Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2 Former Fort Ord, California

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Acronyms and Abbreviations

µg/L	micrograms per liter
AFFF	Aqueous Film-Forming Foam
Ahtna	Ahtna Environmental, Inc.
Army	U.S. Department of the Army
CAMU	Corrective Action Management Unit
CCRWQCB	Central Coast Regional Water Quality Control Board
COC	chemical of concern
cy	cubic yards
DoD	Department of Defense
DOL	Directorate of Logistics
DRMO	Defense Reutilization and Marketing Office
DTSC	California Department of Toxic Substances Control
FAAF	Fritzsche Army Airfield
FDA	Fire Drill Area
FFE	Flame Field Expedient
FOSTA	Fort Ord Soil Treatment Area
FO-SVA	Fort Ord-Salinas Valley Aquitard
FTA	fire training area
GWTP	groundwater treatment plant
HA	health advisory
HDPE	high-density polyethylene
IA	interim action
OU1	Operable Unit 1
OU2	Operable Unit 2
OUCTP	Operable Unit Carbon Tetrachloride Plume
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
SGS	SGS North America, Inc.
SRU	Silver Recovery Unit
STP	sewage treatment plant
SWMU	solid waste management unit
TCE	trichloroethene
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers

USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WWTP	wastewater treatment plant

1.0 Introduction

On behalf of the U.S. Army Corps of Engineers (USACE), Sacramento District, Ahtna Environmental, Inc. (Ahtna) prepared this Technical Summary Report, under Contract Number W91238-14-C-0048, Amendment Number P00008, to assess the presence of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) at the former Fort Ord in response to requests for information from the U.S. Environmental Protection Agency (USEPA) and the California Department of Toxic Substances Control (DTSC). The Report summarizes:

- A basewide review of historical activities with the potential to cause perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at former Fort Ord sites, and
- Groundwater sampling and analysis for PFOA and PFOS at Operable Unit 2 (OU2).

The Report was prepared in accordance with U.S. Department of the Army (Army) guidance for addressing releases of per- and polyfluoroalkyl substances (PFAS; Army, 2018) to the extent practicable; however, while the Army guidance indicates Preliminary Assessments (PAs) will be conducted at installations where PFAS-containing materials were used or stored as part of operational history, the process of developing the Report was initiated prior to publication of the Army guidance and the Report was not prepared as a PA. The Army intends to conduct a PA for PFAS at the former Fort Ord in 2021 in accordance with current U.S. Department of Defense (DoD) and Army policy.

1.1 Former Fort Ord Background and History

The former Fort Ord is located along the Pacific Ocean in northwest Monterey County, approximately 80 miles south of San Francisco, California (Figure 1). The former military installation covered about 28,000 acres, is bounded by Monterey Bay to the west and the Santa Lucia Range to the south, and is surrounded by the cities of Del Rey Oaks, Marina, Sand City, and Seaside. State Highway 1 and the Union Pacific Railroad right-of-way traverse through the western portion of the former Fort Ord, separating the Monterey Bay beachfront from the rest of the installation. Fort Ord served as a training and staging facility for infantry troops from 1917 until its closure in 1994. In 1990, Fort Ord was placed on the USEPA National Priorities List (NPL),[1] primarily due to volatile organic compounds (VOCs) found in groundwater beneath the Fort Ord Landfills. Fort Ord was closed in 1994 under the Base Realignment and Closure Act (BRAC).[2] Environmental remediation at the former Fort Ord is being completed pursuant to the CERCLA §121 and the National Oil and Hazardous Substances Contingency Plan.

1.2 Former Fort Ord Geology and Hydrology

The predominant lithology is a loose, well-sorted (poorly graded) fine to medium sand. The sands represent active and recently active dunes and Pleistocene-age older dune sands. The active dune sands parallel the beach and extend several hundred feet inland. The older dune sands cover most of the northern and western portions of the former Fort Ord. Paleosols, representing former ground surfaces

[1] The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.
[2] BRAC is the process the Department of Defense has used to reorganize its installation infrastructure to more efficiently and effectively support its forces and increase operational readiness.

(silty sands) exist within these sands. These paleosols indicate that one or more cycles of dune deposition have occurred with intervening periods of soil development. The paleosols in the dunes bordering the beach indicate that older dune sand is locally present beneath the recent dune sand.

Three groundwater aquifers are in the remediation phase of cleanup activities at the former Fort Ord: the unconfined A-Aquifer, the unconfined and confined Upper 180-Foot Aquifer, and the confined Lower 180-Foot Aquifer. The aquifers consist predominantly of fine to coarse-grained sands which are separated by silty clay or clayey fine-grained sand aquitards.

The A-Aquifer is located within the recent dune sands and is perched above the regional Fort Ord-Salinas Valley Aquitard (FO-SVA). A groundwater divide in the A-Aquifer exists east of the Fort Ord Landfills and trends northward toward the former Fritzsche Army Airfield (FAAF). Groundwater in the A-Aquifer west of the divide flows north and northwest and discharges to the Monterey Bay. Groundwater in the A-Aquifer east of the divide flows north and northeast toward the Salinas Valley and discharges at the bluff face above the Salinas River.

To the west where the FO-SVA pinches out, the unconfined A-Aquifer and confined Upper 180-Foot Aquifer combine to form a continuous, unconfined hydrostratigraphic unit (identified as the unconfined Upper 180-Foot Aquifer). A north-trending groundwater divide in the unconfined Upper 180-Foot Aquifer exists midway between the FO-SVA and Monterey Bay. Groundwater in the unconfined Upper 180-Foot Aquifer west of the divide flows west and discharges to the Monterey Bay. Groundwater in the unconfined Upper 180-Foot Aquifer east of the divide flows under the FO-SVA (becoming confined) toward the Salinas Valley.

The Upper and Lower 180-Foot Aquifers, and portions of the 400-Foot Aquifer (locally) are contained within valley fill deposits. The Upper 180-Foot Aquifer is separated from the Lower 180-Foot Aquifer by the Intermediate 180-Foot Aquitard, which appears to be laterally discontinuous in the eastern portion of the former Fort Ord near the OU2 and OUCTP areas creating a natural conduit between the aquifers (Ahtna, 2017).

1.3 PFOA and PFOS Background

PFOA and PFOS are part of a larger group of chemicals called per- and polyfluoroalkyl substances (PFAS) that are human-made compounds and do not occur naturally in the environment. PFOA and PFOS are mobile chemicals which bioaccumulate in humans and wildlife, are stable in the environment, and resist typical environmental degradation processes. Production of these compounds began in the 1940s and they were used in firefighting foam, protective coatings, and stain and water-resistant products until the 2000s (ITRC, 2017).[3] They were found in the blood of occupationally exposed workers in the 1970s and the general public in the 1990s. PFOA and PFOS were released into the environment through air emissions, spills, and disposal of wastes. They then mobilized into the surrounding soil and water environment and have been found in sediment and surface water from landfill leachate and downstream of production and wastewater facilities (USEPA, 2017).

[3] PFOA and PFOS can also be found in a range of products and processes including, but not limited to: paper products, textiles, leathers, metal plating/etching, wire manufacturing, carpeting, fabric softeners, polishes, waxes, personal care products, sporting equipment, paints, adhesives, medical products, nonstick cookware, industrial resins/surfactants/molds/plastics, and the semiconductor industry.

In 2016, the USEPA established lifetime health advisory (HA) levels for PFOA and PFOS of 0.07 micrograms per liter (µg/L) to provide a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water. When both PFOA and PFOS are found in drinking water, USEPA recommends the combined concentrations of PFOA and PFOS be compared with the 0.07 µg/L HA level (USEPA, 2016). The DoD calculated tap water screening levels for PFOA and PFOS of 0.40 µg/L using the USEPA online calculator; however, if multiple PFAS are encountered at a site, a 0.1 factor is applied to the screening level (i.e., the screening levels for PFOA and PFOS individually are 0.04 µg/L) (DoD, 2019). In 2019, the California State Water Board's Department of Drinking Water established notification levels for PFOA and for PFOS of 0.0051 µg/L and 0.0065 µg/L, respectively, the lowest levels at which they can be reliably detected in drinking water using currently available and appropriate technologies. The Department of Drinking Water also established response levels for PFOA and PFOS of 0.01 µg/L and 0.04 µg/L, respectively. A response level is a recommended chemical concentration level at which water systems consider taking a water source out of service or provide treatment if that option is available to them. No Federal or State of California Maximum Contaminant Levels for PFOA or PFOS in drinking water have been established.[4]

At Army installations, the primary mechanism for releases of PFAS is through the historical use of Aqueous Film-Forming Foam (AFFF), a product applied during firefighting and firefighting-related training associated with fuel- or petroleum-based fires, though AFFF was not used at Army installations before 1973 (Army, 2018). AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets, fuel farms, or aircraft crash sites.[5] The Army's current practice is not to use AFFF for petroleum-based training fires. Other known sources of environmental releases of PFAS include mist suppressants for chrome plating operations, and landfills and wastewater treatment plants (WWTPs) that have inadvertently accepted PFAS-containing materials (Army, 2018).

1.4 Review Methodology

Upon reviewing the *Draft 4th Five-Year Review Report for Fort Ord Superfund Site* (Army, 2017), USEPA requested the Army conduct a site-wide review of historical activities with the potential to cause PFOA/PFOS contamination in soil and groundwater at the former Fort Ord, and that the results be summarized in a technical memorandum. This Technical Summary Report was prepared in response to USEPA's request. PFOA and PFOS had not been previously evaluated at the former Fort Ord as of the time of the USEPA request. Locations on Army installations with the greatest likelihood of PFAS releases include:

- Fire training areas (FTAs) where AFFF is known or suspected to have been applied,

[4] The Army does not own or operate potable water supply systems at the former Fort Ord. In October 2001, the Army transferred portions of the former Fort Ord to the Fort Ord Reuse Authority, who in turn transferred the water and waste water systems to the Marina Coast Water District, a local water purveyor.

[5] There are two major classes of firefighting foams. Class A foams were developed in the 1980s for fighting wildfires and are also used to fight structure fires (Class A foams do not contain PFAS). Class B foams are designed to effectively extinguish flammable and combustible liquids and gases; petroleum greases, tars, oils and gasoline; and solvents and alcohols. Class B foams can be synthetic foams, including AFFF (ITRC, 2018b).

- AFFF storage locations,
- Aircraft crash sites where AFFF may have been applied for fire control,
- Aviation hangars and other buildings where AFFF was used in the fire suppression systems and where a release may have occurred,
- Fuel farms and sites associated with aviation assets,
- Plating facilities that may have used PFAS-containing mist suppressants,
- Landfills where PFAS-containing materials may have been disposed, and
- WWTPs that may have received wastewater from facilities that used or disposed of PFAS-containing liquid effluents.

Therefore, a three-step review process was implemented for sites at the former Fort Ord to determine the likelihood of a PFAS release. This process included reviews of existing information about use and disposal practices at the installation and collection of limited field data.

1.4.1 Primary Site Review

In accordance with Army guidance for addressing releases of PFAS (Army, 2018), a primary review of basewide historical records was conducted to identify locations at the former Fort Ord where releases of PFAS may have occurred (i.e., the types of facilities listed in Section 1.4). Primary historical records reviewed included:

- Enhanced Preliminary Assessment (Weston, 1990)
- Community Environmental Response Facilitation Act (CERFA) Report (ADL, 1994)
- Basewide Remedial Investigation/Feasibility Study (HLA, 1995d)
- Field Investigation and Data Review, Solid Waste Management Units (Harding ESE, 2002)
- Draft Final Five-Year Review Report, First Five-Year Review Report for Fort Ord Superfund Site (Army, 2002)
- Final Second Five-Year Review Report, Fort Ord Superfund Site (Army, 2007)
- Final 3rd Five-Year Review Report for Fort Ord Superfund Site (Army, 2012)
- Final 4th Five-Year Review Report for Fort Ord Superfund Site (Army, 2017)

During the primary review, consideration was given to:

- Areas where firefighting exercises were conducted,
- Areas where fire suppression infrastructure existed (e.g., fire stations and AFFF equipment storage areas),
- Unplanned release areas such as crash sites, equipment cleaning discharge locations, fire suppression systems located at fuel storage areas, sites where large fires occurred (e.g., warehouse fires),
- Areas where chromium electroplating operations were performed,
- Landfill and waste disposal areas receiving waste streams containing PFAS, and
- Areas where waste material and sludge from WWTPs were disposed of.

From the primary review, a list of historical Fort Ord sites was compiled that includes former or current remedial investigation sites, interim action (IA) sites, no action sites, solid waste management units (SWMUs), and operable units (Table 1). It was also determined during the primary review that, for the former Fort Ord:

- FTAs existed,
- Former AFFF storage locations are probable,
- There are reported aircraft crash sites,
- There are no known sites where large fires were suppressed using AFFF,
- Aviation hangars and other buildings exist where AFFF may have been used in the fire suppression systems,
- Fuel farms and sites associated with aviation assets existed,
- There are no known plating facilities,
- There are current and former landfill areas, and
- WWTPs existed.

If the primary review determined historical activities at a site did not or were unlikely to have resulted in a release of PFAS (i.e., the site was not a location with a likelihood of PFAS releases per the Army guidance [Army, 2018]), the site was eliminated from further evaluation. The results of the primary review are summarized in Table 1.

1.4.2 Secondary Site Review

Known or probable FTAs, AFFF storage locations, aircraft crash sites, aviation hangars and other aviation assets, landfill areas, and WWTPs identified in the primary review then underwent a secondary records review. Secondary historical records reviewed included:

- Site characterization reports,
- IA work plans,
- IA confirmation reports,
- Data summary and evaluation reports,
- Remedial action work plans,
- Remedial action confirmation reports,
- Closeout reports, and
- Real property records.

Additional sites were eliminated from further evaluation based on the secondary records review, as noted in Section 2.0.

1.4.3 Tertiary Site Review

Remaining sites requiring further evaluation for the use or presence of PFAS were subjected to tertiary review, including site visits and interviews of personnel either currently or formerly employed at Fort Ord. The results of the tertiary reviews are also summarized for each site, as applicable, in Section 2.0.

Based on the results, additional sites were eliminated from further evaluation and select sites are recommended for soil or groundwater sampling, with consideration given to the presence of existing groundwater monitoring wells, if any, and consistency with DoD's "worst first" approach, where potential PFAS release sites are prioritized and sequenced for further action based on risk, with higher risk sites (i.e., where human exposure to contaminated drinking water exists) being addressed before lower risk sites (Army, 2018), as described in Section 2.0 and summarized in Section 3.0 and Table 2.

1.5 Groundwater Monitoring at OU2

Upon reviewing the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Draft Revision 5, Groundwater Remedies and Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume* (Ahtna, 2017), DTSC recommended sampling groundwater at the former Fort Ord for PFOA and PFOS analysis because these compounds were detected at low concentrations at Operable Unit 1 (OU1) during the site closure process. In response, and in accordance with Army policy (Army, 2016), the Army proposed to screen for PFOA and PFOS in groundwater at OU2 because products containing PFOA and PFOS may have been disposed of at the Fort Ord Landfills (Ahtna, 2017). PFOA and PFOS data had not been previously collected at OU2 and, at the time of the DTSC recommendation, sampling and analysis for PFAS at other former Fort Ord sites had not been contemplated.

1.5.1 Sampling Events and Objectives

In accordance with the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Addendum No. 1, Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis, Operable Unit 2* (QAPP; Ahtna, 2018), samples were collected from twelve OU2 monitoring wells and the OU2 groundwater treatment plant (GWTP) for PFOA/PFOS analysis during the First Quarter 2019 OU2 groundwater monitoring program event performed March 4 through March 8, 2019.

The primary objectives of the OU2 PFOA/PFOS sampling and analysis were to determine if measurable amounts of PFOA or PFOS are in groundwater at OU2, and if so, then whether:

- The detected concentrations exceed the USEPA lifetime HA level (USEPA, 2017), and
- The OU2 GWTP effectively remove PFOA/PFOS from groundwater (i.e., are concentrations of PFOA/PFOS at the GWTP effluent less than concentrations at the GWTP influent [if detected] and by how much?).

Because regulatory limits for PFOA and PFOS in groundwater have not been established, the OU2 PFOA/PFOS analytical results are compared to the USEPA HA values and DoD screening levels for PFOA and PFOS to determine the need for further action. The USEPA HA levels for the individual concentrations of PFOA and PFOS, and the combined concentrations of PFOA and PFOS, is 0.07 µg/L (USEPA, 2017). The DoD screening level for the individual concentrations of PFOA and PFOS is 0.40 µg/L if only one is detected, and the DoD screening level for the individual concentrations of PFOA and PFOS is 0.04 µg/L if both are detected (DoD, 2019).

1.5.2 Sampling Methodologies and Laboratory Analysis

The groundwater samples were collected using HydraSleeves™ at groundwater monitoring wells screened in the A-Aquifer and the Upper 180-Foot Aquifer. A-Aquifer monitoring and extraction wells in the OU2 area are typically screened in the bottom 30 feet of the aquifer and range from approximately 115 feet to 145 feet in depth. Monitoring and extraction wells screened in the confined Upper 180-Foot Aquifer in the OU2 area range from approximately 175 feet to 300 feet in depth. Screen intervals for wells in the Upper 180-Foot Aquifer vary as determined by local hydrogeology and the historical presence of VOCs in groundwater in the area. The HydraSleeves™ were placed within the well screen interval in the saturated zone with the highest historical chemical of concern (COC) concentrations. HydraSleeves™ were placed at the designated depth using a dedicated rope and stainless steel weight secured to the top of the well casing or well cap.

HydraSleeves™ were left in place for a minimum of 48 hours before sampling. Depth to water was measured before sample collection to confirm the HydraSleeve™ was completely submerged in groundwater, which is necessary for representative data collection. Aqueous sample collection at OU2 GWTP monitoring points used the designated sampling port.

SGS North America, Inc. (SGS) performed analyses for the groundwater samples. SGS is accredited through the DoD Environmental Laboratory Accreditation Program. SGS was accredited throughout the sampling event and there was no lapse in accreditation. Groundwater samples were analyzed for PFOA and PFOS by Modified USEPA Method 537. Analytical results and interpretation are discussed in Section 2.6.5.

1.5.3 Deviations from the QAPP

Per the project schedule presented in QAPP Worksheets #14 and #16, samples were collected and submitted for laboratory analysis in December 2018. During sample preparation at the laboratory, the samples were extracted on a manifold that had been contaminated by samples with elevated PFOA and PFOS concentrations (i.e., in the parts per million [ppm] range). These samples were from a site other than the former Fort Ord. SGS employs a cleaning procedure between sample preparations; however, samples with elevated concentrations may result in carryovers at the parts per trillion level (i.e., the samples collected from the former Fort Ord may have been cross-contaminated by residual PFOA and PFOS in the extraction manifold).

By time SGS analyzed the other site's samples and identified the elevated PFOA/PFOS concentrations, the former Fort Ord samples had already been extracted on the same manifold and potentially cross-contaminated. Per SGS's standard operating procedures, the manifold was taken out of production for additional cleaning and solvent rinses; however, there was insufficient sample volume remaining to re-extract the samples. The original extractions could have been analyzed, but it is unlikely the data would have been usable for project decisions; therefore, the samples were recollected and analyzed in March 2019, delaying the project schedule by three months. The corrective measure was to collect duplicate sample volumes at each sampling location should a similar laboratory incident require re-extraction.

1.5.4 Data Validation and Quality Control Assessment

Two duplicate samples were collected during the PFOA/PFOS groundwater monitoring event at OU2. One trip blank, one field blank, and one equipment blank were also collected during the event.[6,7,8] No target analytes were detected in these samples.

Data validation for the PFOA/PFOS groundwater monitoring event was performed per QAPP guidelines (Ahtna, 2018) and the validation summary report is provided in Appendix A. No results required qualification based on 100 percent Stage 2B and 10 percent Stage 4 data validation review. Data are considered acceptable and suitable for use.

The laboratory assigns data qualifiers when analytical results are less than the laboratory limit of quantification or quality control measures are not met. The data validator assigns additional data qualifiers when quality control measures are not met. Laboratory qualifiers include a "U" meaning the analyte was not detected at or above the limit of detection and a "J" meaning the analyte was detectable above the detection limit but below the limit of quantitation.

[6] Trip blanks are laboratory provided sample bottles filled with analyte free water that are not opened, but travel with regular field samples.

[7] Field blanks are sample bottles filled with laboratory-supplied PFOA/PFOS-free deionized water during regular field sampling.

[8] The equipment blank was prepared by pouring laboratory-supplied PFOA/PFOS-free deionized water into an unused high-density polyethylene HydraSleeve™ that was then suspended in a monitoring well above the water column for a minimum of 48 hours prior to sample collection.

2.0 Site Evaluations for Historical Use of PFOA and PFOS

Based on the results of the primary review described in Section 1.2 (summarized in Table 1), 39 sites were identified as known or probable FTAs, AFFF storage locations, aircraft crash sites, aviation hangars and other aviation assets, landfill areas, and WWTPs and underwent a secondary records review. Other sites were removed from further evaluation.

Based on the secondary records review, additional sites were eliminated from further evaluation as noted below. Remaining sites requiring further evaluation for the use or presence of PFAS were subjected to tertiary review, including site visits and interviews of personnel either currently or formerly employed at the former Fort Ord, as described below.

For several sites it is noted that there is no exposure pathway to human receptors for groundwater that may contain PFAS; however, groundwater remediation goals identified in decision documents for the former Fort Ord typically include returning groundwater to a condition that will allow beneficial uses to occur, including potential future use as a drinking water source without unacceptable risks to users.

2.1 Fire Training Areas

There are five sites at the former Fort Ord identified as former FTAs or potential FTAs. At these sites, training or other activities occurred that involved burning of petroleum-based products, and AFFF may have been used for fire suppression. Therefore, AFFF could have been released into the environment in periodic, high volume, broadcast discharge for fire training. One of the sites, the former FAAF Fire Drill Area (FDA), was previously evaluated for the presence of PFOA and PFOS as part of the closure process for OU1 (HGL, 2017).

2.1.1 Site 8 – Range 49, Molotov Cocktail Range

Site 8 is in the central portion of the former Fort Ord near Parker Flats Road (Figure 2). The site became active in 1976 (Weston, 1990) and training activities included firing handmade explosive devices containing gasoline, transmission fluid, detergent, and motor oil (HLA, 1996d). Approximately 80 cubic yards (cy) of soil and debris were excavated in two phases. The depth of the excavation ranged from about 6 inches to 2 feet, except in several isolated areas where stained soil was excavated to depths of 3 to 4 feet. The soil was transported to the Fort Ord Soil Treatment Area (FOSTA) for treatment (HLA, 1996d). There are no records of fires at Site 8 that required suppression using AFFF (Riso, 2019a). Based on the information available, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.1.2 Site 9 – Range 40A, Flame Field Expedient (FFE) Training Area

Site 9 is in the central portion of the former Fort Ord within Site 39 (Figure 2). Range 40A was used for training military personnel in the construction and use of improvised weapons using flammable substances. In the training exercises, a drum containing a gelatinous mixture of gasoline was partially buried so that its top pointed at a selected target. Detonation cord was used to blow the top off the drum while a trinitrotoluene (TNT) charge in the drum ejected the burning material. According to Fort Ord Range Control personnel, the burning material generally fell 75 to 100 meters from the firing point. In addition to the FFE training exercises, three shallow trenches were used for fire and smoke

demonstrations, which were conducted by filling the trenches with a fuel similar to that used for the FFE training and then igniting the fuel and allowing it to burn (HLA, 1995d).

Field investigations conducted at Range 40A in 1992 and 1994 determined soils at the site consist of surficial yellowish-brown sand to silty sand and clayey sand underlain by a dark grayish-brown sandy clay layer, the bottom of which is hard and dry. Analytical results for soil samples collected during the investigation indicated relatively low concentrations of petroleum hydrocarbons and metals, primarily in surface samples collected in the general vicinity of the three shallow trenches. Leaching of hydrocarbons and metals through soil to groundwater was not identified as a likely migration pathway because of the clay layer beneath the site. The absence of hydrocarbons beneath the clay layer indicates it is an effective barrier to vertical contaminant migration (HLA, 1995d).

Additional site characterization sampling was conducted at Range 40A and adjacent Ranges 39 and 40 in 2001, 2002, 2003, and 2006 and the remedial action was conducted in 2010 and 2011 to remove soil with elevated concentrations of lead (Shaw, 2012). Approximately 7,440 cy of soil were excavated from Ranges 39, 40, and 40A and transported to the Fort Ord Landfills. The depth of the excavations ranged from about 6 inches to 4 feet (Shaw, 2011).

Documentation of activities at Range 40A indicates FFE-related fires were allowed to burn out and no active fire suppression using AFFF or other methods was required. Additionally, the site is underlain by a clay layer that is a barrier to vertical migration of contaminants, and soil remediation was completed at the site. Based on the information available, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.1.3 Site 10 – Burn Pit/Fire Training Area

Site 10 is in the Main Garrison area of the former Fort Ord near the main gate (Figure 2) and the Main Garrison Fire Station (Figure 3). The site consisted of a burn pit in which petroleum hydrocarbons were ignited and extinguished for firefighting training and demonstrations during Fire Prevention Week each year. Although no construction record for the pit was found, it is believed to have been constructed soon after the fire station was built in the mid-1950s (Weston, 1990). The pit was approximately 45 feet long, 25 feet wide, and 2 feet deep. A 2-inch diameter pipe penetrated the southern wall of the pit and a drainage swale, apparently resulting from soil settlement after installation of the pipe, extended from the south side of the pit (Figure 4). The burn pit was filled with water and fuel, which was then ignited and extinguished using a foaming product. This activity may have occurred four to five times for demonstrations during Fire Prevention Week, likely starting in the 1960s (Riso, 2019a); however, AFFF would not have been used until after 1972. By 1991, the pit was no longer used and was grass covered (EA, 1991). Fuels used for this purpose reportedly included off-specification jet fuel (JP-4), gasoline, diesel, and waste oil. After the training sessions, water and residual unburned fuel percolated into the soil at the bottom of the burn pit (HLA, 1996c).

The IA was performed at Site 10 in July 1995 and required three excavations: one at the burn pit, one at the drainage swale, and one east of the burn pit. The excavation area was approximately 80 feet wide by 100 feet long to a maximum depth of 10 feet. 1,451 cy of soil were removed and treated at the FOSTA, and the excavation was backfilled with clean soil (HLA, 1996c).

Additional investigation at Site 10 is recommended because of a suspected release of PFAS associated with reported regular use of AFFF at the site for at least two decades. Site 10 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term (see Section 3.3).

2.1.4 Site 34B – Former Burn Pit

Site 34B is in the FAAF area (Figure 2). The location of a former burn pit at FAAF was identified in 1995 by a former range control officer. According to the range control officer, the burn pit may have been used a few times a year as an FTA by dispensing gasoline or other fuels into the pit, lighting the fuels, and providing an opportunity for firefighters to practice extinguishing the fire. No historical records about the burn pit operations were found (Shaw, 2003); however, elevated concentrations of lead, total petroleum hydrocarbons (TPH), and dioxin/furan detected in shallow soils (0 to 5 feet below ground surface) are evidence of burning at the site.

The IA was performed at Site 34B in October 2002. The excavation area was approximately 40 feet wide by 100 feet long to a maximum depth of 5 feet. 740 cy of soil were removed and disposed of at the Fort Ord Landfills (Shaw, 2003).

A review of historical aerial photographs indicates the burn pit was not present in 1949 but was present in 1986. While the burn pit was likely established after 1949, it had not been used since sometime before 1971 (Riso, 2019a). This information suggests this site may have been a temporary training area that was used while the FAAF was under construction in the early 1960s and before the FAAF FDA was established in 1962.[9] Because the burn pit was not used after 1972, there is no suspected release of AFFF at this location; therefore, this site was eliminated from further evaluation.

2.1.5 Site 41 – Crescent Bluff Fire Drill Area

The Crescent Bluff FDA is located along Crescent Bluff Road, approximately 1 mile southeast of the developed portion of East Garrison (Figure 2). The site is undeveloped and is a seasonal wetland. There were four shallow depressions (1 to 3 feet deep) that were suspected burn pits formerly used for firefighting drills. These pits range in size from approximately 115 to 900 square feet (HLA, 1997a).

It is suspected that Site 41 was used for fire drill practice in the 1940s and 1950s, although the actual period is unknown. A letter dated November 28, 1952 states liquids in burn pits were ignited and extinguished for demonstration purposes during a Fire Prevention Week in October 1952. Liquids used for the demonstration included used crankcase oil, napalm, gasoline, and kerosene (HLA, 1996b).

Based on the results of site characterization, three of the four shallow depressions were recommended for an IA (HLA, 1996b). The IA was performed at Site 41 in June 1996 and required three excavations, with a total of 76 cy removed and disposed of at the Fort Ord Landfills (HLA, 1997a).

Because the pits are relatively small, it is suspected they were used for handheld fire extinguisher training (Riso, 2019a). Additionally, they were suspected of having been used in the 1940s and 1950s and were not used for training after 1971 (Riso, 2019a). For these reasons, there is no suspected release of AFFF at the Crescent Bluff FDA; therefore, this site was eliminated from further evaluation.

[9] FAAF was dedicated to Fort Ord in 1960 and expanded in 1961 (Weston, 1990).

2.1.6 Operable Unit 1 – FAAF Fire Drill Area

The FAAF FDA was established in 1962 as a training area for the Fort Ord Fire Department west of FAAF (Figure 2). As part of training activities, waste fuel (primarily composed of outdated or water-contaminated JP-4) was discharged from an onsite storage tank into a pit, ignited, and then extinguished. Other fuels included hydraulic and lubrication oils, gasoline, diesel, and solvents. After 1972, AFFF was used during training activities to extinguish fires in the FDA, with training occurring at least once per quarter (i.e., four times per year) and 100 to 200 gallons of AFFF being used during each training event (Riso, 2019a).[10]

Training activities at the FDA were discontinued in 1985 and the associated structures (pipeline and storage tank) were removed (Figure 5). These training activities are believed to have resulted in the release of contaminants to soil and groundwater (Army, 2017), though groundwater contamination was limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath OU1 and continues in a downgradient direction more than 5,000 feet beyond the farthest historical extent of the OU1 groundwater plume. The low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former OU1 plume area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Additionally, the OU1 area is located within the Fort Ord Special Groundwater Protection Zone, where installation of wells and use of the A-Aquifer for drinking water are restricted by Monterey County Code, and within the Fort Ord Natural Reserve (part of the University of California Natural Reserve System), where development is prohibited. Consequently, there is no exposure pathway to human receptors for groundwater from the OU1 area (HGL, 2017).

In 1987, approximately 4,000 cy of contaminated soil were removed from the former FDA to a depth of 31 feet, and the area was then backfilled with clean soil. Excavated soils were spread over the area of the former FDA to a depth of 2.5 to 3 feet above the original ground surface and remediated using treated groundwater supplemented with an aqueous nutrient formulation to stimulate microbial degradation of hydrocarbons in the soil (HLA, 1988). As the soil was remediated, it was removed and transported to a soil borrow area for use as fill in construction projects at the former Fort Ord (HGL, 2017). A remediation confirmation study and risk assessment conducted in 1993 indicated chemicals remaining in soil at the former FDA did not present an unacceptable risk to human health or the environment and no further remedial action was necessary (Army, 1995).

Groundwater remediation using pump and treat systems and groundwater monitoring was conducted from 1988 through 2014. Groundwater monitoring results showed the aquifer cleanup levels for COCs specified in the OU1 Record of Decision (OU1 ROD) were achieved at all wells by September 2014. Attainment monitoring performed during 2015 confirmed the OU1 ROD requirements had been met and would be maintained in the future (HGL, 2017).

[10] Firefighting foam was used before 1972 at Fort Ord; however, this material was referred to colloquially as "blood and guts" foam and was most likely a protein foam made from animal byproducts, including keratin protein. Anecdotally, it was also very good fertilizer.

PFOA and PFOS were not addressed in the OU1 ROD but were included in the groundwater attainment monitoring program for OU1 and were considered with COCs in evaluating the case for OU1 site closure. The OU1 closure report summarizes the OU1 site history, remediation and monitoring activities, and decommissioning of the remediation system (HGL, 2017).

In March 2016, USEPA, DTSC, and the Central Coast Regional Water Quality Control Board (CCRWQCB) concluded OU1 groundwater monitoring and remediation are complete and OU1 can be closed; however, the detected PFOA and PFOS concentrations in three wells (PZ-OU1-10A1, MW-OU1-26-A, and MW-OU1-88-A in May 2015)[11] were greater than the USEPA HA levels published in May 2016 or the DoD screening levels published in October 2019.[12] Therefore, USEPA, DTSC, and CCRWQCB also concluded PFOA and PFOS investigations would continue independently of the completed OU1 remediation effort, and additional work associated with PFOA and PFOS at any part of the former Fort Ord will not be associated with the OU1 ROD (HGL, 2017).

Additional investigation at the former FAAF FDA is recommended because of a suspected release of PFAS associated with reported regular use of AFFF at the site for at least 13 years and detections of PFOA and PFOS in three groundwater monitoring wells at concentrations greater than the USEPA HA levels or DoD screening levels. The former FAAF FDA is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.1). No additional investigation of the soil borrow or fill areas at historical construction sites is recommended because the soil excavated from OU1 was removed from the borrow area and there is no available record of the locations of the construction sites.

2.2 AFFF Storage Areas

There were eighteen sites identified at the former Fort Ord based on operational history where AFFF may have been used or stored as part of a fire suppression system. Eight of these sites were aviation hangars, which are described in Section 2.4.

2.2.1 Site 17 – Building 1442 Autoclave

Building 1442 was a brick building at the corner of 8th Street and 4th Avenue (Figure 2) that housed a 1,000-gallon Thompson Tank Company autoclave that treated infectious waste from Army clinics.[13] This low-temperature thermal treatment unit (100 degrees Fahrenheit at 100 pounds per square inch) rested on a concrete slab greater than 2 feet thick and was operated from 1984 until 1992. During the SWMU investigation, no waste migration and dispersal characteristics were identified (Harding ESE, 2002).

The Army transferred the parcel of land that included Building 1442 to the Trustees of the California State University on August 22, 2002. Building 1442 was demolished sometime between December 2011 and May 5, 2012.

[11] These wells were decommissioned in July 2017 (HGL, 2017).
[12] These HA levels were published five months after the attainment monitoring effort was completed.
[13] An autoclave is a pressure chamber used to carry out industrial processes or medical applications requiring elevated temperature and pressure different from ambient air pressure. The Building 1442 autoclave was used to treat infectious wasted, gauze, disposable gowns, and other materials common to medical clinics.

This site was evaluated due to the presence of the autoclave; however, there is no evidence AFFF was used or stored in Building 1442. The autoclave was a low-temperature thermal treatment unit used for steam treating, but not burning, infectious waste (Weston, 1990). Because no fuel- or petroleum-based fires would have occurred during operation of the autoclave, it is unlikely AFFF was used or stored at Building 1442 and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

2.2.2 Site 22 – Building 4492 Auto Craft Shop

The Auto Craft Shop was in Building 4492, located at the intersection of 8th Avenue and Butler Street (Figure 2), and was used by military personnel, Federal government employees, and California State University Monterey Bay and University of California students and faculty, for personal vehicle maintenance (Army, 2003).[14] Waste materials associated with automotive maintenance activities were stored in a SWMU at the Auto Craft Shop, including waste oil and solvents, used antifreeze, used fuel filters and oil filters, rags, and contaminated dry sweep. However, there was no known storage or use of AFFF at the Auto Craft Shop and no suspected release of PFAS (Riso, 2019a); therefore, this site was eliminated from further evaluation.

2.2.3 Site 29 – Building T-111 DRMO Polychlorinated Biphenyl Storage Area

Defense Reutilization and Marketing Office (DRMO) Building T-111 was located in the East Garrison area (Figure 2). Drums, transformers, and other equipment containing waste oil with polychlorinated biphenyl concentrations greater than 5 parts per million were stored temporarily at Building T-111. Epoxy sealant was applied to the concrete floor and the bottom four feet of the walls. The adjoining exterior concrete surface was sloped to one corner, where stormwater was conveyed by a concrete culvert to the street curb, but the exterior concrete surface was not sealed (Harding ESE, 2003). There was no known storage or use of AFFF at the Building T-111 and no suspected release of PFAS (Riso, 2019a); therefore, this site was eliminated from further evaluation.

2.2.4 Silver Recovery Unit – Building 4385

The Silver Recovery Unit (SRU) was in the basement of Building 4385 (former Silas B. Hayes Hospital) in the Main Garrison area of the former Fort Ord (Figure 2). Silver-containing waste solutions (waste toner and developer) from Fort Ord photography and dental laboratories, the hospital x-ray facility, and Fort Hunter Liggett, Presidio of Monterey, Camp Roberts, and the Consolidated Treatment Medical Clinic were transported to the SRU and treated to recover the silver. The SRU was upgraded in the early 1980s to an electrolytic recovery system, and in 1992 to a zero-discharge unit. SRU operations ceased in March 1993 and the SRU was removed and relocated to Fort Lee, Virginia (Harding ESE, 2002).

The recovered silver was subsequently managed by the DRMO and the treated solution was neutralized and discharged to the sanitary sewer system (HLA, 2001). Because petroleum products were not used for SRU processes, it is unlikely AFFF was used in the fire suppression system. Additionally, photographs of the SRU indicate a conventional water-based fire suppression system was in place in the basement of

[14] California State University Monterey Bay Facilities Services & Operations currently occupies the building to support the day-to-day operations of the campus.

Building 4385 (Harding ESE, 2002). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.2.5 Building T-105 East Garrison Fire House

The former East Garrison Fire House was located in Building T-105 on Chapel Hill Road between Camp Street and Sherman Street (Figure 2). Building T-105 was constructed in 1941 was still identified as a "fire station" as of 1991 (DEI, 1993); however, Building T-105 had been demolished by 2007. AFFF was reportedly never stored or used at Building T-105 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.2.6 Building 514 FAAF Fire & Rescue Station

The former FAAF Fire & Rescue Station is located in Building 514 at the Marina Municipal Airport, south of the airport control tower and west of the Site 40A helicopter defueling area (see Section 2.5.2) (Figure 2 and Figure 6). Building 514 was constructed in 1961, concurrent with the original buildout and expansion of FAAF (see Section 2.4.2) and included facilities typical to fire stations, such as a garage, an office, workshop, storeroom, kitchen, and sleeping quarters. It was reported that AFFF was stored at Building 514 and was discharged at adjacent Site 40A; however, there is no evidence of other discharges at Building 514 (Riso, 2019c). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation, though additional investigation is recommended at Site 40A (see Sections 2.5.2 and 3.7).

2.2.7 Building T-1820 Main Garrison Fire House – South

The former Main Garrison Fire House (south) is located in Building T-1820 on 1st Avenue between 4th Street and 5th Street (Figure 2). Building T-1820 was constructed in 1940 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1990, Building T-1820 was being used for office space (DEI, 1993). AFFF was reportedly never stored or used at Building T-1820 (Riso, 2019c). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.2.8 Building T-2898 Main Garrison Fire House – North

The former Main Garrison Fire House (north) was located in Building T-2898 on 11th Street between 12th Street and 13th Street (Figure 2). Building T-2898 was constructed in 1940 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1992, Building T-2898 was being used by the Deputy Chief of Staff (G3 ADE) for supply service administration (DEI, 1993); however, Building T-2898 had been demolished by 2007. AFFF was reportedly never stored or used at Building T-2898 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.2.9 Building T-3280 Main Garrison Fire House – East

The former Main Garrison Fire House (east) is located in Building T-3280 at the intersection of 9th Street and 5th Avenue (Figure 2). Building T-3280 was constructed in 1944 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1992, Building T-2898 was being used as a general-purpose building with office and storeroom facilities (DEI, 1993); however, AFFF

was reportedly never stored or used at Building T-3280 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.2.10 Building 4400 Main Garrison Fire Station

The Main Garrison Fire Station is located on General Jim Moore Boulevard (formerly North-South Road) between Lightfighter Drive and Gigling Road (Figure 2) and includes a complex of three buildings (Figure 3). The original fire station, Building 4400, was constructed in 1953 and included facilities typical to fire stations, such as a main garage, offices, dining room, kitchen, and sleeping quarters. Building 4401, the Applied Instruction Building, was constructed in 1957 for training purposes, and its facilities were limited to a hose tower and furnace room. Building S-4403 was constructed in 1982 and includes a garage, workshops, and a dry chemical shop. It was reported that AFFF was stored at the Main Garrison Fire Station (Riso, 2019c), but this was likely limited to Building S-4403 because Buildings 4400 and 4401 do not have appropriate storage facilities. It was also reported that AFFF tanks on fire department vehicles were drained only when repairs on the tanks were needed and some AFFF could have leaked or spilled in the grassy areas adjacent to the fire station, though it was also noted draining of AFFF tanks occurred only five times over 40 years (Riso, 2019c). Based on this information, there was no significant release of PFAS at this site; however, there were significant releases at adjacent Site 10 that warrant additional investigation (see Section 2.1.2).

2.3 Aircraft Crash Sites

Aircraft crash sites are of interest because AFFF may have been applied for fire control. There are up to five reported aircraft crash sites at the former Fort Ord, with three in the Inland Ranges, one at Mudhen Lake, and one at FAAF.

2.3.1 Site 39 – Inland Ranges

Small airplane wreckage was observed in the northcentral portion of the Inland Ranges during a helicopter survey of Fort Ord on August 2, 1993 (ADL, 1994) (Figure 2); however, the presence of the wreckage could not be confirmed through the review of after action reports for prescribed burns and munitions responses in this part of the Inland Ranges. Additionally, this crash likely occurred before 1971 (Riso, 2019a); therefore, AFFF would not have been applied for fire control.

There were two reported helicopter crashes in the Inland Ranges during training exercises sometime in the 1980s. The specific locations are unknown; however, there was no fire and no use of AFFF associated with these crashes (Riso, 2019a).

Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.3.2 Mudhen Lake

Mudhen Lake is located in the eastern portion of the former Fort Ord at the intersection of Eucalyptus Road, Crescent Bluff Road, and Jacks Road (Figure 2). The site of a helicopter crash at Mudhen Lake was noted during a helicopter survey of Fort Ord on August 2, 1993 (ADL, 1994); however, the after action report for the 1997 munitions response at Mudhen Lake did not note the presence of wreckage (USA, 2000). No other helicopter crash sites were observed during the 1993 helicopter survey, so it is possible

this crash site is the same as one of the ones described in Section 2.3.1 as having occurred in the Inland Ranges. Additionally, the description in the Community Environmental Response Facilitation Act (CERFA) Report indicates the primary concern is a fuel spill and does not indicate any fire associated with this crash (ADL, 1994), which would be consistent with the helicopter crashes described above. Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.3.3 FAAF

A small aircraft crash landing occurred at FAAF when the aircraft landing gear did not deploy; however, there was no fire and AFFF was not used (Riso, 2019a). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

In 1989, an AH-1 Cobra attack helicopter and an OH-58 Kiowa observation helicopter crashed approximately 150 yards apart in dense brush 1 mile southwest of FAAF during a nighttime training mission. The two helicopters were badly damaged and leaking fuel started a small fire in the dense brush (UPI, 1989). The fire department responded to the crash, but no AFFF was used (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

2.4 Aviation Hangars

Aviation hangars are of interest because AFFF may have been used in the fire suppression systems and a release may have occurred.

2.4.1 Site 20 – South Parade Ground and 3800 and 519th Motor Pools

Site 20 is located in the Main Garrison area of the former Fort Ord near the main gate (Figure 2). Aerial photographs and property records indicate the South Parade Ground and parts of the 519th and 3800 Motor Pools were formerly an airfield. Buildings S-3897 and S-3898 were once aircraft hangars and Building T-3855 was an aircraft parts storage building (HLA, 1995b). Personnel interviews also indicated the airfield was used for small aircraft, but only until FAAF construction was completed in the early 1960s (EA, 1991). Because Buildings S-3897 and S-3898 were no longer used as aircraft hangars after the early 1960s, it is unlikely AFFF was used or stored at these locations and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

2.4.2 Site 34 – FAAF Multiple Sites

The FAAF (now the Marina Municipal Airport) is located on the north side of the former Fort Ord adjacent to the City of Marina (Figure 2). Construction of FAAF was completed in the early 1960s and it served as the general airfield for Fort Ord. Several military companies performed aircraft maintenance there and the Directorate of Logistics (DOL) employed a civilian maintenance force at the FAAF in Buildings 533 and 535. There were five aviation hangars constructed at FAAF that are still in existence, as shown in Figure 6 and listed below:

AVIATION HANGARS

Army Building No.	Year Built	Former Army Occupant	Current Occupant	Address
507	1979	7th Aviation Battalion, C & D Companies Flight Maintenance	Naval Postgraduate School Center for Interdisciplinary Remotely-Piloted Aircraft Studies; Joby Aviation	3200 Imjin Road
510	1959	2/9th Cavalry Reconnaissance Flight Maintenance	Fort Ord Works High Performance Structures	3240 Imjin Road
524	1961	2/9th Cavalry Reconnaissance Flight Maintenance	Suddenlink	761 Neeson Road
527	1977	HHC Cavalry Regiment and 1/123rd Aviation Regiment, A & B Companies	Integrated Composites	741 Neeson Road
533	1963	DOL Aircraft Maintenance	Skydive Monterey Bay	721 Neeson Road

Buildings 510, 524, and 533 were constructed before 1972 (DEI, 1993), and a review of real property records for these hangars indicates the original fire suppression systems consisted of automatic sprinklers, deluge systems, fire hydrants, and fire alarms, and these systems were never modified (Appendix B). Additionally, the interior views of Buildings 510, 524, and 533 indicate the original deluge systems are still in place, no foam suppression system is currently present, and there is no infrastructure in place that would have supported a foam suppression system (Figures 7 through 10).; therefore, it is unlikely the fire suppression systems at these hangars contained AFFF.

Buildings 507 and 527 were constructed after 1972 (DEI, 1993); therefore, it is possible the fire suppression systems contained AFFF. However, the real property record for Building 507 indicates the fire suppression system consisted of a sprinkler system and hoses, and a fire alarm, indicating a water-based system (Appendix B). The real property record for Building 527 does not include details regarding fire protection (Appendix B), though during the inspection of Building 510, the Operations Manager for Fort Ord Works High Performance Structures stated all the hangars at FAAF had deluge fire suppression systems supplied by an elevated water storage tank (Figure 6). This assertion was based on information provided by his father, who had served in the Army at Fort Ord and, after being discharged, worked as a civilian boiler mechanic at Fort Ord for the remainder of his career. The current fire suppression systems for all five hangars consist of water deluge systems supplied by 10-inch diameter pipelines, and there are no active foam suppression systems. These systems were supplied by the elevated water storage tank, which was decommissioned, and the systems were connected to the Marina Coast Water District system (Crechriou, 2019). Marina Coast Water District water system basemaps also indicate water supplied to the deluge systems is nonpotable.

It was reported there was an accidental discharge of foam from the fire suppression system in one hangar, which resulted in more than five feet of foam covering the floor of the hangar (indicating it was

high expansion synthetic detergent foam),[15] and it was believed to be one of the newer hangars (i.e., Building 507 or Building 527) (Riso, 2019a). An inspection of the interior of Building 507 indicated the presence of a possible foam suppression system in the helicopter maintenance (hangar) area and an adjacent storage/workshop area (Figure 11), though this is not described as a change in the real property record (Appendix B). An inspection of the interior of Building 527 indicates no foam suppression system is currently present and there is no infrastructure in place that would have supported one (Figure 12).

The former FAAF is a lower risk site because groundwater contamination would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 34 and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former FAAF area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 34 area. However, additional investigation at the Building 507 area is recommended because of the presence of a suspected foam suppression system and the reported discharge of potential AFFF at one hangar. Specifically, cleanup after the accidental discharge could have resulted in AFFF being discharged to surface drainage channels or entering the sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF sewage treatment plant (STP; see Section 3.5). Based on the information available, the other four aviation hangars at the former FAAF were eliminated from further evaluation.

2.5 Fuel Farms and other Aviation Assets

AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets and fuel farms.

2.5.1 Site 34 – Buildings 501, 502, and 503 Aircraft Fuel Facilities

Aircraft fuel facilities associated with Buildings 501, 502, and 503 were located near the FAAF main gate (Figure 2 and Figure 6). Fuels were stored in eight underground storage tanks (USTs) that had a total capacity of 140,000 gallons. Four 10,000-gallon USTs were installed at Building 501 in 1961 and four 25,000-gallon USTs were installed at Building 503 in 1976. These USTs passed pressure tests and there are no records of major spills or fires (EA, 1991). All eight USTs were decommissioned and removed in February 1996 (RCI, 1996). Based on this information, there is no suspected release of PFAS and these facilities were eliminated from further evaluation.

2.5.2 Site 40 – FAAF Helicopter Defueling Area

The helicopter defueling area was located in the northwestern portion of FAAF (Figure 2 and Figure 6), consisting of four areas in the vicinity of aviation hangar Building 533 where helicopter parking, defueling, and routine maintenance operations were performed (HLA, 1996a). Based on elevated concentrations of lead and TPH, 980 cy of soil were excavated from two of these areas, with 650 cy

[15] Examples of high expansion foam generators are shown on Figure 7.

transported to the FOSTA for treatment and the remainder disposed at the Fort Ord Landfills (ECC, 1997).

Defueling stationary aircraft at a single point is performed to prevent leakage while the aircraft is on the ground, or to facilitate maintenance operations. Defueling trucks are used to vacuum the bulk of the fuel out of the aircraft. During defueling operations at FAAF, the fire department was on standby in case of a spill or other incident. Sometime in the late 1970s or early 1980s, a defueling tank ruptured and 5,000 to 10,000 gallons of fuel were spilled. The fire department applied AFFF to the spill area to reduce the likelihood of fire (Riso, 2019a); however, the area where this incident occurred was identified on a map as being east of the FAAF fire and rescue station (Building 514; Figure 6), and it was noted the location of the defueling area was moved to this area when new helicopter pads were constructed east of the fire and rescue station (Riso, 2019b). For the purposes of this review, the FAAF helicopter defueling area east of the fire and rescue station is identified as Site 40A (Figure 2 and Figure 6). After the spill was contained, soil was placed in the spill area to absorb the fuel (and AFFF), after which the soil was loaded into dump trucks and disposed at an unknown location (Riso, 2019b).

Groundwater contamination at the former FAAF would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 40 and Site 40A and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former FAAF area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 40 and Site 40A area.

There is no evidence an AFFF or other PFAS release occurred at Site 40; therefore, this site was eliminated from further evaluation. Additional investigation at Site 40A is recommended because of reported use of AFFF for a fuel spill response and suspected release of PFAS. Specifically, cleanup after the fuel spill could have resulted in AFFF entering the storm drain system, though Site 40A is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.8).

2.6 Landfills

Landfills are sources of PFAS because they are the end repositories for PFAS-contaminated industrial waste, sewage sludge, waste from site mitigation, and consumer goods treated with hydrophobic, stain-resistant coatings. Given the production timeline of PFAS, consumer products landfilled since the 1950s are potential sources of PFAS to the environment. In addition, many landfills accept sewage sludge from WWTPs that may contain PFAS (ITRC, 2018a).

2.6.1 Site 12 – Lower Meadow Disposal Area

Site 12 is in the Main Garrison area of the former Fort Ord east of State Route 1 and south of the City of Marina (Figure 2). The Lower Meadow was a grassy field of approximately 2 acres located east of State Route 1 near the 12th Street overpass (now Imjin Parkway). The Lower Meadow was bounded on the east by the DOL Automotive Yard, to the west and north by 1st Avenue, and to the south by 11th Street. There were no buildings within the Lower Meadow, but Building T-2722 in the DOL Automotive Yard was located immediately to the east. The Lower Meadow was reportedly used for disposal of waste material

generated by the DOL, such as scrap metal, oil, and batteries. The area was also used for disposal of road construction debris. The Lower Meadow received runoff from the DOL Automotive Yard, which had a completely paved surface, and several pipes discharged into the Lower Meadow, including Outfall 31 at the southeast corner of the Lower Meadow (IT, 1999a).

Activities potentially resulting in the release of hazardous materials at the DOL Automotive Yard included transmission repair, degreasing, engine testing, steam cleaning and washing vehicles, and petroleum/oil/lubricant storage (HLA, 1995d, Volume II). Fire department vehicles were serviced at Building T-2722 and this may have included flushing tanks and systems containing AFFF (Riso, 2019a); however, the tanks were drained of AFFF at the Main Garrison Fire Station before servicing and only residual amounts of AFFF were flushed from the tanks and systems. It was also noted servicing of AFFF systems on fire department vehicles was needed only five times over 40 years (Riso, 2019c). Through this process, some residual AFFF could have been discharged to the ground surface and flowed to the Lower Meadow as surface runoff or through the storm drain system.

Surface water runoff from Site 12 flowed as street gutter flow and overland sheet flow in a westerly direction to storm drain inlets located east of the State Route 1 right-of-way. No natural drainage conveyances existed within the boundary of Site 12. The Site 12 storm drain system laterals converged at junction boxes located beneath the Lower Meadow and State Route 1. Surface water runoff was then directed to a 54-inch diameter concrete storm drain outfall (Outfall 15) located in the dunes to the west of State Route 1 (Figure 2). Surface water runoff discharged from this pipe into a closed depression within the dunes. There is no surface flow path from this depression into Monterey Bay (HLA, 1995d, Volume II).

Surface water containing PFAS from the Lower Meadow could have been discharged at Outfall 15; however, the amount of PFAS discharged would have been small and intermittent. Additionally, due to pesticides, metals, VOCs, and TPH detected in soil at Outfall 15, 430 cy of soil were excavated from the Outfall 15 discharge area in 1997 and 1998 and placed in the Fort Ord Landfills for use in the foundation layer. The excavation was then backfilled with imported clean soil (HLA, 1998b). Based on this information, no additional investigation at Outfall 15 is recommended.

67,100 cy of soil and debris were excavated during the remediation of Site 12. 58,400 cy of the excavated materials were designated potentially impacted by debris or TPH, based on either visual observation or sample results, and were placed in Area E of the Fort Ord Landfills as general fill. The remaining 8,700 cy of excavated soil not impacted by debris or TPH were stockpiled onsite and later used to backfill the Lower Meadow excavation along with 52,000 cy of clean soil imported from Fort Ord Landfills Area A (IT, 1999a). This activity included the removal of Outfall 31 and the associated storm drain infrastructure. Based on this information, no additional investigation at Outfall 31 is recommended.

Groundwater contamination at Site 12 was limited to the unconfined Upper 180-Foot Aquifer, which is not used for drinking water purposes. Additionally, the Site 12 area is located within the Fort Ord Special Groundwater Protection Zone, where installation of wells and use of the Upper 180-Foot Aquifer for drinking water are restricted by Monterey County Code. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 12 area. Reportedly poor waste disposal practices at the

DOL Automotive Yard could have resulted in discharges of AFFF to the Lower Meadow and the storm drain system; however, the AFFF discharged was only residual after the tanks on fire department vehicles had already been drained at the Main Garrison Fire Station, and this activity occurred infrequently (see Section 2.2.7). Based on this information, no additional investigation is recommended at the Lower Meadow.

2.6.2 Site 16 – DOL Maintenance Yard, Pete's Pond and Pete's Pond Extension

Site 16 is located in the Main Garrison area of the former Fort Ord between OU2 and State Route 1 (Figure 2). Equipment, primarily large civilian trucks, was serviced in the DOL maintenance yard since the 1950s with most repairs completed in Building T-4900, including servicing of fire department vehicles where flushing of tanks and systems containing AFFF may have occurred (Riso, 2019a); however, the tanks were drained of AFFF at the Main Garrison Fire Station before servicing and only residual amounts of AFFF were flushed from the tanks and systems. It was also noted servicing of AFFF systems on fire department vehicles was needed only five times over 40 years (Riso, 2019c). The facility included a concrete-paved wash rack where runoff discharged to an adjacent oil/water separator. It is suspected fire department vehicle tanks would have been flushed at the wash rack and into the oil/water separator. Drainage from the DOL maintenance yard that did not reach the oil/water separator or sanitary sewer system (i.e., areas other than the wash rack) drained to Pete's Pond Extension, a topographic depression northwest of the yard and adjacent to Pete's Pond.

There was also a sewage pump station at Building 4906 to the southwest of the DOL maintenance yard that served Building T-4900. Overflows are suspected of having occurred, releasing raw sewage into the surrounding area (EA, 1991). Based on aerial photographs, Pete's Pond and Pete's Pond Extension were also used for refuse disposal between the late 1940s and early 1950s (Army, 1997a).

Groundwater was investigated at Site 16 and organic chemicals, including tetrachloroethene and trichloroethene (TCE), were detected; however, it was concluded these were associated with OU2 (Army, 1997a). 40,740 cy of soil were excavated from Site 16 during remedial actions in 1997, and 27,770 cy were placed in the Fort Ord Landfills as general fill. Of this, 20,920 cy were from Pete's Pond Extension (IT, 1999b), which is the area impacted by drainage from the DOL maintenance yard and sewer overflows.

This site was eliminated from further evaluation because:

- Though AFFF may have been discharged at the wash rack associated with Building T-4900 during maintenance activities, the volumes were small and intermittent, and would have mostly been contained in the oil/water separator.
- AFFF forms a film that spreads rapidly across the surface of a petroleum product. The aqueous film is produced by the action of the fluorochemical surfactant reducing the surface tension of the foam solution to a point where the solution is supported on the surface of the petroleum product. Therefore, AFFF discharged to the oil/water separator would have likely remained on the surface of the petroleum product or partitioned to the petroleum/water interface, and would have been skimmed off and disposed of along with the petroleum product before the contents of the oil/water separator entered the sanitary sewer system.

- Sewage overflows from the pump station would have been intermittent and the probability of AFFF being discharged at the wash rack during an event that caused a sewage overflow is low (e.g., a significant storm event).
- The period of refuse dumping at Pete's Pond and Pete's Pond Extension makes it unlikely any PFAS-containing material was placed there.
- Soil remediation was completed.
- Potential impacts to groundwater in this area originate from OU2 and are addressed separately (see Section 2.6.5).

2.6.3 Site 17 – Disposal Area

Site 17 is located in the Main Garrison area of the former Fort Ord between OU2 and State Route 1 (Figure 2). Based on aerial photographs, it appears material was buried extensively in the Site 17 Disposal Area between the late 1940s and early 1950s, though incinerated and unincinerated debris from as early as 1935 was detected at the Site 17 Disposal Area (Army, 1997a). Approximately 107,000 cy of soil and debris were excavated during remediation of Site 17 in 1997 and were placed in the Fort Ord Landfills (IT, 1999b). Due to the operational period of the Site 17 Disposal Area and the age of the waste found, it is unlikely any PFAS-containing material was placed there and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

2.6.4 Site 31 – East Garrison Dump Site

Site 31, the East Garrison Dump Site, is in the East Garrison area south of Building T-111 (Figure 2). The East Garrison Dump Site was used for debris disposal in the 1940s and 1950s. A 500-ton incinerator was reportedly located at the top of the ravine at Site 31. Based on interviews with Fort Ord personnel and field observations, most of the refuse observed on and within the ravine slope appeared to have dated from the 1940s and 1950s. Refuse was wholly or partially incinerated and dumped over the northern slope of the ravine (Army, 1997a). Due to its operational period and the age of the waste found, it is unlikely any PFAS-containing material was placed in the East Garrison Dump Site and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

2.6.5 Operable Unit 2 – Fort Ord Landfills

The Fort Ord Landfills are located east of the Main Garrison area in the northcentral part of the former Fort Ord (Figure 2). The USEPA added Fort Ord to the National Priorities List primarily based on groundwater contamination discovered in 1990 beneath the Fort Ord Landfills area, which was subsequently designated as OU2. The Fort Ord Landfills were active from 1955 to 1987 and were used for residential and on-base waste disposal typical of municipal landfills during that time. Waste was placed in parallel trenches from 10 to 30 feet deep and then covered over with the native dune sand excavated during trenching operations. Detailed disposal records are not available; however, information gathered during field activities and from other sources indicates household and on-base commercial refuse, dried sewage sludge, construction debris, and small amounts of chemical waste (paint, oil, pesticides, electrical equipment, ink, and epoxy adhesive) were placed in the Fort Ord Landfills (Shaw, 2005). Additionally, in the 1970s or 1980s, there were at least two fire incidents at the Fort Ord Landfills where consolidated waste, including tires, burned and AFFF was used to suppress the

fire (Riso, 2019a). These activities led to the release of contaminants to the underlying unconfined A-Aquifer.

The Fort Ord Landfills formerly included six landfill areas, one area north and five areas south of Imjin Parkway, covering approximately 150 acres, including the immediate surrounding area (Figure 2). The former Area A Landfill, north of Imjin Parkway, was approximately 33 acres separated from the Areas B through F Landfills to the south of Imjin Parkway (Figure 13). The Areas B through F Landfills encompass approximately 120 acres of undeveloped land. The former Area A was used from 1956 to 1966. Areas B, C, and D were used from 1966 through 1975, Area E was used from 1960 through 1987, with the northern portion of Area E used specifically for disposal of demolition debris, and Area F was operated from 1966 until 1987, when interim closure of the facility began, which effectively terminated waste disposal activities at the Fort Ord Landfills (Army, 1994b). Accordingly, the landfill fires that were suppressed using AFFF likely occurred in the area south of Imjin Parkway, though the exact locations are unknown.

The remedial action at the former Area A was conducted from 1996 to 1998. Approximately 585,000 cy of refuse were excavated during the remediation. This material was placed and compacted as part of the general fill in Areas B, C, D, and F of the Fort Ord Landfills. The selected remedial action for soil at OU2 included placement of an engineered cover system over buried refuse at the Fort Ord Landfills. The engineered cover over Areas B through F was constructed from 1997 to 2003 (Ahtna, 2019a).

Based on DTSC's recommendation to sample groundwater at the former Fort Ord for PFOA and PFOS analysis (see Section 1.3) and the operational history of the Fort Ord Landfills, groundwater samples were collected from twelve OU2 monitoring wells and the OU2 GWTP for PFOA/PFOS analysis during the First Quarter 2019 OU2 groundwater monitoring program event performed March 4 through March 8, 2019. Analytical results for these samples are presented in Table 3, and PFOA/PFOS concentrations in the A-Aquifer and Upper 180-Foot Aquifer are shown in Figures 14 and 15, respectively. Results and conclusions are summarized below.

- PFOA and PFOS were not detected in four of the monitoring wells sampled (EW-OU2-01-180, MW-OU2-27-A, -44-A, and -73-A).
- All monitoring well detections, except for MW-OU2-23-180, are an order of magnitude less than the USEPA HA levels and DoD screening levels, indicating limited impact on groundwater at OU2.
- Most detections were estimated results (J-qualified) below the limit of quantitation.
- PFOA and PFOS are present in the A-Aquifer at the leading edges of the COC plumes west of the groundwater divide, where groundwater flows to the west and northwest, but at concentrations below the USEPA HA levels and DoD screening levels (Figure 14).
- PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide (monitoring well MW-OU2-27-A), where groundwater flows to the east and northeast, and therefore may not be associated with the tetrachloroethene plume in the A-Aquifer (Figure 14).
- PFOA and PFOS were not detected in A-Aquifer wells near the Fort Ord Landfills (monitoring wells MW-OU2-27-A, -44-A, and -73-A), indicating the Fort Ord Landfills are not a continuing source of PFOA/PFOS in groundwater (Figure 14).

- PFOA and PFOS were detected at concentrations exceeding the USEPA HA level of 0.07 µg/L and DoD screening level of 0.04 µg/L at one Upper 180-Foot Aquifer well (MW-OU2-23-180), which suggests an upgradient source of PFOA/PFOS to the southern lobe of the Upper 180-Foot Aquifer TCE plume (Figure 15).
- PFOA and PFOS were detected at the OU2 GWTP Eastern Main influent (TS-OU2-INF-01) but at concentrations below the USEPA HA levels and DoD screening levels. Because PFOA and PFOS do not appear to be present in the A-Aquifer near the Fort Ord Landfills, this indicates the PFOA and PFOS are coming from Upper 180-Foot Aquifer extraction wells in the Abrams/Imjin Network (EW-OU2-05-180, -06-180, and -12-180) and the GWTP Network (EW-OU2-10-180).
- PFOA and PFOS were not detected at the OU2 GWTP Western Main influent (TS-OU2-INF-02), which further suggests there are no PFOA/PFOS in the A-Aquifer exceeding the USEPA HA levels and DoD screening levels. None of the OU2 Western Network extraction wells (EW-OU2-01-A through -06-A) were operating at the time samples were collected; however, PFOA was not detected and PFOS was detected at a concentration an order of magnitude less than the USEPA HA level at downgradient A-Aquifer monitoring well MW-OU2-40-A, which is adjacent to the Western Network of extraction wells (Figure 14).
- PFOA and PFOS were not detected at any GWTP sampling points downstream of the influent, indicating granular activated carbon treatment is effectively removing PFOA and PFOS.
- Duplicate samples were collected from monitoring wells MW-OU2-08-A and -56-180. Estimated (J-qualified) concentrations of PFOA close to the limit of detection were detected in the primary samples, but both PFOA and PFOS were not detected in the duplicate samples. This indicates PFOA may be present in groundwater at these locations, but at very low concentrations that cannot be consistently detected.

Additional investigation at OU2 in the Upper 180-Foot Aquifer is recommended because of a suspected release of PFAS associated with the disposal practices used, reported discharges of AFFF at the Fort Ord Landfills, and detections of PFOA and PFOS at concentrations above the USEPA HA levels and DoD screening levels in monitoring well MW-OU2-23-180. OU2 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term (see Section 3.2).

2.6.6 Fort Ord Soil Treatment Area (FOSTA)

As described above, soils excavated from Sites 8, 10, and 40 were treated at the FOSTA, which was located at Site 20 (former 519th Motor Pool) (Figure 2). The FOSTA was designed and constructed as a bioremediation facility for soil containing petroleum hydrocarbons excavated from IA sites at the former Fort Ord. The FOSTA was an approximately 200-foot by 200-foot lined and bermed treatment unit, consisting of a foundation layer, high-density polyethylene (HDPE) liner, and operational layer. A 40-mil HDPE liner was placed over the foundation layer and the berm.

From 1995 to 1997, soil suitable for bioremediation was transported to the FOSTA, stockpiled, and treated. The soil stockpiles were located in a concrete-paved area west of the FOSTA, pending available treatment space, and were placed on and covered with polyethylene sheeting at all times to prevent potential migration of soil or contaminants to surrounding areas (HLA, 1994). Following the completion of treatment, the soils were transported to the Fort Ord Landfills (U&A, 1999).

The *Record of Decision, Basewide Remedial Investigation Sites, Fort Ord, California* (Army, 1997a), in conjunction with the *Explanation of Significant Differences, Consolidation of Remediation Waste in a Corrective Action Management Unit (CAMU), Operable Unit 2 Landfill* (Army, 1997b) and the *Explanation of Significant Differences, No Further Action for Munitions and Explosives of Concern, Landfill Gas Control, Reuse of Treated Groundwater, Designation of Corrective Action Management Unit (CAMU) Requirements as Applicable or Relevant and Appropriate Requirements (ARARs)* (Army, 2006) designate CAMU regulations as ARARs for the existing boundaries of Landfills Areas B through F. Such designation allows remediation waste to be placed at the Fort Ord Landfills and used as a foundation layer without triggering certain disposal regulations. Soil remedies for remedial investigation sites and IA sites at the former Fort Ord utilized the Fort Ord Landfills for placement of excavated soil and debris, which are managed, incorporated within the landfill foundation layer, and capped as part of the Fort Ord Landfills engineered cover system (Ahtna, 2019g).

Prior to designation of CAMU regulations as ARARs, approximately 6,000 cy of soil was treated at the FOSTA and transported and placed at the Fort Ord Landfills as fill. After designation of CAMU regulations as ARARs, approximately 2,000 cy of soil from IA sites stockpiled for bioremediation at the FOSTA were transported to the Fort Ord Landfills. The FOSTA was shut down in April 1997, and soil subsequently excavated from other IA sites was transported directly to the Fort Ord Landfills for placement as fill.

After the FOSTA was shut down, approximately 1,602 cy of operational layer soils were removed and placed in Area E of the Fort Ord Landfills. The HDPE liner was cut into approximately 20-foot by 50-foot sections and also disposed of in Area E of the Fort Ord Landfills. Laboratory analysis of confirmation soil samples collected from the foundation layer and berm soils indicated petroleum hydrocarbons (motor oil and diesel) were present in two soil samples above the cleanup criteria. Approximately 68 cy were excavated from this area and transported to Fort Ord Landfills Area E for disposal. Confirmation sampling indicated no chemicals of concern were present in the soil above cleanup criteria. The remaining foundation layer and the earthen berm were integrated with clean fill soil from Sites 2 and 12, and this mixed material was used to backfill the FOSTA site.

The concrete-paved areas used to stockpile soil before treatment were cleaned using a power washer. A minimum amount of water was used to limit the amount of wastewater. Washing began along the outer margins of the paved areas and proceeded toward the center. Wastewater was collected as it began to pond and was transported to holding tanks for treatment and discharge (U&A, 1999). Closure of the FOSTA was completed in April 1999 (IT, 2000a).

The FOSTA received soil from Site 10 that may have contained PFAS (see Section 2.1.2); however, this soil was managed in stockpiles covered and underlain with polyethylene sheeting to prevent potential migration of soil or contaminants to surrounding areas, and then contained in a treatment area lined with 40-mil HDPE. Therefore, there is no suspected release of PFAS and the FOSTA was removed from further evaluation.

2.7 Wastewater Treatment Plants

Municipal and industrial WWTPs can provide the following pathways for PFAS to the environment: point source discharges of effluent; leakage or unintended releases from surface impoundments; air

emissions; or disposal of biosolids and other byproducts generated during the treatment process. PFAS could be concentrated in solid waste (e.g., sewage sludge) and, depending on waste management and disposal practices, this solid waste could contaminate groundwater, surface water, or both. PFAS may also be introduced to the environment through the land application of biosolids as a beneficial soil amendment, potentially allowing PFAS to enter surface water through runoff or infiltrate to groundwater (ITRC, 2018a).

WWTPs where releases may have occurred and which merit evaluation include those that may have received wastewater from facilities that used or disposed of PFAS-containing effluents. Concentrations of PFOA up to 0.02 µg/L and of PFOS up to 0.04 µg/L are typically detected at municipal WWTPs, which is significantly lower than concentrations detected at industrial WWTPs (Frömel et al., 2016) and less than the USEPA HA levels.

2.7.1 Site 1 – Ord Village Sewage Treatment Plant

The former Ord Village STP was located at the southwestern corner of the former Fort Ord in what is now Fort Ord Dunes State Park (Figure 2). The Ord Village STP was built in the early 1950s to treat sewage generated from the housing area at the former Ord Village. Facilities for primary treatment consisted of two trickling filters, two clarifiers, a sludge digestion tank, a chlorine contact tank, three small sludge drying beds, and one holding pond (HLA, 1997d). The STP was abandoned in 1964 and a sewage pump station was built at the site in 1983 (IT, 1997).

In accordance with the Interim Action Record of Decision (Army, 1994a), an IA excavation was completed at Site 1 in 1997 to remove soils with concentrations of organic compounds and metals above target cleanup concentrations. 862 cy of soils and dried sludge were excavated from the area of the former trickling filters and holding pond and placed at the Fort Ord Landfills in the foundation layer for the engineered cover system (HLA, 1997d).

The Ord Village STP served a residential area and did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Additionally, sewage sludge where PFAS may have been concentrated was removed from the site. Therefore, there is no suspected release of PFAS and the Ord Village STP was removed from further evaluation.

2.7.2 Site 2 – Main Garrison Sewage Treatment Plant

The Main Garrison STP occupies an unpaved area of approximately 28 acres west of Beach Range Road (Figure 2). The former treatment facility is fenced and contains a few buildings and two large trickling filters. Outside of the fenced area are three (former) unlined sewage ponding areas and ten asphalt-lined sludge drying beds. The Main Garrison STP was the primary STP for the former Fort Ord, serving a majority of the residential areas and main industrial areas from the late 1930s until it was decommissioned in May 1990. During operation, effluent from the Main Garrison STP was discharged into a storm drain that emptied onto Indian Head Beach during low tide and into Monterey Bay during high tide. Continuing effluent violations, including excessive biological oxygen demand, ammonia, coliform bacteria, and suspended solids, occurred during operation (HLA, 1997e). The sewage sludge was digested anaerobically, dried in drying bed, and subsequently used as a soil conditioner in areas on Fort Ord (Weston, 1990).

No remedial action was proposed for soil at Site 2 (Army, 1997a); however, as part of the maintenance and cleanup activities associated with the closure of Site 2, all sludge remaining in the STP sludge drying beds and evaporation ponds was removed. Additional cleanup activities included the demolition of the asphalt-lined drying beds, removal of drying bed conveyance piping, and excavation of approximately 3 feet of soil below the drying beds and ponds. Approximately 15,000 cy of sludge, soil, and asphalt debris were transported to the Fort Ord Landfills for disposal (IT, 2000b).

While the Main Garrison STP served both residential and industrial areas, analytical results from the remedial investigation indicate contaminants were mainly confined to the sludge in the asphalt-lined drying beds (HLA, 1995d, Volume II) and the sludge, where PFAS may have been concentrated, was removed from the site. Therefore, there is no suspected release of PFAS and the Main Garrison STP was removed from further evaluation.

There are no known records of how much sewage sludge was used for soil conditioning or where it was placed on the former Fort Ord; however, it is unlikely this sludge contained significant concentrations of PFAS because:

- There were no industrial processes at the former Fort Ord that generated PFAS.
- Possible sources of PFAS in the sludge include discharges of AFFF at the DOL Automotive Yard and the DOL Maintenance Yard that could have entered the sanitary sewer system; however, these discharges would have been intermittent, of relatively small volume, and primarily contained in the oil/water separators at each site (see Sections 2.6.1 and 2.6.2).

Additionally, groundwater was sampled and analyzed for PFOA/PFOS at OU2, which covers a significant portion of the Main Garrison area where sewage sludge may have been applied for soil conditioning (see Section 2.6.5), and additional groundwater monitoring is recommended at OU2 (see Section 3.2).

2.7.3 Site 32 – East Garrison Sewage Treatment Plant

The former East Garrison STP was located at the eastern portion of the former Fort Ord, north of Inter-Garrison Road and south of Reservation Road (Figure 2). The East Garrison STP was built before the 1940s as a primary treatment plant to serve the municipal needs of the East Garrison. Treatment facilities consisted of unlined sludge beds, an unlined percolation pond, and two concrete Doten-sedimentation tanks (HLA, 1998a). The STP effluent was discharged to the Salinas River until around 1973 when the discharge pipe was capped (Weston, 1990). The STP operated until 1997 but only received wastewater from toilets and showers used at the East Garrison, approximately 2,000 to 5,000 gallons per day.

In 1997, dried sewage sludge was removed from the inactive drying beds and soil containing elevated concentrations of metals, pesticides, and petroleum hydrocarbons was removed from the IA areas. The Doten tanks were emptied, cleaned, and capped (IT, 2000b). The results of confirmation sampling and risk evaluation indicated no further threat to human health, the environment, or groundwater (HLA, 1998a). The Site 32 property was transferred in 2004 and a residential neighborhood was constructed over the area.

The East Garrison STP operational history indicates it did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Additionally, sewage sludge

where PFAS may have been concentrated was removed from the site. Therefore, there is no suspected release of PFAS and the East Garrison STP was removed from further evaluation.

2.7.4 Site 36 – Fritzsche Army Airfield Sewage Treatment Plant

The FAAF STP was located in the northeastern portion of FAAF near the former Fort Ord boundary (Figure 2). It was operated from the 1950s until March 1991 (Harding ESE, 2002). The STP consisted of a barminutor, an Imhoff tank, two cement soil-lined oxidation (evaporation) ponds with an estimated capacity of 20,000 gallons per day, and two small drying beds for Imhoff tank sludge, and a sewage overflow outfall (HLA, 1996e) (Figure 16). Oil/water separators were installed in the 1960s to pre-treat wastewater from the aircraft wash racks and prevent petroleum hydrocarbons from entering the sanitary sewer system. The STP treated an average of 16,500 gallons per day of sanitary sewage and wastewater from wash racks and maintenance shops at FAAF and the nearby U.S. Army Reserve Center (Site 27). There was no off-base effluent discharge from the evaporation ponds, and sludge was never removed from the drying beds (Harding ESE, 2002). The Imhoff tank experienced overflows from the oil/water separators, and the evaporation ponds had cracks in the bottom, so it was possible for wastewater to percolate into the ground (HLA, 1997c), though groundwater contamination would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 36 and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the Site 36 area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 36 area.

Site characterization identified sewage residue and soil with elevation concentrations of chlordane, cadmium, lead, and TPH in the evaporation ponds (Harding ESE, 2002); therefore, 600 cy of impacted soil were removed from the evaporation ponds and 8,700 cy of sewage sludge were removed from the drying beds in 1997 and placed at the Fort Ord Landfills (IT, 2000b).

Additional investigation at the FAAF STP is recommended because of the reported discharge of potential AFFF at one of the FAAF hangars (see Section 2.4.2). Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the sanitary sewer system and a suspected release of PFAS at the FAAF STP. The FAAF STP is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.6).

2.8 Site 39 – Inland Ranges

Site 39 consists of approximately 6,830 acres designated as habitat reserve in the Habitat Management Plan (Army, 1997c) on the south side of the former Fort Ord (Figure 2). Within Site 39 is the Impact Area Munitions Response Area, which is being remediated in accordance with the Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site (Track 3 ROD; Army, 2008). The selected remedy includes prescribed burning of up to 800 acres per year to clear vegetation and provide access to conduct remediation of munitions and explosives of concern. Prescribed burning is the preferred method for vegetation removal because successful conservation of maritime chaparral is dependent on proper management of the habitat by using fire as a management tool (Army, 1997c).

During prescribed burning at the former Fort Ord, fire foam or retardant may be used for pre-treatment of the containment line around the burn unit (POM, 2016), or to extinguish fires that have gone outside the containment line. However, these are Class A foams or retardants designed for use on combustible materials, such as wood, and not AFFF, which is a Class B foam designed for use on flammable liquids. Class A foams do not contain PFAS. Additionally, the fire department has historically used water tenders and not foam for fighting fires in the Inland Ranges (Riso, 2019a). Based on this information, there is no suspected release of PFAS and the Inland Ranges were removed from further evaluation.

2.9 Outfalls 34 and 35

Outfalls 34 and 35 are located near Site 40, the former FAAF helicopter defueling area (see Section 2.5.2), and west of aviation hangar Building 533 (see Section 2.4.2) (Figure 2). Discharge from Outfall 34 was collected from surface drainage in the area south of Building 533 and west of Building 535, and discharge from Outfall 35 was collected from surface drainage in the area north and east of Building 533. These areas were not part of Site 40 and Outfalls 34 and 35 did not receive stormwater runoff from Site 40 (HLA, 1995c). Both outfalls discharged into a vegetated drainage channel west of Building 533, and chemicals used in Building 533 and Building 535 may have entered storm drain inlets upstream of these outfalls (HLA, 1997c).

Pesticides, metals, and TPH were detected in soil samples collected at the outfalls during site characterization activities. Based on these results, 37 cy of soil were excavated at Outfall 34 and 20 cy of soil were excavated at Outfall 35 and placed in the Fort Ord Landfills (HLA, 1997c).

There was a reported discharge of potential AFFF at one of the FAAF hangars that could have resulted in AFFF entering the storm drain system; however, this discharge is suspected of having occurred at Building 507 and not Building 533 (see Section 2.4.2). Additionally, the intentional application of AFFF to a fuel spill to reduce the likelihood of fire occurred at a helicopter defueling area (Site 40A) separate from Site 40 (see Section 2.5.2). Based on this information, there is no suspected release of PFAS and Outfalls 34 and 35 were removed from further evaluation.

3.0 Recommendations for Additional Investigation

Based on the results of the site evaluations described in Section 2.0, several sites are recommended for additional investigation for PFAS as described below and summarized in Table 2. Specific recommendations for additional sampling are based on the suspected PFAS release mechanism, the current understanding of environmental fate and transport for PFAS, and previous or ongoing remedial actions. Per the Army guidance, additional investigation should be prioritized for sites where there may be a pathway for PFAS to receptors, specifically through drinking water (i.e., medium-risk or higher risk sites). For any future sampling for PFAS analysis at the former Fort Ord, it is also recommended the analytical laboratory report results for the 18 PFAS compounds listed in Table 4 in accordance with Army guidance (Army, 2018).

Although PFAS are very water-soluble, some have been detected in soils at FTAs that have been closed for years (Army, 2018). PFAS present in unsaturated soils are subject to downward leaching during precipitation events that promote dissolution of soil-bound contaminant mass. This process is a potential driver of PFAS transport from surface soils to groundwater; however, while some studies have reported PFAS transport by leaching, others have observed long-term retention of longer-chain PFAS in shallow soils after extended percolation (ITRC, 2018a). These longer-chain PFAS can be more strongly sorbed due to association with the organic carbon fraction of soil; however, the northern part of the former Fort Ord, where PFAS releases are suspected of having occurred, consists of dune sands with very low organic carbon content (0.5% on average). Most of the organic carbon that is present occurs in the top few feet of soil, which was removed at the sites where soil remediation took place. Therefore, soil sampling is not recommended at sites where significant overexcavation of impacted soil has already occurred as part of previous remedial actions.

3.1 FAAF Fire Drill Area

The FAAF FDA is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional groundwater investigation in the A-Aquifer is recommended because of reported regular use of AFFF at the former FAAF FDA for at least 13 years and detections of PFOA and PFOS in three groundwater monitoring wells at concentrations exceeding the USEPA HA or DoD screening levels. The former FAAF FDA was associated with OU1; however, any additional PFAS investigations at this site will be independent of the completed OU1 remediation and not associated with the OU1 ROD (see Section 2.1.5).

No additional soil investigation is recommended at this time. Impacted soils were excavated, remediated, and transported offsite, and the soil remedy is considered to be complete (Army, 1995). PFAS may have been present in the excavated soils, and bioremediation activities could have caused downward leaching of PFAS to groundwater; however, analytical results for PFOA and PFOS in samples collected in May 2015 from A-Aquifer wells downgradient of the former FDA indicate the former FDA was no longer a source (HGL, 2017).

One A-Aquifer groundwater monitoring well (MW-BW-95-A) was installed in September 2018 downgradient of the former FDA as part of ongoing remedial activities at Operable Unit Carbon

Tetrachloride Plume (OUCTP; Ahtna, 2019c) (Figure 17). Therefore, it is recommended this well be sampled for PFAS analysis to confirm the former FDA is no longer a source.

All other groundwater wells associated with OU1 have been decommissioned. Groundwater monitoring wells associated with the upgradient portion of OU1 and in the vicinity of the former FDA were decommissioned in September 2011 (HGL, 2012). Additional groundwater wells associated with the downgradient portion of OU1 were decommissioned in June 2014 (HGL, 2014). All remaining OU1 groundwater monitoring, injection, and extraction wells were decommissioned in July 2017 as part of site closeout activities (HGL, 2017). Therefore, it is recommended two new A-Aquifer groundwater monitoring wells be installed at downgradient locations based on the results of the attainment monitoring completed in 2015 (HGL, 2016): one in the area of former monitoring well MW-OU1-88-A, and one in the area of former monitoring well MW-OU1-85-A, approximately halfway between MW-OU1-88-A and the former Fort Ord boundary (Figure 17). These proposed locations are within the Fort Ord-Salinas Valley Aquitard (FO-SVA) Channel Low, a preferential pathway for groundwater contaminants in the A-Aquifer (HGL, 2016). Because these wells would be located downgradient of MW-BW-95-A, where carbon tetrachloride has been detected at concentrations exceeding the aquifer cleanup levels, they would also serve to define OUCTP in the A-Aquifer in this area.

3.2 Operable Unit 2 – Fort Ord Landfills

OU2 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term. Additional groundwater investigation at OU2 in the Upper 180-Foot Aquifer is recommended because of the historical disposal practices used, the reported discharge of AFFF at the Fort Ord Landfills, and the detections of PFOA and PFOS at concentrations above the USEPA HA levels and DoD screening levels in monitoring well MW-OU2-23-180 (Table 3 and Figure 15).

Monitoring well MW-OU2-23-180 should be resampled to confirm the results of the sampling event conducted in March 2019. Additionally, it is recommended upgradient monitoring wells MW-OU2-50-180 and MW-OU2-54-180, and downgradient extraction well EW-OU2-03-180 be sampled to evaluate the extent of PFAS in the southern lobe of the OU2 TCE plume in the Upper 180-Foot Aquifer. These proposed sampling locations are shown in Figure 15. Due to recent detected TCE concentrations above the aquifer cleanup level (5 µg/L) in the Upper 180-Foot Aquifer and the Maximum Contaminant Level (5 µg/L) in the Lower 180-Foot Aquifer east of the Fort Ord Landfills and upgradient of water supply well FO-29, it is also recommended monitoring wells MW-OU2-62-180, MW-OU2-28-180, MW-BW-59-180, and MW-OU2-82-180 be sampled (Figure 18).[16]

No soil investigation is recommended. The suspected sources of PFAS at the Fort Ord Landfills are the buried waste and AFFF discharged during fire suppression there. Impacted soils would be beneath the waste and inaccessible due to the engineered cover system in place at the Fort Ord Landfills. The engineered cover system also acts as an impermeable barrier to rainwater, thereby eliminating infiltration as a transport mechanism. Additionally, PFOA and PFOS were not detected in A-Aquifer wells

[16] Monitoring wells MW-OU2-54-180 and MW-OU2-62-180 are also recommended for sampling as part of the investigation at Site 10 (Section 3.3).

near the Fort Ord Landfills, indicating the Fort Ord Landfills are not a continuing source of PFOA/PFOS in groundwater (see Section 2.6.5).

3.3 Site 10 – Burn Pit/Fire Training Area

Site 10 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term. Additional groundwater investigation in the Upper 180-Foot Aquifer is recommended because of reported regular use of AFFF at Site 10 for at least two decades. Site 10 overlies the unconfined or semiconfined Upper 180-Foot Aquifer west of the FO-SVA (HLA, 1995a).

No additional soil investigation is recommended at this time. Impacted soils were excavated, transported offsite, and remediated (HLA, 1996c). PFAS may have been present in the excavated soils, and precipitation and training activities could have caused downward leaching of PFAS to groundwater.

All groundwater wells associated with Site 10 have been decommissioned. The three groundwater monitoring wells adjacent to the former burn pit were decommissioned in March 2011 (USAPHC, 2011). All remaining groundwater wells upgradient and downgradient of the former burn pit were decommissioned in June 2014 (HGL, 2014). Groundwater flow in the Upper 180-Foot Aquifer in this area is to the northeast toward the Fort Ord Landfills with hydraulic conductivities up to 366 feet per day (HLA, 1995d, Volume II). Additionally, particle tracking analysis using the Fort Ord groundwater model indicates PFAS entering the Upper 180-Foot Aquifer at Site 10 could have traveled as far as the Fort Ord Landfills within 30 years and potentially commingled with the OU2 TCE plume in the Upper 180-Foot Aquifer; therefore, it is recommended downgradient monitoring wells MW-OU2-29-180, MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 be sampled for PFAS analysis (Figure 19).[17] Depending on the monitoring results from these wells, additional groundwater investigation may be warranted in the area between this well and Site 10.

3.4 Site 34 – FAAF Aviation Hangars

The former FAAF is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional investigation at the Building 507 area is recommended because of the presence of an apparent foam suppression system and the reported discharge of potential AFFF at one hangar. Cleanup after the accidental discharge could have resulted in AFFF being discharged to surface drainage channels or sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF STP (see Section 3.6).

Building 507 is located at 3200 Imjin Road in the Marina Municipal Airport property (formerly FAAF; Figure 20). A 10-inch diameter storm drain line runs through the parking lot west of Building 507 and parallel to Imjin Road. This storm drain line discharged at an outfall approximately 350 feet southwest of Building 507, where the University of California Monterey Bay Education, Science, and Technology Center is now located, and the discharge traveled via surface drainage to a topographic low area to the southeast of Building 507. Surface runoff from around Building 507 appears to have also drained to the

[17] Monitoring wells MW-OU2-54-180 and MW-OU2-62-180 are also recommended for sampling as part of the investigation at OU2 (Section 3.2).

same topographic low area (HLA, 1995c). This area is east of the A-Aquifer groundwater divide and there are no groundwater monitoring wells nearby or downgradient.

Because long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible, limited soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the topographic low area is recommended. Additionally, due to the mobility of PFAS, a groundwater investigation may be warranted in the downgradient area between Building 507 and the former Fort Ord boundary to the east (Figure 20).

3.5 Site 36 – FAAF Sewage Treatment Plant

The FAAF STP is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional investigation at the FAAF STP is recommended because of the reported discharge of potential AFFF at one of the FAAF hangars (see Sections 2.4.2 and 3.5). Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the sanitary sewer system and a suspected release of PFAS at the FAAF STP. The former Imhoff tank experienced overflows and the evaporation ponds had cracks in the bottom, so it was possible for wastewater containing PFAS to have percolated into the ground. No excavation occurred in the area of the Imhoff tank and only limited excavation occurred in the evaporation ponds; therefore, soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the footprints of the former Imhoff tank and evaporation ponds is recommended to evaluate for residual PFAS. Additionally, because the A-Aquifer in this area discharges to the ground surface as seepage from the bluffs above the Salinas River (HLA, 1995d, Volume II), shallow soil samples should be collected from the bluff face (Figure 21).

The Site 36 area is east of the A-Aquifer groundwater divide and the one groundwater monitoring well adjacent to the former evaporation ponds (MW-36-01-A) was decommissioned in June 2014 (HGL, 2014). There are no downgradient monitoring wells. Groundwater flow in the A-Aquifer in this area is to the northeast toward the Salinas River. No additional groundwater investigation is recommended at this time because:

- The A-Aquifer east of the groundwater divide discharges to the ground surface as seepage from the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). These bluffs are approximately 800 feet downgradient of the former Imhoff tank location and 350 feet downgradient from the former evaporation ponds; therefore, given the average hydraulic conductivity of the A-Aquifer and modeled groundwater gradients in this area (HLA, 1995d, Volume II), if any PFAS were discharged at the FAAF STP and migrated to groundwater, they would have already discharged to the ground surface at the bluffs.
- Analytical results for groundwater samples collected from MW-36-01-A from 1992 through 2003 indicate most compounds were not detected and concentrations of detected compounds were consistently less than Federal and State Maximum Contaminant Levels, except for one detection of TCE at 8.1 µg/L in 1995, indicating limited migration of contaminants from the FAAF STP to groundwater.

3.6 Site 40A – East FAAF Helicopter Defueling Area

Site 40A is a lower risk site because there is no pathway from this site to existing water supply wells; however, as described in Section 2.5.2, there was a reported discharge of AFFF at a previously unidentified helicopter defueling area east of the fire and rescue station and separate from the helicopter defueling area identified as Site 40. For this report, this eastern helicopter defueling area is identified as Site 40A (Table 2 and Figure 2). Additional investigation is recommended at Site 40A because of the reported use of AFFF for a fuel spill response. Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the storm drain system.

A 24-inch diameter storm drain line runs through the helicopter parking apron east of the fire and rescue station and parallels Imjin Road. This storm drain line discharges at an outfall approximately 450 feet east of the fire and rescue station, and the discharge traveled via surface drainage to a topographic low area to the northeast of the helicopter parking apron. Surface runoff from the helicopter parking apron appears to have also drained to the same topographic low area (HLA, 1995c). This area is east of the A-Aquifer groundwater divide and there are no groundwater monitoring wells nearby or downgradient. Because long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible, limited soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the topographic low area is recommended. Additionally, due to the mobility of PFAS, a groundwater investigation may be warranted in the downgradient area between the helicopter parking apron and the former Fort Ord boundary to the east (Figure 22).

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[18] At the end of references included in the Fort Ord Administrative Record are the Administrative Record Numbers (AR#s) (e.g. BW-1234). To find the referenced document, this number may be typed into the online search tool at: http://www.fortordcleanup.com/documents/search/. Please note the referenced documents were available in the Fort Ord Administrative Record at the time this document was issued; however, some may have been superseded by more current versions and were subsequently withdrawn.

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TABLES

Table 1. Site Summary and Primary Records Review Results*

RI Site ID	Site Name	SWMU (FTO-)	SWMU Name	Bldg. No.	SWMU Type	Applicable Decision Document	FTA	AFFF Storage	Aircraft Crash Site	Aviation Hangar	FF/AA	Landfill	WWTP
1	Ord Village STP	059	Ord Village STP	NA	wastewater treatment	IA Sites ROD							known
2	Main Garrison STP	012	Main Garrison STP	2076	wastewater treatment	BW RI Sites ROD							known
3	Beach Trainfire Ranges	NA	NA	NA	NA	Site 3/Track 1							
4	Beach Stormwater Outfalls (includes OF-15)	NA	NA	NA	NA	BW RI Sites ROD							
5	Range 36A (within Site 39)	016	Open Detonation Area	NA	thermal treatment	BW RI Sites ROD							
6	Range 39, Abandoned Car Dump	NA	NA	NA	NA	IA Sites ROD							
7	Ranges 40 and 41 (within Site 39)	NA	NA	NA	NA	BW RI Sites ROD							
8	Range 49, Molotov Cocktail Range	NA	NA	NA	NA	IA Sites ROD	possible						
9	Range 40A, Flame Field Expedient Training Area	NA	NA	NA	NA	BW RI Sites ROD	possible						
10	Burn Pit	014	Fire Training Area at Fort Ord Fire Station	4400	thermal treatment	IA Sites ROD	known						
11	AAFES Fueling Station	010	AAFES Service Station	4220	waste POL storage, container storage	No Action Sites ROD							
12	Lower Meadow Disposal Area	007	Cannibalization Area	T-2460	waste pile	BW RI Sites ROD							
		037	DOL Main Automotive Yard	T-2726	temporary container storage	BW RI Sites ROD							
		038	DOL General Equipment Maintenance Yard	T-2424	temporary container storage	BW RI Sites ROD							
		060	Lower Meadow Disposal Area	NA	landfill	BW RI Sites ROD						known	
13	Railroad Right-of-Way	NA	NA	NA	NA	No Action Sites ROD							
14	707th Maintenance Facility	004	707th Maintenance Battalion, A,B, and C Company Motor Pools	4885	temporary container storage	IA Sites ROD							
		061	Transfer Station South of Building 4885	4885	temporary container storage	IA Sites ROD							
15	DEH Yard	015	PCB Storage Area	4891, H482	temporary container storage	IA Sites ROD							
		018	Pesticide Mixing Area	T-4897	pest management	IA Sites ROD							
16	DOL Maintenance Yard	036	DOL Heavy Equipment Maintenance Yard	T-4900	temporary container storage	BW RI Sites ROD							
		062	Pete's Pond and Pete's Pond Extension	NA	landfill	BW RI Sites ROD						known	
17	Disposal Area, 1400 Block Motor Pool	013	Building 1442 Autoclave	1442	low temp thermal treatment	BW RI Sites ROD		possible					
		048	6th/8th Field Artillery Battalion Motor Pool	1483	temporary container storage	BW RI Sites ROD							
		049	7th/15th Field Artillery Battalion Motor Pool	1489	temporary container storage	BW RI Sites ROD							

Table 1. Site Summary and Primary Records Review Results*

RI Site ID	Site Name	SWMU (FTO-)	SWMU Name	Bldg. No.	SWMU Type	Applicable Decision Document	FTA	AFFF Storage	Aircraft Crash Site	Aviation Hangar	FF/AA	Landfill	WWTP
17	Disposal Area, 1400 Block Motor Pool (continued)	050	7/7th Air Defense Artillery Motor Pool	1495	temporary container storage	BW RI Sites ROD							
		051	5/15th Field Artillery Battalion Motor Pool	1489	temporary container storage	BW RI Sites ROD							
		063	Temporary Container Storage Unit East of Aces Carpentry	T-1440	temporary container storage	BW RI Sites ROD							
		064	Temporary Container Storage Unit Between Buildings T-1458 and T-1468	T-1458, T-1468	temporary container storage	BW RI Sites ROD							
		065	Site 17 Disposal Area	1483	landfill	BW RI Sites ROD						known	
18	1600 Block Facility	017	TASC Plastics Shop	T-1663	temporary container storage	No Action Sites ROD							
		023	TASC Graphics Shop	T-1665	temporary container storage	No Action Sites ROD							
		040	DOL Temporary Motor Pool	T-1672	temporary container storage	No Action Sites ROD							
		041	590th SS Company Motor Pool	T-1637	temporary container storage	No Action Sites ROD							
		044	121st Aviation Battalion, Company E Motor Pool	T-1697	temporary container storage	No Action Sites ROD							
		052	2/62nd ADA B-Battery Motor Pool	T-1641	temporary container storage	No Action Sites ROD							
		053	7th Medical Battalion Motor Pool	T-1697	temporary container storage	No Action Sites ROD							
		056	7th MP Company Motor Pool	T-1681	temporary container storage	No Action Sites ROD							
		057	571st MP Company Motor Pool	T-1686	temporary container storage	No Action Sites ROD							
		058	761st Chemical Company Motor Pool	T-1656	temporary container storage	No Action Sites ROD							
19	2200 Block Facility	NA	NA	NA	NA	No Action Sites ROD							
20	South Parade Ground and 3800 and 519th Motor Pools	024	519th Maintenance Company	3896, 3899	temporary container storage	IA Sites ROD		possible		known			
		066	Temporary Container Storage Units in Former Troop Training Area	H381, H382	temporary container storage	IA Sites ROD		possible		known			
		067	3800 Motor Pool	H3882, H3883	temporary container storage	IA Sites ROD		possible		known			
21	4400/4500 Block Motor Pool East	027	2/9 Reconnaissance Battalion Motor Pool	4495	temporary container storage	IA Sites ROD							

Table 1. Site Summary and Primary Records Review Results*

RI Site ID	Site Name	SWMU (FTO-)	SWMU Name	Bldg. No.	SWMU Type	Applicable Decision Document	FTA	AFFF Storage	Aircraft Crash Site	Aviation Hangar	FF/AA	Landfill	WWTP
		028	56th Medical Company Motor Pool	4499E	temporary container storage	IA Sites ROD							
		029	9th Regiment HHC Motor Pool	4499W	temporary container storage	IA Sites ROD							
		030	HHC/Air Force Detachment Motor Pool	4518W	temporary container storage	IA Sites ROD							
		031	8th Evacuation Hospital Motor Pool	4522	temporary container storage	IA Sites ROD							
		032	7th Aviation Battalion, C & D Company Motor Pool	4506E	temporary container storage	IA Sites ROD							
		033	1/23rd Aviation Regiment, A, B, C and Companies Motor Pool	4506W	temporary container storage	IA Sites ROD							
		034	2nd Brigade Consolidated Motor Pool	4512	temporary container storage	IA Sites ROD							
22	4400/4500 Block Motor Pool West	005	13th Engineer Battalion Motor Pool	4544	temporary container storage	IA Sites ROD							
		025	14th Engineer Battalion Motor Pool	4534	temporary container storage	IA Sites ROD							
		026	127th Signal Company Motor Pool	4548	temporary container storage	IA Sites ROD							
		035	3rd Brigade Consolidated Motor Pool	4538	temporary container storage	IA Sites ROD							
		068	Auto Craft Shop	4492	temporary container storage	IA Sites ROD		possible					
23	3700 Block Motor Pool Complex	054	107th Medical Battalion	T-3772, T-3776	temporary container storage	No Action Sites ROD							
		069	107th Medical Battalion Motor Pool	T-3767	temporary container storage	No Action Sites ROD							
24	Old DEH Yard	NA	NA	NA	NA	IA Sites ROD							
25	Former DRMO	022	Former DRMO site	NA	abandoned storage site	BW RI Sites ROD							
26	Sewage Pump Stations, Buildings 5871 and 6143	NA	NA	NA	NA	No Action Sites ROD							
27	Army Reserve Motor Pool	055	U.S. Army Reserve Center Motor Pool	705	temporary container storage	No Action Sites ROD							
28	Barracks and Main Garrison Area	NA	NA	NA	NA	No Action Sites ROD							
29	DRMO	009	DRMO PCB Storage Area	T-111	temporary container storage	No Action Sites ROD		possible					
30	Driver Training Area	NA	NA	NA	NA	IA Sites ROD							
31	Former Dump Site	070	East Garrison Dump Site	NA	landfill	BW RI Sites ROD						known	
32	East Garrison STP	011	East Garrison STP	145	wastewater treatment	IA Sites ROD							known

Table 1. Site Summary and Primary Records Review Results*

RI Site ID	Site Name	SWMU (FTO-)	SWMU Name	Bldg. No.	SWMU Type	Applicable Decision Document	FTA	AFFF Storage	Aircraft Crash Site	Aviation Hangar	FF/AA	Landfill	WWTP
33	Golf Course Maintenance Area	071	Golf Course Maintenance Area	4110	temporary container storage	BW RI Sites ROD							
34	FAAF Fueling Facility	NA	NA	501, 502, 503	NA	NA					known		
		006	HHC Cavalry Regiment Motor Pool	527	temporary container storage	IA Sites ROD		possible		known			
		039	DOL Aircraft Maintenance Motor Pool	533	temporary container storage	IA Sites ROD		possible		known			
		042	HHC Combat Aviation Brigade Motor Pool	509	temporary container storage	IA Sites ROD							
		043	1/123rd Aviation Regiment, A & B Companies Motor Pool	527	temporary container storage	IA Sites ROD		possible		known			
		045	23rd Medical Detachment Motor Pool	541	temporary container storage	IA Sites ROD							
		046	2/9th Cavalry Reconnaissance Flight Maintenance Motor Pool	510 or 524	temporary container storage	IA Sites ROD		possible		known			
		047	7th Aviation Battalion, C & D Companies Flight Maintenance Motor Pool	507	temporary container storage	IA Sites ROD		possible		known			
34B	Former Burn Pit	NA	NA	NA	NA	IA Sites ROD	possible						
35	FAAF Aircraft Cannibalization Yard	NA	NA	NA	NA	No Action Sites ROD							
36	FAAF STP	003	FAAF STP	540	wastewater treatment	IA Sites ROD							known
37	Trailer Park Maintenance Shop	NA	NA	NA	NA	No Action Sites ROD							
38	AAFES Dry Cleaners	019	AAFES Economy Cleaners	1434	USTs	No Action Sites ROD							
39	Inland Ranges	NA	NA	NA	NA	BW RI Sites ROD		possible	known				
39A	East Garrison Ranges	NA	NA	NA	NA	IA Sites ROD							
39B	Inter-Garrison Training Area	NA	NA	NA	NA	IA Sites ROD							
40	FAAF Helicopter Defueling Area	NA	NA	NA	NA	IA Sites ROD		possible			known		
41	Crescent Bluff Fire Drill Area	072	Crescent Bluff Fire Drill Area	NA	thermal treatment	IA Sites ROD	known						
NA	DRMO	008	DRMO Hazardous Waste Storage Area	53A		RCRA Closure Certification Report							
NA	FAAF	NA	NA	NA	NA	NA			possible				
NA	NA	020	Infectious Waste Incinerator at Silas B. Hayes Hospital	4385	incinerator	NA							
NA	NA	021	Silver Recovery Unit	4385	recovery unit	NA		possible					
NA	Fort Ord Soil Treatment Area (FOSTA)	NA	NA	NA	NA	NA						known	
NA	FAAF Fire & Rescue Station	NA	NA	514	NA	NA		possible					
NA	East Garrison Fire House	NA	NA	T-105	NA	NA		possible					
NA	Main Garrison Fire House - South	NA	NA	T-1820	NA	NA		possible					
NA	Main Garrison Fire House - North	NA	NA	T-2898	NA	NA		possible					
NA	Main Garrison Fire House - East	NA	NA	T-3280	NA	NA		possible					

Table 1. Site Summary and Primary Records Review Results*

RI Site ID	Site Name	SWMU (FTO-)	SWMU Name	Bldg. No.	SWMU Type	Applicable Decision Document	FTA	AFFF Storage	Aircraft Crash Site	Aviation Hangar	FF/AA	Landfill	WWTP
NA	Main Garrison Fire Station	NA	NA	4400	NA	NA		possible					
NA	Mudhen Lake	NA	NA	NA	NA	NA			possible				
OF-15	Outfall 15 (part of Site 4)	NA	NA	NA	NA	IA Sites ROD							
OF34/35	Outfalls 34 and 35	NA	NA	NA	NA	IA Sites ROD							
OU1	Operable Unit 1	001	FAAF Fire Drill Area	NA	thermal treatment	OU1 ROD	known						
OU2	Operable Unit 2	002	Fort Ord Landfills	NA	landfill	OU2 ROD						known	
OUCTP	Operable Unit Carbon Tetrachloride Plume	NA	NA	NA	NA	OUCTP ROD							

Notes:
*No plating facilities that may have used PFAS-containing mist suppressants were identified during the primary records review.

Acronyms:
AAFES = Army and Air Force Exchange Service
AFFF = aqueous film-forming foam
DEH = Directorate of Engineering and Housing
DOL = Directorate of Logistics
DRMO = Defense Reutilization Marketing Office
FAAF = Fritzsche Army Airfield
FF/AA = Fuel Farm/Aviation Asset
FTA = fire training area
HTW = Hazardous and Toxic Waste
IA = Interim Action
NA = not applicable
OF = Outfall
RCRA = Resource Conservation and Recovery Act
RI = Remedial Investigation
ROD = Record of Decision
STP = Sewage Treatment Plant
WWTP = wastewater treatment plant

Table 2. Sites Recommended for Additional Investigation

Site Name	Bldg. No.	Site Type	Recommended Additional Investigation			
			GW	Soil	Risk Priority	Sample Notes
FAAF Fire Drill Area	NA	FTA	X		lower	Existing well MW-BW-95-A and two new downgradient wells.
Operable Unit 2 - Fort Ord Landfills	NA	Landfill	X		medium	Three existing wells in Upper 180-Foot Aquifer TCE plume southern lobe; two existing downgradient wells in the Upper 180-Foot Aquifer and two existing downgradient wells in the Lower 180-Foot Aquifer.
Site 10 - Burn Pit/Fire Training Area	4400	FTA	X		medium	Downgradient wells MW-OU2-29-180 and MW-OU2-55-180.
Site 34 - FAAF Aviation Hangars	507	Aviation Hangar	X	X	lower	Soil sampling to 10 feet bgs at three locations in drainage area and groundwater monitoring at two downgradient locations.
Site 36 - FAAF Sewage Treatment Plant	540	WWTP		X	lower	To 10 feet bgs at four locations: in footprints of Imhoff tank and two evaporation ponds, and A-Aquifer downgradient discharge point.
Site 40A - East FAAF Helicopter Defueling Area	NA	FF/AA	X	X	lower	Soil sampling to 10 feet bgs at three locations in drainage area and groundwater monitoring at two downgradient locations.

Acronyms:
bgs = below ground surface
FAAF = Fritzsche Army Airfield
FF/AA = Fuel Farm/Aviation Asset
FTA = fire training area
GW = groundwater
NA = not applicable
WWTP = wastewater treatment plant

Risk Priorities:
Lower = no pathway to drinking water exists
Medium = potential pathway to drinking water exists
Higher = human exposure to contaminated drinking water exists

Table 3. Summary of Groundwater Monitoring Analytical Results, March 7, 2019

	Sample Depth (ft btoc)	PFOA (µg/L)		PFOS (µg/L)		Total PFOA/PFOS (µg/L)
		Result	Qualifier	Result	Qualifier	
Well ID	**A-Aquifer**					
MW-OU2-06-AR	118	0.00762		0.00790		0.01552
MW-OU2-08-A	125	0.00245	J	<0.0020	U	0.00245
MW-OU2-08-A-DUP	125	<0.0020	U	<0.0020	U	-
MW-OU2-27-A	113	<0.0020	U	<0.0020	U	-
MW-OU2-40-A	118	<0.0020	U	0.00351	J	0.00351
MW-OU2-44-A	90	<0.0020	U	<0.0020	U	-
MW-OU2-73-A	122	<0.0020	U	<0.0020	U	-
MW-OU2-75-A	116	<0.0020	U	0.00193	J	0.00193
Well ID	**Upper 180-Foot Aquifer**					
EW-OU2-01-180	158	<0.0020	U	<0.0020	U	-
MW-OU2-23-180	219	**0.113**		**0.447**		**0.560**
MW-OU2-24-180	214	0.00326	J	0.00254	J	0.00580
MW-OU2-44-180	188	0.00309	J	0.00343	J	0.00652
MW-OU2-56-180	225	0.00252	J	<0.0020	U	0.00252
MW-OU2-56-180-DUP	225	<0.0020	U	<0.0020	U	-
Sample Port	**Operable Unit 2 Groundwater Treatment Plant**					
TS-OU2-INF-01	-	0.0156		0.0153		0.03090
TS-OU2-INF-02	-	<0.0020	U	<0.0020	U	-
TS-OU2-EFF-1A	-	<0.0020	U	<0.0020	U	-
TS-OU2-EFF-2A	-	<0.0020	U	<0.0020	U	-
TS-OU2-INJ-01	-	<0.0020	U	<0.0020	U	-

Notes:
Results in gray are not detected above the limit of detection
Results in **bold** are above the U.S. Environmental Protection Agency health advisory level of 0.07 µg/L and the Department of Defense screening level of 0.04 µg/L

Acronyms and Abbreviations:
- = not applicable
µg/L = micrograms per liter
DUP = duplicate
ft btoc = feet below top of casing
J = estimated result below the limit of quantitation
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate (perfluorooctanesulfonic acid)
TS-OU2-INF-01 = Eastern Main influent (EW-OU2-16-A, -17-A, -18-A, -19-A, -20-A, -05-180, -06-180, -09-180, -10-180, -12-180)
TS-OU2-INF-02 = Western Main influent (EW-OU2-10-A, -11-AR, -12-A, -13-A, -02-180R, -03-180)
TS-OU2-EFF-1A = Lead GAC Vessel Effluent for GAC Train #1
TS-OU2-EFF-2A = Lead GAC Vessel Effluent for GAC Train #2
TS-OU2-INJ-01 = GWTP effluent
U = not detected above the limit of detection

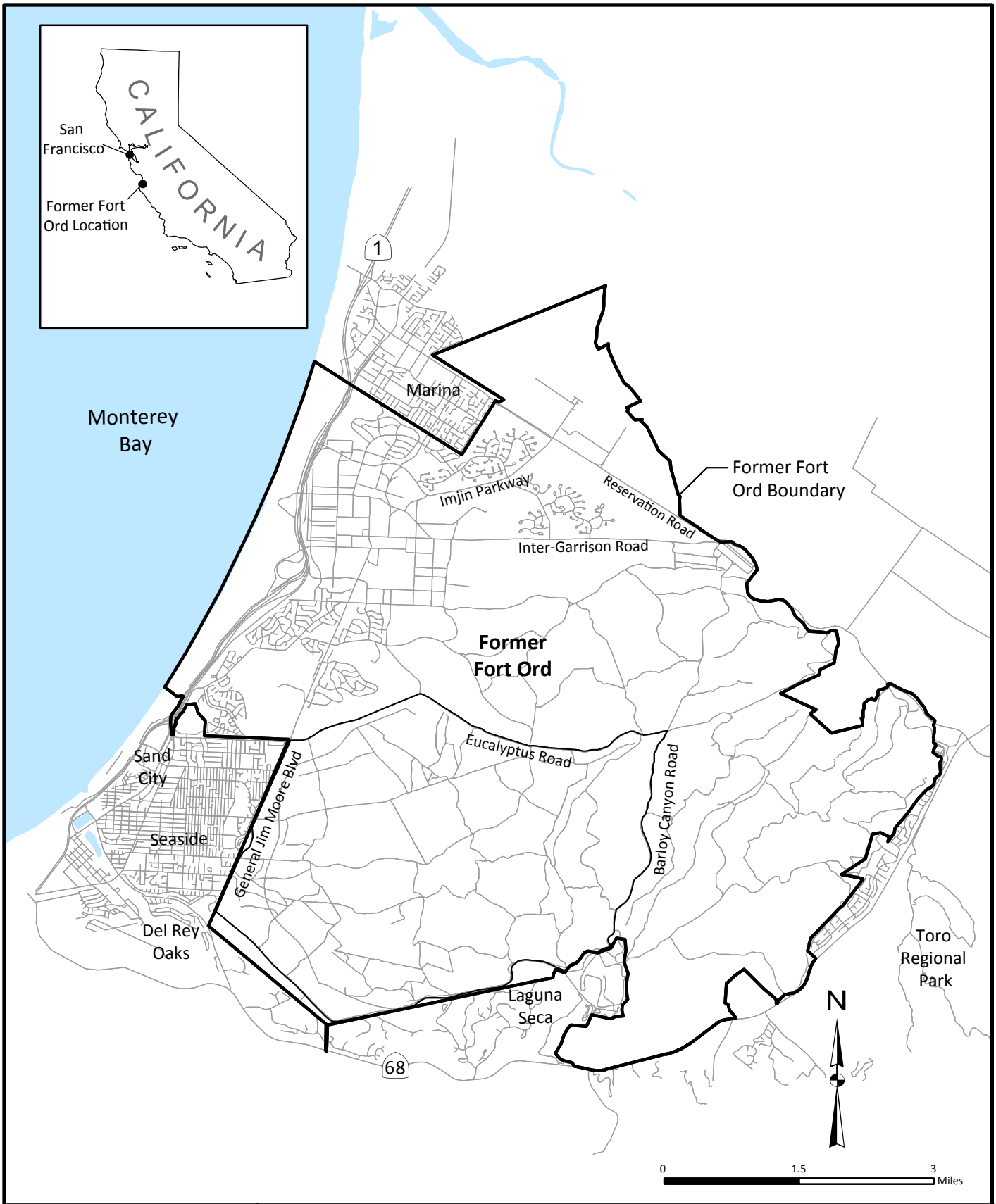
Table 4. Recommended PFAS Target Analyte List*

Compound	Acronym	CASRN
perfluorooctanesulfonic acid	PFOS	1763-23-1
perfluorooctanoic acid	PFOA	335-67-1
perfluorobutanesulfonic acid	PFBS	375-73-5
perfluorodecanoic acid	PFDA	335-76-2
perfluorododecanoic acid	PFDoA	307-55-1
perfluoroheptanoic acid	PFHpA	374-85-9
perfluorohexanesulfonic acid	PFHxS	355-46-4
perfluorohexanoic acid	PFHxA	307-24-4
perfluorononanoic acid	PFNA	375-95-1
perfluorotetradecanoic acid	PFTA	376-06-7
perfluorotridecanoic acid	PFTrDA	72629-94-8
perfluoround ecanoic acid	PFUnA	2058-94-8
perfluorodecane sulfonate	PFDS	335-77-3
perfluorobutanoic acid	PFBA	375-22-4
perfluorooctane sulfonamide	PFOSA	754-91-6
perfluoropentanoic acid	PFPeA	2706-90-3
n-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
n-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9

Notes:
CASRN = Chemical Abstracts Service Registry Number

*From *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)* , September 2018, Department of the Army, Office of the Assistant Chief of Staff for Installation Management.

FIGURES



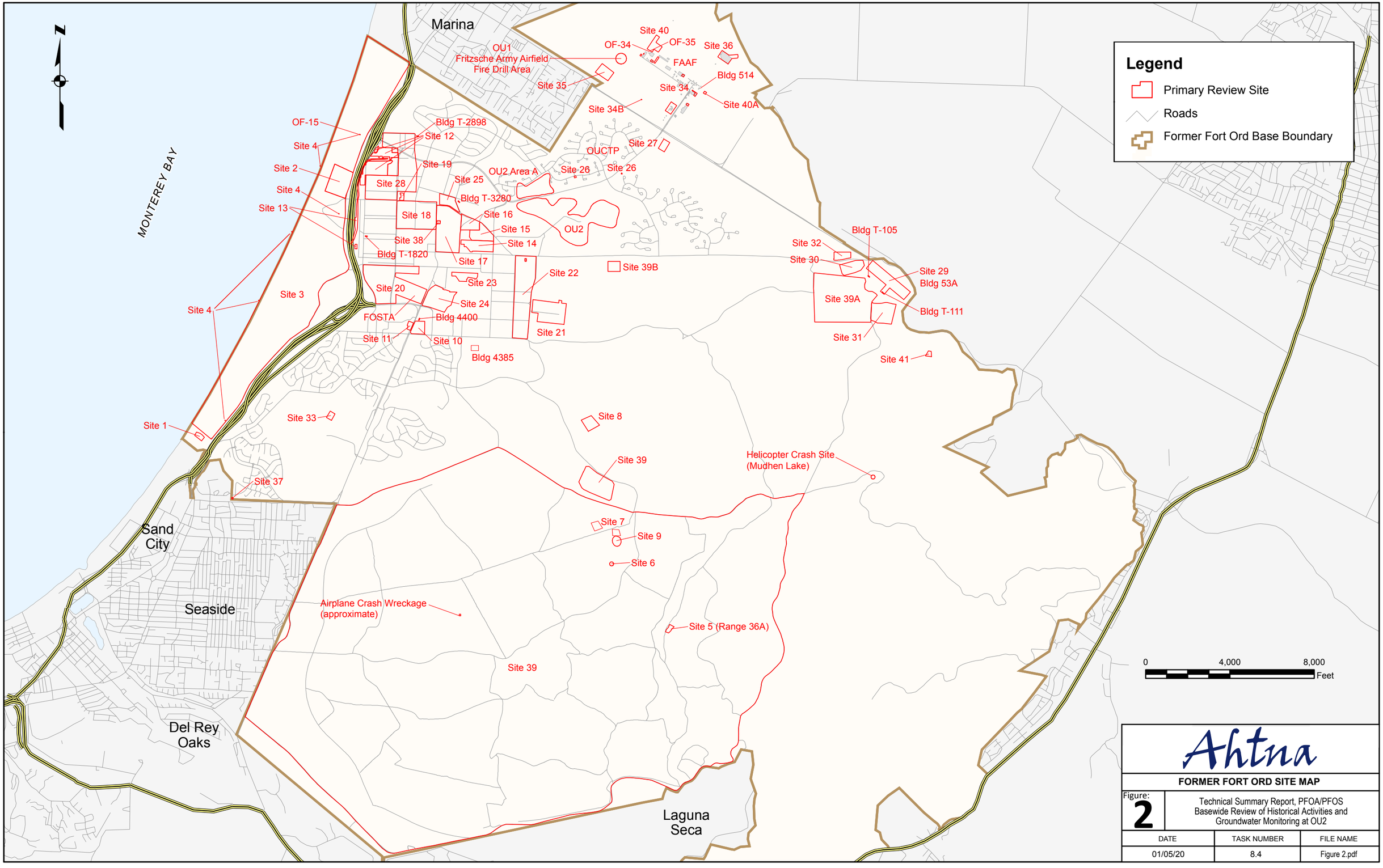
Ahtna

Former Fort Ord Location Map

Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activites and Groundwater Monitoring at OU2

Figure:

1



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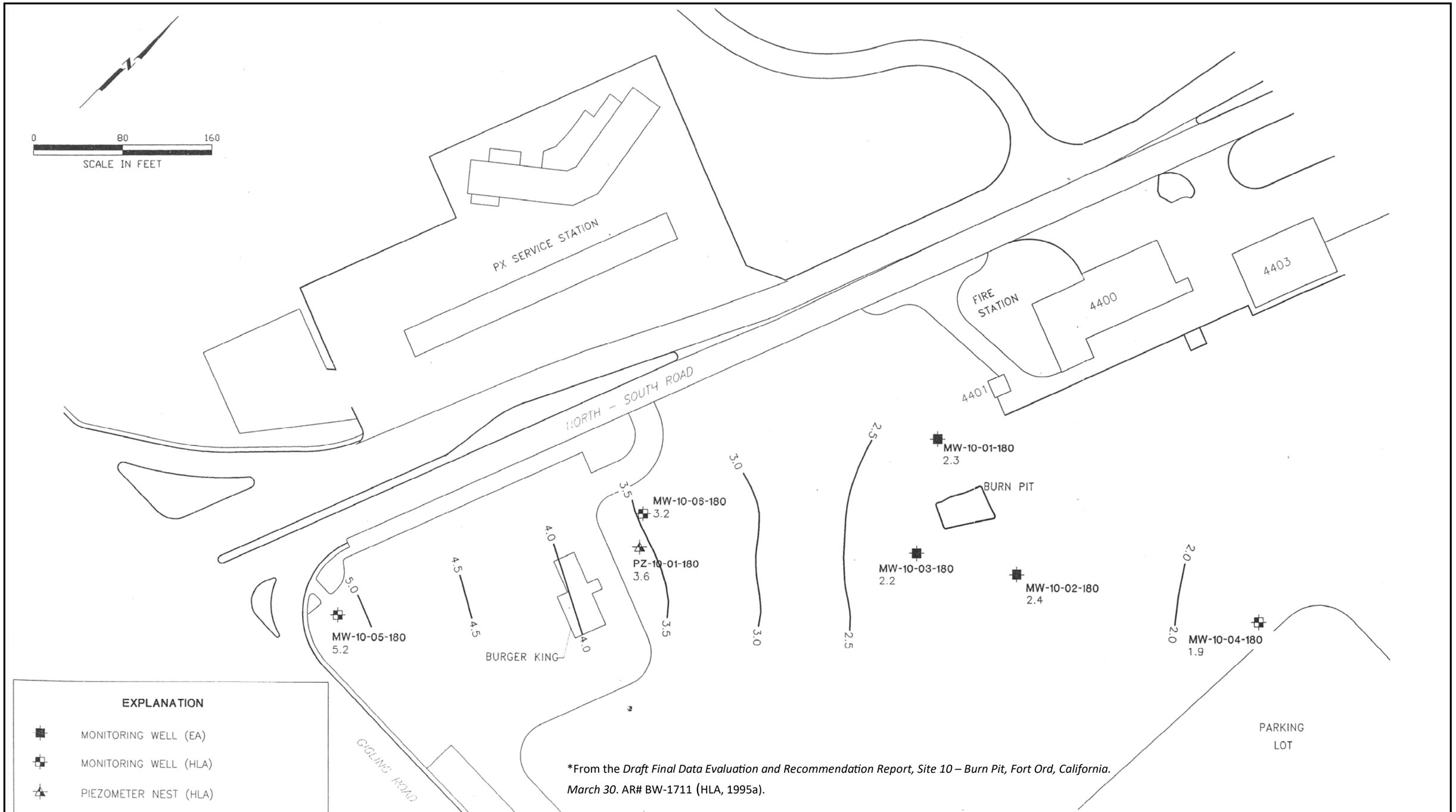
FORMER FORT ORD SITE MAP

Figure: **2**

Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2

DATE	TASK NUMBER	FILE NAME
01/05/20	8.4	Figure 2.pdf



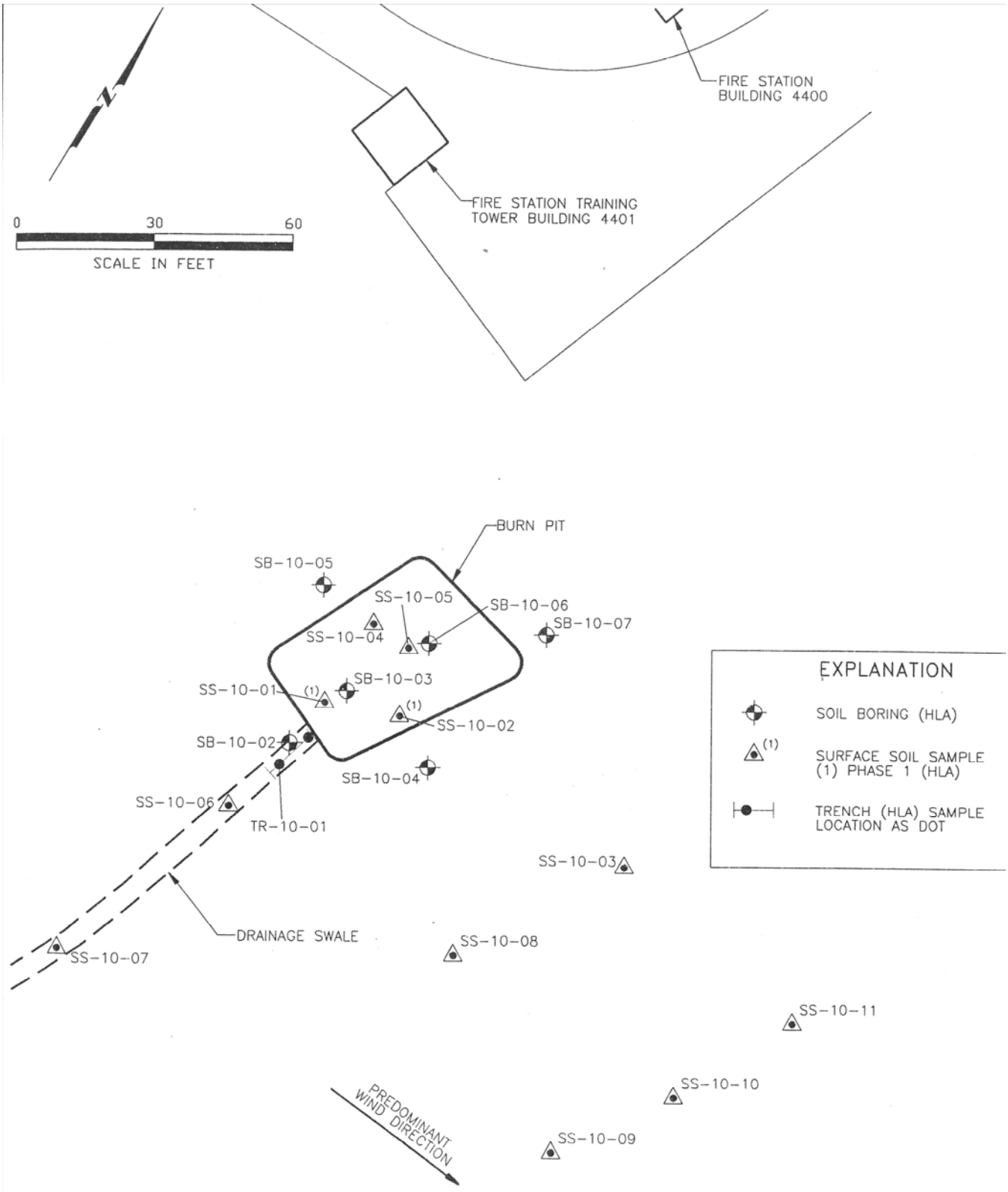
*From the *Draft Final Data Evaluation and Recommendation Report, Site 10 – Burn Pit, Fort Ord, California. March 30*. AR# BW-1711 (HLA, 1995a).

Ahtna

Site 10—Site Map and Historical Groundwater Elevations*

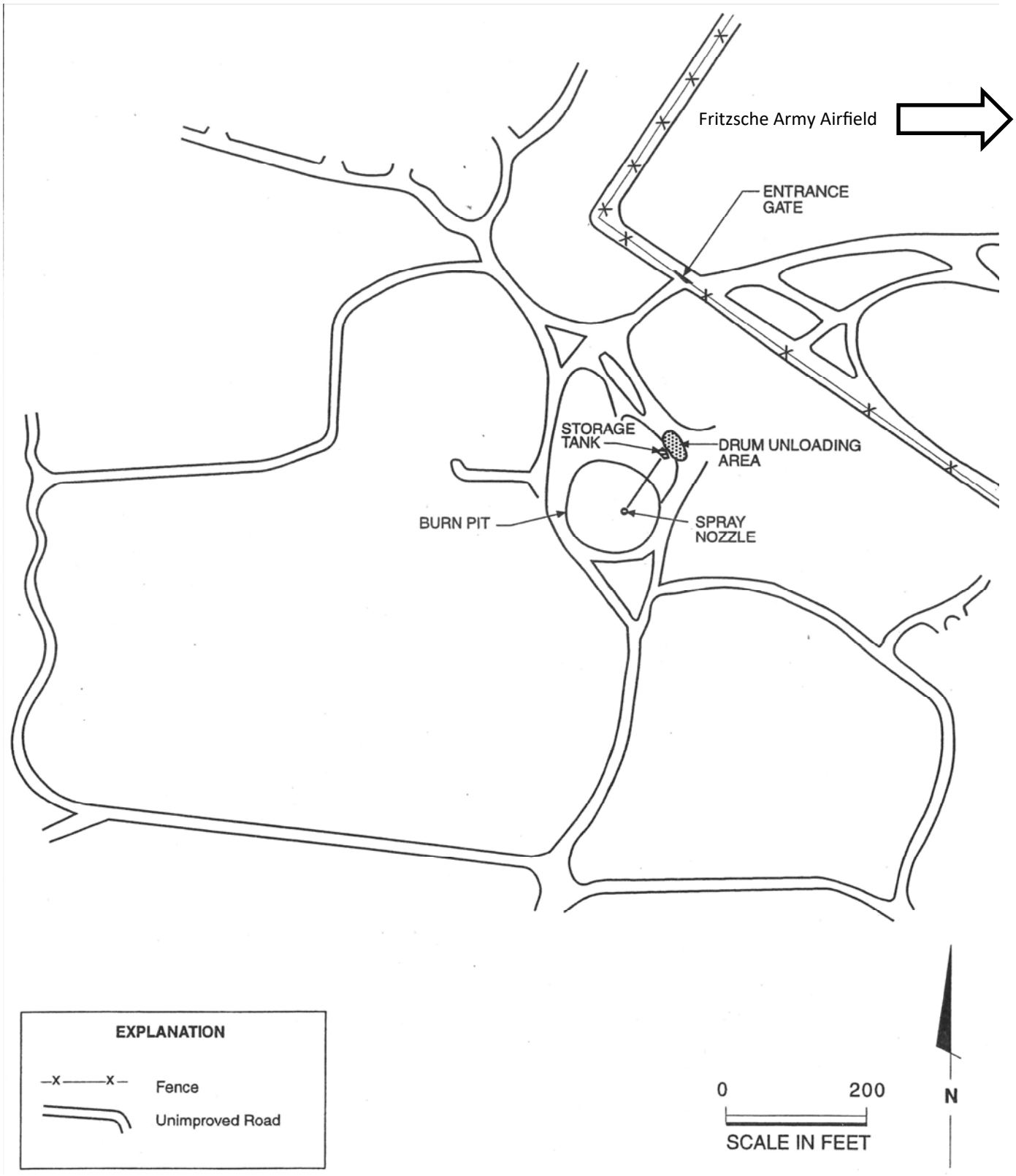
Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

Figure: **3**



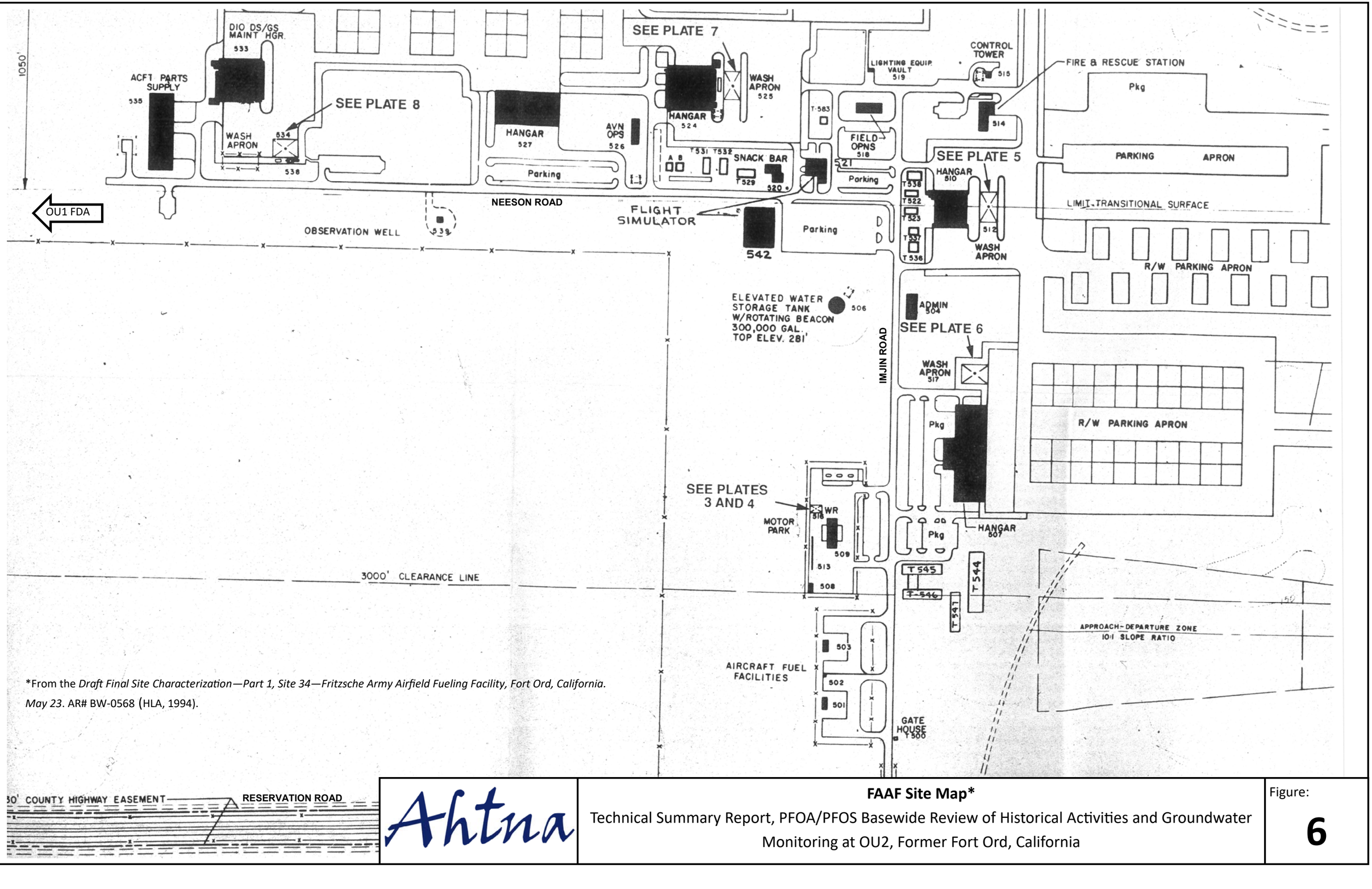
*From the *Draft Final Data Evaluation and Recommendation Report, Site 10 – Burn Pit, Fort Ord, California. March 30*. AR# BW-1711 (HLA, 1995a).

Ahtna	**Site 10—Burn Pit/Fire Training Area*** Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California	Figure: **4**



*From the *Five-Year Status Report and Effectiveness Evaluation, Operable Unit 1, Fort Ord, California. November 29*. AR# OU1-484J (HLA, 1999).

Ahtna	**OU1—Former Fire Drill Area*** Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California	Figure: **5**



*From the *Draft Final Site Characterization—Part 1, Site 34—Fritzsche Army Airfield Fueling Facility, Fort Ord, California. May 23*. AR# BW-0568 (HLA, 1994).

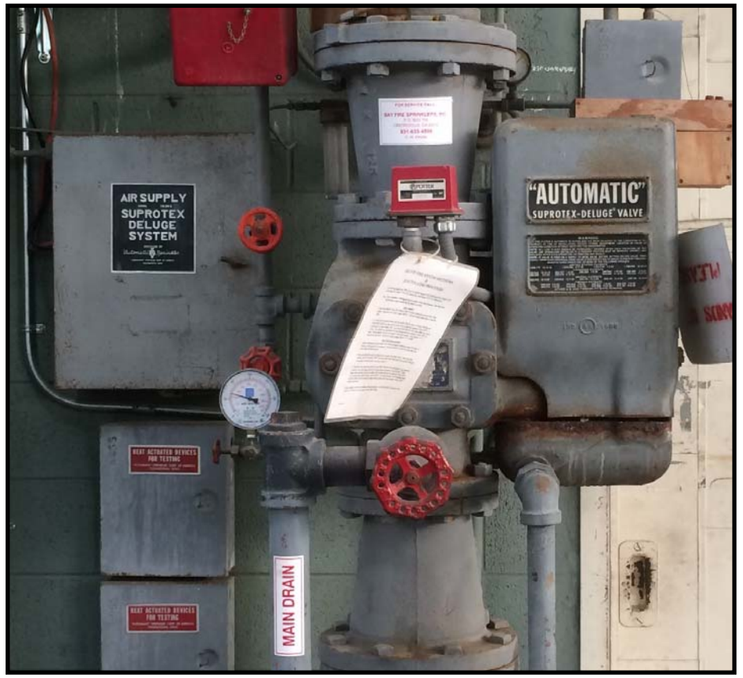
Ahtna

FAAF Site Map*

Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

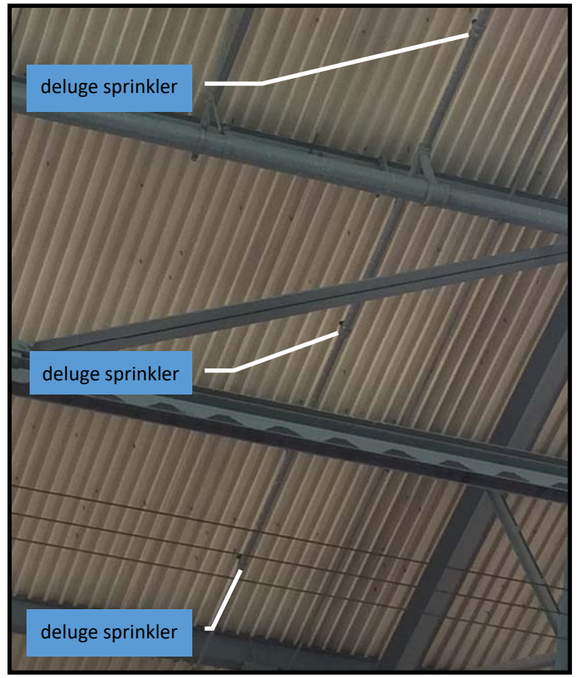
Figure: **6**

FAAF hangar water deluge valve system (typical)



FAAF hangar water deluge valve system and riser pipe (typical)

FAAF hangar water deluge sprinkler system (typical)



Example high expansion foam generator

FAAF hangar support area wet system valve (typical)

FAAF hangar support area wet system sprinkler (typical)

Example high expansion foam generator

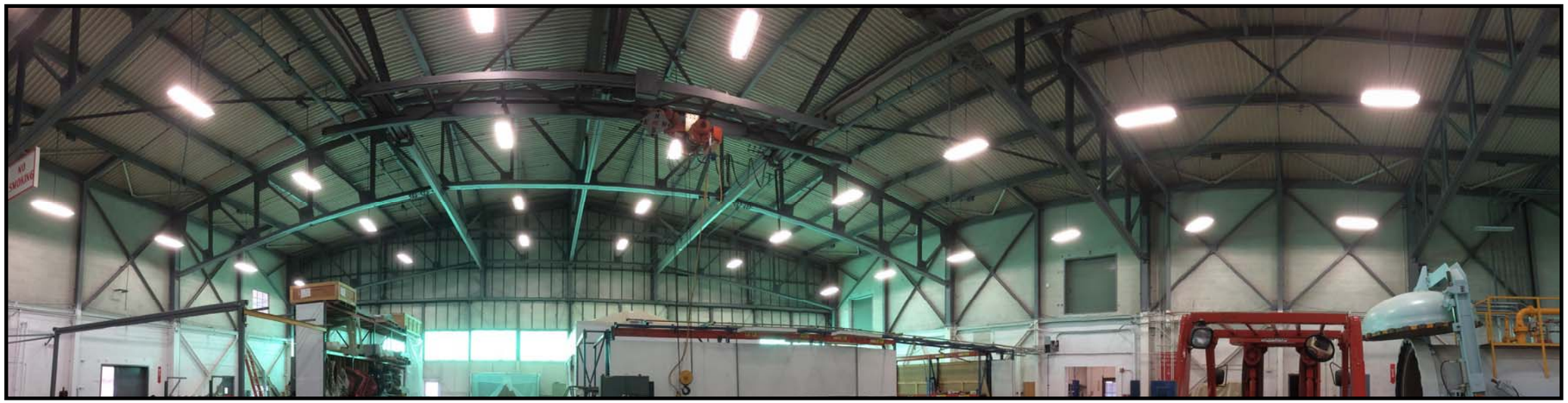
Hangar Fire Suppression System Photo-graphs

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure: **7**

Building 510 northeast interior view.



Building 510 southwest interior view.

Building 510 west exterior view.

Building 510 Aviation Hangar Photographs

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure:
8

Building 524 north interior view.

Building 524 south interior view.

Building 524 south exterior view.

Building 524 Aviation Hangar Photographs

Technical Summary Report
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Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure:
9

Building 533 south interior view.

Building 533 north interior view.

Building 533 north exterior view.

Building 533 Aviation Hangar Photographs

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure:
10

Building 507 suspected high expansion foam generator in hangar.

Building 507 suspected high expansion foam generator in storeroom/workshop.

Building 507 north exterior view.

Building 507 Aviation Hangar Photographs

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure:
11

Building 527 east interior view.

Building 527 west interior view.

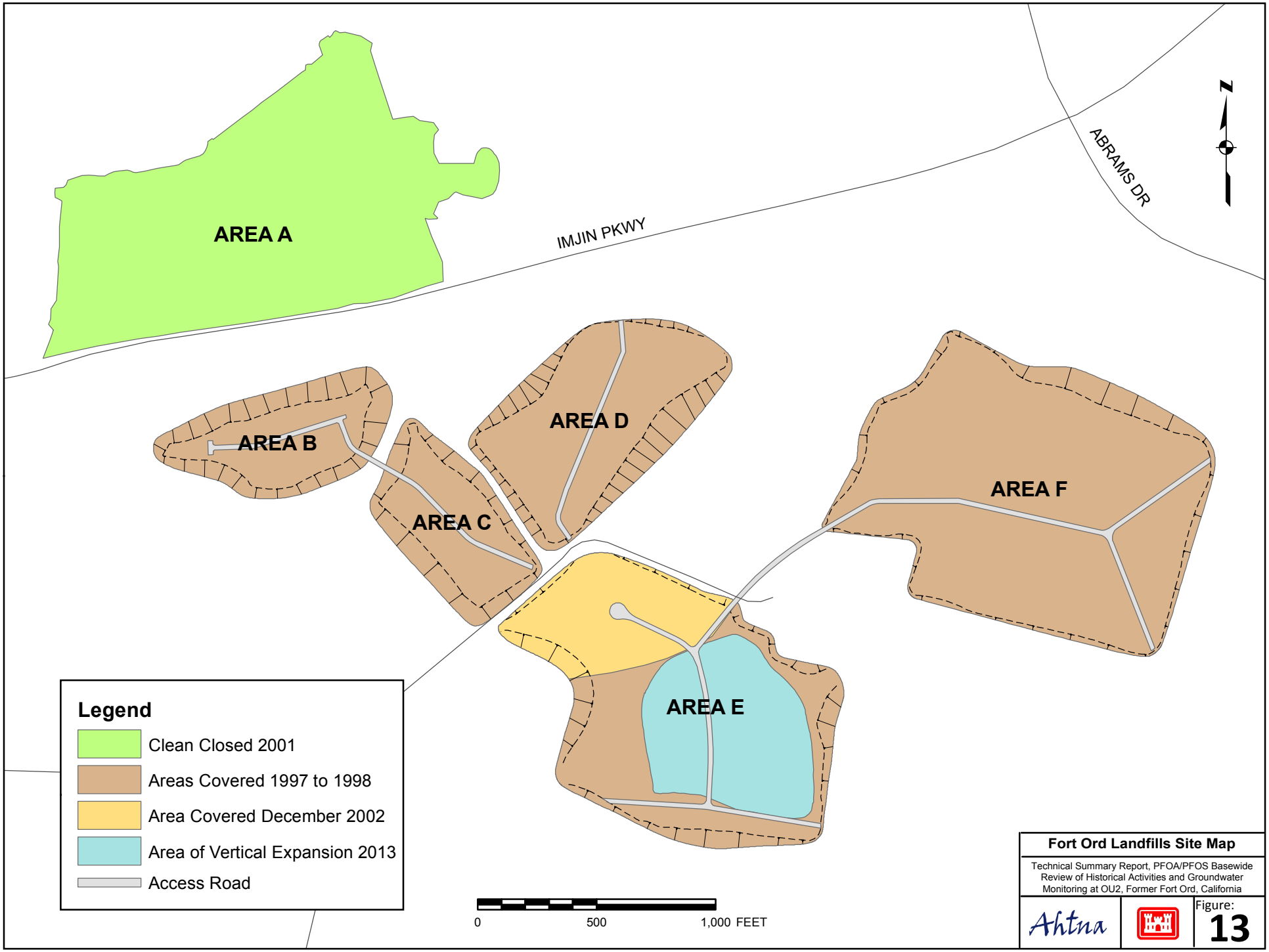
Building 527 north exterior view.

Building 527 Aviation Hangar Photographs

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure:
12

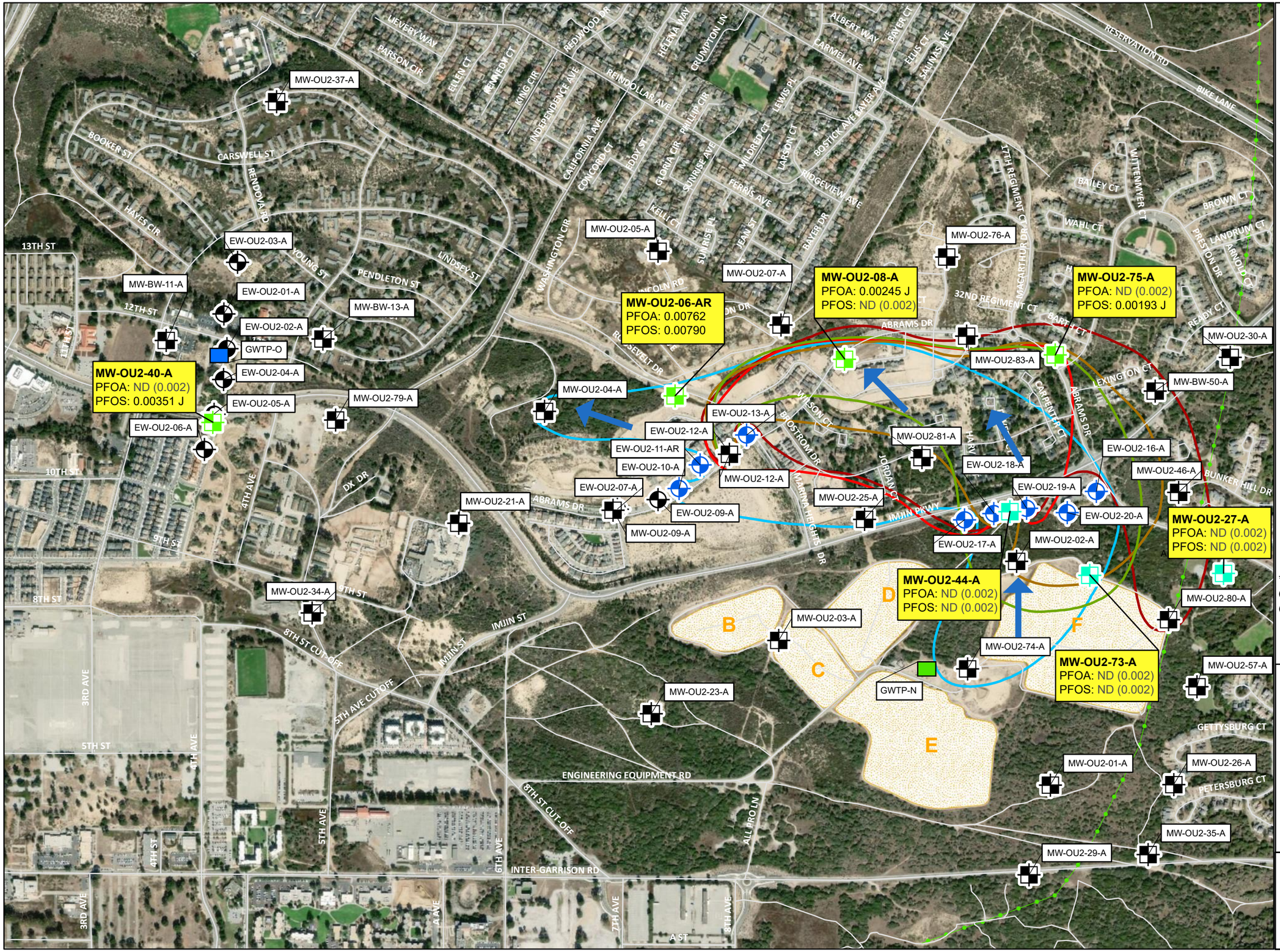


Fort Ord Landfills Site Map

Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

Ahtna

Figure: 13



Legend

- Groundwater Divide
- Roads
- OU2 Landfill Areas
- OU2 GWTP-O: old OU2 GWTP ceased operation in October 2018 (not sampled)
- OU2 GWTP-N: new OU2 GWTP began operation in November 2018 (sampled)

Well Type and PFOA/PFOS Results

- Extraction Well - Offline
- Extraction Well - Online
- Monitoring Well - Not Sampled
- Monitoring Well - Sampled and PFOA/PFOS results below USEPA HA
- Monitoring Well - Sampled and PFOA/PFOS results not detected

GWMP A-Aquifer COCs 2019-2Q

- 1,1-DCA (5.0 ug/L)
- 1,2-DCA (0.5 ug/L)
- PCE (3.0 ug/L)
- TCE (5.0 ug/L)
- VC (0.1 ug/L)

General Groundwater Flow Direction*

*Groundwater flow direction source: OU2 Second Quarter 2019 Groundwater Monitoring Report

N

0 415 830 1,660 Feet

OU2 A-Aquifer Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

Ahtna

Figure: 14

Legend

- Roads
- OU2 Landfill Areas
- OU2 GWTP-O: old OU2 GWTP ceased operation in October 2018 (not sampled)
- OU2 GWTP-N: new OU2 GWTP began operation in November 2018 (sampled)

Well Type and PFOA/PFOS Results

- Extraction Well - Offline
- Extraction Well - Online
- Extraction Well - Offline - Sampled and PFOA/PFOS results not detected
- Monitoring Well - Not Sampled
- Monitoring Well - Sampled and PFOA/PFOS results below USEPA HA
- Monitoring Well - Sampled and PFOA/PFOS results above USEPA HA

GWMP Upper 180-Foot Aquifer COCs

- TCE (5.0 ug/L) 2019-2Q
- General Groundwater Flow Direction*

*Groundwater flow direction source: OU2 Second Quarter 2019 Groundwater Monitoring Report

N

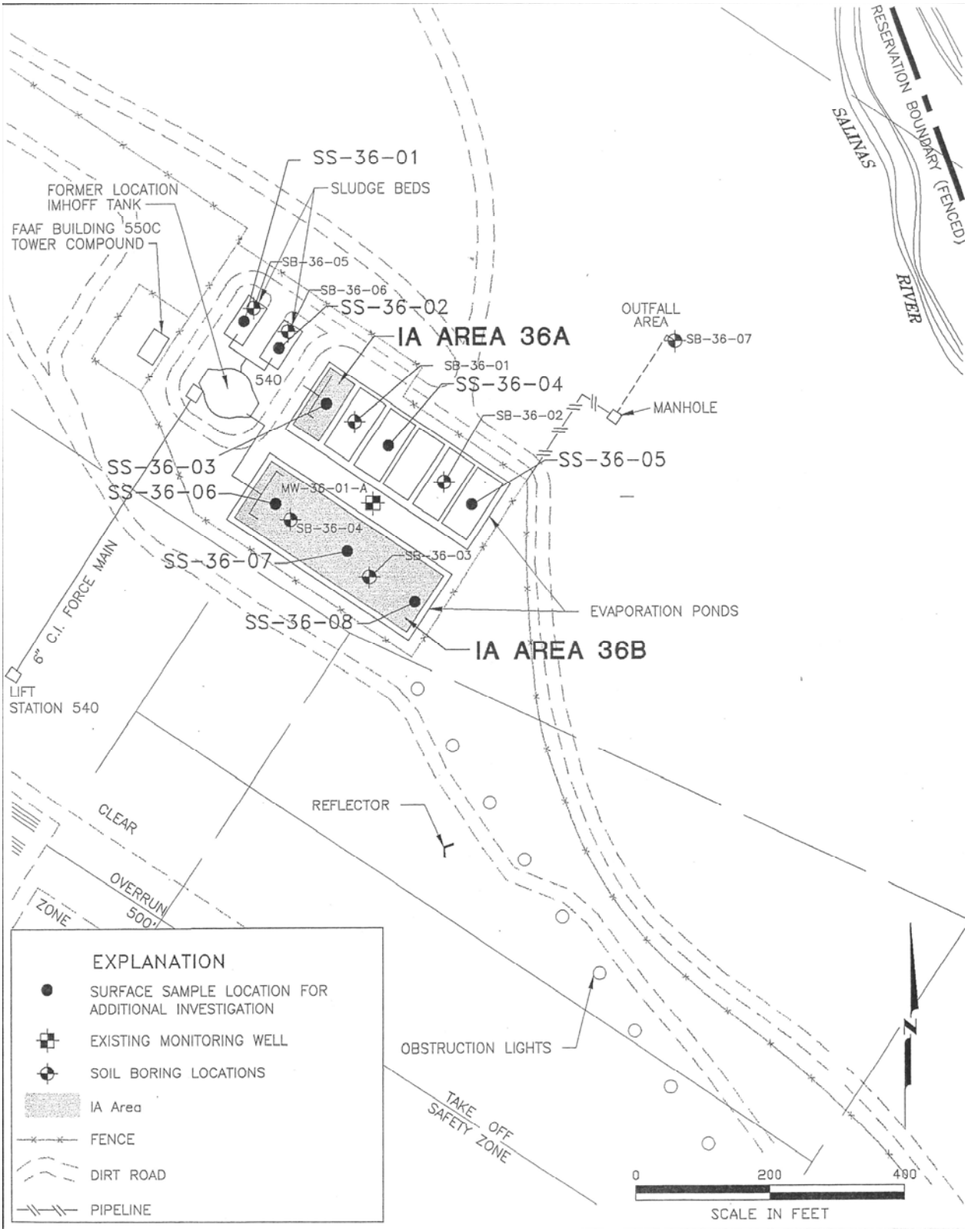
0 425 850 1,700 Feet

OU2 Upper 180-Foot Aquifer Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

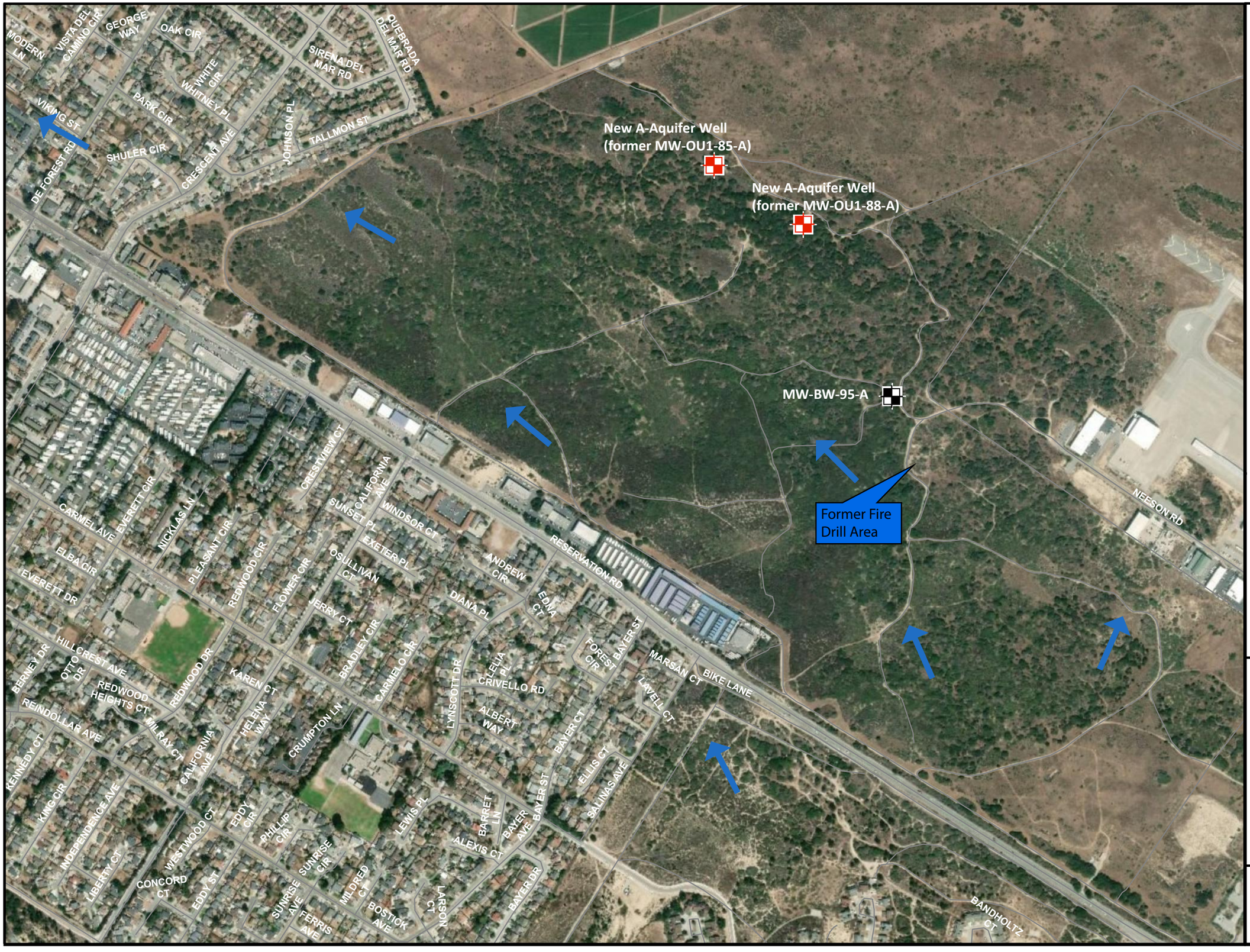
Ahtna

Figure: 15



*From the *Interim Action Confirmation Report, Site 36—Fritzsche Army Airfield Sewage Treatment Plant, Fort Ord, California. June 20*. AR# IAFS-177 (HLA, 1997).

Ahtna	**Site 36 – FAAF STP Site Map*** Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California	Figure: **16**



Legend

- Roads
- New Well Location
- Existing Well Location
- General Groundwater Flow Direction*

N

*Groundwater flow direction source: OUCTP First Quarter 2019 Groundwater Monitoring Report

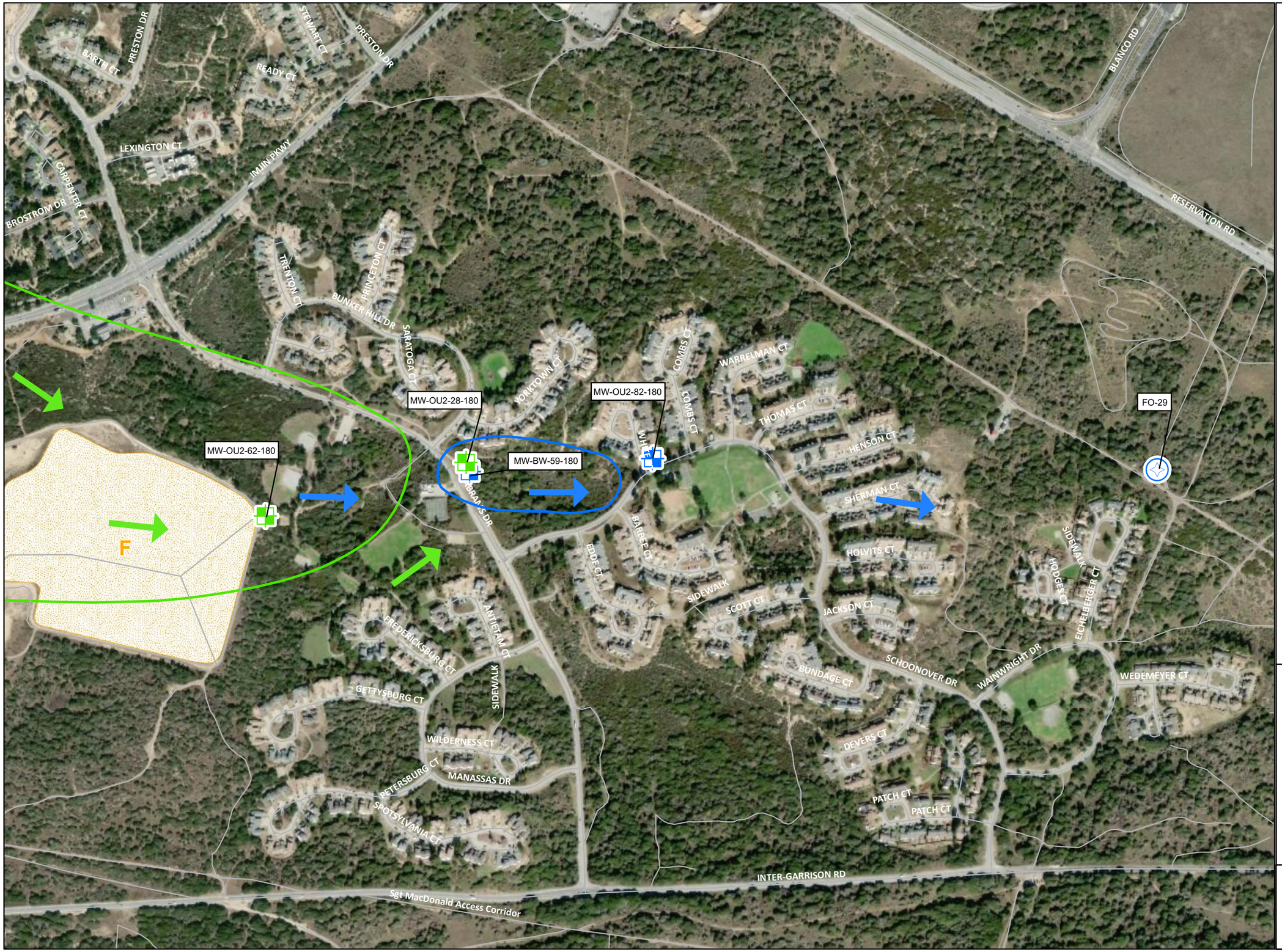
0 250 500 1,000 Feet

FAAF Fire Drill Area Recommended Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure: **17**



Legend

- Existing Upper 180-Foot Aquifer Monitoring Well - Sampling Recommended
- Existing Lower 180-Foot Aquifer Monitoring Well - Sampling Recommended
- Existing Lower 180-Foot Aquifer Supply Well - Sampling Recommended
- Roads
- OU2 Landfill Areas

GWMP COCs

- Upper 180-Foot Aquifer TCE (5.0 ug/L) 2019-2Q
- Lower 180-Foot Aquifer TCE (5.0 ug/L) 2019-2Q
- General Upper 180-Foot Aquifer Groundwater Flow Direction*
- General Lower 180-Foot Aquifer Groundwater Flow Direction*

*Groundwater flow direction source:
A. Upper 180-Foot Aquifer: OU2 Second Quarter 2019 Groundwater Monitoring Report
B. Lower 180-Foot Aquifer: OUCTP Second Quarter 2019 Groundwater Monitoring Report

N

0 250 500 1,000 Feet

OU2 Upper 180-Foot Aquifer and Lower 180-Foot Aquifer Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

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Figure: 18

Legend

- Existing Well Location
- Roads
- General Groundwater Flow Direction*

*Groundwater flow direction source:
A. North of Inter-Garrison Road: OU2 First Quarter 2019 Groundwater Monitoring Report
B. South of Inter-Garrison Road: Sites 2/12, OU2, and OUCTP First Quarter 2014 Goundwater Monitoring Program utilizing now decommissioned Site 10 well data

N

0 275 550 1,100 Feet

Site 10 - Burn Pit/ Fire Training Area Recommended Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure: 19

Legend

- Roads
- New Soil Boring Location
- New Monitoring Well Locati
- General Surfacewater Flow Direction
- General Groundwater Flow Direction

N

0 65 130 260 Feet

Site 34 - FAAF
Aviation Hangers
Building 507
Recommended
Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review
of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

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Figure:
20

Legend

- Roads
- New Soil Boring Location
- General Groundwater Flow Direction*

*Groundwater flow direction source: Extrapolated from upgradient OUCTP A-Aquifer well elevation data from the OUCTP Second Quarter 2019 Groundwater Monitoring Report

N

0 50 100 200 Feet

Site 36 - FAAF
Sewage Treatment Plant
Recommended
Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review
of Historical Activities and
Groundwater Monitoring at OU2
Former Fort Ord, California

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Figure:
21

Legend

- Roads
- New Soil Boring Location
- New Monitoring Well Location
- General Surfacewater Flow Direction
- General Groundwater Flow Direction

N

0 87.5 175 350 Feet

Site 40A - East FAAF Helicopter Defueling Area Recommended Sampling Locations

Technical Summary Report
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2
Former Fort Ord, California

Ahtna

Figure: **22**

APPENDICES

APPENDIX A

Validation Summary Report

VALIDATION SUMMARY REPORT

First Quarter 2019
Perfluorooctanoic Acid and Perfluorooctane Sulfonate
Groundwater Sampling
Operable Unit 2
Former Fort Ord, California

Prepared for:

Ahtna Environmental Inc.
296 12th Street
Marina, California 93933-6001

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
1670 Corporate, Circle, Suite 201
Petaluma, California 94954

April 8, 2019

Project No. 8418191360

wood.

Validation Summary Report
First Quarter 2019
Perfluorooctanoic Acid and Perfluorooctane Sulfonate
Groundwater Sampling
Operable Unit 2
Former Fort Ord, California

April 8, 2019
Project No. 8418191360

Zachary Carroll
Database Analyst

For Kevin E. Garrett, PhD, PMP
Senior Associate

with permission

Validation Summary Report
First Quarter 2019
Perfluorooctanoic Acid and Perfluorooctane Sulfonate
Groundwater Sampling
Operable Unit 2
Former Fort Ord, California

Project No. 8418191360

This document was prepared by Wood Environment & Infrastructure Solutions, Inc., on behalf of Ahtna Environmental Inc. at the direction of the United States Army Corps of Engineers (USACE) for the sole use of the United States Department of the Army (Army) and regulatory agencies, the only intended beneficiaries of this work. No other party should rely on the information contained herein without prior written consent of the USACE and Army. This report and the interpretations, conclusions, and recommendations contained within are based in part on information presented in other documents that are cited in the text and listed in the references. Therefore, this report is subject to the limitations and qualifications presented in the referenced documents.

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ABBREVIATIONS

%	percent
ADR	Automated Data Review
Army	United States Department of the Army
DOD	Department of Defense
LCS	laboratory control sample
OU2	Operable Unit 2
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RL	reporting limit
RPD	relative percent difference
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

This Validation Summary Report presents Stage 2B and Stage 4 data validation results for groundwater samples collected during the First Quarter 2019 monitoring period for the Fort Ord perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) sampling at Operable Unit 2 (OU2). Data review was performed in accordance with the procedures specified in the following documents:

- *EM-200-1-10, Guidance for Evaluating Performance-based Chemical Data* (United States Army Corps of Engineers [USACE], 2005)
- *Quality Assurance Project Plan (QAPP), Former Fort Ord, California, Volume I, Appendix A, Addendum No. 1 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis Operable Unit 2, Former Fort Ord, California. Draft* (U.S. Department of the Army [Army], 2019)
- The Department of Defense (DOD) *Quality Systems Manual (QSM) for Environmental Laboratories Version 5.1* (DOD, 2017)
- EPA 540-R-08-005, Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. (USACE, 2009).

Wood Environment & Infrastructure Solutions, Inc. performed the data validation task under subcontract to Ahtna Environmental Inc.

Each of the analytical results from the monitoring event were subjected to Stage 2B review, which comprises an evaluation of Quality Control (QC) summary results for sample holding times, initial and continuing calibrations, surrogates, internal standards, laboratory duplicates, laboratory control samples (LCS), matrix spike and matrix spike duplicate samples, method blanks, calibration blanks, and field duplicate samples, as applicable.

Additionally, to confirm sample quantitation and identification, a Stage 4 evaluation of the QC summary forms and the raw data was performed on a minimum 10 percent (%) of the sample results. A sample cross reference, including sample identification numbers and level of review is presented as Table 1. A copy laboratory report is included as Appendix 1.

2.0 SUMMARY DATA QUALITY ASSESSMENT

The overall quality of the data was acceptable. Sample analysis for United States Environmental Protection Agency (USEPA) Test Method 537 (modified) was performed by SGS Accutest Laboratories in Orlando, Florida. SGS Accutest's Orlando laboratory is currently certified

through the Department of Defense Environmental Laboratory Accreditation Program ([DOD ELAP] number L2229).

Stage 2B review was performed on 100% of the data from this monitoring event using Laboratory Data Consultants, Inc.'s Automated Data Review (ADR) software program ADR.NET version 1.9.1.335. Flagging conventions specified in the QAPP were incorporated with the program's reference library to assess compliance with project requirements.

The ADR program was used as an electronic validation tool for the following QC checks:

- Holding Times
- Method Blank Contamination
- Surrogates
- Laboratory Control Samples
- Field Blank Contamination
- Field Duplicates

Initial, continuing calibration, and internal standards were validated manually due to the laboratory's inability to deliver electronic calibration files.

For the monitoring event, an additional Stage 4 review was performed on 10% of the results. The Stage 4 review included the elements of the Stage 2B review plus target compound identification, target compound quantitation, and an evaluation of the raw data and incorporated QC criteria from the QAPP. The findings of the Stage 2B and Stage 4 data review are presented in the following sections.

2.1 SAMPLE PRESERVATION AND HOLDING TIME

Samples were properly collected and stored in compliance with the United States Army Corps of Engineers' (USACE) standard of 0-6 degrees Celsius (°C). The 14 days until extraction, 28 days until analysis holding times were met.

2.2 INSTRUMENT CALIBRATION

Initial and continuing calibrations were analyzed at the method specified frequency. Initial calibration criteria specified in the QAPP were met.

Second source initial calibration verification standards, continuing calibration verification standards specified in the QAPP were met.

2.3 METHOD BLANKS

Method blanks were analyzed at the frequency required by the QAPP of one per analytical batch. No target compounds were detected in the method blanks.

2.4 SURROGATES AND INTERNAL STANDARDS

Surrogates and internal standards were added to investigative and QC samples as required by the QAPP. Reported recoveries of surrogate compounds for project samples were within laboratory's in-house acceptance limits, as specified by the QAPP.

Internal standard retention times and area counts were within the method specified acceptance criteria.

2.5 LABORATORY CONTROL SAMPLES

LCS were analyzed at the frequency required by the QAPP of one per analytical batch. The %R and relative percent differences (RPD) for laboratory control sample duplicates were within QAPP specified acceptance limits.

2.6 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE SAMPLES

Matrix spike and matrix spike duplicate (MS/MSD) samples were analyzed at the frequency required by the QAPP of one set per analytical batch. The %R and relative percent differences (RPD) for project source samples were within the QAPP specified acceptance limits.

2.7 TARGET COMPOUND IDENTIFICATION

The raw data associated with two project samples were evaluated as part of the Stage 4 review. Target compound identifications and quantitations were found to be acceptable. The Stage 4 review included both recalculation of reported results and review of the raw data for transcription errors. Results evaluated as part of the Stage 4 review were re-calculated and verified as being correctly reported by the laboratory. The Stage 4 calculation worksheet is presented as Attachment 1.

2.8 ANALYTICAL SENSITIVITY

Laboratory reporting limits (RL) reviewed as part of the Stage 2B review met the QAPP specified requirements.

The raw data associated with two project samples was evaluated for instrument sensitivity as part of the Stage 4 review. The instrument sensitivity was found to be sufficient to support project reporting requirements.

3.0 FIELD DUPLICATES

Two field duplicate sample pairs were collected and analyzed.

The following equation was used to calculate the RPD:

$$RPD = \frac{(\text{sample result} - \text{duplicate result}) \times 100}{(\text{sample result} + \text{duplicate result})/2}$$

The RPDs between the primary and duplicate samples were evaluated and were below the QAPP specified 30% acceptance criteria. The field duplicate relative percent differences are presented as Attachment 2.

4.0 DEVIATIONS FROM THE QAPP

Project samples collected and submitted during the monitoring period were analyzed as described in the QAPP.

5.0 RECONCILIATION OF DATA QUALITY OBJECTIVES

The sample results generated for the First Quarter 2019 monitoring period were subject to a rigorous 100% Stage 2B and 10% Stage 4 raw data review, as described in Section 1.0. The data review verified that the data is of a known quality that is in compliance with QAPP criteria, the general guidance of the DOD QSM Version 5.1, and the published analytical methods.

5.1 REJECTED DATA

No data gaps were identified as a result of the validation effort. No data generated for the monitoring period was rejected.

5.2 USABILITY

The data are considered usable for the intended purpose as reported by the laboratory.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The analytical data quality assessment for the sample results generated for the First Quarter 2019 monitoring period established that the overall project requirements and completeness levels specified in the QAPP were met. The data are considered usable for the intended purpose.

6.1 CORRECTIVE ACTIONS

No field or laboratory corrective actions are recommended on the basis of the data validation.

7.0 REFERENCES

Department of Defense, 2017. *DoD Quality Systems Manual for Environmental Laboratories, Version 5.1*

United States Army Corps of Engineers (USACE), 2005. EM-200-1-10, *Guidance for Evaluation Performance Based Chemical Data*. June.

USACE, 2009. EPA 540-R-08-005*, Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, 13 January.

United States Department of the Army, 2018 *Addendum No. 1 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis Operable Unit 2, Former Fort Ord, California. Draft,* 28 September.

TABLE 1

SAMPLE CROSS REFERENCE

Validation Summary Report, OU2 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling
Former Fort Ord, California

Sample Date	Sample Number	Lab Sample ID	Station Name	Sample Type	Test Method	Validation Stage
3/7/2019	1910BOU2048F	FA62220-1	MW-OU2-06-AR	Primary	EPA 537M	2B
3/7/2019	1910BOU2049A	FA62220-2	FIELD-QC	Trip Blank	EPA 537M	2B
3/7/2019	1910BOU2050F	FA62220-3	MW-OU2-24-180	Primary	EPA 537M	2B
3/7/2019	1910BOU2051F	FA62220-4	MW-OU2-08-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2052D	FA62220-5	MW-OU2-08-A	Field Duplicate	EPA 537M	2B
3/7/2019	1910BOU2053F	FA62220-6	MW-OU2-75-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2054F	FA62220-7	MW-OU2-27-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2055F	FA62220-8	MW-OU2-73-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2056C	FA62220-9	FIELD-QC	Field Blank	EPA 537M	2B
3/7/2019	1910BOU2057F	FA62220-10	MW-OU2-44-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2058B	FA62220-11	FIELD-QC	Equipment Blank	EPA 537M	2B
3/7/2019	1910BOU2059F	FA62220-12	MW-OU2-44-180	Primary	EPA 537M	2B
3/7/2019	1910BOU2060F	FA62220-13	MW-OU2-56-180	Primary	EPA 537M	2B
3/7/2019	1910BOU2061D	FA62220-14	MW-OU2-56-180	Field Duplicate	EPA 537M	2B
3/7/2019	1910BOU2062F	FA62220-15	MW-OU2-40-A	Primary	EPA 537M	2B
3/7/2019	1910BOU2063F	FA62220-16	EW-OU2-01-180	Primary	EPA 537M	2B
3/7/2019	1910BOU2064F	FA62220-17	MW-OU2-23-180	Primary	EPA 537M	4
3/7/2019	1910BOU2065F	FA62220-18	TS-OU2-INF-01	Primary	EPA 537M	4
3/7/2019	1910BOU2066F	FA62220-19	TS-OU2-INF-02	Primary	EPA 537M	2B
3/7/2019	1910BOU2067F	FA62220-20	TS-OU2-EFF-1A	Primary	EPA 537M	2B
3/7/2019	1910BOU2068F	FA62220-21	TS-OU2-EFF-2A	Primary	EPA 537M	2B
3/7/2019	1910BOU2069F	FA62220-22	TS-OU2-INJ-01	Primary	EPA 537M	2B

ATTACHMENT 1

Stage 4 Worksheet

Data Validation Worksheet

Project Name: Former Ft. Ord
OU2 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling

Laboratory Name: SGS - Orlando

SAMPLE CROSS REFERENCE TABLES

Samples reviewed as Stage 4: 2
Samples: 22
Percent Stage 4 **9%**

Sample ID	Laboratory ID	Matrix
1910BOU2064F	FA62220-17	H2O
1910BOU2065F	FA62220-18	H2O

Data Validation Worksheet

INITIAL CALIBRATION - AVERAGE RESPONSE FACTOR

RRF = Ax*Is/Ais*STD

Ax = Area of compound; Is = Concentration of internal standard;
Ais = Area of associated internal standard; STD = Concentration of compound

Date: 3/18/2019
Compound: PFOA ITSD: M8-PFOA

	1	2	3	4	5	6	7	8
STD =	0.5	1	2	5	10	20	50	100
Ax =	2817	5758	11272	27043	52958	107547	267229	498604
Ais =	222345	221022	227282	208189	203690	202524	201495	183541
Is =	20	20	20	20	20	20	20	20
RF =	0.5068	0.5210	0.4959	0.5196	0.5200	0.5310	0.5305	0.5433

Rpt Avg	0.521
Rpt %RSD	2.83
AVG. RF	0.521
SD	0.014744
%RSD=	2.83

Linear Fit

	y	0.0127	0.0261	0.0496	0.1299	0.2600	0.5310	1.3262	2.7166
	x	0.025	0.05	0.1	0.25	0.5	1	2.5	5
Slope (m) =	m	0.5424147							
Intercept (b) =	b	0							
linear R^2 =	r2	0.999879							

Date: 3/18/2019
Compound: PFOS ITSD: M8-PFOS

	1	2	3	4	5	6	7	8
STD =	0.5	1	2	5	10	20	50	100
Ax =	649	1263	2733	6138	12220	24125	61125	113808
Ais =	28319	27340	28599	25891	24727	24876	25394	23384
Is =	20	20	20	20	20	20	20	20
RF =	0.9167	0.9239	0.9556	0.9483	0.9884	0.9698	0.9628	0.9734

Rpt Avg	0.955
Rpt %RSD	2.57
AVG. RF	0.955
SD	0.02453
%RSD=	2.57

Linear Fit

	y	0.0229	0.0462	0.0956	0.2371	0.4942	0.9698	2.4071	4.8669
	x	0.025	0.05	0.1	0.25	0.5	1	2.5	5
Slope (m) =	m	0.9721177							
Intercept (b) =	b	0							
linear R^2 =	r2	0.999969							

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

Data Validation Worksheet

CALIBRATION VERIFICATION

Date:	3/19/2019
Time:	18:08
CCV:	S2Q443-ECC442
Compound:	PFOA
Expected	20.0
Final Conc	19.498
%D	-2.5
RPT	-2.5%

Date:	3/19/2019
Time:	18:08
CCV:	S2Q443-ECC442
Compound:	PFOS
Expected	20.0
Final Conc	19.556
%D	-2.2
RPT	-2.2%

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

Data Validation Worksheet

Lab ID:	FA62220-17	FA62220-17	FA62220-18	FA62220-18
Compound:	PFOA	PFOS	PFOA	PFOS
ITSD:	M8-PFOA	M8-PFOS	M8-PFOA	M8-PFOS
Response in compound:	143912	50969	21299	3337
Response of Internal Standard:	188592	9394	202788	17930
Amount of Internal Standard[1] (ug/L):	20	10	20	20
Dilution factor:	1	2	1	1
Volume of extract injected (mL):	1	1	1	1
% moisture (100 if AQ)	100	100	100	100
Average from ICAL:	0.521	0.955	0.521	0.955
Volume of water (mL):	250	250	250	250
Calculated Concentration (ug/L) for RF	0.117	0.455	0.0161	0.0156
y =	0.76308645	5.425697254	0.10503087	0.18611266
(from curve) b =	0	0	0	0
(from curve) m =	0.54241472	0.972117662	0.54241472	0.97211766
calc X =	1.40683213	5.581317432	0.19363573	0.19145075
Calculated Concentration (ug/L) for Linear	0.113	0.447	0.0155	0.0153
Result Reported (ug/L):	0.113	0.447	0.0156	0.0153

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

Notes:

1) Per the SGS Orlando Chromatography Technical Director (4/2/19): Any dilution under a 20X the isotopes (extracted internals) are not added back in to a concentration of 20ppb. So, the ISTD response at a 2x is lower. We have to tell the software that it is a 2x for the ISTD response and it adjusts the raw data. Then the dilution factor is done in LIMS. So ISTD concentration is 10 not 20 for a 2x.

ATTACHMENT 2

Field Duplicate Relative Percent Differences

Field Duplicate RPD Report

Lab Reporting Batch ID: FA62220 **Laboratory: ACTO**

EDD Filename: FA62220ACTO **eQAPP Name: FtOrd_PFAS**

Method: EPA537M
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	1910BOU2060F	1910BOU2061D			
Perfluorooctanoic acid	0.00252 J	0.004 U	N/A	30.00	No Qualifiers Applied

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	1910BOU2051F	1910BOU2052D			
Perfluorooctanoic acid	0.00245 J	0.004 U	N/A	30.00	No Qualifiers Applied

Project Name and Number: - OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

APPENDIX 1

Laboratory Report

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Ahtna Environmental Inc

OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2

SGS Job Number: FA62220

Sampling Date: 03/07/19

Report to:

Ahtna Environmental Inc
3100 Beacon Blvd
West Sacramento, CA 95691
hdillon@ahtna.net; jeffery.fenton@amecfw.com;
zachary.carroll@amecfw.com; mfisler@ahtna.net;
ATTN: Derek Lieberman

Total number of pages in report: **1205**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

Test results relate only to samples analyzed.

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SGS North America Inc.

Sample Summary

Ahtna Environmental Inc

Job No: FA62220

OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Project No: 8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
FA62220-1	03/07/19	07:30	DA	03/09/19	AQ	Ground Water	1910BOU2048F
FA62220-1D	03/07/19	07:30	DA	03/09/19	AQ	Water Dup/MSD	1910BOU2048F
FA62220-1S	03/07/19	07:30	DA	03/09/19	AQ	Water Matrix Spike	1910BOU2048F
FA62220-2	03/07/19	07:35	DA	03/09/19	AQ	Trip Blank Water	1910BOU2049A
FA62220-3	03/07/19	08:10	DA	03/09/19	AQ	Ground Water	1910BOU2050F
FA62220-4	03/07/19	08:35	DA	03/09/19	AQ	Ground Water	1910BOU2051F
FA62220-5	03/07/19	08:37	DA	03/09/19	AQ	Ground Water	1910BOU2052D
FA62220-6	03/07/19	09:05	DA	03/09/19	AQ	Ground Water	1910BOU2053F
FA62220-7	03/07/19	09:35	DA	03/09/19	AQ	Ground Water	1910BOU2054F
FA62220-8	03/07/19	10:15	DA	03/09/19	AQ	Ground Water	1910BOU2055F
FA62220-9	03/07/19	10:25	DA	03/09/19	AQ	Ground Water	1910BOU2056C
FA62220-10	03/07/19	10:50	DA	03/09/19	AQ	Ground Water	1910BOU2057F
FA62220-11	03/07/19	11:10	DA	03/09/19	AQ	Ground Water	1910BOU2058B

Sample Summary
(continued)

Ahtna Environmental Inc

Job No: FA62220

OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Project No: 8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA62220-12	03/07/19	11:15	DA	03/09/19	AQ	Ground Water	1910BOU2059F
FA62220-13	03/07/19	12:25	DA	03/09/19	AQ	Ground Water	1910BOU2060F
FA62220-14	03/07/19	12:27	DA	03/09/19	AQ	Ground Water	1910BOU2061D
FA62220-15	03/07/19	13:00	DA	03/09/19	AQ	Ground Water	1910BOU2062F
FA62220-16	03/07/19	13:25	DA	03/09/19	AQ	Ground Water	1910BOU2063F
FA62220-17	03/07/19	14:00	DA	03/09/19	AQ	Ground Water	1910BOU2064F
FA62220-18	03/07/19	14:50	DA	03/09/19	AQ	Ground Water	1910BOU2065F
FA62220-19	03/07/19	14:52	DA	03/09/19	AQ	Ground Water	1910BOU2066F
FA62220-20	03/07/19	14:54	DA	03/09/19	AQ	Ground Water	1910BOU2067F
FA62220-21	03/07/19	14:56	DA	03/09/19	AQ	Ground Water	1910BOU2068F
FA62220-22	03/07/19	14:58	DA	03/09/19	AQ	Ground Water	1910BOU2069F

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Ahtna Environmental Inc **Job No** FA62220

Site: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring **Report Date** 3/27/2019 9:46:10

21 Samples, 1 Trip Blank were collected on 03/07/2019 and were received at SGS North America Inc - Orlando on 03/09/2019 properly preserved, at 2.8 Deg. C and intact. These samples received an SGS Orlando job number of FA62220. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Semi-volatiles By Method EPA 537M QSM5.1 B-15

Matrix: AQ **Batch ID:** OP74164

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62220-21MS, FA62220-22DUP were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** OP74180

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62220-1MS, FA62220-1MSD were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** OP74233

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

Sample(s) FA62454-1DUP, FA62454-2MS were used as the QC samples indicated.

All method blanks for this batch meet method specific criteria.

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ariel Hartney, Client Services *(Signature on File)*

Summary of Hits

Job Number: FA62220
Account: Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Collected: 03/07/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA62220-1	**1910BOU2048F**					
Perfluorooctanoic acid		0.00762	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
Perfluorooctanesulfonic acid		0.00790	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-2	**1910BOU2049A**					
No hits reported in this sample.						
FA62220-3	**1910BOU2050F**					
Perfluorooctanoic acid		0.00326 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
Perfluorooctanesulfonic acid		0.00254 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-4	**1910BOU2051F**					
Perfluorooctanoic acid		0.00245 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-5	**1910BOU2052D**					
No hits reported in this sample.						
FA62220-6	**1910BOU2053F**					
Perfluorooctanesulfonic acid		0.00193 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-7	**1910BOU2054F**					
No hits reported in this sample.						
FA62220-8	**1910BOU2055F**					
No hits reported in this sample.						
FA62220-9	**1910BOU2056C**					
No hits reported in this sample.						
FA62220-10	**1910BOU2057F**					
No hits reported in this sample.						
FA62220-11	**1910BOU2058B**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA62220
Account: Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Collected: 03/07/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA62220-12	**1910BOU2059F**					
Perfluorooctanoic acid		0.00309 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
Perfluorooctanesulfonic acid		0.00343 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-13	**1910BOU2060F**					
Perfluorooctanoic acid		0.00252 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-14	**1910BOU2061D**					
No hits reported in this sample.						
FA62220-15	**1910BOU2062F**					
Perfluorooctanesulfonic acid		0.00351 J	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-16	**1910BOU2063F**					
No hits reported in this sample.						
FA62220-17	**1910BOU2064F**					
Perfluorooctanoic acid		0.113	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
Perfluorooctanesulfonic acid		0.447	0.0080	0.0040	ug/l	EPA 537M QSM5.1 B-15
FA62220-18	**1910BOU2065F**					
Perfluorooctanoic acid		0.0156	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
Perfluorooctanesulfonic acid		0.0153	0.0040	0.0020	ug/l	EPA 537M QSM5.1 B-15
FA62220-19	**1910BOU2066F**					
No hits reported in this sample.						
FA62220-20	**1910BOU2067F**					
No hits reported in this sample.						
FA62220-21	**1910BOU2068F**					
No hits reported in this sample.						

Summary of Hits

Job Number: FA62220
Account: Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Collected: 03/07/19

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FA62220-22	**1910BOU2069F**					

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2048F		
Lab Sample ID:	FA62220-1	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27693.D	1	03/18/19 16:16	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.00762	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.00790	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	93%		50-150%
	13C8-PFOS	74%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2049A		
Lab Sample ID:	FA62220-2	**Date Sampled:**	03/07/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27696.D	1	03/18/19 17:04	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	92%		50-150%
	13C8-PFOS	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2050F		
Lab Sample ID:	FA62220-3	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27697.D	1	03/18/19 17:19	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.00326	0.0040	0.0020	0.0010	ug/l	J
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.00254	0.0040	0.0020	0.0015	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	61%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2051F		
Lab Sample ID:	FA62220-4	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q1986.D	1	03/21/19 13:36	NAF	03/20/19 12:00	OP74233	S3Q54
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.00245	0.0040	0.0020	0.0010	ug/l	J
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	90%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2052D		
Lab Sample ID:	FA62220-5	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27699.D	1	03/18/19 17:51	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	88%		50-150%
	13C8-PFOS	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2053F		
Lab Sample ID:	FA62220-6	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27700.D	1	03/18/19 18:07	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.00193	0.0040	0.0020	0.0015	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	96%		50-150%
	13C8-PFOS	71%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2054F		
Lab Sample ID:	FA62220-7	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27703.D	1	03/18/19 18:54	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	71%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2055F		
Lab Sample ID:	FA62220-8	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Q1987.D	1	03/21/19 13:51	NAF	03/20/19 12:00	OP74233	S3Q54
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	86%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2056C		
Lab Sample ID:	FA62220-9	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27705.D	1	03/18/19 19:25	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2057F		
Lab Sample ID:	FA62220-10	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27706.D	1	03/18/19 19:41	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	89%		50-150%
	13C8-PFOS	73%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2058B		
Lab Sample ID:	FA62220-11	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27707.D	1	03/18/19 19:57	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	84%		50-150%
	13C8-PFOS	64%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2059F		
Lab Sample ID:	FA62220-12	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27708.D	1	03/18/19 20:12	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.00309	0.0040	0.0020	0.0010	ug/l	J
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.00343	0.0040	0.0020	0.0015	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	75%		50-150%
	13C8-PFOS	58%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2060F		
Lab Sample ID:	FA62220-13	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27709.D	1	03/18/19 20:28	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.00252	0.0040	0.0020	0.0010	ug/l	J
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	96%		50-150%
	13C8-PFOS	67%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2061D		
Lab Sample ID:	FA62220-14	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27710.D	1	03/18/19 20:44	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	72%		50-150%
	13C8-PFOS	53%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2062F		
Lab Sample ID:	FA62220-15	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27711.D	1	03/18/19 21:00	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.00351	0.0040	0.0020	0.0015	ug/l	J

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	91%		50-150%
	13C8-PFOS	60%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2063F		
Lab Sample ID:	FA62220-16	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27712.D	1	03/18/19 21:15	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	93%		50-150%
	13C8-PFOS	63%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2064F		
Lab Sample ID:	FA62220-17	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27715.D	1	03/18/19 22:03	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2	2Q27752.D	2	03/19/19 17:52	NAF	03/15/19 07:30	OP74180	S2Q443

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2	250 ml	1.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.113	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.447 [a]	0.0080	0.0040	0.0030	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	90%	97%	50-150%
	13C8-PFOS	66%	72%	50-150%

(a) Result is from Run# 2

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2065F		
Lab Sample ID:	FA62220-18	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27751.D	1	03/19/19 17:37	NAF	03/15/19 07:30	OP74180	S2Q443
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0156	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0153	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	97%		50-150%
	13C8-PFOS	69%		50-150%

U = Not detected LOD = Limit of Detection
LOQ = Limit of Quantitation DL = Detection Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2066F		
Lab Sample ID:	FA62220-19	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27717.D	1	03/18/19 22:34	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	95%		50-150%
	13C8-PFOS	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2067F		
Lab Sample ID:	FA62220-20	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27718.D	1	03/18/19 22:50	NAF	03/15/19 07:30	OP74180	S2Q442
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	98%		50-150%
	13C8-PFOS	66%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2068F		
Lab Sample ID:	FA62220-21	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27657.D	1	03/15/19 17:09	NAF	03/14/19 07:00	OP74164	S2Q441
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	72%		50-150%
	13C8-PFOS	52%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	1910BOU2069F		
Lab Sample ID:	FA62220-22	**Date Sampled:**	03/07/19
Matrix:	AQ - Ground Water	**Date Received:**	03/09/19
Method:	EPA 537M QSM5.1 B-15 EPA 537 MOD	**Percent Solids:**	n/a
Project:	OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2Q27659.D	1	03/15/19 17:40	NAF	03/14/19 07:00	OP74164	S2Q441
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYLCARBOXYLIC ACIDS							
335-67-1	Perfluorooctanoic acid	0.0020 U	0.0040	0.0020	0.0010	ug/l	
PERFLUOROALKYLSULFONATES							
1763-23-1	Perfluorooctanesulfonic acid	0.0020 U	0.0040	0.0020	0.0015	ug/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOA	75%		50-150%
	13C8-PFOS	52%		50-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits

Seq. No. 3767

CA0S1564
1670 Corporate Circle
Suite 201
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

1 OF 3

~~FA62220~~ Wood.

FA62220

Lab: SGS Accutest

Samplers: D. Allbaut

Job Number: 84181913601.05.053

Name/Location: Fort Ord Basewide Groundwater Monitoring - OU2 PFOS

Project Manager: Jeff Fenton

Recorder: (Signature Required)

MATRIX			# CONTAINERS						SAMPLE NUMBER	DATE				STATION DESCRIPTION		ANALYSIS REQUESTED			
Water	Soil	Air	Unpres.	H2SO4	HNO3	HCL				YR	MO	DAY	TIME		DEPTH	8260 - SIM	8270	TITLE 22 METALS	PFOA/PFOS
X			4						191ØBOU2Ø48F	19	03	07	0730						X MS/MSD limited volume
X			2						191ØBOU2Ø49A	19	03	07	0735						X
X			2						191ØBOU2Ø50F	19	03	07	0810						X
X			2						191ØBOU2Ø51F	19	03	07	0835						X
X			2						191ØBOU2Ø52D	19	03	07	0837						X limited volume
X			2						191ØBOU2Ø53F	19	03	07	0905						X limited volume
X			12						191ØBOU2Ø54F	19	03	07	0935						X limited volume
X			2						191ØBOU2Ø55F	19	03	07	1015						X
X			2						191ØBOU2Ø56C	19	03	07	1025						X
X			12						191ØBOU2Ø57F	19	03	07	1050						X limited volume

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#:

TAT: Standard

Comments: Field Filtered Y / (N)

CHAIN OF CUSTODY RECORD

Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
	David Allbaut	Wood	3/7/19 1600
Received By (Signature):	(Print Name)	(Company)	(Date/Time)
	LEE BAUTISTA	SGS	3/8/19 1150
Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
	LEE BAUTISTA	SGS	3/8/19 1500
Received By (Signature):	(Print Name)	(Company)	(Date/Time)
FedEx			3/8/19 1500
Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
FY			
Received By (Signature):	(Print Name)	(Company)	(Date/Time)
	Peter H	SGS	3/9/19 915

Method of Shipment:

2.8

White - Laboratory Copy Yellow - Project Office Copy Pink - Field of Office Copy F1008-1

FA62220: Chain of Custody
Page 1 of 4

Seq. No. 3786

CA051564
1670 Corporate Circle
Suite 201
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

2 OF 3

Lab: SGS Accutest

Samplers: D. Allbut

Wood.

FA62220

Job Number: 84181911360.05.053

Name/Location: Fort Ord Basewide Groundwater Monitoring - OU2 PFOS

Project Manager: Jeff Fenton

Recorder: (Signature Required)

	MATRIX			# CONTAINERS						SAMPLE NUMBER	DATE				STATION DESCRIPTION		ANALYSIS REQUESTED		
	Water	Soil	Air	Unpres.	H2SO4	HNO3	HCL				YR	MO	DAY	TIME		DEPTH	8260	8270	TITLE 22 METALS PFOA/PFOS
1	X			2						191ØBOU2058B	19	03	07	1110					X
2	X			2						191ØBOU2059F	19	03	07	1115					X
3	X			2						191ØBOU2060F	19	03	07	1225					X
4	X			2						191ØBOU2061D	19	03	07	1227					X
5	X			2						191ØBOU2062F	19	03	07	1300					X
6	X			2						191ØBOU2063F	19	03	07	1325					X
7	X			2						191ØBOU2064F	19	03	07	1400					X

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#:

TAT: Standard

Comments: Field Filtered Y / (N)

CHAIN OF CUSTODY RECORD

	(Signature)	(Print Name)	(Company)	(Date/Time)
Relinquished By:		David Allbut	Wood	3/7/19 1600
Received By:		LEE BAUTISTA	SGS	3/8/19 1130
Relinquished By:		LEE BAUTISTA	SGS	3/8/19 1500
Received By:	FEDEX			3/8/19 1500
Relinquished By:	FY			
Received By:		Peter H	SGS	3/9/19 915

Method of Shipment:

White - Laboratory Copy Yellow - Project Office Copy Pink - Field of Office Copy F1008-1

5.1 5

FA62220: Chain of Custody
Page 2 of 4

CADS1564

3 of 3

wood.

Seq. No. 3787

Lab: SGS-Accutest

1670 Corporate Circle
Suite 201
Petaluma, CA 94954
(707) 793-3800

CHAIN OF CUSTODY FORM

Samplers: D. Allbut

FA62220

Job Number: 8418191360.05.053

Name/Location: Fort Ord Basewide Groundwater Monitoring – OU2 PFOS

Project Manager: Jeff Fenton

Recorder: [signature] (Signature Required)

MATRIX Water	Soil	Air		# CONTAINERS Unpres.	H2SO4	HNO3	HCL		SAMPLE NUMBER	DATE YR	MO	DAY	TIME	STATION DESCRIPTION	DEPTH	8260	8270	TITLE 22 METALS	PFOS/PFOA
X				2					1910BOU2065F	19	03	07	1450						X
X				2					1910BOU2066F	19	03	07	1452						X
X				2					1910BOU2067F	19	03	07	1454						X
X				2					1910BOU2068F	19	03	07	1456						X
X				2					1910BOU2069F	19	03	07	1458						X

ANALYSIS REQUESTED

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#:

TAT: Standard

Comments: Field Filtered Y / (N)

CHAIN OF CUSTODY RECORD

Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
[signature]	David Allbut	Wood	3/7/19

Received By (Signature):	(Print Name)	(Company)	(Date/Time)
[signature]	Lee Baltista	SGS	3/8/19 1150

Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
[signature]	Lee Baltista	SGS	3/8/19 1500

Received By (Signature):	(Print Name)	(Company)	(Date/Time)
FedEx			3/8/19 1500

Relinquished By (Signature):	(Print Name)	(Company)	(Date/Time)
FX			

Received By (Signature):	(Print Name)	(Company)	(Date/Time)
[signature]	Peter H	SGS	3/9/19 9:5

Method of Shipment:

White - Laboratory Copy Yellow - Project Office Copy Pink - Field of Office Copy F1008-1

FA62220: Chain of Custody
Page 3 of 4

SGS Sample Receipt Summary

Job Number: FA62220 **Client:** AHTNA **Project:** OU2 (PFOA/PFOS)-Fort Ord GWM 1Q2019

Date / Time Received: 3/9/2019 9:15:00 AM **Delivery Method:** FedEx **Airbill #'s:** 774658965347

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☑		☐	☐
2. Trip Blank listed on COC	☑		☐	☐

	W	or	S	N/A
3. Type Of TB Received	☑		☐	☐

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☐		☑	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 3/9/2019 9:15:00 AM Reviewer: PH Date: 3/11/2019

FA62220: Chain of Custody
Page 4 of 4

QC Evaluation: DOD QSM5 Limits

Job Number: FA62220
Account: Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring
Collected: 03/07/19

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No Exceptions found.

* Sample used for QC is not from job FA62220

MS Semi-volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Injection Standard Area Summaries
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries

Instrument Blank

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q441-IBLK	2Q27626.D	1	03/15/19	NAF	n/a	n/a	S2Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	78%	50-150%
	13C5-PFPeA	79%	50-150%
	13C5-PFHxA	78%	50-150%
	13C4-PFHpA	79%	50-150%
	13C8-PFOA	78%	50-150%
	13C9-PFNA	83%	50-150%
	13C6-PFDA	85%	50-150%
	13C7-PFUnDA	80%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	66%	50-150%
	13C3-PFBS	81%	50-150%
	13C3-PFHxS	80%	50-150%
	13C8-PFOS	85%	50-150%
	13C8-FOSA	87%	50-150%
	d3-MeFOSAA	81%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	74%	50-150%
	13C2-8:2FTS	75%	50-150%

Instrument Blank

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q442-IBLK	2Q27675.D	1	03/18/19	NAF	n/a	n/a	S2Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-19, FA62220-20

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	104%	50-150%
	13C5-PFHxA	103%	50-150%
	13C4-PFHpA	105%	50-150%
	13C8-PFOA	107%	50-150%
	13C9-PFNA	106%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	108%	50-150%
	13C2-PFDoDA	109%	50-150%
	13C2-PFTeDA	108%	50-150%
	13C3-PFBS	102%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	103%	50-150%
	13C8-FOSA	107%	50-150%
	d3-MeFOSAA	104%	50-150%
	13C2-4:2FTS	97%	50-150%
	13C2-6:2FTS	100%	50-150%
	13C2-8:2FTS	99%	50-150%

Instrument Blank

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S2Q443-IBLK	2Q27725.D	1	03/19/19	NAF	n/a	n/a	S2Q443

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-17, FA62220-18

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	109%	50-150%
	13C5-PFPeA	107%	50-150%
	13C5-PFHxA	107%	50-150%
	13C4-PFHpA	107%	50-150%
	13C8-PFOA	109%	50-150%
	13C9-PFNA	108%	50-150%
	13C6-PFDA	112%	50-150%
	13C7-PFUnDA	112%	50-150%
	13C2-PFDoDA	110%	50-150%
	13C2-PFTeDA	114%	50-150%
	13C3-PFBS	108%	50-150%
	13C3-PFHxS	108%	50-150%
	13C8-PFOS	112%	50-150%
	13C8-FOSA	115%	50-150%
	d3-MeFOSAA	109%	50-150%
	13C2-4:2FTS	100%	50-150%
	13C2-6:2FTS	102%	50-150%
	13C2-8:2FTS	103%	50-150%

Instrument Blank

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S3Q54-IBLK	3Q1980.D	1	03/21/19	NAF	n/a	n/a	S3Q54

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	101%	50-150%
	13C5-PFPeA	101%	50-150%
	13C5-PFHxA	101%	50-150%
	13C4-PFHpA	102%	50-150%
	13C8-PFOA	103%	50-150%
	13C9-PFNA	105%	50-150%
	13C6-PFDA	107%	50-150%
	13C7-PFUnDA	106%	50-150%
	13C2-PFDoDA	105%	50-150%
	13C2-PFTeDA	107%	50-150%
	13C3-PFBS	100%	50-150%
	13C3-PFHxS	102%	50-150%
	13C8-PFOS	102%	50-150%
	13C8-FOSA	106%	50-150%
	d3-MeFOSAA	105%	50-150%
	13C2-4:2FTS	94%	50-150%
	13C2-6:2FTS	98%	50-150%
	13C2-8:2FTS	96%	50-150%

Method Blank Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74164-MB	2Q27656.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C4-PFBA	73%	50-150%
	13C5-PFPeA	75%	50-150%
	13C5-PFHxA	75%	50-150%
	13C4-PFHpA	75%	50-150%
	13C8-PFOA	80%	50-150%
	13C9-PFNA	84%	50-150%
	13C6-PFDA	86%	50-150%
	13C7-PFUnDA	89%	50-150%
	13C2-PFDoDA	87%	50-150%
	13C2-PFTeDA	62%	50-150%
	13C3-PFBS	74%	50-150%
	13C3-PFHxS	71%	50-150%
	13C8-PFOS	75%	50-150%
	13C8-FOSA	78%	50-150%
	d3-MeFOSAA	78%	50-150%
	13C2-4:2FTS	72%	50-150%
	13C2-6:2FTS	78%	50-150%
	13C2-8:2FTS	80%	50-150%

Method Blank Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74180-MB	2Q27692.D	1	03/18/19	NAF	03/15/19	OP74180	S2Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.0010	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.0015	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	93%	50-150%
	13C8-PFOS	79%	50-150%

Method Blank Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74233-MB	3Q1985.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

CAS No.	Compound	Result	RL	MDL	Units	Q
335-67-1	Perfluorooctanoic acid	ND	0.0077	0.0019	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0077	0.0029	ug/l	

CAS No.	ID Standard Recoveries		Limits
	13C8-PFOA	99%	50-150%
	13C8-PFOS	90%	50-150%

Blank Spike Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74164-BS	2Q27655.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
335-67-1	Perfluorooctanoic acid	0.08	0.0775	97	71-133
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0737	92	65-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	69%	50-150%
	13C5-PFPeA	71%	50-150%
	13C5-PFHxA	71%	50-150%
	13C4-PFHpA	71%	50-150%
	13C8-PFOA	73%	50-150%
	13C9-PFNA	76%	50-150%
	13C6-PFDA	75%	50-150%
	13C7-PFUnDA	74%	50-150%
	13C2-PFDoDA	73%	50-150%
	13C2-PFTeDA	54%	50-150%
	13C3-PFBS	72%	50-150%
	13C3-PFHxS	67%	50-150%
	13C8-PFOS	70%	50-150%
	13C8-FOSA	71%	50-150%
	d3-MeFOSAA	68%	50-150%
	13C2-4:2FTS	73%	50-150%
	13C2-6:2FTS	76%	50-150%
	13C2-8:2FTS	75%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74180-BS	2Q27691.D	1	03/18/19	NAF	03/15/19	OP74180	S2Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
335-67-1	Perfluorooctanoic acid	0.08	0.0826	103	71-133
1763-23-1	Perfluorooctanesulfonic acid	0.08	0.0810	101	65-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	87%	50-150%
	13C8-PFOS	82%	50-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74233-BS	3Q1984.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
335-67-1	Perfluorooctanoic acid	0.154	0.163	106	71-133
1763-23-1	Perfluorooctanesulfonic acid	0.154	0.155	101	65-140

CAS No.	ID Standard Recoveries	BSP	Limits
	13C8-PFOA	98%	50-150%
	13C8-PFOS	92%	50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74164-MS	2Q27658.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441
FA62220-21	2Q27657.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

CAS No.	Compound	FA62220-21 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
335-67-1	Perfluorooctanoic acid	0.0040	U	0.08	0.0740	93	71-133
1763-23-1	Perfluorooctanesulfonic acid	0.0040	U	0.08	0.0696	87	65-140

CAS No.	ID Standard Recoveries	MS	FA62220-21	Limits
	13C4-PFBA	75%		50-150%
	13C5-PFPeA	76%		50-150%
	13C5-PFHxA	76%		50-150%
	13C4-PFHpA	78%		50-150%
	13C8-PFOA	82%	72%	50-150%
	13C9-PFNA	78%		50-150%
	13C6-PFDA	74%		50-150%
	13C7-PFUnDA	79%		50-150%
	13C2-PFDoDA	78%		50-150%
	13C2-PFTeDA	60%		50-150%
	13C3-PFBS	75%		50-150%
	13C3-PFHxS	72%		50-150%
	13C8-PFOS	64%	52%	50-150%
	13C8-FOSA	72%		50-150%
	d3-MeFOSAA	68%		50-150%
	13C2-4:2FTS	80%		50-150%
	13C2-6:2FTS	91%		50-150%
	13C2-8:2FTS	75%		50-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74233-MS	3Q1991.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54
FA62454-2	3Q1990.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

CAS No.	Compound	FA62454-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
335-67-1	Perfluorooctanoic acid	0.0316		0.154	0.202	111	71-133
1763-23-1	Perfluorooctanesulfonic acid	0.524		0.154	0.676	99	65-140

CAS No.	ID Standard Recoveries	MS	FA62454-2	Limits
	13C8-PFOA	98%	96%	50-150%
	13C8-PFOS	89%	83%	50-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74180-MS	2Q27694.D	1	03/18/19	NAF	03/15/19	OP74180	S2Q442
OP74180-MSD	2Q27695.D	1	03/18/19	NAF	03/15/19	OP74180	S2Q442
FA62220-1	2Q27693.D	1	03/18/19	NAF	03/15/19	OP74180	S2Q442

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

CAS No.	Compound	FA62220-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
335-67-1	Perfluorooctanoic acid	0.00762		0.08	0.0909	104	0.08	0.0836	95	8	71-133/30
1763-23-1	Perfluorooctanesulfonic acid	0.00790		0.08	0.0920	105	0.08	0.0837	95	9	65-140/30

CAS No.	ID Standard Recoveries	MS	MSD	FA62220-1	Limits
	13C8-PFOA	84%	88%	93%	50-150%
	13C8-PFOS	70%	70%	74%	50-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74164-DUP	2Q27660.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441
FA62220-22	2Q27659.D	1	03/15/19	NAF	03/14/19	OP74164	S2Q441

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

CAS No.	Compound	FA62220-22 ug/l	Q	DUP ug/l	Q	RPD	Limits
335-67-1	Perfluorooctanoic acid	0.0040	U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0040	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FA62220-22	Limits
	13C4-PFBA	59%		50-150%
	13C5-PFPeA	60%		50-150%
	13C5-PFHxA	60%		50-150%
	13C4-PFHpA	62%		50-150%
	13C8-PFOA	68%	75%	50-150%
	13C9-PFNA	64%		50-150%
	13C6-PFDA	62%		50-150%
	13C7-PFUnDA	65%		50-150%
	13C2-PFDoDA	65%		50-150%
	13C2-PFTeDA	46%* [a]		50-150%
	13C3-PFBS	65%		50-150%
	13C3-PFHxS	61%		50-150%
	13C8-PFOS	53%	52%	50-150%
	13C8-FOSA	59%		50-150%
	d3-MeFOSAA	55%		50-150%
	13C2-4:2FTS	63%		50-150%
	13C2-6:2FTS	74%		50-150%
	13C2-8:2FTS	58%		50-150%

(a) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP74233-DUP	3Q1989.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54
FA62454-1	3Q1988.D	1	03/21/19	NAF	03/20/19	OP74233	S3Q54

The QC reported here applies to the following samples: **Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

CAS No.	Compound	FA62454-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
335-67-1	Perfluorooctanoic acid	0.0310		0.0320		3	30
1763-23-1	Perfluorooctanesulfonic acid	0.511		0.535		5	30

CAS No.	ID Standard Recoveries	DUP	FA62454-1	Limits
	13C8-PFOA	95%	102%	50-150%
	13C8-PFOS	83%	91%	50-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S2Q441-CC439	**Injection Date:**	03/15/19
Lab File ID:	2Q27653.D	**Injection Time:**	16:06
Instrument ID:	GCMS2Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	358299	6.87	52649	7.46
Check Std [b]	349896	6.45	49627	7.05
Upper Limit [c]	537449	7.45	78974	8.05
Lower Limit [d]	179150	5.45	26325	6.05

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
OP74164-BS	295452	6.45	41803	7.05
OP74164-MB	310144	6.45	42666	7.05
FA62220-21	321197	6.45	40464	7.05
OP74164-MS	326757	6.45	43017	7.05
FA62220-22	323680	6.45	41340	7.05
OP74164-DUP	310735	6.45	40520	7.05
S2Q441-ECC439	327096	6.45	46482	7.05

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S2Q439-ICC439 2Q27568.D 03/13/19 12:03
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S2Q442-CC442	**Injection Date:**	03/18/19
Lab File ID:	2Q27688.D	**Injection Time:**	14:57
Instrument ID:	GCMS2Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	270918	6.43	43615	7.05
Check Std [b]	303819	6.43	46779	7.04
Upper Limit [c]	406377	7.43	65423	8.04
Lower Limit [d]	135459	5.43	21808	6.04

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
OP74180-BS	250146	6.43	37068	7.05
OP74180-MB	252927	6.43	36813	7.05
FA62220-1	284864	6.43	40120	7.04
OP74180-MS	249290	6.43	36670	7.04
OP74180-MSD	240011	6.43	34143	7.04
FA62220-2	288171	6.43	39540	7.04
FA62220-3	275902	6.43	38892	7.04
FA62220-5	271948	6.43	37601	7.04
FA62220-6	272791	6.43	37188	7.04

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S2Q442-CC442	**Injection Date:**	03/18/19
Lab File ID:	2Q27701.D	**Injection Time:**	18:22
Instrument ID:	GCMS2Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	270918	6.43	43615	7.05
Check Std [b]	315380	6.43	47865	7.04
Upper Limit [c]	406377	7.43	65423	8.04
Lower Limit [d]	135459	5.43	21808	6.04

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
FA62220-7	263784	6.43	36605	7.04
FA62220-9	258399	6.43	35871	7.04
FA62220-10	252566	6.43	35615	7.04
FA62220-11	242545	6.43	33698	7.05
FA62220-12	216370	6.43	30828	7.05
FA62220-13	286411	6.43	38937	7.05
FA62220-14	218359	6.43	29899	7.05
FA62220-15	277830	6.43	37290	7.05
FA62220-16	283404	6.43	38941	7.05

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S2Q442-CC442	**Injection Date:**	03/18/19
Lab File ID:	2Q27713.D	**Injection Time:**	21:31
Instrument ID:	GCMS2Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	270918	6.43	43615	7.05
Check Std [b]	304907	6.43	45909	7.05
Upper Limit [c]	406377	7.43	65423	8.05
Lower Limit [d]	135459	5.43	21808	6.05

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
FA62220-17	275006	6.43	37581	7.04
FA62220-19	266068	6.43	35885	7.04
FA62220-20	278424	6.43	37347	7.04
S2Q442-ECC442	310379	6.43	46264	7.04

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S2Q443-CC442	**Injection Date:**	03/19/19
Lab File ID:	2Q27742.D	**Injection Time:**	15:15
Instrument ID:	GCMS2Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	270918	6.43	43615	7.05
Check Std [b]	302137	6.43	46798	7.05
Upper Limit [c]	406377	7.43	65423	8.05
Lower Limit [d]	135459	5.43	21808	6.05

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
OP74196-BS				
OP74196-MB				
FA62366-1				
OP74196-MS				
OP74196-MSD				
FA62220-18	276743	6.43	39253	7.05
FA62220-17	316900	6.45	44894	7.05
S2Q443-ECC442	303791	6.43	46509	7.05

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Injection Standard Area Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Check Std:	S3Q54-ICC54	**Injection Date:**	03/21/19
Lab File ID:	3Q1977.D	**Injection Time:**	11:10
Instrument ID:	GCMS3Q	**Method:**	EPA 537M QSM5.1 B-15

	IS 1 AREA	RT	IS 2 AREA	RT
Initial Cal [a]	403246	6.62	120795	7.20
Check Std [b]	403246	6.62	120795	7.20
Upper Limit [c]	604869	7.62	181193	8.20
Lower Limit [d]	201623	5.62	60398	6.20

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT
S3Q54-IBLK	435894	6.62	129273	7.20
S3Q54-IBLK	435894	6.62	129273	7.20
OP74233-BS	387619	6.62	117123	7.20
OP74233-MB	405989	6.62	118878	7.20
FA62220-4	406659	6.61	120535	7.18
FA62220-8	400221	6.61	118438	7.20
FA62454-1	406717	6.61	114853	7.18
OP74233-DUP	405278	6.61	113003	7.20
FA62454-2	387407	6.61	109076	7.18
OP74233-MS	399248	6.61	114135	7.18

IS 1 = 13C2-PFOA
IS 2 = 13C4-PFOS

(a) Initial Cal is: S3Q54-ICC54 3Q1977.D 03/21/19 11:10
(b) Check Std Limit = -50 to + 50% of initial cal area.
(c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
(d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

Isotope Dilution Standard Recovery Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Method: EPA 537M QSM5.1 B-15 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
FA62220-1	2Q27693.D	93	74
FA62220-2	2Q27696.D	92	66
FA62220-3	2Q27697.D	91	61
FA62220-4	3Q1986.D	91	90
FA62220-5	2Q27699.D	88	63
FA62220-6	2Q27700.D	96	71
FA62220-7	2Q27703.D	91	71
FA62220-8	3Q1987.D	91	86
FA62220-9	2Q27705.D	91	63
FA62220-10	2Q27706.D	89	73
FA62220-11	2Q27707.D	84	64
FA62220-12	2Q27708.D	75	58
FA62220-13	2Q27709.D	96	67
FA62220-14	2Q27710.D	72	53
FA62220-15	2Q27711.D	91	60
FA62220-16	2Q27712.D	93	63
FA62220-17	2Q27752.D	97	72
FA62220-17	2Q27715.D	90	66
FA62220-18	2Q27751.D	97	69
FA62220-19	2Q27717.D	95	66
FA62220-20	2Q27718.D	98	66
FA62220-21	2Q27657.D	72	52
FA62220-22	2Q27659.D	75	52
OP74164-BS	2Q27655.D	73	70
OP74164-DUP	2Q27660.D	68	53
OP74164-MB	2Q27656.D	80	75
OP74164-MS	2Q27658.D	82	64
OP74180-BS	2Q27691.D	87	82
OP74180-MB	2Q27692.D	93	79
OP74180-MS	2Q27694.D	84	70
OP74180-MSD	2Q27695.D	88	70
OP74233-BS	3Q1984.D	98	92
OP74233-DUP	3Q1989.D	95	83
OP74233-MB	3Q1985.D	99	90
OP74233-MS	3Q1991.D	98	89
S2Q441-IBLK	2Q27626.D	78	85
S2Q442-IBLK	2Q27675.D	107	103
S2Q443-IBLK	2Q27725.D	109	112
S3Q54-IBLK	3Q1980.D	103	102

Isotope Dilution Standard Recovery Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Method: EPA 537M QSM5.1 B-15 **Matrix:** AQ

Samples and QC shown here apply to the above method

Isotope Dilution Standards	Recovery Limits

Isotope Dilution Standards	Recovery Limits
S1 = 13C8-PFOA	50-150%
S2 = 13C8-PFOS	50-150%

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q439-ICC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27568.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Method Path	D:\MassHunter\damethods
Method File	ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name	D:\MassHunter\Data\0313_ID_GENX_S2Q439\QuantResults\S2Q439.batch.bin
Last Calib Update	3/13/2019 1:11:01 PM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d	3/13/2019 10:44:33 AM	3/13/2019 1:11:01 PM
2	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d	3/13/2019 11:00:17 AM	3/13/2019 1:11:01 PM
3	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d	3/13/2019 11:16:00 AM	3/13/2019 1:11:01 PM
4	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d	3/13/2019 11:31:44 AM	3/13/2019 1:11:01 PM
5	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d	3/13/2019 11:47:28 AM	3/13/2019 1:11:01 PM
6	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d	3/13/2019 12:03:12 PM	3/13/2019 1:11:01 PM
7	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d	3/13/2019 12:18:56 PM	3/13/2019 1:11:01 PM
8	D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d	3/13/2019 12:34:40 PM	3/13/2019 1:11:01 PM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
S 13C4-PFBA	Linear	8956	9063	8962	8821	8773	8019	8374	8378	8668	4.253
S 13C5-PFPeA	Linear	7399	7546	7411	7317	7270	6632	6930	6866	7172	4.480
S 13C3-PFBS	Linear	1247	1280	1249	1233	1226	1119	1169	1164	1211	4.480
S 13C2-4:2FTS	Linear	4043	4084	4088	3996	4009	3802	4343	4846	4151	7.646
S 13C5-PFHxA	Linear	10616	10754	10678	10491	10440	9481	9907	9686	10257	4.793
S 13C3-HFPO-DA	Linear	2114	2162	2171	2166	2108	1943	1843	1744	2031	8.178
S 13C4-PFHpA	Linear	14961	15319	15048	14716	14640	13293	13796	13401	14397	5.461
S 13C3-PFHxS	Linear	1396	1450	1428	1413	1388	1260	1297	1264	1362	5.599
S 13C2-6:2FTS	Linear	4333	4359	4341	4297	4285	4046	4423	4787	4359	4.711
S 13C8-PFOA	Linear	15646	15984	15714	15511	15176	13826	13944	13331	14892	6.893
S 13C8-FOSA	Linear	6102	6242	6129	5968	5928	5283	5220	4690	5695	9.817
S 13C8-PFOS	Linear	1724	1744	1712	1703	1713	1535	1573	1527	1654	5.561
S 13C9-PFNA	Linear	14945	15153	15032	14802	14638	13359	13642	13082	14331	5.801
S d3-MeFOSAA	Linear	2479	2474	2468	2457	2465	2222	2286	2279	2391	4.539
S 13C6-PFDA	Linear	19254	19657	19645	19342	19196	17236	17379	16403	18514	6.972
S 13C2-8:2FTS	Linear	2716	2752	2730	2773	2786	2654	2964	3338	2839	7.769
S 13C7-PFUnDA	Linear	24620	25059	25163	24843	24607	22309	22967	22077	23956	5.361
S 13C2-PFDoDA	Linear	28057	28726	29005	28538	28469	26452	27180	26862	27911	3.412
S 13C2-PFTeDA	Linear	19389	20412	20121	20123	19586	16725	19033	19257	19331	5.986
I 13C2-PFOA				---------- ISTD ----------							
S M2-PFOA	Linear	1.0004	1.0011	1.0005	1.0012	1.0008	1.0009	1.0013	1.0007	1.0009	0.032
I 13C4-PFOS				---------- ISTD ----------							
S M4-PFOS	Linear	1.0001	1.0002	1.0005	0.9996	1.0003	0.9992	1.0004	1.0014	1.0002	0.064
I M4-PFBA				---------- ISTD ----------							
T PFBA	Linear	0.2002	0.1922	0.1838	0.1878	0.1846	0.1920	0.1910	0.1956	0.1909	2.872
I M5-PFPeA				---------- ISTD ----------							
T PFPeA	Linear	0.9827	0.9024	0.8595	0.8637	0.8540	0.8864	0.8897	0.9147	0.8942	4.660

Generated at 1:11 PM on 3/13/2019

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q439-ICC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27568.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-PFHxA						ISTD					
T PFHxA	Linear	0.3787	0.3536	0.3241	0.3314	0.3301	0.3442	0.3378	0.3484	0.3435	5.048
I M4-PFHpA						ISTD					
T PFHpA	Linear	0.9408	0.9019	0.8734	0.8992	0.8887	0.9247	0.9188	0.9439	0.9114	2.735
I M8-PFOA						ISTD					
T ADONA	Quadratic	0.9988	0.9817	0.9655	0.9805	0.9855	1.0347	1.0628	1.1209	1.0163	5.229
T PFOA	Linear	0.5930	0.5281	0.5146	0.5184	0.5186	0.5412	0.5423	0.5488	0.5381	4.753
I M9-PFNA						ISTD					
T PFNA	Linear	0.6594	0.6218	0.5740	0.5999	0.6030	0.6401	0.6323	0.6522	0.6229	4.657
I M6-PFDA						ISTD					
T 9Cl-PF3ONS	Quadratic	0.0774	0.0755	0.0697	0.0724	0.0700	0.0747	0.0766	0.0810	0.0747	5.157
T PFDA	Linear	0.4574	0.4189	0.3932	0.3973	0.4013	0.4243	0.4178	0.4235	0.4167	4.909
I M7-PFUnDA						ISTD					
T PFUnDA	Linear	0.4150	0.3914	0.3916	0.3992	0.3937	0.4188	0.4124	0.4268	0.4061	3.403
I M2-PFDoDA						ISTD					
T 11Cl-PF3OUdS	Linear	0.2765	0.2448	0.2408	0.2446	0.2479	0.2532	0.2532	0.2543	0.2519	4.394
T PFDoDA	Linear	0.4768	0.4507	0.4362	0.4462	0.4427	0.4638	0.4632	0.4707	0.4563	3.158
I M2-PFTeDA						ISTD					
T PFTrDA	Linear	0.7810	0.7196	0.6889	0.7168	0.7216	0.7609	0.7478	0.7519	0.7360	4.011
T PFTeDA	Linear	0.7366	0.6758	0.6208	0.6368	0.6490	0.6657	0.6710	0.6867	0.6678	5.274
I M8-FOSA						ISTD					
T FOSA	Quadratic	0.5288	0.4542	0.4369	0.4520	0.4526	0.4645	0.4632	0.4816	0.4667	6.036
I M3-PFBS						ISTD					
T PFBS	Linear	1.6809	1.6659	1.6030	1.5844	1.5783	1.6304	1.6313	1.6593	1.6292	2.345
T PFPeS	Linear	1.1467	1.1128	1.0985	1.1199	1.0913	1.1431	1.1237	1.1328	1.1211	1.768
I M3-PFHxS						ISTD					
T PFHxS	Linear	1.3257	1.1312	1.1469	1.1163	1.1051	1.1645	1.1654	1.1996	1.1693	5.987
T PFHpS	Linear	1.0118	0.9743	0.9752	0.9925	1.0014	1.0419	1.0128	1.0121	1.0028	2.222
I M8-PFOS						ISTD					
T PFOS	Linear	1.1929	1.0249	1.0304	0.9744	0.9441	0.9982	1.0041	1.0326	1.0252	7.238
T PFNS	Linear	0.8268	0.7339	0.7431	0.7633	0.7143	0.7721	0.7490	0.7480	0.7563	4.423
T PFDS	Linear	0.4108	0.4150	0.4006	0.3770	0.3794	0.4028	0.3932	0.3955	0.3968	3.415
I M2-4:2FTS						ISTD					
T 4:2FTS	Avg RF	0.6325	0.6019	0.5731	0.6073	0.5935	0.6009	0.5434	0.5021	0.5818	7.126
I M2-6:2FTS						ISTD					

Generated at 1:11 PM on 3/13/2019

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q439-ICC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27568.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T 6:2FTS	Avg RF	0.6087	0.5331	0.5082	0.5220	0.5050	0.5155	0.4737	0.4250	0.5114	10.190
						ISTD					
I M2-8:2FTS											
T 8:2FTS	Avg RF	0.6246	0.5175	0.5770	0.5195	0.5293	0.5233	0.4910	0.4435	0.5282	10.229
						ISTD					
I M3-MeFOSAA											
T MeFOSAA	Quadratic	0.5934	0.5122	0.5483	0.5123	0.5129	0.5329	0.5413	0.5550	0.5385	5.185
T EtFOSAA	Quadratic	0.4930	0.4534	0.4595	0.4412	0.4294	0.4559	0.4294	0.4201	0.4477	5.181
						ISTD					
I M3-HFPO-DA											
T HFPO-DA	Linear	1.3169	1.2287	1.1800	1.1758	1.1776	1.1988	1.2201	1.2125	1.2138	3.815

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q439-ICC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27568.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	Curve Fit R2
T PFBA	Linear	y = 0.194495 * x	0.999826
S 13C4-PFBA	Linear	y = 8668.293220 * x	0.000000
T PFPeA	Linear	y = 0.908479 * x	0.999746
S 13C5-PFPeA	Linear	y = 7171.534783 * x	0.000000
S 13C3-PFBS	Linear	y = 1210.868273 * x	0.000000
T PFBS	Linear	y = 1.652262 * x	0.999896
S 13C2-4:2FTS	Linear	y = 4151.435828 * x	0.000000
S 13C5-PFHxA	Linear	y = 10256.589849 * x	0.000000
T PFHxA	Linear	y = 0.346056 * x	0.999749
T PFPeS	Linear	y = 1.131047 * x	0.999965
T HFPO-DA	Linear	y = 1.213220 * x	0.999970
S 13C3-HFPO-DA	Linear	y = 2031.292129 * x	0.000000
S 13C4-PFHpA	Linear	y = 14396.740274 * x	0.000000
T PFHpA	Linear	y = 0.937951 * x	0.999786
S 13C3-PFHxS	Linear	y = 1362.070727 * x	0.000000
T PFHxS	Linear	y = 1.191071 * x	0.999712
T ADONA	Quadratic	y = 0.023602 * x ^ 2 + 1.003062 * x	0.999987
S 13C2-6:2FTS	Linear	y = 4358.899629 * x	0.000000
S 13C8-PFOA	Linear	y = 14891.518157 * x	0.000000
S M2-PFOA	Linear	y = 1.000869 * x	0.000000
T PFOA	Linear	y = 0.547049 * x	0.999920
T PFHpS	Linear	y = 1.013039 * x	0.999958
S 13C8-FOSA	Linear	y = 5695.319136 * x	0.000000
T FOSA	Quadratic	y = 0.006387 * x ^ 2 + 0.449415 * x	0.999977
S 13C8-PFOS	Linear	y = 1653.953870 * x	0.000000
S M4-PFOS	Linear	y = 1.000220 * x	0.000000
T PFOS	Linear	y = 1.025296 * x	0.999705
S 13C9-PFNA	Linear	y = 14331.430917 * x	0.000000
T PFNA	Linear	y = 0.647533 * x	0.999697
T 9Cl-PF3ONS	Quadratic	y = 0.001770 * x ^ 2 + 0.072154 * x	0.999978
S d3-MeFOSAA	Linear	y = 2391.122420 * x	0.000000
T MeFOSAA	Quadratic	y = 0.005938 * x ^ 2 + 0.525456 * x	0.999986
T PFNS	Linear	y = 0.748704 * x	0.999927
T EtFOSAA	Quadratic	y = -0.005079 * x ^ 2 + 0.445191 * x	0.999905
S 13C6-PFDA	Linear	y = 18513.813105 * x	0.000000
T PFDA	Linear	y = 0.422223 * x	0.999915
S 13C2-8:2FTS	Linear	y = 2839.173556 * x	0.000000
T PFDS	Linear	y = 0.395151 * x	0.999949
S 13C7-PFUnDA	Linear	y = 23955.563266 * x	0.000000
T PFUnDA	Linear	y = 0.423444 * x	0.999658
T 11Cl-PF3OUdS	Linear	y = 0.253177 * x	0.999870
S 13C2-PFDoDA	Linear	y = 27911.018523 * x	0.000000
T PFDoDA	Linear	y = 0.468734 * x	0.999890

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q439-ICC439
Lab FileID: 2Q27568.D

Initial Calibration Report

T PFTrDA	Linear	y = 0.751032 * x	0.999958
S 13C2-PFTeDA	Linear	y = 19330.674506 * x	0.000000
T PFTeDA	Linear	y = 0.682652 * x	0.999801

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Page 5 of 5

Generated at 1:11 PM on 3/13/2019

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27572.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0313_ID_GENX_S2Q439\S2Q439.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d
2:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d
3:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d
4:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d
5:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d
6:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d
7:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d
8:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d

Data File: 2Q27572
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	17.308	-13.5	86.5
13C2-6:2FTS	20.000	17.827	-10.9	89.1
13C2-8:2FTS	20.000	17.635	-11.8	88.2
13C2-PFDoDA	20.000	19.110	-4.4	95.6
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	18.607	-7.0	93.0
13C3-PFBS	20.000	18.033	-9.8	90.2
13C3-PFHxS	20.000	18.285	-8.6	91.4
13C4-PFBA	20.000	18.225	-8.9	91.1
13C4-PFHpA	20.000	18.207	-9.0	91.0
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	18.237	-8.8	91.2
13C5-PFPeA	20.000	18.237	-8.8	91.2
13C6-PFDA	20.000	19.171	-4.1	95.9
13C7-PFUnDA	20.000	19.109	-4.5	95.5
13C8-FOSA	20.000	19.386	-3.1	96.9
13C8-PFOA	20.000	18.741	-6.3	93.7
13C8-PFOS	20.000	18.168	-9.2	90.8
13C9-PFNA	20.000	18.535	-7.3	92.7
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	18.930	-5.3	94.7
M2-PFOA	20.000	19.990	0.0	100.0
EtFOSAA	20.000	18.977	-5.1	94.9
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	17.802	-11.0	89.0
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	19.638	-1.8	98.2
PFDA	20.000	19.591	-2.0	98.0
PFDoDA	20.000	19.439	-2.8	97.2
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	19.859	-0.7	99.3
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	19.678	-1.6	98.4
PFHxS	20.000	19.683	-1.6	98.4
PFNA	20.000	20.371	1.9	101.9

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27572.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	20.232	1.2	101.2
PFOS	20.000	19.713	-1.4	98.6
PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	19.591	-2.0	98.0
PFTrDA	20.000	20.261	1.3	101.3
PFUnDA	20.000	19.838	-0.8	99.2
M4-PFOS	20.000	20.004	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	20.845	4.2	104.2
13C3-HFPO-DA	100.000	101.328	1.3	101.3
9Cl-PF3ONS	20.000	20.805	4.0	104.0
ADONA	20.000	20.610	3.1	103.1
HFPO-DA	20.000	18.440	-7.8	92.2
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27573.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0313_ID_GENX_S2Q439\S2Q439.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d
2:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d
3:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d
4:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d
5:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d
6:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d
7:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d
8:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d

Data File: 2Q27573
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.510	-7.5	92.5
13C2-6:2FTS	20.000	18.656	-6.7	93.3
13C2-8:2FTS	20.000	18.841	-5.8	94.2
13C2-PFDoDA	20.000	19.679	-1.6	98.4
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	19.309	-3.5	96.5
13C3-PFBS	20.000	18.433	-7.8	92.2
13C3-PFHxS	20.000	18.458	-7.7	92.3
13C4-PFBA	20.000	18.153	-9.2	90.8
13C4-PFHpA	20.000	18.524	-7.4	92.6
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	18.557	-7.2	92.8
13C5-PFPeA	20.000	18.471	-7.6	92.4
13C6-PFDA	20.000	19.046	-4.8	95.2
13C7-PFUnDA	20.000	19.156	-4.2	95.8
13C8-FOSA	20.000	19.011	-4.9	95.1
13C8-PFOA	20.000	18.637	-6.8	93.2
13C8-PFOS	20.000	18.657	-6.7	93.3
13C9-PFNA	20.000	18.758	-6.2	93.8
4:2FTS	20.000	19.174	-4.1	95.9
6:2FTS	20.000	19.727	-1.4	98.6
8:2FTS	20.000	19.709	-1.5	98.5
d3-MeFOSAA	20.000	19.028	-4.9	95.1
M2-PFOA	20.000	19.993	0.0	100.0
EtFOSAA	20.000	20.804	4.0	104.0
FOSA	20.000	21.384	6.9	106.9
MeFOSAA	20.000	20.637	3.2	103.2
PFBA	20.000	20.210	1.0	101.0
PFBS	20.000	17.055	-14.7	85.3
PFDA	20.000	18.789	-6.1	93.9
PFDoDA	20.000	21.009	5.0	105.0
PFDS	20.000	18.588	-7.1	92.9
PFHpA	20.000	20.916	4.6	104.6
PFHpS	20.000	19.674	-1.6	98.4
PFHxA	20.000	18.260	-8.7	91.3
PFHxS	20.000	17.204	-14.0	86.0
PFNA	20.000	18.660	-6.7	93.3

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27573.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	19.140	-4.3	95.7
PFOA	20.000	20.517	2.6	102.6
PFOS	20.000	19.610	-2.0	98.0
PFPeA	20.000	19.028	-4.9	95.1
PFPeS	20.000	17.161	-14.2	85.8
PFTeDA	20.000	18.519	-7.4	92.6
PFTrDA	20.000	22.346	11.7	111.7
PFUnDA	20.000	20.465	2.3	102.3
M4-PFOS	20.000	19.990	-0.1	99.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	103.111	3.1	103.1
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27574.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0313_ID_GENX_S2Q439\S2Q439.batch.bin

Level ID:Calibration File
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3:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d
4:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d
5:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d
6:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d
7:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d
8:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d

Data File: 2Q27574
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.216	-3.9	96.1
13C2-6:2FTS	20.000	20.461	2.3	102.3
13C2-8:2FTS	20.000	19.735	-1.3	98.7
13C2-PFDoDA	20.000	21.649	8.2	108.2
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	21.183	5.9	105.9
13C3-PFBS	20.000	20.083	0.4	100.4
13C3-PFHxS	20.000	20.364	1.8	101.8
13C4-PFBA	20.000	20.148	0.7	100.7
13C4-PFHpA	20.000	20.578	2.9	102.9
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	20.442	2.2	102.2
13C5-PFPeA	20.000	20.293	1.5	101.5
13C6-PFDA	20.000	21.594	8.0	108.0
13C7-PFUnDA	20.000	21.471	7.4	107.4
13C8-FOSA	20.000	22.131	10.7	110.7
13C8-PFOA	20.000	21.115	5.6	105.6
13C8-PFOS	20.000	20.541	2.7	102.7
13C9-PFNA	20.000	20.860	4.3	104.3
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	20.337	1.7	101.7
M2-PFOA	20.000	20.007	0.0	100.0
EtFOSAA	20.000	16.199	-19.0	81.0
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	17.489	-12.6	87.4
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	0.000	# -100.0	0.0
PFDA	20.000	0.000	# -100.0	0.0
PFDoDA	20.000	0.000	# -100.0	0.0
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	0.000	# -100.0	0.0
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	0.000	# -100.0	0.0
PFHxS	20.000	0.000	# -100.0	0.0
PFNA	20.000	0.000	# -100.0	0.0

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q439-ICV439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27574.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	16.688	-16.6	83.4
PFOS	20.000	18.691	-6.5	93.5
PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	0.000	# -100.0	0.0
PFTrDA	20.000	0.000	# -100.0	0.0
PFUnDA	20.000	0.000	# -100.0	0.0
M4-PFOS	20.000	20.006	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	103.181	3.2	103.2
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q441-CC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27653.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0315_ID_GENX_S2Q441\S2Q441.batch.bin

Level ID:Calibration File
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4:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d
5:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d
6:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d
7:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d
8:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d

Data File: 2Q27653
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	17.655	-11.7	88.3
13C2-6:2FTS	20.000	18.179	-9.1	90.9
13C2-8:2FTS	20.000	20.397	2.0	102.0
13C2-PFDoDA	20.000	19.650	-1.8	98.2
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	17.837	-10.8	89.2
13C3-PFBS	20.000	17.072	-14.6	85.4
13C3-PFHxS	20.000	16.843	-15.8	84.2
13C4-PFBA	20.000	16.847	-15.8	84.2
13C4-PFHpA	20.000	17.574	-12.1	87.9
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	17.560	-12.2	87.8
13C5-PFPeA	20.000	17.620	-11.9	88.1
13C6-PFDA	20.000	20.252	1.3	101.3
13C7-PFUnDA	20.000	19.576	-2.1	97.9
13C8-FOSA	20.000	18.904	-5.5	94.5
13C8-PFOA	20.000	17.955	-10.2	89.8
13C8-PFOS	20.000	18.030	-9.9	90.1
13C9-PFNA	20.000	19.265	-3.7	96.3
4:2FTS	20.000	20.232	1.2	101.2
6:2FTS	20.000	19.894	-0.5	99.5
8:2FTS	20.000	19.958	-0.2	99.8
d3-MeFOSAA	20.000	19.602	-2.0	98.0
M2-PFOA	20.000	19.982	-0.1	99.9
EtFOSAA	20.000	20.729	3.6	103.6
FOSA	20.000	20.732	3.7	103.7
MeFOSAA	20.000	20.792	4.0	104.0
PFBA	20.000	20.079	0.4	100.4
PFBS	20.000	19.645	-1.8	98.2
PFDA	20.000	19.896	-0.5	99.5
PFDoDA	20.000	19.775	-1.1	98.9
PFDS	20.000	20.043	0.2	100.2
PFHpA	20.000	19.375	-3.1	96.9
PFHpS	20.000	20.528	2.6	102.6
PFHxA	20.000	19.420	-2.9	97.1
PFHxS	20.000	19.660	-1.7	98.3
PFNA	20.000	19.267	-3.7	96.3

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q441-CC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27653.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	20.686	3.4	103.4
PFOA	20.000	19.902	-0.5	99.5
PFOS	20.000	19.225	-3.9	96.1
PFPeA	20.000	19.247	-3.8	96.2
PFPeS	20.000	19.766	-1.2	98.8
PFTeDA	20.000	19.798	-1.0	99.0
PFTrDA	20.000	20.246	1.2	101.2
PFUnDA	20.000	20.101	0.5	100.5
M4-PFOS	20.000	20.000	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.241	-8.8	91.2
13C3-HFPO-DA	100.000	87.559	-12.4	87.6
9Cl-PF3ONS	20.000	18.588	-7.1	92.9
ADONA	20.000	19.415	-2.9	97.1
HFPO-DA	100.000	101.926	1.9	101.9
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q441-ECC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27663.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0315_ID_GENX_S2Q441\S2Q441.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d
2:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d
3:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d
4:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d
5:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d
6:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d
7:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d
8:D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d

Data File: 2Q27663
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	16.408	-18.0	82.0
13C2-6:2FTS	20.000	16.946	-15.3	84.7
13C2-8:2FTS	20.000	18.976	-5.1	94.9
13C2-PFDoDA	20.000	17.802	-11.0	89.0
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	15.692	-21.5	78.5
13C3-PFBS	20.000	15.935	-20.3	79.7
13C3-PFHxS	20.000	15.758	-21.2	78.8
13C4-PFBA	20.000	15.692	-21.5	78.5
13C4-PFHpA	20.000	16.351	-18.2	81.8
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	16.351	-18.2	81.8
13C5-PFPeA	20.000	16.390	-18.0	82.0
13C6-PFDA	20.000	18.831	-5.8	94.2
13C7-PFUnDA	20.000	18.168	-9.2	90.8
13C8-FOSA	20.000	17.584	-12.1	87.9
13C8-PFOA	20.000	16.943	-15.3	84.7
13C8-PFOS	20.000	16.730	-16.3	83.7
13C9-PFNA	20.000	18.107	-9.5	90.5
4:2FTS	20.000	20.177	0.9	100.9
6:2FTS	20.000	20.304	1.5	101.5
8:2FTS	20.000	19.986	-0.1	99.9
d3-MeFOSAA	20.000	18.783	-6.1	93.9
M2-PFOA	20.000	19.993	0.0	100.0
EtFOSAA	20.000	20.531	2.7	102.7
FOSA	20.000	20.525	2.6	102.6
MeFOSAA	20.000	20.591	3.0	103.0
PFBA	20.000	20.117	0.6	100.6
PFBS	20.000	19.866	-0.7	99.3
PFDA	20.000	19.613	-1.9	98.1
PFDoDA	20.000	19.811	-0.9	99.1
PFDS	20.000	19.760	-1.2	98.8
PFHpA	20.000	19.605	-2.0	98.0
PFHpS	20.000	20.817	4.1	104.1
PFHxA	20.000	19.762	-1.2	98.8
PFHxS	20.000	19.681	-1.6	98.4
PFNA	20.000	19.179	-4.1	95.9

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q441-ECC439
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27663.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	21.020	5.1	105.1
PFOA	20.000	19.844	-0.8	99.2
PFOS	20.000	18.988	-5.1	94.9
PFPeA	20.000	19.434	-2.8	97.2
PFPeS	20.000	19.886	-0.6	99.4
PFTeDA	20.000	19.618	-1.9	98.1
PFTrDA	20.000	20.248	1.2	101.2
PFUnDA	20.000	20.052	0.3	100.3
M4-PFOS	20.000	19.972	-0.1	99.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.409	-8.0	92.0
13C3-HFPO-DA	100.000	76.590	-23.4	76.6
9Cl-PF3ONS	20.000	18.590	-7.0	93.0
ADONA	20.000	19.282	-3.6	96.4
HFPO-DA	100.000	100.861	0.9	100.9
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-ICC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27672.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Method Path	D:\MassHunter\damethods
Method File	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	D:\MassHunter\Data\0318_ID_GENX_S2Q442\QuantResults\S2Q442.batch.bin
Last Calib Update	3/18/2019 10:25:16 AM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d	3/18/2019 8:18:31 AM	3/18/2019 10:25:16 AM
2	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d	3/18/2019 8:34:20 AM	3/18/2019 10:25:16 AM
3	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d	3/18/2019 8:50:04 AM	3/18/2019 10:25:16 AM
4	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d	3/18/2019 9:05:48 AM	3/18/2019 10:25:16 AM
5	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d	3/18/2019 9:21:31 AM	3/18/2019 10:25:16 AM
6	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d	3/18/2019 9:37:15 AM	3/18/2019 10:25:16 AM
7	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d	3/18/2019 9:52:58 AM	3/18/2019 10:25:16 AM
8	D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d	3/18/2019 10:08:42 AM	3/18/2019 10:25:16 AM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
S 13C4-PFBA	Linear	6277	6274	6497	5911	5748	5806	5902	5558	5997	5.319
S 13C5-PFPeA	Linear	5324	5292	5484	5025	4900	4926	4989	4727	5083	5.040
S 13C3-PFBS	Linear	975.9	954.8	994.3	898.4	871.6	880.8	884.6	833.8	911.8	6.199
S 13C2-4:2FTS	Linear	2976	2911	3044	2812	2756	2842	3119	3329	2974	6.315
S 13C5-PFHxA	Linear	7685	7604	7914	7178	6924	7034	7134	6657	7266	5.878
S 13C3-HFPO-DA	Linear	1680	1731	1787	1617	1593	1546	1500	1338	1599	8.854
S 13C4-PFHpA	Linear	10960	10821	11261	10227	9959	10006	10078	9430	10343	5.926
S 13C3-PFHxS	Linear	1089	1088	1109	1009	976.0	987.2	978.6	918.5	1019	6.683
S 13C2-6:2FTS	Linear	3225	3166	3336	3073	3033	3109	3346	3390	3210	4.232
S 13C8-PFOA	Linear	11126	11043	11352	10406	10173	10118	10068	9169	10432	6.871
S 13C8-FOSA	Linear	4451	4385	4469	4143	3958	3924	3794	3315	4055	9.717
S 13C8-PFOS	Linear	1415	1367	1432	1295	1238	1243	1270	1169	1304	7.131
S 13C9-PFNA	Linear	11090	11008	11453	10537	10268	10391	10351	9603	10588	5.469
S d3-MeFOSAA	Linear	2010	1945	2049	1875	1884	1869	1905	1798	1917	4.250
S 13C6-PFDA	Linear	14484	14198	14830	13586	13271	13392	13383	12027	13646	6.381
S 13C2-8:2FTS	Linear	2167	2130	2245	2072	2063	2137	2384	2540	2217	7.502
S 13C7-PFUnDA	Linear	17527	17558	18250	16865	16491	16595	16774	15330	16924	5.184
S 13C2-PFDoDA	Linear	19066	19032	20039	18611	18441	18520	18929	17831	18809	3.397
S 13C2-PFTeDA	Linear	13033	12884	13611	12653	12546	12693	12984	12305	12839	3.066
I 13C2-PFOA				---------- ISTD ----------							
S M2-PFOA	Linear	1.0006	1.0012	1.0007	1.0010	1.0007	1.0013	1.0008	1.0013	1.0010	0.029
I 13C4-PFOS				---------- ISTD ----------							
S M4-PFOS	Linear	0.9990	1.0013	0.9989	1.0030	1.0010	1.0000	1.0018	0.9987	1.0005	0.156
I M4-PFBA				---------- ISTD ----------							
T PFBA	Linear	0.1888	0.1964	0.1844	0.1919	0.1953	0.1958	0.1963	0.1979	0.1934	2.403
I M5-PFPeA				---------- ISTD ----------							
T PFPeA	Linear	0.8749	0.8458	0.8261	0.8490	0.8534	0.8630	0.8626	0.8667	0.8552	1.776

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q442-ICC442
Lab FileID: 2Q27672.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-PFHxA						ISTD					
T PFHxA	Linear	0.3283	0.3352	0.3150	0.3386	0.3434	0.3392	0.3424	0.3452	0.3359	2.972
I M4-PFHpA						ISTD					
T PFHpA	Linear	0.7915	0.8459	0.7825	0.8413	0.8467	0.8573	0.8638	0.8621	0.8364	3.777
I M8-PFOA						ISTD					
T ADONA	Quadratic	0.9168	0.9441	0.9241	0.9637	0.9852	0.9948	1.0148	1.0572	0.9751	4.888
T PFOA	Linear	0.5068	0.5210	0.4959	0.5196	0.5200	0.5310	0.5305	0.5433	0.5210	2.831
I M9-PFNA						ISTD					
T PFNA	Linear	0.6153	0.6162	0.6019	0.6283	0.6641	0.6600	0.6627	0.6637	0.6390	4.102
I M6-PFDA						ISTD					
T 9Cl-PF3ONS	Quadratic	0.0704	0.0764	0.0686	0.0743	0.0778	0.0756	0.0770	0.0806	0.0751	5.219
T PFDA	Linear	0.4079	0.4103	0.4065	0.4198	0.4308	0.4336	0.4300	0.4368	0.4220	2.939
I M7-PFUnDA						ISTD					
T PFUnDA	Linear	0.3692	0.3818	0.3659	0.3907	0.4041	0.4025	0.4058	0.4149	0.3919	4.601
I M2-PFDoDA						ISTD					
T 11Cl-PF3OUdS	Linear	0.2894	0.2829	0.2600	0.2728	0.2757	0.2776	0.2741	0.2734	0.2757	3.084
T PFDoDA	Linear	0.4193	0.4282	0.4029	0.4298	0.4383	0.4448	0.4432	0.4458	0.4315	3.443
I M2-PFTeDA						ISTD					
T PFTrDA	Linear	0.6703	0.6814	0.6677	0.6984	0.7209	0.7205	0.7268	0.7294	0.7019	3.686
T PFTeDA	Linear	0.6752	0.6706	0.6400	0.6743	0.6947	0.6943	0.6932	0.7013	0.6804	2.938
I M8-FOSA						ISTD					
T FOSA	Quadratic	0.4457	0.4272	0.4292	0.4430	0.4520	0.4652	0.4628	0.4667	0.4490	3.458
I M3-PFBS						ISTD					
T PFBS	Linear	1.5405	1.5464	1.4950	1.5509	1.5670	1.5611	1.5914	1.5884	1.5551	1.964
T PFPeS	Linear	1.0208	0.9895	0.9434	0.9825	1.0100	1.0105	1.0249	1.0146	0.9995	2.699
I M3-PFHxS						ISTD					
T PFHxS	Linear	1.0766	1.0002	1.0240	1.0641	1.0874	1.0760	1.1192	1.1037	1.0689	3.698
T PFHpS	Linear	0.9332	1.0002	0.8912	0.9598	0.9754	0.9785	0.9883	0.9656	0.9615	3.616
I M8-PFOS						ISTD					
T PFOS	Linear	0.9167	0.9238	0.9556	0.9482	0.9884	0.9698	0.9628	0.9734	0.9548	2.572
T PFNS	Linear	0.5850	0.7658	0.6364	0.6977	0.7225	0.7059	0.6911	0.6828	0.6859	7.971
T PFDS	Linear	0.3694	0.3805	0.3508	0.3700	0.3743	0.3861	0.3694	0.3673	0.3710	2.800
I M2-4:2FTS						ISTD					
T 4:2FTS	Avg RF	0.5573	0.5899	0.5499	0.5744	0.5665	0.5660	0.5297	0.4741	0.5510	6.483
I M2-6:2FTS						ISTD					

Generated at 10:25 AM on 3/18/2019

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q442-ICC442
Lab FileID: 2Q27672.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T 6:2FTS	Avg RF	0.5288	0.5368	0.5090	0.4944	0.4989	0.4964	0.4565	0.4152	0.4920	8.012
I M2-8:2FTS						ISTD					
T 8:2FTS	Avg RF	0.5362	0.4821	0.5185	0.5277	0.5312	0.5130	0.4775	0.4141	0.5000	8.200
I M3-MeFOSAA						ISTD					
T MeFOSAA	Quadratic	0.4441	0.5244	0.4642	0.5122	0.4984	0.5144	0.5143	0.5217	0.4992	5.878
T EtFOSAA	Quadratic	0.4227	0.4942	0.4075	0.4047	0.4191	0.4230	0.4197	0.4061	0.4246	6.855
I M3-HFPO-DA						ISTD					
T HFPO-DA	Linear	1.1493	1.1180	1.0889	1.1647	1.1458	1.1794	1.1788	1.1911	1.1520	2.994

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Generated at 10:25 AM on 3/18/2019

Initial Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-ICC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27672.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	Curve Fit R2
S 13C4-PFBA	Linear	y = 5996.518789 * x	0.000000
T PFBA	Linear	y = 0.197520 * x	0.999975
S 13C5-PFPeA	Linear	y = 5083.356394 * x	0.000000
T PFPeA	Linear	y = 0.865662 * x	0.999990
T PFBS	Linear	y = 1.587873 * x	0.999980
S 13C3-PFBS	Linear	y = 911.778702 * x	0.000000
S 13C2-4:2FTS	Linear	y = 2973.580736 * x	0.000000
S 13C5-PFHxA	Linear	y = 7266.192219 * x	0.000000
T PFHxA	Linear	y = 0.344421 * x	0.999970
T PFPeS	Linear	y = 1.016317 * x	0.999968
T HFPO-DA	Linear	y = 1.187915 * x	0.999953
S 13C3-HFPO-DA	Linear	y = 1599.025152 * x	0.000000
S 13C4-PFHpA	Linear	y = 10342.763286 * x	0.000000
T PFHpA	Linear	y = 0.862058 * x	0.999988
S 13C3-PFHxS	Linear	y = 1019.424693 * x	0.000000
T PFHxS	Linear	y = 1.105562 * x	0.999908
T ADONA	Quadratic	y = 0.016622 * x ^ 2 + 0.974049 * x	0.999997
S 13C2-6:2FTS	Linear	y = 3209.585519 * x	0.000000
S 13C8-PFOA	Linear	y = 10431.663893 * x	0.000000
S M2-PFOA	Linear	y = 1.000962 * x	0.000000
T PFOA	Linear	y = 0.540236 * x	0.999831
T PFHpS	Linear	y = 0.970406 * x	0.999866
T FOSA	Quadratic	y = 0.001527 * x ^ 2 + 0.459098 * x	0.999986
S 13C8-FOSA	Linear	y = 4054.959560 * x	0.000000
S M4-PFOS	Linear	y = 1.000462 * x	0.000000
T PFOS	Linear	y = 0.971314 * x	0.999967
S 13C8-PFOS	Linear	y = 1303.510781 * x	0.000000
S 13C9-PFNA	Linear	y = 10587.712977 * x	0.000000
T PFNA	Linear	y = 0.663287 * x	0.999985
T 9Cl-PF3ONS	Quadratic	y = 0.001311 * x ^ 2 + 0.073985 * x	0.999975
S d3-MeFOSAA	Linear	y = 1916.910382 * x	0.000000
T MeFOSAA	Quadratic	y = 0.002859 * x ^ 2 + 0.507371 * x	0.999988
T PFNS	Linear	y = 0.685455 * x	0.999881
S 13C6-PFDA	Linear	y = 13646.262526 * x	0.000000
T PFDA	Linear	y = 0.435348 * x	0.999935
T EtFOSAA	Quadratic	y = -0.004715 * x ^ 2 + 0.429857 * x	0.999975
S 13C2-8:2FTS	Linear	y = 2217.301028 * x	0.000000
T PFDS	Linear	y = 0.368354 * x	0.999876
S 13C7-PFUnDA	Linear	y = 16923.713644 * x	0.000000
T PFUnDA	Linear	y = 0.412589 * x	0.999838
T 11Cl-PF3OUdS	Linear	y = 0.274079 * x	0.999929
S 13C2-PFDoDA	Linear	y = 18808.572482 * x	0.000000
T PFDoDA	Linear	y = 0.445132 * x	0.999981

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q442-ICC442
Lab FileID: 2Q27672.D

Initial Calibration Report

T PFTrDA	Linear	y = 0.728459 * x	0.999981
T PFTeDA	Linear	y = 0.699430 * x	0.999958
S 13C2-PFTeDA	Linear	y = 12838.574424 * x	0.000000

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27676.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d
2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27676
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.252	1.3	101.3
13C2-6:2FTS	20.000	20.889	4.4	104.4
13C2-8:2FTS	20.000	21.759	8.8	108.8
13C2-PFDoDA	20.000	24.560	22.8	122.8
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	25.772	28.9	128.9
13C3-PFBS	20.000	20.930	4.7	104.7
13C3-PFHxS	20.000	21.132	5.7	105.7
13C4-PFBA	20.000	20.498	2.5	102.5
13C4-PFHpA	20.000	22.142	10.7	110.7
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.644	8.2	108.2
13C5-PFPeA	20.000	21.319	6.6	106.6
13C6-PFDA	20.000	23.118	15.6	115.6
13C7-PFUnDA	20.000	22.940	14.7	114.7
13C8-FOSA	20.000	22.597	13.0	113.0
13C8-PFOA	20.000	22.066	10.3	110.3
13C8-PFOS	20.000	21.430	7.2	107.2
13C9-PFNA	20.000	22.205	11.0	111.0
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	21.717	8.6	108.6
M2-PFOA	20.000	19.988	-0.1	99.9
EtFOSAA	20.000	15.917	-20.4	79.6
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	17.692	-11.5	88.5
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	0.000	# -100.0	0.0
PFDA	20.000	0.000	# -100.0	0.0
PFDoDA	20.000	0.000	# -100.0	0.0
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	0.000	# -100.0	0.0
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	0.000	# -100.0	0.0
PFHxS	20.000	0.000	# -100.0	0.0
PFNA	20.000	0.000	# -100.0	0.0

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27676.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	17.009	-15.0	85.0
PFOS	20.000	19.885	-0.6	99.4
PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	0.000	# -100.0	0.0
PFTrDA	20.000	0.000	# -100.0	0.0
PFUnDA	20.000	0.000	# -100.0	0.0
M4-PFOS	20.000	20.005	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	103.129	3.1	103.1
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27677.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d
2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
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4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27677
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	22.638	13.2	113.2
13C2-6:2FTS	20.000	22.817	14.1	114.1
13C2-8:2FTS	20.000	23.035	15.2	115.2
13C2-PFDoDA	20.000	23.742	18.7	118.7
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	24.339	21.7	121.7
13C3-PFBS	20.000	22.365	11.8	111.8
13C3-PFHxS	20.000	22.260	11.3	111.3
13C4-PFBA	20.000	22.456	12.3	112.3
13C4-PFHpA	20.000	23.074	15.4	115.4
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	22.916	14.6	114.6
13C5-PFPeA	20.000	22.739	13.7	113.7
13C6-PFDA	20.000	23.318	16.6	116.6
13C7-PFUnDA	20.000	23.698	18.5	118.5
13C8-FOSA	20.000	22.532	12.7	112.7
13C8-PFOA	20.000	23.216	16.1	116.1
13C8-PFOS	20.000	22.252	11.3	111.3
13C9-PFNA	20.000	23.187	15.9	115.9
4:2FTS	20.000	17.691	-11.5	88.5
6:2FTS	20.000	18.148	-9.3	90.7
8:2FTS	20.000	18.613	-6.9	93.1
d3-MeFOSAA	20.000	23.338	16.7	116.7
M2-PFOA	20.000	20.004	0.0	100.0
EtFOSAA	20.000	18.369	-8.2	91.8
FOSA	20.000	19.229	-3.9	96.1
MeFOSAA	20.000	19.078	-4.6	95.4
PFBA	20.000	18.609	-7.0	93.0
PFBS	20.000	15.884	-20.6	79.4
PFDA	20.000	17.488	-12.6	87.4
PFDoDA	20.000	19.612	-1.9	98.1
PFDS	20.000	18.040	-9.8	90.2
PFHpA	20.000	19.524	-2.4	97.6
PFHpS	20.000	18.494	-7.5	92.5
PFHxA	20.000	16.735	-16.3	83.7
PFHxS	20.000	16.344	-18.3	81.7
PFNA	20.000	17.441	-12.8	87.2

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27677.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	18.531	-7.3	92.7
PFOA	20.000	18.815	-5.9	94.1
PFOS	20.000	18.739	-6.3	93.7
PFPeA	20.000	17.947	-10.3	89.7
PFPeS	20.000	15.768	-21.2	78.8
PFTeDA	20.000	17.125	-14.4	85.6
PFTrDA	20.000	19.985	-0.1	99.9
PFUnDA	20.000	19.148	-4.3	95.7
M4-PFOS	20.000	20.020	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	112.339	12.3	112.3
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27678.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27678
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.949	-0.3	99.7
13C2-6:2FTS	20.000	20.397	2.0	102.0
13C2-8:2FTS	20.000	20.279	1.4	101.4
13C2-PFDoDA	20.000	22.005	10.0	110.0
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	22.045	10.2	110.2
13C3-PFBS	20.000	20.708	3.5	103.5
13C3-PFHxS	20.000	20.662	3.3	103.3
13C4-PFBA	20.000	20.885	4.4	104.4
13C4-PFHpA	20.000	21.553	7.8	107.8
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.131	5.7	105.7
13C5-PFPeA	20.000	21.185	5.9	105.9
13C6-PFDA	20.000	22.187	10.9	110.9
13C7-PFUnDA	20.000	21.945	9.7	109.7
13C8-FOSA	20.000	22.035	10.2	110.2
13C8-PFOA	20.000	21.863	9.3	109.3
13C8-PFOS	20.000	21.032	5.2	105.2
13C9-PFNA	20.000	21.779	8.9	108.9
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	21.405	7.0	107.0
M2-PFOA	20.000	19.984	-0.1	99.9
EtFOSAA	20.000	17.754	-11.2	88.8
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	17.719	-11.4	88.6
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	18.581	-7.1	92.9
PFDA	20.000	18.965	-5.2	94.8
PFDoDA	20.000	18.808	-6.0	94.0
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	18.868	-5.7	94.3
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	18.761	-6.2	93.8
PFHxS	20.000	19.135	-4.3	95.7
PFNA	20.000	19.556	-2.2	97.8

Initial Calibration Verification

Job Number: FA62220 **Sample:** S2Q442-ICV442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27678.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	19.149	-4.3	95.7
PFOS	20.000	18.260	-8.7	91.3
PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	18.900	-5.5	94.5
PFTrDA	20.000	19.098	-4.5	95.5
PFUnDA	20.000	19.168	-4.2	95.8
M4-PFOS	20.000	20.007	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	19.907	-0.5	99.5
13C3-HFPO-DA	100.000	103.306	3.3	103.3
9Cl-PF3ONS	20.000	19.678	-1.6	98.4
ADONA	20.000	19.409	-3.0	97.0
HFPO-DA	20.000	19.973	-0.1	99.9
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27688.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27688
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.955	4.8	104.8
13C2-6:2FTS	20.000	21.894	9.5	109.5
13C2-8:2FTS	20.000	23.468	17.3	117.3
13C2-PFDoDA	20.000	24.865	24.3	124.3
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	26.079	# 30.4	130.4
13C3-PFBS	20.000	20.397	2.0	102.0
13C3-PFHxS	20.000	20.797	4.0	104.0
13C4-PFBA	20.000	21.107	5.5	105.5
13C4-PFHpA	20.000	21.935	9.7	109.7
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.253	6.3	106.3
13C5-PFPeA	20.000	21.378	6.9	106.9
13C6-PFDA	20.000	22.958	14.8	114.8
13C7-PFUnDA	20.000	23.673	18.4	118.4
13C8-FOSA	20.000	21.967	9.8	109.8
13C8-PFOA	20.000	22.072	10.4	110.4
13C8-PFOS	20.000	21.257	6.3	106.3
13C9-PFNA	20.000	22.588	12.9	112.9
4:2FTS	20.000	20.536	2.7	102.7
6:2FTS	20.000	19.861	-0.7	99.3
8:2FTS	20.000	20.320	1.6	101.6
d3-MeFOSAA	20.000	22.047	10.2	110.2
M2-PFOA	20.000	20.002	0.0	100.0
EtFOSAA	20.000	20.259	1.3	101.3
FOSA	20.000	19.761	-1.2	98.8
MeFOSAA	20.000	19.851	-0.7	99.3
PFBA	20.000	19.686	-1.6	98.4
PFBS	20.000	19.959	-0.2	99.8
PFDA	20.000	20.085	0.4	100.4
PFDoDA	20.000	19.910	-0.5	99.5
PFDS	20.000	20.213	1.1	101.1
PFHpA	20.000	19.719	-1.4	98.6
PFHpS	20.000	20.349	1.7	101.7
PFHxA	20.000	19.973	-0.1	99.9
PFHxS	20.000	19.682	-1.6	98.4
PFNA	20.000	19.822	-0.9	99.1

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27688.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	20.857	4.3	104.3
PFOA	20.000	19.387	-3.1	96.9
PFOS	20.000	19.234	-3.8	96.2
PFPeA	20.000	19.825	-0.9	99.1
PFPeS	20.000	20.759	3.8	103.8
PFTeDA	20.000	19.710	-1.4	98.6
PFTrDA	20.000	19.407	-3.0	97.0
PFUnDA	20.000	19.837	-0.8	99.2
M4-PFOS	20.000	20.021	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.355	-13.2	86.8
13C3-HFPO-DA	100.000	102.732	2.7	102.7
9Cl-PF3ONS	20.000	18.991	-5.0	95.0
ADONA	20.000	19.507	-2.5	97.5
HFPO-DA	100.000	102.547	2.5	102.5
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27690.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27690
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	21.428	7.1	107.1
13C2-6:2FTS	20.000	22.563	12.8	112.8
13C2-8:2FTS	20.000	23.190	15.9	115.9
13C2-PFDoDA	20.000	25.994	30.0	130.0
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	27.775	# 38.9	138.9
13C3-PFBS	20.000	21.847	9.2	109.2
13C3-PFHxS	20.000	22.053	10.3	110.3
13C4-PFBA	20.000	22.486	12.4	112.4
13C4-PFHpA	20.000	23.532	17.7	117.7
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	22.955	14.8	114.8
13C5-PFPeA	20.000	22.884	14.4	114.4
13C6-PFDA	20.000	25.114	25.6	125.6
13C7-PFUnDA	20.000	25.557	27.8	127.8
13C8-FOSA	20.000	23.954	19.8	119.8
13C8-PFOA	20.000	24.101	20.5	120.5
13C8-PFOS	20.000	21.959	9.8	109.8
13C9-PFNA	20.000	24.656	23.3	123.3
4:2FTS	1.000	0.989	-1.1	98.9
6:2FTS	1.000	0.994	-0.6	99.4
8:2FTS	1.000	0.987	-1.3	98.7
d3-MeFOSAA	20.000	23.833	19.2	119.2
M2-PFOA	20.000	19.993	0.0	100.0
EtFOSAA	1.000	0.961	-3.9	96.1
FOSA	1.000	1.015	1.5	101.5
MeFOSAA	1.000	1.013	1.3	101.3
PFBA	1.000	0.987	-1.3	98.7
PFBS	1.000	0.970	-3.0	97.0
PFDA	1.000	0.987	-1.3	98.7
PFDoDA	1.000	0.977	-2.3	97.7
PFDS	1.000	0.885	-11.5	88.5
PFHpA	1.000	0.935	-6.5	93.5
PFHpS	1.000	0.977	-2.3	97.7
PFHxA	1.000	0.969	-3.1	96.9
PFHxS	1.000	0.960	-4.0	96.0
PFNA	1.000	0.934	-6.6	93.4

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27690.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	1.000	1.082	8.2	108.2
PFOA	1.000	0.932	-6.8	93.2
PFOS	1.000	1.040	4.0	104.0
PFPeA	1.000	0.974	-2.6	97.4
PFPeS	1.000	1.041	4.1	104.1
PFTeDA	1.000	0.943	-5.7	94.3
PFTrDA	1.000	0.897	-10.3	89.7
PFUnDA	1.000	0.937	-6.3	93.7
M4-PFOS	20.000	20.048	0.2	100.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	0.857	-14.3	85.7
13C3-HFPO-DA	100.000	115.795	15.8	115.8
9Cl-PF3ONS	1.000	0.986	-1.4	98.6
ADONA	1.000	0.908	-9.2	90.8
HFPO-DA	5.000	4.780	-4.4	95.6
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27701.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
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3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27701
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	22.092	10.5	110.5
13C2-6:2FTS	20.000	22.347	11.7	111.7
13C2-8:2FTS	20.000	23.504	17.5	117.5
13C2-PFDoDA	20.000	25.004	25.0	125.0
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	26.123	# 30.6	130.6
13C3-PFBS	20.000	21.113	5.6	105.6
13C3-PFHxS	20.000	21.231	6.2	106.2
13C4-PFBA	20.000	21.954	9.8	109.8
13C4-PFHpA	20.000	22.768	13.8	113.8
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	22.337	11.7	111.7
13C5-PFPeA	20.000	22.534	12.7	112.7
13C6-PFDA	20.000	24.162	20.8	120.8
13C7-PFUnDA	20.000	24.323	21.6	121.6
13C8-FOSA	20.000	22.738	13.7	113.7
13C8-PFOA	20.000	22.931	14.7	114.7
13C8-PFOS	20.000	21.422	7.1	107.1
13C9-PFNA	20.000	23.414	17.1	117.1
4:2FTS	20.000	20.224	1.1	101.1
6:2FTS	20.000	20.329	1.6	101.6
8:2FTS	20.000	20.434	2.2	102.2
d3-MeFOSAA	20.000	22.582	12.9	112.9
M2-PFOA	20.000	19.994	0.0	100.0
EtFOSAA	20.000	20.571	2.9	102.9
FOSA	20.000	20.067	0.3	100.3
MeFOSAA	20.000	19.904	-0.5	99.5
PFBA	20.000	19.384	-3.1	96.9
PFBS	20.000	20.042	0.2	100.2
PFDA	20.000	19.736	-1.3	98.7
PFDoDA	20.000	19.993	0.0	100.0
PFDS	20.000	19.809	-1.0	99.0
PFHpA	20.000	19.701	-1.5	98.5
PFHpS	20.000	20.631	3.2	103.2
PFHxA	20.000	19.659	-1.7	98.3
PFHxS	20.000	19.778	-1.1	98.9
PFNA	20.000	19.664	-1.7	98.3

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27701.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	21.178	5.9	105.9
PFOA	20.000	19.401	-3.0	97.0
PFOS	20.000	19.406	-3.0	97.0
PFPeA	20.000	19.728	-1.4	98.6
PFPeS	20.000	20.784	3.9	103.9
PFTeDA	20.000	19.411	-2.9	97.1
PFTrDA	20.000	19.213	-3.9	96.1
PFUnDA	20.000	19.693	-1.5	98.5
M4-PFOS	20.000	20.037	0.2	100.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.467	-12.7	87.3
13C3-HFPO-DA	100.000	106.139	6.1	106.1
9Cl-PF3ONS	20.000	18.216	-8.9	91.1
ADONA	20.000	19.508	-2.5	97.5
HFPO-DA	100.000	99.543	-0.5	99.5
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27713.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

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4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27713
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	21.156	5.8	105.8
13C2-6:2FTS	20.000	21.882	9.4	109.4
13C2-8:2FTS	20.000	23.047	15.2	115.2
13C2-PFDoDA	20.000	24.124	20.6	120.6
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	25.149	25.7	125.7
13C3-PFBS	20.000	20.257	1.3	101.3
13C3-PFHxS	20.000	20.293	1.5	101.5
13C4-PFBA	20.000	21.044	5.2	105.2
13C4-PFHpA	20.000	22.098	10.5	110.5
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.493	7.5	107.5
13C5-PFPeA	20.000	21.569	7.8	107.8
13C6-PFDA	20.000	23.406	17.0	117.0
13C7-PFUnDA	20.000	23.715	18.6	118.6
13C8-FOSA	20.000	21.764	8.8	108.8
13C8-PFOA	20.000	22.179	10.9	110.9
13C8-PFOS	20.000	20.005	0.0	100.0
13C9-PFNA	20.000	23.125	15.6	115.6
4:2FTS	20.000	20.327	1.6	101.6
6:2FTS	20.000	20.133	0.7	100.7
8:2FTS	20.000	20.389	1.9	101.9
d3-MeFOSAA	20.000	22.608	13.0	113.0
M2-PFOA	20.000	20.002	0.0	100.0
EtFOSAA	20.000	20.094	0.5	100.5
FOSA	20.000	19.993	0.0	100.0
MeFOSAA	20.000	20.244	1.2	101.2
PFBA	20.000	19.245	-3.8	96.2
PFBS	20.000	19.622	-1.9	98.1
PFDA	20.000	19.934	-0.3	99.7
PFDoDA	20.000	20.117	0.6	100.6
PFDS	20.000	20.986	4.9	104.9
PFHpA	20.000	19.752	-1.2	98.8
PFHpS	20.000	20.637	3.2	103.2
PFHxA	20.000	19.667	-1.7	98.3
PFHxS	20.000	20.050	0.2	100.2
PFNA	20.000	19.243	-3.8	96.2

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27713.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	21.760	8.8	108.8
PFOA	20.000	19.330	-3.3	96.7
PFOS	20.000	19.925	-0.4	99.6
PFPeA	20.000	19.827	-0.9	99.1
PFPeS	20.000	20.824	4.1	104.1
PFTeDA	20.000	19.414	-2.9	97.1
PFTrDA	20.000	19.163	-4.2	95.8
PFUnDA	20.000	19.644	-1.8	98.2
M4-PFOS	20.000	20.003	0.0	100.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.257	-13.7	86.3
13C3-HFPO-DA	100.000	99.599	-0.4	99.6
9Cl-PF3ONS	20.000	18.087	-9.6	90.4
ADONA	20.000	19.365	-3.2	96.8
HFPO-DA	100.000	99.866	-0.1	99.9
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-ECC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27719.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0318_ID_GENX_S2Q442\S2Q442.batch.bin

Level ID:Calibration File
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5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27719
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	21.425	7.1	107.1
13C2-6:2FTS	20.000	22.240	11.2	111.2
13C2-8:2FTS	20.000	23.648	18.2	118.2
13C2-PFDoDA	20.000	24.970	24.8	124.8
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	26.248	# 31.2	131.2
13C3-PFBS	20.000	20.474	2.4	102.4
13C3-PFHxS	20.000	20.821	4.1	104.1
13C4-PFBA	20.000	21.554	7.8	107.8
13C4-PFHpA	20.000	22.419	12.1	112.1
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.608	8.0	108.0
13C5-PFPeA	20.000	22.047	10.2	110.2
13C6-PFDA	20.000	23.978	19.9	119.9
13C7-PFUnDA	20.000	24.195	21.0	121.0
13C8-FOSA	20.000	22.149	10.7	110.7
13C8-PFOA	20.000	22.584	12.9	112.9
13C8-PFOS	20.000	20.806	4.0	104.0
13C9-PFNA	20.000	23.413	17.1	117.1
4:2FTS	20.000	20.340	1.7	101.7
6:2FTS	20.000	20.063	0.3	100.3
8:2FTS	20.000	20.300	1.5	101.5
d3-MeFOSAA	20.000	23.564	17.8	117.8
M2-PFOA	20.000	20.002	0.0	100.0
EtFOSAA	20.000	19.577	-2.1	97.9
FOSA	20.000	20.042	0.2	100.2
MeFOSAA	20.000	19.484	-2.6	97.4
PFBA	20.000	19.315	-3.4	96.6
PFBS	20.000	19.930	-0.3	99.7
PFDA	20.000	19.850	-0.8	99.2
PFDoDA	20.000	19.945	-0.3	99.7
PFDS	20.000	20.206	1.0	101.0
PFHpA	20.000	19.743	-1.3	98.7
PFHpS	20.000	20.150	0.7	100.7
PFHxA	20.000	19.706	-1.5	98.5
PFHxS	20.000	19.650	-1.8	98.2
PFNA	20.000	19.454	-2.7	97.3

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q442-ECC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27719.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	21.406	7.0	107.0
PFOA	20.000	19.367	-3.2	96.8
PFOS	20.000	19.251	-3.7	96.3
PFPeA	20.000	19.754	-1.2	98.8
PFPeS	20.000	20.934	4.7	104.7
PFTeDA	20.000	19.438	-2.8	97.2
PFTrDA	20.000	19.281	-3.6	96.4
PFUnDA	20.000	19.747	-1.3	98.7
M4-PFOS	20.000	20.026	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	17.212	-13.9	86.1
13C3-HFPO-DA	100.000	101.659	1.7	101.7
9Cl-PF3ONS	20.000	17.935	-10.3	89.7
ADONA	20.000	19.389	-3.1	96.9
HFPO-DA	100.000	99.045	-1.0	99.0
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27742.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0319_ID_GENX_S2Q443\S2Q443.batch.bin

Level ID:Calibration File
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5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27742
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.921	4.6	104.6
13C2-6:2FTS	20.000	21.602	8.0	108.0
13C2-8:2FTS	20.000	22.687	13.4	113.4
13C2-PFDoDA	20.000	23.476	17.4	117.4
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	24.026	20.1	120.1
13C3-PFBS	20.000	20.639	3.2	103.2
13C3-PFHxS	20.000	20.637	3.2	103.2
13C4-PFBA	20.000	20.892	4.5	104.5
13C4-PFHpA	20.000	21.594	8.0	108.0
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.222	6.1	106.1
13C5-PFPeA	20.000	21.432	7.2	107.2
13C6-PFDA	20.000	22.631	13.2	113.2
13C7-PFUnDA	20.000	23.104	15.5	115.5
13C8-FOSA	20.000	21.500	7.5	107.5
13C8-PFOA	20.000	21.662	8.3	108.3
13C8-PFOS	20.000	21.188	5.9	105.9
13C9-PFNA	20.000	22.203	11.0	111.0
4:2FTS	20.000	20.442	2.2	102.2
6:2FTS	20.000	19.897	-0.5	99.5
8:2FTS	20.000	20.595	3.0	103.0
d3-MeFOSAA	20.000	21.731	8.7	108.7
M2-PFOA	20.000	19.997	0.0	100.0
EtFOSAA	20.000	20.735	3.7	103.7
FOSA	20.000	19.717	-1.4	98.6
MeFOSAA	20.000	20.660	3.3	103.3
PFBA	20.000	19.616	-1.9	98.1
PFBS	20.000	19.907	-0.5	99.5
PFDA	20.000	20.271	1.4	101.4
PFDoDA	20.000	20.046	0.2	100.2
PFDS	20.000	19.677	-1.6	98.4
PFHpA	20.000	19.691	-1.5	98.5
PFHpS	20.000	20.234	1.2	101.2
PFHxA	20.000	20.148	0.7	100.7
PFHxS	20.000	19.938	-0.3	99.7
PFNA	20.000	19.997	0.0	100.0

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27742.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	20.249	1.2	101.2
PFOA	20.000	19.610	-1.9	98.1
PFOS	20.000	19.231	-3.8	96.2
PFPeA	20.000	19.577	-2.1	97.9
PFPeS	20.000	20.653	3.3	103.3
PFTeDA	20.000	19.581	-2.1	97.9
PFTrDA	20.000	19.663	-1.7	98.3
PFUnDA	20.000	19.632	-1.8	98.2
M4-PFOS	20.000	20.030	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.032	-9.8	90.2
13C3-HFPO-DA	100.000	114.940	14.9	114.9
9Cl-PF3ONS	20.000	19.011	-4.9	95.1
ADONA	20.000	19.591	-2.0	98.0
HFPO-DA	100.000	99.516	-0.5	99.5
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27744.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0319_ID_GENX_S2Q443\S2Q443.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d
2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27744
Type : QC
Level : 2

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	21.265	6.3	106.3
13C2-6:2FTS	20.000	22.516	12.6	112.6
13C2-8:2FTS	20.000	23.238	16.2	116.2
13C2-PFDoDA	20.000	25.290	26.4	126.4
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	25.866	29.3	129.3
13C3-PFBS	20.000	22.304	11.5	111.5
13C3-PFHxS	20.000	22.068	10.3	110.3
13C4-PFBA	20.000	22.506	12.5	112.5
13C4-PFHpA	20.000	23.628	18.1	118.1
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	22.971	14.9	114.9
13C5-PFPeA	20.000	23.015	15.1	115.1
13C6-PFDA	20.000	25.435	27.2	127.2
13C7-PFUnDA	20.000	25.478	27.4	127.4
13C8-FOSA	20.000	23.928	19.6	119.6
13C8-PFOA	20.000	24.038	20.2	120.2
13C8-PFOS	20.000	22.634	13.2	113.2
13C9-PFNA	20.000	24.657	23.3	123.3
4:2FTS	1.000	1.034	3.4	103.4
6:2FTS	1.000	1.106	10.6	110.6
8:2FTS	1.000	1.066	6.6	106.6
d3-MeFOSAA	20.000	23.734	18.7	118.7
M2-PFOA	20.000	20.002	0.0	100.0
EtFOSAA	1.000	1.067	6.7	106.7
FOSA	1.000	0.942	-5.8	94.2
MeFOSAA	1.000	0.964	-3.6	96.4
PFBA	1.000	0.967	-3.3	96.7
PFBS	1.000	0.965	-3.5	96.5
PFDA	1.000	0.969	-3.1	96.9
PFDoDA	1.000	0.967	-3.3	96.7
PFDS	1.000	1.036	3.6	103.6
PFHpA	1.000	0.932	-6.8	93.2
PFHpS	1.000	0.979	-2.1	97.9
PFHxA	1.000	1.005	0.5	100.5
PFHxS	1.000	0.976	-2.4	97.6
PFNA	1.000	0.901	-9.9	90.1

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-CC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27744.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	1.000	1.025	2.5	102.5
PFOA	1.000	0.977	-2.3	97.7
PFOS	1.000	0.995	-0.5	99.5
PFPeA	1.000	0.978	-2.2	97.8
PFPeS	1.000	0.981	-1.9	98.1
PFTeDA	1.000	0.956	-4.4	95.6
PFTrDA	1.000	0.936	-6.4	93.6
PFUnDA	1.000	0.941	-5.9	94.1
M4-PFOS	20.000	20.023	0.1	100.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	1.000	0.879	-12.1	87.9
13C3-HFPO-DA	100.000	124.630	24.6	124.6
9Cl-PF3ONS	1.000	1.050	5.0	105.0
ADONA	1.000	0.927	-7.3	92.7
HFPO-DA	5.000	4.794	-4.1	95.9
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-ECC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27753.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0319_ID_GENX_S2Q443\S2Q443.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d
2:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d
3:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d
4:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d
5:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d
6:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d
7:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d
8:D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d

Data File: 2Q27753
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.831	4.2	104.2
13C2-6:2FTS	20.000	21.860	9.3	109.3
13C2-8:2FTS	20.000	23.204	16.0	116.0
13C2-PFDoDA	20.000	23.407	17.0	117.0
13C2-PFOA	---	--ISTD--		
13C2-PFTeDA	20.000	23.880	19.4	119.4
13C3-PFBS	20.000	20.459	2.3	102.3
13C3-PFHxS	20.000	20.320	1.6	101.6
13C4-PFBA	20.000	21.033	5.2	105.2
13C4-PFHpA	20.000	21.883	9.4	109.4
13C4-PFOS	---	--ISTD--		
13C5-PFHxA	20.000	21.352	6.8	106.8
13C5-PFPeA	20.000	21.638	8.2	108.2
13C6-PFDA	20.000	23.098	15.5	115.5
13C7-PFUnDA	20.000	23.359	16.8	116.8
13C8-FOSA	20.000	21.674	8.4	108.4
13C8-PFOA	20.000	21.918	9.6	109.6
13C8-PFOS	20.000	20.850	4.3	104.3
13C9-PFNA	20.000	22.339	11.7	111.7
4:2FTS	20.000	20.694	3.5	103.5
6:2FTS	20.000	20.184	0.9	100.9
8:2FTS	20.000	20.068	0.3	100.3
d3-MeFOSAA	20.000	22.608	13.0	113.0
M2-PFOA	20.000	19.997	0.0	100.0
EtFOSAA	20.000	19.740	-1.3	98.7
FOSA	20.000	19.610	-1.9	98.1
MeFOSAA	20.000	19.514	-2.4	97.6
PFBA	20.000	19.659	-1.7	98.3
PFBS	20.000	19.930	-0.4	99.6
PFDA	20.000	19.909	-0.5	99.5
PFDoDA	20.000	19.954	-0.2	99.8
PFDS	20.000	19.094	-4.5	95.5
PFHpA	20.000	19.583	-2.1	97.9
PFHpS	20.000	20.890	4.5	104.5
PFHxA	20.000	19.929	-0.4	99.6
PFHxS	20.000	19.935	-0.3	99.7
PFNA	20.000	20.073	0.4	100.4

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S2Q443-ECC442
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 2Q27753.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFNS	20.000	20.917	4.6	104.6
PFOA	20.000	19.498	-2.5	97.5
PFOS	20.000	19.556	-2.2	97.8
PFPeA	20.000	19.458	-2.7	97.3
PFPeS	20.000	20.538	2.7	102.7
PFTeDA	20.000	19.536	-2.3	97.7
PFTrDA	20.000	19.494	-2.5	97.5
PFUnDA	20.000	19.655	-1.7	98.3
M4-PFOS	20.000	19.979	-0.1	99.9
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.051	-9.7	90.3
13C3-HFPO-DA	100.000	106.974	7.0	107.0
9Cl-PF3ONS	20.000	18.239	-8.8	91.2
ADONA	20.000	19.469	-2.7	97.3
HFPO-DA	100.000	100.213	0.2	100.2
M3-HFPO-DA	---	--ISTD--		

CC Criteria: +/- 30%

Initial Calibration Summary

Job Number: FA62220 **Sample:** S3Q54-ICC54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1977.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Method Path	D:\MassHunter\Methods
Method File	ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name	D:\MassHunter\Data\0321_id_genx_S3Q54\QuantResults\s3q54.batch.bin
Last Calib Update	3/21/2019 12:54:41 PM

Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time
1	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1972.d	3/21/2019 9:54:57 AM	3/21/2019 12:54:41 PM
2	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d	3/21/2019 10:10:04 AM	3/21/2019 12:54:41 PM
3	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d	3/21/2019 10:25:10 AM	3/21/2019 12:54:41 PM
4	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d	3/21/2019 10:40:17 AM	3/21/2019 12:54:41 PM
5	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d	3/21/2019 10:55:23 AM	3/21/2019 12:54:41 PM
6	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d	3/21/2019 11:10:30 AM	3/21/2019 12:54:41 PM
7	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d	3/21/2019 11:25:37 AM	3/21/2019 12:54:41 PM
8	D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d	3/21/2019 11:41:20 AM	3/21/2019 12:54:41 PM

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
S 13C4-PFBA	Linear	16259	16631	16857	16399	16245	15933	15872	16277	16309	2.010
S 13C5-PFPeA	Linear	11121	11248	11363	11123	10976	10861	10777	11109	11072	1.749
S 13C3-PFBS	Linear	2551	2568	2604	2534	2500	2459	2455	2507	2522	2.058
S 13C2-4:2FTS	Linear	4533	4539	4598	4487	4551	4600	4931	5727	4746	8.843
S 13C5-PFHxA	Linear	15083	15058	15044	14697	14669	14381	14162	14640	14717	2.278
S 13C3-HFPO-DA	Linear	1708	1754	1751	1717	1736	1635	1587	1472	1670	5.939
S 13C4-PFHpA	Linear	17018	17016	17397	16822	16571	16439	16076	16216	16694	2.687
S 13C3-PFHxS	Linear	2591	2592	2641	2540	2512	2471	2430	2443	2528	3.031
S 13C2-6:2FTS	Linear	4365	4367	4549	4422	4429	4528	4619	5279	4570	6.575
S 13C8-PFOA	Linear	16413	16365	16456	16086	15931	15403	14993	14917	15821	4.004
S 13C8-PFOS	Linear	3952	3973	4043	3899	3816	3767	3721	3648	3852	3.545
S 13C9-PFNA	Linear	15428	15338	15640	15168	14795	14724	14231	14227	14944	3.592
S 13C8-FOSA	Linear	11057	10949	11109	10733	10712	10380	9849	9410	10525	5.795
S 13C6-PFDA	Linear	17160	17326	17474	16907	16721	16481	15880	15314	16658	4.465
S 13C2-8:2FTS	Linear	2642	2616	2720	2677	2661	2729	2935	3384	2795	9.206
S d3-MeFOSAA	Linear	2436	2374	2428	2337	2361	2369	2330	2358	2374	1.638
S 13C7-PFUnDA	Linear	19045	18837	19305	18773	18825	18235	17871	17424	18539	3.441
S 13C2-PFDoDA	Linear	19949	19609	20176	19896	19572	19306	18965	18964	19555	2.303
S 13C2-PFTeDA	Linear	18951	18560	18631	18818	18399	18229	17409	17347	18293	3.322
I M4-PFBA	---------- ISTD ----------										
T PFBA	Linear	0.1778	0.1806	0.1714	0.1823	0.1853	0.1868	0.1884	0.1899	0.1828	3.366
I M5-PFPeA	---------- ISTD ----------										
T PFPeA	Linear	0.9984	0.9743	0.9201	0.9760	1.0069	1.0084	1.0130	1.0138	0.9889	3.221
I M5-PFHxA	---------- ISTD ----------										
T PFHxA	Linear	0.3521	0.3446	0.3360	0.3364	0.3540	0.3527	0.3570	0.3561	0.3486	2.449
I M4-PFHpA	---------- ISTD ----------										
T PFHpA	Linear	0.8085	0.8329	0.8040	0.8467	0.8635	0.8724	0.8746	0.8887	0.8489	3.703

Generated at 12:55 PM on 3/21/2019

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S3Q54-ICC54
Lab FileID: 3Q1977.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M8-PFOA						ISTD					
T ADONA	Quadratic	1.1033	1.1541	1.1123	1.1802	1.2166	1.2515	1.2726	1.3021	1.1991	6.158
T PFOA	Linear	0.5183	0.5112	0.4972	0.5234	0.5276	0.5400	0.5334	0.5359	0.5234	2.712
I M9-PFNA						ISTD					
T PFNA	Linear	0.5541	0.5888	0.5667	0.5796	0.6237	0.6120	0.6198	0.6224	0.5959	4.582
I M6-PFDA						ISTD					
T 9Cl-PF3ONS	Quadratic	0.1006	0.1082	0.1049	0.1094	0.1117	0.1124	0.1177	0.1230	0.1110	6.329
T PFDA	Linear	0.4082	0.4313	0.4371	0.4586	0.4742	0.4714	0.4697	0.4747	0.4532	5.467
I M7-PFUnDA						ISTD					
T PFDS	Avg RF	0.0668	0.0624	0.0585	0.0624	0.0594	0.0616	0.0607	0.0609	0.0616	4.092
T PFUnDA	Linear	0.3961	0.3940	0.3817	0.4238	0.4265	0.4351	0.4306	0.4347	0.4153	5.110
I M2-PFDoDA						ISTD					
T 11Cl-PF3OUdS	Linear	0.3697	0.3712	0.3518	0.3746	0.3808	0.3820	0.3823	0.3833	0.3745	2.829
T PFDoDA	Linear	0.4124	0.4273	0.4118	0.4275	0.4523	0.4476	0.4565	0.4563	0.4365	4.350
I M2-PFTeDA						ISTD					
T PFTrDA	Linear	0.4679	0.4816	0.4851	0.5088	0.5274	0.5177	0.5328	0.5330	0.5068	5.022
T PFTeDA	Linear	0.5678	0.5867	0.5698	0.5973	0.6160	0.6122	0.6204	0.6230	0.5991	3.720
I M8-FOSA						ISTD					
T FOSA	Quadratic	0.4009	0.4284	0.4219	0.4415	0.4483	0.4495	0.4517	0.4569	0.4374	4.340
I M3-PFBS						ISTD					
T PFBS	Linear	1.3066	1.3391	1.2825	1.3420	1.3732	1.3888	1.3937	1.3914	1.3522	3.094
T PFPeS	Linear	0.7691	0.8027	0.7934	0.8504	0.8550	0.8704	0.8677	0.8645	0.8341	4.742
I M3-PFHxS						ISTD					
T PFHxS	Linear	1.0299	1.0712	1.0213	1.0418	1.0905	1.0848	1.0936	1.1022	1.0669	2.948
T PFHpS	Linear	0.8369	0.9221	0.9108	0.9484	0.9509	0.9457	0.9655	0.9491	0.9287	4.409
I M8-PFOS						ISTD					
T PFOS	Linear	1.2142	0.9864	0.8528	0.9003	0.9034	0.9142	0.9135	0.9302	0.9519	11.792
T PFNS	Linear	0.5094	0.5380	0.5156	0.5684	0.5549	0.5558	0.5512	0.5374	0.5413	3.780
I M2-4:2FTS						ISTD					
T 4:2FTS	Avg RF	0.5444	0.5473	0.5423	0.5761	0.5804	0.5676	0.5341	0.4825	0.5468	5.674
I M2-6:2FTS						ISTD					
T 6:2FTS	Avg RF	0.6448	0.4841	0.4668	0.4857	0.4961	0.4822	0.4687	0.4178	0.4933	13.322
I M2-8:2FTS						ISTD					
T 8:2FTS	Avg RF	0.5048	0.4891	0.5108	0.5210	0.5191	0.5186	0.4793	0.4178	0.4951	7.001
I M3-MeFOSAA						ISTD					

Generated at 12:55 PM on 3/21/2019

Initial Calibration Summary

Job Number: FA62220 **Sample:** S3Q54-ICC54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1977.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T MeFOSAA	Linear	0.4719	0.4479	0.5241	0.5131	0.5067	0.5189	0.5399	0.5350	0.5072	6.264
T EtFOSAA	Quadratic	0.5269	0.4603	0.4370	0.4467	0.4541	0.4469	0.4531	0.4587	0.4605	6.052
I M3-HFPO-DA				---------- ISTD ----------							
T HFPO-DA	Linear	1.5344	1.5054	1.4645	1.5764	1.5836	1.6456	1.6356	1.7158	1.5827	5.166
I 13C2-PFOA				---------- ISTD ----------							
S M2-PFOA	Linear	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.000
I 13C4-PFOS				---------- ISTD ----------							
S M4-PFOS	Linear	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.000

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Summary

Job Number: FA62220 **Sample:** S3Q54-ICC54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1977.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	Curve Fit R2
S 13C4-PFBA	Linear	y = 16309.112710 * x	0.000000
T PFBA	Linear	y = 0.189472 * x	0.999962
S 13C5-PFPeA	Linear	y = 11072.412322 * x	0.000000
T PFPeA	Linear	y = 1.013343 * x	0.999990
S 13C3-PFBS	Linear	y = 2522.337422 * x	0.000000
T PFBS	Linear	y = 1.391454 * x	0.999990
S 13C2-4:2FTS	Linear	y = 4745.705236 * x	0.000000
S 13C5-PFHxA	Linear	y = 14716.889080 * x	0.000000
T PFHxA	Linear	y = 0.356127 * x	0.999983
T PFPeS	Linear	y = 0.865196 * x	0.999989
S 13C3-HFPO-DA	Linear	y = 1669.883520 * x	0.000000
T HFPO-DA	Linear	y = 1.696905 * x	0.999365
S 13C4-PFHpA	Linear	y = 16694.177448 * x	0.000000
T PFHpA	Linear	y = 0.885168 * x	0.999914
T PFHxS	Linear	y = 1.099775 * x	0.999965
S 13C3-PFHxS	Linear	y = 2527.532987 * x	0.000000
T ADONA	Quadratic	y = 0.013156 * x ^ 2 + 1.236642 * x	0.999982
S 13C2-6:2FTS	Linear	y = 4569.802753 * x	0.000000
T PFOA	Linear	y = 0.535450 * x	0.999985
S 13C8-PFOA	Linear	y = 15820.619667 * x	0.000000
S M2-PFOA	Linear	y = 1.000000 * x	NaN
T PFHpS	Linear	y = 0.952125 * x	0.999927
S 13C8-PFOS	Linear	y = 3852.284530 * x	0.000000
S M4-PFOS	Linear	y = 1.000000 * x	NaN
T PFOS	Linear	y = 0.926210 * x	0.999900
S 13C9-PFNA	Linear	y = 14943.935134 * x	0.000000
T PFNA	Linear	y = 0.621451 * x	0.999967
S 13C8-FOSA	Linear	y = 10524.713125 * x	0.000000
T FOSA	Quadratic	y = 0.002055 * x ^ 2 + 0.446624 * x	0.999998
T 9Cl-PF3ONS	Quadratic	y = 0.002337 * x ^ 2 + 0.111356 * x	0.999987
T PFNS	Linear	y = 0.540829 * x	0.999794
S 13C6-PFDA	Linear	y = 16657.936302 * x	0.000000
T PFDA	Linear	y = 0.473603 * x	0.999966
S 13C2-8:2FTS	Linear	y = 2795.424818 * x	0.000000
S d3-MeFOSAA	Linear	y = 2374.052116 * x	0.000000
T MeFOSAA	Linear	y = 0.535177 * x	0.999893
T EtFOSAA	Quadratic	y = 0.002344 * x ^ 2 + 0.447038 * x	0.999995
S 13C7-PFUnDA	Linear	y = 18539.340851 * x	0.000000
T PFUnDA	Linear	y = 0.433852 * x	0.999966
T 11Cl-PF3OUdS	Linear	y = 0.383046 * x	0.999993
S 13C2-PFDoDA	Linear	y = 19554.588748 * x	0.000000
T PFDoDA	Linear	y = 0.455986 * x	0.999966
T PFTrDA	Linear	y = 0.532422 * x	0.999951

Generated at 12:55 PM on 3/21/2019

Initial Calibration Summary

Job Number: FA62220
Account: AHTNACAS Ahtna Environmental Inc
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S3Q54-ICC54
Lab FileID: 3Q1977.D

Initial Calibration Report

S 13C2-PFTeDA	Linear	y = 18292.858140 * x	0.000000
T PFTeDA	Linear	y = 0.622052 * x	0.999974

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

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Generated at 12:55 PM on 3/21/2019

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1981.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0321_id_genx_S3Q54\s3q54.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1972.d
2:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d
3:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d
4:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d
5:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d
6:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d
7:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d
8:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d

Data File: 3q1981
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	18.886	-5.6	94.4
13C2-6:2FTS	20.000	19.533	-2.3	97.7
13C2-8:2FTS	20.000	19.626	-1.9	98.1
13C2-PFDoDA	20.000	21.290	6.5	106.5
13C2-PFTeDA	20.000	21.236	6.2	106.2
13C3-PFBS	20.000	20.262	1.3	101.3
13C3-PFHxS	20.000	20.317	1.6	101.6
13C4-PFBA	20.000	20.329	1.6	101.6
13C4-PFHpA	20.000	20.411	2.1	102.1
13C5-PFHxA	20.000	20.152	0.8	100.8
13C5-PFPeA	20.000	20.198	1.0	101.0
13C6-PFDA	20.000	21.301	6.5	106.5
13C7-PFUnDA	20.000	21.582	7.9	107.9
13C8-FOSA	20.000	21.229	6.1	106.1
13C8-PFOA	20.000	20.599	3.0	103.0
13C8-PFOS	20.000	20.316	1.6	101.6
13C9-PFNA	20.000	20.679	3.4	103.4
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	20.910	4.6	104.6
EtFOSAA	20.000	15.108	-24.5	75.5
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	17.092	-14.5	85.5
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	0.000	# -100.0	0.0
PFDA	20.000	0.000	# -100.0	0.0
PFDoDA	20.000	0.000	# -100.0	0.0
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	0.000	# -100.0	0.0
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	0.000	# -100.0	0.0
PFHxS	20.000	0.000	# -100.0	0.0
PFNA	20.000	0.000	# -100.0	0.0
PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	17.376	-13.1	86.9
PFOS	20.000	19.416	-2.9	97.1

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1981.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	0.000	# -100.0	0.0
PFTrDA	20.000	0.000	# -100.0	0.0
PFUnDA	20.000	0.000	# -100.0	0.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	103.778	3.8	103.8
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
M2-PFOA	20.000	20.000	0.0	100.0
M4-PFOS	20.000	20.000	0.0	100.0

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1982.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0321_id_genx_S3Q54\s3q54.batch.bin

Level ID:Calibration File
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2:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d
3:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d
4:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d
5:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d
6:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d
7:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d
8:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d

Data File: 3q1982
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	20.095	0.5	100.5
13C2-6:2FTS	20.000	20.282	1.4	101.4
13C2-8:2FTS	20.000	20.447	2.2	102.2
13C2-PFDoDA	20.000	20.909	4.5	104.5
13C2-PFTeDA	20.000	20.596	3.0	103.0
13C3-PFBS	20.000	20.186	0.9	100.9
13C3-PFHxS	20.000	20.516	2.6	102.6
13C4-PFBA	20.000	20.281	1.4	101.4
13C4-PFHpA	20.000	20.327	1.6	101.6
13C5-PFHxA	20.000	20.176	0.9	100.9
13C5-PFPeA	20.000	20.268	1.3	101.3
13C6-PFDA	20.000	20.938	4.7	104.7
13C7-PFUnDA	20.000	21.092	5.5	105.5
13C8-FOSA	20.000	20.468	2.3	102.3
13C8-PFOA	20.000	20.406	2.0	102.0
13C8-PFOS	20.000	20.601	3.0	103.0
13C9-PFNA	20.000	20.438	2.2	102.2
4:2FTS	20.000	18.355	-8.2	91.8
6:2FTS	20.000	17.905	-10.5	89.5
8:2FTS	20.000	19.092	-4.5	95.5
d3-MeFOSAA	20.000	20.898	4.5	104.5
EtFOSAA	20.000	18.951	-5.2	94.8
FOSA	20.000	19.808	-1.0	99.0
MeFOSAA	20.000	18.854	-5.7	94.3
PFBA	20.000	18.505	-7.5	92.5
PFBS	20.000	16.176	-19.1	80.9
PFDA	20.000	17.053	-14.7	85.3
PFDoDA	20.000	19.431	-2.8	97.2
PFDS	20.000	16.807	-16.0	84.0
PFHpA	20.000	19.450	-2.7	97.3
PFHpS	20.000	18.260	-8.7	91.3
PFHxA	20.000	16.936	-15.3	84.7
PFHxS	20.000	16.000	-20.0	80.0
PFNA	20.000	17.649	-11.8	88.2
PFNS	20.000	17.765	-11.2	88.8
PFOA	20.000	18.953	-5.2	94.8
PFOS	20.000	18.066	-9.7	90.3

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1982.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFPeA	20.000	17.721	-11.4	88.6
PFPeS	20.000	15.791	-21.0	79.0
PFTeDA	20.000	17.115	-14.4	85.6
PFTrDA	20.000	20.447	2.2	102.2
PFUnDA	20.000	19.262	-3.7	96.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	0.000	# -100.0	0.0
13C3-HFPO-DA	100.000	105.525	5.5	105.5
9Cl-PF3ONS	20.000	0.000	# -100.0	0.0
ADONA	20.000	0.000	# -100.0	0.0
HFPO-DA	100.000	0.000	# -100.0	0.0
M3-HFPO-DA	---	--ISTD--		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
M2-PFOA	20.000	20.000	0.0	100.0
M4-PFOS	20.000	20.000	0.0	100.0

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1983.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0321_id_genx_S3Q54\s3q54.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1972.d
2:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d
3:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d
4:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d
5:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d
6:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d
7:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d
8:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d

Data File: 3q1983
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.027	-4.9	95.1
13C2-6:2FTS	20.000	19.608	-2.0	98.0
13C2-8:2FTS	20.000	19.692	-1.5	98.5
13C2-PFDoDA	20.000	20.862	4.3	104.3
13C2-PFTeDA	20.000	20.760	3.8	103.8
13C3-PFBS	20.000	20.108	0.5	100.5
13C3-PFHxS	20.000	20.122	0.6	100.6
13C4-PFBA	20.000	20.283	1.4	101.4
13C4-PFHpA	20.000	20.165	0.8	100.8
13C5-PFHxA	20.000	20.125	0.6	100.6
13C5-PFPeA	20.000	20.129	0.6	100.6
13C6-PFDA	20.000	21.496	7.5	107.5
13C7-PFUnDA	20.000	21.238	6.2	106.2
13C8-FOSA	20.000	21.369	6.8	106.8
13C8-PFOA	20.000	20.589	2.9	102.9
13C8-PFOS	20.000	20.255	1.3	101.3
13C9-PFNA	20.000	20.562	2.8	102.8
4:2FTS	20.000	0.000	# -100.0	0.0
6:2FTS	20.000	0.000	# -100.0	0.0
8:2FTS	20.000	0.000	# -100.0	0.0
d3-MeFOSAA	20.000	21.098	5.5	105.5
EtFOSAA	20.000	17.612	-11.9	88.1
FOSA	20.000	0.000	# -100.0	0.0
MeFOSAA	20.000	16.806	-16.0	84.0
PFBA	20.000	0.000	# -100.0	0.0
PFBS	20.000	18.885	-5.6	94.4
PFDA	20.000	19.031	-4.8	95.2
PFDoDA	20.000	18.646	-6.8	93.2
PFDS	20.000	0.000	# -100.0	0.0
PFHpA	20.000	19.176	-4.1	95.9
PFHpS	20.000	0.000	# -100.0	0.0
PFHxA	20.000	18.887	-5.6	94.4
PFHxS	20.000	19.171	-4.1	95.9
PFNA	20.000	19.638	-1.8	98.2
PFNS	20.000	0.000	# -100.0	0.0
PFOA	20.000	19.435	-2.8	97.2
PFOS	20.000	18.625	-6.9	93.1

Initial Calibration Verification

Job Number: FA62220 **Sample:** S3Q54-ICV54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1983.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFPeA	20.000	0.000	# -100.0	0.0
PFPeS	20.000	0.000	# -100.0	0.0
PFTeDA	20.000	18.757	-6.2	93.8
PFTrDA	20.000	19.726	-1.4	98.6
PFUnDA	20.000	18.953	-5.2	94.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	19.863	-0.7	99.3
13C3-HFPO-DA	100.000	101.128	1.1	101.1
9Cl-PF3ONS	20.000	19.538	-2.3	97.7
ADONA	20.000	19.610	-1.9	98.1
HFPO-DA	20.000	19.283	-3.6	96.4
M3-HFPO-DA	---	--ISTD--		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
M2-PFOA	20.000	20.000	0.0	100.0
M4-PFOS	20.000	20.000	0.0	100.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S3Q54-CC54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1992.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Continuing Calibration Report

Batch: D:\MassHunter\Data\0321_id_genx_S3Q54\s3q54.batch.bin

Level ID:Calibration File
1:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1972.d
2:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d
3:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d
4:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d
5:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d
6:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d
7:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d
8:D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d

Data File: 3q1992
Type : QC
Level : 6

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	20.000	19.373	-3.1	96.9
13C2-6:2FTS	20.000	19.795	-1.0	99.0
13C2-8:2FTS	20.000	20.520	2.6	102.6
13C2-PFDoDA	20.000	20.852	4.3	104.3
13C2-PFTeDA	20.000	20.730	3.7	103.7
13C3-PFBS	20.000	19.274	-3.6	96.4
13C3-PFHxS	20.000	19.479	-2.6	97.4
13C4-PFBA	20.000	19.556	-2.2	97.8
13C4-PFHpA	20.000	19.605	-2.0	98.0
13C5-PFHxA	20.000	19.357	-3.2	96.8
13C5-PFPeA	20.000	19.173	-4.1	95.9
13C6-PFDA	20.000	20.439	2.2	102.2
13C7-PFUnDA	20.000	20.872	4.4	104.4
13C8-FOSA	20.000	20.086	0.4	100.4
13C8-PFOA	20.000	19.800	-1.0	99.0
13C8-PFOS	20.000	19.285	-3.6	96.4
13C9-PFNA	20.000	20.156	0.8	100.8
4:2FTS	20.000	20.973	4.9	104.9
6:2FTS	20.000	19.660	-1.7	98.3
8:2FTS	20.000	20.574	2.9	102.9
d3-MeFOSAA	20.000	20.618	3.1	103.1
EtFOSAA	20.000	20.444	2.2	102.2
FOSA	20.000	20.178	0.9	100.9
MeFOSAA	20.000	18.885	-5.6	94.4
PFBA	20.000	19.725	-1.4	98.6
PFBS	20.000	19.979	-0.1	99.9
PFDA	20.000	20.165	0.8	100.8
PFDoDA	20.000	19.706	-1.5	98.5
PFDS	20.000	18.309	-8.5	91.5
PFHpA	20.000	19.830	-0.8	99.2
PFHpS	20.000	19.989	-0.1	99.9
PFHxA	20.000	19.875	-0.6	99.4
PFHxS	20.000	19.650	-1.7	98.3
PFNA	20.000	19.791	-1.0	99.0
PFNS	20.000	20.907	4.5	104.5
PFOA	20.000	20.009	0.0	100.0
PFOS	20.000	19.906	-0.5	99.5

Continuing Calibration Summary

Job Number: FA62220 **Sample:** S3Q54-CC54
Account: AHTNACAS Ahtna Environmental Inc **Lab FileID:** 3Q1992.D
Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

PFPeA	20.000	19.603	-2.0	98.0
PFPeS	20.000	20.124	0.6	100.6
PFTeDA	20.000	19.806	-1.0	99.0
PFTrDA	20.000	19.626	-1.9	98.1
PFUnDA	20.000	19.752	-1.2	98.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11Cl-PF3OUdS	20.000	18.785	-6.1	93.9
13C3-HFPO-DA	100.000	95.535	-4.5	95.5
9Cl-PF3ONS	20.000	18.714	-6.4	93.6
ADONA	20.000	19.643	-1.8	98.2
HFPO-DA	100.000	97.698	-2.3	97.7
M3-HFPO-DA	---	--ISTD--		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
M2-PFOA	20.000	20.000	0.0	100.0
M4-PFOS	20.000	20.000	0.0	100.0

CC Criteria: +/- 30%

MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27693.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 4:16:56 PM
Sample Name : fa62220-1
Vial : Vial 15
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

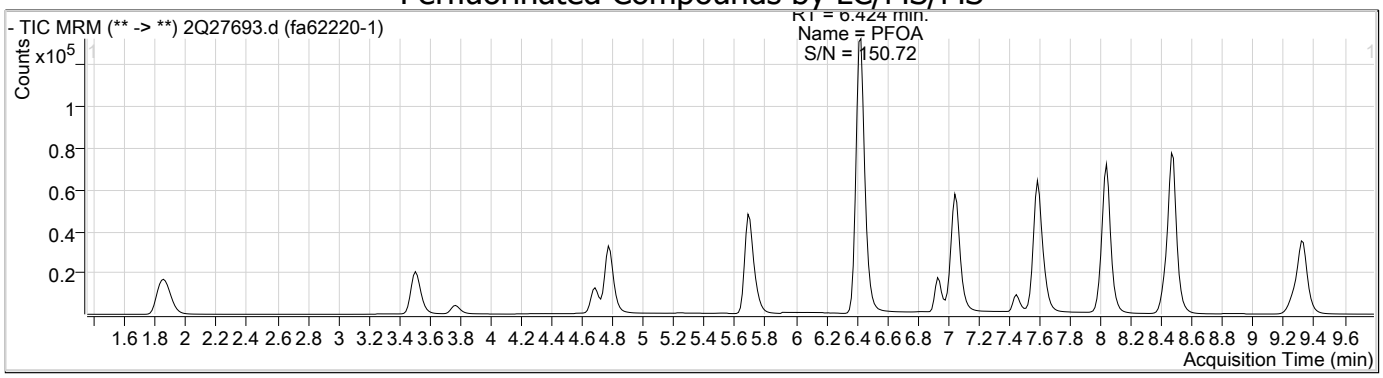
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	284864	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	40120	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	105748	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	89026	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	125442	20.00	µg/L	-0.013
M4-PFHpA	5.693	367.0 -> 322.0	183385	20.00	µg/L	-0.013
M8-PFOA	6.434	421.0 -> 376.0	194051	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	183774	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	231649	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	296411	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	345887	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	192909	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	58239	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	15092	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	16581	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	19201	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	49890	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	61754	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	35525	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	28284	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	49717	16.72	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.6%		
13C2-6:2FTS	6.416	429.0 -> 409.0	61748	19.24	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	35529	16.02	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.1%		
13C2-PFDoDA	8.466	615.0 -> 570.0	345754	18.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%		
13C2-PFTeDA	9.315	715.0 -> 670.0	192152	14.97	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.8%		
13C3-PFBS	3.767	302.0 -> 99.0	15091	16.55	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.8%		
13C3-PFHxS	5.736	402.0 -> 99.0	16562	16.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.2%		
13C4-PFBA	1.852	217.0 -> 172.0	105661	17.62	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%		
13C4-PFHpA	5.693	367.0 -> 322.0	183491	17.74	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%		
13C5-PFHxA	4.776	318.0 -> 273.0	125433	17.26	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%		
13C5-PFPeA	3.511	268.0 -> 223.0	88852	17.48	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.4%		
13C6-PFDA	7.594	519.0 -> 474.0	231622	16.97	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

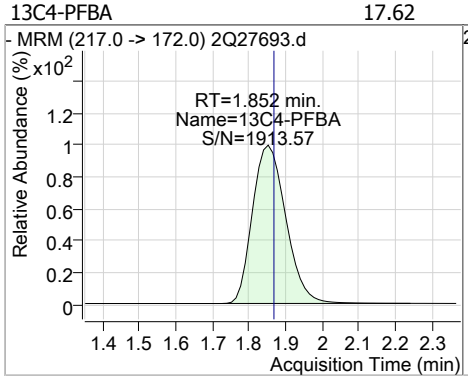
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.9%			
13C7-PFUnDA	8.041	570.0 -> 525.0	296309	17.51	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%			
13C8-FOSA	6.932	506.0 -> 78.0	58220	14.36	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%			
13C8-PFOA	6.434	421.0 -> 376.0	193928	18.59	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%			
13C8-PFOS	7.033	507.0 -> 99.0	19206	14.73	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.7%			
13C9-PFNA	7.052	472.0 -> 427.0	183701	17.35	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.8%			
d3-MeFOSAA	7.447	573.0 -> 419.0	28302	14.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.8%			
M2-PFOA	6.435	415.0 -> 370.0	284954	19.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.036	503.0 -> 80.0	40158	20.01	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.848	213.0 -> 169.0	956	0.92	µg/L		100
PFBS	3.771	299.0 -> 80.0	1915	1.60	µg/L		97
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.695	363.0 -> 319.0	4779	0.60	µg/L	m	99
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.778	313.0 -> 269.0	3151	1.46	µg/L		98
PFHxS	5.739	399.0 -> 80.0	1060	1.16	µg/L	m	97
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.424	413.0 -> 369.0	9992	1.91	µg/L	m	100
PFOS	7.037	499.0 -> 80.0	1841	1.97	µg/L	#m	69
PFPeA	3.515	263.0 -> 219.0	4739	1.23	µg/L		100
PFPeS	4.895	349.0 -> 80.0	447	0.58	µg/L	m	94
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

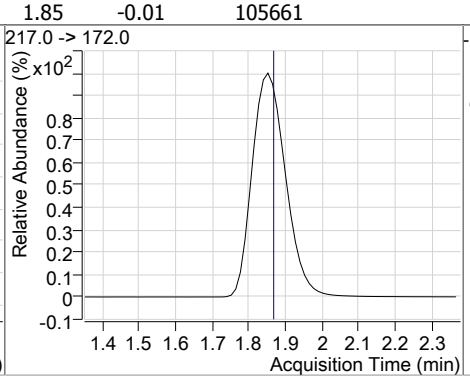
 # = Qualifier out of range, m = manually integrated, + = Area summed

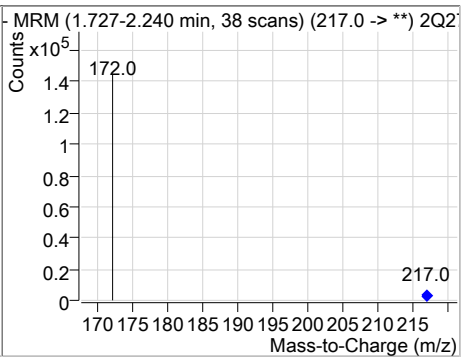
Perfluorinated Compounds by LC/MS/MS



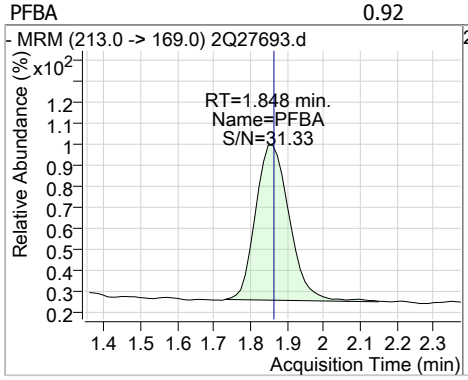
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.62	1.85	-0.01	105661				

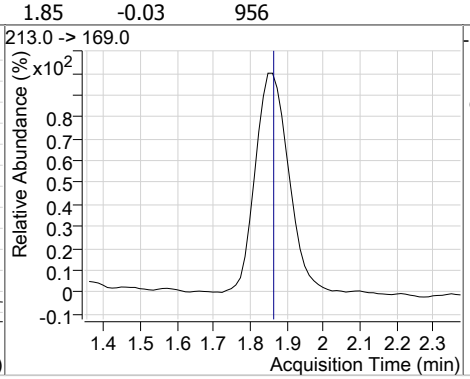


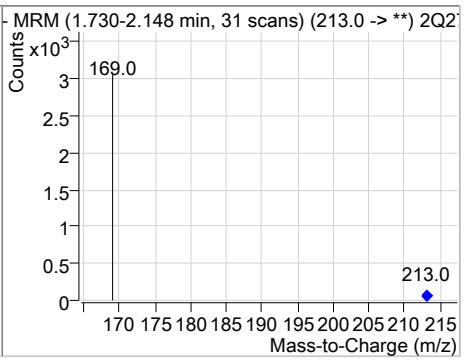




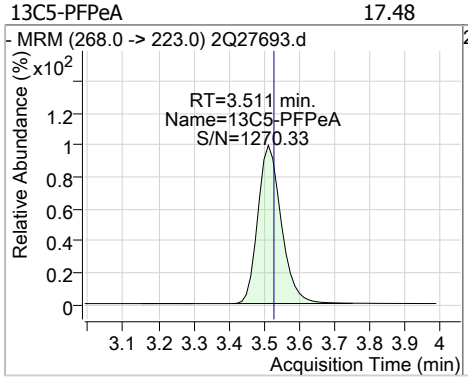
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.92	1.85	-0.03	956				

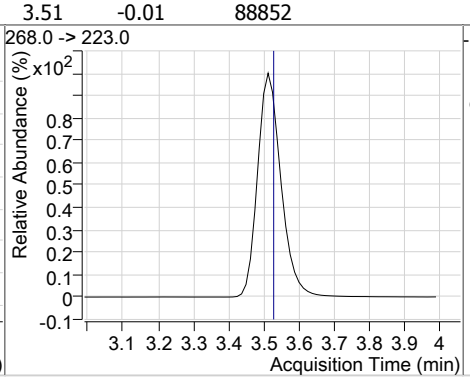


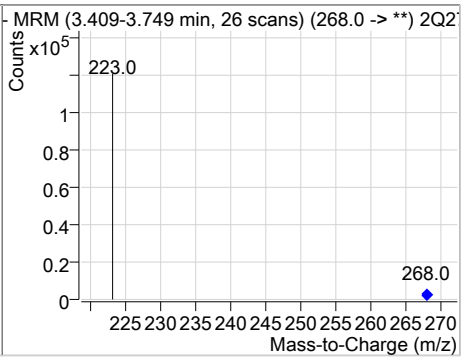




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.48	3.51	-0.01	88852				

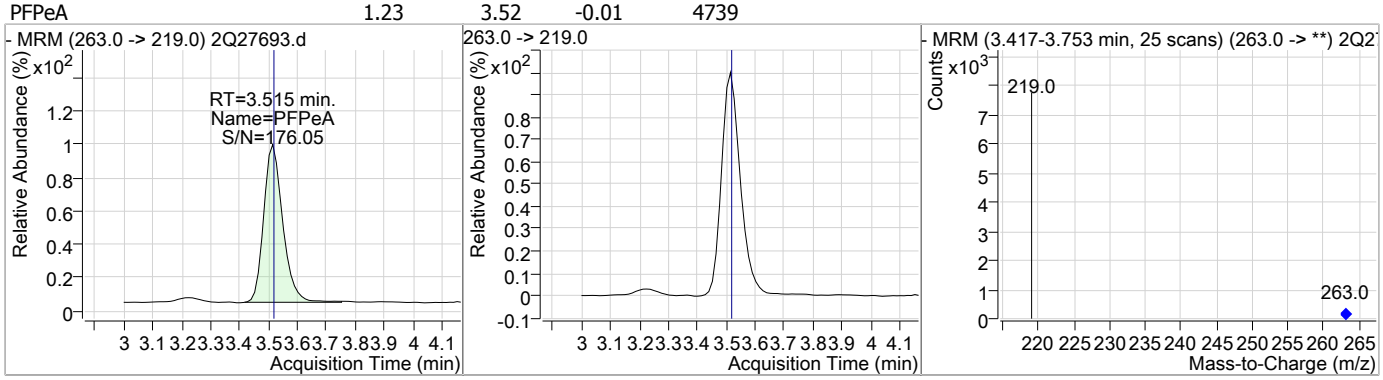




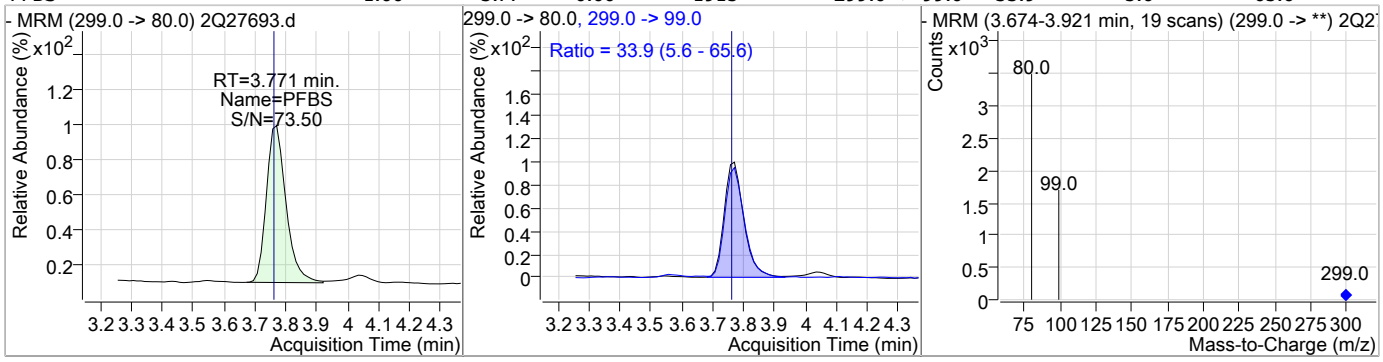


Perfluorinated Compounds by LC/MS/MS

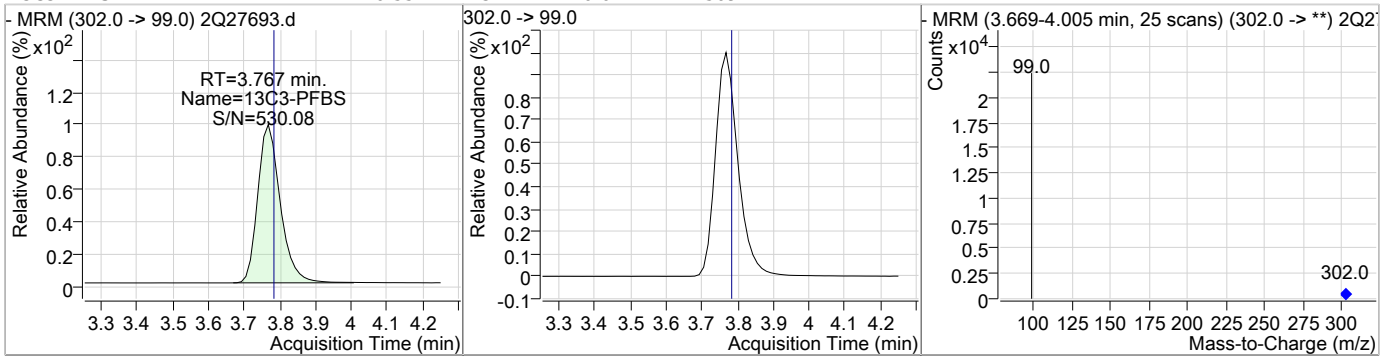
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.23	3.52	-0.01	4739				



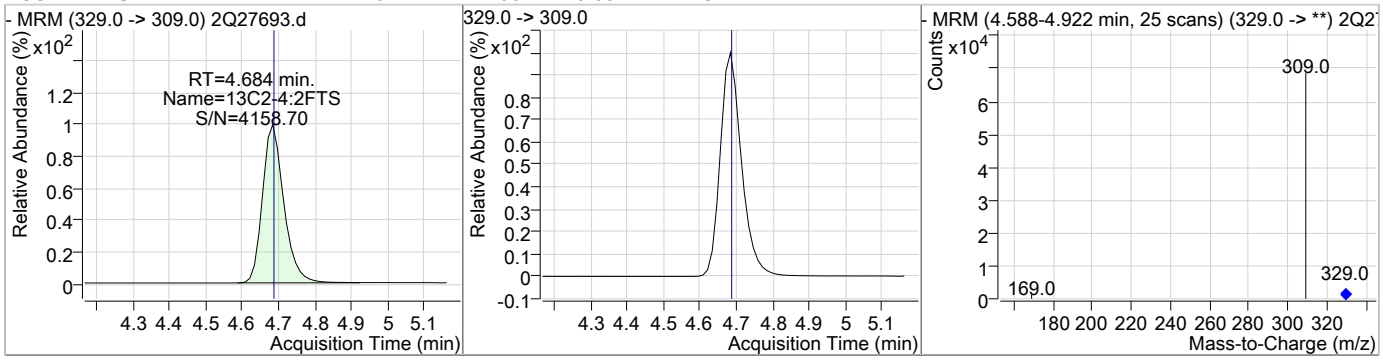
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.60	3.77	0.00	1915	299.0 -> 99.0	33.9	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.55	3.77	-0.01	15091				

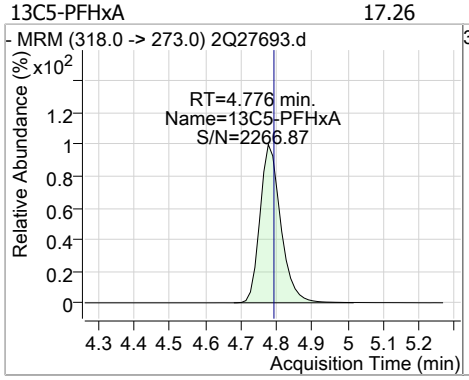


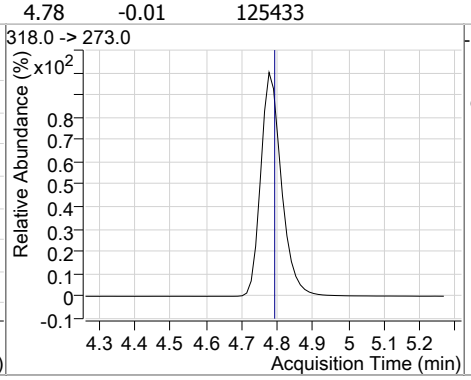
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.72	4.68	0.00	49717				

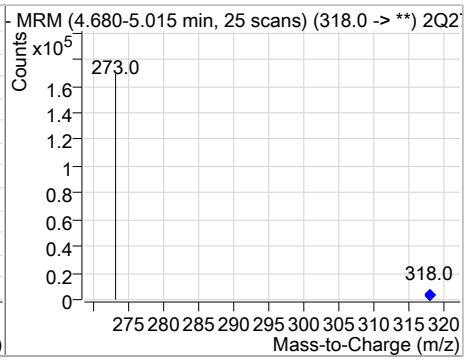


Perfluorinated Compounds by LC/MS/MS

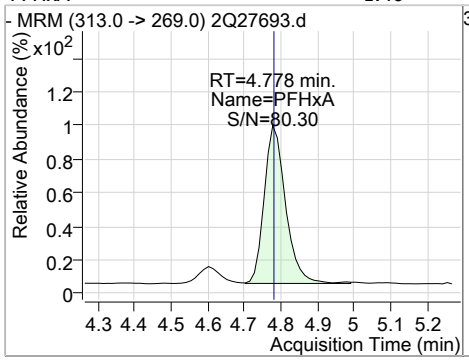
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.26	4.78	-0.01	125433				

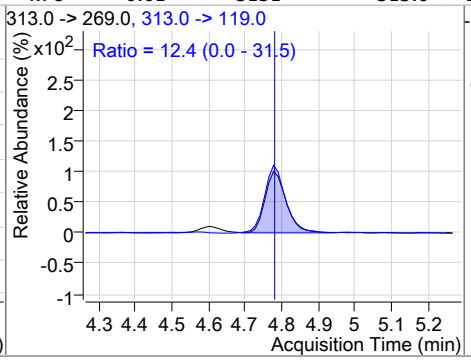


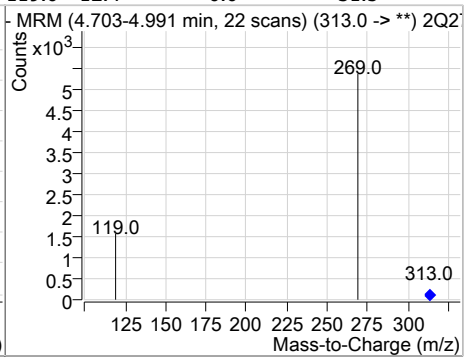




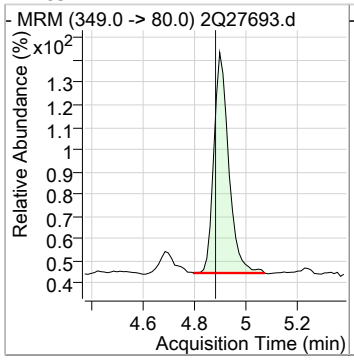
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.46	4.78	-0.01	3151	313.0 -> 119.0	12.4	0.0	31.5

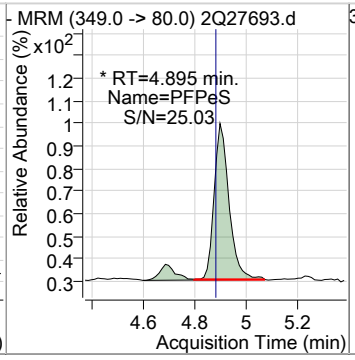


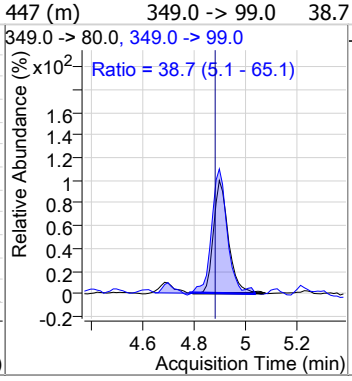


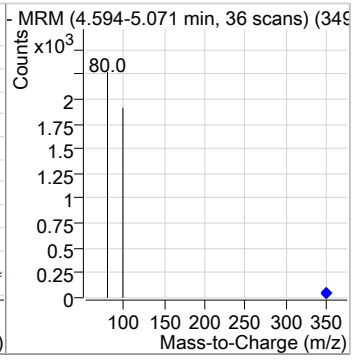


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.58	4.90	0.00	447 (m)	349.0 -> 99.0	38.7	5.1	65.1

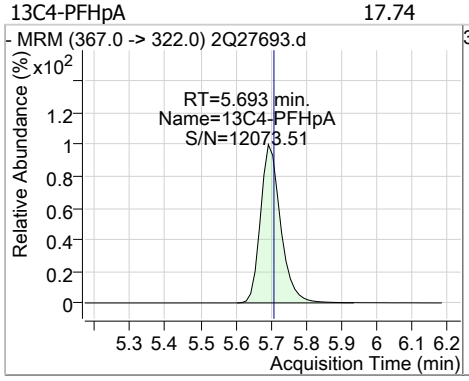


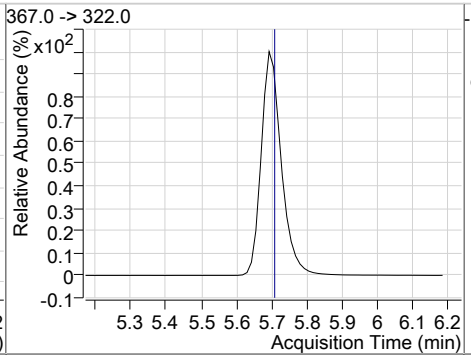


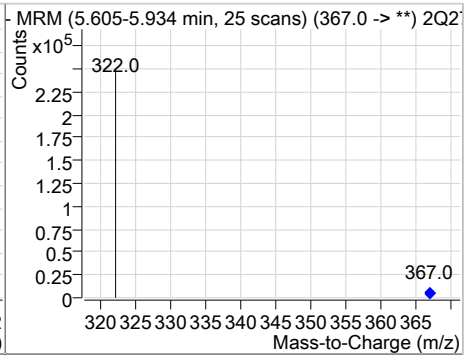




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.74	5.69	-0.01	183491				

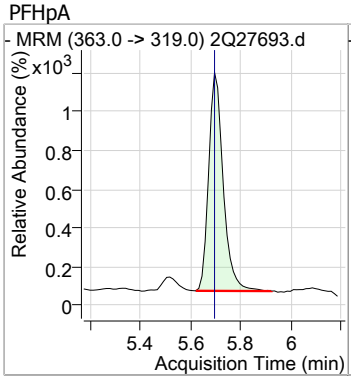


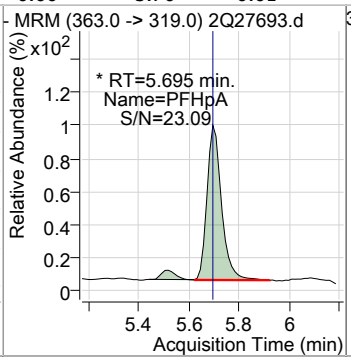


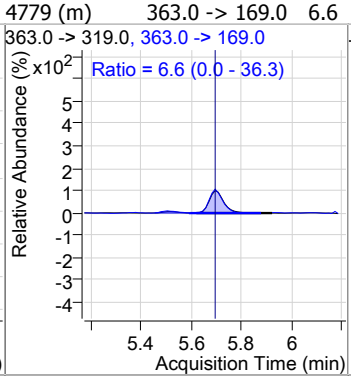


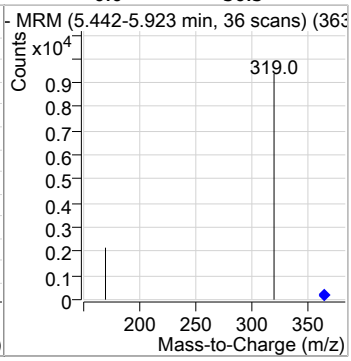
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.60	5.70	-0.01	4779 (m)	363.0 -> 169.0	6.6	0.0	36.3

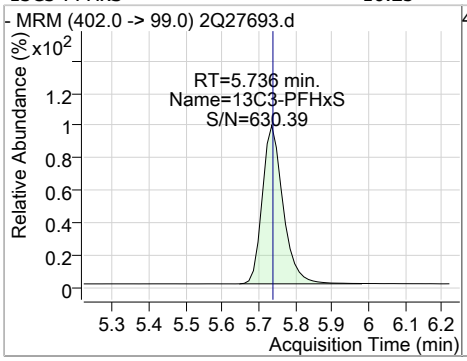


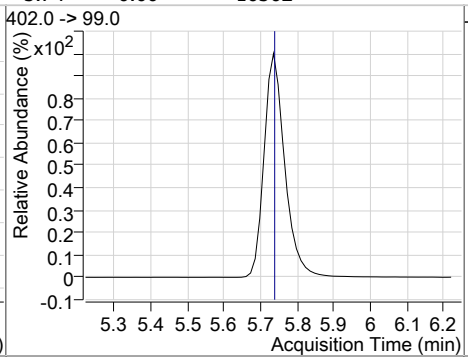


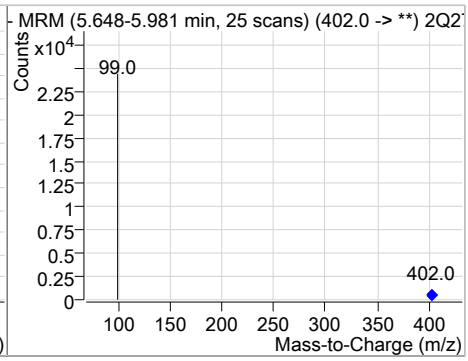




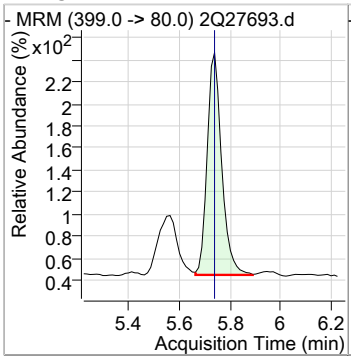
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.25	5.74	0.00	16562				

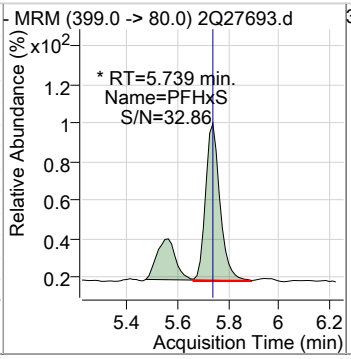


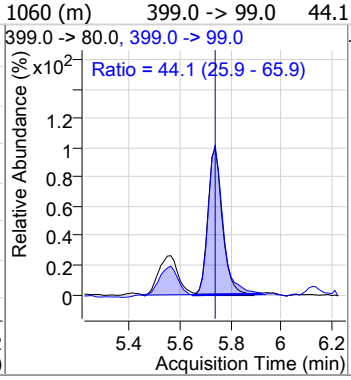


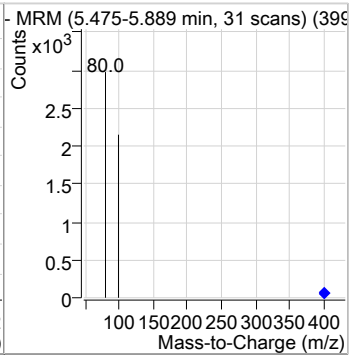


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.16	5.74	0.00	1060 (m)	399.0 -> 99.0	44.1	25.9	65.9

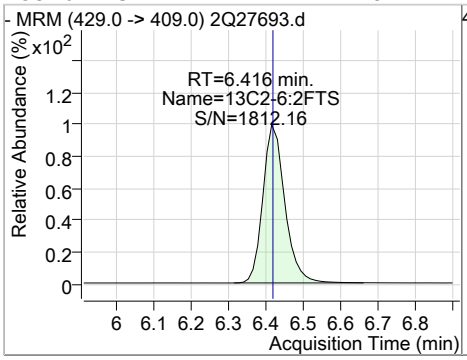


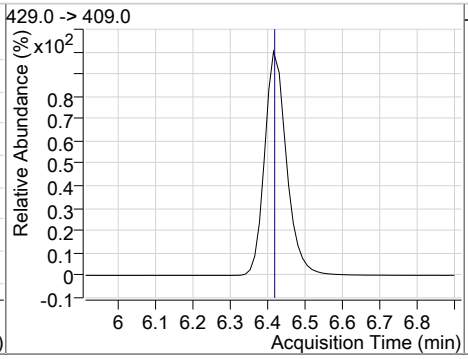


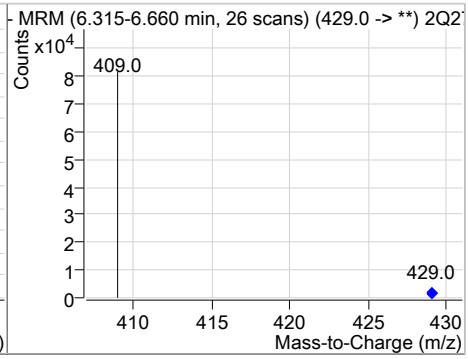




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.24	6.42	0.00	61748				

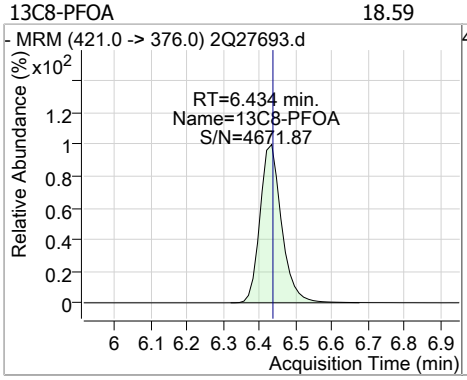


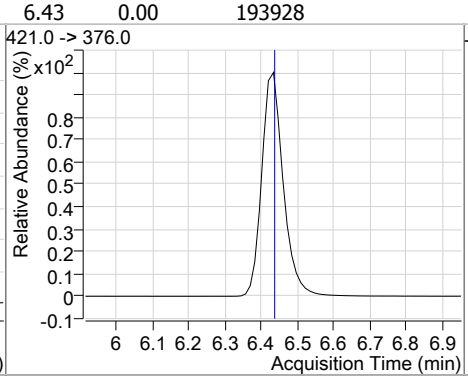


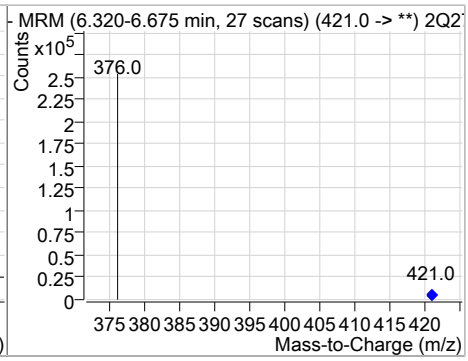


Perfluorinated Compounds by LC/MS/MS

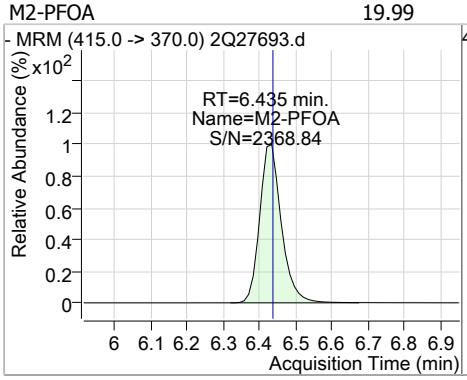
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.59	6.43	0.00	193928				

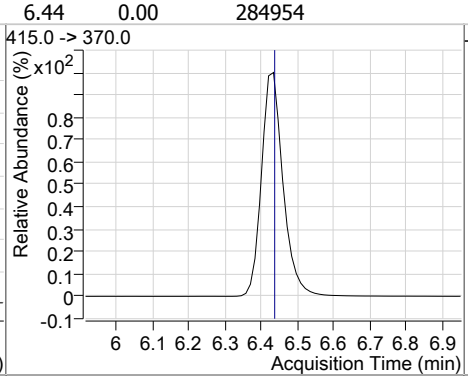


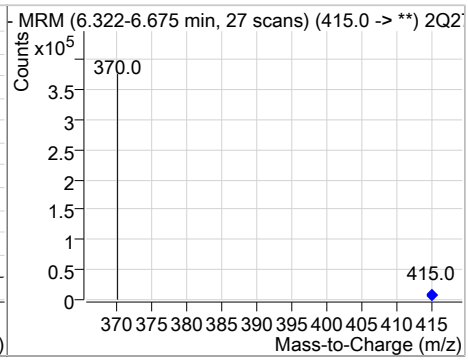




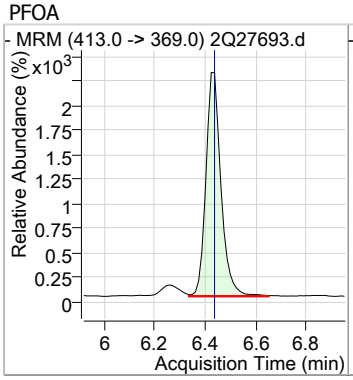
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	284954				

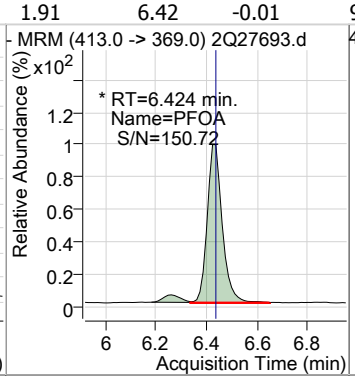


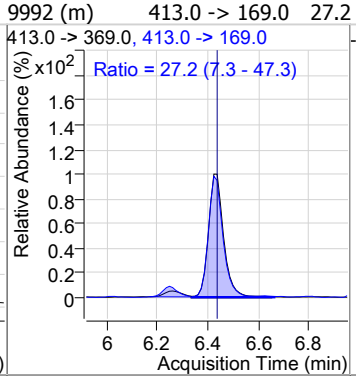


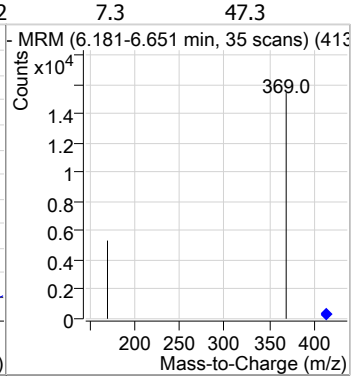


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.91	6.42	-0.01	9992 (m)	413.0 -> 169.0	27.2	7.3	47.3

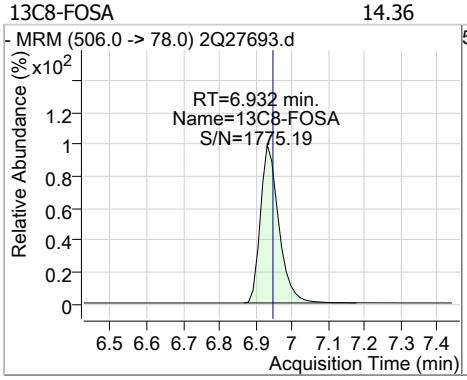


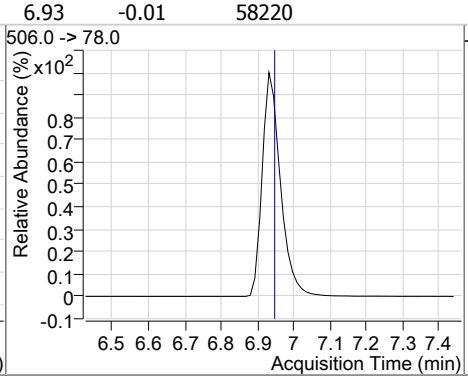


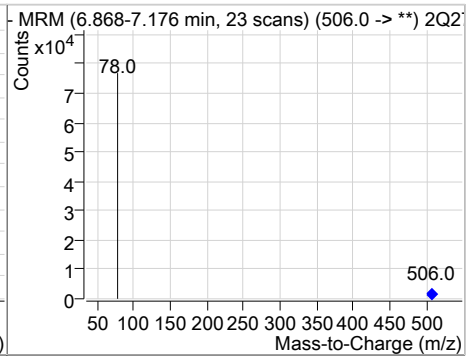




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.36	6.93	-0.01	58220				

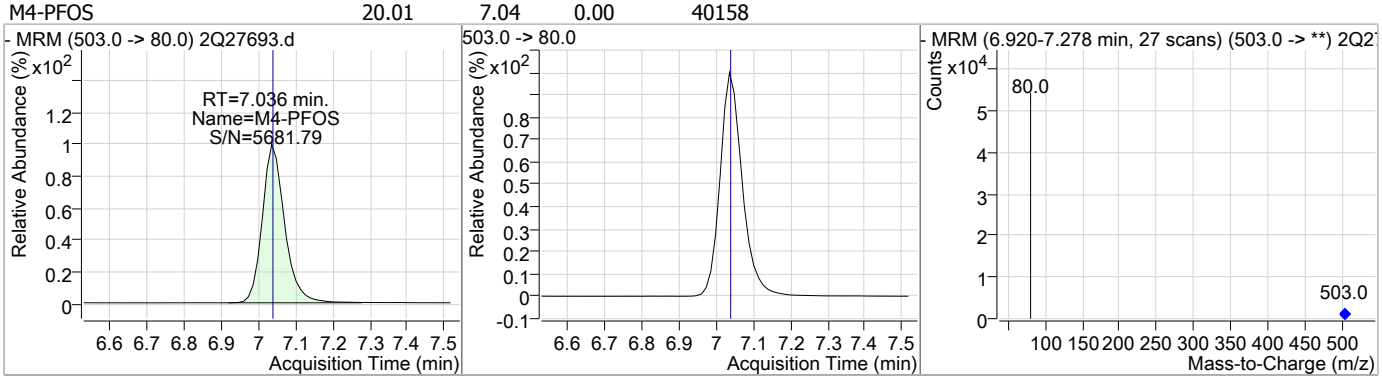




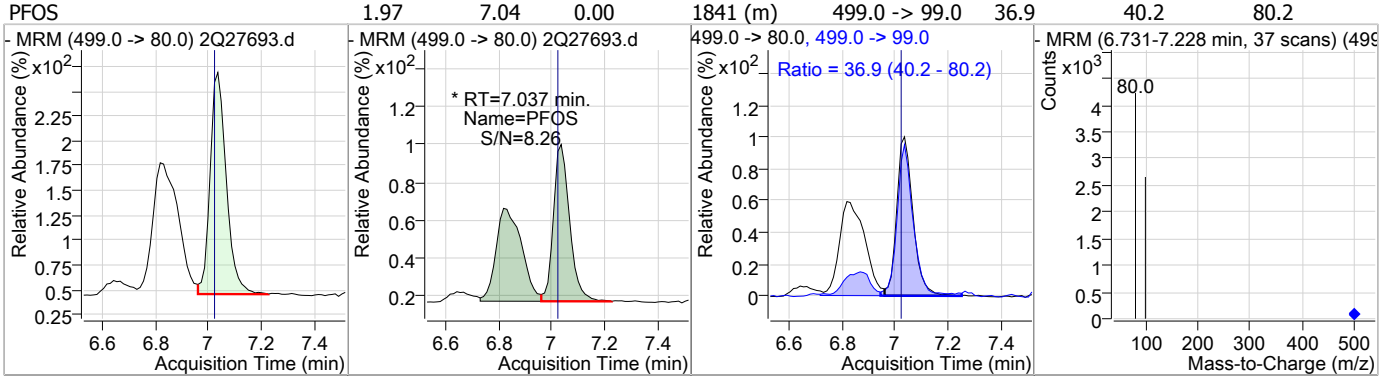


Perfluorinated Compounds by LC/MS/MS

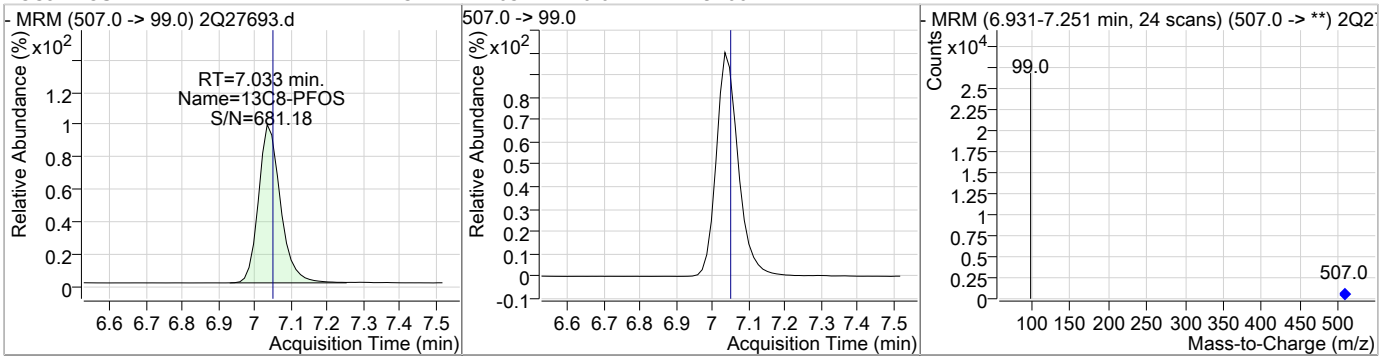
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.04	0.00	40158				



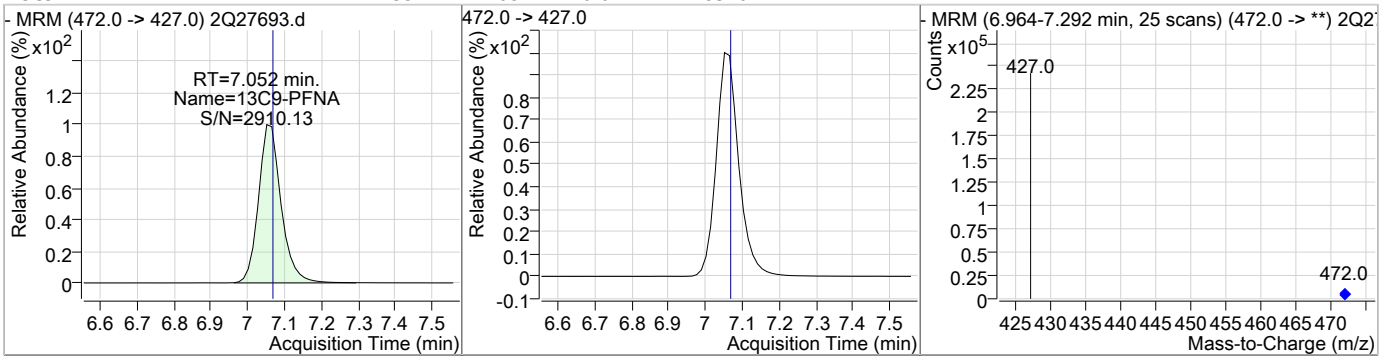
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.97	7.04	0.00	1841 (m)	499.0 -> 99.0	36.9	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.73	7.03	-0.01	19206				

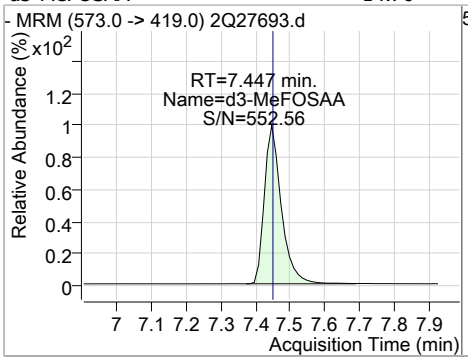


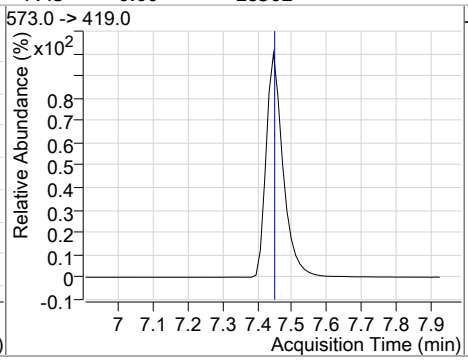
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.35	7.05	-0.01	183701				

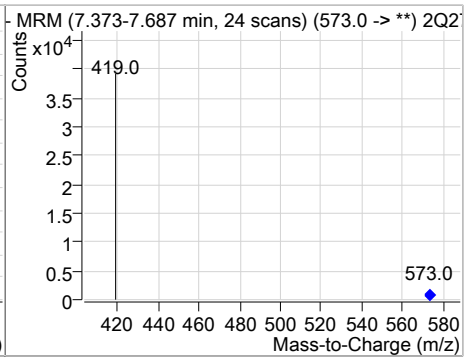


Perfluorinated Compounds by LC/MS/MS

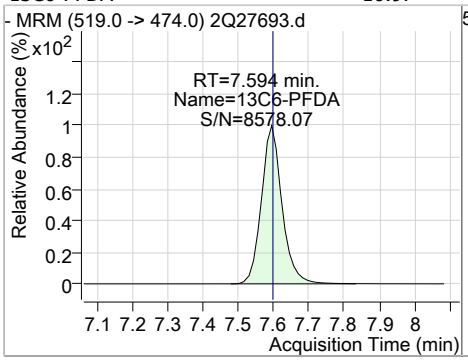
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.76	7.45	0.00	28302				

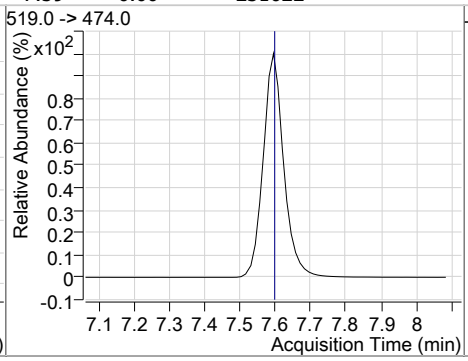


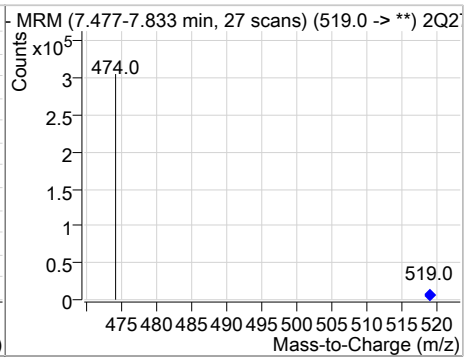




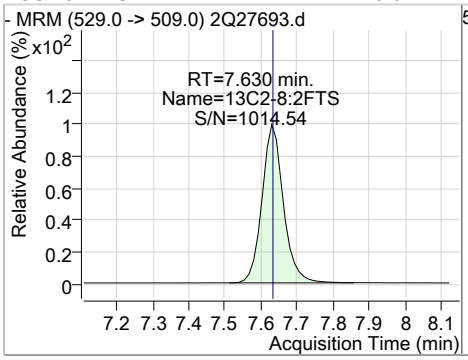
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.97	7.59	0.00	231622				

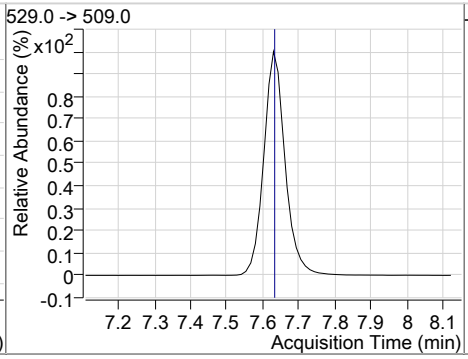


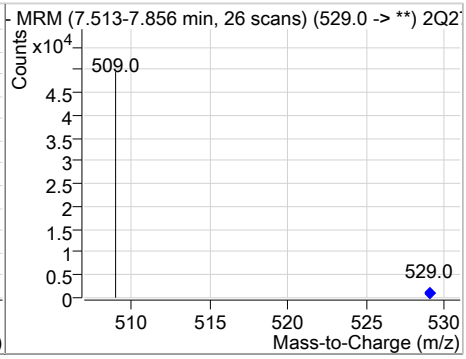




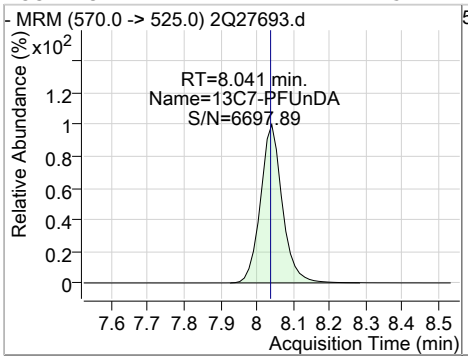
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.02	7.63	0.00	35529				

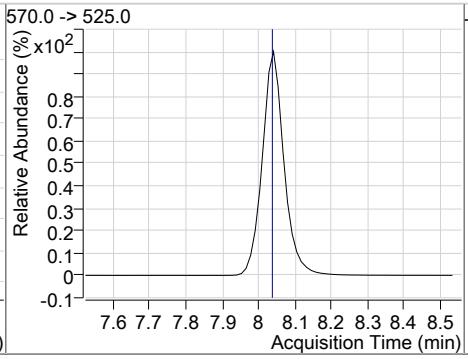


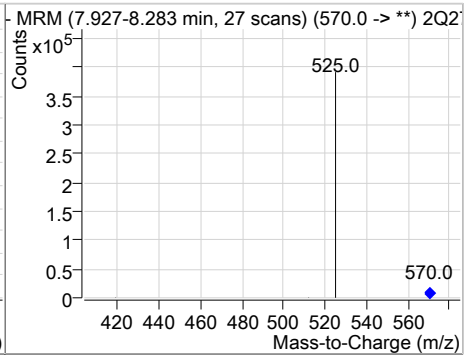




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.51	8.04	0.00	296309				

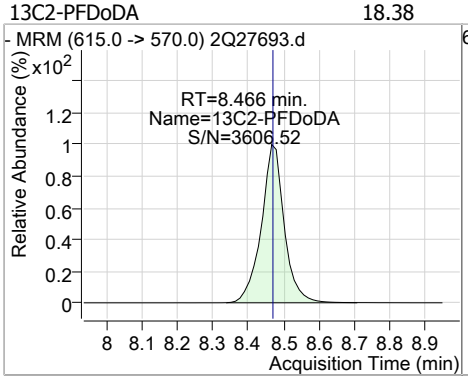


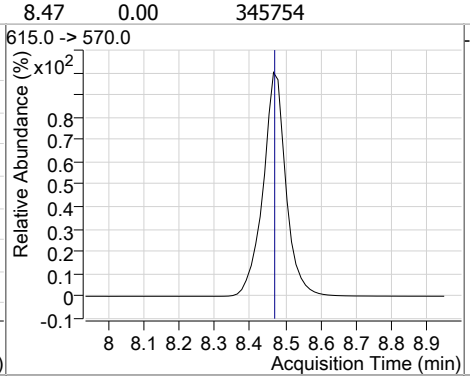


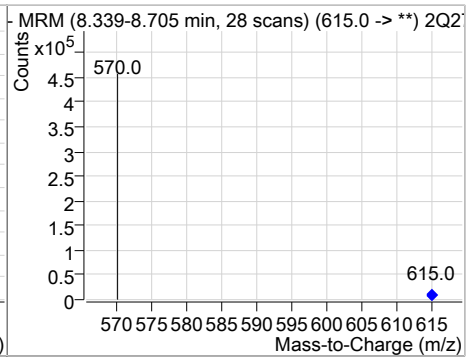


Perfluorinated Compounds by LC/MS/MS

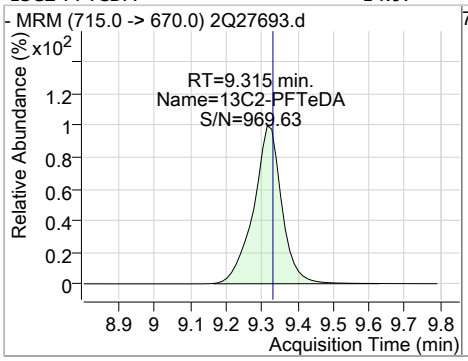
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.38	8.47	0.00	345754				

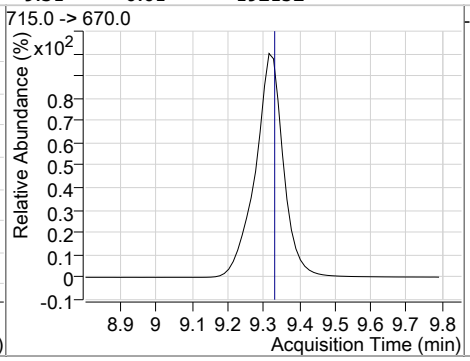


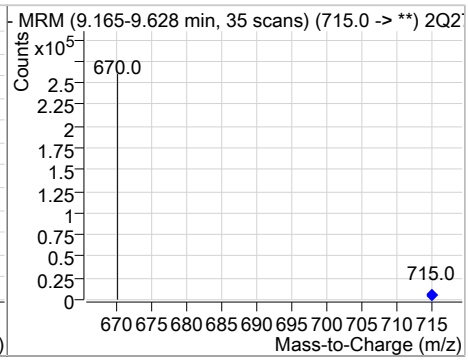




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.97	9.31	-0.01	192152				







Manual Integration Approval Summary

Sample Number: FA62220-1
Lab FileID: 2Q27693.D
Injection Time: 03/18/19 16:16
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		4.89	Split peak
Perfluoroheptanoic acid	375-85-9		5.70	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanoic acid	335-67-1		6.42	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27696.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 5:04:07 PM
Sample Name	:	fa62220-2
Vial	:	Vial 18
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74180,S2Q442,250,,,1.0,1,water

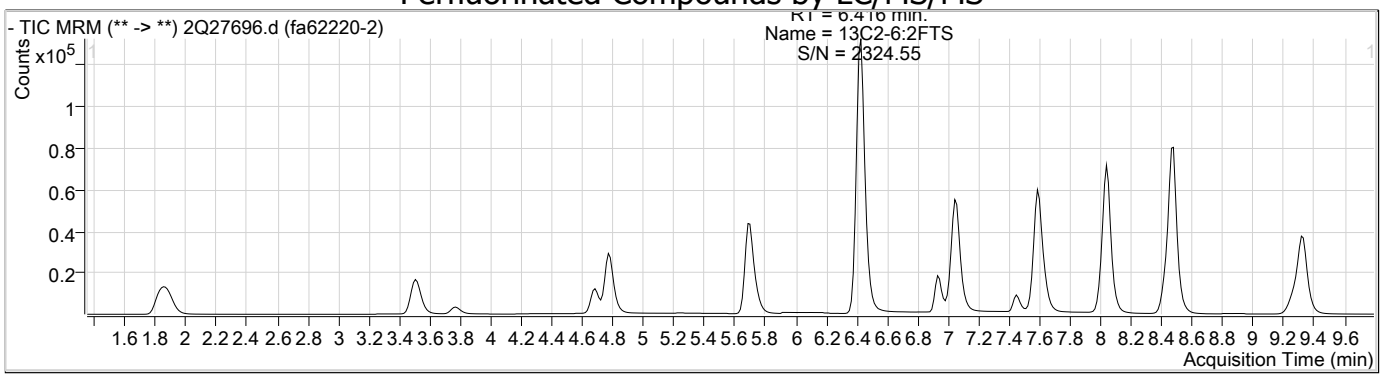
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	288171	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	39540	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	94100	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	79946	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	115870	20.00	µg/L	-0.013
M4-PFHpA	5.693	367.0 -> 322.0	174694	20.00	µg/L	-0.013
M8-PFOA	6.434	421.0 -> 376.0	192158	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	177736	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	216170	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	293480	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	361847	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	205801	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	61936	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14912	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	16502	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	17323	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	48405	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	62345	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	32776	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	27596	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	48359	16.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.3%		
13C2-6:2FTS	6.416	429.0 -> 409.0	62336	19.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%		
13C2-8:2FTS	7.630	529.0 -> 509.0	32773	14.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.9%		
13C2-PFDoDA	8.479	615.0 -> 570.0	361811	19.24	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C2-PFTeDA	9.315	715.0 -> 670.0	205009	15.97	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%		
13C3-PFBS	3.767	302.0 -> 99.0	14900	16.34	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.7%		
13C3-PFHxS	5.736	402.0 -> 99.0	16498	16.18	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.9%		
13C4-PFBA	1.852	217.0 -> 172.0	93913	15.66	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%		
13C4-PFHpA	5.693	367.0 -> 322.0	174596	16.88	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C5-PFHxA	4.776	318.0 -> 273.0	115827	15.94	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.7%		
13C5-PFPeA	3.511	268.0 -> 223.0	79716	15.68	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.4%		
13C6-PFDA	7.594	519.0 -> 474.0	216174	15.84	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

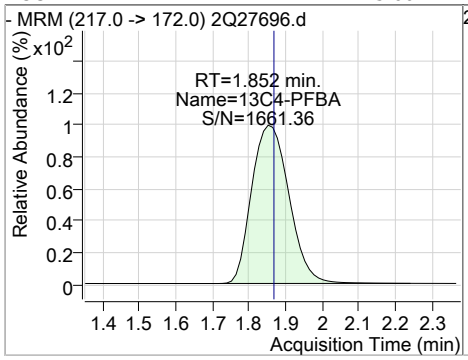
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.2%	
13C7-PFUnDA	8.041	570.0 -> 525.0	293557	17.35 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%	
13C8-FOSA	6.932	506.0 -> 78.0	61921	15.27 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%	
13C8-PFOA	6.434	421.0 -> 376.0	192069	18.41 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C8-PFOS	7.033	507.0 -> 99.0	17316	13.28 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.4%	
13C9-PFNA	7.065	472.0 -> 427.0	177714	16.78 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.9%	
d3-MeFOSAA	7.447	573.0 -> 419.0	27540	14.37 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%	
M2-PFOA	6.435	415.0 -> 370.0	288789	20.02 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
M4-PFOS	7.036	503.0 -> 80.0	39572	20.01 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

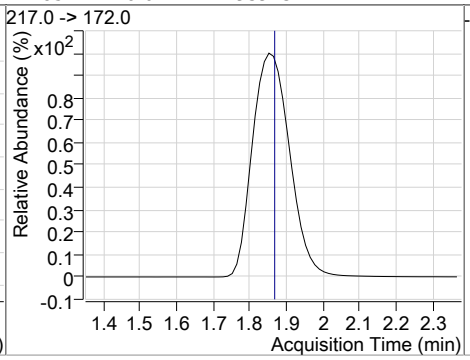
 # = Qualifier out of range, m = manually integrated, + = Area summed

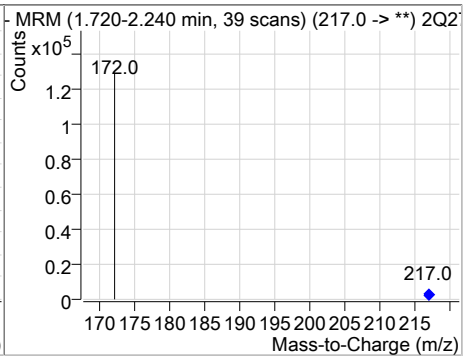
Perfluorinated Compounds by LC/MS/MS



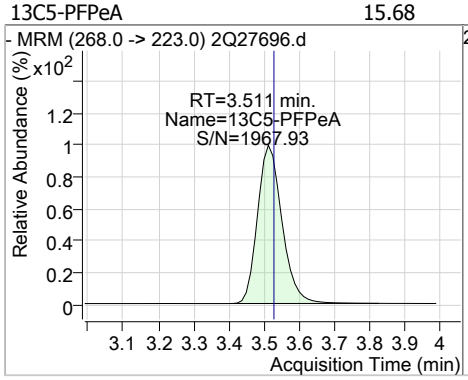
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.66	1.85	-0.01	93913				

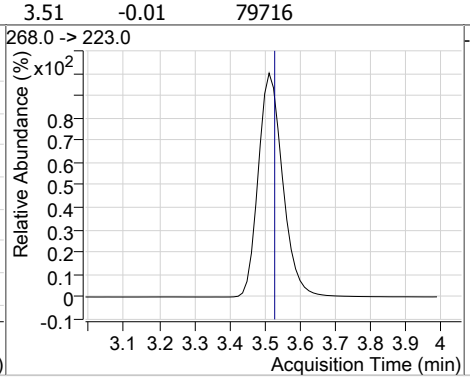


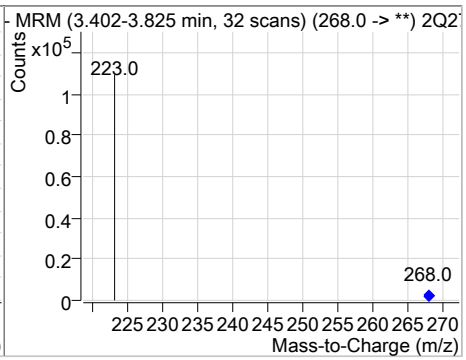




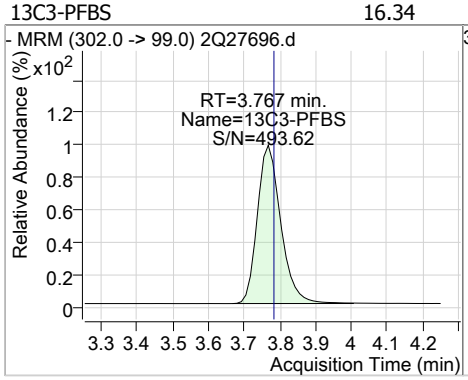
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.68	3.51	-0.01	79716				

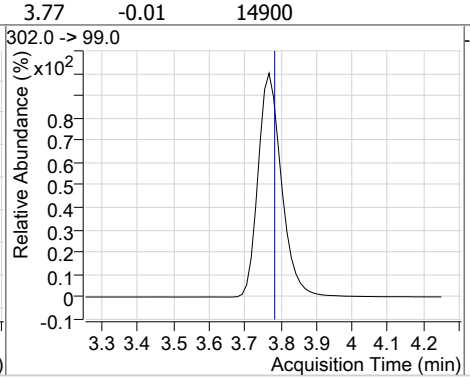


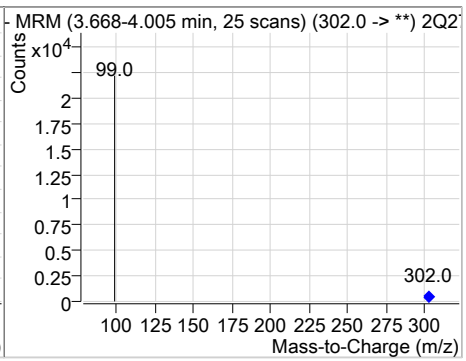




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.34	3.77	-0.01	14900				

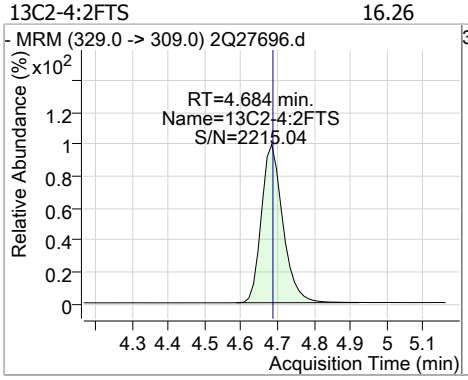


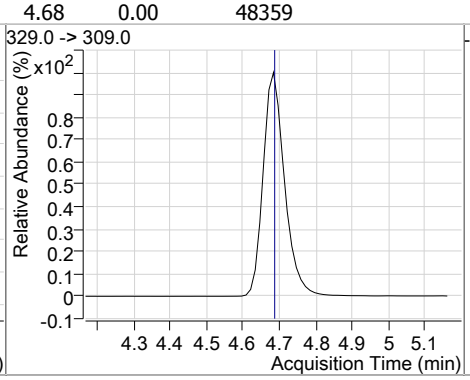


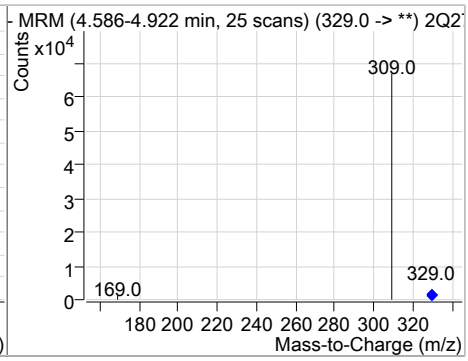


Perfluorinated Compounds by LC/MS/MS

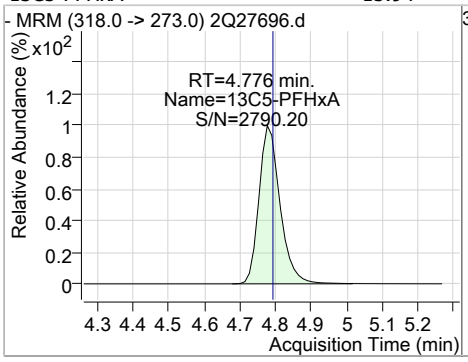
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.26	4.68	0.00	48359				

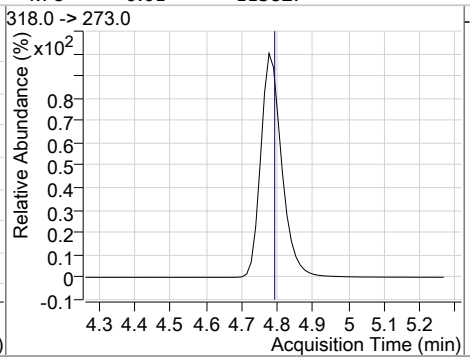


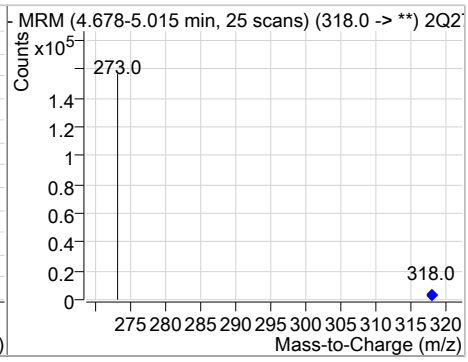




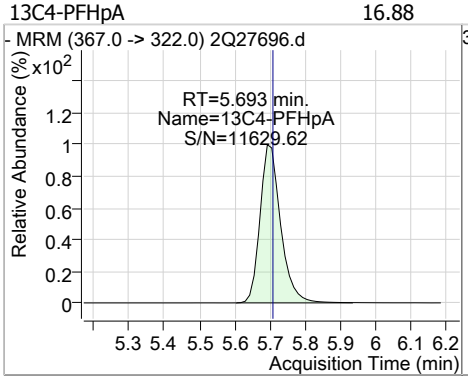
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.94	4.78	-0.01	115827				

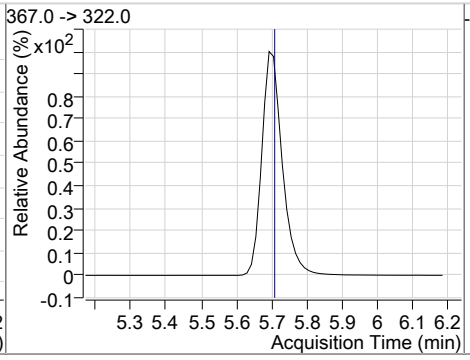


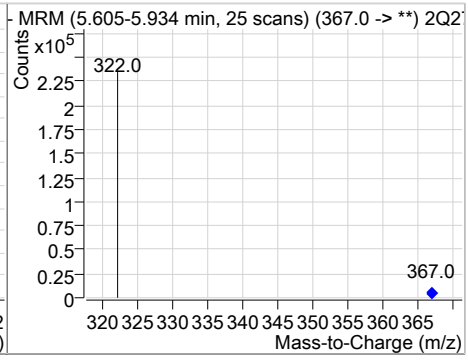




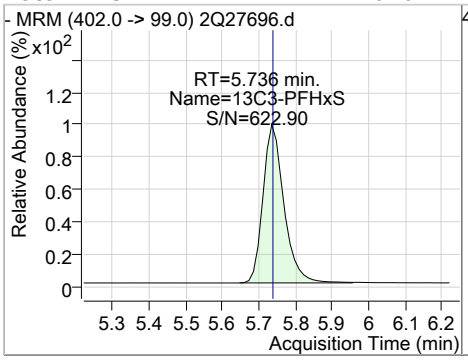
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.88	5.69	-0.01	174596				

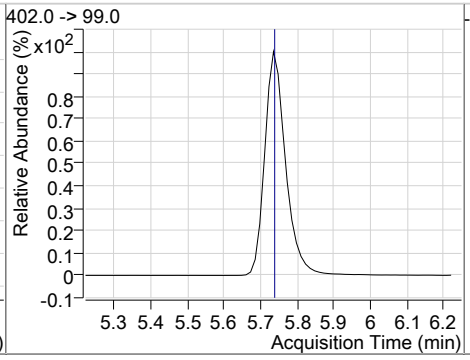


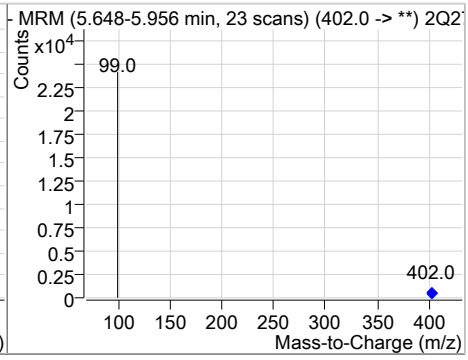




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.18	5.74	0.00	16498				

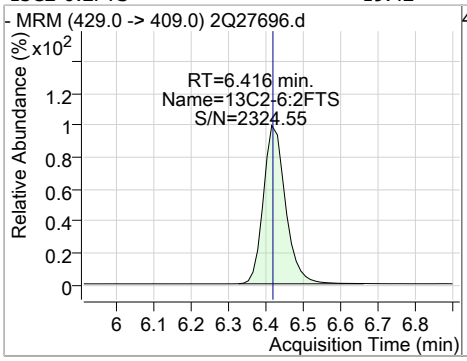


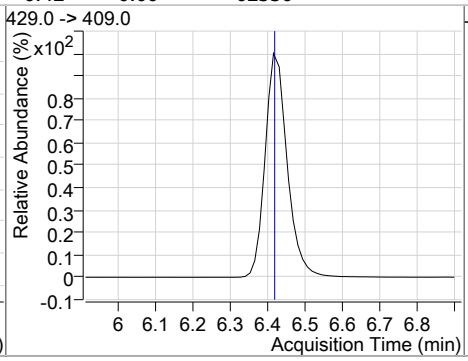


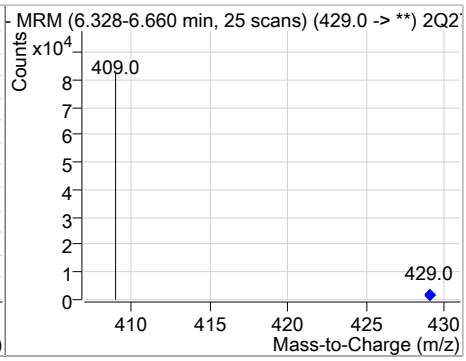


Perfluorinated Compounds by LC/MS/MS

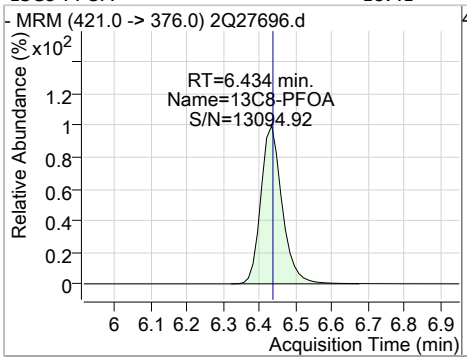
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.42	6.42	0.00	62336				

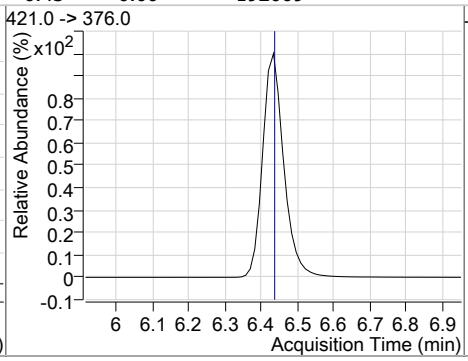


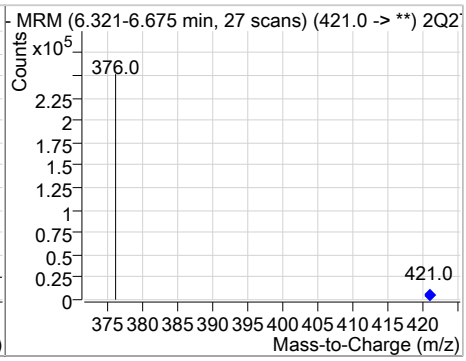




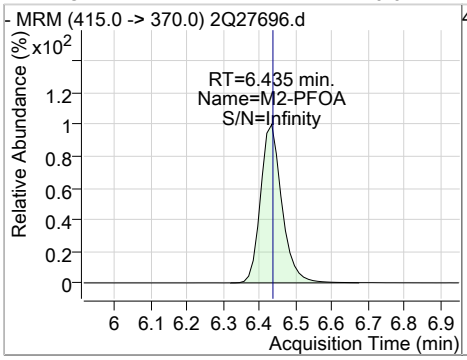
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.41	6.43	0.00	192069				

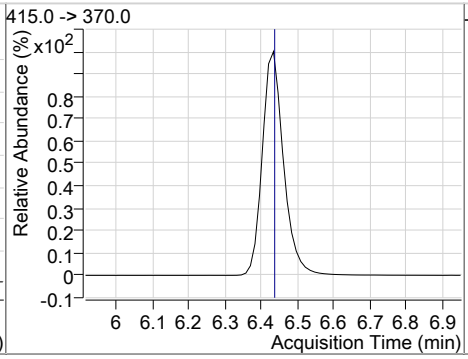


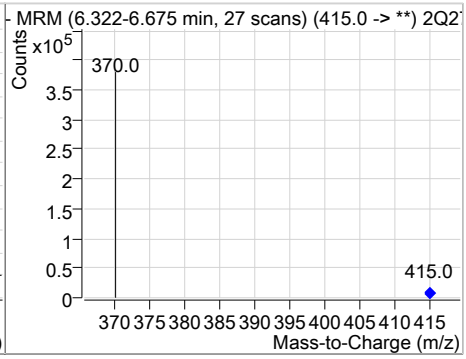




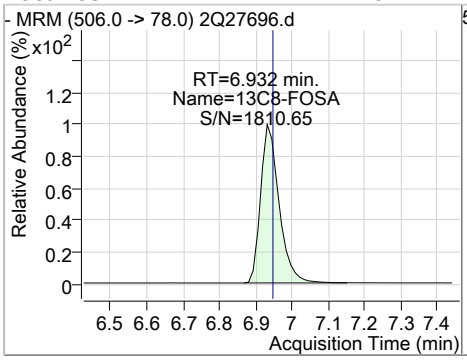
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.02	6.44	0.00	288789				

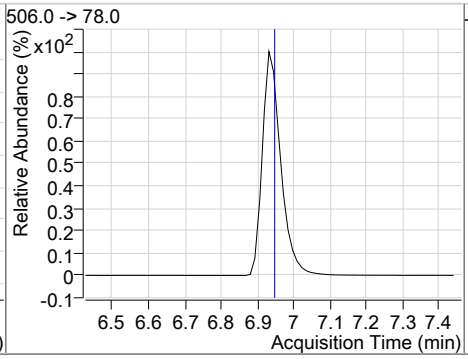


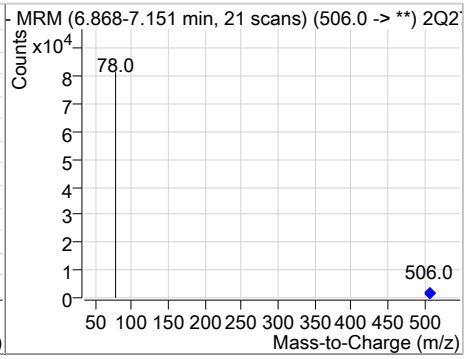




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.27	6.93	-0.01	61921				

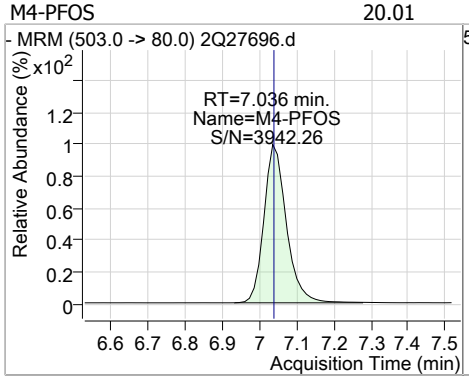


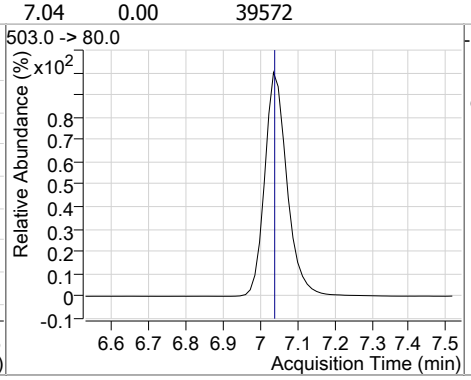


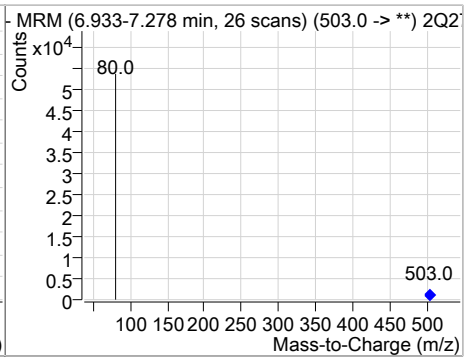


Perfluorinated Compounds by LC/MS/MS

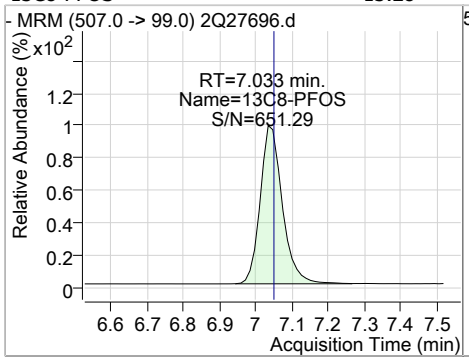
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.04	0.00	39572				

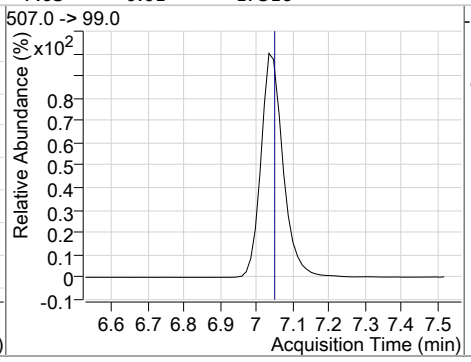


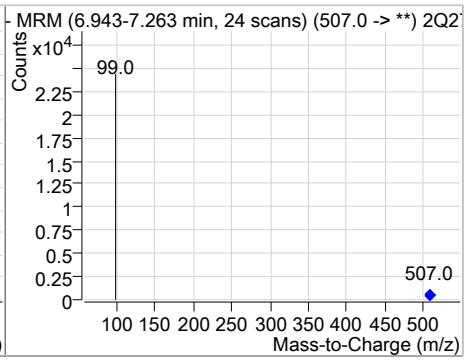




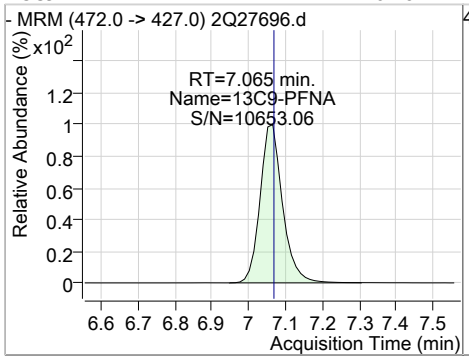
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.28	7.03	-0.01	17316				

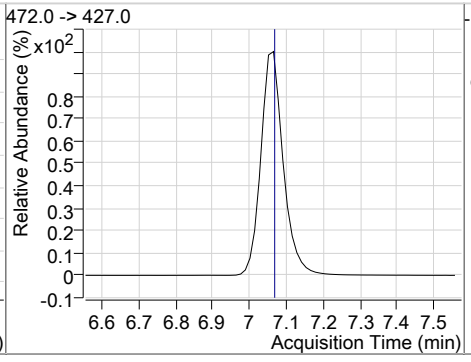


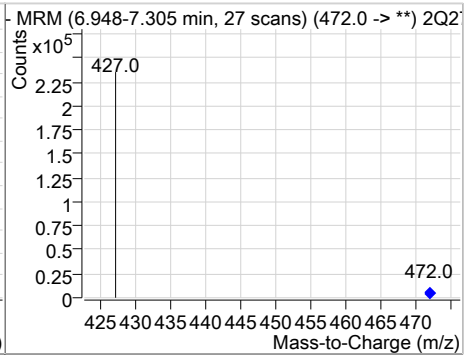




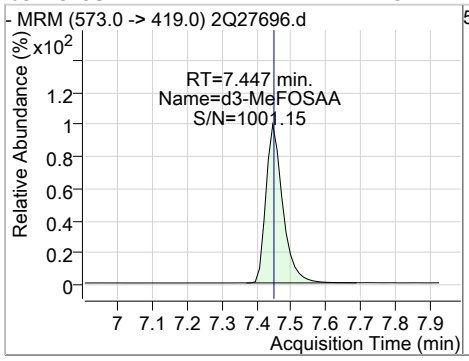
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.78	7.07	0.00	177714				

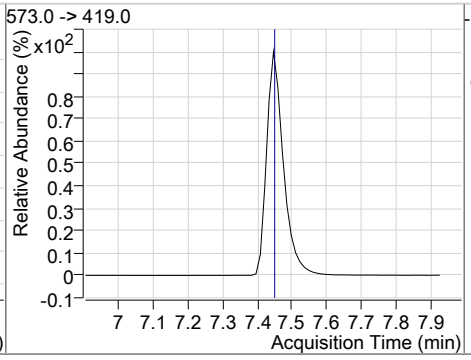


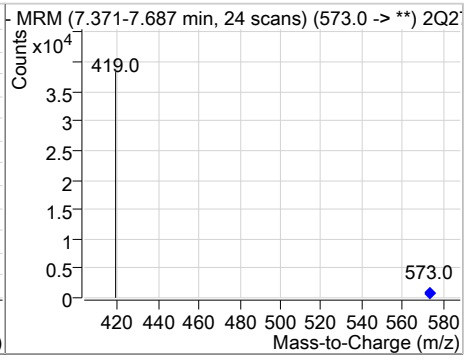




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.37	7.45	0.00	27540				

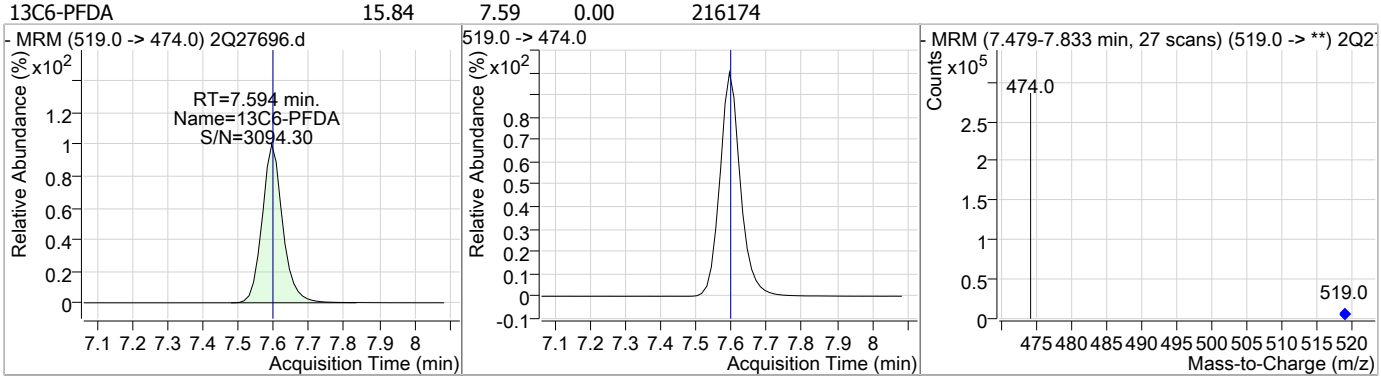




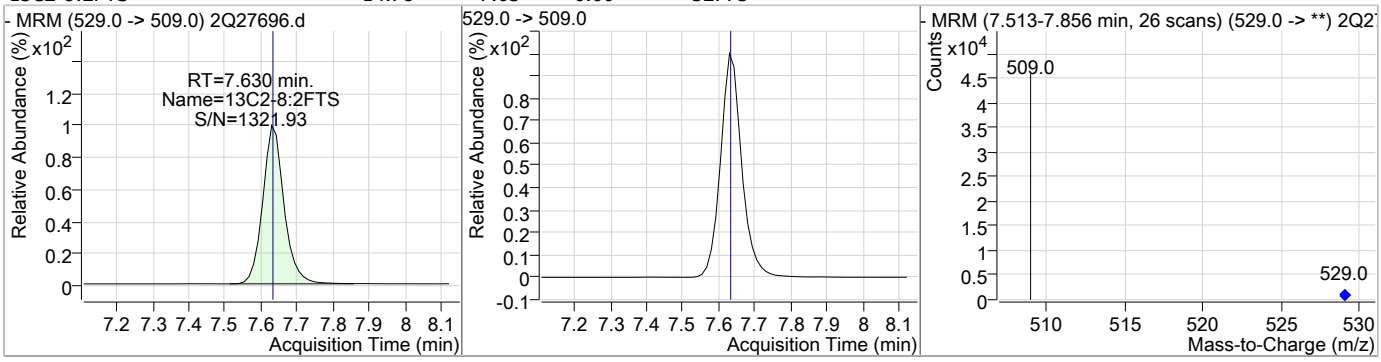


Perfluorinated Compounds by LC/MS/MS

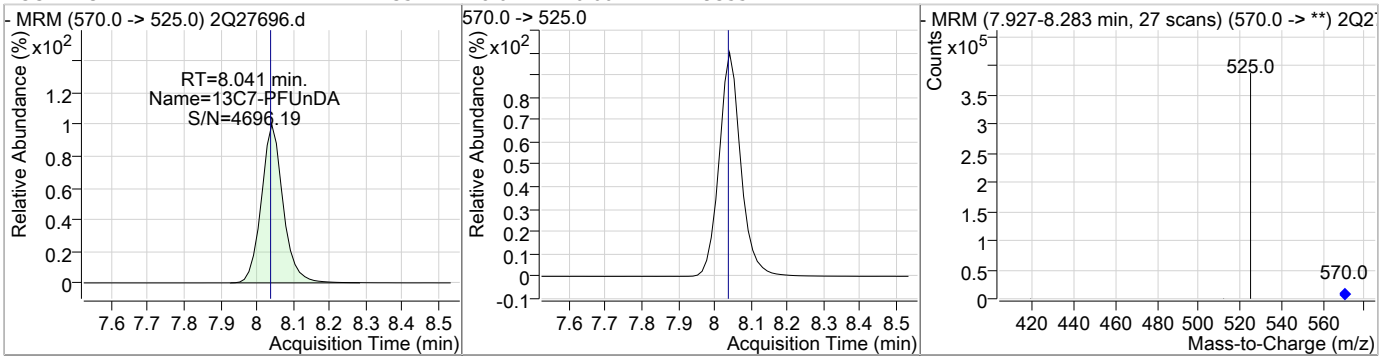
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.84	7.59	0.00	216174				



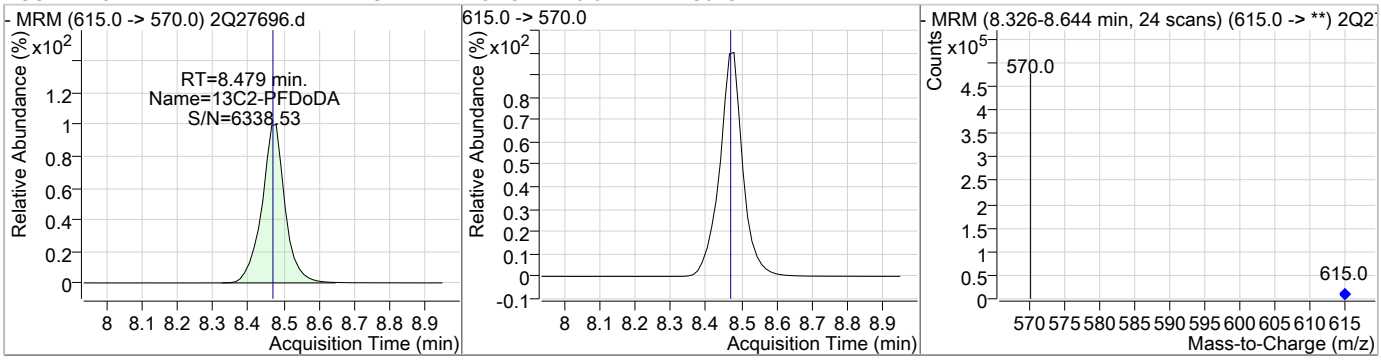
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.78	7.63	0.00	32773				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.35	8.04	0.00	293557				

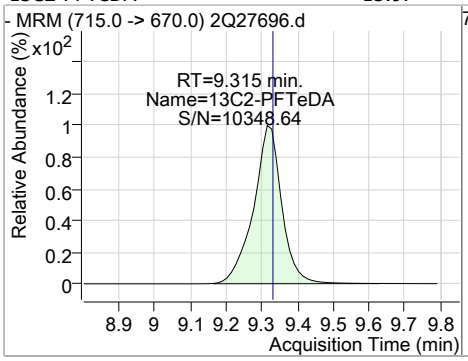


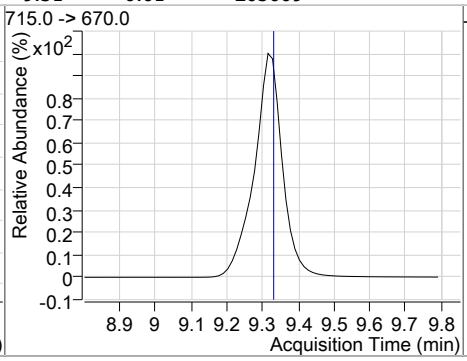
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.24	8.48	0.01	361811				

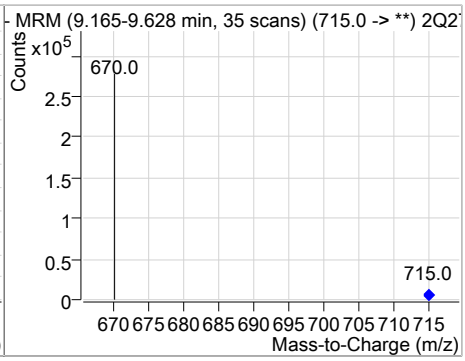


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.97	9.31	-0.01	205009				







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27697.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 5:19:51 PM
Sample Name : fa62220-3
Vial : Vial 19
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

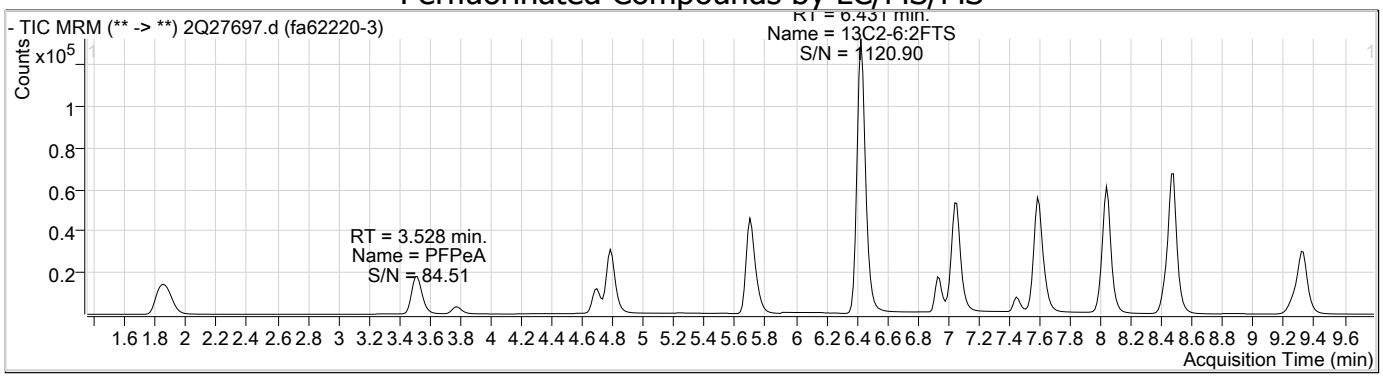
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	275902	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	38892	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	101345	20.00	µg/L	-0.013
M5-PFPeA	3.524	268.0 -> 223.0	85352	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	121062	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	176293	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	190425	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	174812	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	202250	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	248214	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	302404	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	166350	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	60417	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	14948	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	16099	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	15893	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	48863	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	60021	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	30232	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	24108	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	48732	16.39	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.9%		
13C2-6:2FTS	6.431	429.0 -> 409.0	59979	18.69	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.4%		
13C2-8:2FTS	7.630	529.0 -> 509.0	30239	13.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.2%		
13C2-PFDoDA	8.479	615.0 -> 570.0	302312	16.07	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	165695	12.91	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.5%		
13C3-PFBS	3.780	302.0 -> 99.0	14918	16.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.8%		
13C3-PFHxS	5.748	402.0 -> 99.0	16088	15.78	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.9%		
13C4-PFBA	1.852	217.0 -> 172.0	101244	16.88	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C4-PFHpA	5.705	367.0 -> 322.0	176135	17.03	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.1%		
13C5-PFHxA	4.789	318.0 -> 273.0	120989	16.65	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	85142	16.75	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%		
13C6-PFDA	7.594	519.0 -> 474.0	202250	14.82	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

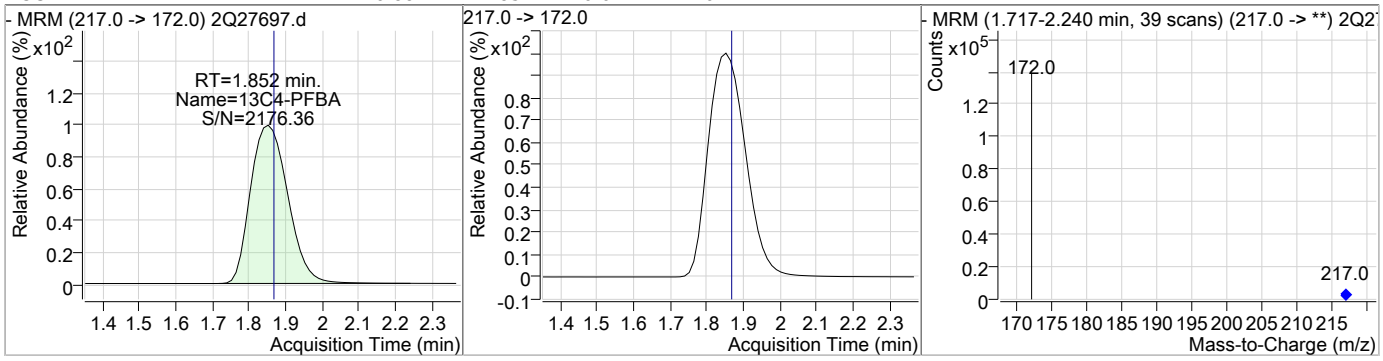
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.1%		
13C7-PFUnDA	8.041	570.0 -> 525.0	248201	14.67 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.3%		
13C8-FOSA	6.932	506.0 -> 78.0	60400	14.90 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.5%		
13C8-PFOA	6.434	421.0 -> 376.0	190347	18.25 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C8-PFOS	7.045	507.0 -> 99.0	15890	12.19 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.9%		
13C9-PFNA	7.065	472.0 -> 427.0	174826	16.51 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.6%		
d3-MeFOSAA	7.447	573.0 -> 419.0	24149	12.60 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.0%		
M2-PFOA	6.435	415.0 -> 370.0	275963	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
M4-PFOS	7.036	503.0 -> 80.0	38942	20.02 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	4.791	313.0 -> 269.0	1474	0.71 µg/L		96
PFHxS	5.739	399.0 -> 80.0	2347	2.64 µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.437	413.0 -> 369.0	4196	0.82 µg/L	m	95
PFOS	6.844	499.0 -> 80.0	490	0.64 µg/L	#m	67
PFPeA	3.528	263.0 -> 219.0	2472	0.67 µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

 # = Qualifier out of range, m = manually integrated, + = Area summed

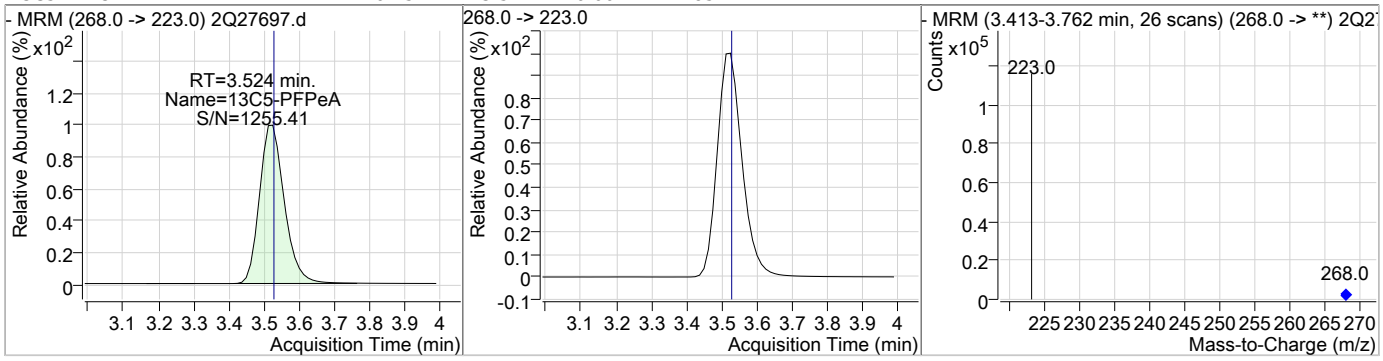
Perfluorinated Compounds by LC/MS/MS



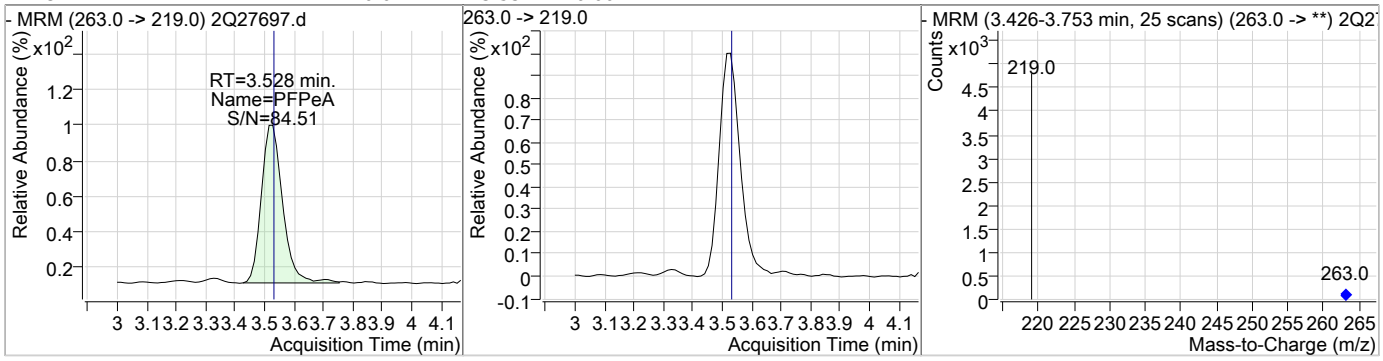
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.88	1.85	-0.01	101244				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.75	3.52	0.00	85142				

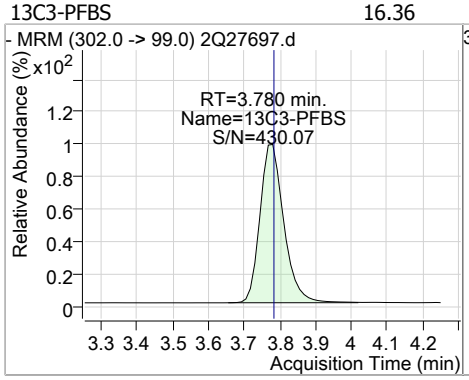


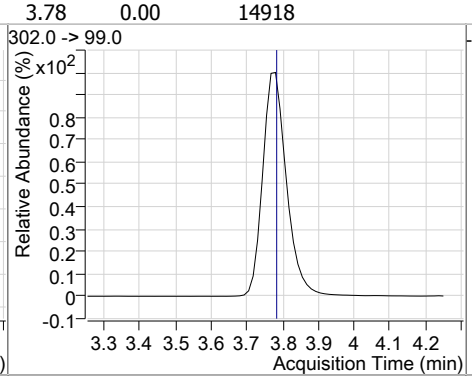
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.67	3.53	0.00	2472				

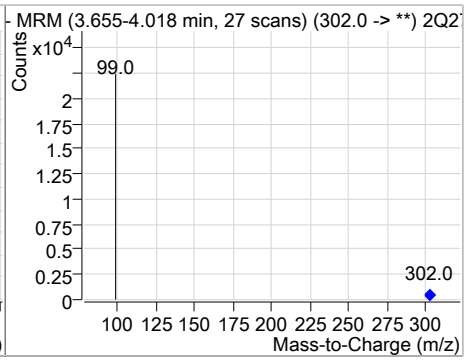


Perfluorinated Compounds by LC/MS/MS

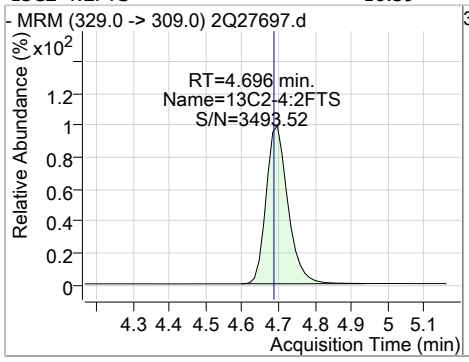
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.36	3.78	0.00	14918				

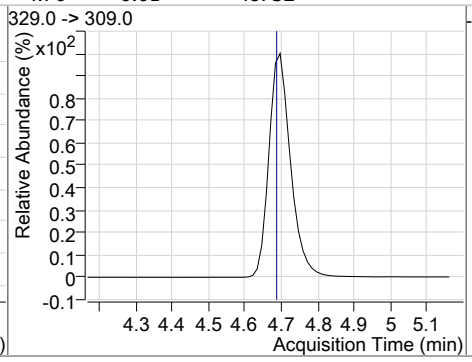


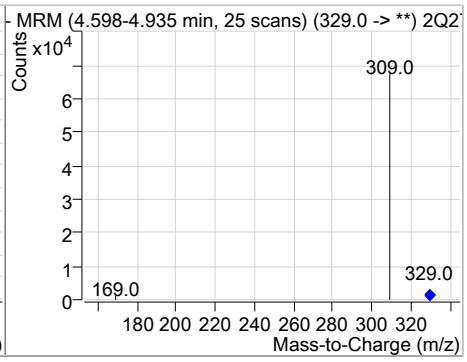




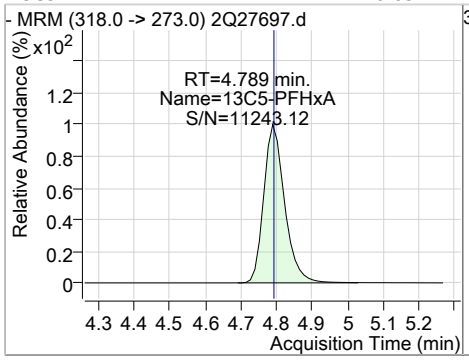
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.39	4.70	0.01	48732				

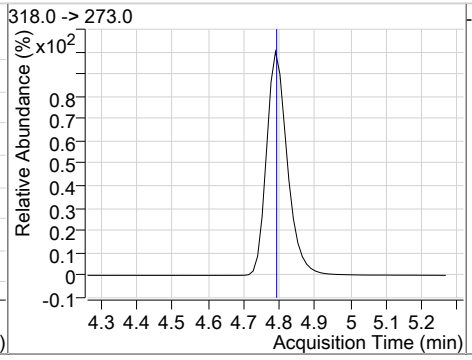


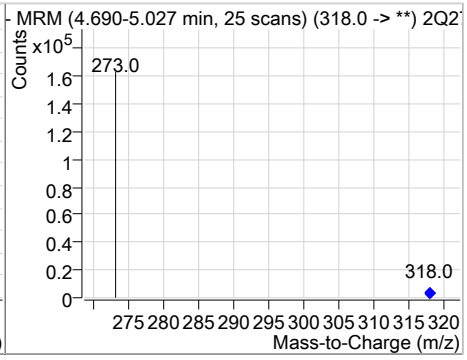




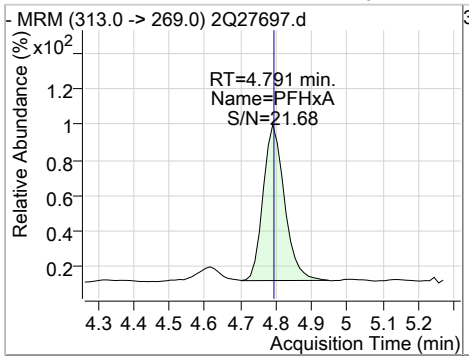
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.65	4.79	0.00	120989				

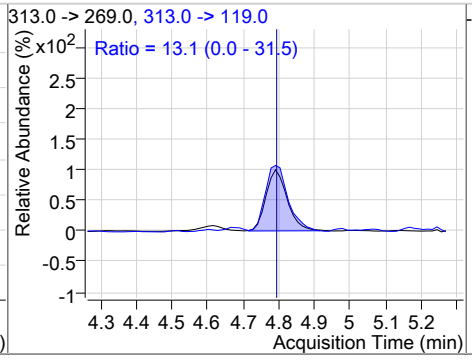


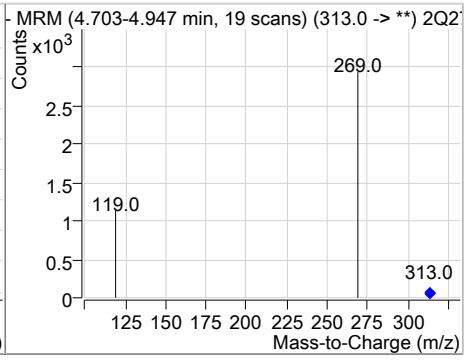




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.71	4.79	0.00	1474	313.0 -> 119.0	13.1	0.0	31.5

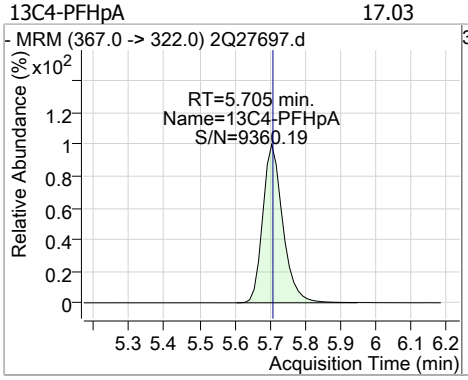


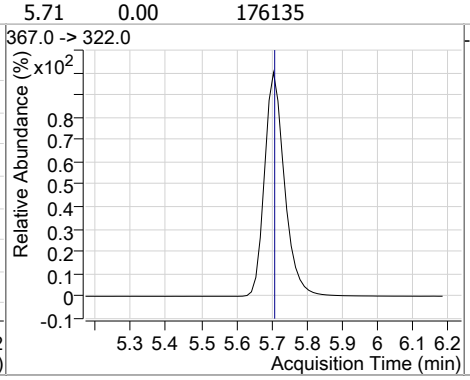


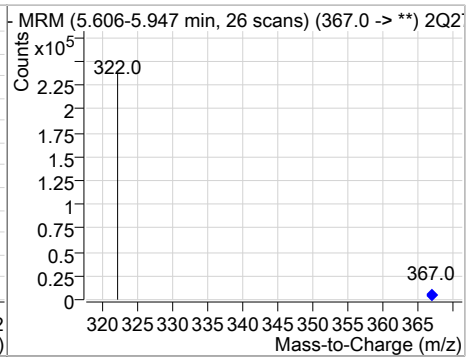


Perfluorinated Compounds by LC/MS/MS

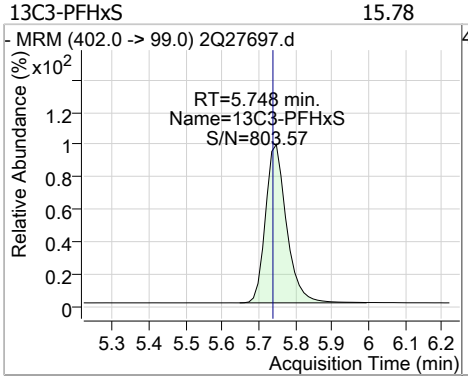
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.03	5.71	0.00	176135				

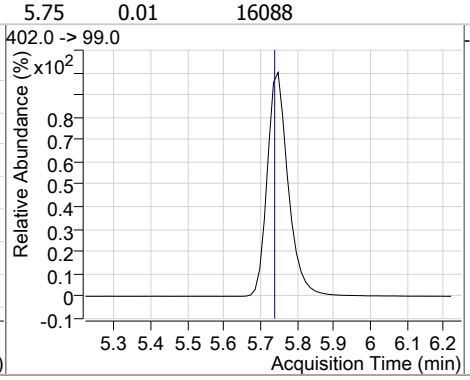


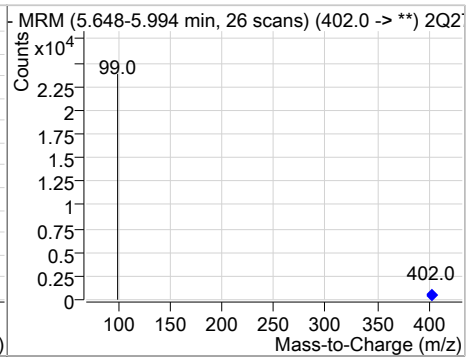




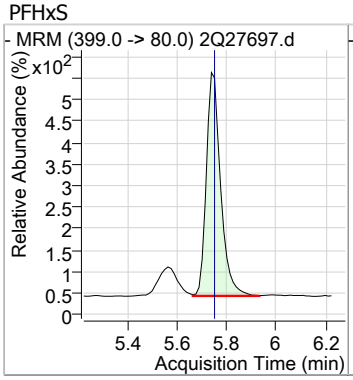
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.78	5.75	0.01	16088				

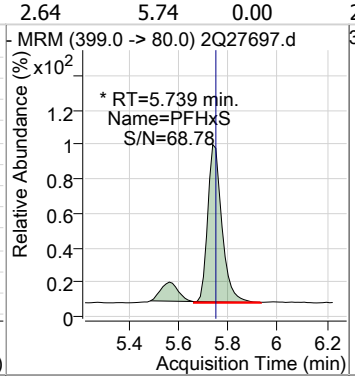


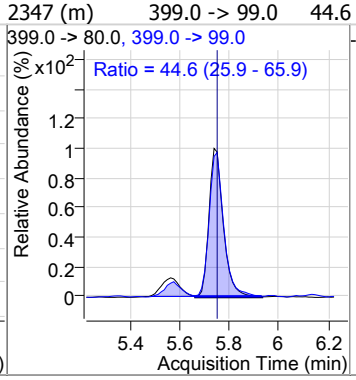


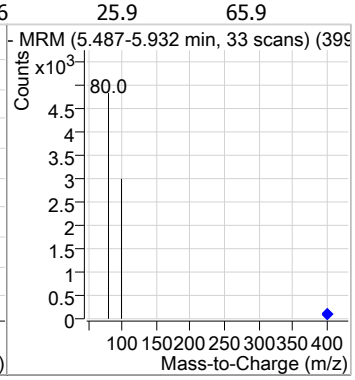


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.64	5.74	0.00	2347 (m)	399.0 -> 99.0	44.6	25.9	65.9

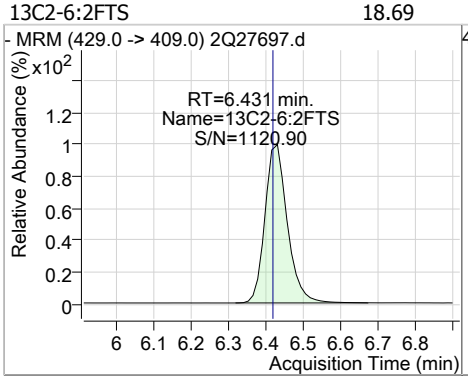


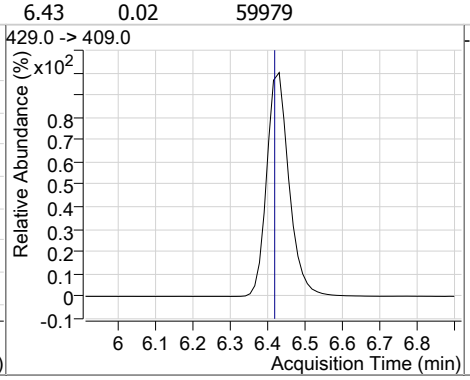


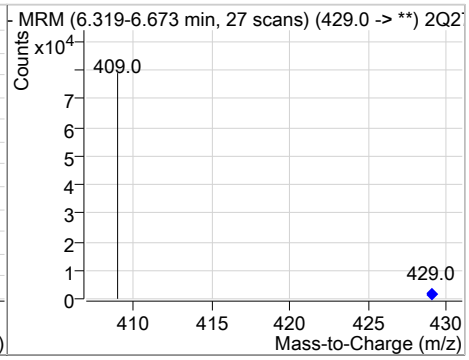




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.69	6.43	0.02	59979				

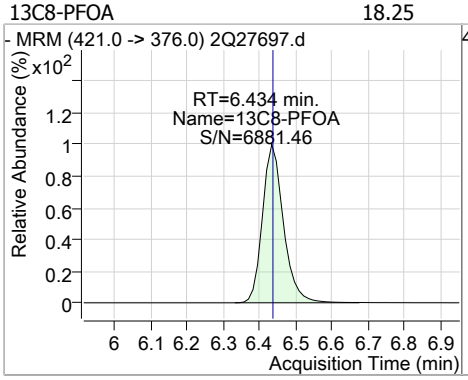


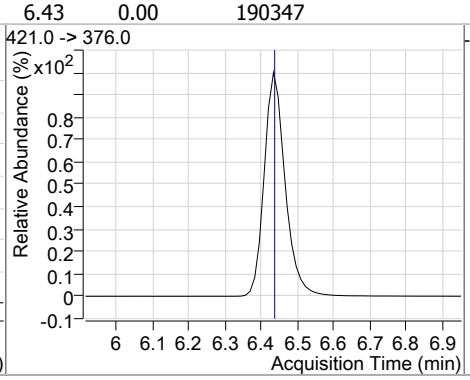


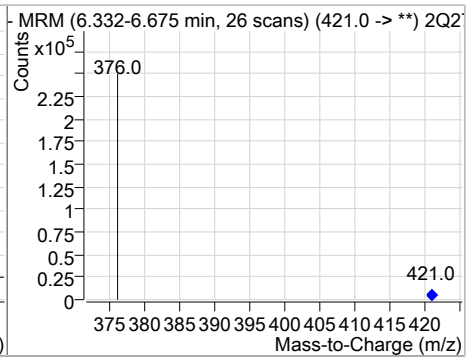


Perfluorinated Compounds by LC/MS/MS

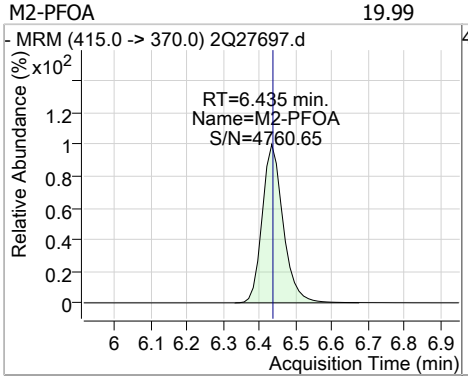
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.25	6.43	0.00	190347				

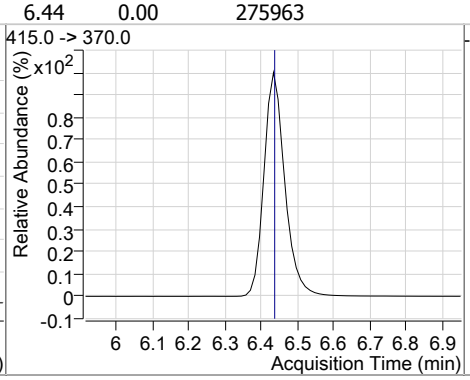


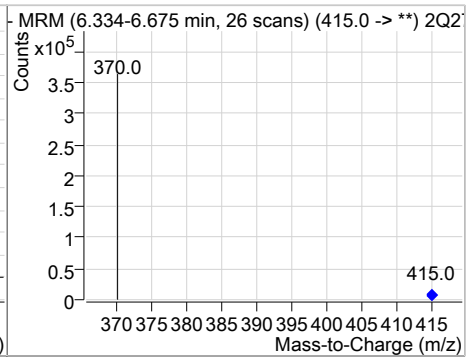




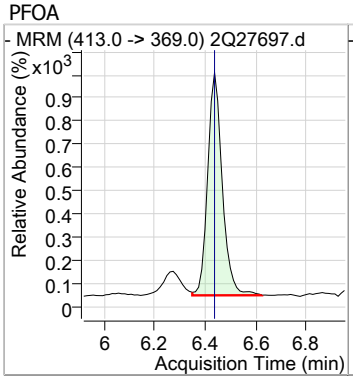
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	275963				

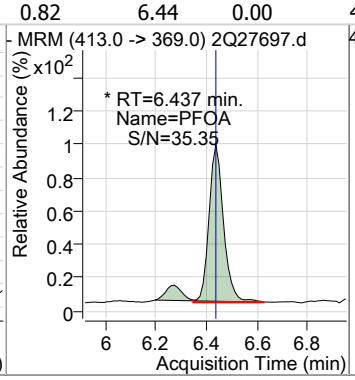


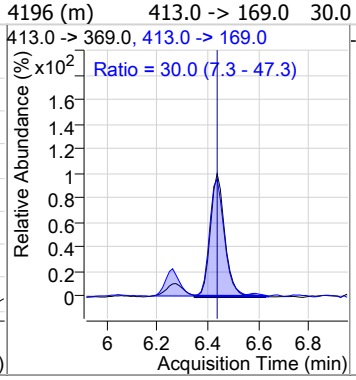


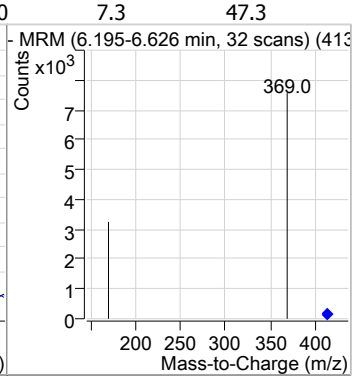


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.82	6.44	0.00	4196 (m)	413.0 -> 169.0	30.0	7.3	47.3

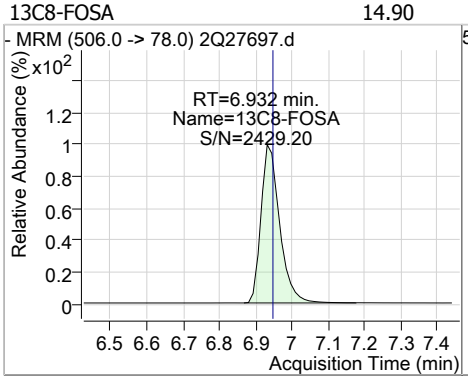


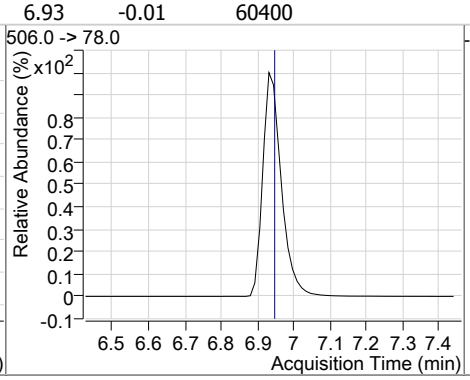


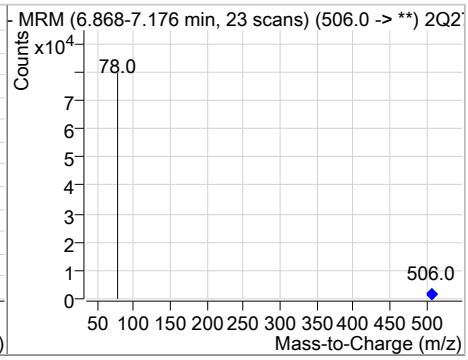




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.90	6.93	-0.01	60400				

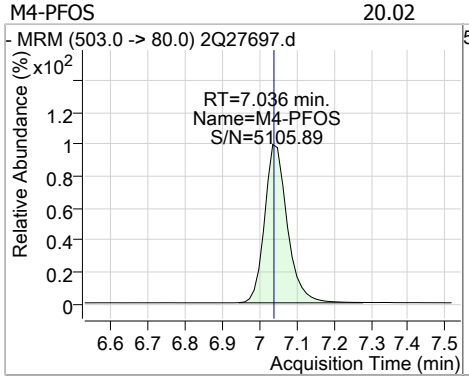


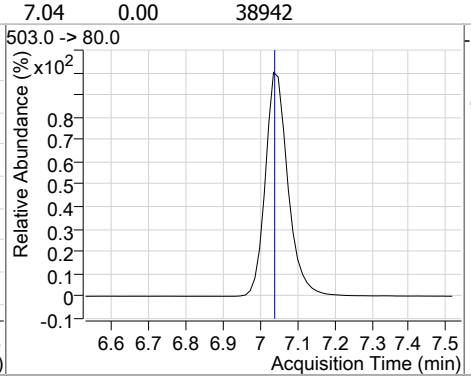


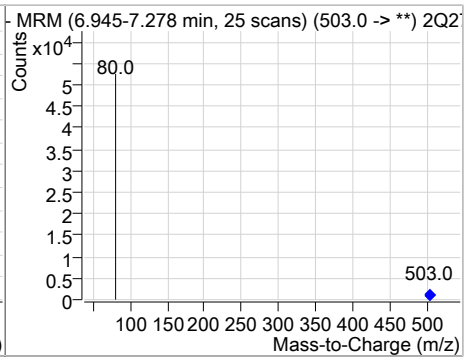


Perfluorinated Compounds by LC/MS/MS

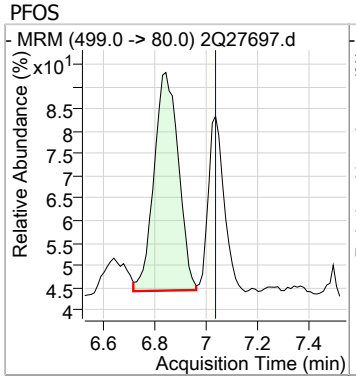
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.04	0.00	38942				

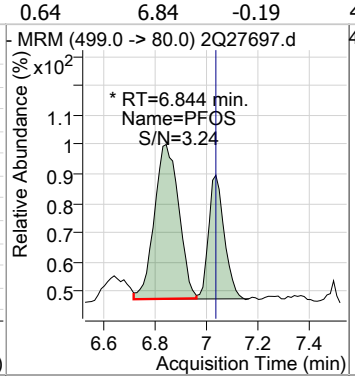


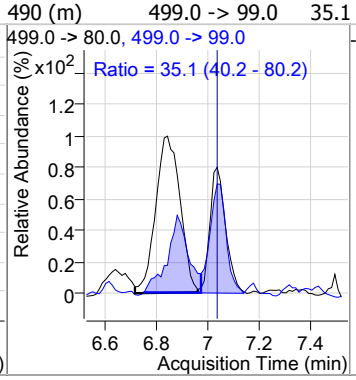


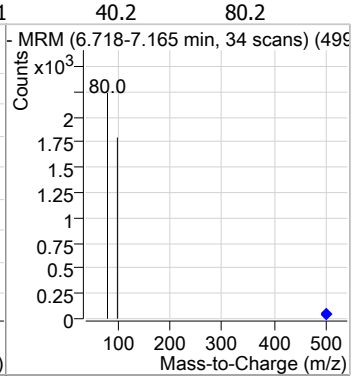


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.64	6.84	-0.19	490 (m)	499.0 -> 99.0	35.1	40.2	80.2

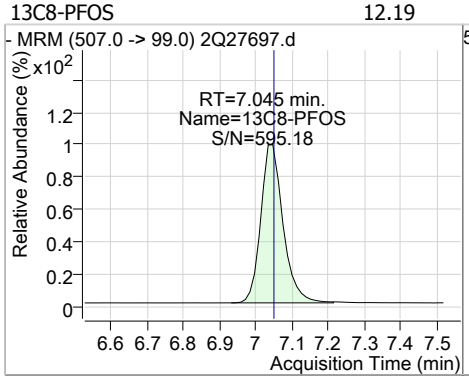


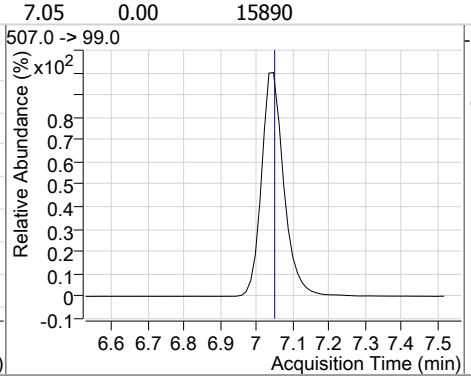


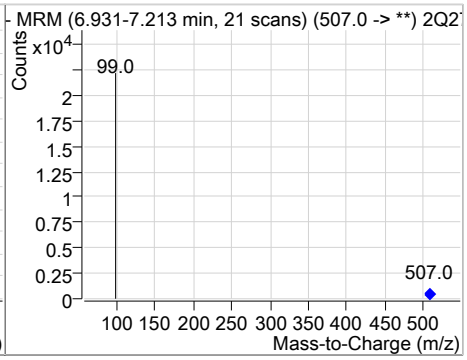




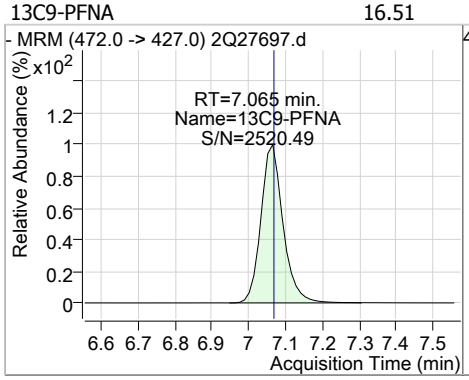
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.19	7.05	0.00	15890				

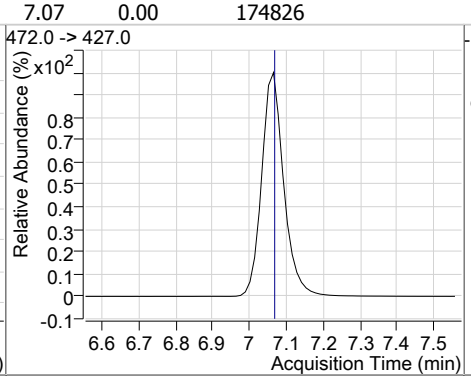


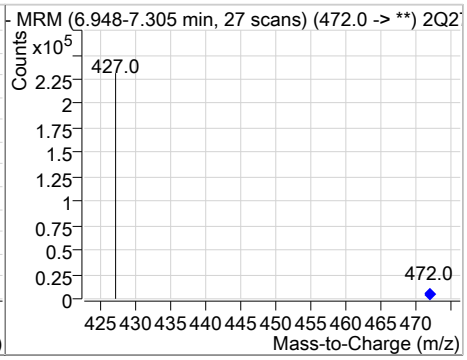




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.51	7.07	0.00	174826				

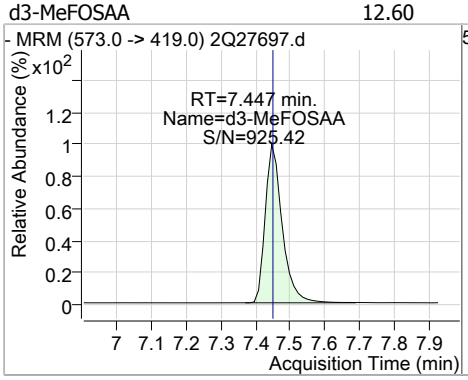


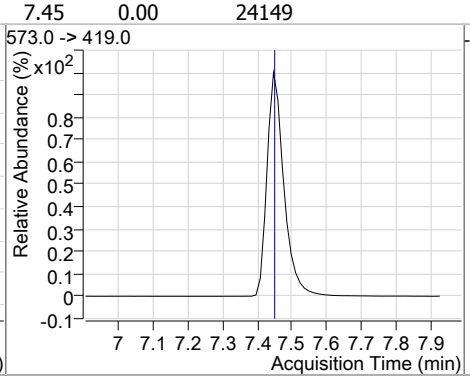


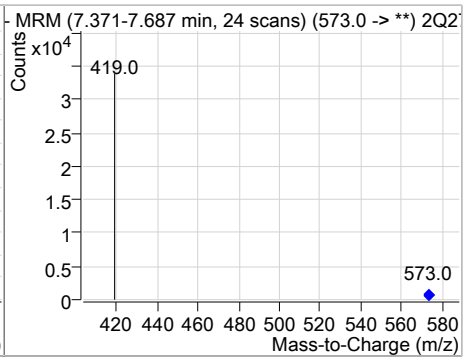


Perfluorinated Compounds by LC/MS/MS

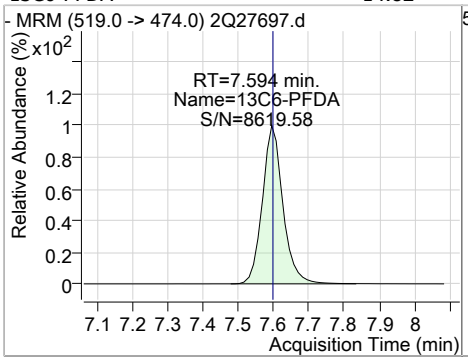
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	12.60	7.45	0.00	24149				

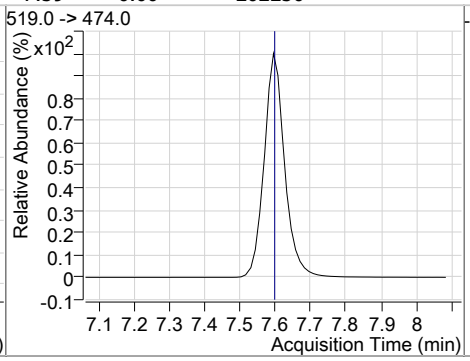


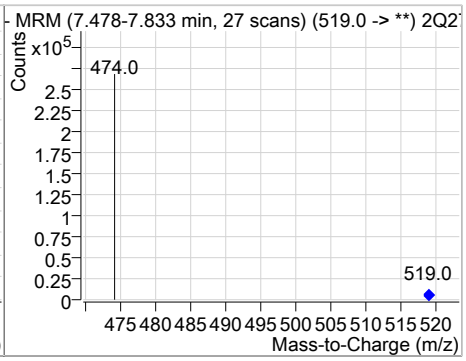




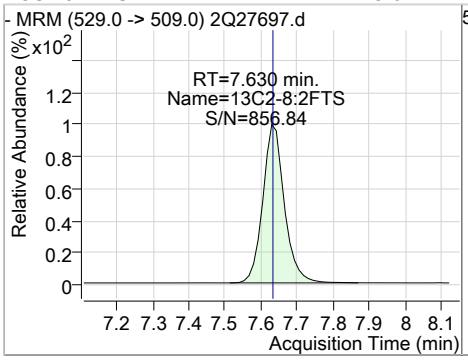
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	14.82	7.59	0.00	202250				

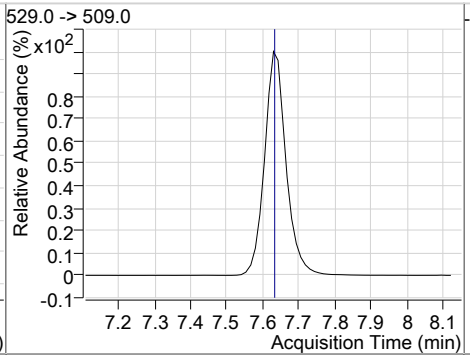


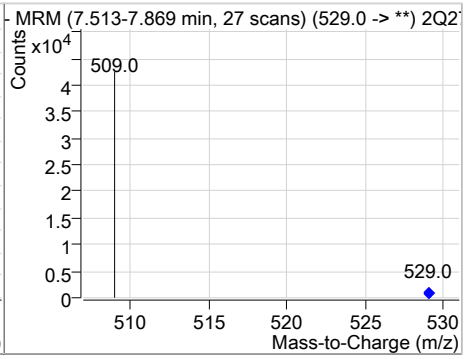




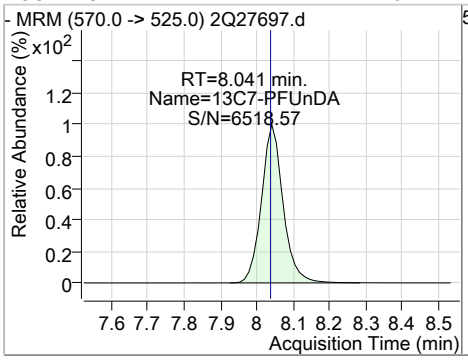
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	13.64	7.63	0.00	30239				

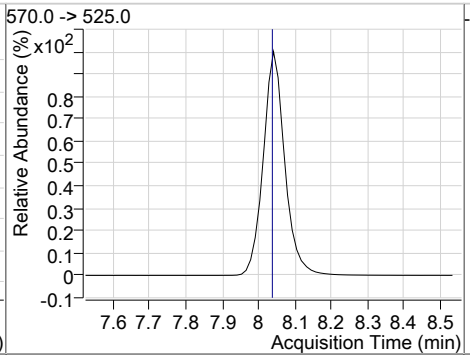


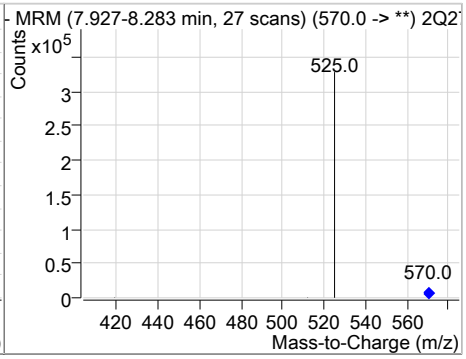




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.67	8.04	0.00	248201				

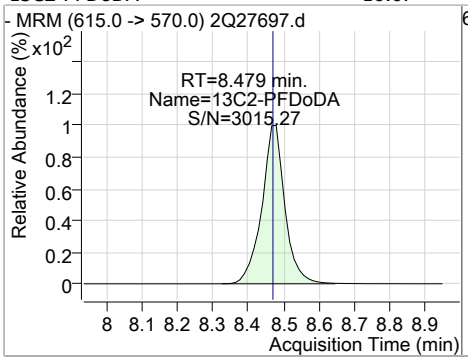


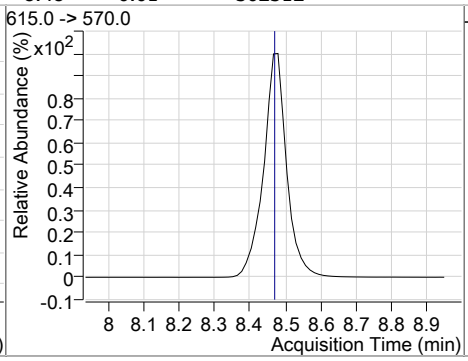


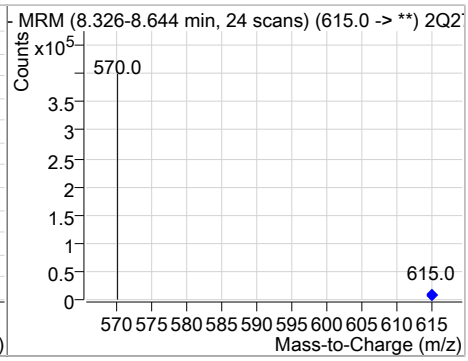


Perfluorinated Compounds by LC/MS/MS

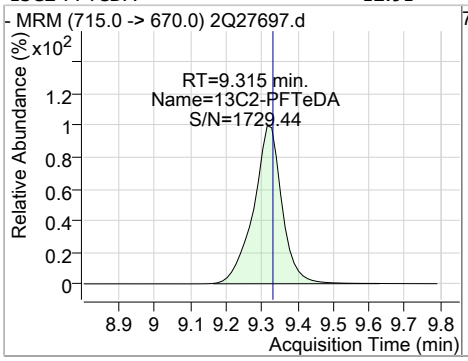
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.07	8.48	0.01	302312				

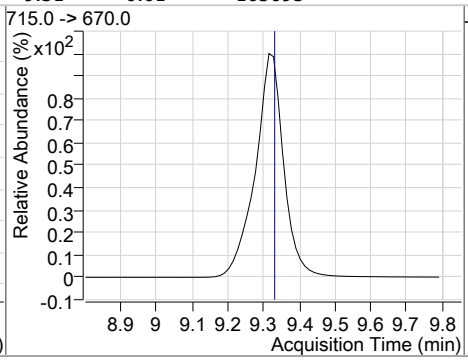


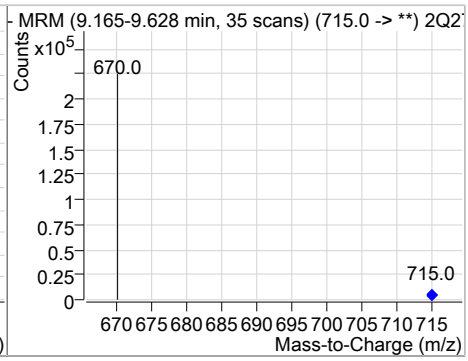




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.91	9.31	-0.01	165695				







Manual Integration Approval Summary

Sample Number: FA62220-3
Lab FileID: 2Q27697.D
Injection Time: 03/18/19 17:19

Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanoic acid	335-67-1		6.44	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.84	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1986.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 1:36:17 PM
Sample Name : fa62220-4
Vial : P3-B6
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,250,,,1.0,1,WATER

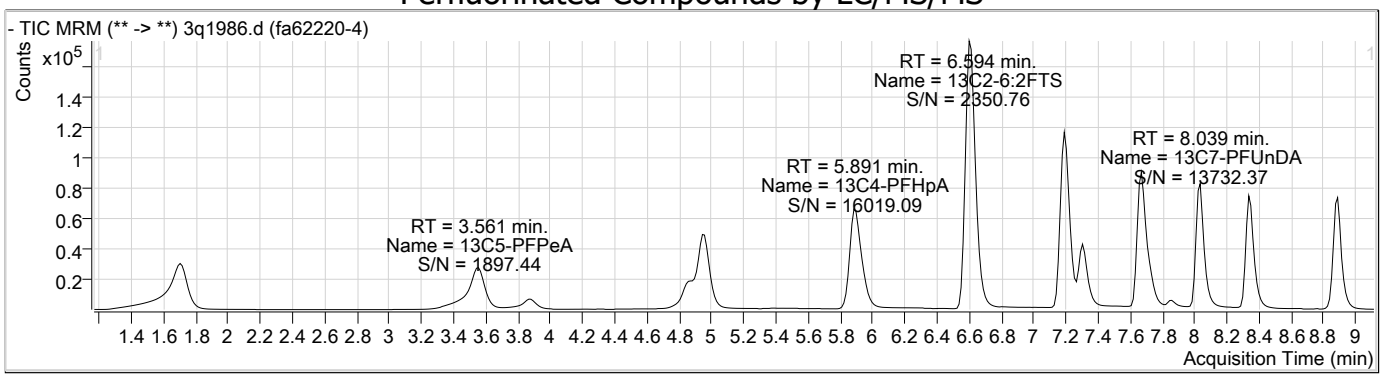
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.702	217.0 -> 172.0	278317	20.00	µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	188238	20.00	µg/L	0.000
M5-PFHxA	4.963	318.0 -> 273.0	253363	20.00	µg/L	0.000
M4-PFHpA	5.891	367.0 -> 322.0	295116	20.00	µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	289259	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	290287	20.00	µg/L	-0.013
M6-PFDA	7.678	519.0 -> 474.0	306873	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	297253	20.00	µg/L	0.000
M2-PFDoDA	8.340	615.0 -> 570.0	269113	20.00	µg/L	-0.013
M2-PFTeDA	8.886	715.0 -> 670.0	265271	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	146142	20.00	µg/L	0.000
M3-PFBS	3.867	302.0 -> 99.0	43366	20.00	µg/L	-0.013
M3-PFHxS	5.947	402.0 -> 99.0	44607	20.00	µg/L	0.000
M8-PFOS	7.183	507.0 -> 99.0	68669	20.00	µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	78201	20.00	µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	79258	20.00	µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	47354	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	35319	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
13C2-PFOA	6.610	415.0 -> 370.0	406659	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	120535	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.845	329.0 -> 309.0	78163	16.47	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.4%		
13C2-6:2FTS	6.594	429.0 -> 409.0	79334	17.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.8%		
13C2-8:2FTS	7.701	529.0 -> 509.0	47412	16.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%		
13C2-PFDoDA	8.340	615.0 -> 570.0	269122	13.76	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.8%		
13C2-PFTeDA	8.886	715.0 -> 670.0	265334	14.50	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.5%		
13C3-PFBS	3.867	302.0 -> 99.0	43051	17.07	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.3%		
13C3-PFHxS	5.947	402.0 -> 99.0	44536	17.62	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%		
13C4-PFBA	1.702	217.0 -> 172.0	267742	16.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%		
13C4-PFHpA	5.891	367.0 -> 322.0	294662	17.65	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.3%		
13C5-PFHxA	4.963	318.0 -> 273.0	252330	17.15	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.7%		
13C5-PFPeA	3.561	268.0 -> 223.0	186903	16.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C6-PFDA	7.678	519.0 -> 474.0	310112	18.62	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

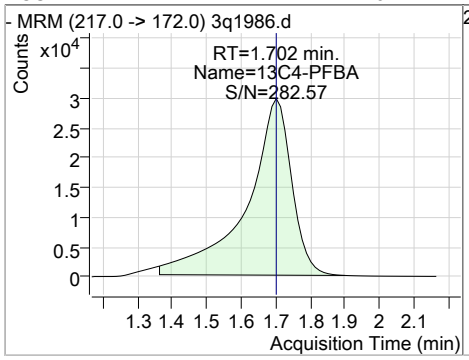
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%			
13C7-PFUnDA	8.039	570.0 -> 525.0	297391	16.04	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.2%			
13C8-FOSA	7.311	506.0 -> 78.0	146121	13.88	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.4%			
13C8-PFOA	6.609	421.0 -> 376.0	289213	18.28	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%			
13C8-PFOS	7.183	507.0 -> 99.0	69290	17.99	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.9%			
13C9-PFNA	7.201	472.0 -> 427.0	290054	19.41	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
d3-MeFOSAA	7.735	573.0 -> 419.0	35308	14.87	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.4%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
M2-PFOA	6.610	415.0 -> 370.0	406659	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	120535	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.710	213.0 -> 169.0	2766	1.05	µg/L		100
PFBS	3.870	299.0 -> 80.0	1177	0.39	µg/L		93
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.894	363.0 -> 319.0	4210	0.32	µg/L	m	97
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.952	313.0 -> 269.0	9411	2.09	µg/L		98
PFHxS	5.937	399.0 -> 80.0	1443	0.59	µg/L	m	91
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.623	413.0 -> 369.0	4752	0.61	µg/L	m	100
PFOS	-	499.0 -> 80.0	-	N.D.			
PFPeA	3.564	263.0 -> 219.0	22958	2.41	µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

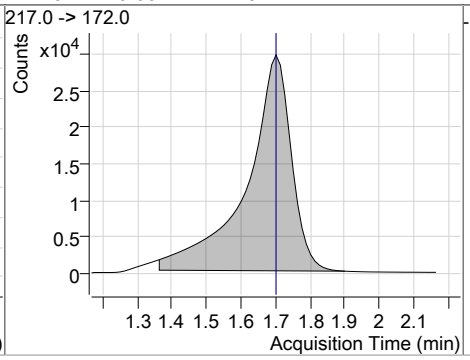
 # = Qualifier out of range, m = manually integrated, + = Area summed

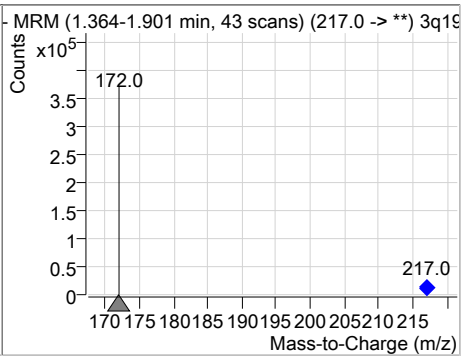
Perfluorinated Compounds by LC/MS/MS



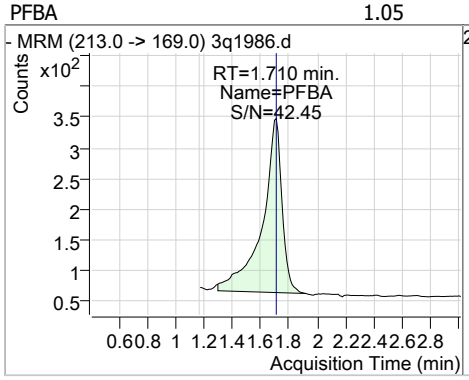
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.42	1.70	0.00	267742				

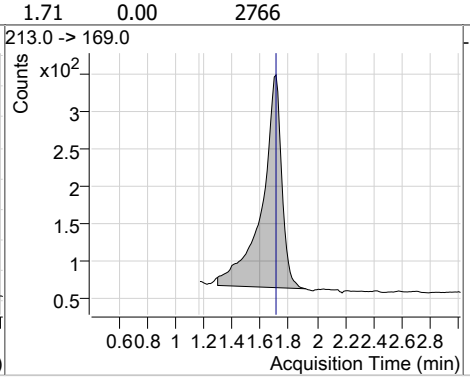


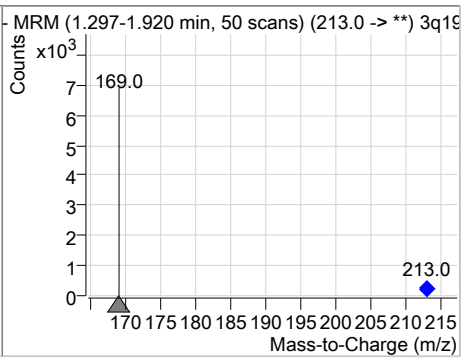




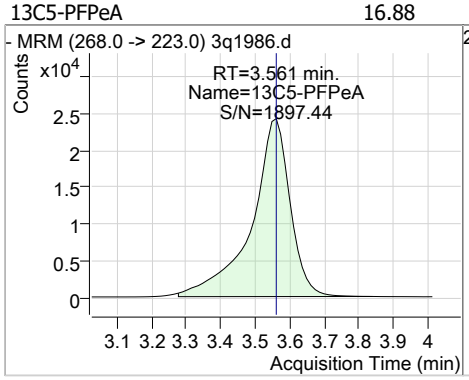
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.05	1.71	0.00	2766				

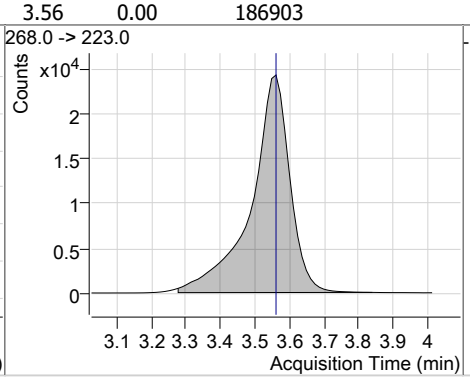


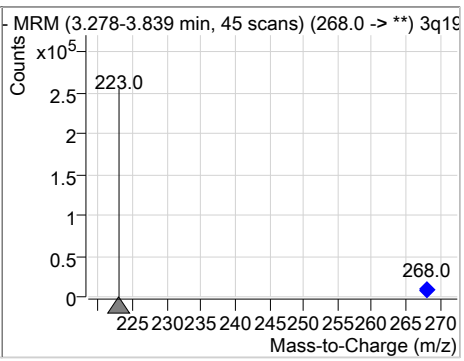




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.88	3.56	0.00	186903				

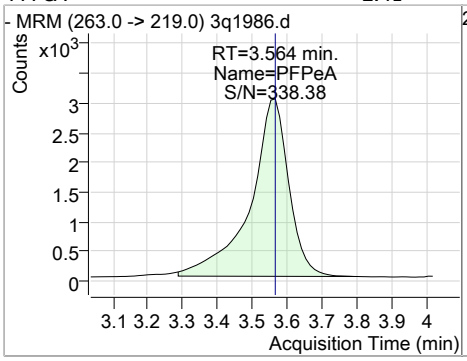


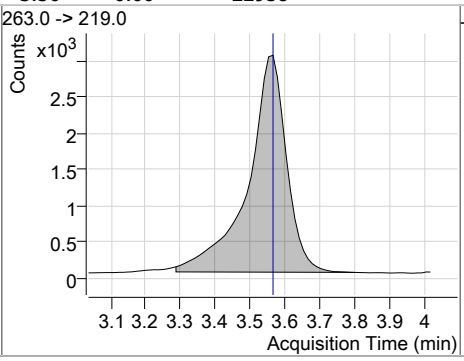


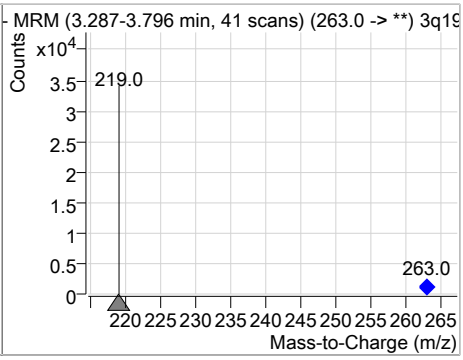


Perfluorinated Compounds by LC/MS/MS

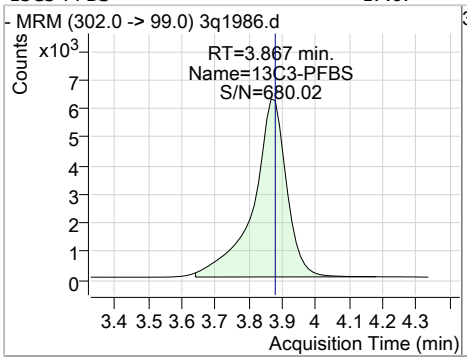
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.41	3.56	0.00	22958				

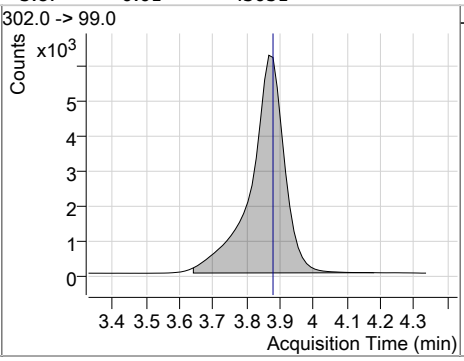


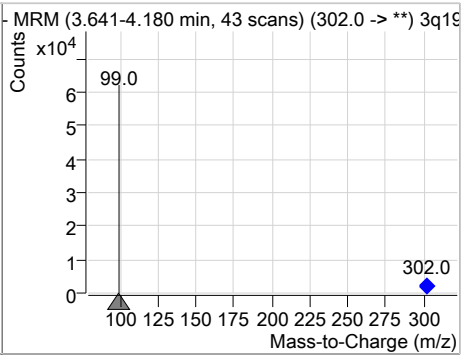




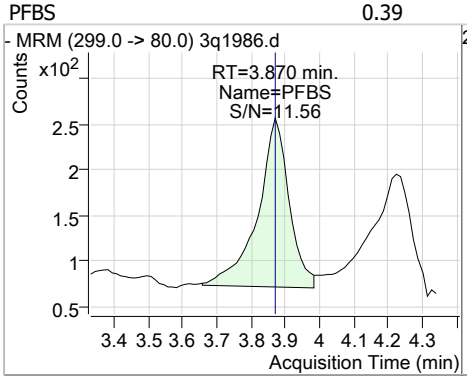
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.07	3.87	-0.01	43051				

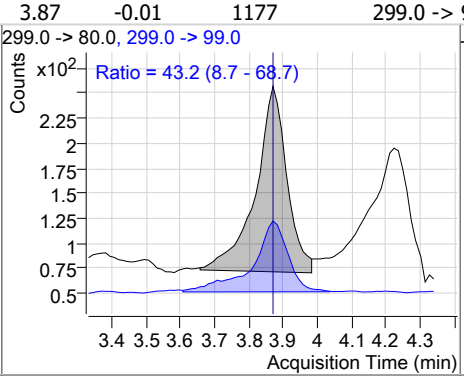


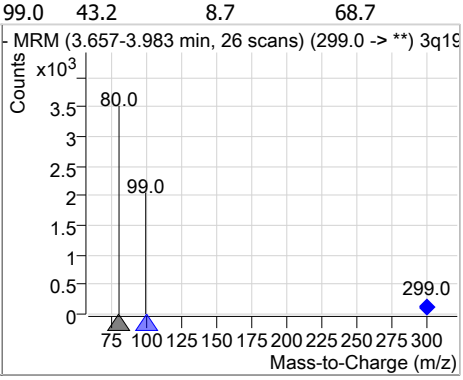




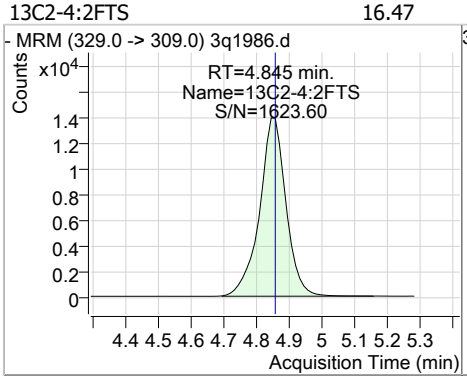
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.39	3.87	-0.01	1177	299.0 -> 99.0	43.2	8.7	68.7

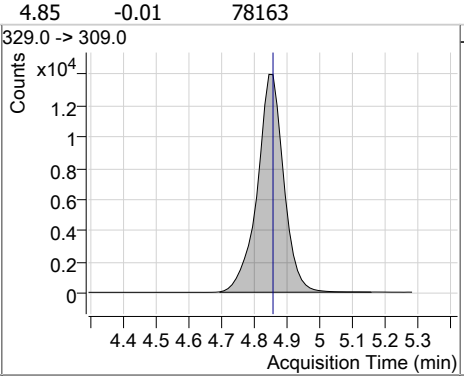


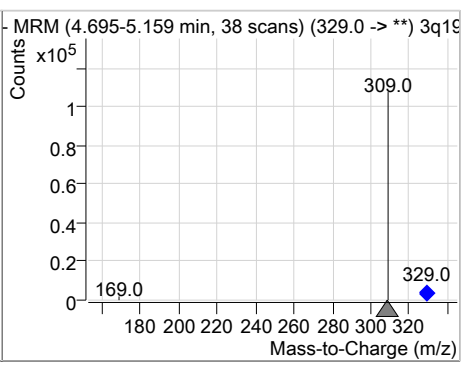




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.47	4.85	-0.01	78163				

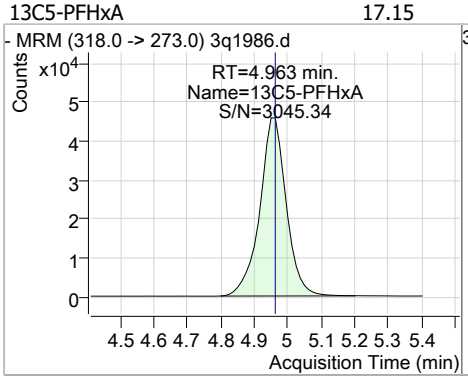


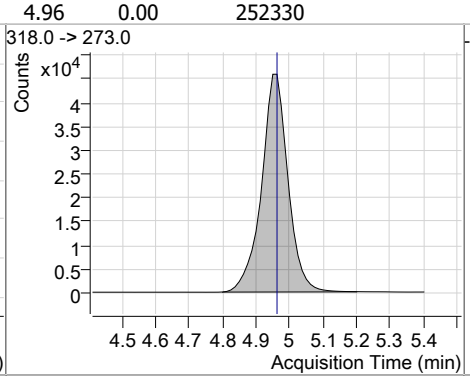


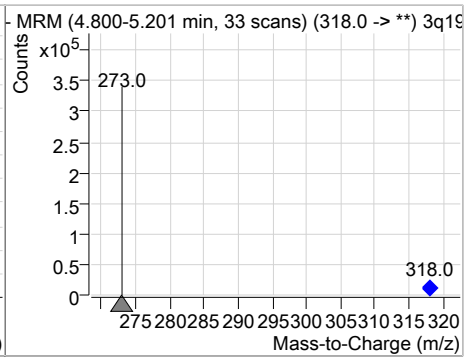


Perfluorinated Compounds by LC/MS/MS

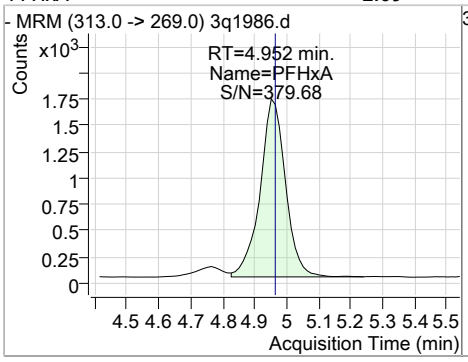
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.15	4.96	0.00	252330				

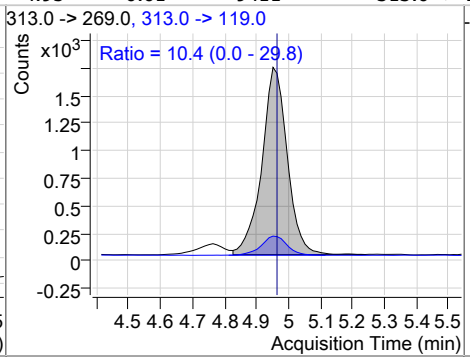


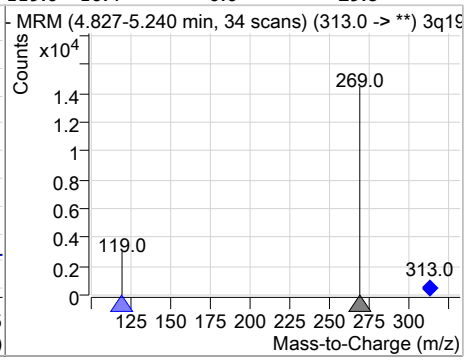




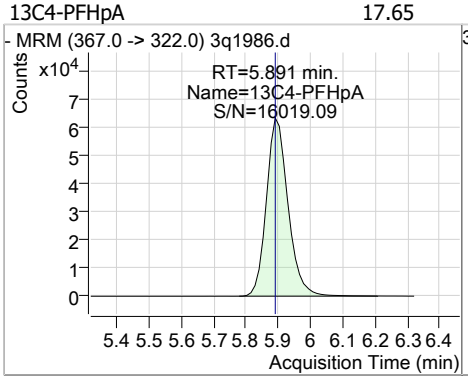
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.09	4.95	-0.01	9411	313.0 -> 119.0	10.4	0.0	29.8

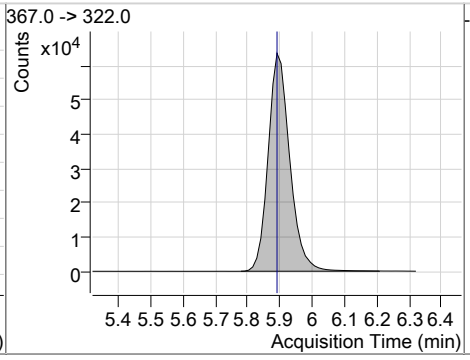


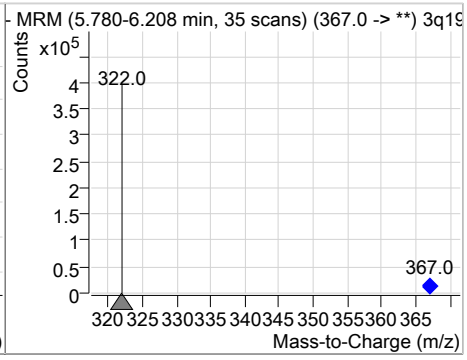




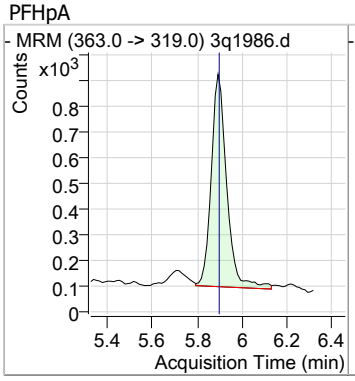
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.65	5.89	0.00	294662				

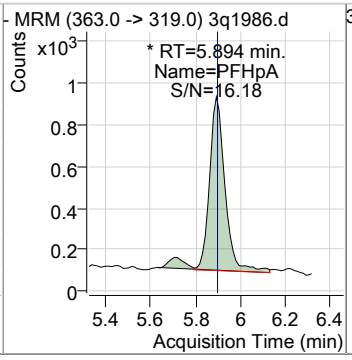


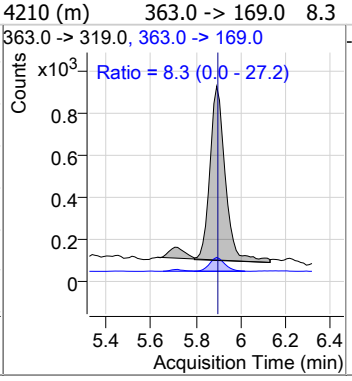


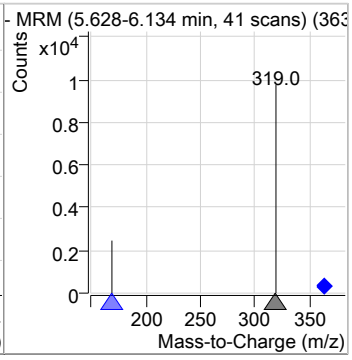


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.32	5.89	0.00	4210 (m)	363.0 -> 169.0	8.3	0.0	27.2



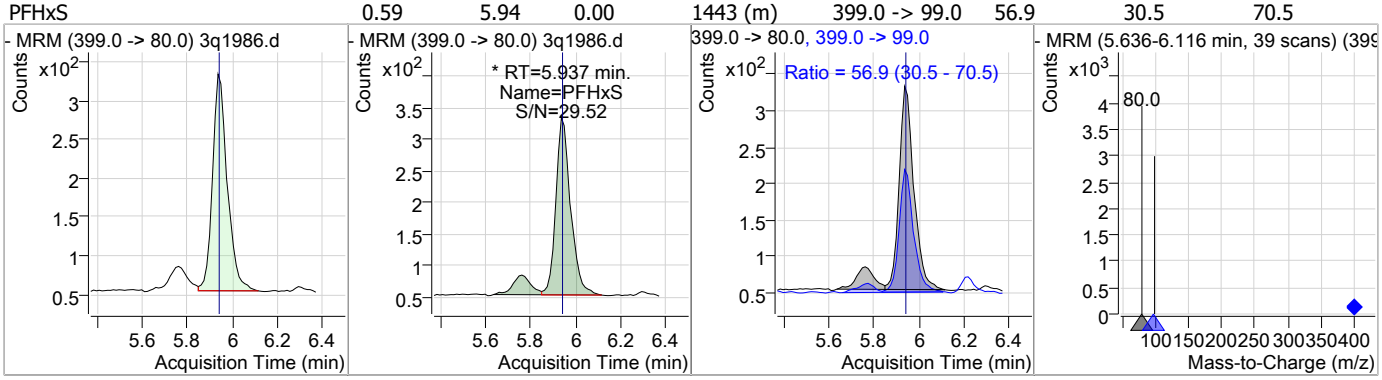




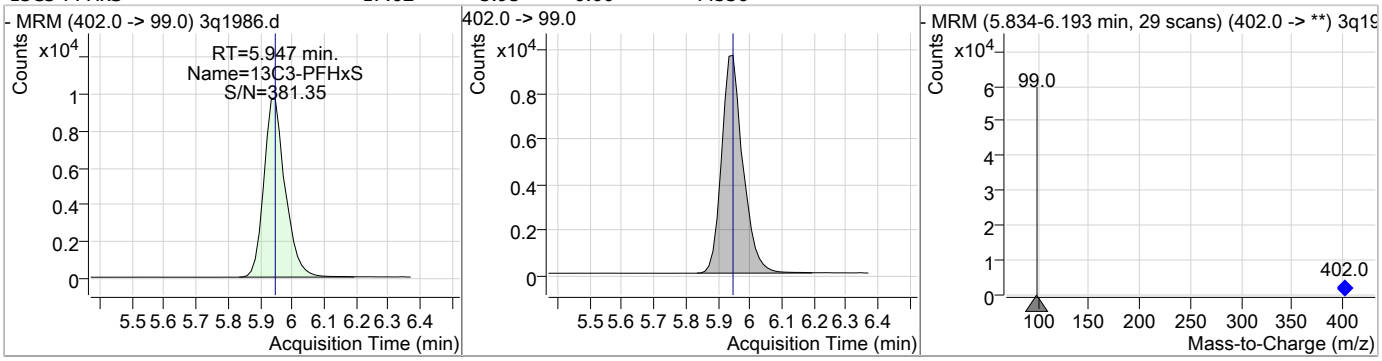


Perfluorinated Compounds by LC/MS/MS

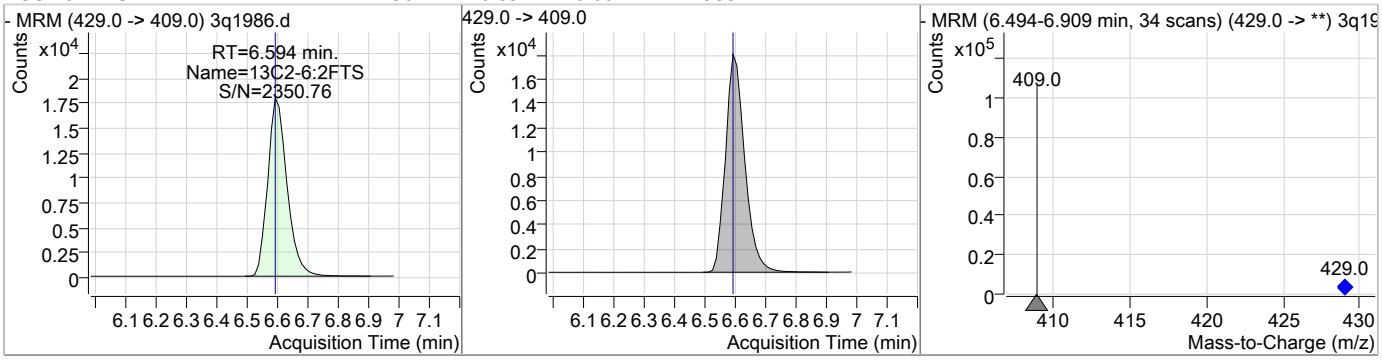
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.59	5.94	0.00	1443 (m)	399.0 -> 99.0	56.9	30.5	70.5



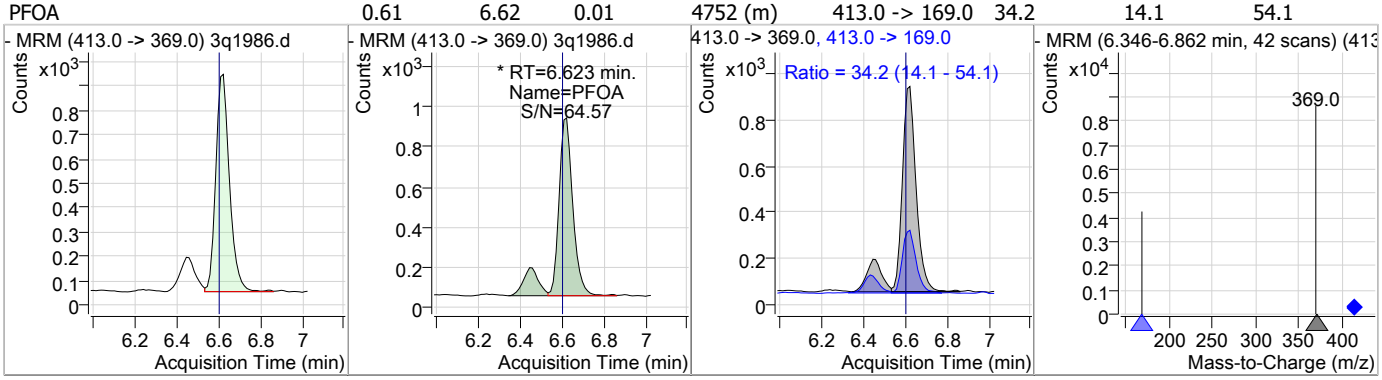
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.62	5.95	0.00	44536				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.36	6.59	0.00	79334				

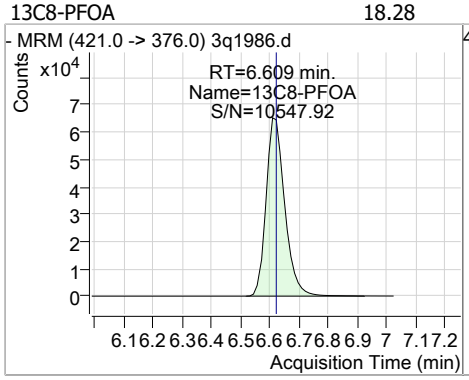


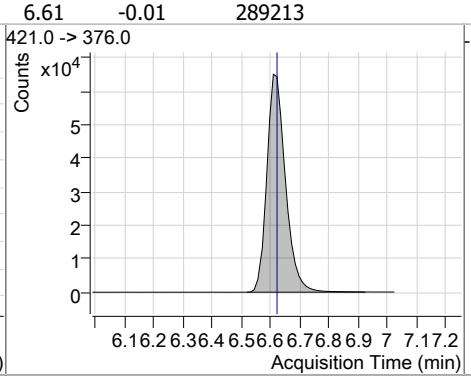
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.61	6.62	0.01	4752 (m)	413.0 -> 169.0	34.2	14.1	54.1

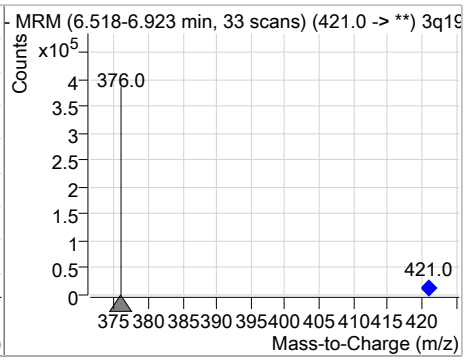


Perfluorinated Compounds by LC/MS/MS

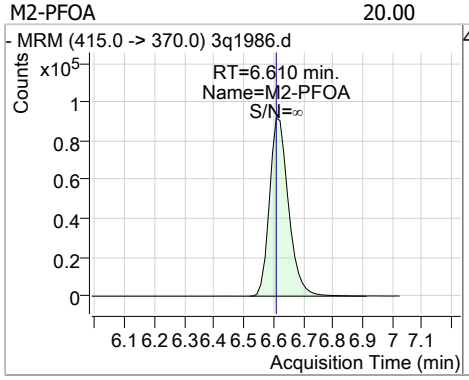
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.28	6.61	-0.01	289213				

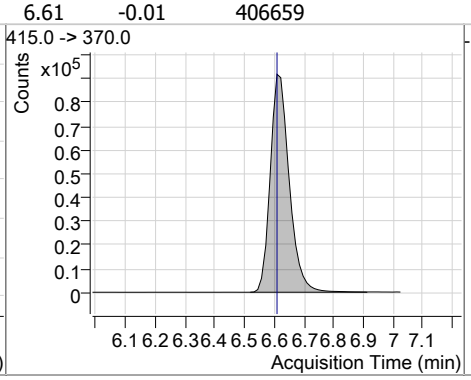


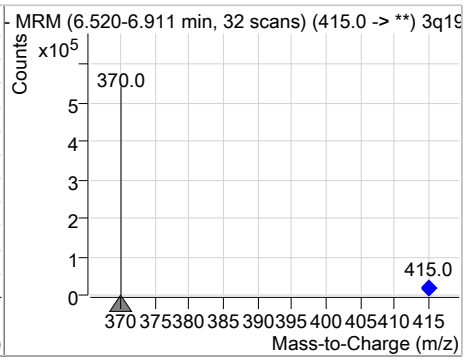




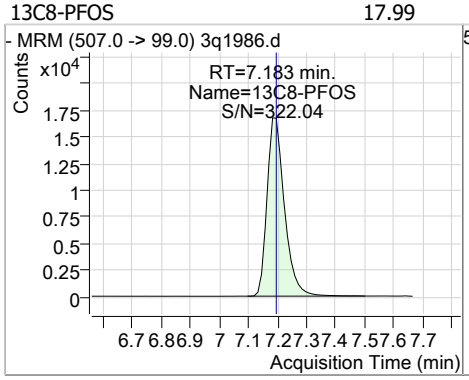
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	406659				

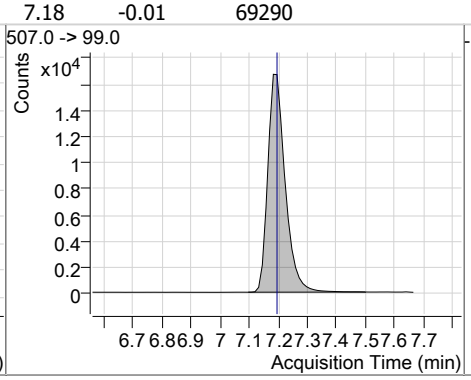


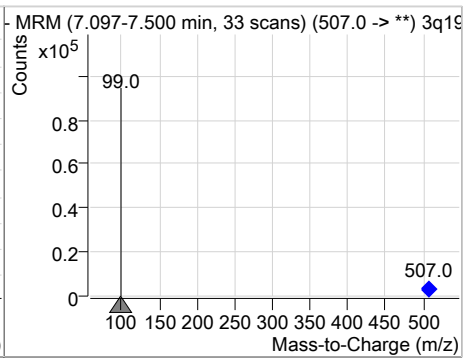




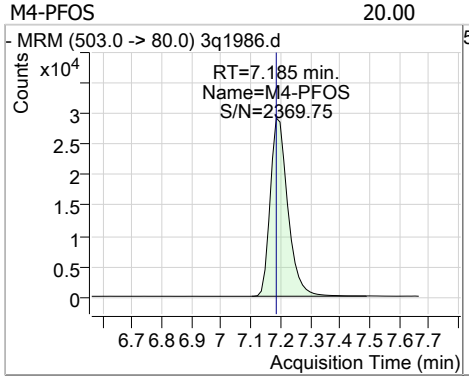
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.99	7.18	-0.01	69290				

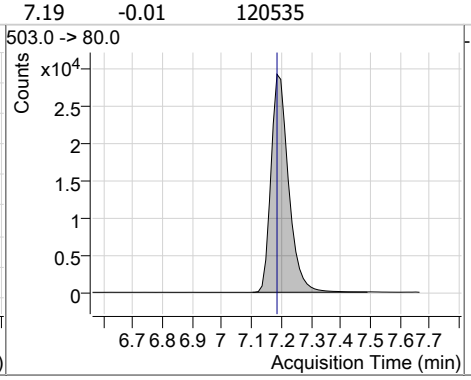


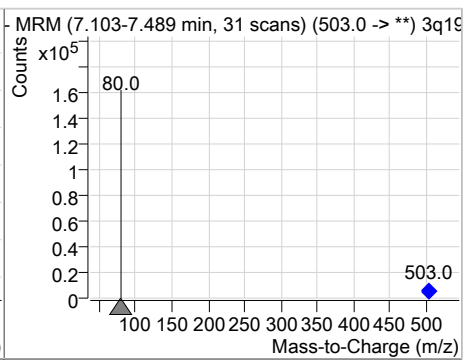




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	120535				

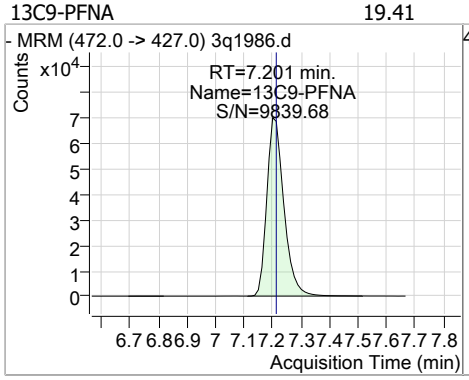


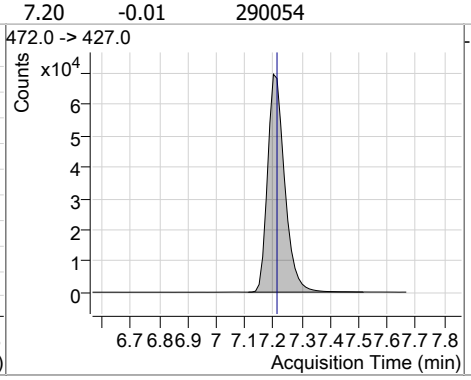


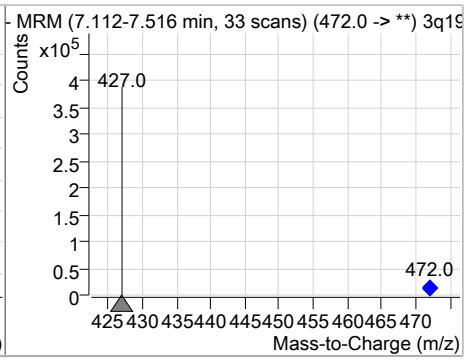


Perfluorinated Compounds by LC/MS/MS

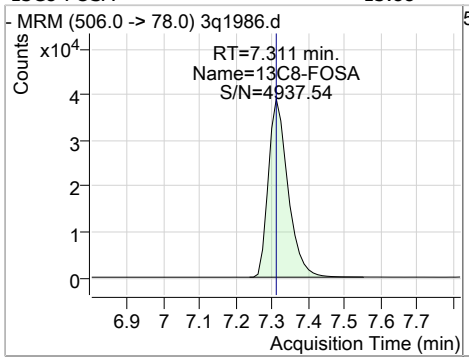
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.41	7.20	-0.01	290054				

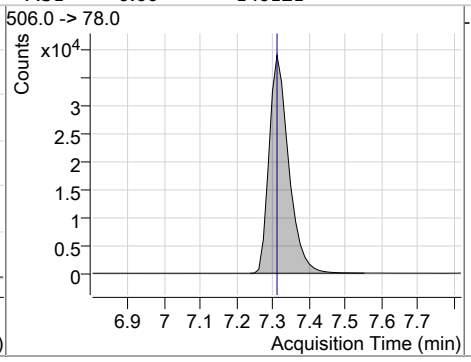


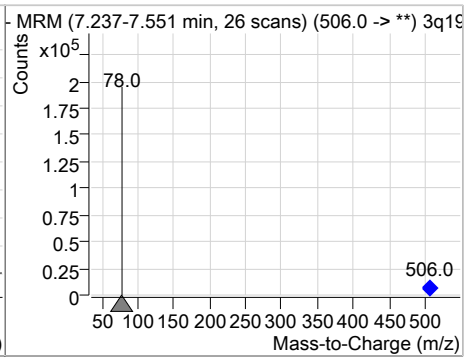




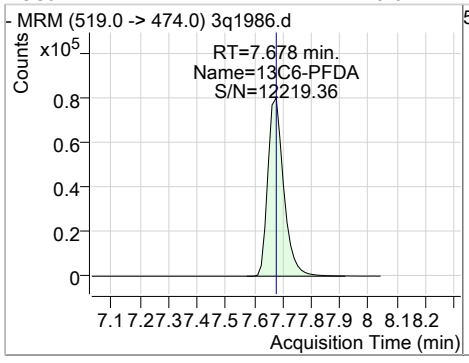
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	13.88	7.31	0.00	146121				

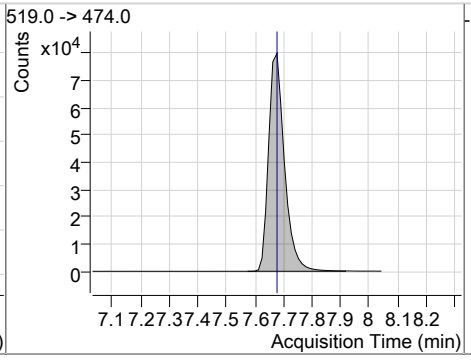


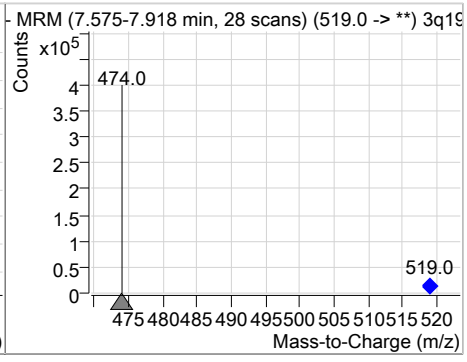




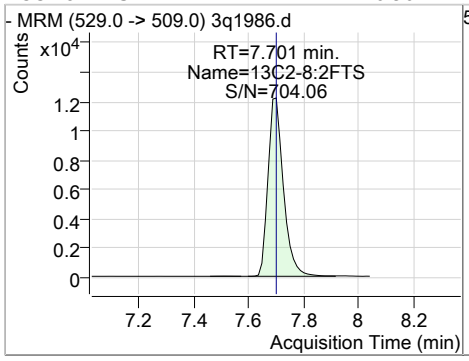
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.62	7.68	0.00	310112				

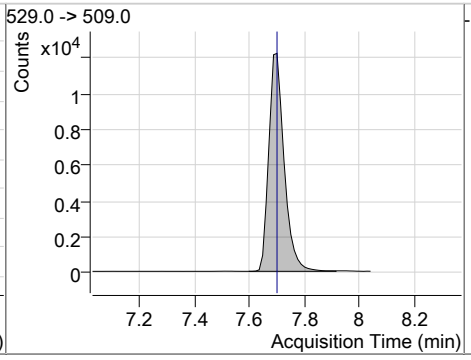


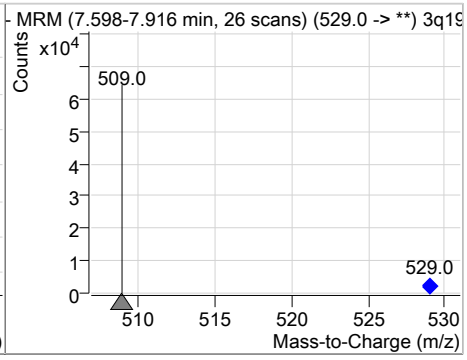




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.96	7.70	0.00	47412				

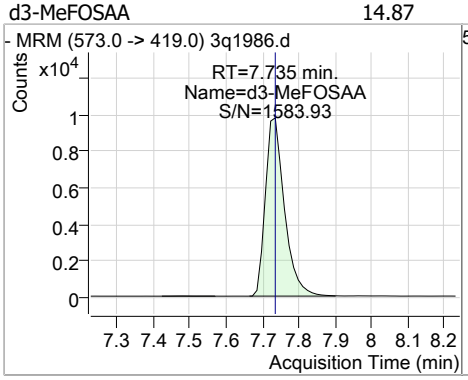


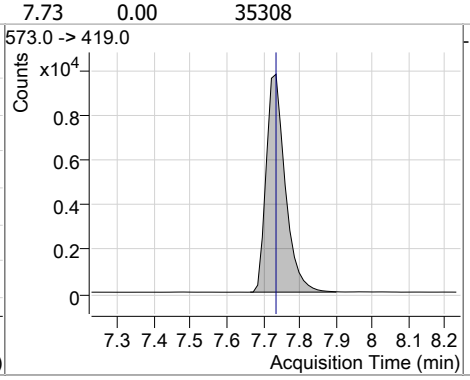


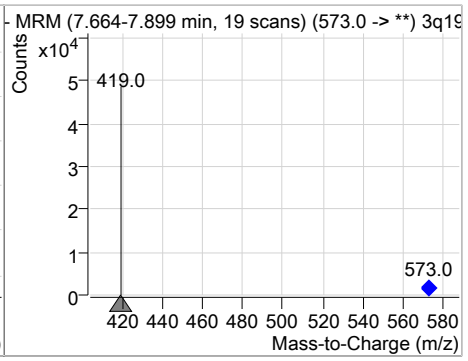


Perfluorinated Compounds by LC/MS/MS

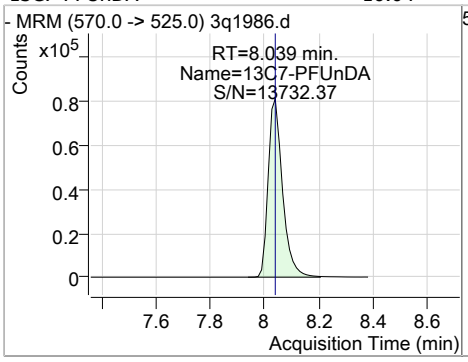
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.87	7.73	0.00	35308				

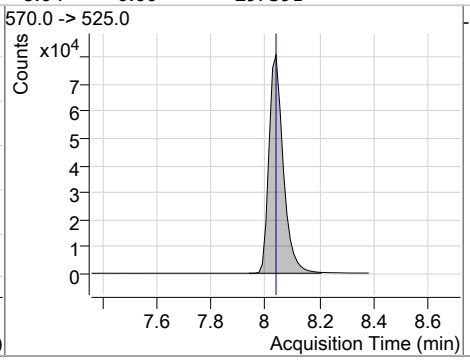


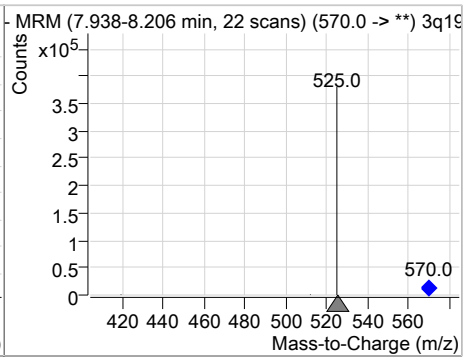




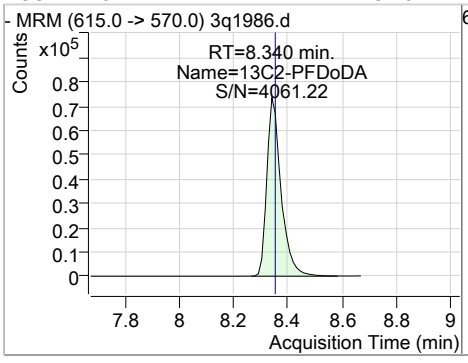
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.04	8.04	0.00	297391				

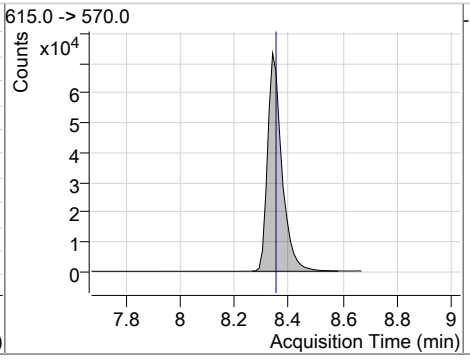


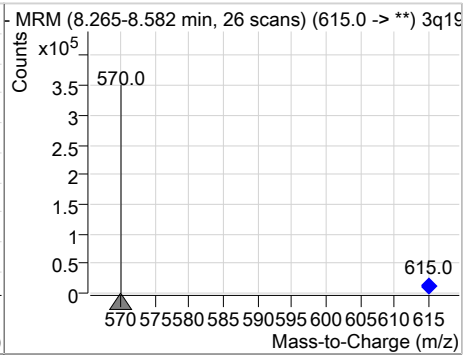




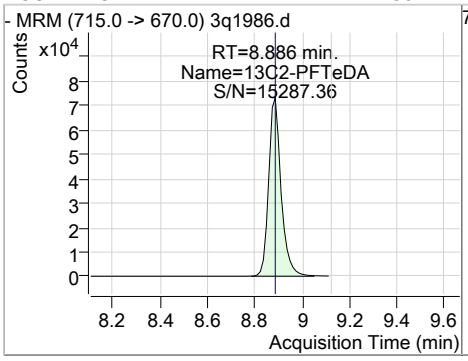
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.76	8.34	-0.01	269122				

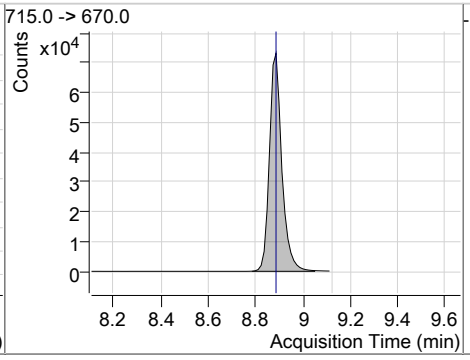


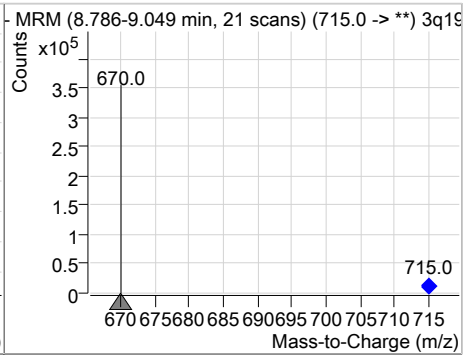




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.50	8.89	0.00	265334				







Manual Integration Approval Summary

Sample Number: FA62220-4
Lab FileID: 3Q1986.D
Injection Time: 03/21/19 13:36

Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:48 Nancy Saunders
Supervisor approved: 03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		5.89	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanoic acid	335-67-1		6.62	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27699.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 5:51:18 PM
Sample Name	:	fa62220-5
Vial	:	Vial 21
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74180,S2Q442,250,,,1.0,1,water

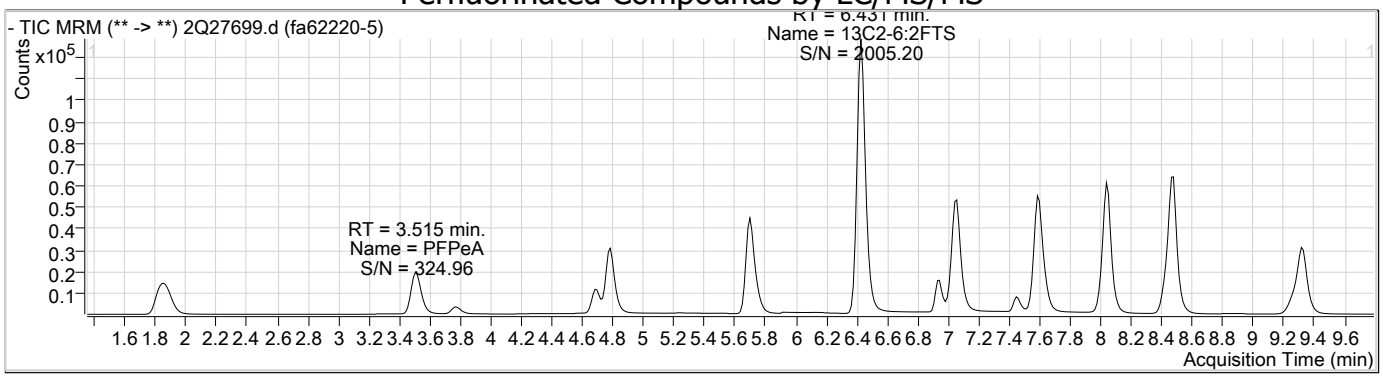
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	271948	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	37601	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	97032	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	82287	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	116966	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	171871	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	184145	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	175378	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	202317	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	249476	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	294662	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	170554	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	54186	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	13895	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	15388	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	16286	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	46256	20.00	µg/L	0.000
M2-6:2FTS	6.431	429.0 -> 409.0	58794	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	30418	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	24027	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	53	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	46131	15.51	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%		
13C2-6:2FTS	6.431	429.0 -> 409.0	58779	18.31	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.6%		
13C2-8:2FTS	7.630	529.0 -> 509.0	30417	13.72	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.6%		
13C2-PFDoDA	8.479	615.0 -> 570.0	294559	15.66	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%		
13C2-PFTeDA	9.315	715.0 -> 670.0	170286	13.26	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.3%		
13C3-PFBS	3.767	302.0 -> 99.0	13859	15.20	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.0%		
13C3-PFHxS	5.748	402.0 -> 99.0	15388	15.09	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.5%		
13C4-PFBA	1.852	217.0 -> 172.0	96828	16.15	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C4-PFHpA	5.705	367.0 -> 322.0	171687	16.60	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.0%		
13C5-PFHxA	4.789	318.0 -> 273.0	116999	16.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.5%		
13C5-PFPeA	3.511	268.0 -> 223.0	82140	16.16	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.8%		
13C6-PFDA	7.594	519.0 -> 474.0	202185	14.82	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

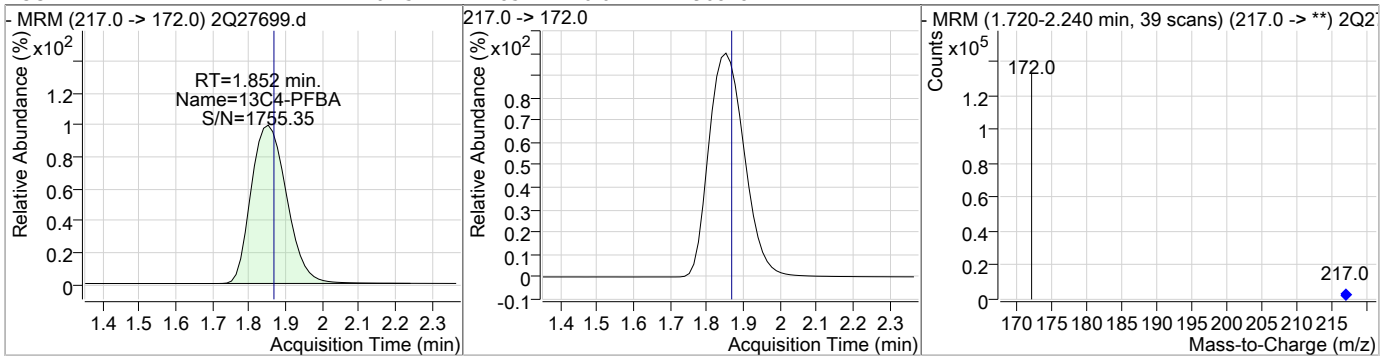
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.1%	
13C7-PFUnDA	8.041	570.0 -> 525.0	249399	14.74 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.7%	
13C8-FOSA	6.944	506.0 -> 78.0	54161	13.36 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.8%	
13C8-PFOA	6.434	421.0 -> 376.0	184079	17.65 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.2%	
13C8-PFOS	7.045	507.0 -> 99.0	16296	12.50 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.5%	
13C9-PFNA	7.065	472.0 -> 427.0	175356	16.56 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.8%	
d3-MeFOSAA	7.447	573.0 -> 419.0	24009	12.53 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.6%	
M2-PFOA	6.435	415.0 -> 370.0	272082	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.036	503.0 -> 80.0	37666	20.03 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C3-HFPO-DA	5.081	287.0 -> 169.0	53	0.03 µg/L	0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 0.0%	
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.848	213.0 -> 169.0	1045	1.09 µg/L	100
PFBS	3.771	299.0 -> 80.0	463	0.42 µg/L	96
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	4.791	313.0 -> 269.0	4281	2.13 µg/L	98
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	3.515	263.0 -> 219.0	9229	2.59 µg/L	100
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

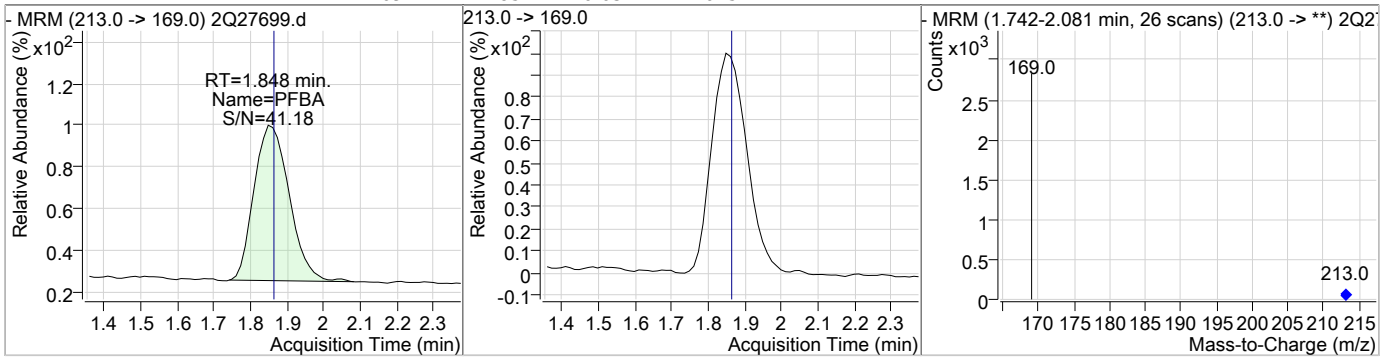
Perfluorinated Compounds by LC/MS/MS



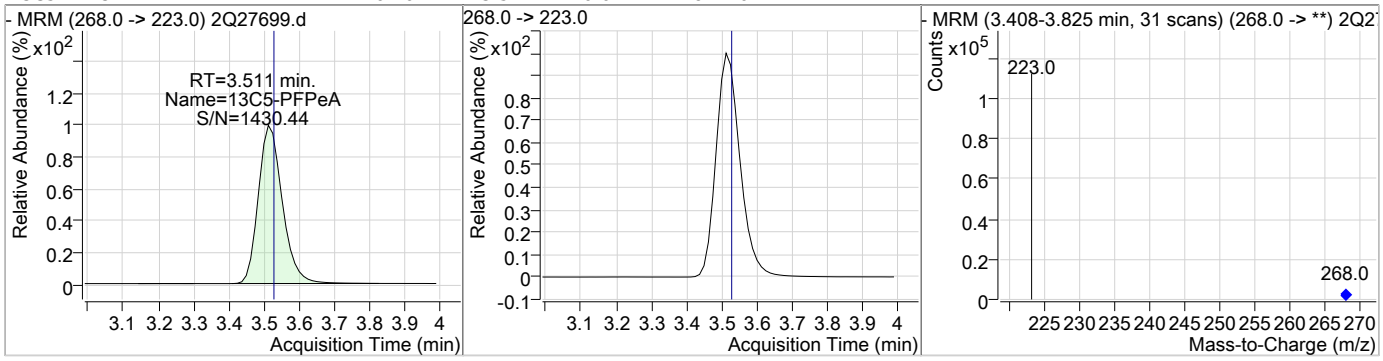
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.15	1.85	-0.01	96828				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.09	1.85	-0.03	1045				

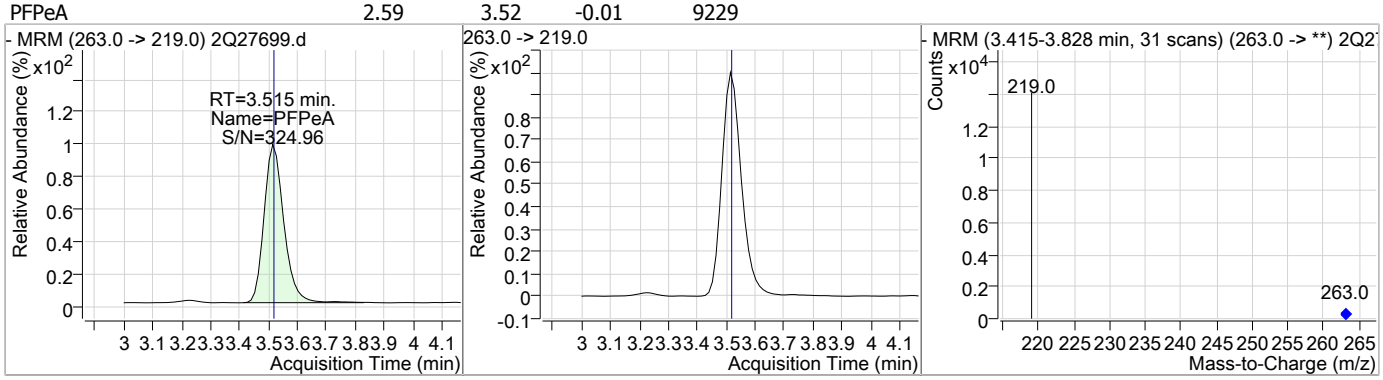


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.16	3.51	-0.01	82140				

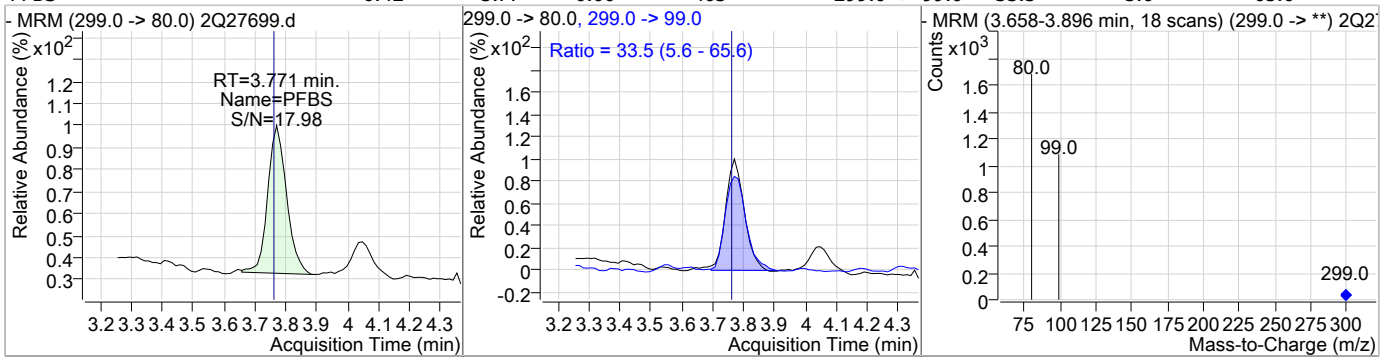


Perfluorinated Compounds by LC/MS/MS

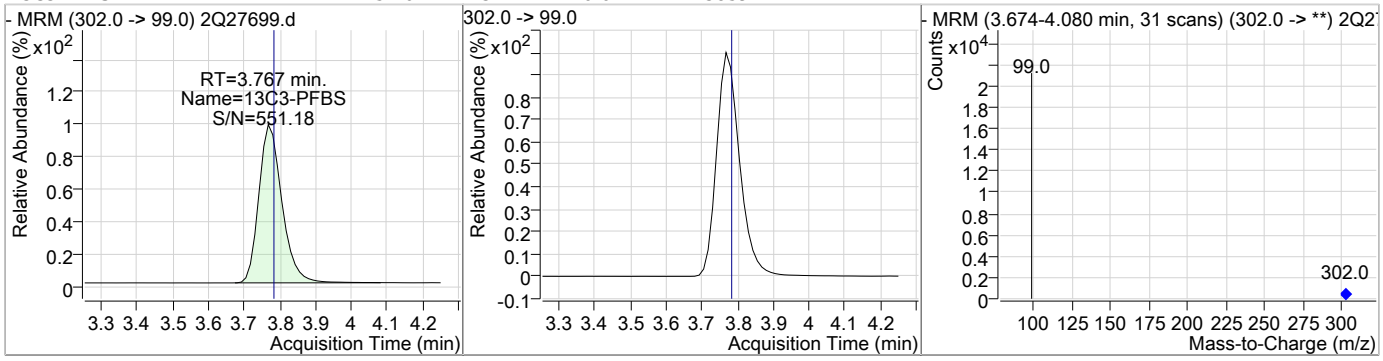
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.59	3.52	-0.01	9229				



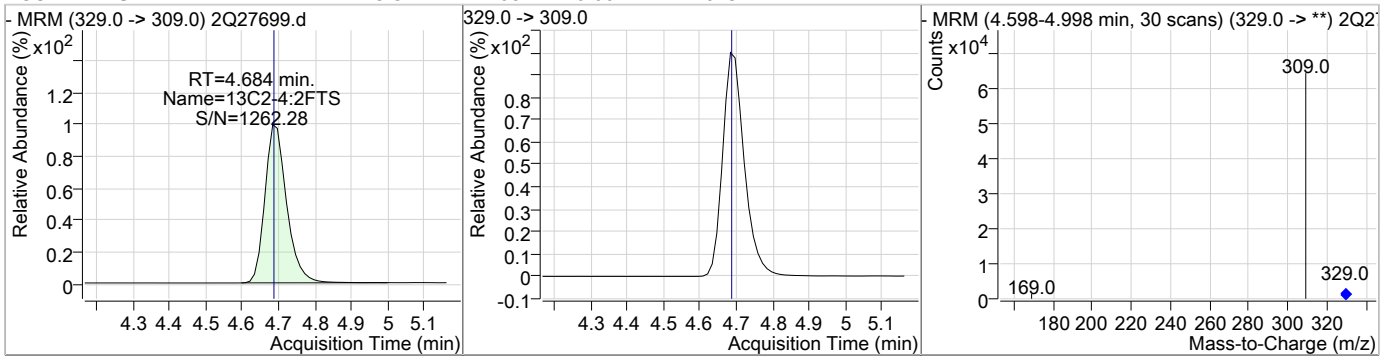
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.42	3.77	0.00	463	299.0 -> 99.0	33.5	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.20	3.77	-0.01	13859				

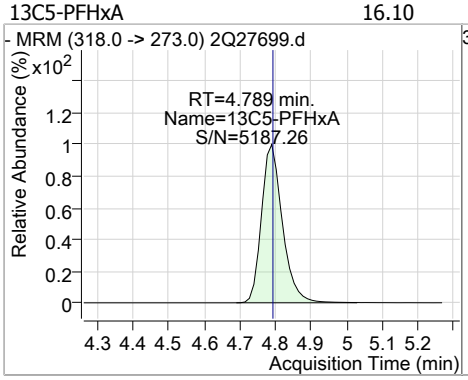


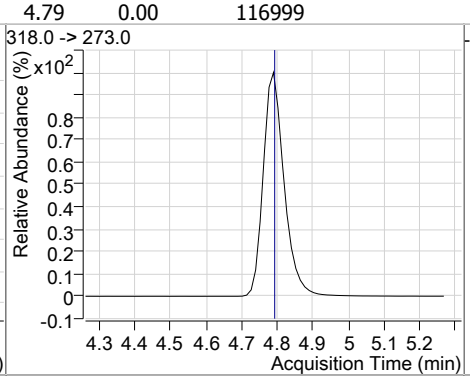
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.51	4.68	0.00	46131				

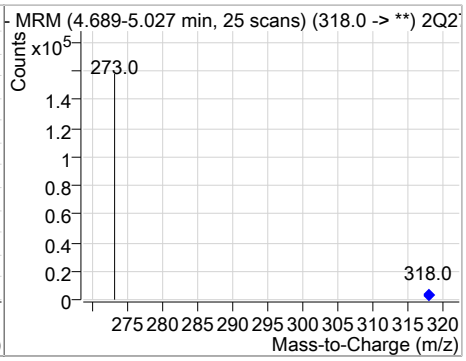


Perfluorinated Compounds by LC/MS/MS

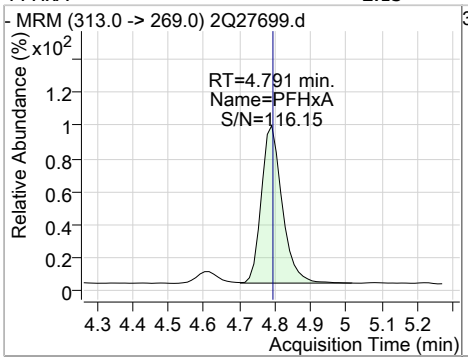
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.10	4.79	0.00	116999				

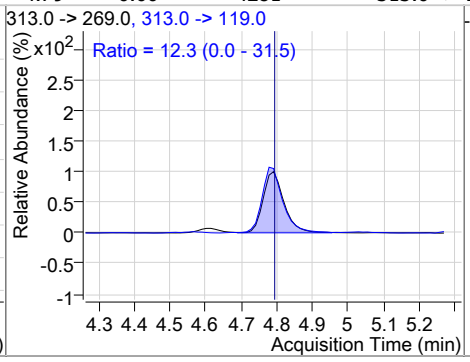


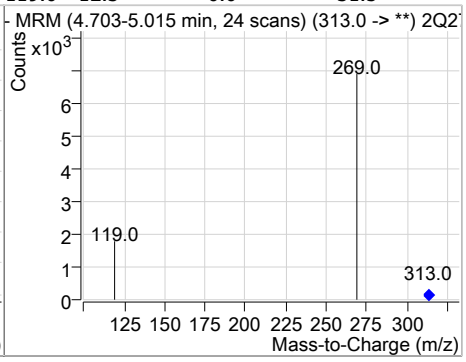




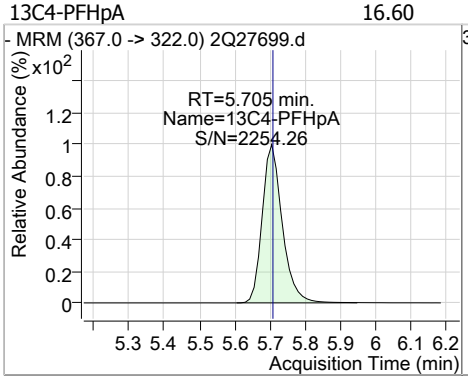
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.13	4.79	0.00	4281	313.0 -> 119.0	12.3	0.0	31.5

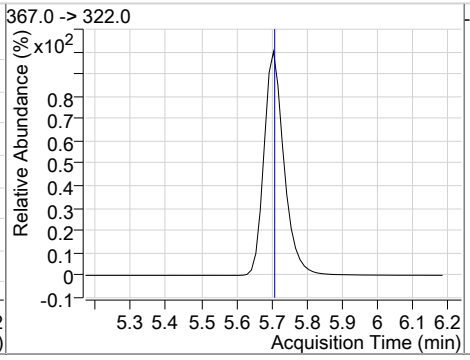


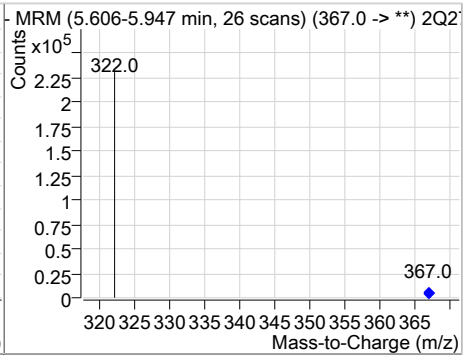




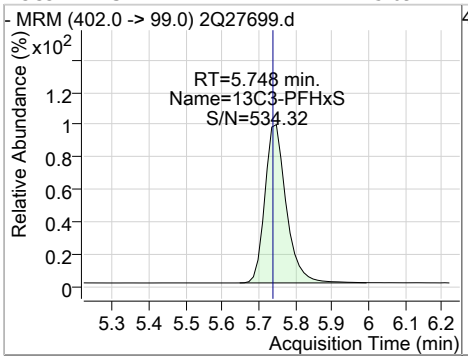
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.60	5.71	0.00	171687				

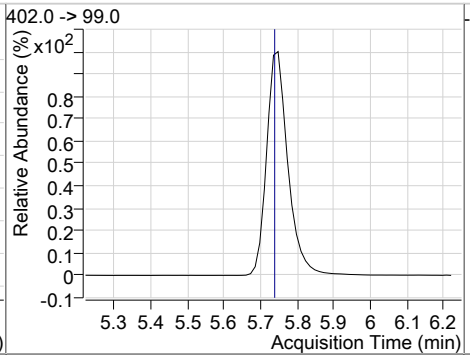


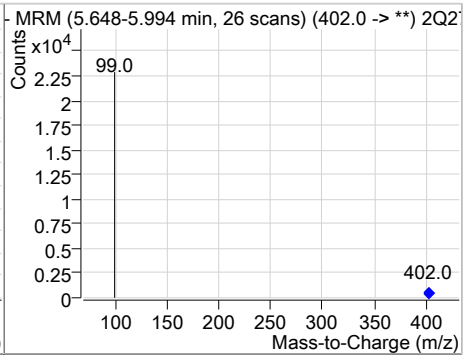




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.09	5.75	0.01	15388				

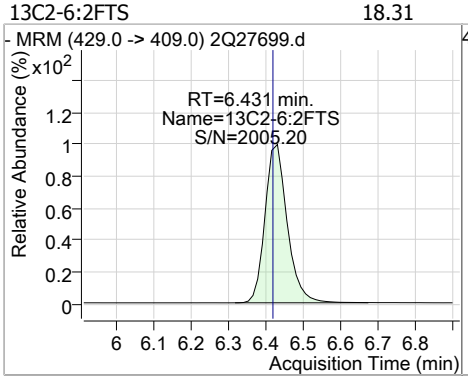


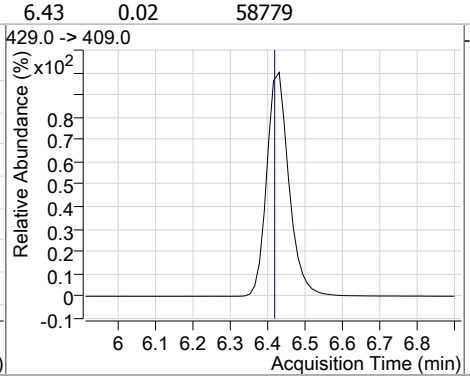


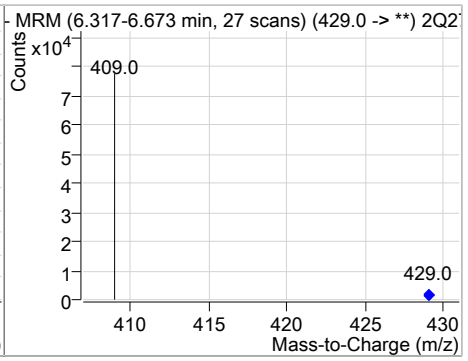


Perfluorinated Compounds by LC/MS/MS

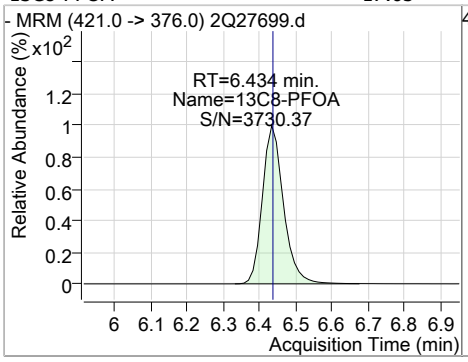
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.31	6.43	0.02	58779				

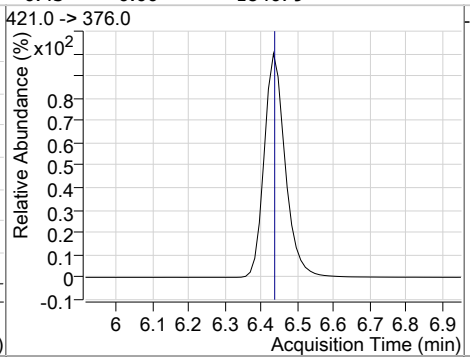


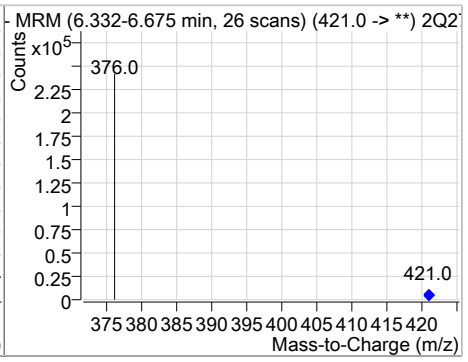




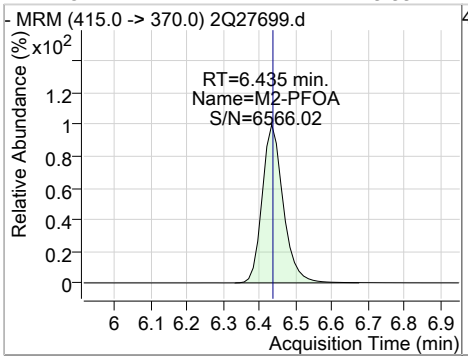
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.65	6.43	0.00	184079				

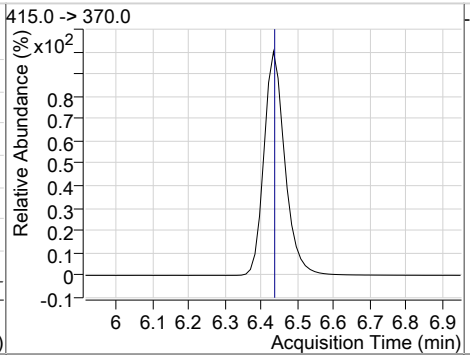


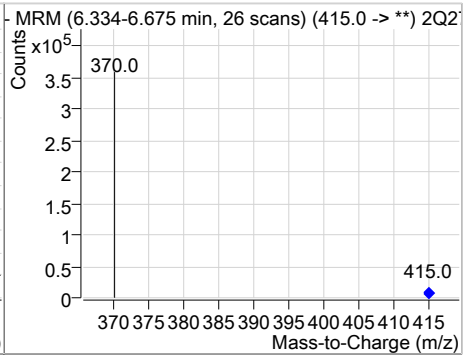




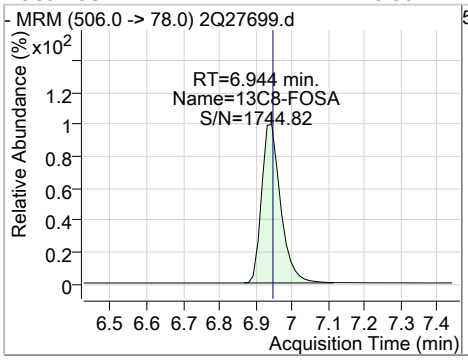
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	272082				

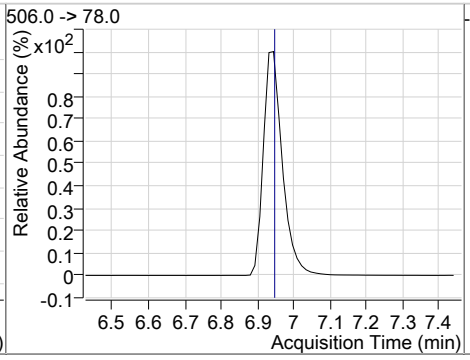


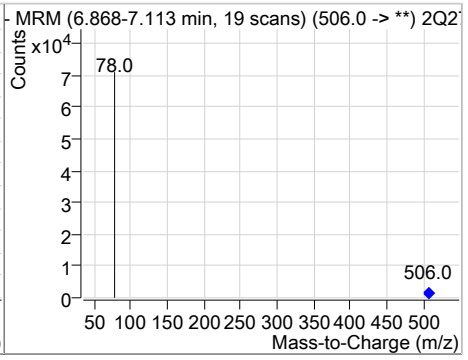




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	13.36	6.94	0.00	54161				

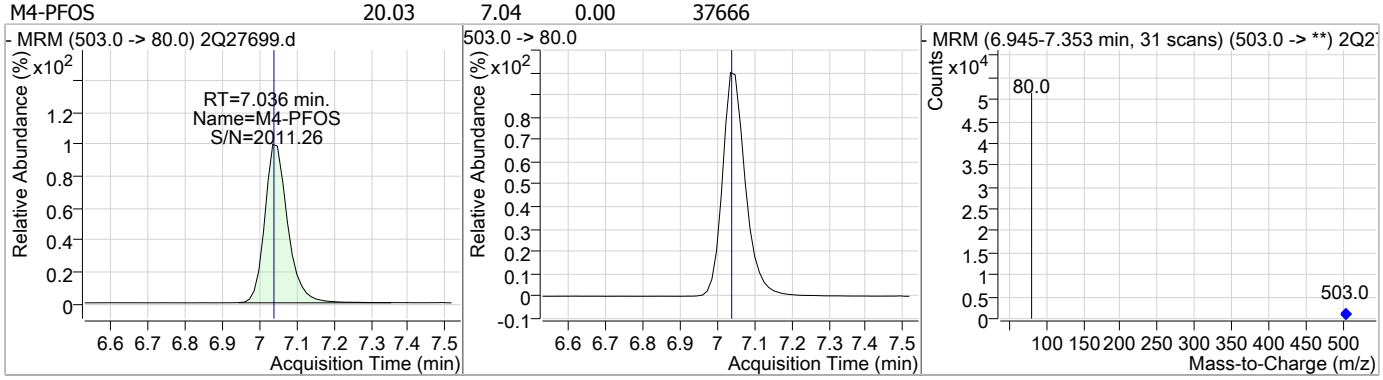




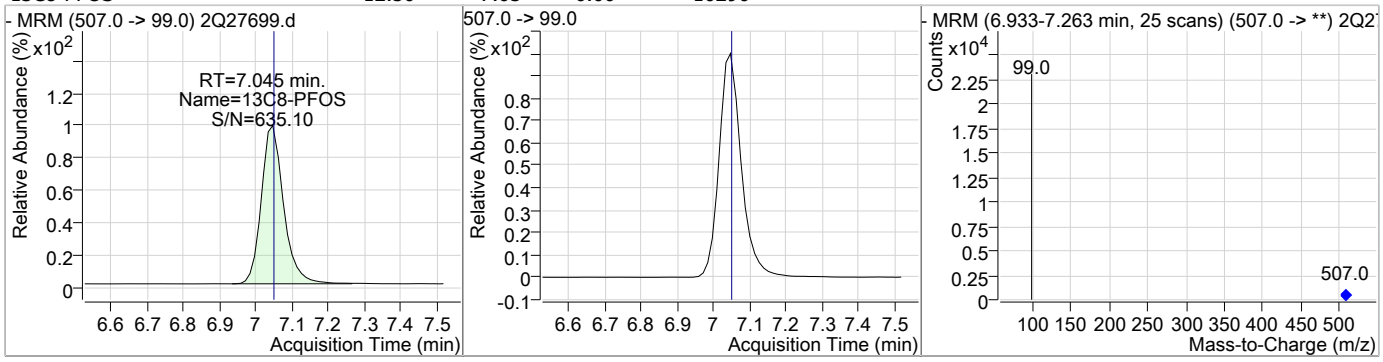


Perfluorinated Compounds by LC/MS/MS

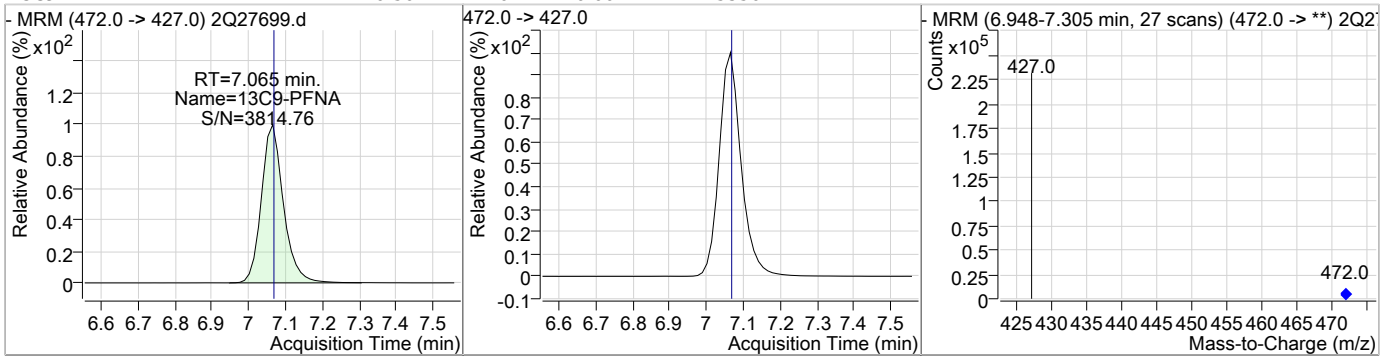
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.03	7.04	0.00	37666				



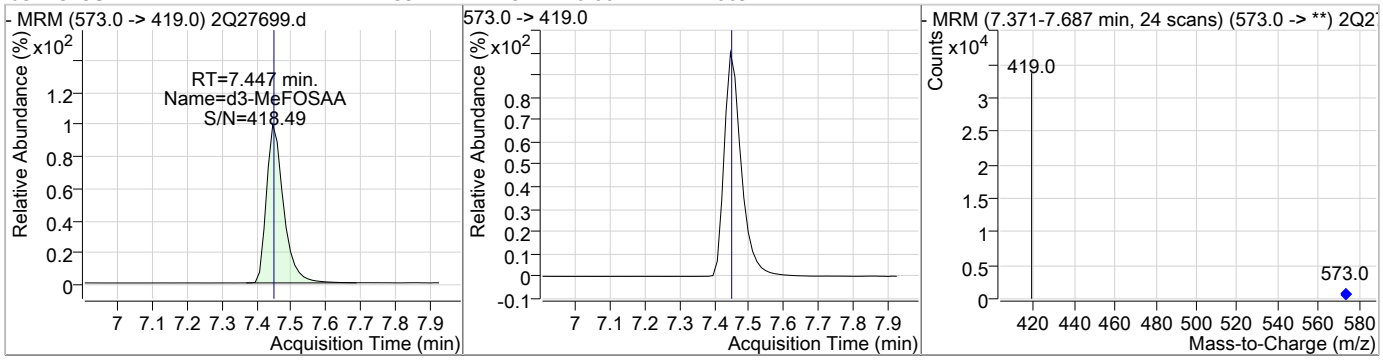
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.50	7.05	0.00	16296				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.56	7.07	0.00	175356				

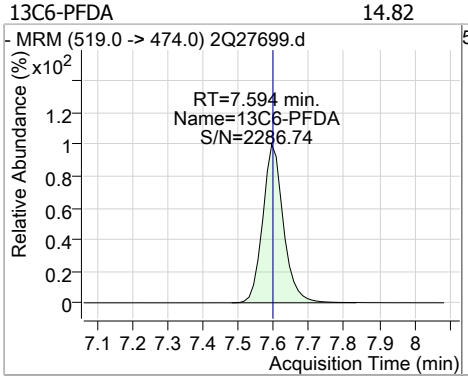


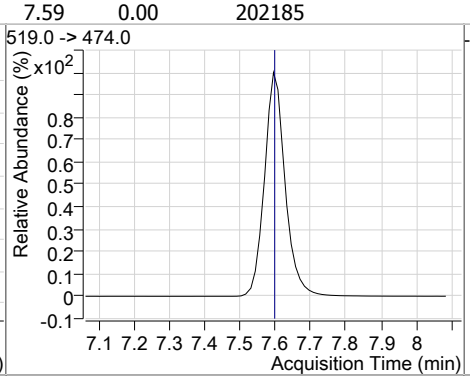
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	12.53	7.45	0.00	24009				

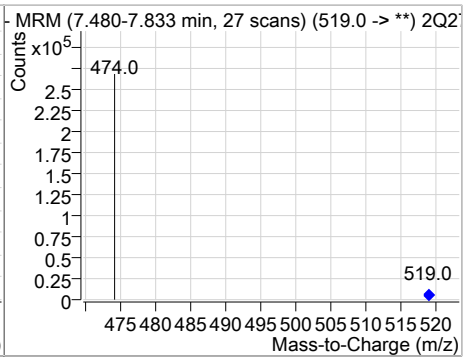


Perfluorinated Compounds by LC/MS/MS

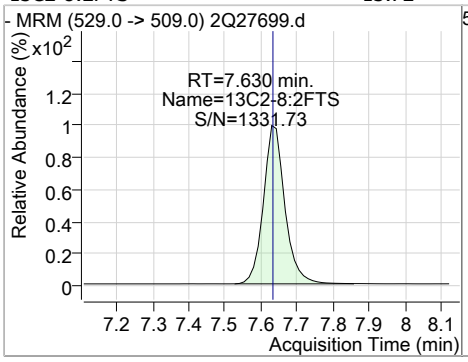
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	14.82	7.59	0.00	202185				

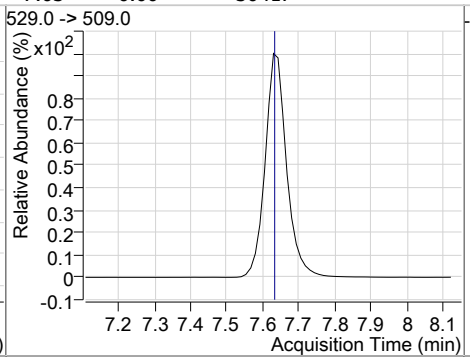


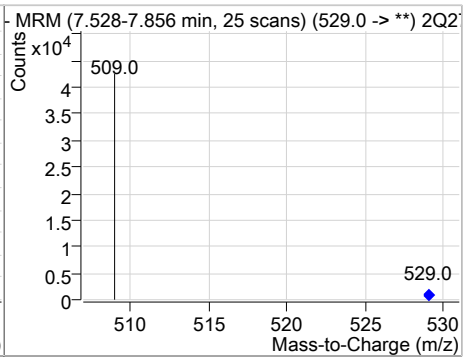




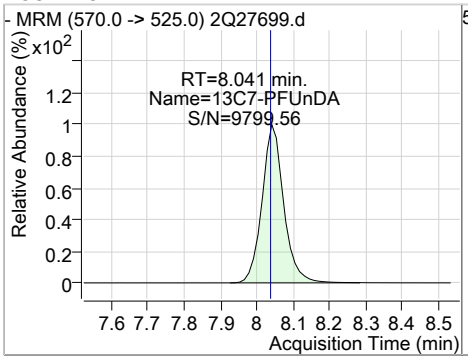
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	13.72	7.63	0.00	30417				

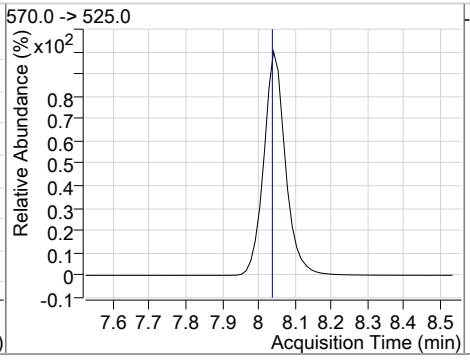


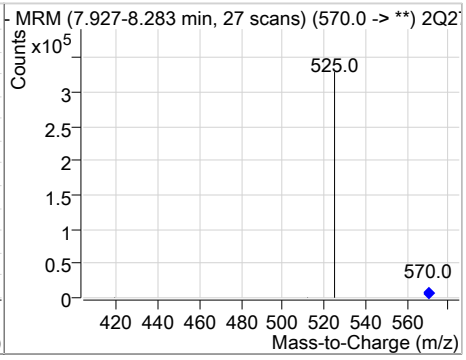




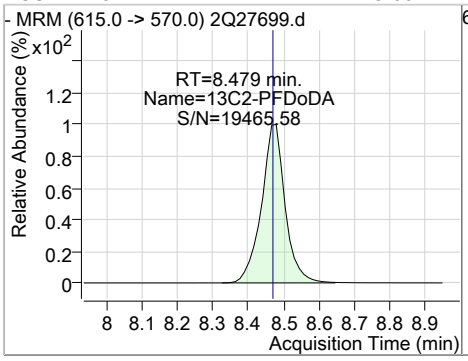
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.74	8.04	0.00	249399				

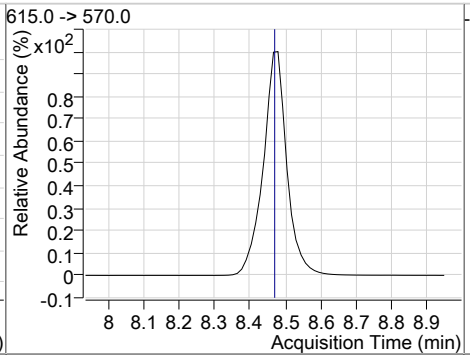


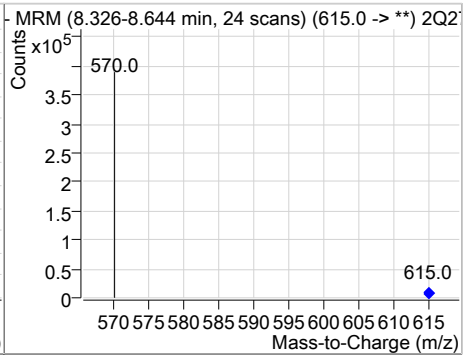




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	15.66	8.48	0.01	294559				

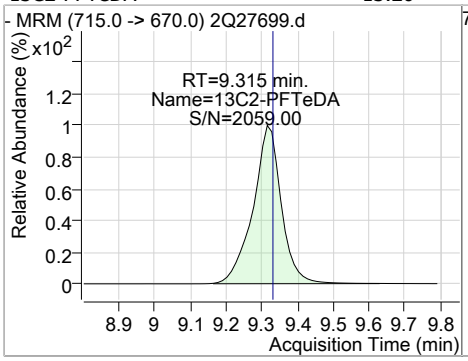


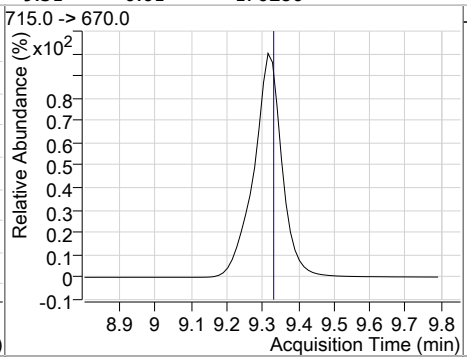


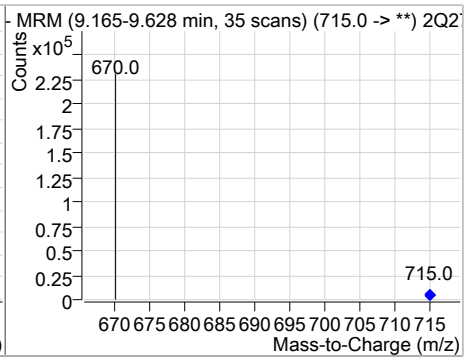


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	13.26	9.31	-0.01	170286				







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27700.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 6:07:01 PM
Sample Name : fa62220-6
Vial : Vial 22
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

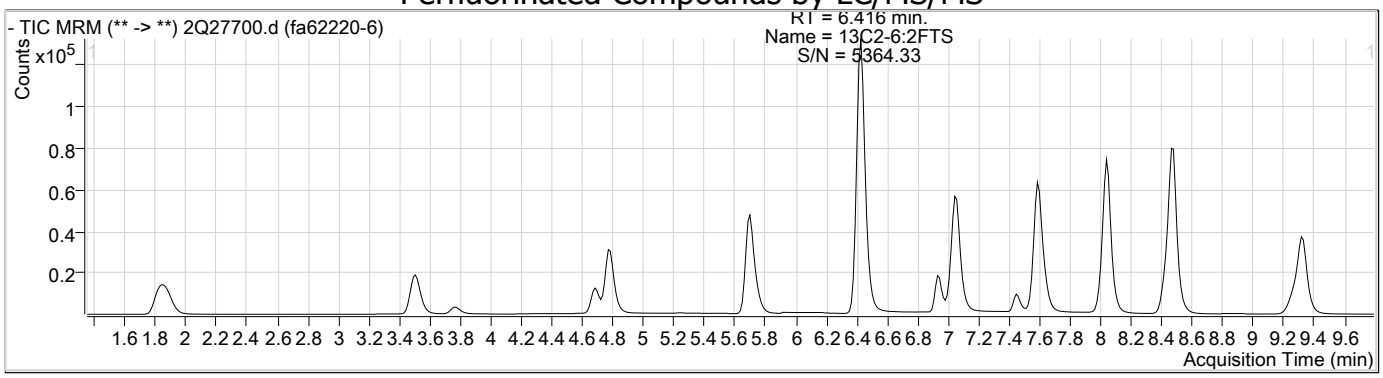
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	272791	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	37188	20.00	µg/L	0.000
M4-PFBA	1.840	217.0 -> 172.0	100634	20.00	µg/L	-0.025
M5-PFPeA	3.511	268.0 -> 223.0	85982	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	123979	20.00	µg/L	-0.013
M4-PFHpA	5.705	367.0 -> 322.0	182369	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	200154	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	186585	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	229382	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	300992	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	366773	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	204276	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	62750	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14764	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	16719	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	18422	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	49535	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	64363	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	34155	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	28962	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	49516	16.65	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.3%		
13C2-6:2FTS	6.416	429.0 -> 409.0	64344	20.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	34412	15.52	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%		
13C2-PFDoDA	8.466	615.0 -> 570.0	366466	19.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	203528	15.85	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%		
13C3-PFBS	3.767	302.0 -> 99.0	14754	16.18	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.9%		
13C3-PFHxS	5.736	402.0 -> 99.0	16718	16.40	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%		
13C4-PFBA	1.840	217.0 -> 172.0	100365	16.74	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%		
13C4-PFHpA	5.705	367.0 -> 322.0	182301	17.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%		
13C5-PFHxA	4.776	318.0 -> 273.0	123883	17.05	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.2%		
13C5-PFPeA	3.511	268.0 -> 223.0	86047	16.93	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.6%		
13C6-PFDA	7.594	519.0 -> 474.0	229268	16.80	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

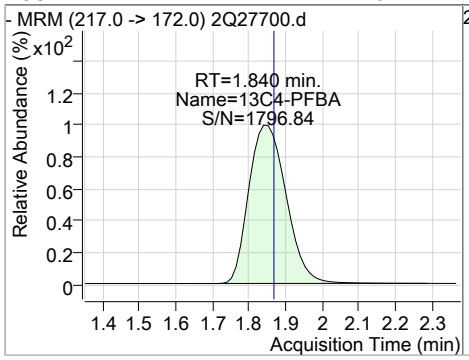
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%		
13C7-PFUnDA	8.041	570.0 -> 525.0	300785	17.77 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C8-FOSA	6.932	506.0 -> 78.0	62742	15.47 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%		
13C8-PFOA	6.434	421.0 -> 376.0	200055	19.18 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C8-PFOS	7.033	507.0 -> 99.0	18426	14.14 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.7%		
13C9-PFNA	7.066	472.0 -> 427.0	186551	17.62 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%		
d3-MeFOSAA	7.447	573.0 -> 419.0	28921	15.09 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.4%		
M2-PFOA	6.435	415.0 -> 370.0	272880	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
M4-PFOS	7.036	503.0 -> 80.0	37244	20.02 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%		
Target Compounds						**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	5.708	363.0 -> 319.0	4229	0.54 µg/L		100
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	4.778	313.0 -> 269.0	1254	0.59 µg/L		98
PFHxS	5.739	399.0 -> 80.0	622	0.67 µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	-	413.0 -> 369.0	-	N.D.		
PFOS	7.037	499.0 -> 80.0	432	0.48 µg/L	m	77
PFPeA	3.515	263.0 -> 219.0	3859	1.04 µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

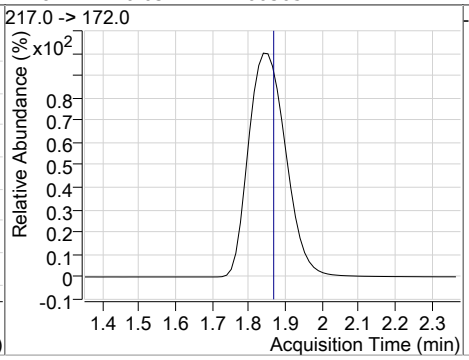
 # = Qualifier out of range, m = manually integrated, + = Area summed

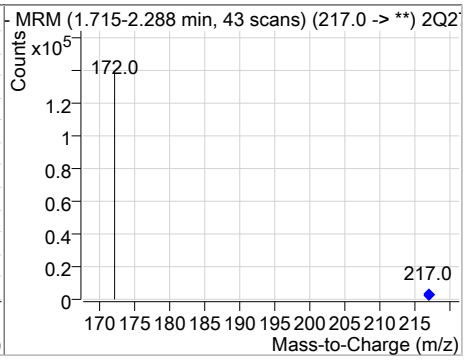
Perfluorinated Compounds by LC/MS/MS



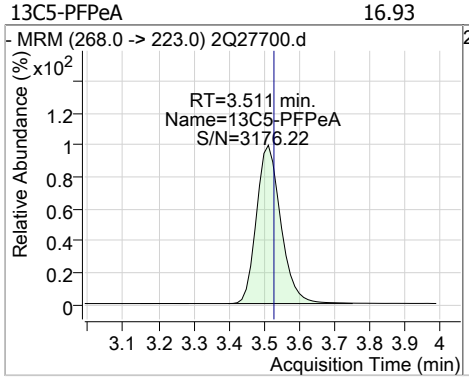
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.74	1.84	-0.03	100365				

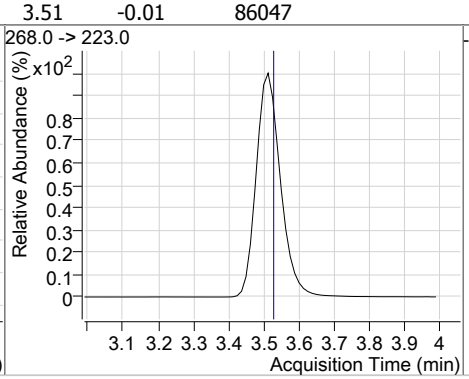


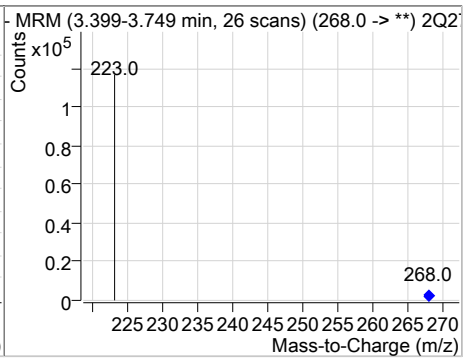




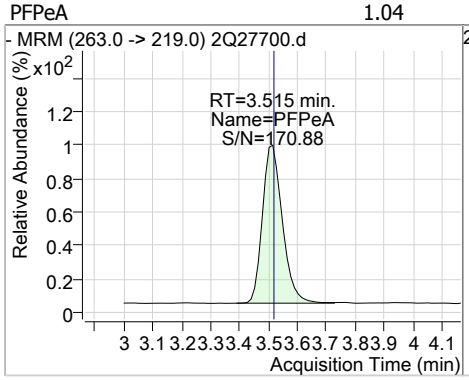
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.93	3.51	-0.01	86047				

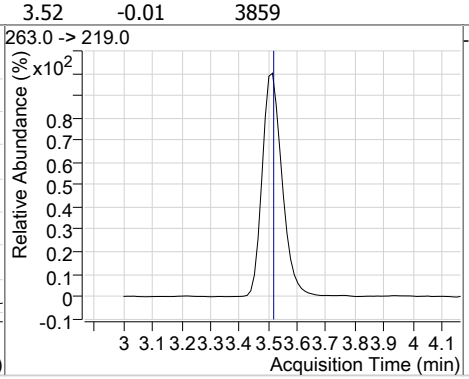


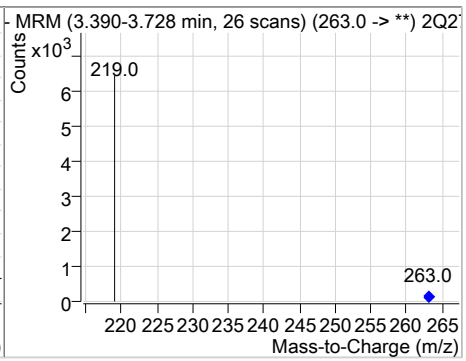




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.04	3.52	-0.01	3859				

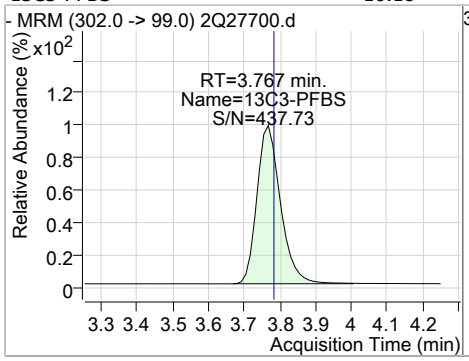


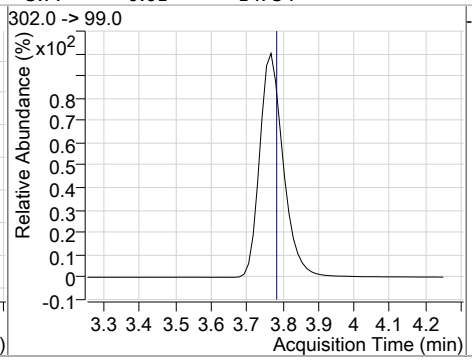


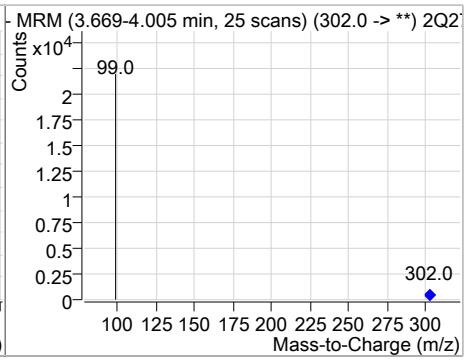


Perfluorinated Compounds by LC/MS/MS

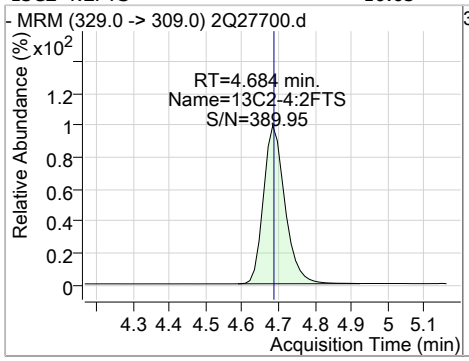
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.18	3.77	-0.01	14754				

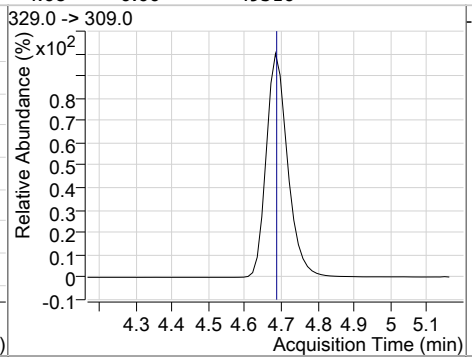


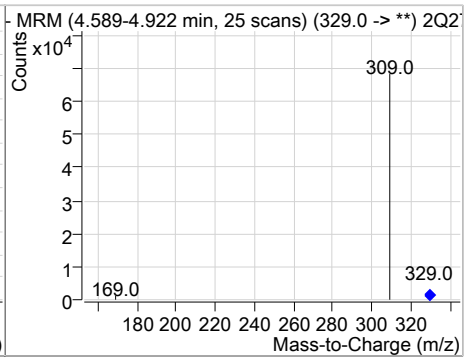




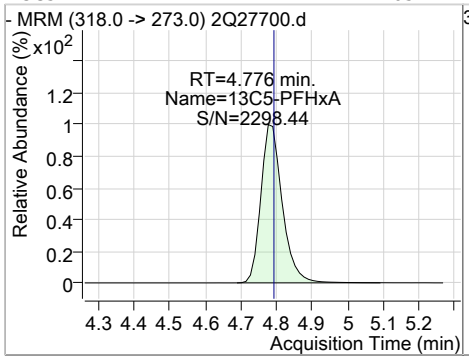
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.65	4.68	0.00	49516				

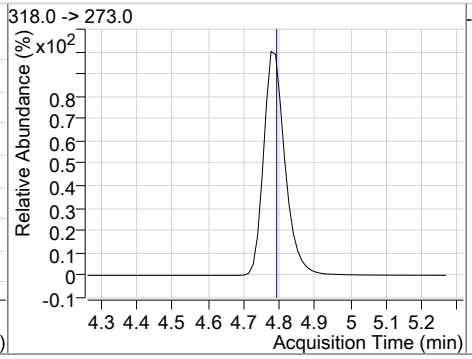


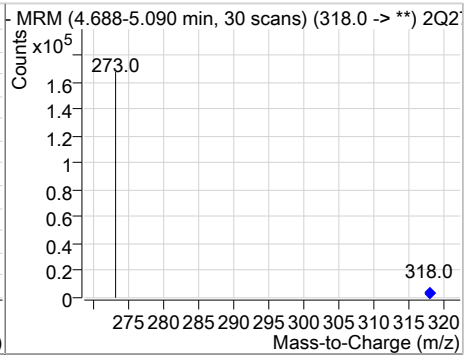




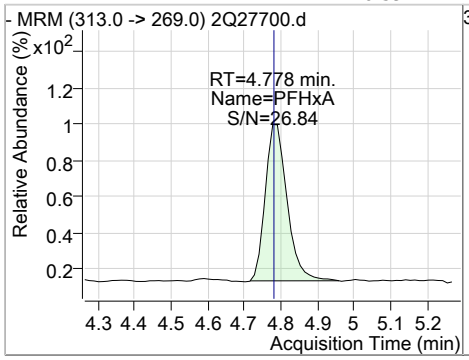
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.05	4.78	-0.01	123883				

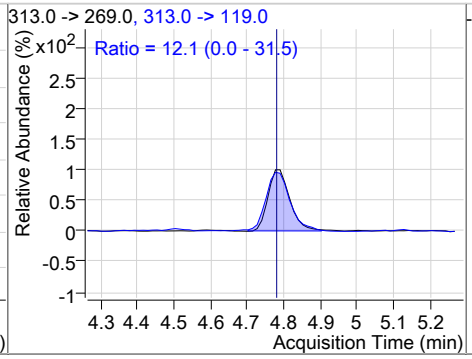


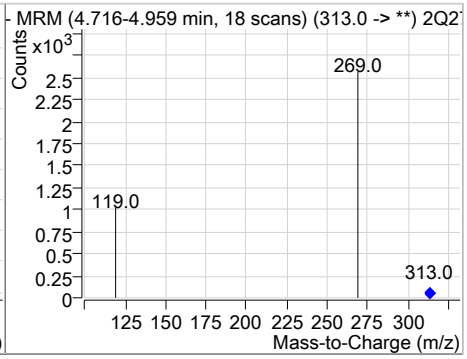




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.59	4.78	-0.01	1254	313.0 -> 119.0	12.1	0.0	31.5

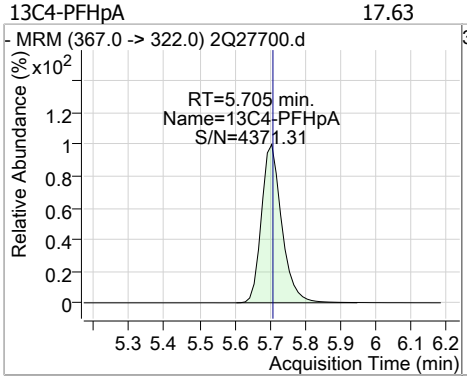


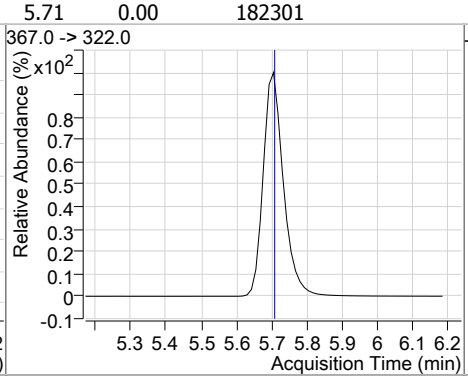


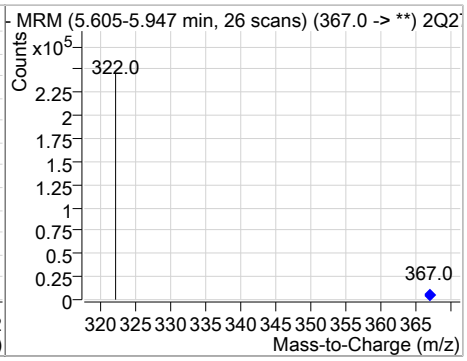


Perfluorinated Compounds by LC/MS/MS

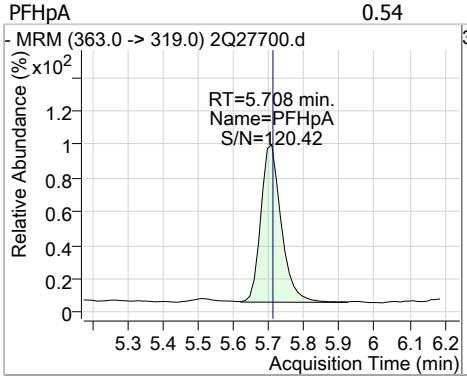
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.63	5.71	0.00	182301				

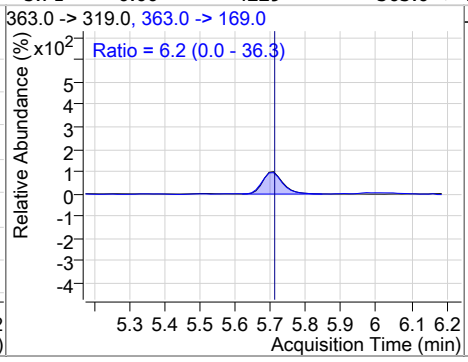


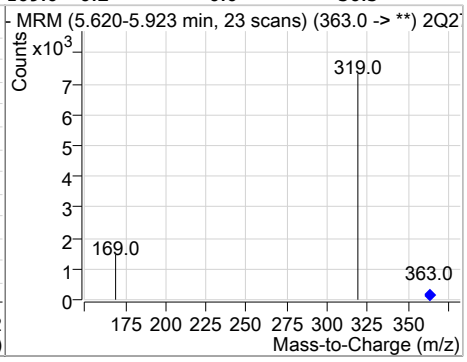




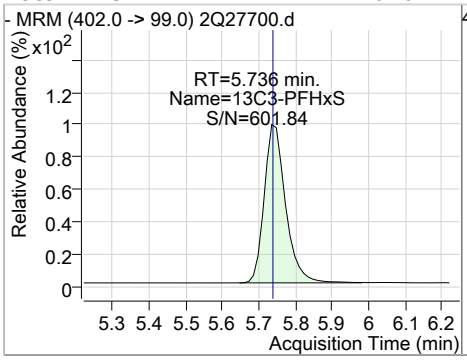
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.54	5.71	0.00	4229	363.0 -> 169.0	6.2	0.0	36.3

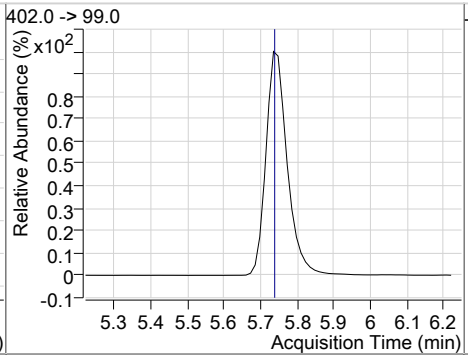


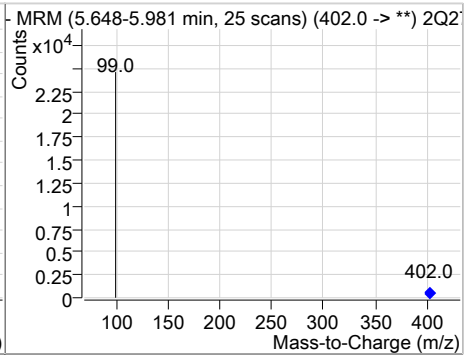




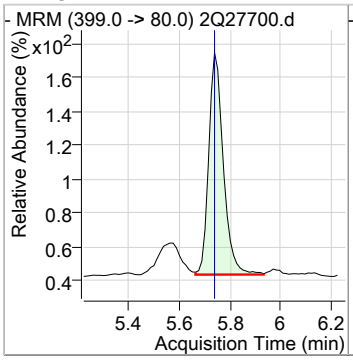
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.40	5.74	0.00	16718				

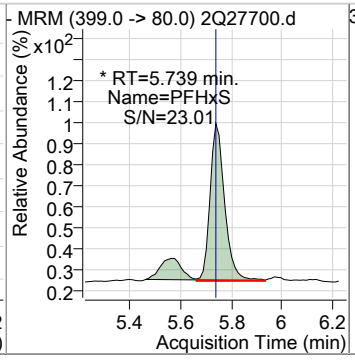


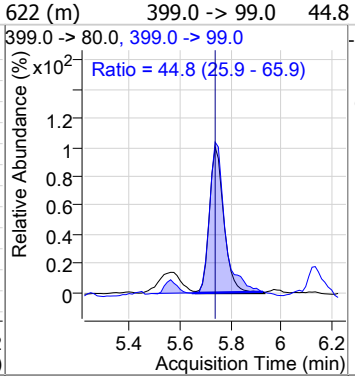


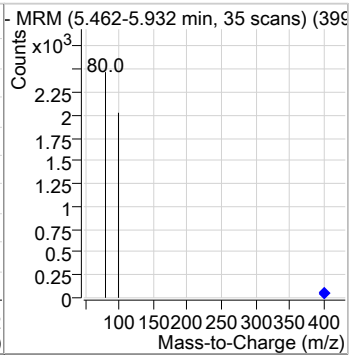


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.67	5.74	0.00	622 (m)	399.0 -> 99.0	44.8	25.9	65.9



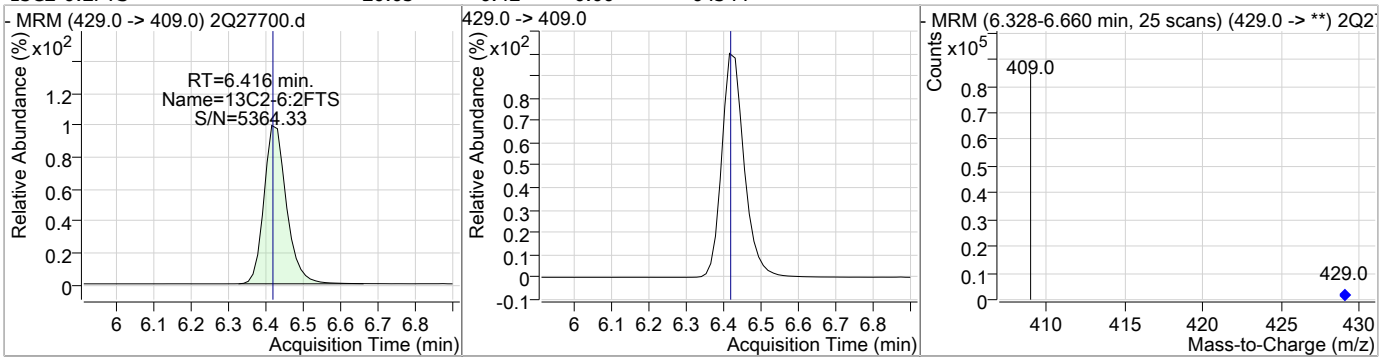




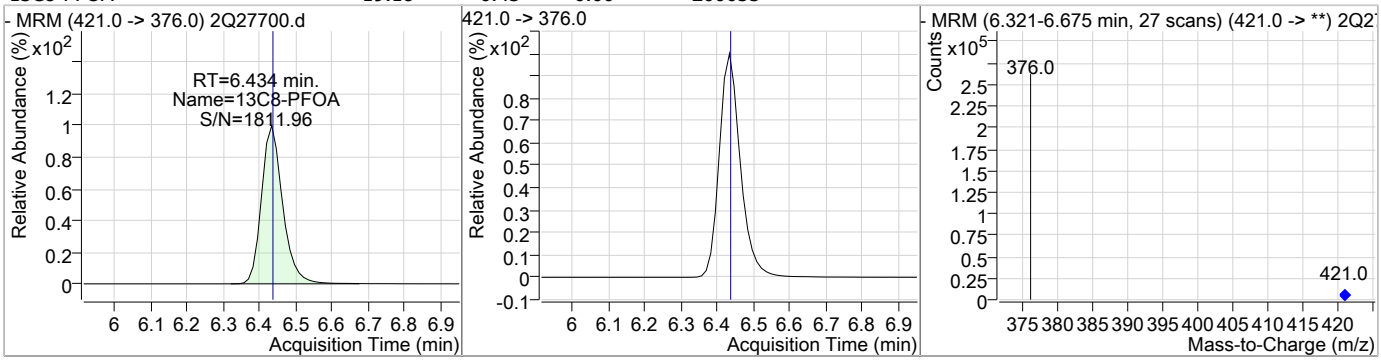


Perfluorinated Compounds by LC/MS/MS

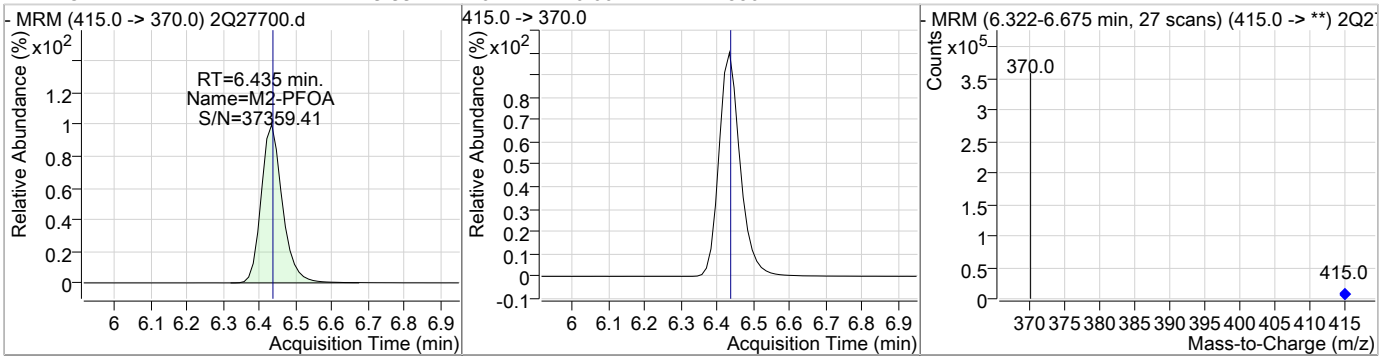
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.05	6.42	0.00	64344				



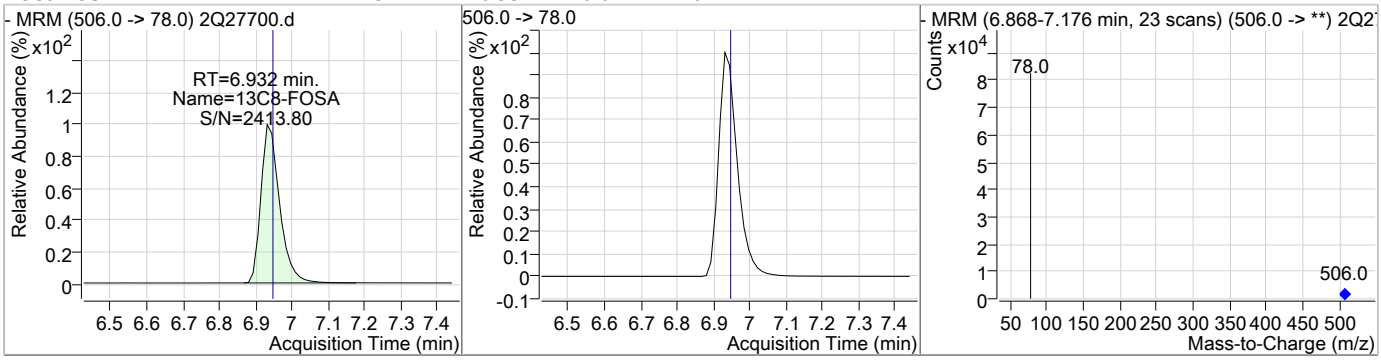
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.18	6.43	0.00	200055				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	272880				

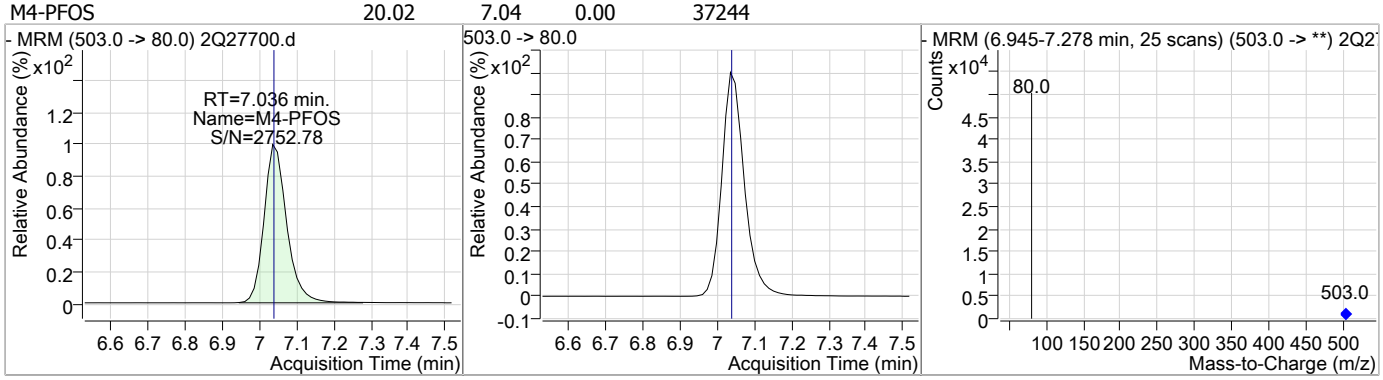


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.47	6.93	-0.01	62742				

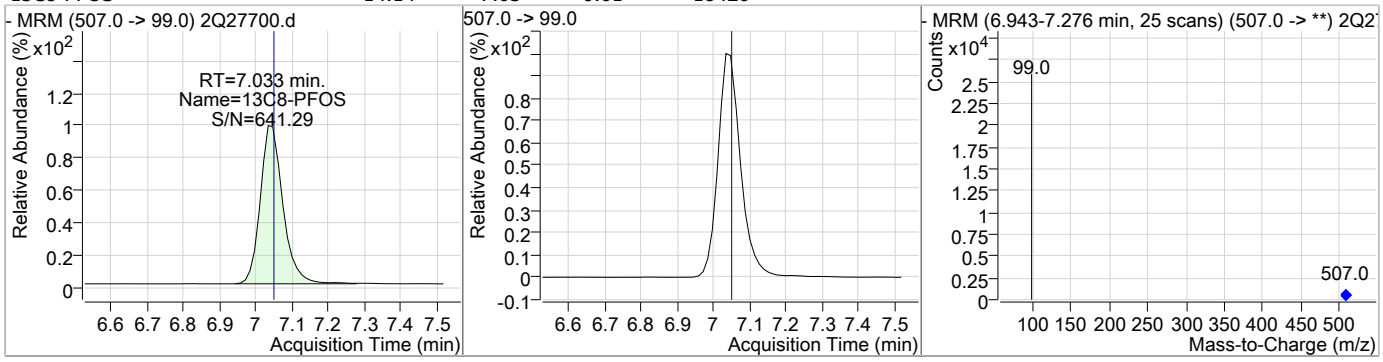


Perfluorinated Compounds by LC/MS/MS

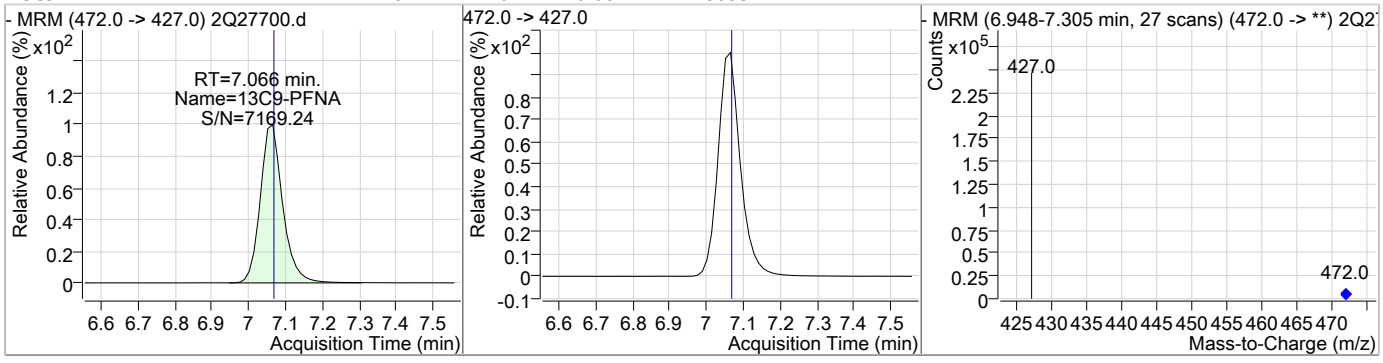
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.04	0.00	37244				



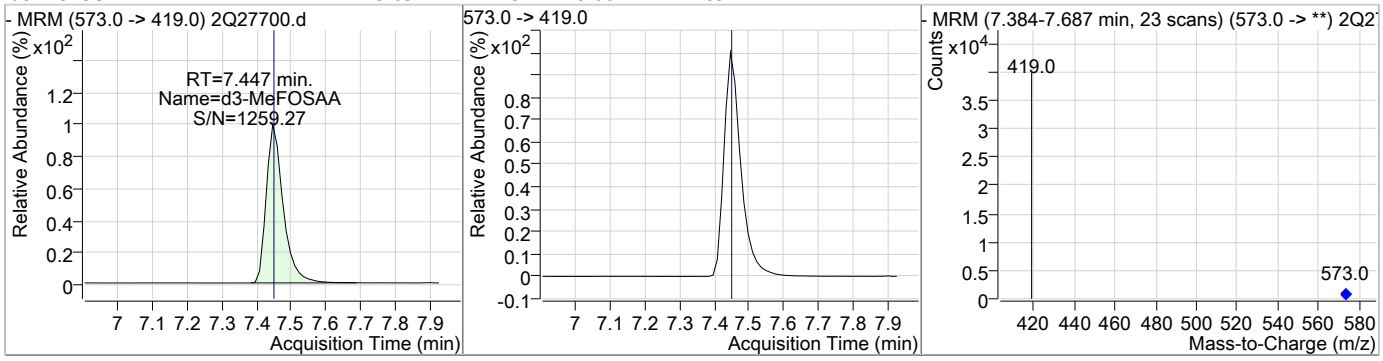
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.14	7.03	-0.01	18426				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.62	7.07	0.00	186551				

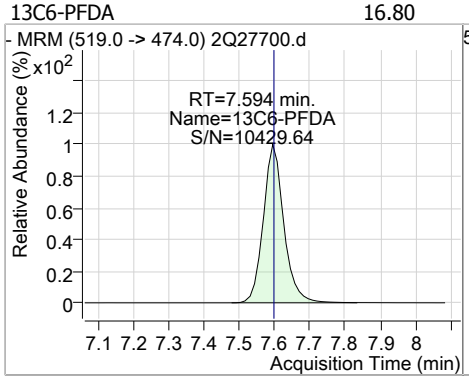


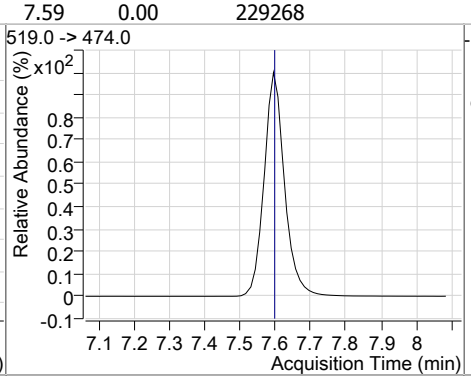
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.09	7.45	0.00	28921				

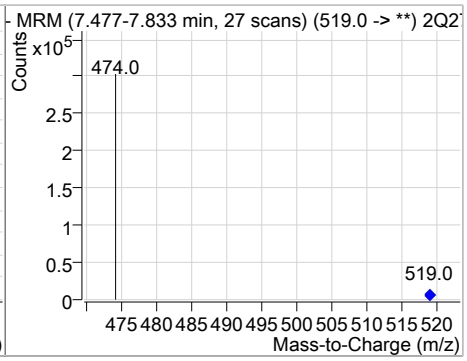


Perfluorinated Compounds by LC/MS/MS

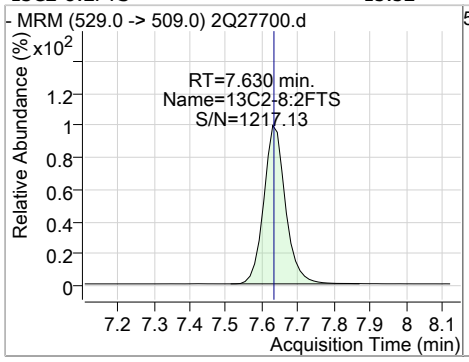
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.80	7.59	0.00	229268				

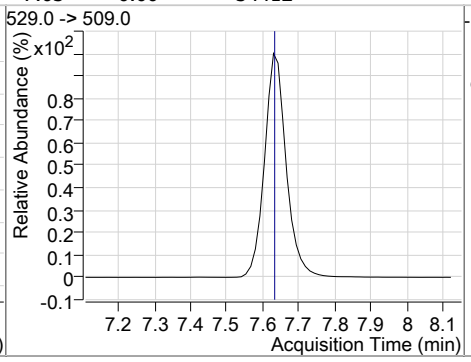


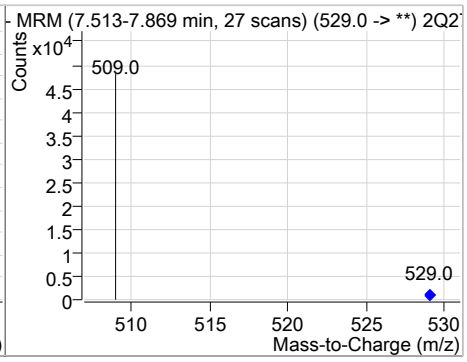




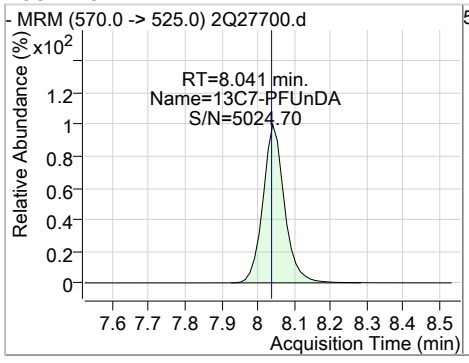
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.52	7.63	0.00	34412				

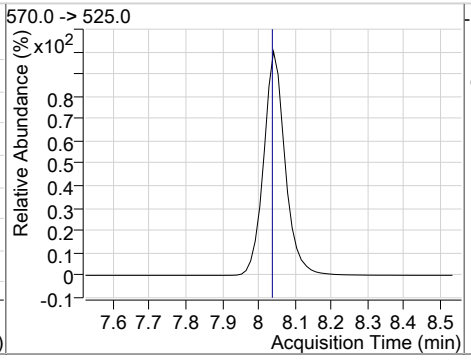


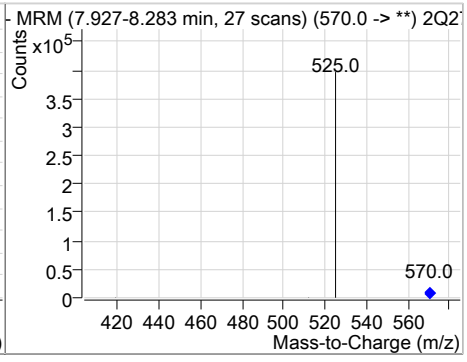




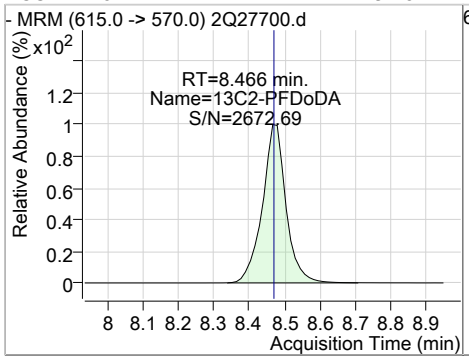
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.77	8.04	0.00	300785				

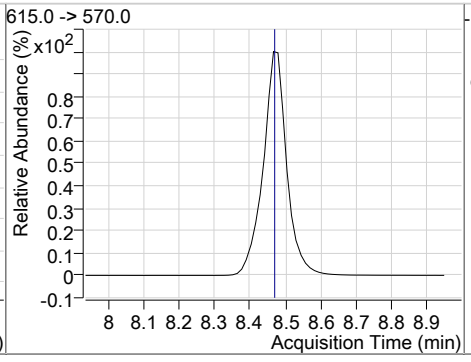


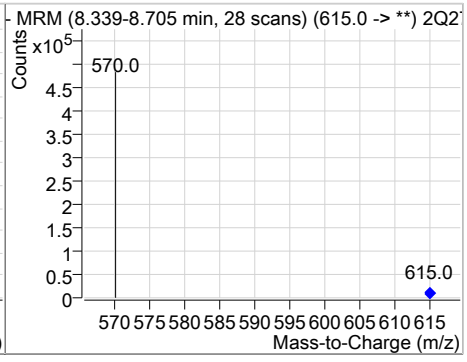




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.48	8.47	0.00	366466				

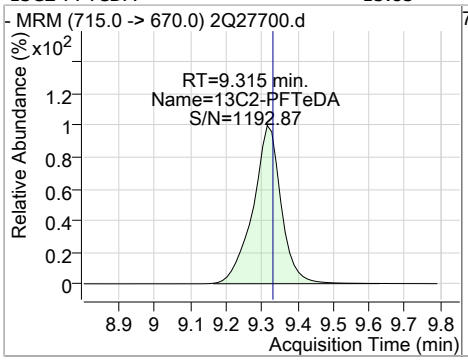


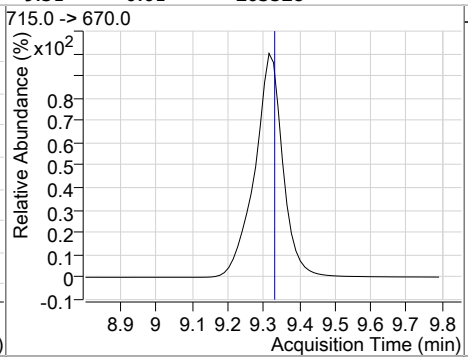


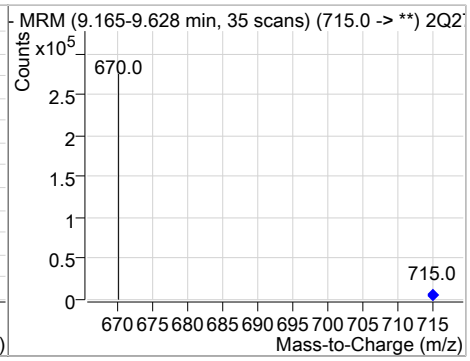


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.85	9.31	-0.01	203528				







Manual Integration Approval Summary

Sample Number: FA62220-6
Lab FileID: 2Q27700.D
Injection Time: 03/18/19 18:07
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27703.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 6:54:12 PM
Sample Name	:	fa62220-7
Vial	:	Vial 23
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74180,S2Q442,250,,,1.0,1,water

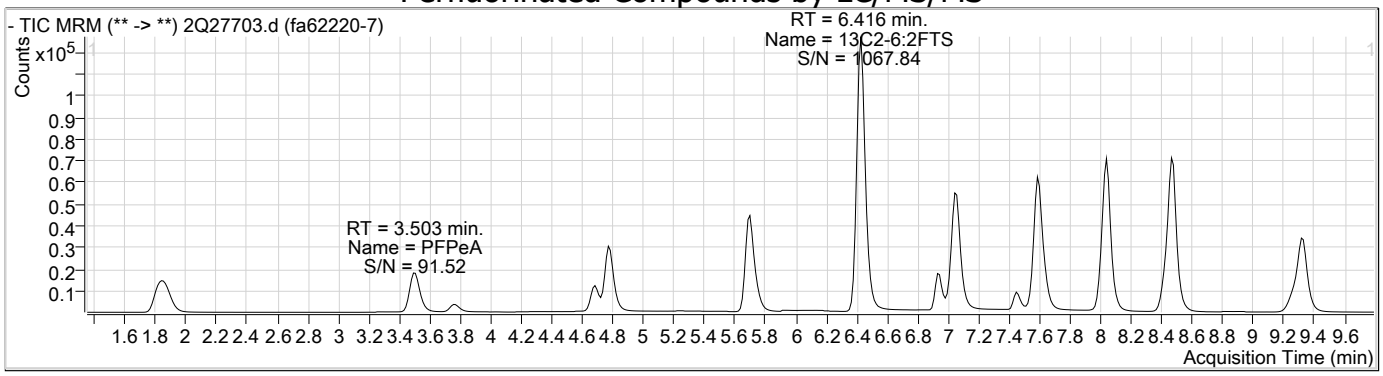
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	263784	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	36605	20.00	µg/L	0.000
M4-PFBA	1.840	217.0 -> 172.0	98965	20.00	µg/L	-0.025
M5-PFPeA	3.499	268.0 -> 223.0	84621	20.00	µg/L	-0.025
M5-PFHxA	4.776	318.0 -> 273.0	119455	20.00	µg/L	-0.013
M4-PFHpA	5.705	367.0 -> 322.0	175596	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	189378	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	180369	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	225569	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	292290	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	324818	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	187223	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	60995	20.00	µg/L	-0.013
M3-PFBS	3.755	302.0 -> 99.0	14168	20.00	µg/L	-0.025
M3-PFHxS	5.736	402.0 -> 99.0	15632	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	18467	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	47905	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	60089	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	34293	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	27477	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	47909	16.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.6%		
13C2-6:2FTS	6.416	429.0 -> 409.0	60026	18.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.5%		
13C2-8:2FTS	7.630	529.0 -> 509.0	34312	15.47	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.4%		
13C2-PFDoDA	8.466	615.0 -> 570.0	324824	17.27	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%		
13C2-PFTeDA	9.315	715.0 -> 670.0	187007	14.57	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.8%		
13C3-PFBS	3.755	302.0 -> 99.0	14134	15.50	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%		
13C3-PFHxS	5.736	402.0 -> 99.0	15626	15.33	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.6%		
13C4-PFBA	1.840	217.0 -> 172.0	98754	16.47	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%		
13C4-PFHpA	5.705	367.0 -> 322.0	175490	16.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%		
13C5-PFHxA	4.776	318.0 -> 273.0	119408	16.43	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.2%		
13C5-PFPeA	3.499	268.0 -> 223.0	84382	16.60	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.0%		
13C6-PFDA	7.594	519.0 -> 474.0	225473	16.52	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

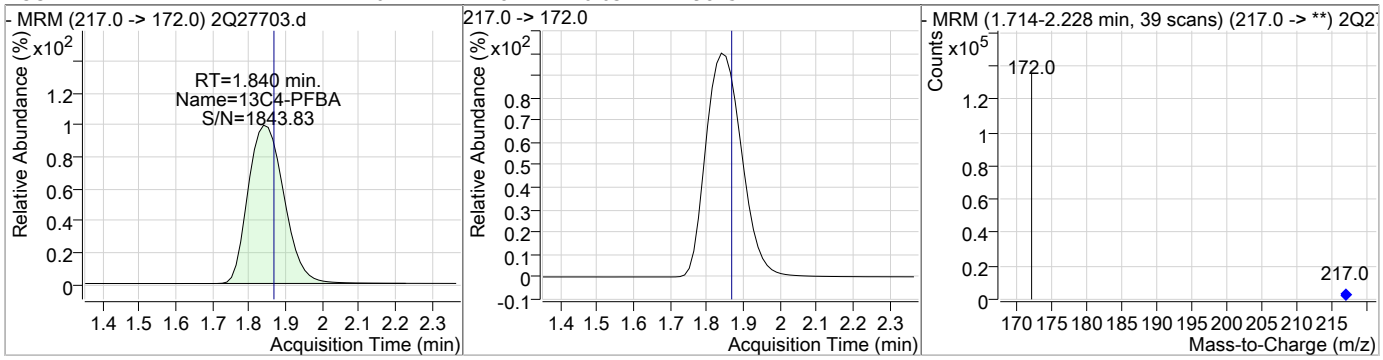
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.6%	
13C7-PFUnDA	8.041	570.0 -> 525.0	292151	17.26 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%	
13C8-FOSA	6.932	506.0 -> 78.0	60982	15.04 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%	
13C8-PFOA	6.434	421.0 -> 376.0	189328	18.15 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%	
13C8-PFOS	7.033	507.0 -> 99.0	18466	14.17 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.8%	
13C9-PFNA	7.065	472.0 -> 427.0	180388	17.04 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.2%	
d3-MeFOSAA	7.447	573.0 -> 419.0	27476	14.33 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.7%	
M2-PFOA	6.435	415.0 -> 370.0	263861	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.036	503.0 -> 80.0	36589	19.98 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.848	213.0 -> 169.0	453	0.46 µg/L	100
PFBS	3.758	299.0 -> 80.0	1108	0.98 µg/L	90
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	3.503	263.0 -> 219.0	1722	0.47 µg/L	100
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

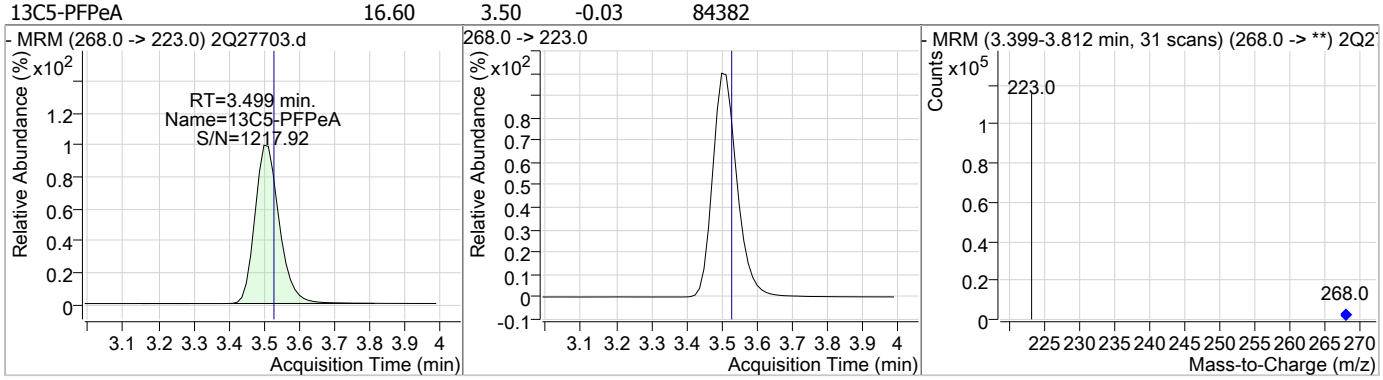
Perfluorinated Compounds by LC/MS/MS



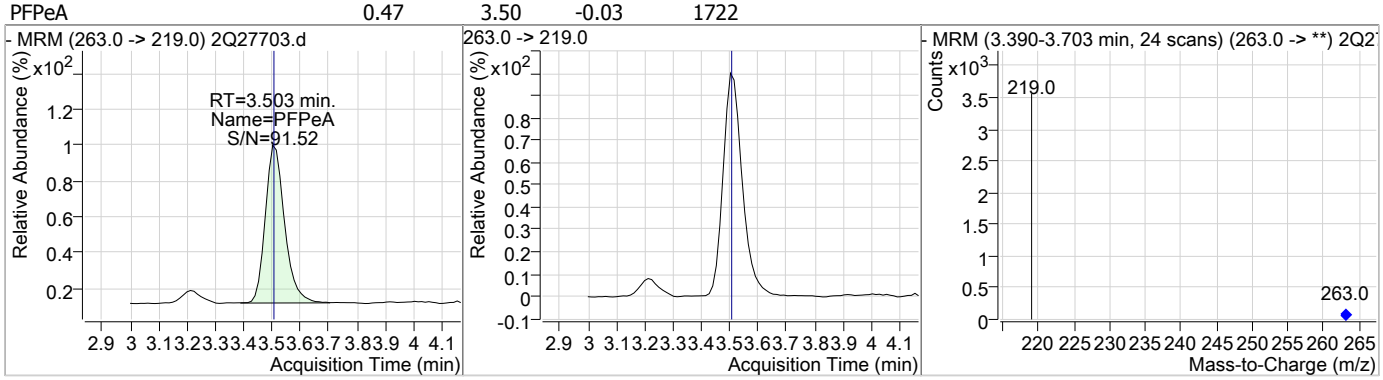
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.47	1.84	-0.03	98754				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.60	3.50	-0.03	84382				

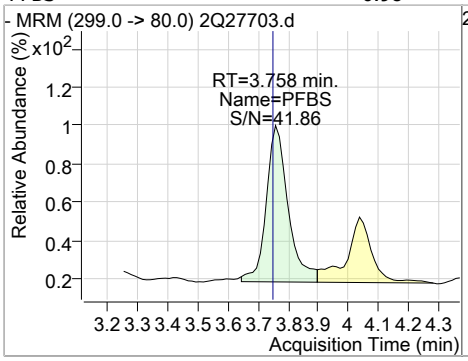


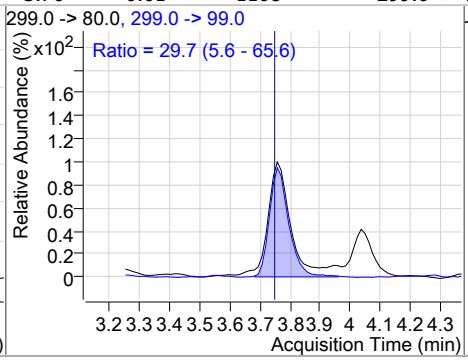
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.47	3.50	-0.03	1722				

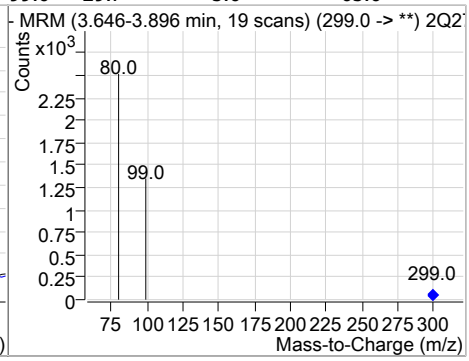


Perfluorinated Compounds by LC/MS/MS

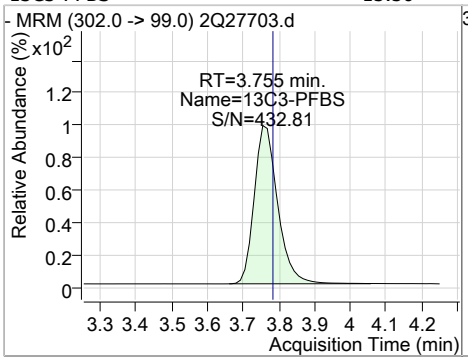
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.98	3.76	-0.01	1108	299.0 -> 99.0	29.7	5.6	65.6

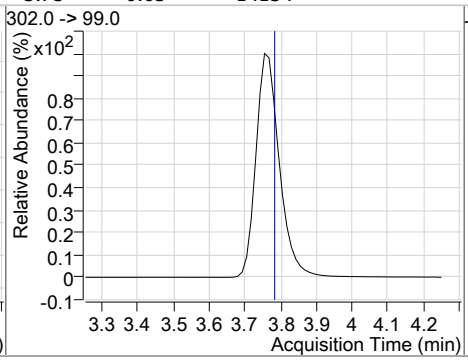


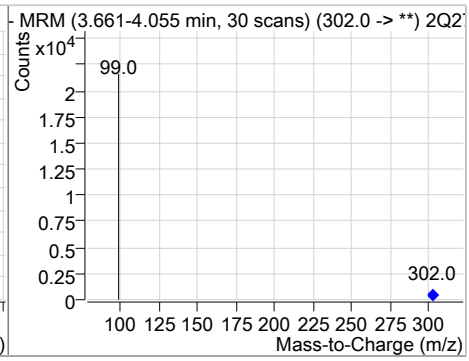




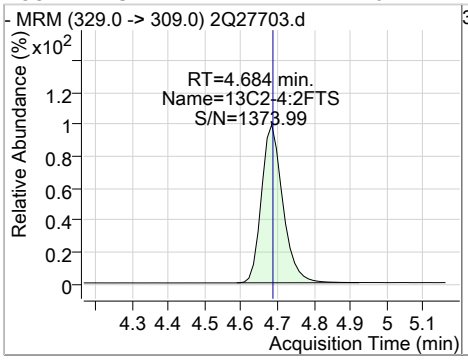
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.50	3.75	-0.03	14134				

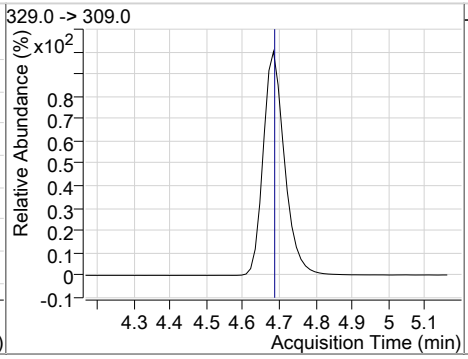


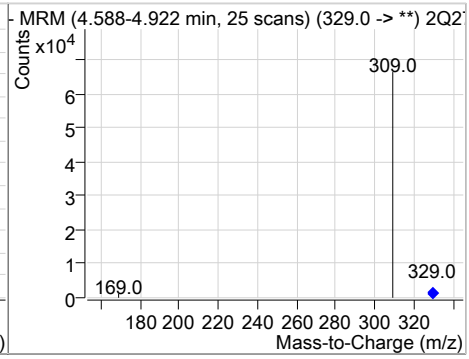




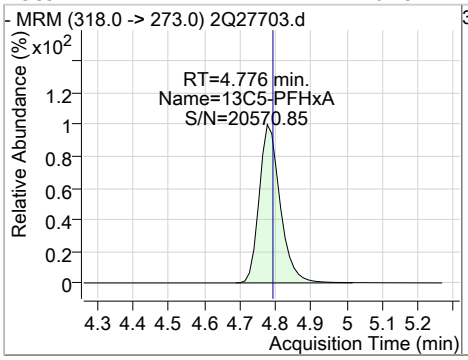
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.11	4.68	0.00	47909				

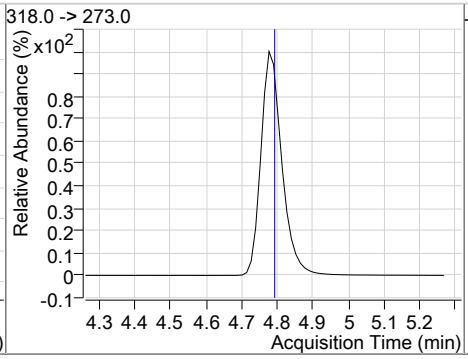


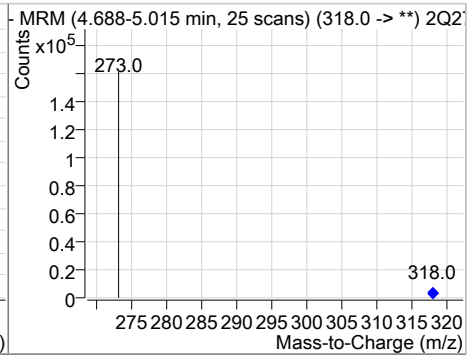




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.43	4.78	-0.01	119408				

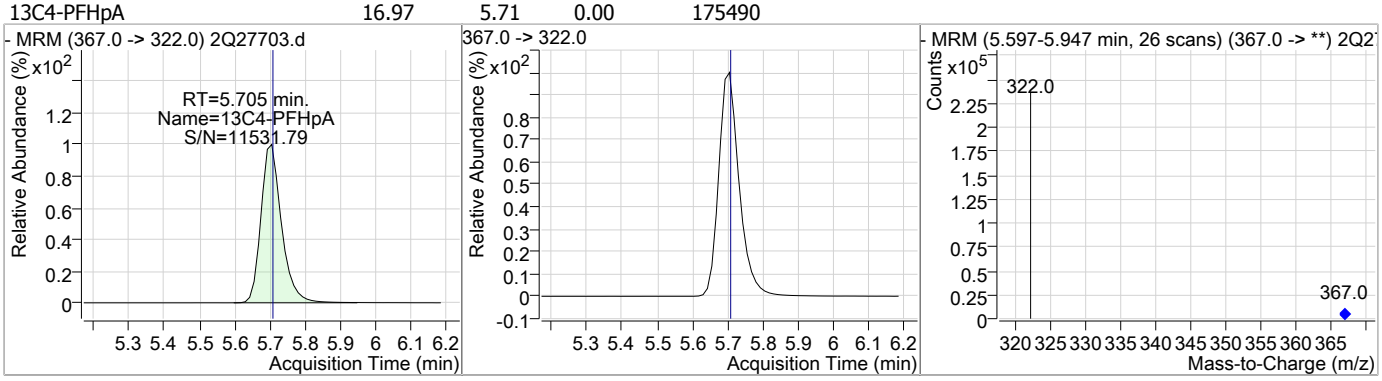




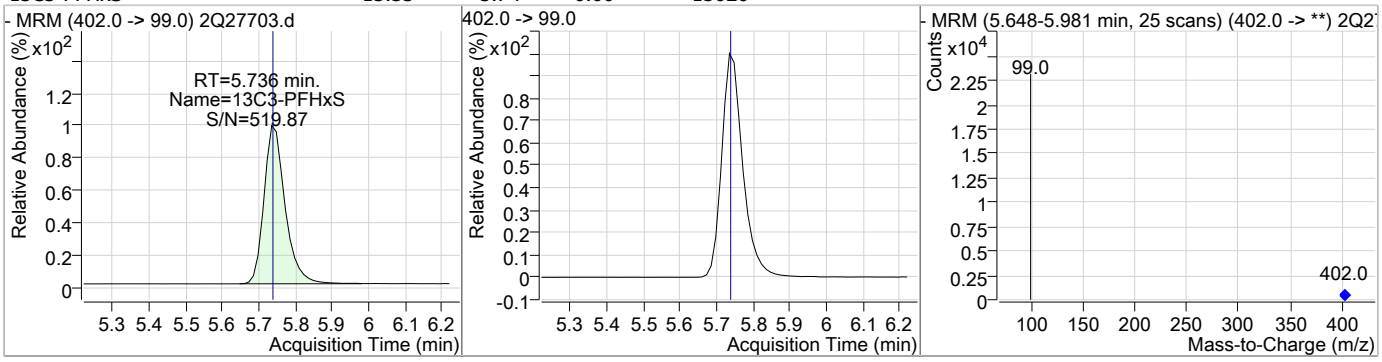


Perfluorinated Compounds by LC/MS/MS

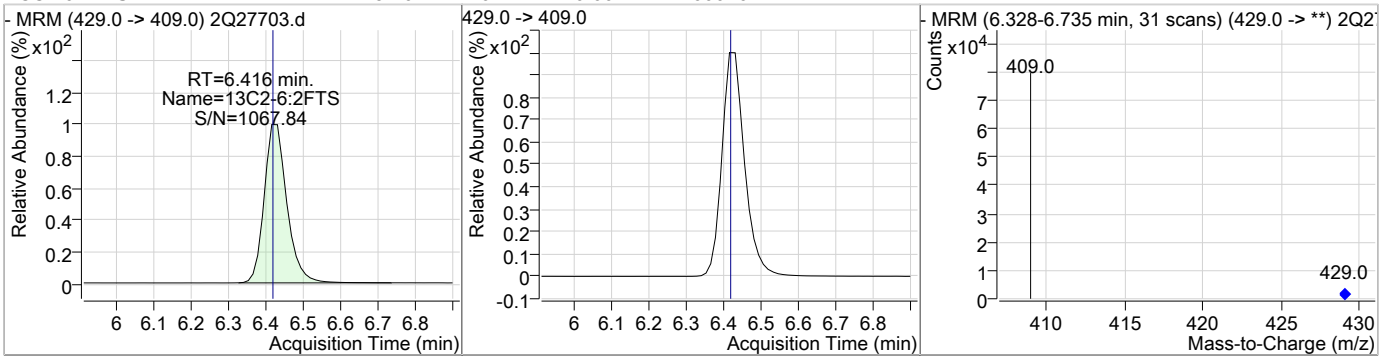
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.97	5.71	0.00	175490				



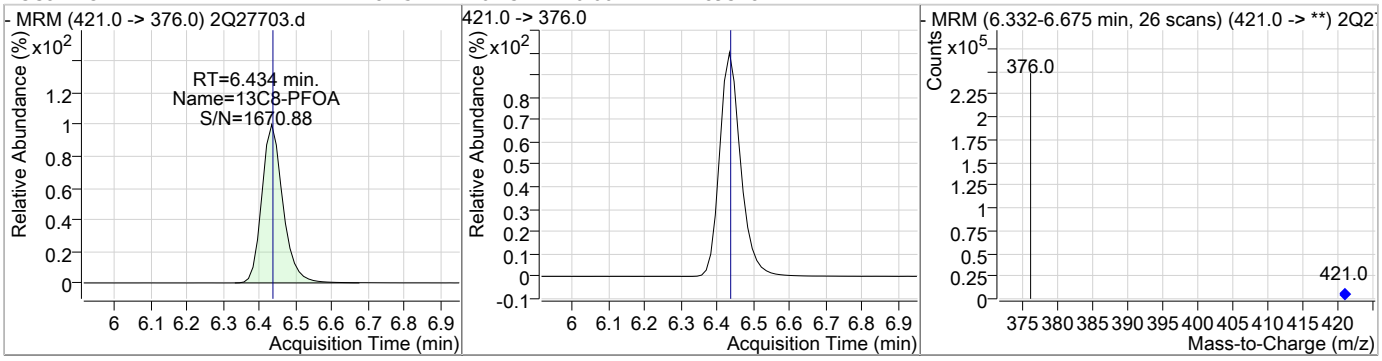
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.33	5.74	0.00	15626				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.70	6.42	0.00	60026				

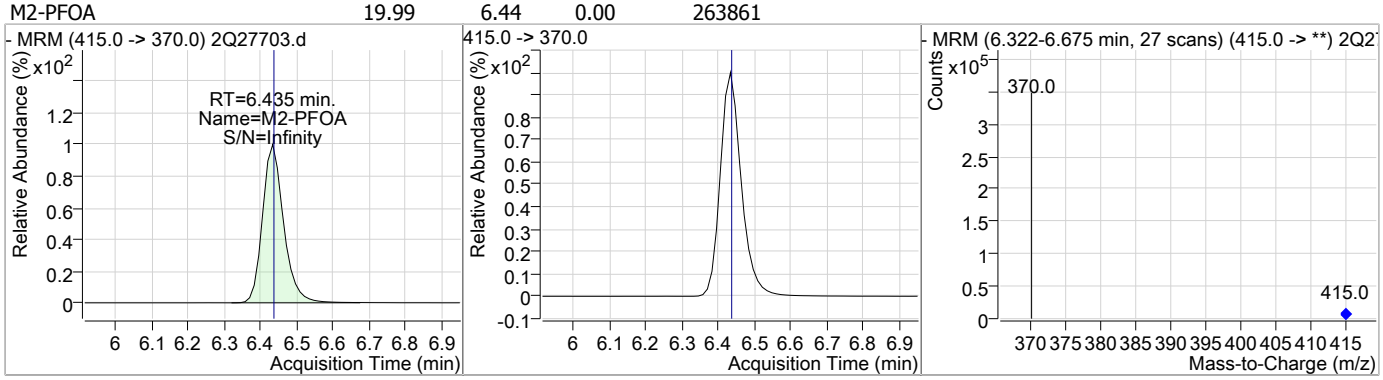


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.15	6.43	0.00	189328				

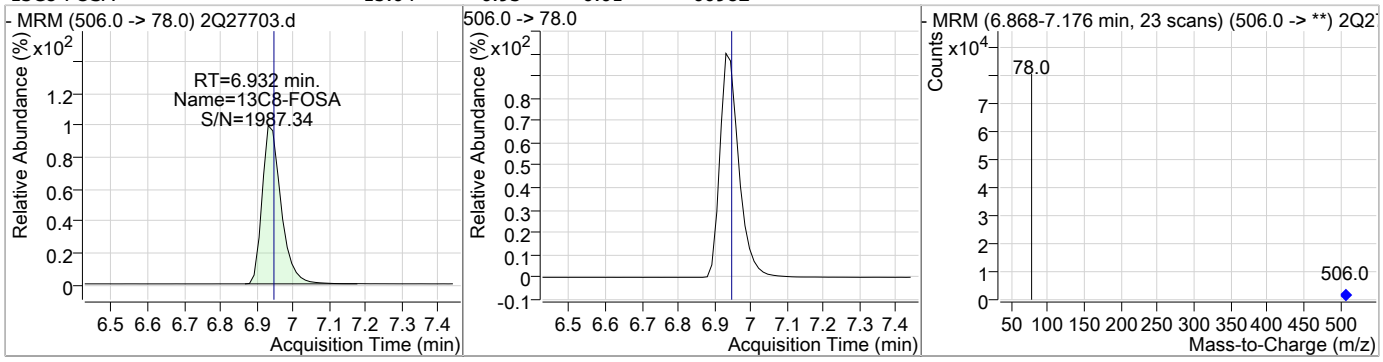


Perfluorinated Compounds by LC/MS/MS

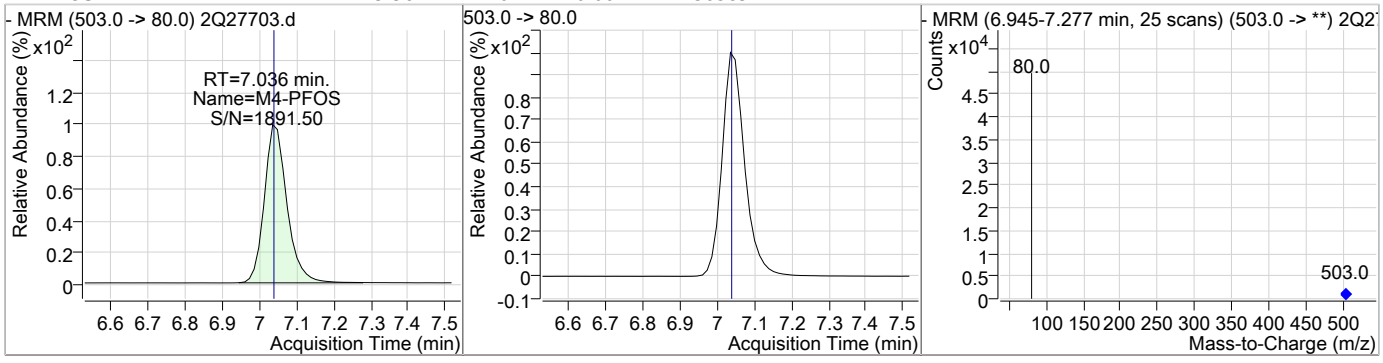
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	263861				



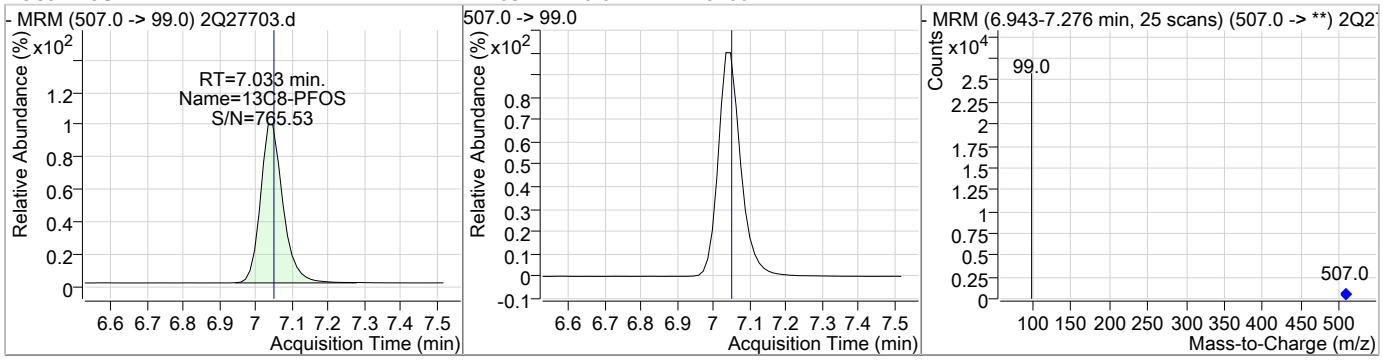
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.04	6.93	-0.01	60982				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.04	0.00	36589				

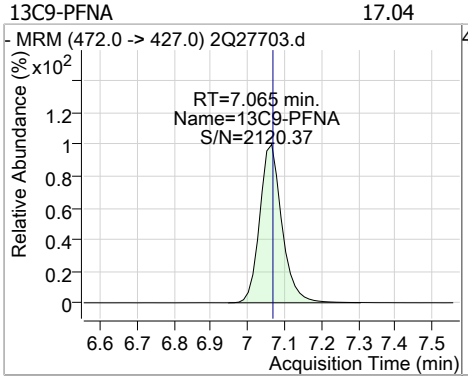


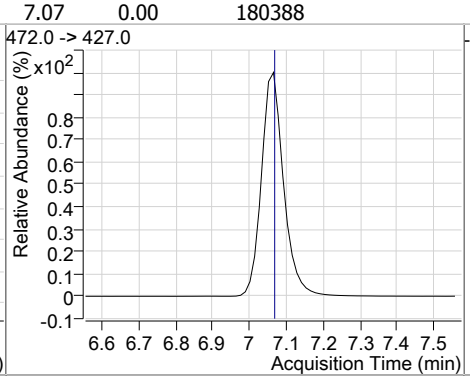
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.17	7.03	-0.01	18466				

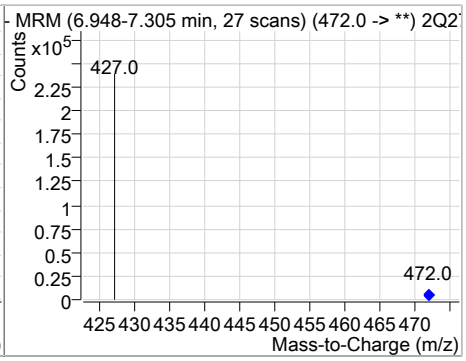


Perfluorinated Compounds by LC/MS/MS

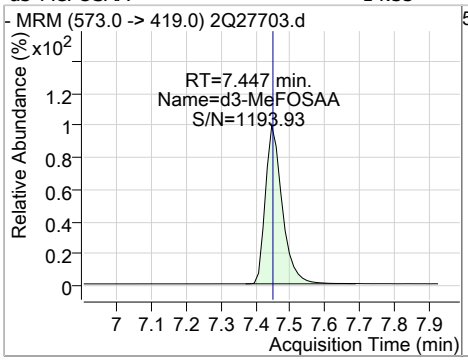
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.04	7.07	0.00	180388				

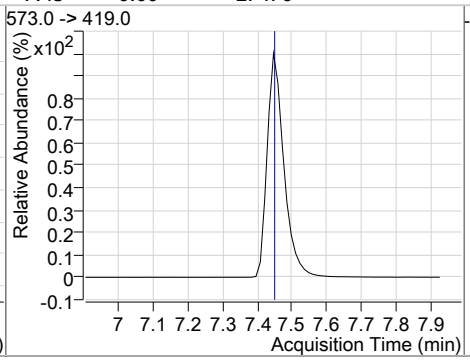


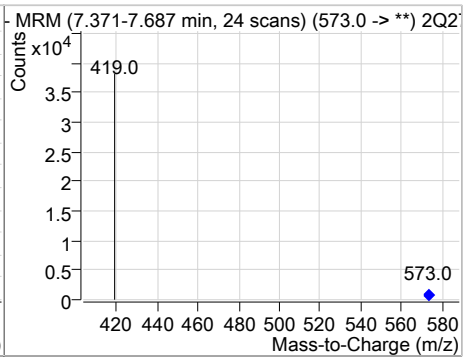




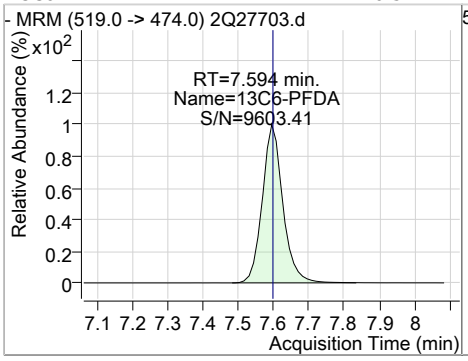
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.33	7.45	0.00	27476				

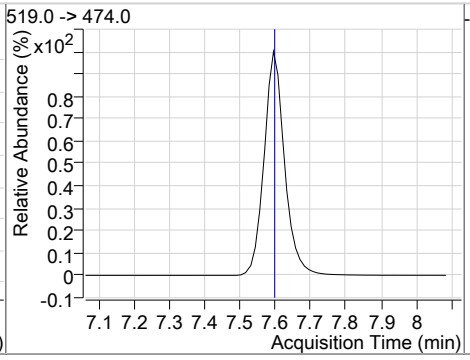


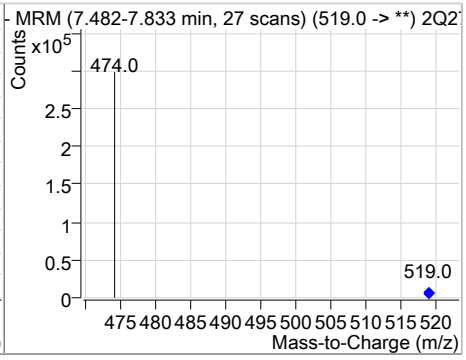




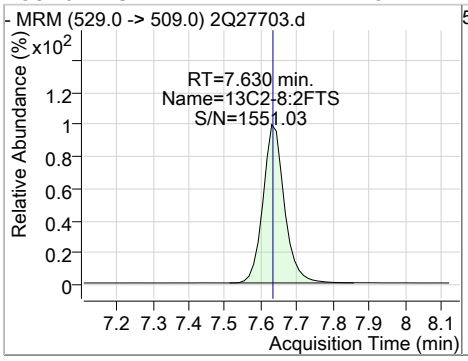
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.52	7.59	0.00	225473				

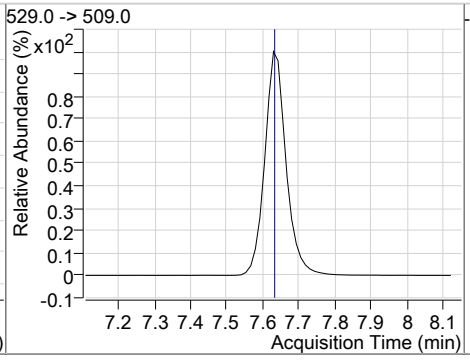


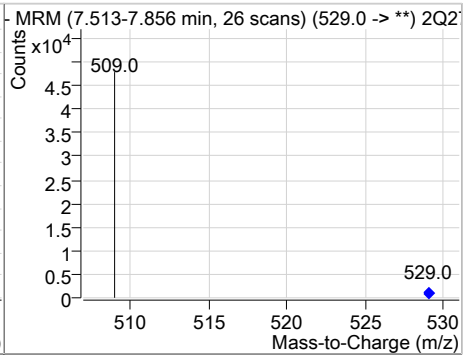




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.47	7.63	0.00	34312				

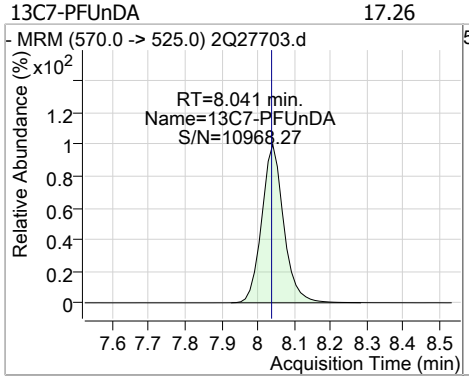


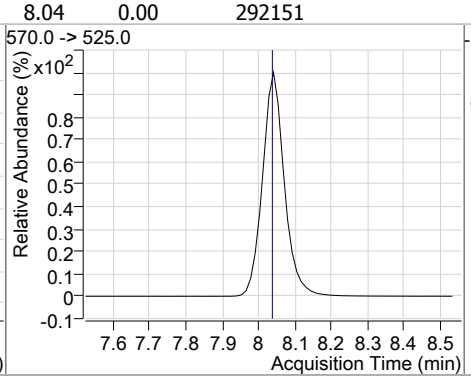


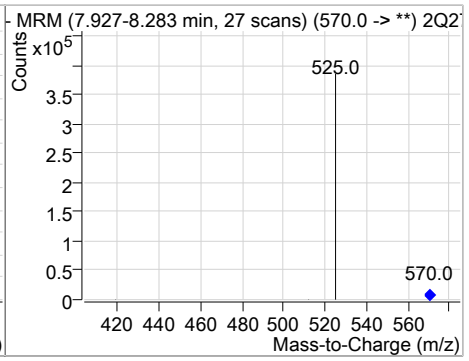


Perfluorinated Compounds by LC/MS/MS

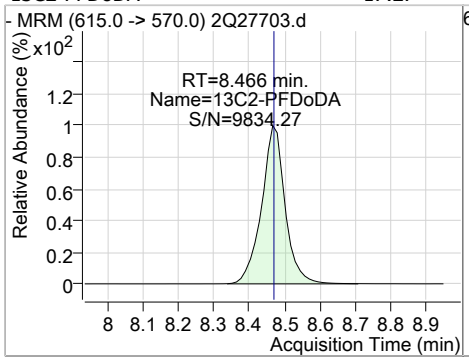
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.26	8.04	0.00	292151				

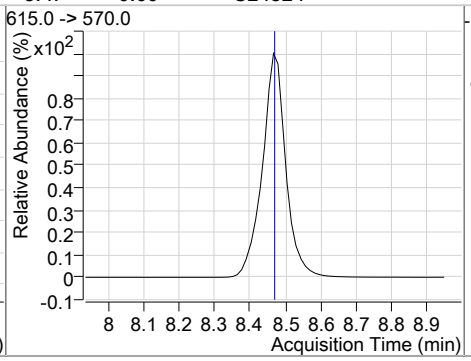


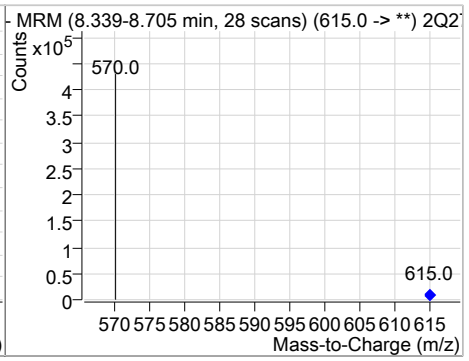




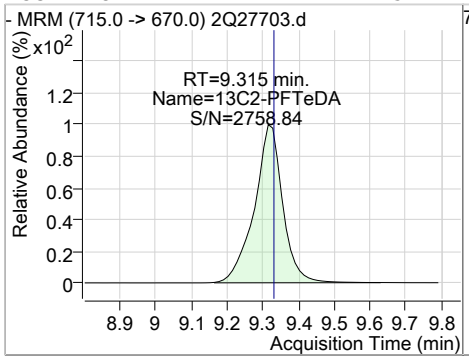
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.27	8.47	0.00	324824				

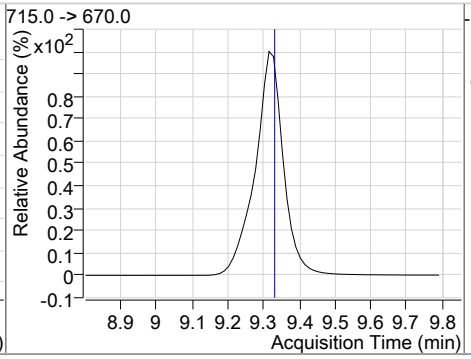


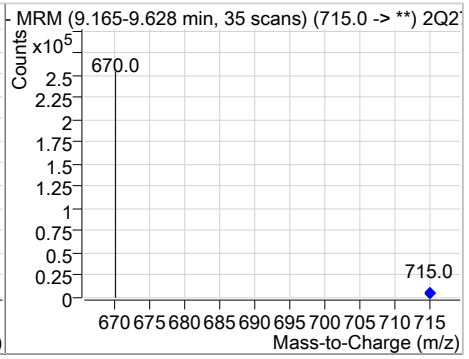




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.57	9.31	-0.01	187007				







Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1987.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 1:51:24 PM
Sample Name : fa62220-8
Vial : P3-B7
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,250,,,1.0,1,WATER

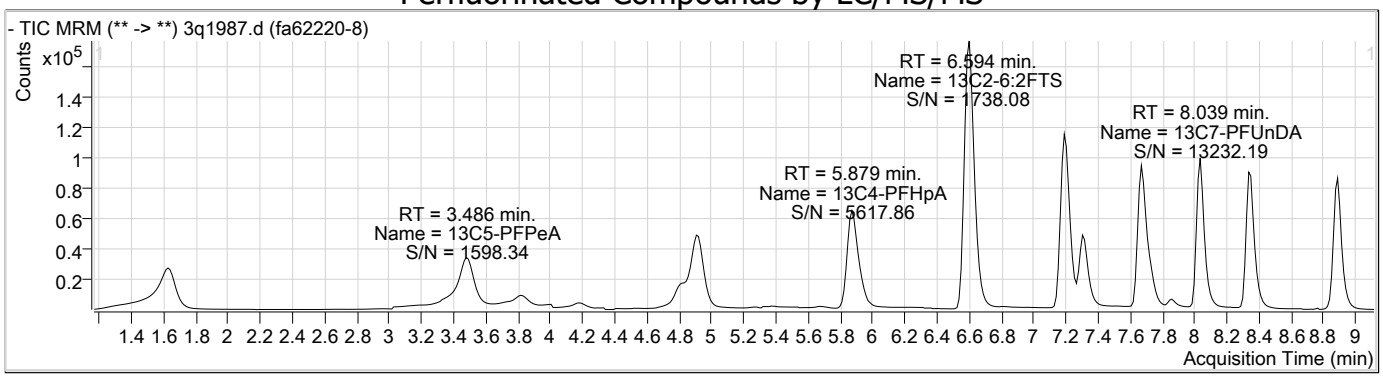
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
M4-PFBA	1.627	217.0 -> 172.0	209388	20.00	µg/L		-0.075
M5-PFPeA	3.486	268.0 -> 223.0	164686	20.00	µg/L		-0.075
M5-PFHxA	4.913	318.0 -> 273.0	228222	20.00	µg/L		-0.050
M4-PFHpA	5.879	367.0 -> 322.0	277186	20.00	µg/L		-0.013
M8-PFOA	6.609	421.0 -> 376.0	288229	20.00	µg/L		-0.013
M9-PFNA	7.201	472.0 -> 427.0	291162	20.00	µg/L		-0.013
M6-PFDA	7.678	519.0 -> 474.0	320173	20.00	µg/L		0.000
M7-PFUnDA	8.039	570.0 -> 525.0	351475	20.00	µg/L		0.000
M2-PFDoDA	8.340	615.0 -> 570.0	337330	20.00	µg/L		-0.013
M2-PFTeDA	8.886	715.0 -> 670.0	313076	20.00	µg/L		0.000
M8-FOSA	7.311	506.0 -> 78.0	171728	20.00	µg/L		0.000
M3-PFBS	3.817	302.0 -> 99.0	36174	20.00	µg/L		-0.063
M3-PFHxS	5.922	402.0 -> 99.0	38216	20.00	µg/L		-0.025
M8-PFOS	7.196	507.0 -> 99.0	66100	20.00	µg/L		0.000
M2-4:2FTS	4.808	329.0 -> 309.0	78922	20.00	µg/L		-0.050
M2-6:2FTS	6.594	429.0 -> 409.0	85504	20.00	µg/L		0.000
M2-8:2FTS	7.701	529.0 -> 509.0	51594	20.00	µg/L		0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	40940	20.00	µg/L		0.000
M3-HFPO-DA	5.179	287.0 -> 169.0	0	100.00	µg/L	m	-0.075
13C2-PFOA	6.610	415.0 -> 370.0	400221	20.00	µg/L		-0.013
13C4-PFOS	7.198	503.0 -> 80.0	118438	20.00	µg/L		0.000
System Monitoring Compounds							
13C2-4:2FTS	4.808	329.0 -> 309.0	78870	16.62	µg/L		-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.1%			
13C2-6:2FTS	6.594	429.0 -> 409.0	85586	18.73	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%			
13C2-8:2FTS	7.701	529.0 -> 509.0	51598	18.46	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%			
13C2-PFDoDA	8.340	615.0 -> 570.0	337512	17.26	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.3%			
13C2-PFTeDA	8.886	715.0 -> 670.0	313058	17.11	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.6%			
13C3-PFBS	3.817	302.0 -> 99.0	36490	14.47	µg/L		-0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.3%			
13C3-PFHxS	5.922	402.0 -> 99.0	38212	15.12	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.6%			
13C4-PFBA	1.627	217.0 -> 172.0	197367	12.10	µg/L		-0.075
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.5%			
13C4-PFHpA	5.879	367.0 -> 322.0	278304	16.67	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.4%			
13C5-PFHxA	4.913	318.0 -> 273.0	227609	15.47	µg/L		-0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.3%			
13C5-PFPeA	3.486	268.0 -> 223.0	162759	14.70	µg/L		-0.075
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.5%			
13C6-PFDA	7.678	519.0 -> 474.0	320254	19.23	µg/L		0.000

Perfluorinated Compounds by LC/MS/MS

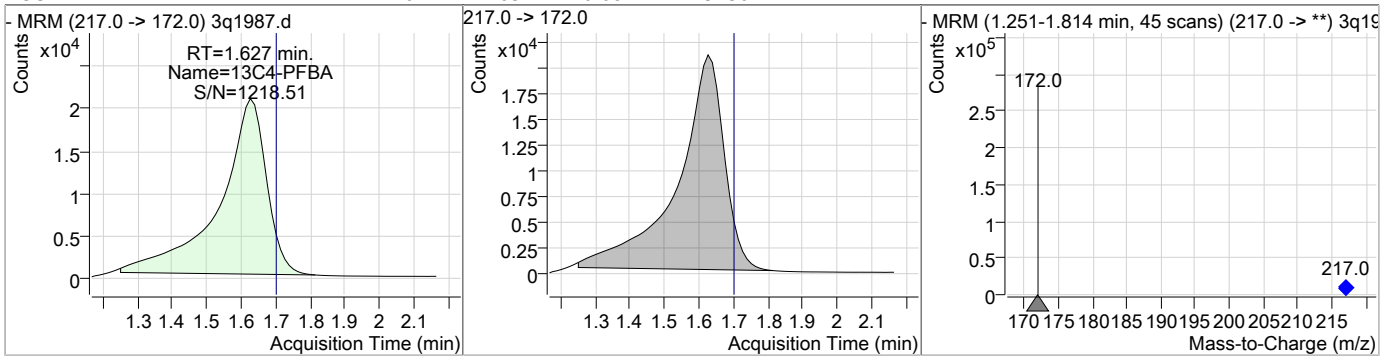
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%			
13C7-PFUnDA	8.039	570.0 -> 525.0	351539	18.96	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%			
13C8-FOSA	7.311	506.0 -> 78.0	171662	16.31	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%			
13C8-PFOA	6.609	421.0 -> 376.0	288436	18.23	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%			
13C8-PFOS	7.196	507.0 -> 99.0	66236	17.19	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.0%			
13C9-PFNA	7.201	472.0 -> 427.0	291326	19.49	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%			
d3-MeFOSAA	7.735	573.0 -> 419.0	41155	17.34	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%			
13C3-HFPO-DA	5.179	287.0 -> 169.0	0	0.00	µg/L	m	-0.075
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
M2-PFOA	6.610	415.0 -> 370.0	400221	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.198	503.0 -> 80.0	118438	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.635	213.0 -> 169.0	65829	33.19	µg/L		100
PFBS	3.820	299.0 -> 80.0	9391	3.73	µg/L		85
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.881	363.0 -> 319.0	16305	1.33	µg/L	m	98
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.914	313.0 -> 269.0	40216	9.90	µg/L		100
PFHxS	-	399.0 -> 80.0	-	N.D.			
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.598	413.0 -> 369.0	1324	0.17	µg/L	m	71
PFOS	-	499.0 -> 80.0	-	N.D.			
PFPeA	3.489	263.0 -> 219.0	83486	10.01	µg/L		100
PFPeS	5.069	349.0 -> 80.0	906	0.58	µg/L		91
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

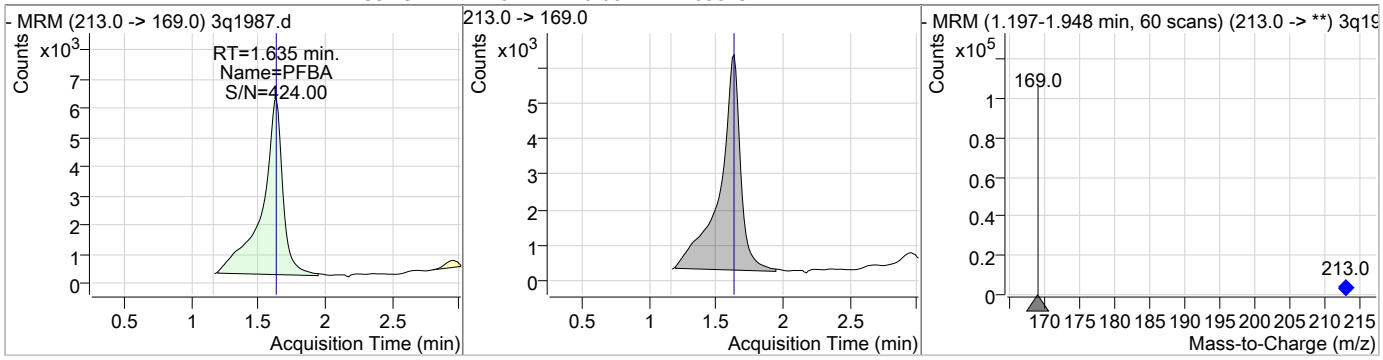
Perfluorinated Compounds by LC/MS/MS



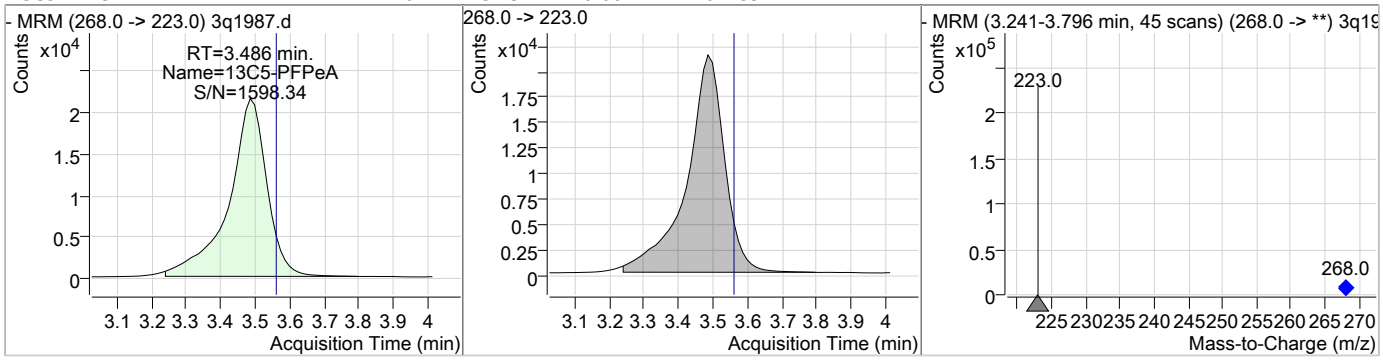
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	12.10	1.63	-0.08	197367				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	33.19	1.64	-0.08	65829				

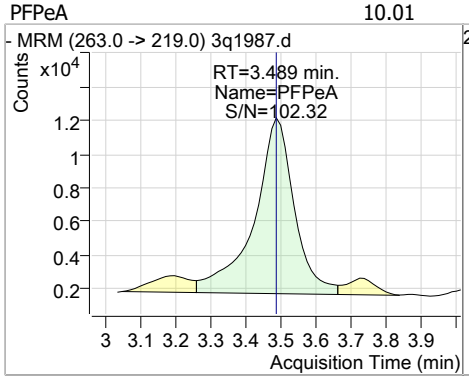


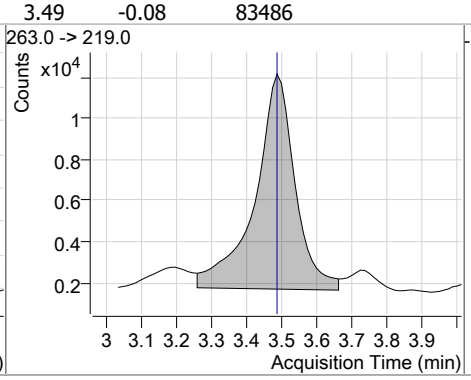
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	14.70	3.49	-0.08	162759				

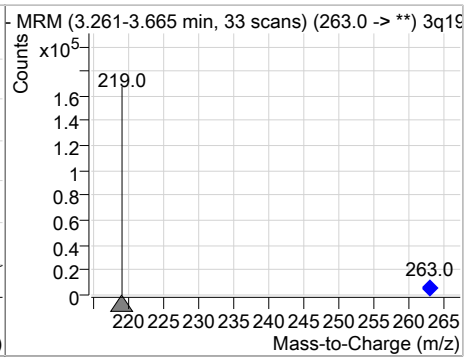


Perfluorinated Compounds by LC/MS/MS

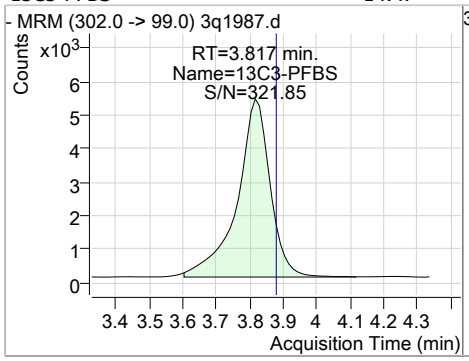
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	10.01	3.49	-0.08	83486				

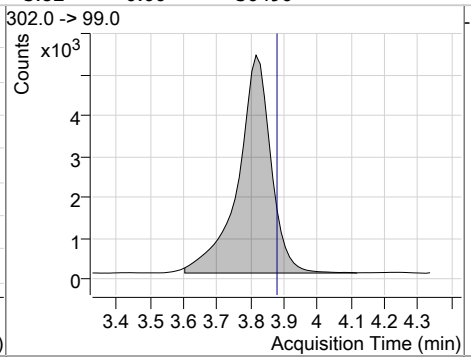


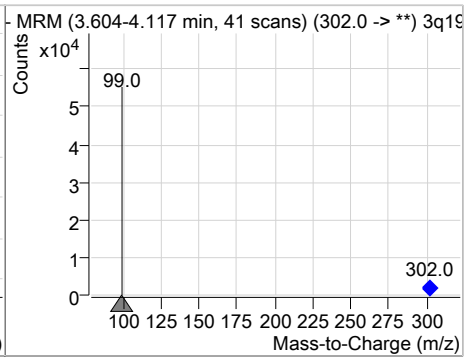




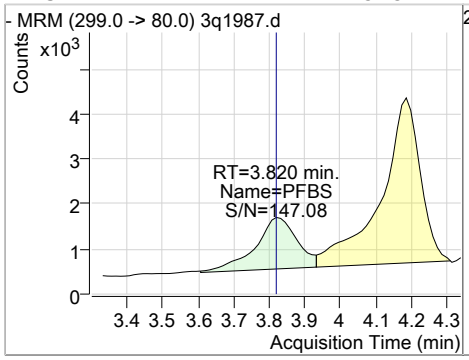
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.47	3.82	-0.06	36490				

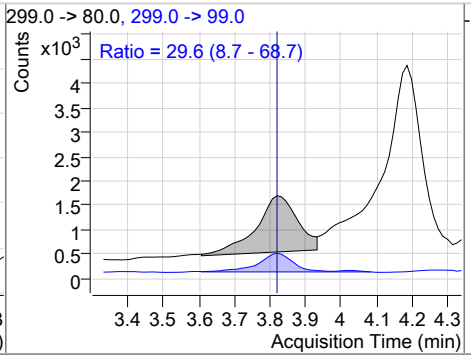


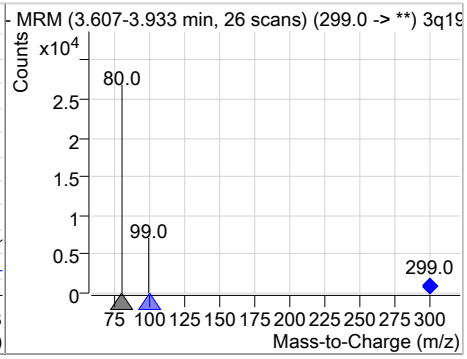




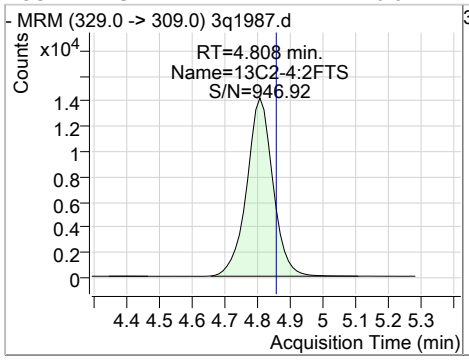
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	3.73	3.82	-0.06	9391	299.0 -> 99.0	29.6	8.7	68.7

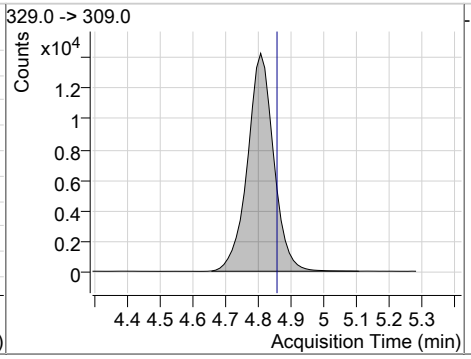


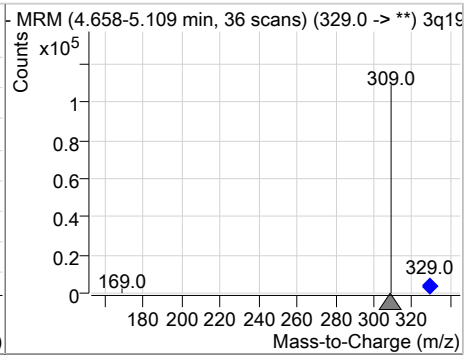




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.62	4.81	-0.05	78870				

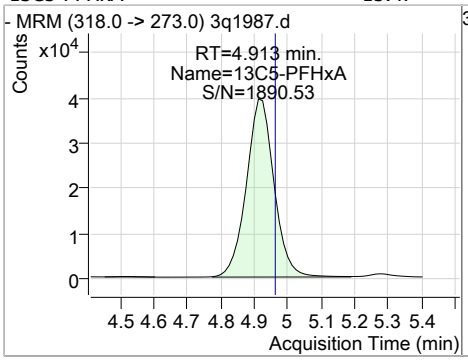


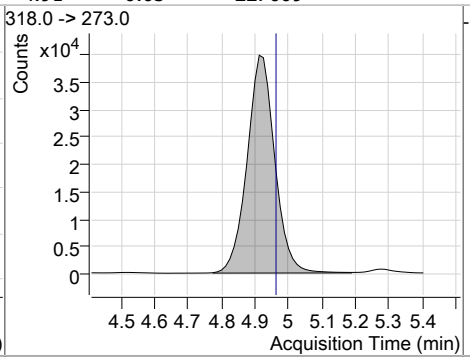


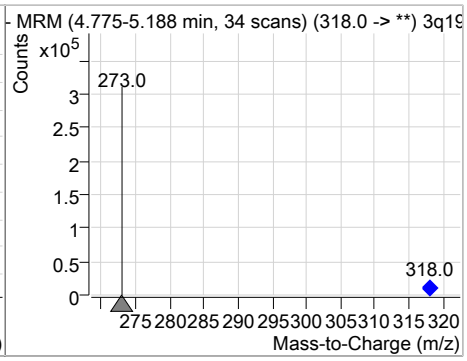


Perfluorinated Compounds by LC/MS/MS

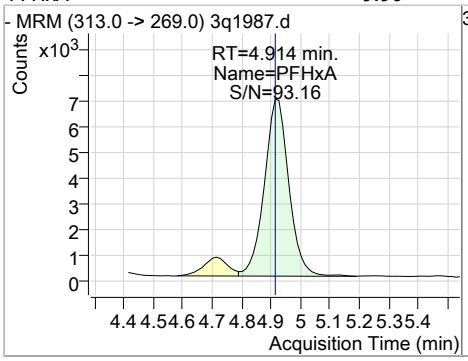
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.47	4.91	-0.05	227609				

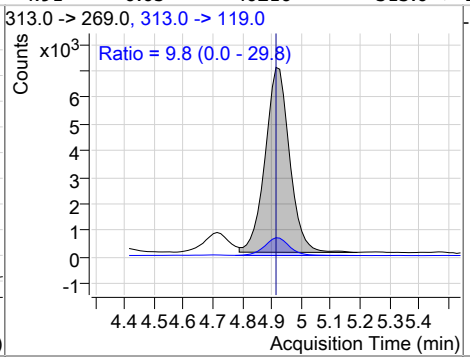


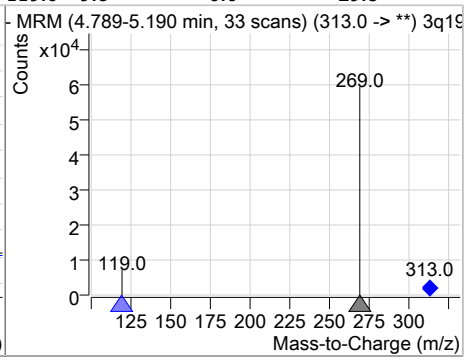




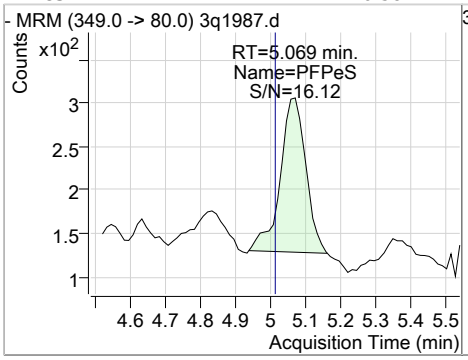
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	9.90	4.91	-0.05	40216	313.0 -> 119.0	9.8	0.0	29.8

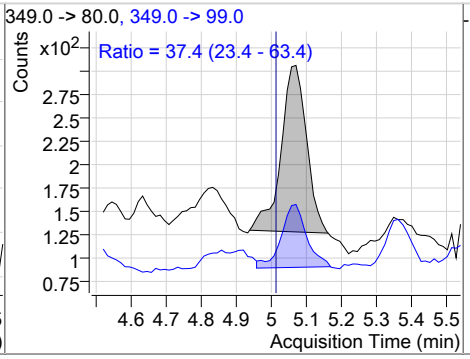


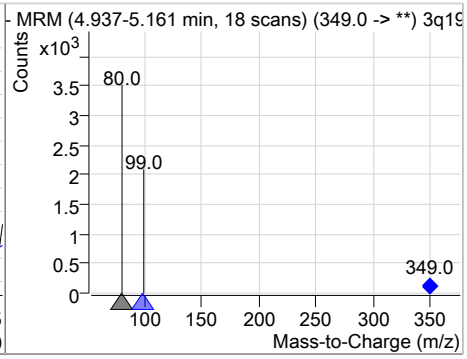




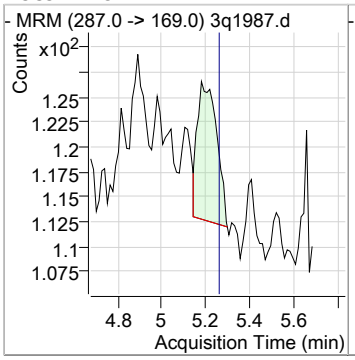
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.58	5.07	-0.03	906	349.0 -> 99.0	37.4	23.4	63.4

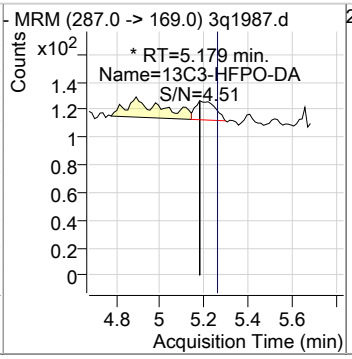


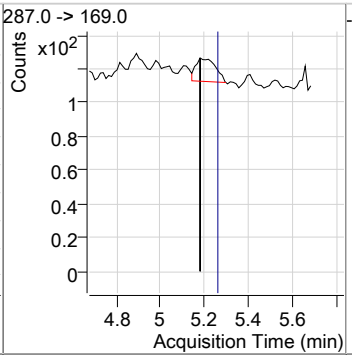


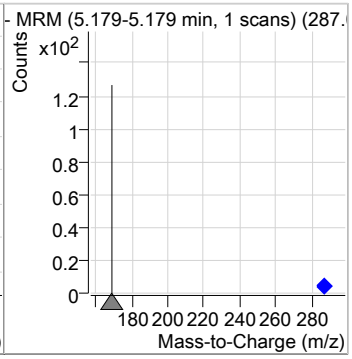


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	d	0		0				



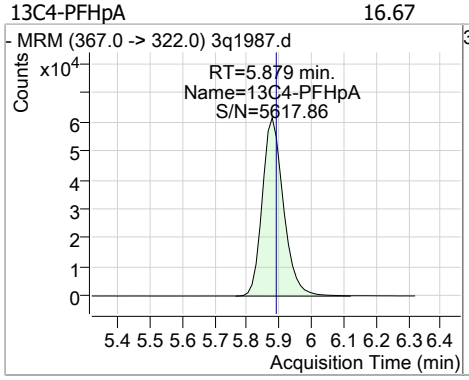


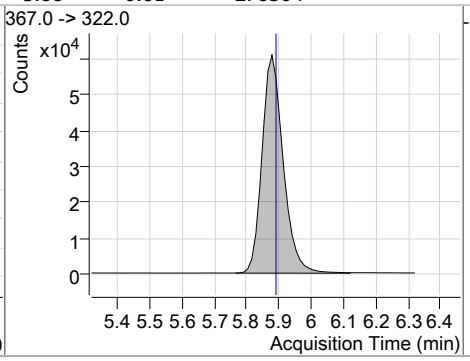


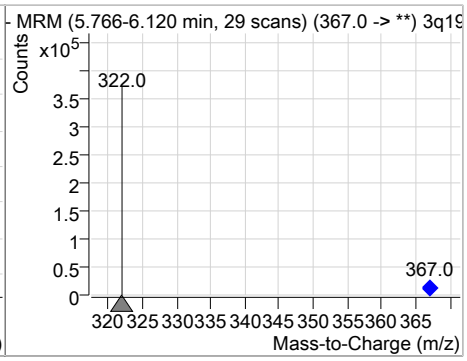


Perfluorinated Compounds by LC/MS/MS

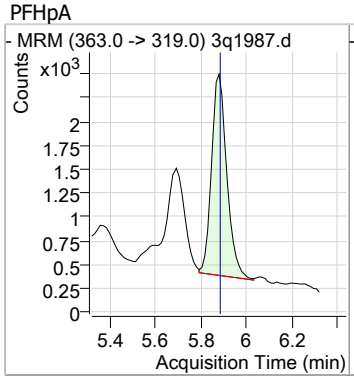
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.67	5.88	-0.01	278304				

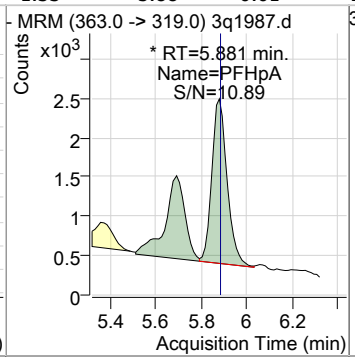


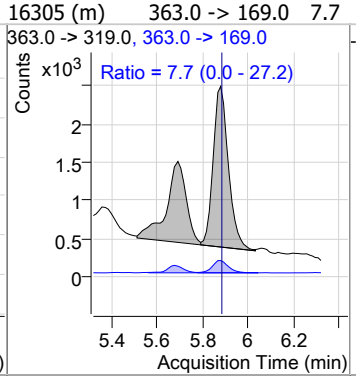


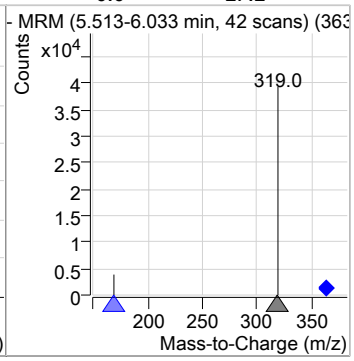


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.33	5.88	-0.01	16305 (m)	363.0 -> 169.0	7.7	0.0	27.2

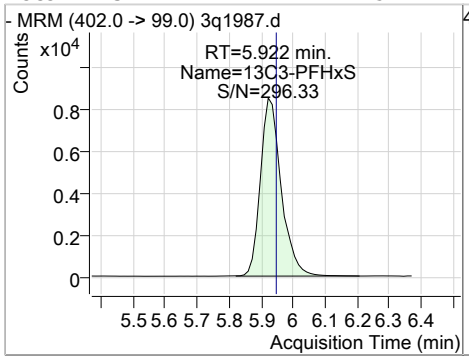


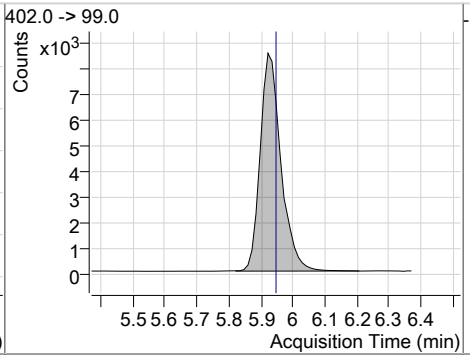


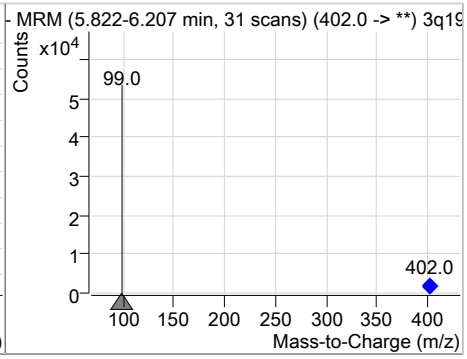




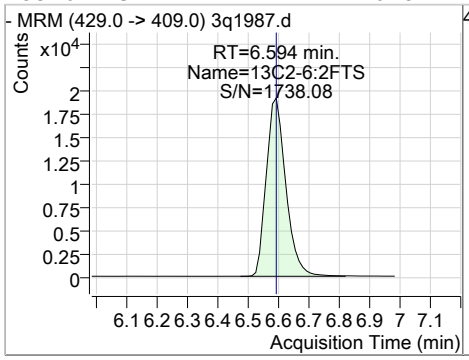
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.12	5.92	-0.03	38212				

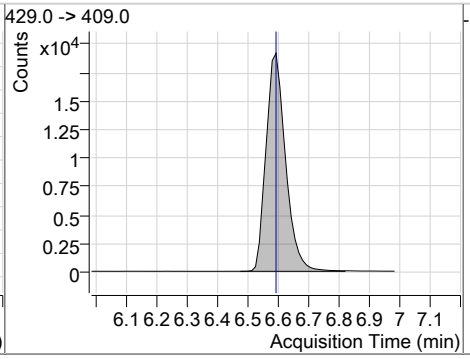


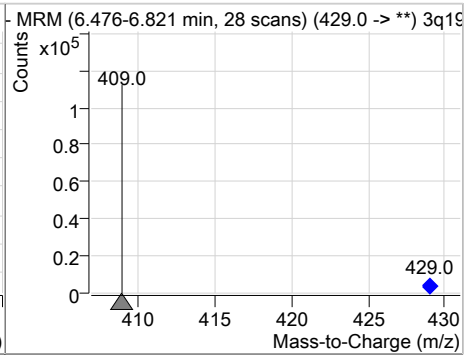




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.73	6.59	0.00	85586				

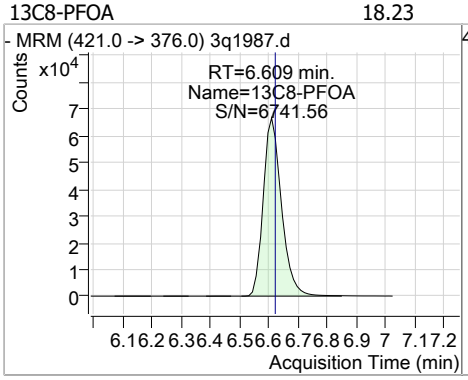


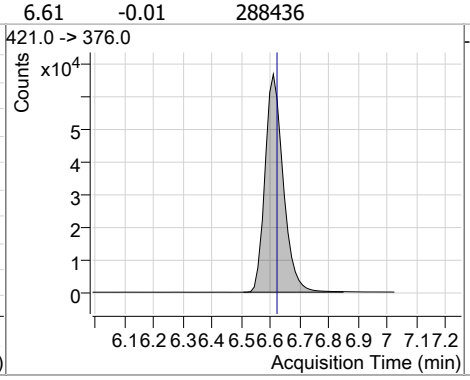


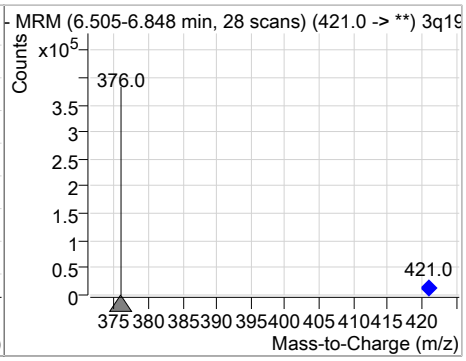


Perfluorinated Compounds by LC/MS/MS

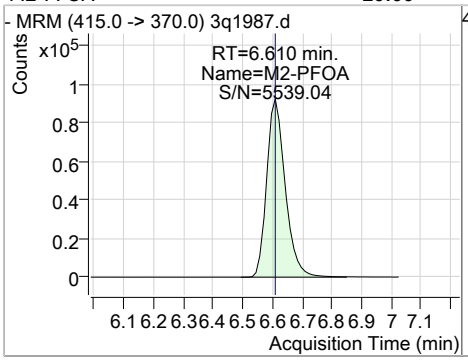
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.23	6.61	-0.01	288436				

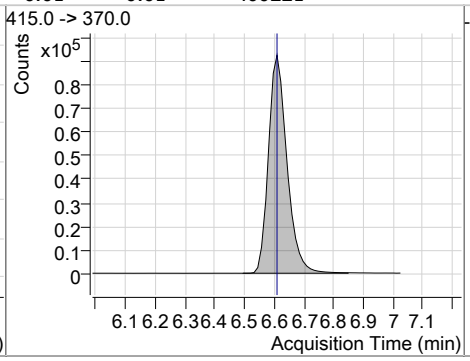


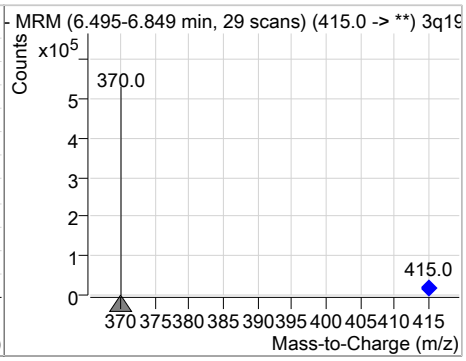




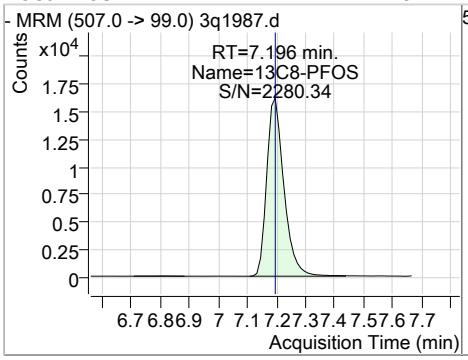
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	400221				

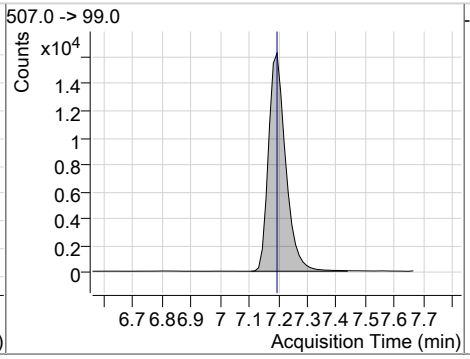


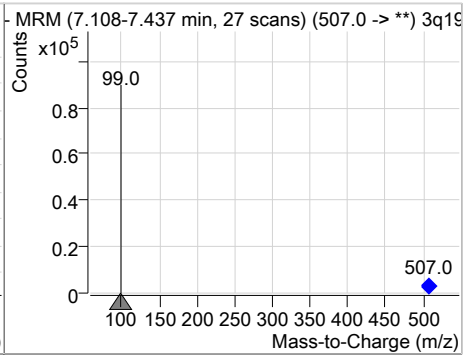




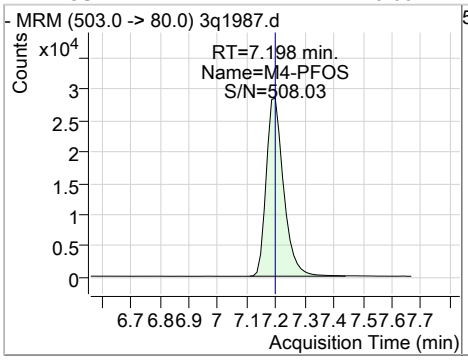
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.19	7.20	0.00	66236				

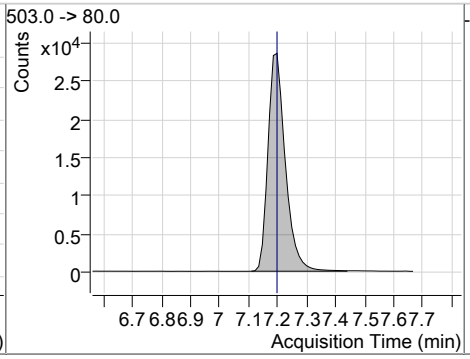


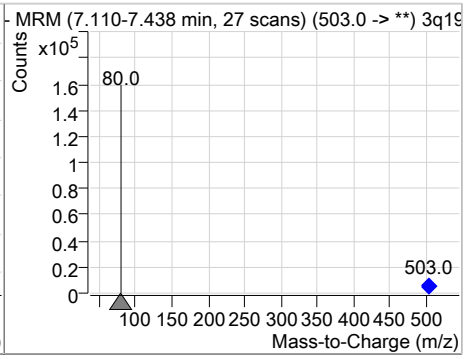




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	118438				

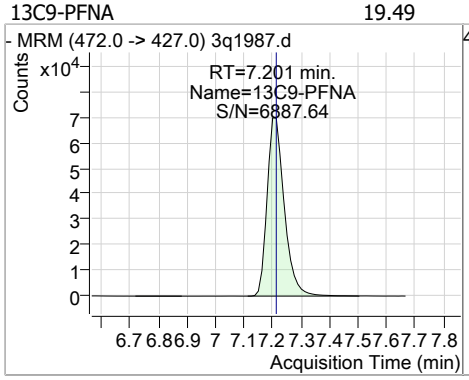


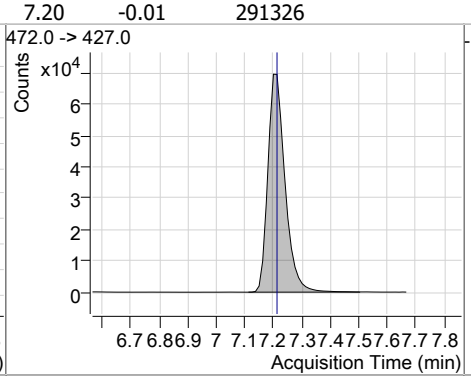


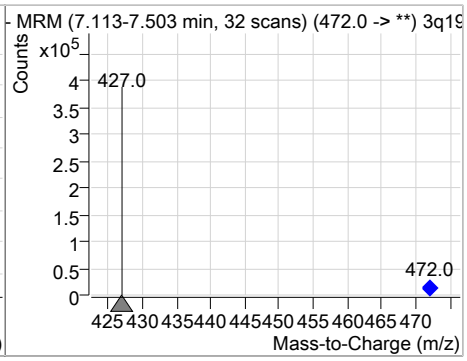


Perfluorinated Compounds by LC/MS/MS

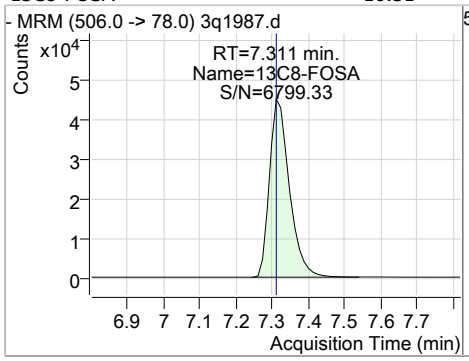
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.49	7.20	-0.01	291326				

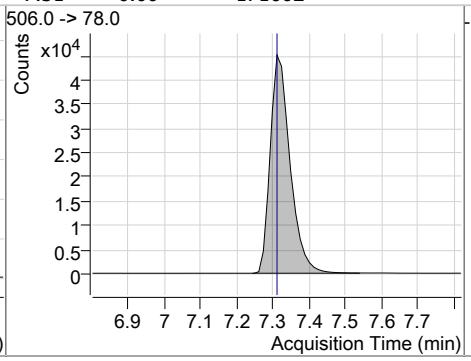


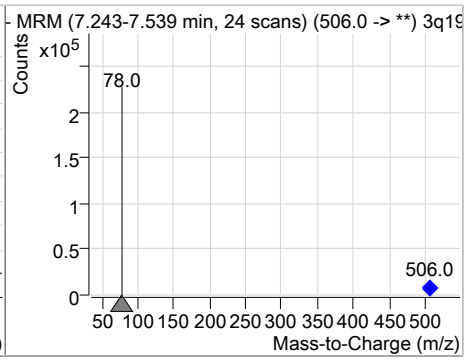




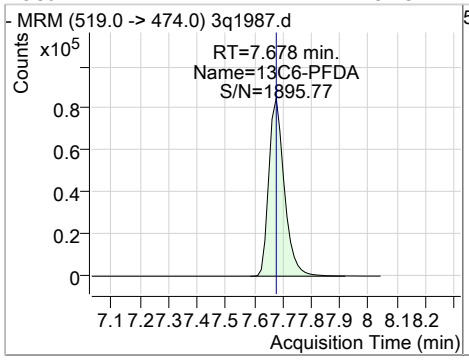
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.31	7.31	0.00	171662				

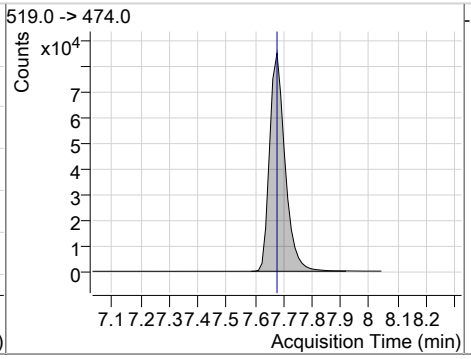


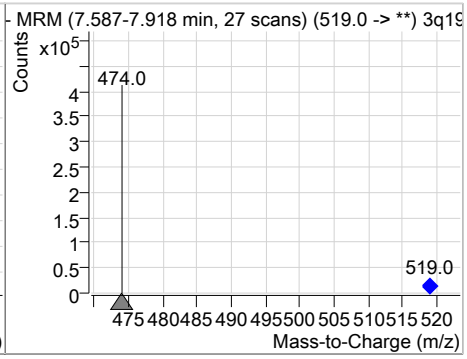




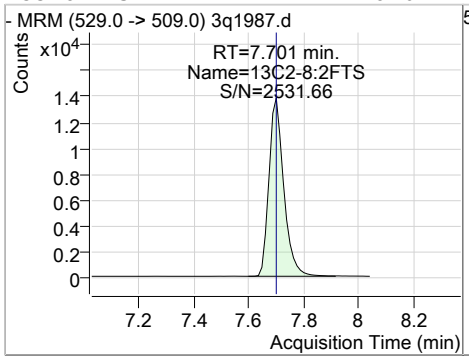
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.23	7.68	0.00	320254				

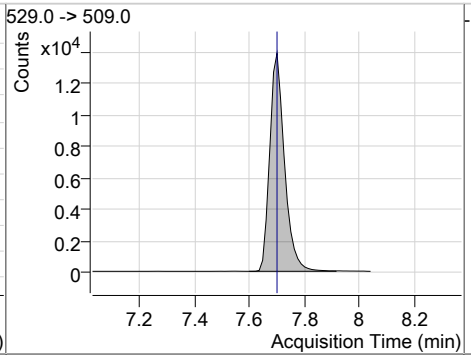


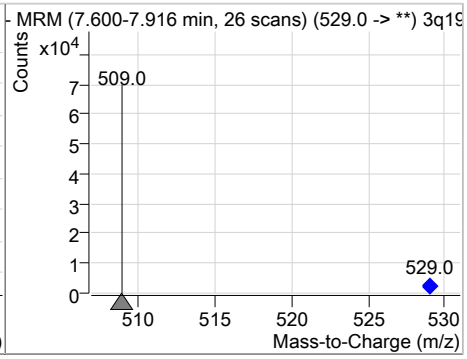




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.46	7.70	0.00	51598				

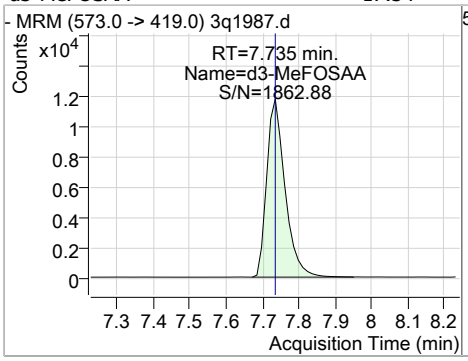


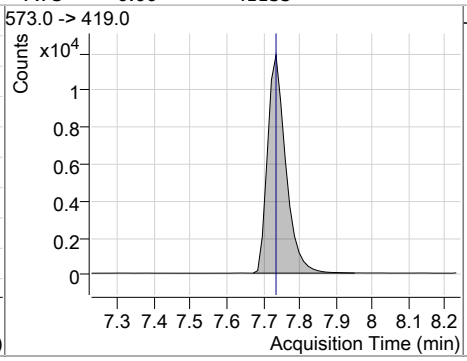


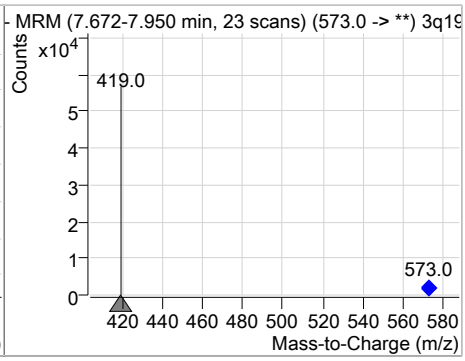


Perfluorinated Compounds by LC/MS/MS

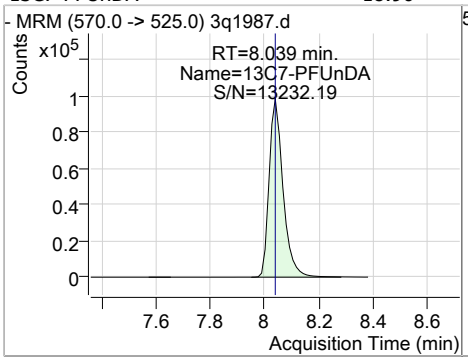
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.34	7.73	0.00	41155				

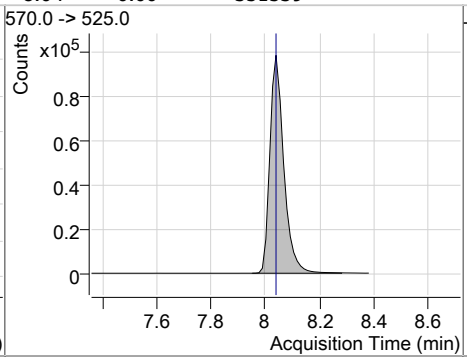


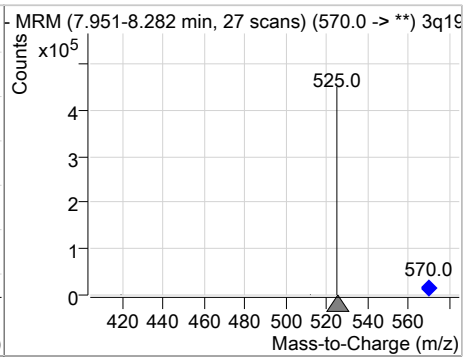




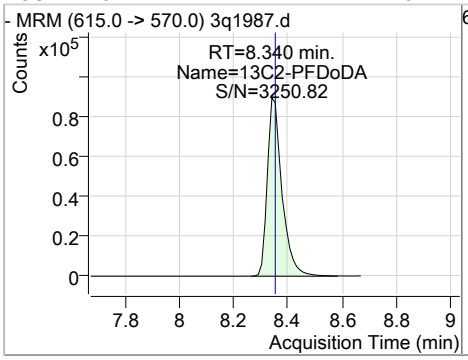
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.96	8.04	0.00	351539				

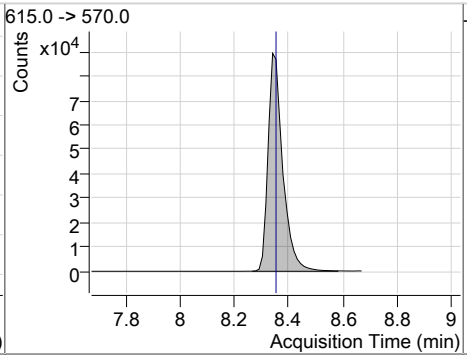


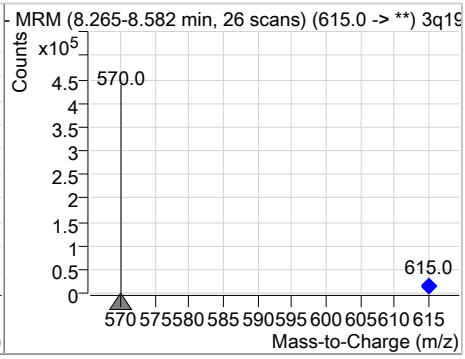




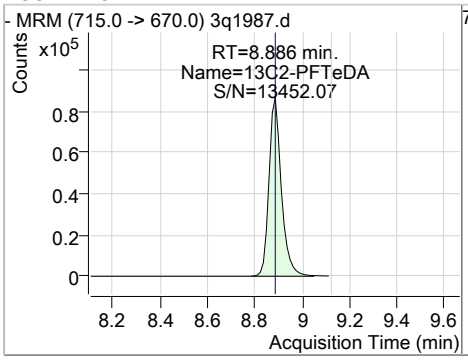
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.26	8.34	-0.01	337512				

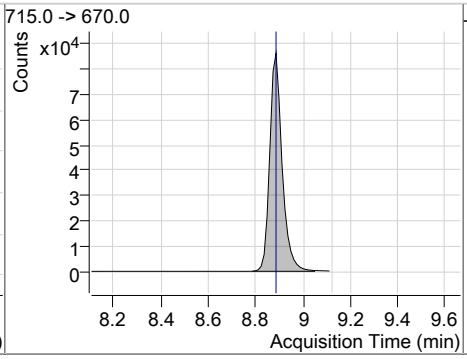


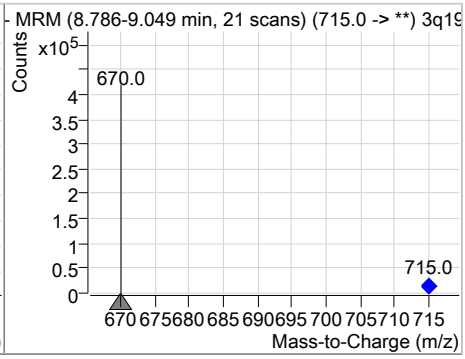




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.11	8.89	0.00	313058				







Manual Integration Approval Summary

Sample Number: FA62220-8
Lab FileID: 3Q1987.D
Injection Time: 03/21/19 13:51
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:48 Nancy Saunders
Supervisor approved: 03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		5.88	Split peak
Perfluorooctanoic acid	335-67-1		6.60	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27705.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 7:25:41 PM
Sample Name	:	fa62220-9
Vial	:	Vial 25
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74180,S2Q442,250,,,1.0,1,water

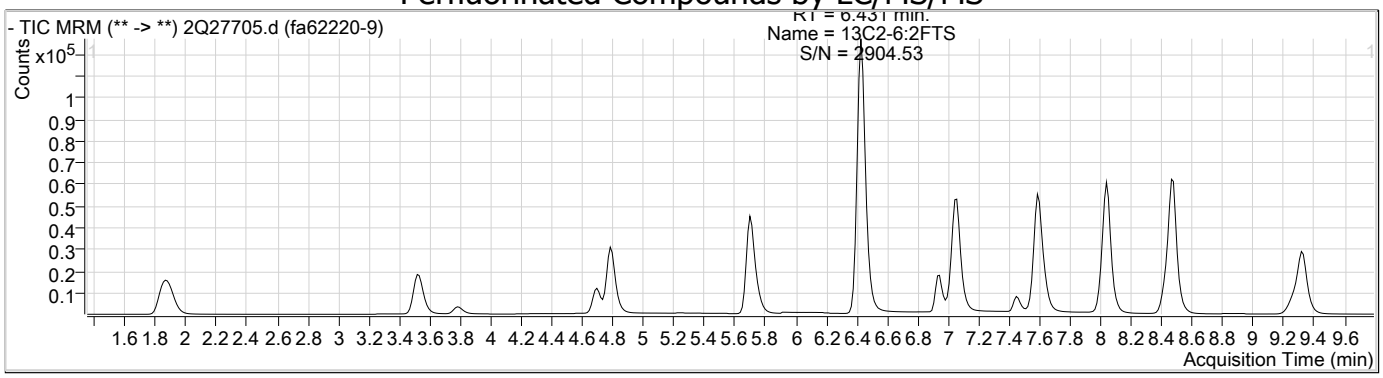
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	258399	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	35871	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	101558	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	84908	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	121429	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	174120	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	189080	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	175127	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	200396	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	247666	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	282103	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	159055	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	61570	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	14355	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	15078	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	16327	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	46414	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	59847	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	30020	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	23987	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	46445	15.62	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.1%		
13C2-6:2FTS	6.431	429.0 -> 409.0	59837	18.64	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	30096	13.57	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.9%		
13C2-PFDoDA	8.466	615.0 -> 570.0	281849	14.99	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.9%		
13C2-PFTeDA	9.315	715.0 -> 670.0	158436	12.34	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.7%		
13C3-PFBS	3.780	302.0 -> 99.0	14313	15.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	15075	14.79	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.9%		
13C4-PFBA	1.865	217.0 -> 172.0	101289	16.89	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	174065	16.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.1%		
13C5-PFHxA	4.789	318.0 -> 273.0	121351	16.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.5%		
13C5-PFPeA	3.524	268.0 -> 223.0	84828	16.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.4%		
13C6-PFDA	7.594	519.0 -> 474.0	200325	14.68	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

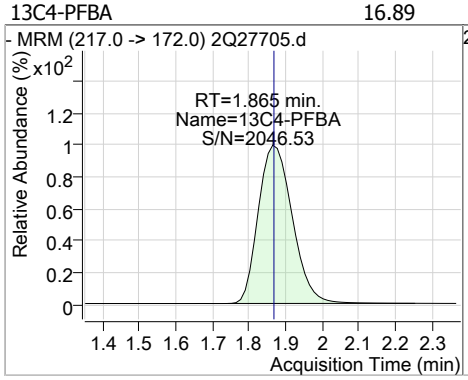
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.4%	
13C7-PFUnDA	8.041	570.0 -> 525.0	247510	14.63 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.1%	
13C8-FOSA	6.944	506.0 -> 78.0	61628	15.20 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.0%	
13C8-PFOA	6.434	421.0 -> 376.0	189043	18.12 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%	
13C8-PFOS	7.045	507.0 -> 99.0	16330	12.53 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.6%	
13C9-PFNA	7.065	472.0 -> 427.0	175104	16.54 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%	
d3-MeFOSAA	7.447	573.0 -> 419.0	23967	12.50 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.5%	
M2-PFOA	6.435	415.0 -> 370.0	258493	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.036	503.0 -> 80.0	35891	20.00 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

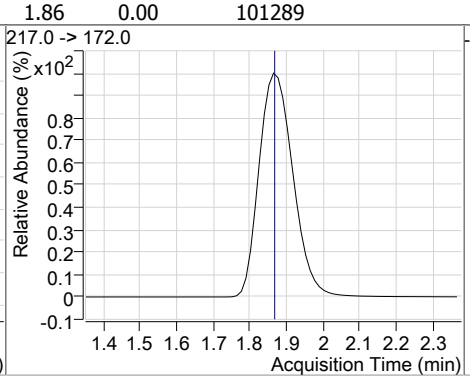
 # = Qualifier out of range, m = manually integrated, + = Area summed

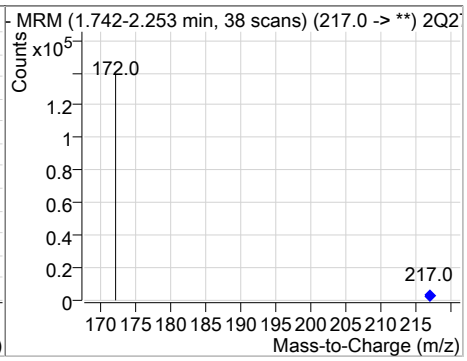
Perfluorinated Compounds by LC/MS/MS



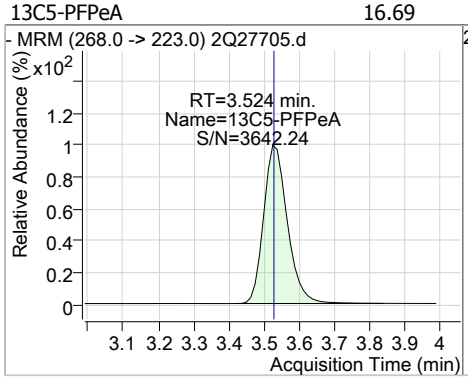
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.89	1.86	0.00	101289				

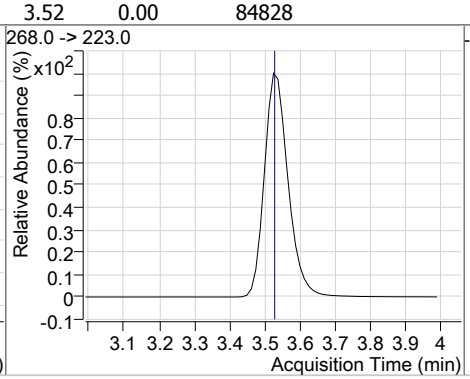


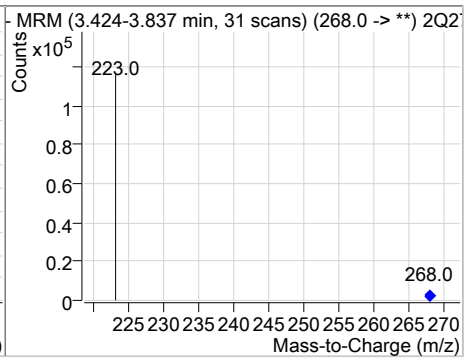




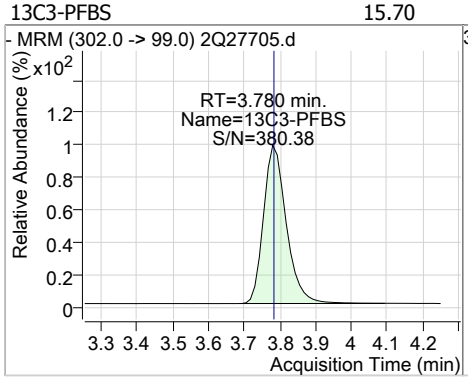
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.69	3.52	0.00	84828				

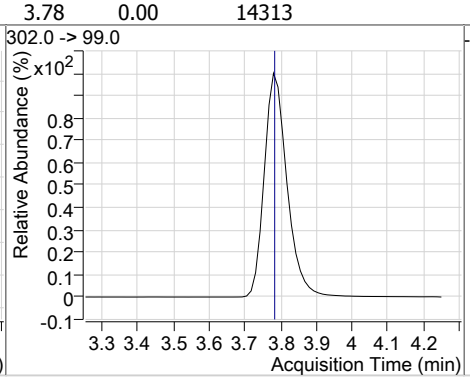


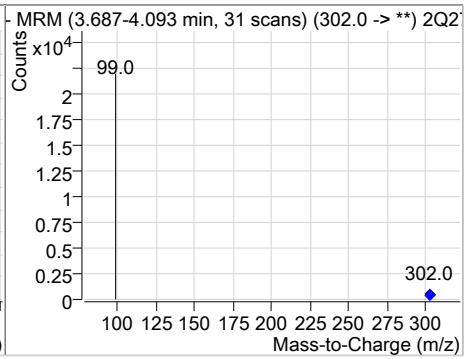




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.70	3.78	0.00	14313				

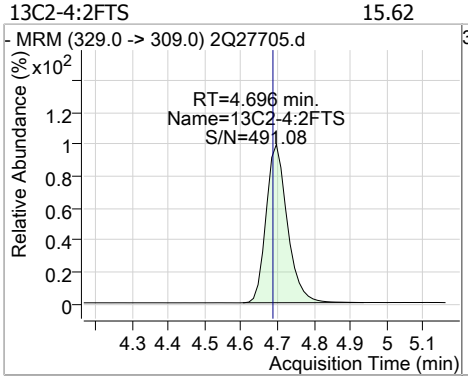


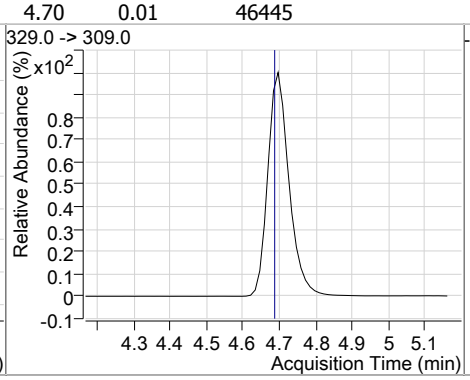


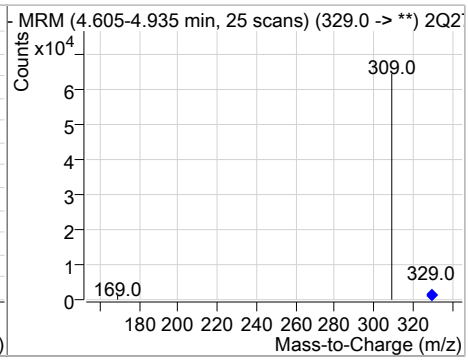


Perfluorinated Compounds by LC/MS/MS

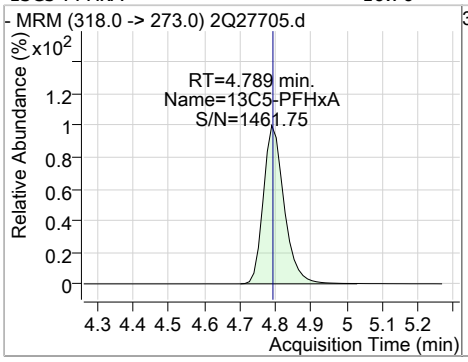
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.62	4.70	0.01	46445				

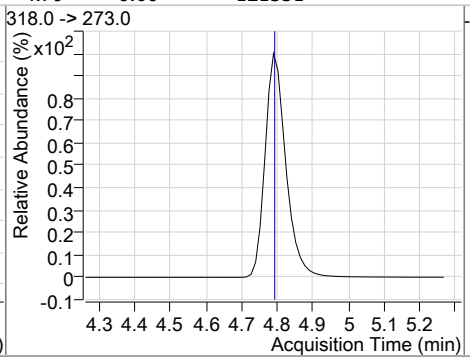


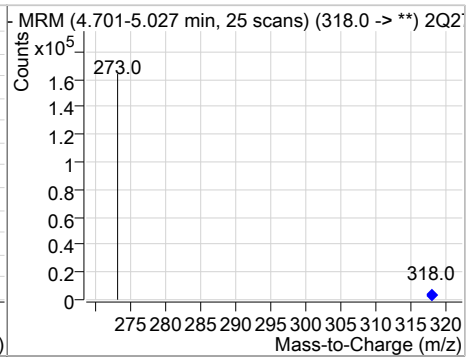




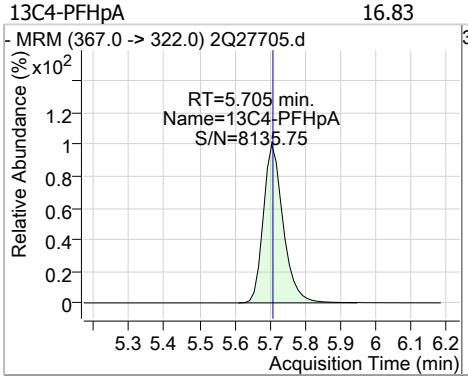
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.70	4.79	0.00	121351				

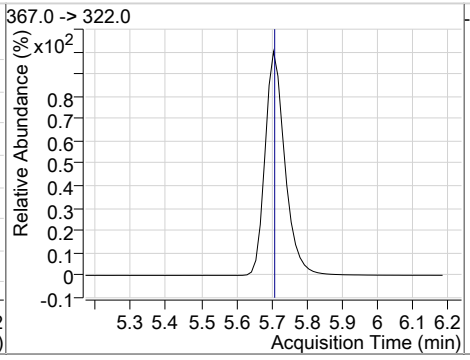


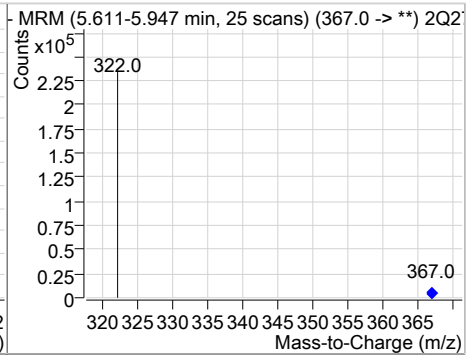




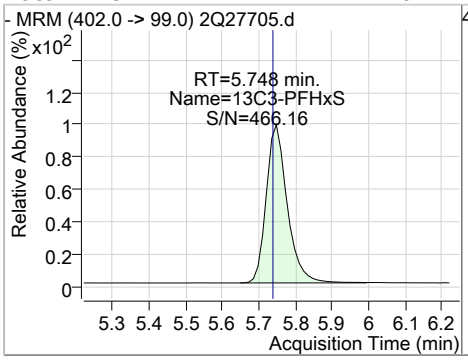
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.83	5.71	0.00	174065				

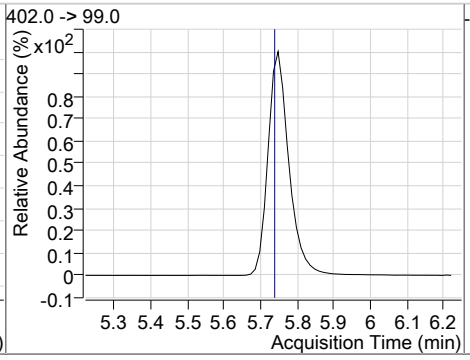


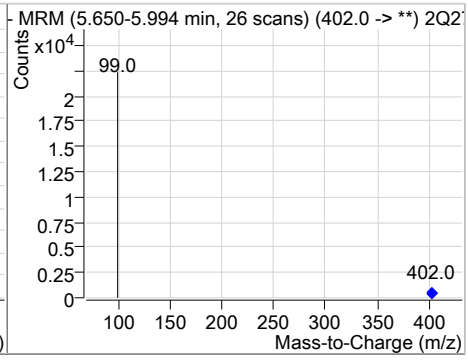




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	14.79	5.75	0.01	15075				

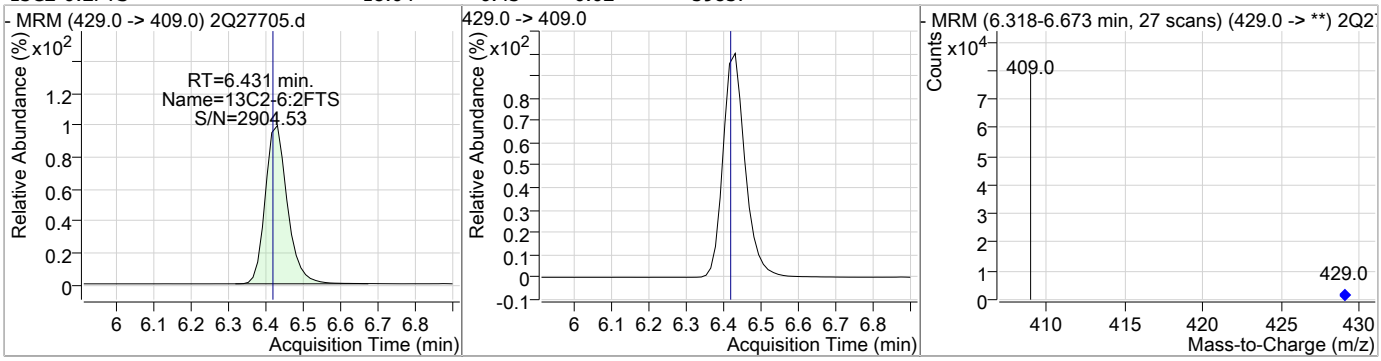




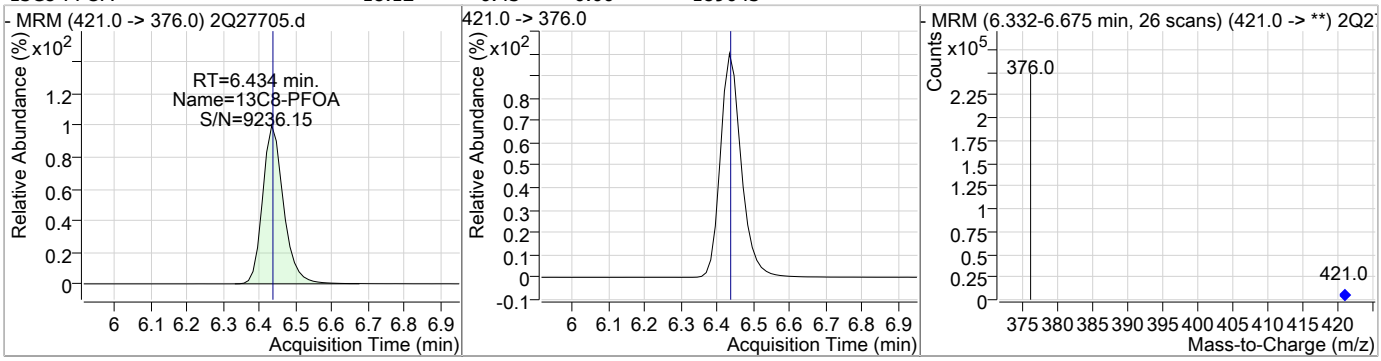


Perfluorinated Compounds by LC/MS/MS

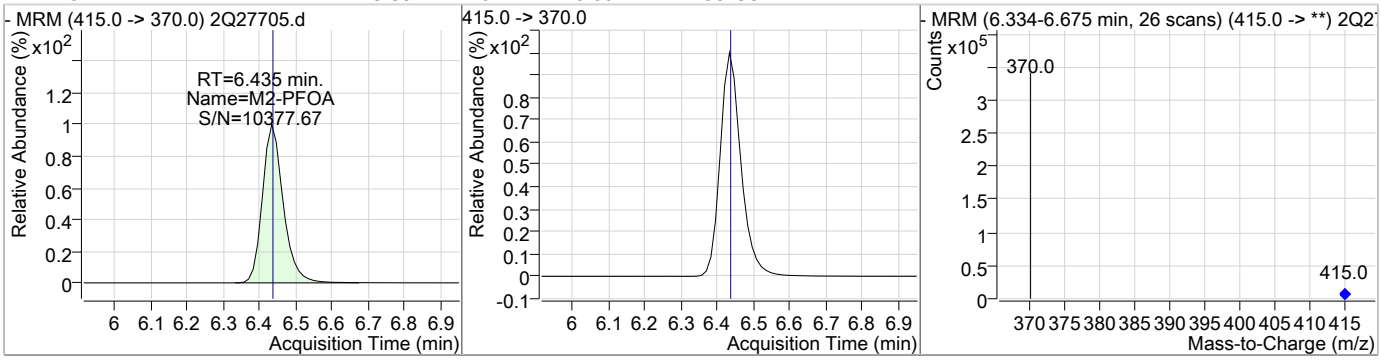
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.64	6.43	0.02	59837				



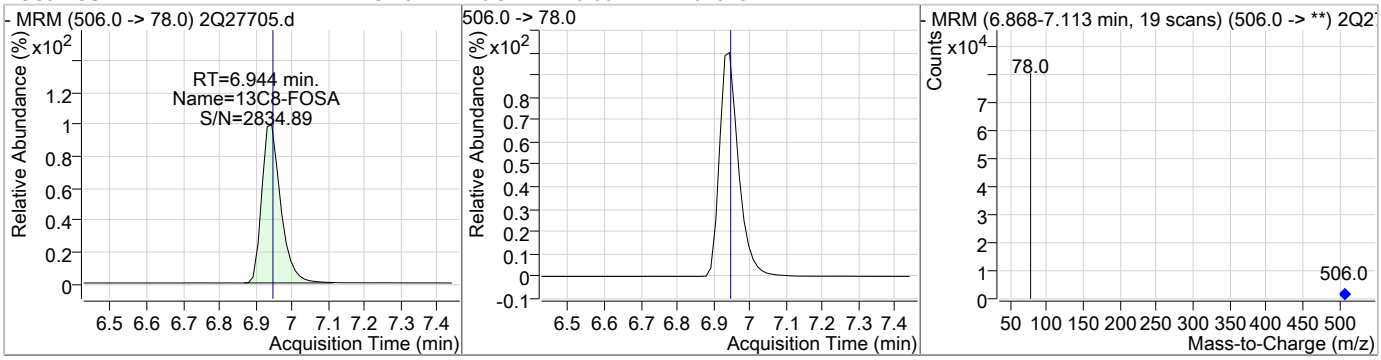
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.12	6.43	0.00	189043				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	258493				

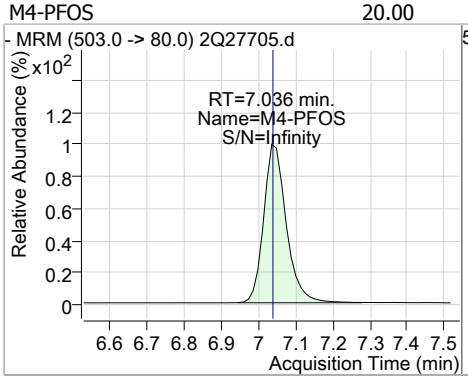


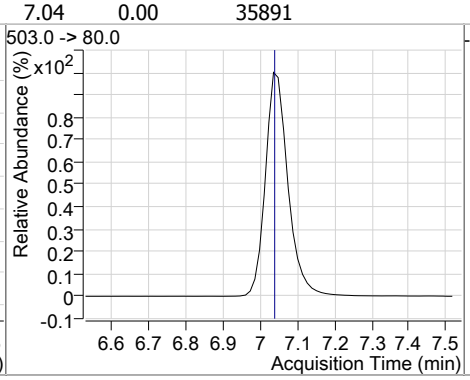
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.20	6.94	0.00	61628				

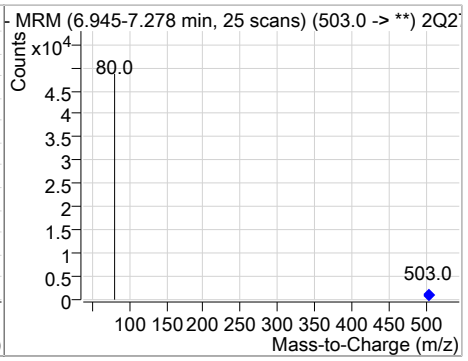


Perfluorinated Compounds by LC/MS/MS

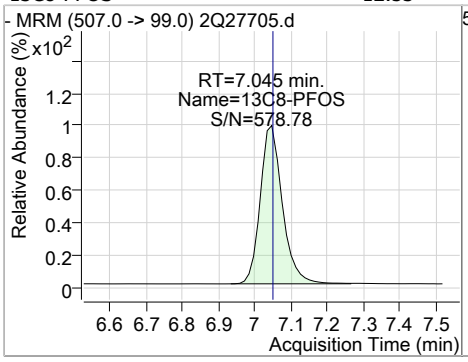
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.04	0.00	35891				

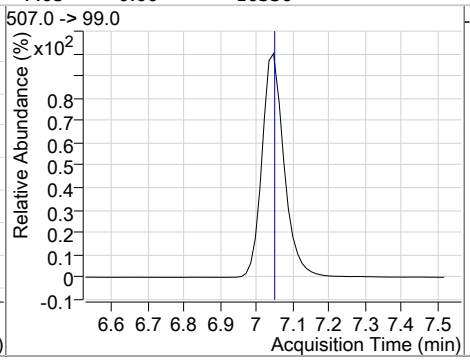


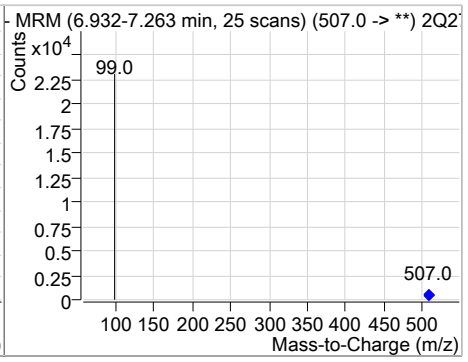




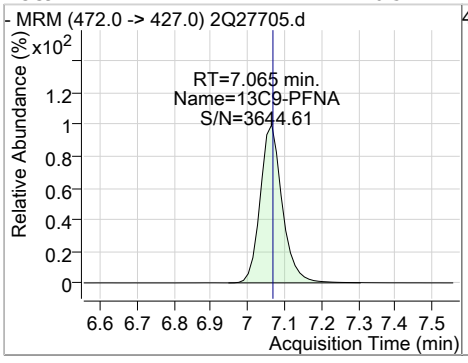
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.53	7.05	0.00	16330				

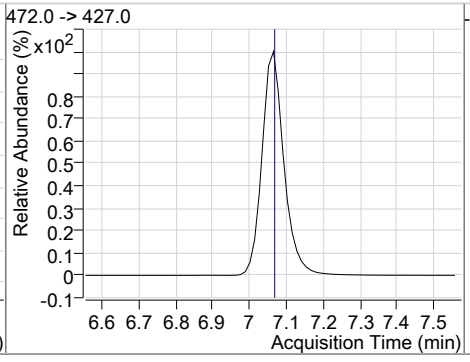


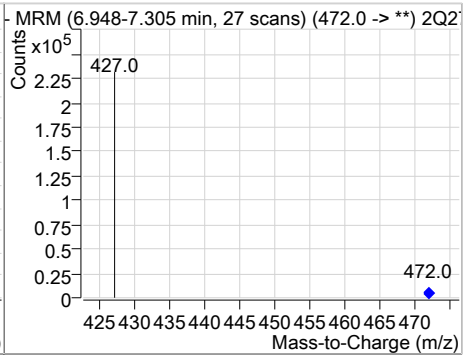




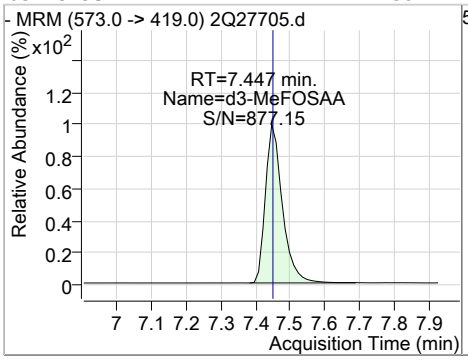
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.54	7.07	0.00	175104				

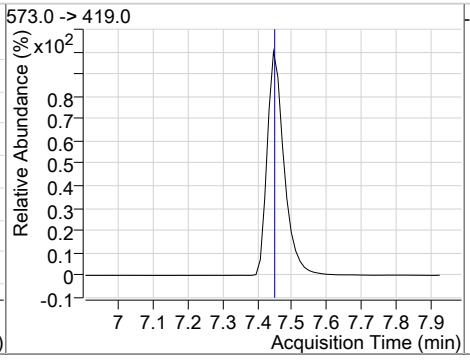


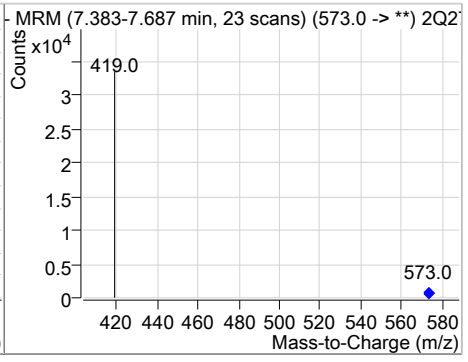




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	12.50	7.45	0.00	23967				

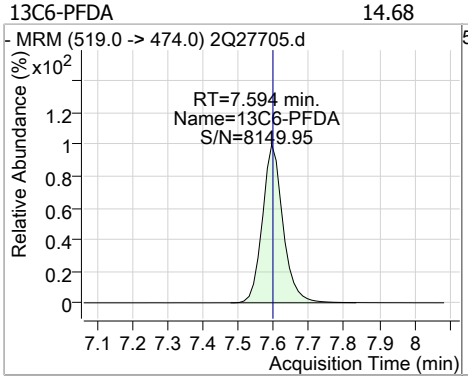


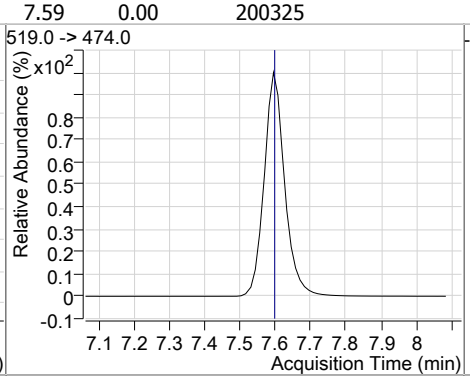


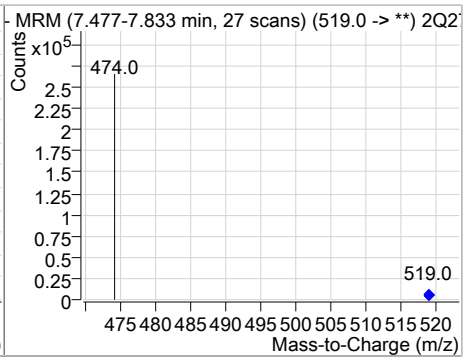


Perfluorinated Compounds by LC/MS/MS

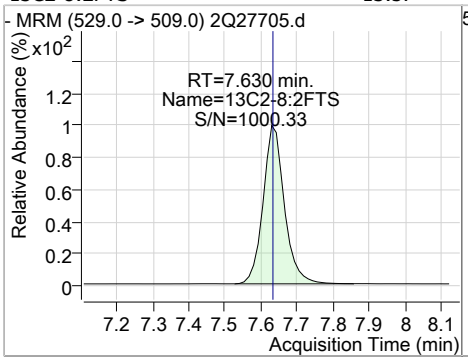
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	14.68	7.59	0.00	200325				

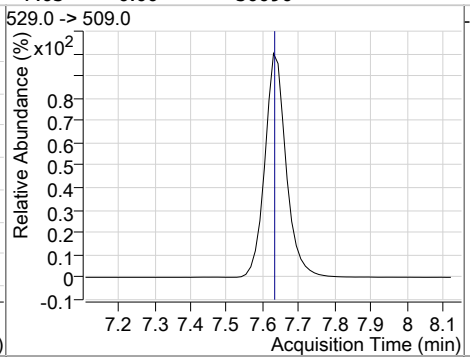


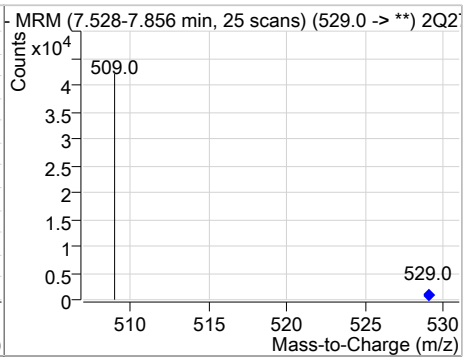




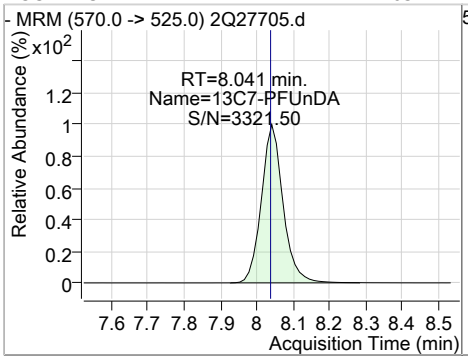
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	13.57	7.63	0.00	30096				

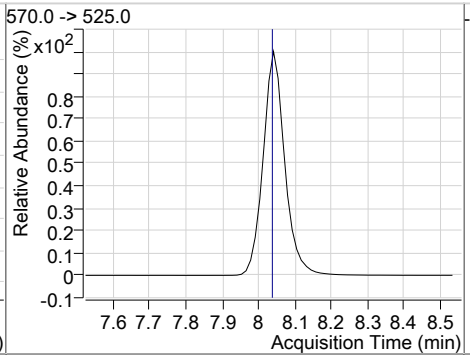


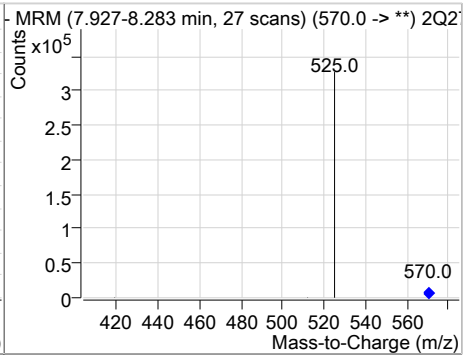




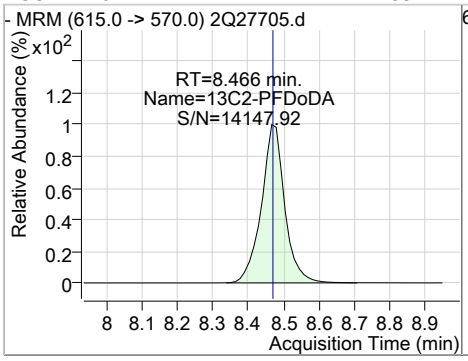
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.63	8.04	0.00	247510				

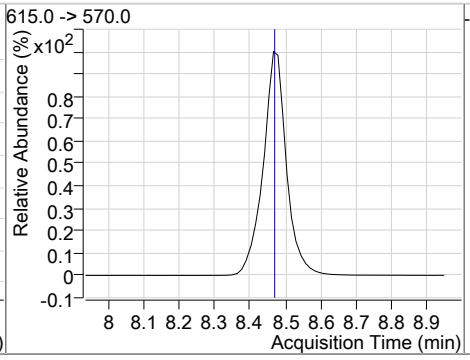


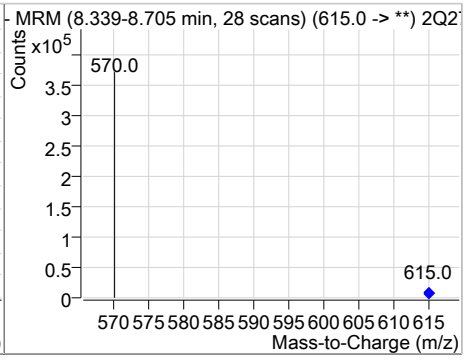




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.99	8.47	0.00	281849				

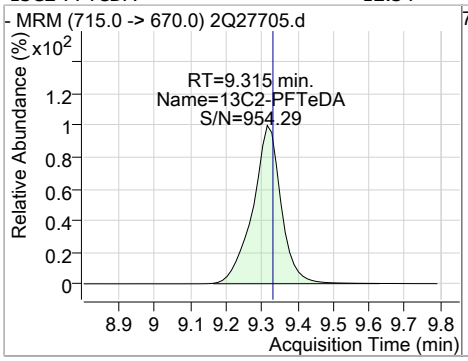


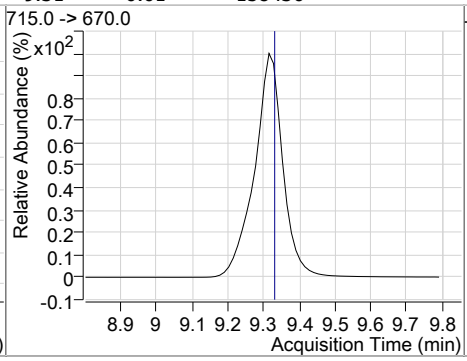


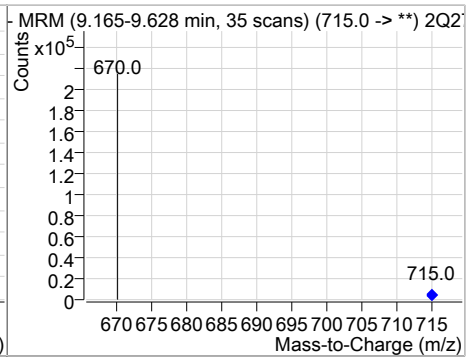


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.34	9.31	-0.01	158436				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27706.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 7:41:25 PM
Sample Name : fa62220-10
Vial : Vial 26
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

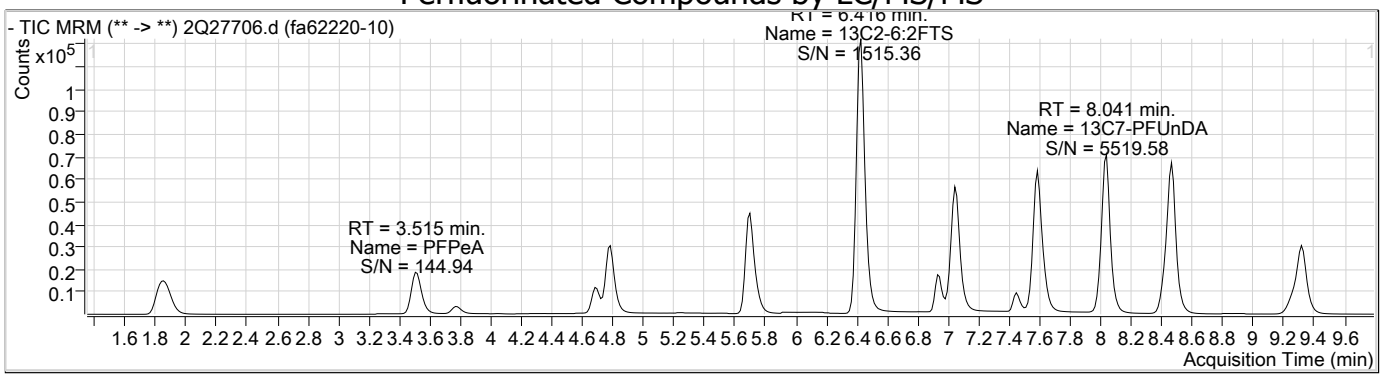
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	252566	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	35615	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	97548	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	82383	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	117368	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	173236	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	185392	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	182669	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	229367	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	288599	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	306866	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	165400	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	58949	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	13860	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	15497	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	18938	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	46212	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	57991	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	34660	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	28175	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	46188	15.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%		
13C2-6:2FTS	6.416	429.0 -> 409.0	57974	18.06	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.3%		
13C2-8:2FTS	7.630	529.0 -> 509.0	34652	15.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.1%		
13C2-PFDoDA	8.466	615.0 -> 570.0	306690	16.31	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.5%		
13C2-PFTeDA	9.315	715.0 -> 670.0	165168	12.86	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.3%		
13C3-PFBS	3.767	302.0 -> 99.0	13851	15.19	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.0%		
13C3-PFHxS	5.736	402.0 -> 99.0	15481	15.19	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%		
13C4-PFBA	1.852	217.0 -> 172.0	97348	16.23	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.2%		
13C4-PFHpA	5.705	367.0 -> 322.0	173137	16.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%		
13C5-PFHxA	4.789	318.0 -> 273.0	117335	16.15	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C5-PFPeA	3.511	268.0 -> 223.0	82383	16.21	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
13C6-PFDA	7.594	519.0 -> 474.0	229266	16.80	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

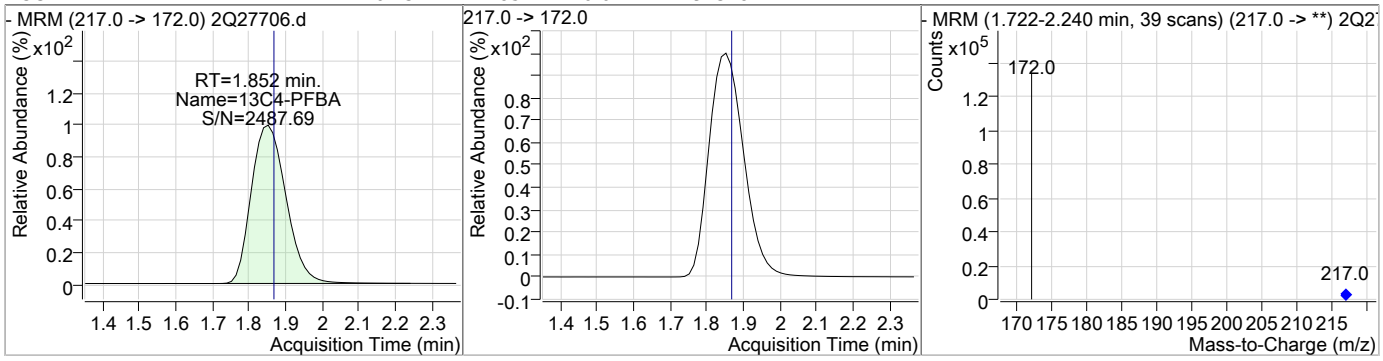
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%	
13C7-PFUnDA	8.041	570.0 -> 525.0	288376	17.04 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.2%	
13C8-FOSA	6.932	506.0 -> 78.0	58938	14.53 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.7%	
13C8-PFOA	6.434	421.0 -> 376.0	185246	17.76 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%	
13C8-PFOS	7.033	507.0 -> 99.0	18922	14.52 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.6%	
13C9-PFNA	7.052	472.0 -> 427.0	182632	17.25 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.2%	
d3-MeFOSAA	7.447	573.0 -> 419.0	28201	14.71 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.6%	
M2-PFOA	6.435	415.0 -> 370.0	252596	19.98 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.036	503.0 -> 80.0	35626	20.00 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.848	213.0 -> 169.0	495	0.51 µg/L	100
PFBS	3.771	299.0 -> 80.0	772	0.70 µg/L	57
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	4.791	313.0 -> 269.0	2957	1.46 µg/L	96
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	3.515	263.0 -> 219.0	5094	1.43 µg/L	100
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

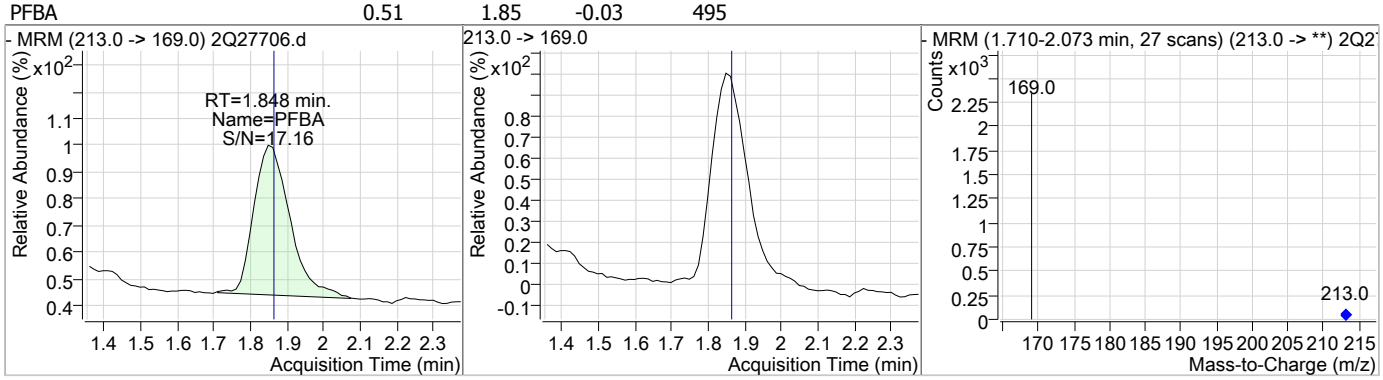
Perfluorinated Compounds by LC/MS/MS



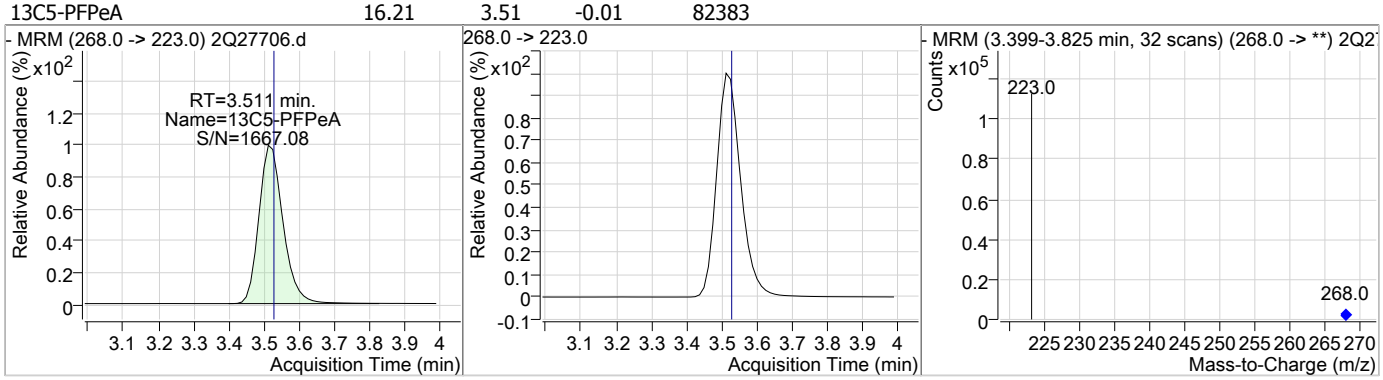
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.23	1.85	-0.01	97348				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.51	1.85	-0.03	495				

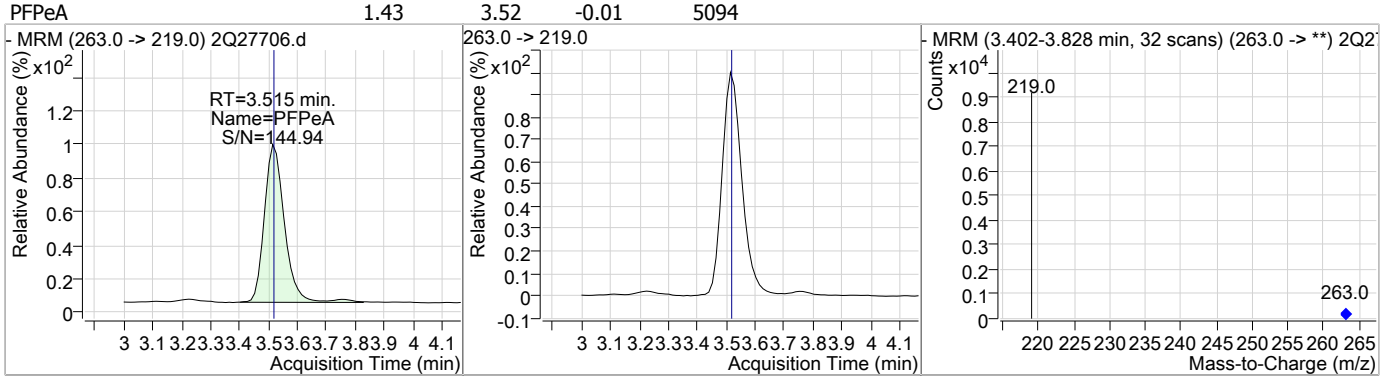


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.21	3.51	-0.01	82383				

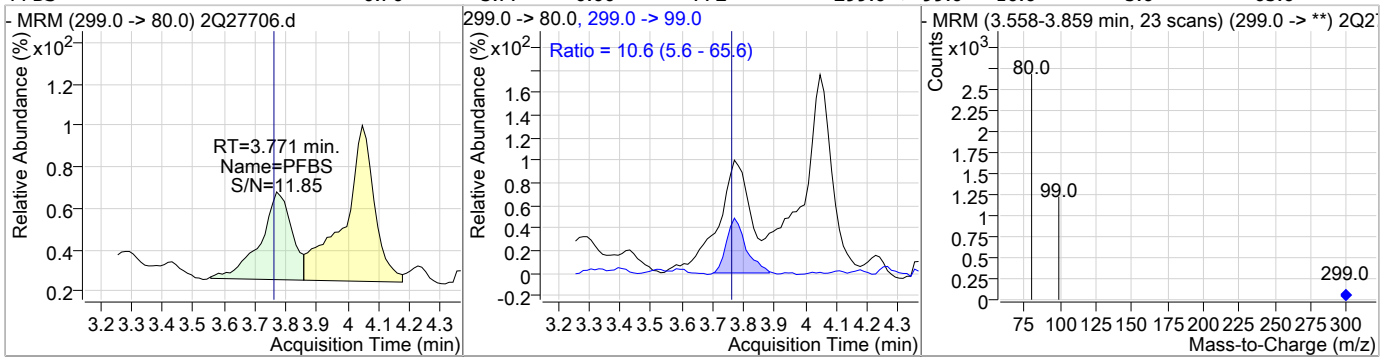


Perfluorinated Compounds by LC/MS/MS

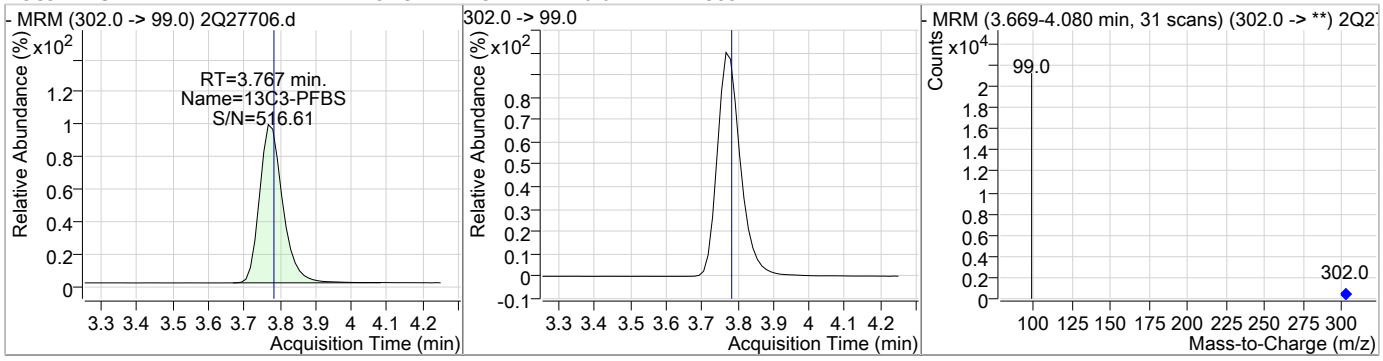
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.43	3.52	-0.01	5094				



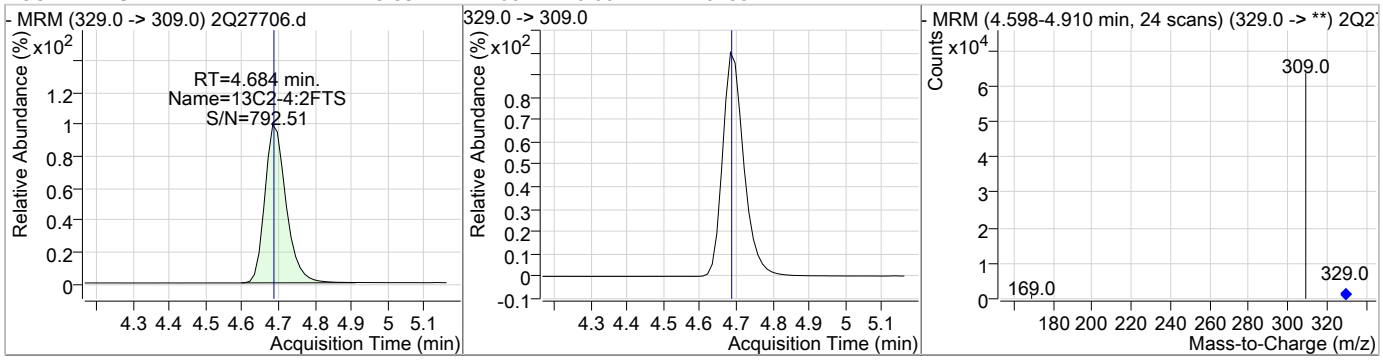
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.70	3.77	0.00	772	299.0 -> 99.0	10.6	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.19	3.77	-0.01	13851				

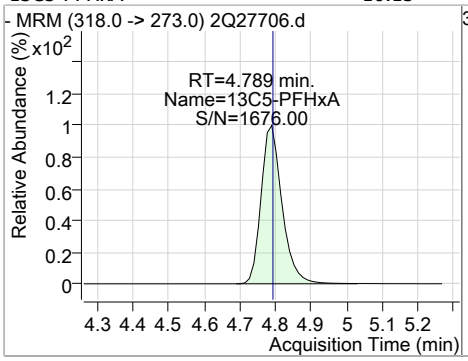


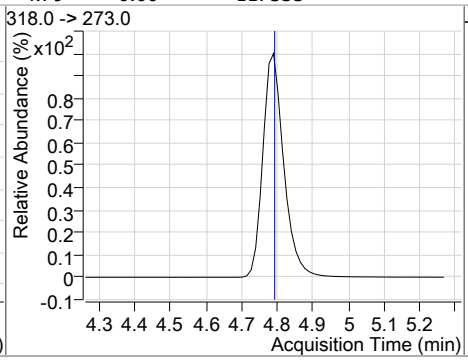
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.53	4.68	0.00	46188				

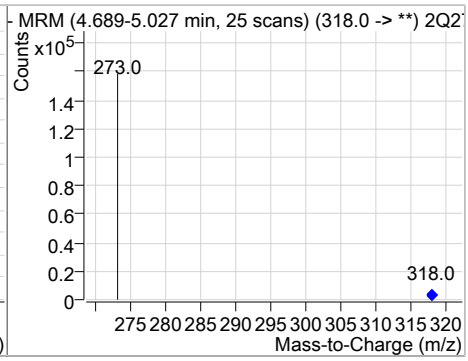


Perfluorinated Compounds by LC/MS/MS

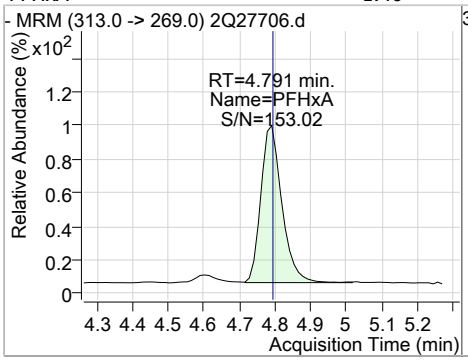
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.15	4.79	0.00	117335				

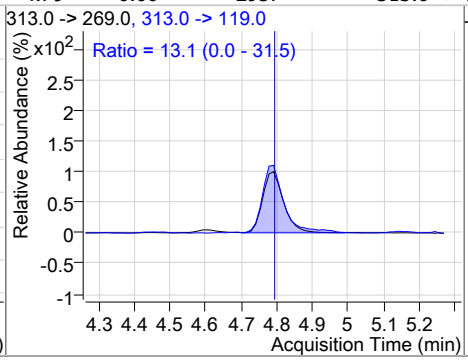


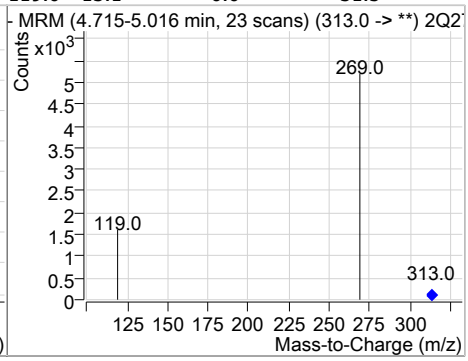




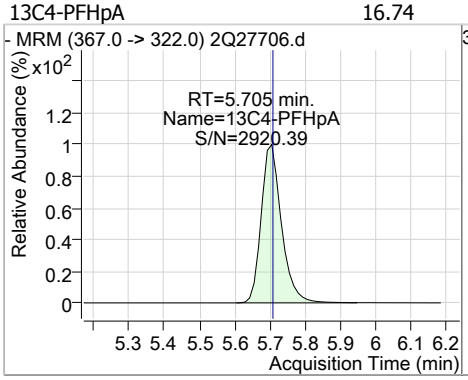
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.46	4.79	0.00	2957	313.0 -> 119.0	13.1	0.0	31.5

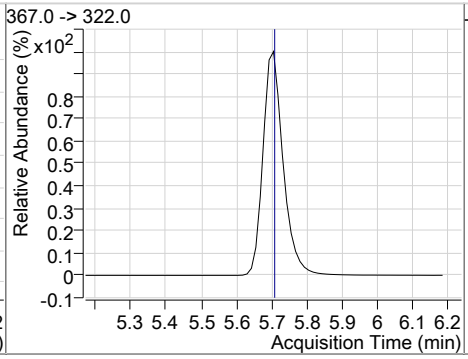


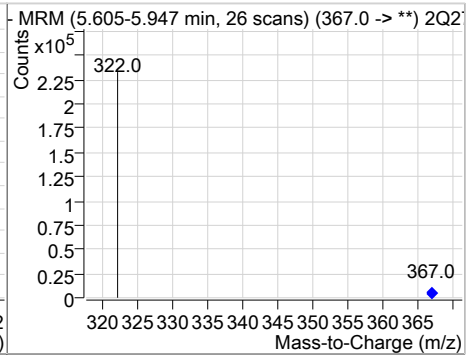




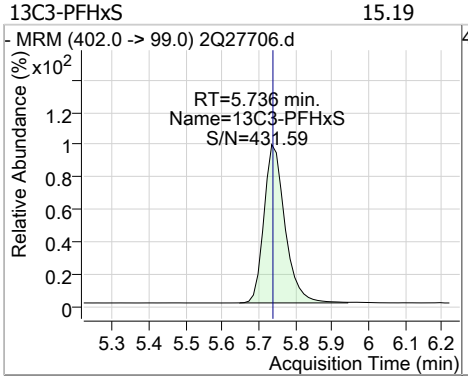
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.74	5.71	0.00	173137				

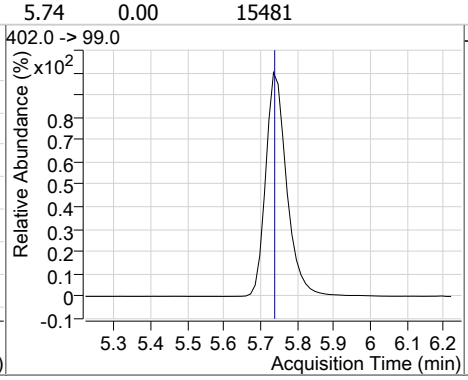


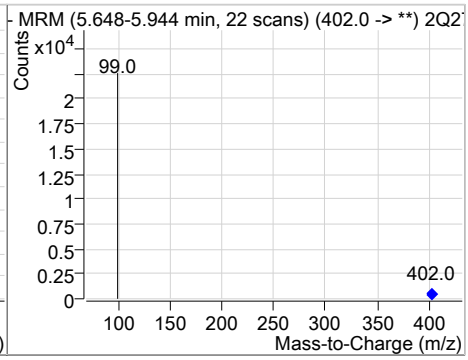




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.19	5.74	0.00	15481				

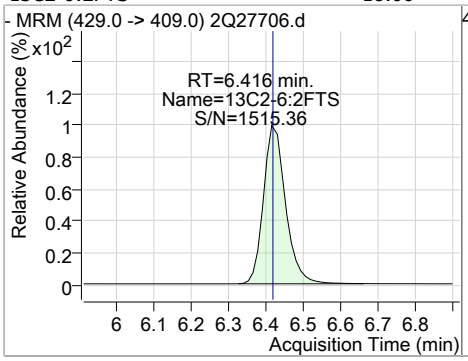


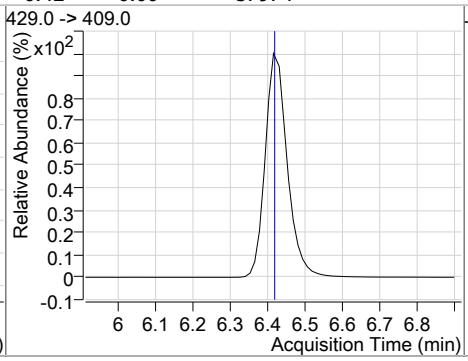


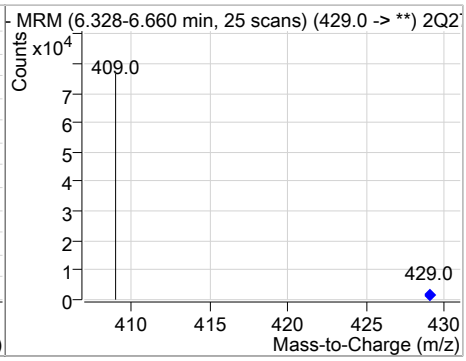


Perfluorinated Compounds by LC/MS/MS

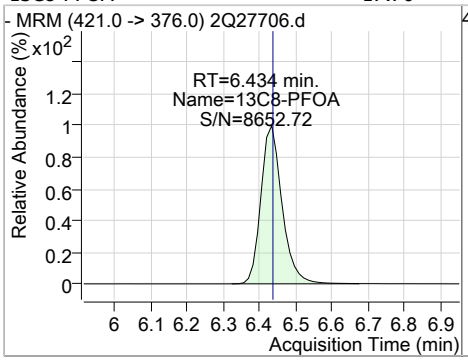
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.06	6.42	0.00	57974				

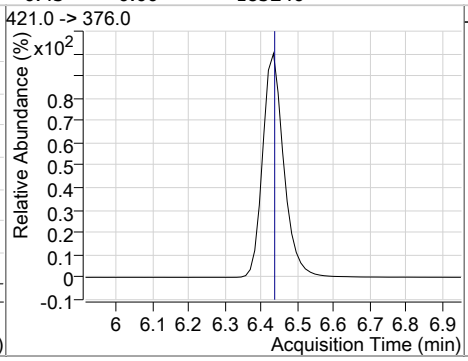


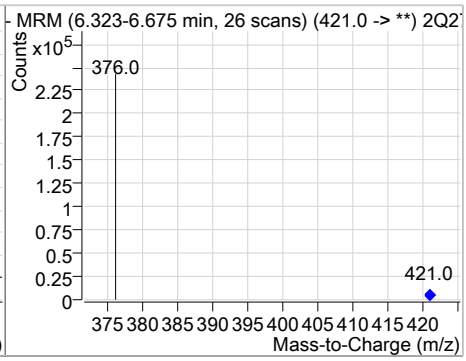




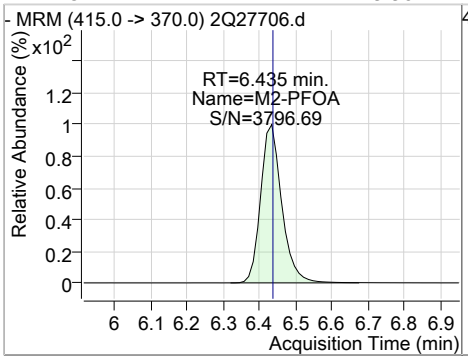
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.76	6.43	0.00	185246				

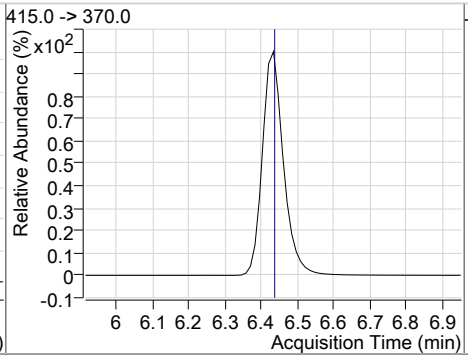


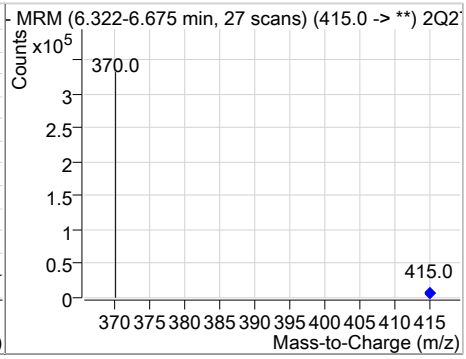




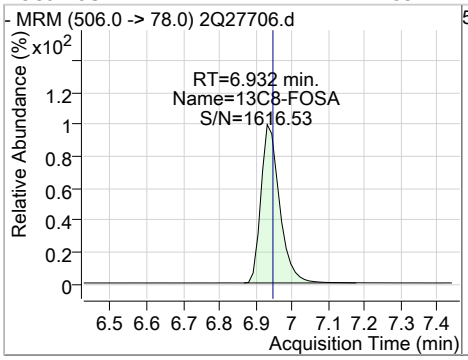
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.44	0.00	252596				

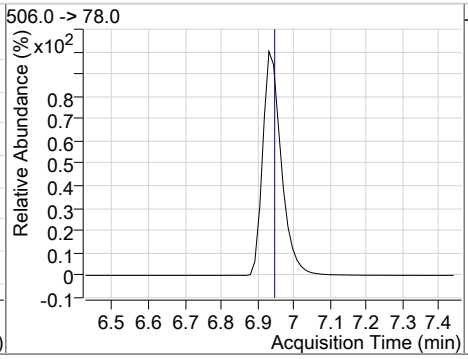


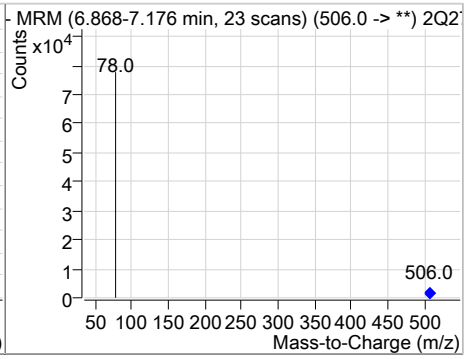




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.53	6.93	-0.01	58938				

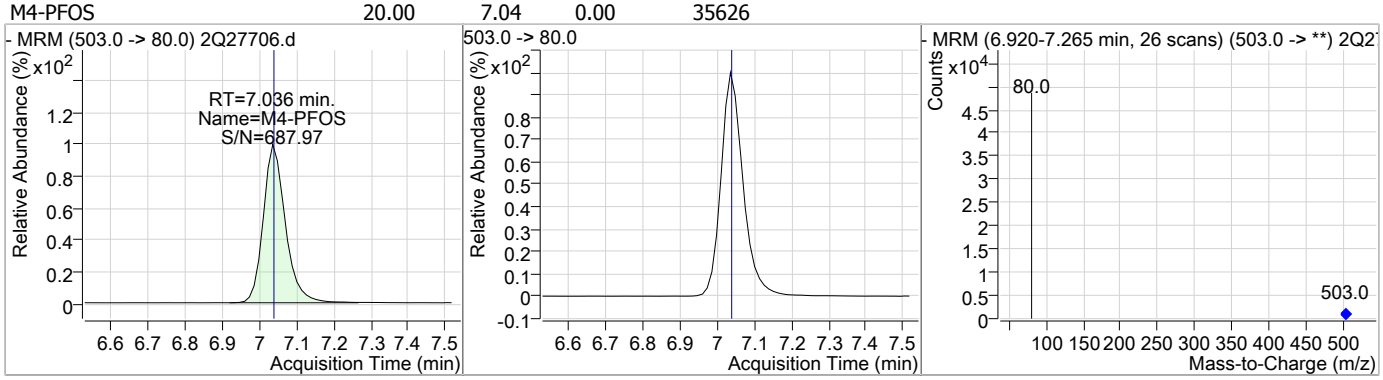




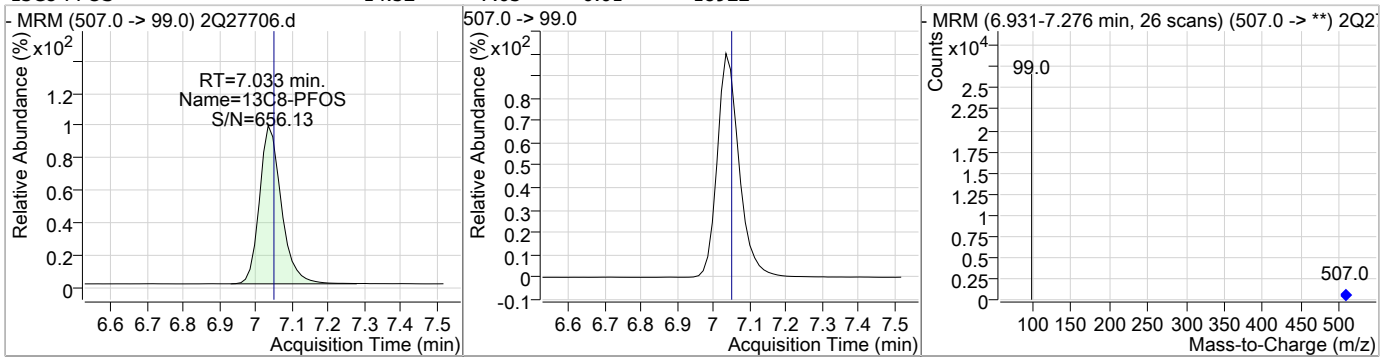


Perfluorinated Compounds by LC/MS/MS

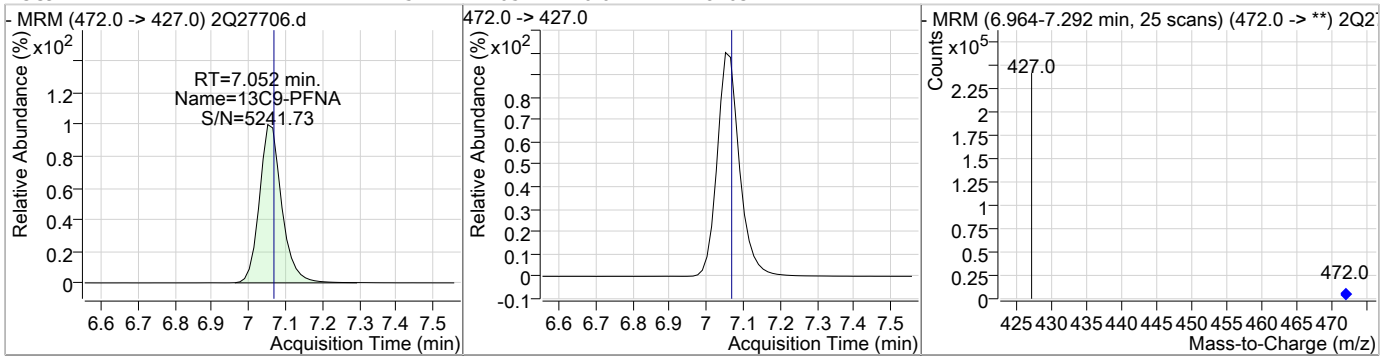
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.04	0.00	35626				



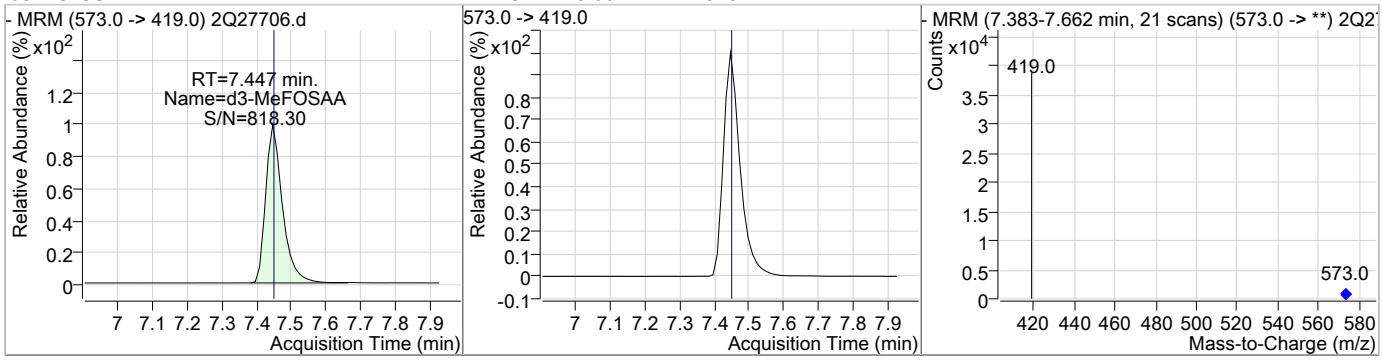
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.52	7.03	-0.01	18922				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.25	7.05	-0.01	182632				

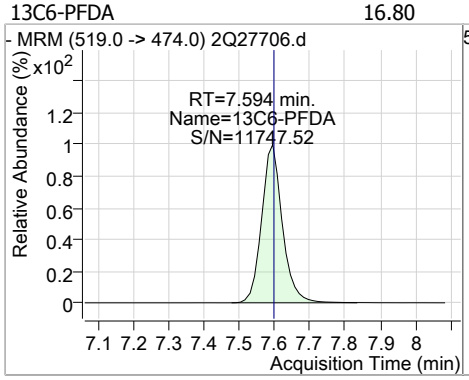


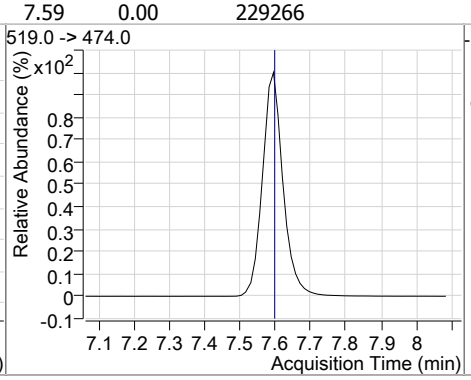
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.71	7.45	0.00	28201				

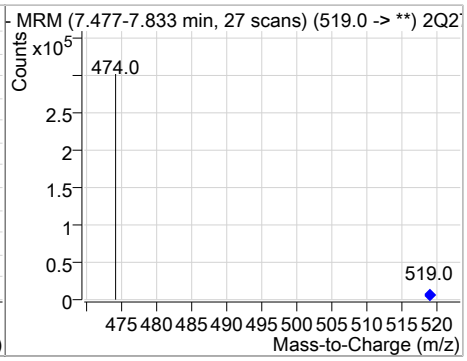


Perfluorinated Compounds by LC/MS/MS

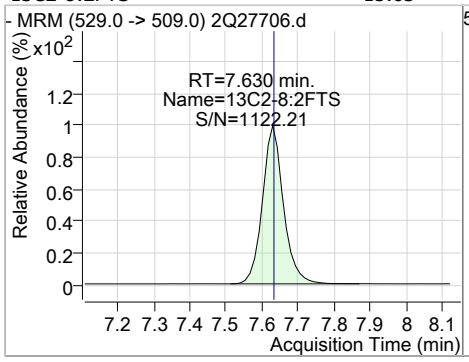
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.80	7.59	0.00	229266				

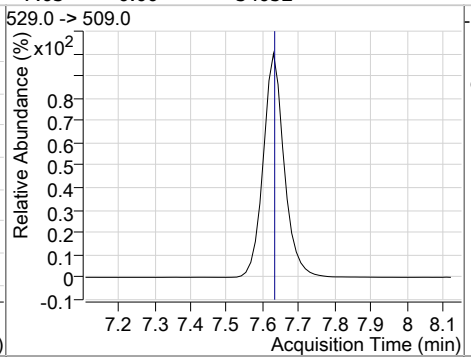


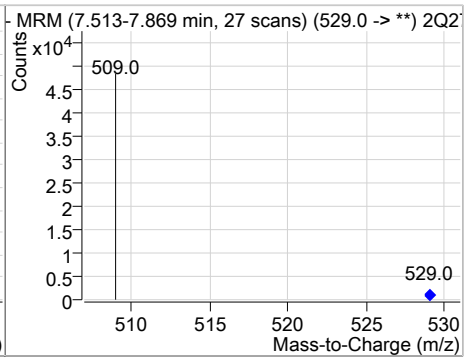




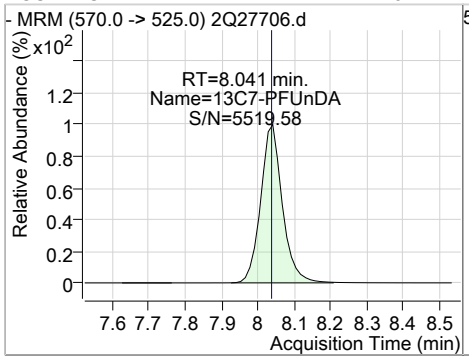
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.63	7.63	0.00	34652				

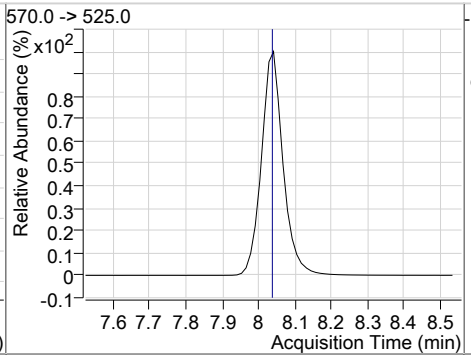


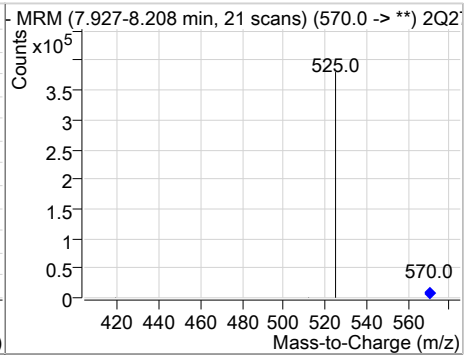




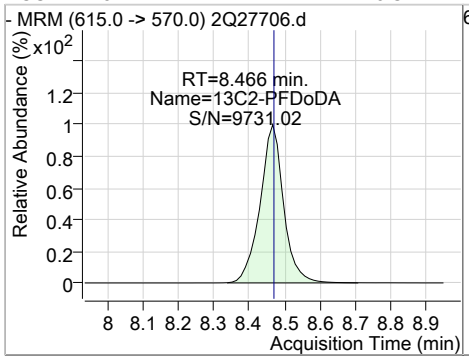
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.04	8.04	0.00	288376				

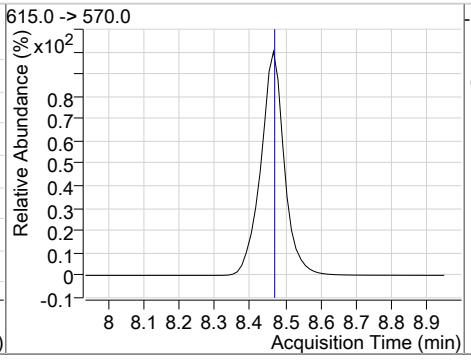


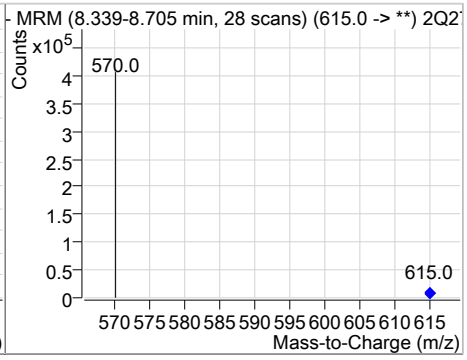




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.31	8.47	0.00	306690				

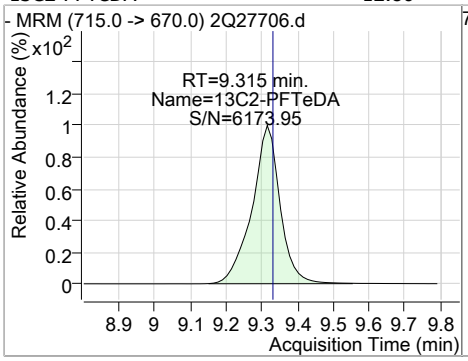


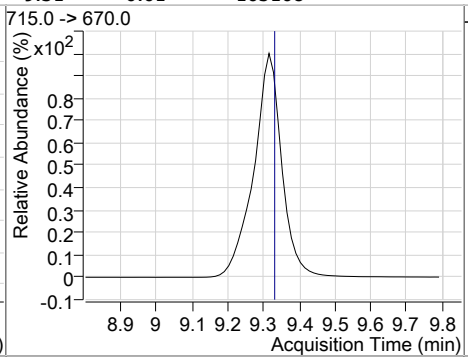


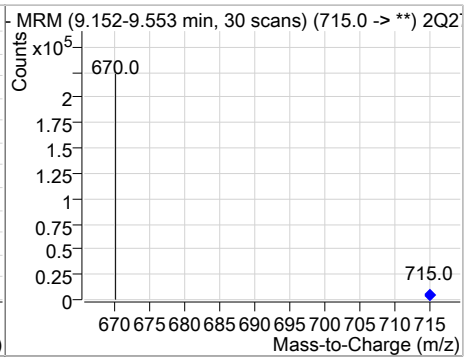


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.86	9.31	-0.01	165168				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27707.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 7:57:09 PM
Sample Name : fa62220-11
Vial : Vial 27
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

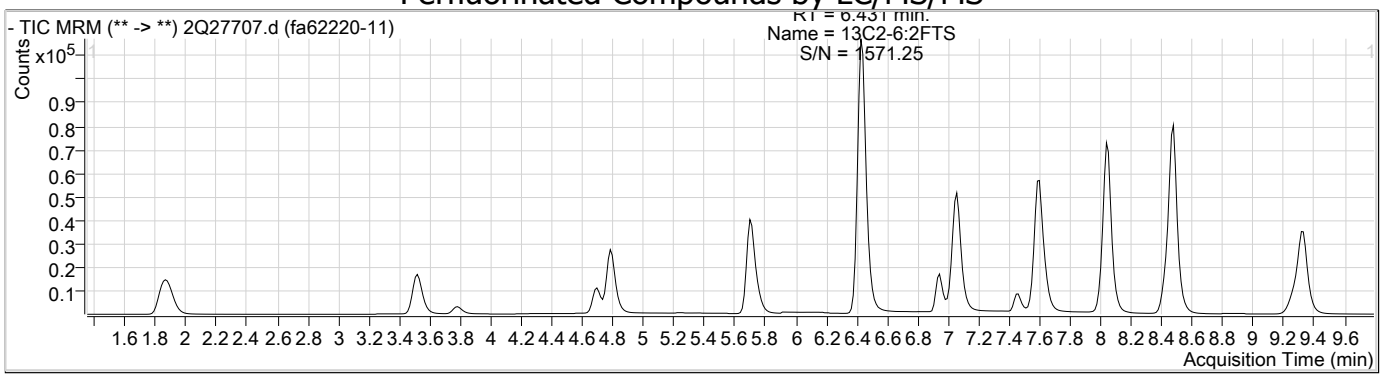
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	242545	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	33698	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	92126	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	76811	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	107727	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	155844	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	174851	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	165410	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	208427	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	294329	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	352688	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	193658	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	57096	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	13404	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	14010	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	16723	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	43596	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	56977	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	32015	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	26705	20.00	µg/L	0.013
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	43469	14.62	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.1%		
13C2-6:2FTS	6.431	429.0 -> 409.0	56989	17.76	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%		
13C2-8:2FTS	7.642	529.0 -> 509.0	32021	14.44	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.2%		
13C2-PFDoDA	8.479	615.0 -> 570.0	352562	18.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.7%		
13C2-PFTeDA	9.315	715.0 -> 670.0	192887	15.02	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.1%		
13C3-PFBS	3.780	302.0 -> 99.0	13386	14.68	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.4%		
13C3-PFHxS	5.748	402.0 -> 99.0	13998	13.73	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.7%		
13C4-PFBA	1.865	217.0 -> 172.0	91908	15.33	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.6%		
13C4-PFHpA	5.705	367.0 -> 322.0	155798	15.06	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.3%		
13C5-PFHxA	4.789	318.0 -> 273.0	107605	14.81	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%		
13C5-PFPeA	3.524	268.0 -> 223.0	76901	15.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.6%		
13C6-PFDA	7.594	519.0 -> 474.0	208593	15.29	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

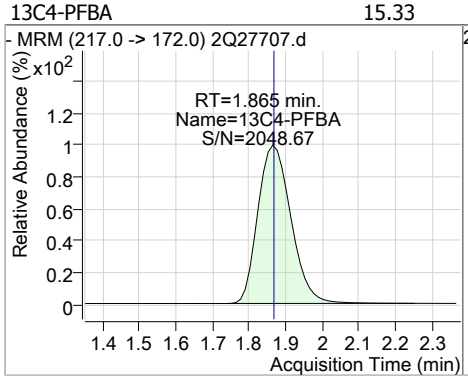
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%	
13C7-PFUnDA	8.041	570.0 -> 525.0	294161	17.38 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%	
13C8-FOSA	6.944	506.0 -> 78.0	57099	14.08 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.4%	
13C8-PFOA	6.434	421.0 -> 376.0	174762	16.75 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%	
13C8-PFOS	7.045	507.0 -> 99.0	16718	12.83 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.1%	
13C9-PFNA	7.065	472.0 -> 427.0	165399	15.62 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.1%	
d3-MeFOSAA	7.459	573.0 -> 419.0	26711	13.93 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.7%	
M2-PFOA	6.435	415.0 -> 370.0	242619	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.048	503.0 -> 80.0	33719	20.00 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

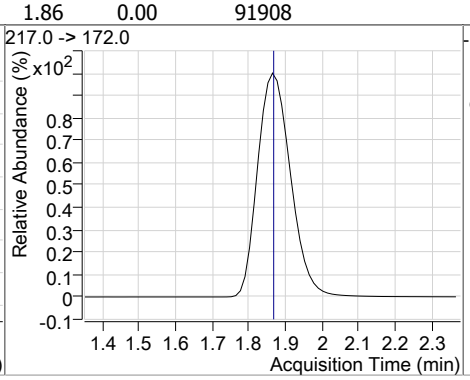
 # = Qualifier out of range, m = manually integrated, + = Area summed

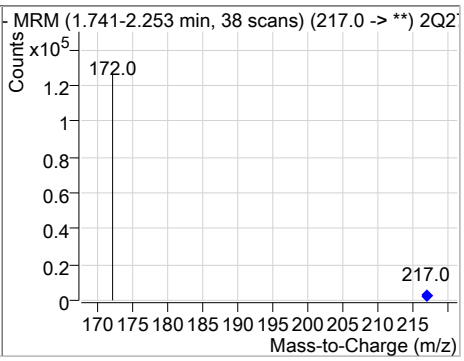
Perfluorinated Compounds by LC/MS/MS



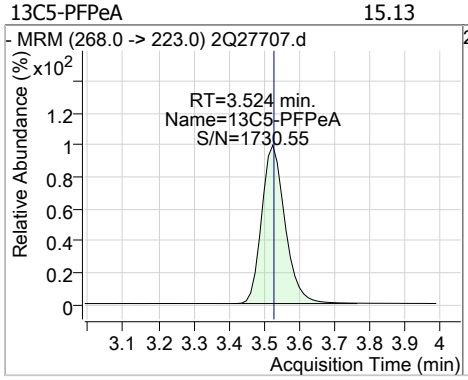
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.33	1.86	0.00	91908				

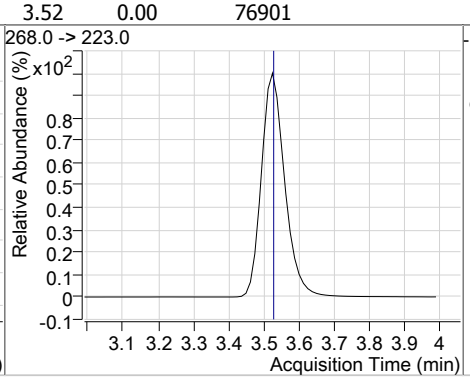


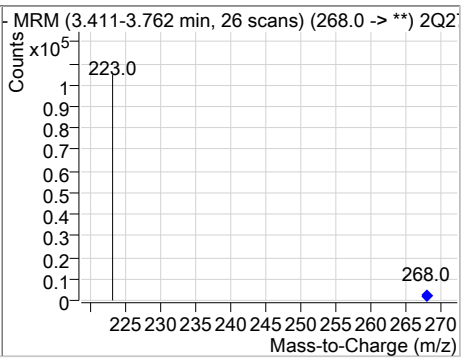




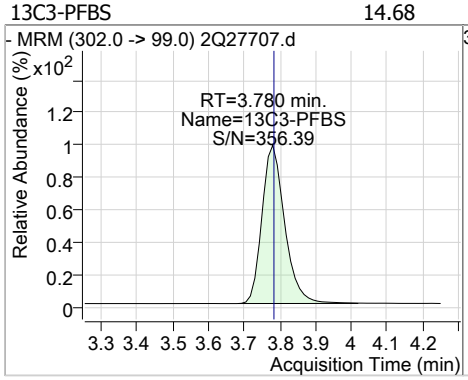
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.13	3.52	0.00	76901				

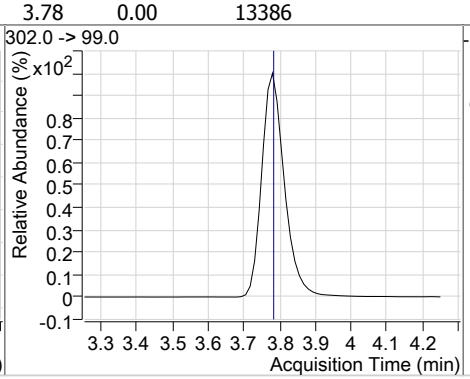


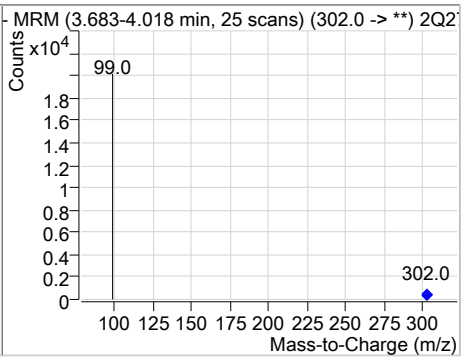




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.68	3.78	0.00	13386				

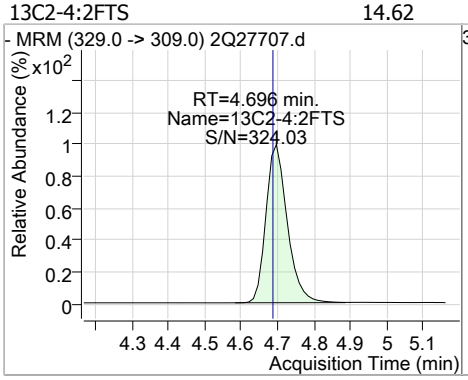


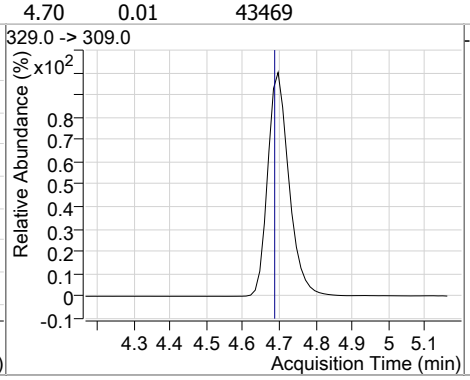


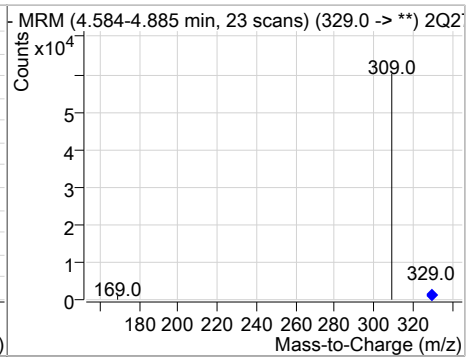


Perfluorinated Compounds by LC/MS/MS

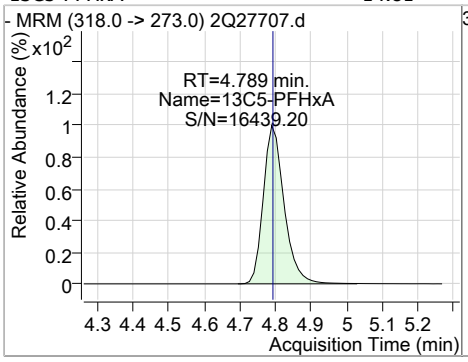
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.62	4.70	0.01	43469				

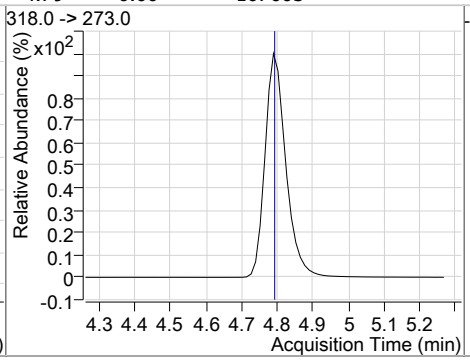


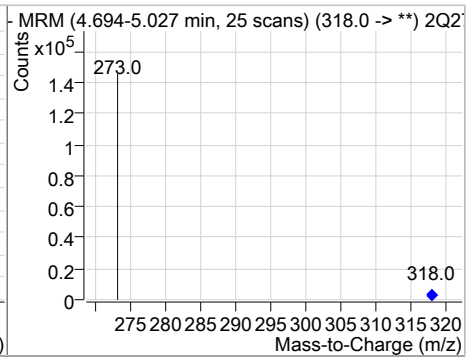




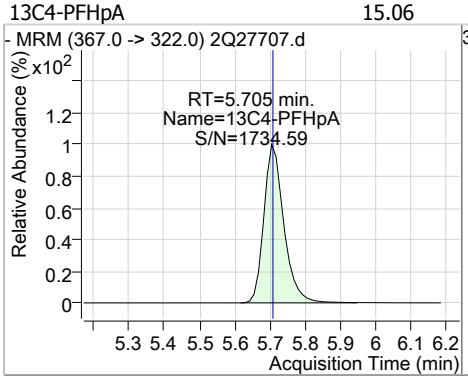
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.81	4.79	0.00	107605				

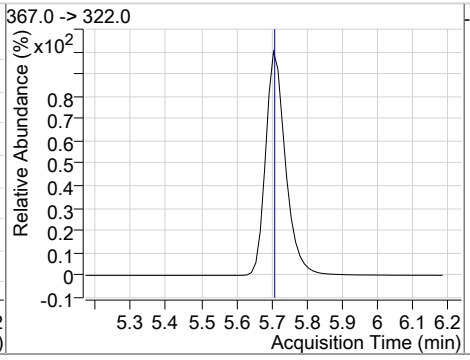


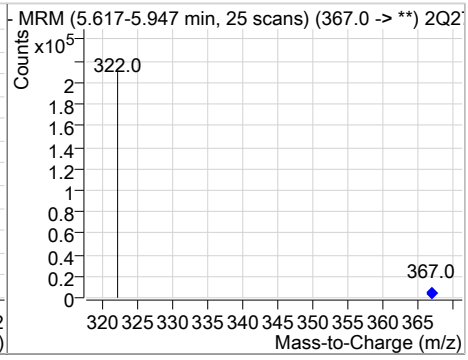




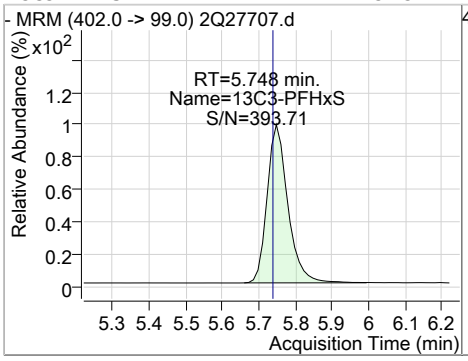
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.06	5.71	0.00	155798				

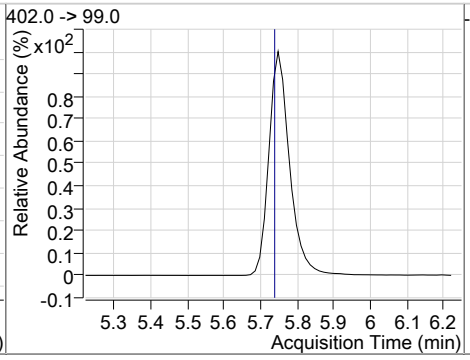


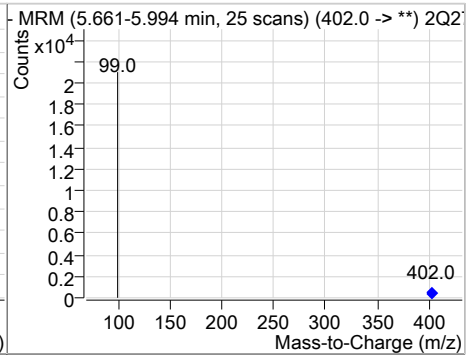




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	13.73	5.75	0.01	13998				

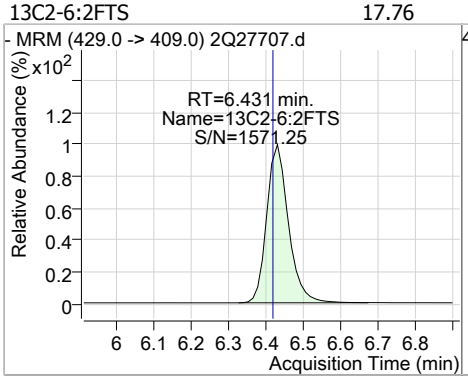


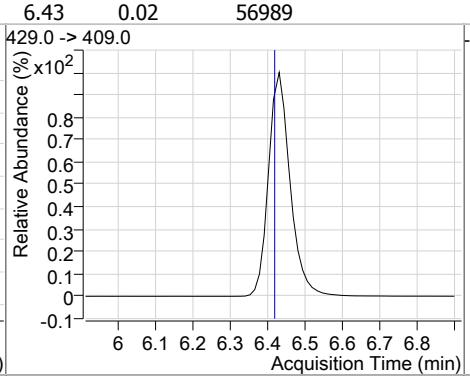


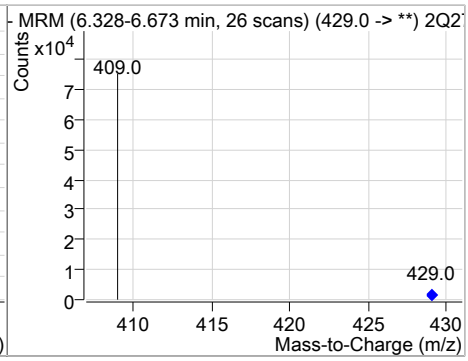


Perfluorinated Compounds by LC/MS/MS

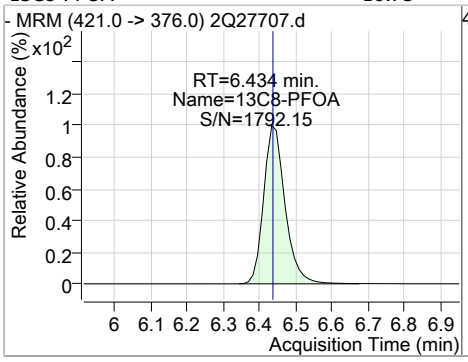
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.76	6.43	0.02	56989				

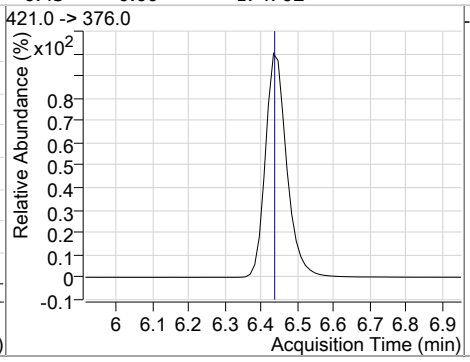


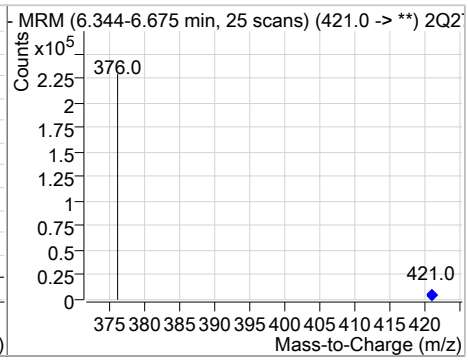




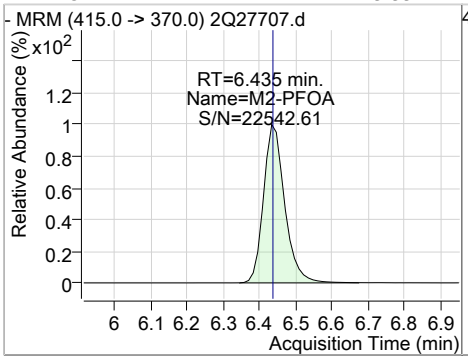
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.75	6.43	0.00	174762				

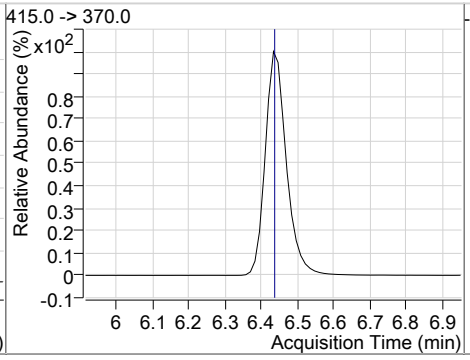


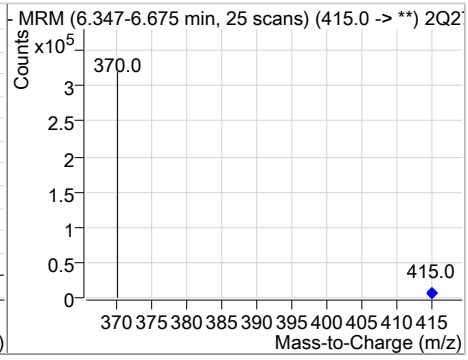




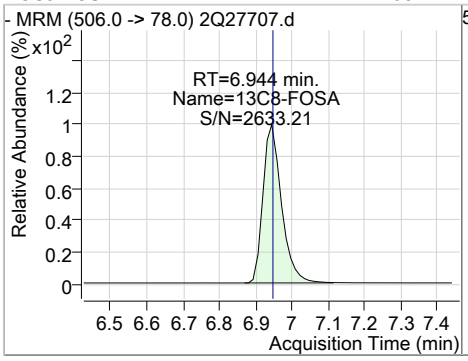
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	242619				

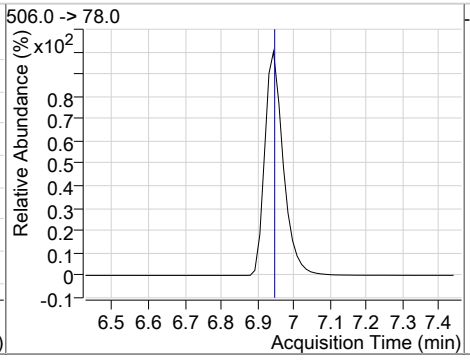


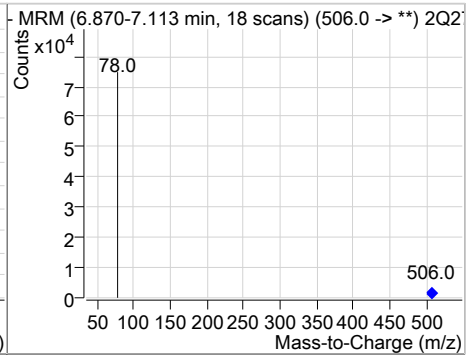




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.08	6.94	0.00	57099				

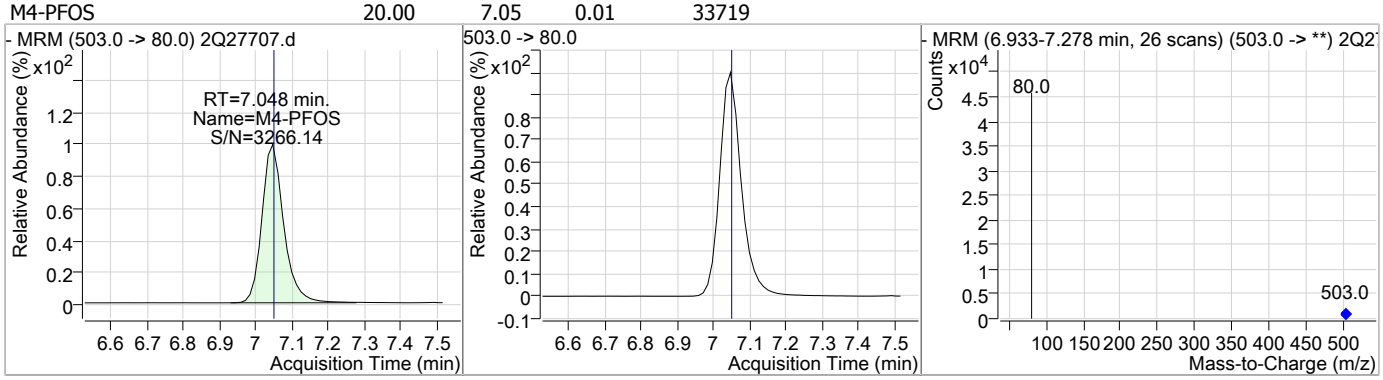




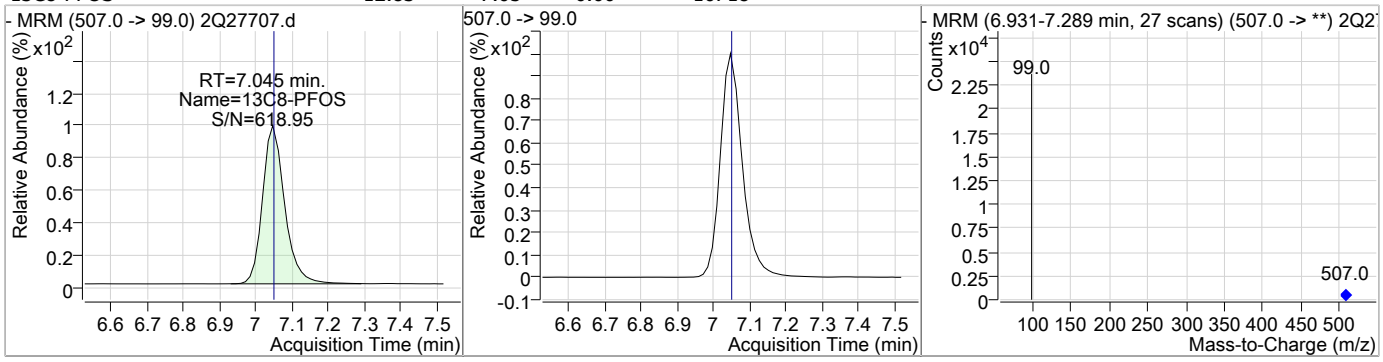


Perfluorinated Compounds by LC/MS/MS

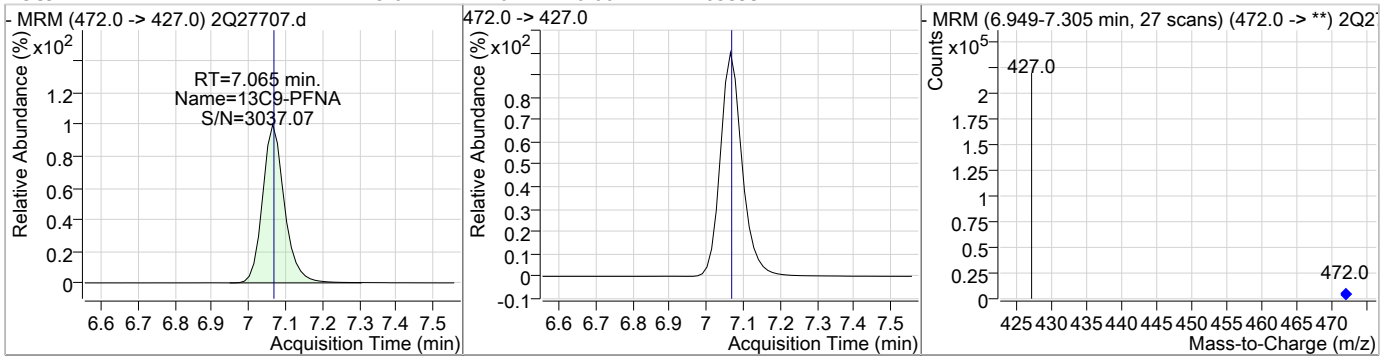
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.01	33719				



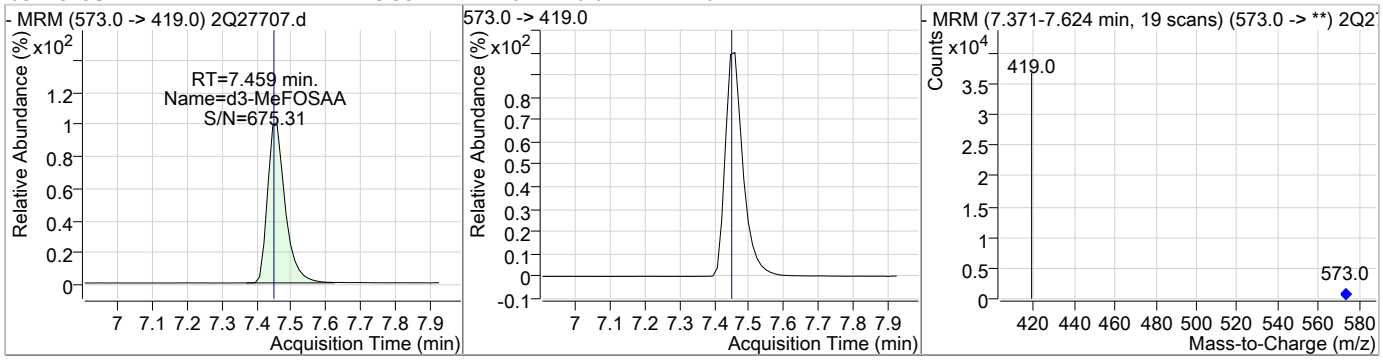
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.83	7.05	0.00	16718				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	15.62	7.07	0.00	165399				

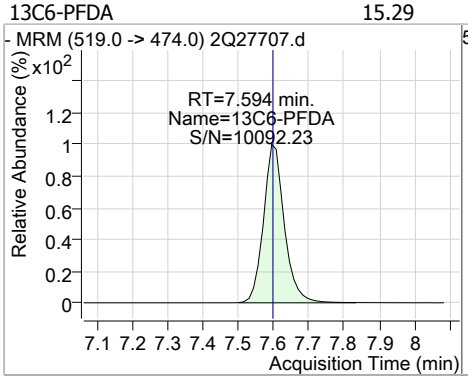


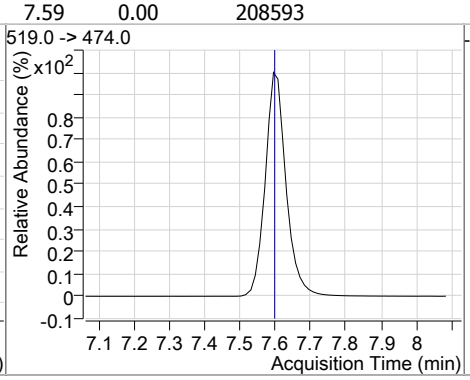
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	13.93	7.46	0.01	26711				

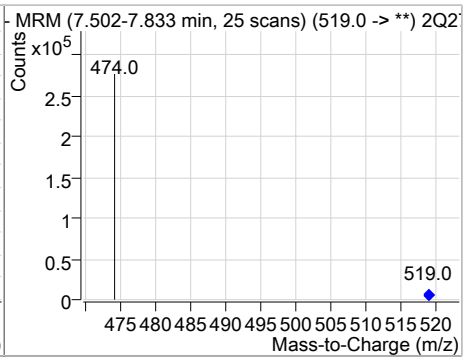


Perfluorinated Compounds by LC/MS/MS

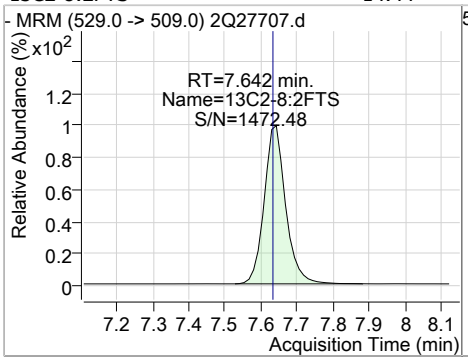
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.29	7.59	0.00	208593				

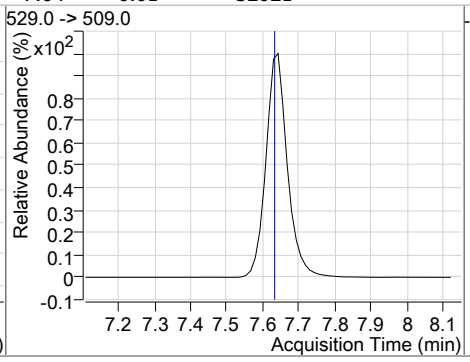


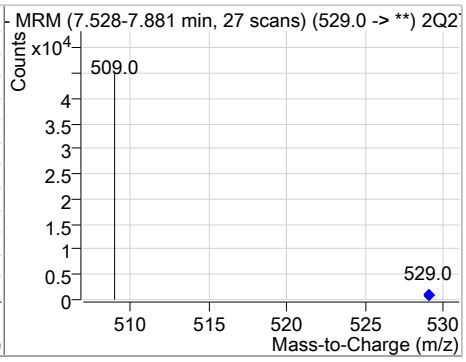




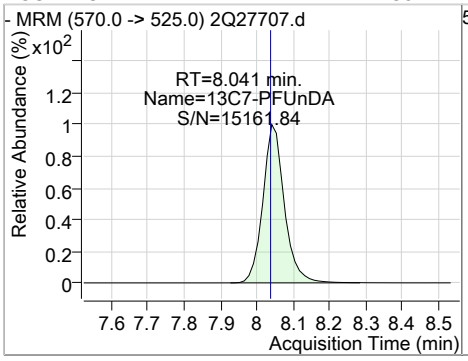
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.44	7.64	0.01	32021				

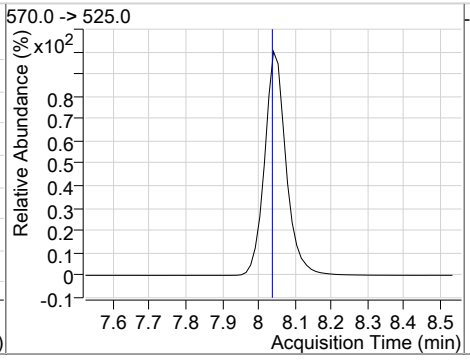


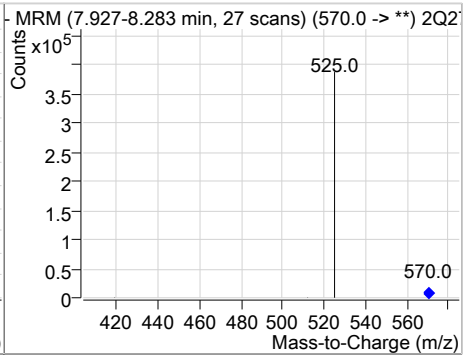




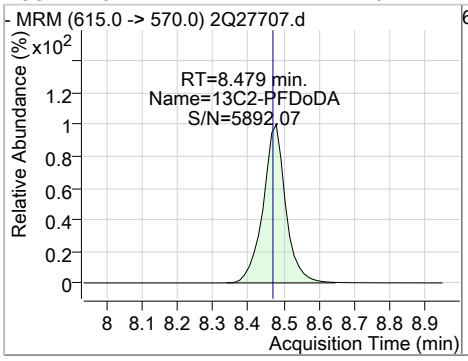
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.38	8.04	0.00	294161				

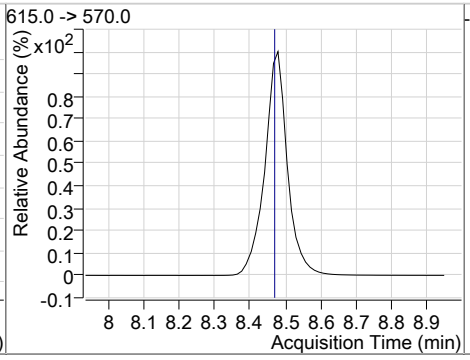


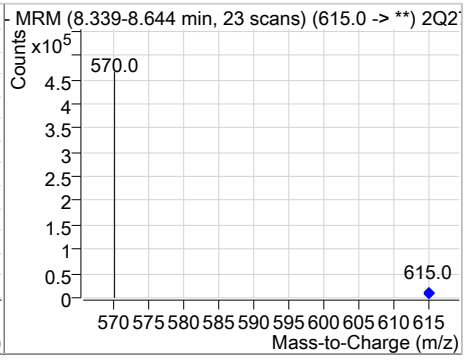




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.74	8.48	0.01	352562				

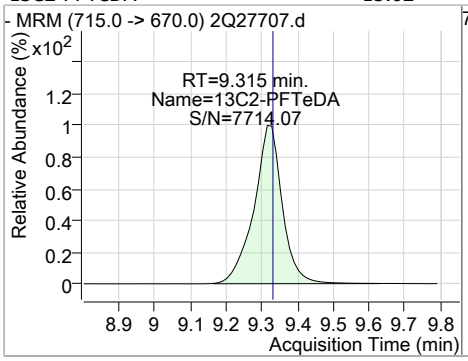


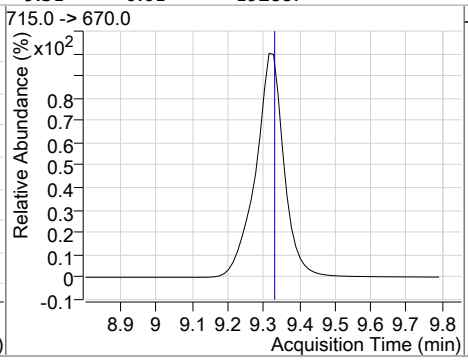


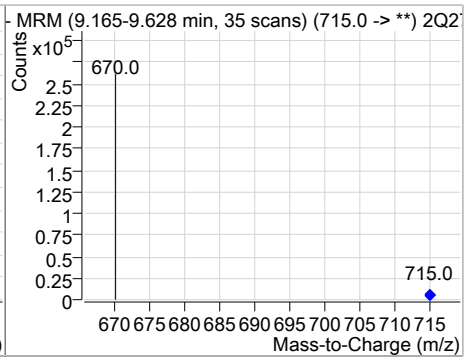


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.02	9.31	-0.01	192887				







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27708.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:12:53 PM
Sample Name : fa62220-12
Vial : Vial 28
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

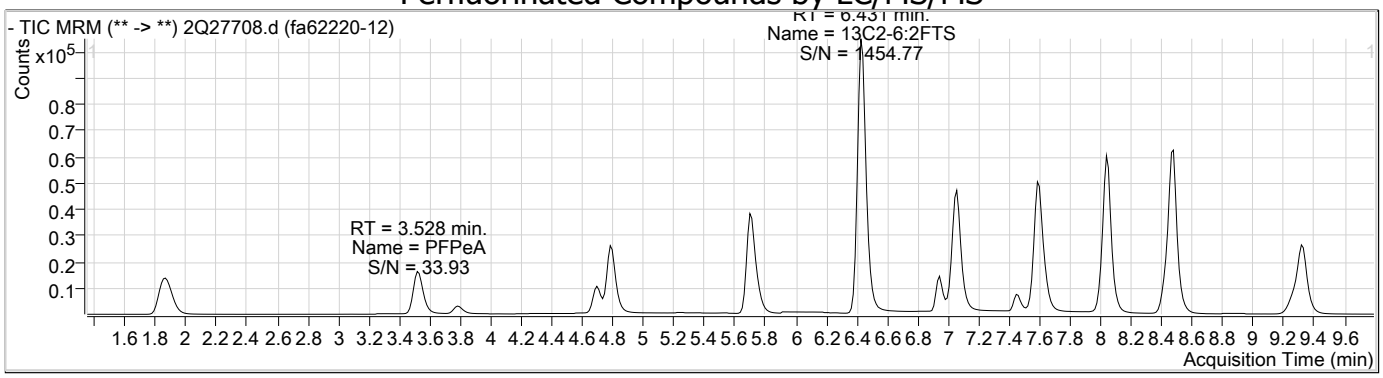
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	216370	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	30828	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	83665	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	70851	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	100674	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	146433	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	155558	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	150420	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	183121	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	243290	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	280615	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	144162	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	47378	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	12108	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	13481	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	15017	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	40739	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	49748	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	28353	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	22428	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	40684	13.68	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.4%		
13C2-6:2FTS	6.431	429.0 -> 409.0	49736	15.50	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%		
13C2-8:2FTS	7.630	529.0 -> 509.0	28324	12.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.9%		
13C2-PFDoDA	8.479	615.0 -> 570.0	280501	14.91	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.6%		
13C2-PFTeDA	9.315	715.0 -> 670.0	143852	11.20	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 56.0%		
13C3-PFBS	3.780	302.0 -> 99.0	12088	13.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.3%		
13C3-PFHxS	5.748	402.0 -> 99.0	13485	13.23	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.1%		
13C4-PFBA	1.865	217.0 -> 172.0	83509	13.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.6%		
13C4-PFHpA	5.705	367.0 -> 322.0	146302	14.15	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.7%		
13C5-PFHxA	4.789	318.0 -> 273.0	100581	13.84	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.2%		
13C5-PFPeA	3.524	268.0 -> 223.0	70859	13.94	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.7%		
13C6-PFDA	7.594	519.0 -> 474.0	183112	13.42	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

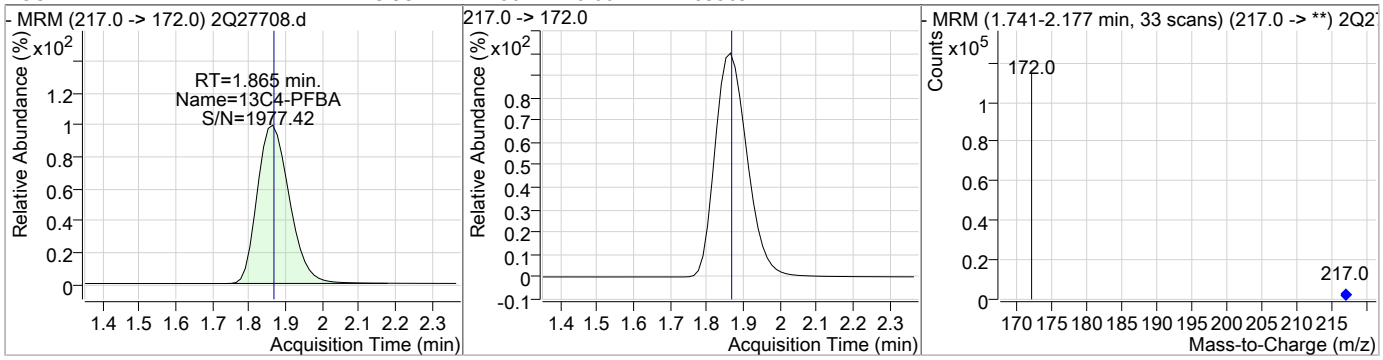
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.1%			
13C7-PFUnDA	8.041	570.0 -> 525.0	243200	14.37	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.9%			
13C8-FOSA	6.944	506.0 -> 78.0	47384	11.69	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.4%			
13C8-PFOA	6.434	421.0 -> 376.0	155449	14.90	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.5%			
13C8-PFOS	7.045	507.0 -> 99.0	15031	11.53	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 57.7%			
13C9-PFNA	7.065	472.0 -> 427.0	150446	14.21	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.0%			
d3-MeFOSAA	7.447	573.0 -> 419.0	22416	11.69	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.5%			
M2-PFOA	6.435	415.0 -> 370.0	216511	19.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	30845	20.00	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.860	213.0 -> 169.0	513	0.62	µg/L		100
PFBS	3.783	299.0 -> 80.0	487	0.51	µg/L		89
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.791	313.0 -> 269.0	1637	0.94	µg/L		98
PFHxS	5.751	399.0 -> 80.0	2619	3.51	µg/L	m	96
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.437	413.0 -> 369.0	3249	0.77	µg/L	m	100
PFOS	6.832	499.0 -> 80.0	624	0.86	µg/L	#m	66
PFPeA	3.528	263.0 -> 219.0	2604	0.85	µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

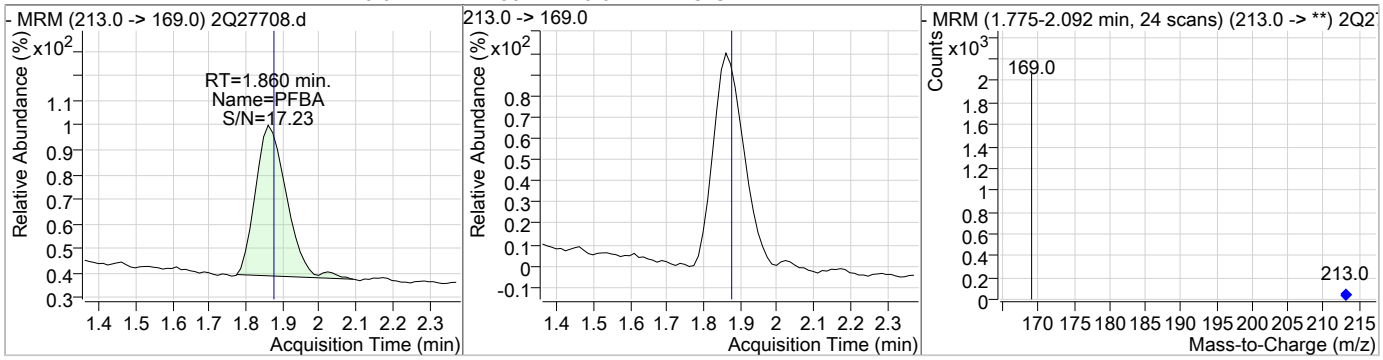
Perfluorinated Compounds by LC/MS/MS



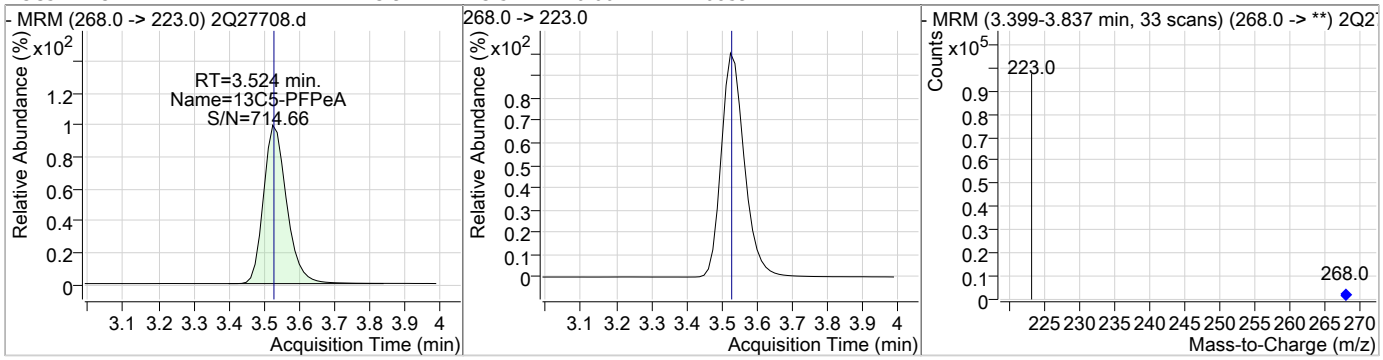
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.93	1.86	0.00	83509				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.62	1.86	-0.01	513				

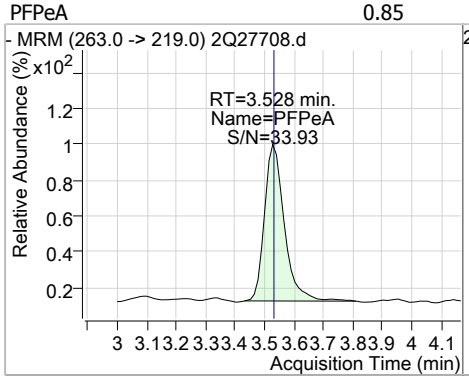


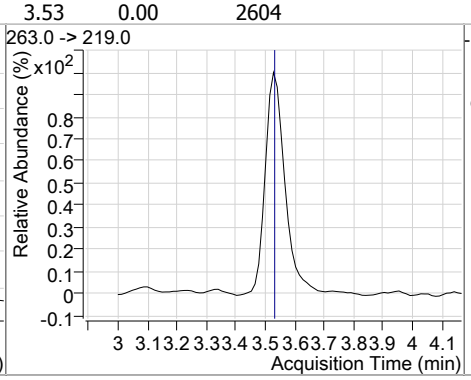
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.94	3.52	0.00	70859				

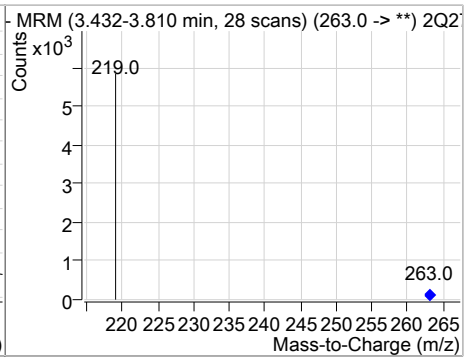


Perfluorinated Compounds by LC/MS/MS

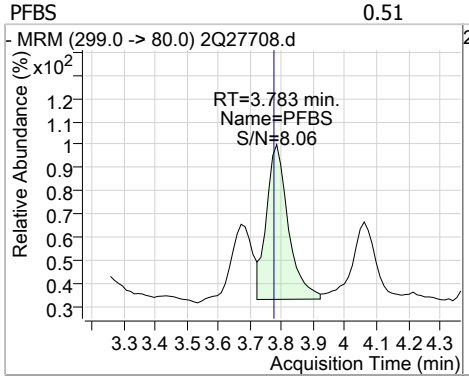
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.85	3.53	0.00	2604				

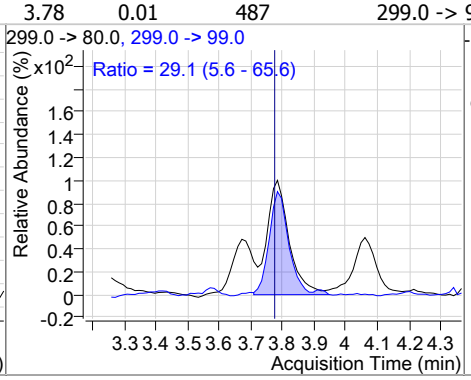


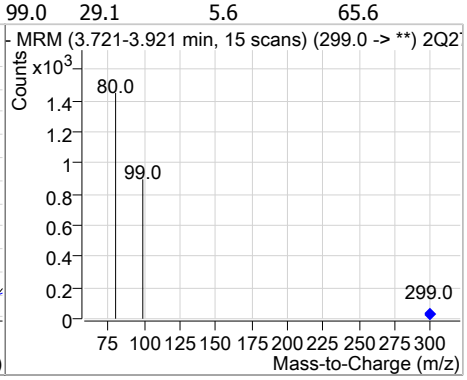




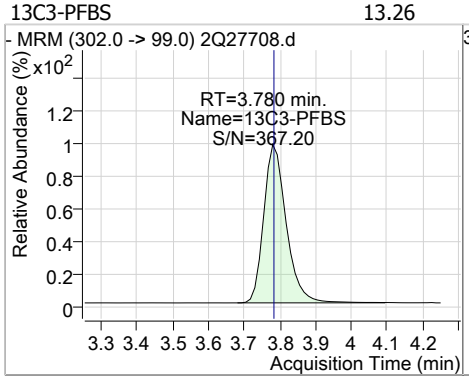
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.51	3.78	0.01	487	299.0 -> 99.0	29.1	5.6	65.6

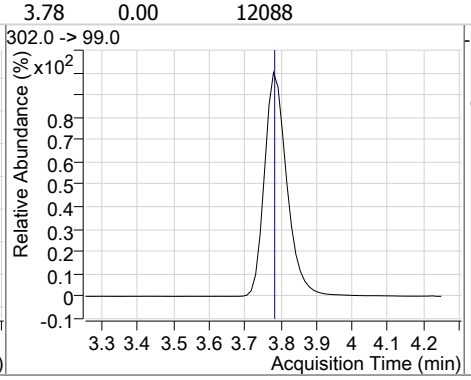


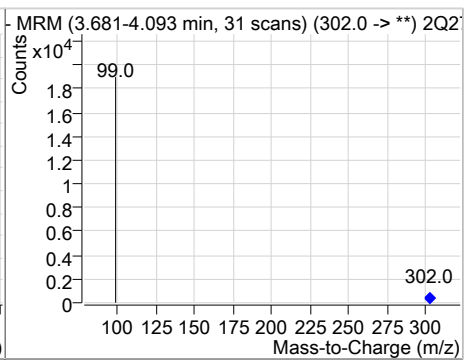




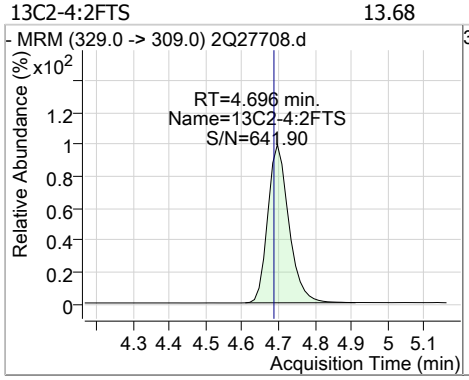
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	13.26	3.78	0.00	12088				

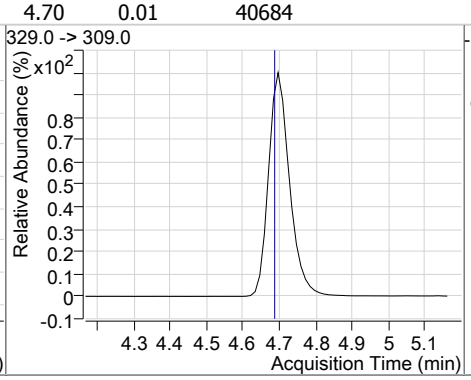


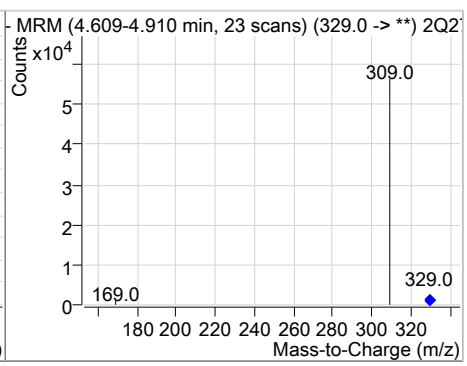




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	13.68	4.70	0.01	40684				

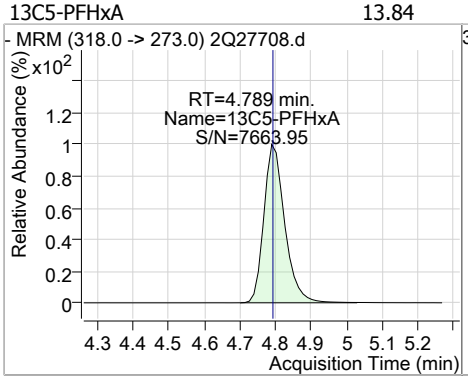


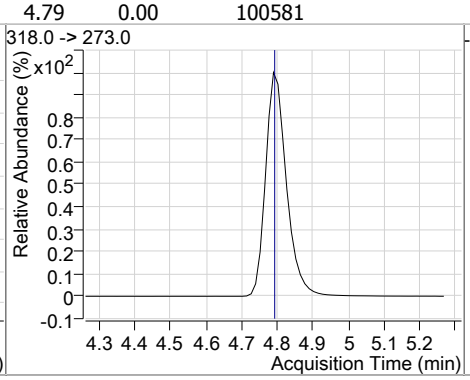


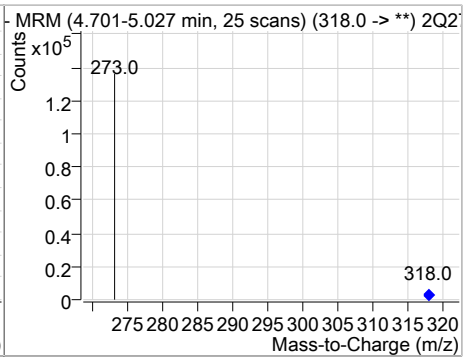


Perfluorinated Compounds by LC/MS/MS

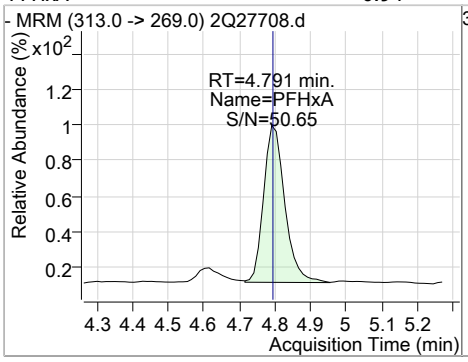
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.84	4.79	0.00	100581				

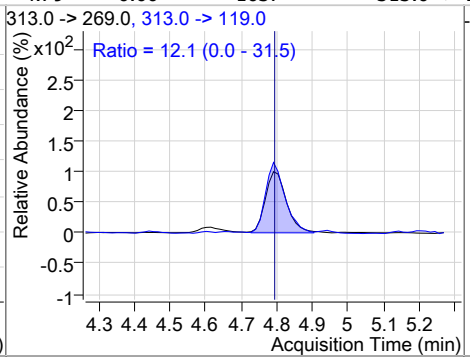


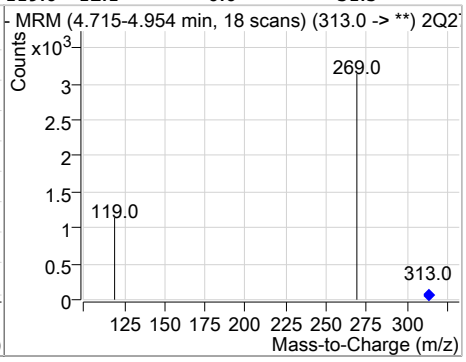




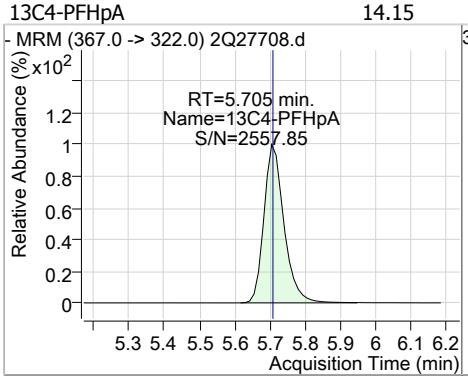
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.94	4.79	0.00	1637	313.0 -> 119.0	12.1	0.0	31.5

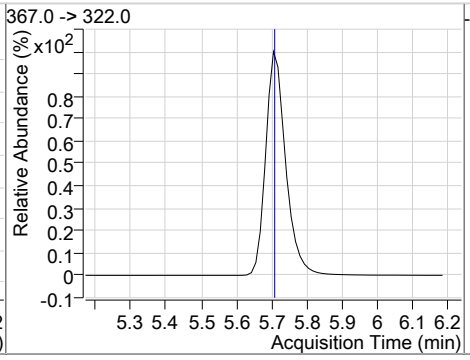


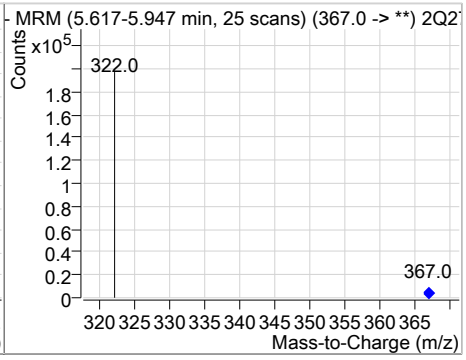




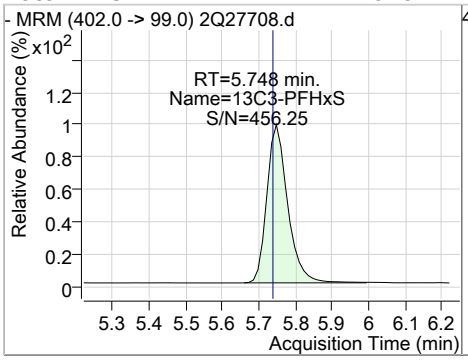
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	14.15	5.71	0.00	146302				

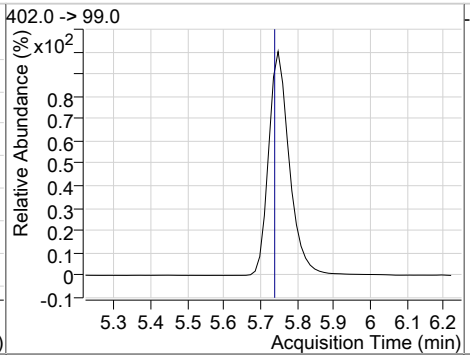


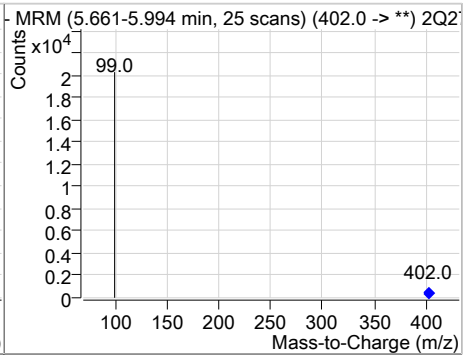




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	13.23	5.75	0.01	13485				

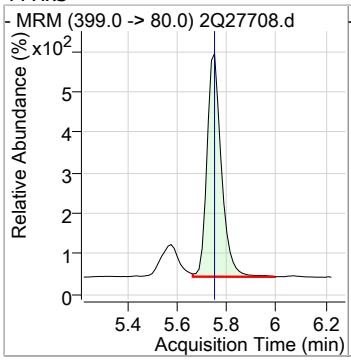


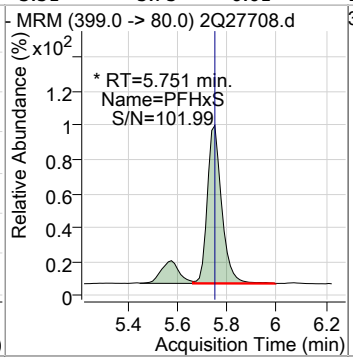


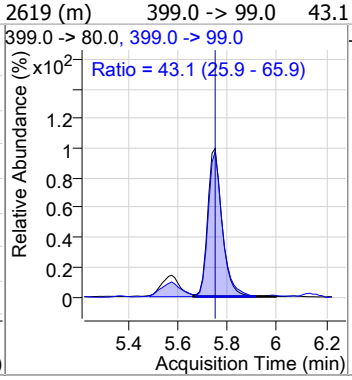


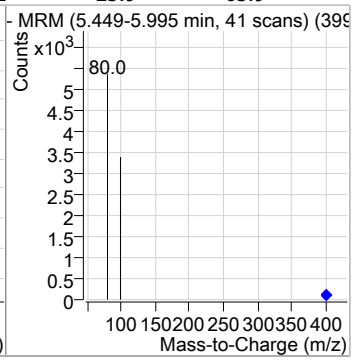
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	3.51	5.75	0.01	2619 (m)	399.0 -> 99.0	43.1	25.9	65.9

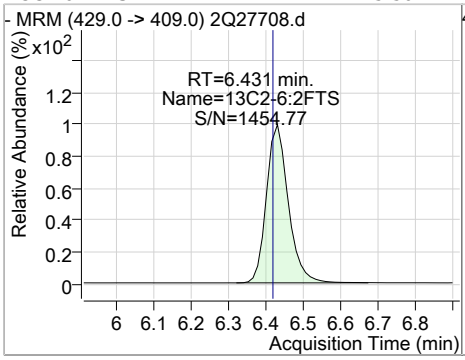


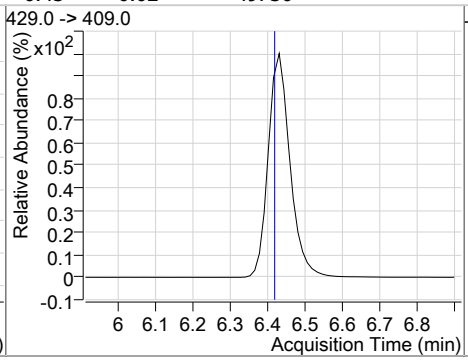


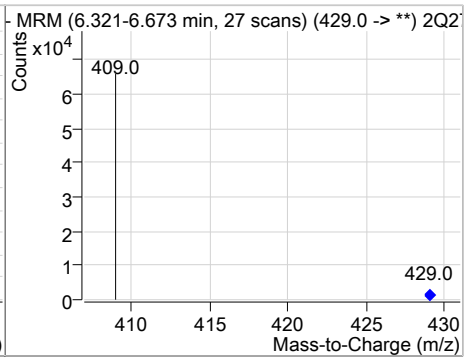




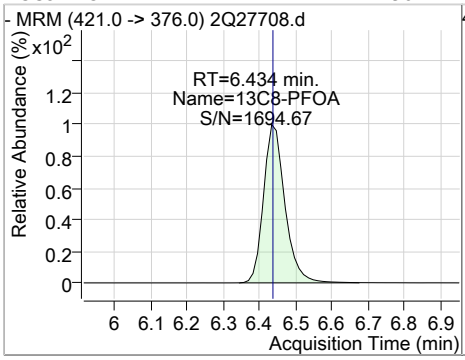
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.50	6.43	0.02	49736				

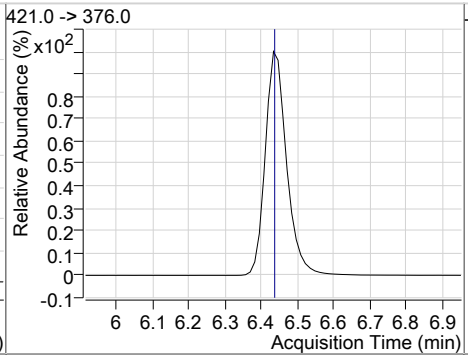


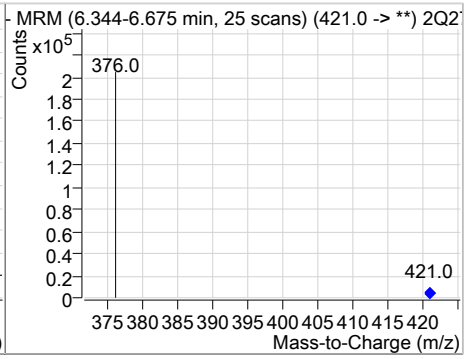




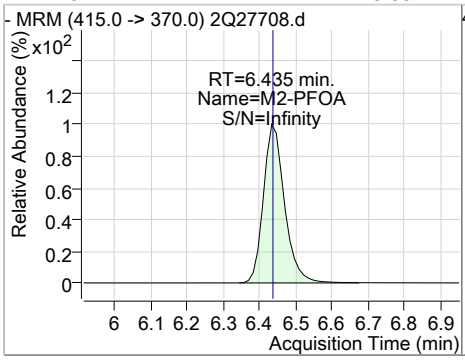
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.90	6.43	0.00	155449				

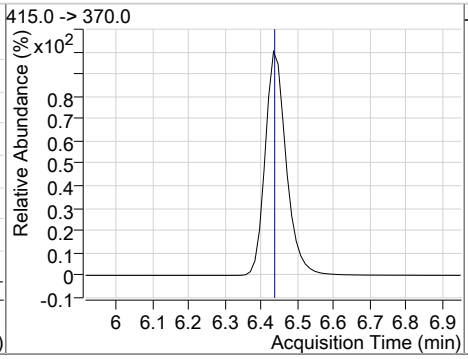


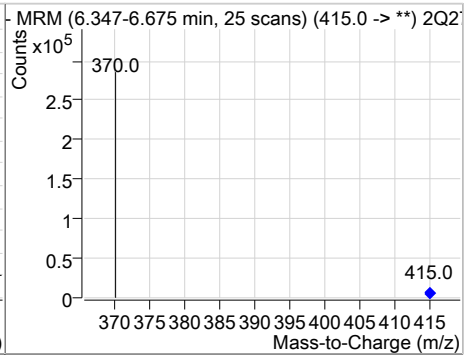




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	216511				

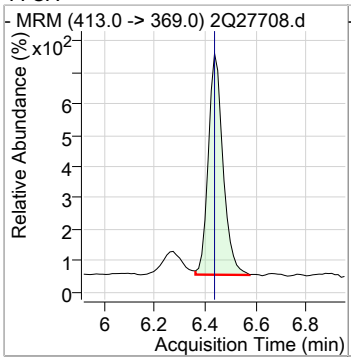


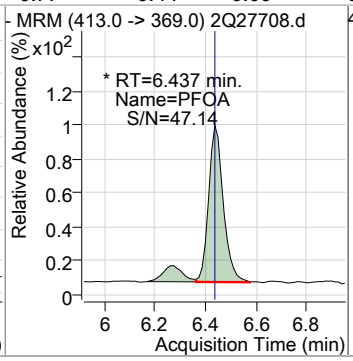


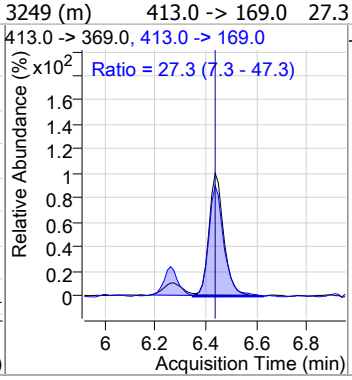


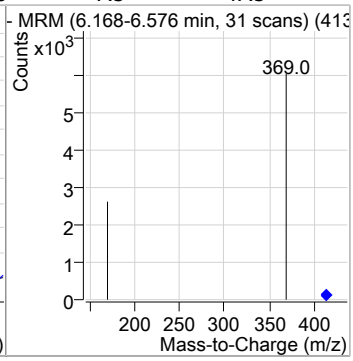
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.77	6.44	0.00	3249 (m)	413.0 -> 169.0	27.3	7.3	47.3

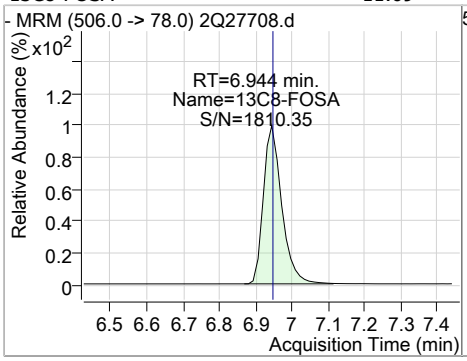


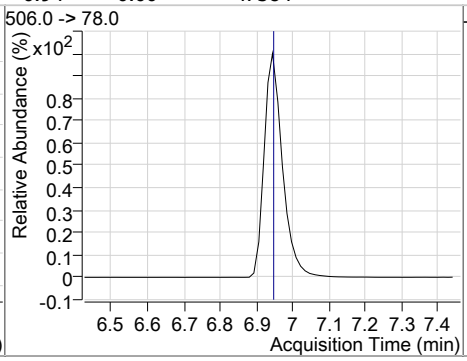


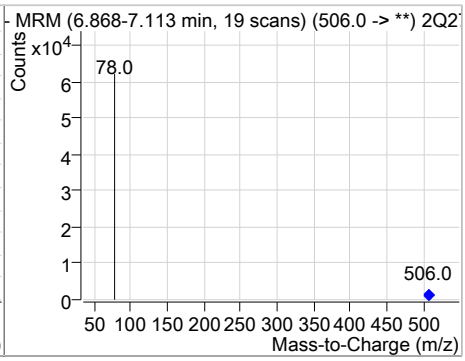




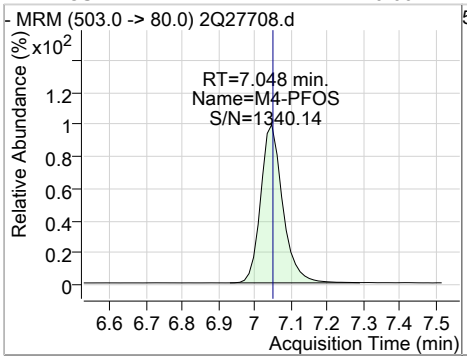
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	11.69	6.94	0.00	47384				

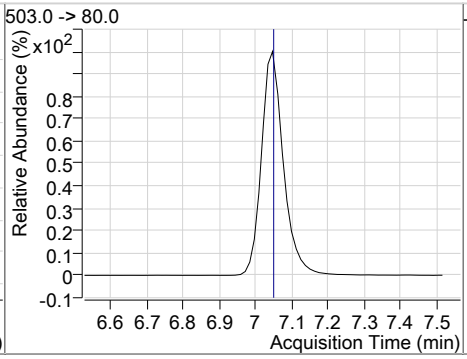


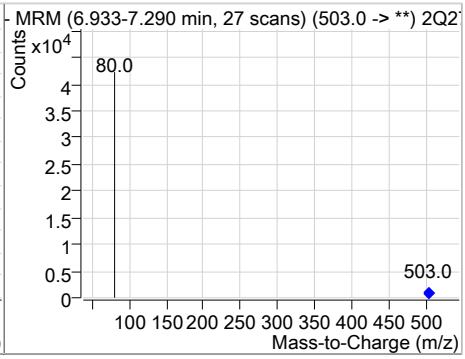




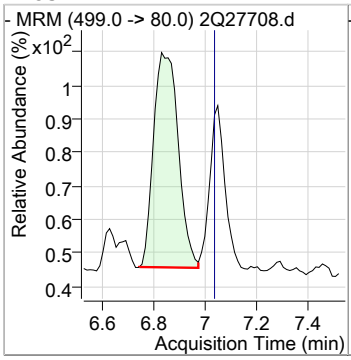
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.01	30845				

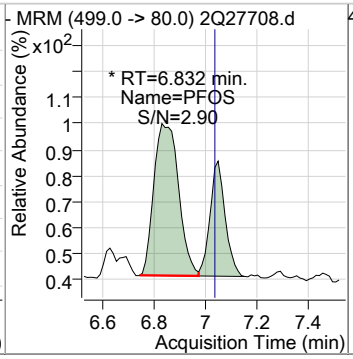


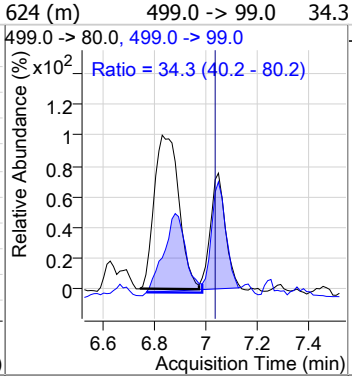


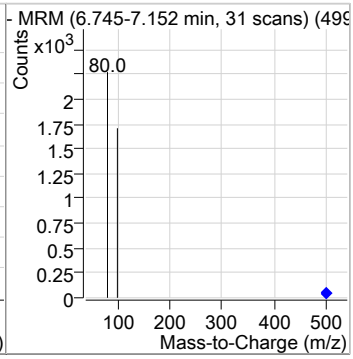


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.86	6.83	-0.21	624 (m)	499.0 -> 99.0	34.3	40.2	80.2



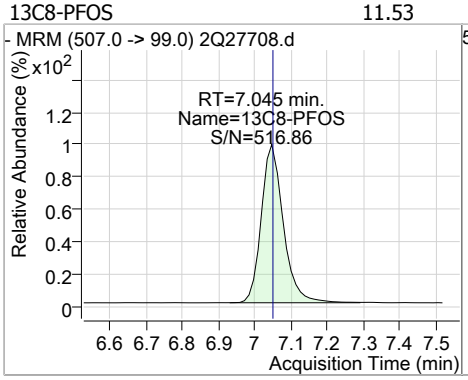


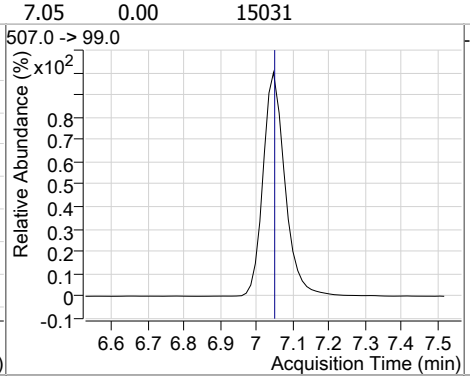


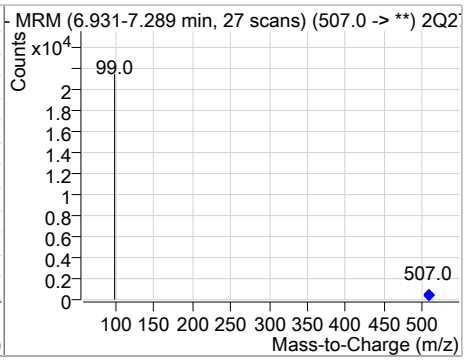


Perfluorinated Compounds by LC/MS/MS

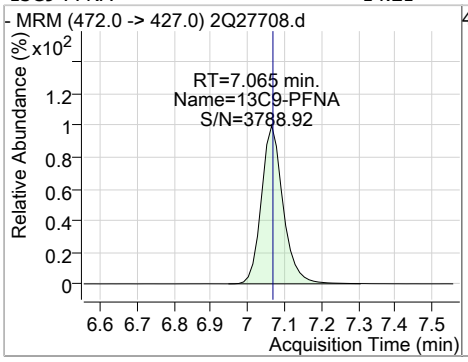
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	11.53	7.05	0.00	15031				

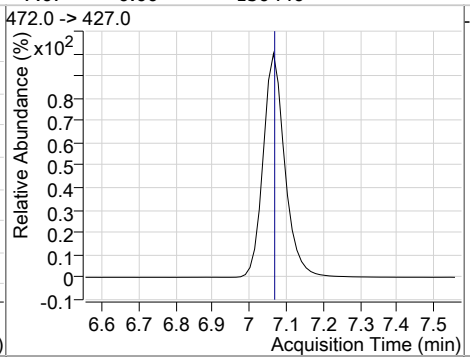


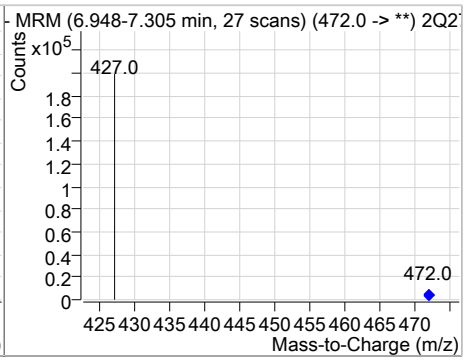




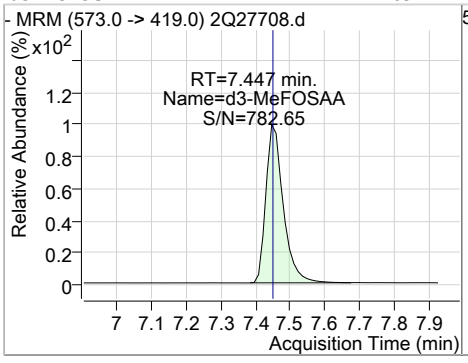
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	14.21	7.07	0.00	150446				

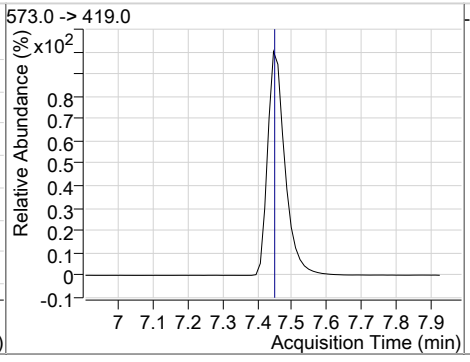


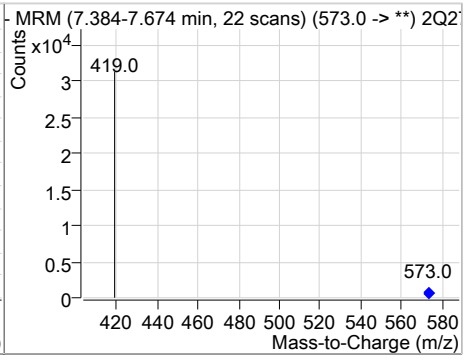




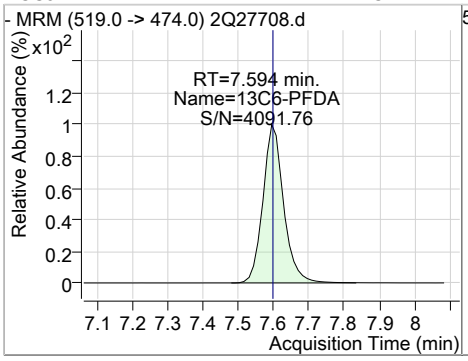
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	11.69	7.45	0.00	22416				

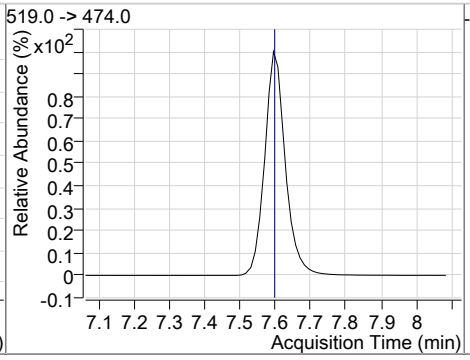


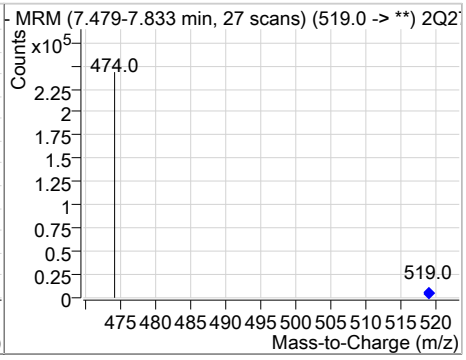




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	13.42	7.59	0.00	183112				

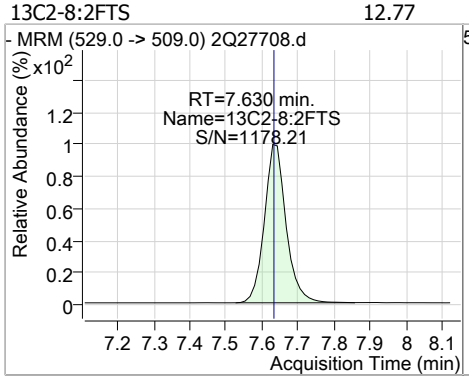


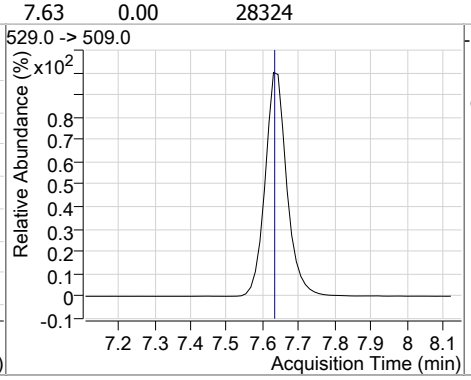


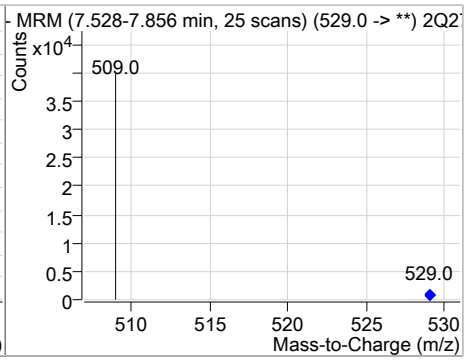


Perfluorinated Compounds by LC/MS/MS

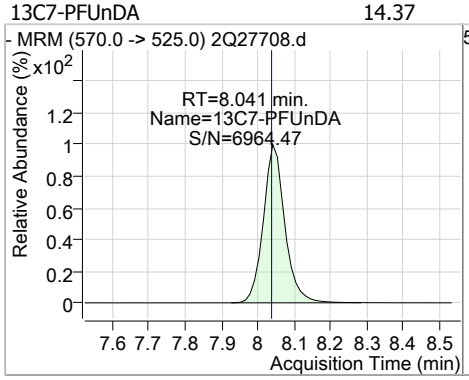
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	12.77	7.63	0.00	28324				

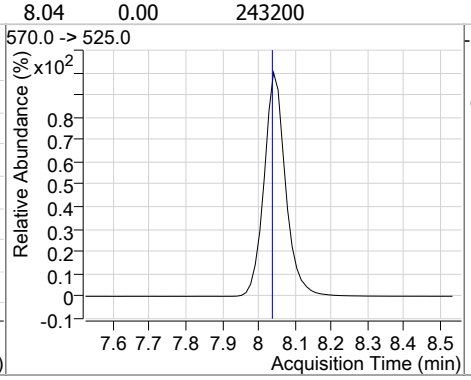


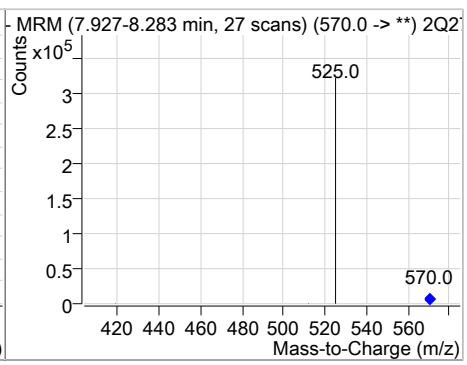




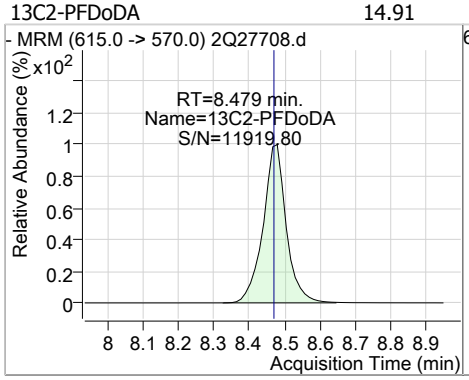
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.37	8.04	0.00	243200				

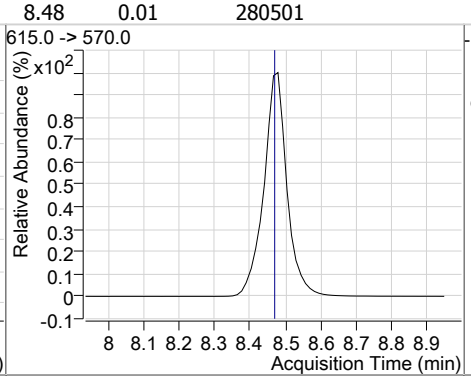


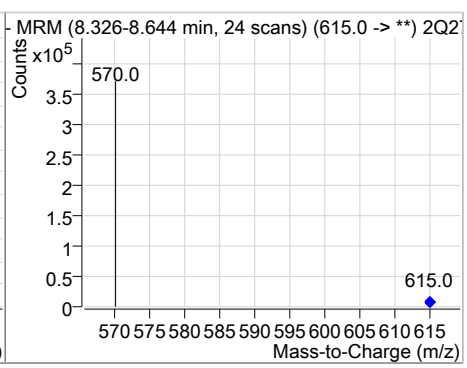




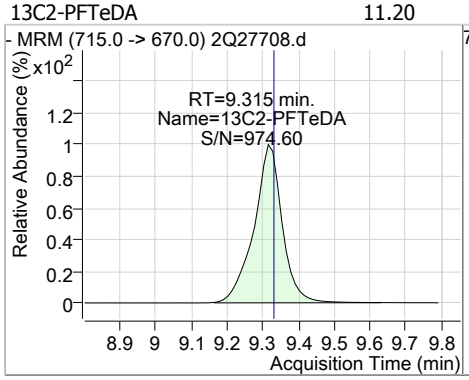
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.91	8.48	0.01	280501				

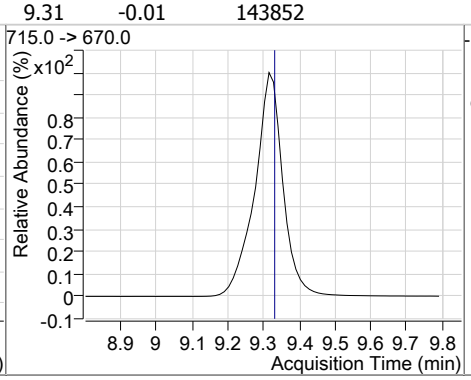


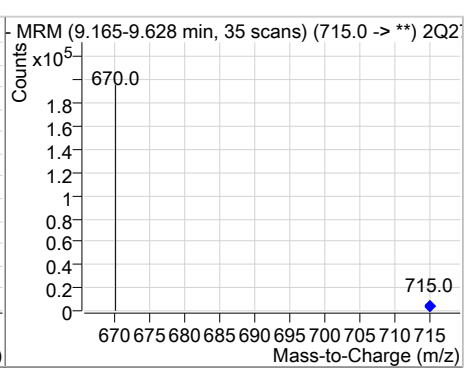




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	11.20	9.31	-0.01	143852				







Manual Integration Approval Summary

Sample Number: FA62220-12
Lab FileID: 2Q27708.D
Injection Time: 03/18/19 20:12
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanoic acid	335-67-1		6.44	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.83	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27709.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:28:38 PM
Sample Name : fa62220-13
Vial : Vial 29
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

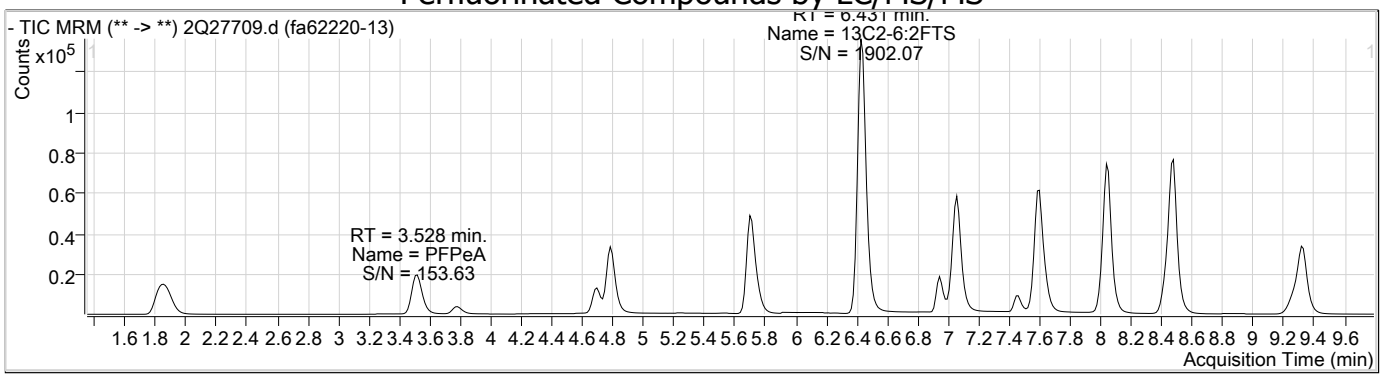
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	286411	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	38937	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	104610	20.00	µg/L	-0.013
M5-PFPeA	3.524	268.0 -> 223.0	89457	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	128320	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	186432	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	200942	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	187237	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	226109	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	304648	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	348750	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	185354	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	62257	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	15494	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	16797	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	17609	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	51559	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	64697	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	34372	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	28711	20.00	µg/L	0.013
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	51538	17.33	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	64705	20.16	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%		
13C2-8:2FTS	7.642	529.0 -> 509.0	34378	15.50	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%		
13C2-PFDoDA	8.479	615.0 -> 570.0	348665	18.54	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.7%		
13C2-PFTeDA	9.315	715.0 -> 670.0	185081	14.42	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.1%		
13C3-PFBS	3.780	302.0 -> 99.0	15467	16.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%		
13C3-PFHxS	5.748	402.0 -> 99.0	16795	16.48	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.4%		
13C4-PFBA	1.852	217.0 -> 172.0	104354	17.40	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%		
13C4-PFHpA	5.705	367.0 -> 322.0	186319	18.01	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%		
13C5-PFHxA	4.789	318.0 -> 273.0	128329	17.66	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	89375	17.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C6-PFDA	7.594	519.0 -> 474.0	226103	16.57	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

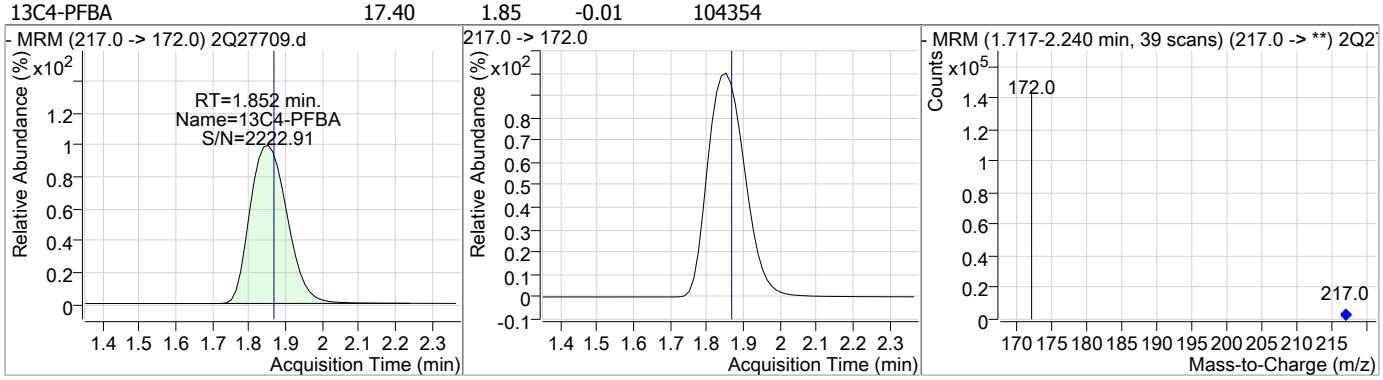
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.8%			
13C7-PFUnDA	8.041	570.0 -> 525.0	304632	18.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.0%			
13C8-FOSA	6.944	506.0 -> 78.0	62330	15.37	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.9%			
13C8-PFOA	6.434	421.0 -> 376.0	200827	19.25	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.3%			
13C8-PFOS	7.045	507.0 -> 99.0	17582	13.49	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.4%			
13C9-PFNA	7.066	472.0 -> 427.0	187184	17.68	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.4%			
d3-MeFOSAA	7.459	573.0 -> 419.0	28686	14.96	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.8%			
M2-PFOA	6.435	415.0 -> 370.0	286874	20.01	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
M4-PFOS	7.048	503.0 -> 80.0	38938	19.99	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.848	213.0 -> 169.0	705	0.68	µg/L		100
PFBS	3.771	299.0 -> 80.0	777	0.63	µg/L		93
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.791	313.0 -> 269.0	2923	1.32	µg/L		99
PFHxS	5.751	399.0 -> 80.0	2881	3.10	µg/L	m	99
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.437	413.0 -> 369.0	3416	0.63	µg/L	m	93
PFOS	6.844	499.0 -> 80.0	0	0.00	µg/L	m	1
PFPeA	3.528	263.0 -> 219.0	4719	1.22	µg/L		100
PFPeS	4.908	349.0 -> 80.0	397	0.50	µg/L		98
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

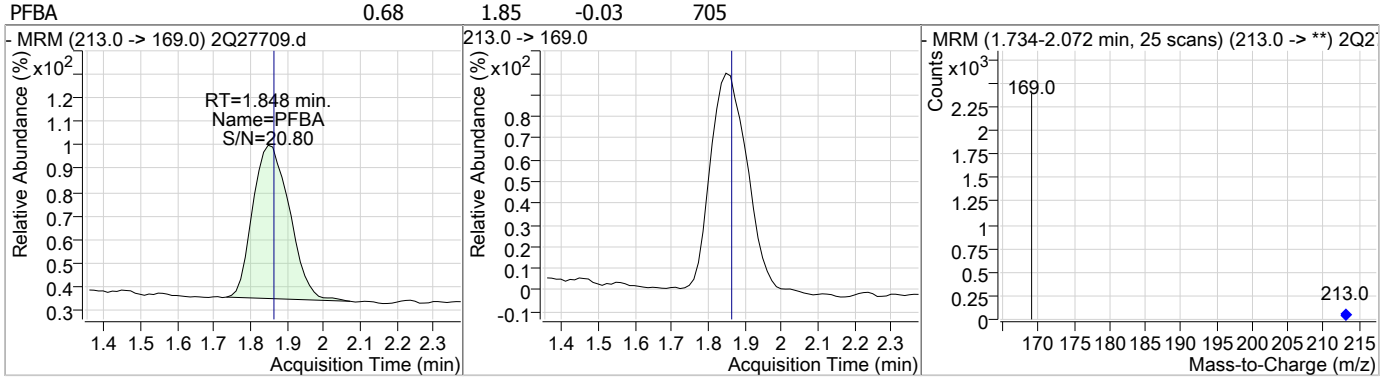
Perfluorinated Compounds by LC/MS/MS



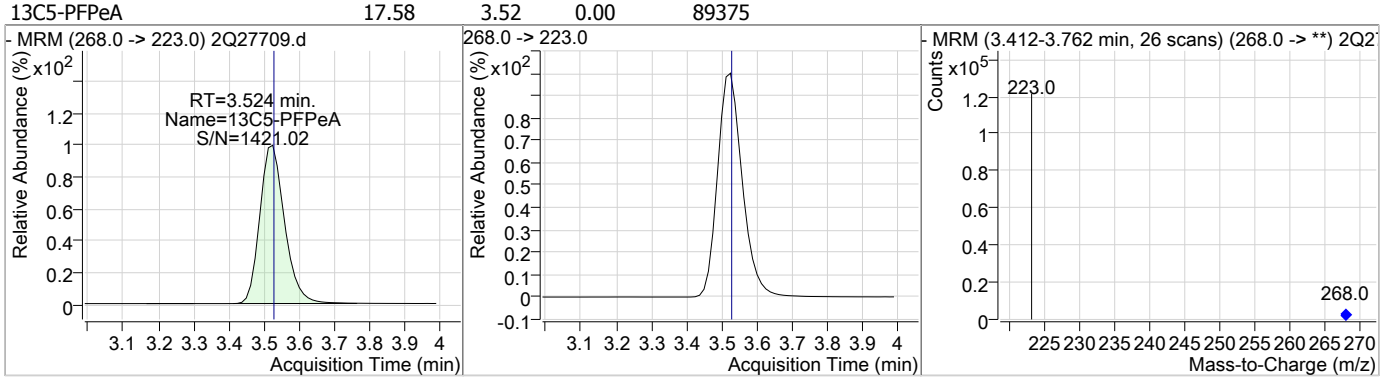
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.40	1.85	-0.01	104354				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.68	1.85	-0.03	705				

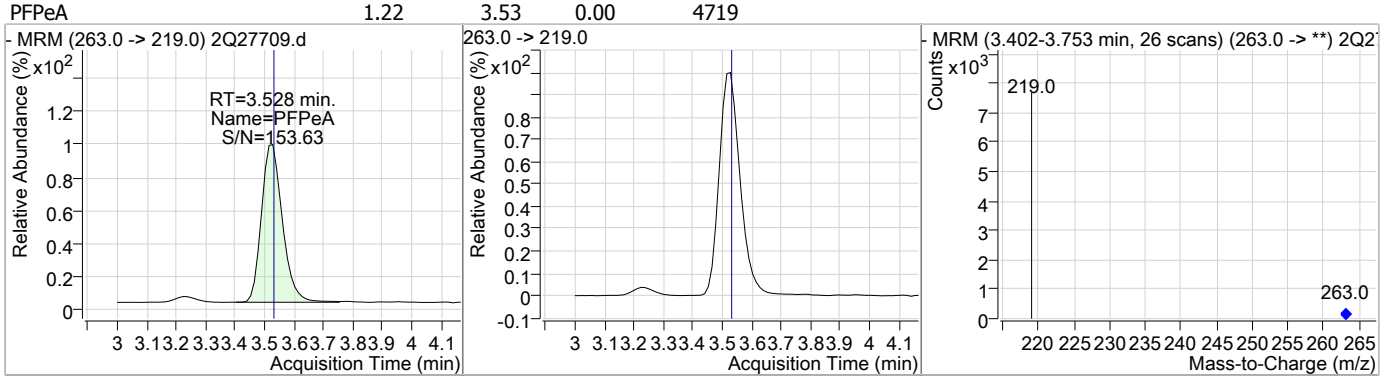


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.58	3.52	0.00	89375				

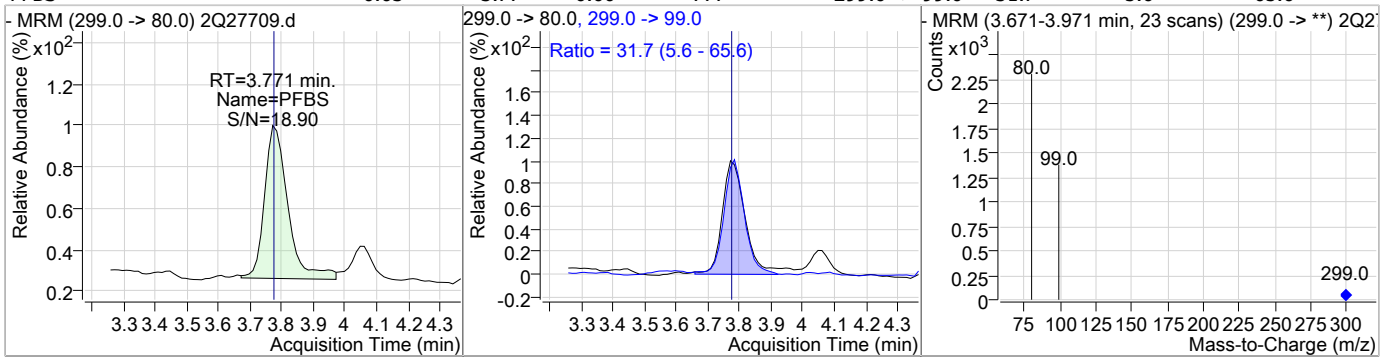


Perfluorinated Compounds by LC/MS/MS

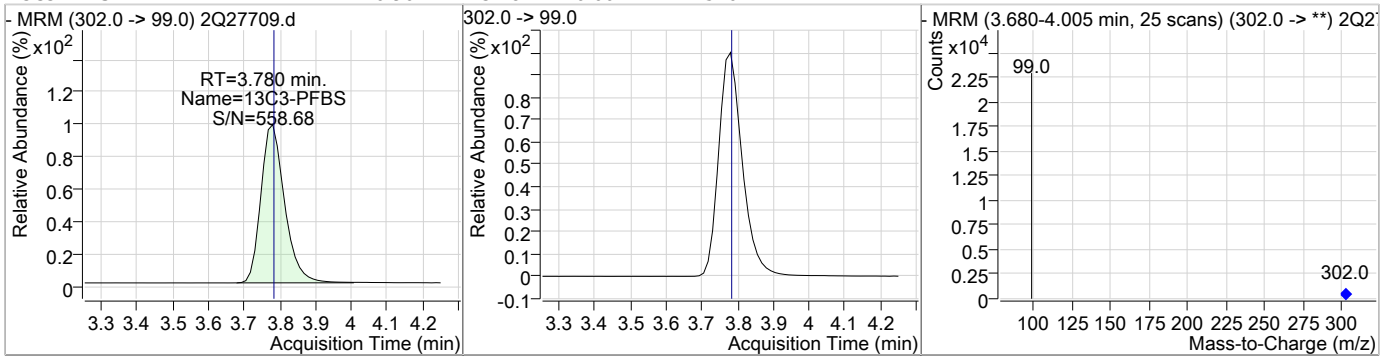
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.22	3.53	0.00	4719				



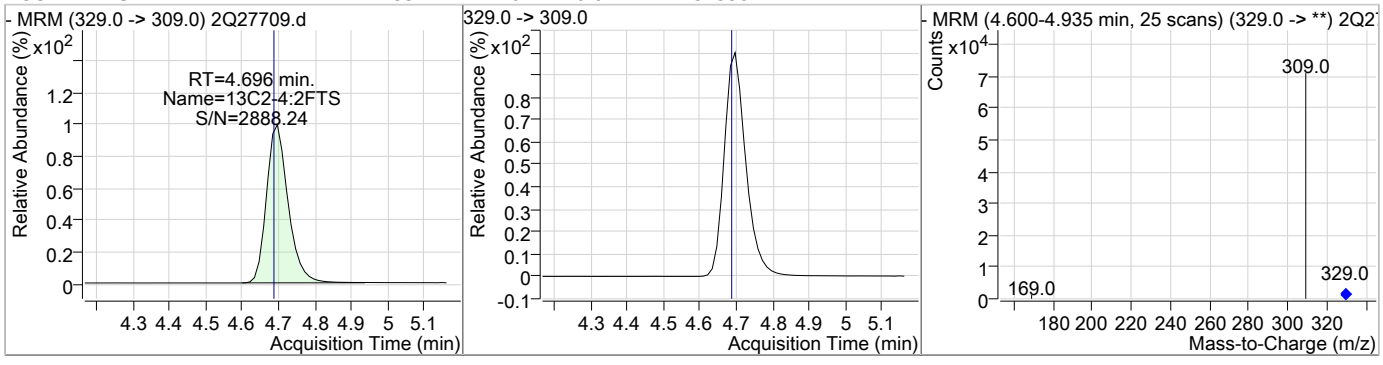
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.63	3.77	0.00	777	299.0 -> 99.0	31.7	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.96	3.78	0.00	15467				

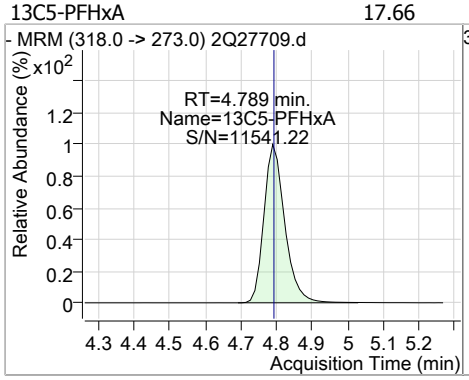


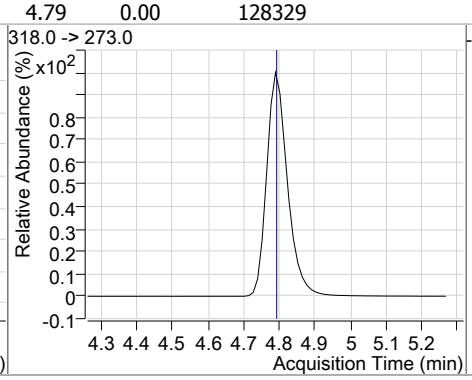
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.33	4.70	0.01	51538				

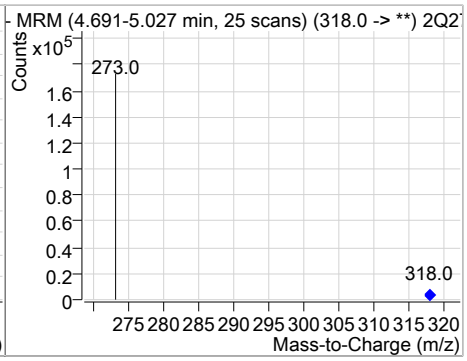


Perfluorinated Compounds by LC/MS/MS

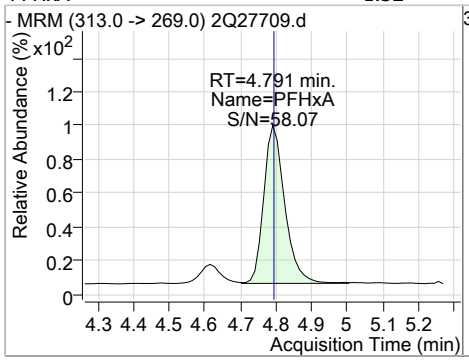
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.66	4.79	0.00	128329				

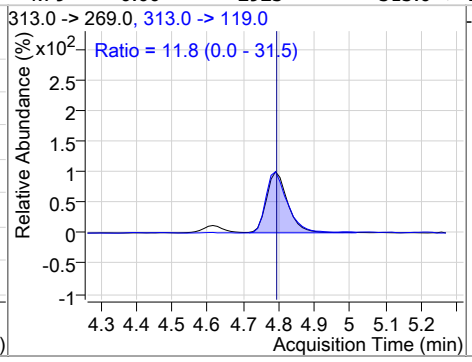


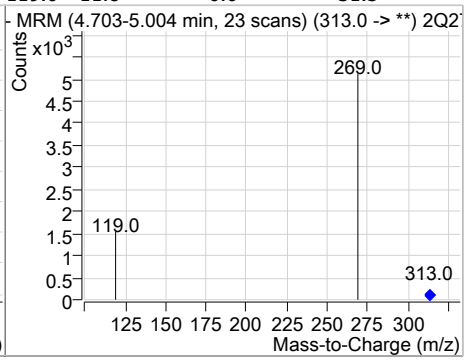




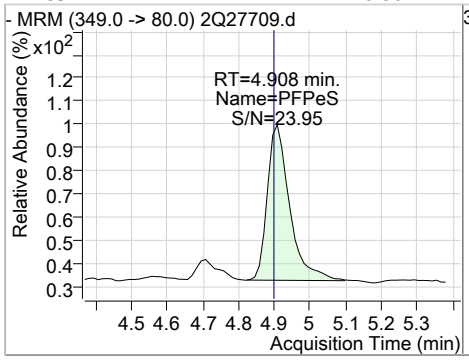
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.32	4.79	0.00	2923	313.0 -> 119.0	11.8	0.0	31.5

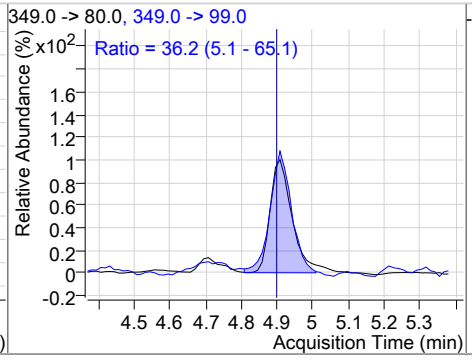


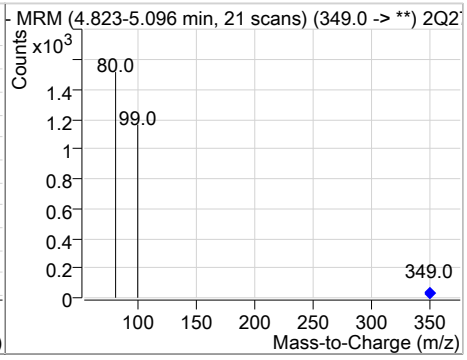




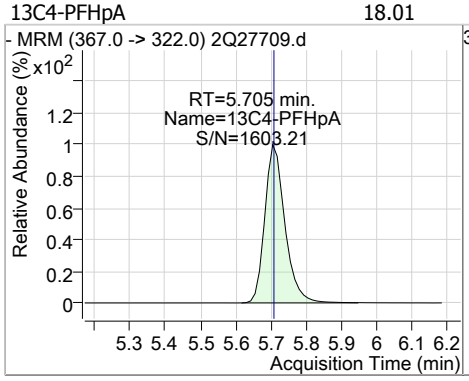
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.50	4.91	0.01	397	349.0 -> 99.0	36.2	5.1	65.1

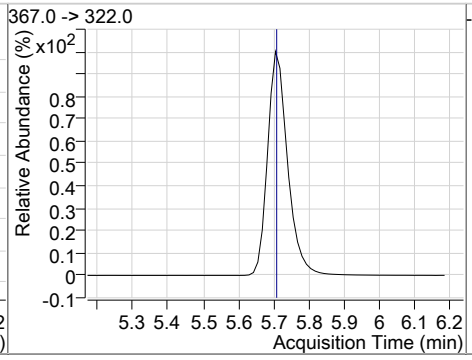


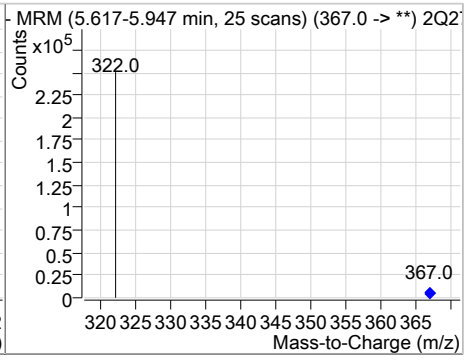




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.01	5.71	0.00	186319				

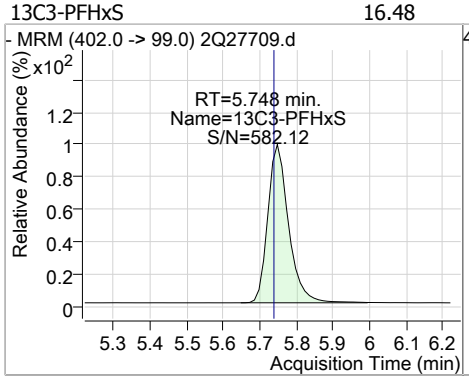


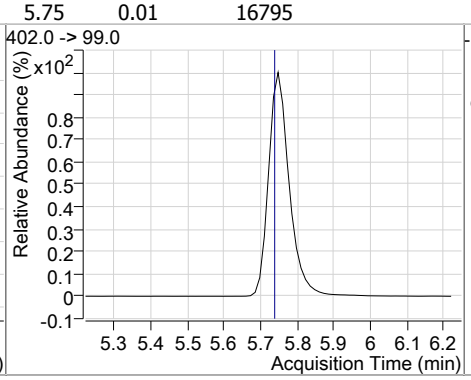


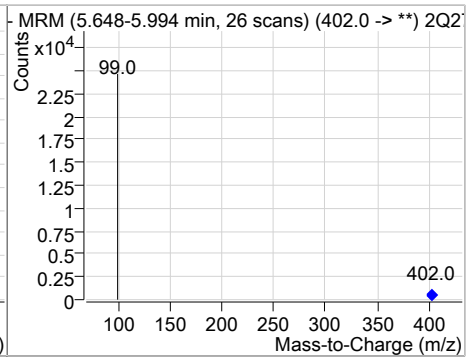


Perfluorinated Compounds by LC/MS/MS

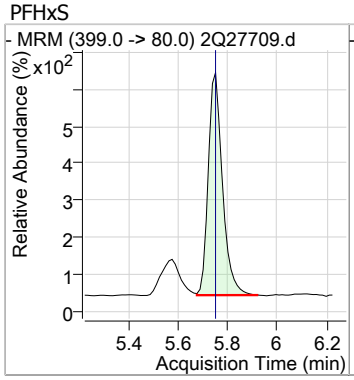
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.48	5.75	0.01	16795				

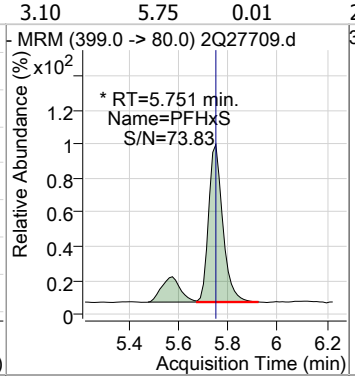


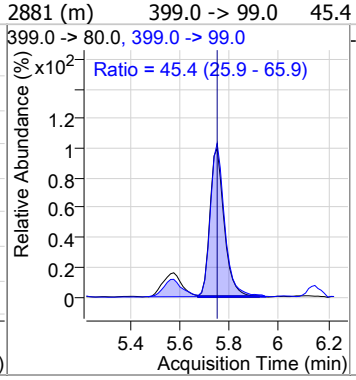


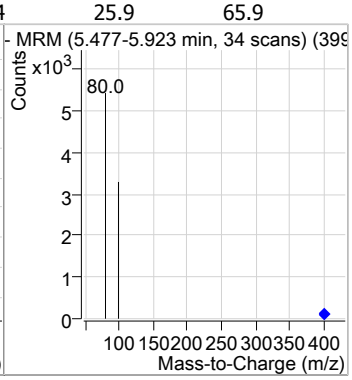


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	3.10	5.75	0.01	2881 (m)	399.0 -> 99.0	45.4	25.9	65.9

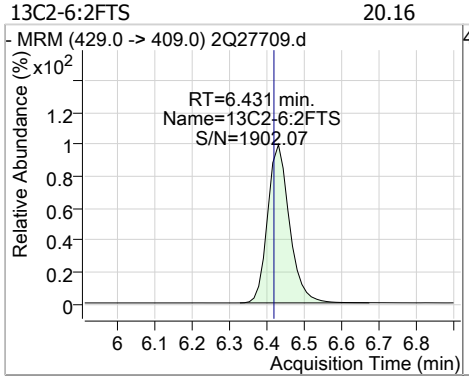


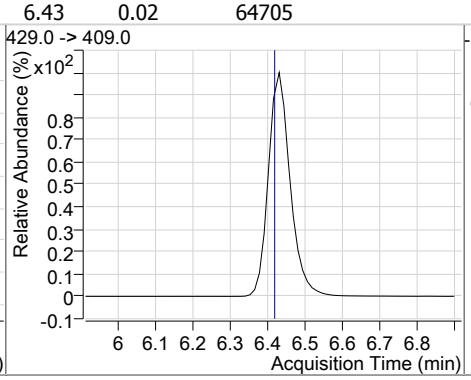


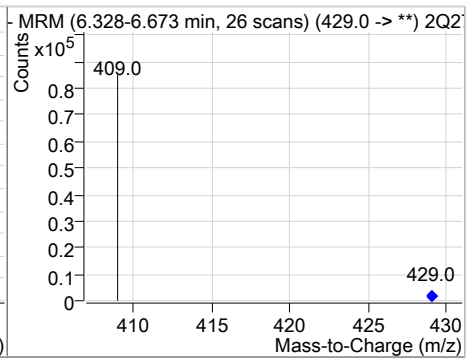




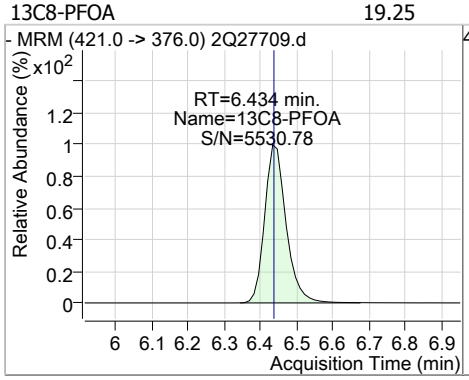
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.16	6.43	0.02	64705				

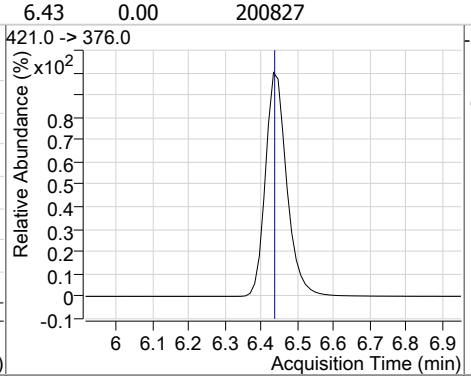


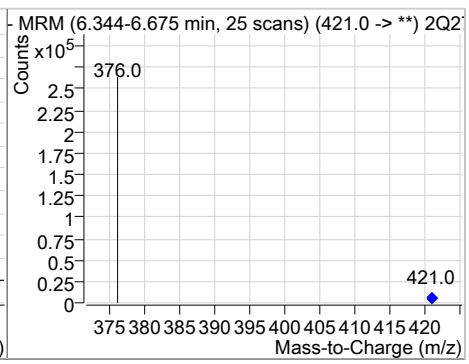




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.25	6.43	0.00	200827				

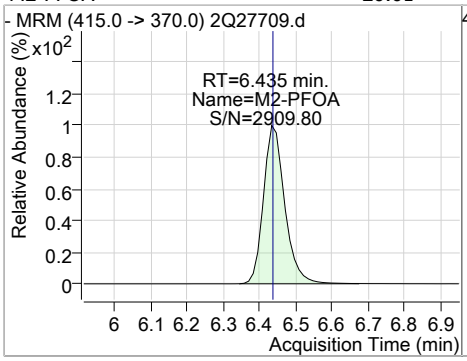


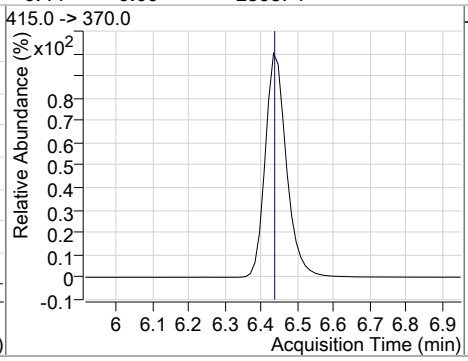


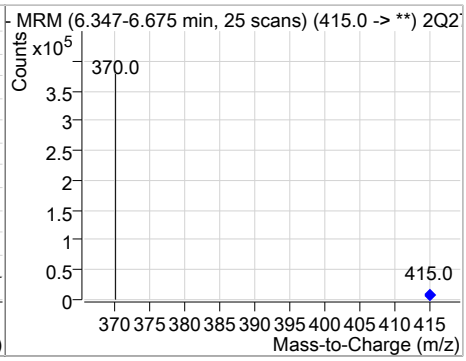


Perfluorinated Compounds by LC/MS/MS

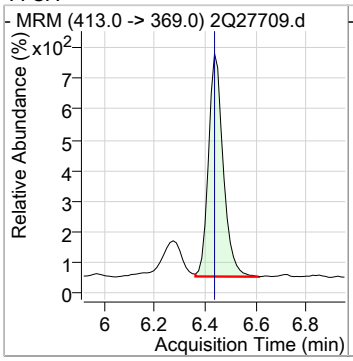
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.44	0.00	286874				

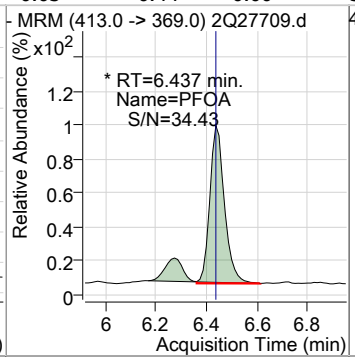


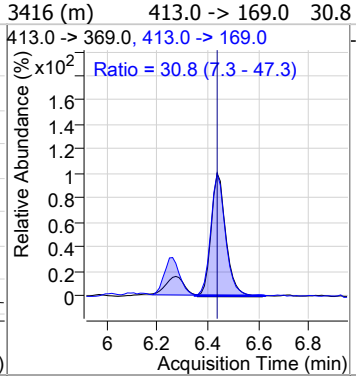


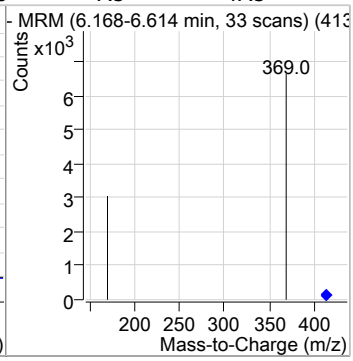


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.63	6.44	0.00	3416 (m)	413.0 -> 169.0	30.8	7.3	47.3

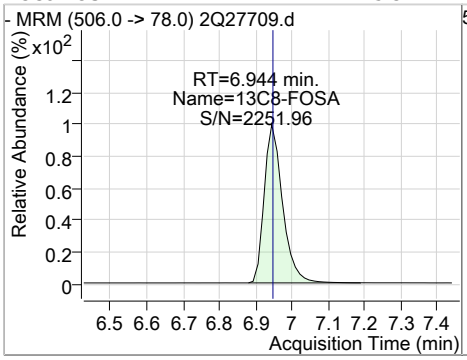


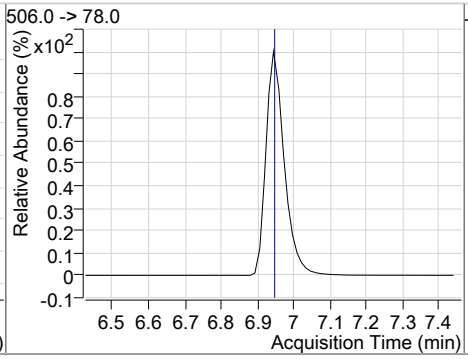


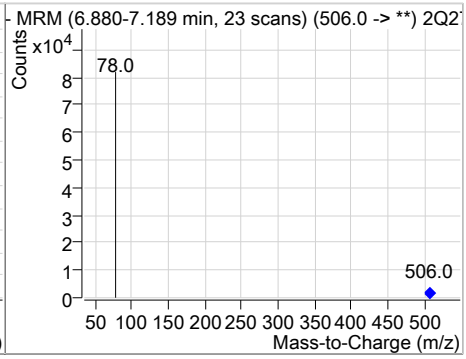




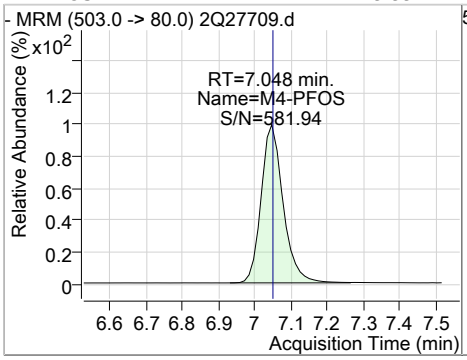
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.37	6.94	0.00	62330				

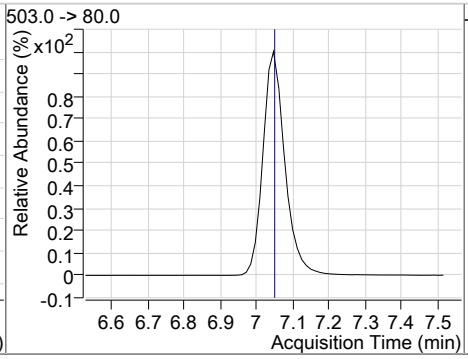


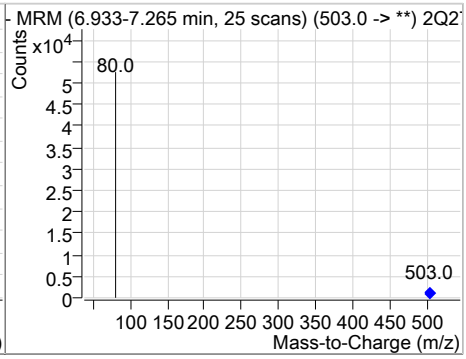




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.01	38938				

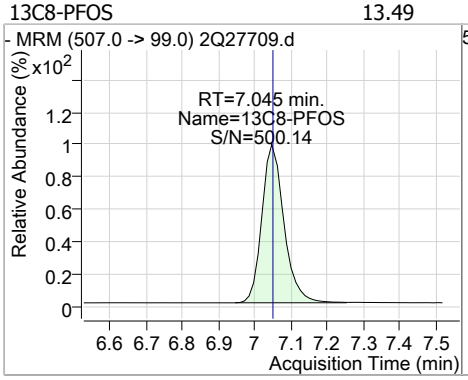


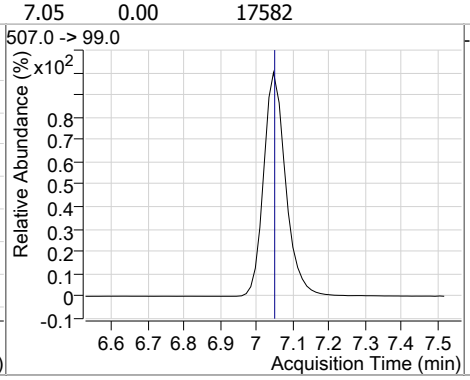


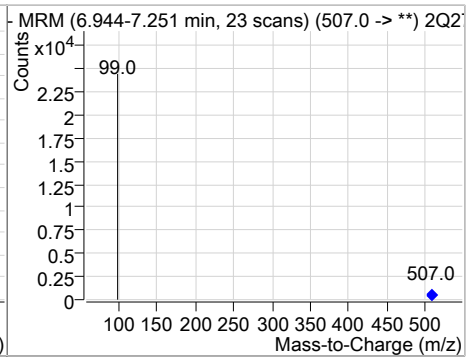


Perfluorinated Compounds by LC/MS/MS

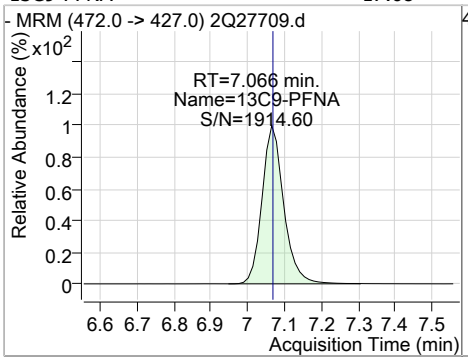
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.49	7.05	0.00	17582				

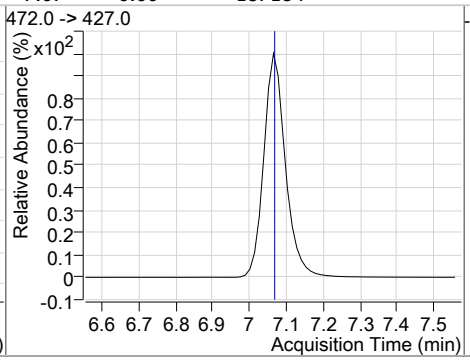


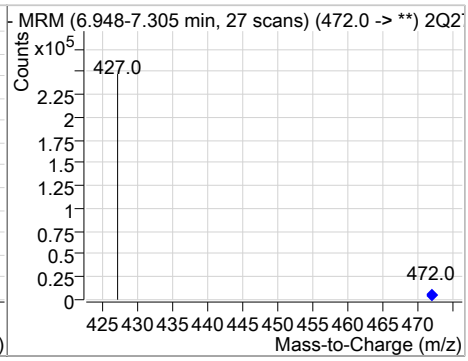




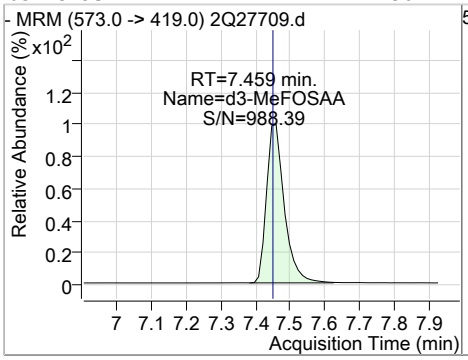
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.68	7.07	0.00	187184				

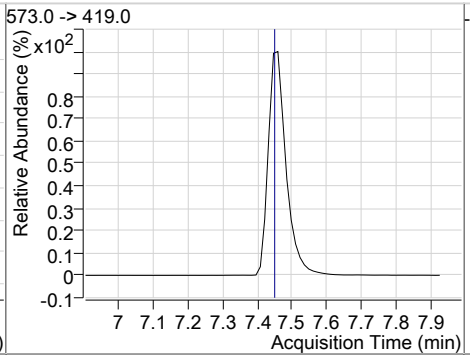


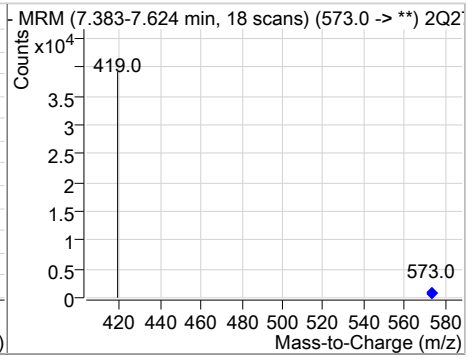




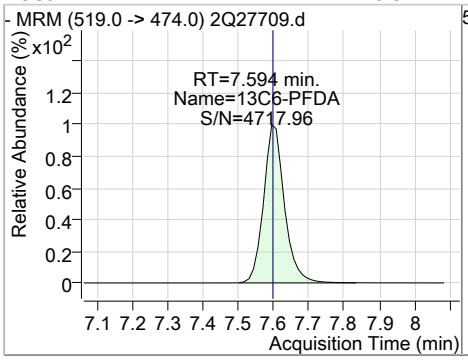
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.96	7.46	0.01	28686				

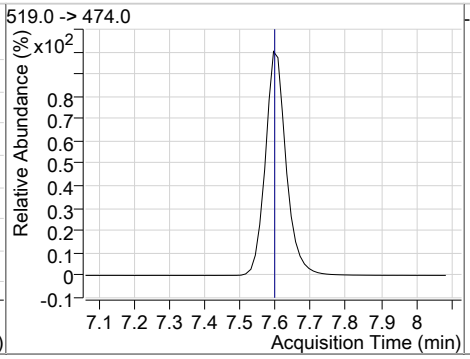


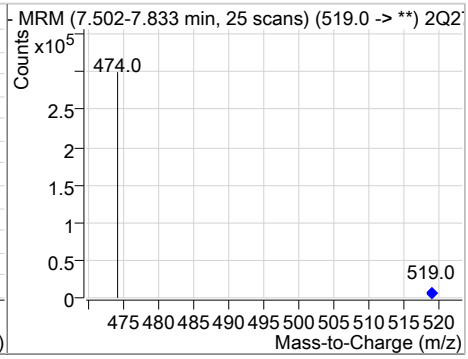




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.57	7.59	0.00	226103				

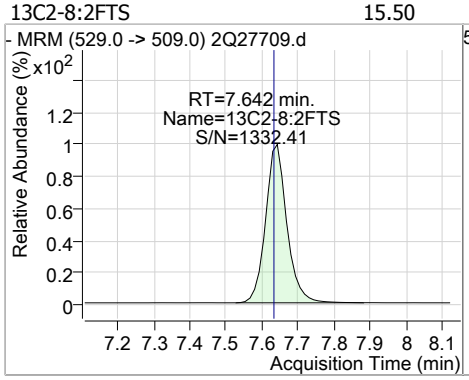


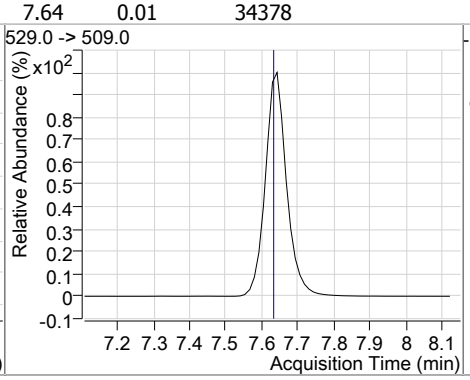


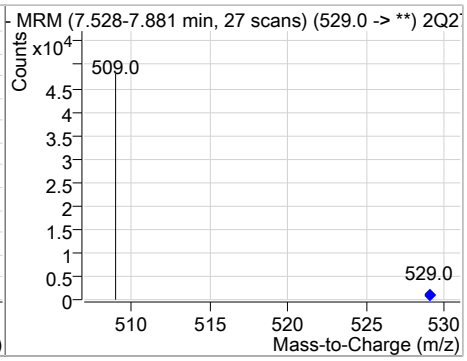


Perfluorinated Compounds by LC/MS/MS

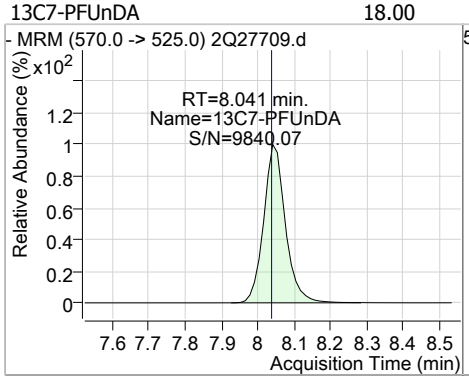
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.50	7.64	0.01	34378				

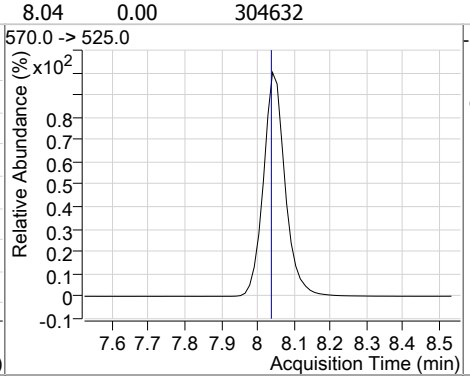


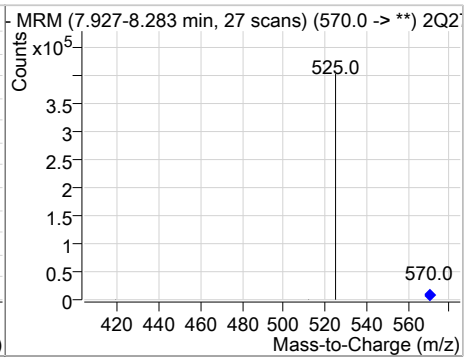




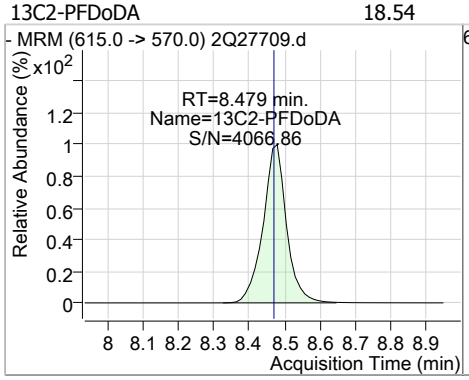
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.00	8.04	0.00	304632				

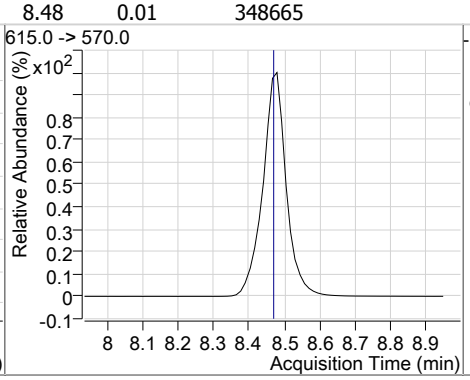


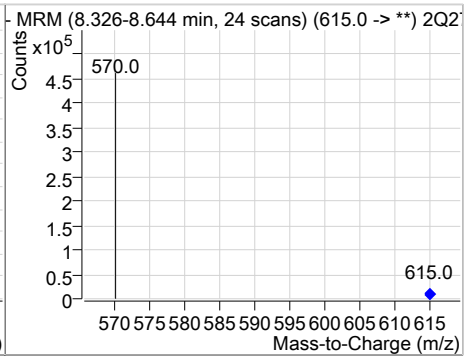




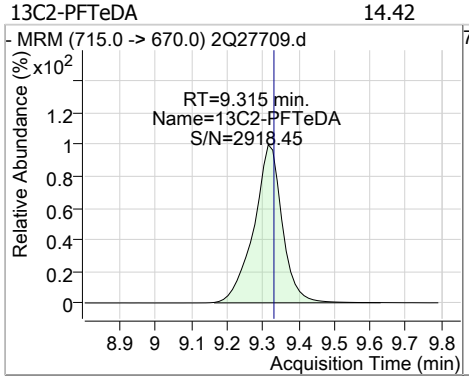
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.54	8.48	0.01	348665				

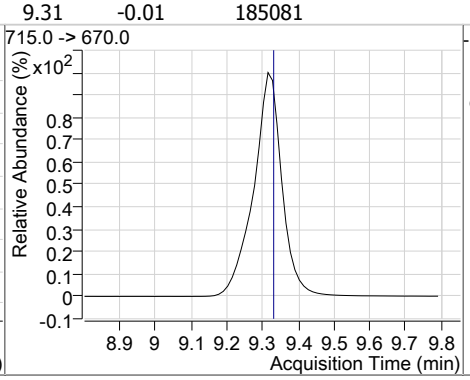


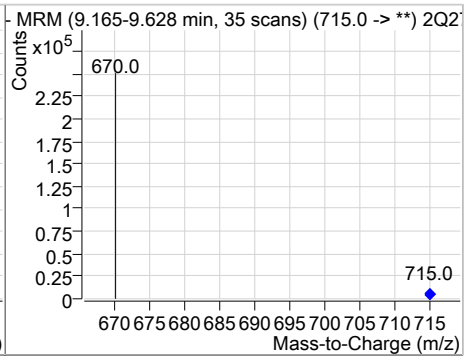




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.42	9.31	-0.01	185081				







Manual Integration Approval Summary

Sample Number: FA62220-13
Lab FileID: 2Q27709.D
Injection Time: 03/18/19 20:28
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanoic acid	335-67-1		6.44	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27710.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:44:24 PM
Sample Name : fa62220-14
Vial : Vial 30
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

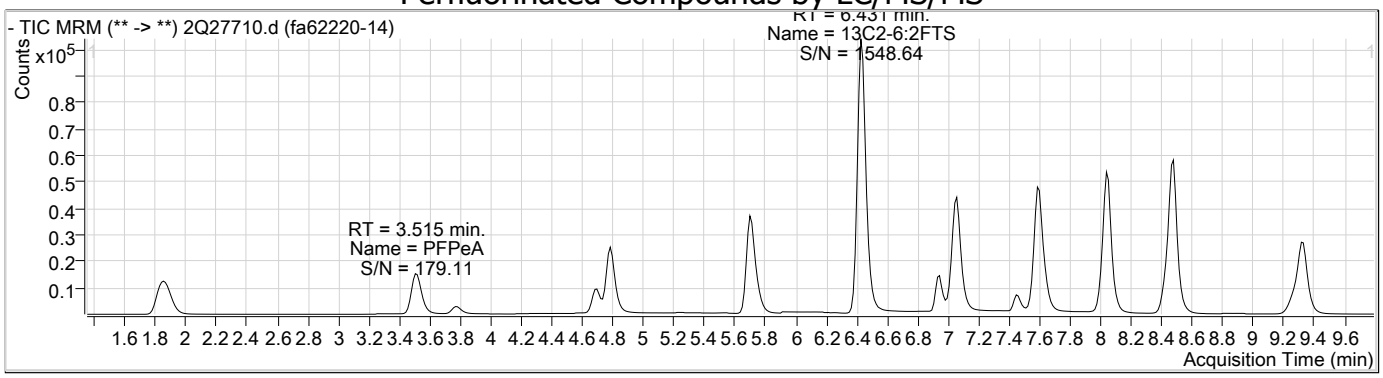
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	218359	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	29899	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	80150	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	67834	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	96584	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	140687	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	150826	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	142494	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	175395	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	219476	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	262224	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	149564	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	48877	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	11396	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	12375	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	13840	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	37463	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	46813	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	26220	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	21280	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	37338	12.56	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.8%		
13C2-6:2FTS	6.431	429.0 -> 409.0	46837	14.59	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.0%		
13C2-8:2FTS	7.630	529.0 -> 509.0	26212	11.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.1%		
13C2-PFDoDA	8.479	615.0 -> 570.0	262123	13.94	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.7%		
13C2-PFTeDA	9.315	715.0 -> 670.0	149480	11.64	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.2%		
13C3-PFBS	3.767	302.0 -> 99.0	11390	12.49	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	12363	12.13	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.6%		
13C4-PFBA	1.852	217.0 -> 172.0	80002	13.34	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.7%		
13C4-PFHpA	5.705	367.0 -> 322.0	140643	13.60	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.0%		
13C5-PFHxA	4.789	318.0 -> 273.0	96464	13.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.4%		
13C5-PFPeA	3.511	268.0 -> 223.0	67634	13.31	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.5%		
13C6-PFDA	7.594	519.0 -> 474.0	175384	12.85	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

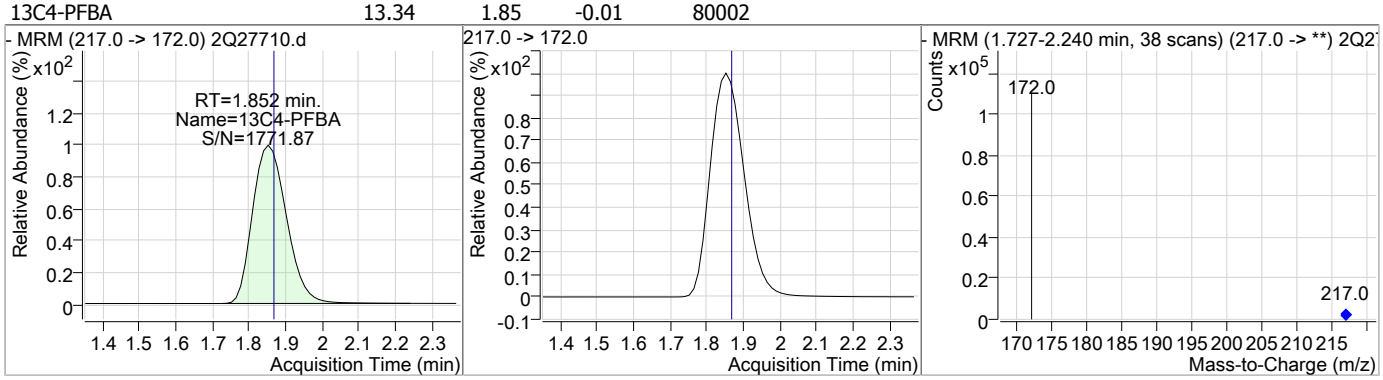
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.3%			
13C7-PFUnDA	8.041	570.0 -> 525.0	219450	12.97	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.8%			
13C8-FOSA	6.944	506.0 -> 78.0	48872	12.05	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.3%			
13C8-PFOA	6.434	421.0 -> 376.0	150734	14.45	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.2%			
13C8-PFOS	7.045	507.0 -> 99.0	13834	10.61	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.1%			
13C9-PFNA	7.065	472.0 -> 427.0	142466	13.46	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.3%			
d3-MeFOSAA	7.447	573.0 -> 419.0	21287	11.10	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 55.5%			
M2-PFOA	6.435	415.0 -> 370.0	218458	19.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	29948	20.02	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.848	213.0 -> 169.0	565	0.71	µg/L		100
PFBS	3.771	299.0 -> 80.0	627	0.69	µg/L		94
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.791	313.0 -> 269.0	2332	1.40	µg/L		98
PFHxS	5.751	399.0 -> 80.0	2218	3.24	µg/L	m	93
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	-	413.0 -> 369.0	-	N.D.			
PFOS	6.869	499.0 -> 80.0	0	0.00	µg/L	m	1
PFPeA	3.515	263.0 -> 219.0	3887	1.32	µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

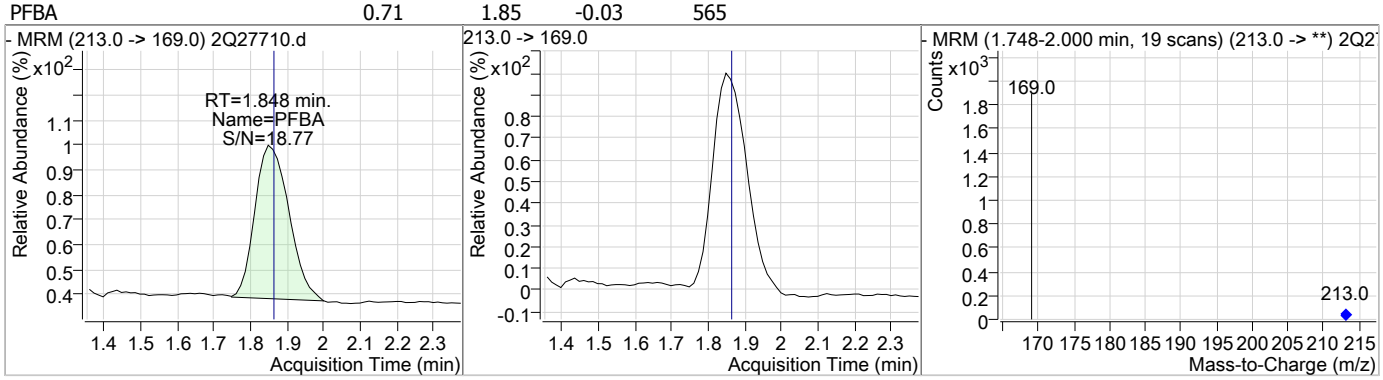
Perfluorinated Compounds by LC/MS/MS



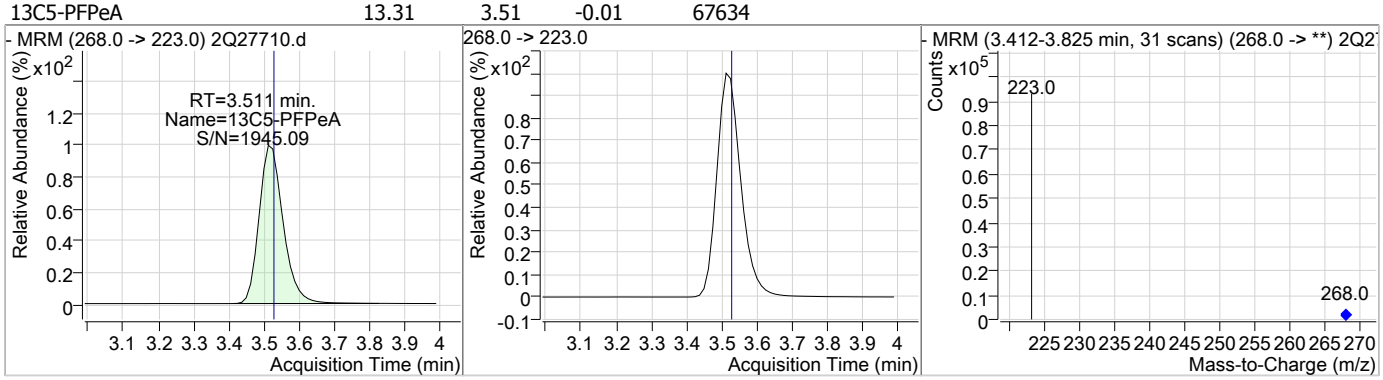
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.34	1.85	-0.01	80002				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.71	1.85	-0.03	565				

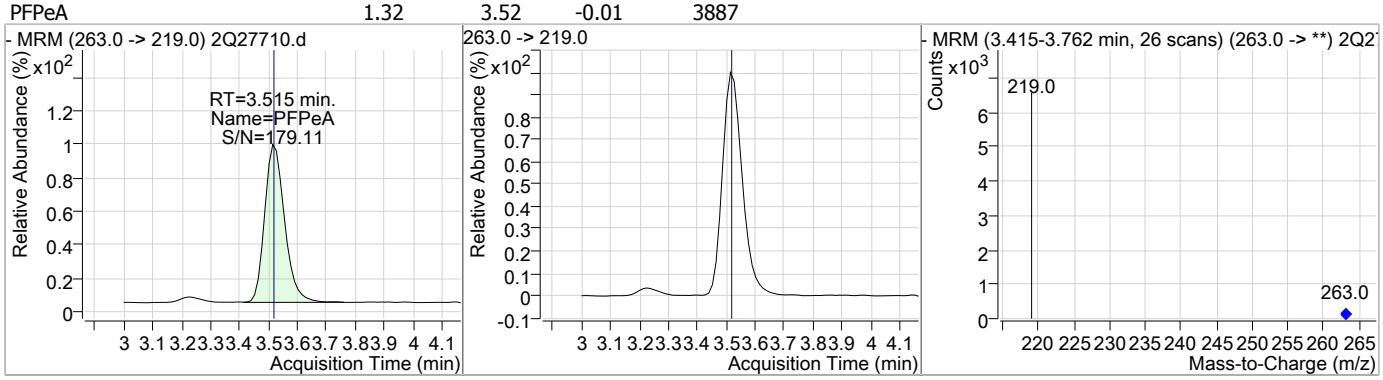


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.31	3.51	-0.01	67634				

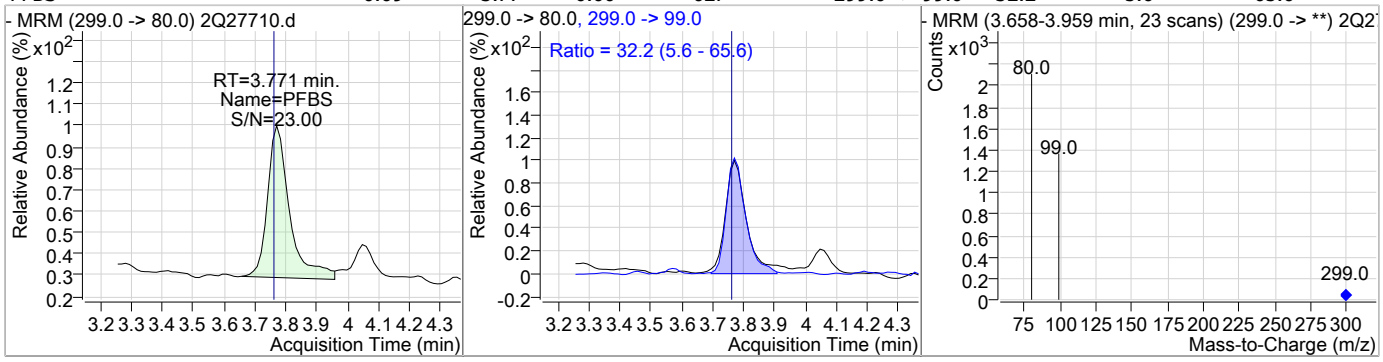


Perfluorinated Compounds by LC/MS/MS

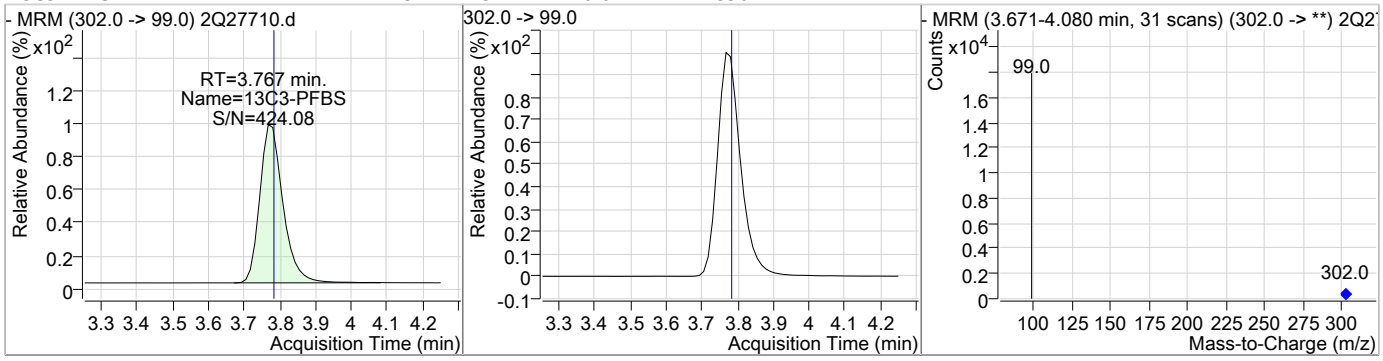
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.32	3.52	-0.01	3887				



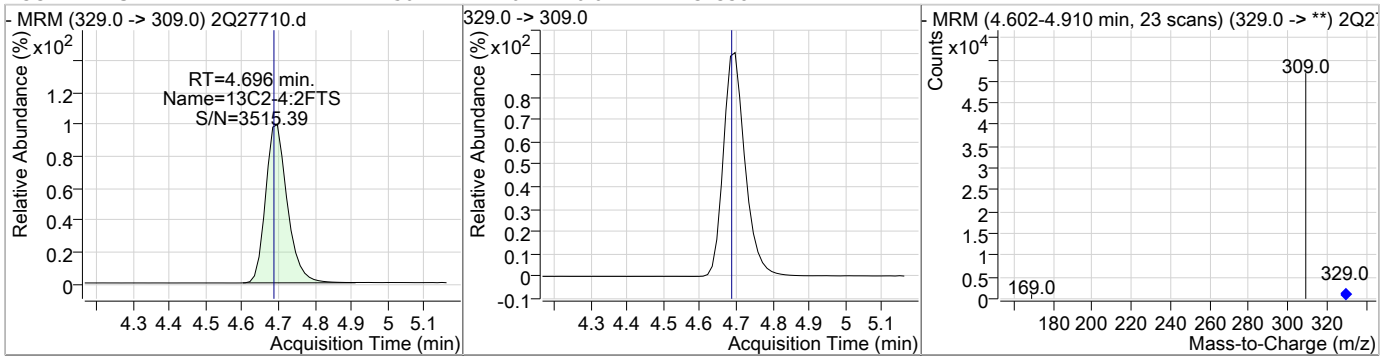
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.69	3.77	0.00	627	299.0 -> 99.0	32.2	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	12.49	3.77	-0.01	11390				

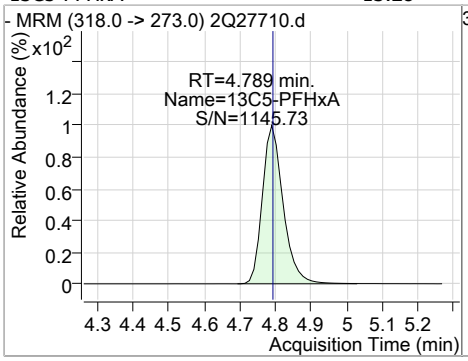


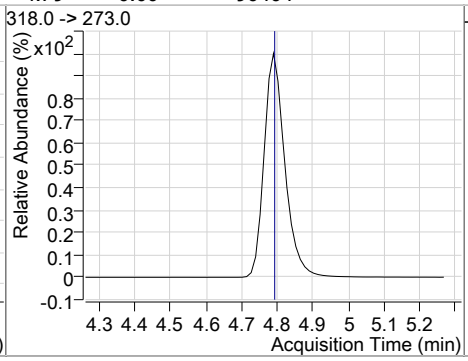
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	12.56	4.70	0.01	37338				

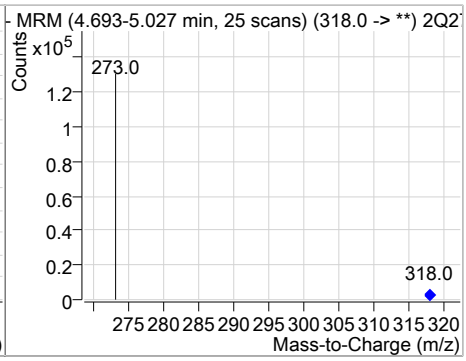


Perfluorinated Compounds by LC/MS/MS

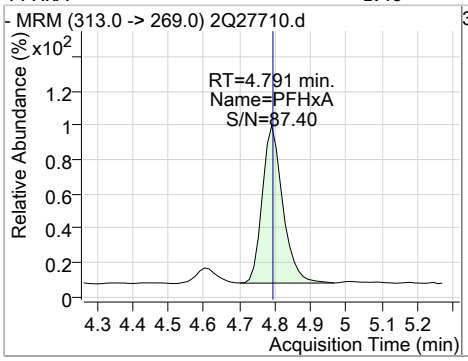
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.28	4.79	0.00	96464				

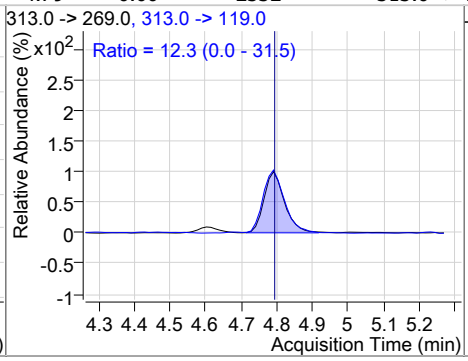


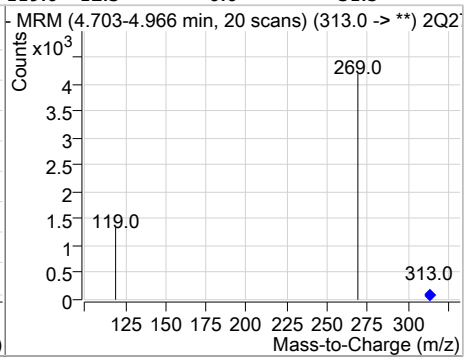




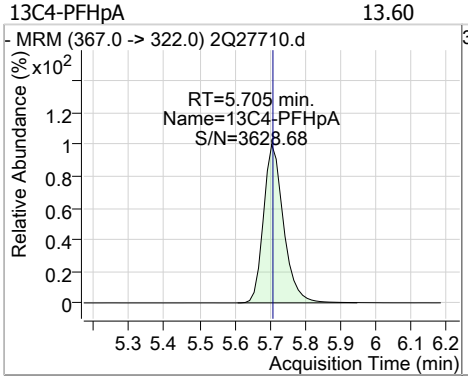
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.40	4.79	0.00	2332	313.0 -> 119.0	12.3	0.0	31.5

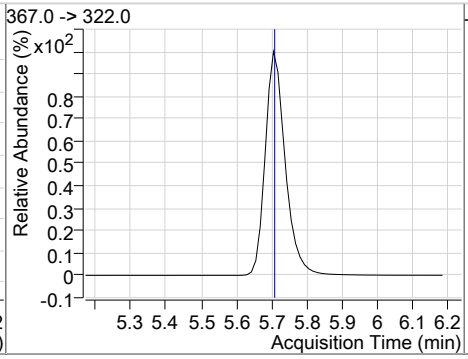


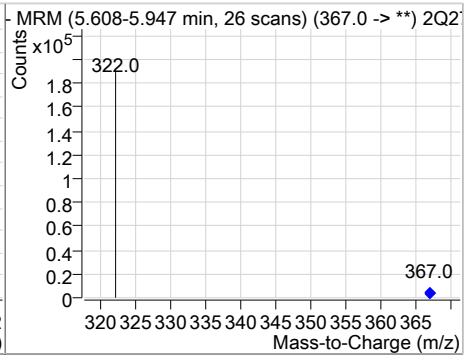




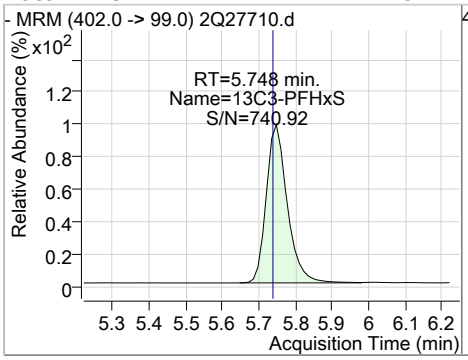
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	13.60	5.71	0.00	140643				

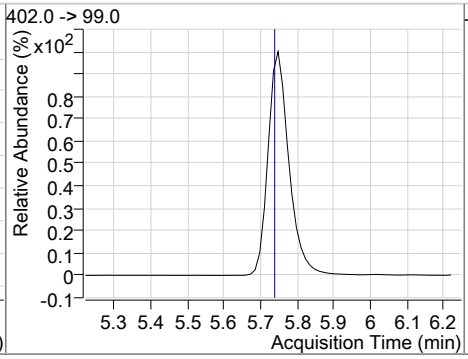


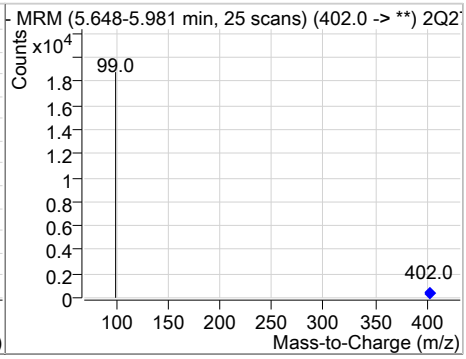




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	12.13	5.75	0.01	12363				

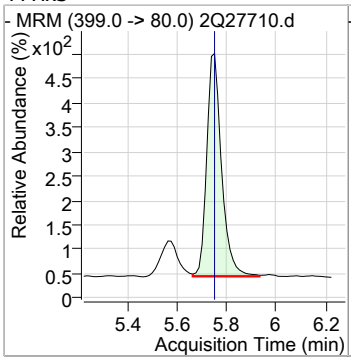


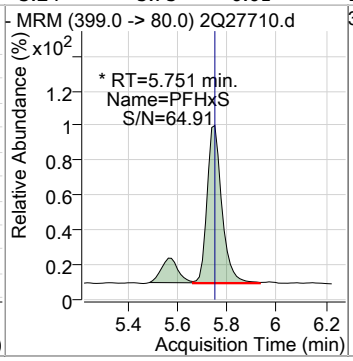


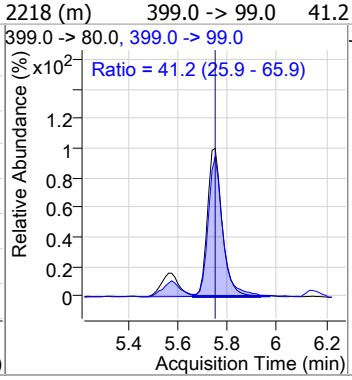


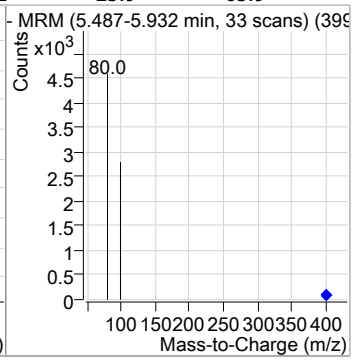
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	3.24	5.75	0.01	2218 (m)	399.0 -> 99.0	41.2	25.9	65.9

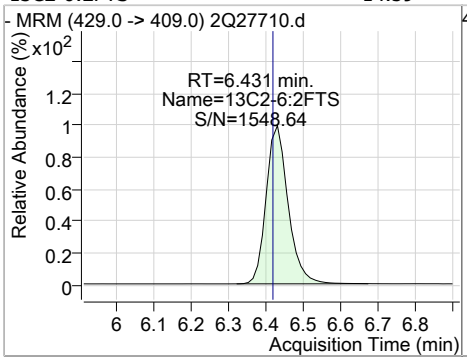


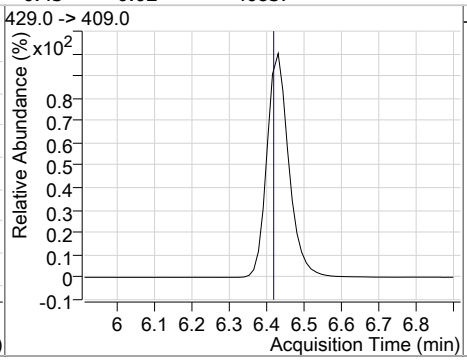


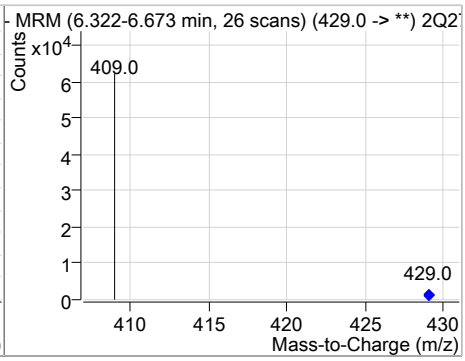




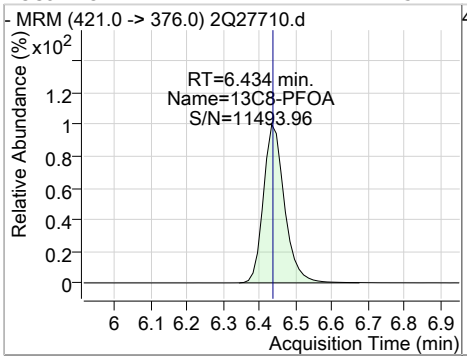
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	14.59	6.43	0.02	46837				

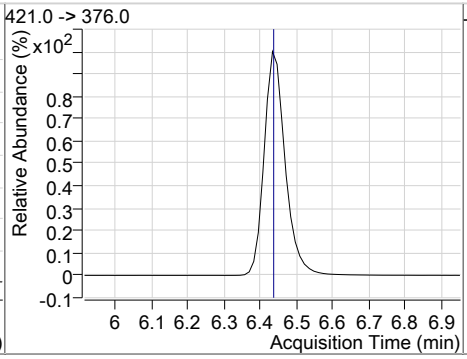


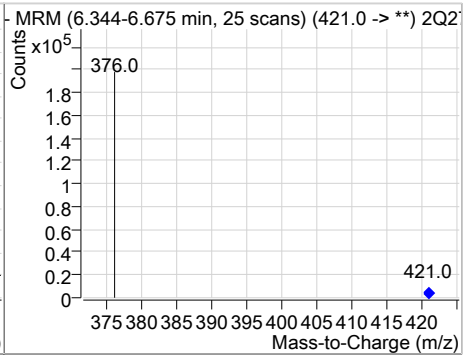




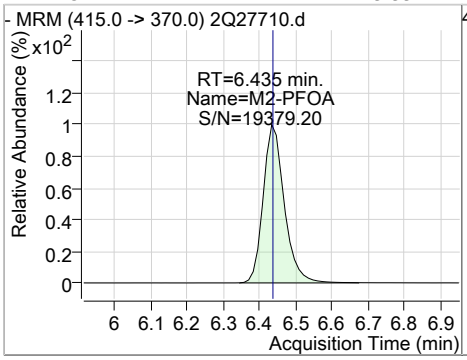
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.45	6.43	0.00	150734				

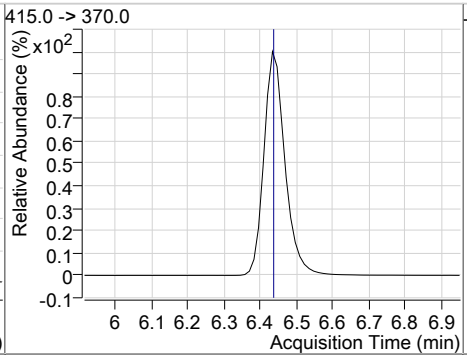


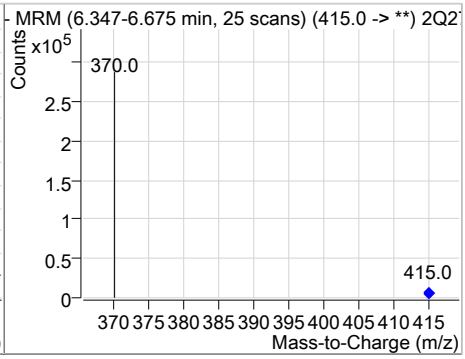




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	218458				

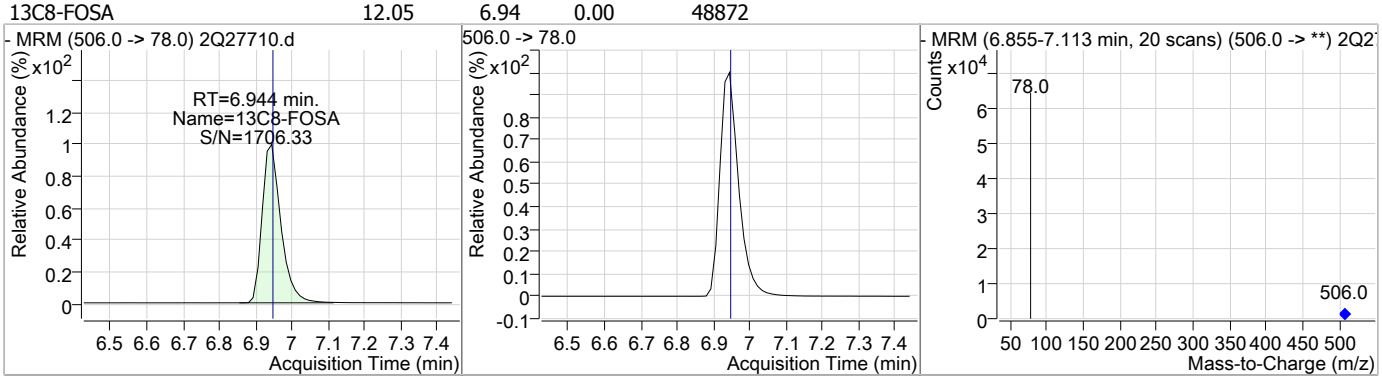




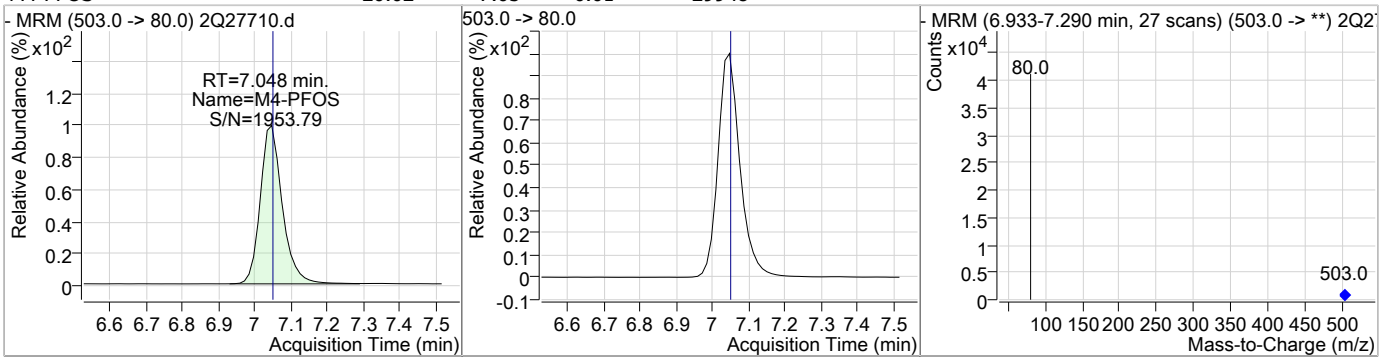


Perfluorinated Compounds by LC/MS/MS

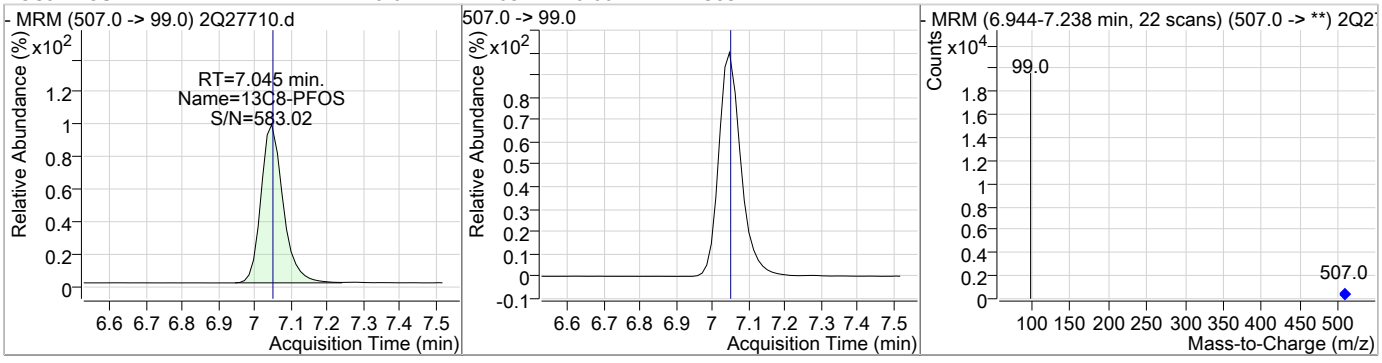
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.05	6.94	0.00	48872				



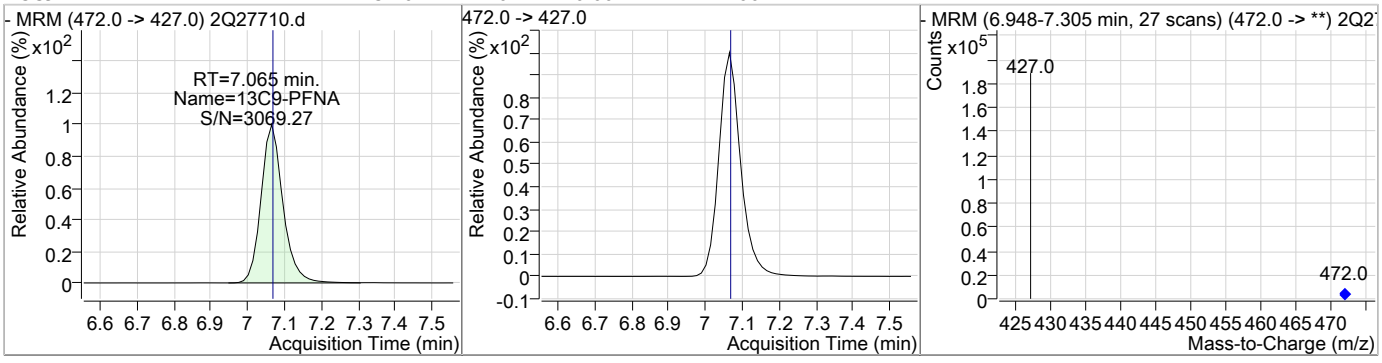
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.05	0.01	29948				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	10.61	7.05	0.00	13834				

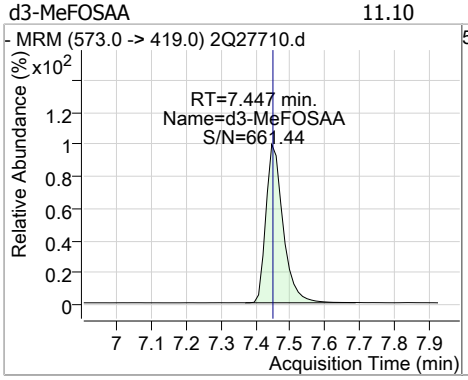


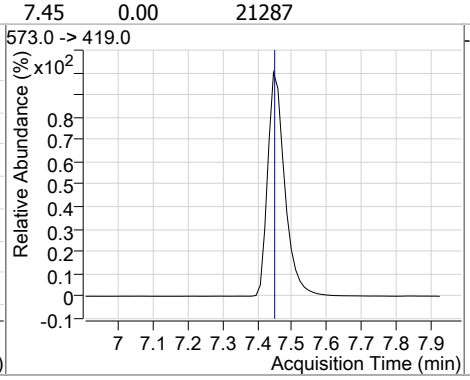
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	13.46	7.07	0.00	142466				

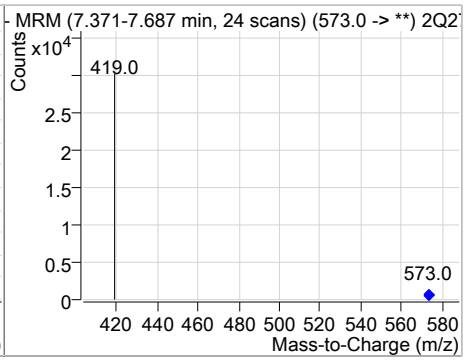


Perfluorinated Compounds by LC/MS/MS

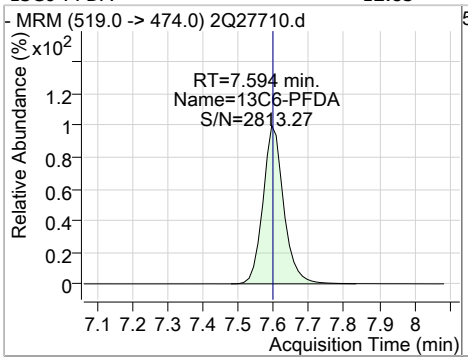
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	11.10	7.45	0.00	21287				

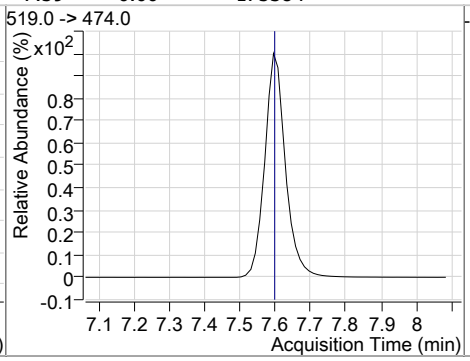


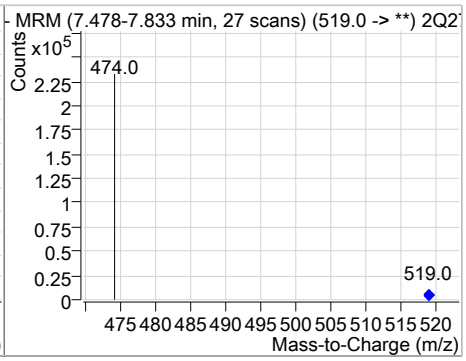




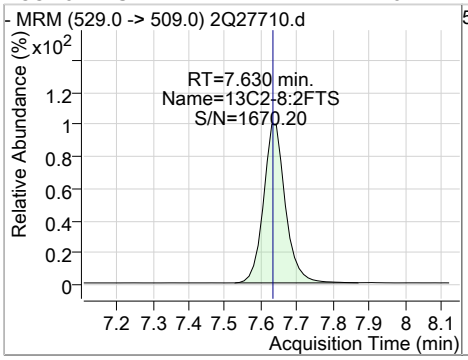
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	12.85	7.59	0.00	175384				

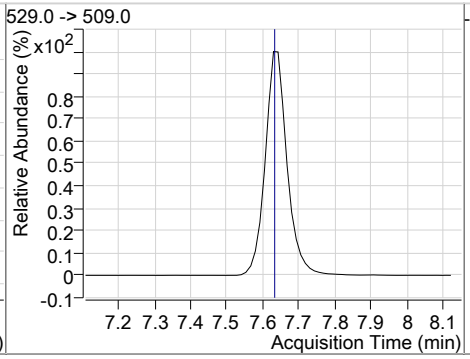


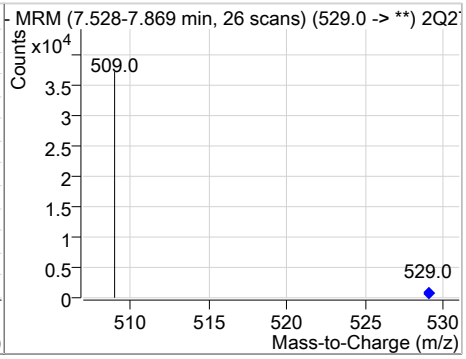




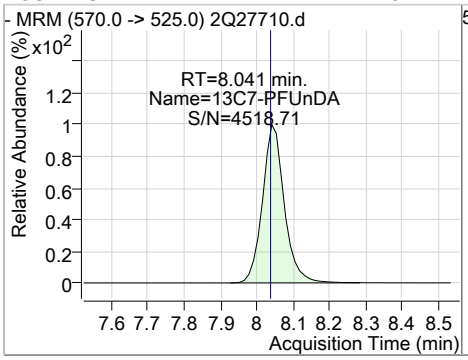
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.82	7.63	0.00	26212				

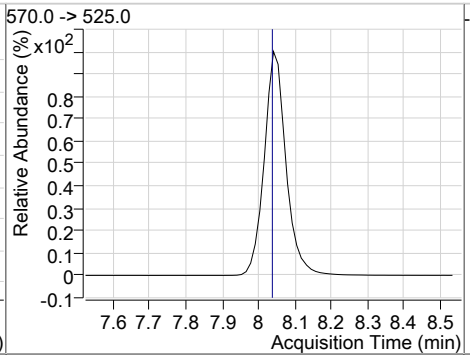


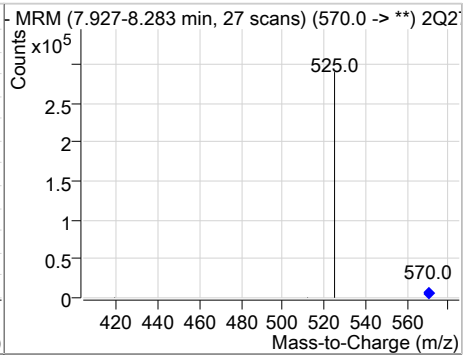




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	12.97	8.04	0.00	219450				

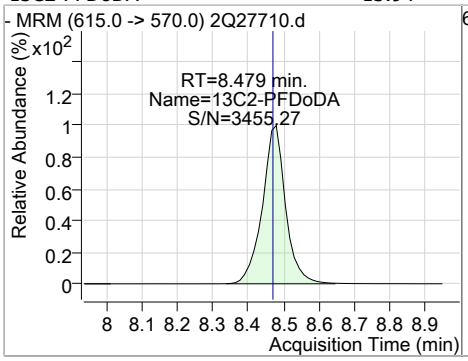


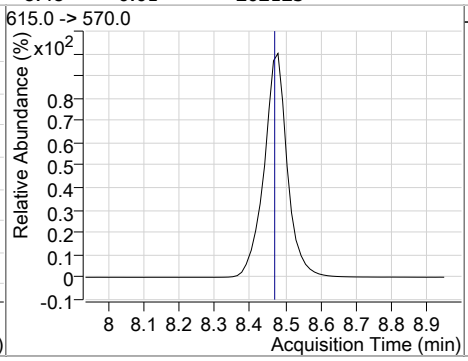


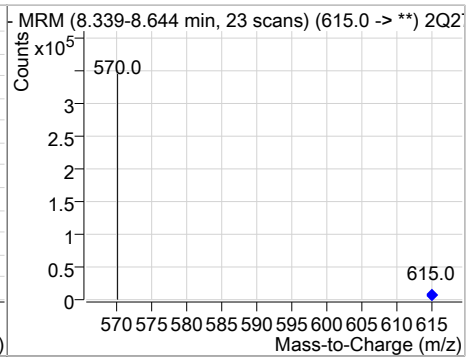


Perfluorinated Compounds by LC/MS/MS

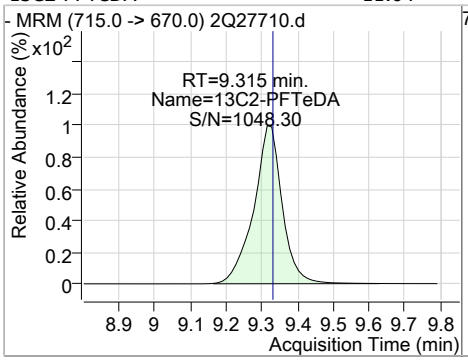
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.94	8.48	0.01	262123				

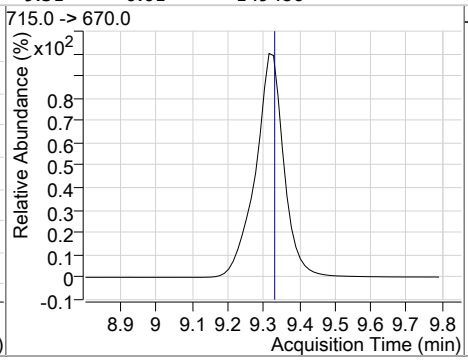


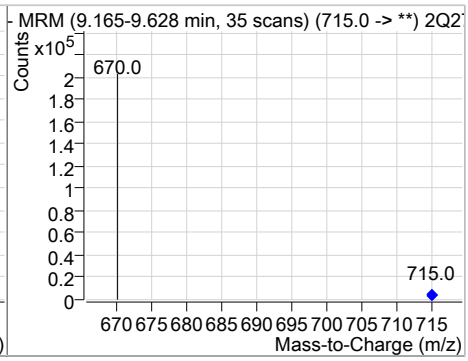




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	11.64	9.31	-0.01	149480				







Manual Integration Approval Summary

Sample Number:	FA62220-14	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27710.D	**Analyst approved:**	03/19/19 09:52 Nancy Saunders
Injection Time:	03/18/19 20:44	**Supervisor approved:**	03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27711.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:00:07 PM
Sample Name : fa62220-15
Vial : Vial 31
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

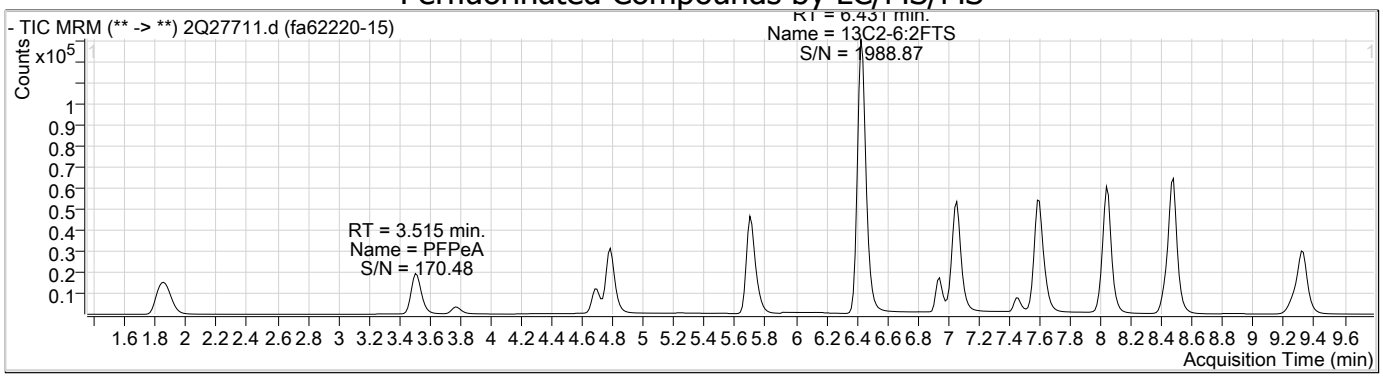
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	277830	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	37290	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	101517	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	85846	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	120934	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	175478	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	189397	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	173053	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	201111	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	249446	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	290007	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	166112	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	58262	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	14239	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	15600	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	15529	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	48222	20.00	µg/L	0.000
M2-6:2FTS	6.431	429.0 -> 409.0	61042	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	30049	20.00	µg/L	0.013
M3-MeFOSAA	7.447	573.0 -> 419.0	23603	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	48306	16.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.2%		
13C2-6:2FTS	6.431	429.0 -> 409.0	61017	19.01	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%		
13C2-8:2FTS	7.642	529.0 -> 509.0	30034	13.55	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.7%		
13C2-PFDoDA	8.479	615.0 -> 570.0	289794	15.41	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.0%		
13C2-PFTeDA	9.315	715.0 -> 670.0	165818	12.92	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.6%		
13C3-PFBS	3.767	302.0 -> 99.0	14232	15.61	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.0%		
13C3-PFHxS	5.748	402.0 -> 99.0	15601	15.30	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.5%		
13C4-PFBA	1.852	217.0 -> 172.0	101415	16.91	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.6%		
13C4-PFHpA	5.705	367.0 -> 322.0	175358	16.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%		
13C5-PFHxA	4.789	318.0 -> 273.0	120925	16.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.2%		
13C5-PFPeA	3.511	268.0 -> 223.0	85834	16.89	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%		
13C6-PFDA	7.594	519.0 -> 474.0	201105	14.74	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

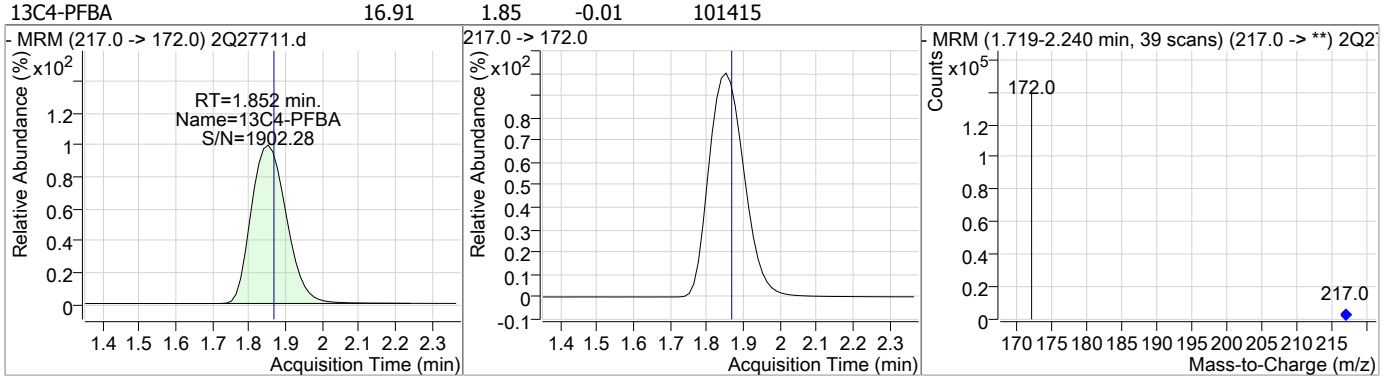
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.7%		
13C7-PFUnDA	8.041	570.0 -> 525.0	249257	14.73 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.6%		
13C8-FOSA	6.944	506.0 -> 78.0	58251	14.37 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%		
13C8-PFOA	6.434	421.0 -> 376.0	189293	18.15 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
13C8-PFOS	7.045	507.0 -> 99.0	15534	11.92 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.6%		
13C9-PFNA	7.065	472.0 -> 427.0	173010	16.34 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.7%		
d3-MeFOSAA	7.447	573.0 -> 419.0	23596	12.31 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.5%		
M2-PFOA	6.435	415.0 -> 370.0	277969	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.048	503.0 -> 80.0	37330	20.01 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	1.848	213.0 -> 169.0	569	0.57 µg/L		100
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	5.708	363.0 -> 319.0	5825	0.77 µg/L		99
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	4.791	313.0 -> 269.0	2726	1.31 µg/L		100
PFHxS	5.751	399.0 -> 80.0	638	0.74 µg/L	m	94
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	-	413.0 -> 369.0	-	N.D.		
PFOS	7.049	499.0 -> 80.0	661	0.88 µg/L	#m	72
PFPeA	3.515	263.0 -> 219.0	5072	1.36 µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

 # = Qualifier out of range, m = manually integrated, + = Area summed

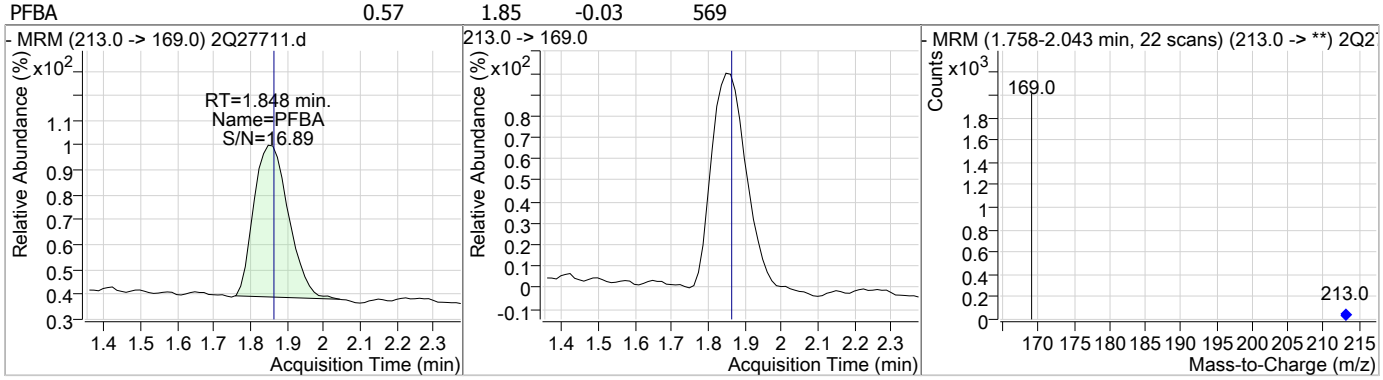
Perfluorinated Compounds by LC/MS/MS



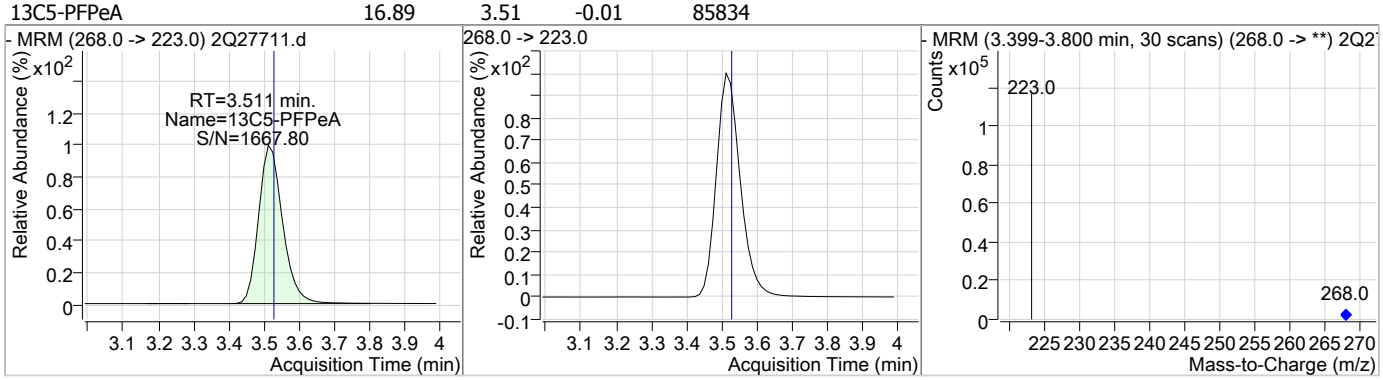
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.91	1.85	-0.01	101415				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.57	1.85	-0.03	569				

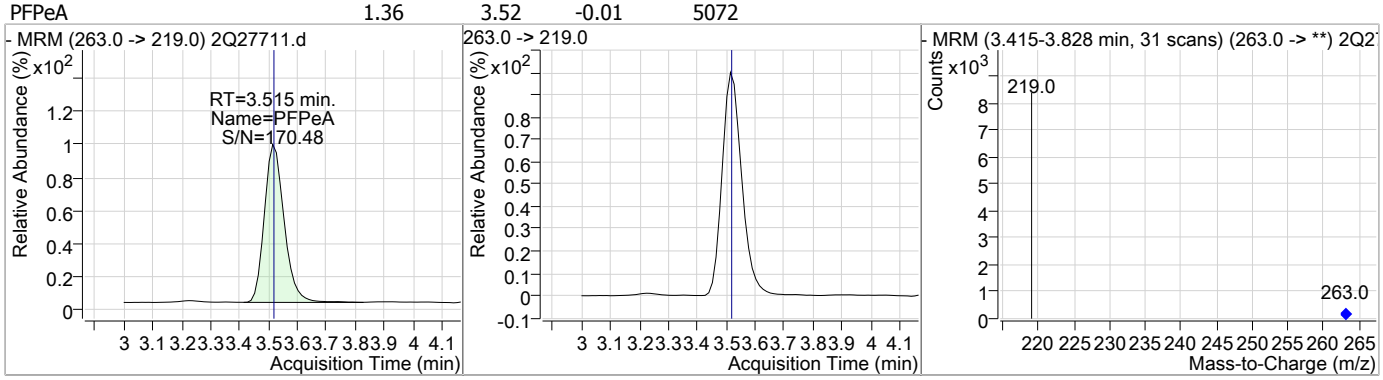


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.89	3.51	-0.01	85834				

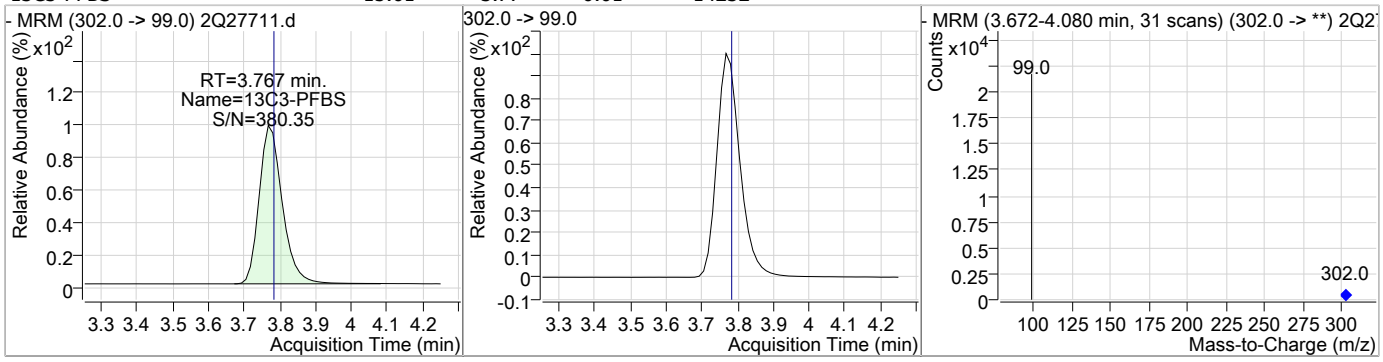


Perfluorinated Compounds by LC/MS/MS

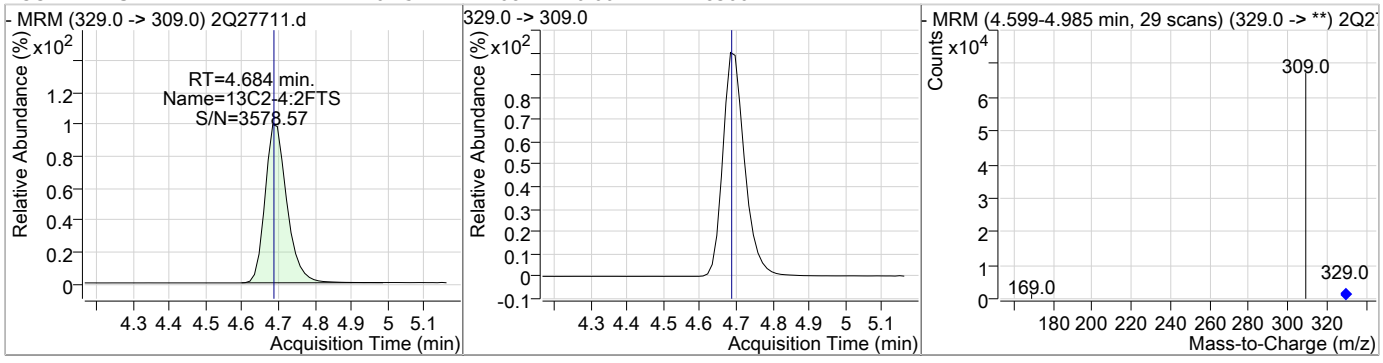
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.36	3.52	-0.01	5072				



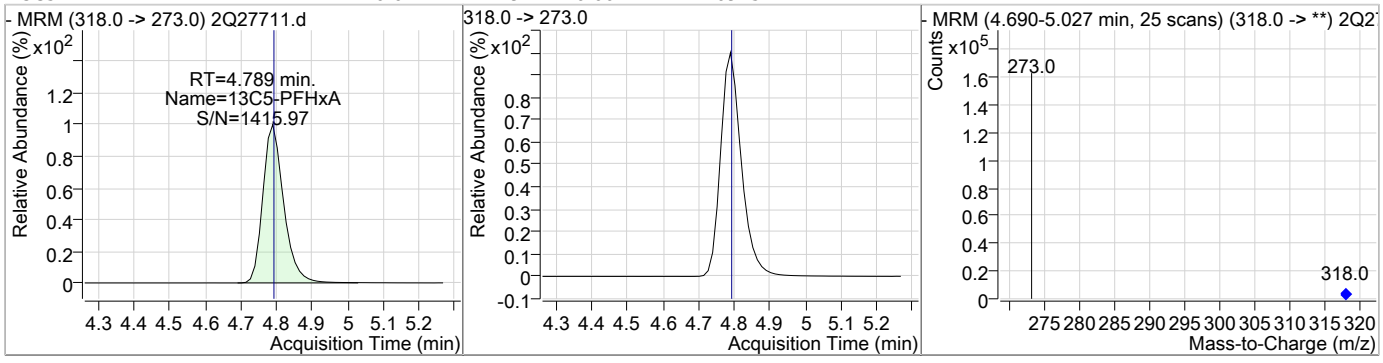
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.61	3.77	-0.01	14232				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.25	4.68	0.00	48306				

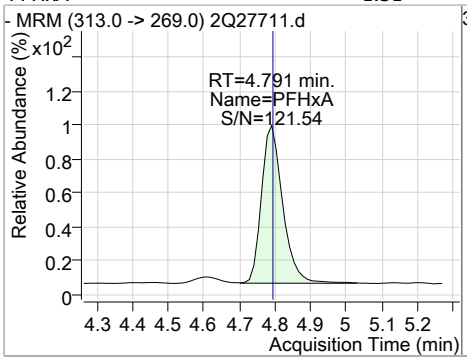


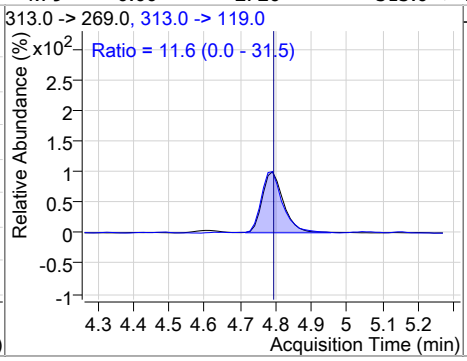
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.64	4.79	0.00	120925				

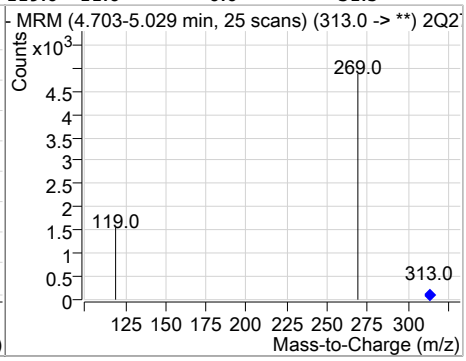


Perfluorinated Compounds by LC/MS/MS

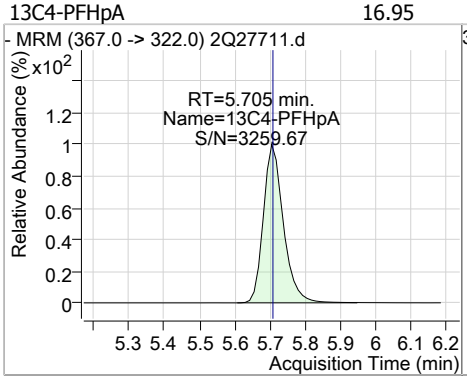
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.31	4.79	0.00	2726	313.0 -> 119.0	11.6	0.0	31.5

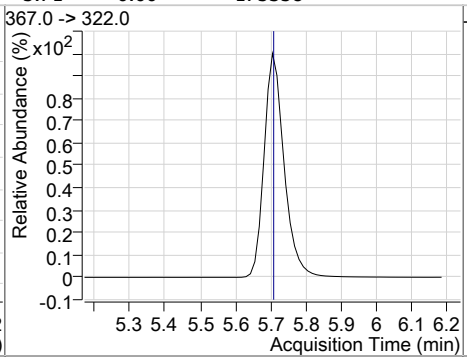


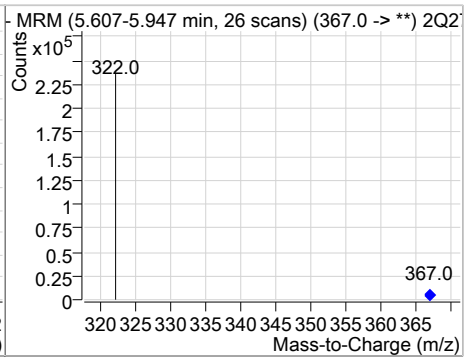




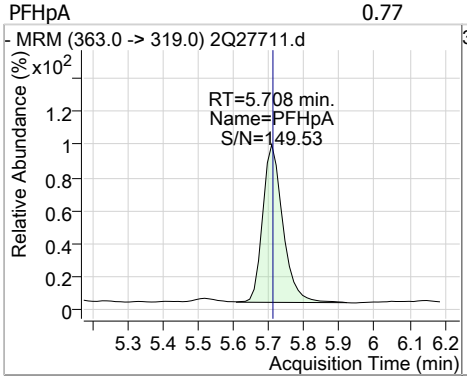
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.95	5.71	0.00	175358				

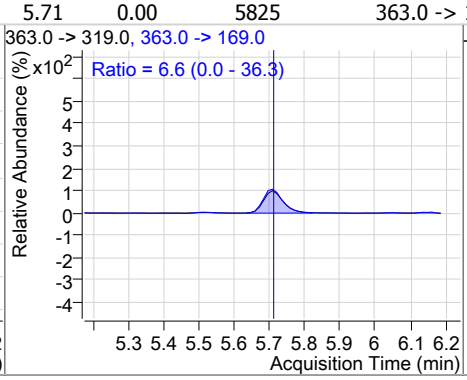


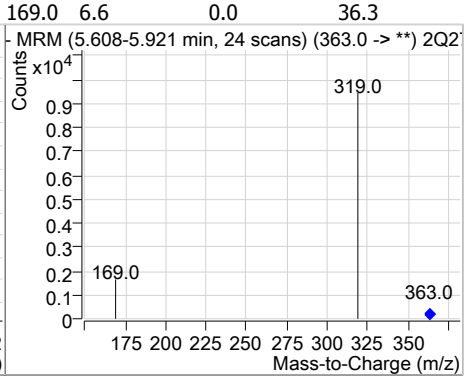




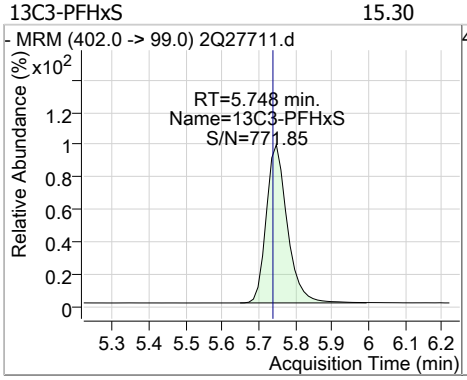
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.77	5.71	0.00	5825	363.0 -> 169.0	6.6	0.0	36.3

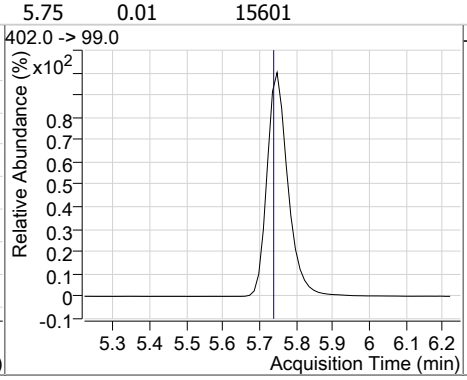


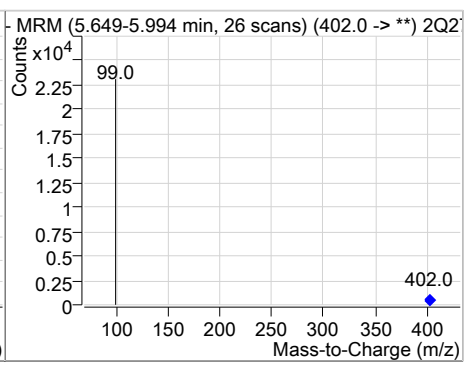




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.30	5.75	0.01	15601				

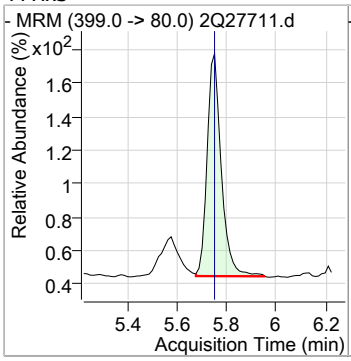


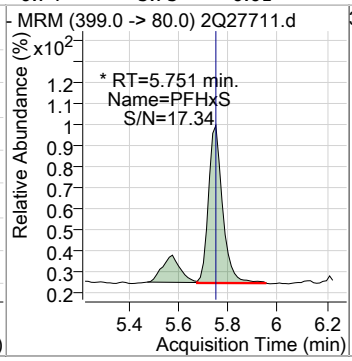


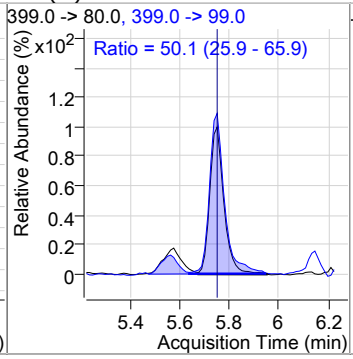


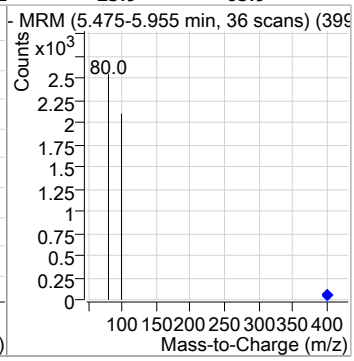
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.74	5.75	0.01	638 (m)	399.0 -> 99.0	50.1	25.9	65.9

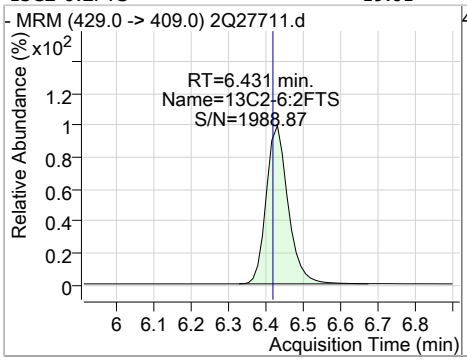


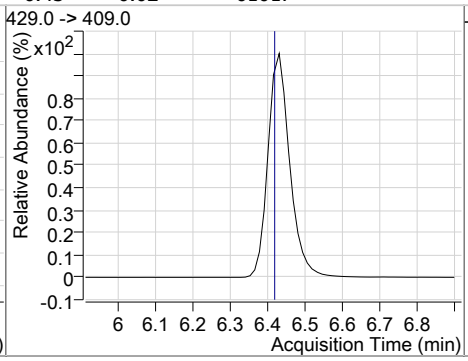


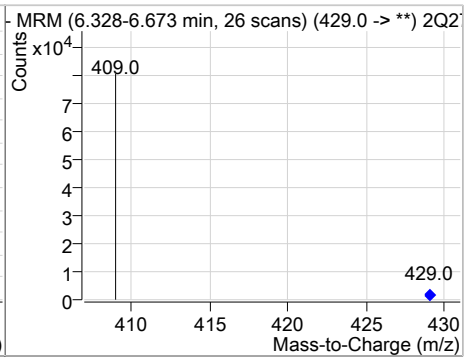




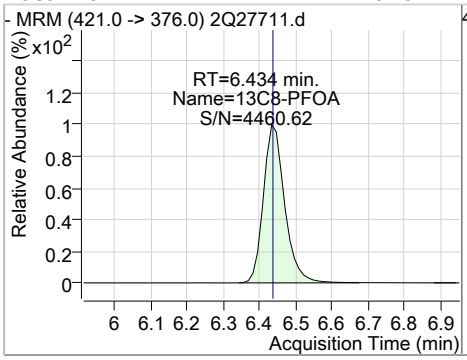
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.01	6.43	0.02	61017				

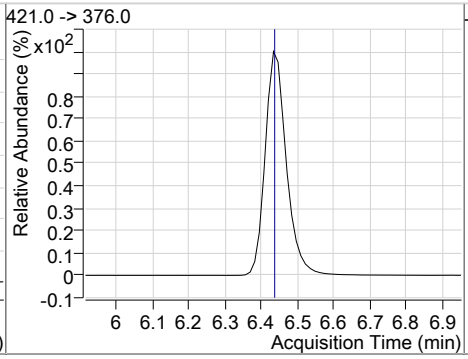


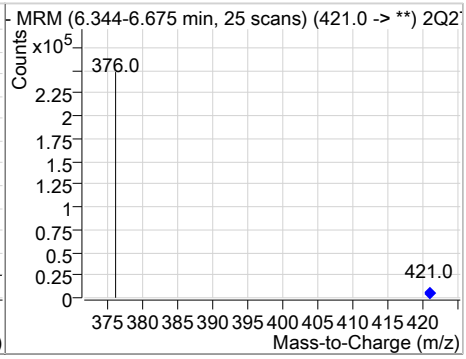




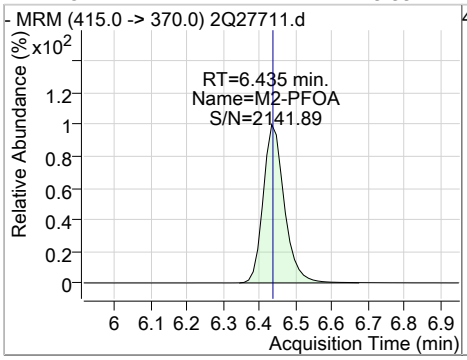
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.15	6.43	0.00	189293				

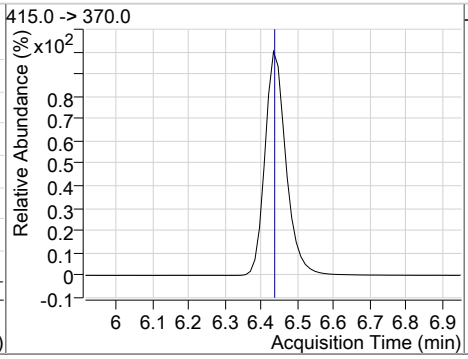


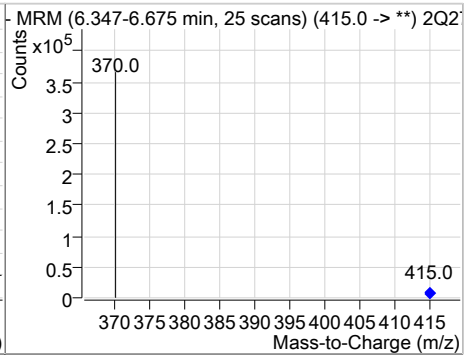




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	277969				

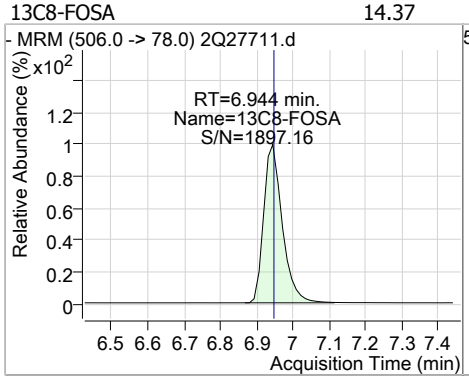


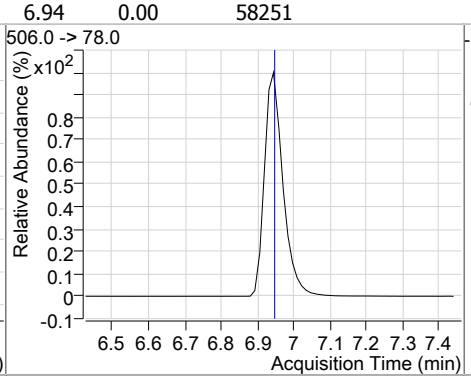


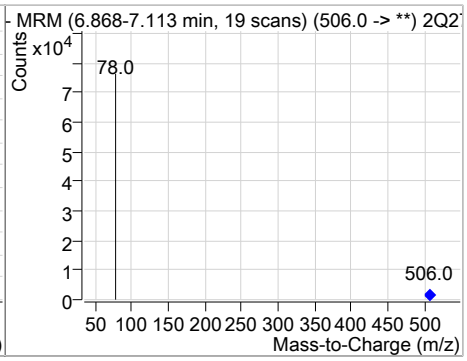


Perfluorinated Compounds by LC/MS/MS

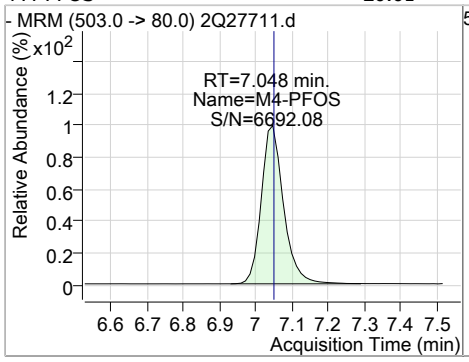
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.37	6.94	0.00	58251				

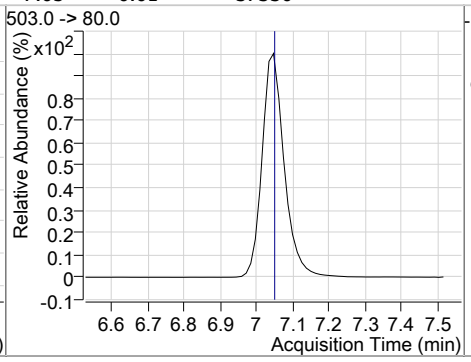


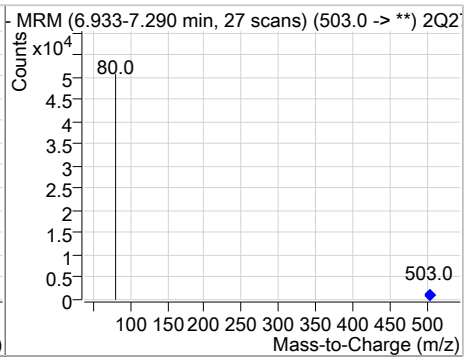




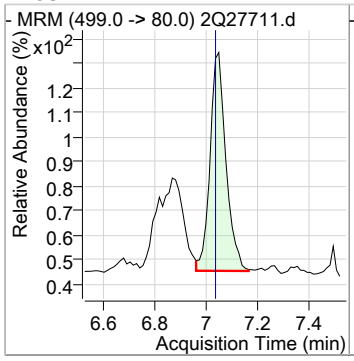
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.05	0.01	37330				

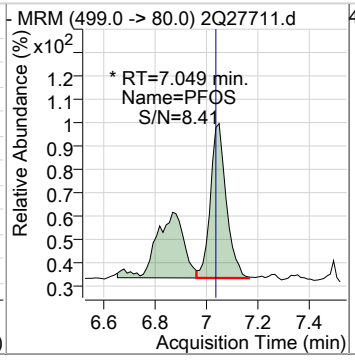


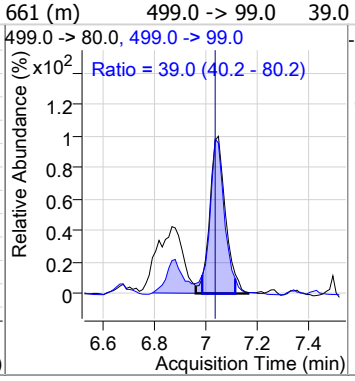


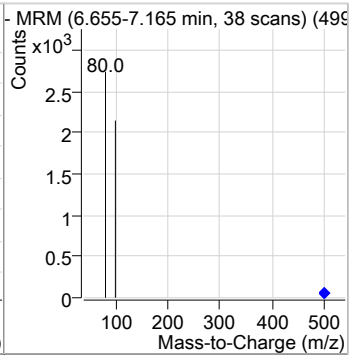


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.88	7.05	0.01	661 (m)	499.0 -> 99.0	39.0	40.2	80.2

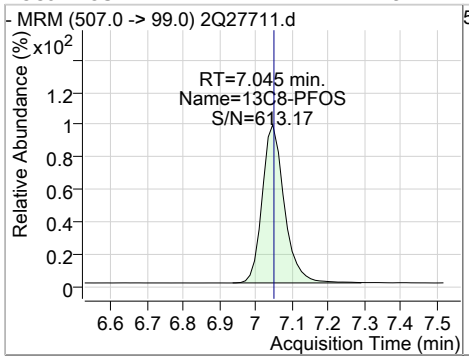


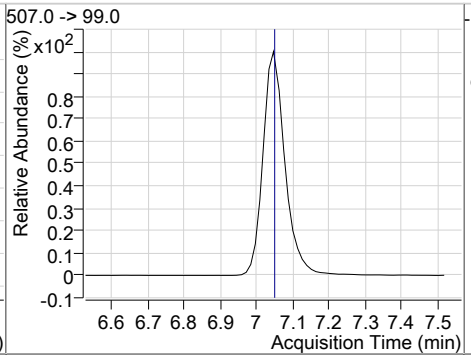


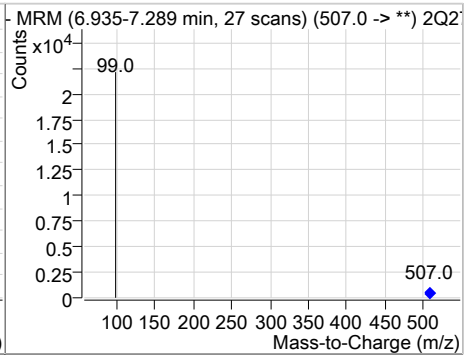




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	11.92	7.05	0.00	15534				

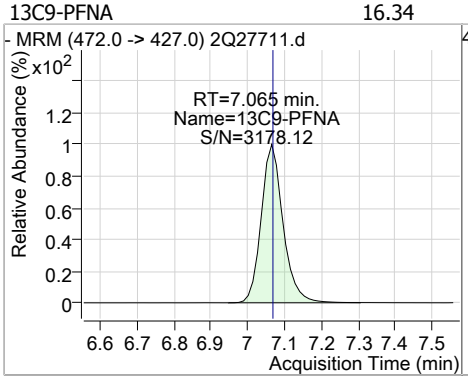


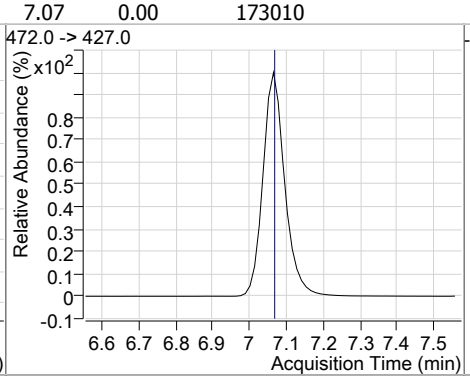


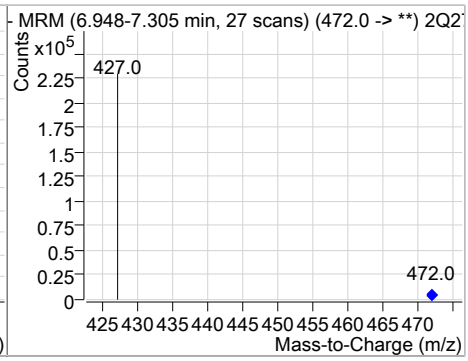


Perfluorinated Compounds by LC/MS/MS

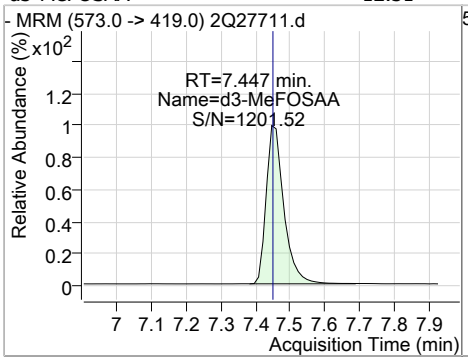
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.34	7.07	0.00	173010				

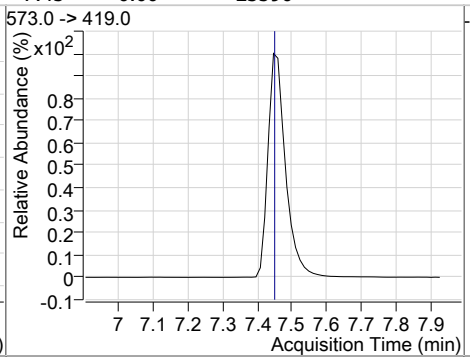


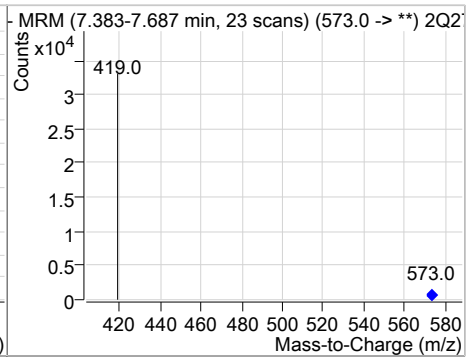




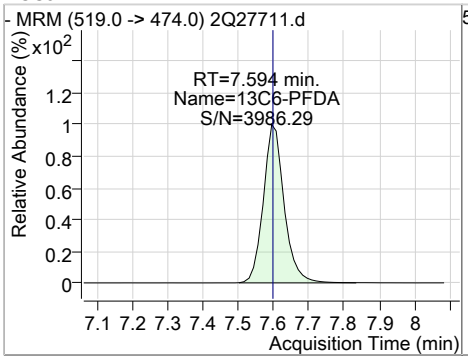
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	12.31	7.45	0.00	23596				

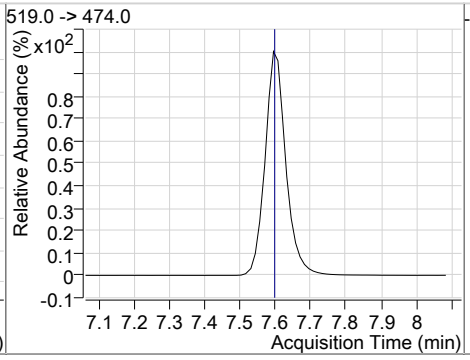


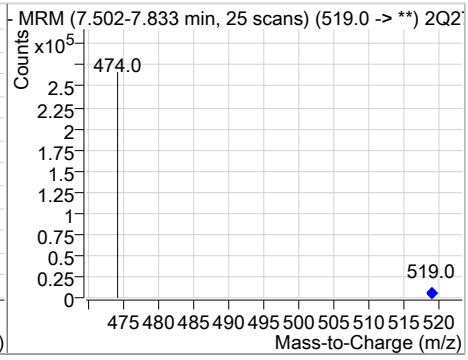




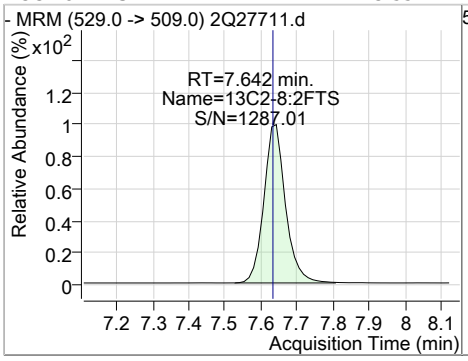
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	14.74	7.59	0.00	201105				

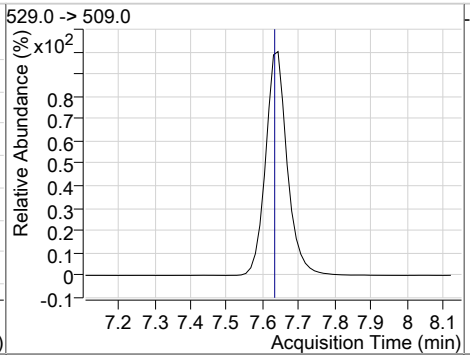


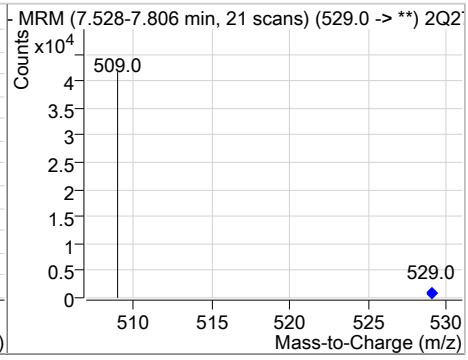




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	13.55	7.64	0.01	30034				

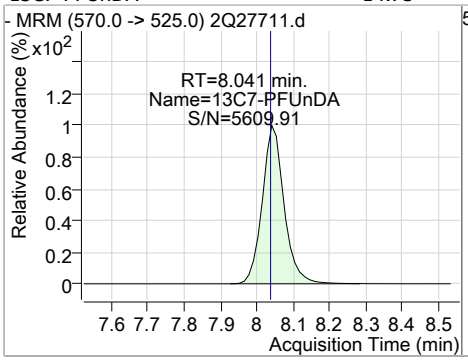


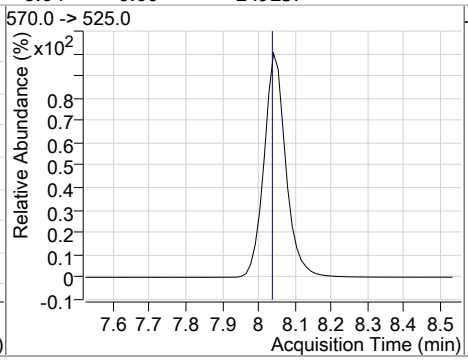


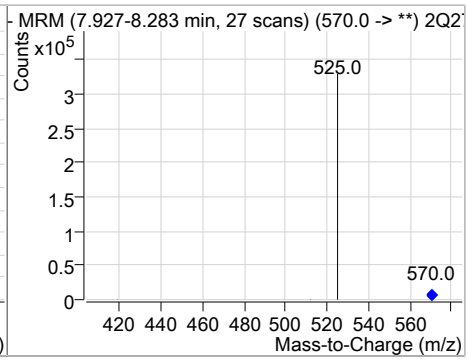


Perfluorinated Compounds by LC/MS/MS

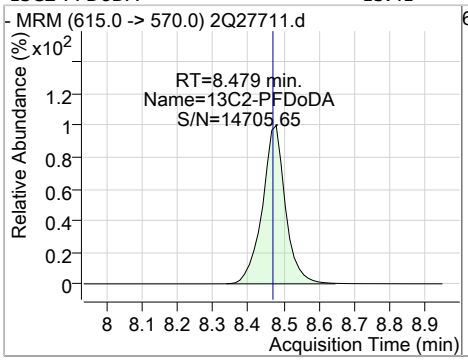
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.73	8.04	0.00	249257				

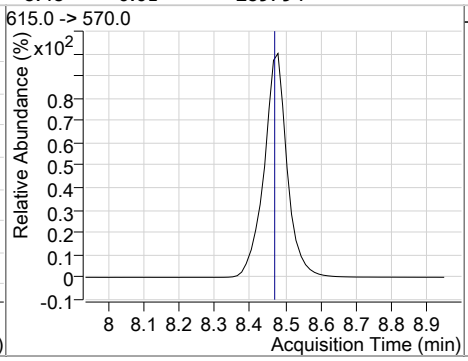


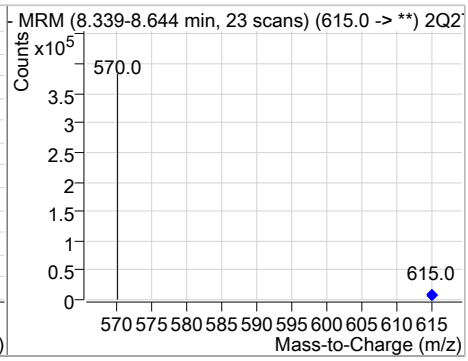




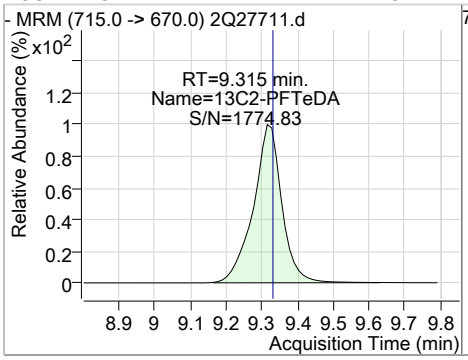
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	15.41	8.48	0.01	289794				

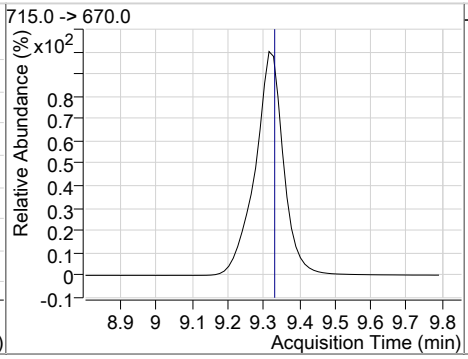


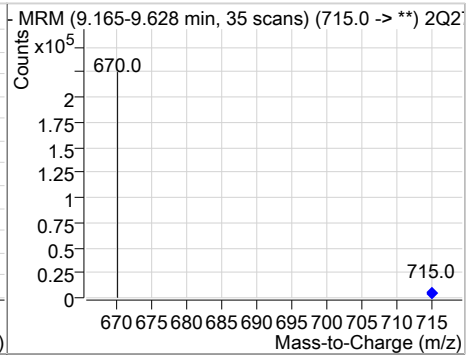




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.92	9.31	-0.01	165818				







Manual Integration Approval Summary

Sample Number:	FA62220-15	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27711.D	**Analyst approved:**	03/19/19 09:52 Nancy Saunders
Injection Time:	03/18/19 21:00	**Supervisor approved:**	03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27712.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:15:50 PM
Sample Name : fa62220-16
Vial : Vial 32
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

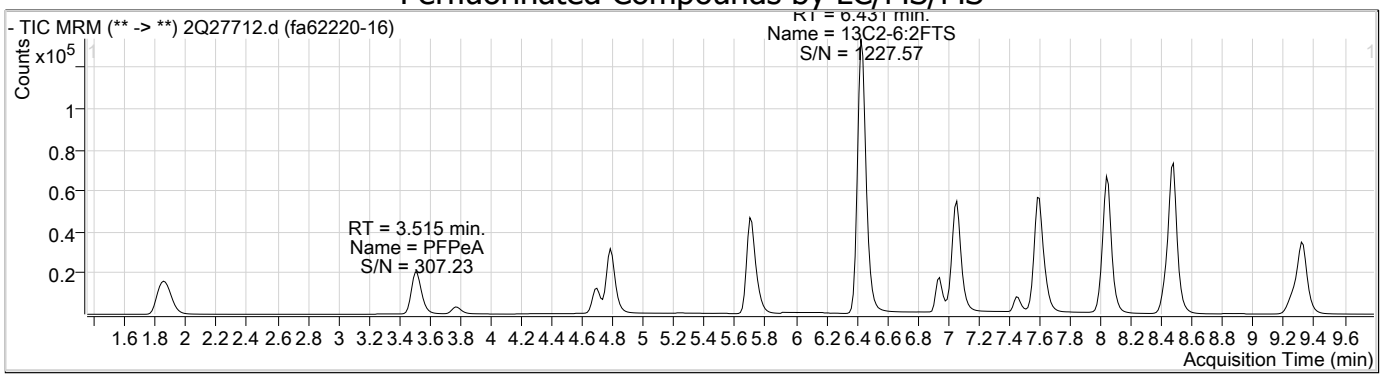
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	283404	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	38941	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	103034	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	87118	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	122157	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	181298	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	194879	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	176553	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	208358	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	277458	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	328884	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	194998	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	59995	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	14700	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	16170	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	16311	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	49838	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	62371	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	32607	20.00	µg/L	0.013
M3-MeFOSAA	7.447	573.0 -> 419.0	25690	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	49791	16.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	62294	19.41	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C2-8:2FTS	7.642	529.0 -> 509.0	32592	14.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.5%		
13C2-PFDoDA	8.479	615.0 -> 570.0	328691	17.48	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	194336	15.14	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.7%		
13C3-PFBS	3.767	302.0 -> 99.0	14670	16.09	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.4%		
13C3-PFHxS	5.748	402.0 -> 99.0	16196	15.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.4%		
13C4-PFBA	1.852	217.0 -> 172.0	102932	17.17	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.8%		
13C4-PFHpA	5.705	367.0 -> 322.0	181304	17.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.6%		
13C5-PFHxA	4.789	318.0 -> 273.0	122064	16.80	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%		
13C5-PFPeA	3.511	268.0 -> 223.0	86935	17.10	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.5%		
13C6-PFDA	7.594	519.0 -> 474.0	209848	15.38	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

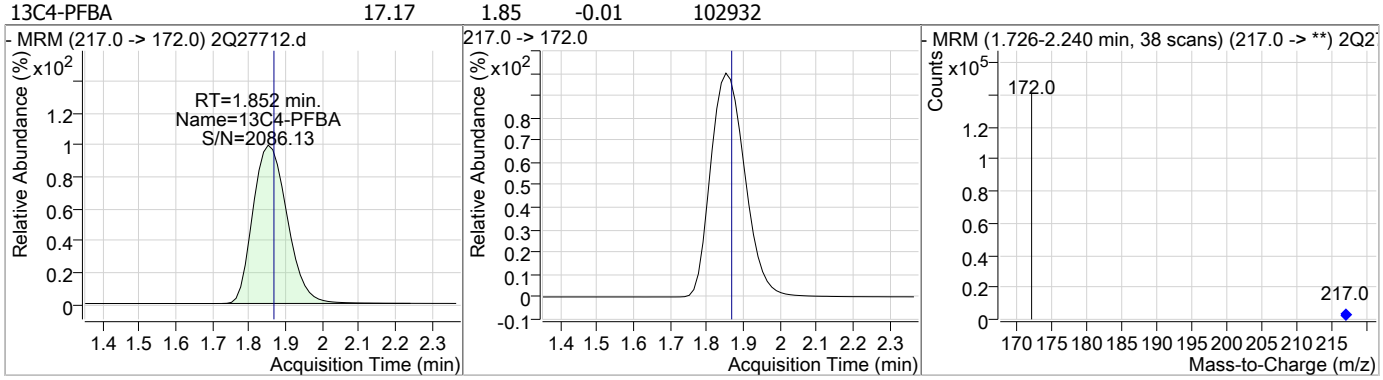
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.9%			
13C7-PFUnDA	8.041	570.0 -> 525.0	277452	16.39	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%			
13C8-FOSA	6.944	506.0 -> 78.0	59994	14.80	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%			
13C8-PFOA	6.434	421.0 -> 376.0	194779	18.67	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.4%			
13C8-PFOS	7.045	507.0 -> 99.0	16301	12.51	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.5%			
13C9-PFNA	7.065	472.0 -> 427.0	176586	16.68	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.4%			
d3-MeFOSAA	7.447	573.0 -> 419.0	25706	13.41	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.1%			
M2-PFOA	6.435	415.0 -> 370.0	283466	19.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	38924	19.98	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.860	213.0 -> 169.0	1626	1.60	µg/L		100
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	-	363.0 -> 319.0	-	N.D.			
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.791	313.0 -> 269.0	2448	1.16	µg/L		100
PFHxS	5.751	399.0 -> 80.0	634	0.71	µg/L	m	98
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	-	413.0 -> 369.0	-	N.D.			
PFOS	-	499.0 -> 80.0	-	N.D.			
PFPeA	3.515	263.0 -> 219.0	8910	2.36	µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

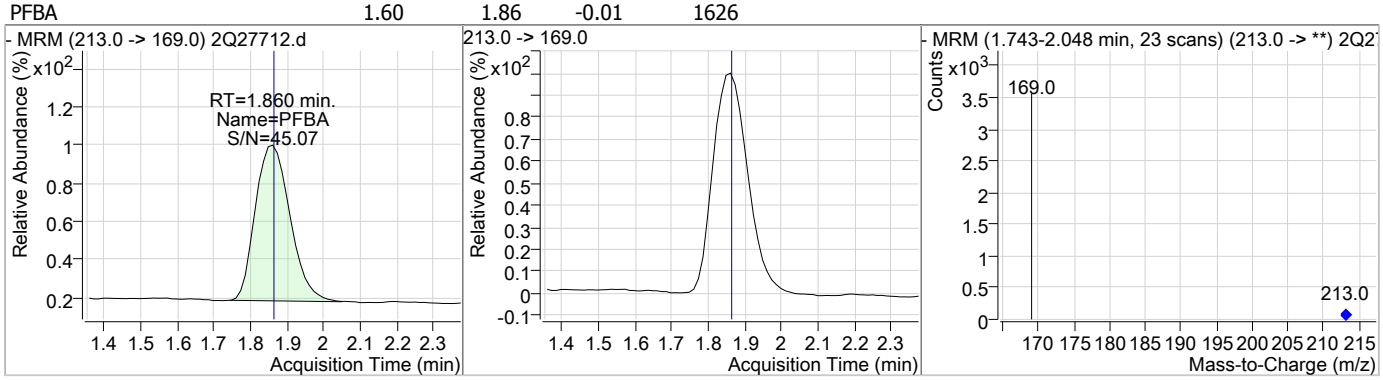
Perfluorinated Compounds by LC/MS/MS



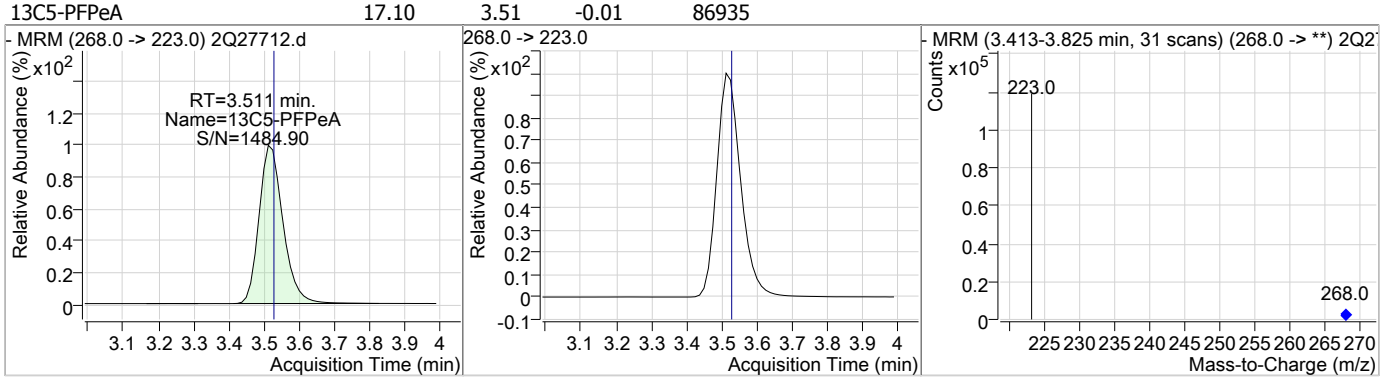
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.17	1.85	-0.01	102932				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.60	1.86	-0.01	1626				

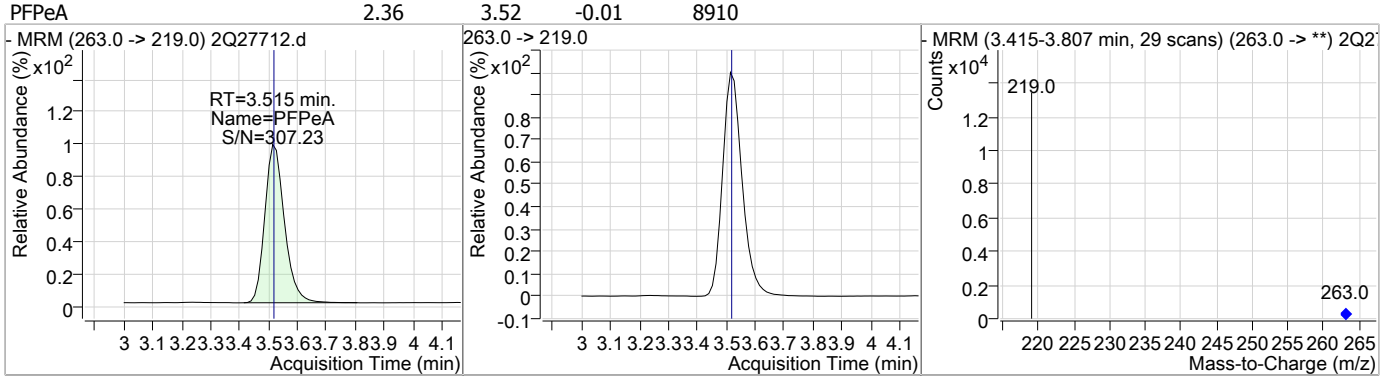


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.10	3.51	-0.01	86935				

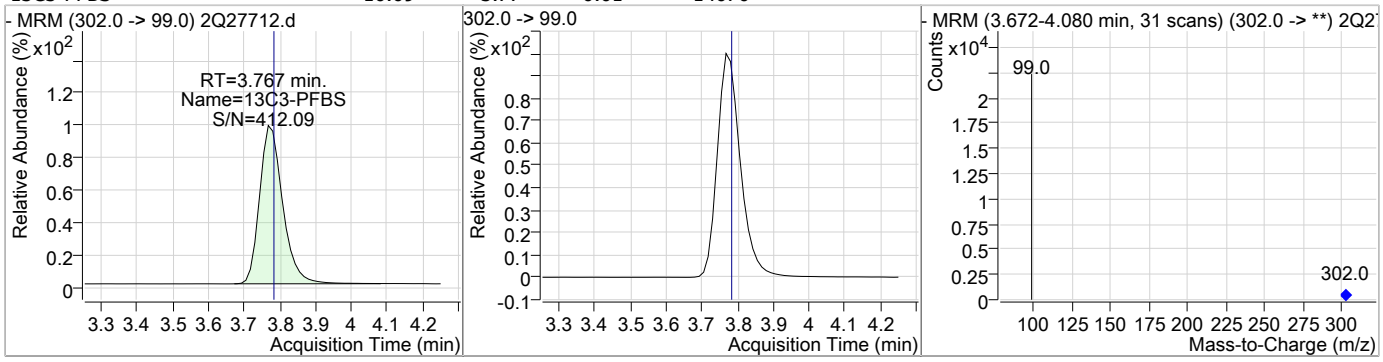


Perfluorinated Compounds by LC/MS/MS

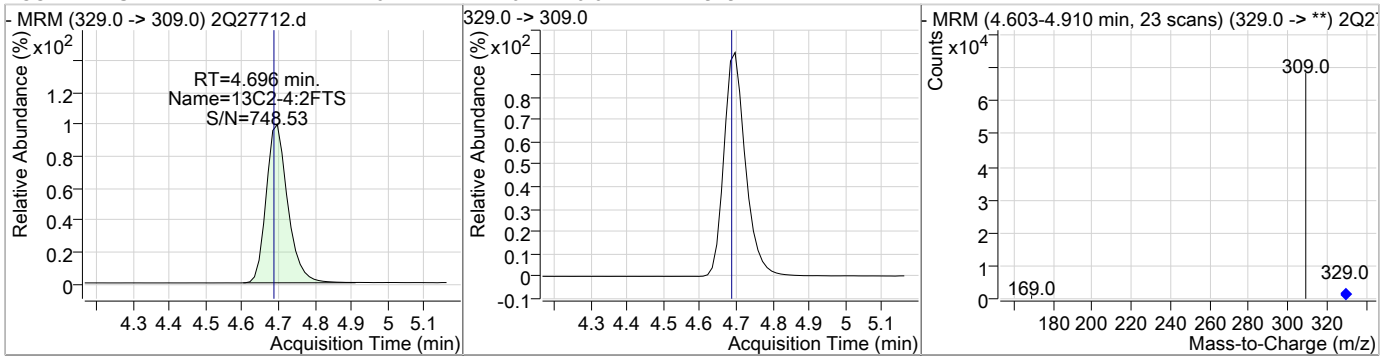
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.36	3.52	-0.01	8910				



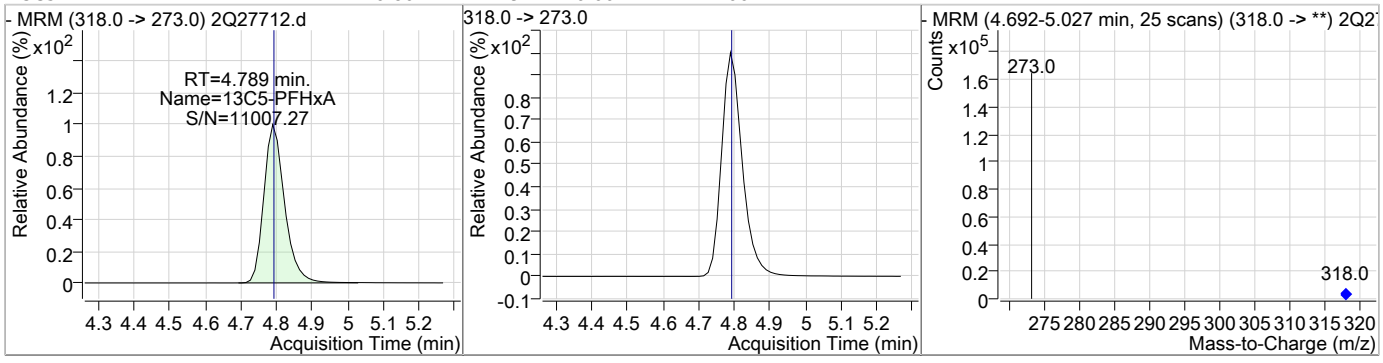
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.09	3.77	-0.01	14670				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.74	4.70	0.01	49791				

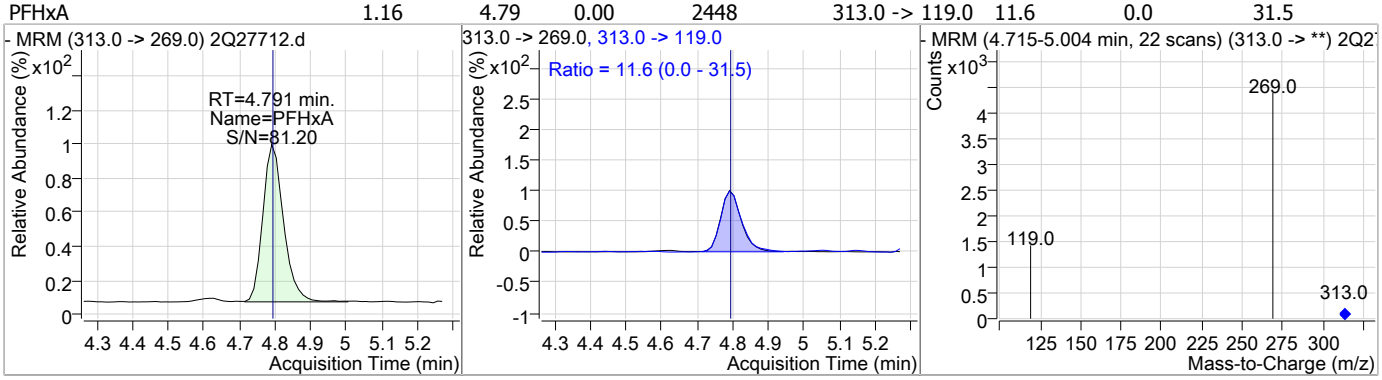


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.80	4.79	0.00	122064				

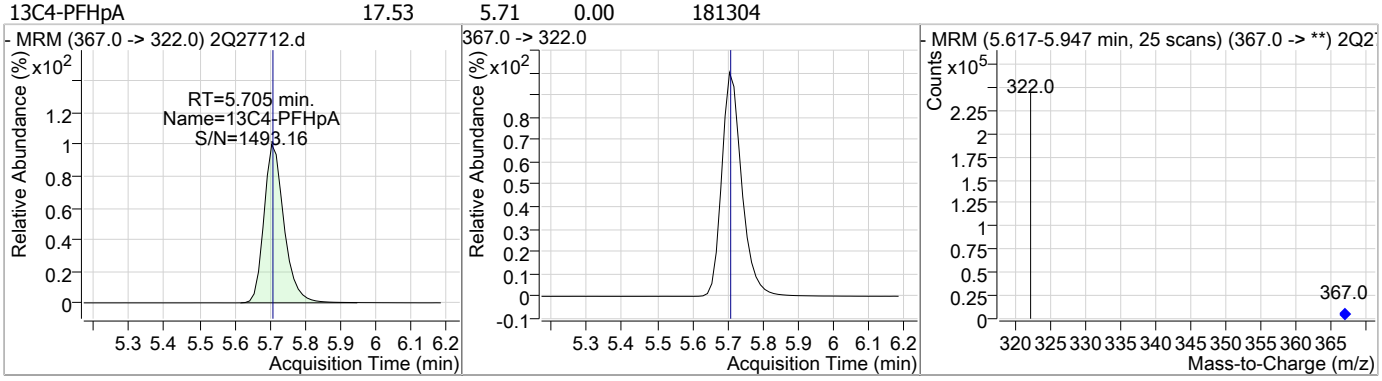


Perfluorinated Compounds by LC/MS/MS

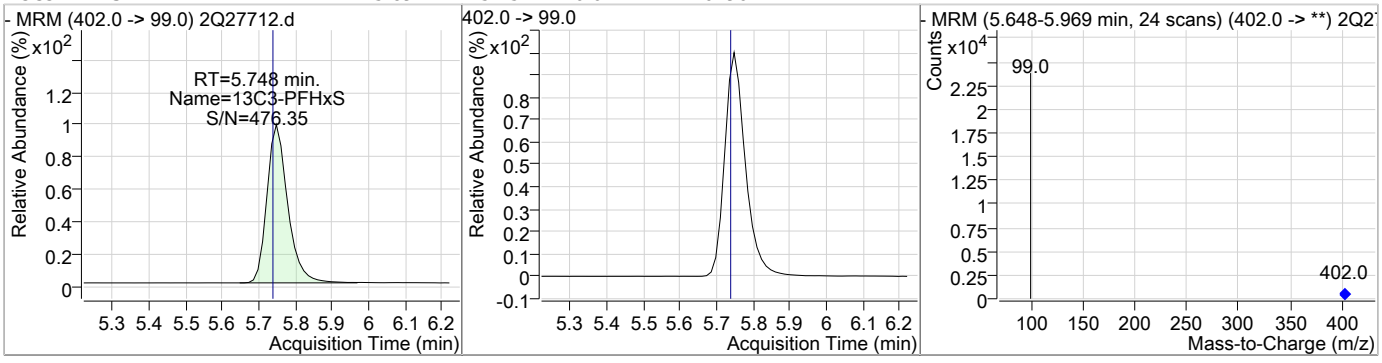
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.16	4.79	0.00	2448	313.0 -> 119.0	11.6	0.0	31.5



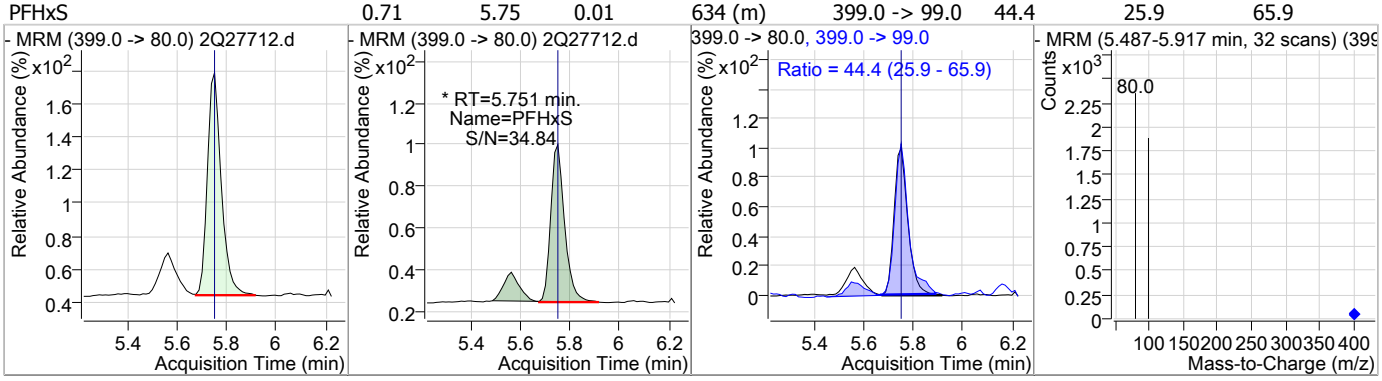
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.53	5.71	0.00	181304				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.89	5.75	0.01	16196				

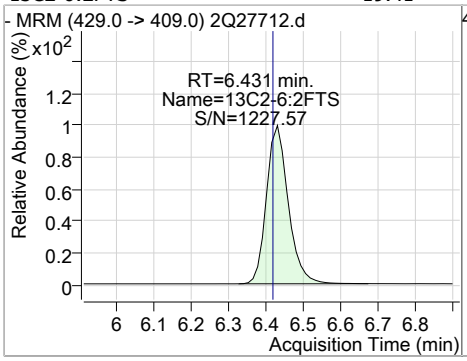


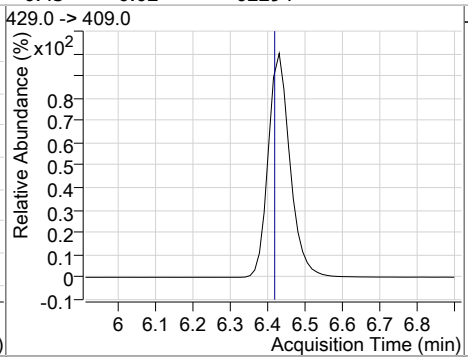
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.71	5.75	0.01	634 (m)	399.0 -> 99.0	44.4	25.9	65.9

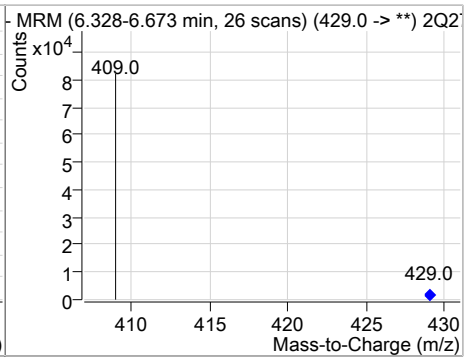


Perfluorinated Compounds by LC/MS/MS

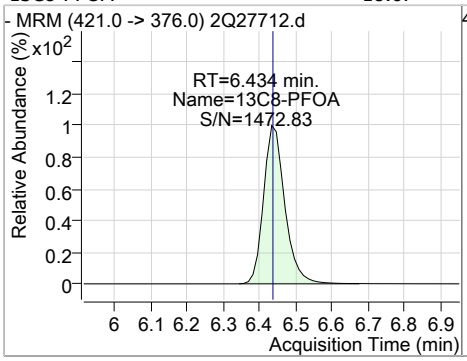
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.41	6.43	0.02	62294				

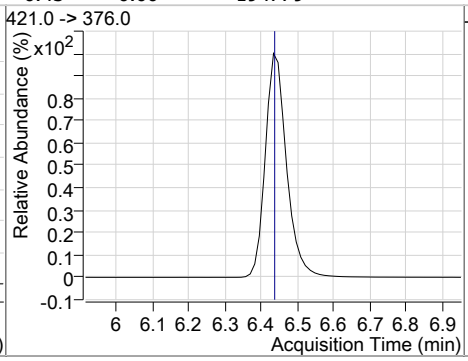


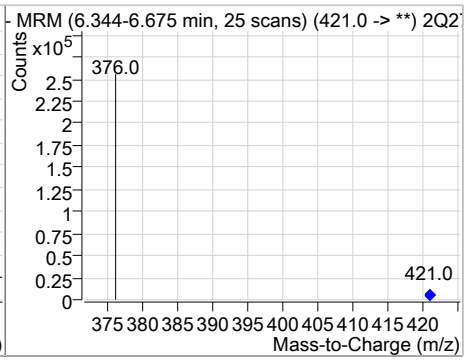




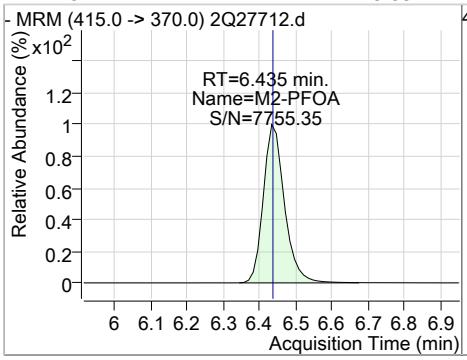
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.67	6.43	0.00	194779				

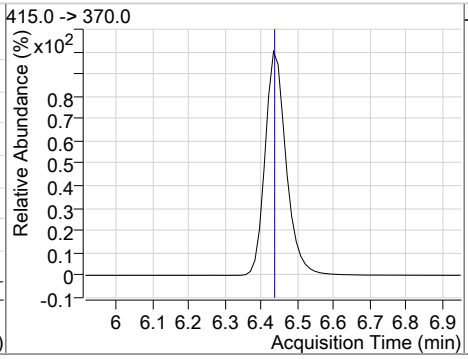


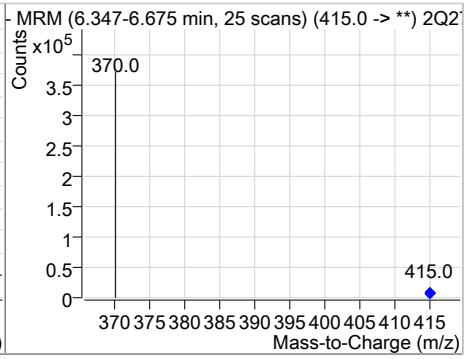




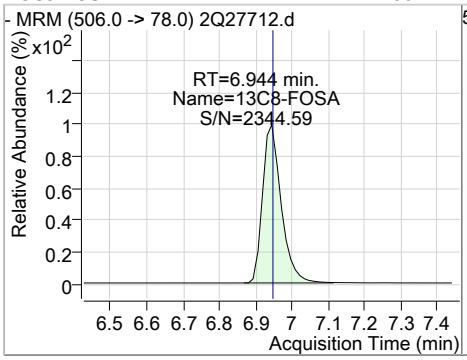
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	283466				

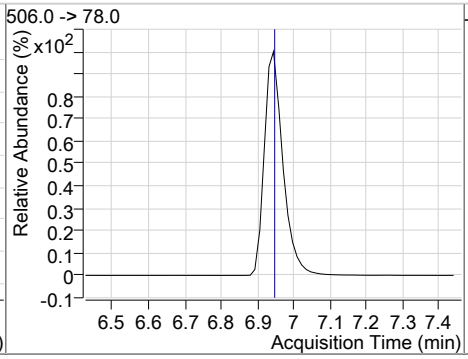


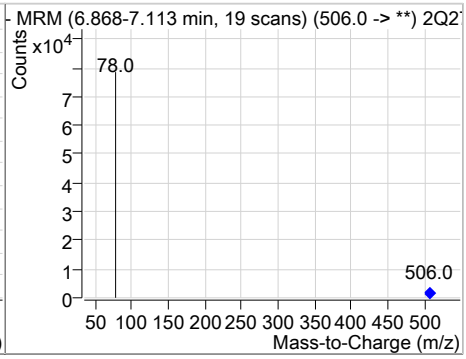




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.80	6.94	0.00	59994				

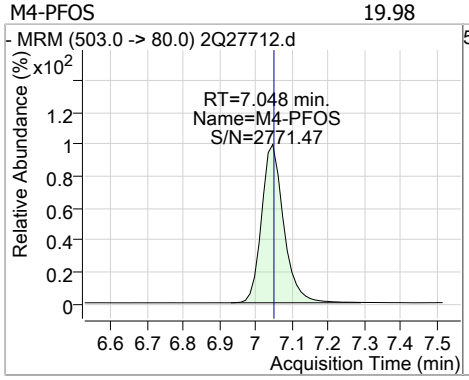


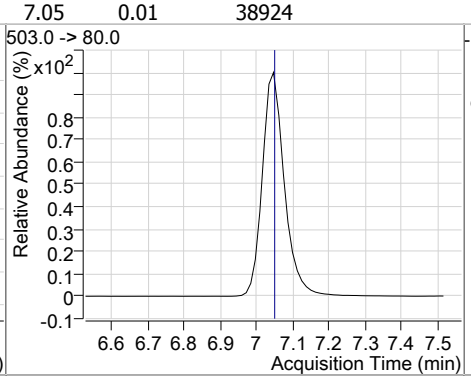


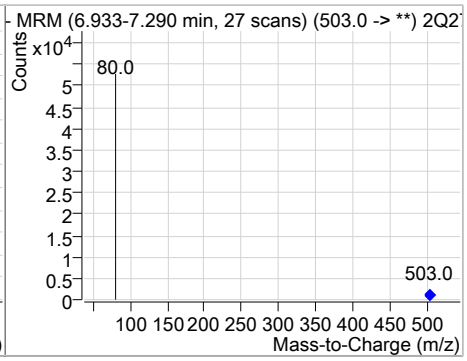


Perfluorinated Compounds by LC/MS/MS

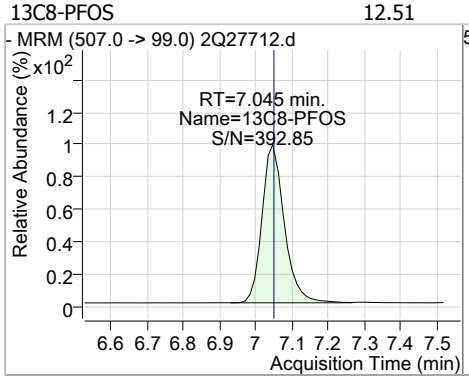
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.05	0.01	38924				

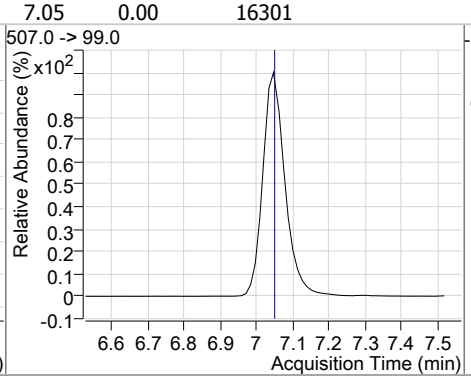


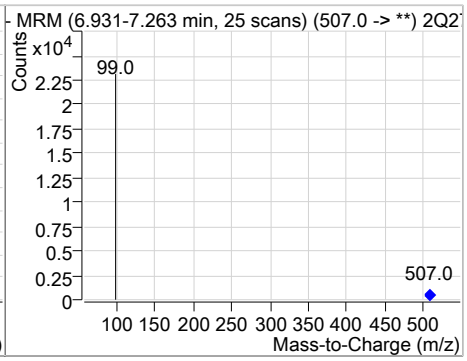




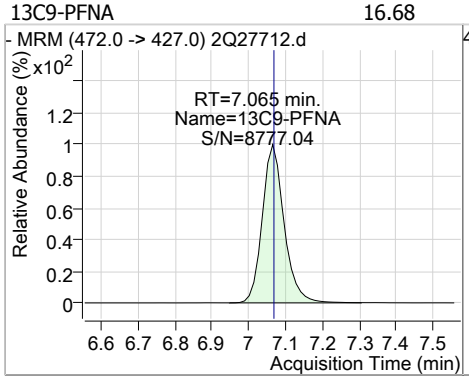
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.51	7.05	0.00	16301				

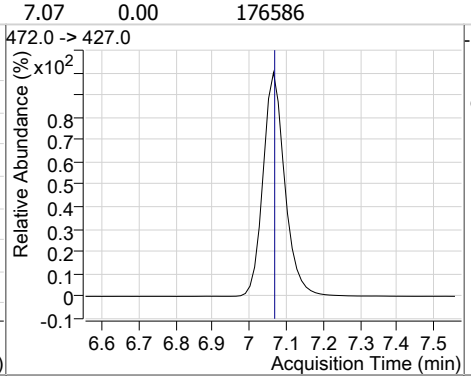


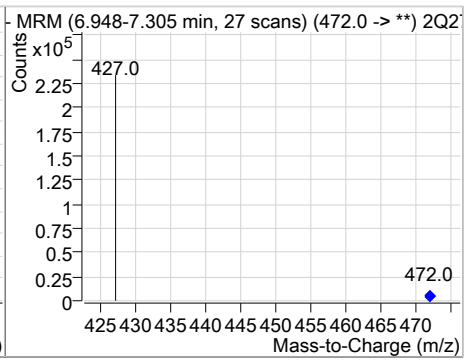




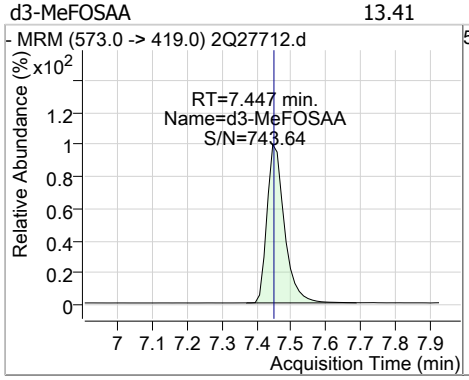
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.68	7.07	0.00	176586				

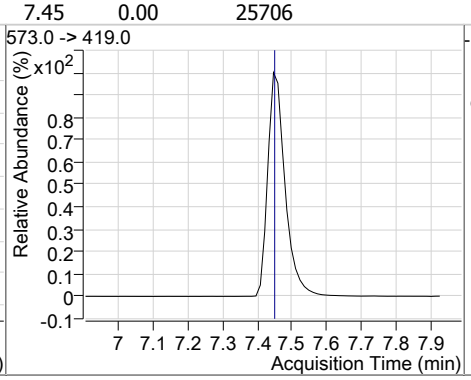


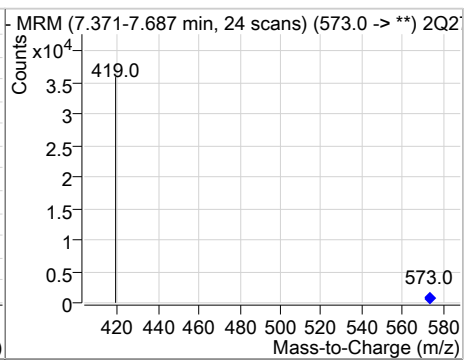




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	13.41	7.45	0.00	25706				

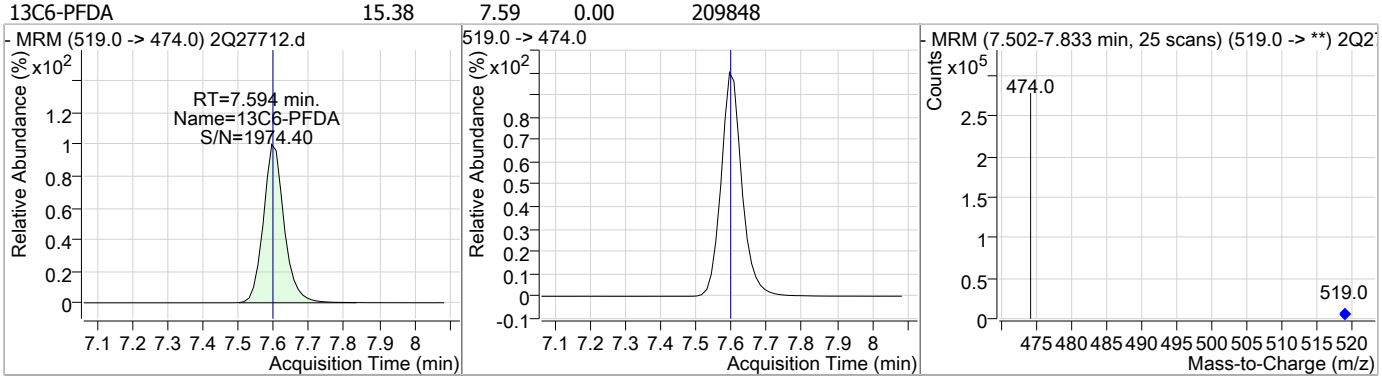




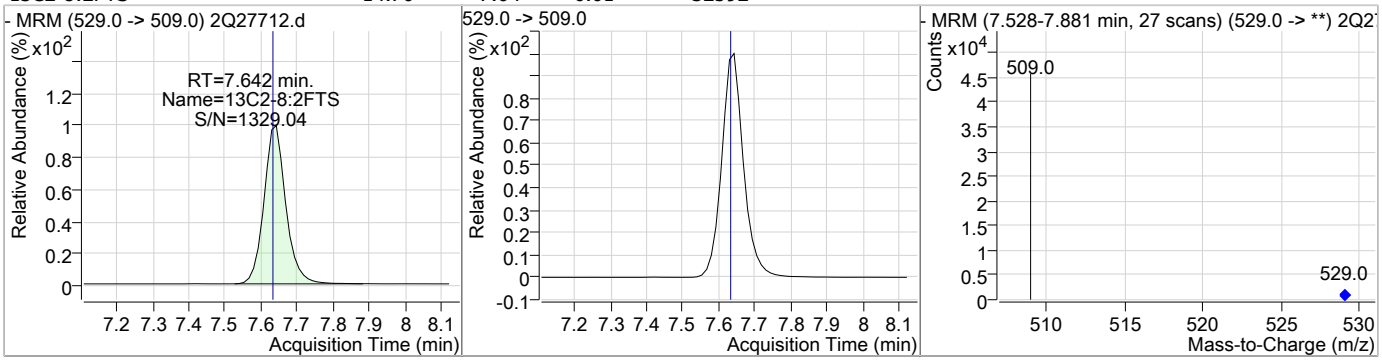


Perfluorinated Compounds by LC/MS/MS

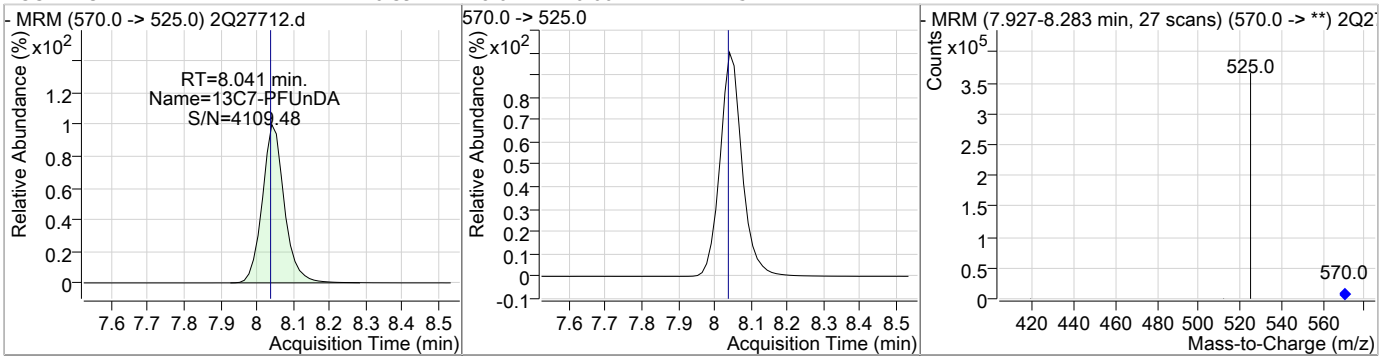
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.38	7.59	0.00	209848				



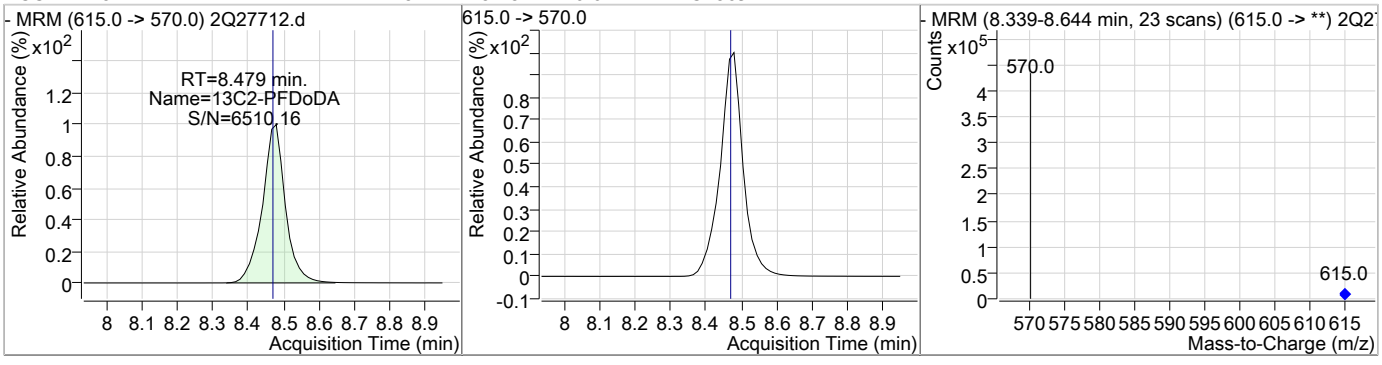
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.70	7.64	0.01	32592				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.39	8.04	0.00	277452				

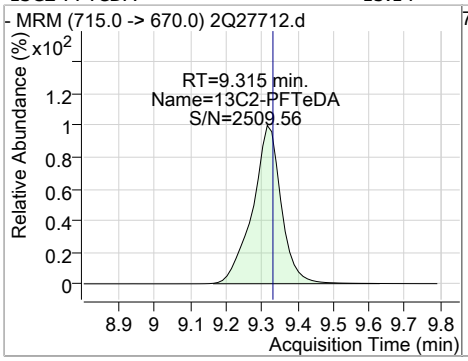


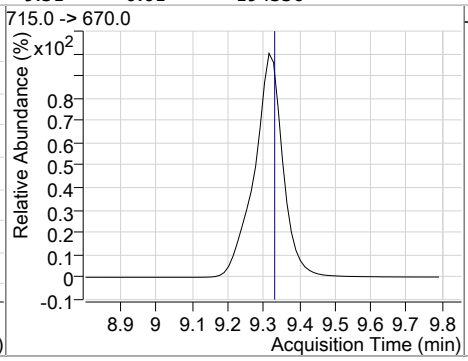
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.48	8.48	0.01	328691				

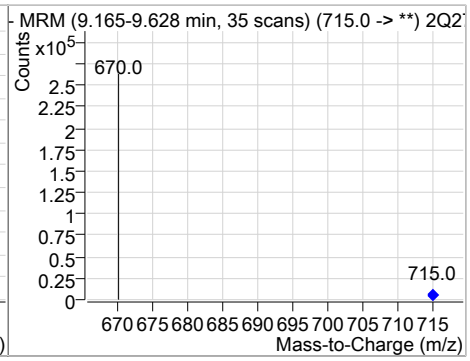


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.14	9.31	-0.01	194336				







Manual Integration Approval Summary

Sample Number: FA62220-16
Lab FileID: 2Q27712.D
Injection Time: 03/18/19 21:15
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:26

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27715.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 10:03:00 PM
Sample Name : fa62220-17
Vial : Vial 33
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

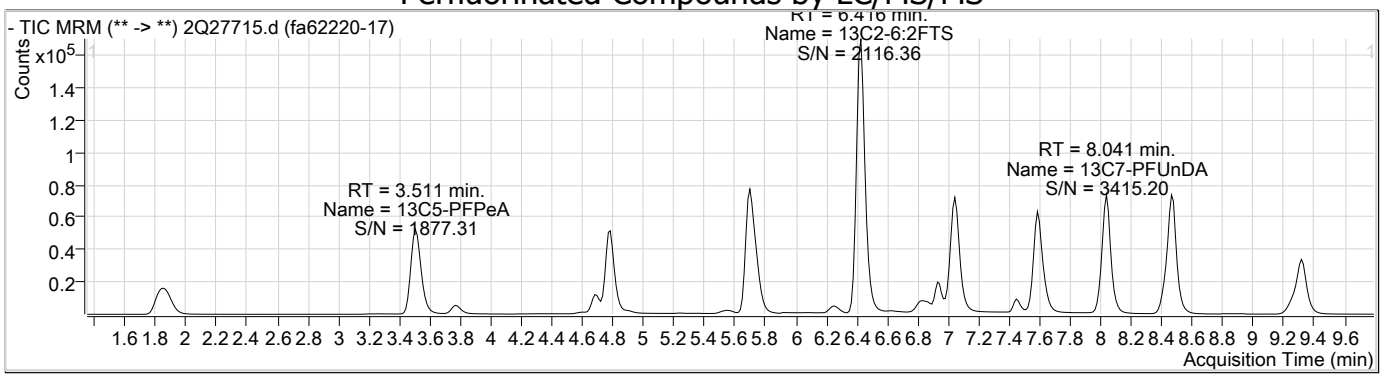
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	275006	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	37581	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	99535	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	83903	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	119346	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	174963	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	188592	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	177386	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	226938	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	300188	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	334653	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	183180	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	62883	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14182	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	15413	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	17152	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	47149	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	58256	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	33807	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	27737	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	47580	16.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.0%		
13C2-6:2FTS	6.416	429.0 -> 409.0	58197	18.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
13C2-8:2FTS	7.630	529.0 -> 509.0	33797	15.24	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.2%		
13C2-PFDoDA	8.466	615.0 -> 570.0	334515	17.79	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C2-PFTeDA	9.315	715.0 -> 670.0	182631	14.23	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.1%		
13C3-PFBS	3.767	302.0 -> 99.0	14166	15.54	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.7%		
13C3-PFHxS	5.736	402.0 -> 99.0	15408	15.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.6%		
13C4-PFBA	1.852	217.0 -> 172.0	99429	16.58	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%		
13C4-PFHpA	5.705	367.0 -> 322.0	174952	16.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.6%		
13C5-PFHxA	4.789	318.0 -> 273.0	119330	16.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%		
13C5-PFPeA	3.511	268.0 -> 223.0	83641	16.45	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%		
13C6-PFDA	7.594	519.0 -> 474.0	226811	16.62	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

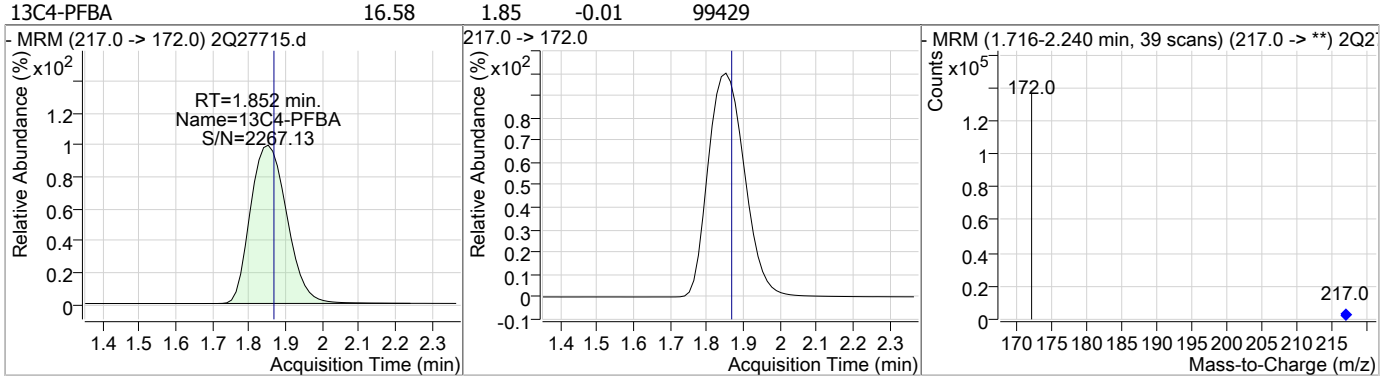
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.1%			
13C7-PFUnDA	8.041	570.0 -> 525.0	300153	17.74	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.7%			
13C8-FOSA	6.932	506.0 -> 78.0	62856	15.50	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%			
13C8-PFOA	6.434	421.0 -> 376.0	188600	18.08	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.4%			
13C8-PFOS	7.033	507.0 -> 99.0	17136	13.15	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.7%			
13C9-PFNA	7.052	472.0 -> 427.0	177366	16.75	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%			
d3-MeFOSAA	7.447	573.0 -> 419.0	27730	14.47	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.3%			
M2-PFOA	6.435	415.0 -> 370.0	275025	19.98	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.036	503.0 -> 80.0	37457	19.92	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	6.418	427.0 -> 407.0	4480	3.13	µg/L		99
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.848	213.0 -> 169.0	12174	12.38	µg/L		100
PFBS	3.771	299.0 -> 80.0	6677	5.93	µg/L		99
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.708	363.0 -> 319.0	107363	14.24	µg/L		100
PFHpS	6.442	449.0 -> 80.0	1875	2.51	µg/L	m	98
PFHxA	4.791	313.0 -> 269.0	80926	39.38	µg/L		100
PFHxS	5.739	399.0 -> 80.0	53226	62.47	µg/L	m	94
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.437	413.0 -> 369.0	143912	28.25	µg/L	m	99
PFOS	7.037	499.0 -> 80.0	90490	108.63	µg/L	m	75
PFPeA	3.515	263.0 -> 219.0	164232	45.22	µg/L		100
PFPeS	4.908	349.0 -> 80.0	3675	5.10	µg/L	m	95
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

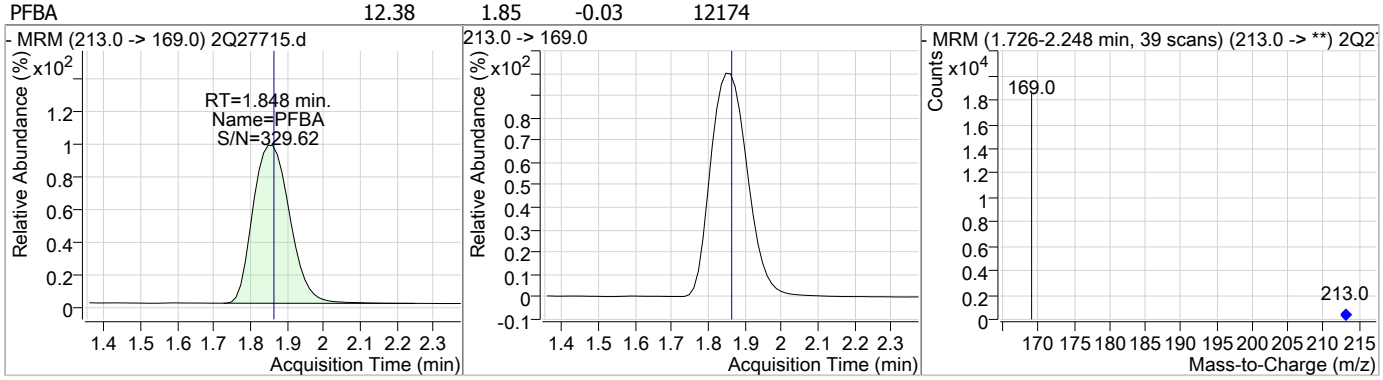
Perfluorinated Compounds by LC/MS/MS



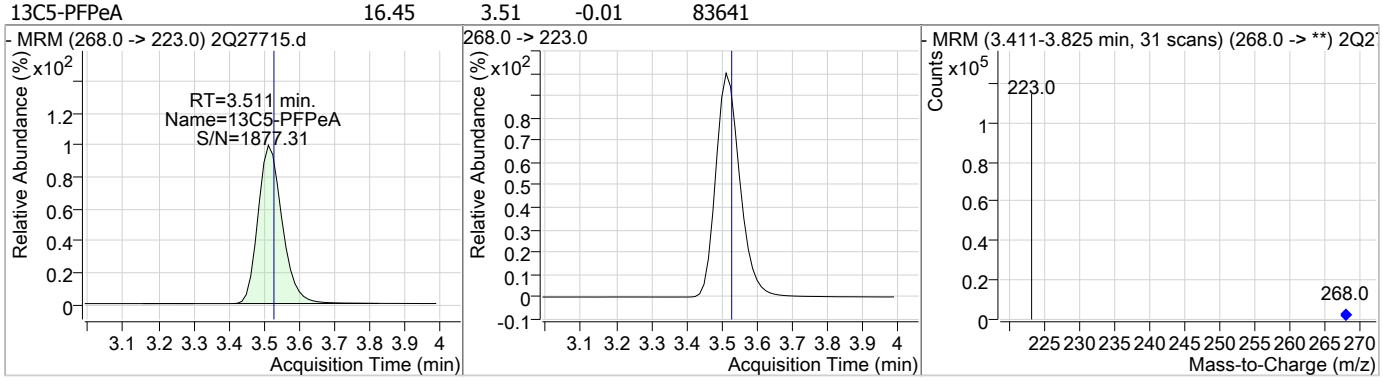
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.58	1.85	-0.01	99429				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	12.38	1.85	-0.03	12174				

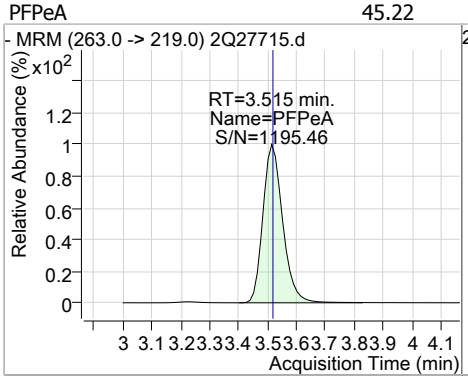


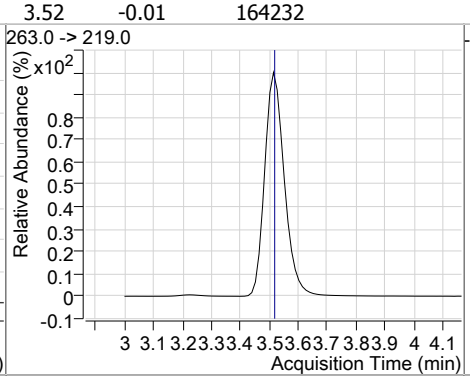
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.45	3.51	-0.01	83641				

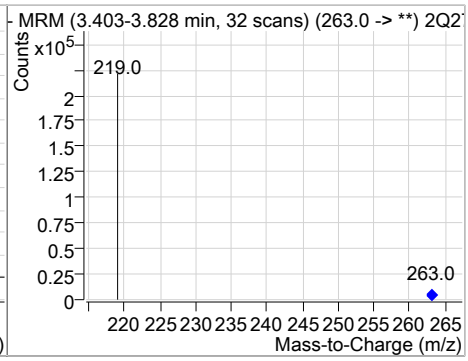


Perfluorinated Compounds by LC/MS/MS

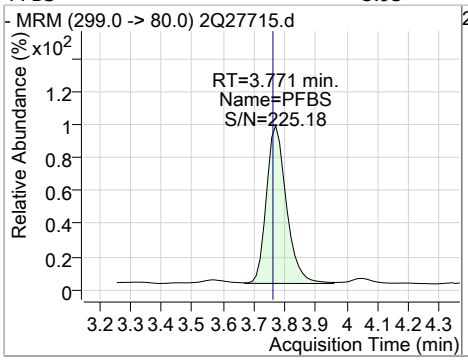
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	45.22	3.52	-0.01	164232				

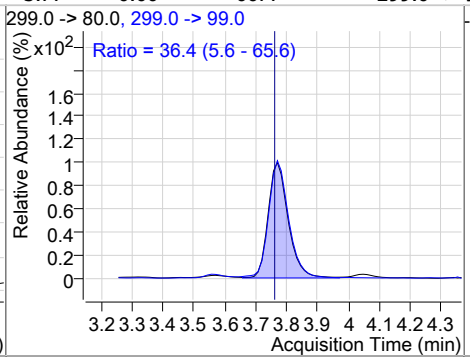


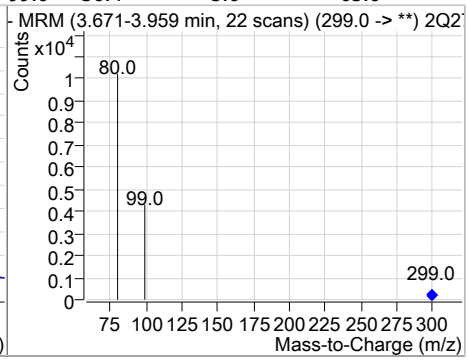




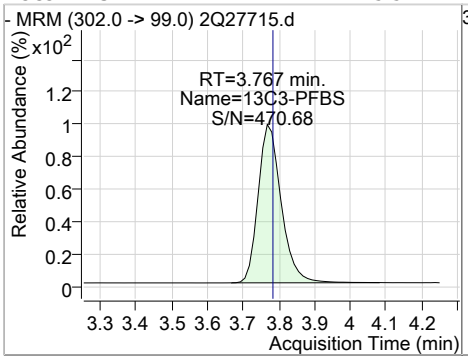
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	5.93	3.77	0.00	6677	299.0 -> 99.0	36.4	5.6	65.6

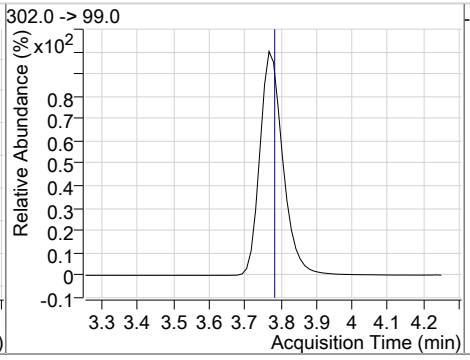


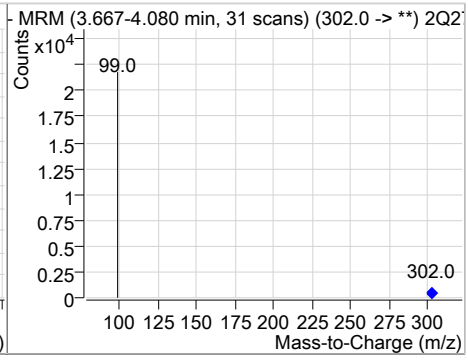




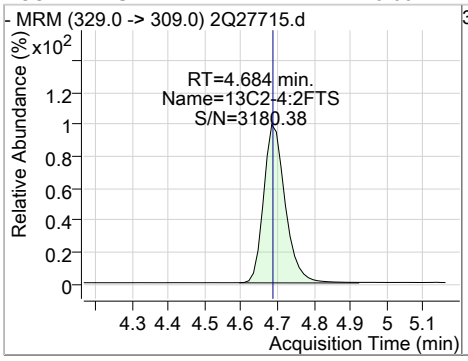
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.54	3.77	-0.01	14166				

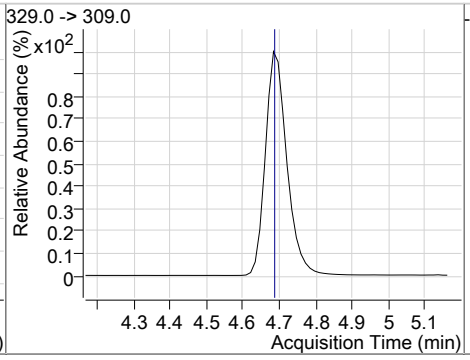


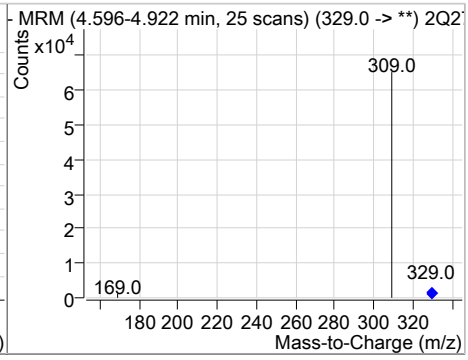




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.00	4.68	0.00	47580				

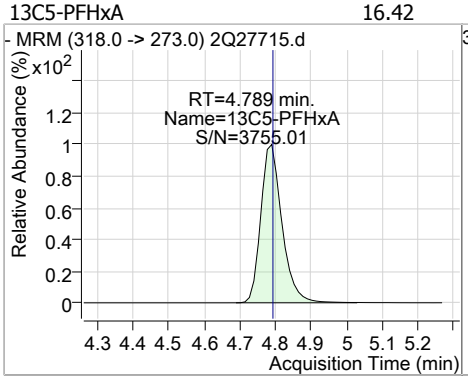


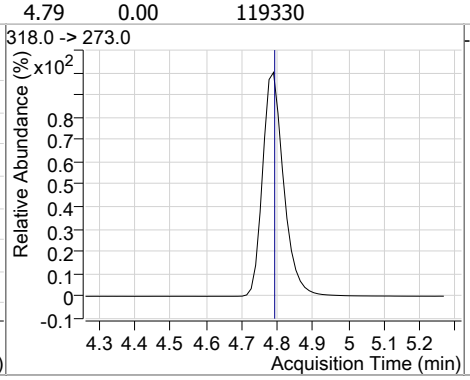


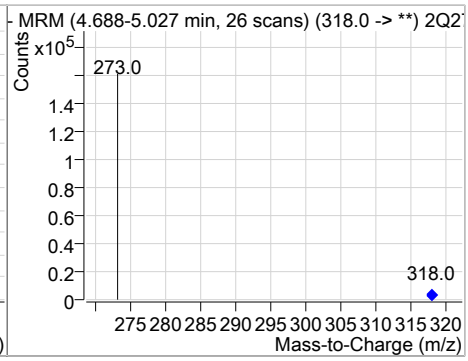


Perfluorinated Compounds by LC/MS/MS

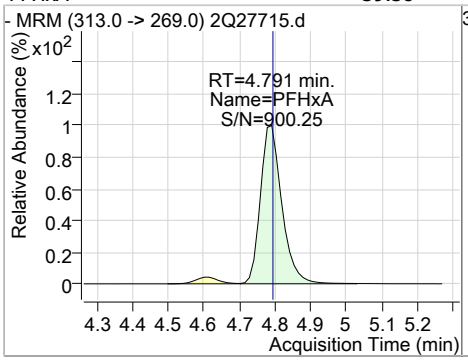
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.42	4.79	0.00	119330				

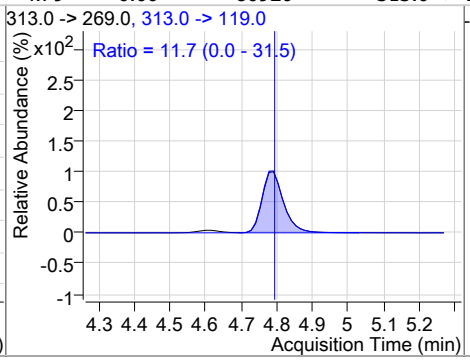


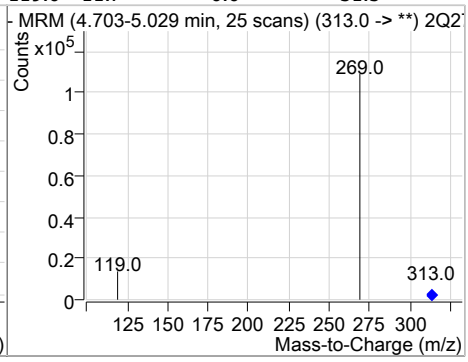




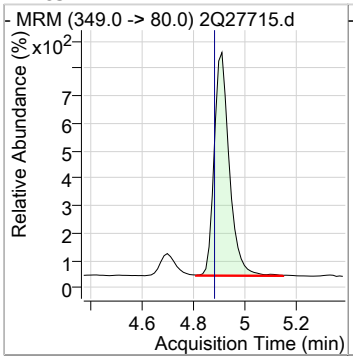
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	39.38	4.79	0.00	80926	313.0 -> 119.0	11.7	0.0	31.5

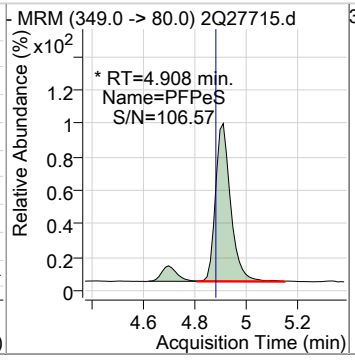


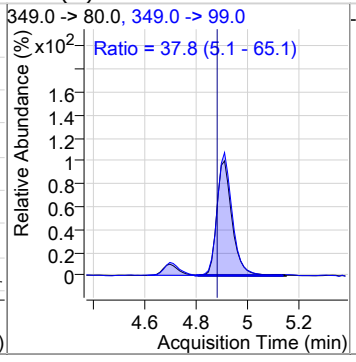


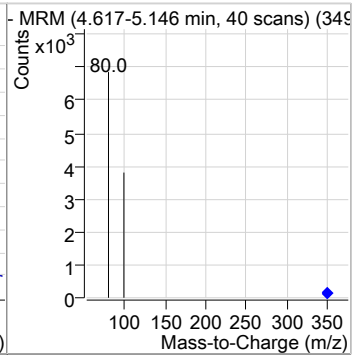


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	5.10	4.91	0.01	3675 (m)	349.0 -> 99.0	37.8	5.1	65.1

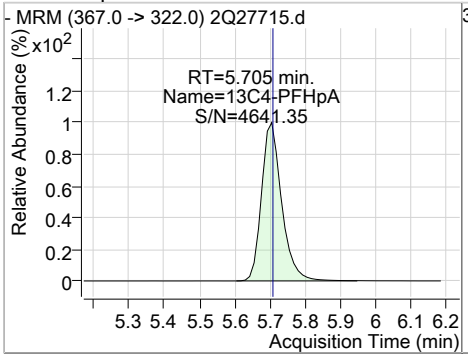


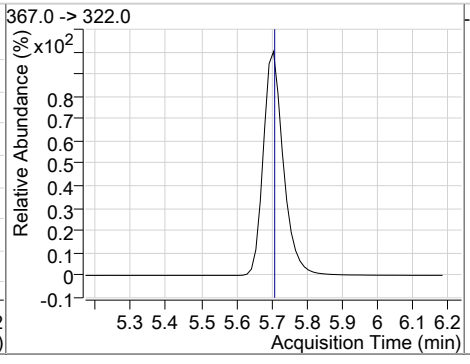


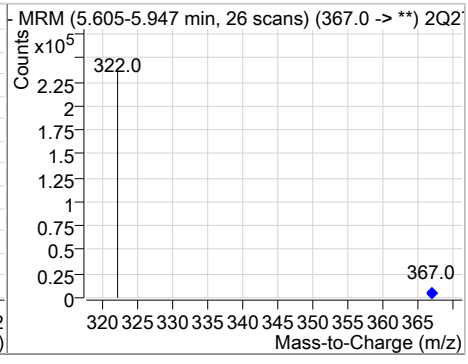




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.92	5.71	0.00	174952				

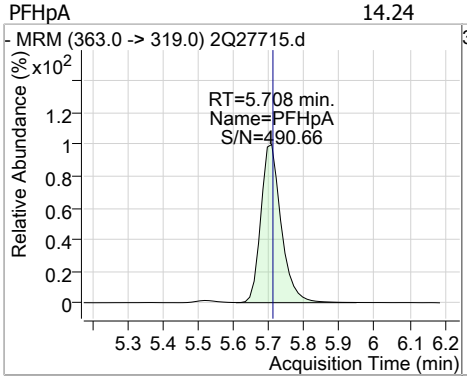


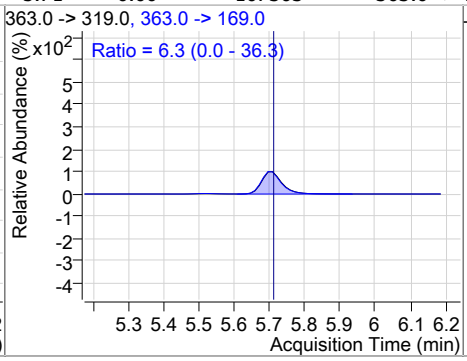


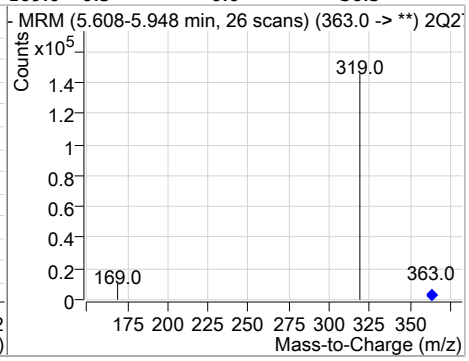


Perfluorinated Compounds by LC/MS/MS

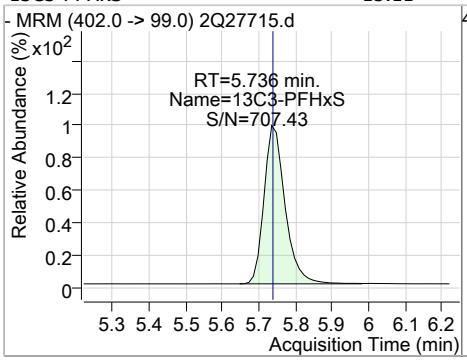
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	14.24	5.71	0.00	107363	363.0 -> 169.0	6.3	0.0	36.3

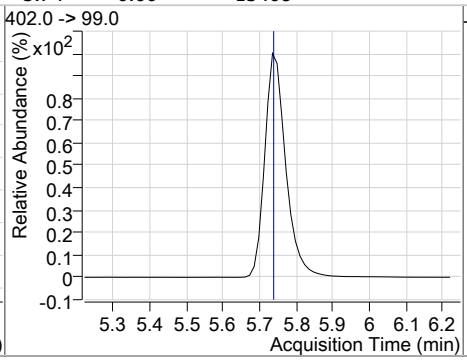


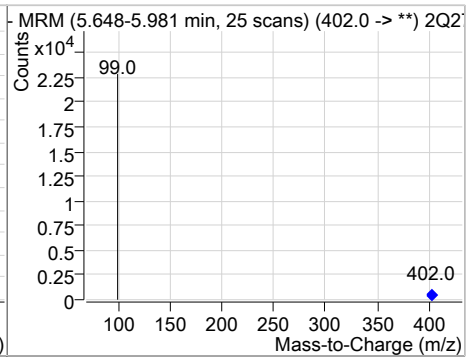




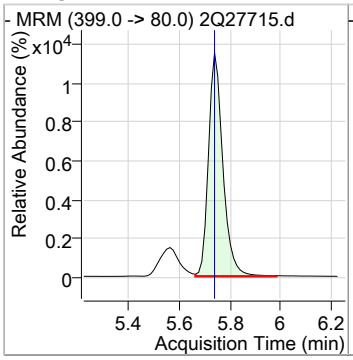
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.11	5.74	0.00	15408				

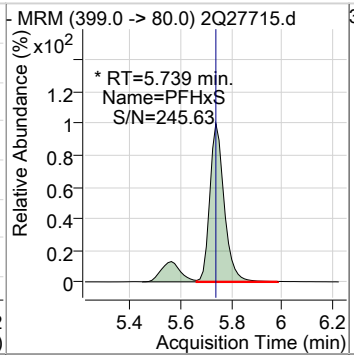


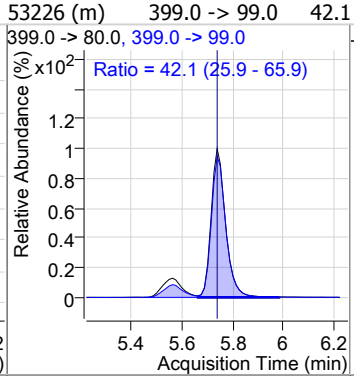


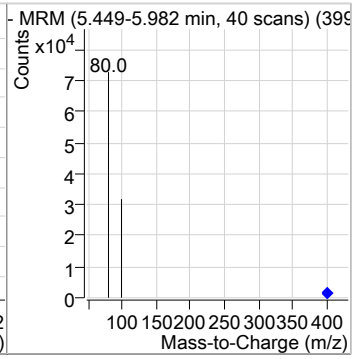


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	62.47	5.74	0.00	53226 (m)	399.0 -> 99.0	42.1	25.9	65.9

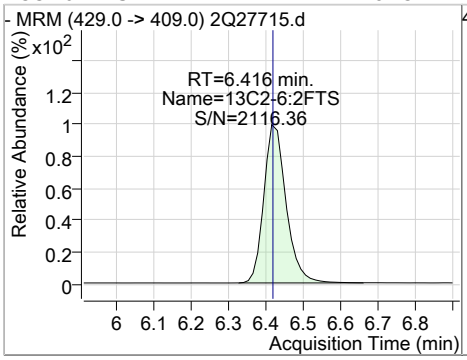


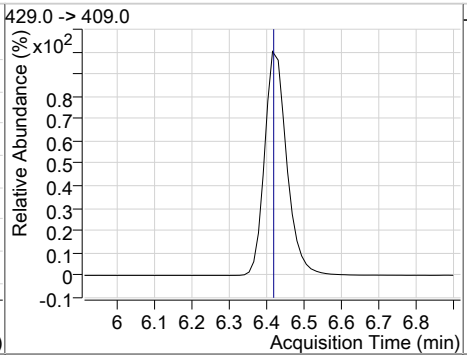


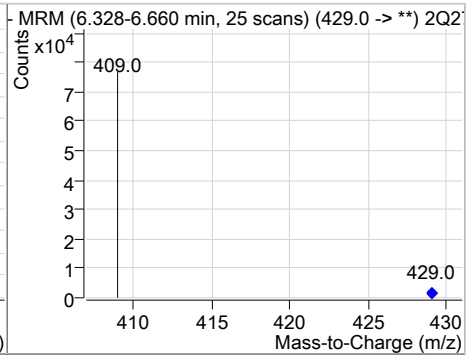




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.13	6.42	0.00	58197				

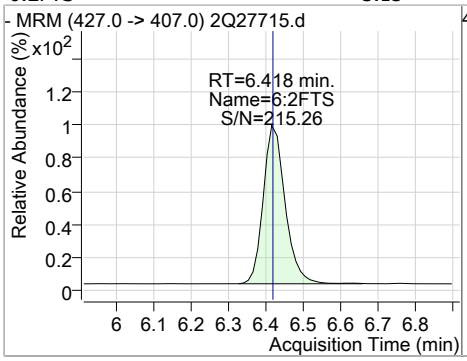


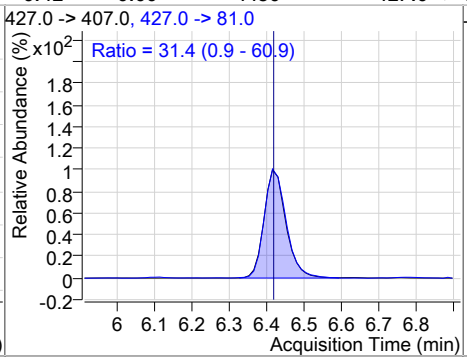


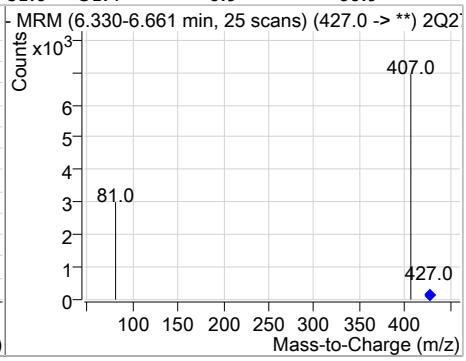


Perfluorinated Compounds by LC/MS/MS

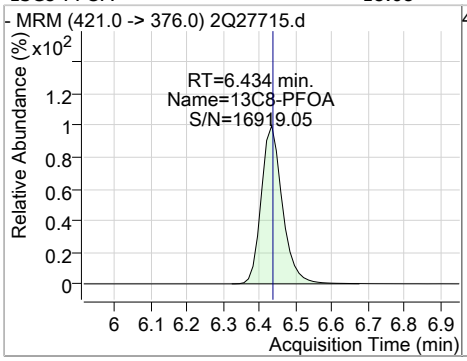
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	3.13	6.42	0.00	4480	427.0 -> 81.0	31.4	0.9	60.9

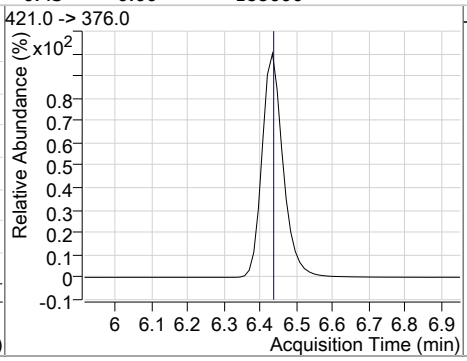


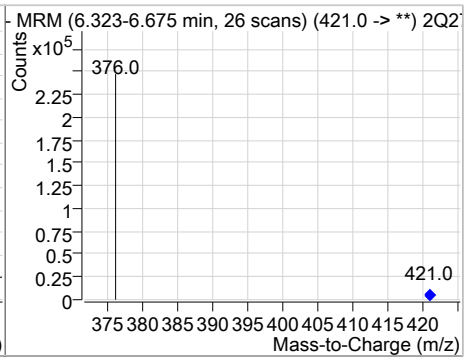




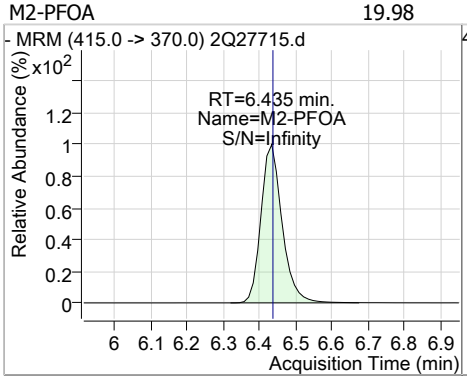
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.08	6.43	0.00	188600				

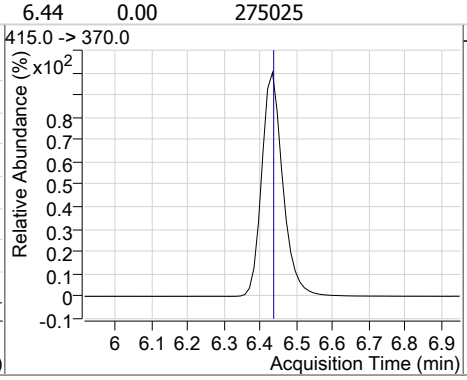


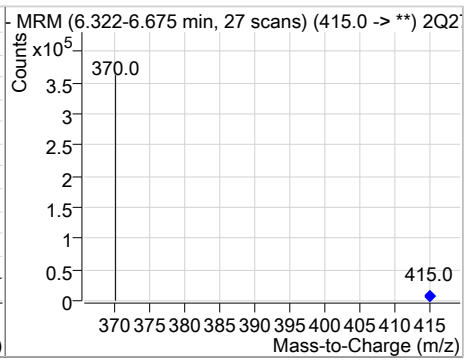




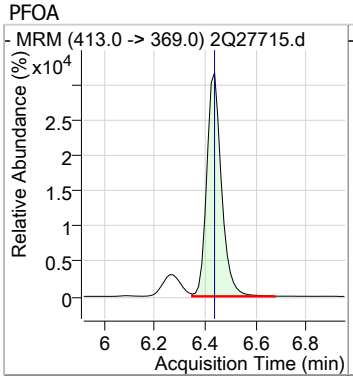
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.44	0.00	275025				

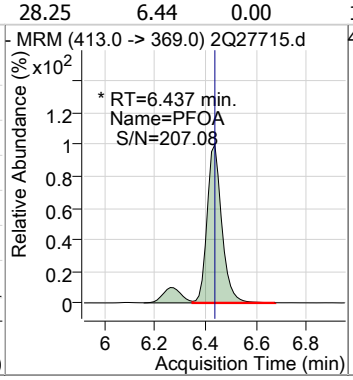


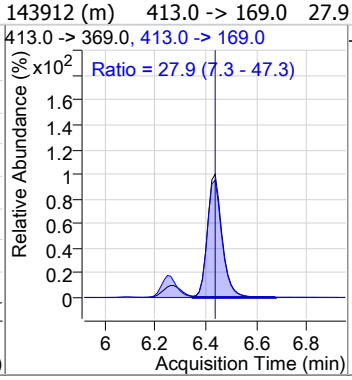


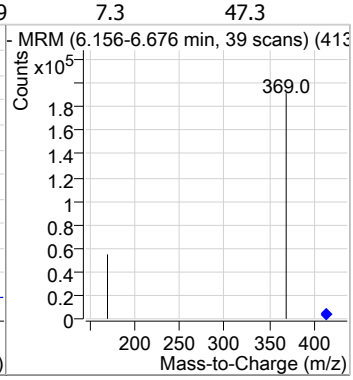


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	28.25	6.44	0.00	143912 (m)	413.0 -> 169.0	27.9	7.3	47.3



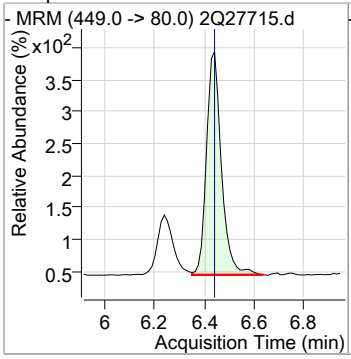


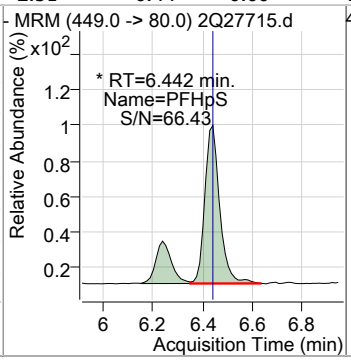


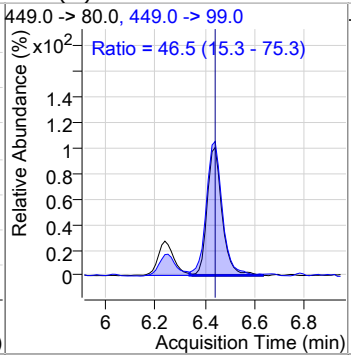


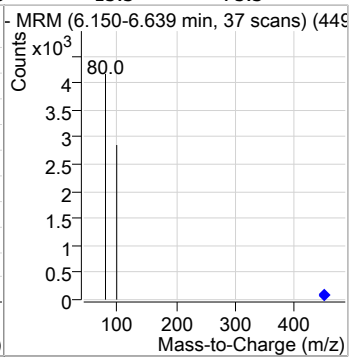
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.51	6.44	0.00	1875 (m)	449.0 -> 99.0	46.5	15.3	75.3

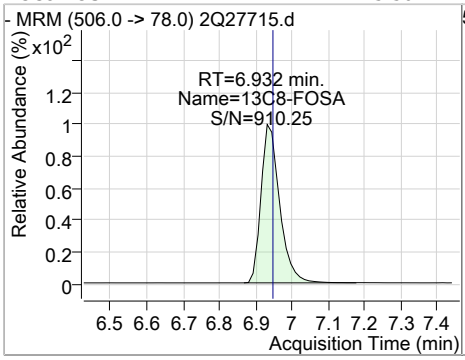


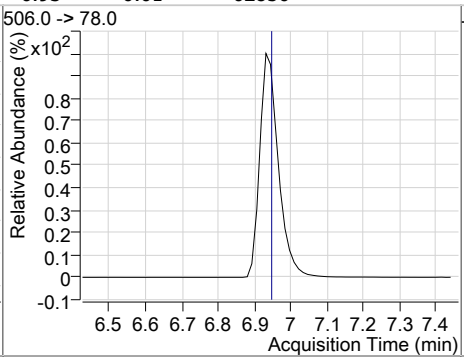


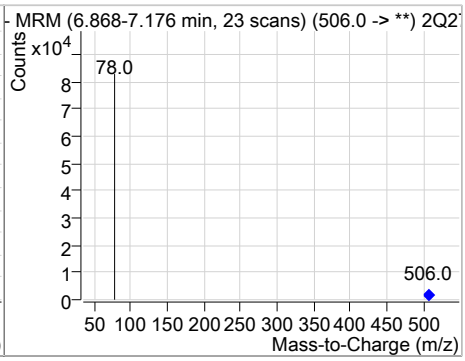




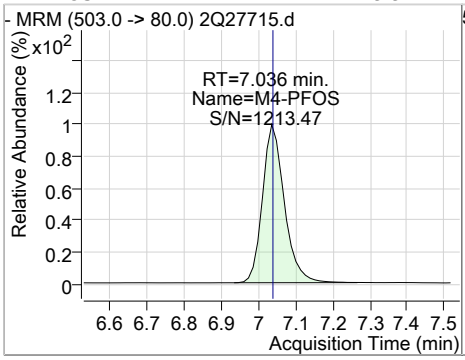
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.50	6.93	-0.01	62856				

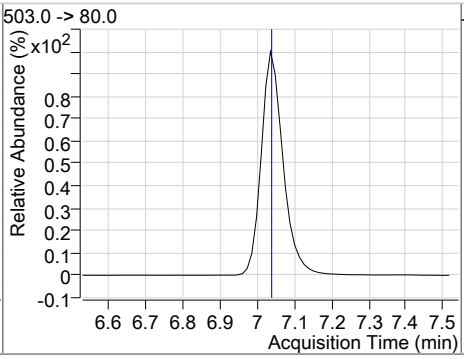


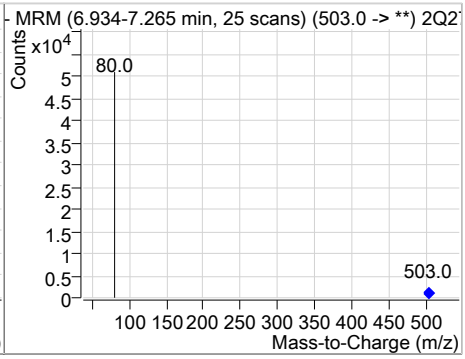




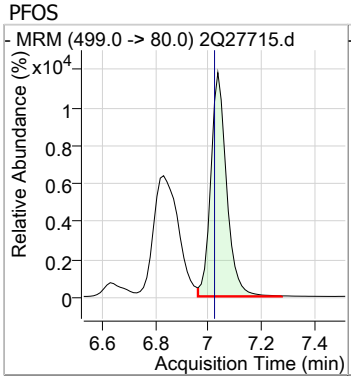
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.92	7.04	0.00	37457				

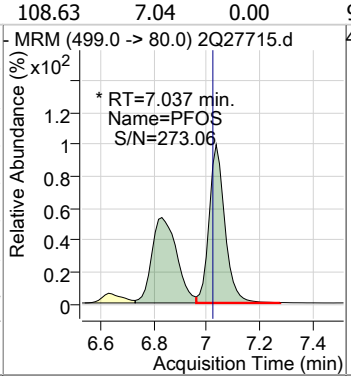


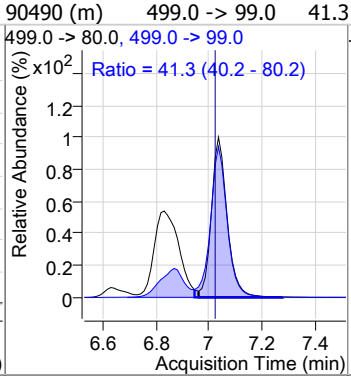


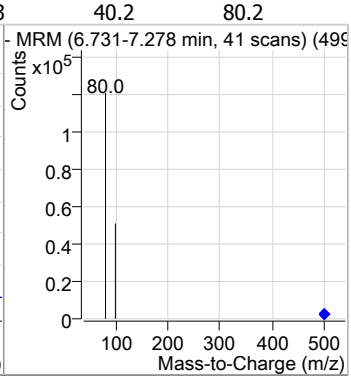


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	108.63	7.04	0.00	90490 (m)	499.0 -> 99.0	41.3	40.2	80.2



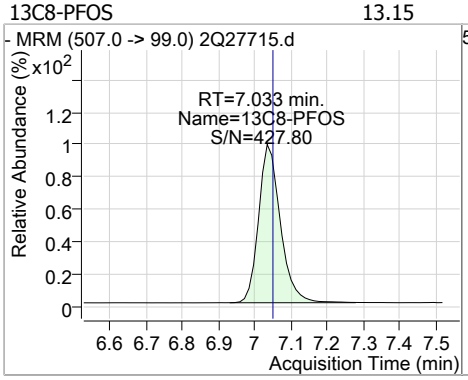


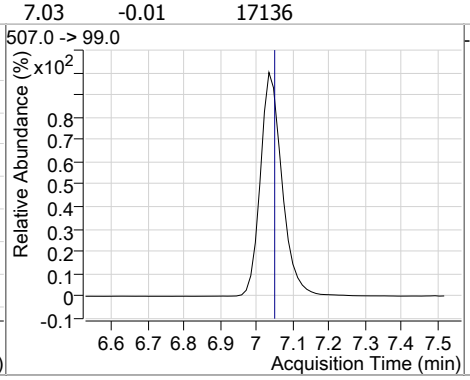


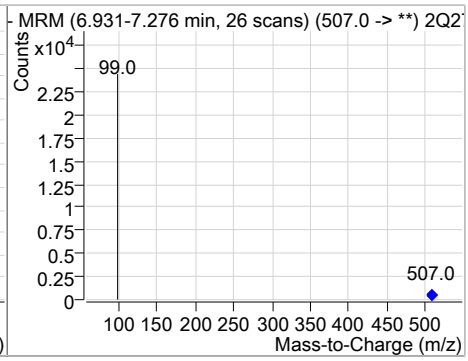


Perfluorinated Compounds by LC/MS/MS

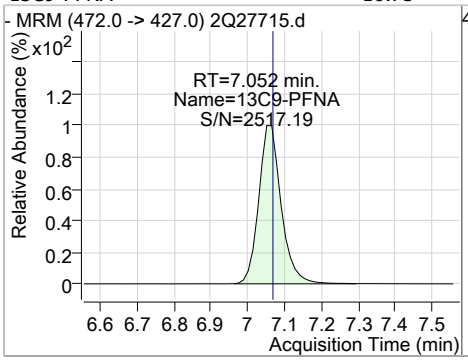
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.15	7.03	-0.01	17136				

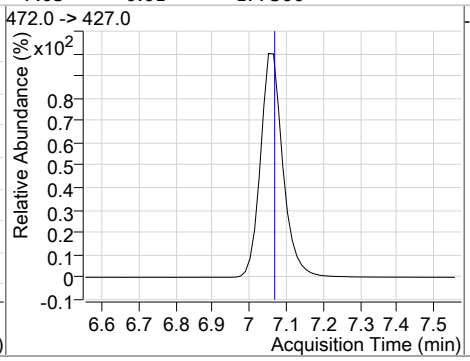


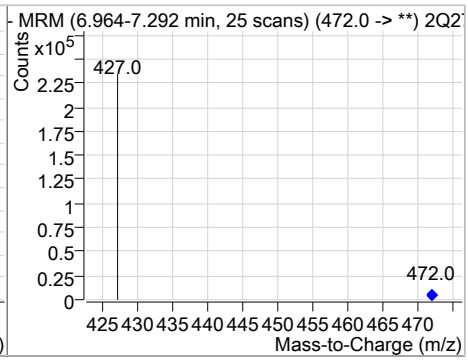




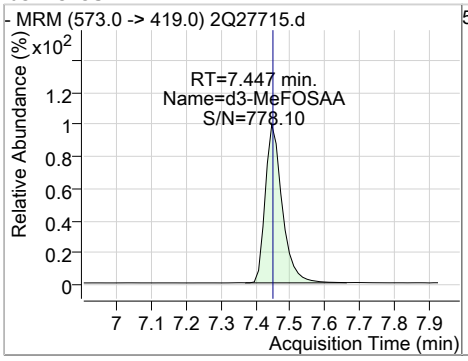
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.75	7.05	-0.01	177366				

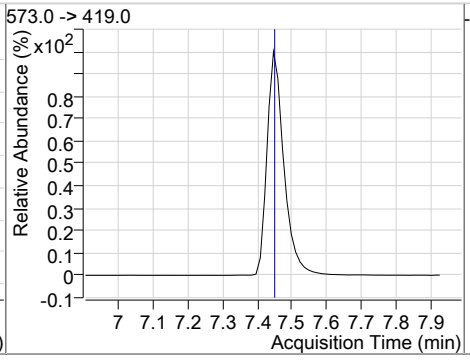


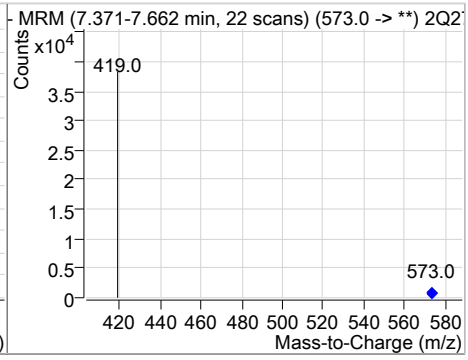




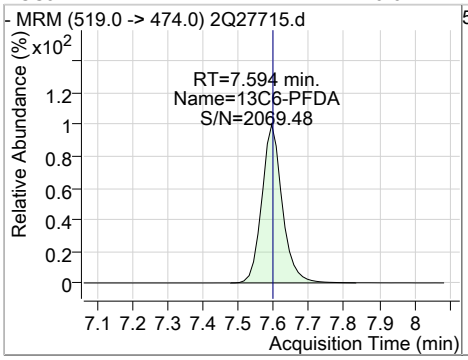
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.47	7.45	0.00	27730				

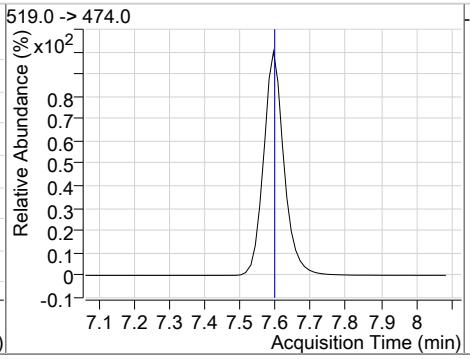


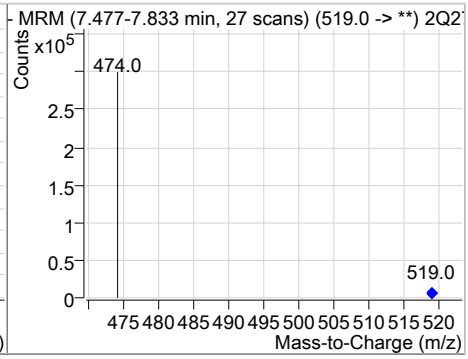




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.62	7.59	0.00	226811				

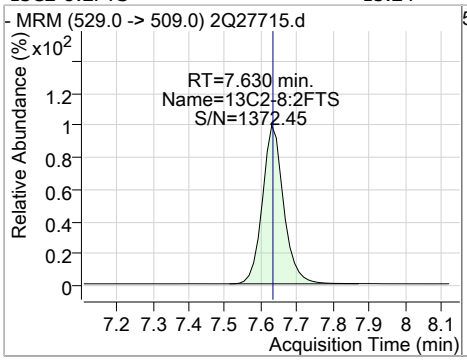


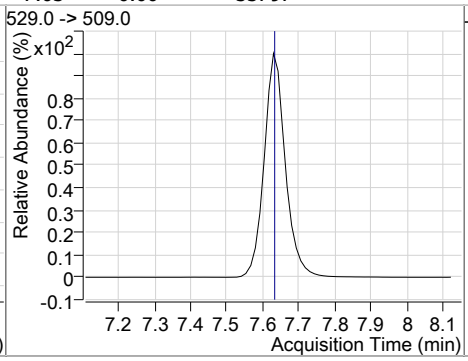


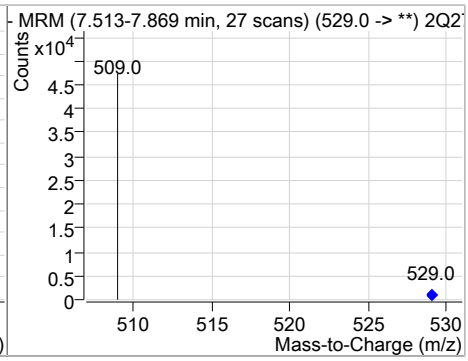


Perfluorinated Compounds by LC/MS/MS

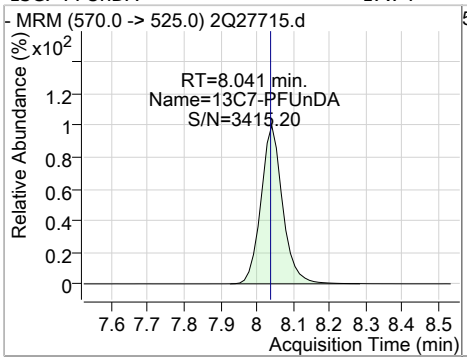
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.24	7.63	0.00	33797				

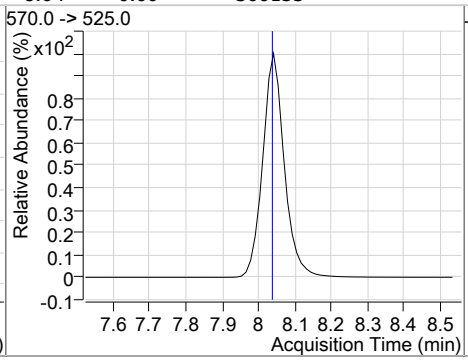


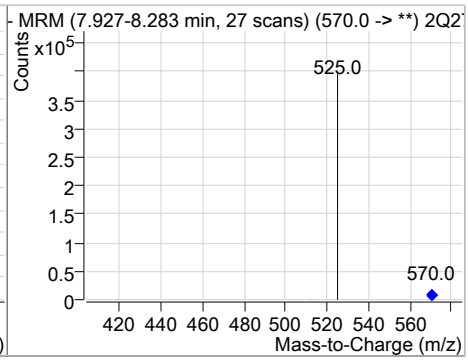




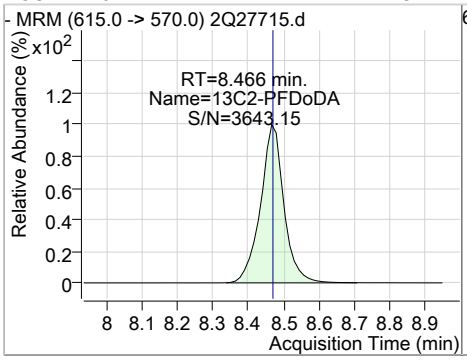
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.74	8.04	0.00	300153				

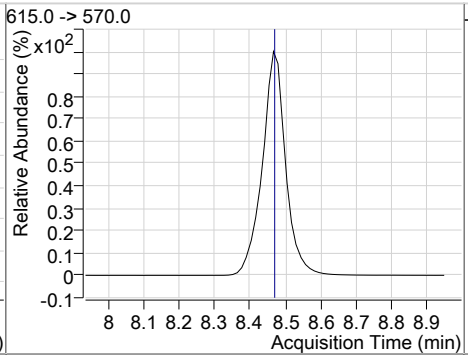


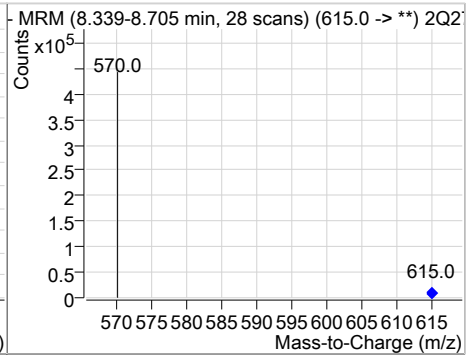




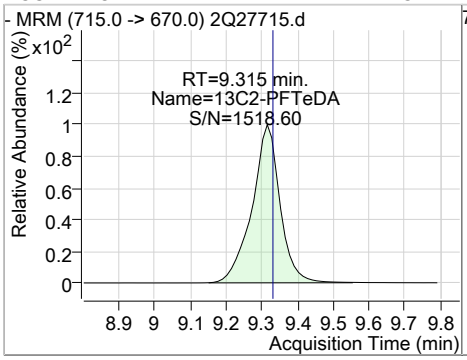
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.79	8.47	0.00	334515				

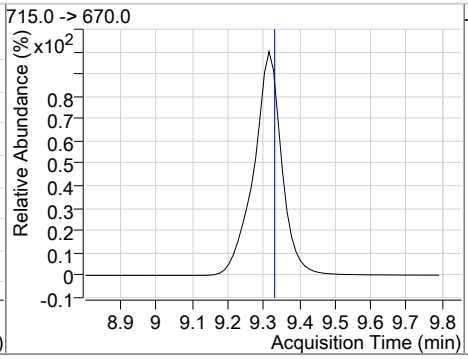


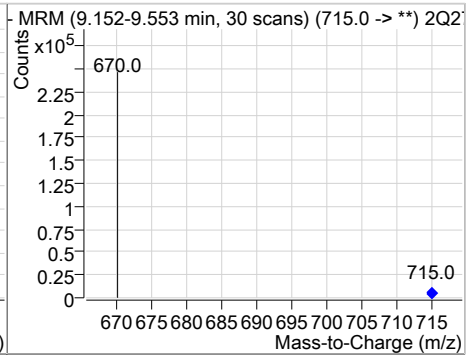




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.23	9.31	-0.01	182631				







Manual Integration Approval Summary

Sample Number: FA62220-17
Lab FileID: 2Q27715.D
Injection Time: 03/18/19 22:03
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:59 Nancy Saunders
Supervisor approved: 03/20/19 09:26 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		4.91	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanoic acid	335-67-1		6.44	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.44	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:26

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27752.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 5:52:53 PM
Sample Name : FA62220-17
Vial : Vial 16
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74180,S2Q443,250,,,1.0,2,water

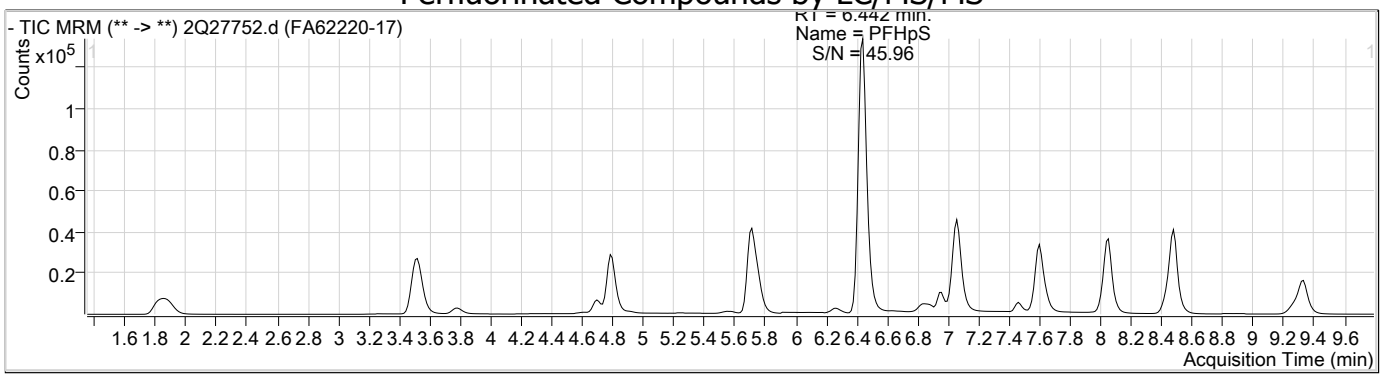
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	316900	20.00	µg/L	0.013
13C4-PFOS	7.048	503.0 -> 80.0	44894	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	55473	20.00	µg/L	-0.013
M5-PFPeA	3.524	268.0 -> 223.0	46181	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	65462	20.00	µg/L	0.000
M4-PFHpA	5.718	367.0 -> 322.0	95728	20.00	µg/L	0.013
M8-PFOA	6.446	421.0 -> 376.0	101317	20.00	µg/L	0.013
M9-PFNA	7.078	472.0 -> 427.0	96010	20.00	µg/L	0.013
M6-PFDA	7.607	519.0 -> 474.0	119609	20.00	µg/L	0.013
M7-PFUnDA	8.054	570.0 -> 525.0	149862	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	181276	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	91628	20.00	µg/L	0.000
M8-FOSA	6.959	506.0 -> 78.0	33661	20.00	µg/L	0.015
M3-PFBS	3.780	302.0 -> 99.0	8175	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	8761	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	9394	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	26134	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	33300	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	17930	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	15405	20.00	µg/L	0.013
M3-HFPO-DA	5.081	287.0 -> 169.0	71	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	25998	8.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 43.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	33297	10.37	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 51.9%		
13C2-8:2FTS	7.642	529.0 -> 509.0	17944	8.09	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 40.5%		
13C2-PFDoDA	8.479	615.0 -> 570.0	181451	9.65	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 48.2%		
13C2-PFTeDA	9.327	715.0 -> 670.0	91441	7.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 35.6%		
13C3-PFBS	3.780	302.0 -> 99.0	8168	8.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.8%		
13C3-PFHxS	5.748	402.0 -> 99.0	8744	8.58	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 42.9%		
13C4-PFBA	1.852	217.0 -> 172.0	55281	9.22	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 46.1%		
13C4-PFHpA	5.718	367.0 -> 322.0	95747	9.26	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 46.3%		
13C5-PFHxA	4.789	318.0 -> 273.0	65451	9.01	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.0%		
13C5-PFPeA	3.524	268.0 -> 223.0	46204	9.09	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.4%		
13C6-PFDA	7.607	519.0 -> 474.0	119623	8.77	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

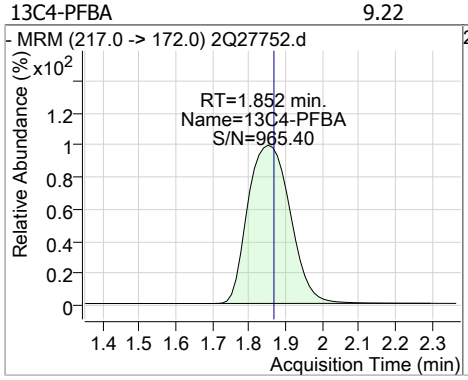
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 43.8%			
13C7-PFUnDA	8.054	570.0 -> 525.0	149792	8.85	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 44.3%			
13C8-FOSA	6.959	506.0 -> 78.0	33672	8.30	µg/L		0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 41.5%			
13C8-PFOA	6.446	421.0 -> 376.0	101315	9.71	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 48.6%			
13C8-PFOS	7.045	507.0 -> 99.0	9391	7.20	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 36.0%			
13C9-PFNA	7.078	472.0 -> 427.0	95953	9.06	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.3%			
d3-MeFOSAA	7.459	573.0 -> 419.0	15469	8.07	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 40.3%			
M2-PFOA	6.448	415.0 -> 370.0	317642	10.01	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 50.1%			
M4-PFOS	7.048	503.0 -> 80.0	44843	9.98	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 49.9%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	0	0.00	µg/L	m	0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	6.432	427.0 -> 407.0	2612	1.59	µg/L		98
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.860	213.0 -> 169.0	6826	6.23	µg/L		100
PFBS	3.771	299.0 -> 80.0	3789	2.92	µg/L		99
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.708	363.0 -> 319.0	58385	7.08	µg/L		100
PFHpS	6.442	449.0 -> 80.0	1102	1.30	µg/L	m	97
PFHxA	4.791	313.0 -> 269.0	45567	20.21	µg/L		100
PFHxS	5.751	399.0 -> 80.0	29195	30.14	µg/L	m	96
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.450	413.0 -> 369.0	77863	14.23	µg/L	m	98
PFOS	7.049	499.0 -> 80.0	50969	55.86	µg/L	m	77
PFPeA	3.528	263.0 -> 219.0	90816	22.72	µg/L		100
PFPeS	4.908	349.0 -> 80.0	2066	2.49	µg/L	m	96
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

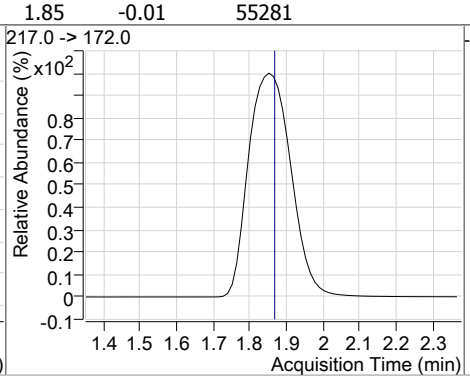
 # = Qualifier out of range, m = manually integrated, + = Area summed

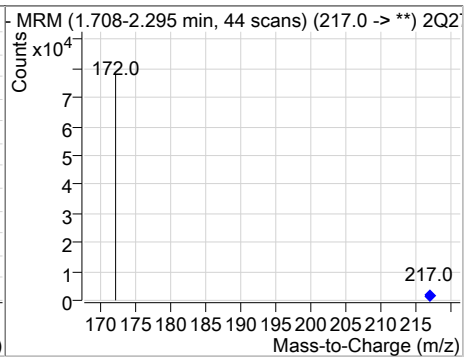
Perfluorinated Compounds by LC/MS/MS



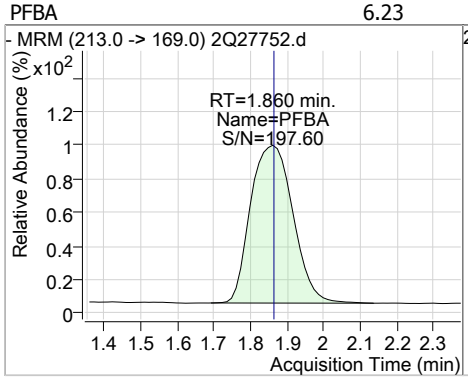
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	9.22	1.85	-0.01	55281				

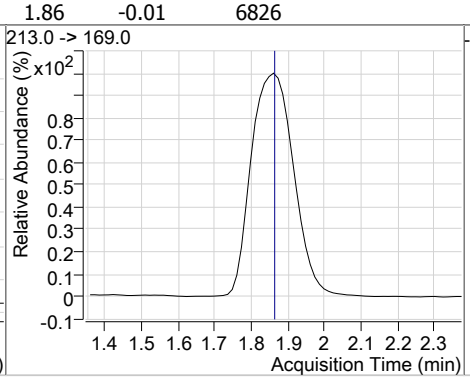


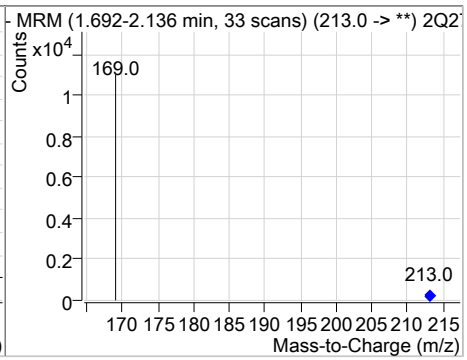




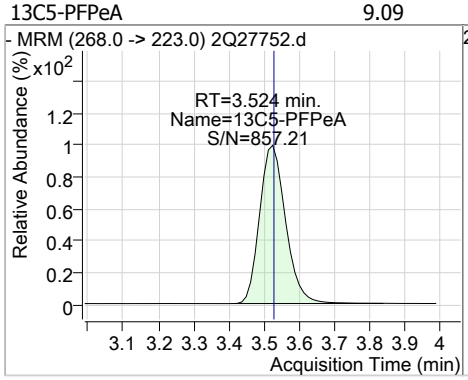
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	6.23	1.86	-0.01	6826				

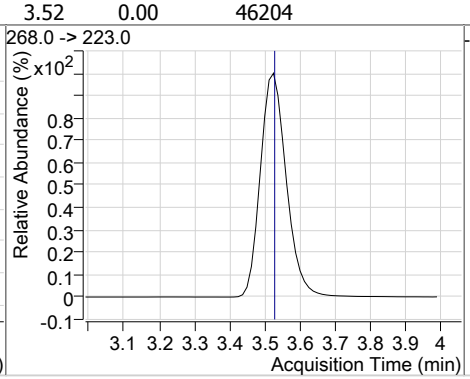


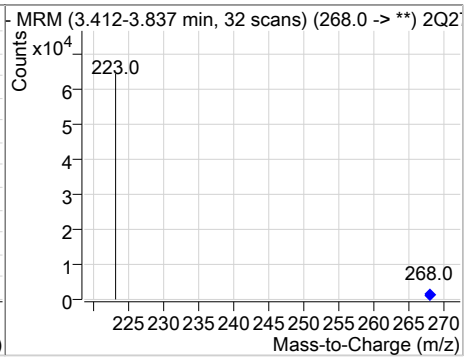




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	9.09	3.52	0.00	46204				

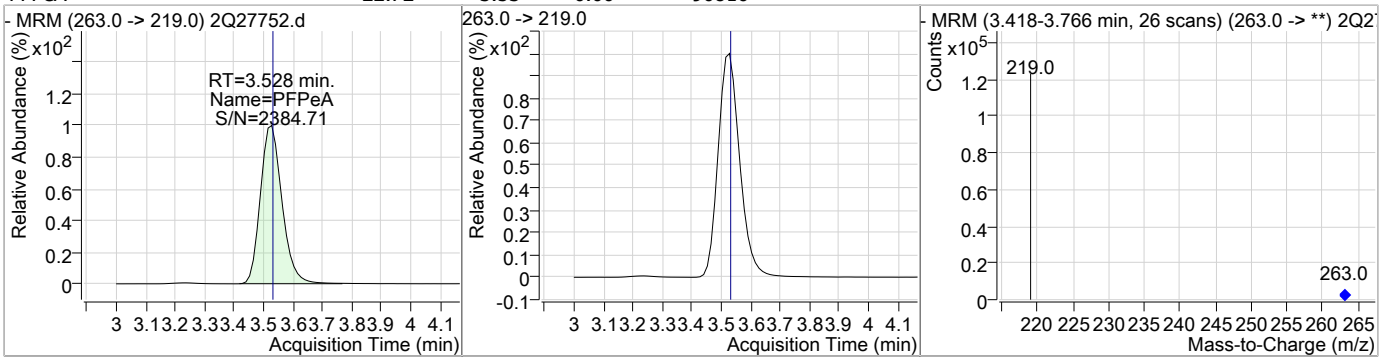




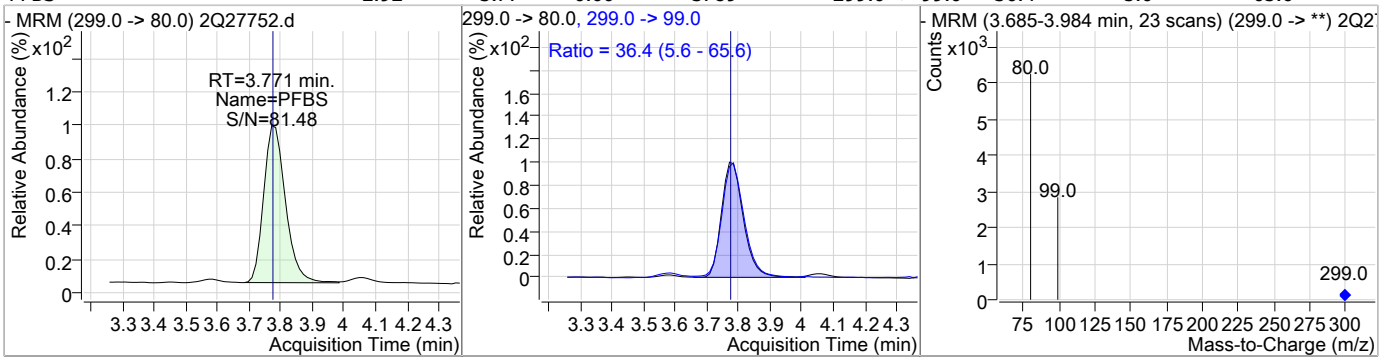


Perfluorinated Compounds by LC/MS/MS

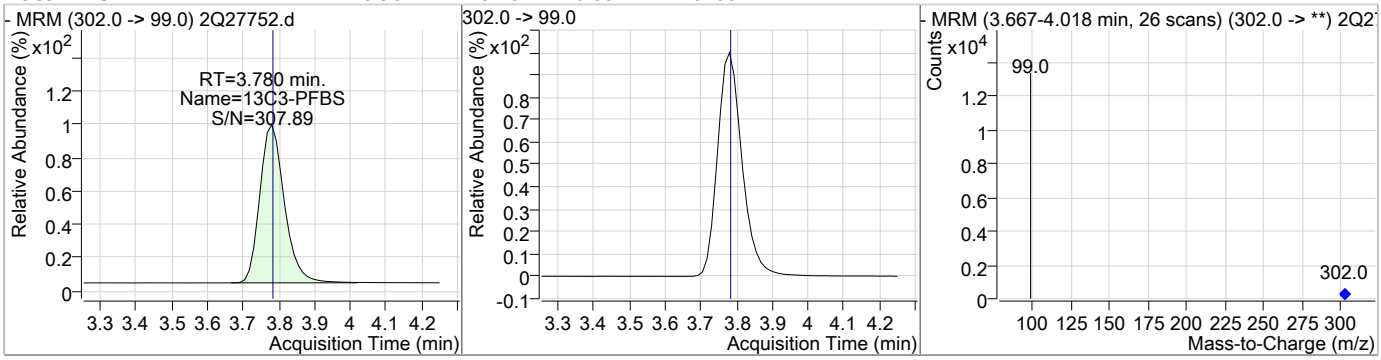
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	22.72	3.53	0.00	90816				



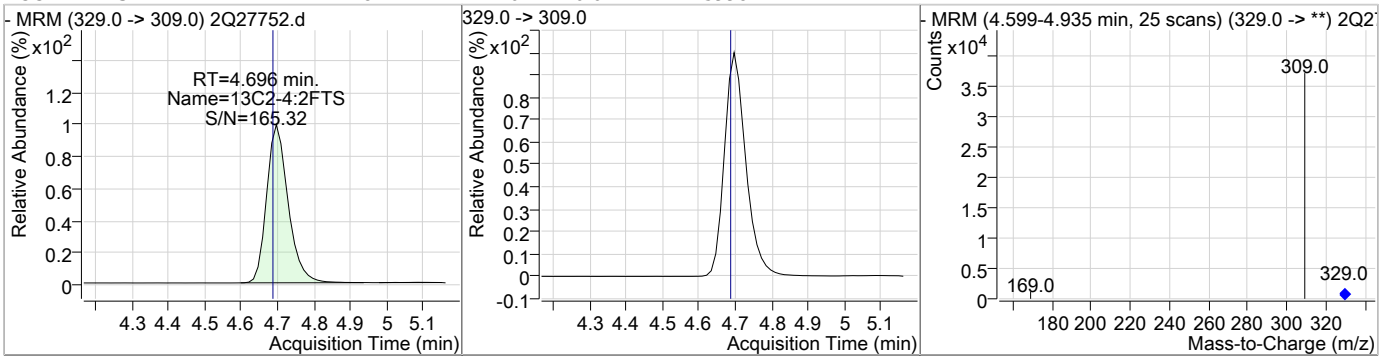
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.92	3.77	0.00	3789	299.0 -> 99.0	36.4	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	8.96	3.78	0.00	8168				

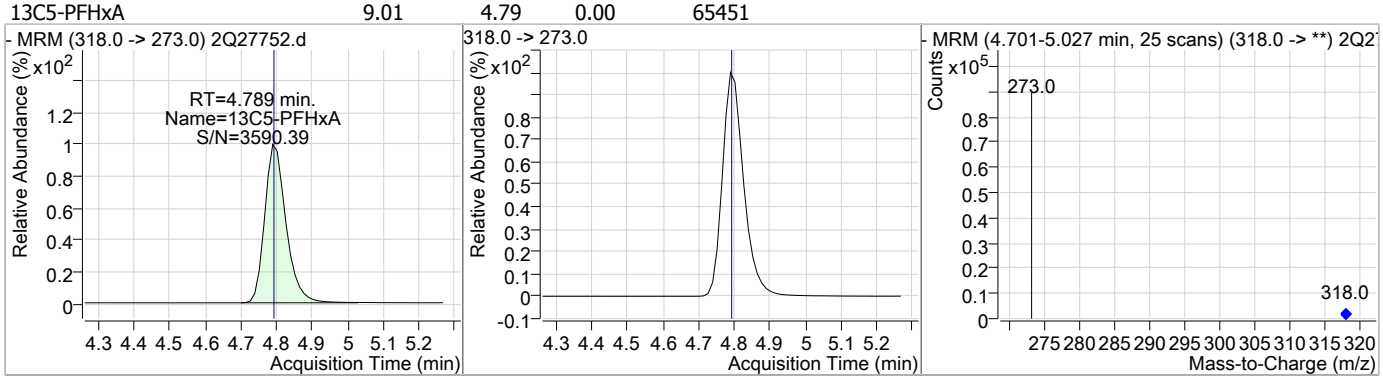


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	8.74	4.70	0.01	25998				

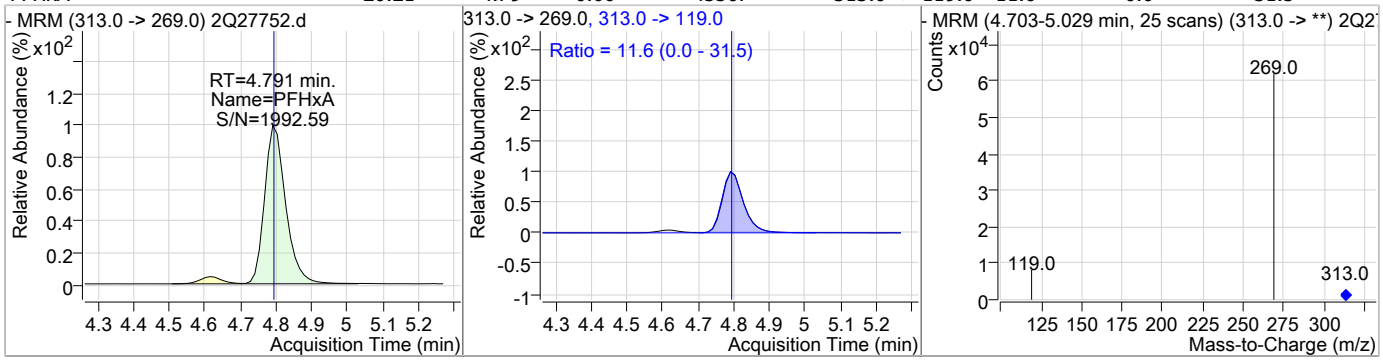


Perfluorinated Compounds by LC/MS/MS

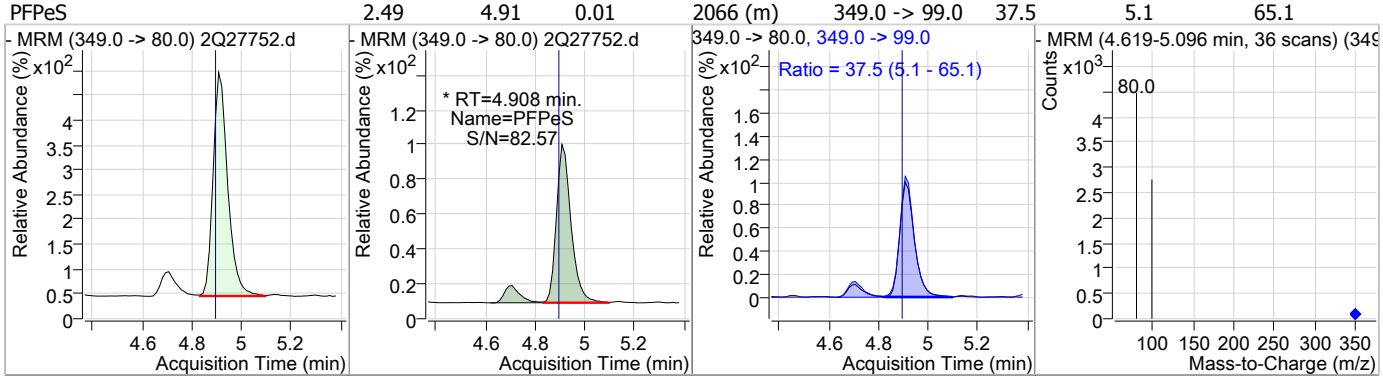
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	9.01	4.79	0.00	65451				



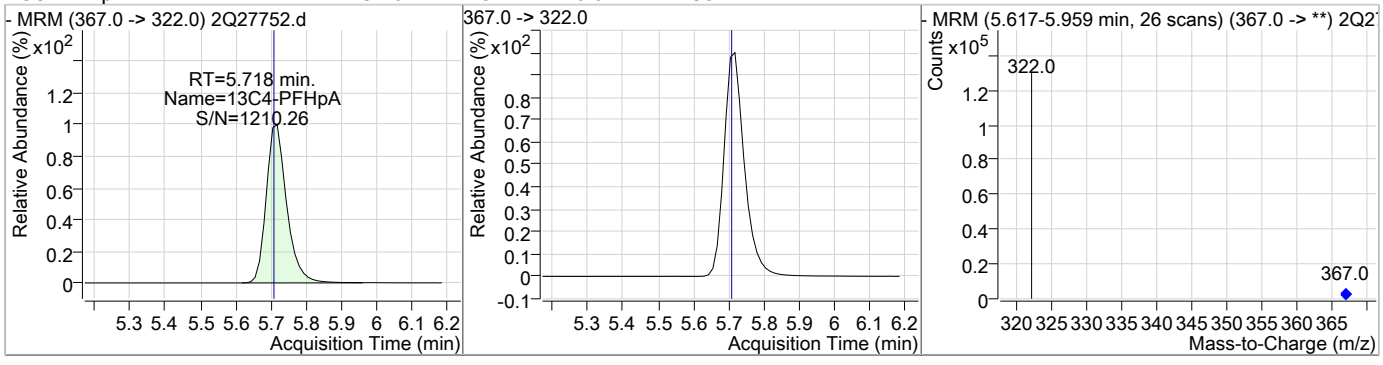
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.21	4.79	0.00	45567	313.0 -> 119.0	11.6	0.0	31.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.49	4.91	0.01	2066 (m)	349.0 -> 99.0	37.5	5.1	65.1

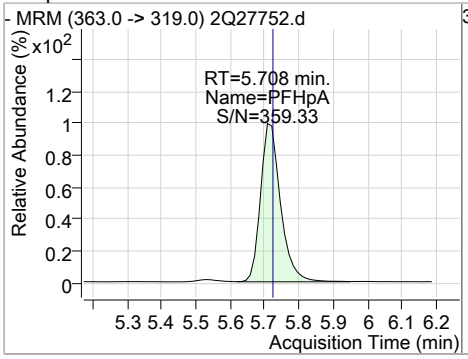


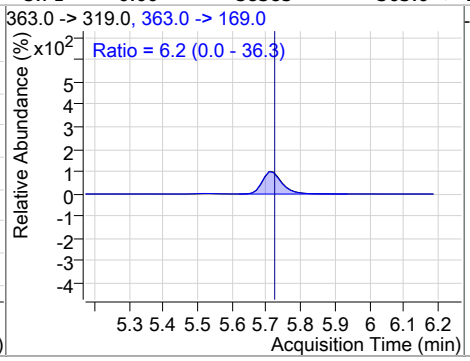
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	9.26	5.72	0.01	95747				

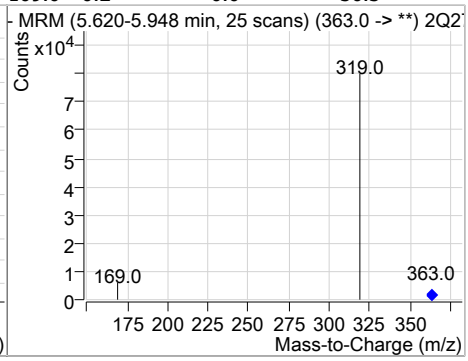


Perfluorinated Compounds by LC/MS/MS

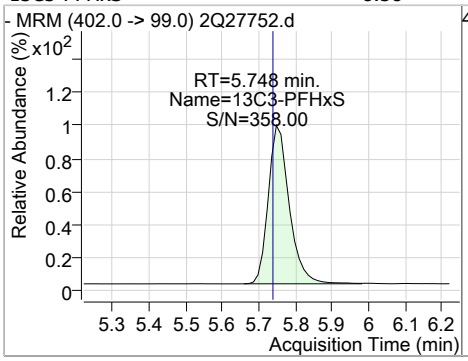
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	7.08	5.71	0.00	58385	363.0 -> 169.0	6.2	0.0	36.3

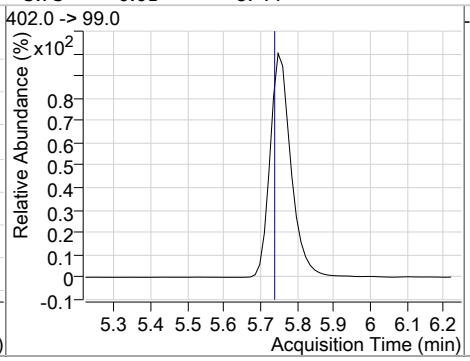


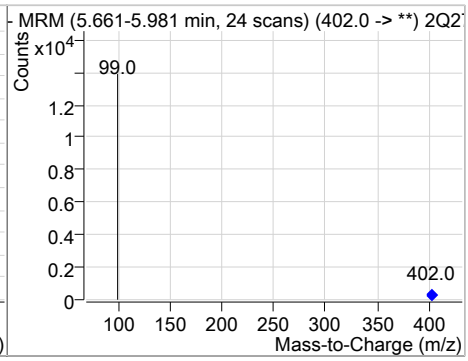




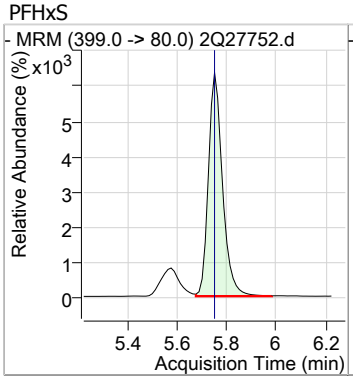
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	8.58	5.75	0.01	8744				

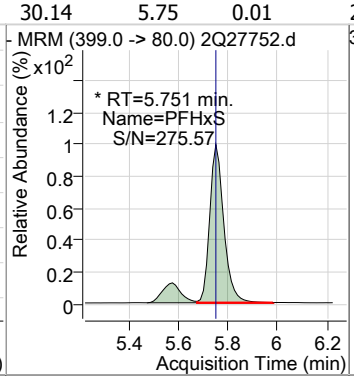


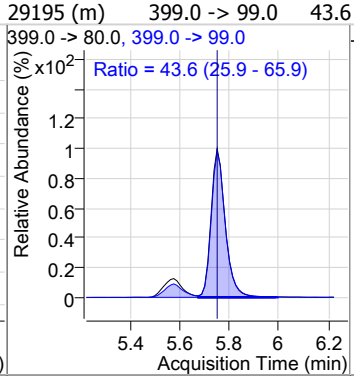


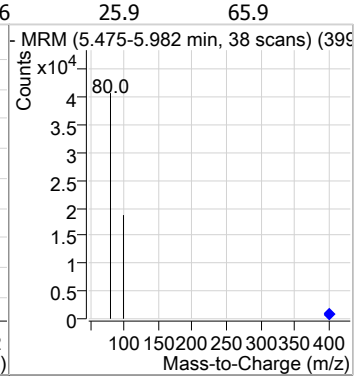


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	30.14	5.75	0.01	29195 (m)	399.0 -> 99.0	43.6	25.9	65.9

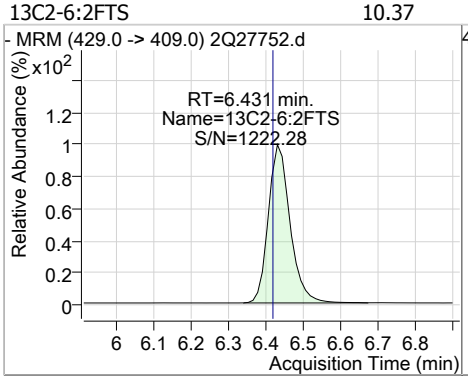


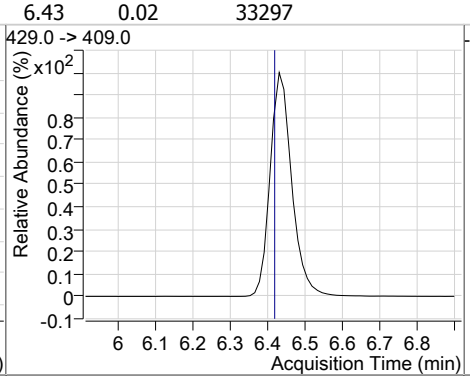


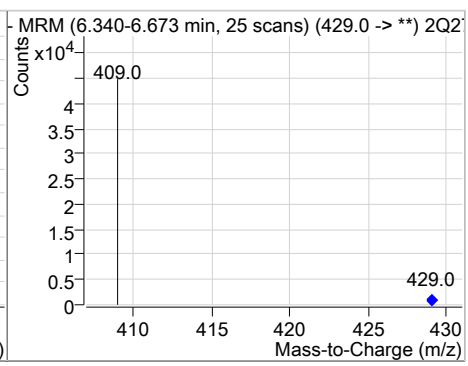




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	10.37	6.43	0.02	33297				

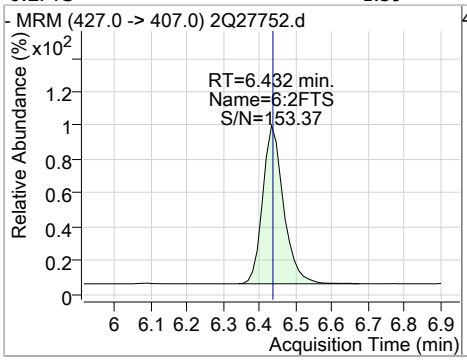


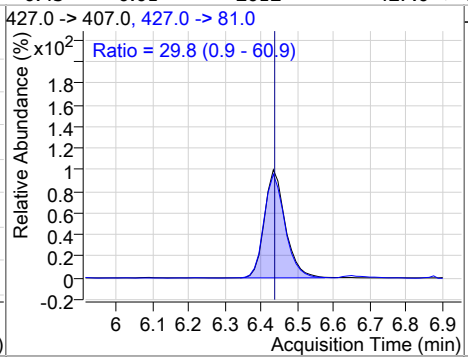


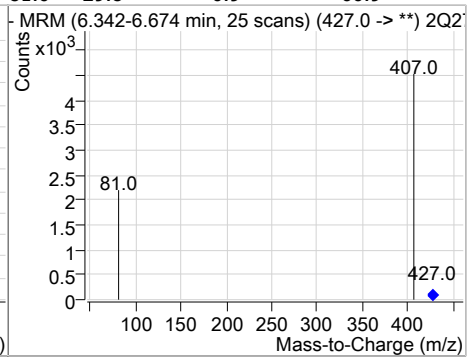


Perfluorinated Compounds by LC/MS/MS

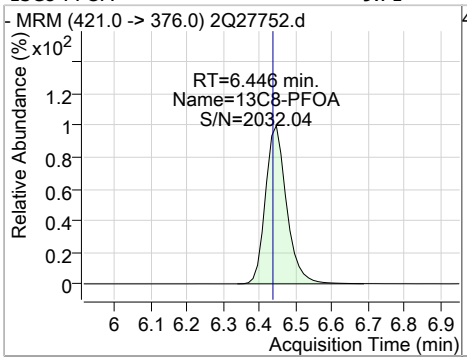
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.59	6.43	0.01	2612	427.0 -> 81.0	29.8	0.9	60.9

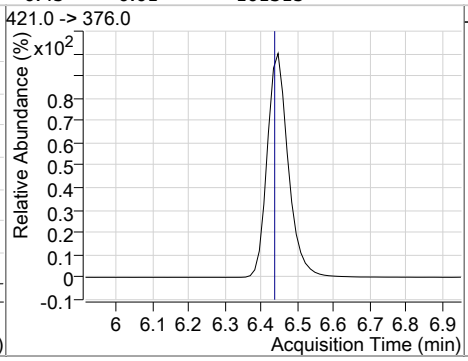


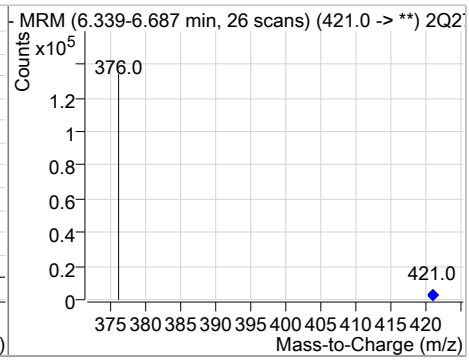




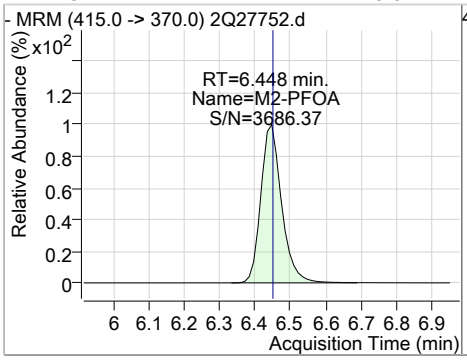
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	9.71	6.45	0.01	101315				

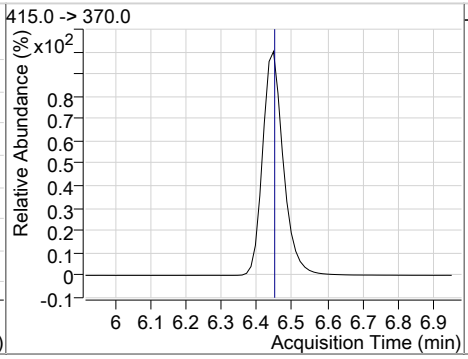


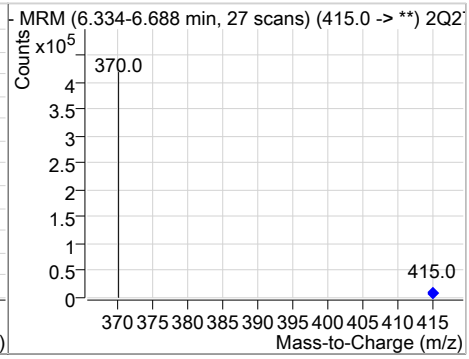




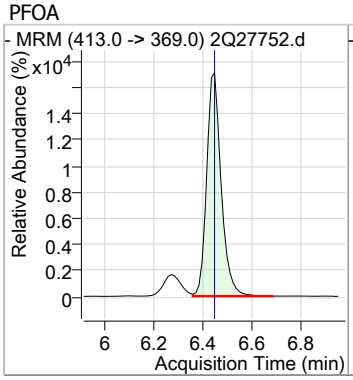
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	10.01	6.45	0.01	317642				

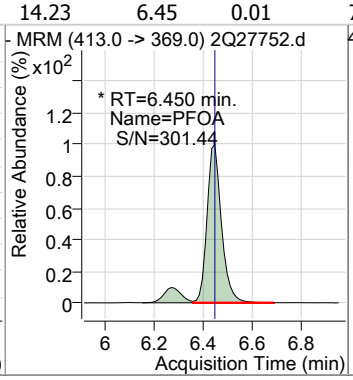


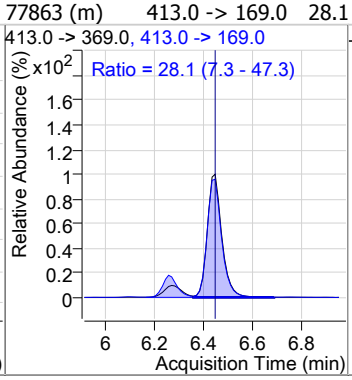


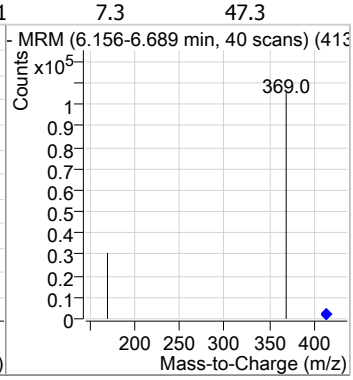


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	14.23	6.45	0.01	77863 (m)	413.0 -> 169.0	28.1	7.3	47.3



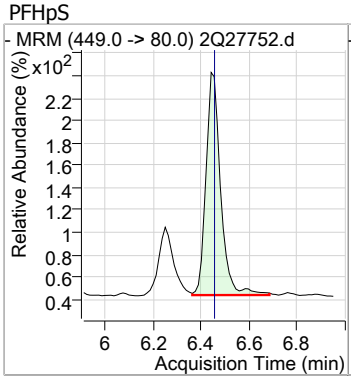


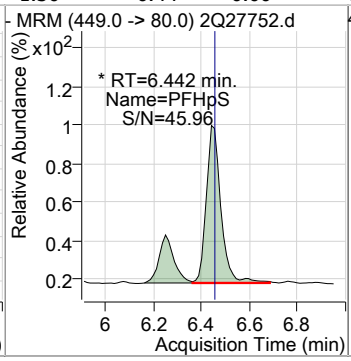


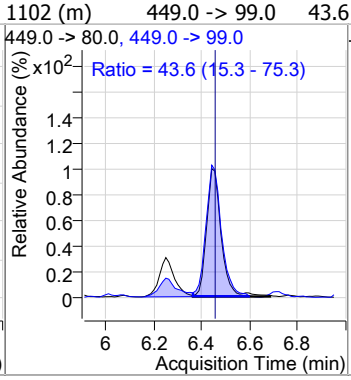


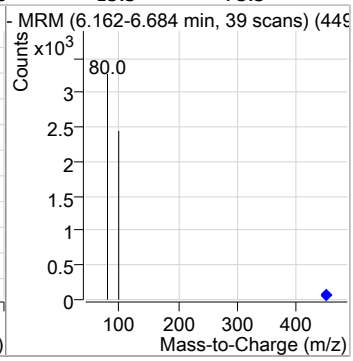
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.30	6.44	0.00	1102 (m)	449.0 -> 99.0	43.6	15.3	75.3

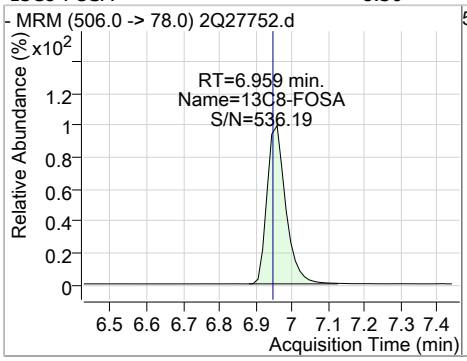


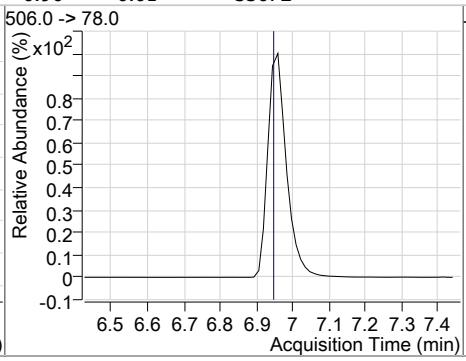


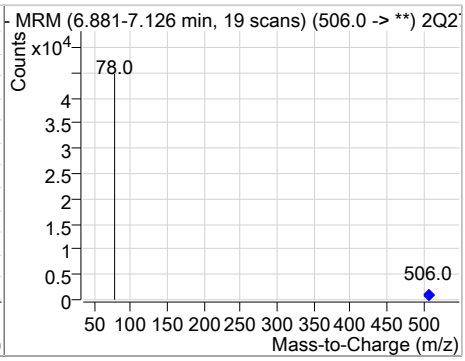




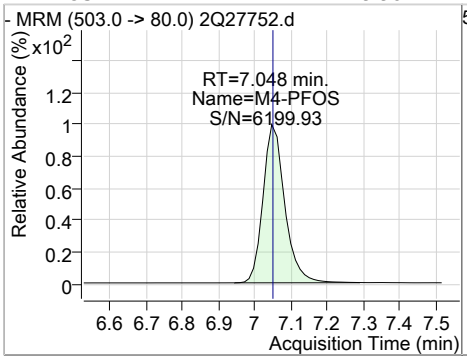
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	8.30	6.96	0.01	33672				

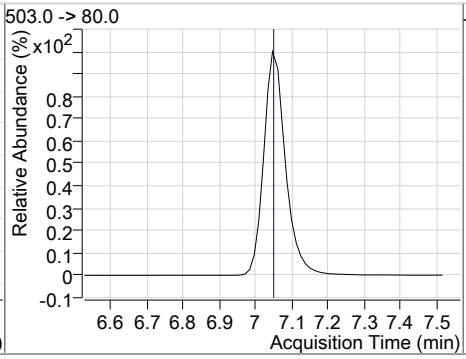


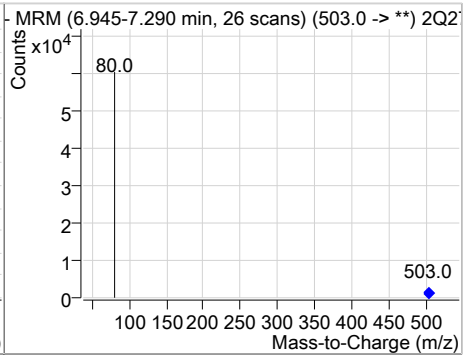




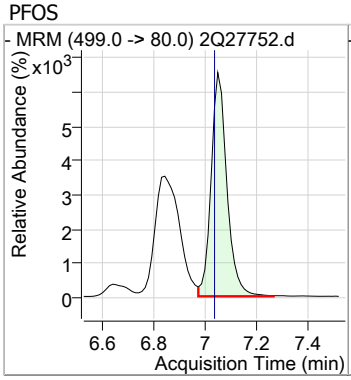
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	9.98	7.05	0.01	44843				

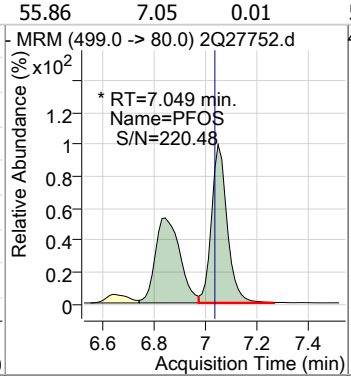


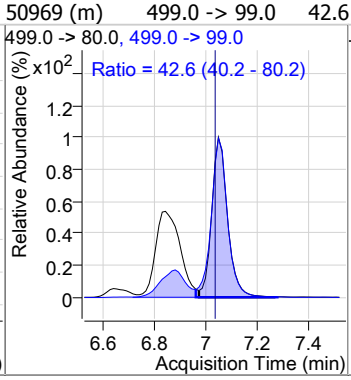


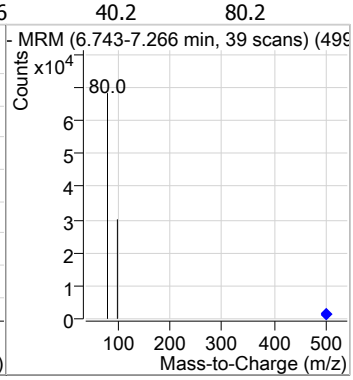


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	55.86	7.05	0.01	50969 (m)	499.0 -> 99.0	42.6	40.2	80.2



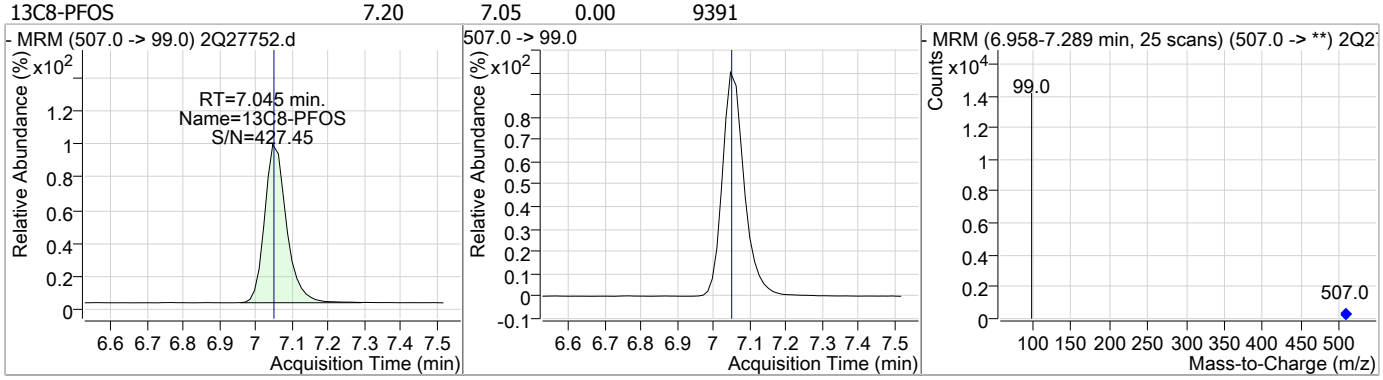




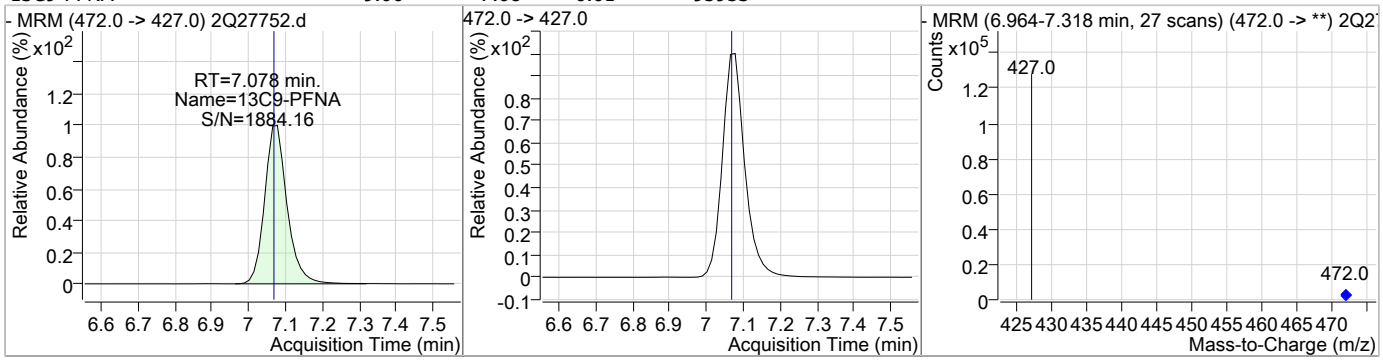


Perfluorinated Compounds by LC/MS/MS

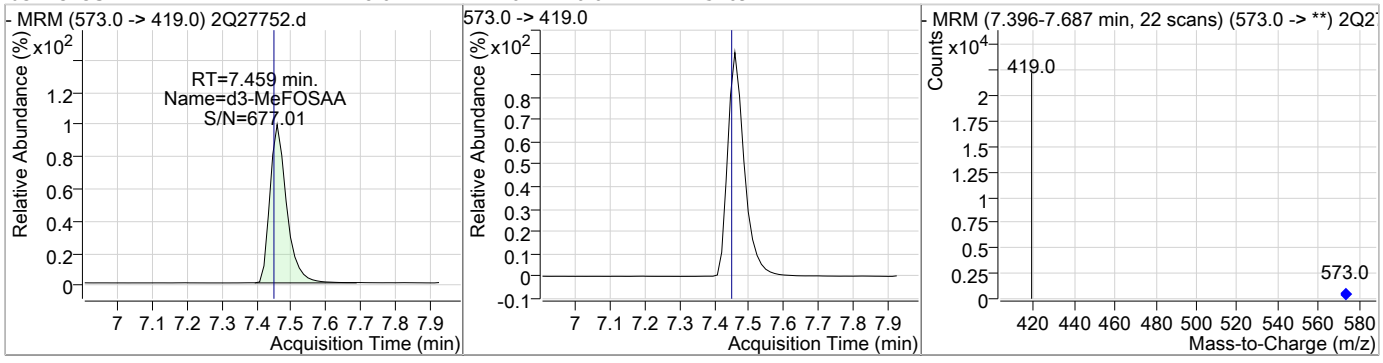
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	7.20	7.05	0.00	9391				



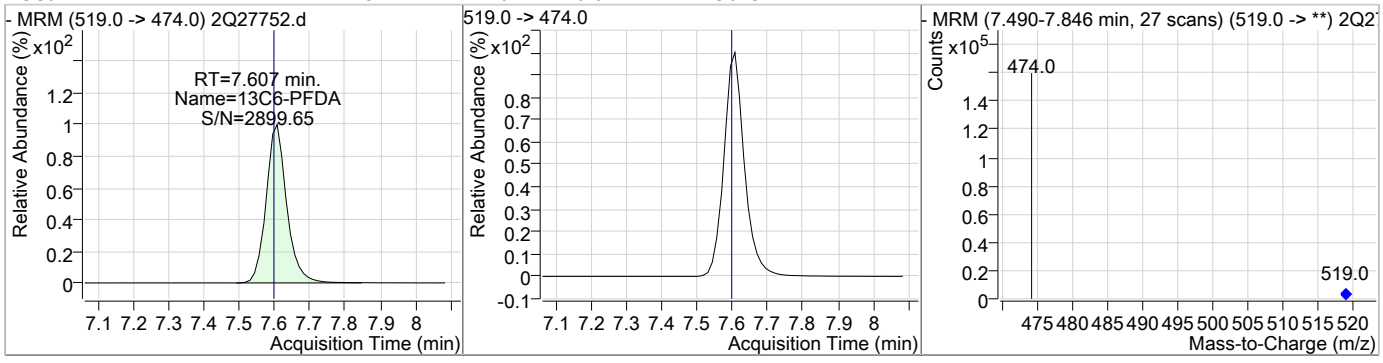
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	9.06	7.08	0.01	95953				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	8.07	7.46	0.01	15469				

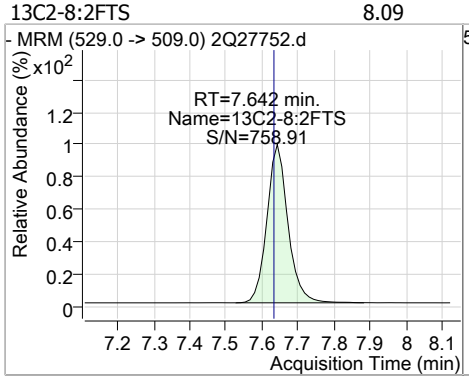


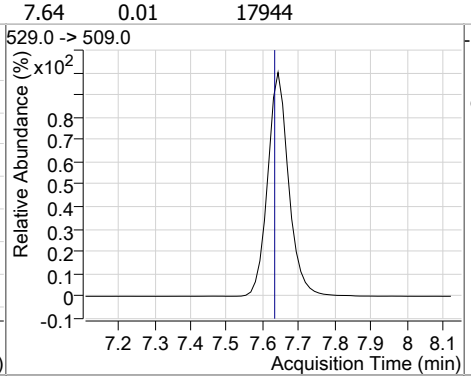
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	8.77	7.61	0.01	119623				

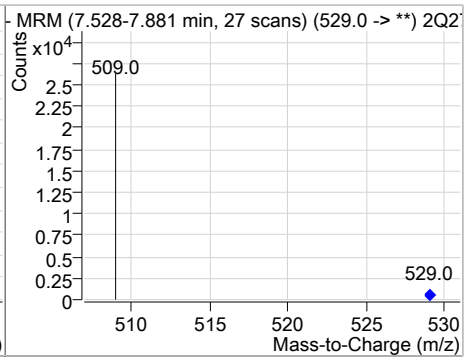


Perfluorinated Compounds by LC/MS/MS

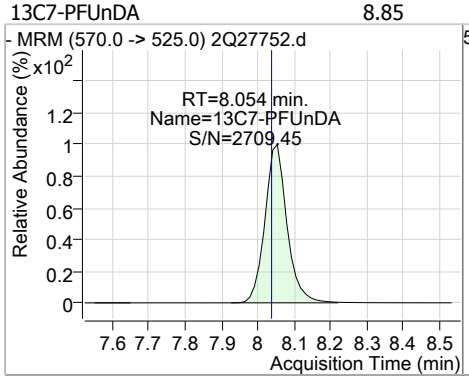
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	8.09	7.64	0.01	17944				

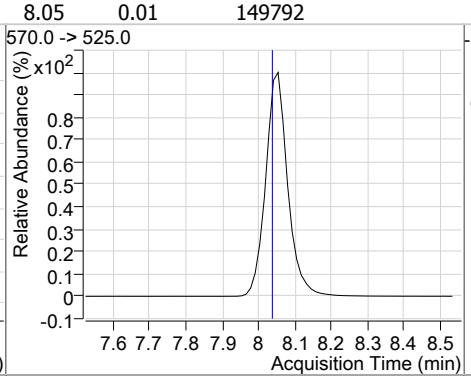


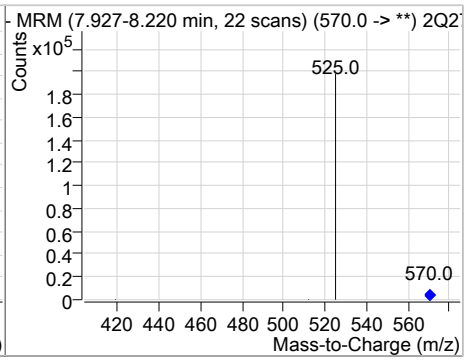




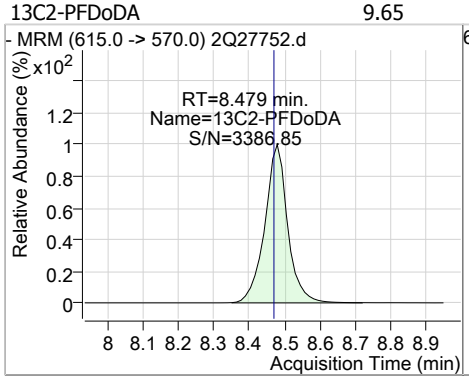
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	8.85	8.05	0.01	149792				

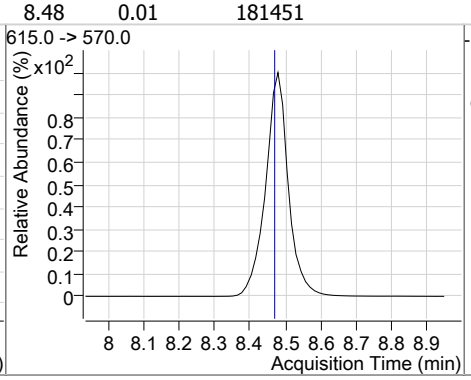


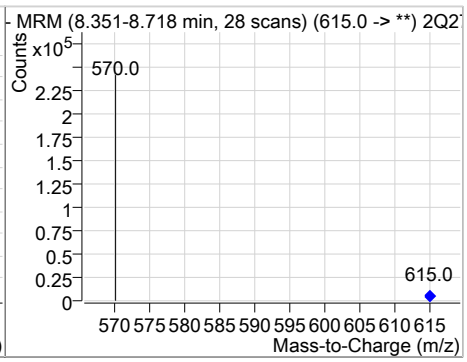




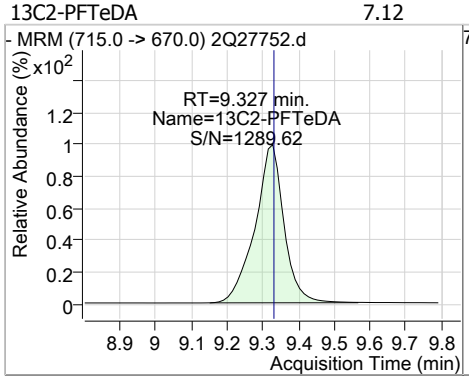
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	9.65	8.48	0.01	181451				

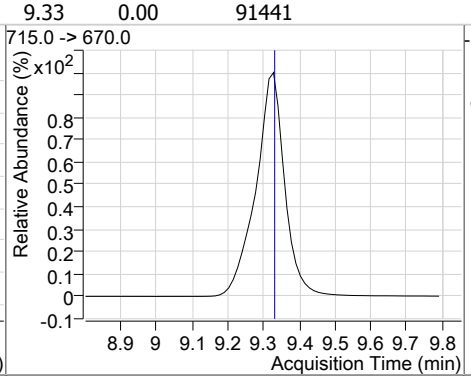


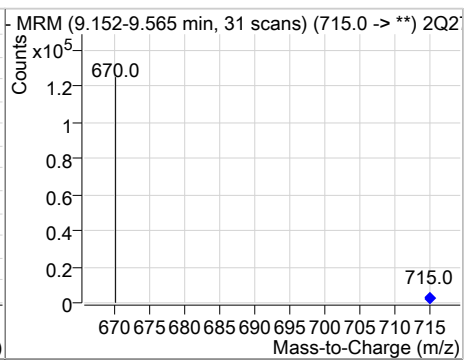




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	7.12	9.33	0.00	91441				







Manual Integration Approval Summary

Sample Number: FA62220-17
Lab FileID: 2Q27752.D
Injection Time: 03/19/19 17:52
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:59 Nancy Saunders
Supervisor approved: 03/20/19 09:26 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		4.91	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.44	Split peak
Perfluorooctanoic acid	335-67-1		6.45	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27751.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 5:37:10 PM
Sample Name : FA62220-18
Vial : Vial 15
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74180,S2Q443,250,,,1.0,1,water

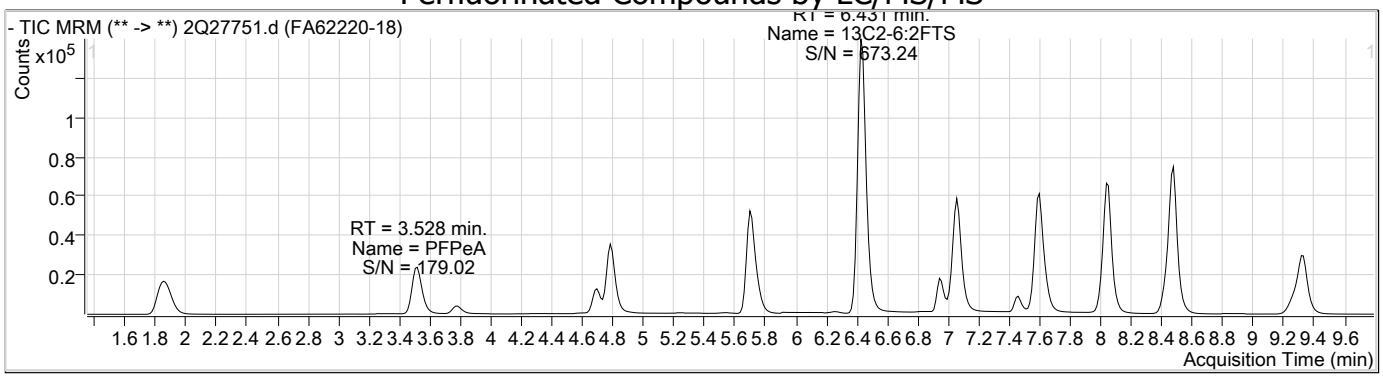
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	276743	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	39253	20.00	µg/L	0.013
M4-PFBA	1.852	217.0 -> 172.0	105178	20.00	µg/L	-0.013
M5-PFPeA	3.524	268.0 -> 223.0	89280	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	126819	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	188121	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	202788	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	183913	20.00	µg/L	0.000
M6-PFDA	7.607	519.0 -> 474.0	220921	20.00	µg/L	0.013
M7-PFUnDA	8.041	570.0 -> 525.0	275650	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	332164	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	167817	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	61571	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	15162	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	16788	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	17930	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	49885	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	63904	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	33197	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	27522	20.00	µg/L	0.013
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	49929	16.79	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%		
13C2-6:2FTS	6.431	429.0 -> 409.0	63841	19.89	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%		
13C2-8:2FTS	7.642	529.0 -> 509.0	33166	14.96	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.8%		
13C2-PFDoDA	8.479	615.0 -> 570.0	331879	17.65	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.2%		
13C2-PFTeDA	9.315	715.0 -> 670.0	167056	13.01	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.1%		
13C3-PFBS	3.780	302.0 -> 99.0	15147	16.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.1%		
13C3-PFHxS	5.748	402.0 -> 99.0	16780	16.46	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%		
13C4-PFBA	1.852	217.0 -> 172.0	104938	17.50	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	188028	18.18	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.9%		
13C5-PFHxA	4.789	318.0 -> 273.0	126828	17.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	89282	17.56	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C6-PFDA	7.607	519.0 -> 474.0	220842	16.18	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

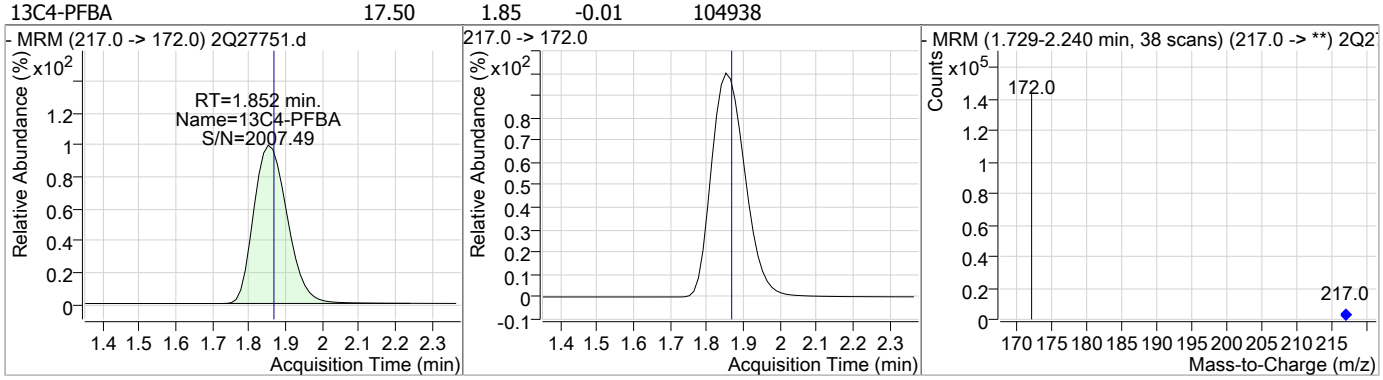
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.9%			
13C7-PFUnDA	8.041	570.0 -> 525.0	275620	16.29	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.4%			
13C8-FOSA	6.944	506.0 -> 78.0	61576	15.19	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%			
13C8-PFOA	6.434	421.0 -> 376.0	202728	19.43	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%			
13C8-PFOS	7.045	507.0 -> 99.0	17939	13.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.8%			
13C9-PFNA	7.065	472.0 -> 427.0	183862	17.37	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.8%			
d3-MeFOSAA	7.459	573.0 -> 419.0	27524	14.36	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.8%			
M2-PFOA	6.435	415.0 -> 370.0	277139	20.01	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	39281	20.01	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.860	213.0 -> 169.0	2030	1.95	µg/L		100
PFBS	3.771	299.0 -> 80.0	1717	1.43	µg/L		99
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.708	363.0 -> 319.0	13436	1.66	µg/L	m	100
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.791	313.0 -> 269.0	10772	4.93	µg/L		99
PFHxS	5.751	399.0 -> 80.0	7396	7.97	µg/L	m	96
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.437	413.0 -> 369.0	21299	3.89	µg/L	m	98
PFOS	7.049	499.0 -> 80.0	3337	3.83	µg/L	#m	69
PFPeA	3.528	263.0 -> 219.0	20615	5.33	µg/L		100
PFPeS	4.908	349.0 -> 80.0	919	1.19	µg/L	m	96
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

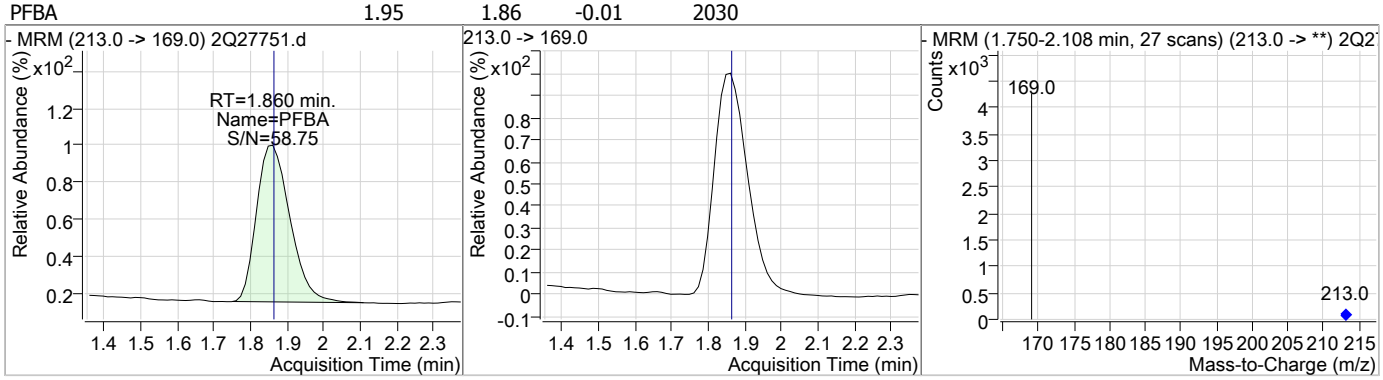
Perfluorinated Compounds by LC/MS/MS



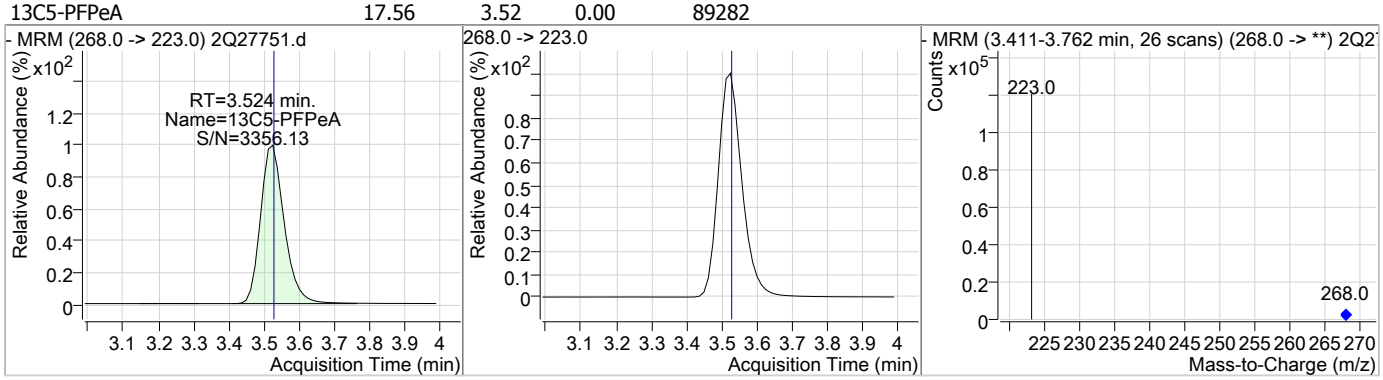
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.50	1.85	-0.01	104938				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.95	1.86	-0.01	2030				

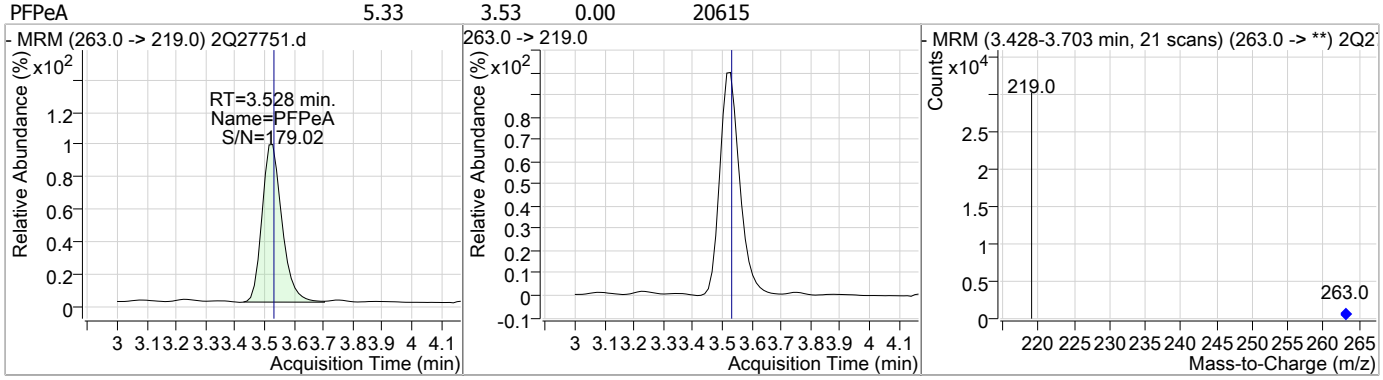


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.56	3.52	0.00	89282				

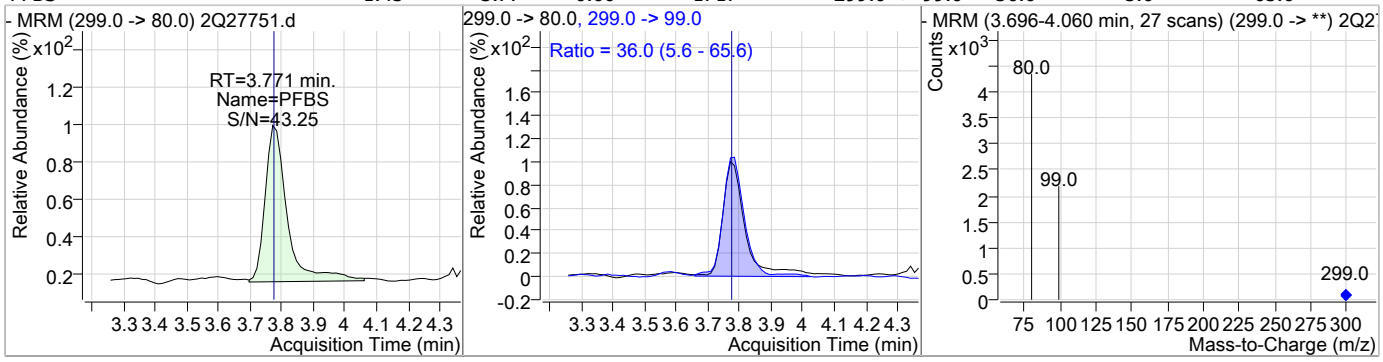


Perfluorinated Compounds by LC/MS/MS

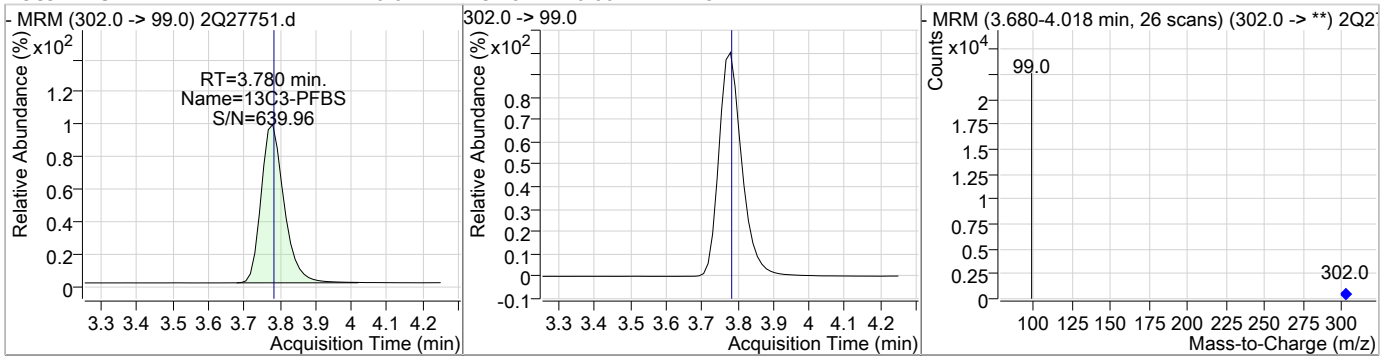
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.33	3.53	0.00	20615				



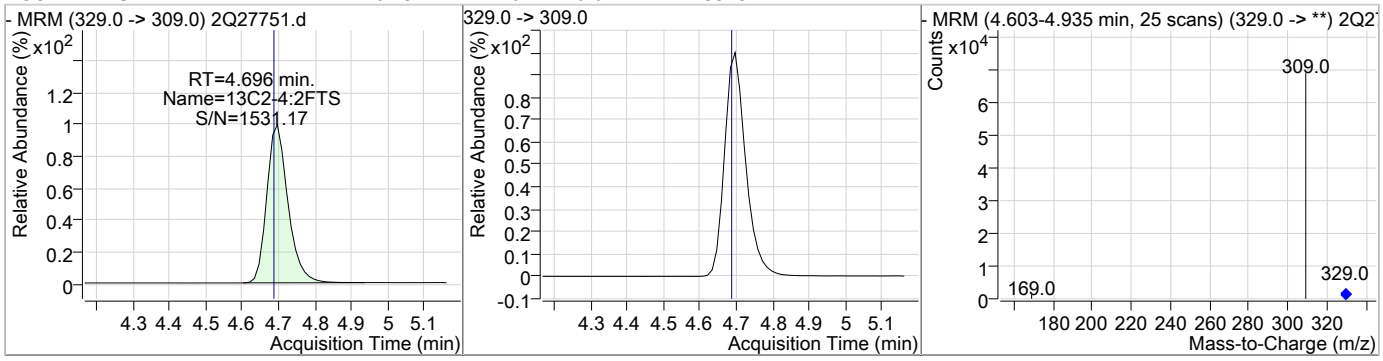
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.43	3.77	0.00	1717	299.0 -> 99.0	36.0	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.61	3.78	0.00	15147				

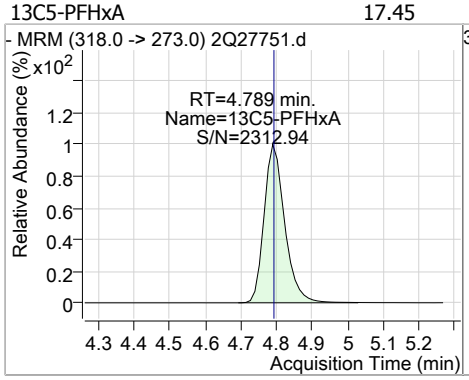


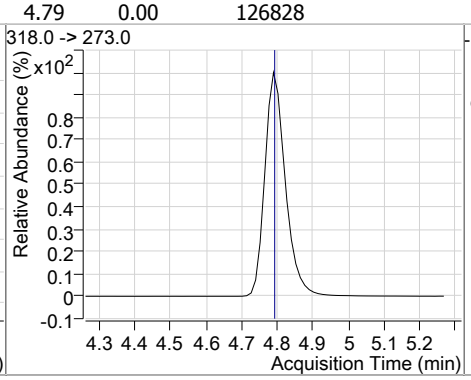
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.79	4.70	0.01	49929				

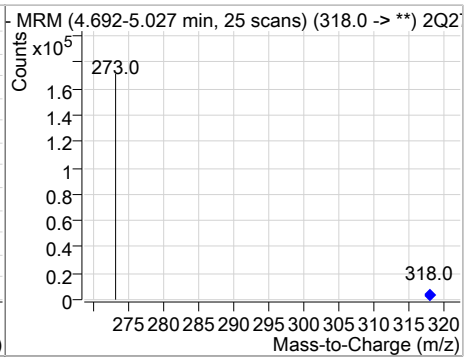


Perfluorinated Compounds by LC/MS/MS

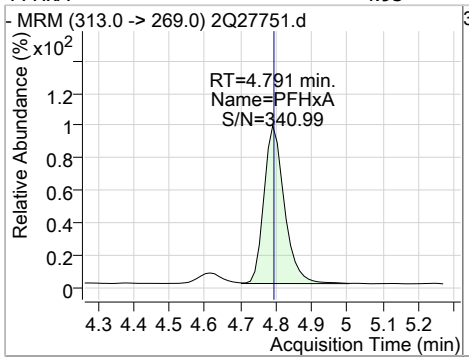
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.45	4.79	0.00	126828				

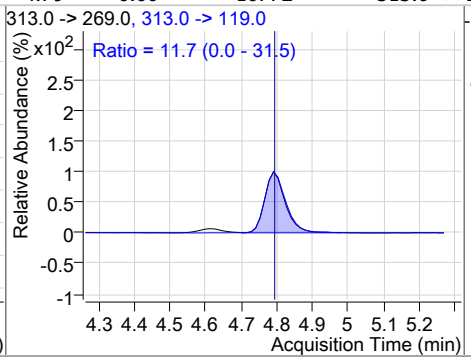


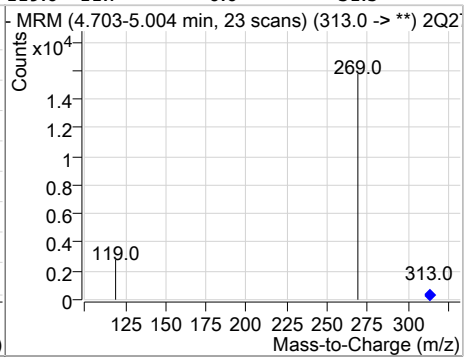




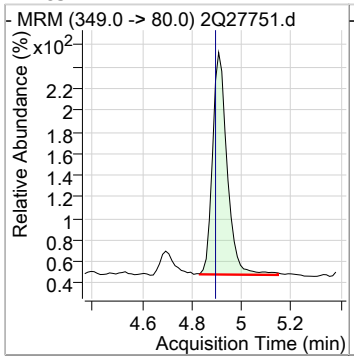
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.93	4.79	0.00	10772	313.0 -> 119.0	11.7	0.0	31.5

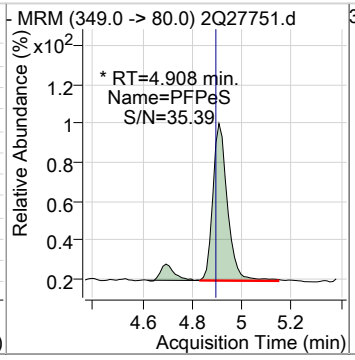


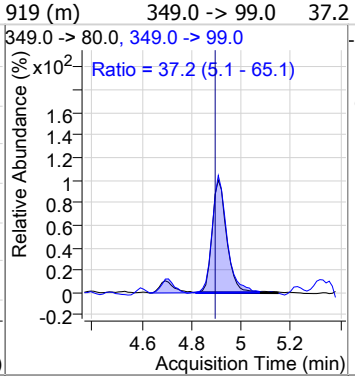


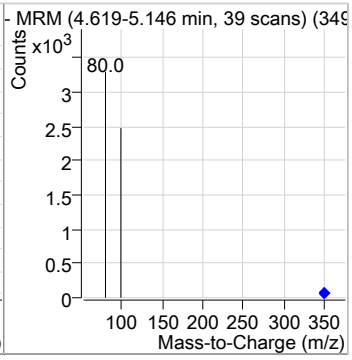


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.19	4.91	0.01	919 (m)	349.0 -> 99.0	37.2	5.1	65.1

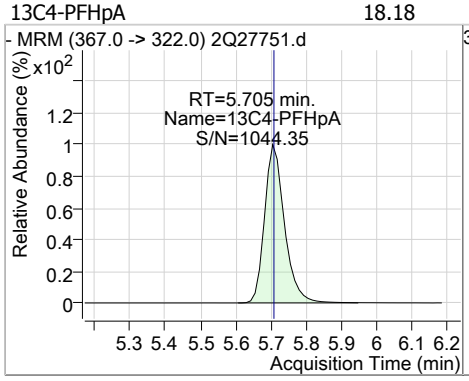


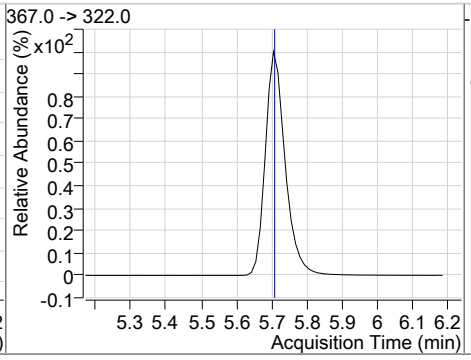


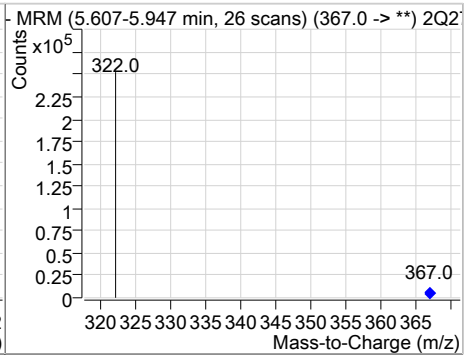




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.18	5.71	0.00	188028				

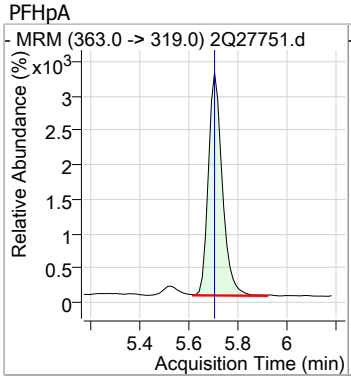


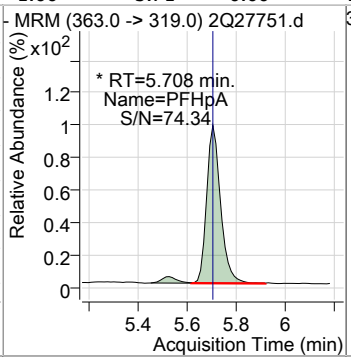


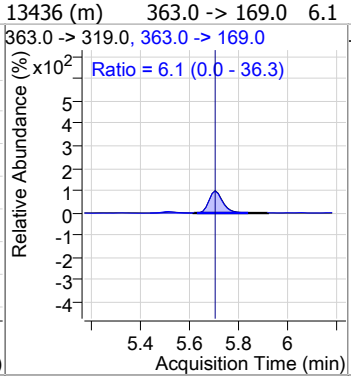


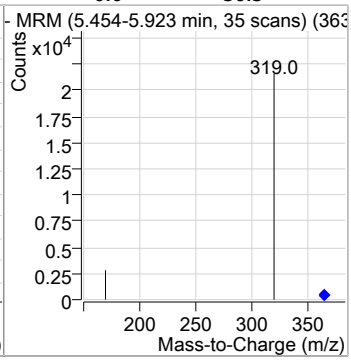
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.66	5.71	0.00	13436 (m)	363.0 -> 169.0	6.1	0.0	36.3

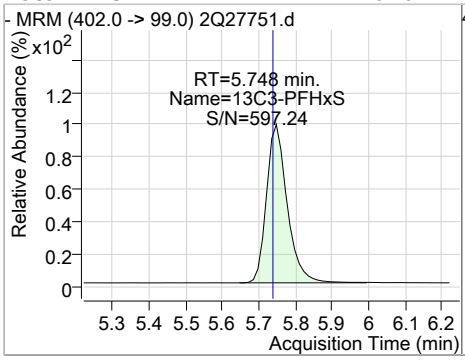


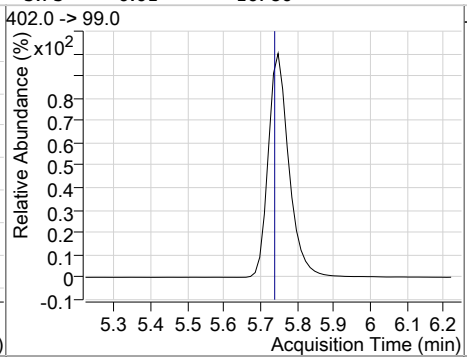


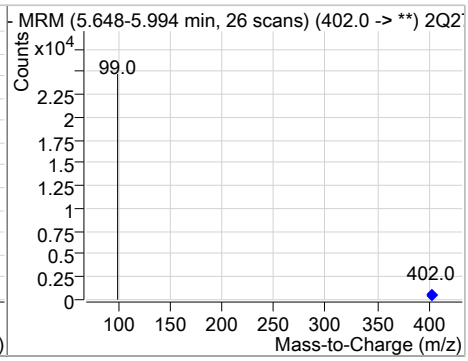




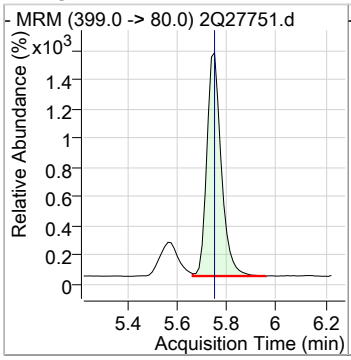
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.46	5.75	0.01	16780				

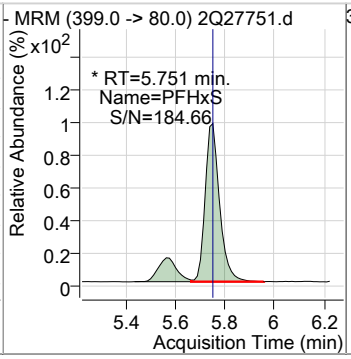


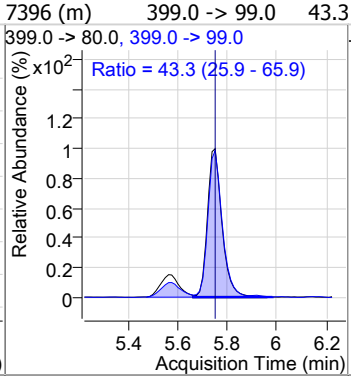


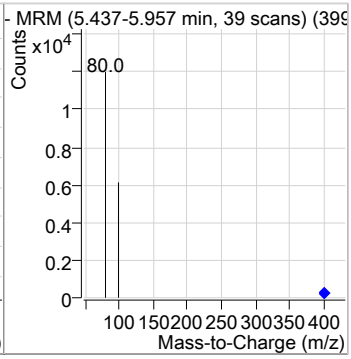


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	7.97	5.75	0.01	7396 (m)	399.0 -> 99.0	43.3	25.9	65.9

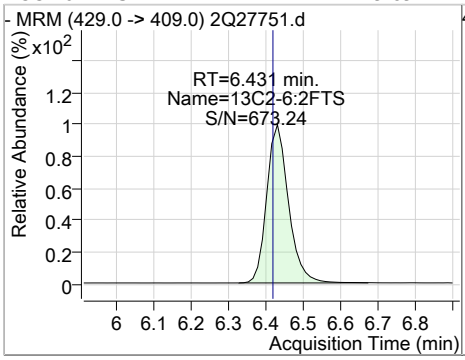


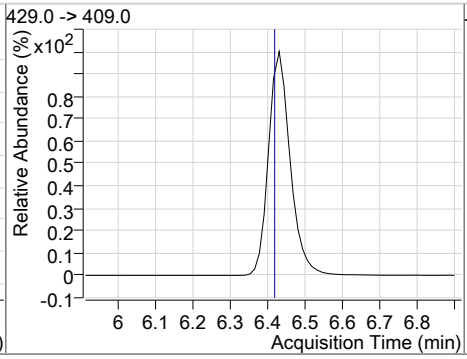


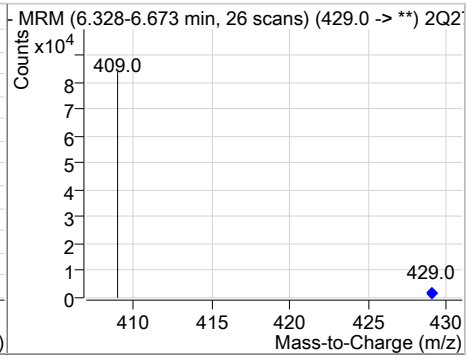




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.89	6.43	0.02	63841				

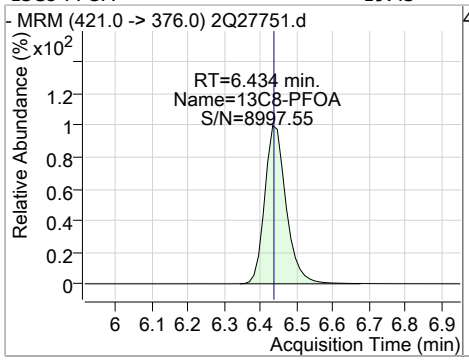


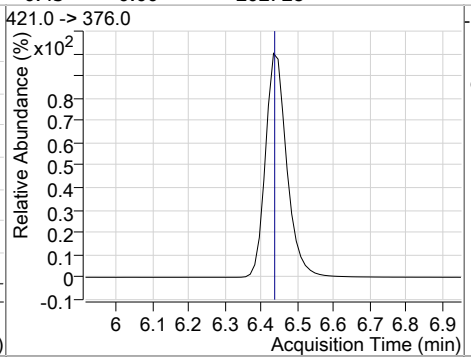


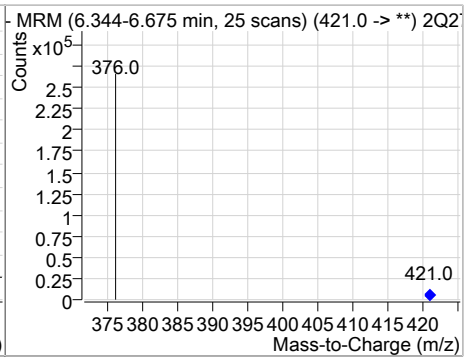


Perfluorinated Compounds by LC/MS/MS

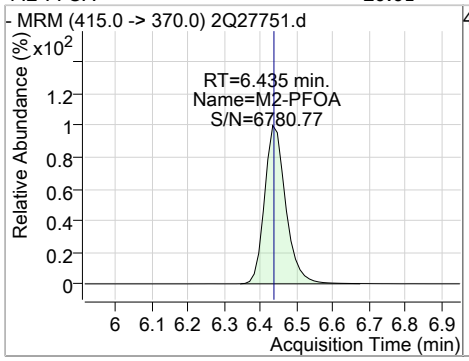
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.43	6.43	0.00	202728				

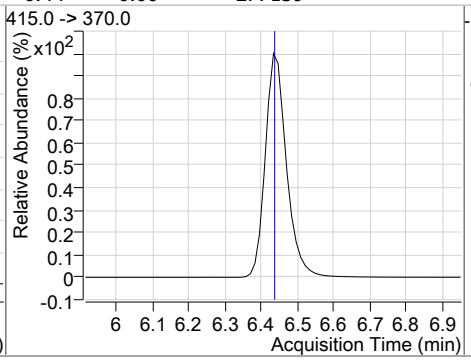


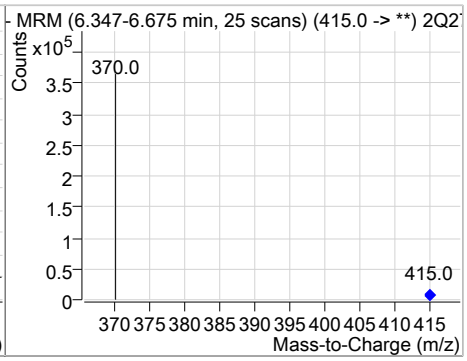




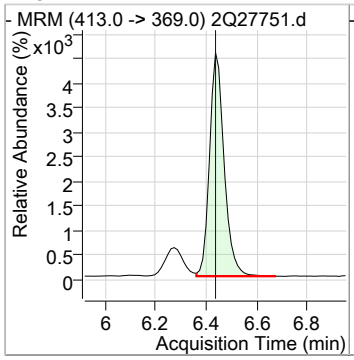
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.44	0.00	277139				

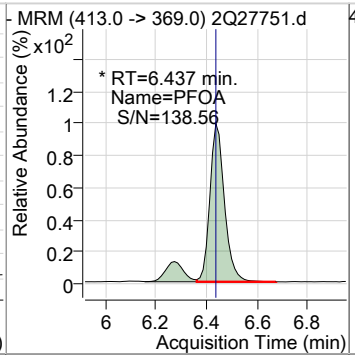


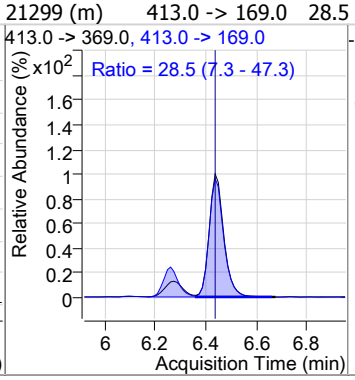


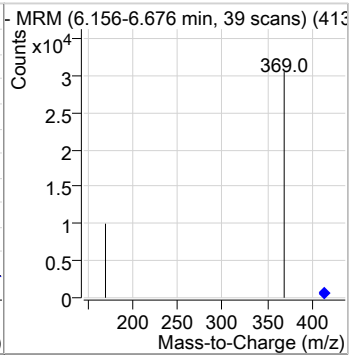


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	3.89	6.44	0.00	21299 (m)	413.0 -> 169.0	28.5	7.3	47.3

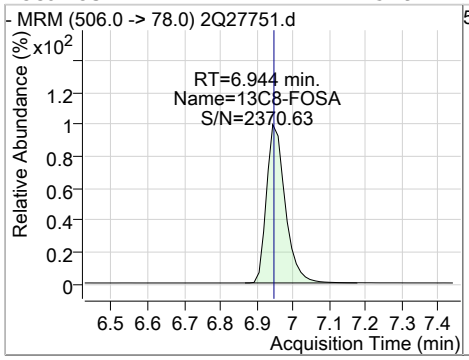


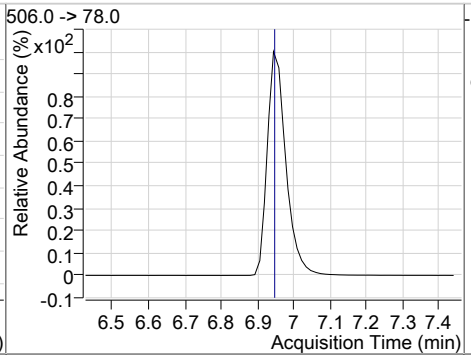


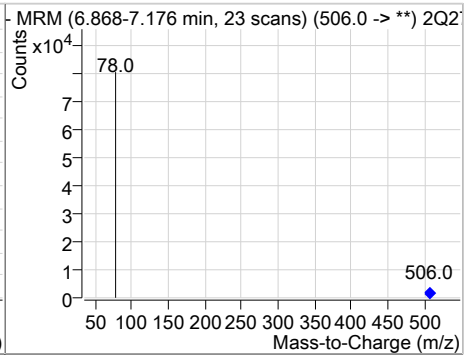




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.19	6.94	0.00	61576				

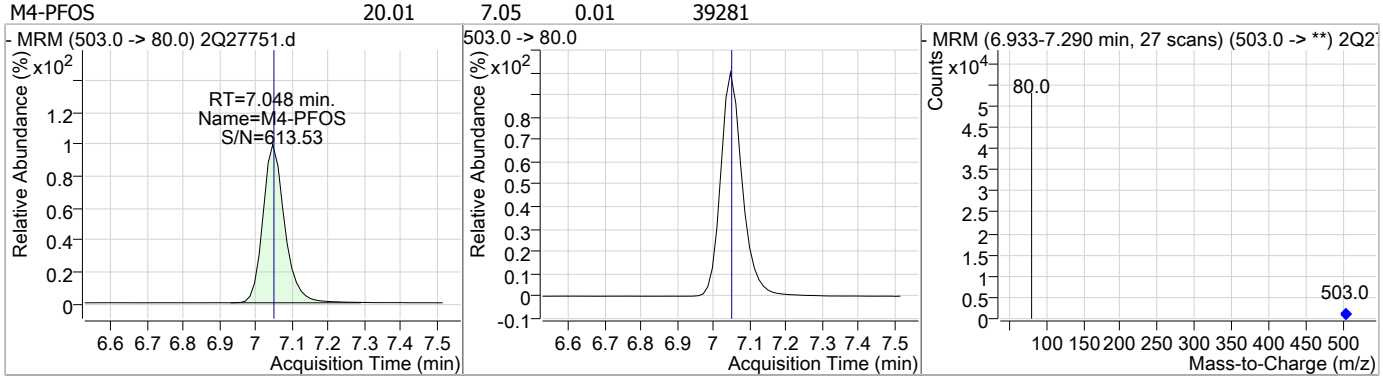




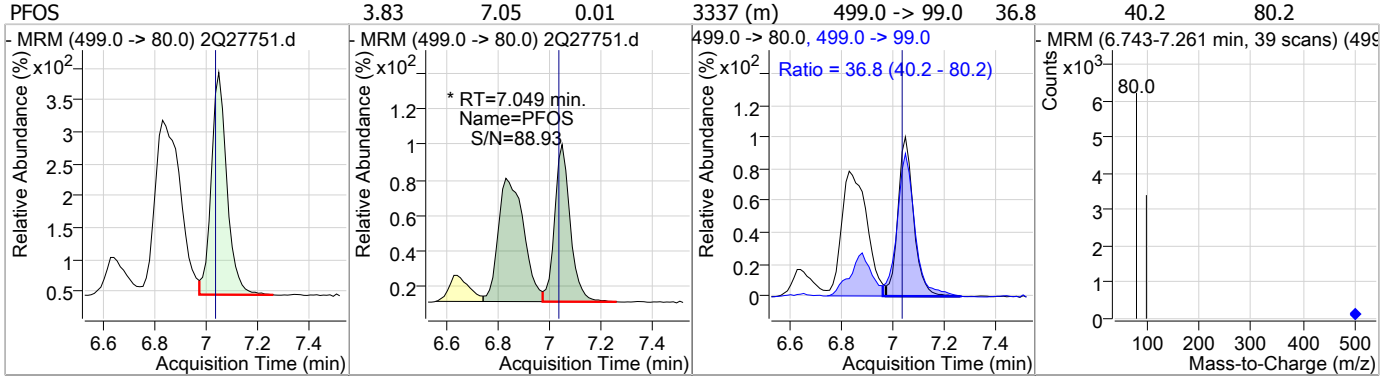


Perfluorinated Compounds by LC/MS/MS

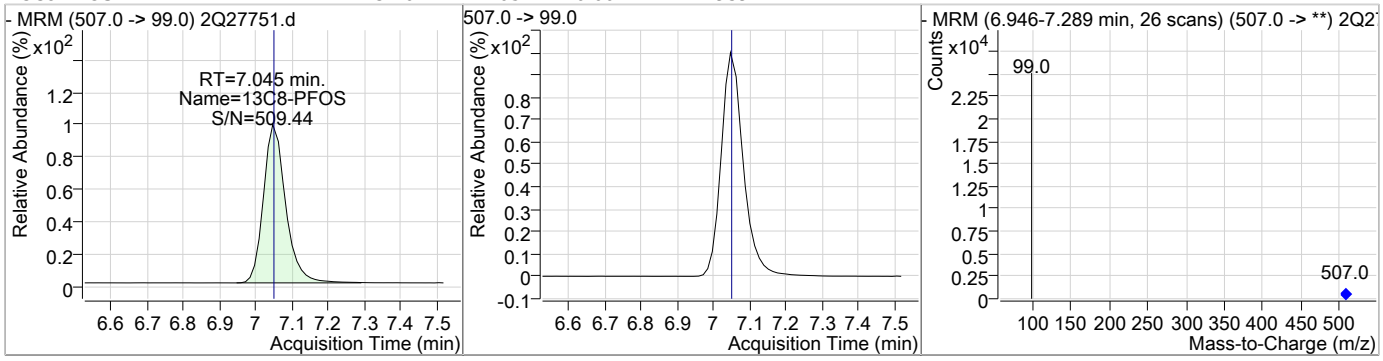
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.05	0.01	39281				



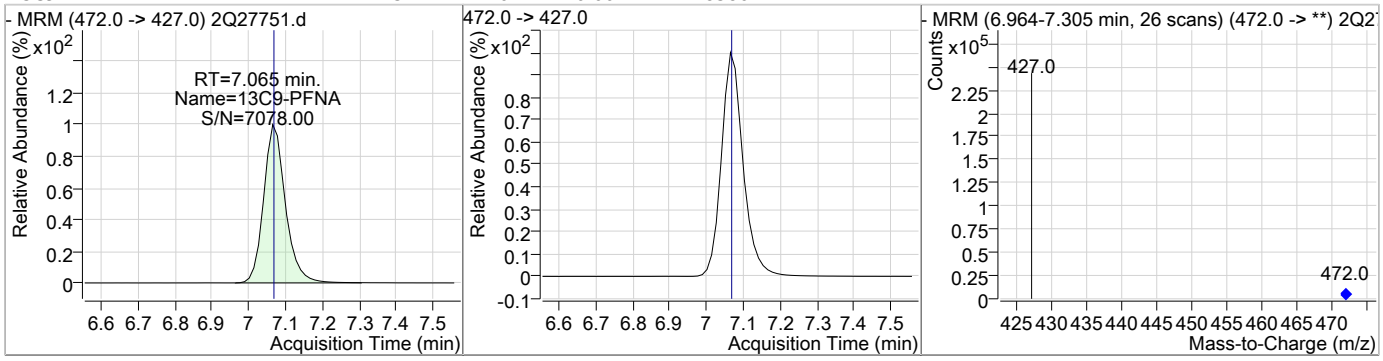
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.83	7.05	0.01	3337 (m)	499.0 -> 99.0	36.8	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.76	7.05	0.00	17939				

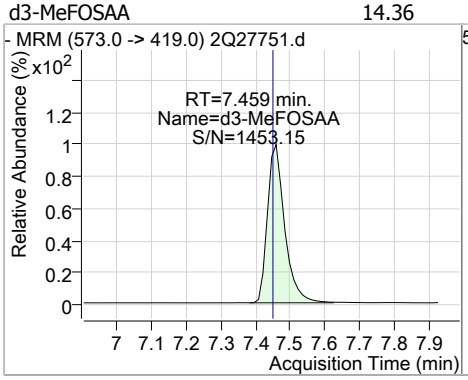


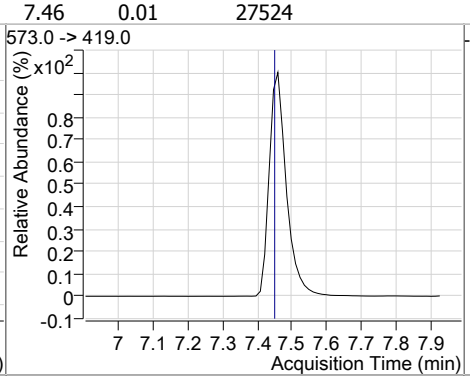
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.37	7.07	0.00	183862				

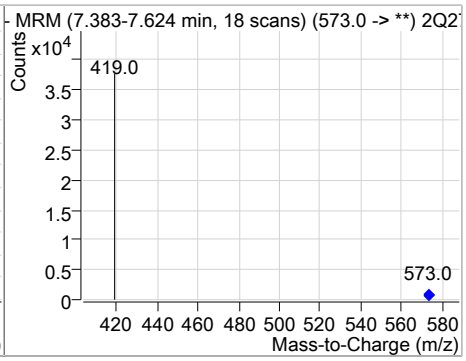


Perfluorinated Compounds by LC/MS/MS

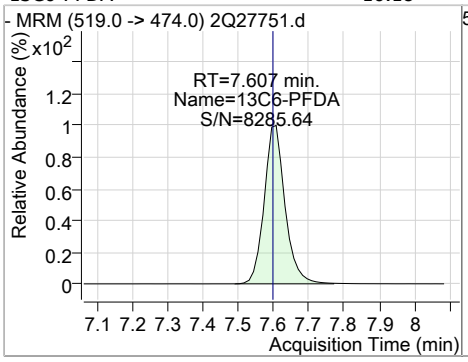
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.36	7.46	0.01	27524				

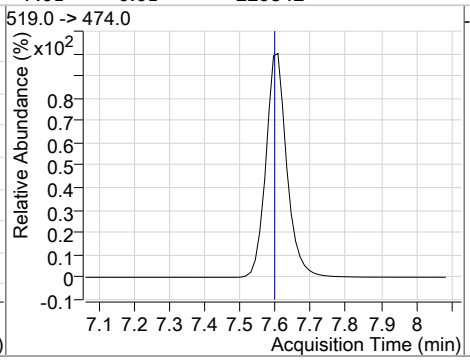


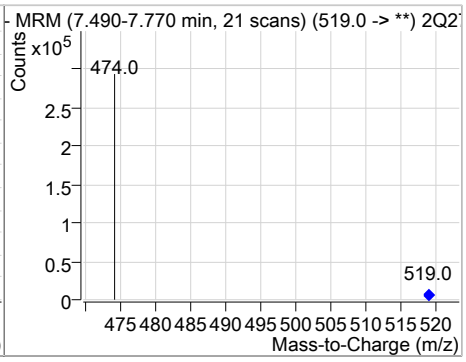




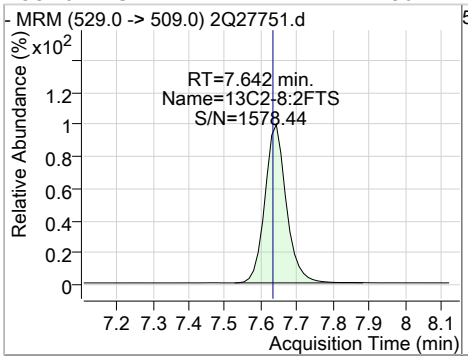
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.18	7.61	0.01	220842				

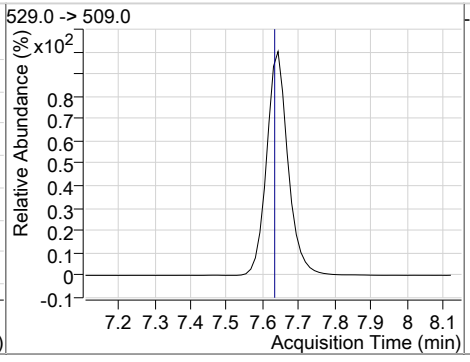


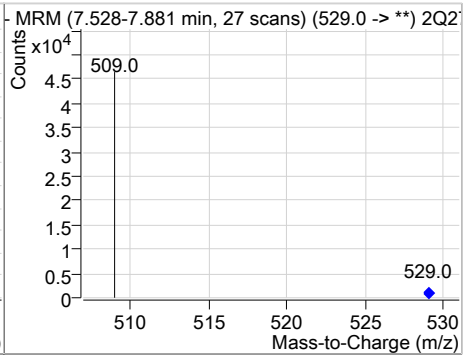




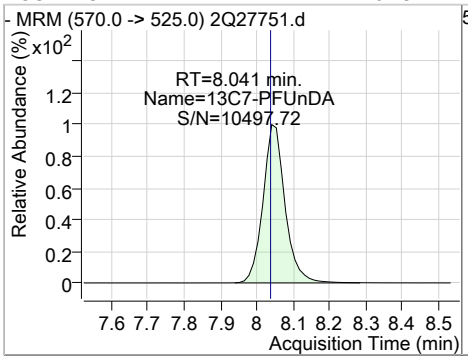
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.96	7.64	0.01	33166				

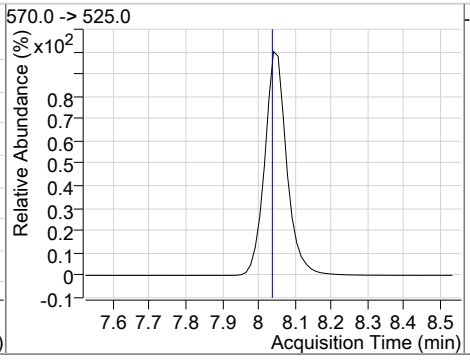


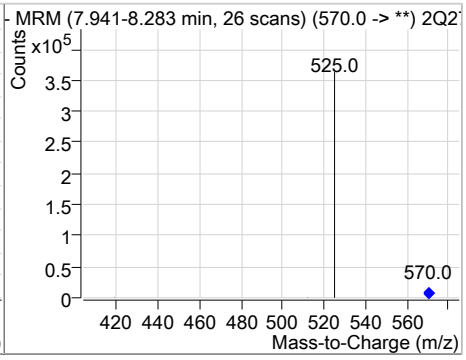




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.29	8.04	0.00	275620				

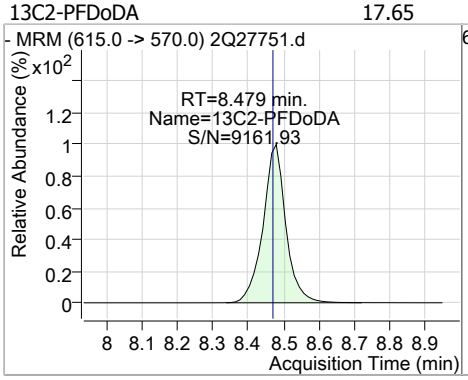


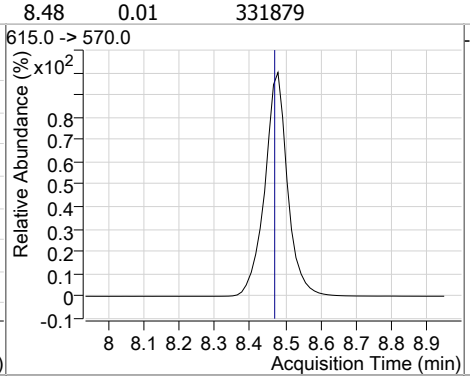


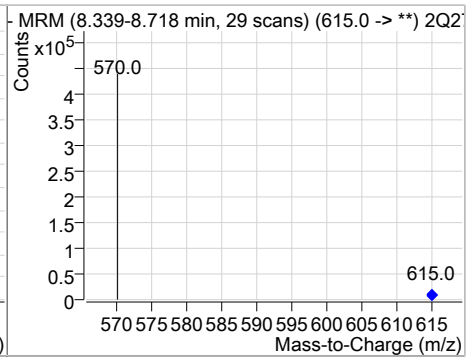


Perfluorinated Compounds by LC/MS/MS

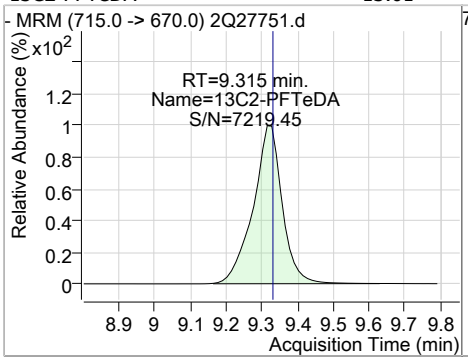
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.65	8.48	0.01	331879				

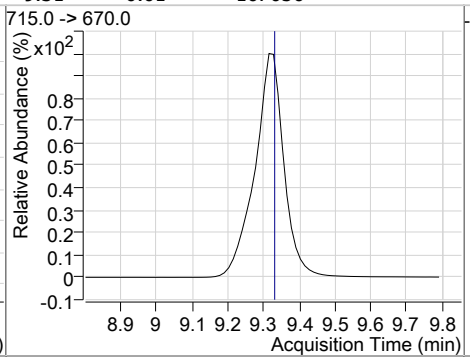


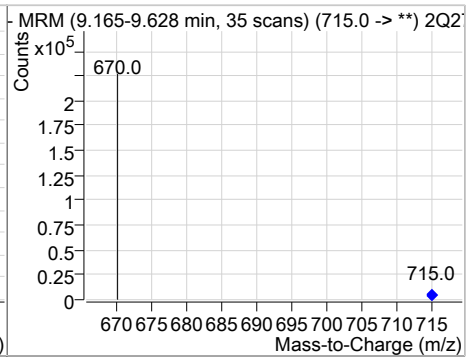




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	13.01	9.31	-0.01	167056				







Manual Integration Approval Summary

Sample Number: FA62220-18
Lab FileID: 2Q27751.D
Injection Time: 03/19/19 17:37
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:59 Nancy Saunders
Supervisor approved: 03/20/19 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		4.91	Split peak
Perfluoroheptanoic acid	375-85-9		5.71	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanoic acid	335-67-1		6.44	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27717.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 10:34:29 PM
Sample Name : fa62220-19
Vial : Vial 35
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

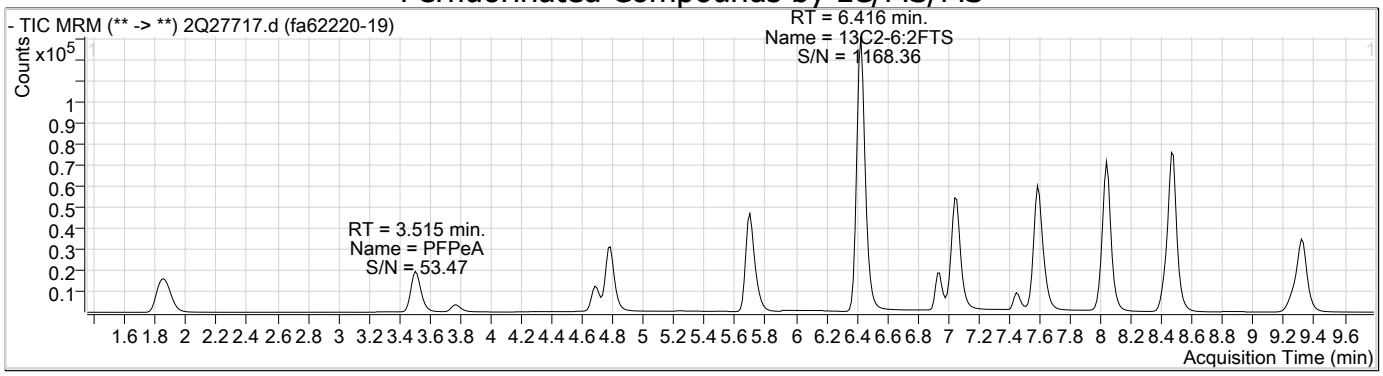
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	266068	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	35885	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	103462	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	87458	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	123409	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	181838	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	197609	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	181542	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	217729	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	290214	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	343400	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	190788	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	64420	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	14523	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	15862	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	17065	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	48838	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	62384	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	33137	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	27777	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	48622	16.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.8%		
13C2-6:2FTS	6.416	429.0 -> 409.0	62310	19.41	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%		
13C2-8:2FTS	7.630	529.0 -> 509.0	33134	14.94	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.7%		
13C2-PFDoDA	8.466	615.0 -> 570.0	343413	18.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.3%		
13C2-PFTeDA	9.315	715.0 -> 670.0	189966	14.80	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%		
13C3-PFBS	3.767	302.0 -> 99.0	14506	15.91	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C3-PFHxS	5.736	402.0 -> 99.0	15883	15.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%		
13C4-PFBA	1.852	217.0 -> 172.0	103245	17.22	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.1%		
13C4-PFHpA	5.705	367.0 -> 322.0	181811	17.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C5-PFHxA	4.789	318.0 -> 273.0	123387	16.98	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.9%		
13C5-PFPeA	3.511	268.0 -> 223.0	87383	17.19	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.9%		
13C6-PFDA	7.594	519.0 -> 474.0	217889	15.97	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

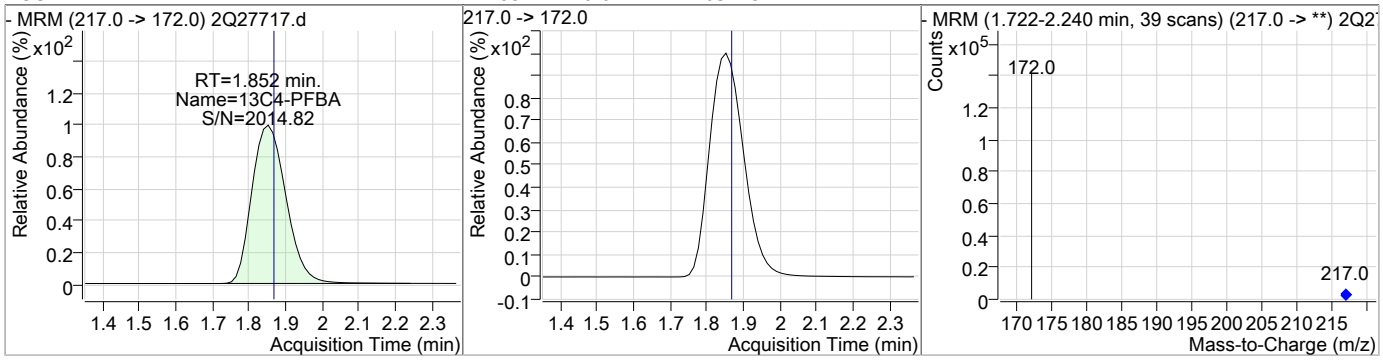
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%		
13C7-PFUnDA	8.041	570.0 -> 525.0	290146	17.14 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.7%		
13C8-FOSA	6.944	506.0 -> 78.0	64427	15.89 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.4%		
13C8-PFOA	6.434	421.0 -> 376.0	197541	18.94 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.7%		
13C8-PFOS	7.033	507.0 -> 99.0	17114	13.13 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.6%		
13C9-PFNA	7.065	472.0 -> 427.0	181455	17.14 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.7%		
d3-MeFOSAA	7.447	573.0 -> 419.0	27810	14.51 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.5%		
M2-PFOA	6.435	415.0 -> 370.0	266857	20.04 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
M4-PFOS	7.036	503.0 -> 80.0	35928	20.02 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%		
Target Compounds						**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	1.848	213.0 -> 169.0	667	0.65 µg/L		100
PFBS	3.771	299.0 -> 80.0	470	0.41 µg/L		93
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	4.791	313.0 -> 269.0	1657	0.78 µg/L		98
PFHxS	5.739	399.0 -> 80.0	1072	1.22 µg/L	m	89
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	-	413.0 -> 369.0	-	N.D.		
PFOS	-	499.0 -> 80.0	-	N.D.		
PFPeA	3.515	263.0 -> 219.0	2558	0.68 µg/L		100
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

 # = Qualifier out of range, m = manually integrated, + = Area summed

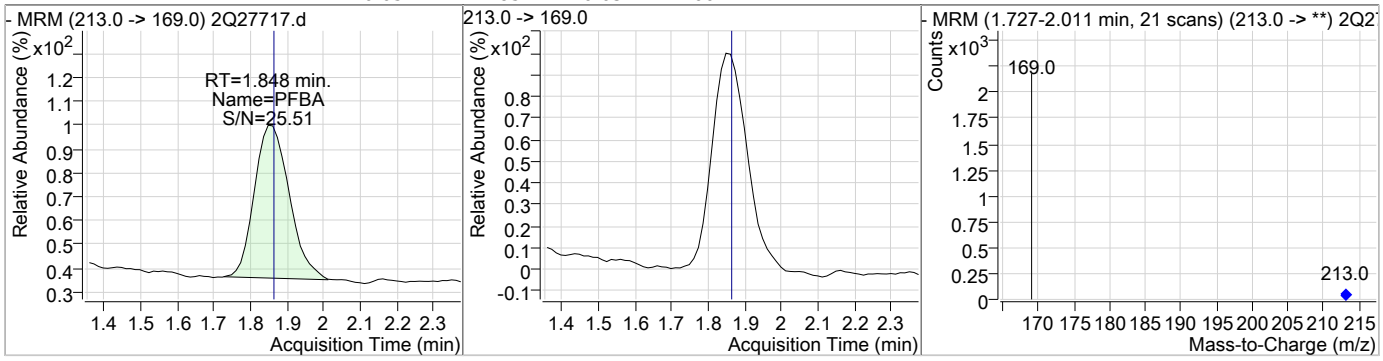
Perfluorinated Compounds by LC/MS/MS



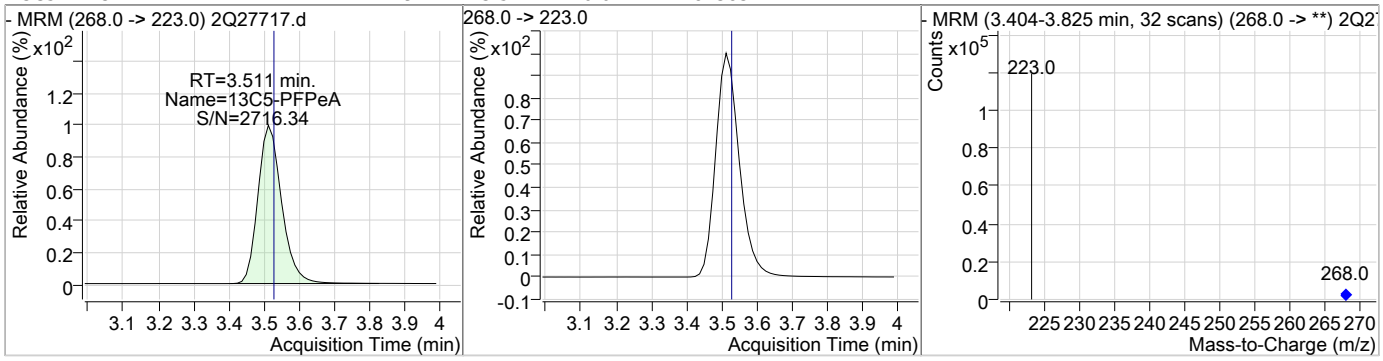
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.22	1.85	-0.01	103245				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.65	1.85	-0.03	667				

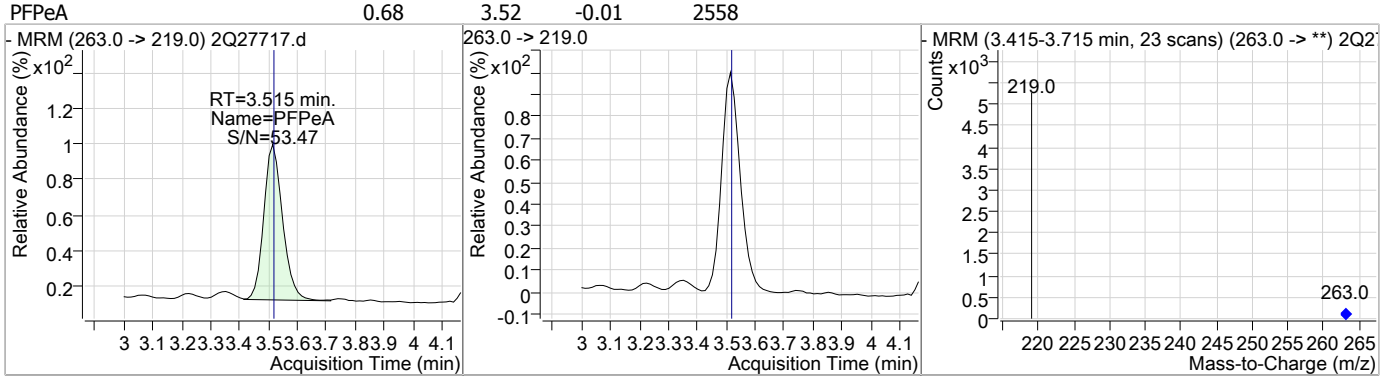


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.19	3.51	-0.01	87383				

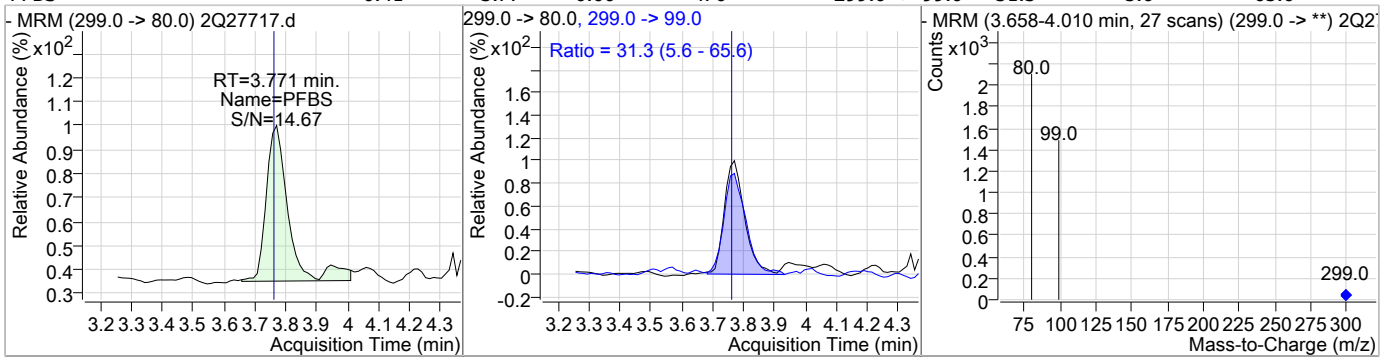


Perfluorinated Compounds by LC/MS/MS

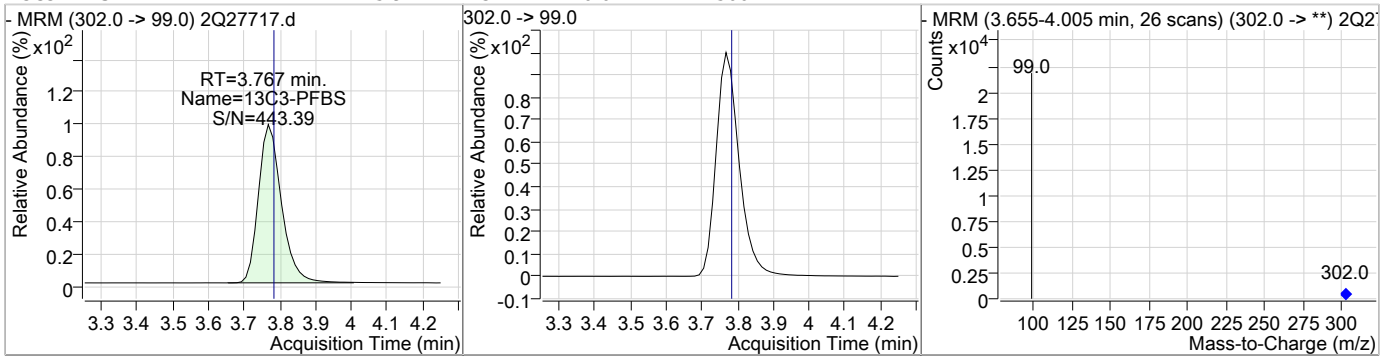
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.68	3.52	-0.01	2558				



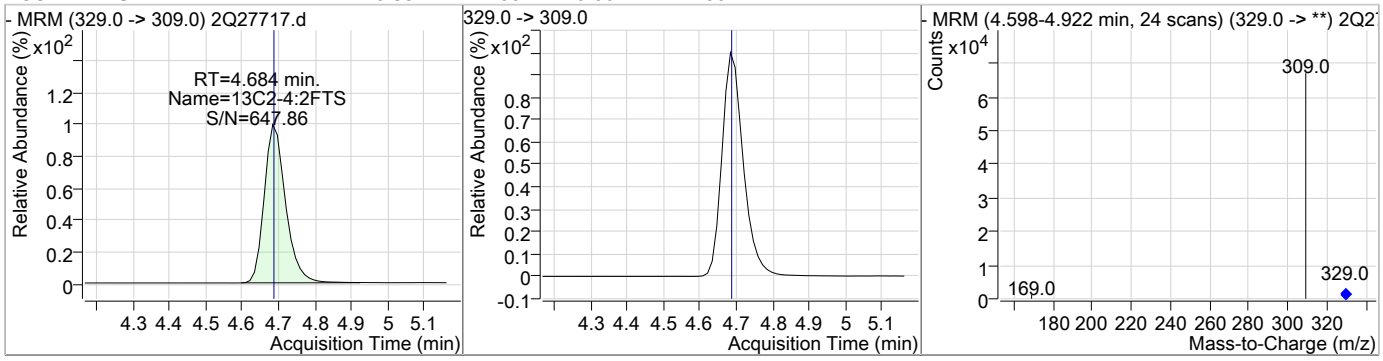
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.41	3.77	0.00	470	299.0 -> 99.0	31.3	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.91	3.77	-0.01	14506				

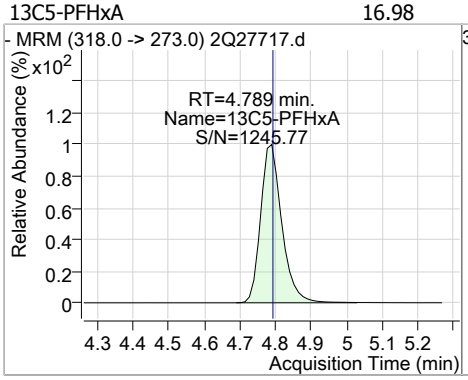


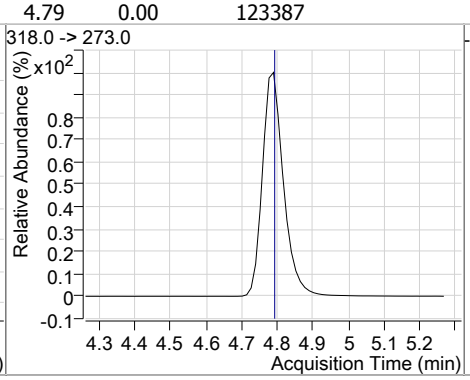
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.35	4.68	0.00	48622				

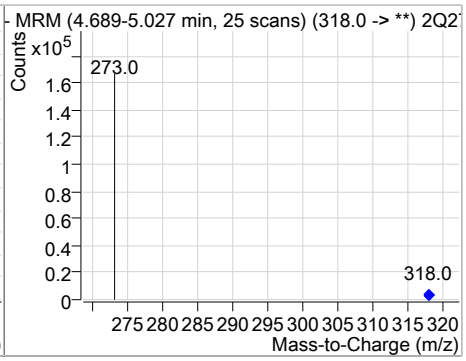


Perfluorinated Compounds by LC/MS/MS

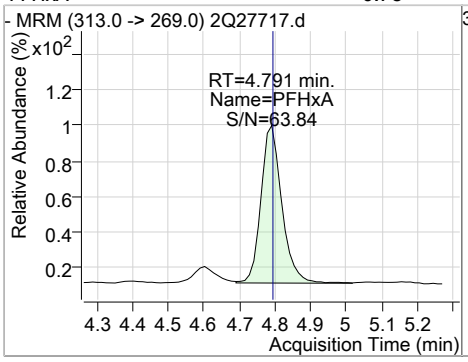
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.98	4.79	0.00	123387				

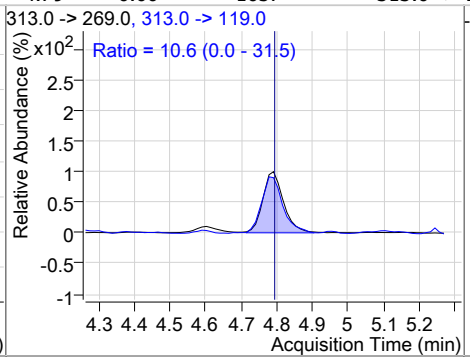


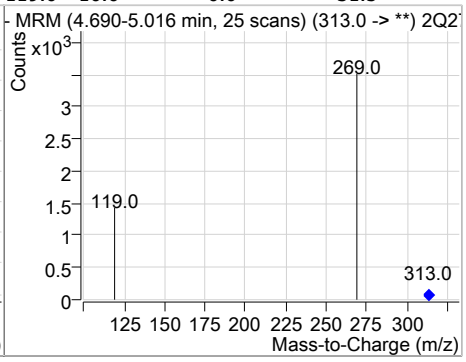




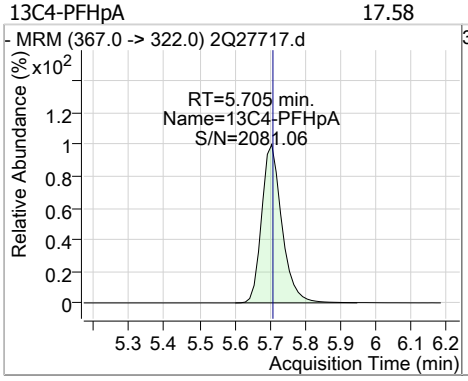
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.78	4.79	0.00	1657	313.0 -> 119.0	10.6	0.0	31.5

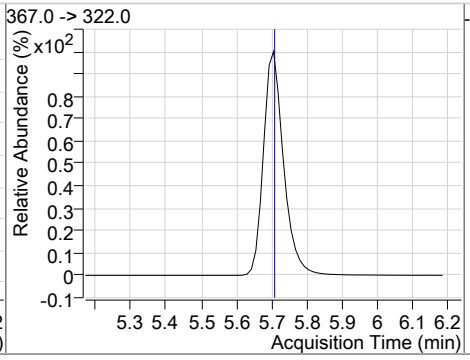


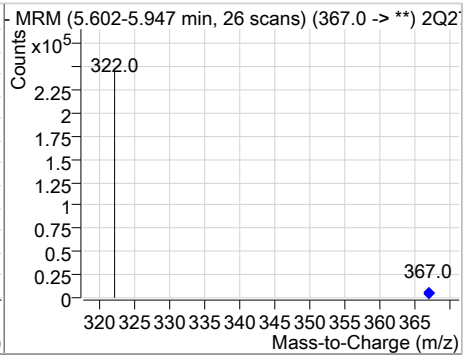




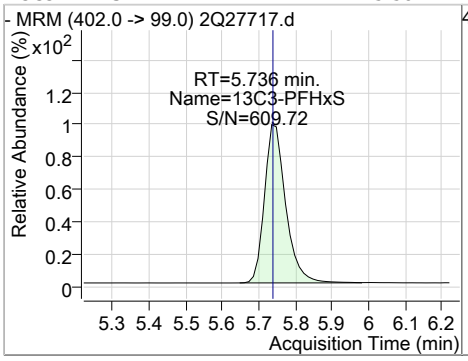
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.58	5.71	0.00	181811				

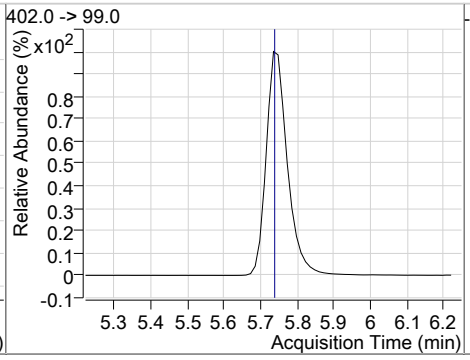


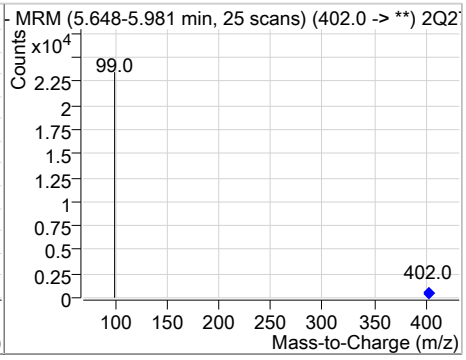




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.58	5.74	0.00	15883				

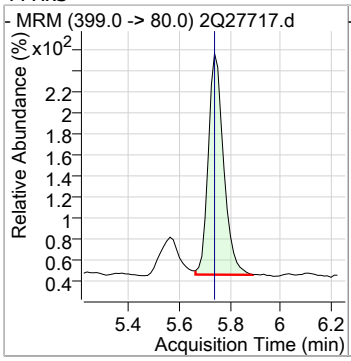


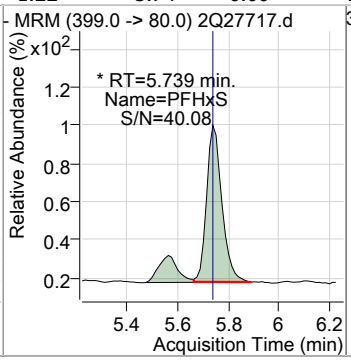


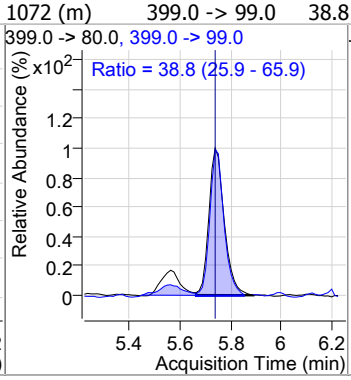


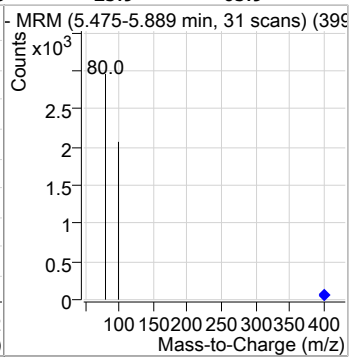
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.22	5.74	0.00	1072 (m)	399.0 -> 99.0	38.8	25.9	65.9

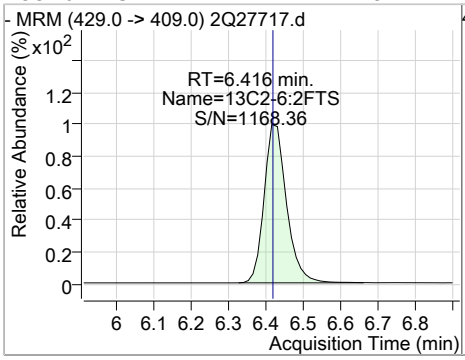


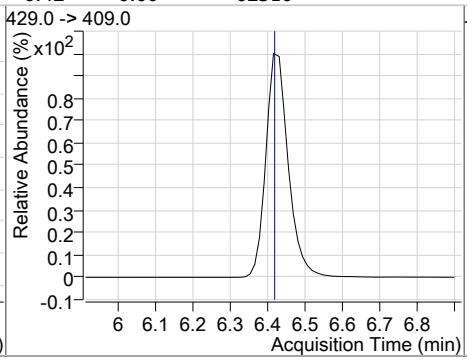


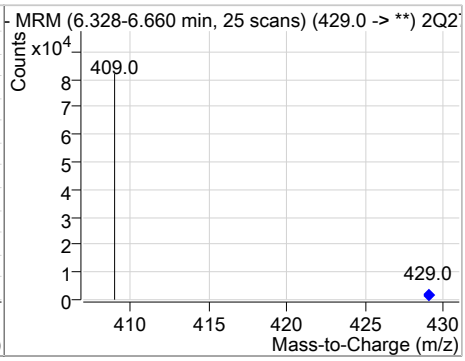




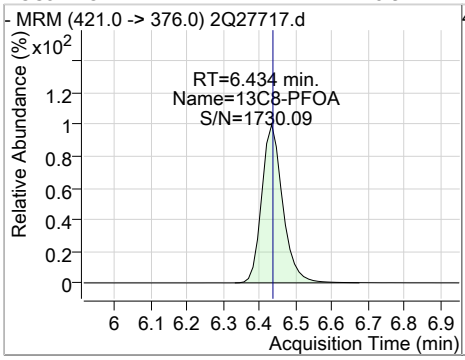
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.41	6.42	0.00	62310				

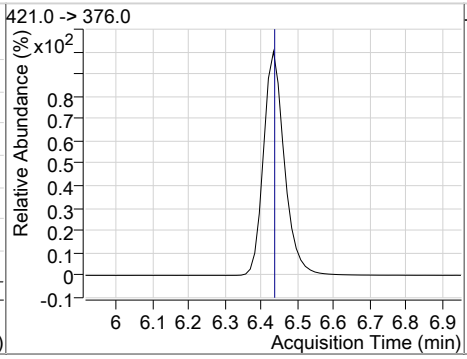


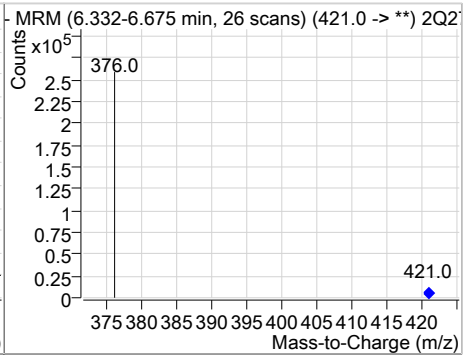




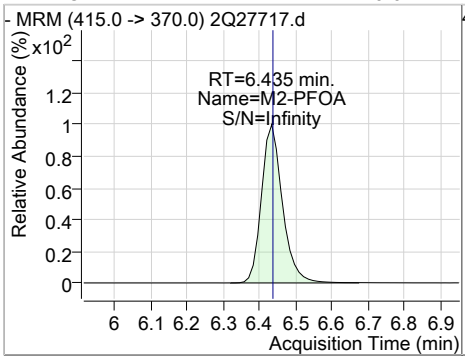
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.94	6.43	0.00	197541				

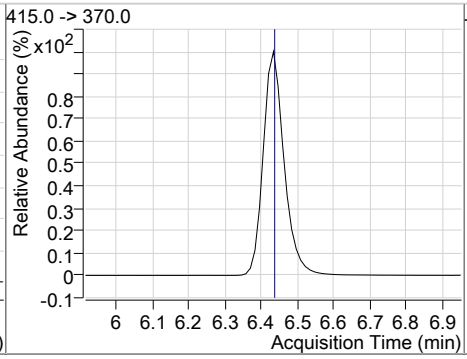


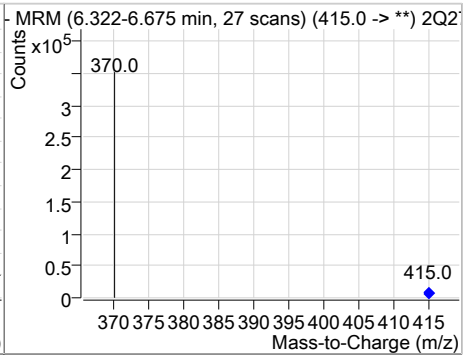




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.04	6.44	0.00	266857				

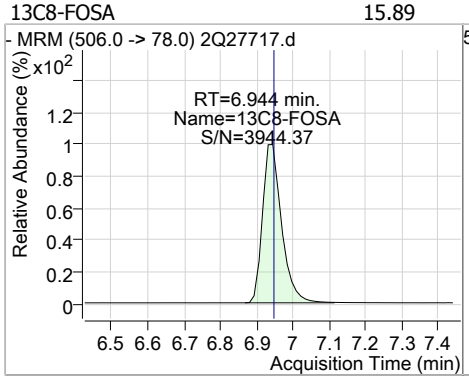


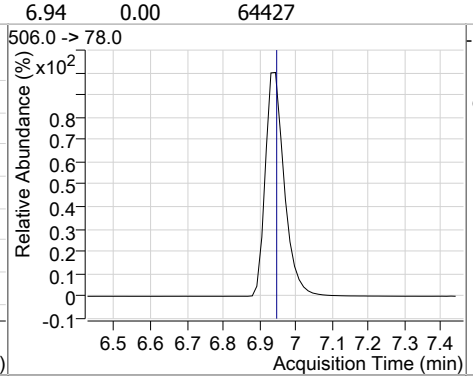


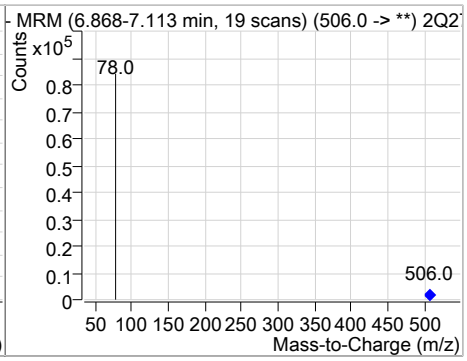


Perfluorinated Compounds by LC/MS/MS

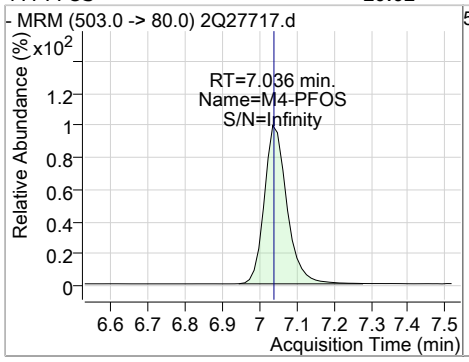
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.89	6.94	0.00	64427				

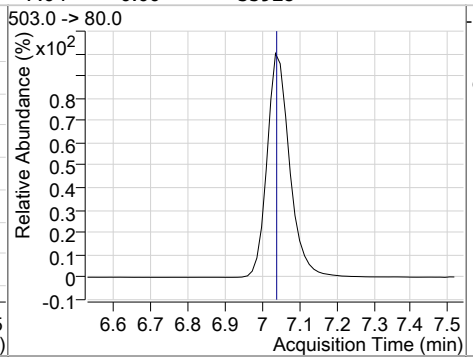


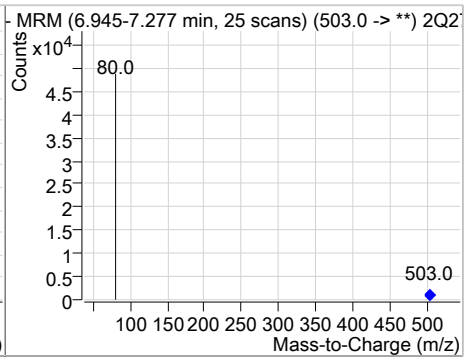




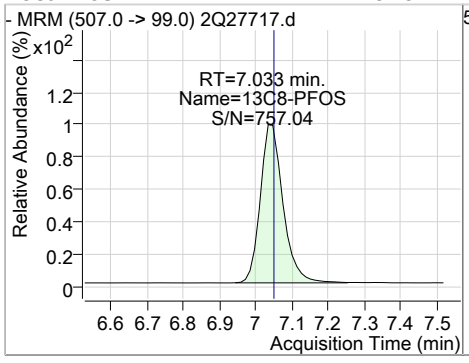
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.04	0.00	35928				

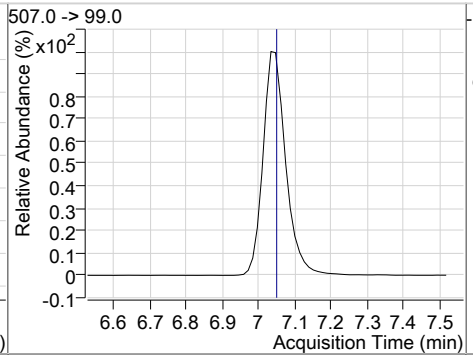


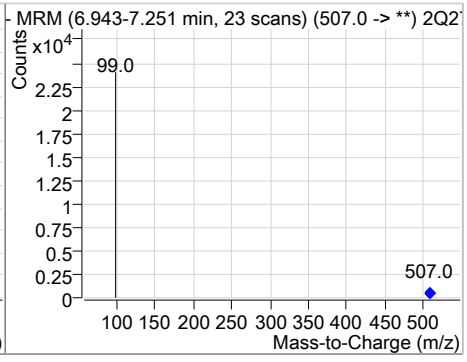




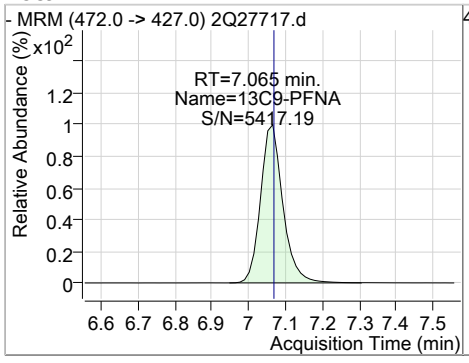
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.13	7.03	-0.01	17114				

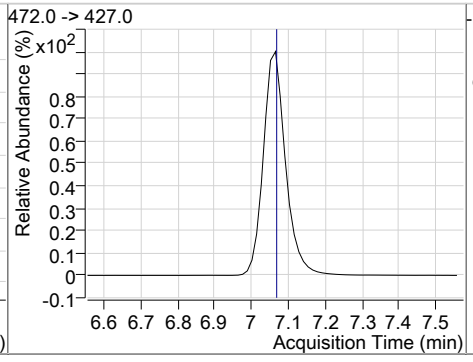


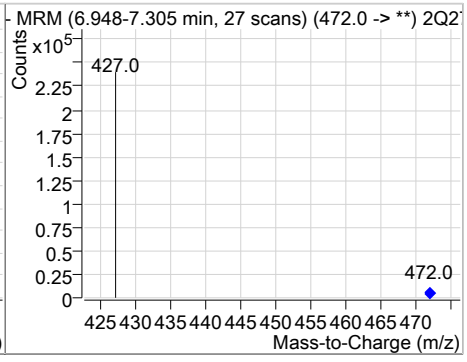




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.14	7.07	0.00	181455				

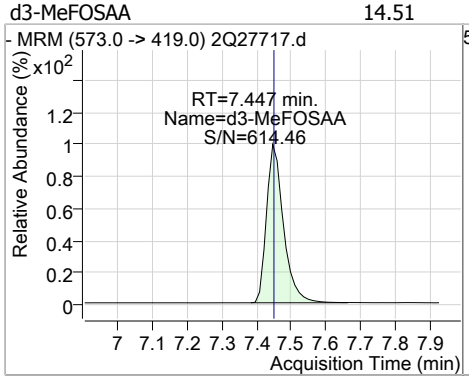


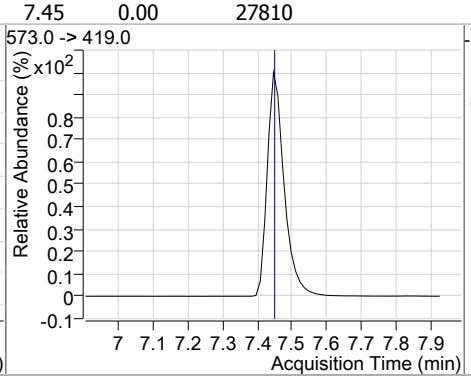


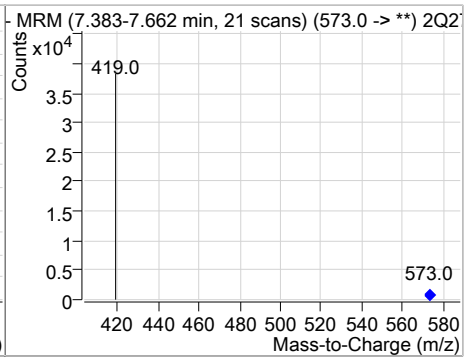


Perfluorinated Compounds by LC/MS/MS

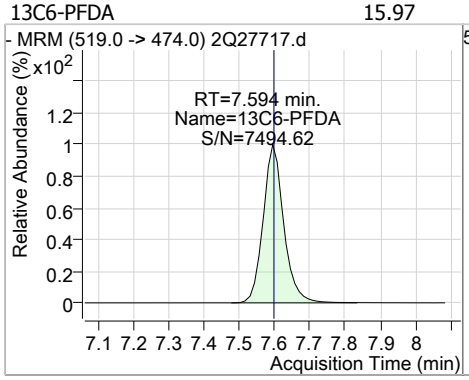
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.51	7.45	0.00	27810				

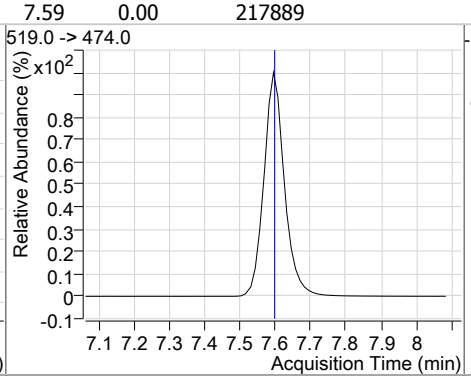


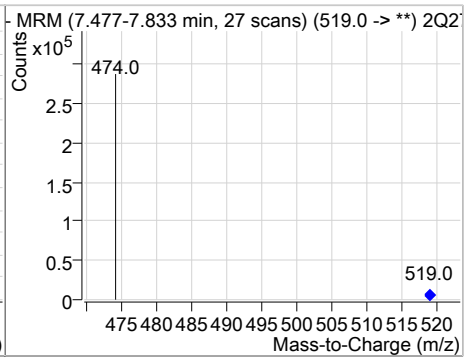




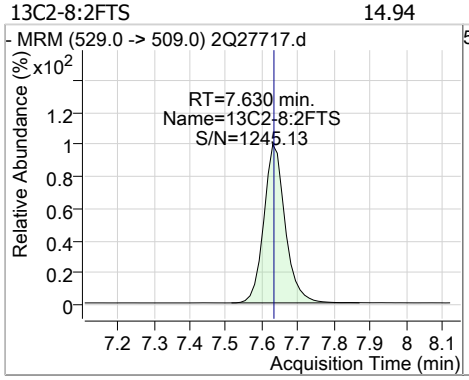
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.97	7.59	0.00	217889				

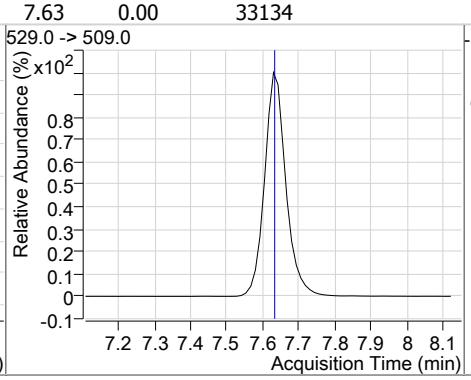


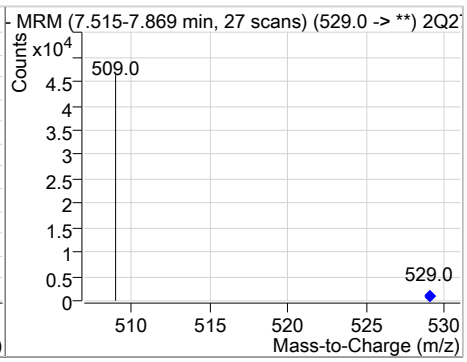




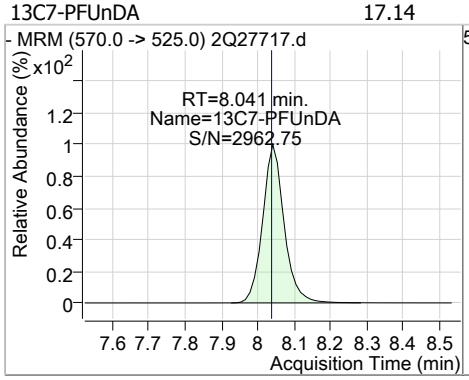
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.94	7.63	0.00	33134				

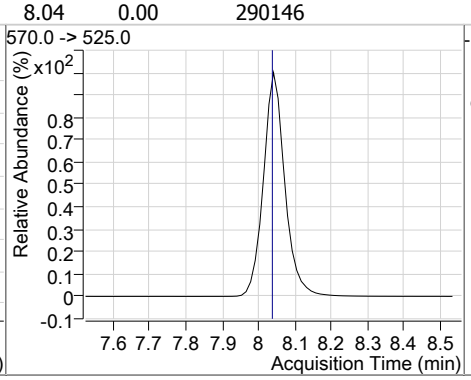


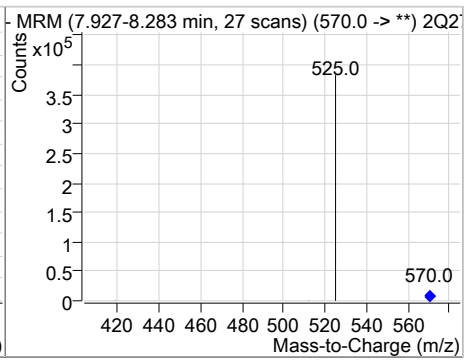




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.14	8.04	0.00	290146				

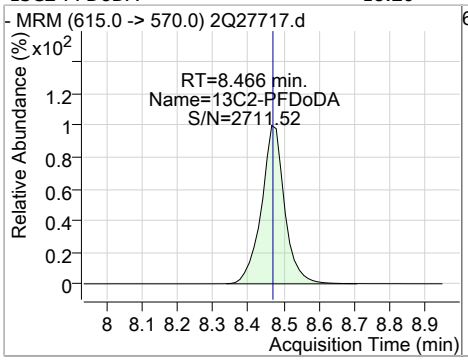


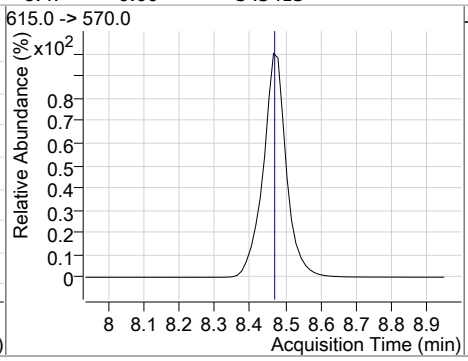


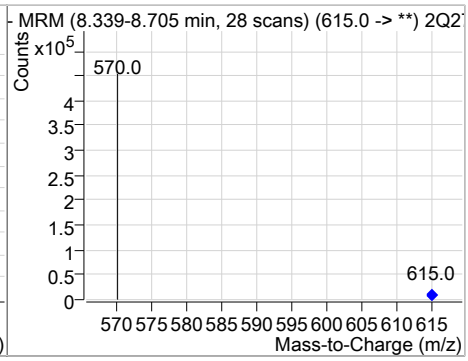


Perfluorinated Compounds by LC/MS/MS

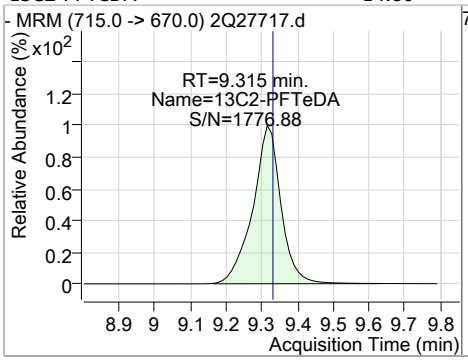
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.26	8.47	0.00	343413				

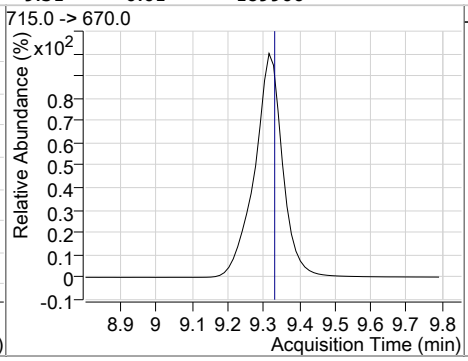


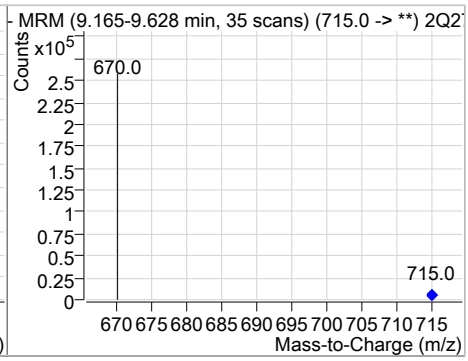




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.80	9.31	-0.01	189966				







Manual Integration Approval Summary

Sample Number: FA62220-19
Lab FileID: 2Q27717.D
Injection Time: 03/18/19 22:34
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27718.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 10:50:12 PM
Sample Name	:	fa62220-20
Vial	:	Vial 36
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74180,S2Q442,250,,,1.0,1,water

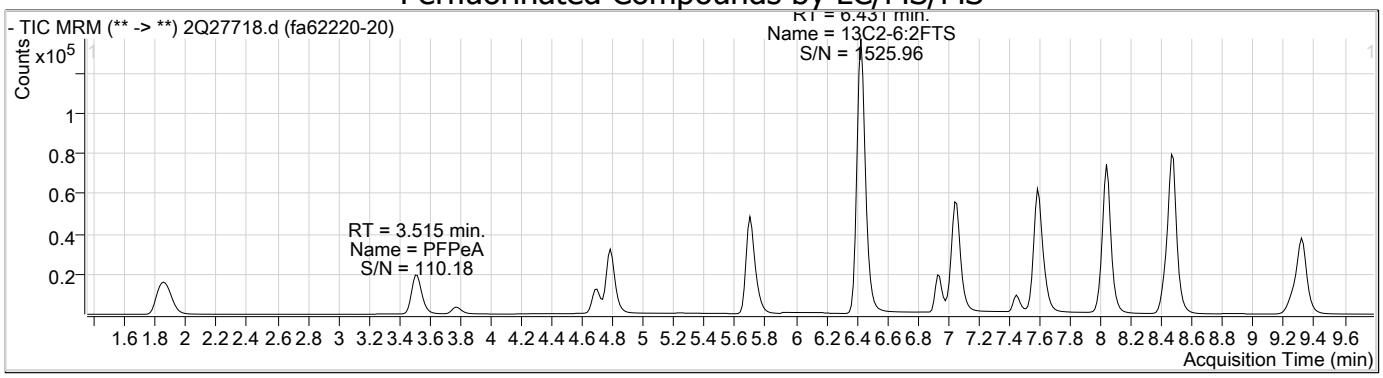
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	278424	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	37347	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	106880	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	89917	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	126133	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	187125	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	204240	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	184166	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	222953	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	298456	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	359594	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	205490	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	66431	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14930	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	16476	20.00	µg/L	0.013
M8-PFOS	7.033	507.0 -> 99.0	17050	20.00	µg/L	-0.013
M2-4:2FTS	4.696	329.0 -> 309.0	50038	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	66280	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	33344	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	28384	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	49831	16.76	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%		
13C2-6:2FTS	6.431	429.0 -> 409.0	66279	20.65	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C2-8:2FTS	7.630	529.0 -> 509.0	33329	15.03	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%		
13C2-PFDoDA	8.466	615.0 -> 570.0	359515	19.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%		
13C2-PFTeDA	9.315	715.0 -> 670.0	204857	15.96	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%		
13C3-PFBS	3.767	302.0 -> 99.0	14975	16.42	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%		
13C3-PFHxS	5.748	402.0 -> 99.0	16460	16.15	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C4-PFBA	1.852	217.0 -> 172.0	106633	17.78	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C4-PFHpA	5.705	367.0 -> 322.0	186902	18.07	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.4%		
13C5-PFHxA	4.789	318.0 -> 273.0	126014	17.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.7%		
13C5-PFPeA	3.511	268.0 -> 223.0	89971	17.70	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.5%		
13C6-PFDA	7.594	519.0 -> 474.0	222860	16.33	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

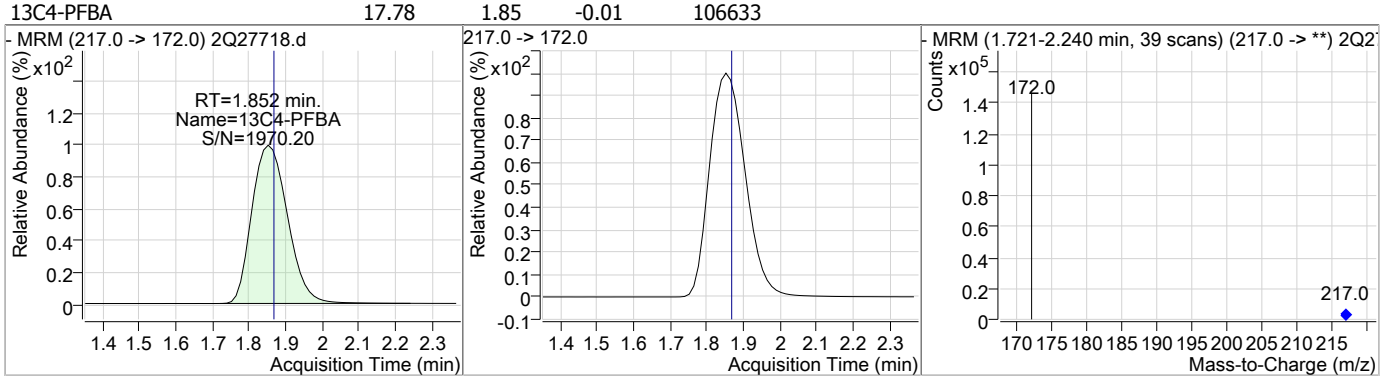
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.7%	
13C7-PFUnDA	8.041	570.0 -> 525.0	298298	17.63 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%	
13C8-FOSA	6.932	506.0 -> 78.0	66395	16.37 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.9%	
13C8-PFOA	6.434	421.0 -> 376.0	204138	19.57 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	7.033	507.0 -> 99.0	17113	13.13 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.6%	
13C9-PFNA	7.066	472.0 -> 427.0	184245	17.40 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%	
d3-MeFOSAA	7.447	573.0 -> 419.0	28428	14.83 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.2%	
M2-PFOA	6.435	415.0 -> 370.0	278493	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.036	503.0 -> 80.0	37421	20.03 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.860	213.0 -> 169.0	1070	1.01 µg/L	100
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	3.515	263.0 -> 219.0	2354	0.60 µg/L	100
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

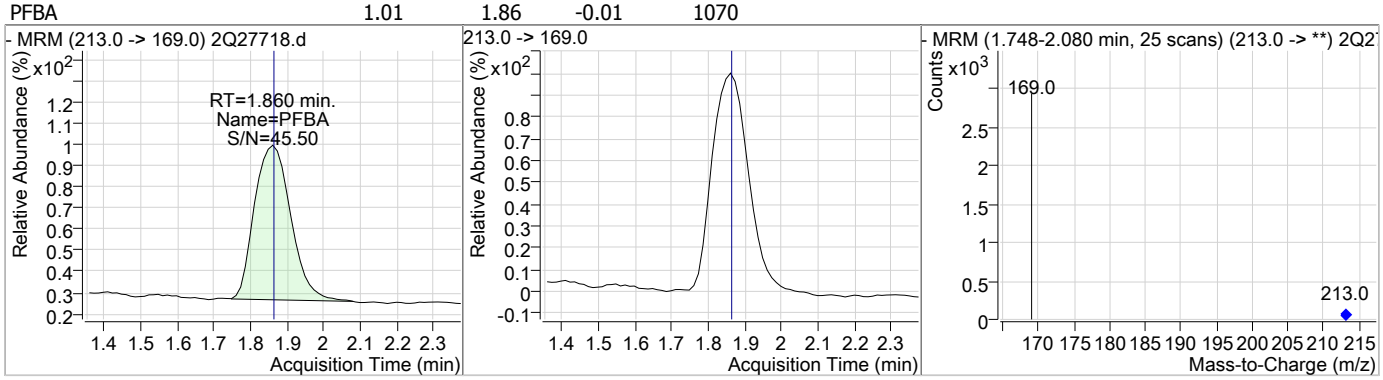
Perfluorinated Compounds by LC/MS/MS



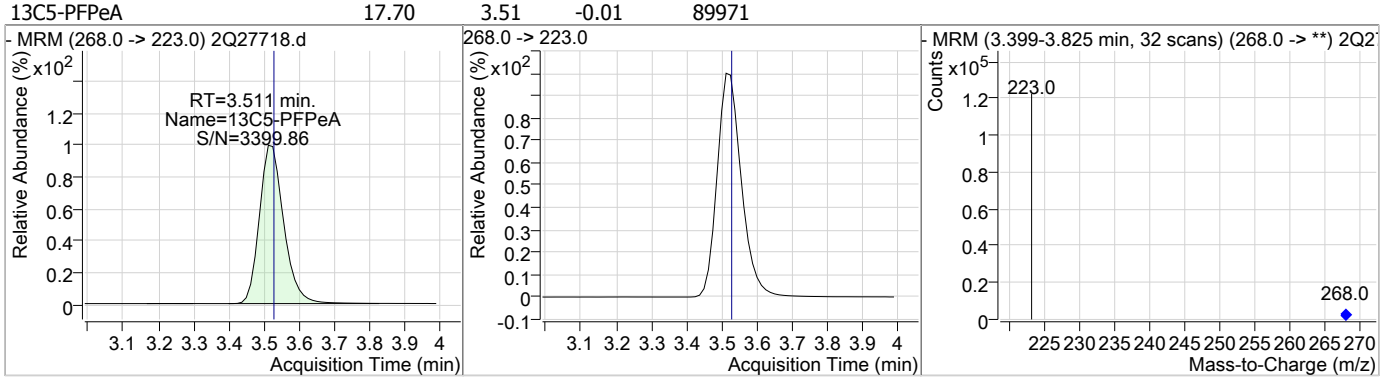
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.78	1.85	-0.01	106633				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.01	1.86	-0.01	1070				

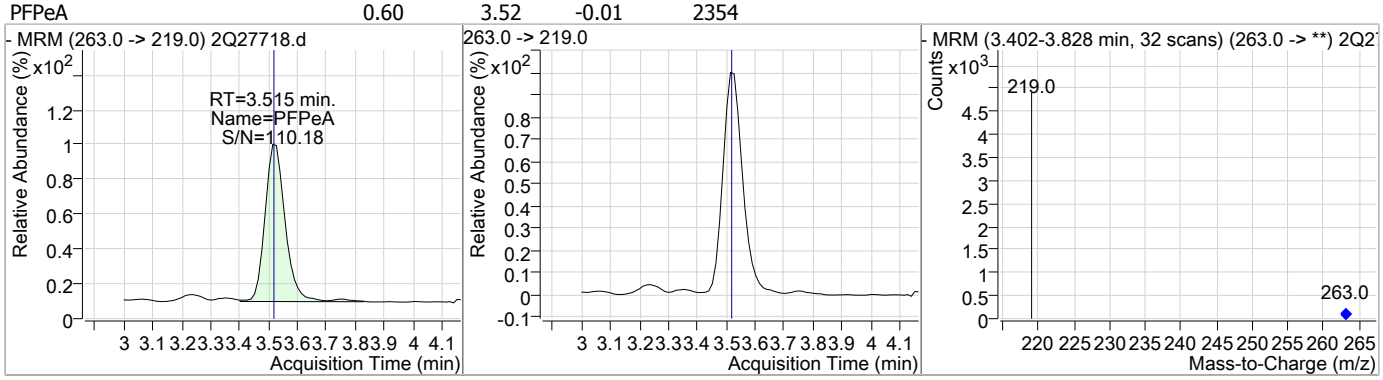


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.70	3.51	-0.01	89971				

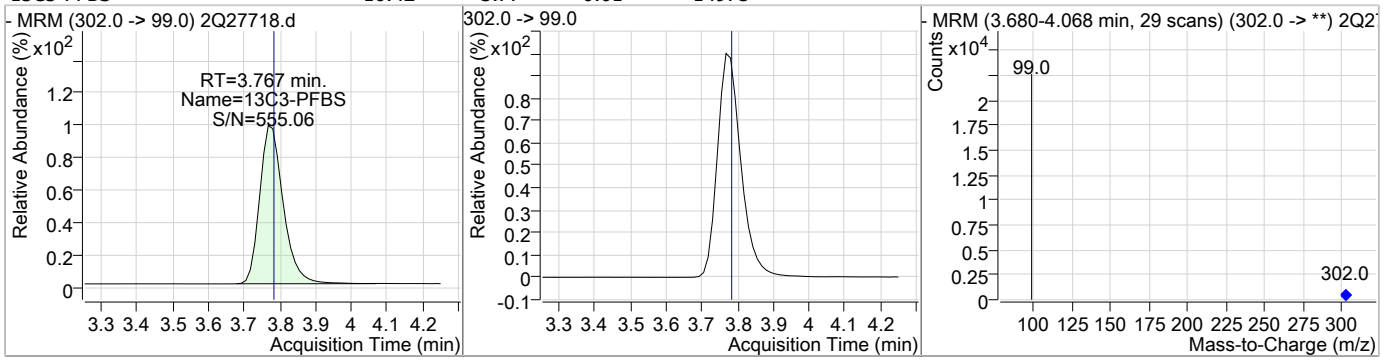


Perfluorinated Compounds by LC/MS/MS

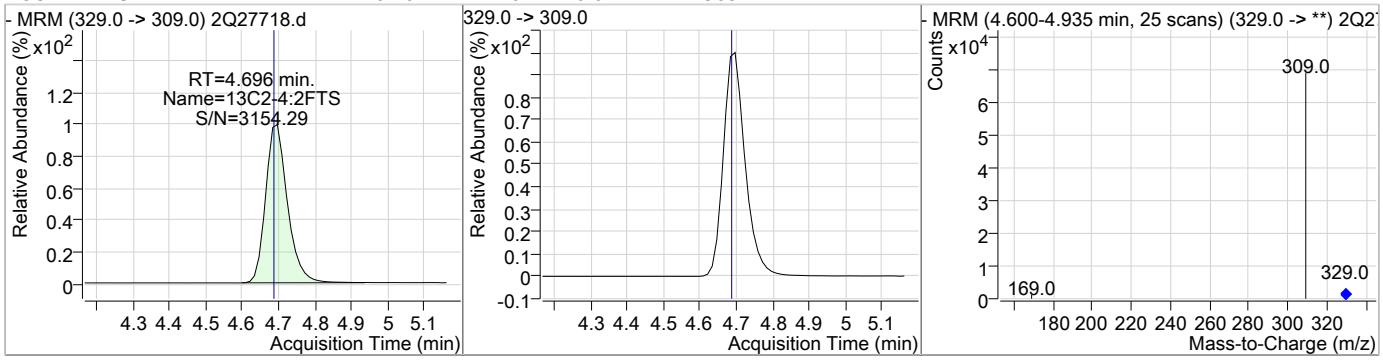
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.60	3.52	-0.01	2354				



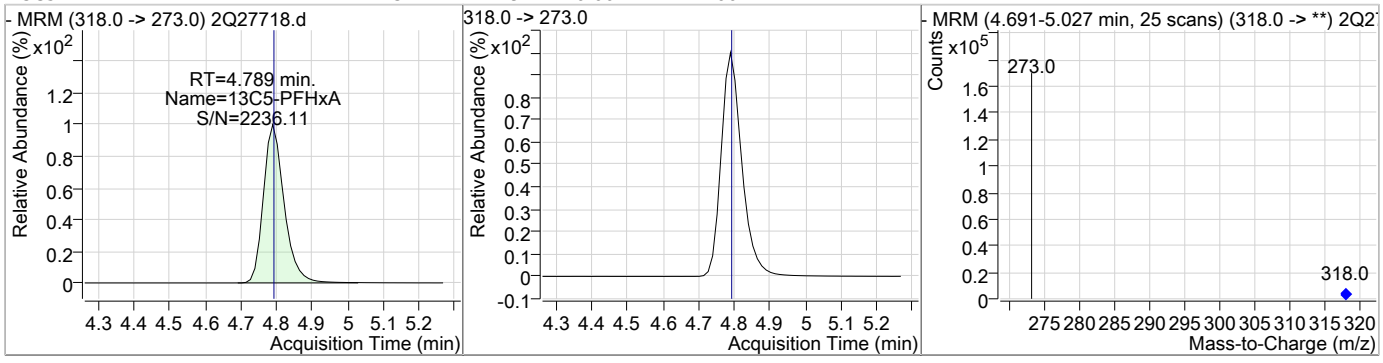
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.42	3.77	-0.01	14975				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.76	4.70	0.01	49831				

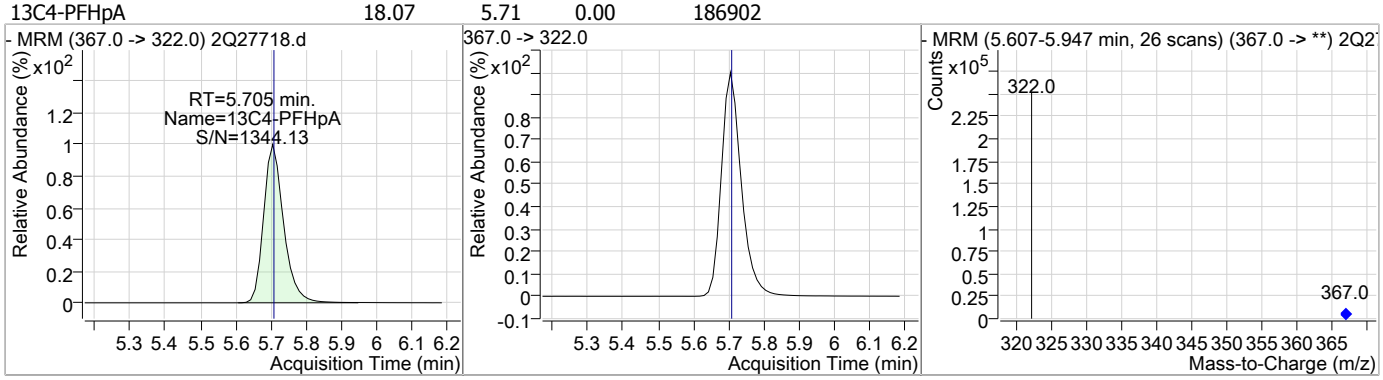


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.34	4.79	0.00	126014				

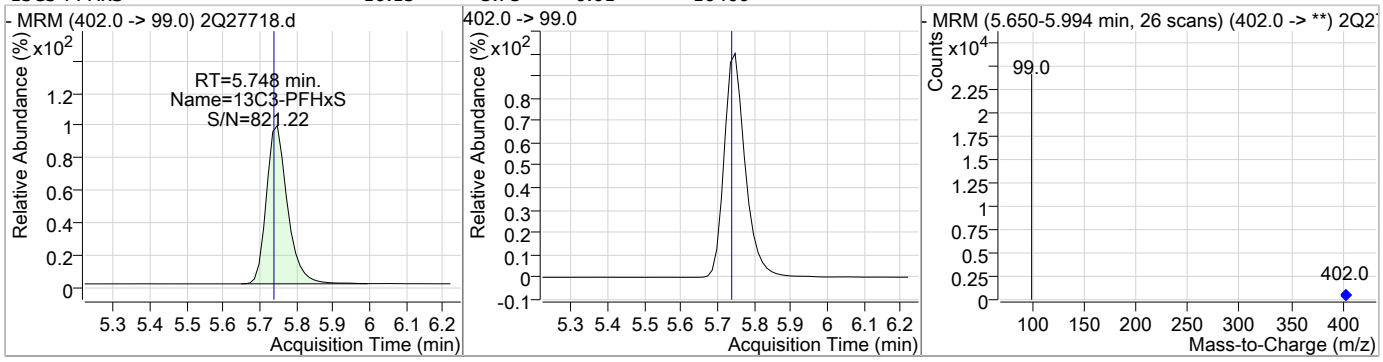


Perfluorinated Compounds by LC/MS/MS

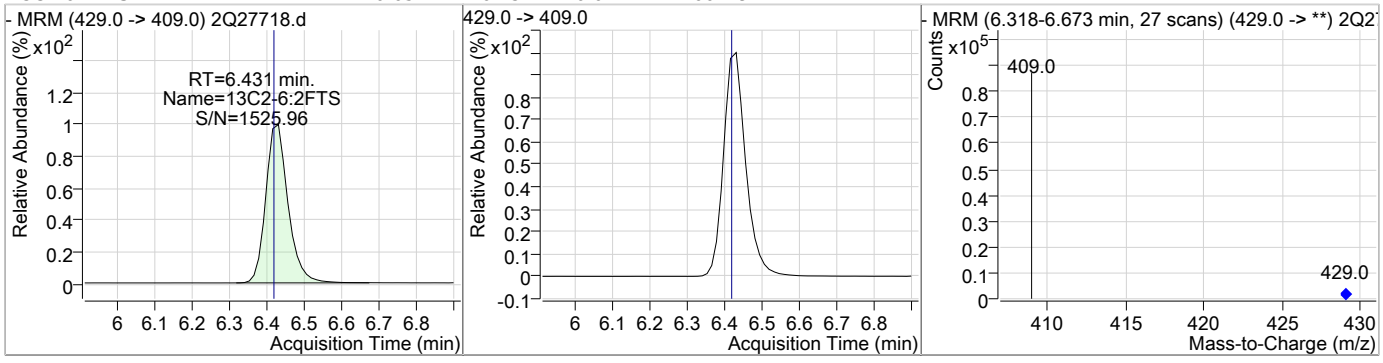
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.07	5.71	0.00	186902				



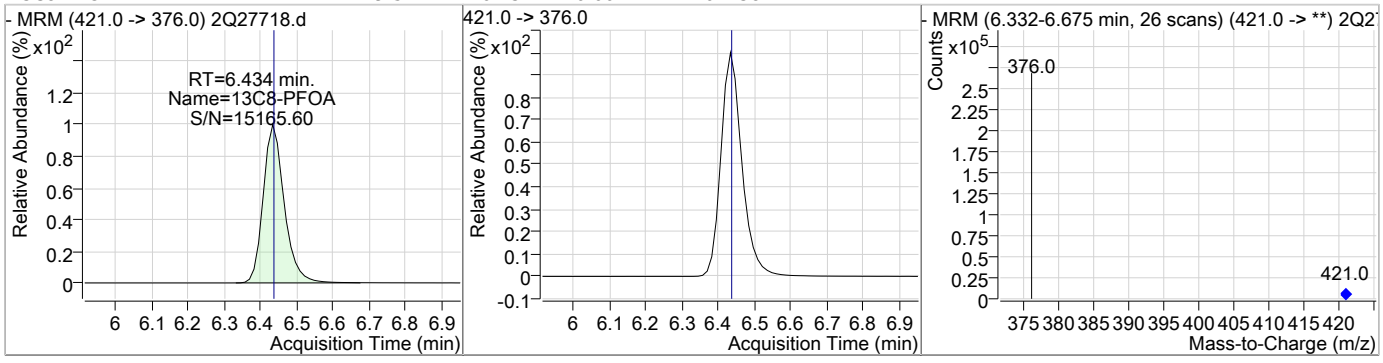
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.15	5.75	0.01	16460				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.65	6.43	0.02	66279				

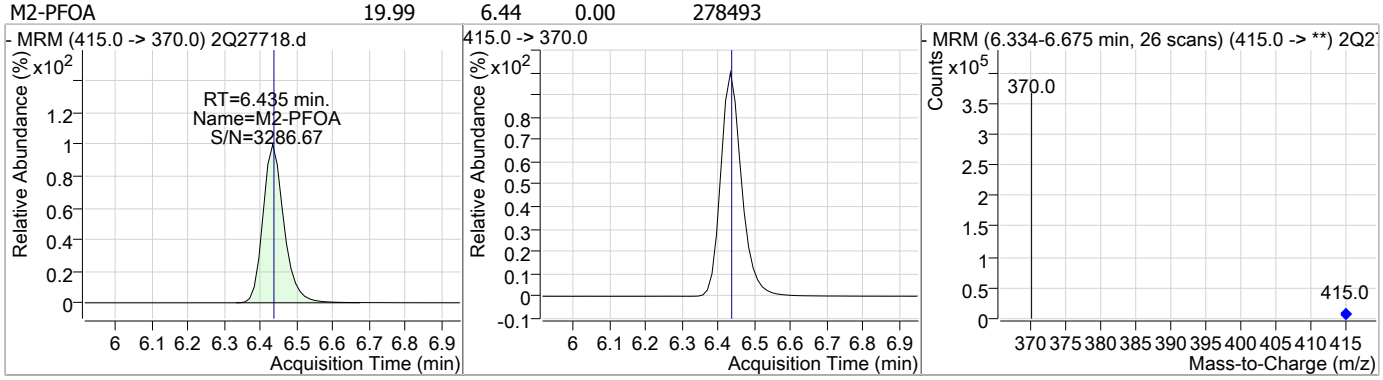


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.57	6.43	0.00	204138				

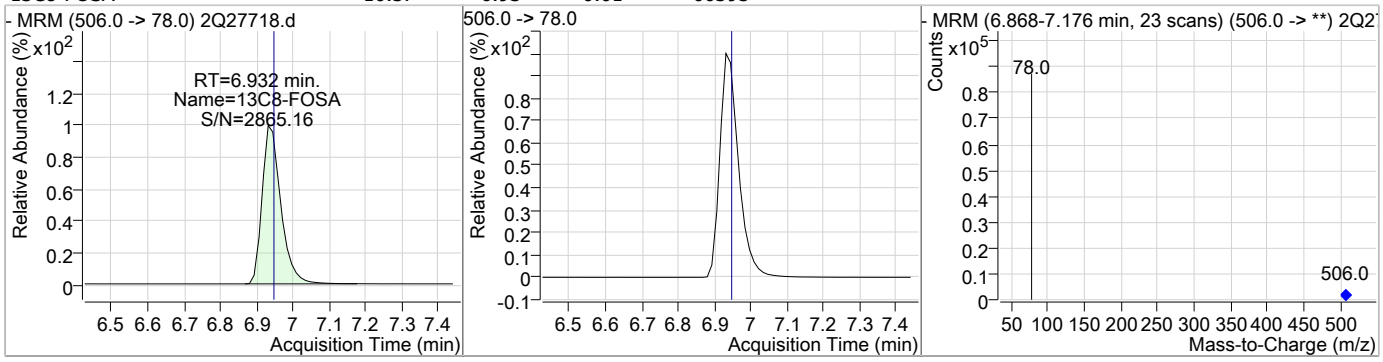


Perfluorinated Compounds by LC/MS/MS

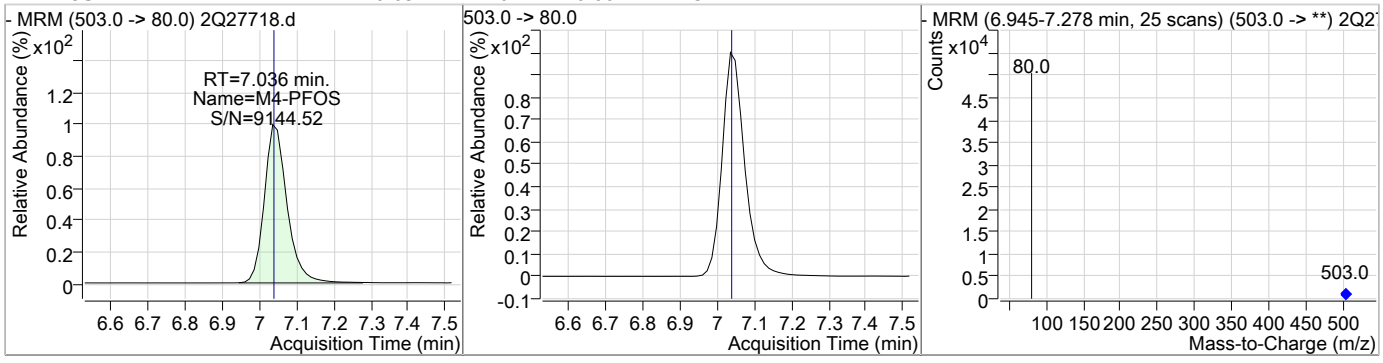
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	278493				



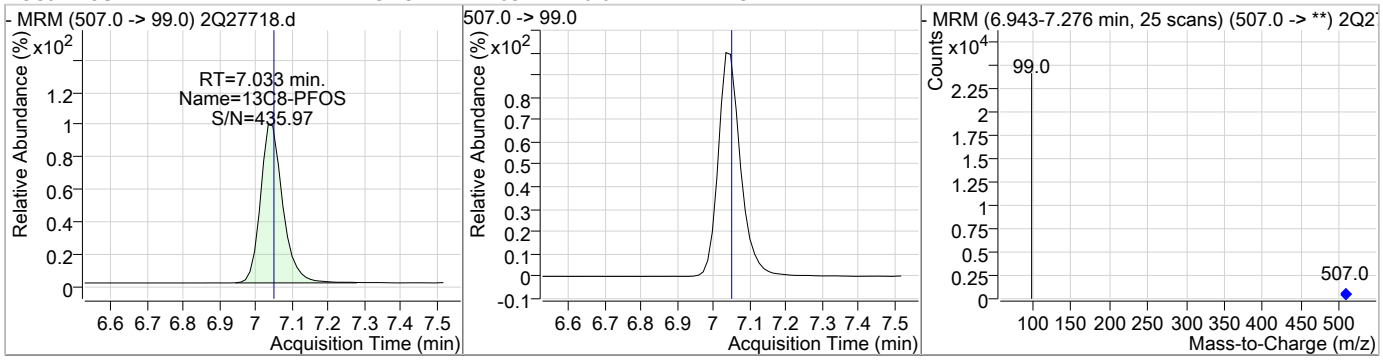
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.37	6.93	-0.01	66395				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.03	7.04	0.00	37421				

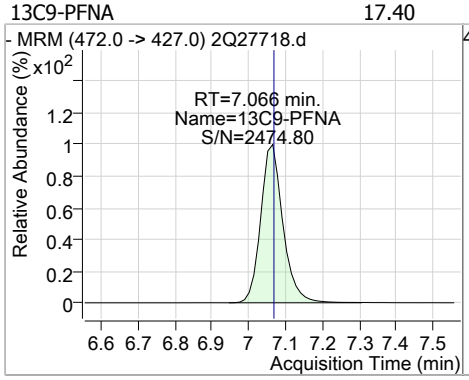


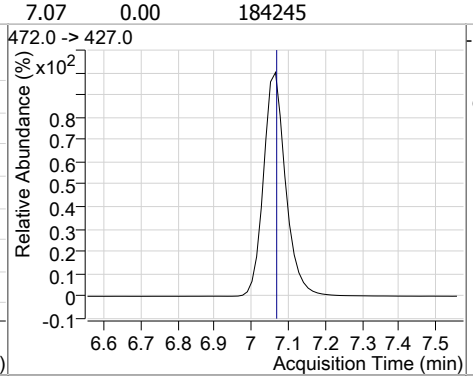
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.13	7.03	-0.01	17113				

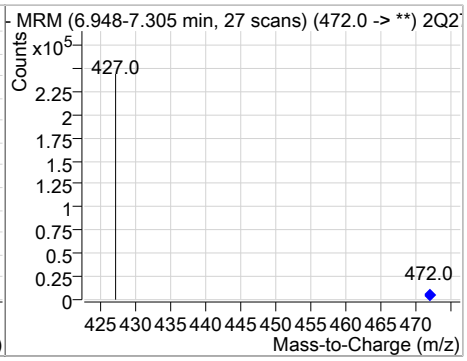


Perfluorinated Compounds by LC/MS/MS

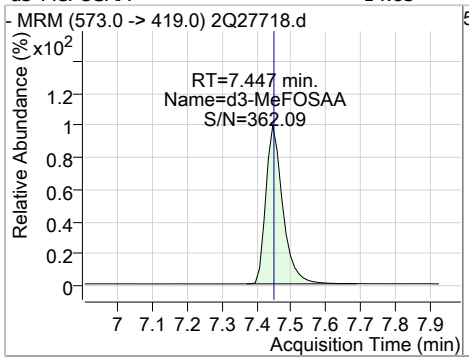
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.40	7.07	0.00	184245				

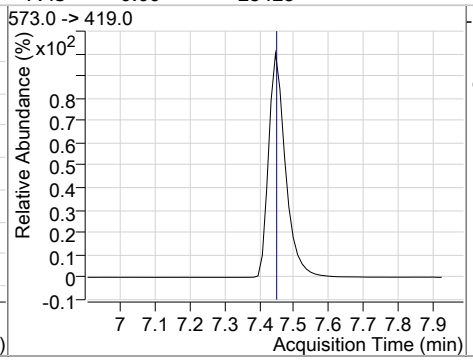


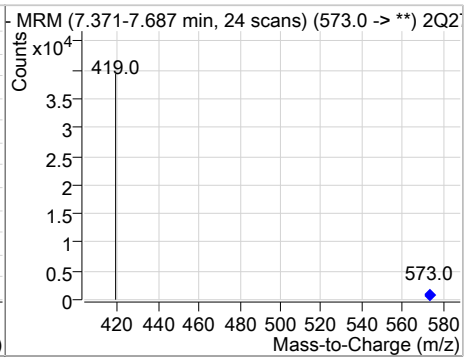




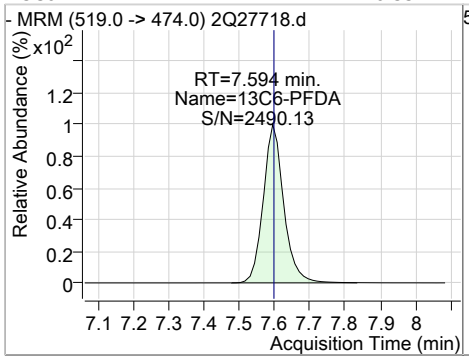
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.83	7.45	0.00	28428				

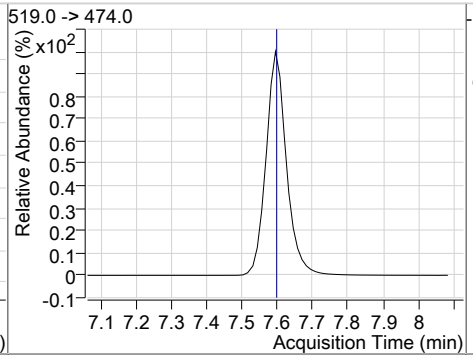


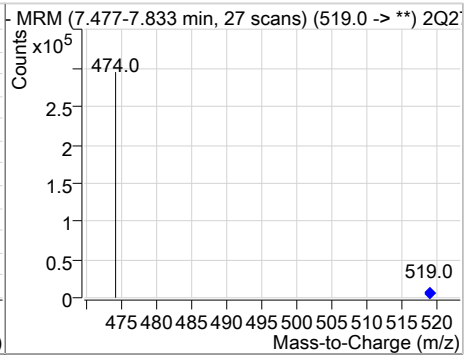




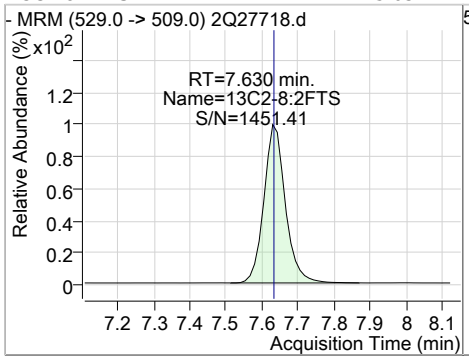
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.33	7.59	0.00	222860				

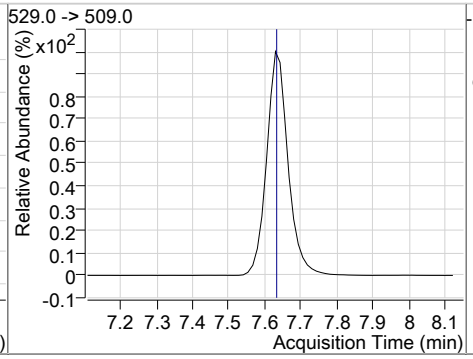


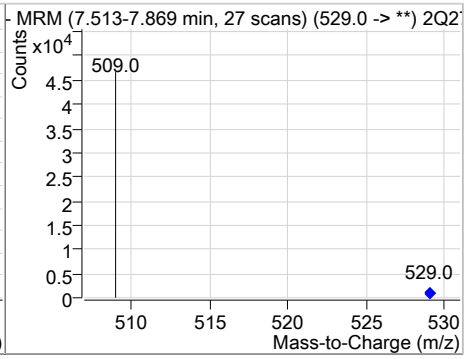




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.03	7.63	0.00	33329				

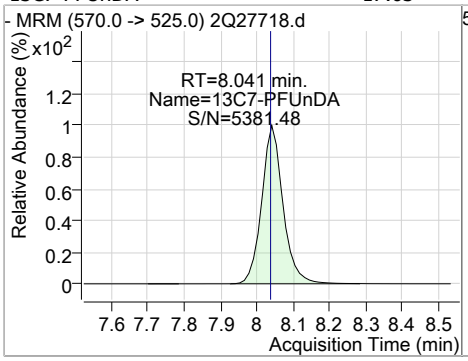


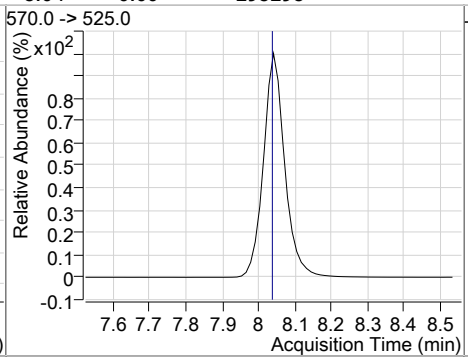


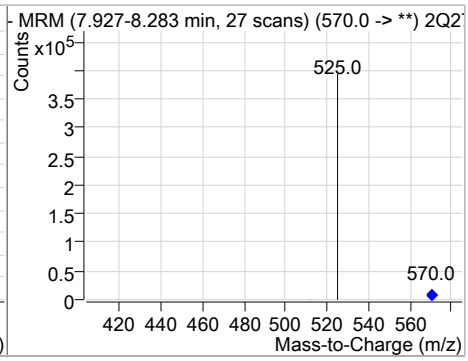


Perfluorinated Compounds by LC/MS/MS

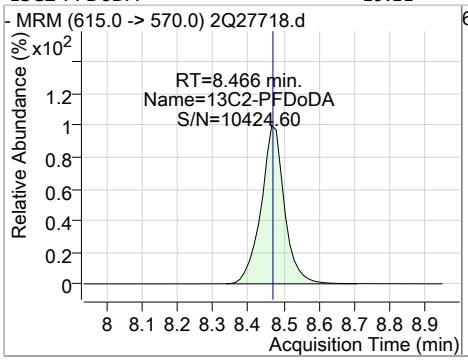
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.63	8.04	0.00	298298				

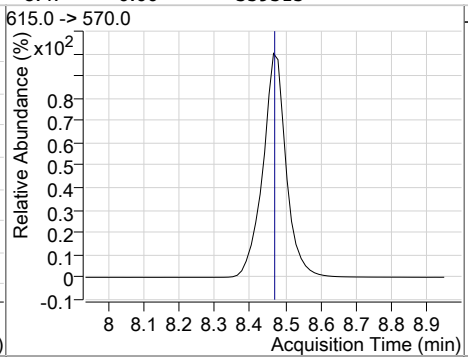


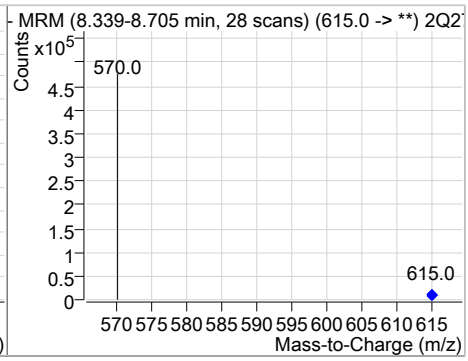




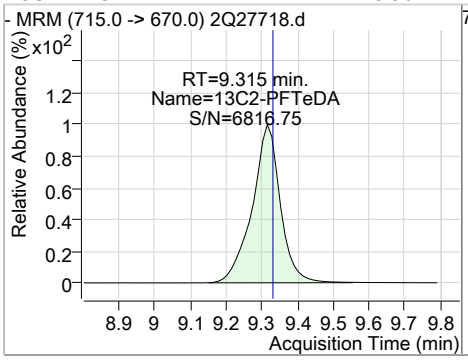
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.11	8.47	0.00	359515				

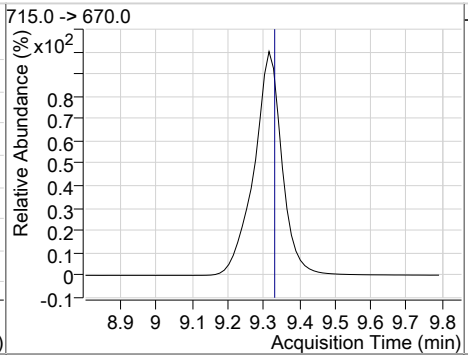


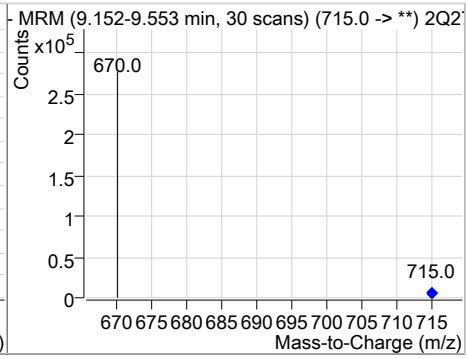




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.96	9.31	-0.01	204857				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27657.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 5:09:27 PM
Sample Name : FA62220-21
Vial : Vial 56
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

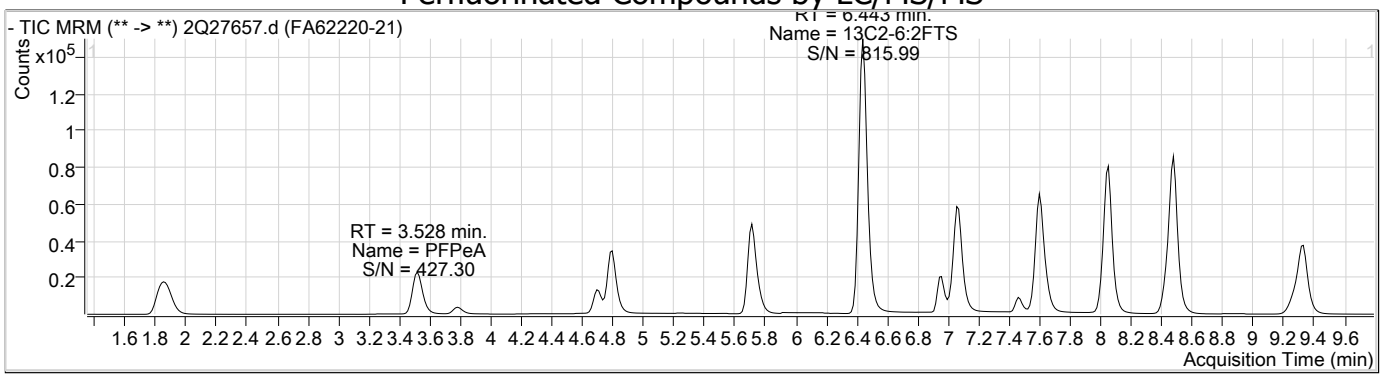
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	321197	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	40464	20.00	µg/L	0.031
M4-PFBA	1.852	217.0 -> 172.0	115908	20.00	µg/L	-0.013
M5-PFPeA	3.524	268.0 -> 223.0	95873	20.00	µg/L	0.032
M5-PFHxA	4.801	318.0 -> 273.0	135891	20.00	µg/L	0.038
M4-PFHpA	5.718	367.0 -> 322.0	189810	20.00	µg/L	0.029
M8-PFOA	6.446	421.0 -> 376.0	215487	20.00	µg/L	0.031
M9-PFNA	7.078	472.0 -> 427.0	191463	20.00	µg/L	0.033
M6-PFDA	7.607	519.0 -> 474.0	234756	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	333151	20.00	µg/L	0.028
M2-PFDoDA	8.478	615.0 -> 570.0	384241	20.00	µg/L	0.028
M2-PFTeDA	9.327	715.0 -> 670.0	208624	20.00	µg/L	0.025
M8-FOSA	6.959	506.0 -> 78.0	72309	20.00	µg/L	0.032
M3-PFBS	3.780	302.0 -> 99.0	15809	20.00	µg/L	0.025
M3-PFHxS	5.748	402.0 -> 99.0	16770	20.00	µg/L	0.026
M8-PFOS	7.045	507.0 -> 99.0	17333	20.00	µg/L	0.030
M2-4:2FTS	4.696	329.0 -> 309.0	52517	20.00	µg/L	0.028
M2-6:2FTS	6.443	429.0 -> 409.0	66597	20.00	µg/L	0.042
M2-8:2FTS	7.642	529.0 -> 509.0	33831	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	27538	20.00	µg/L	0.029
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	52499	12.65	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.2%		
13C2-6:2FTS	6.443	429.0 -> 409.0	66598	15.28	µg/L	0.042
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%		
13C2-8:2FTS	7.642	529.0 -> 509.0	33818	11.91	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.6%		
13C2-PFDoDA	8.478	615.0 -> 570.0	384099	13.76	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.8%		
13C2-PFTeDA	9.327	715.0 -> 670.0	207954	10.76	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.8%		
13C3-PFBS	3.780	302.0 -> 99.0	15785	13.04	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.2%		
13C3-PFHxS	5.748	402.0 -> 99.0	16777	12.32	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.6%		
13C4-PFBA	1.852	217.0 -> 172.0	115671	13.34	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.7%		
13C4-PFHpA	5.718	367.0 -> 322.0	189773	13.18	µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.9%		
13C5-PFHxA	4.801	318.0 -> 273.0	135850	13.25	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.2%		
13C5-PFPeA	3.524	268.0 -> 223.0	95665	13.34	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.7%		
13C6-PFDA	7.607	519.0 -> 474.0	234774	12.68	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

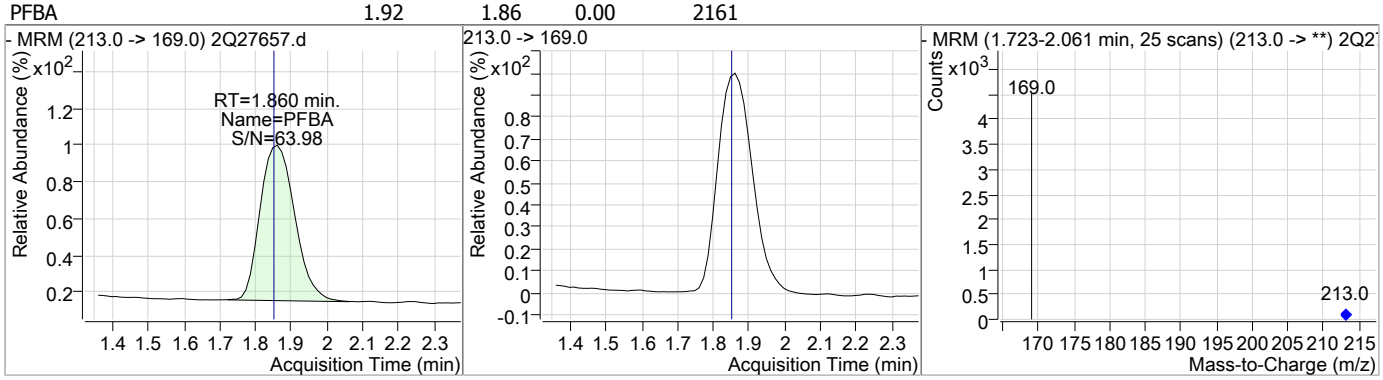
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.4%	
13C7-PFUnDA	8.054	570.0 -> 525.0	333195	13.91 µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.5%	
13C8-FOSA	6.959	506.0 -> 78.0	72302	12.69 µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.5%	
13C8-PFOA	6.446	421.0 -> 376.0	215322	14.46 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.3%	
13C8-PFOS	7.045	507.0 -> 99.0	17311	10.47 µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 52.3%	
13C9-PFNA	7.078	472.0 -> 427.0	191416	13.36 µg/L	0.033
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 66.8%	
d3-MeFOSAA	7.459	573.0 -> 419.0	27578	11.53 µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 57.7%	
M2-PFOA	6.448	415.0 -> 370.0	321270	19.99 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.048	503.0 -> 80.0	40454	19.99 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.860	213.0 -> 169.0	2161	1.92 µg/L	100
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	4.803	313.0 -> 269.0	2604	1.11 µg/L	99
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	3.528	263.0 -> 219.0	11187	2.57 µg/L	100
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

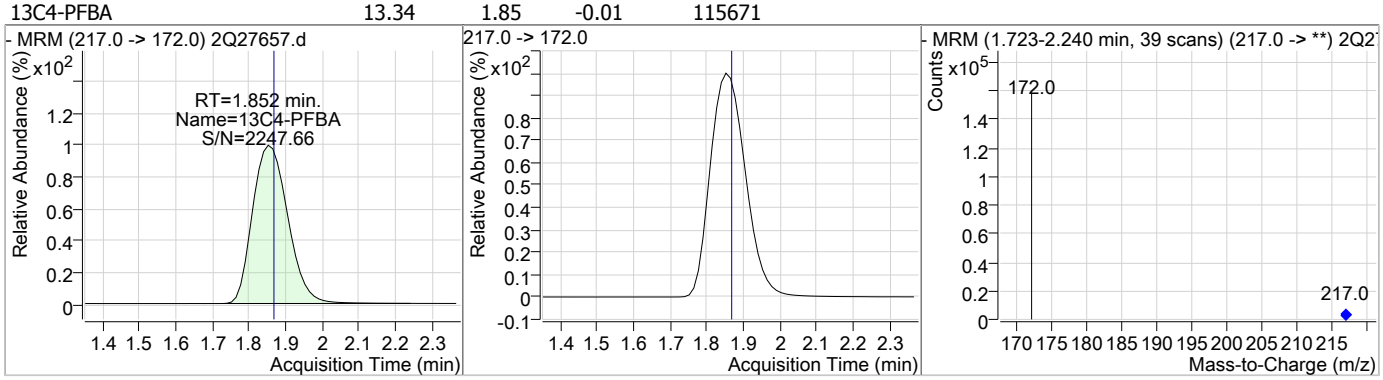
Perfluorinated Compounds by LC/MS/MS



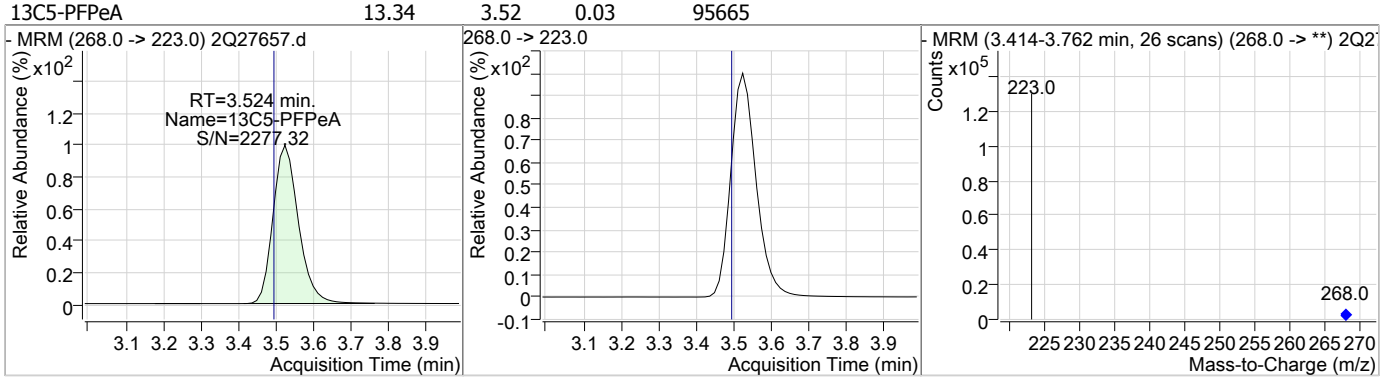
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.92	1.86	0.00	2161				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.34	1.85	-0.01	115671				

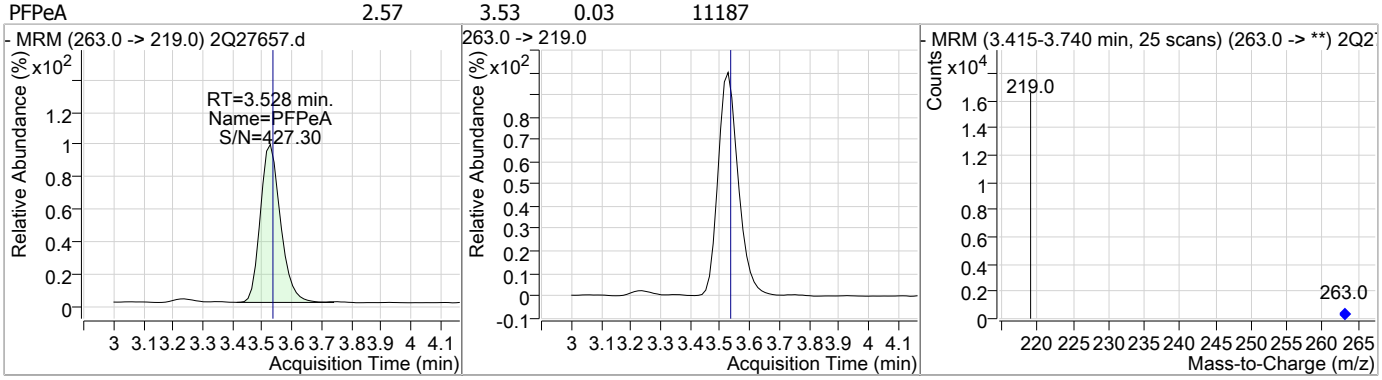


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.34	3.52	0.03	95665				

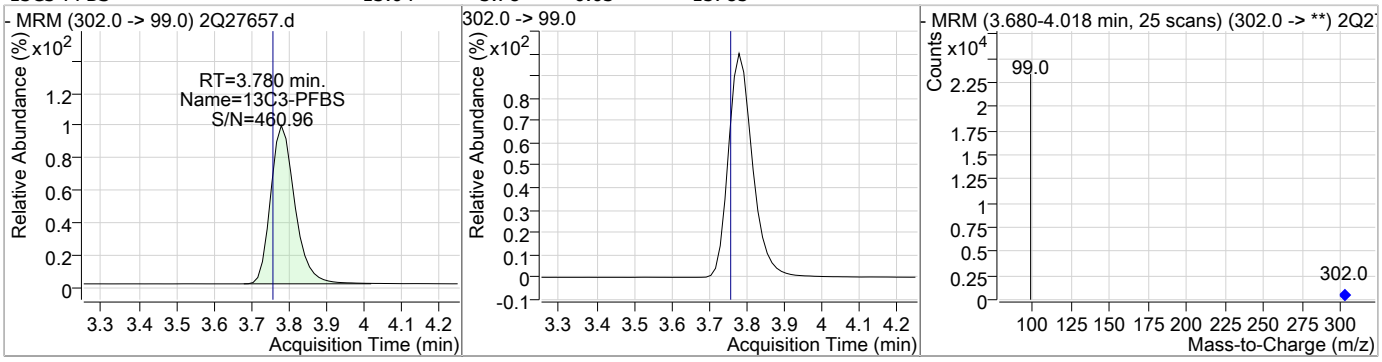


Perfluorinated Compounds by LC/MS/MS

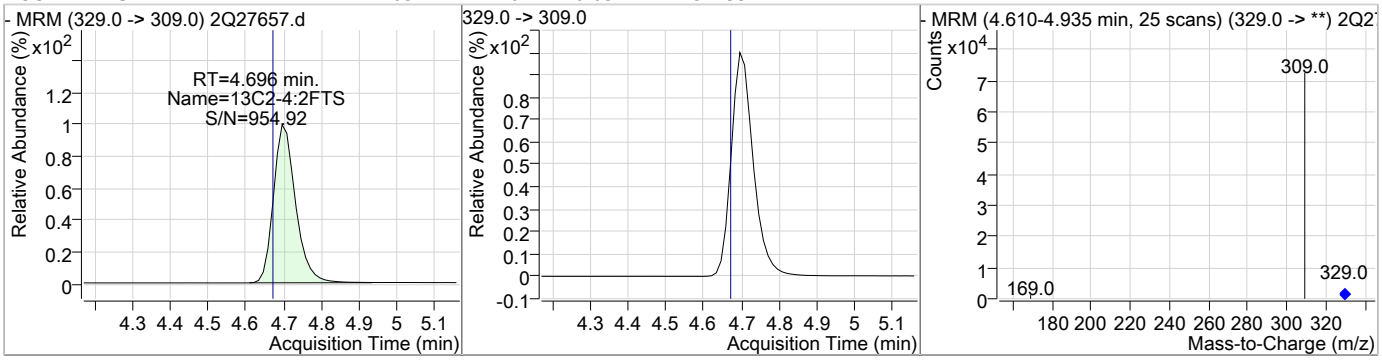
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	2.57	3.53	0.03	11187				



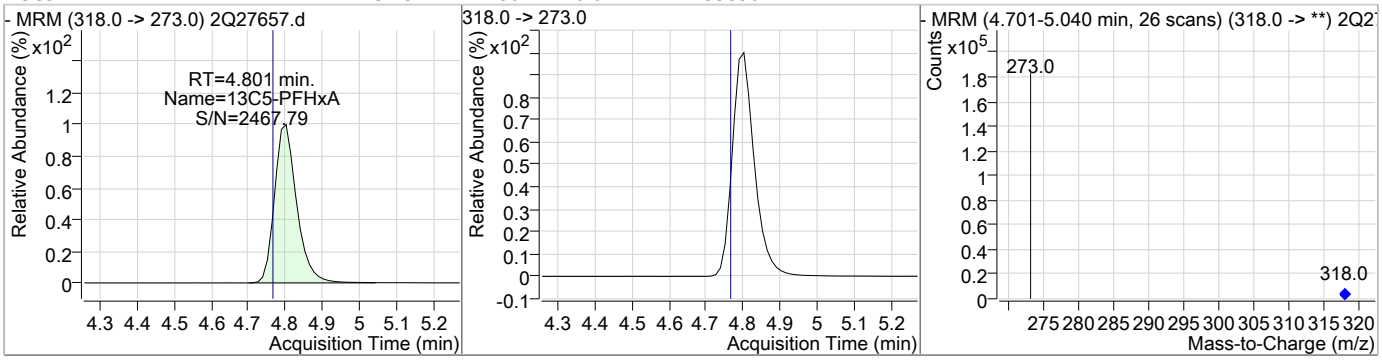
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	13.04	3.78	0.03	15785				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	12.65	4.70	0.03	52499				

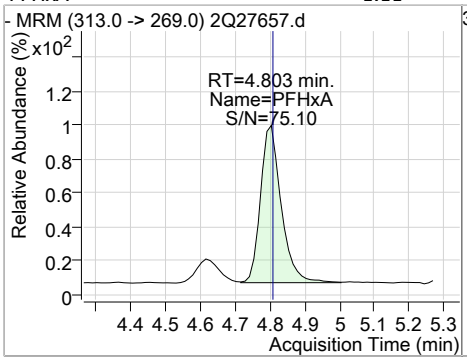


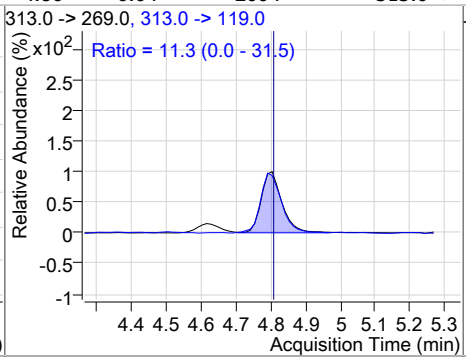
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.25	4.80	0.04	135850				

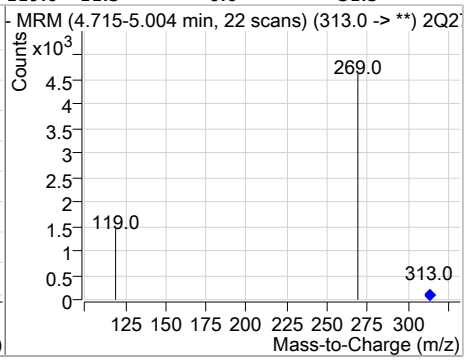


Perfluorinated Compounds by LC/MS/MS

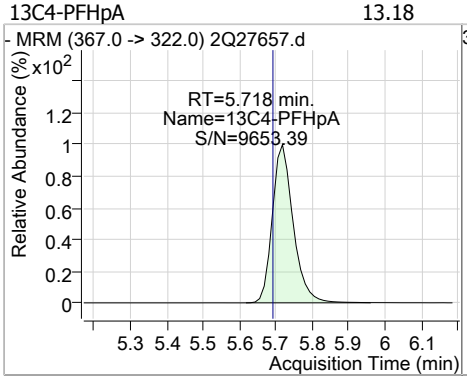
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.11	4.80	0.04	2604	313.0 -> 119.0	11.3	0.0	31.5

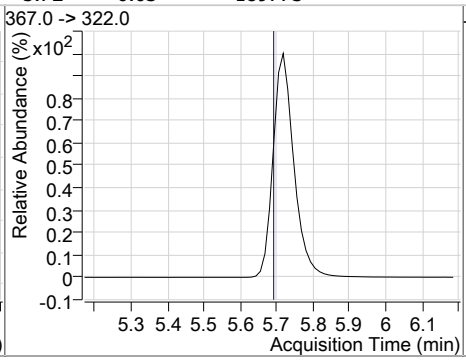


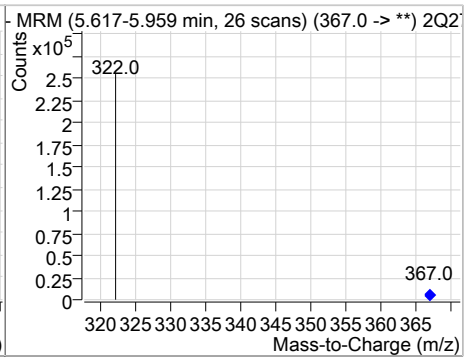




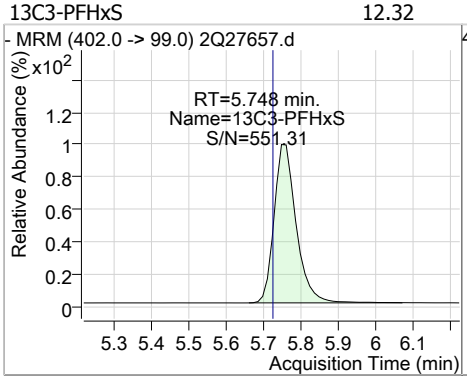
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	13.18	5.72	0.03	189773				

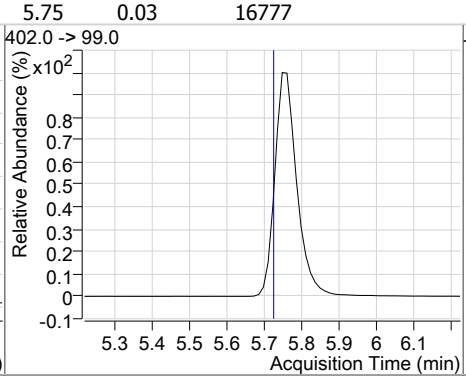


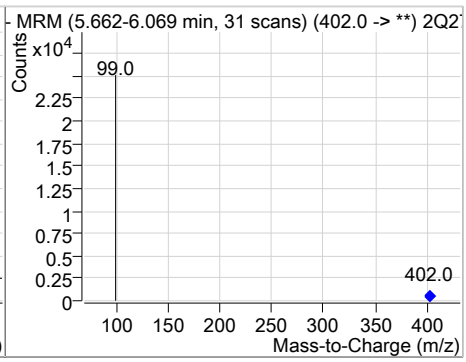




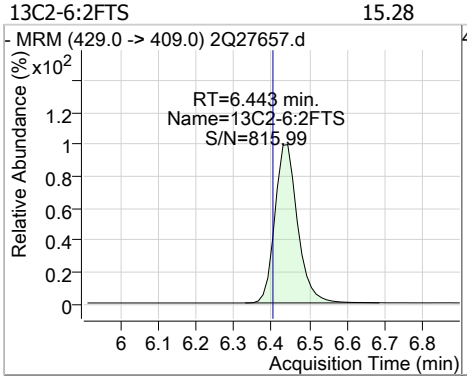
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	12.32	5.75	0.03	16777				

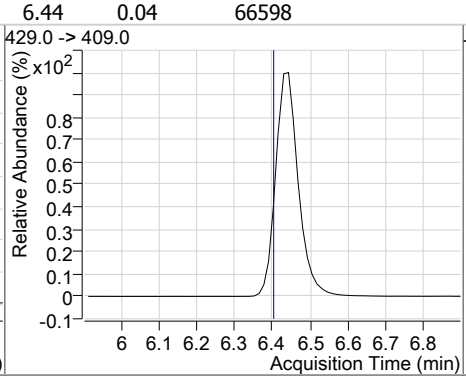


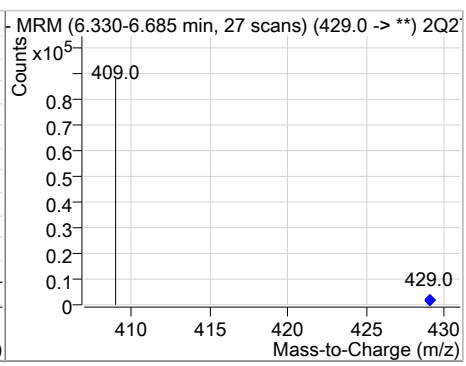




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.28	6.44	0.04	66598				

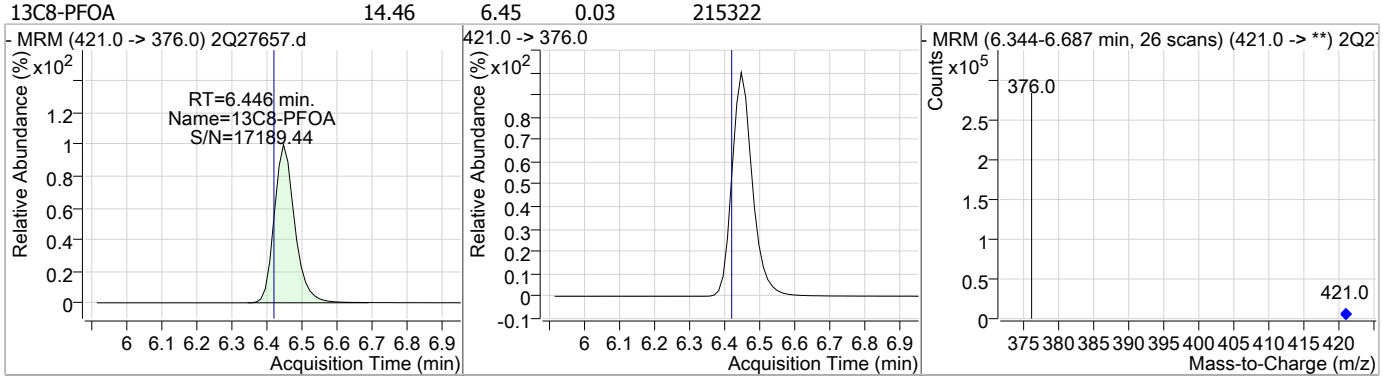




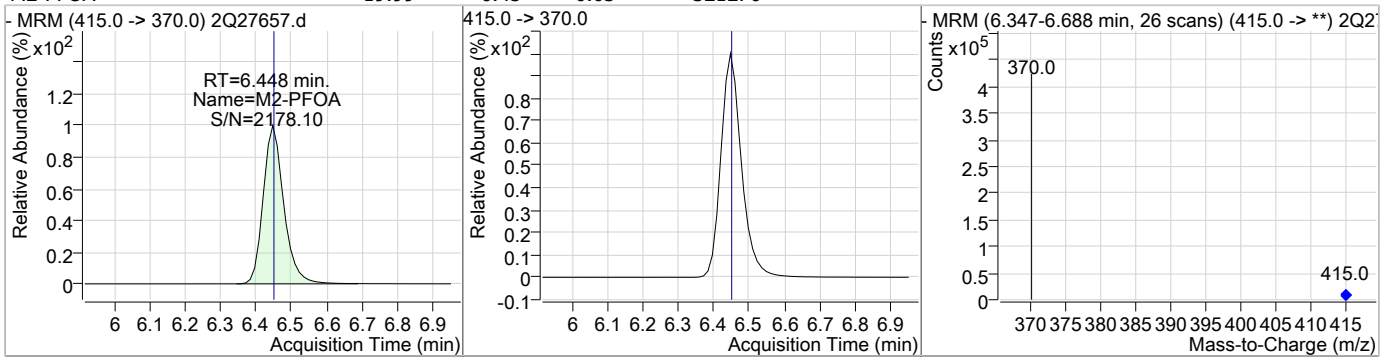


Perfluorinated Compounds by LC/MS/MS

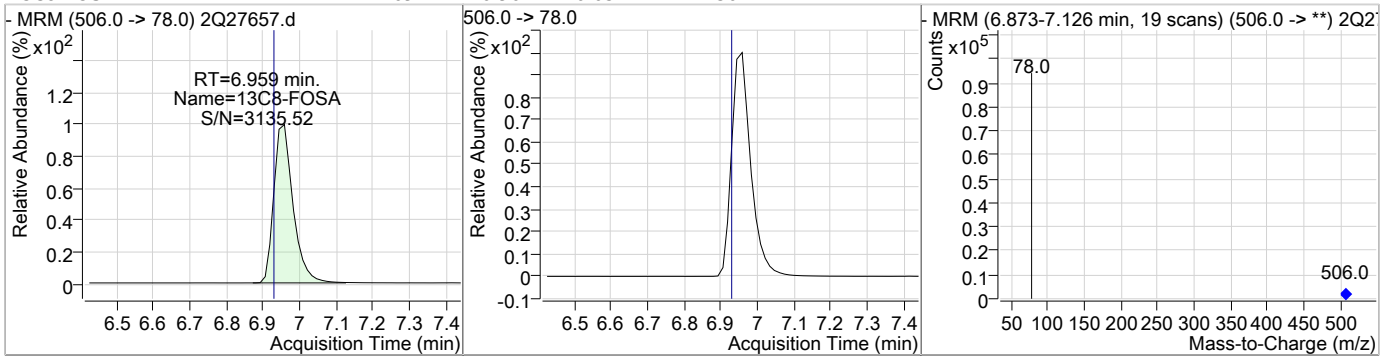
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.46	6.45	0.03	215322				



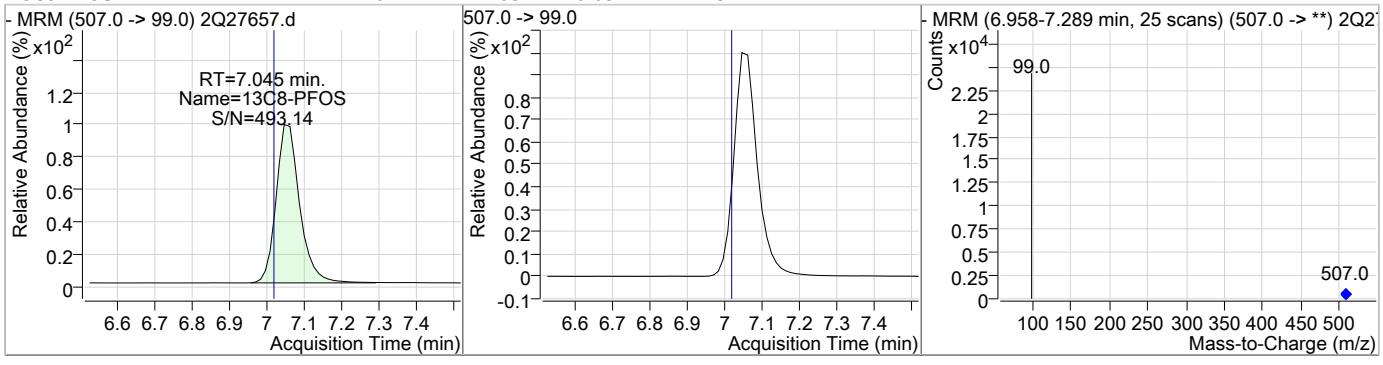
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	321270				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.69	6.96	0.03	72302				

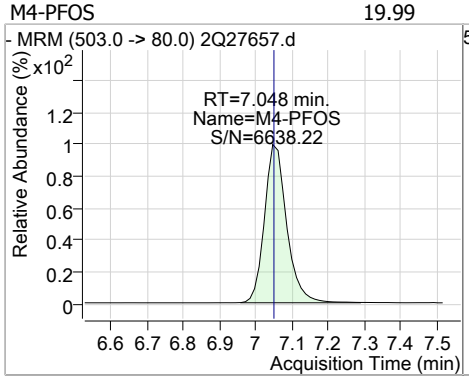


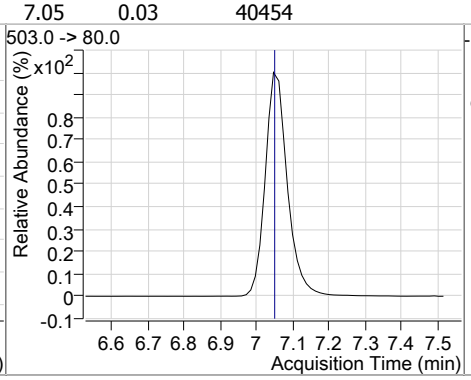
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	10.47	7.05	0.03	17311				

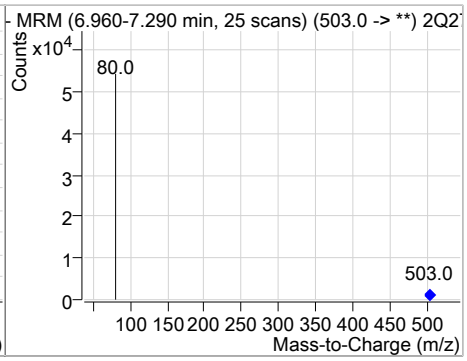


Perfluorinated Compounds by LC/MS/MS

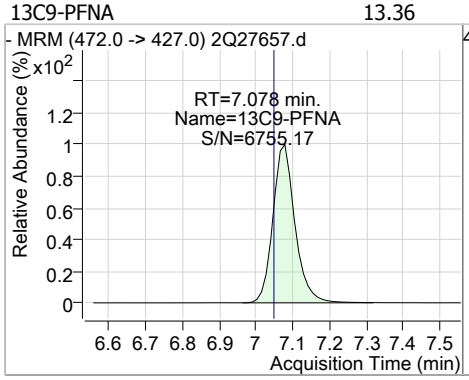
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.03	40454				

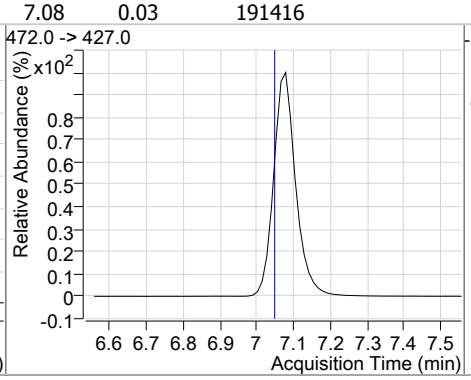


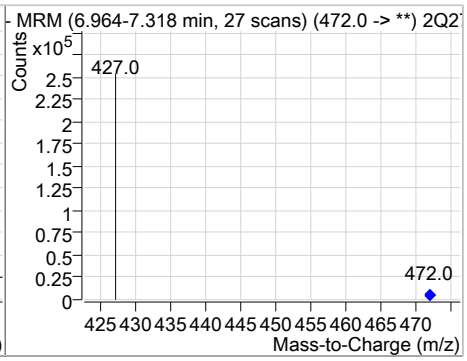




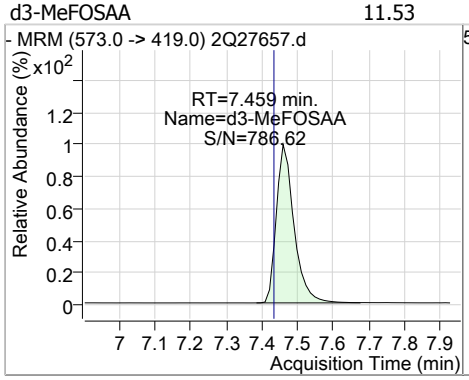
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	13.36	7.08	0.03	191416				

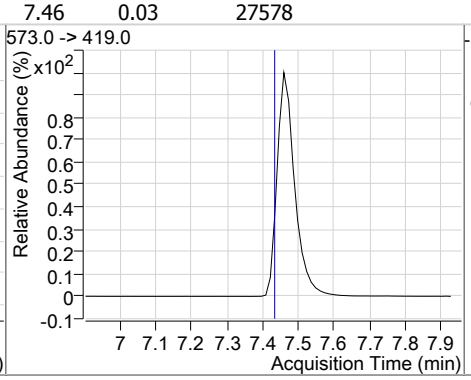


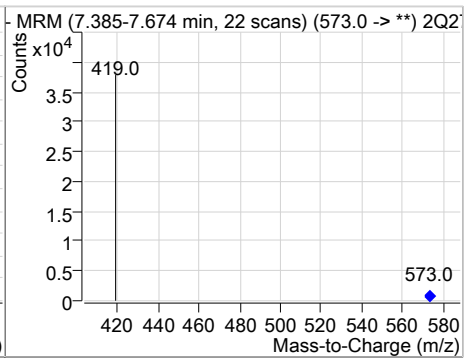




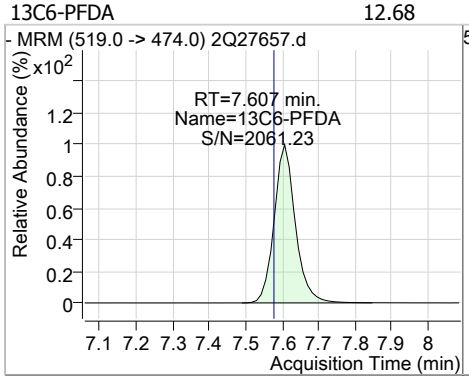
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	11.53	7.46	0.03	27578				

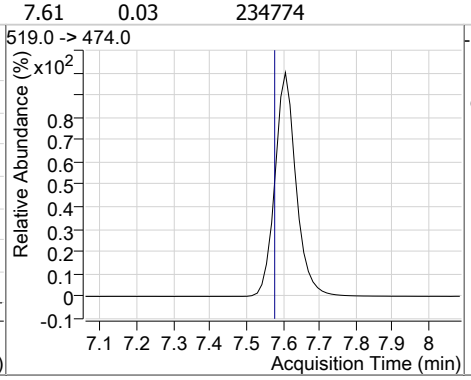


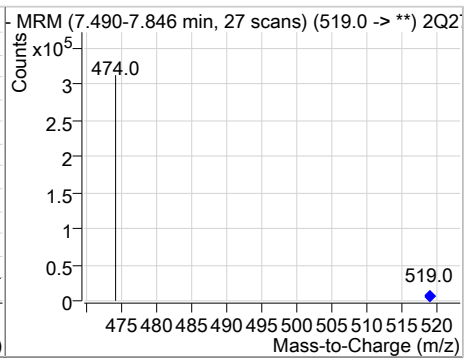




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	12.68	7.61	0.03	234774				

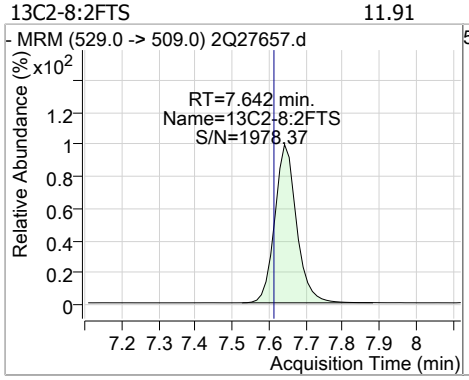


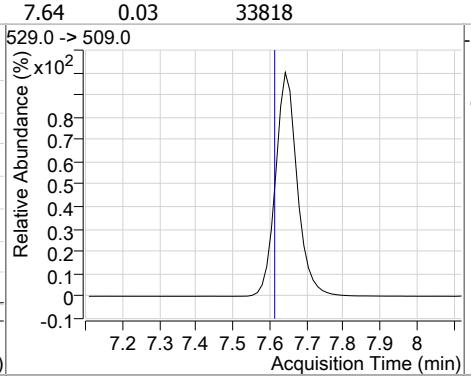


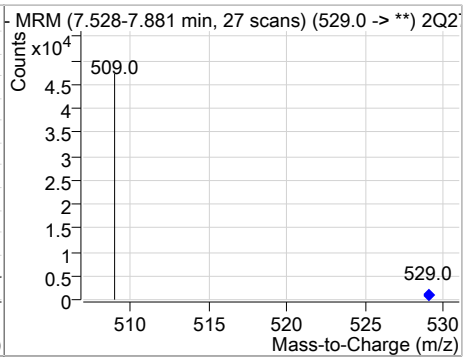


Perfluorinated Compounds by LC/MS/MS

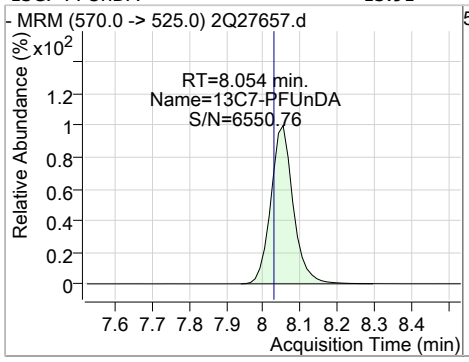
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.91	7.64	0.03	33818				

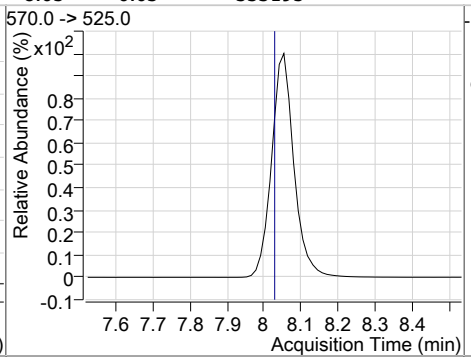


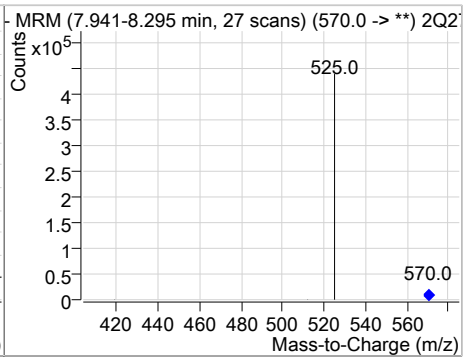




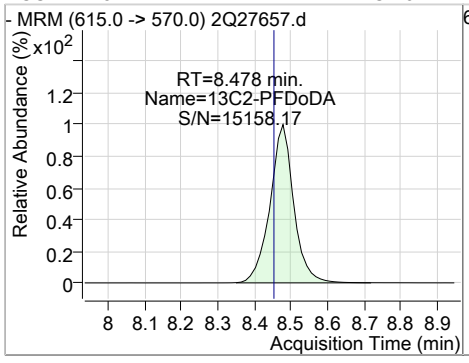
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	13.91	8.05	0.03	333195				

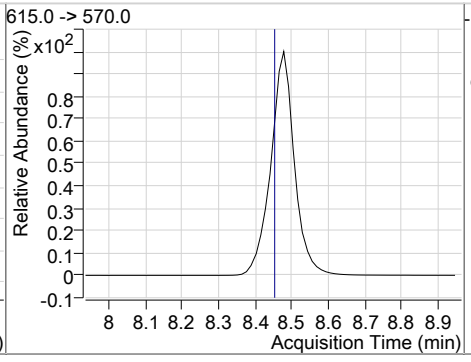


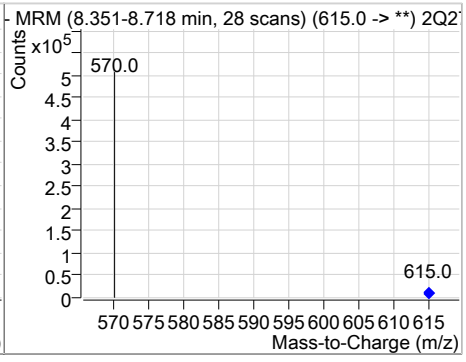




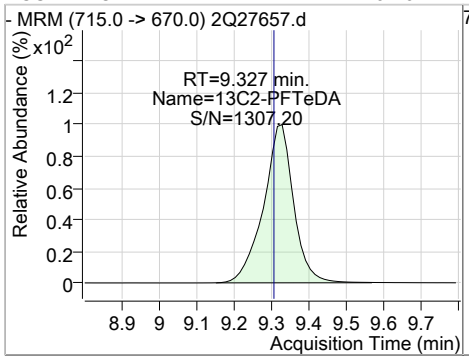
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.76	8.48	0.03	384099				

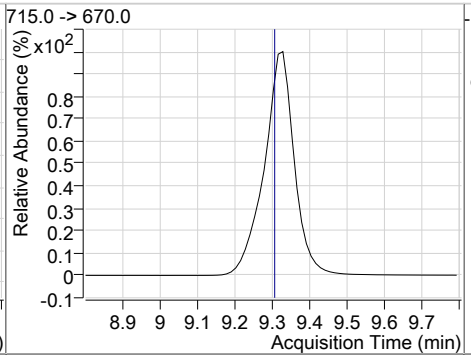


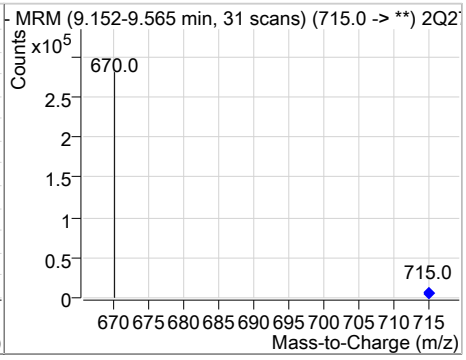




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	10.76	9.33	0.02	207954				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27659.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 5:40:55 PM
Sample Name : FA62220-22
Vial : Vial 58
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

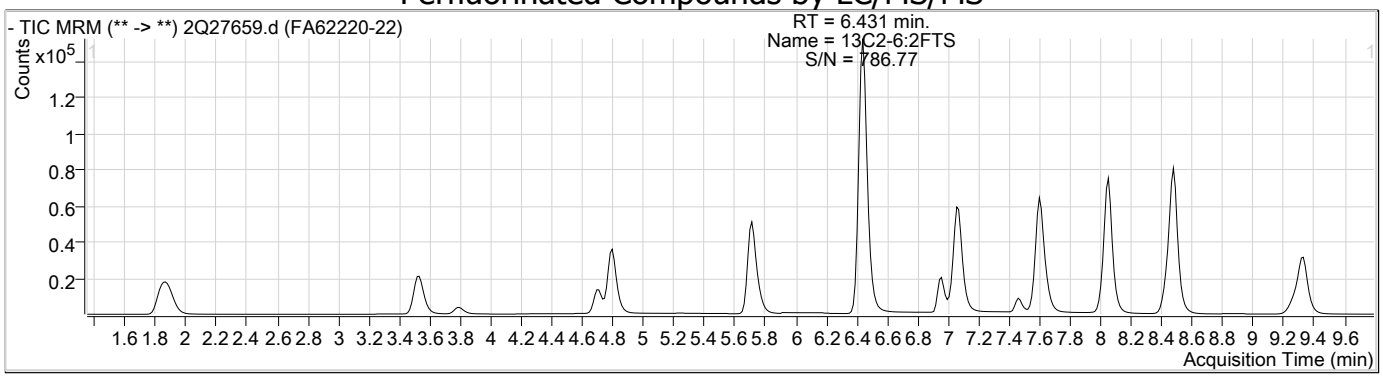
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	323680	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	41340	20.00	µg/L	0.031
M4-PFBA	1.865	217.0 -> 172.0	120372	20.00	µg/L	0.000
M5-PFPeA	3.537	268.0 -> 223.0	99518	20.00	µg/L	0.045
M5-PFHxA	4.801	318.0 -> 273.0	142875	20.00	µg/L	0.038
M4-PFHpA	5.718	367.0 -> 322.0	199830	20.00	µg/L	0.029
M8-PFOA	6.446	421.0 -> 376.0	222700	20.00	µg/L	0.031
M9-PFNA	7.078	472.0 -> 427.0	193284	20.00	µg/L	0.033
M6-PFDA	7.607	519.0 -> 474.0	232500	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	305227	20.00	µg/L	0.028
M2-PFDoDA	8.478	615.0 -> 570.0	360506	20.00	µg/L	0.028
M2-PFTeDA	9.327	715.0 -> 670.0	175733	20.00	µg/L	0.025
M8-FOSA	6.959	506.0 -> 78.0	70645	20.00	µg/L	0.032
M3-PFBS	3.792	302.0 -> 99.0	16384	20.00	µg/L	0.038
M3-PFHxS	5.748	402.0 -> 99.0	17386	20.00	µg/L	0.026
M8-PFOS	7.045	507.0 -> 99.0	17181	20.00	µg/L	0.030
M2-4:2FTS	4.696	329.0 -> 309.0	54705	20.00	µg/L	0.028
M2-6:2FTS	6.431	429.0 -> 409.0	69085	20.00	µg/L	0.030
M2-8:2FTS	7.642	529.0 -> 509.0	33119	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	26467	20.00	µg/L	0.029
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	54574	13.15	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	69031	15.84	µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.2%		
13C2-8:2FTS	7.642	529.0 -> 509.0	33137	11.67	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.4%		
13C2-PFDoDA	8.478	615.0 -> 570.0	360396	12.91	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.6%		
13C2-PFTeDA	9.327	715.0 -> 670.0	175196	9.06	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.3%		
13C3-PFBS	3.792	302.0 -> 99.0	16348	13.50	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	17361	12.75	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.7%		
13C4-PFBA	1.865	217.0 -> 172.0	120100	13.86	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.3%		
13C4-PFHpA	5.718	367.0 -> 322.0	199357	13.85	µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.2%		
13C5-PFHxA	4.801	318.0 -> 273.0	142800	13.92	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.6%		
13C5-PFPeA	3.537	268.0 -> 223.0	99612	13.89	µg/L	0.045
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.4%		
13C6-PFDA	7.607	519.0 -> 474.0	232448	12.56	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

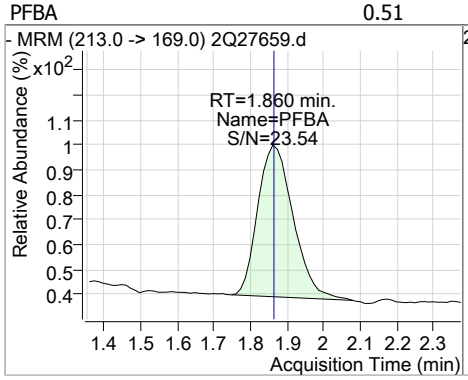
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.8%	
13C7-PFUnDA	8.054	570.0 -> 525.0	305070	12.73 µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 63.7%	
13C8-FOSA	6.959	506.0 -> 78.0	70633	12.40 µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.0%	
13C8-PFOA	6.446	421.0 -> 376.0	222598	14.95 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.7%	
13C8-PFOS	7.045	507.0 -> 99.0	17231	10.42 µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 52.1%	
13C9-PFNA	7.078	472.0 -> 427.0	193248	13.48 µg/L	0.033
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.4%	
d3-MeFOSAA	7.459	573.0 -> 419.0	26469	11.07 µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 55.3%	
M2-PFOA	6.448	415.0 -> 370.0	323659	19.98 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.048	503.0 -> 80.0	41365	20.01 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.860	213.0 -> 169.0	597	0.51 µg/L	100
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

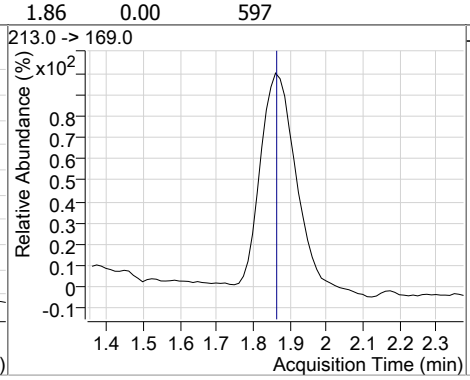
 # = Qualifier out of range, m = manually integrated, + = Area summed

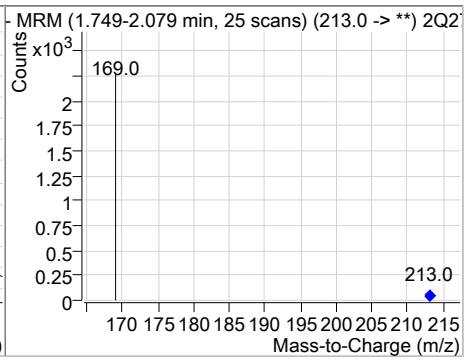
Perfluorinated Compounds by LC/MS/MS



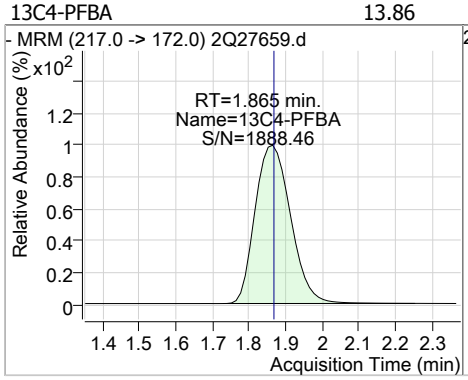
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.51	1.86	0.00	597				

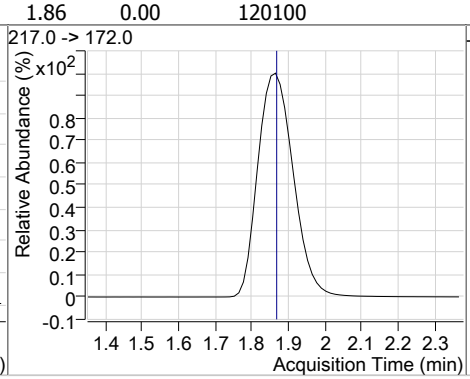


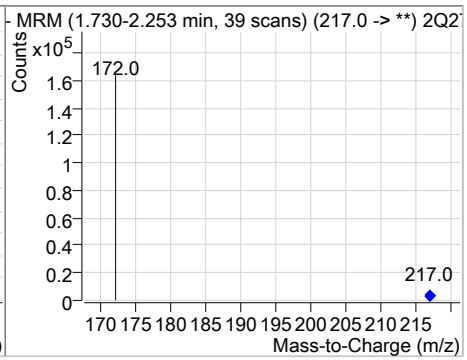




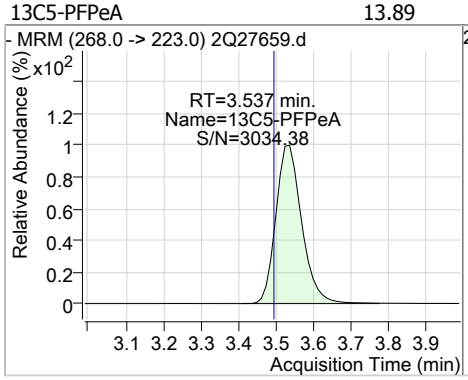
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.86	1.86	0.00	120100				

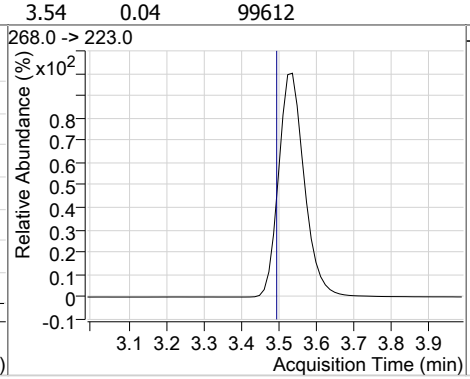


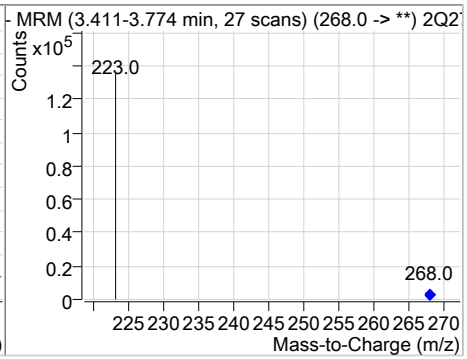




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	13.89	3.54	0.04	99612				

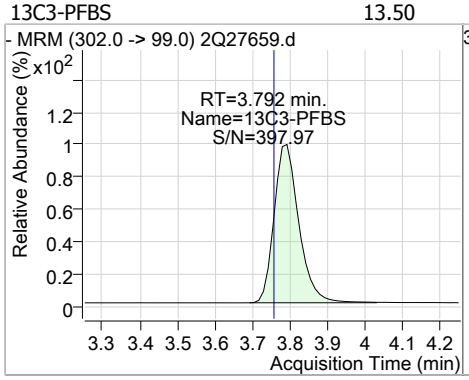


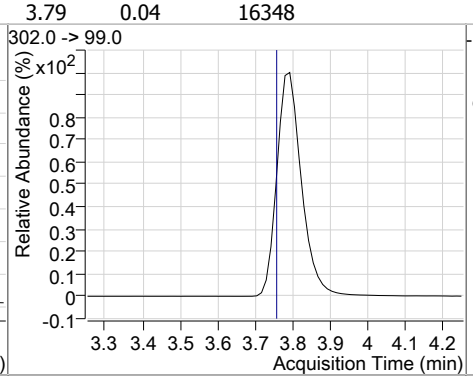


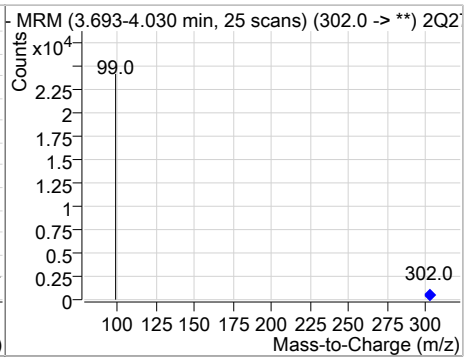


Perfluorinated Compounds by LC/MS/MS

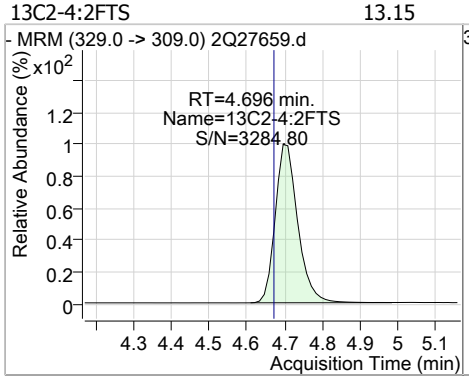
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	13.50	3.79	0.04	16348				

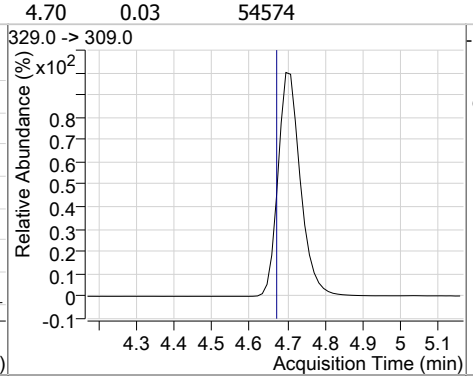


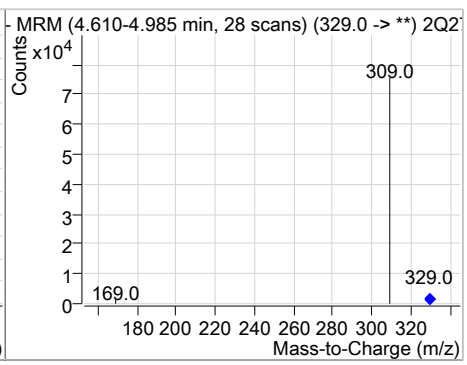




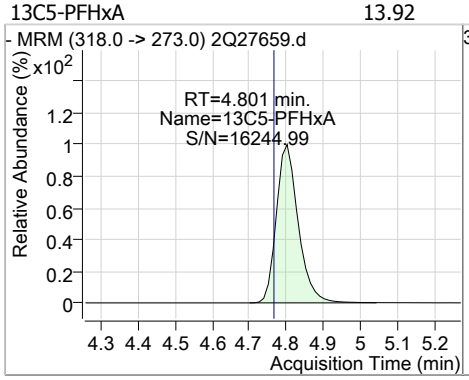
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	13.15	4.70	0.03	54574				

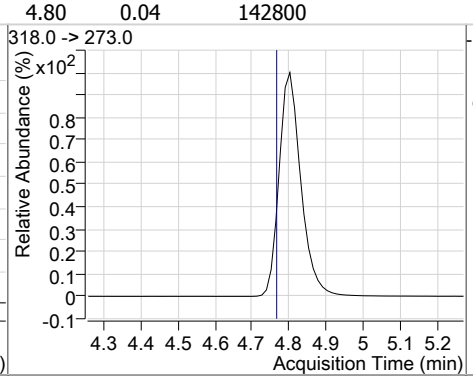


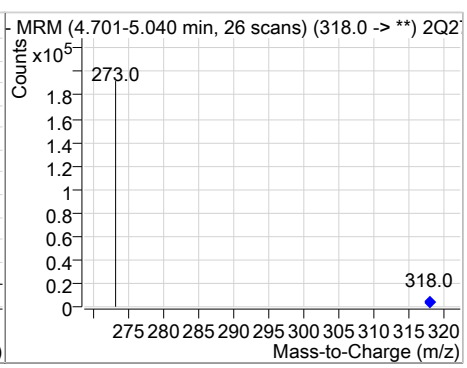




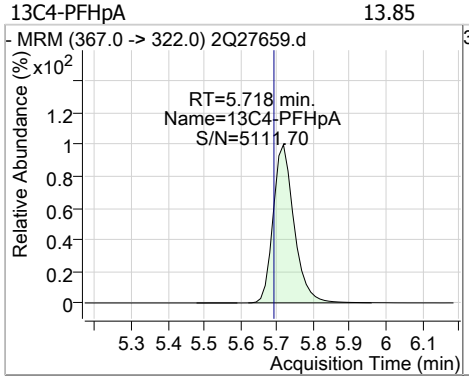
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	13.92	4.80	0.04	142800				

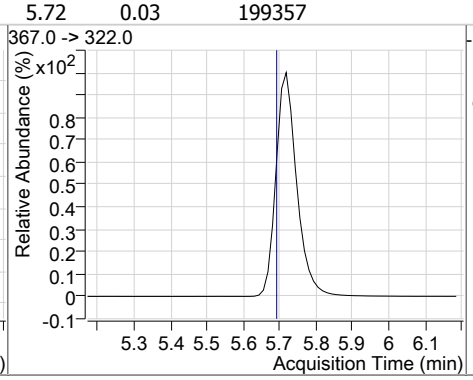


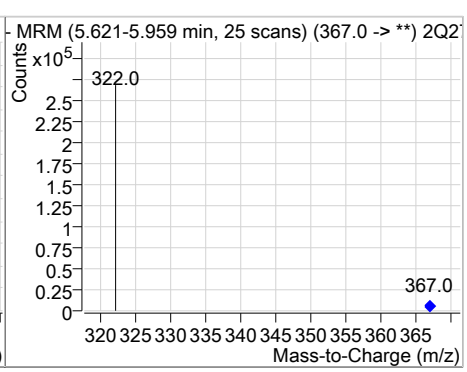




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	13.85	5.72	0.03	199357				

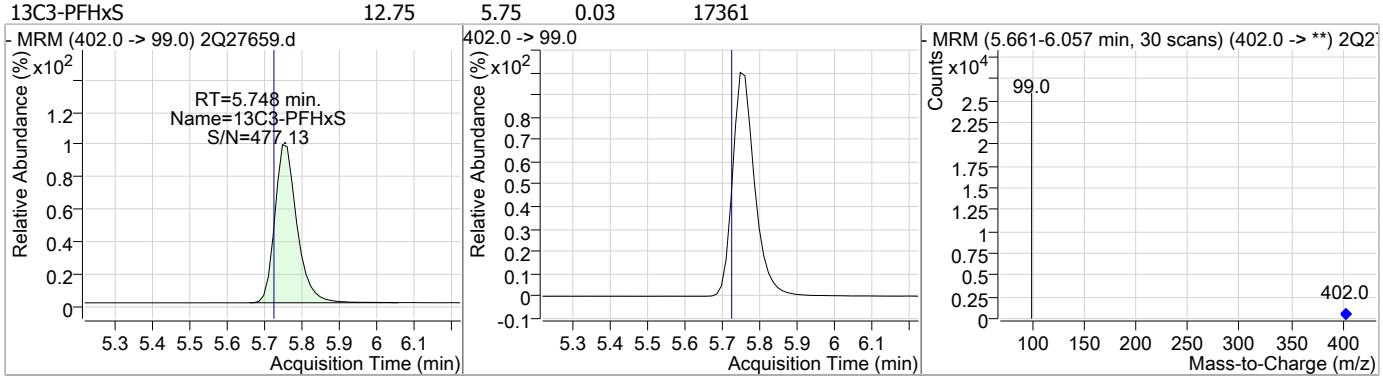




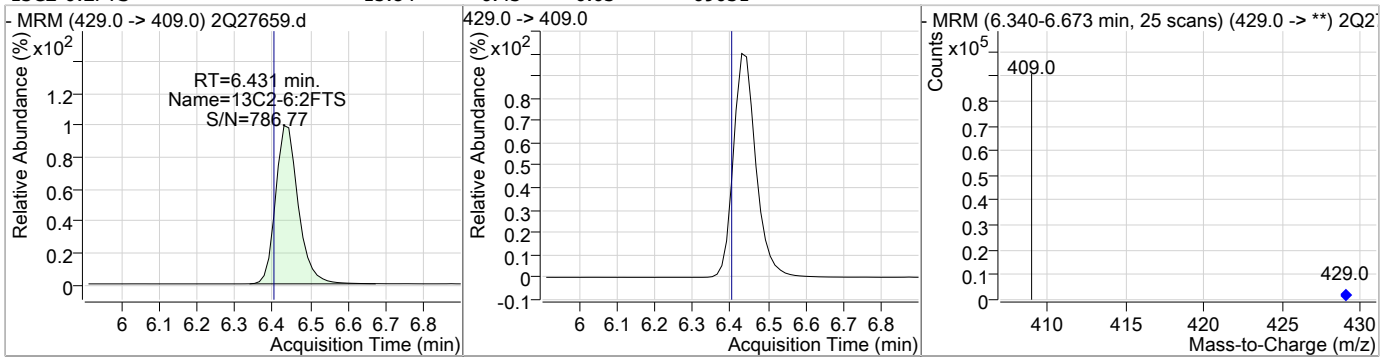


Perfluorinated Compounds by LC/MS/MS

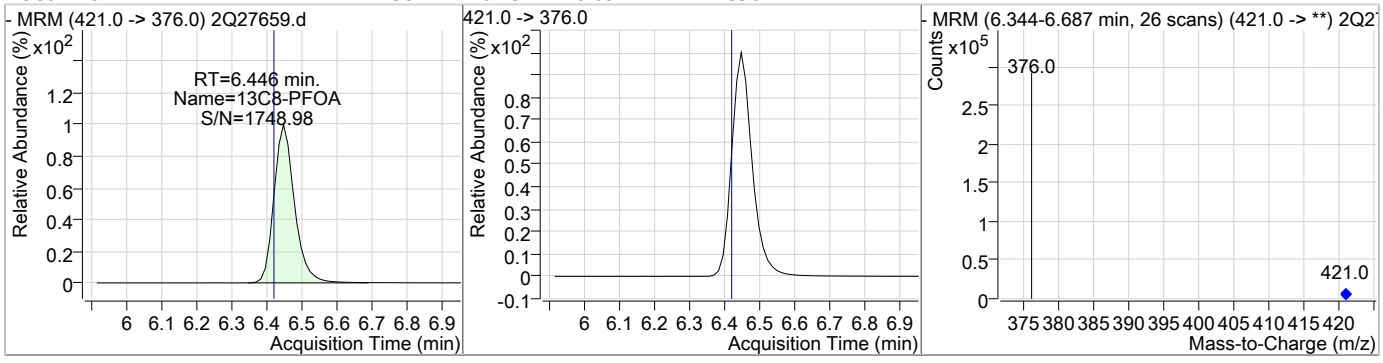
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	12.75	5.75	0.03	17361				



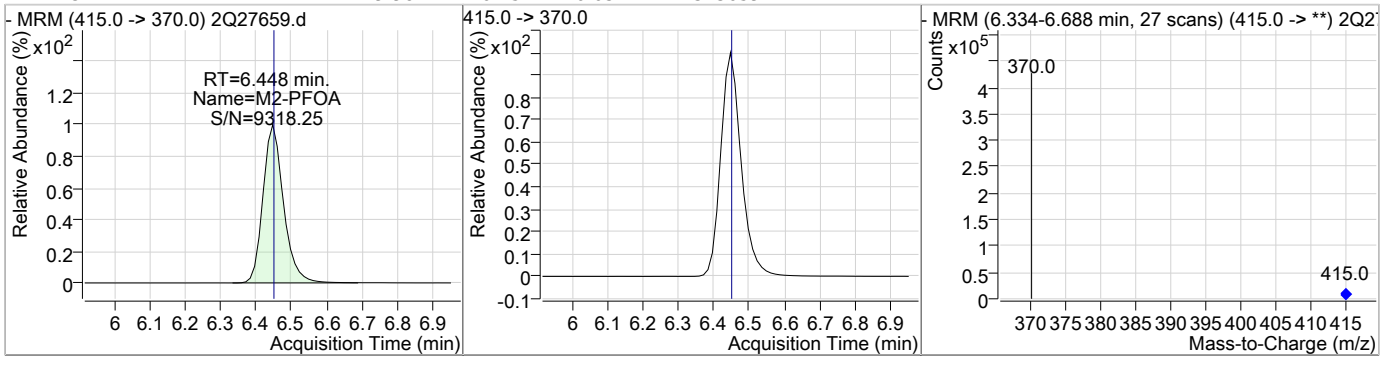
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.84	6.43	0.03	69031				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.95	6.45	0.03	222598				

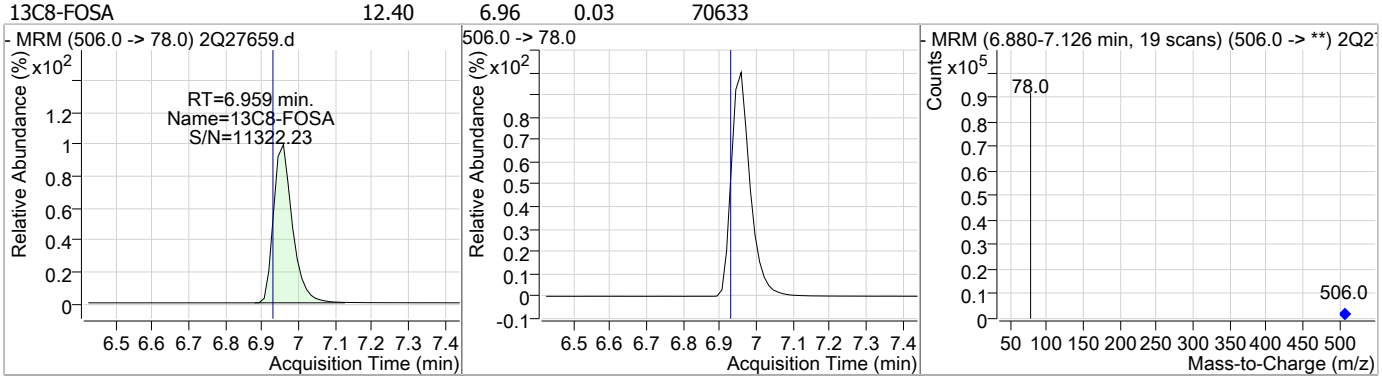


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.45	0.03	323659				

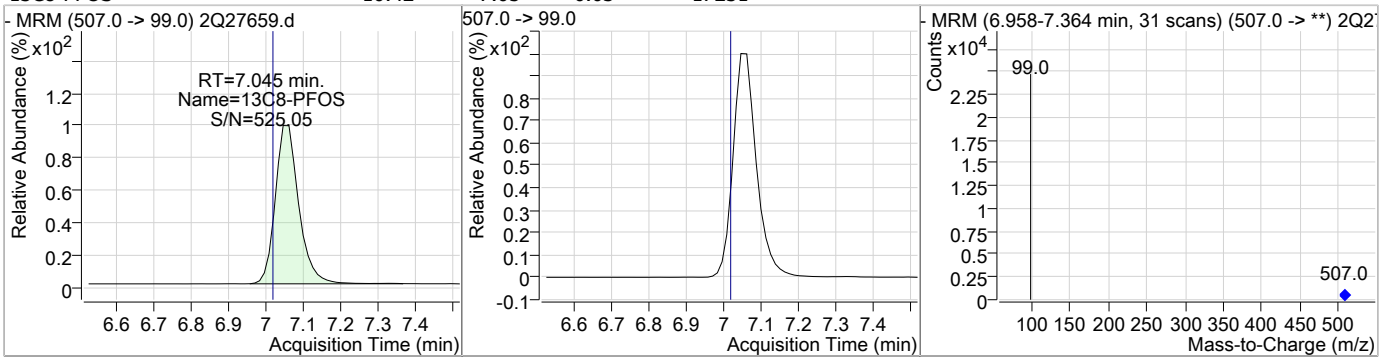


Perfluorinated Compounds by LC/MS/MS

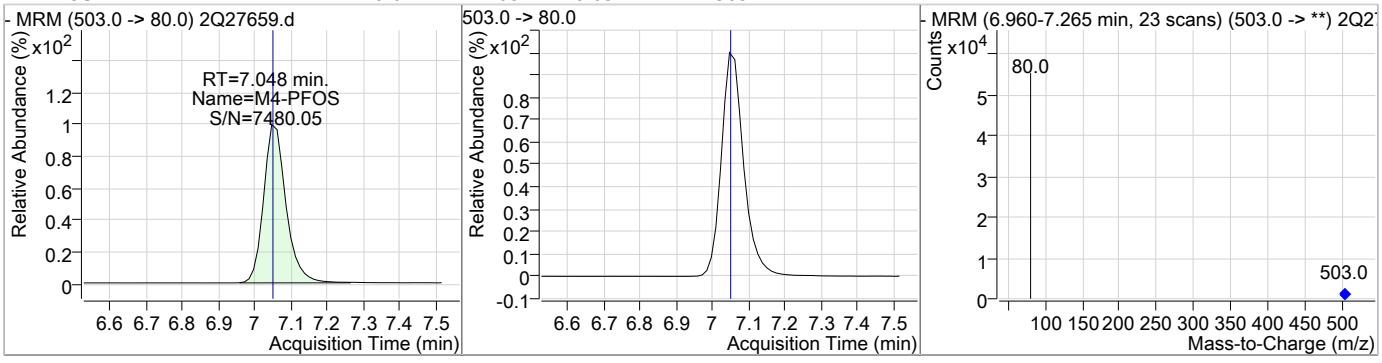
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.40	6.96	0.03	70633				



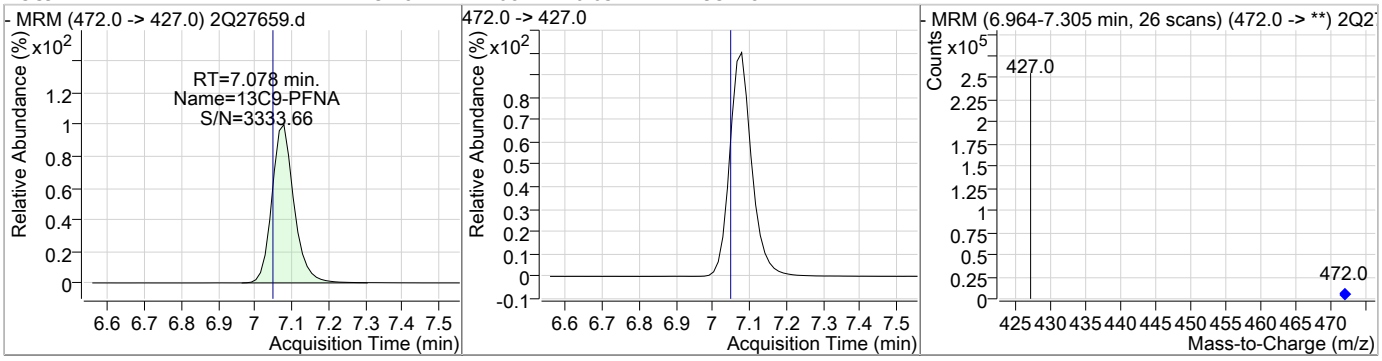
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	10.42	7.05	0.03	17231				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.05	0.03	41365				

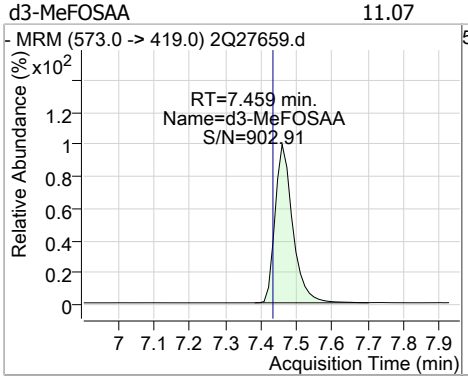


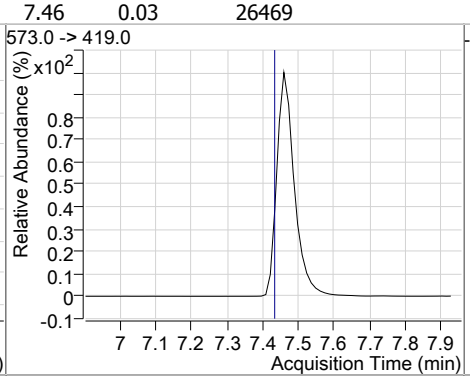
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	13.48	7.08	0.03	193248				

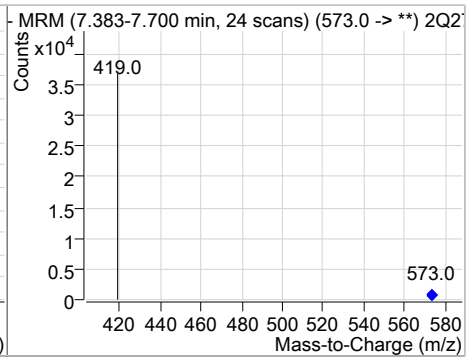


Perfluorinated Compounds by LC/MS/MS

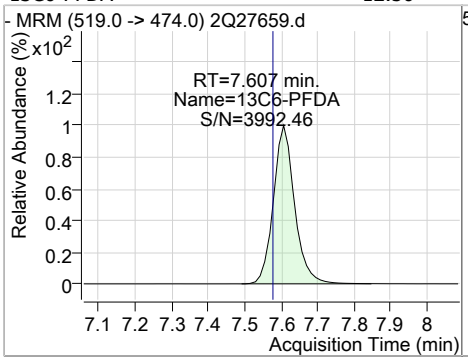
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	11.07	7.46	0.03	26469				

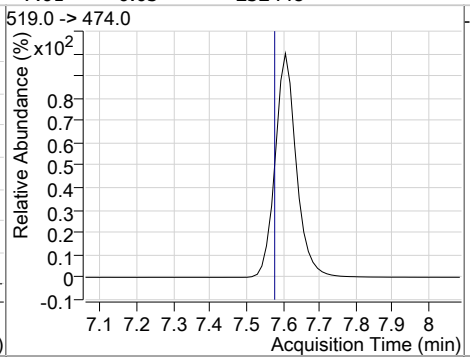


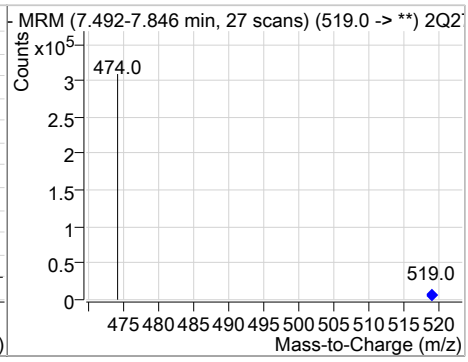




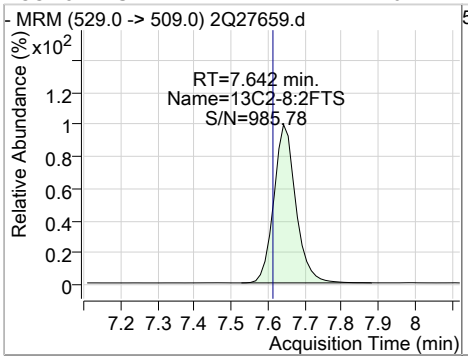
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	12.56	7.61	0.03	232448				

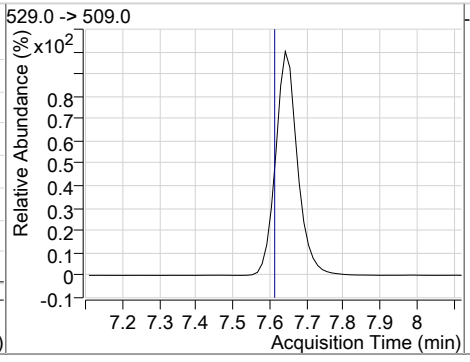


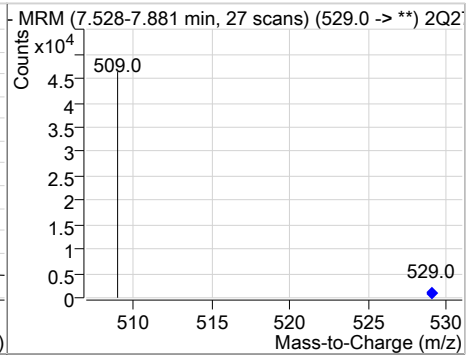




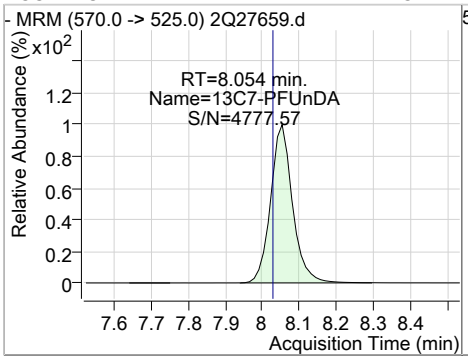
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.67	7.64	0.03	33137				

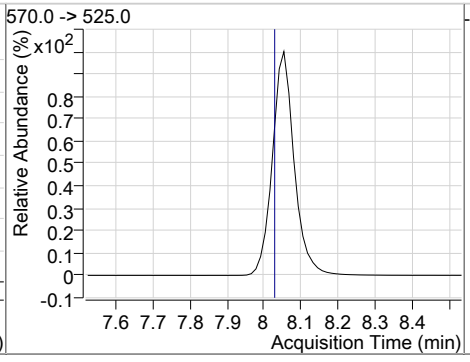


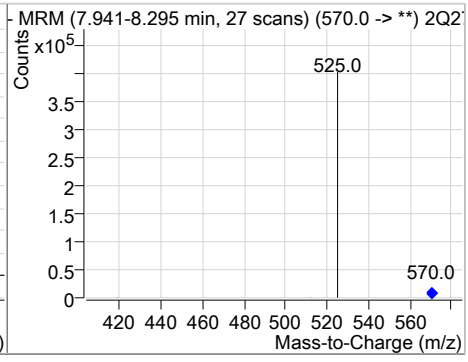




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	12.73	8.05	0.03	305070				

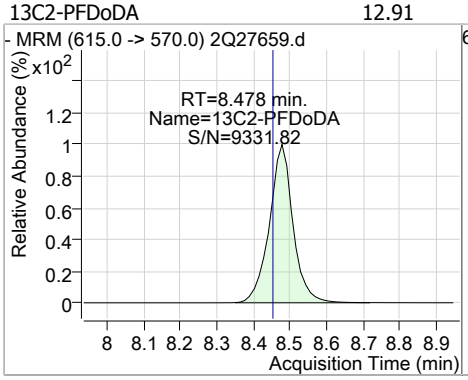


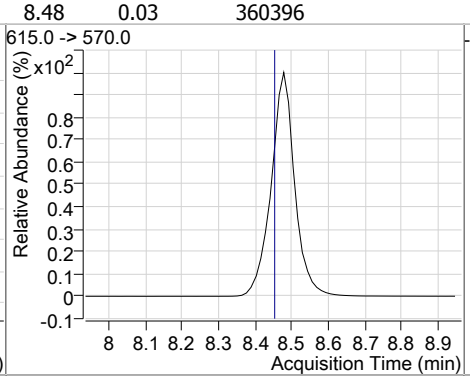


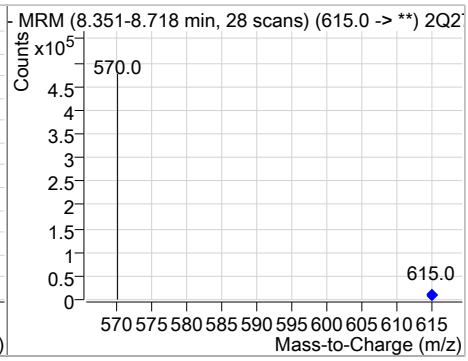


Perfluorinated Compounds by LC/MS/MS

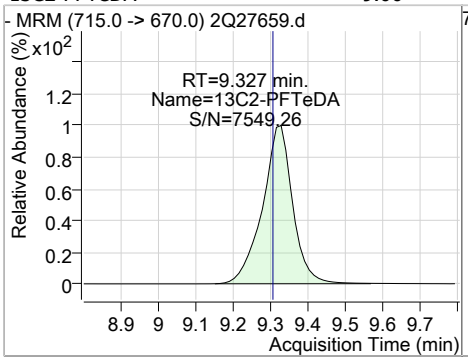
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	12.91	8.48	0.03	360396				

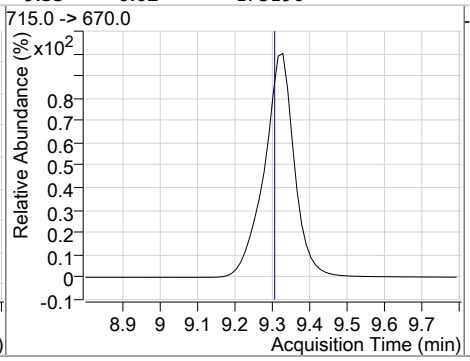


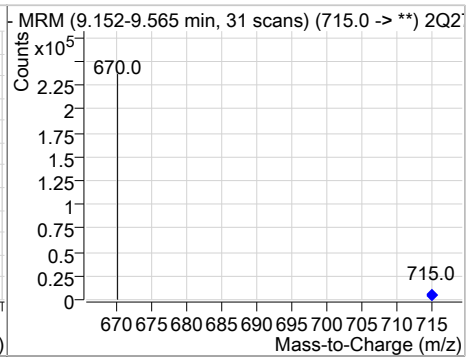




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	9.06	9.33	0.02	175196				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27656.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 4:53:43 PM
Sample Name : OP74164-MB
Vial : Vial 55
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
13C2-PFOA	6.448	415.0 -> 370.0	310144	20.00	µg/L		0.031
13C4-PFOS	7.048	503.0 -> 80.0	42666	20.00	µg/L		0.031
M4-PFBA	1.865	217.0 -> 172.0	126348	20.00	µg/L		0.000
M5-PFPeA	3.536	268.0 -> 223.0	107180	20.00	µg/L		0.045
M5-PFHxA	4.801	318.0 -> 273.0	154820	20.00	µg/L		0.038
M4-PFHpA	5.718	367.0 -> 322.0	216646	20.00	µg/L		0.029
M8-PFOA	6.446	421.0 -> 376.0	237832	20.00	µg/L		0.031
M9-PFNA	7.078	472.0 -> 427.0	240259	20.00	µg/L		0.033
M6-PFDA	7.607	519.0 -> 474.0	318447	20.00	µg/L		0.033
M7-PFUnDA	8.054	570.0 -> 525.0	425602	20.00	µg/L		0.028
M2-PFDoDA	8.478	615.0 -> 570.0	486415	20.00	µg/L		0.028
M2-PFTeDA	9.327	715.0 -> 670.0	240687	20.00	µg/L		0.025
M8-FOSA	6.959	506.0 -> 78.0	88792	20.00	µg/L		0.032
M3-PFBS	3.792	302.0 -> 99.0	18077	20.00	µg/L		0.038
M3-PFHxS	5.761	402.0 -> 99.0	19258	20.00	µg/L		0.038
M8-PFOS	7.045	507.0 -> 99.0	24640	20.00	µg/L		0.030
M2-4:2FTS	4.709	329.0 -> 309.0	60220	20.00	µg/L		0.040
M2-6:2FTS	6.443	429.0 -> 409.0	67731	20.00	µg/L		0.042
M2-8:2FTS	7.642	529.0 -> 509.0	45495	20.00	µg/L		0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	37269	20.00	µg/L		0.029
M3-HFPO-DA	5.093	287.0 -> 169.0	0	100.00	µg/L	m	0.039
System Monitoring Compounds							
13C2-4:2FTS	4.709	329.0 -> 309.0	60035	14.46	µg/L		0.040
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.3%			
13C2-6:2FTS	6.443	429.0 -> 409.0	67686	15.53	µg/L		0.042
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%			
13C2-8:2FTS	7.642	529.0 -> 509.0	45496	16.02	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.1%			
13C2-PFDoDA	8.478	615.0 -> 570.0	485874	17.41	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%			
13C2-PFTeDA	9.327	715.0 -> 670.0	239877	12.41	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.0%			
13C3-PFBS	3.792	302.0 -> 99.0	18024	14.89	µg/L		0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.4%			
13C3-PFHxS	5.761	402.0 -> 99.0	19336	14.20	µg/L		0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.0%			
13C4-PFBA	1.865	217.0 -> 172.0	126048	14.54	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.7%			
13C4-PFHpA	5.718	367.0 -> 322.0	216401	15.03	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%			
13C5-PFHxA	4.801	318.0 -> 273.0	154683	15.08	µg/L		0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.4%			
13C5-PFPeA	3.536	268.0 -> 223.0	106933	14.91	µg/L		0.045
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.6%			
13C6-PFDA	7.607	519.0 -> 474.0	318345	17.20	µg/L		0.033

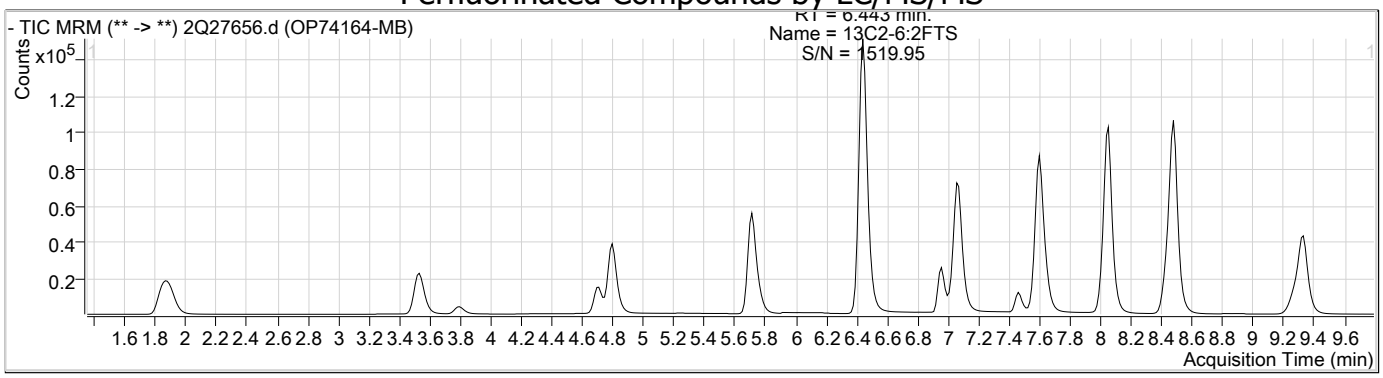
Perfluorinated Compounds by LC/MS/MS

Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.0%			
13C7-PFUnDA	8.054	570.0 -> 525.0	425567	17.76	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.8%			
13C8-FOSA	6.959	506.0 -> 78.0	88742	15.58	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%			
13C8-PFOA	6.446	421.0 -> 376.0	237584	15.95	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%			
13C8-PFOS	7.045	507.0 -> 99.0	24657	14.91	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.5%			
13C9-PFNA	7.078	472.0 -> 427.0	240038	16.75	µg/L		0.033
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%			
d3-MeFOSAA	7.459	573.0 -> 419.0	37280	15.59	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.0%			
M2-PFOA	6.448	415.0 -> 370.0	310219	19.99	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	42675	20.00	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	5.093	287.0 -> 169.0	0	0.00	µg/L	m	0.039
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			

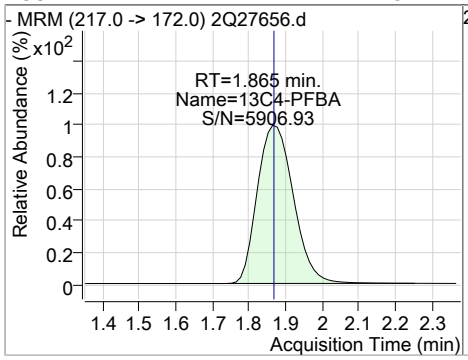
Target Compounds				QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.
6:2FTS	-	427.0 -> 407.0	-	N.D.
8:2FTS	-	527.0 -> 507.0	-	N.D.
EtFOSAA	-	584.0 -> 419.0	-	N.D.
FOSA	-	498.0 -> 78.0	-	N.D.
MeFOSAA	-	570.0 -> 419.0	-	N.D.
PFBA	-	213.0 -> 169.0	-	N.D.
PFBS	-	299.0 -> 80.0	-	N.D.
PFDA	-	513.0 -> 469.0	-	N.D.
PFDoDA	-	613.0 -> 569.0	-	N.D.
PFDS	-	599.0 -> 80.0	-	N.D.
PFHpA	-	363.0 -> 319.0	-	N.D.
PFHpS	-	449.0 -> 80.0	-	N.D.
PFHxA	-	313.0 -> 269.0	-	N.D.
PFHxS	-	399.0 -> 80.0	-	N.D.
PFNA	-	463.0 -> 419.0	-	N.D.
PFNS	-	549.0 -> 80.0	-	N.D.
PFOA	-	413.0 -> 369.0	-	N.D.
PFOS	-	499.0 -> 80.0	-	N.D.
PFPeA	-	263.0 -> 219.0	-	N.D.
PFPeS	-	349.0 -> 80.0	-	N.D.
PFTeDA	-	713.0 -> 669.0	-	N.D.
PFTrDA	-	663.0 -> 619.0	-	N.D.
PFUnDA	-	563.0 -> 519.0	-	N.D.
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.
ADONA	-	377.0 -> 251.0	-	N.D.
HFPO-DA	-	329.0 -> 169.0	-	N.D.

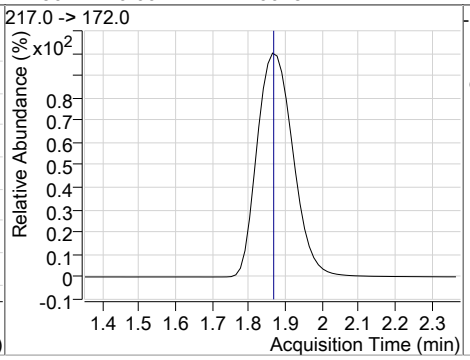
 # = Qualifier out of range, m = manually integrated, + = Area summed

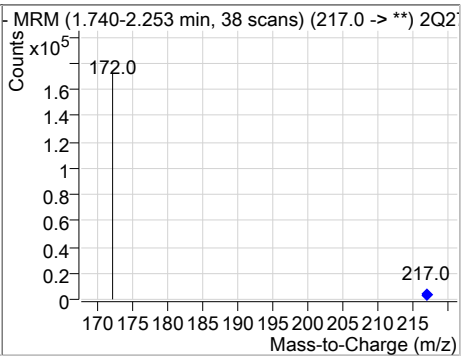
Perfluorinated Compounds by LC/MS/MS



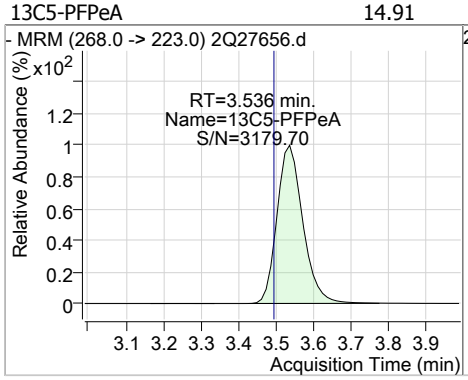
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	14.54	1.86	0.00	126048				

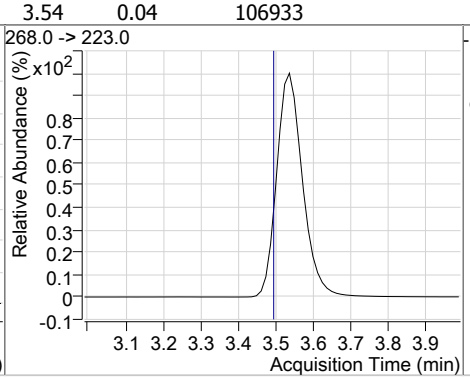


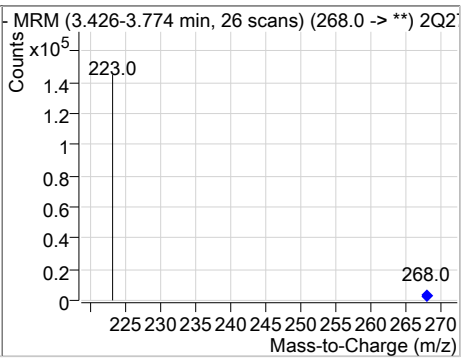




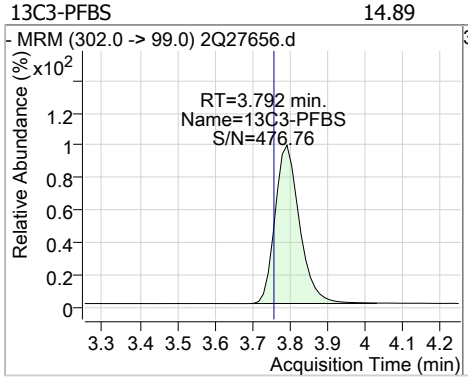
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	14.91	3.54	0.04	106933				

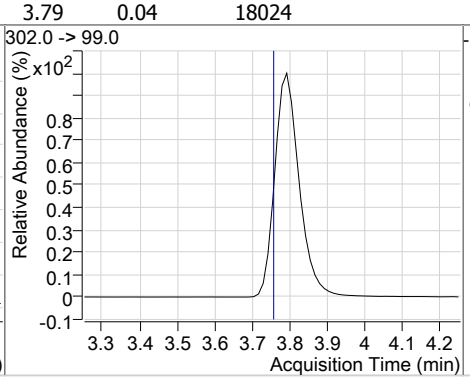


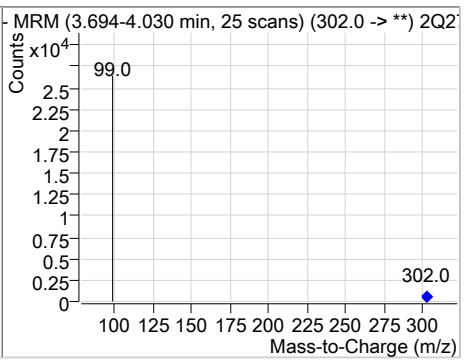




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.89	3.79	0.04	18024				

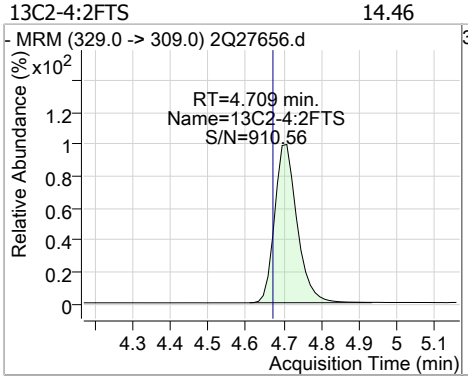


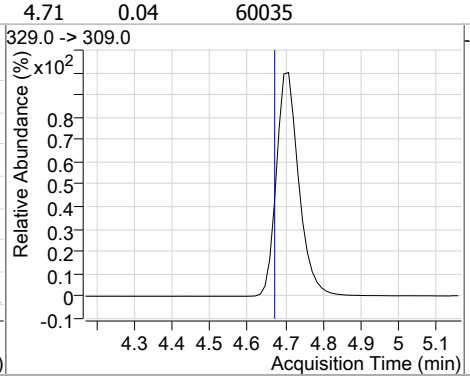


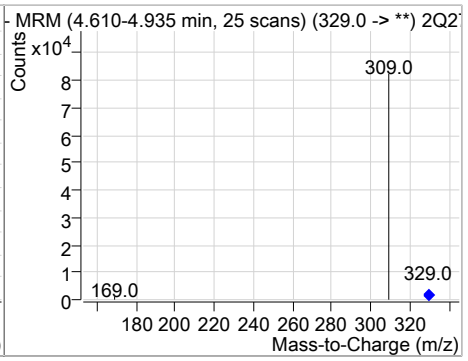


Perfluorinated Compounds by LC/MS/MS

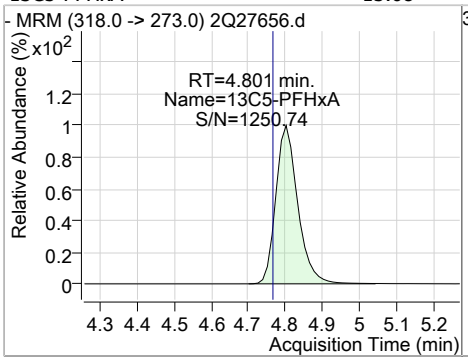
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.46	4.71	0.04	60035				

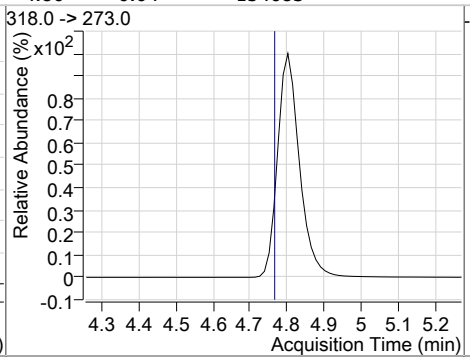


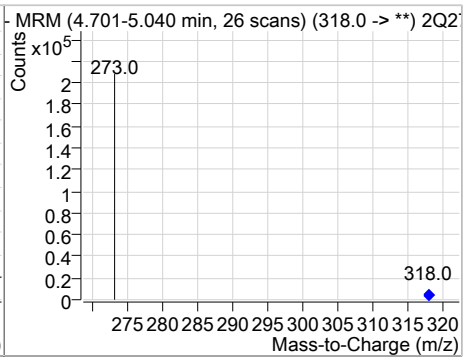




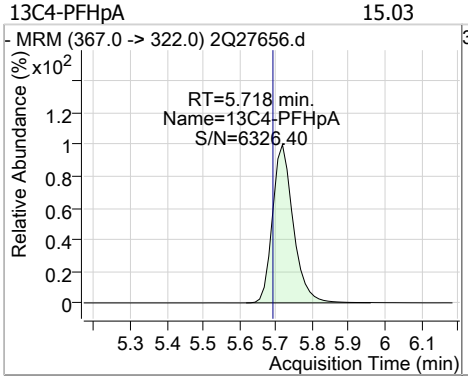
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.08	4.80	0.04	154683				

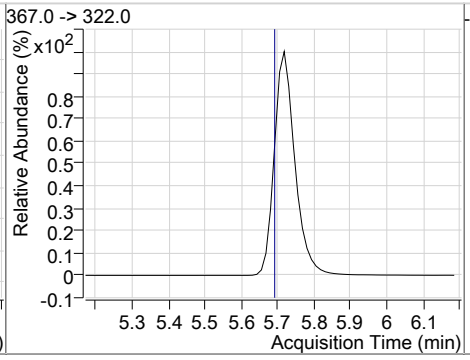


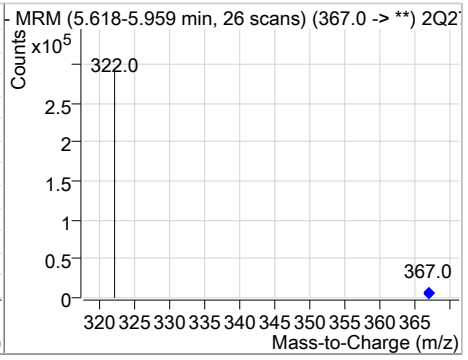




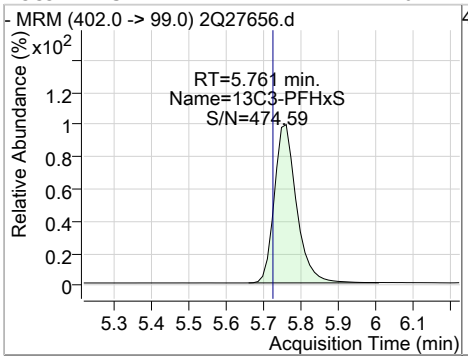
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.03	5.72	0.03	216401				

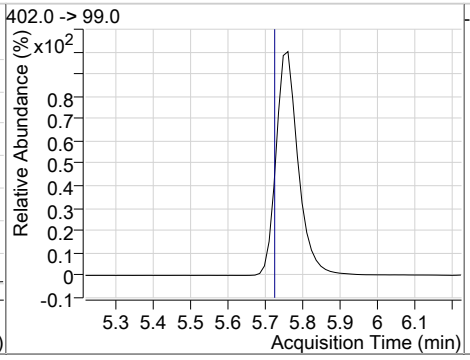


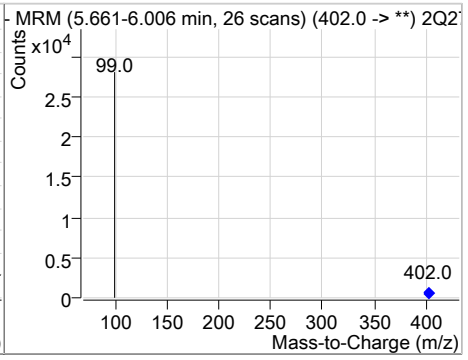




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	14.20	5.76	0.04	19336				

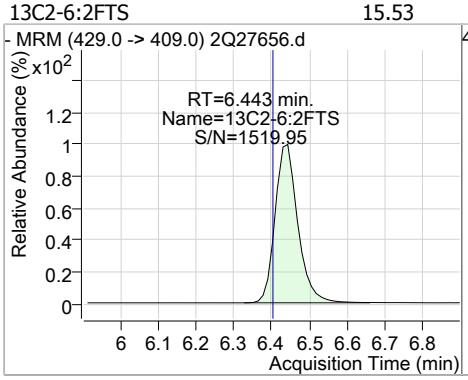


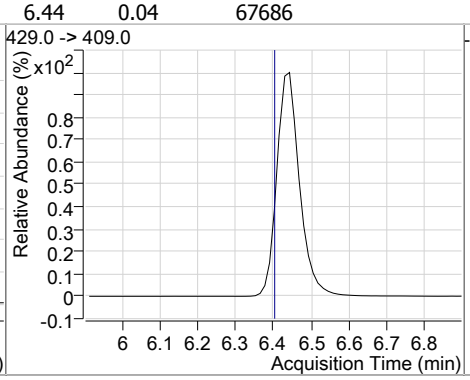


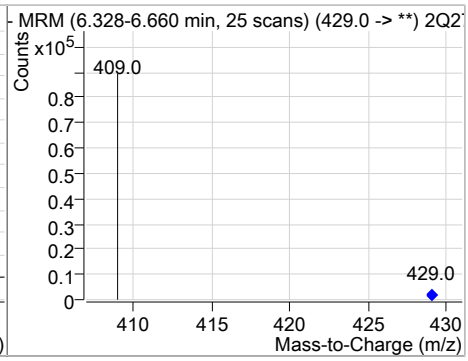


Perfluorinated Compounds by LC/MS/MS

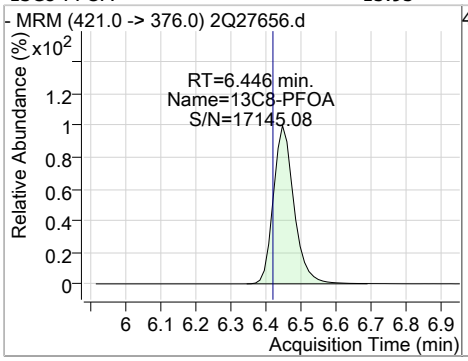
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.53	6.44	0.04	67686				

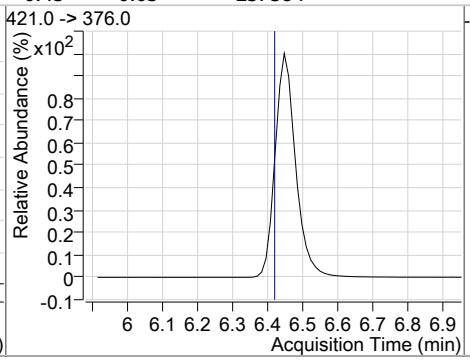


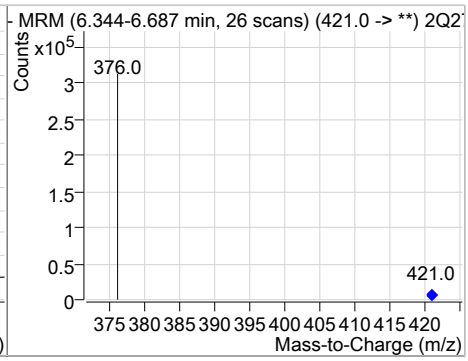




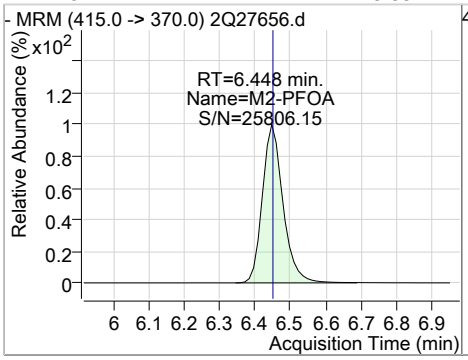
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	15.95	6.45	0.03	237584				

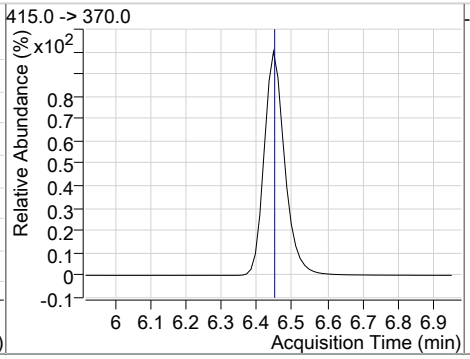


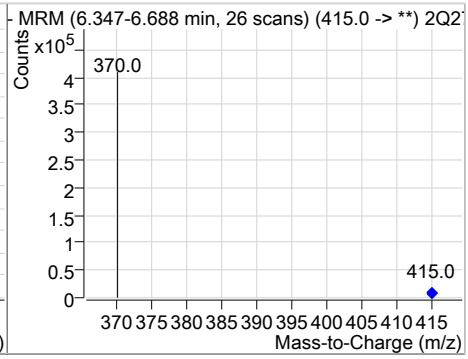




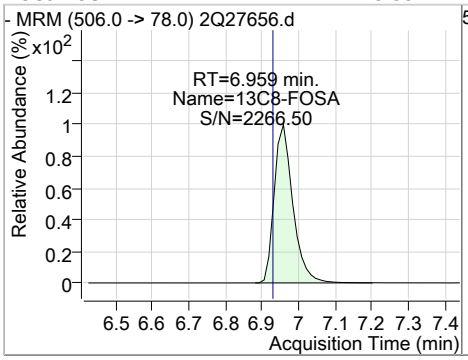
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	310219				

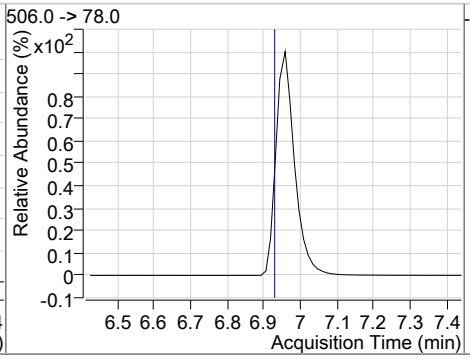


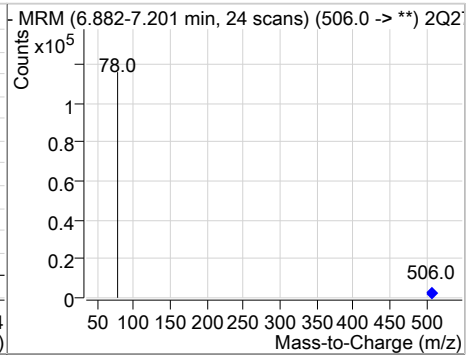




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	15.58	6.96	0.03	88742				

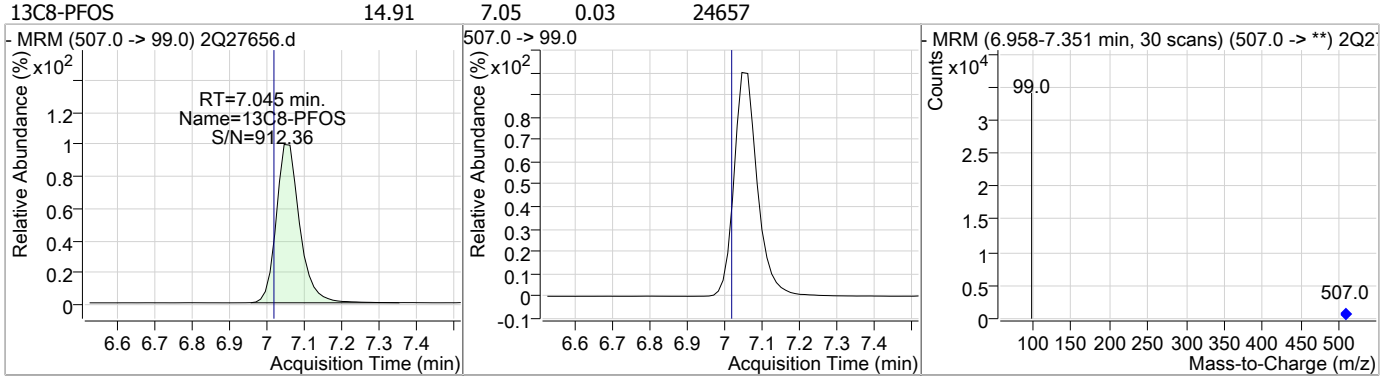




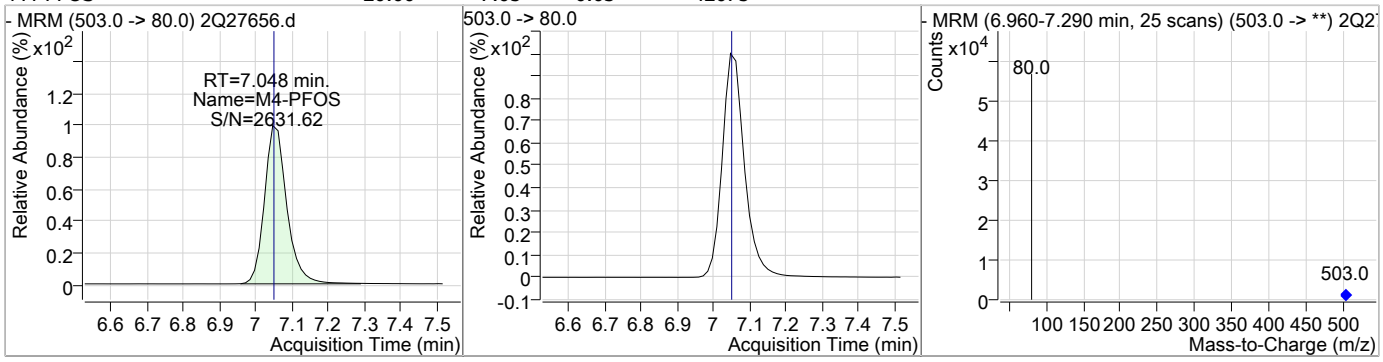


Perfluorinated Compounds by LC/MS/MS

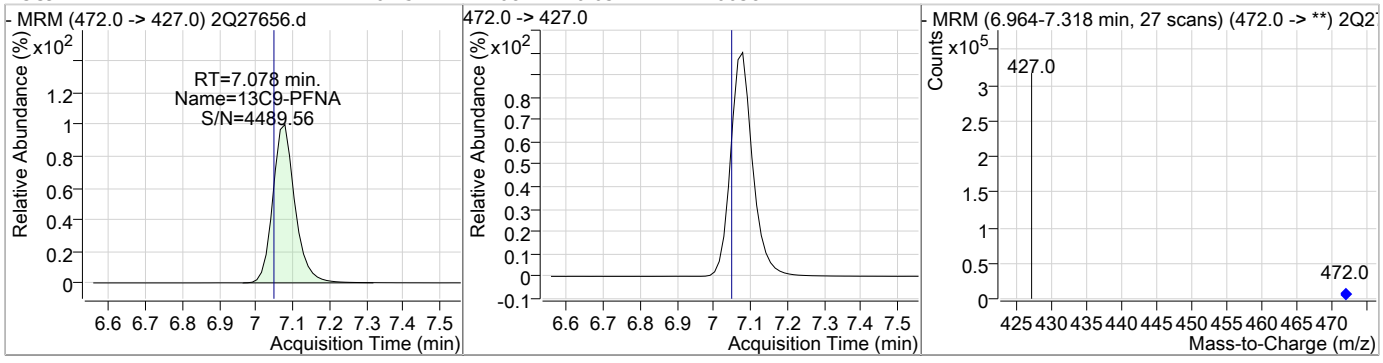
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.91	7.05	0.03	24657				



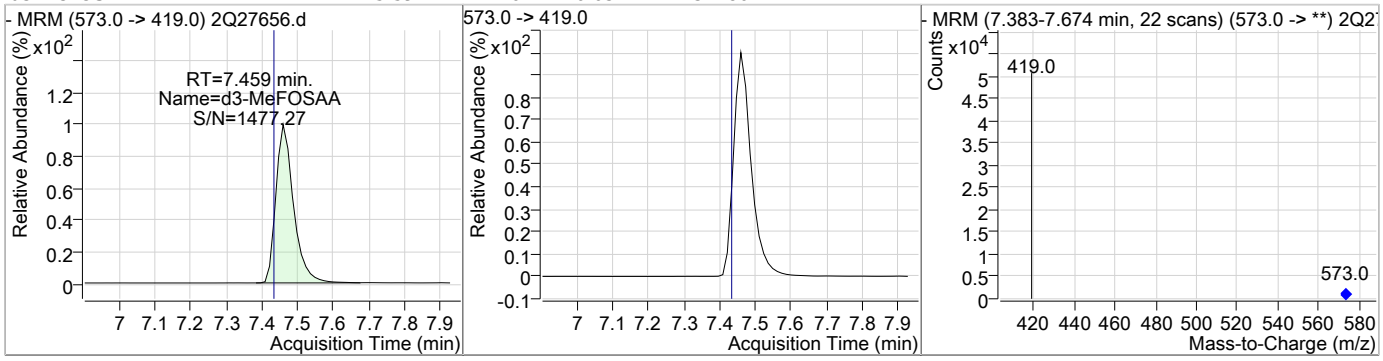
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.03	42675				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.75	7.08	0.03	240038				

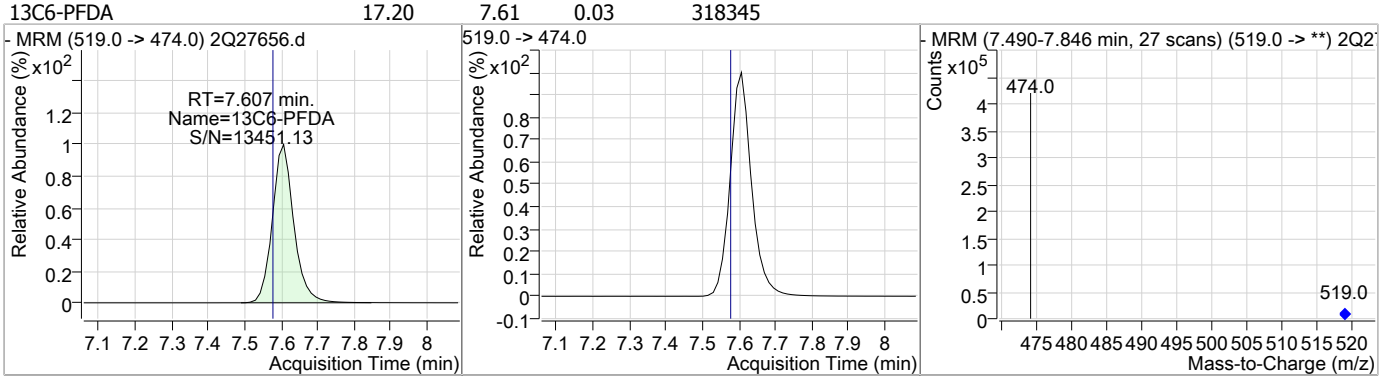


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.59	7.46	0.03	37280				

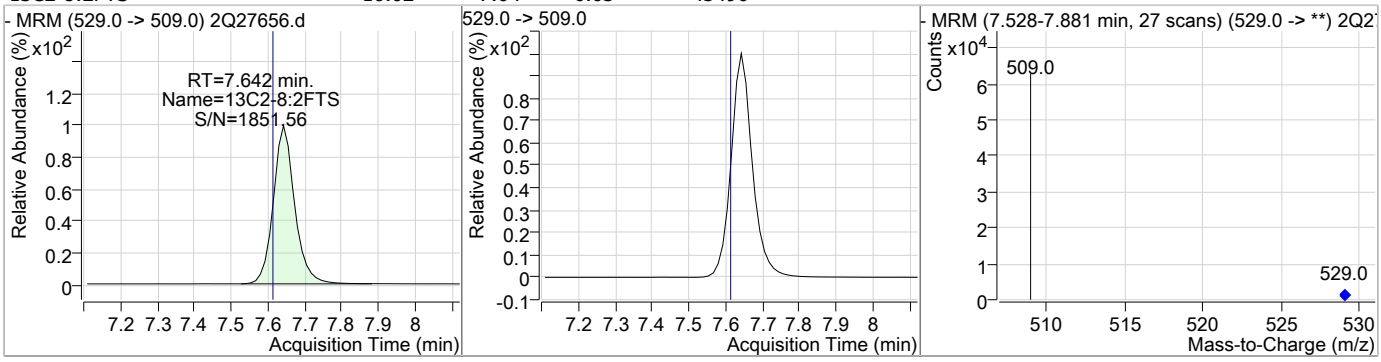


Perfluorinated Compounds by LC/MS/MS

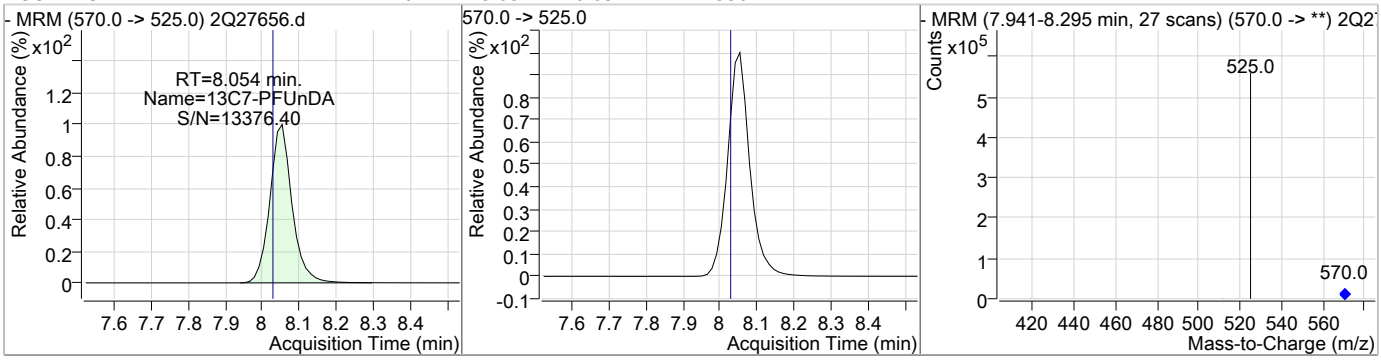
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.20	7.61	0.03	318345				



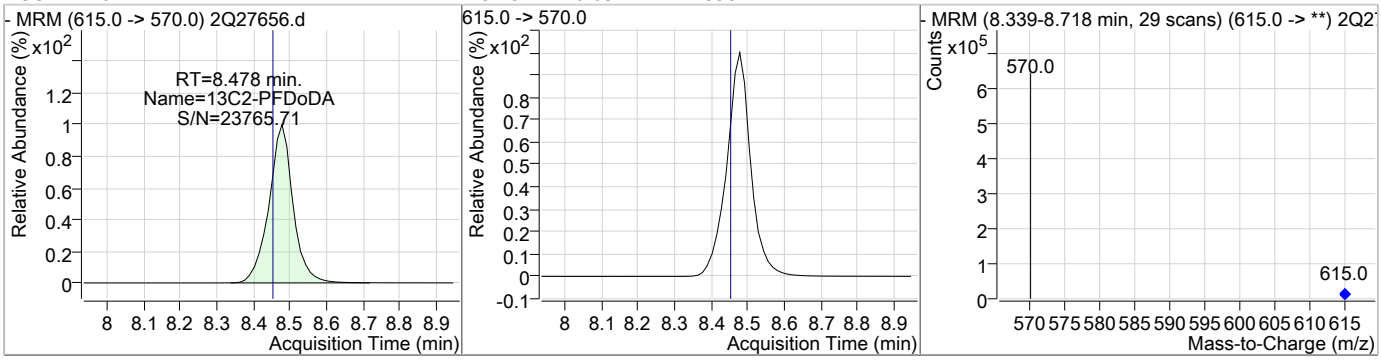
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.02	7.64	0.03	45496				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.76	8.05	0.03	425567				

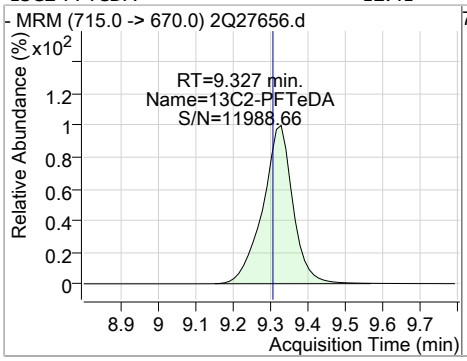


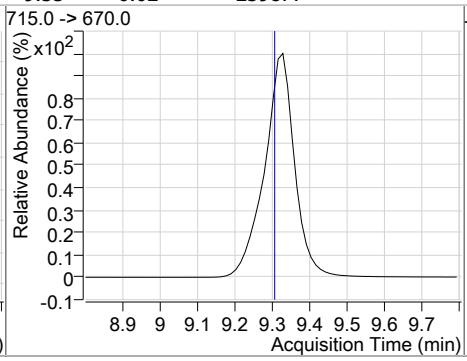
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.41	8.48	0.03	485874				

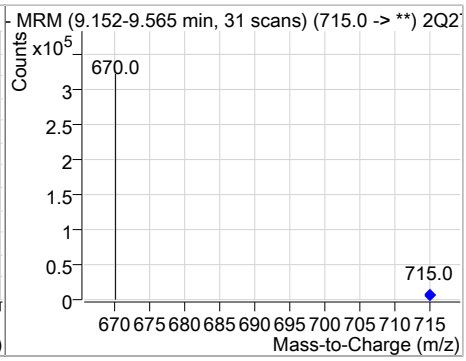


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	12.41	9.33	0.02	239877				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27692.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 4:01:12 PM
Sample Name : op74180-mb
Vial : Vial 14
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

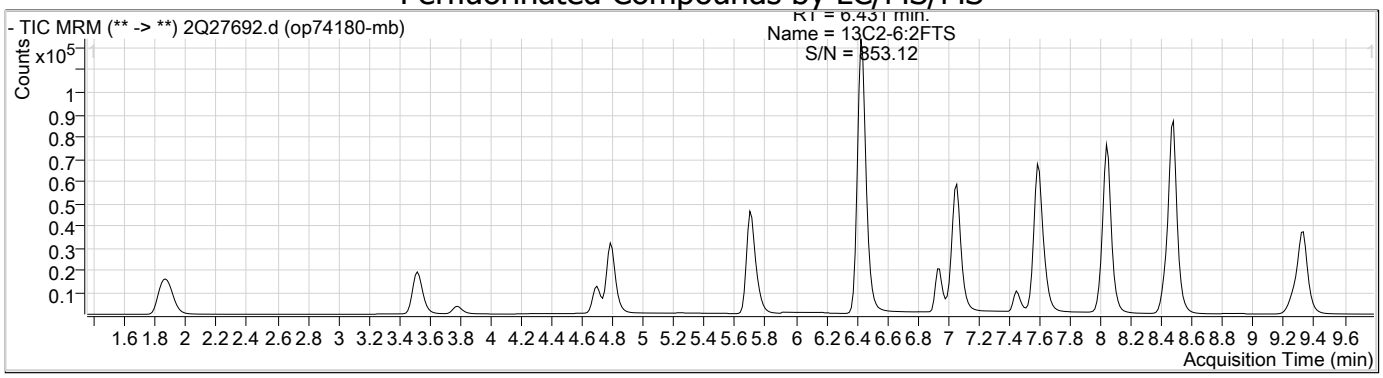
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	252927	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	36813	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	105190	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	89105	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	127370	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	182174	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	194635	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	192070	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	247178	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	311776	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	381929	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	203824	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	71163	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	15320	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	16629	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	20709	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	49104	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	57103	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	36490	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	31787	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	49122	16.52	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.6%		
13C2-6:2FTS	6.431	429.0 -> 409.0	57083	17.79	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C2-8:2FTS	7.630	529.0 -> 509.0	36482	16.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%		
13C2-PFDoDA	8.479	615.0 -> 570.0	381855	20.30	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C2-PFTeDA	9.327	715.0 -> 670.0	203156	15.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.1%		
13C3-PFBS	3.780	302.0 -> 99.0	15318	16.80	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%		
13C3-PFHxS	5.748	402.0 -> 99.0	16642	16.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.6%		
13C4-PFBA	1.865	217.0 -> 172.0	104906	17.49	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	181961	17.59	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.0%		
13C5-PFHxA	4.789	318.0 -> 273.0	127219	17.51	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%		
13C5-PFPeA	3.524	268.0 -> 223.0	89113	17.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%		
13C6-PFDA	7.594	519.0 -> 474.0	247135	18.11	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

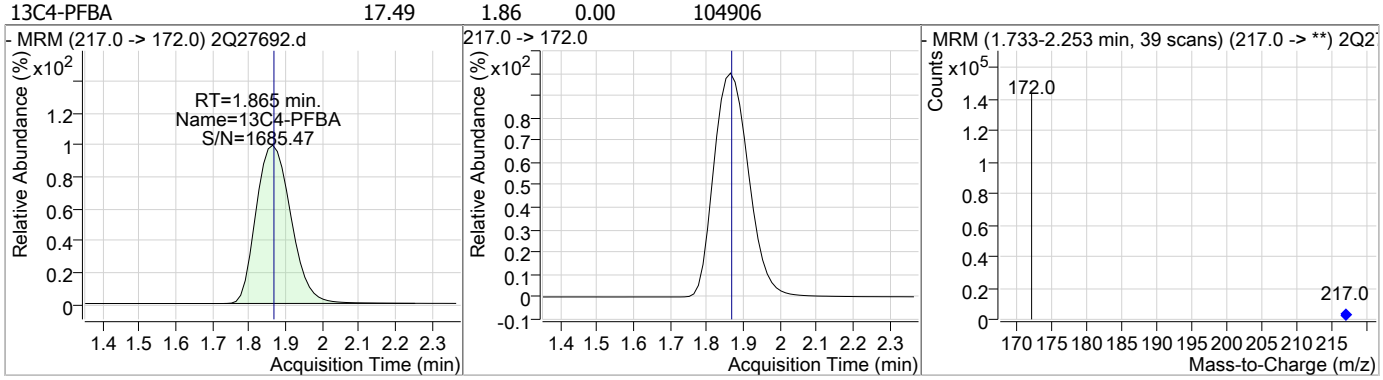
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%	
13C7-PFUnDA	8.041	570.0 -> 525.0	311558	18.41 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	6.932	506.0 -> 78.0	71138	17.54 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%	
13C8-PFOA	6.434	421.0 -> 376.0	194586	18.65 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C8-PFOS	7.045	507.0 -> 99.0	20720	15.90 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%	
13C9-PFNA	7.065	472.0 -> 427.0	191966	18.13 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%	
d3-MeFOSAA	7.447	573.0 -> 419.0	31853	16.62 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.1%	
M2-PFOA	6.435	415.0 -> 370.0	253060	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.048	503.0 -> 80.0	36809	19.99 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

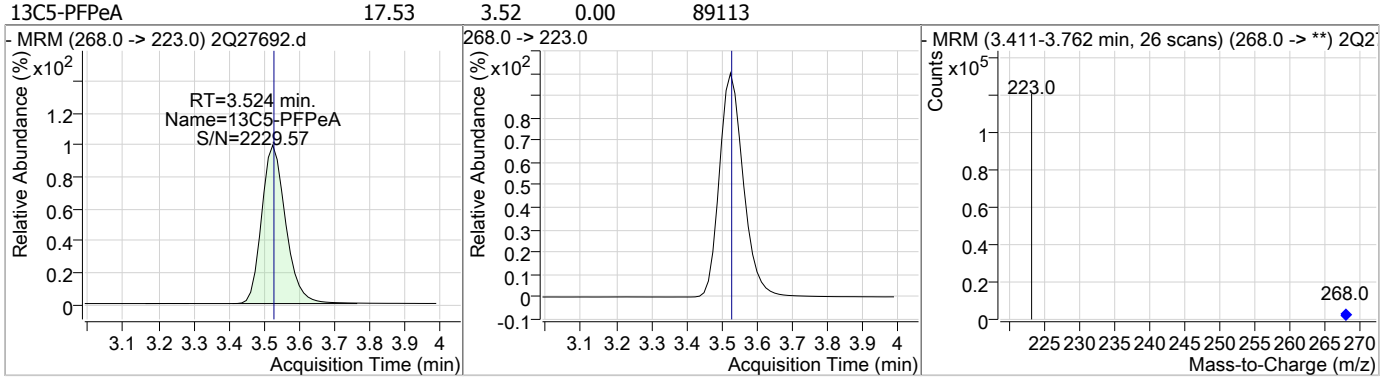
Perfluorinated Compounds by LC/MS/MS



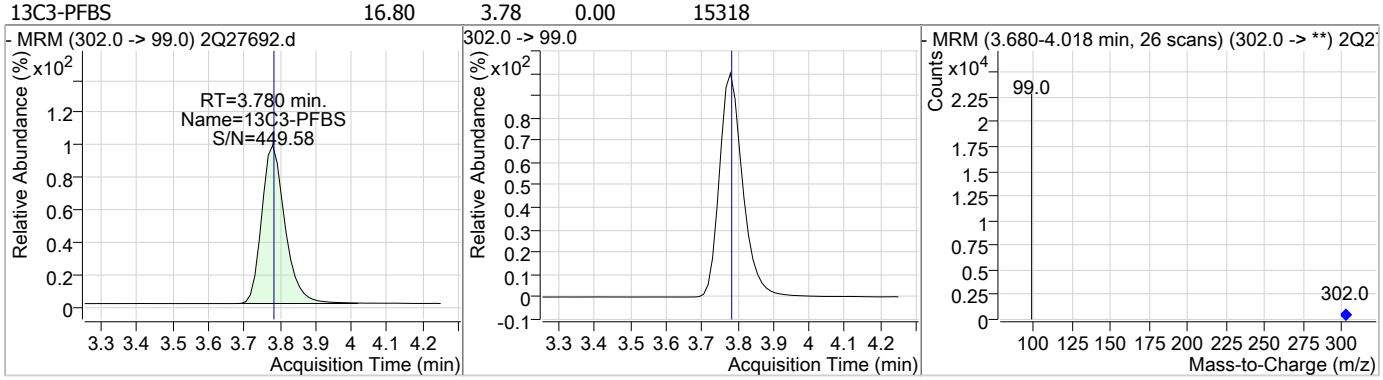
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	17.49	1.86	0.00	104906				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.53	3.52	0.00	89113				

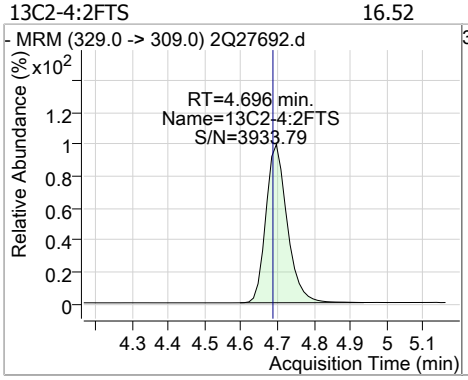


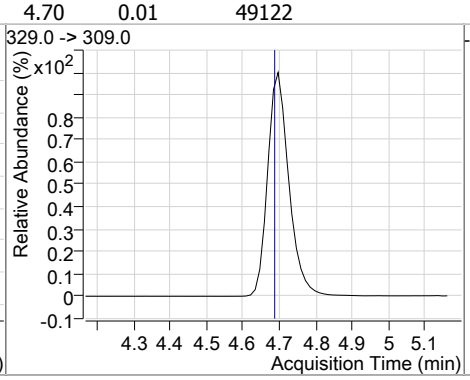
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.80	3.78	0.00	15318				

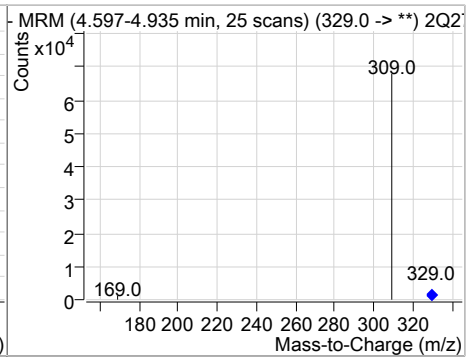


Perfluorinated Compounds by LC/MS/MS

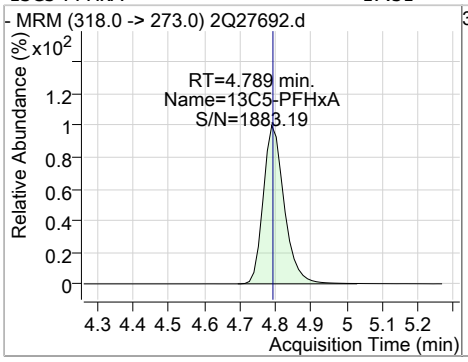
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.52	4.70	0.01	49122				

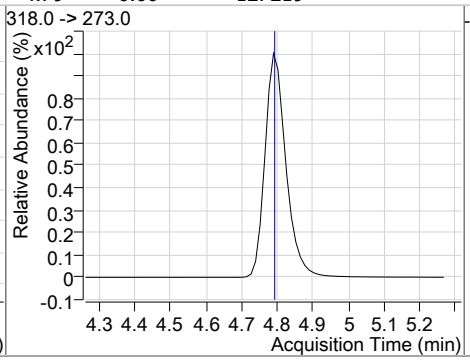


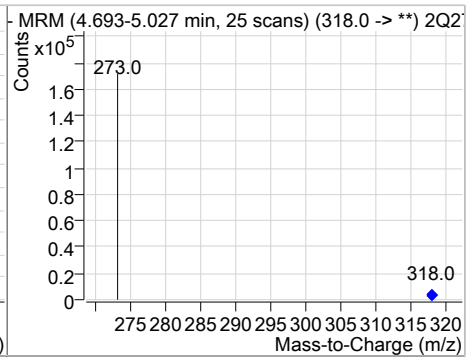




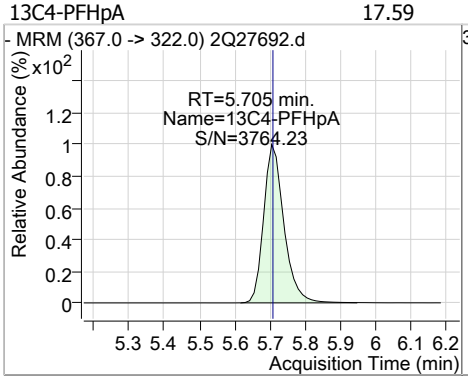
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.51	4.79	0.00	127219				

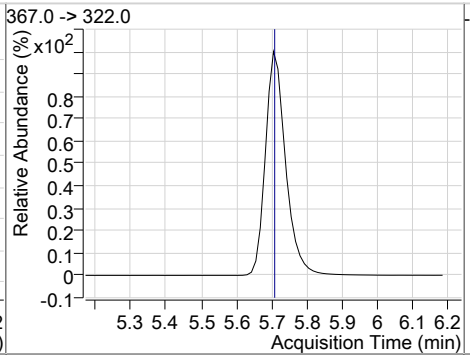


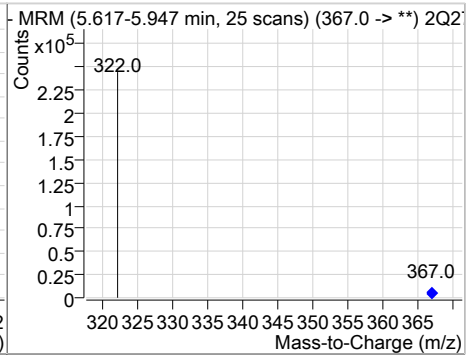




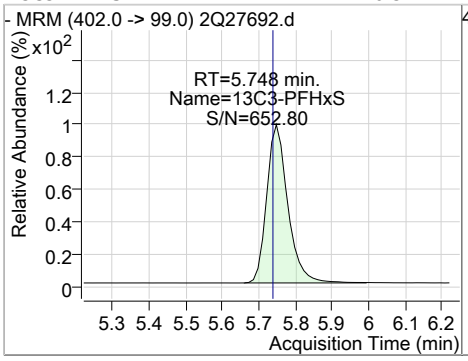
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.59	5.71	0.00	181961				

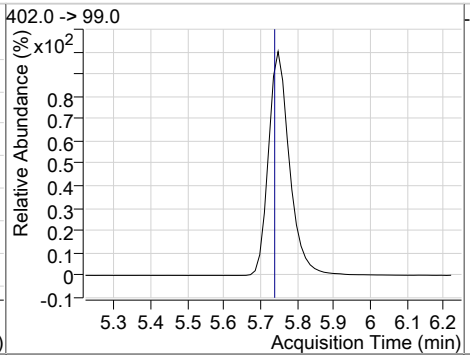


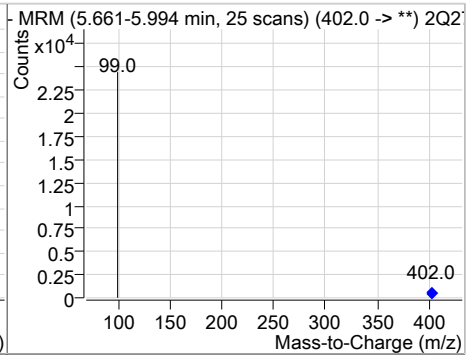




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.32	5.75	0.01	16642				

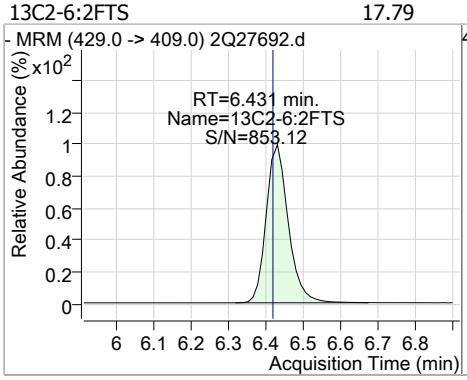


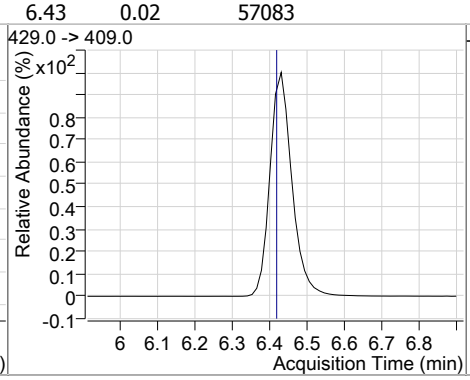


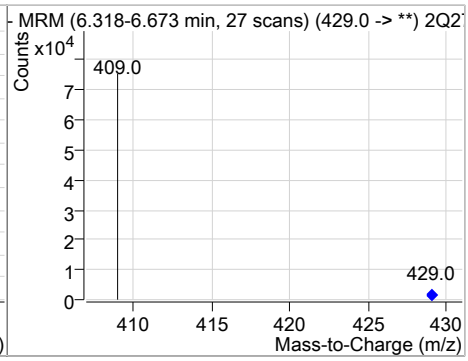


Perfluorinated Compounds by LC/MS/MS

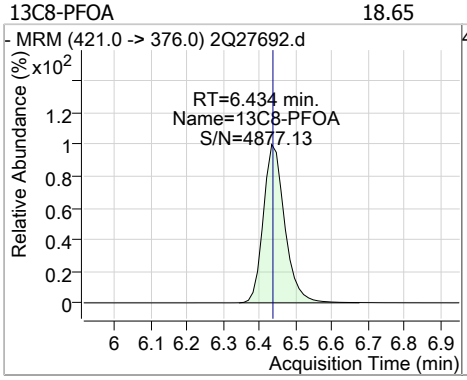
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.79	6.43	0.02	57083				

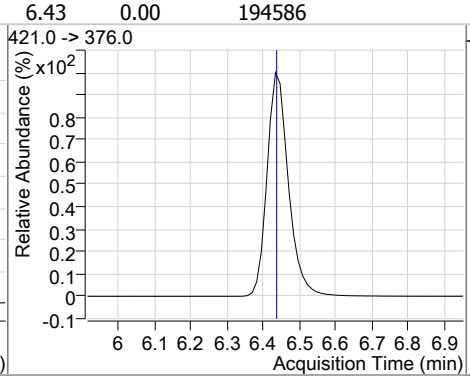


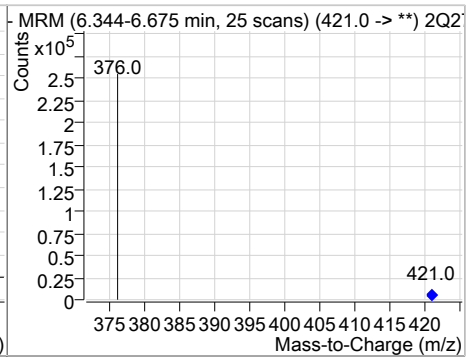




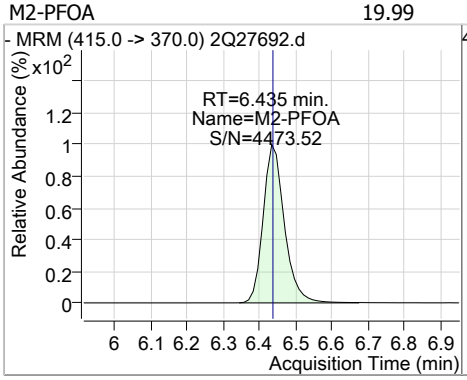
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.65	6.43	0.00	194586				

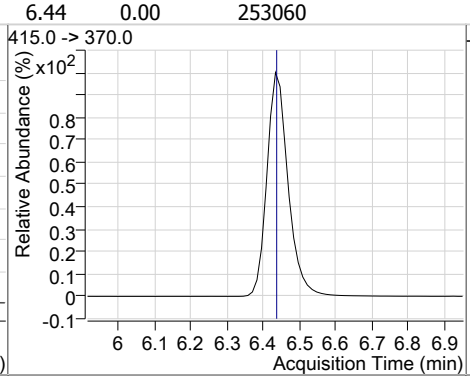


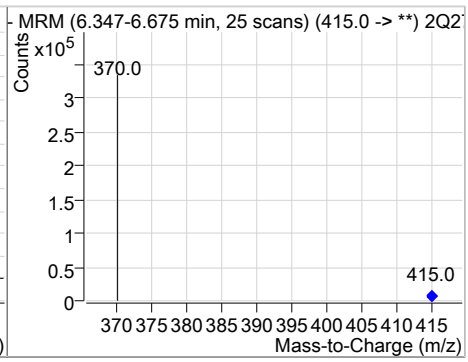




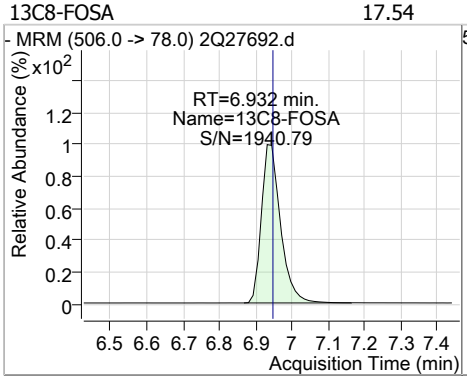
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	253060				

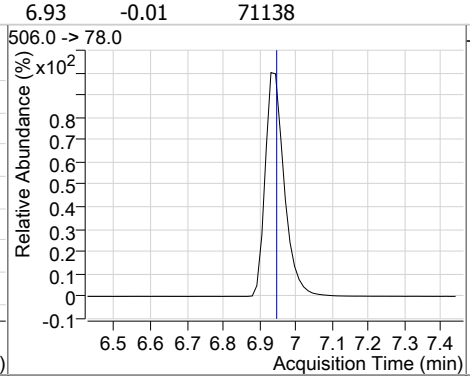


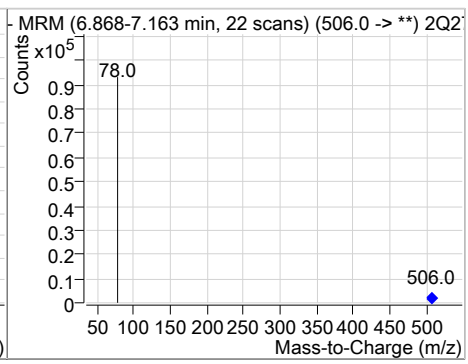




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.54	6.93	-0.01	71138				

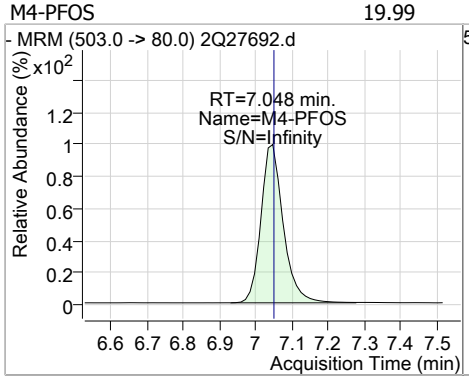


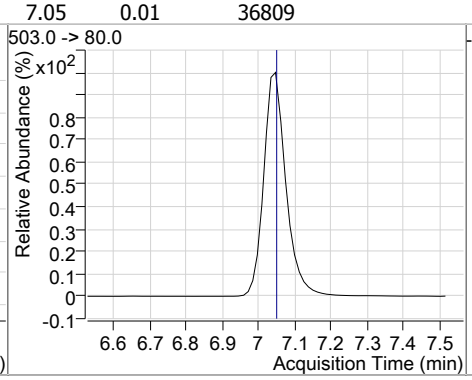


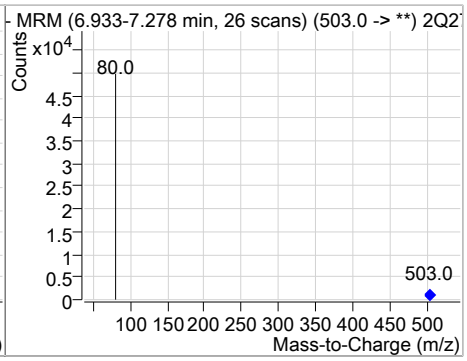


Perfluorinated Compounds by LC/MS/MS

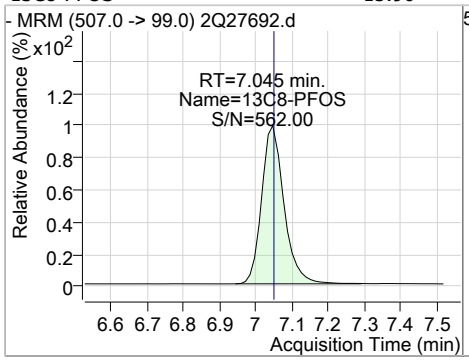
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.01	36809				

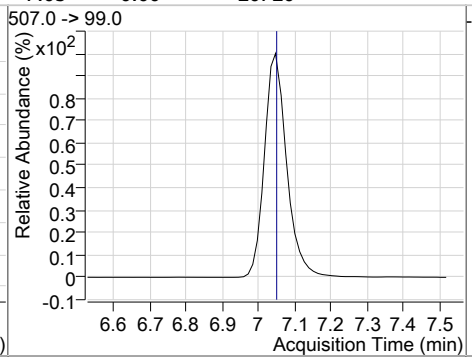


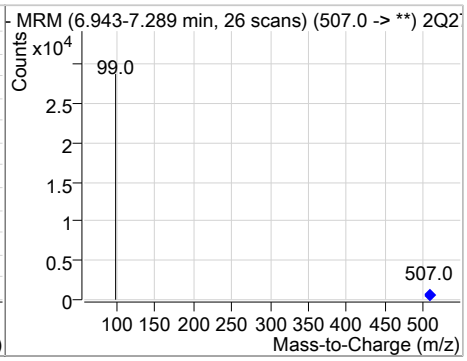




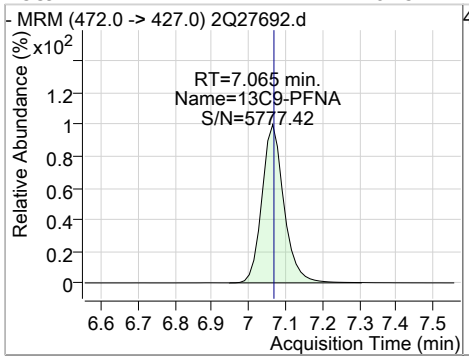
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	15.90	7.05	0.00	20720				

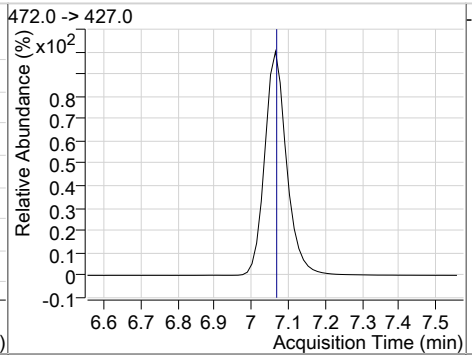


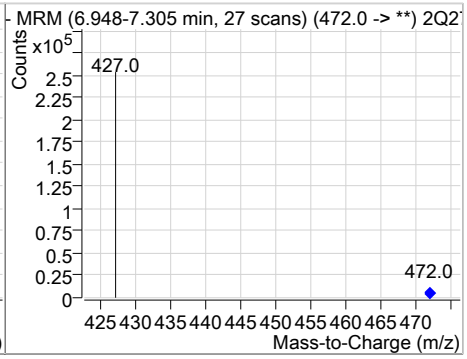




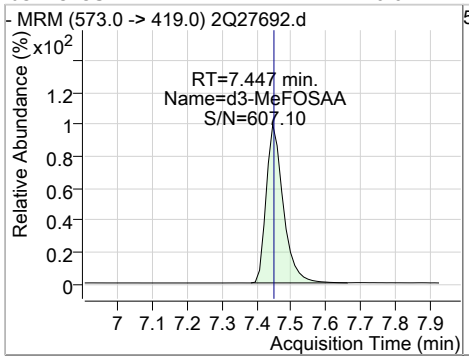
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.13	7.07	0.00	191966				

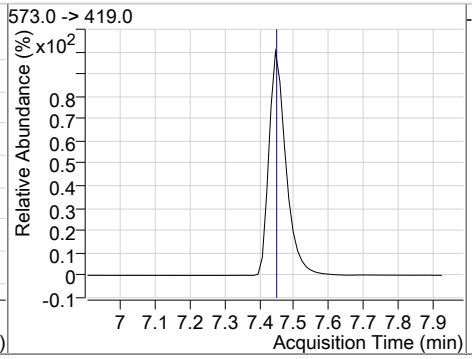


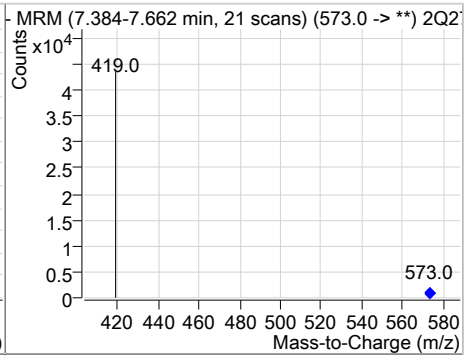




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	16.62	7.45	0.00	31853				

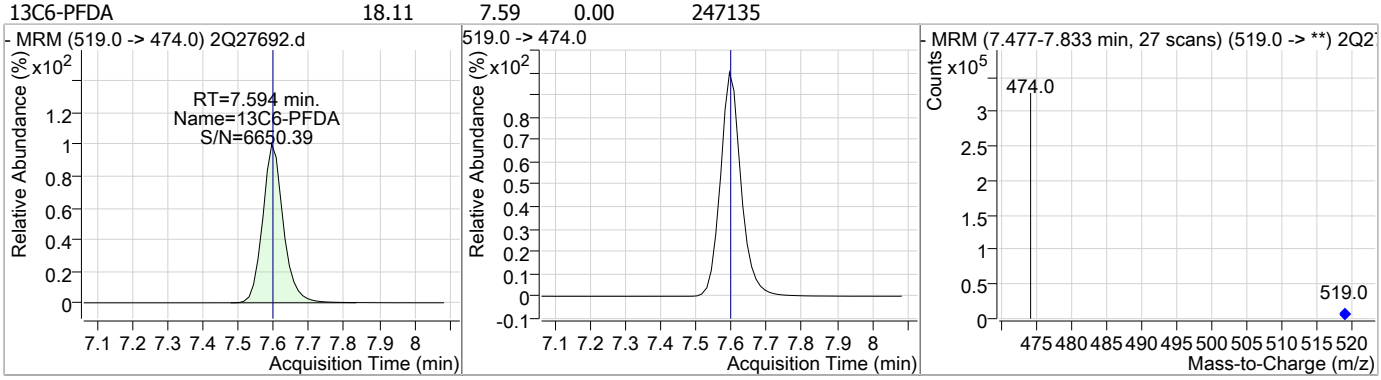




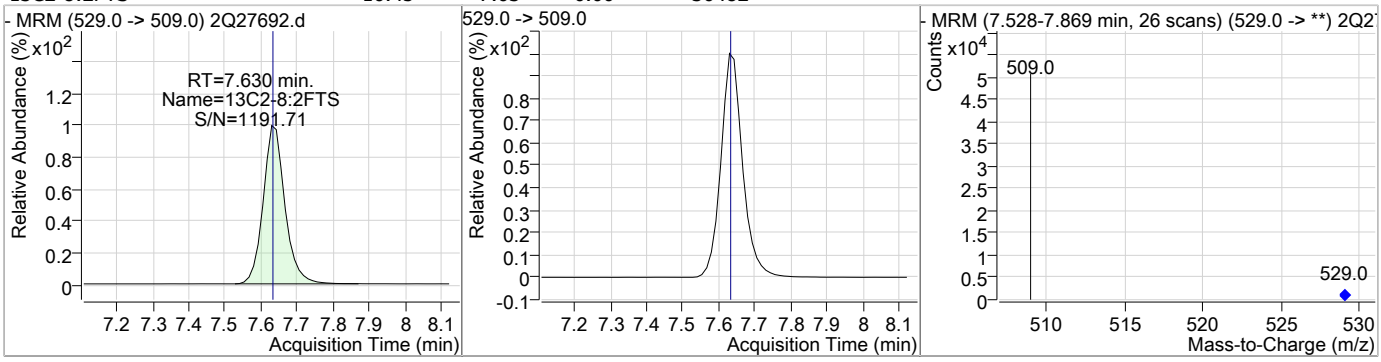


Perfluorinated Compounds by LC/MS/MS

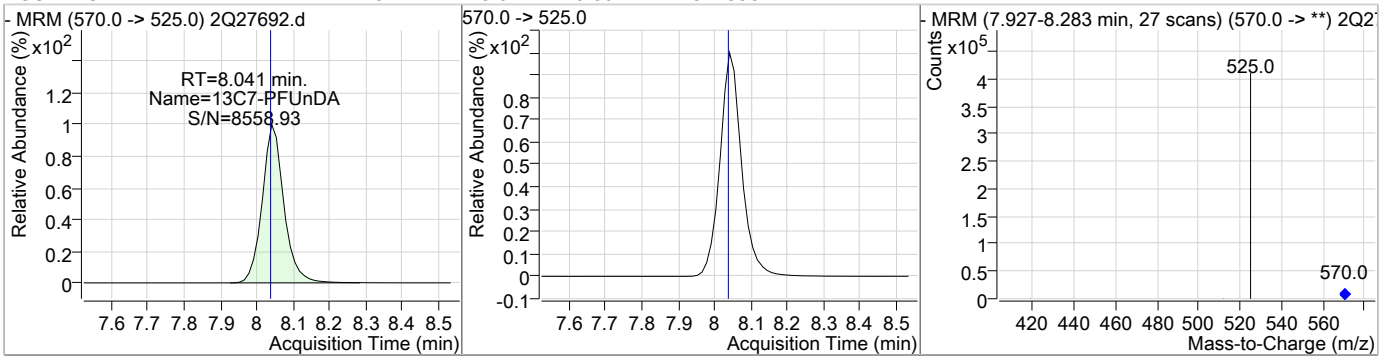
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.11	7.59	0.00	247135				



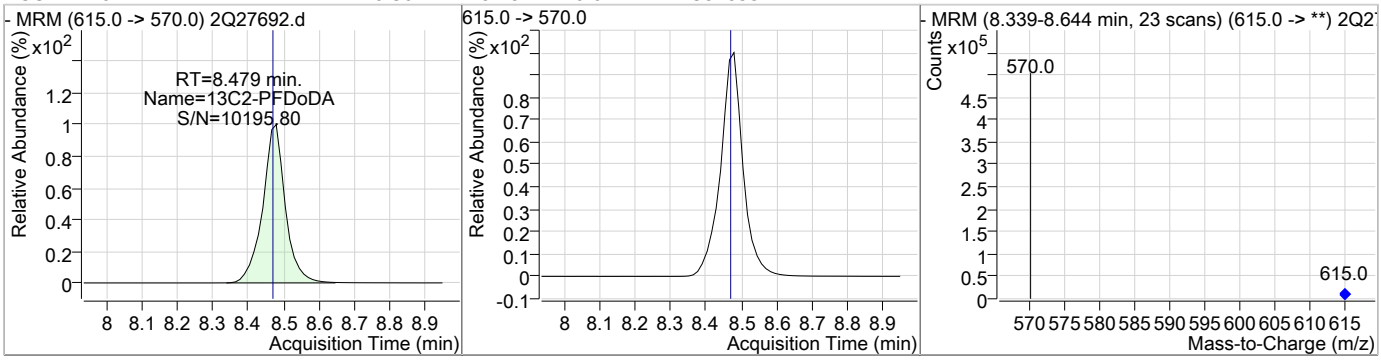
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.45	7.63	0.00	36482				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.41	8.04	0.00	311558				

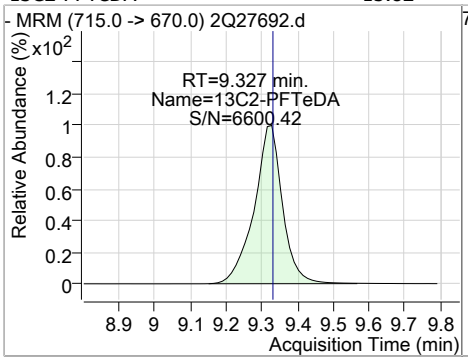


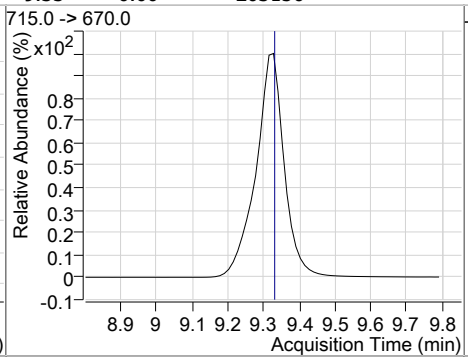
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.30	8.48	0.01	381855				

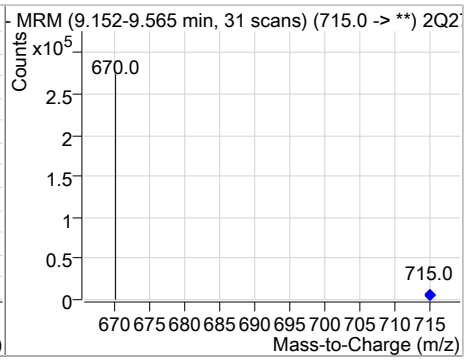


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.82	9.33	0.00	203156				







7.2.2

7

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1985.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 1:21:10 PM
Sample Name : op74233-mb
Vial : P3-B5
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,130,,,1.0,1,WATER

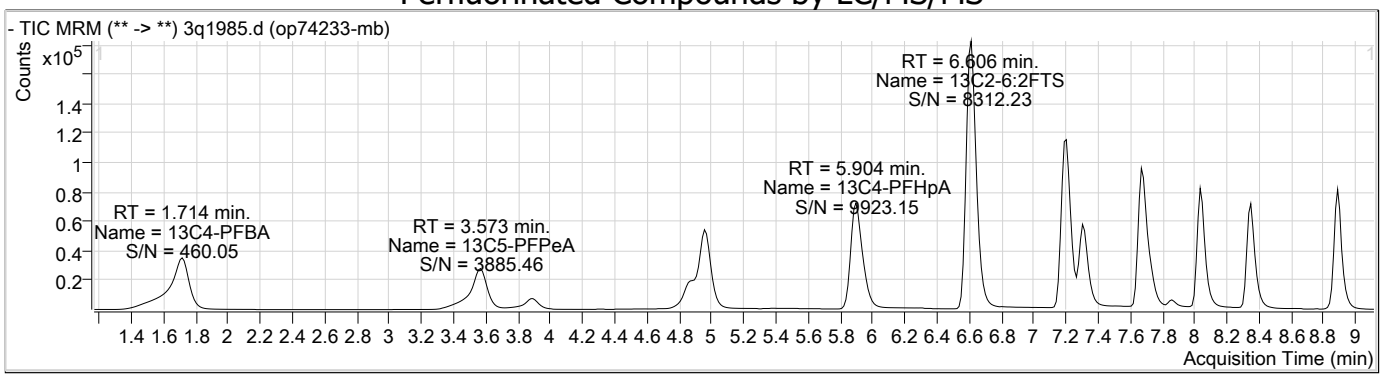
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.714	217.0 -> 172.0	318068	20.00	µg/L	0.013
M5-PFPeA	3.573	268.0 -> 223.0	208032	20.00	µg/L	0.013
M5-PFHxA	4.963	318.0 -> 273.0	283249	20.00	µg/L	0.000
M4-PFHpA	5.904	367.0 -> 322.0	325368	20.00	µg/L	0.013
M8-PFOA	6.621	421.0 -> 376.0	314246	20.00	µg/L	0.000
M9-PFNA	7.213	472.0 -> 427.0	303068	20.00	µg/L	0.000
M6-PFDA	7.678	519.0 -> 474.0	330741	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	294209	20.00	µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	264597	20.00	µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	278907	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	203258	20.00	µg/L	0.000
M3-PFBS	3.892	302.0 -> 99.0	48383	20.00	µg/L	0.013
M3-PFHxS	5.947	402.0 -> 99.0	49194	20.00	µg/L	0.000
M8-PFOS	7.196	507.0 -> 99.0	68600	20.00	µg/L	0.000
M2-4:2FTS	4.858	329.0 -> 309.0	85498	20.00	µg/L	0.000
M2-6:2FTS	6.606	429.0 -> 409.0	84397	20.00	µg/L	0.013
M2-8:2FTS	7.701	529.0 -> 509.0	49243	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	38764	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
13C2-PFOA	6.622	415.0 -> 370.0	405989	20.00	µg/L	0.000
13C4-PFOS	7.198	503.0 -> 80.0	118878	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	85186	17.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%		
13C2-6:2FTS	6.606	429.0 -> 409.0	84391	18.47	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%		
13C2-8:2FTS	7.701	529.0 -> 509.0	49099	17.56	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C2-PFDoDA	8.352	615.0 -> 570.0	264659	13.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.7%		
13C2-PFTeDA	8.886	715.0 -> 670.0	278923	15.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.2%		
13C3-PFBS	3.892	302.0 -> 99.0	48255	19.13	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C3-PFHxS	5.947	402.0 -> 99.0	49128	19.44	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%		
13C4-PFBA	1.714	217.0 -> 172.0	313390	19.22	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%		
13C4-PFHpA	5.904	367.0 -> 322.0	324833	19.46	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.3%		
13C5-PFHxA	4.963	318.0 -> 273.0	282400	19.19	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C5-PFPeA	3.573	268.0 -> 223.0	207871	18.77	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.9%		
13C6-PFDA	7.678	519.0 -> 474.0	331410	19.90	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

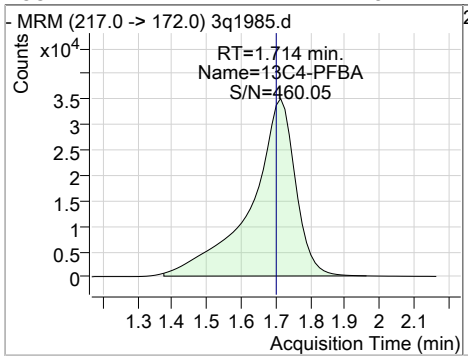
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%		
13C7-PFUnDA	8.039	570.0 -> 525.0	294222	15.87 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.4%		
13C8-FOSA	7.311	506.0 -> 78.0	203210	19.31 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C8-PFOA	6.621	421.0 -> 376.0	314176	19.86 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C8-PFOS	7.196	507.0 -> 99.0	69121	17.94 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.7%		
13C9-PFNA	7.213	472.0 -> 427.0	302515	20.24 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
d3-MeFOSAA	7.735	573.0 -> 419.0	38806	16.35 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.7%		
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%		
M2-PFOA	6.622	415.0 -> 370.0	405989	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.198	503.0 -> 80.0	118878	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	-	584.0 -> 419.0	-	N.D.		
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	-	570.0 -> 419.0	-	N.D.		
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	-	313.0 -> 269.0	-	N.D.		
PFHxS	-	399.0 -> 80.0	-	N.D.		
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	-	413.0 -> 369.0	-	N.D.		
PFOS	7.048	499.0 -> 80.0	1101	0.35 µg/L	m	91
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

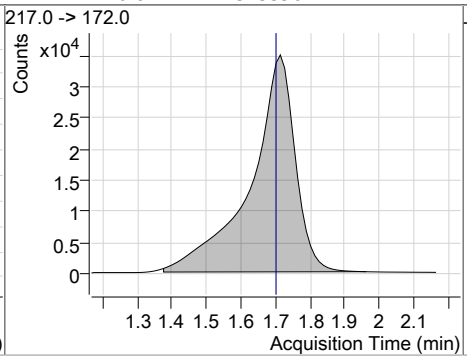
 # = Qualifier out of range, m = manually integrated, + = Area summed

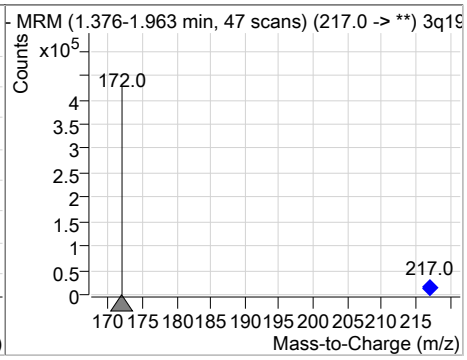
Perfluorinated Compounds by LC/MS/MS



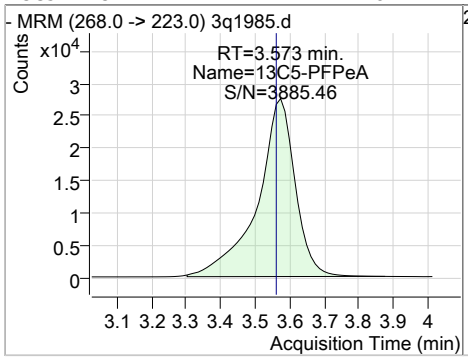
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.22	1.71	0.01	313390				

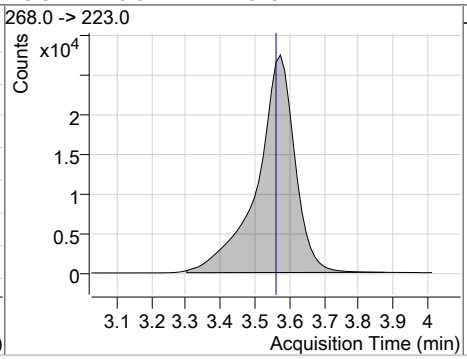


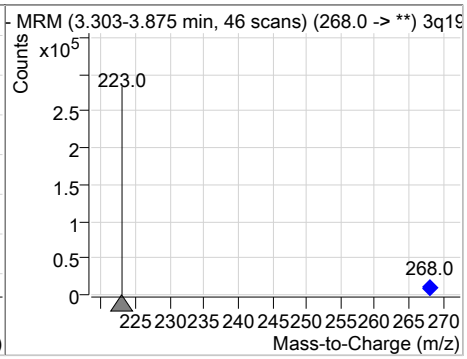




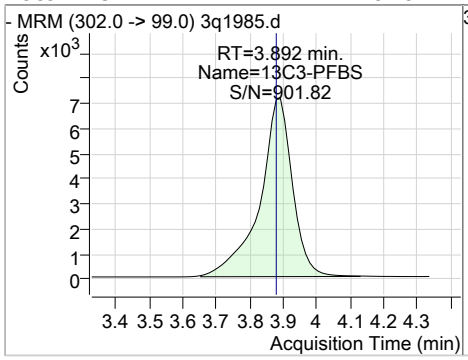
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.77	3.57	0.01	207871				

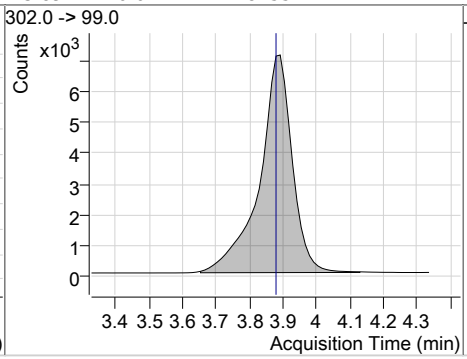


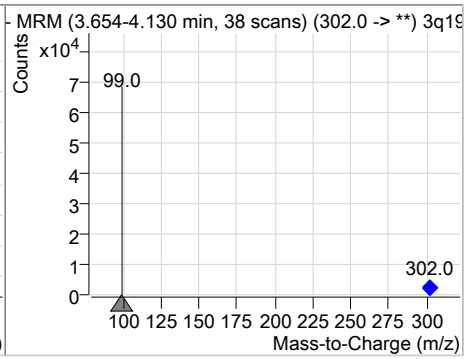




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.13	3.89	0.01	48255				

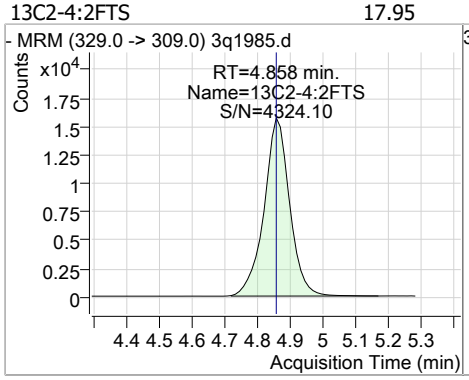


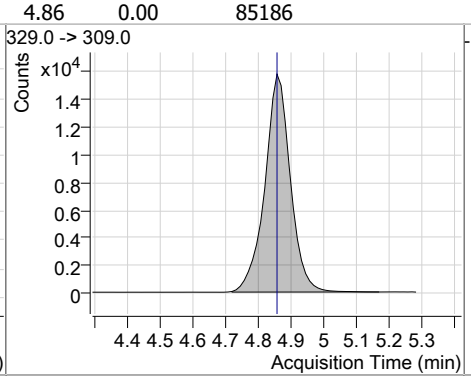


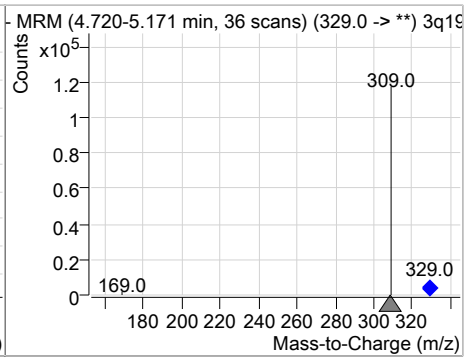


Perfluorinated Compounds by LC/MS/MS

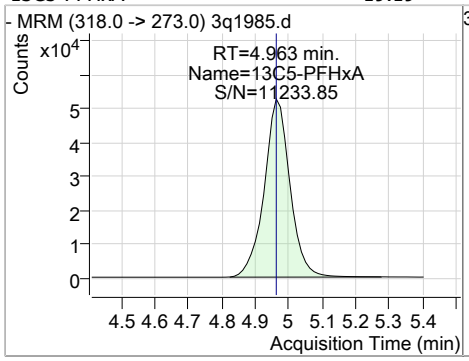
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.95	4.86	0.00	85186				

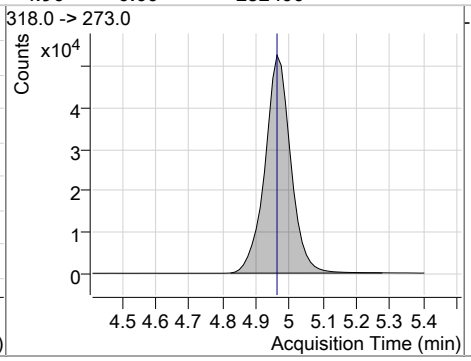


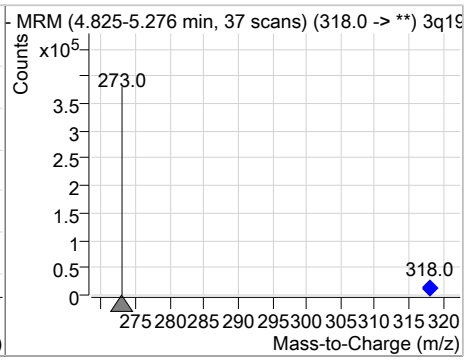




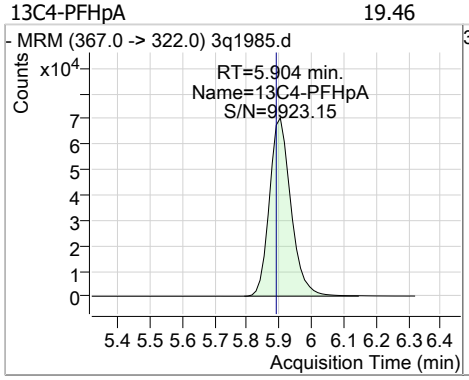
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.19	4.96	0.00	282400				

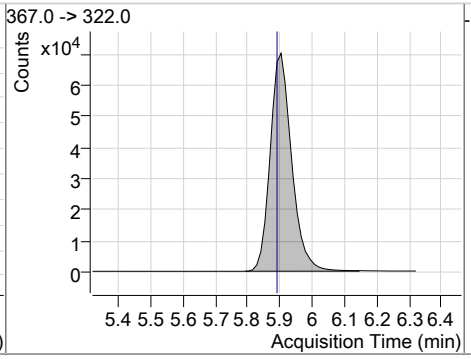


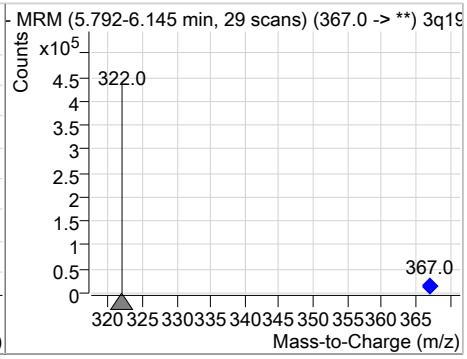




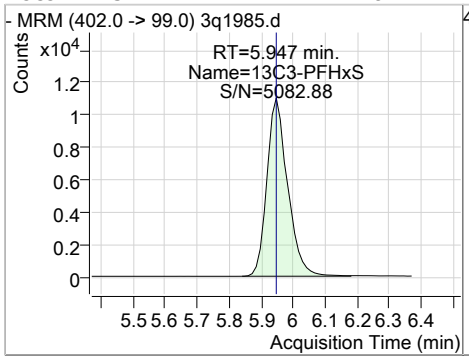
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.46	5.90	0.01	324833				

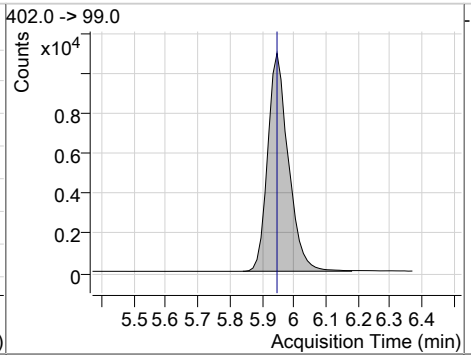


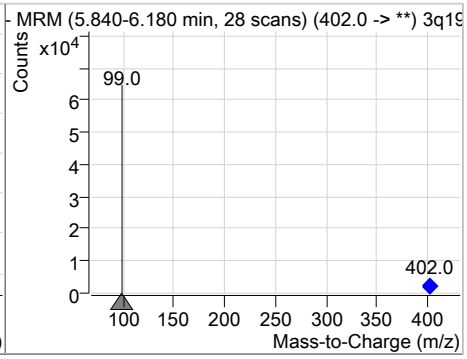




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.44	5.95	0.00	49128				

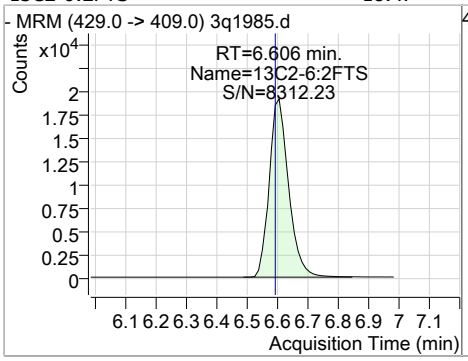


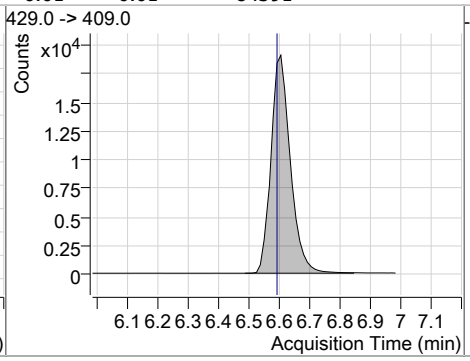


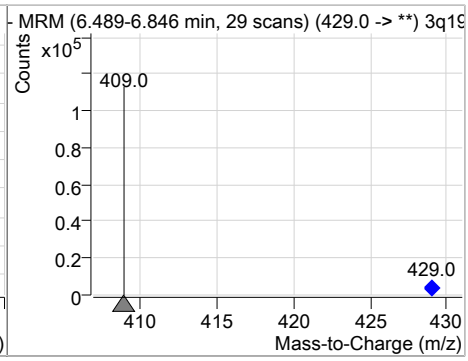


Perfluorinated Compounds by LC/MS/MS

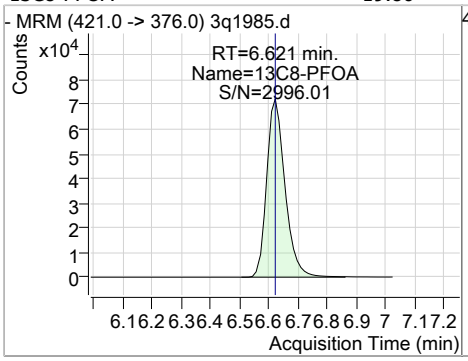
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.47	6.61	0.01	84391				

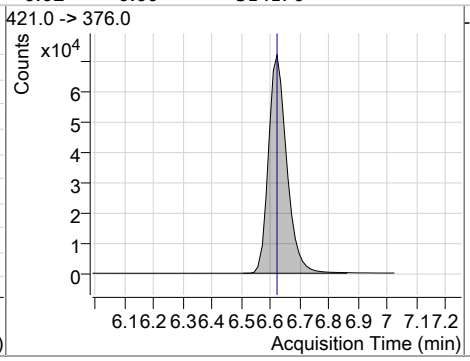


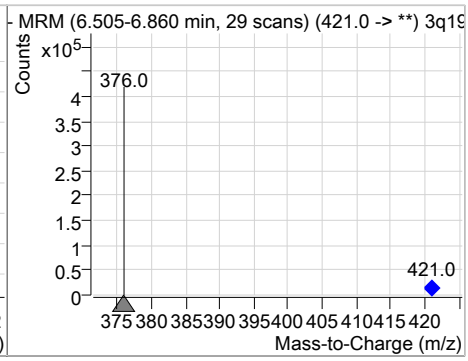




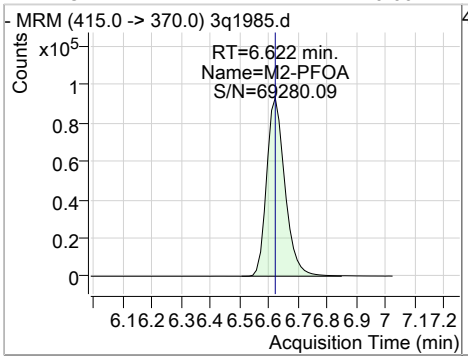
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.86	6.62	0.00	314176				

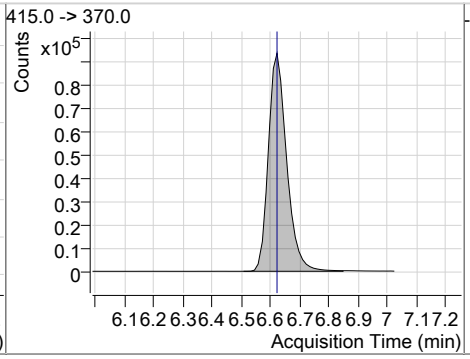


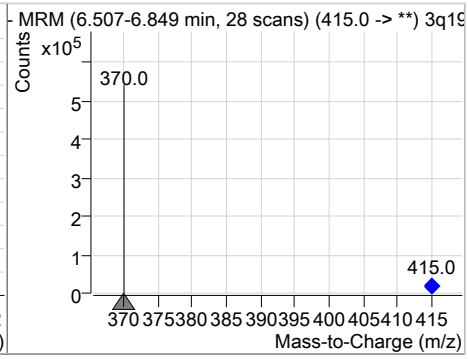




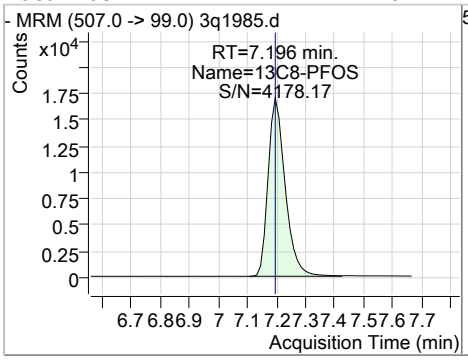
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.62	0.00	405989				

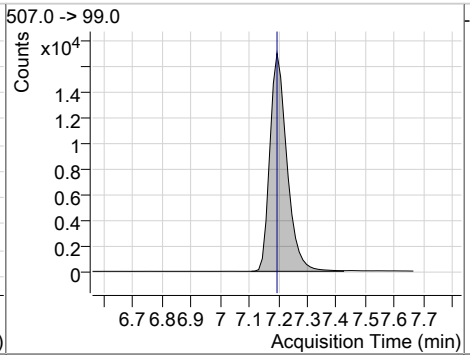


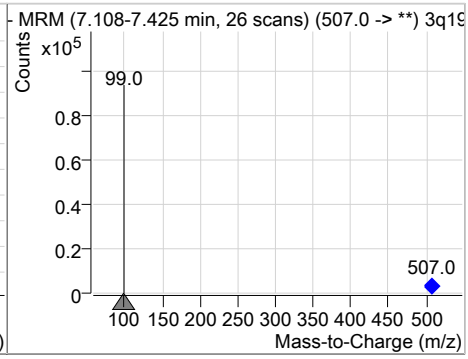




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.94	7.20	0.00	69121				

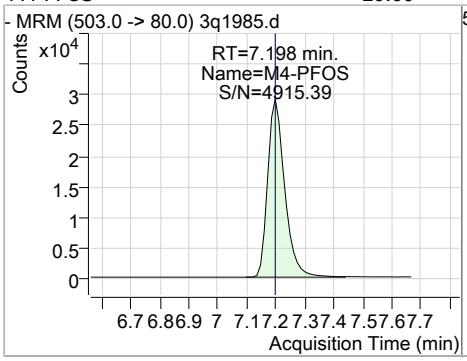


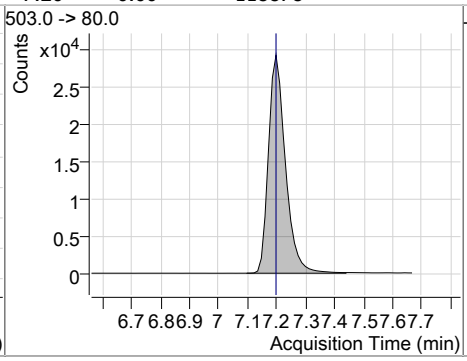


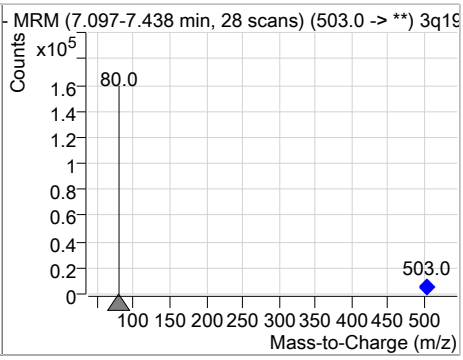


Perfluorinated Compounds by LC/MS/MS

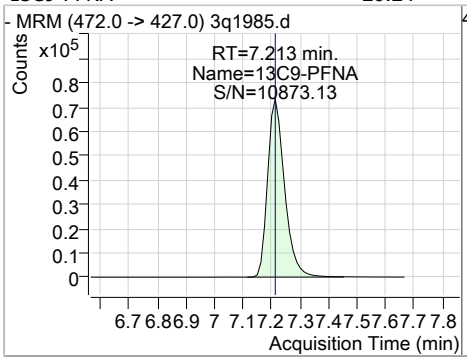
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	118878				

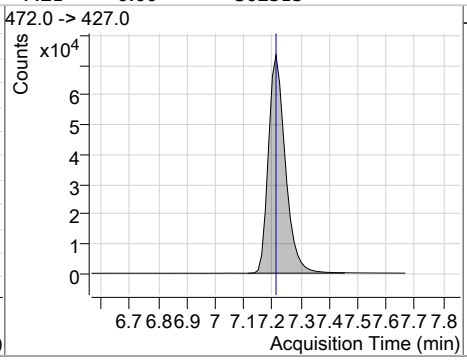


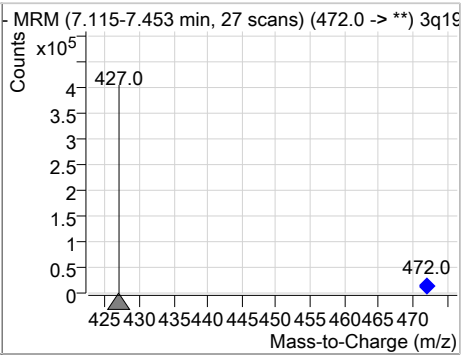




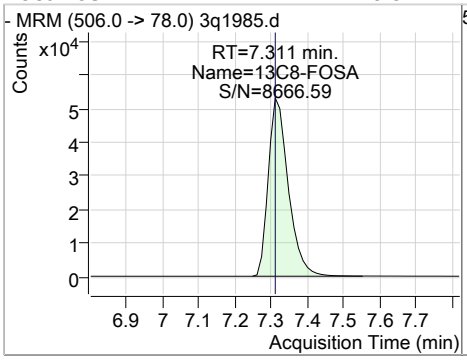
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.24	7.21	0.00	302515				

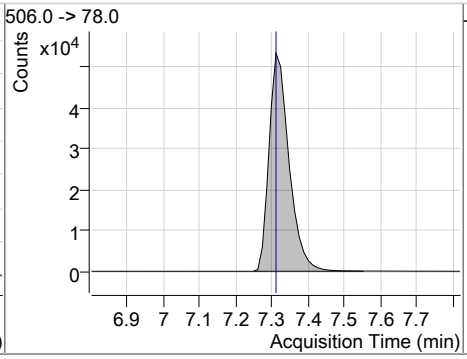


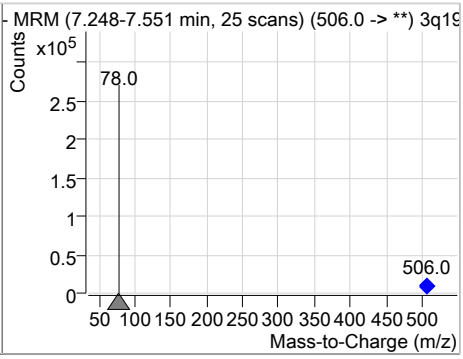




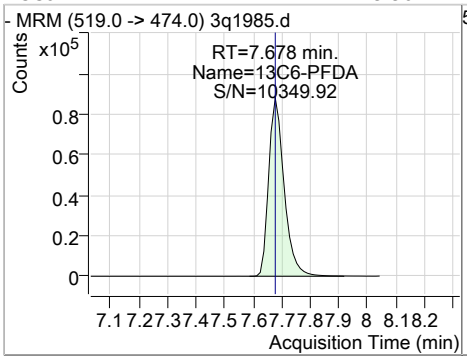
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.31	7.31	0.00	203210				

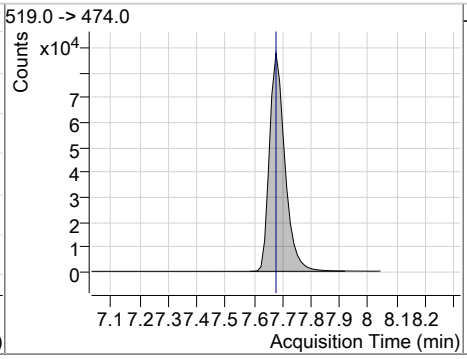


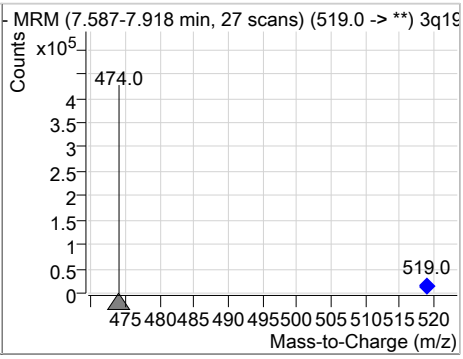




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.90	7.68	0.00	331410				

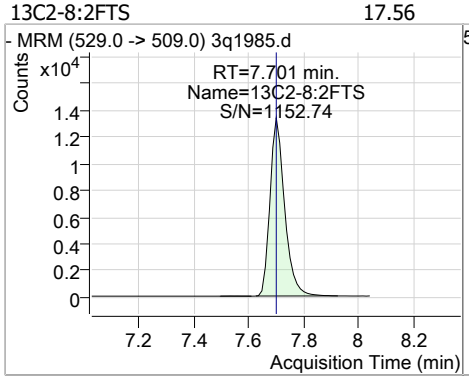


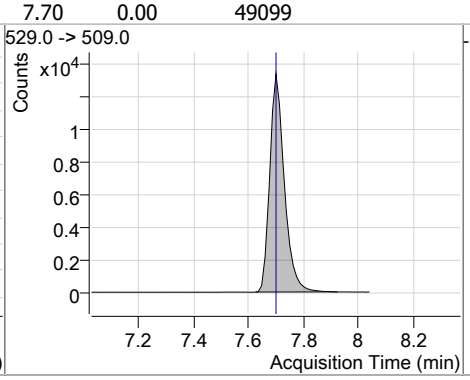


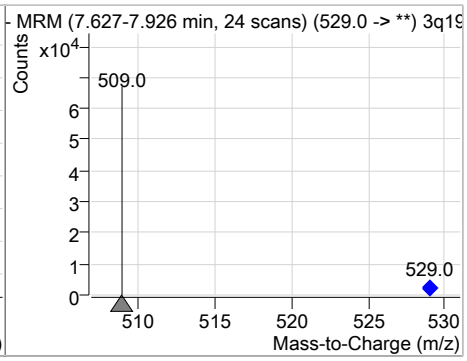


Perfluorinated Compounds by LC/MS/MS

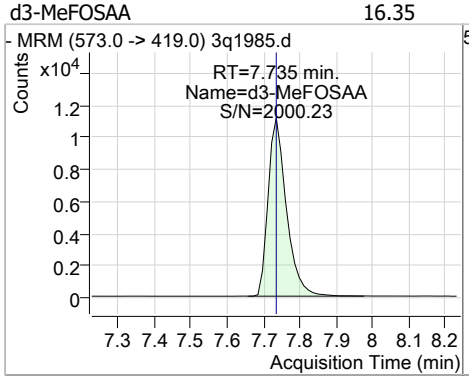
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.56	7.70	0.00	49099				

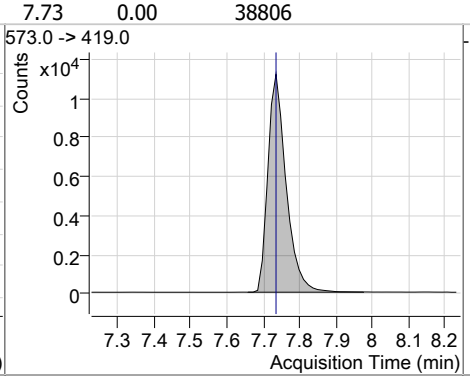


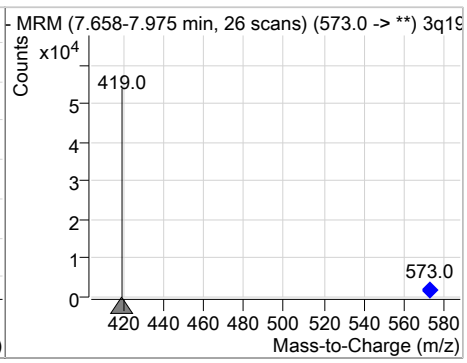




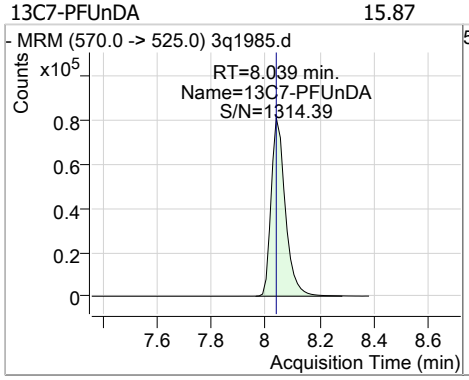
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	16.35	7.73	0.00	38806				

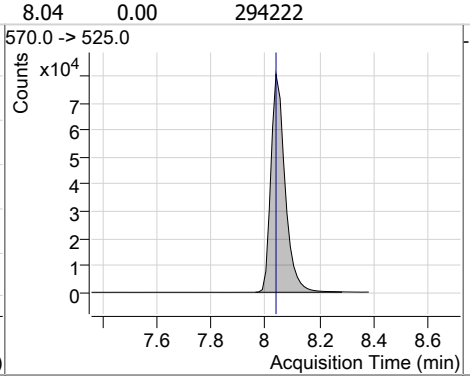


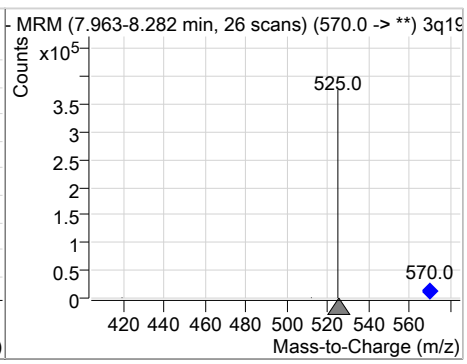




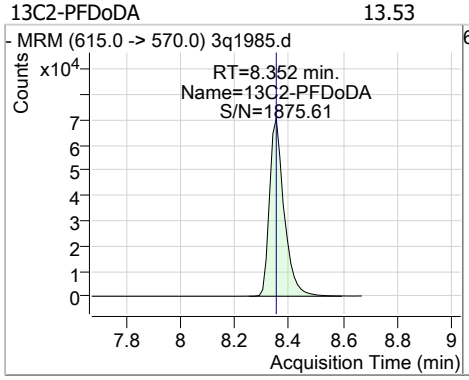
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.87	8.04	0.00	294222				

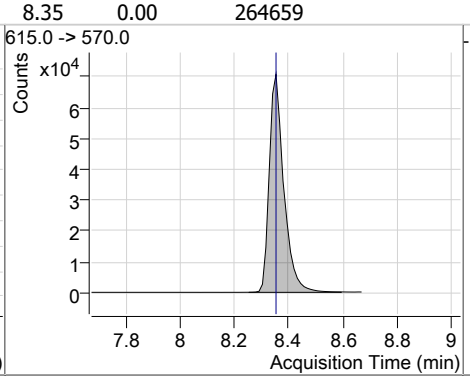


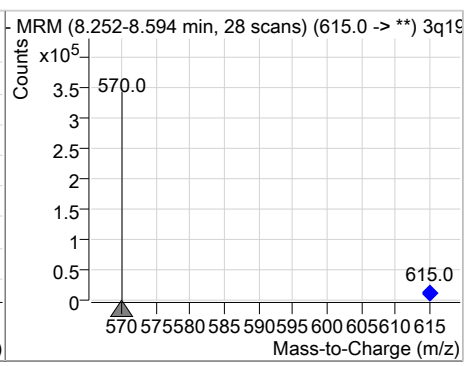




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.53	8.35	0.00	264659				

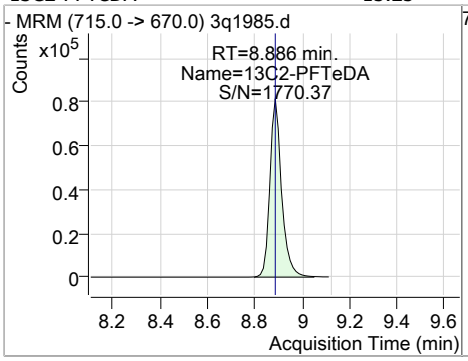


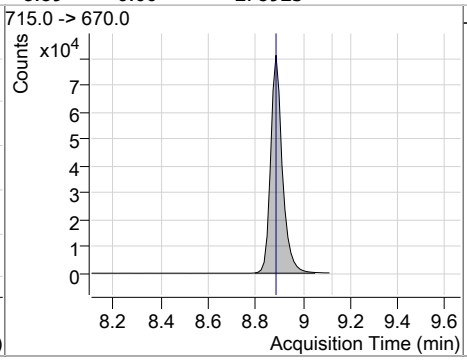


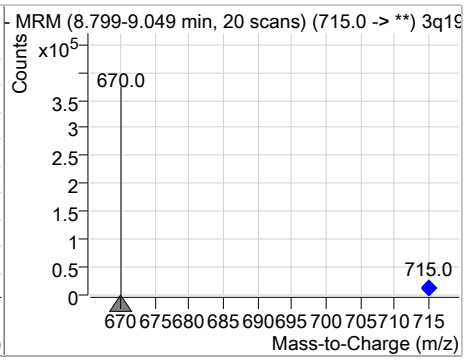


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.25	8.89	0.00	278923				







Manual Integration Approval Summary

Sample Number:	OP74233-MB	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	3Q1985.D	**Analyst approved:**	03/22/19 11:47 Nancy Saunders
Injection Time:	03/21/19 13:21	**Supervisor approved:**	03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27626.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 8:48:48 AM
Sample Name : iblk
Vial : Vial 1
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op73501,S2Q441,250,,,1.0,1,water

Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.409	415.0 -> 370.0	320292	20.00	µg/L	-0.008
13C4-PFOS	7.023	503.0 -> 80.0	50457	20.00	µg/L	0.006
M4-PFBA	1.852	217.0 -> 172.0	135558	20.00	µg/L	-0.013
M5-PFPeA	3.499	268.0 -> 223.0	112991	20.00	µg/L	0.007
M5-PFHxA	4.764	318.0 -> 273.0	159956	20.00	µg/L	0.001
M4-PFHpA	5.680	367.0 -> 322.0	227025	20.00	µg/L	-0.008
M8-PFOA	6.407	421.0 -> 376.0	230985	20.00	µg/L	-0.009
M9-PFNA	7.039	472.0 -> 427.0	237848	20.00	µg/L	-0.006
M6-PFDA	7.582	519.0 -> 474.0	315609	20.00	µg/L	0.007
M7-PFUnDA	8.029	570.0 -> 525.0	385589	20.00	µg/L	0.003
M2-PFDoDA	8.453	615.0 -> 570.0	408919	20.00	µg/L	0.003
M2-PFTeDA	9.302	715.0 -> 670.0	253839	20.00	µg/L	0.000
M8-FOSA	6.919	506.0 -> 78.0	99176	20.00	µg/L	-0.008
M3-PFBS	3.755	302.0 -> 99.0	19536	20.00	µg/L	0.000
M3-PFHxS	5.723	402.0 -> 99.0	21693	20.00	µg/L	0.001
M8-PFOS	7.020	507.0 -> 99.0	28239	20.00	µg/L	0.005
M2-4:2FTS	4.671	329.0 -> 309.0	60992	20.00	µg/L	0.003
M2-6:2FTS	6.403	429.0 -> 409.0	64583	20.00	µg/L	0.002
M2-8:2FTS	7.617	529.0 -> 509.0	42726	20.00	µg/L	0.007
M3-MeFOSAA	7.434	573.0 -> 419.0	38545	20.00	µg/L	0.004
M3-HFPO-DA	5.056	287.0 -> 169.0	184062	100.00	µg/L	0.001
System Monitoring Compounds						
13C2-4:2FTS	4.671	329.0 -> 309.0	60986	14.69	µg/L	0.003
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.5%		
13C2-6:2FTS	6.403	429.0 -> 409.0	64744	14.85	µg/L	0.002
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.3%		
13C2-8:2FTS	7.617	529.0 -> 509.0	42704	15.04	µg/L	0.007
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%		
13C2-PFDoDA	8.453	615.0 -> 570.0	408652	14.64	µg/L	0.003
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%		
13C2-PFTeDA	9.302	715.0 -> 670.0	253831	13.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.7%		
13C3-PFBS	3.755	302.0 -> 99.0	19551	16.15	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C3-PFHxS	5.723	402.0 -> 99.0	21658	15.90	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C4-PFBA	1.852	217.0 -> 172.0	135085	15.58	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%		
13C4-PFHpA	5.680	367.0 -> 322.0	226777	15.75	µg/L	-0.008
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.8%		
13C5-PFHxA	4.764	318.0 -> 273.0	159916	15.59	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.0%		
13C5-PFPeA	3.499	268.0 -> 223.0	112813	15.73	µg/L	0.007
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.7%		
13C6-PFDA	7.582	519.0 -> 474.0	315765	17.06	µg/L	0.007

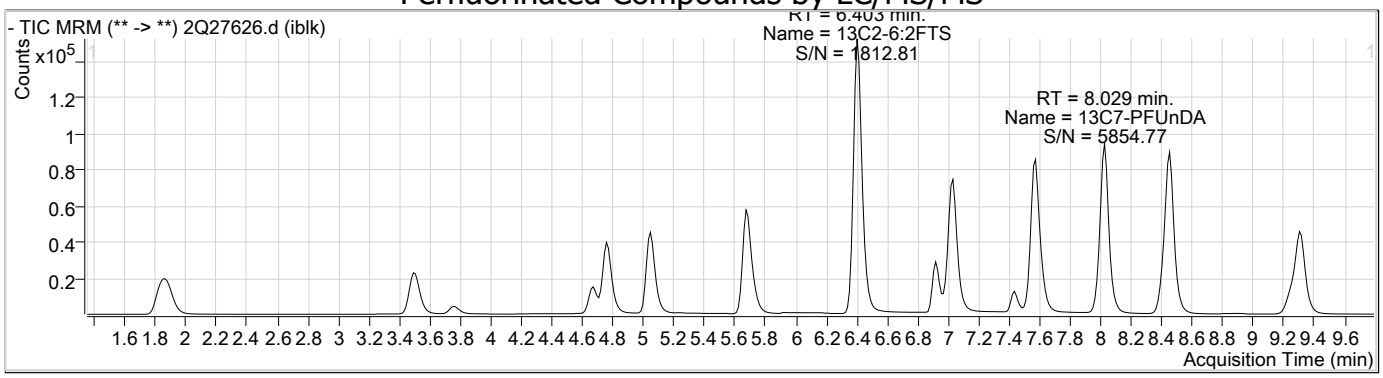
Perfluorinated Compounds by LC/MS/MS

Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.3%	
13C7-PFUnDA	8.029	570.0 -> 525.0	385271	16.08 µg/L	0.003
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.4%	
13C8-FOSA	6.919	506.0 -> 78.0	99162	17.41 µg/L	-0.008
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.1%	
13C8-PFOA	6.407	421.0 -> 376.0	230931	15.51 µg/L	-0.009
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.5%	
13C8-PFOS	7.020	507.0 -> 99.0	28220	17.06 µg/L	0.005
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.3%	
13C9-PFNA	7.039	472.0 -> 427.0	237743	16.59 µg/L	-0.006
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.9%	
d3-MeFOSAA	7.434	573.0 -> 419.0	38559	16.13 µg/L	0.004
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.6%	
M2-PFOA	6.409	415.0 -> 370.0	320354	19.99 µg/L	-0.008
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
M4-PFOS	7.023	503.0 -> 80.0	49918	19.78 µg/L	0.006
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C3-HFPO-DA	5.056	287.0 -> 169.0	184062	90.61 µg/L	0.001
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 90.6%	

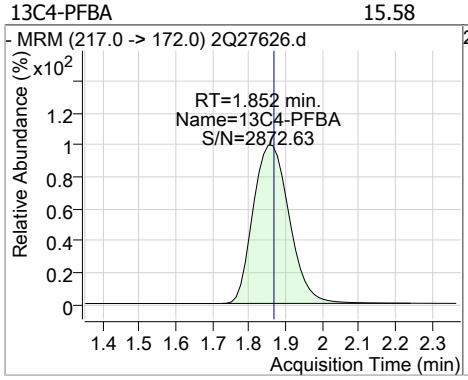
Target Compounds					QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

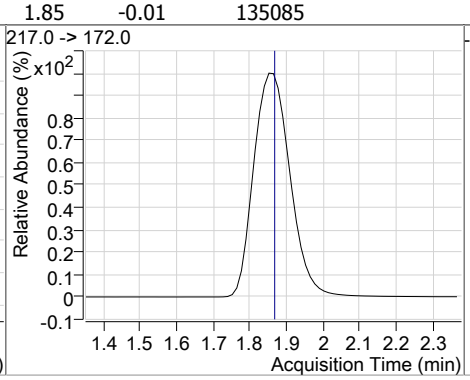
 # = Qualifier out of range, m = manually integrated, + = Area summed

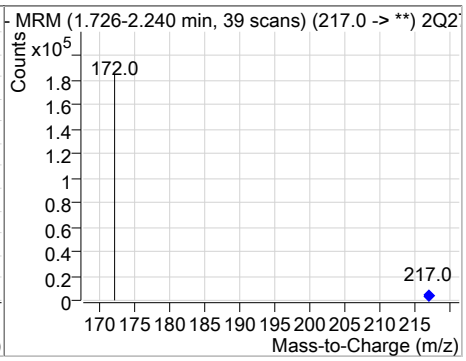
Perfluorinated Compounds by LC/MS/MS



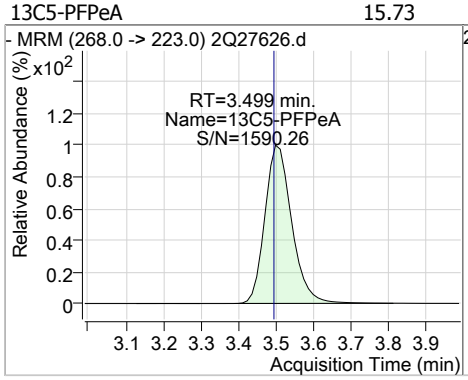
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.58	1.85	-0.01	135085				

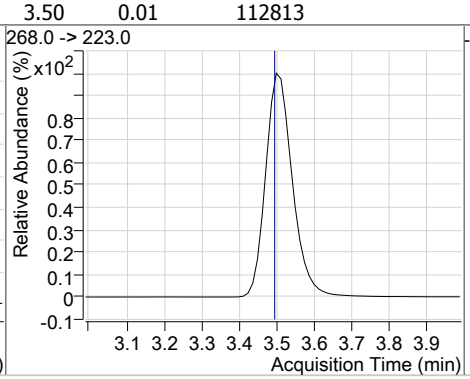


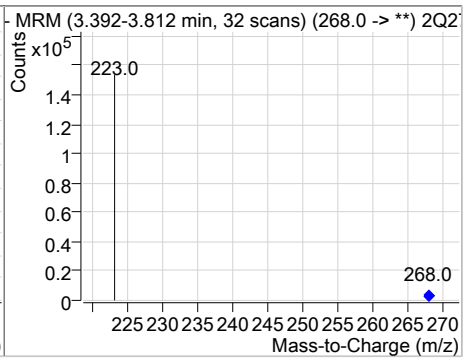




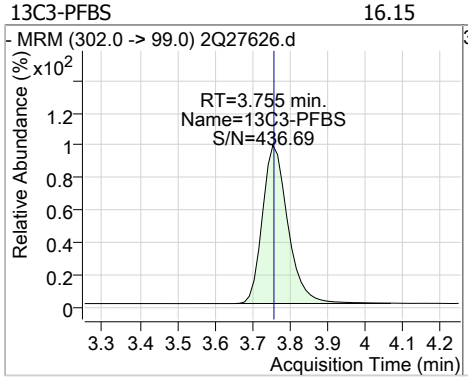
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.73	3.50	0.01	112813				

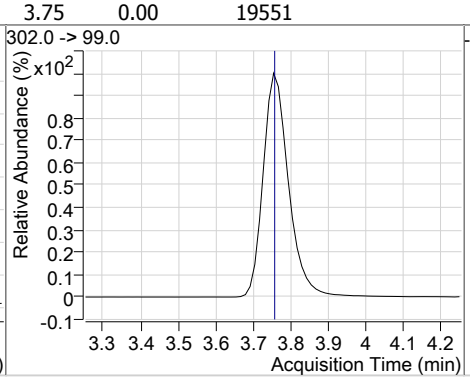


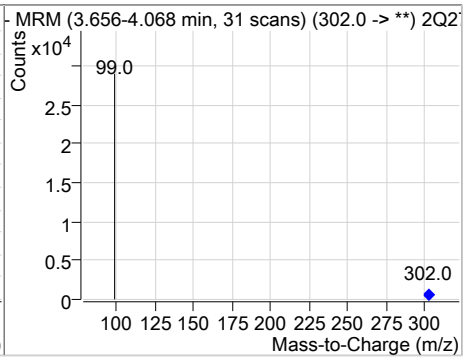




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.15	3.75	0.00	19551				

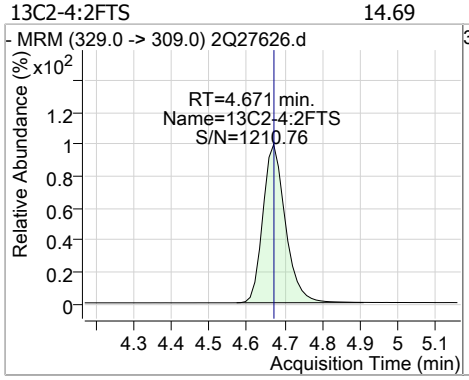


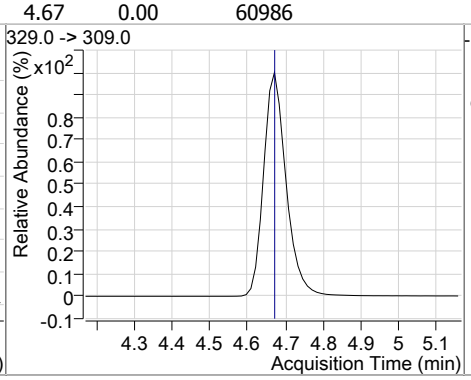


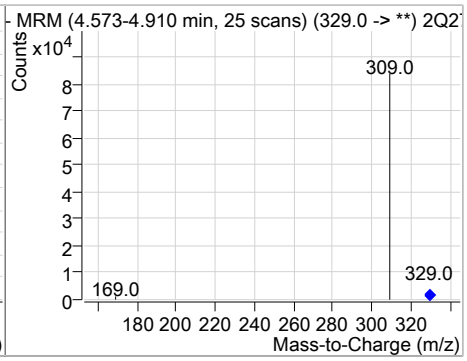


Perfluorinated Compounds by LC/MS/MS

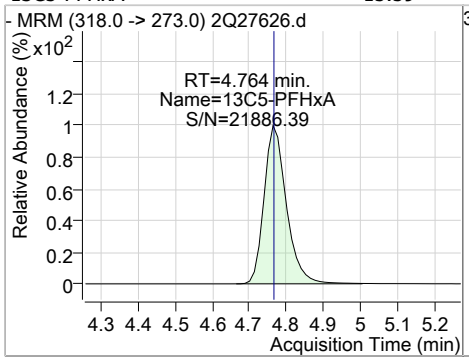
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.69	4.67	0.00	60986				

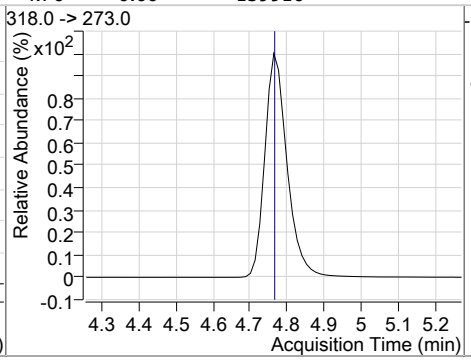


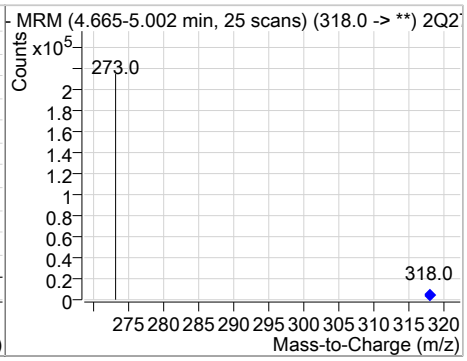




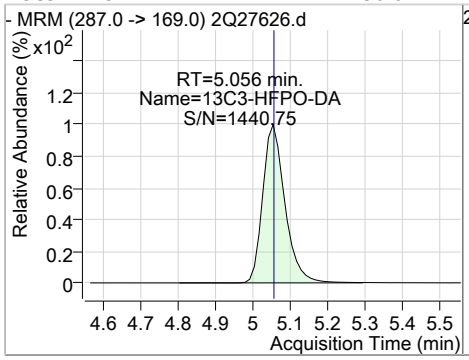
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.59	4.76	0.00	159916				

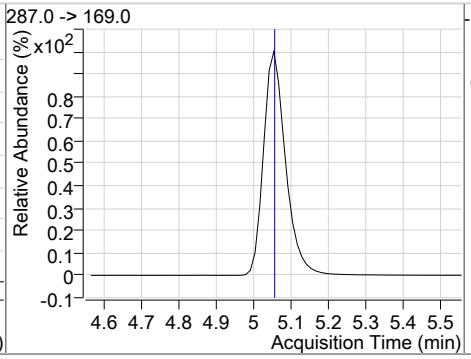


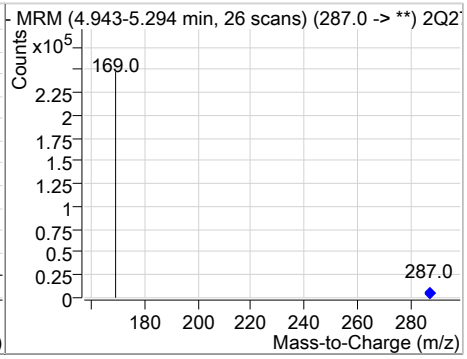




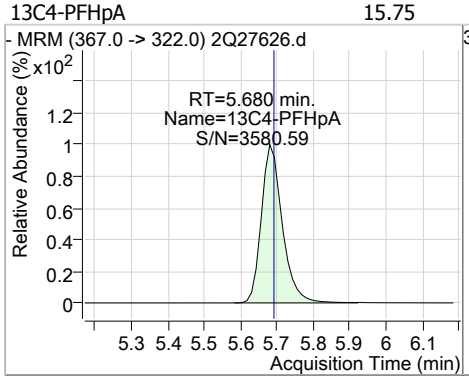
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	90.61	5.06	0.00	184062				

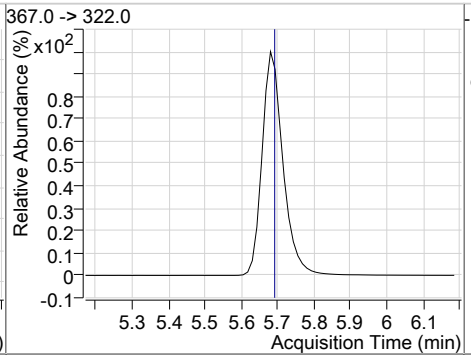


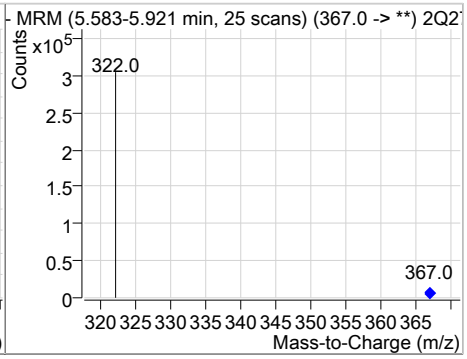




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.75	5.68	-0.01	226777				

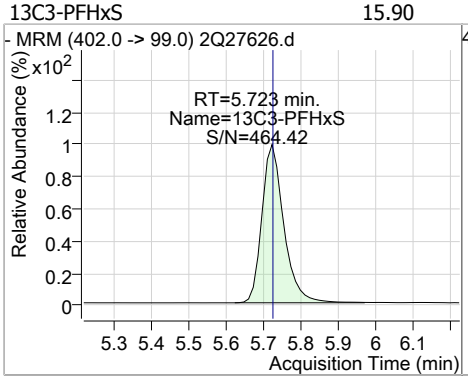


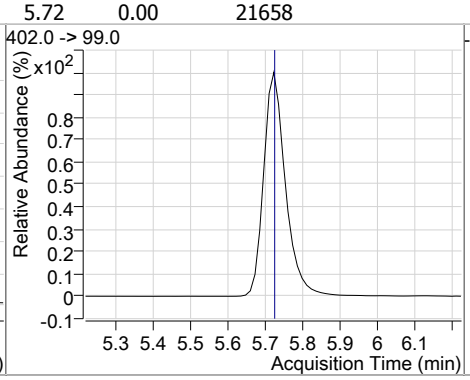


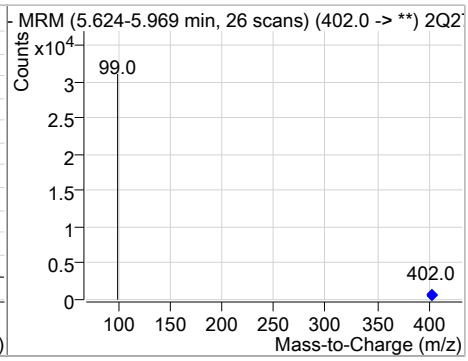


Perfluorinated Compounds by LC/MS/MS

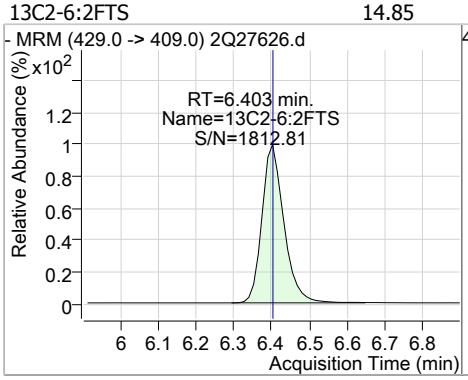
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.90	5.72	0.00	21658				

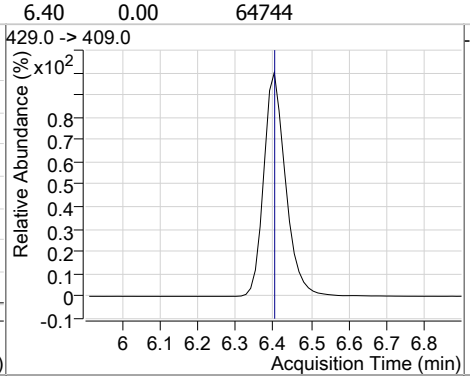


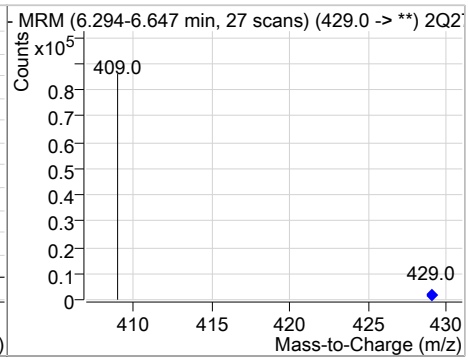




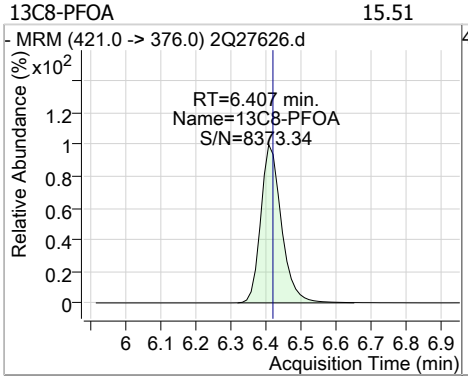
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	14.85	6.40	0.00	64744				

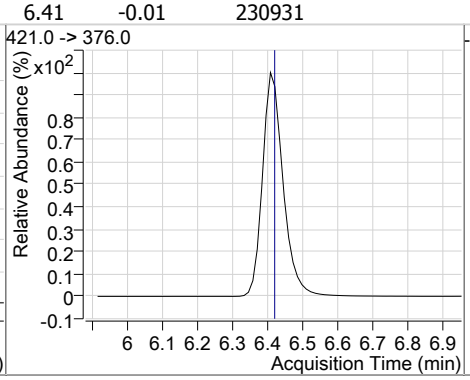


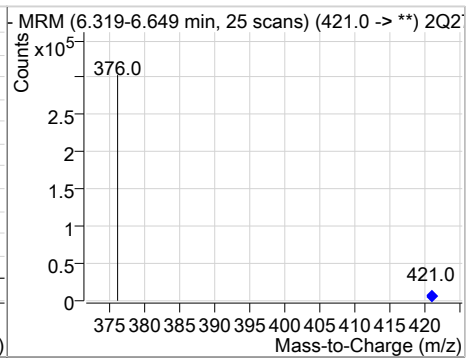




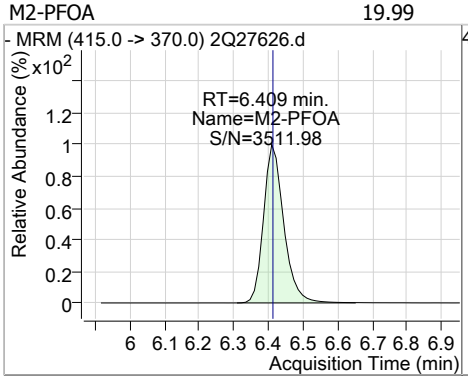
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	15.51	6.41	-0.01	230931				

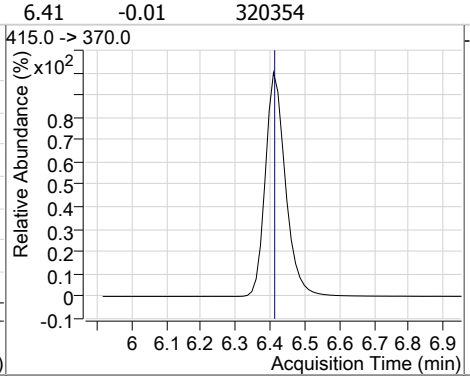


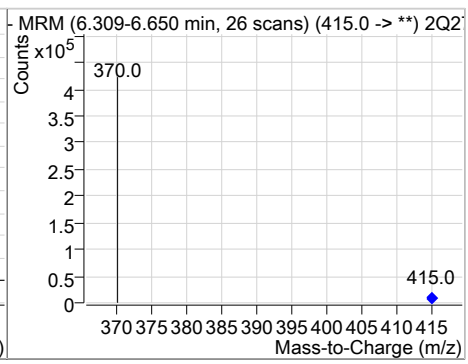




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.41	-0.01	320354				

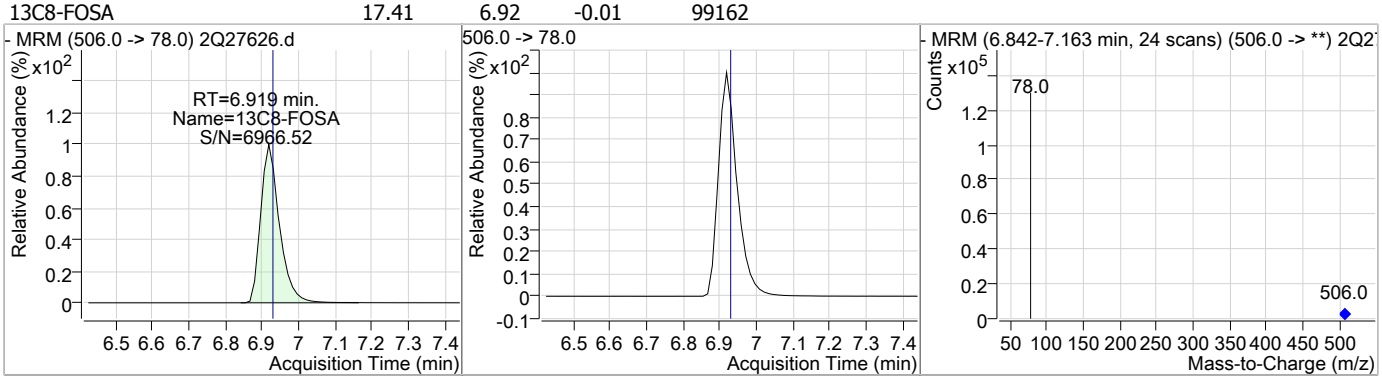




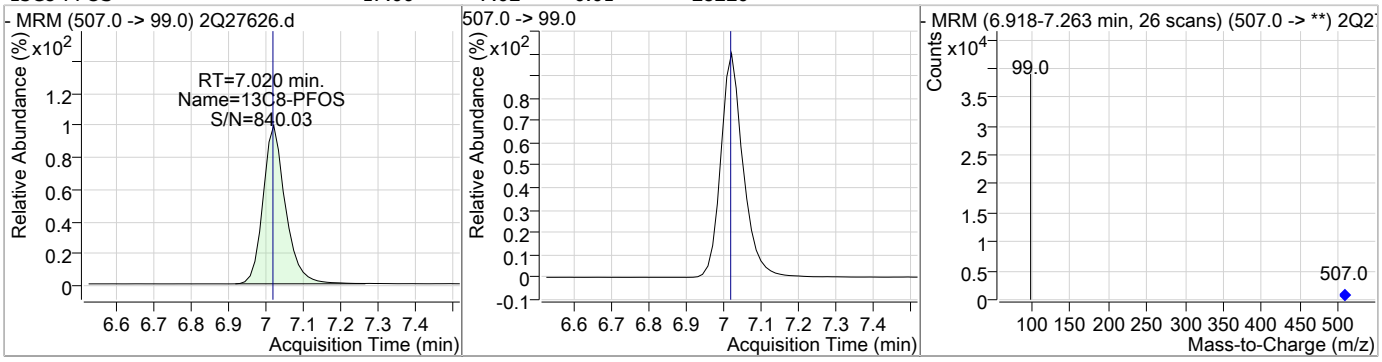


Perfluorinated Compounds by LC/MS/MS

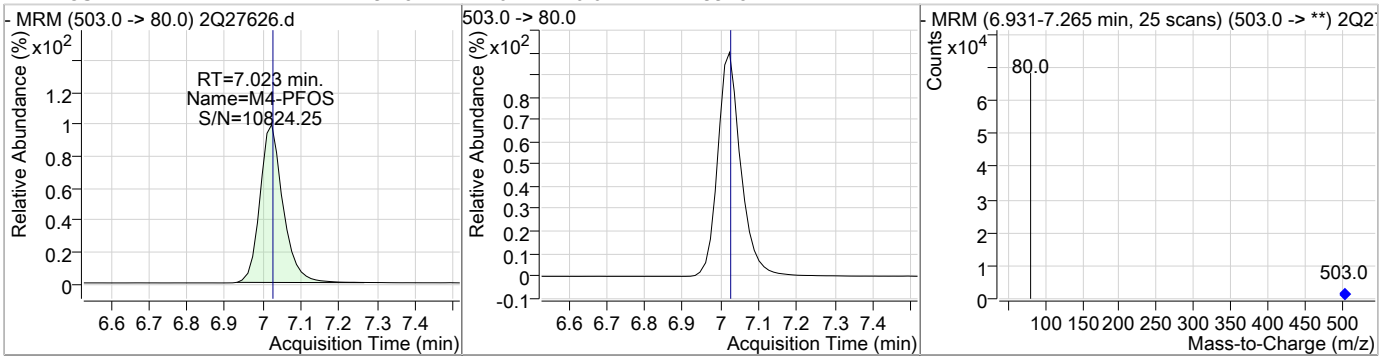
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.41	6.92	-0.01	99162				



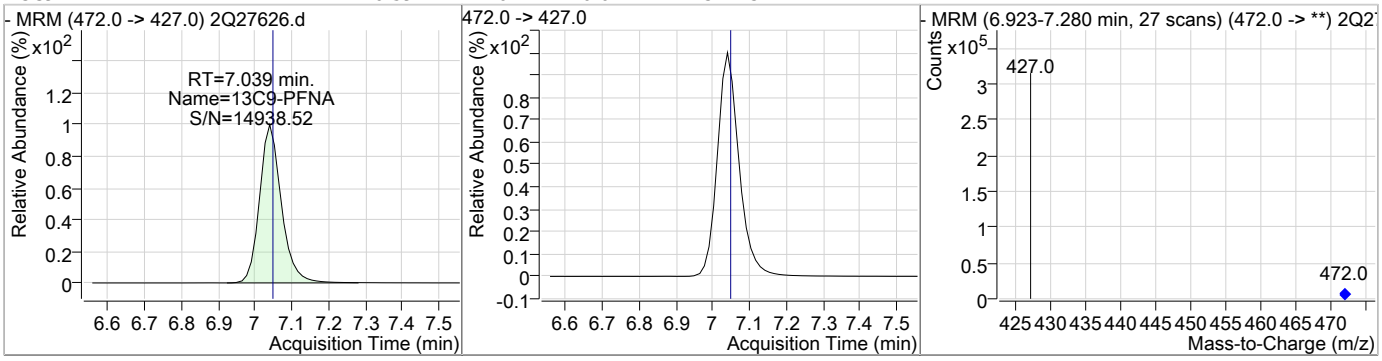
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.06	7.02	0.01	28220				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.78	7.02	0.01	49918				

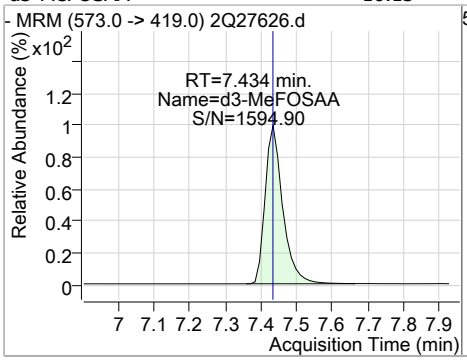


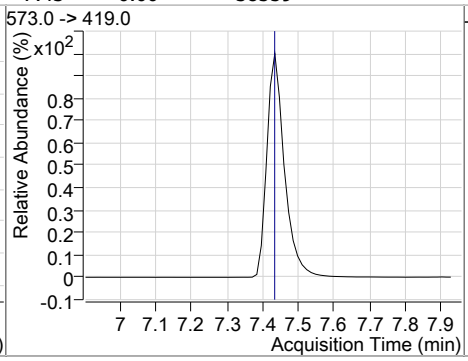
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.59	7.04	-0.01	237743				

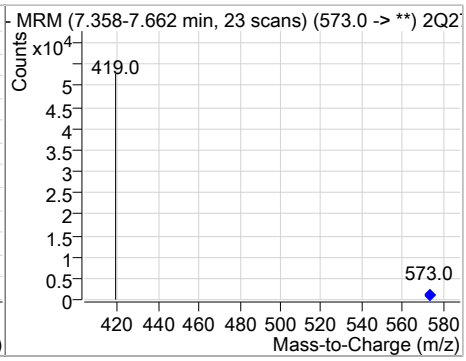


Perfluorinated Compounds by LC/MS/MS

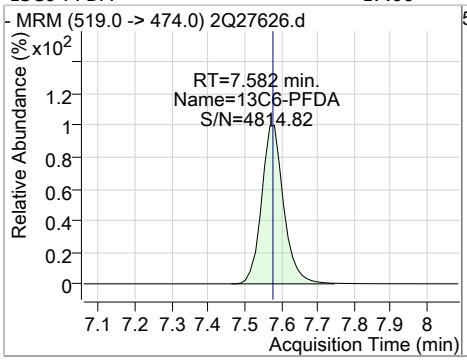
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	16.13	7.43	0.00	38559				

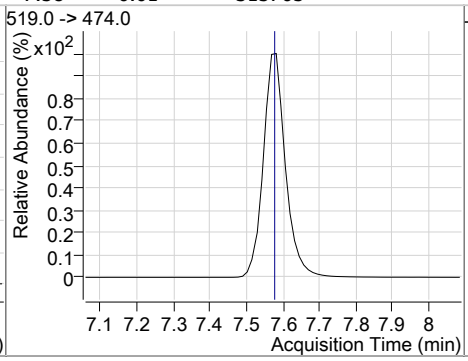


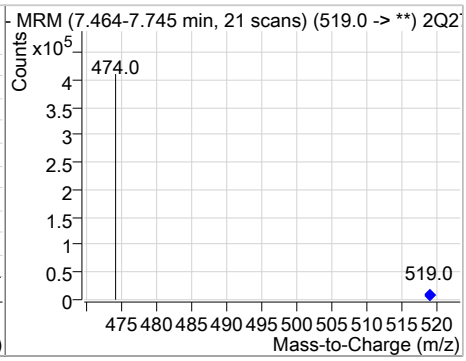




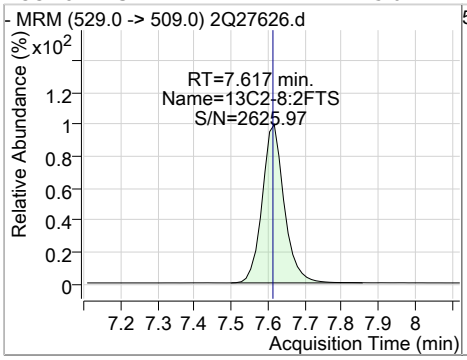
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.06	7.58	0.01	315765				

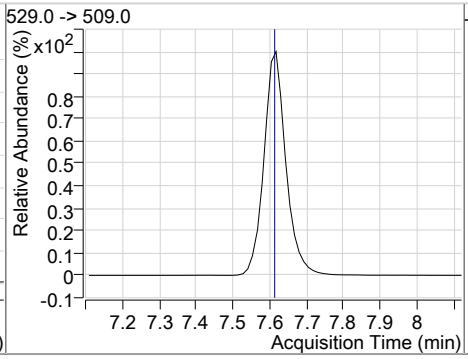


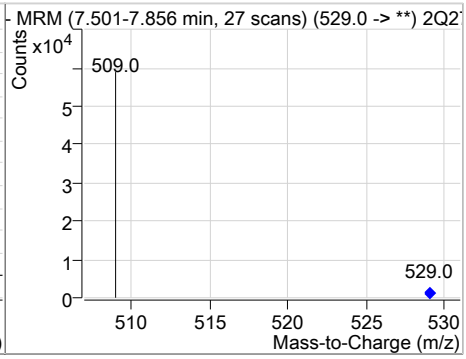




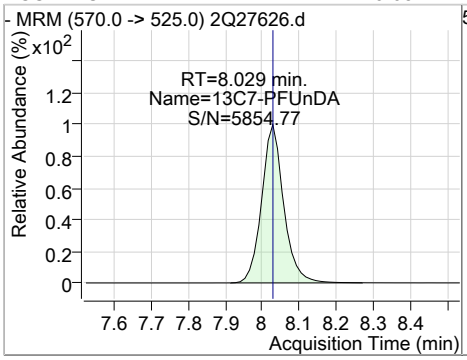
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.04	7.62	0.01	42704				

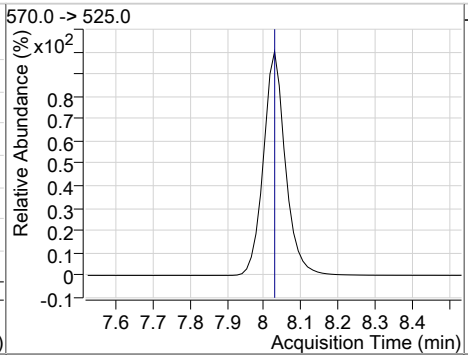


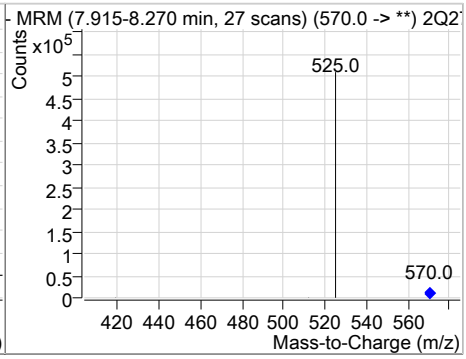




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.08	8.03	0.00	385271				

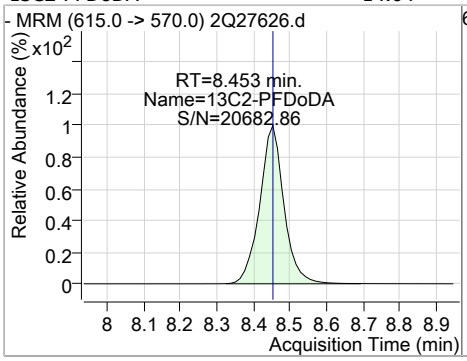


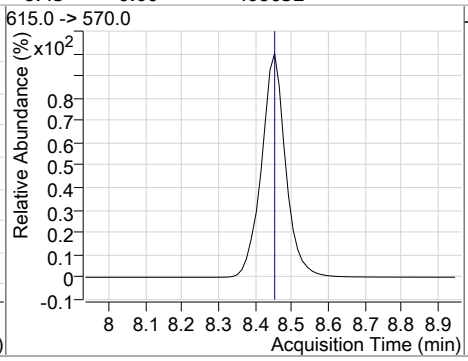


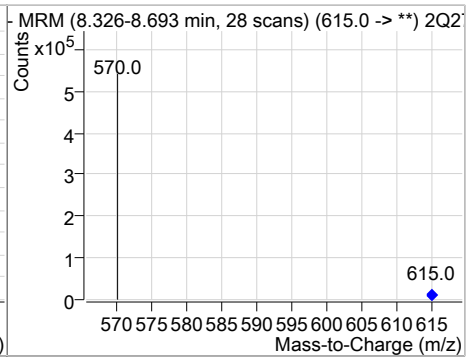


Perfluorinated Compounds by LC/MS/MS

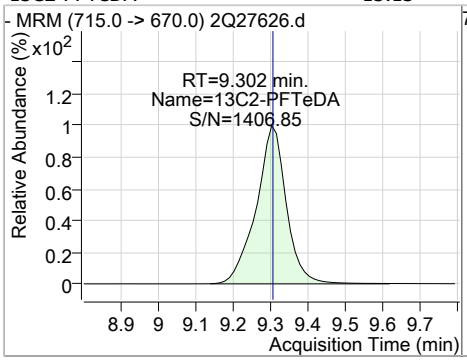
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.64	8.45	0.00	408652				

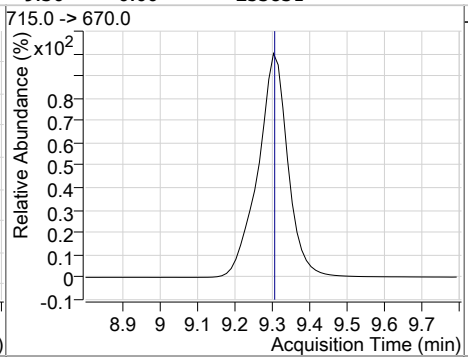


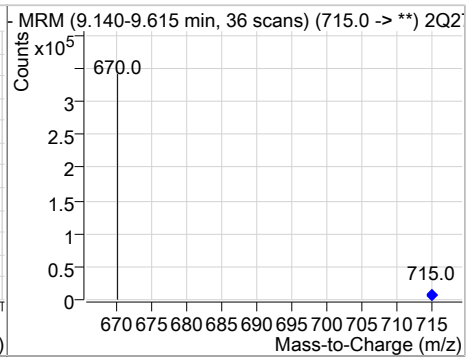




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	13.13	9.30	0.00	253831				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27675.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 10:26:34 AM
Sample Name : IBLK
Vial : Vial 1
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

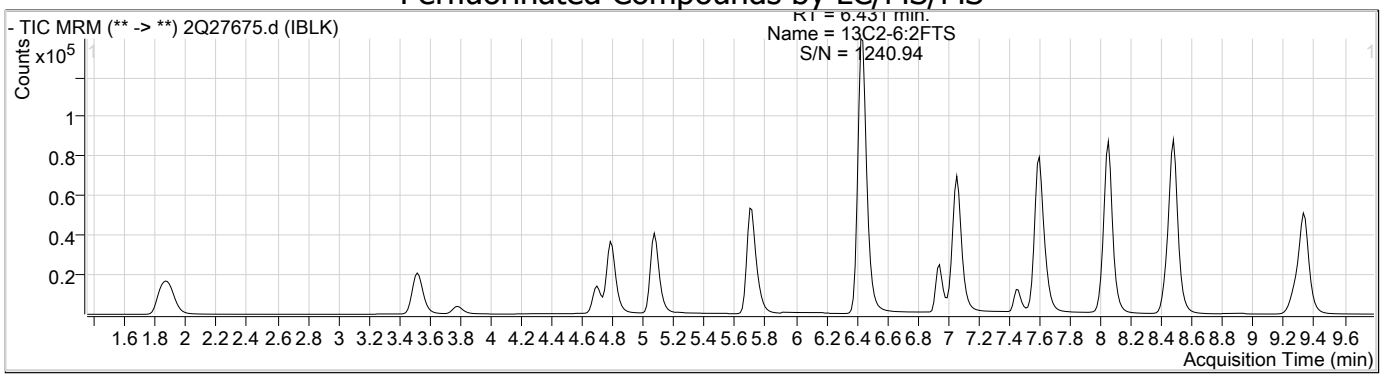
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	302327	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	46604	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	122039	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	105367	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	150318	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	217289	20.00	µg/L	0.000
M8-PFOA	6.446	421.0 -> 376.0	222731	20.00	µg/L	0.013
M9-PFNA	7.065	472.0 -> 427.0	225305	20.00	µg/L	0.000
M6-PFDA	7.607	519.0 -> 474.0	293475	20.00	µg/L	0.013
M7-PFUnDA	8.054	570.0 -> 525.0	365096	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	408241	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	279499	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	86329	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	18683	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	20803	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	26772	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	58008	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	64471	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	43928	20.00	µg/L	0.013
M3-MeFOSAA	7.447	573.0 -> 419.0	40036	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	166781	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	57820	19.44	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%		
13C2-6:2FTS	6.431	429.0 -> 409.0	64448	20.08	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C2-8:2FTS	7.642	529.0 -> 509.0	43894	19.80	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C2-PFDoDA	8.479	615.0 -> 570.0	408201	21.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.5%		
13C2-PFTeDA	9.327	715.0 -> 670.0	278273	21.67	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.4%		
13C3-PFBS	3.780	302.0 -> 99.0	18546	20.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C3-PFHxS	5.748	402.0 -> 99.0	20761	20.37	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C4-PFBA	1.865	217.0 -> 172.0	121505	20.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C4-PFHpA	5.705	367.0 -> 322.0	217100	20.99	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.0%		
13C5-PFHxA	4.789	318.0 -> 273.0	150006	20.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C5-PFPeA	3.524	268.0 -> 223.0	105367	20.73	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%		
13C6-PFDA	7.607	519.0 -> 474.0	293330	21.50	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

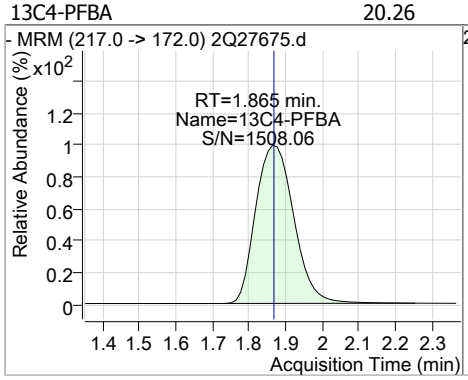
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C7-PFUnDA	8.054	570.0 -> 525.0	364660	21.55 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C8-FOSA	6.944	506.0 -> 78.0	86381	21.30 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C8-PFOA	6.446	421.0 -> 376.0	222520	21.33 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C8-PFOS	7.045	507.0 -> 99.0	26750	20.52 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C9-PFNA	7.065	472.0 -> 427.0	225103	21.26 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.3%	
d3-MeFOSAA	7.447	573.0 -> 419.0	40063	20.90 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
M2-PFOA	6.435	415.0 -> 370.0	302497	19.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.048	503.0 -> 80.0	46672	20.02 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C3-HFPO-DA	5.081	287.0 -> 169.0	166781	104.30 µg/L	0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 104.3%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	9.332	713.0 -> 669.0	1063	0.11 µg/L	98
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

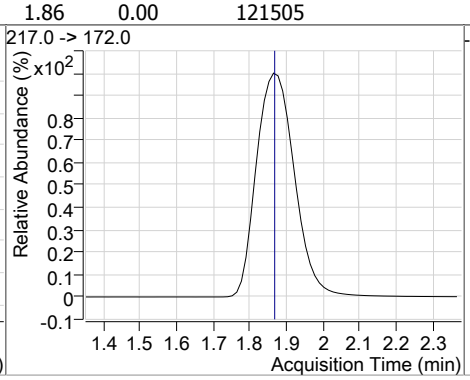
 # = Qualifier out of range, m = manually integrated, + = Area summed

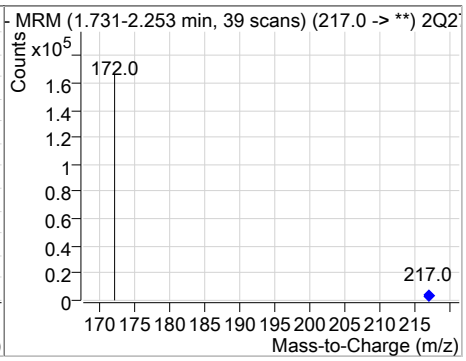
Perfluorinated Compounds by LC/MS/MS



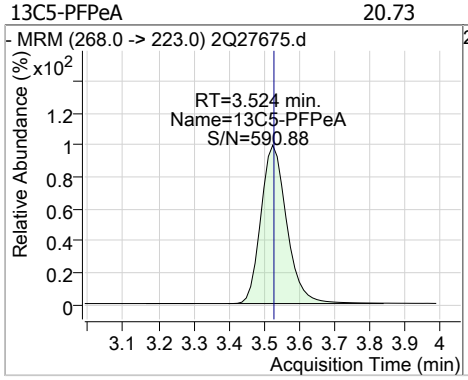
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.26	1.86	0.00	121505				

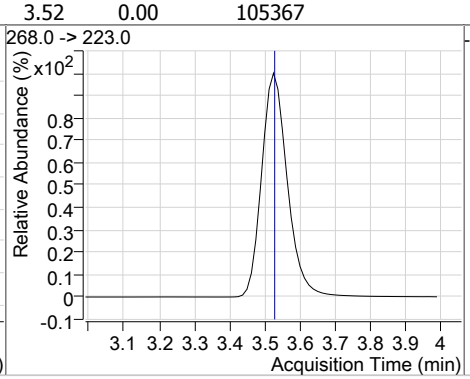


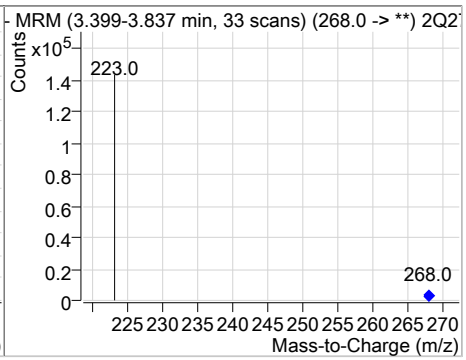




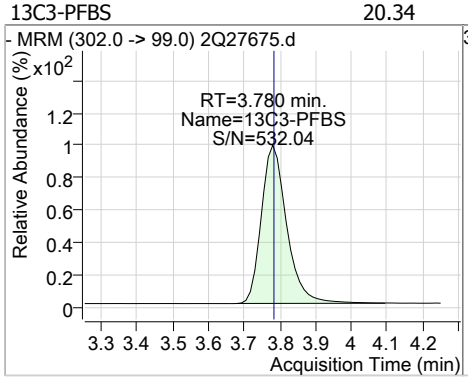
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.73	3.52	0.00	105367				

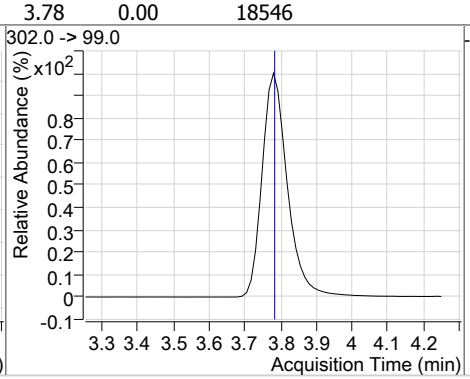


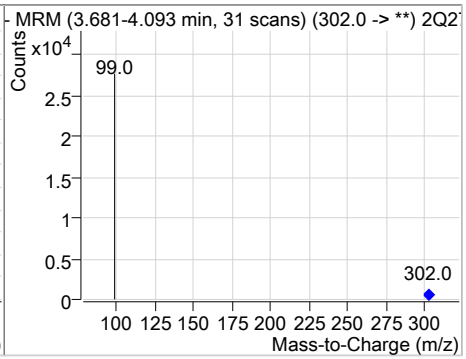




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.34	3.78	0.00	18546				

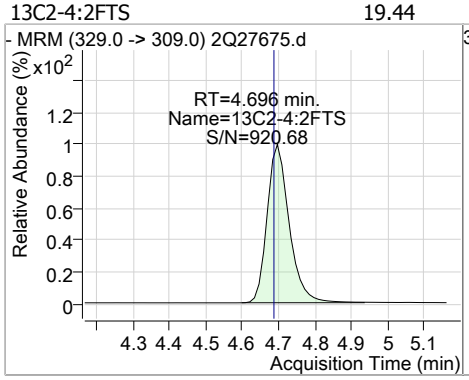


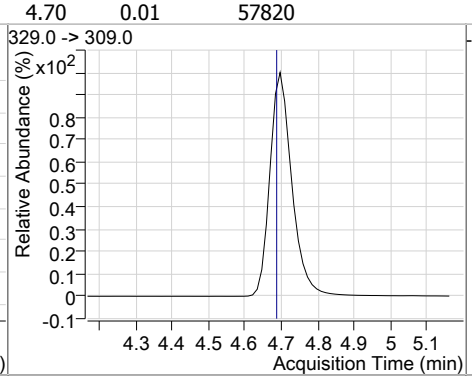


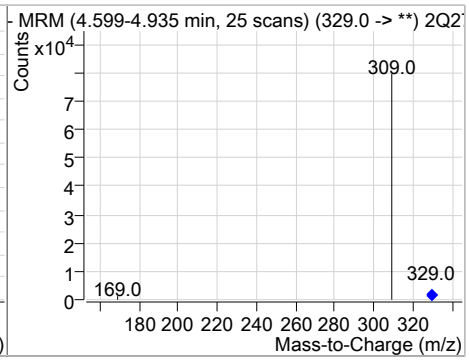


Perfluorinated Compounds by LC/MS/MS

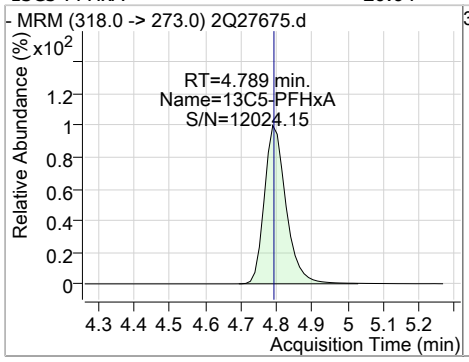
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.44	4.70	0.01	57820				

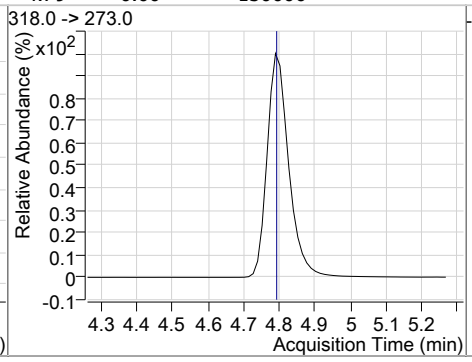


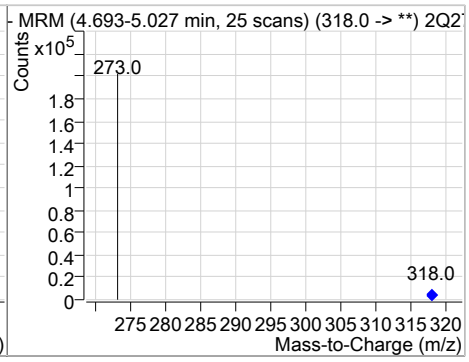




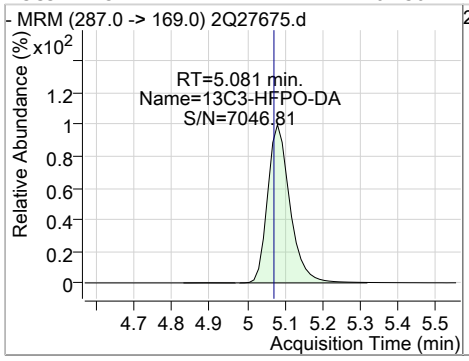
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.64	4.79	0.00	150006				

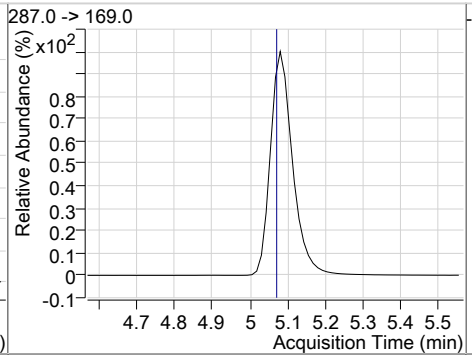


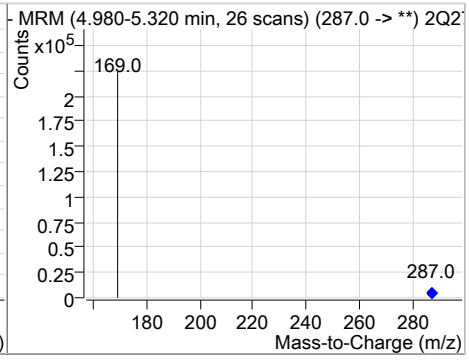




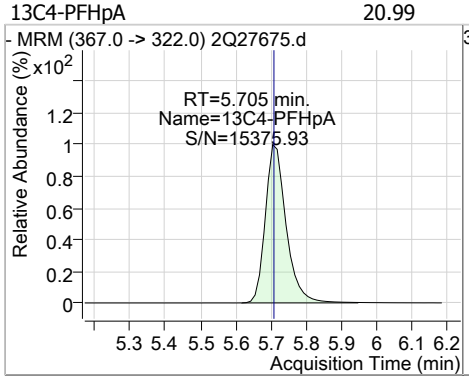
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	104.30	5.08	0.01	166781				

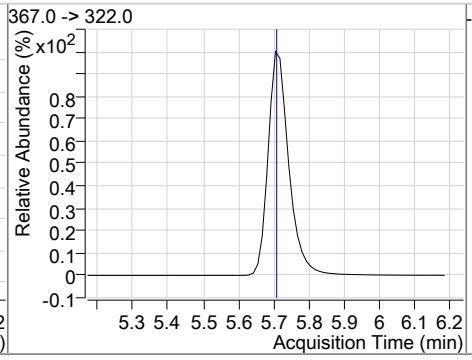


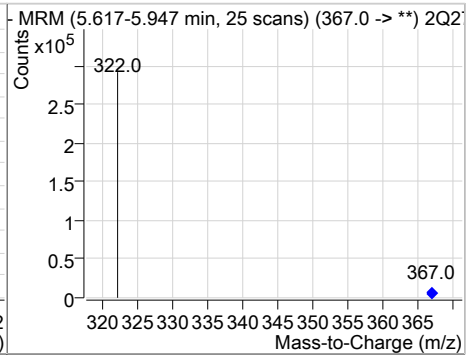




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.99	5.71	0.00	217100				

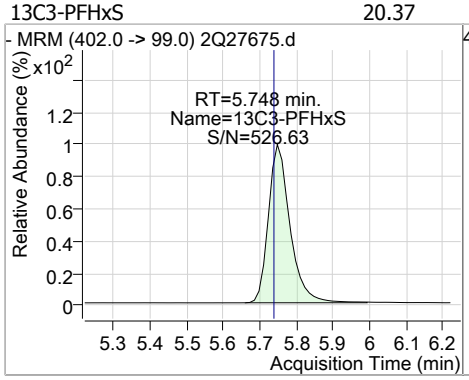


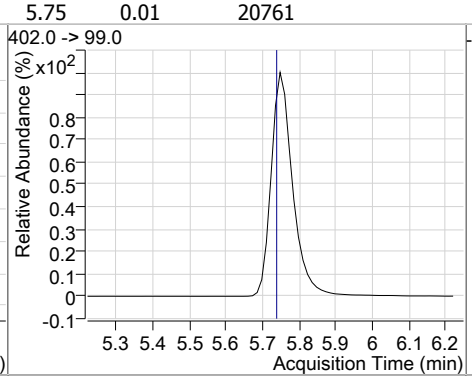


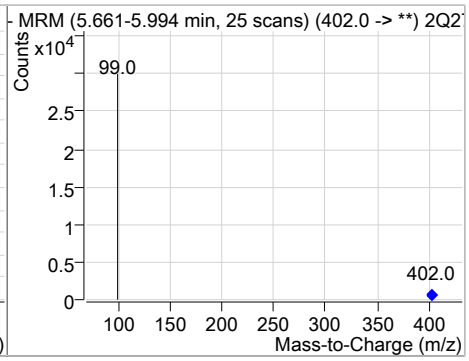


Perfluorinated Compounds by LC/MS/MS

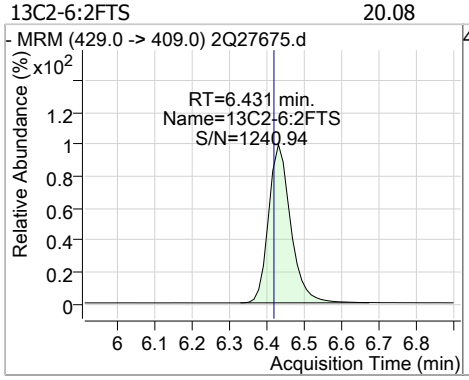
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.37	5.75	0.01	20761				

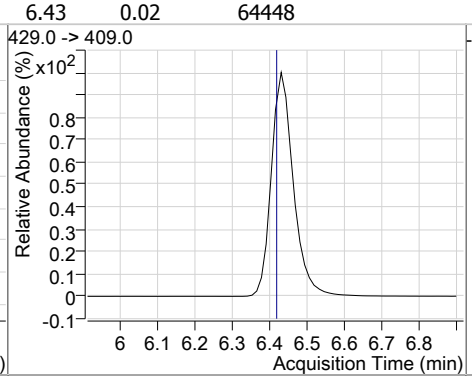


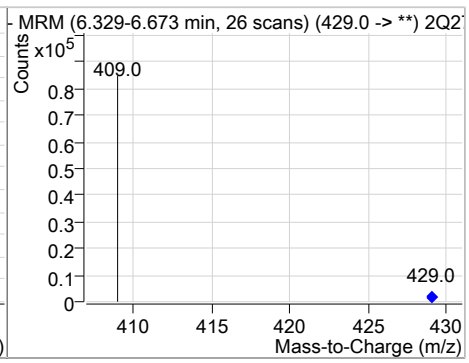




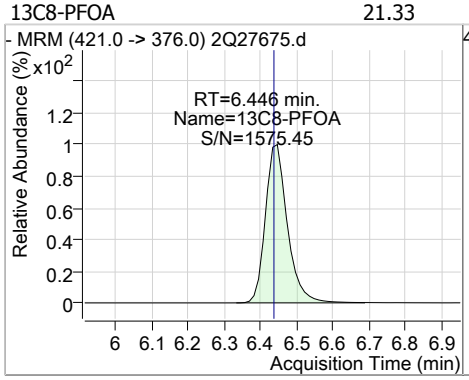
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.08	6.43	0.02	64448				

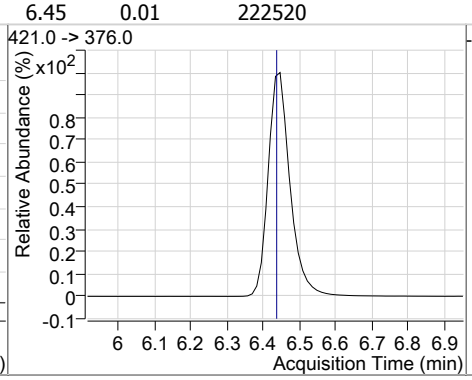


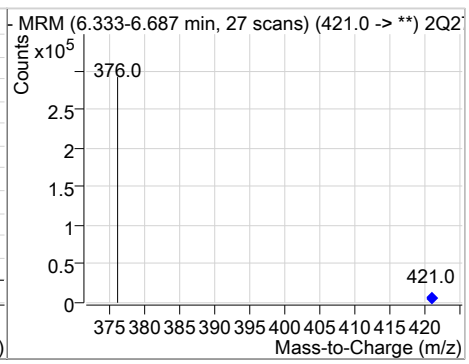




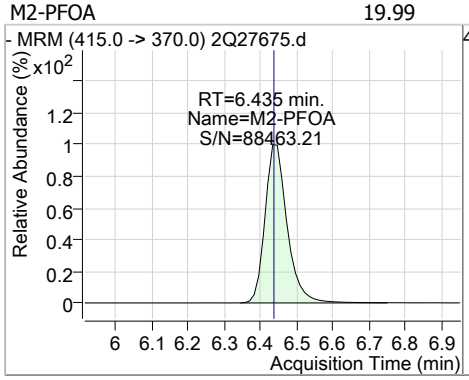
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.33	6.45	0.01	222520				

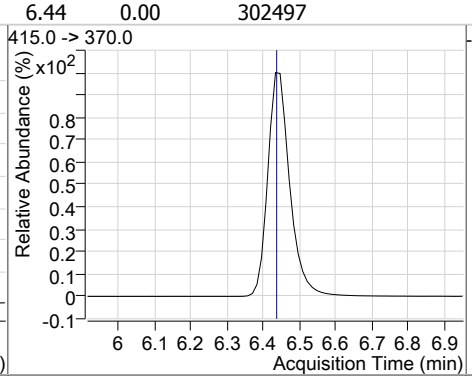


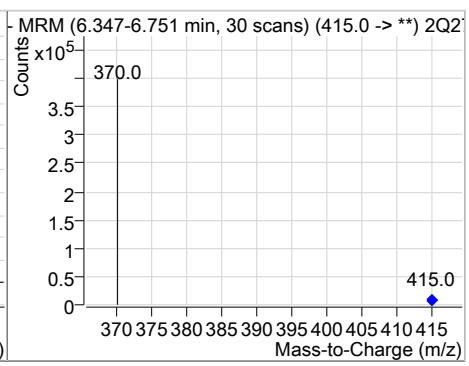




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	302497				

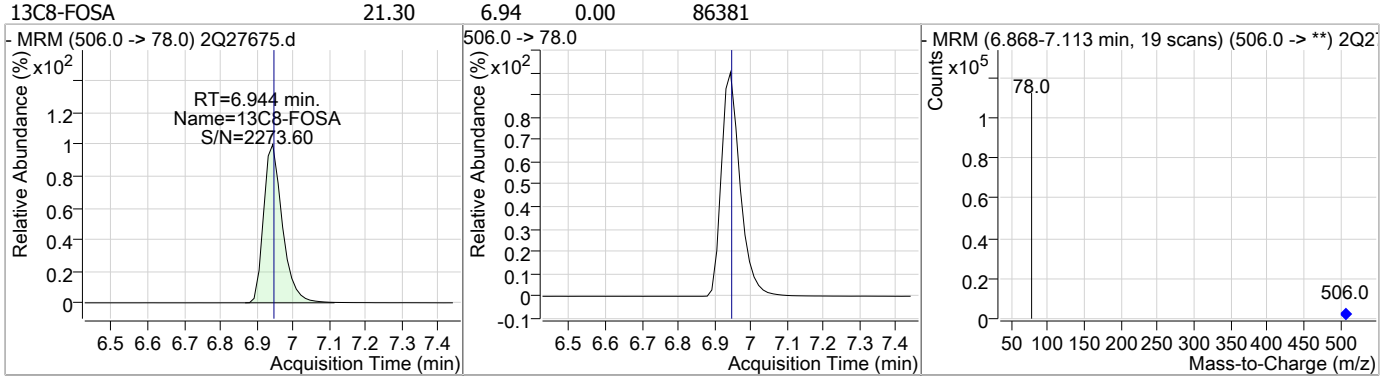




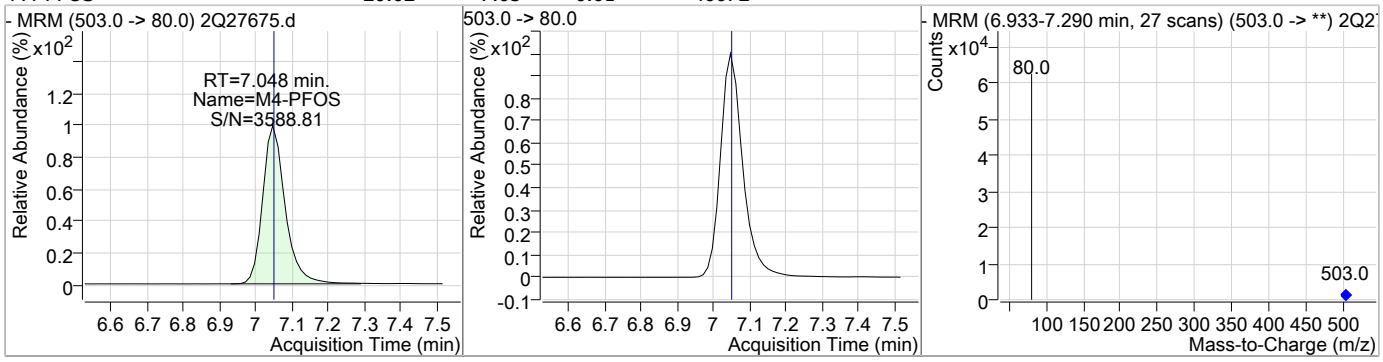


Perfluorinated Compounds by LC/MS/MS

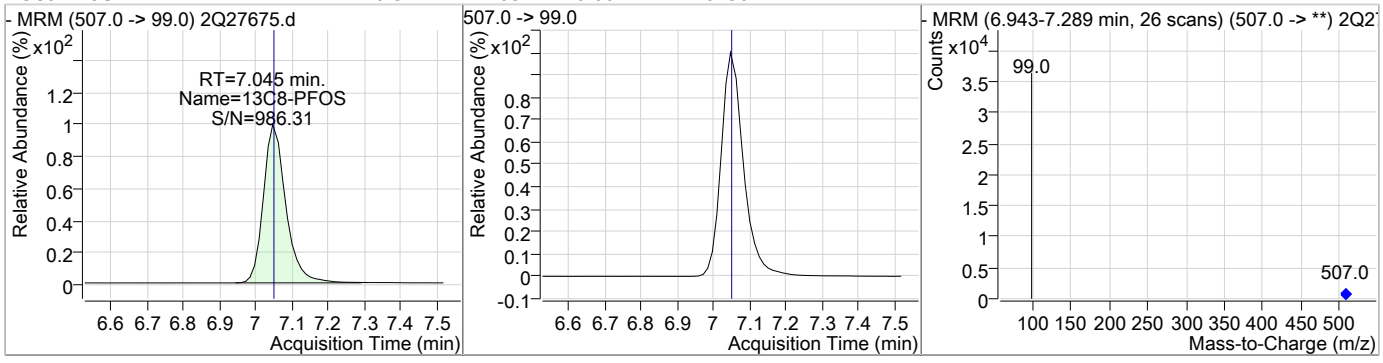
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.30	6.94	0.00	86381				



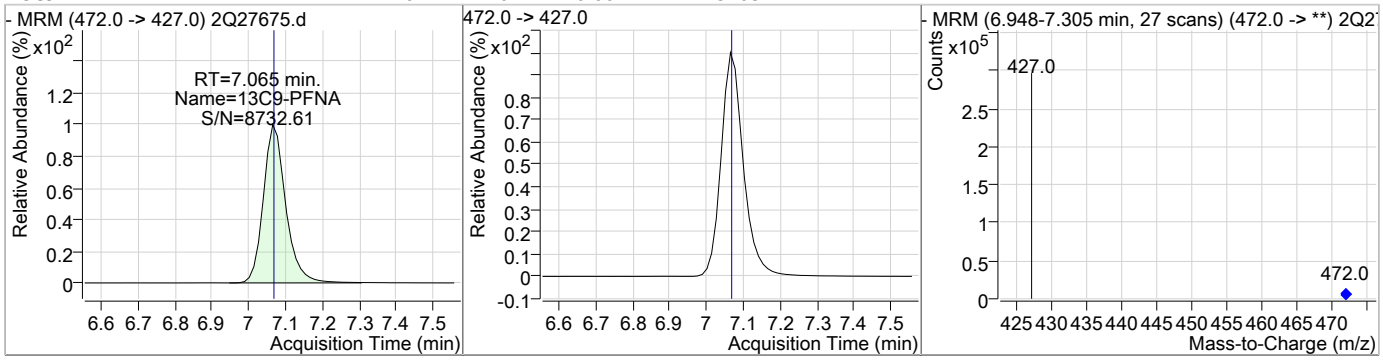
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.05	0.01	46672				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.52	7.05	0.00	26750				

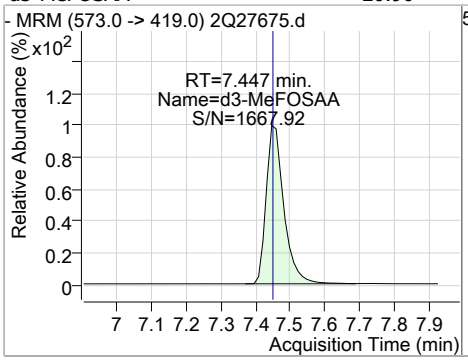


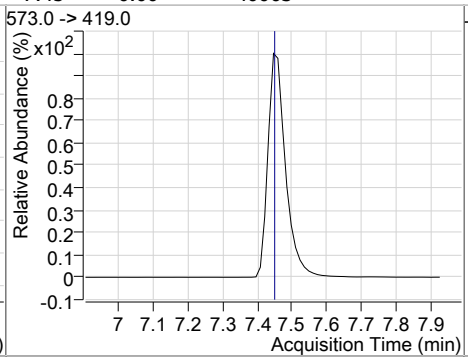
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.26	7.07	0.00	225103				

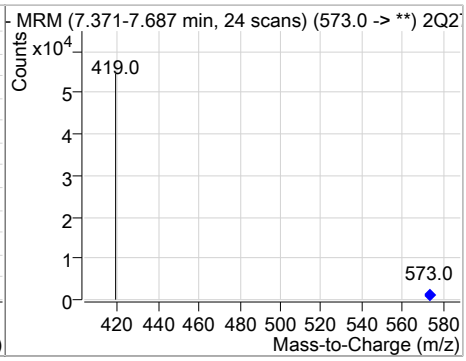


Perfluorinated Compounds by LC/MS/MS

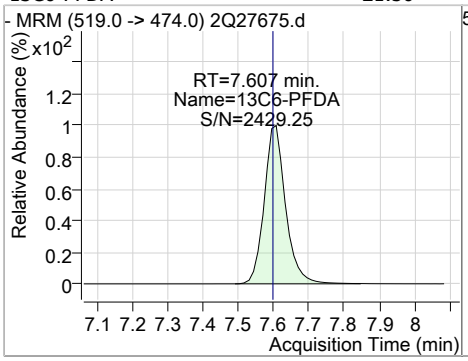
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.90	7.45	0.00	40063				

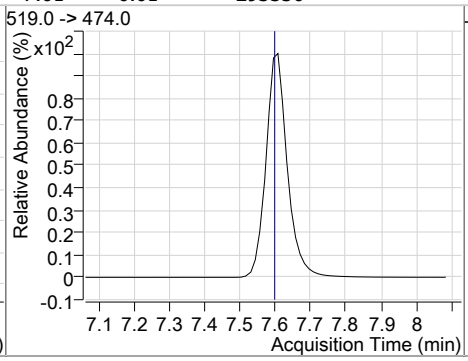


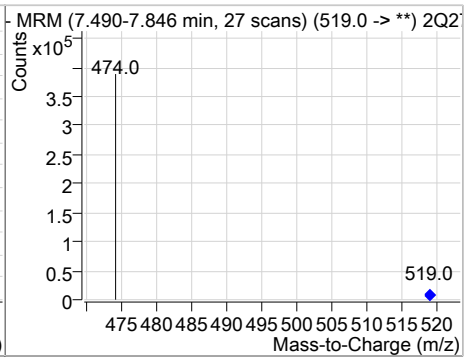




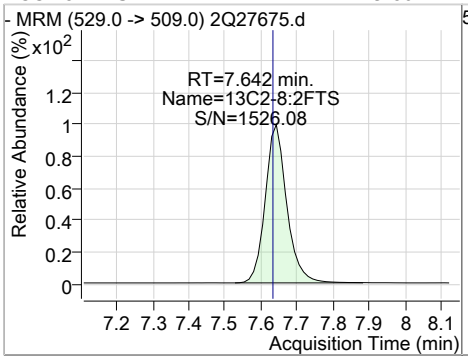
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.50	7.61	0.01	293330				

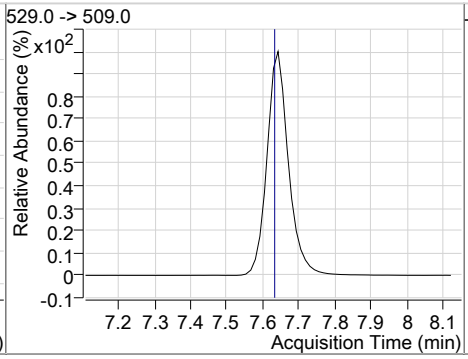


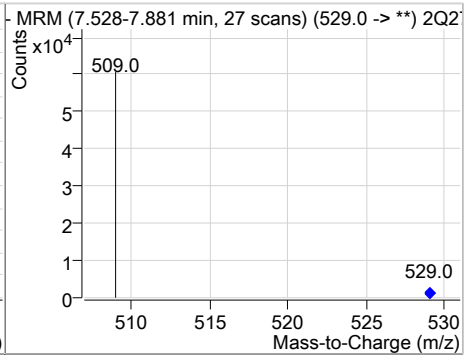




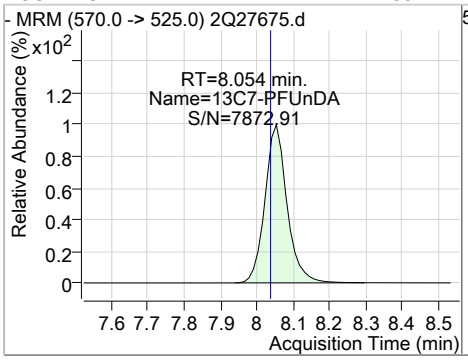
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.80	7.64	0.01	43894				

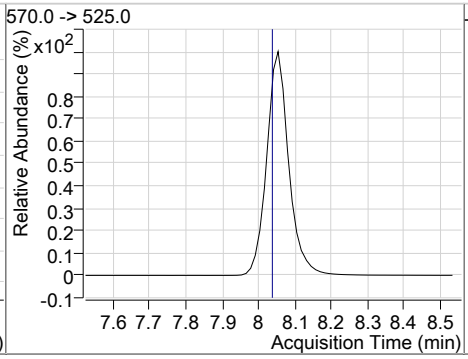


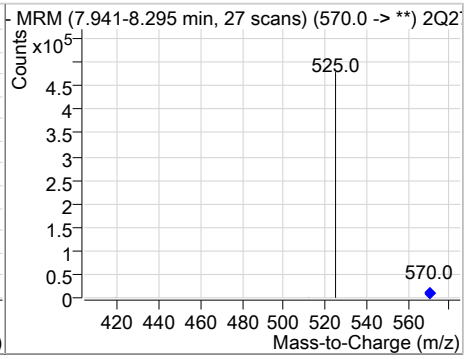




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.55	8.05	0.01	364660				

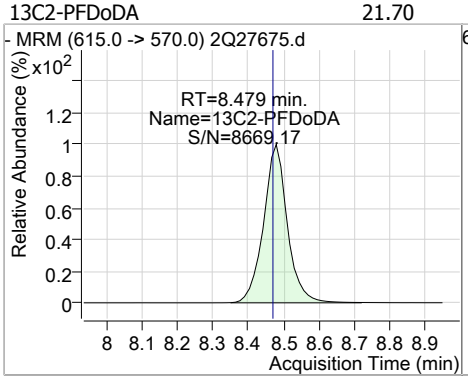


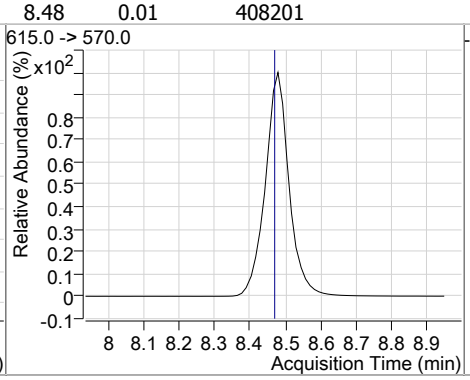


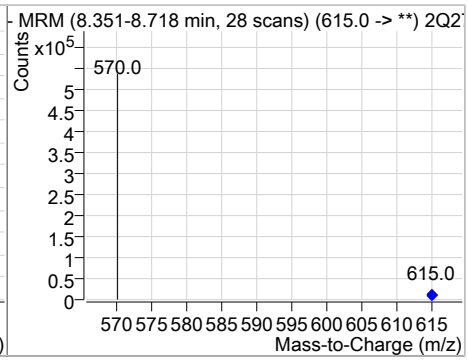


Perfluorinated Compounds by LC/MS/MS

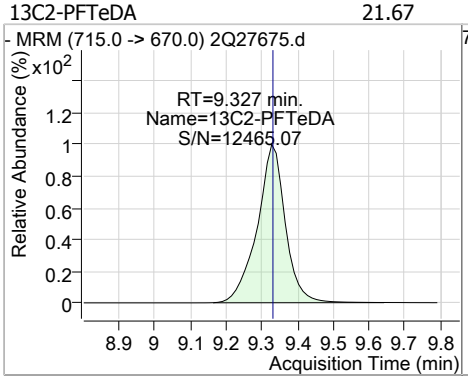
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.70	8.48	0.01	408201				

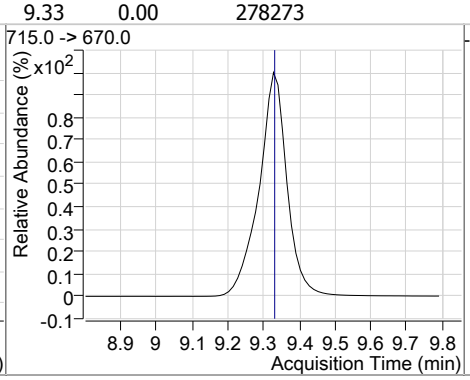


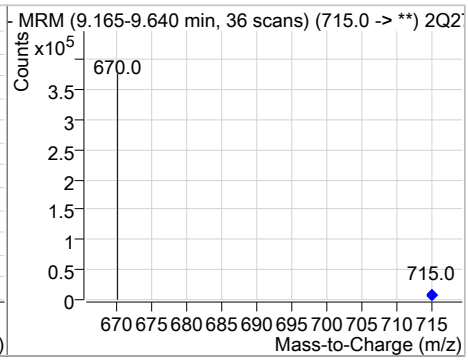




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.67	9.33	0.00	278273				







Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27725.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 10:45:34 AM
Sample Name : IBLK
Vial : Vial 1
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74164,S2Q443,250,,,1.0,1,water

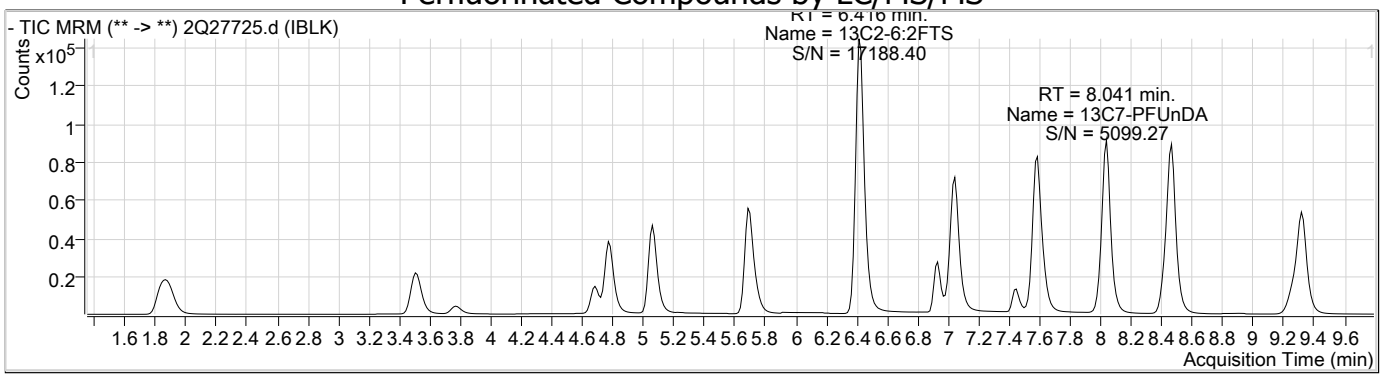
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
13C2-PFOA	6.422	415.0 -> 370.0	310480	20.00 µg/L	-0.014
13C4-PFOS	7.036	503.0 -> 80.0	50956	20.00 µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	131171	20.00 µg/L	0.000
M5-PFPeA	3.511	268.0 -> 223.0	108971	20.00 µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	155183	20.00 µg/L	-0.013
M4-PFHpA	5.693	367.0 -> 322.0	221682	20.00 µg/L	-0.013
M8-PFOA	6.420	421.0 -> 376.0	227144	20.00 µg/L	-0.014
M9-PFNA	7.052	472.0 -> 427.0	229737	20.00 µg/L	-0.013
M6-PFDA	7.582	519.0 -> 474.0	306033	20.00 µg/L	-0.013
M7-PFUnDA	8.041	570.0 -> 525.0	379636	20.00 µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	414986	20.00 µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	292724	20.00 µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	93116	20.00 µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	19704	20.00 µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21875	20.00 µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	29276	20.00 µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	59430	20.00 µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	65845	20.00 µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	45901	20.00 µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	41836	20.00 µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	189815	100.00 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.684	329.0 -> 309.0	59386	19.97 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C2-6:2FTS	6.416	429.0 -> 409.0	65757	20.49 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C2-8:2FTS	7.630	529.0 -> 509.0	45892	20.70 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C2-PFDoDA	8.466	615.0 -> 570.0	414383	22.03 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
13C2-PFTeDA	9.315	715.0 -> 670.0	291754	22.72 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.6%	
13C3-PFBS	3.767	302.0 -> 99.0	19728	21.64 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C3-PFHxS	5.736	402.0 -> 99.0	21932	21.51 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C4-PFBA	1.865	217.0 -> 172.0	130544	21.77 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C4-PFHpA	5.693	367.0 -> 322.0	221405	21.41 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
13C5-PFHxA	4.776	318.0 -> 273.0	154924	21.32 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C5-PFPeA	3.511	268.0 -> 223.0	109260	21.49 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C6-PFDA	7.582	519.0 -> 474.0	305745	22.41 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

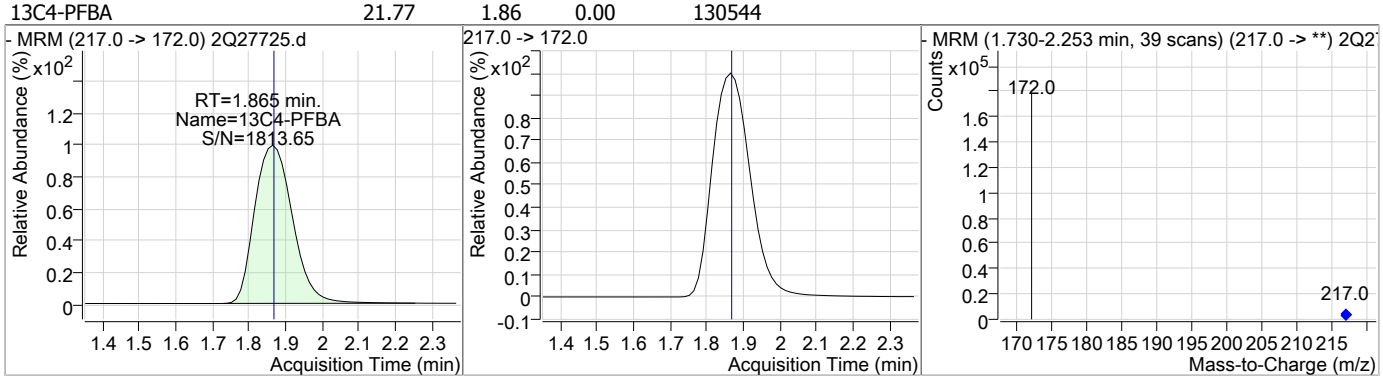
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.0%	
13C7-PFUnDA	8.041	570.0 -> 525.0	379635	22.43 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.2%	
13C8-FOSA	6.932	506.0 -> 78.0	93124	22.97 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C8-PFOA	6.420	421.0 -> 376.0	227093	21.77 µg/L	-0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C8-PFOS	7.033	507.0 -> 99.0	29263	22.45 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.2%	
13C9-PFNA	7.052	472.0 -> 427.0	229621	21.69 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.4%	
d3-MeFOSAA	7.447	573.0 -> 419.0	41889	21.85 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.3%	
M2-PFOA	6.422	415.0 -> 370.0	310632	19.99 µg/L	-0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.036	503.0 -> 80.0	50971	20.00 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	5.068	287.0 -> 169.0	189815	118.71 µg/L	0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 118.7%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	9.319	713.0 -> 669.0	1033	0.10 µg/L	100
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

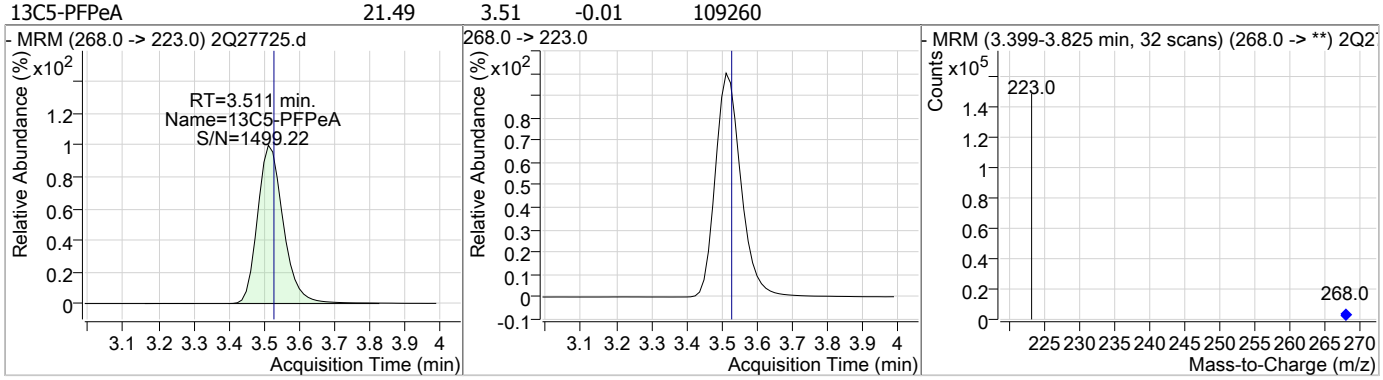
Perfluorinated Compounds by LC/MS/MS



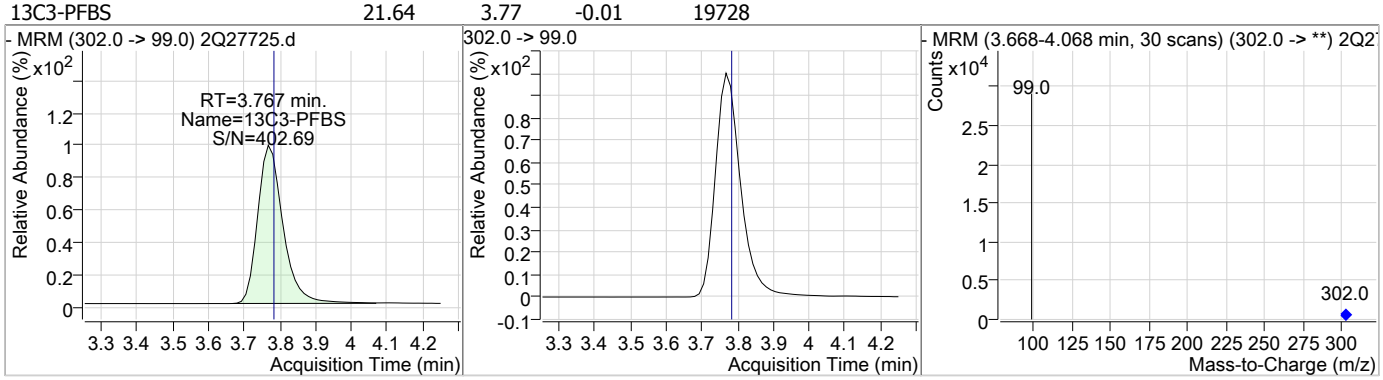
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.77	1.86	0.00	130544				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.49	3.51	-0.01	109260				

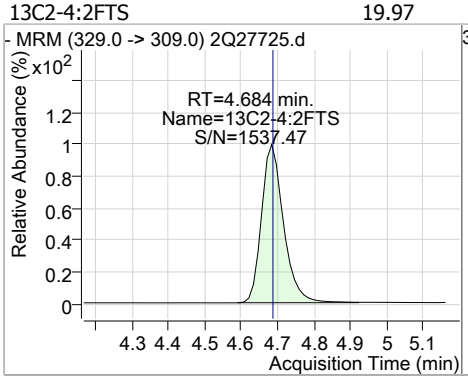


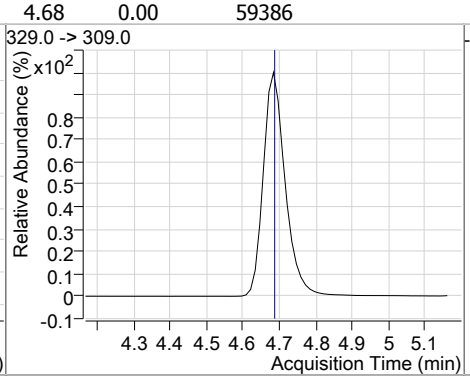
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.64	3.77	-0.01	19728				

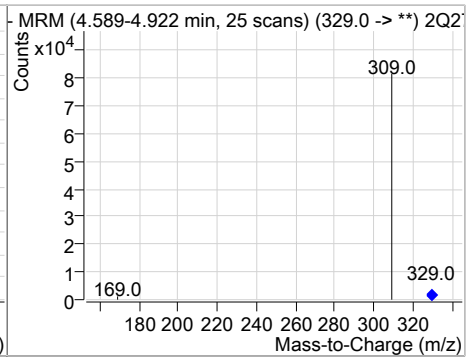


Perfluorinated Compounds by LC/MS/MS

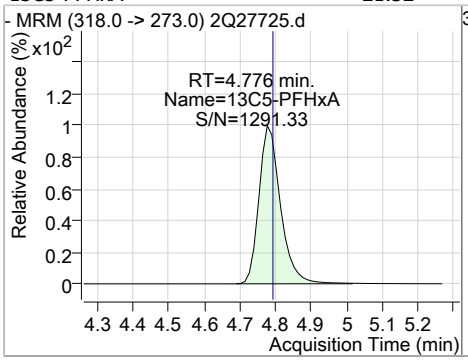
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.97	4.68	0.00	59386				

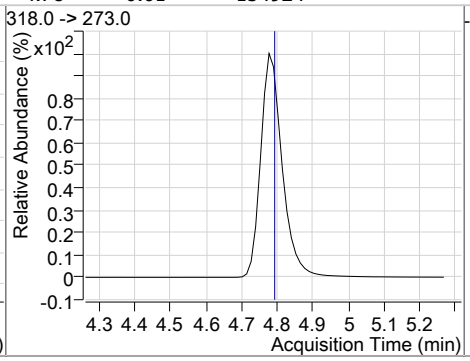


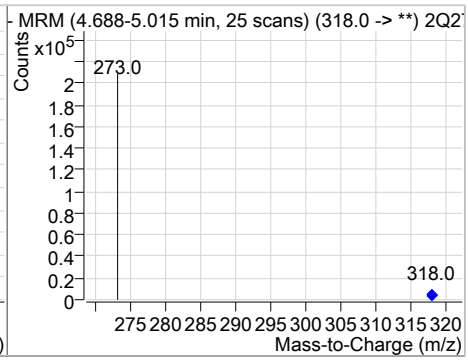




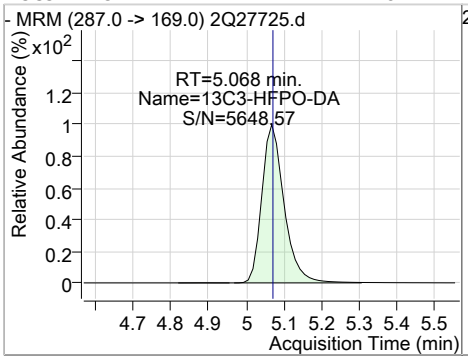
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.32	4.78	-0.01	154924				

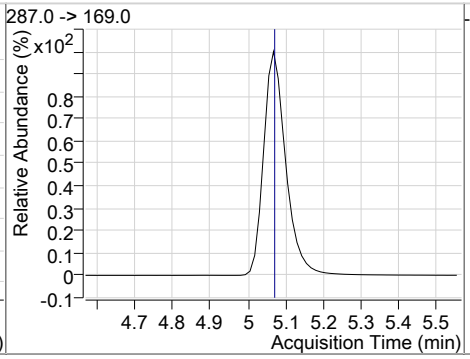


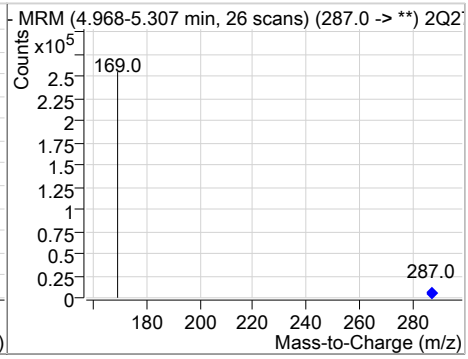




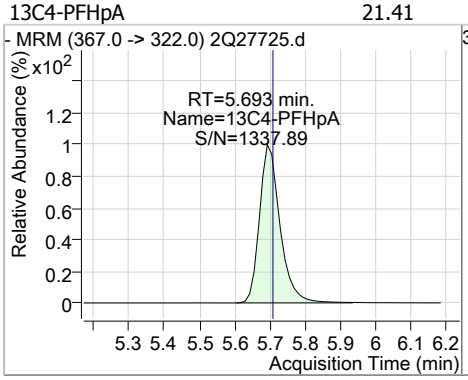
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	118.71	5.07	0.00	189815				

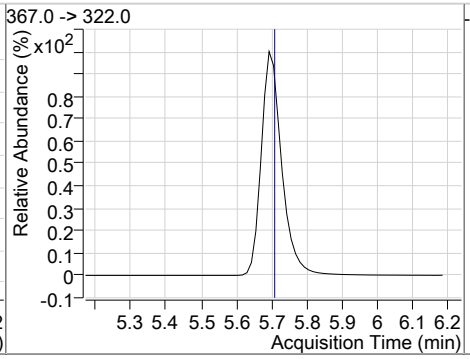


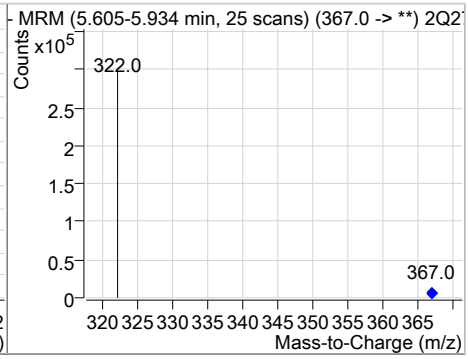




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.41	5.69	-0.01	221405				

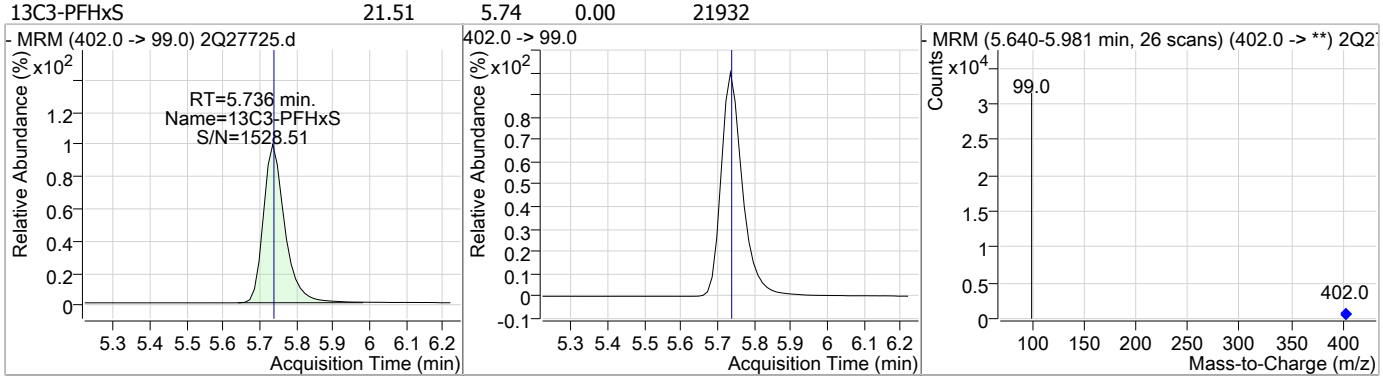




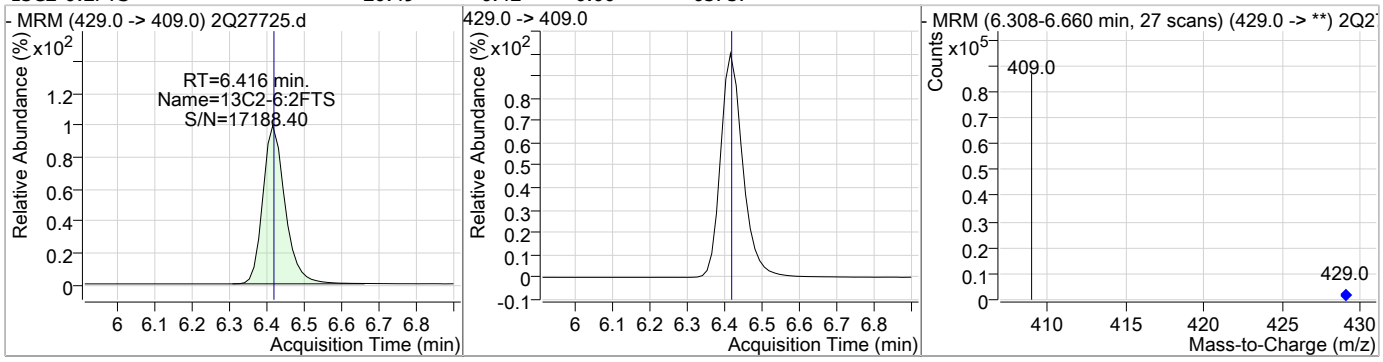


Perfluorinated Compounds by LC/MS/MS

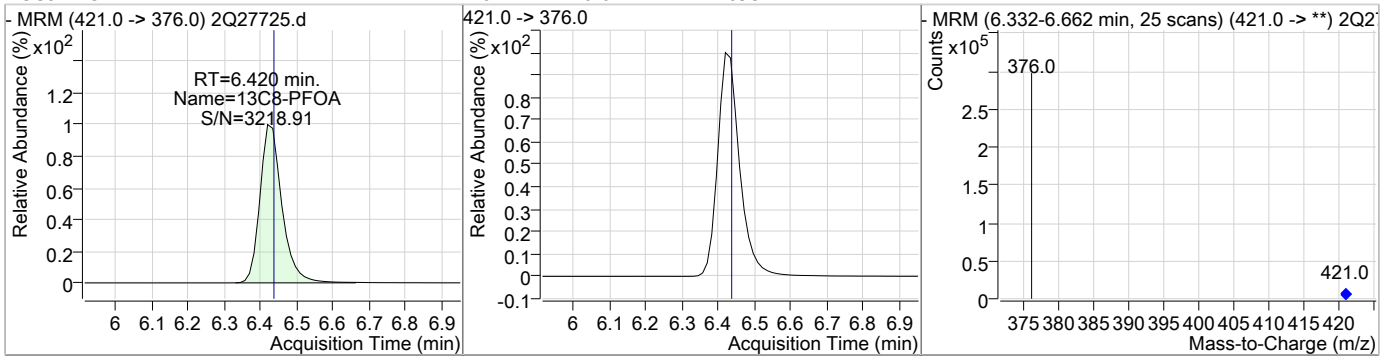
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.51	5.74	0.00	21932				



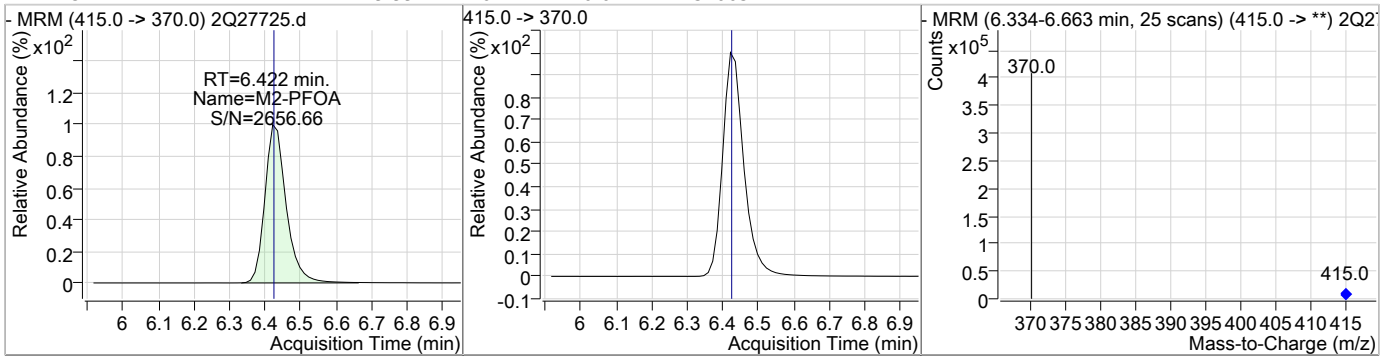
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.49	6.42	0.00	65757				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.77	6.42	-0.01	227093				

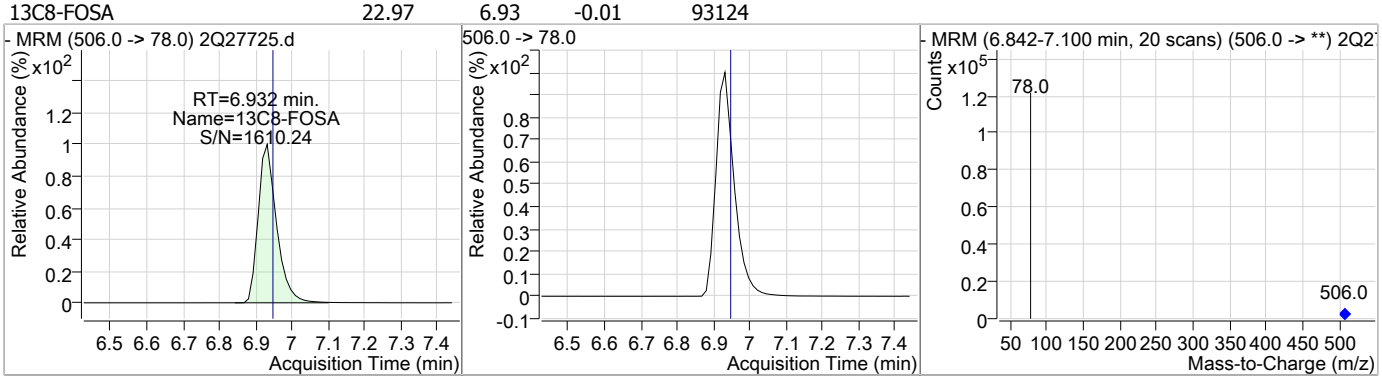


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.42	-0.01	310632				

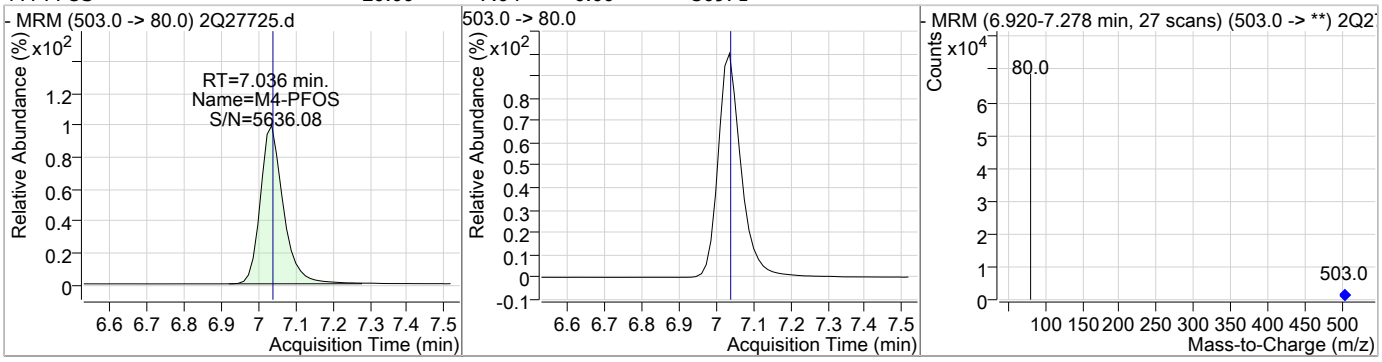


Perfluorinated Compounds by LC/MS/MS

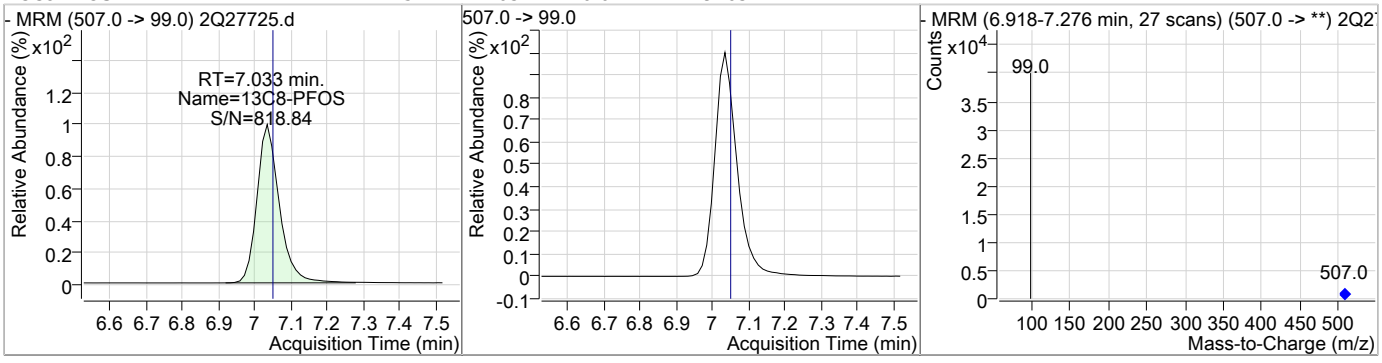
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.97	6.93	-0.01	93124				



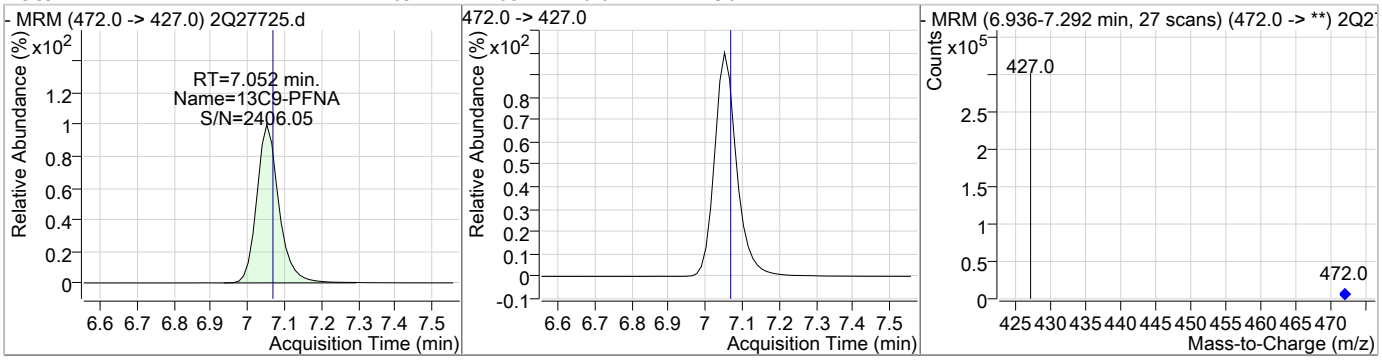
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.04	0.00	50971				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	22.45	7.03	-0.01	29263				

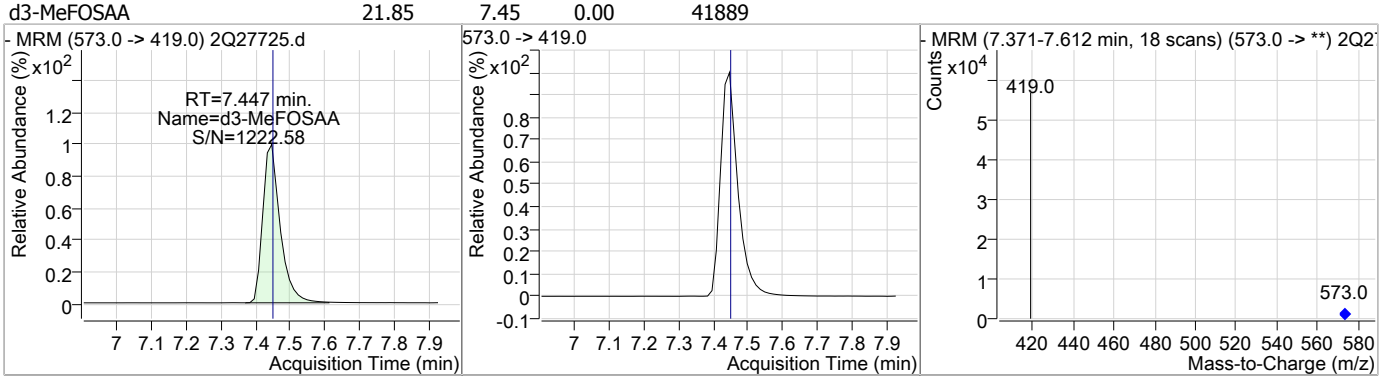


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.69	7.05	-0.01	229621				

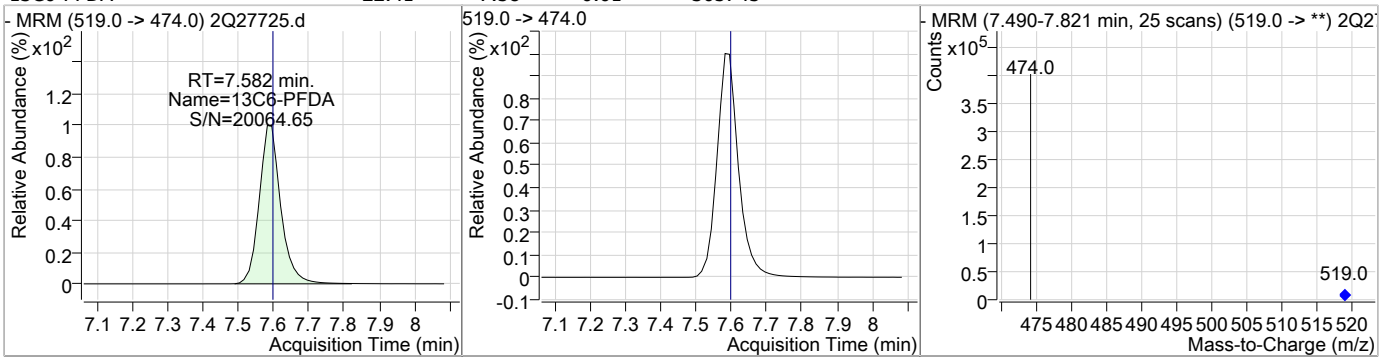


Perfluorinated Compounds by LC/MS/MS

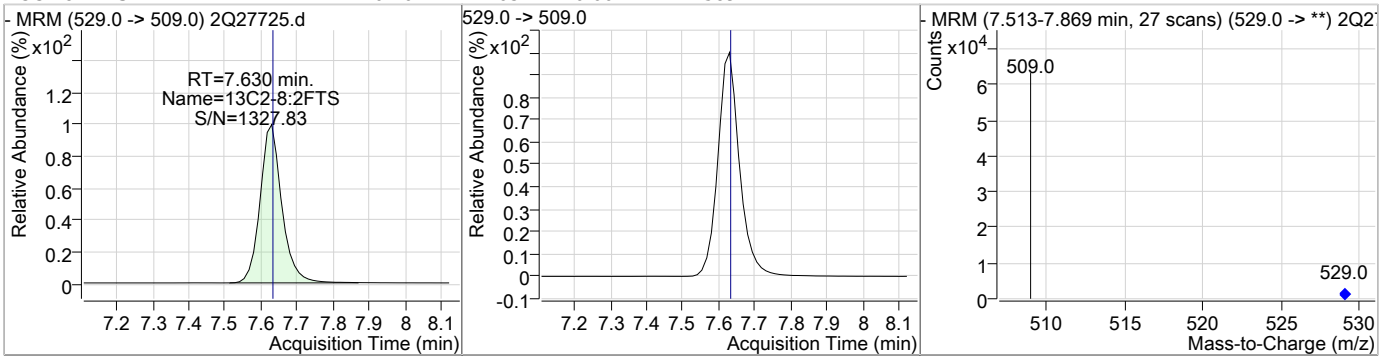
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.85	7.45	0.00	41889				



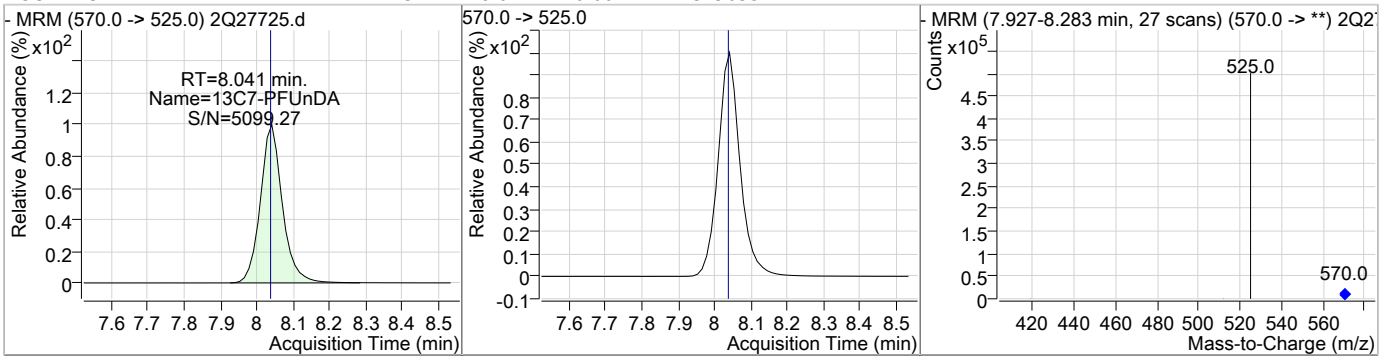
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	22.41	7.58	-0.01	305745				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.70	7.63	0.00	45892				

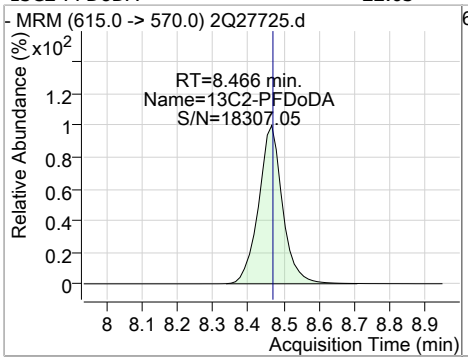


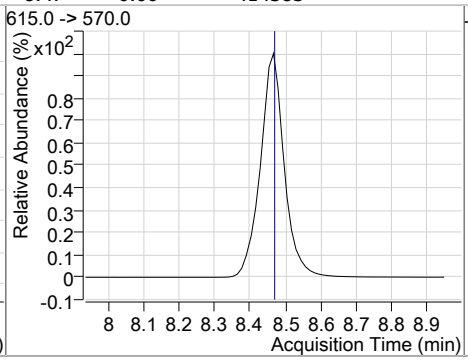
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	22.43	8.04	0.00	379635				

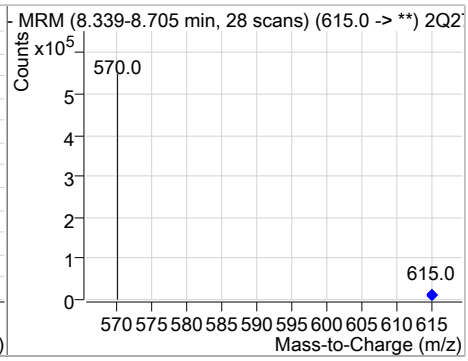


Perfluorinated Compounds by LC/MS/MS

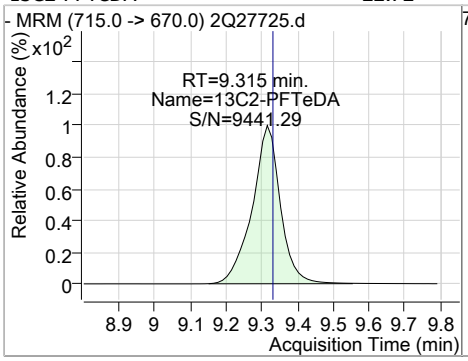
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	22.03	8.47	0.00	414383				

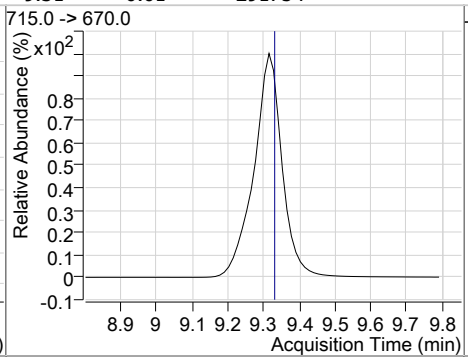


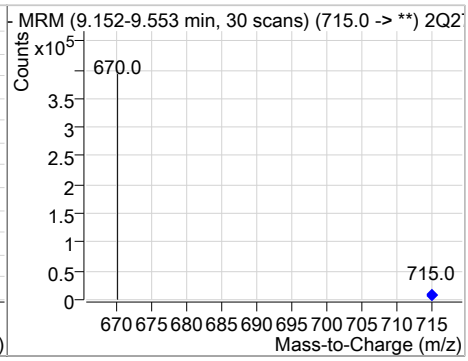




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	22.72	9.31	-0.01	291754				







Perfluorinated Compounds by LC/MS/MS

Data File	:	3q1980.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/21/2019 11:56:26 AM
Sample Name	:	iblk
Vial	:	P3-A1
DA Method File	:	ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name	:	s3q54.batch.bin
Sample Information	:	op74053,S3Q54,250,,,1.0,1,WATER

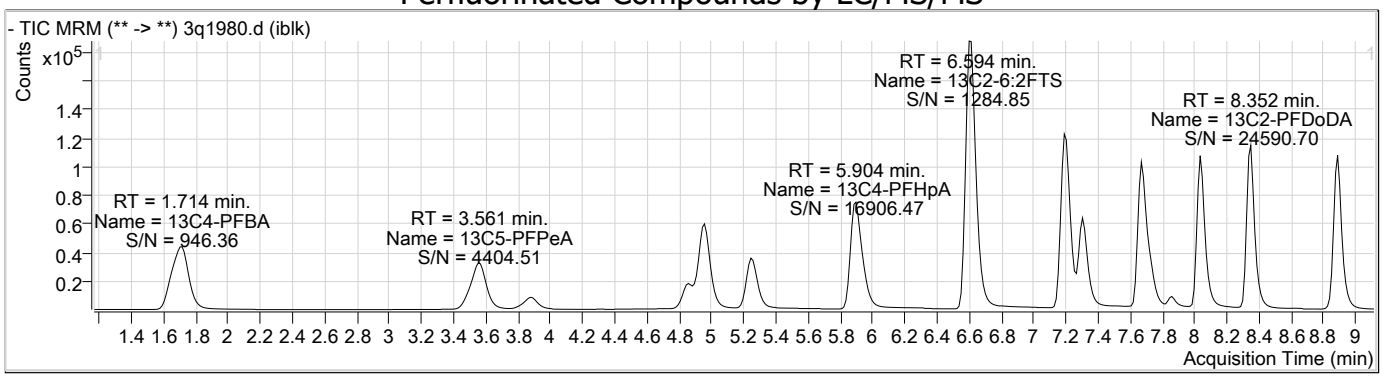
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.714	217.0 -> 172.0	331595	20.00	µg/L	0.013
M5-PFPeA	3.561	268.0 -> 223.0	224335	20.00	µg/L	0.000
M5-PFHxA	4.963	318.0 -> 273.0	298062	20.00	µg/L	0.000
M4-PFHpA	5.904	367.0 -> 322.0	340208	20.00	µg/L	0.013
M8-PFOA	6.621	421.0 -> 376.0	326946	20.00	µg/L	0.000
M9-PFNA	7.213	472.0 -> 427.0	314136	20.00	µg/L	0.000
M6-PFDA	7.678	519.0 -> 474.0	357234	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	391498	20.00	µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	411252	20.00	µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	390025	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	222866	20.00	µg/L	0.000
M3-PFBS	3.879	302.0 -> 99.0	50867	20.00	µg/L	0.000
M3-PFHxS	5.947	402.0 -> 99.0	51644	20.00	µg/L	0.000
M8-PFOS	7.196	507.0 -> 99.0	78751	20.00	µg/L	0.000
M2-4:2FTS	4.858	329.0 -> 309.0	89846	20.00	µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	89325	20.00	µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	53606	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	49900	20.00	µg/L	0.000
M3-HFPO-DA	5.255	287.0 -> 169.0	173168	100.00	µg/L	0.000
13C2-PFOA	6.622	415.0 -> 370.0	435894	20.00	µg/L	0.000
13C4-PFOS	7.198	503.0 -> 80.0	129273	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	89274	18.81	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.1%		
13C2-6:2FTS	6.594	429.0 -> 409.0	89317	19.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-8:2FTS	7.701	529.0 -> 509.0	53662	19.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.0%		
13C2-PFDoDA	8.352	615.0 -> 570.0	411301	21.03	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C2-PFTeDA	8.886	715.0 -> 670.0	390086	21.32	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.6%		
13C3-PFBS	3.879	302.0 -> 99.0	50667	20.09	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C3-PFHxS	5.947	402.0 -> 99.0	51421	20.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C4-PFBA	1.714	217.0 -> 172.0	329122	20.18	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C4-PFHpA	5.904	367.0 -> 322.0	339271	20.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C5-PFHxA	4.963	318.0 -> 273.0	296733	20.16	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%		
13C5-PFPeA	3.561	268.0 -> 223.0	224325	20.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C6-PFDA	7.678	519.0 -> 474.0	357132	21.44	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

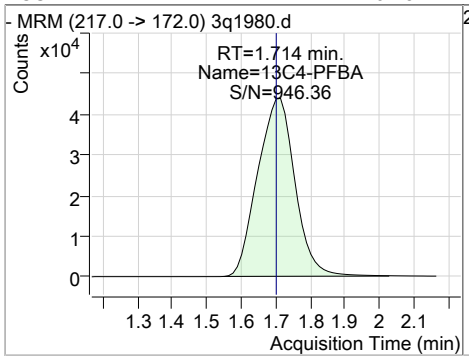
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C7-PFUnDA	8.039	570.0 -> 525.0	391539	21.12 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-FOSA	7.311	506.0 -> 78.0	222795	21.17 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C8-PFOA	6.621	421.0 -> 376.0	327117	20.68 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C8-PFOS	7.196	507.0 -> 99.0	78837	20.46 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C9-PFNA	7.213	472.0 -> 427.0	313654	20.99 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%	
d3-MeFOSAA	7.735	573.0 -> 419.0	49888	21.01 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C3-HFPO-DA	5.255	287.0 -> 169.0	173168	103.70 µg/L	0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
M2-PFOA	6.622	415.0 -> 370.0	435894	20.00 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.198	503.0 -> 80.0	129273	20.00 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	-	213.0 -> 169.0	-	N.D.	
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

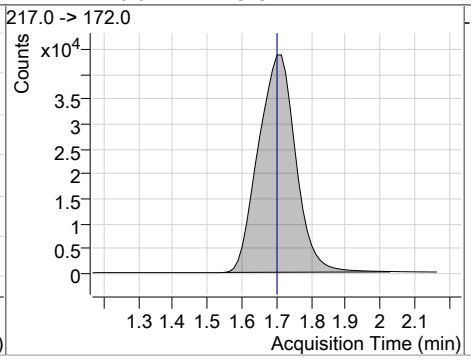
 # = Qualifier out of range, m = manually integrated, + = Area summed

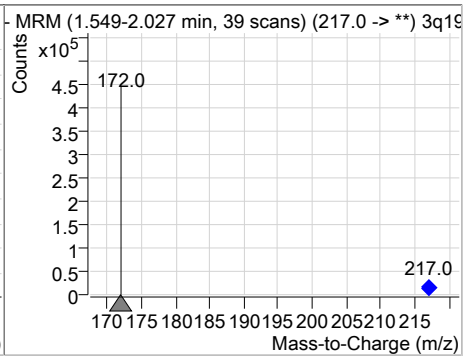
Perfluorinated Compounds by LC/MS/MS



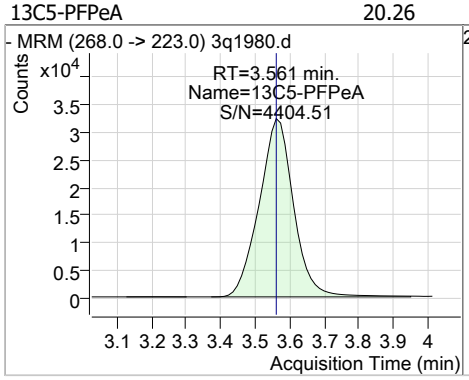
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.18	1.71	0.01	329122				

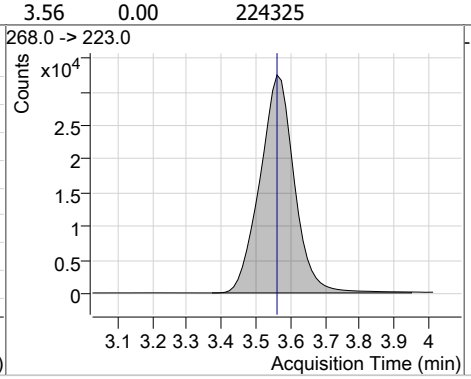


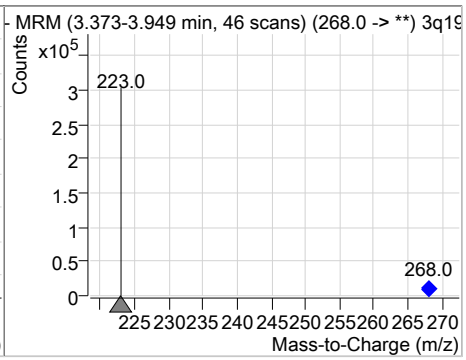




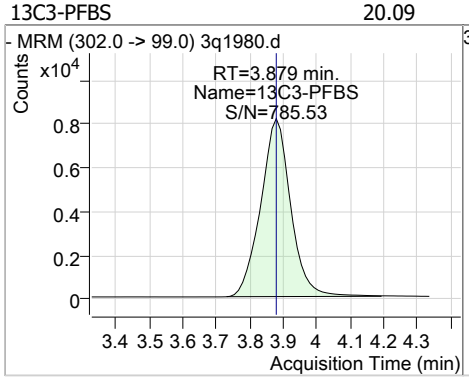
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.26	3.56	0.00	224325				

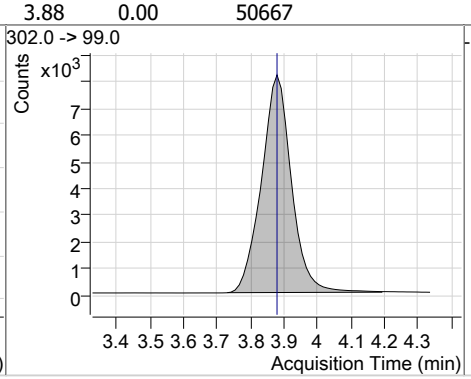


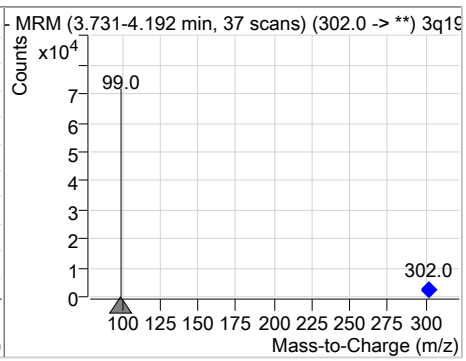




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.09	3.88	0.00	50667				

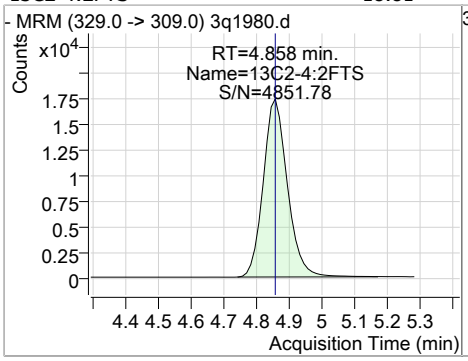


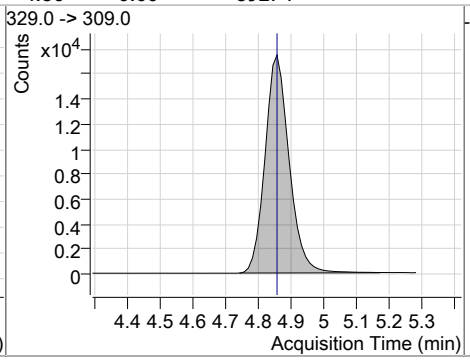


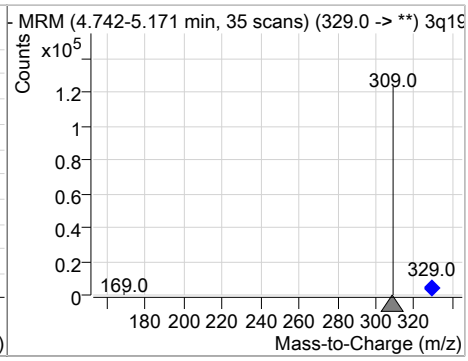


Perfluorinated Compounds by LC/MS/MS

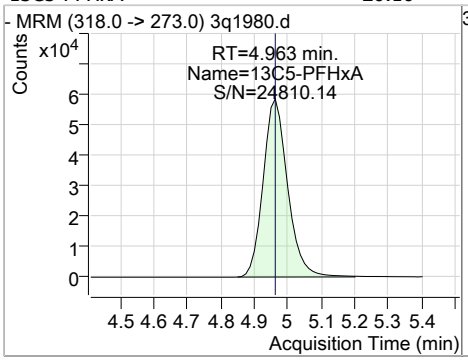
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.81	4.86	0.00	89274				

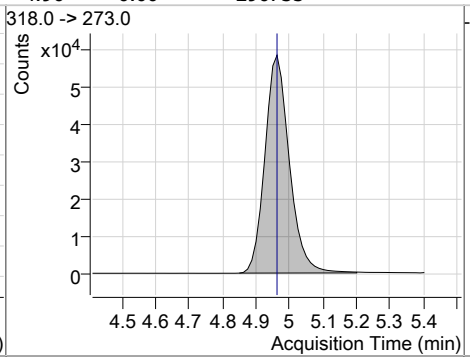


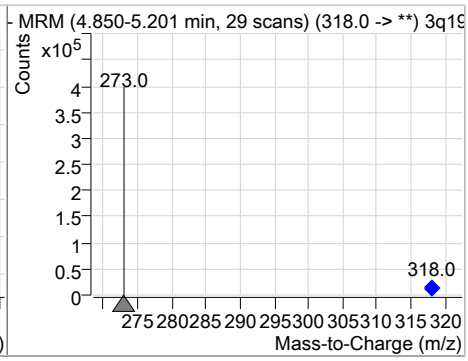




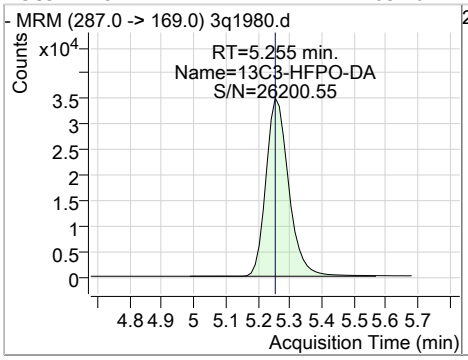
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.16	4.96	0.00	296733				

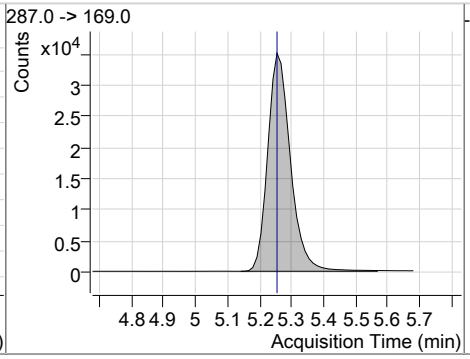


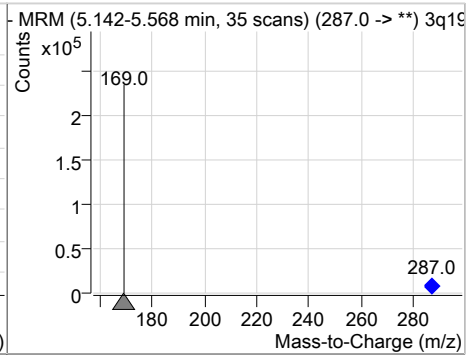




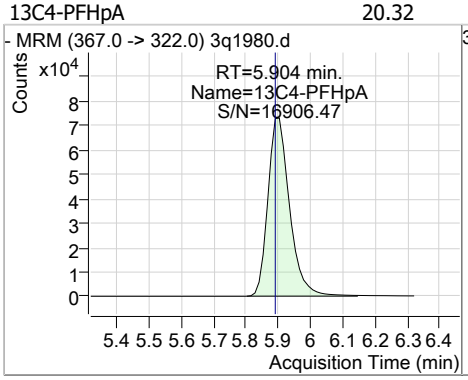
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.70	5.25	0.00	173168				

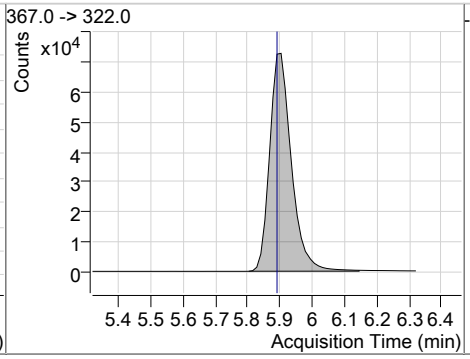


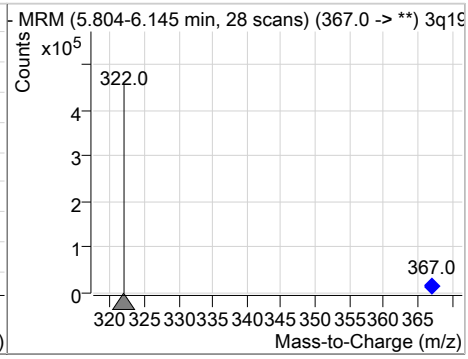




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.32	5.90	0.01	339271				

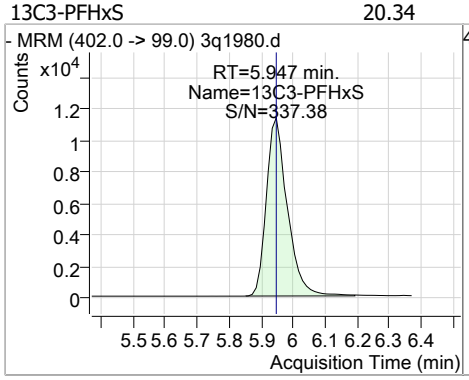


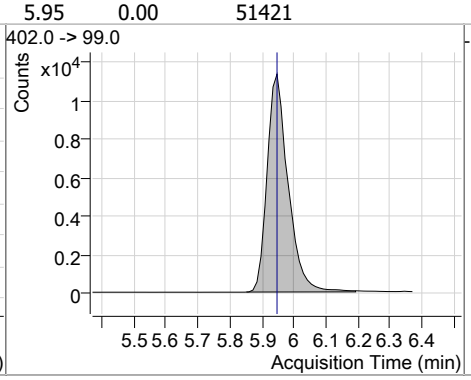


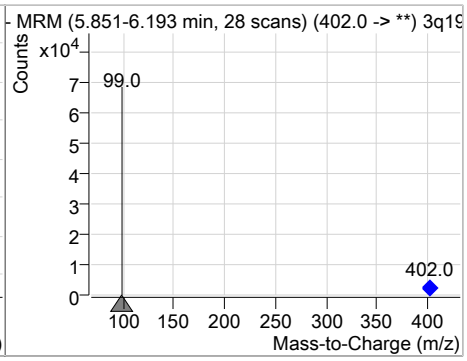


Perfluorinated Compounds by LC/MS/MS

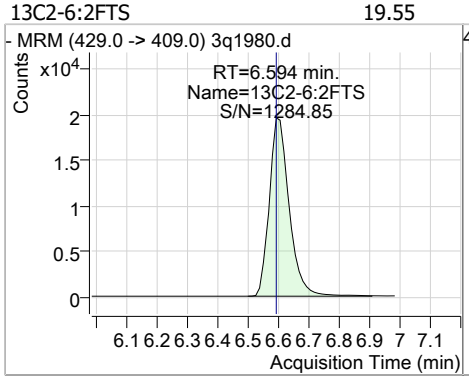
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.34	5.95	0.00	51421				

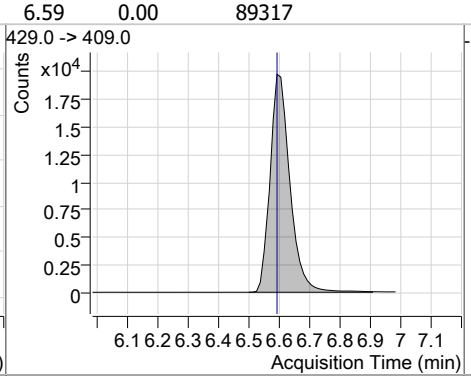


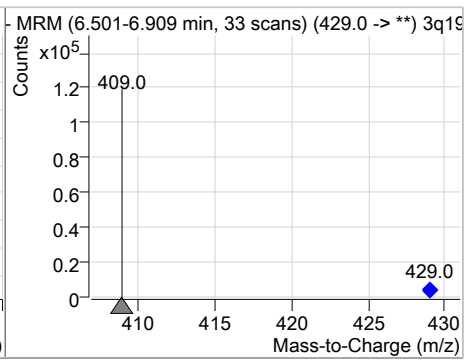




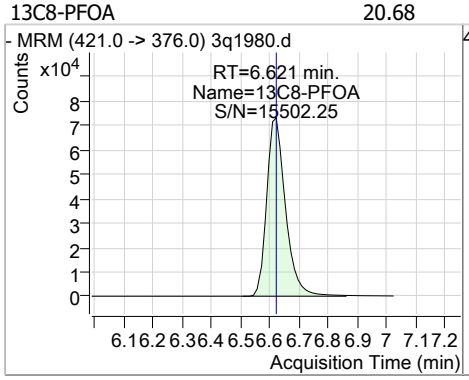
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.55	6.59	0.00	89317				

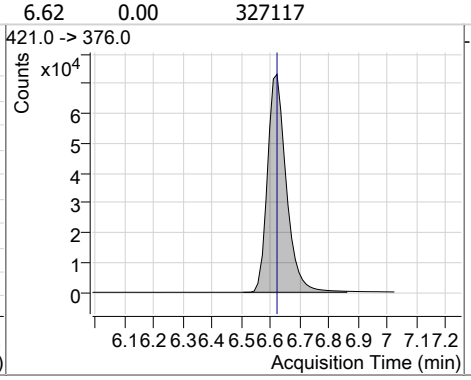


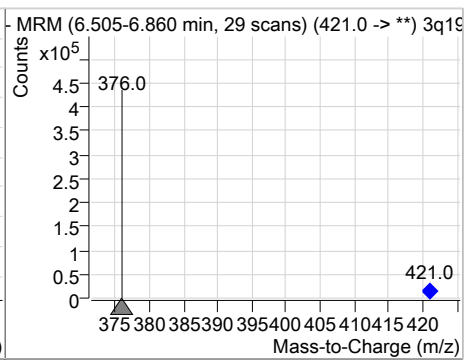




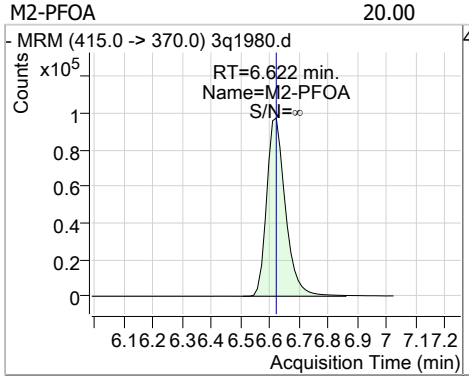
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.68	6.62	0.00	327117				

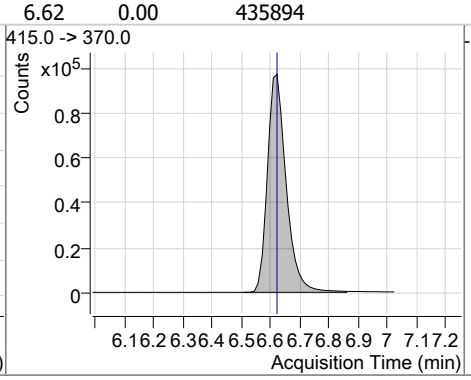


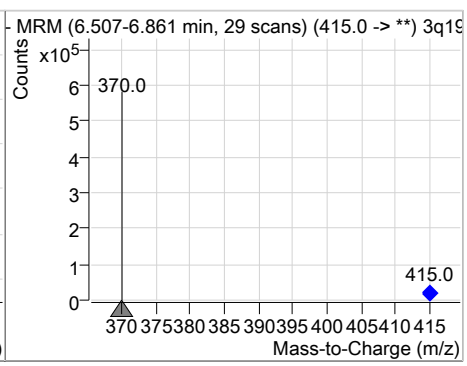




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.62	0.00	435894				

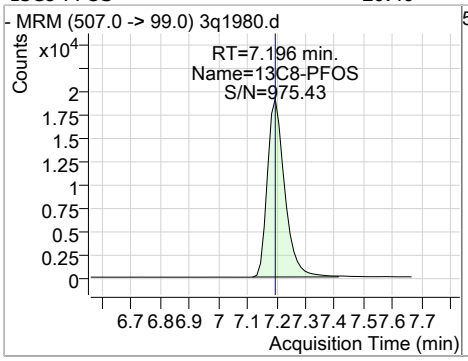


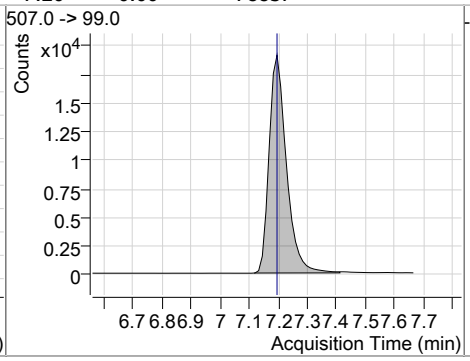


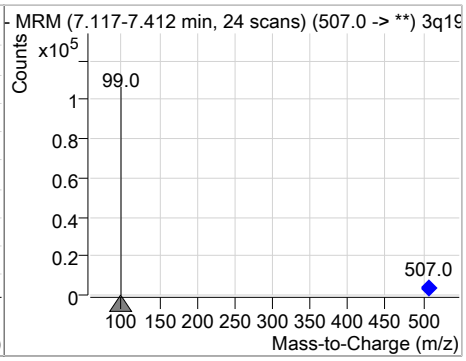


Perfluorinated Compounds by LC/MS/MS

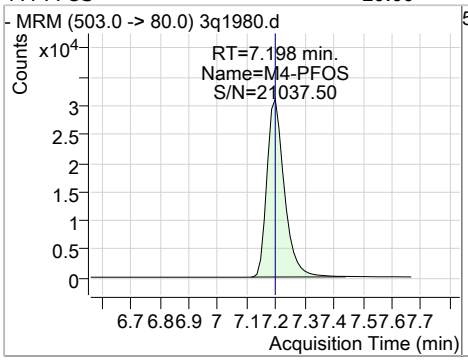
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.46	7.20	0.00	78837				

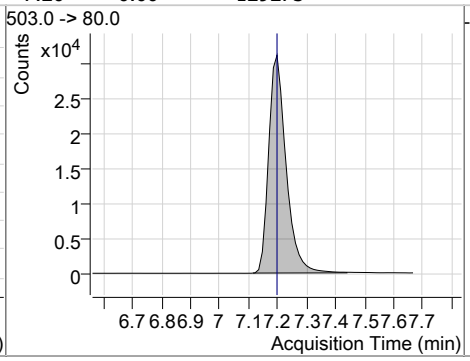


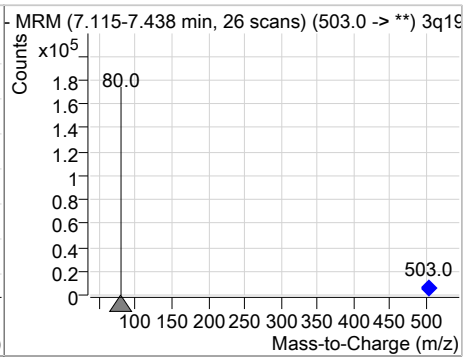




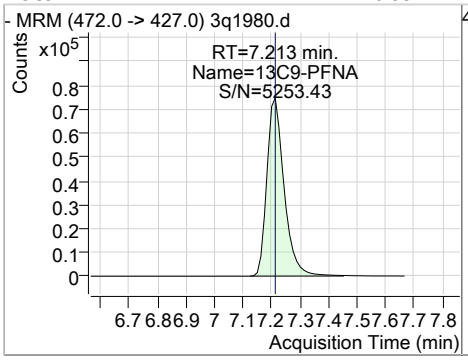
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	129273				

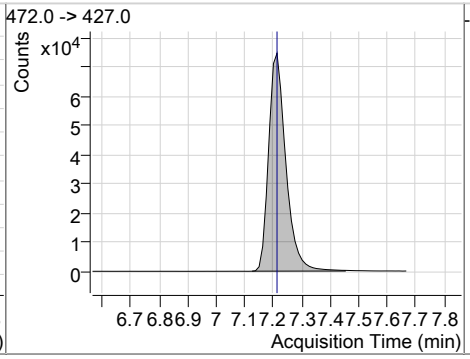


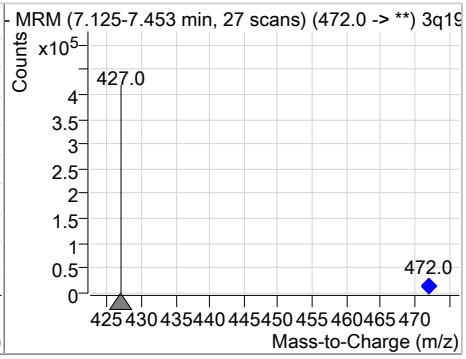




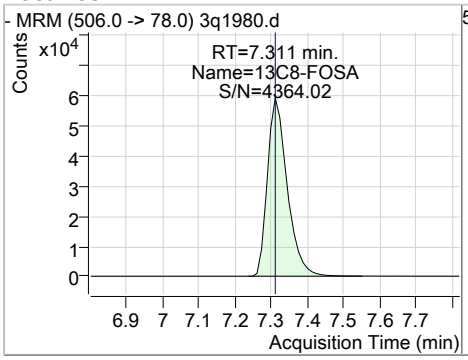
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.99	7.21	0.00	313654				

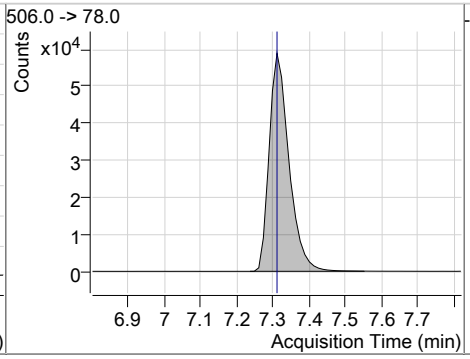


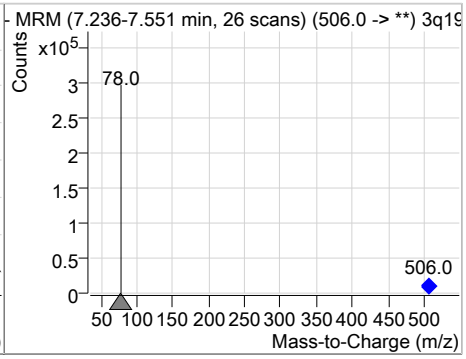




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.17	7.31	0.00	222795				

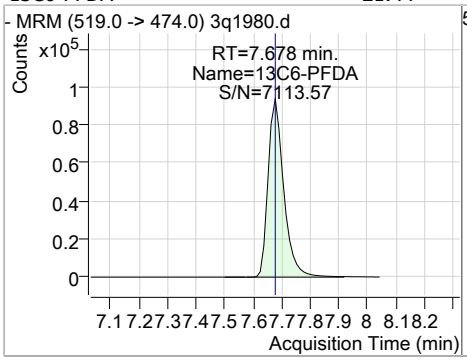


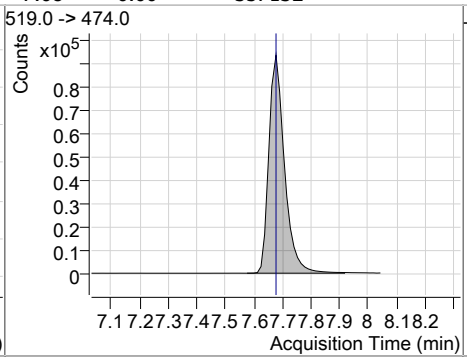


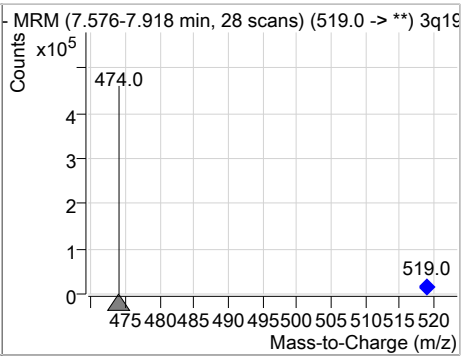


Perfluorinated Compounds by LC/MS/MS

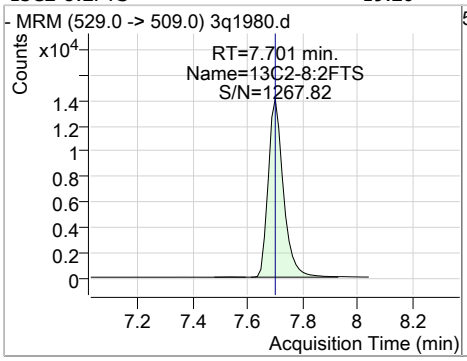
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.44	7.68	0.00	357132				

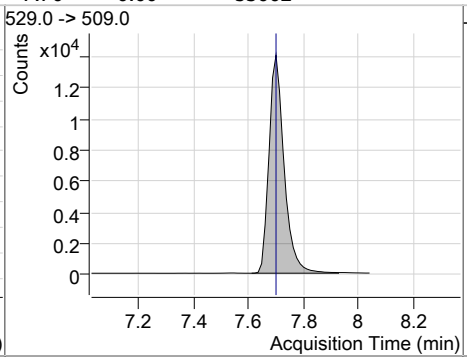


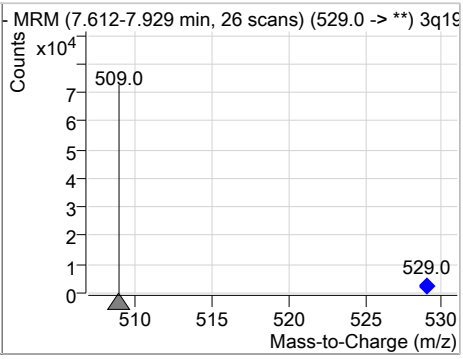




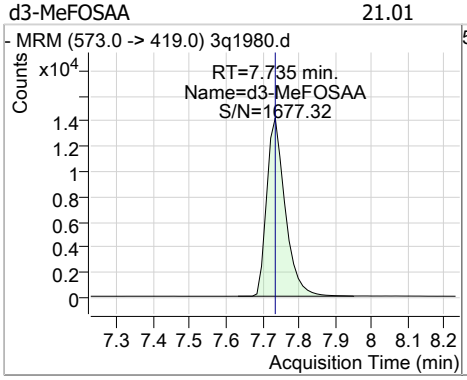
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.20	7.70	0.00	53662				

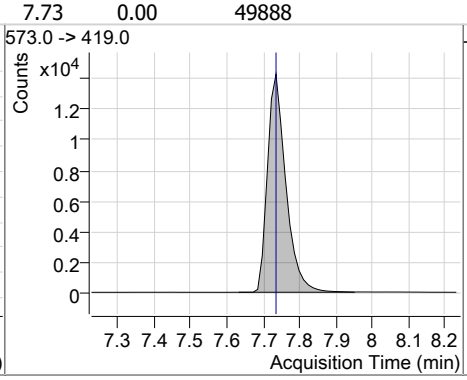


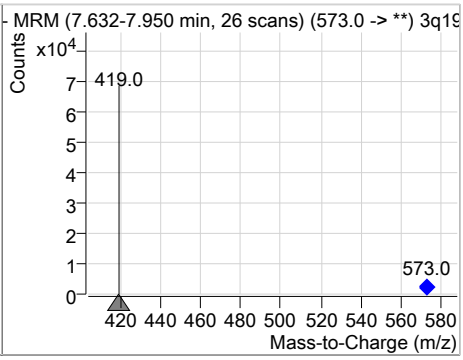




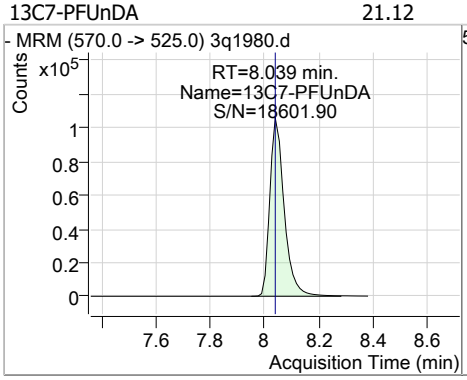
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.01	7.73	0.00	49888				

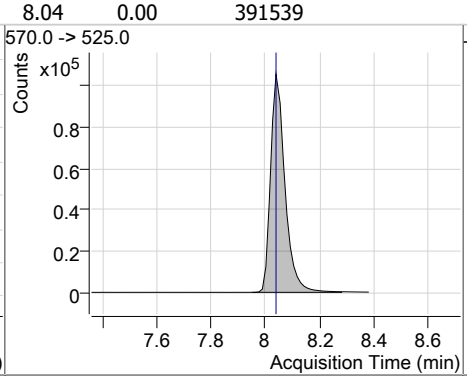


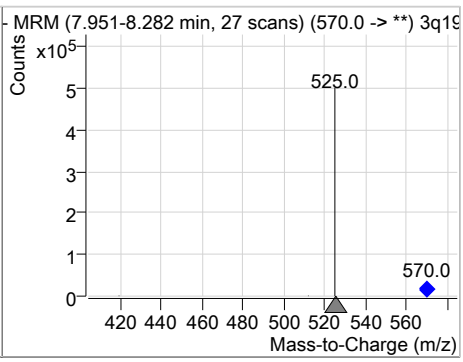




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.12	8.04	0.00	391539				

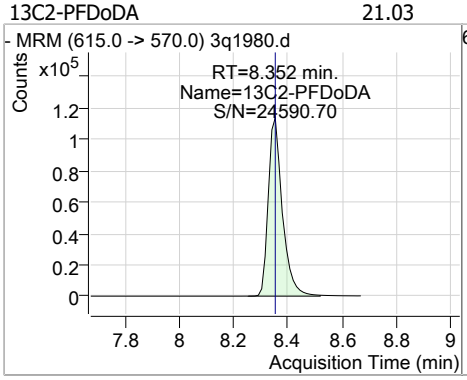


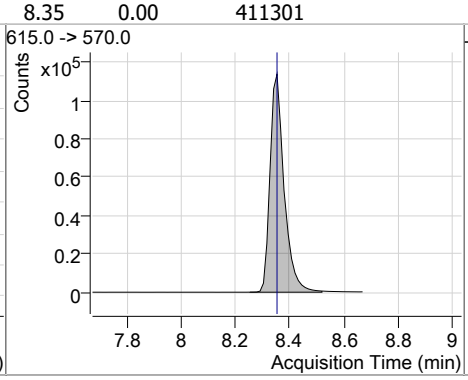


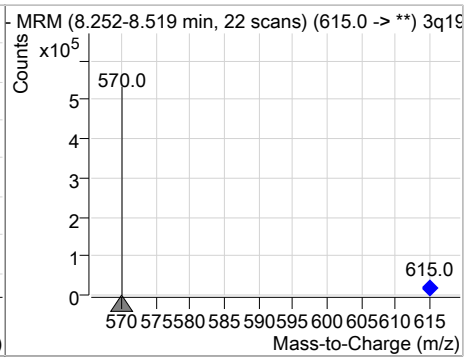


Perfluorinated Compounds by LC/MS/MS

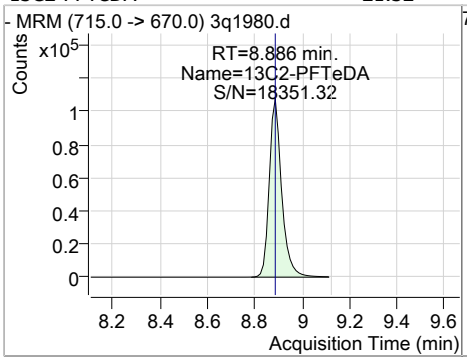
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.03	8.35	0.00	411301				

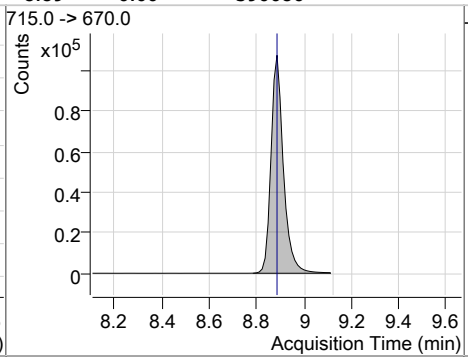


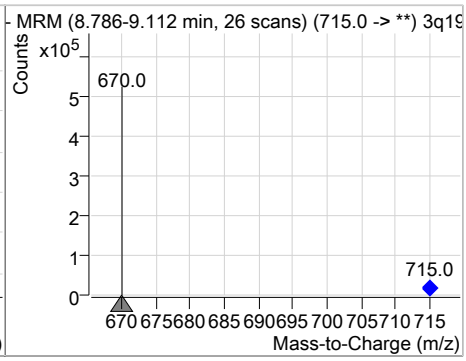




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.32	8.89	0.00	390086				







Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/18/19 13:59

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27655.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 4:37:59 PM
Sample Name : OP74164-BS
Vial : Vial 54
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

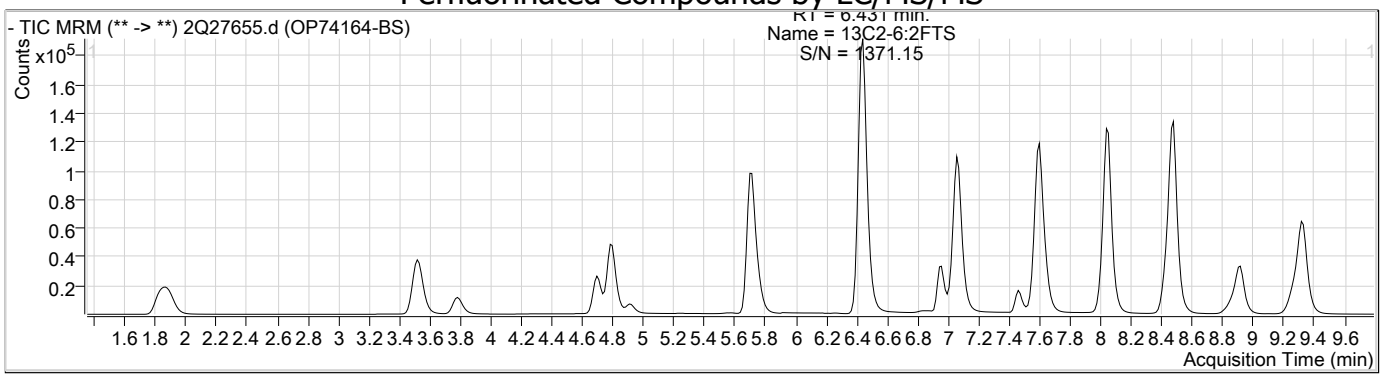
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
13C2-PFOA	6.448	415.0 -> 370.0	295452	20.00	µg/L		0.031
13C4-PFOS	7.048	503.0 -> 80.0	41803	20.00	µg/L		0.031
M4-PFBA	1.865	217.0 -> 172.0	119663	20.00	µg/L		0.000
M5-PFPeA	3.524	268.0 -> 223.0	101650	20.00	µg/L		0.032
M5-PFHxA	4.789	318.0 -> 273.0	146013	20.00	µg/L		0.026
M4-PFHpA	5.705	367.0 -> 322.0	203255	20.00	µg/L		0.017
M8-PFOA	6.446	421.0 -> 376.0	217941	20.00	µg/L		0.031
M9-PFNA	7.065	472.0 -> 427.0	216767	20.00	µg/L		0.020
M6-PFDA	7.607	519.0 -> 474.0	278971	20.00	µg/L		0.033
M7-PFUnDA	8.041	570.0 -> 525.0	354962	20.00	µg/L		0.015
M2-PFDoDA	8.478	615.0 -> 570.0	408923	20.00	µg/L		0.028
M2-PFTeDA	9.315	715.0 -> 670.0	210145	20.00	µg/L		0.012
M8-FOSA	6.959	506.0 -> 78.0	81411	20.00	µg/L		0.032
M3-PFBS	3.780	302.0 -> 99.0	17425	20.00	µg/L		0.025
M3-PFHxS	5.748	402.0 -> 99.0	18289	20.00	µg/L		0.026
M8-PFOS	7.045	507.0 -> 99.0	23227	20.00	µg/L		0.030
M2-4:2FTS	4.696	329.0 -> 309.0	60560	20.00	µg/L		0.028
M2-6:2FTS	6.431	429.0 -> 409.0	65851	20.00	µg/L		0.030
M2-8:2FTS	7.642	529.0 -> 509.0	42477	20.00	µg/L		0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	32359	20.00	µg/L		0.029
M3-HFPO-DA	5.081	287.0 -> 169.0	0	100.00	µg/L	m	0.026
System Monitoring Compounds							
13C2-4:2FTS	4.696	329.0 -> 309.0	60372	14.54	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.7%			
13C2-6:2FTS	6.431	429.0 -> 409.0	65828	15.10	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.5%			
13C2-8:2FTS	7.642	529.0 -> 509.0	42476	14.96	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.8%			
13C2-PFDoDA	8.478	615.0 -> 570.0	408877	14.65	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%			
13C2-PFTeDA	9.315	715.0 -> 670.0	209484	10.84	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 54.2%			
13C3-PFBS	3.780	302.0 -> 99.0	17369	14.34	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.7%			
13C3-PFHxS	5.748	402.0 -> 99.0	18326	13.45	µg/L		0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.3%			
13C4-PFBA	1.865	217.0 -> 172.0	119349	13.77	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.8%			
13C4-PFHpA	5.705	367.0 -> 322.0	203169	14.11	µg/L		0.017
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.6%			
13C5-PFHxA	4.789	318.0 -> 273.0	145828	14.22	µg/L		0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.1%			
13C5-PFPeA	3.524	268.0 -> 223.0	101324	14.13	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.6%			
13C6-PFDA	7.607	519.0 -> 474.0	278315	15.03	µg/L		0.033

Perfluorinated Compounds by LC/MS/MS

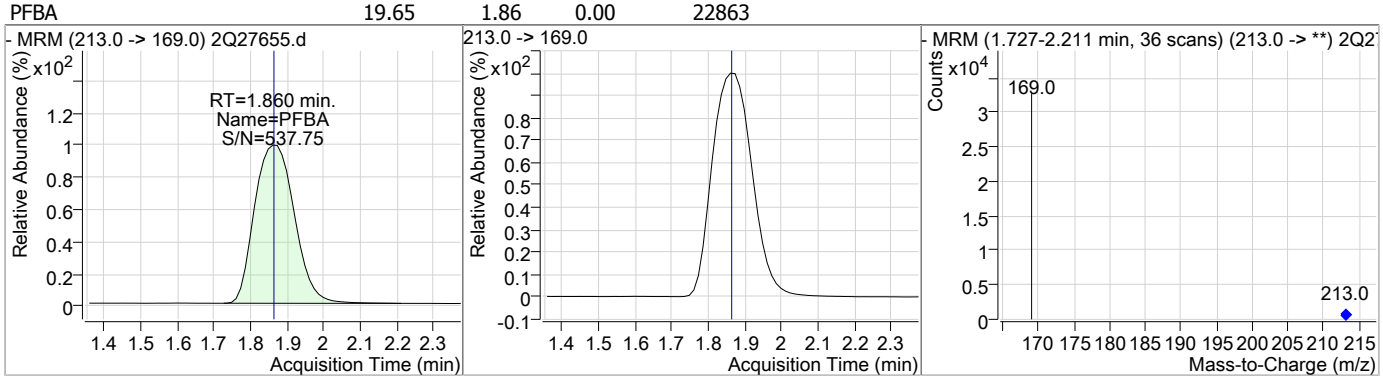
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.2%			
13C7-PFUnDA	8.041	570.0 -> 525.0	354843	14.81	µg/L		0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.1%			
13C8-FOSA	6.959	506.0 -> 78.0	81416	14.30	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.5%			
13C8-PFOA	6.446	421.0 -> 376.0	217895	14.63	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 73.2%			
13C8-PFOS	7.045	507.0 -> 99.0	23209	14.03	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.2%			
13C9-PFNA	7.065	472.0 -> 427.0	216790	15.13	µg/L		0.020
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.6%			
d3-MeFOSAA	7.459	573.0 -> 419.0	32321	13.52	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.6%			
M2-PFOA	6.448	415.0 -> 370.0	295588	19.99	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	41782	19.99	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	0	0.00	µg/L	m	0.026
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	34121	19.37	µg/L		99
6:2FTS	6.432	427.0 -> 407.0	32137	19.09	µg/L		98
8:2FTS	7.643	527.0 -> 507.0	22155	19.75	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	13235	18.57	µg/L		98
FOSA	6.947	498.0 -> 78.0	37526	20.22	µg/L		99
MeFOSAA	7.460	570.0 -> 419.0	16953	19.72	µg/L		100
PFBA	1.860	213.0 -> 169.0	22863	19.65	µg/L		100
PFBS	3.783	299.0 -> 80.0	26779	18.60	µg/L		100
PFDA	7.595	513.0 -> 469.0	114774	19.49	µg/L		99
PFDoDA	8.480	613.0 -> 569.0	185675	19.37	µg/L		99
PFDS	8.014	599.0 -> 80.0	6911	15.06	µg/L		99
PFHpA	5.708	363.0 -> 319.0	178768	18.75	µg/L		100
PFHpS	6.454	449.0 -> 80.0	18981	20.49	µg/L		100
PFHxA	4.791	313.0 -> 269.0	47273	18.71	µg/L		99
PFHxS	5.751	399.0 -> 80.0	20903	19.19	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	132813	18.92	µg/L		100
PFNS	7.565	549.0 -> 80.0	14548	16.73	µg/L		99
PFOA	6.450	413.0 -> 369.0	115467	19.37	µg/L		97
PFOS	7.049	499.0 -> 80.0	21951	18.44	µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	85897	18.60	µg/L		100
PFPeS	4.908	349.0 -> 80.0	18028	18.30	µg/L		99
PFTeDA	9.319	713.0 -> 669.0	143090	19.95	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	167474	21.22	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	150704	20.05	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

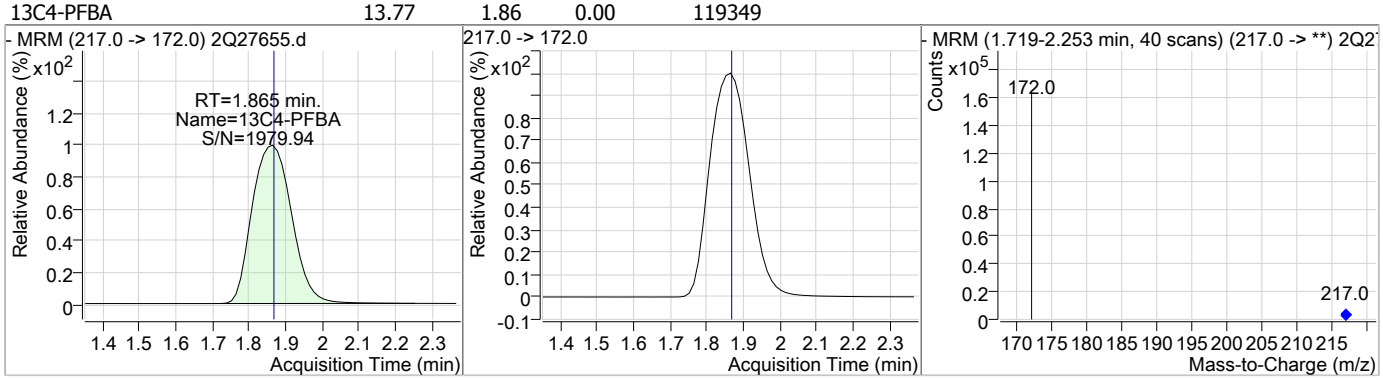
Perfluorinated Compounds by LC/MS/MS



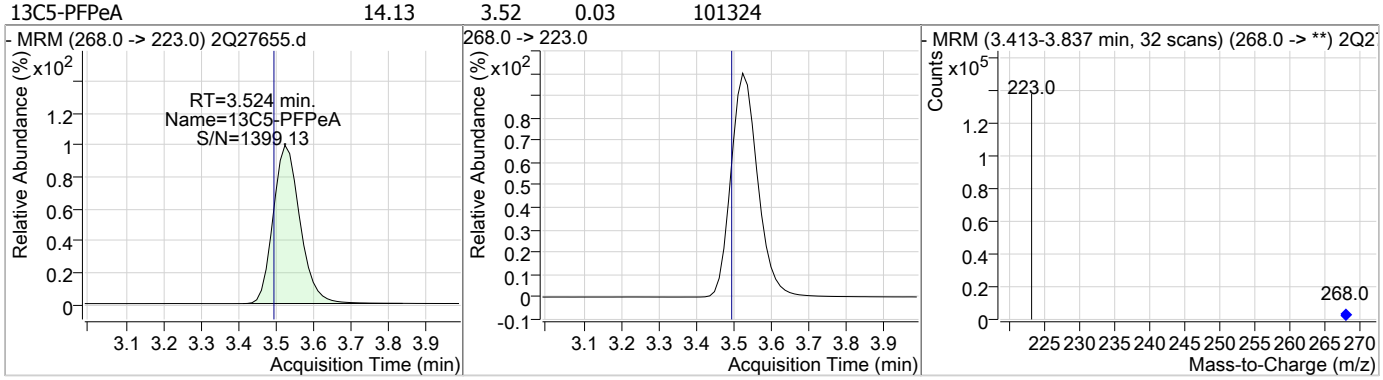
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.65	1.86	0.00	22863				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	13.77	1.86	0.00	119349				

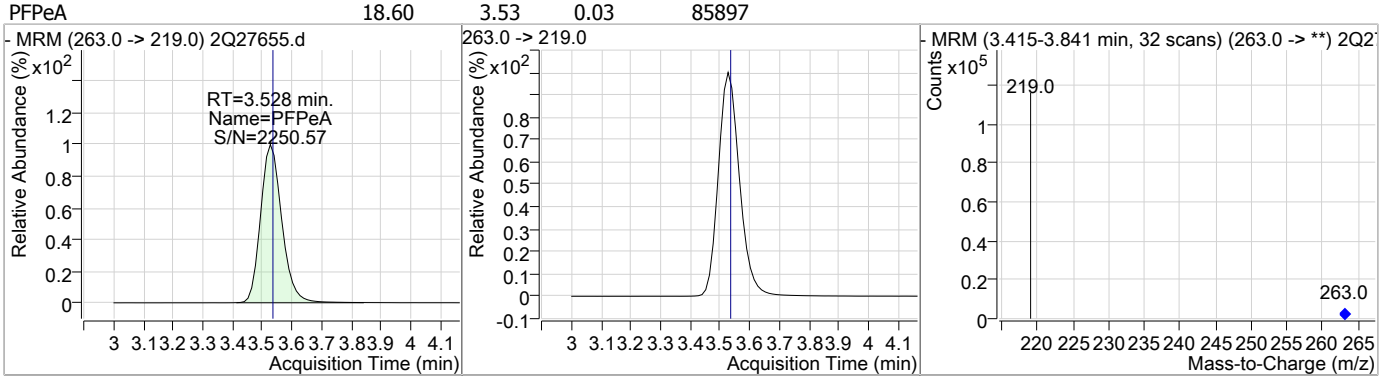


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	14.13	3.52	0.03	101324				

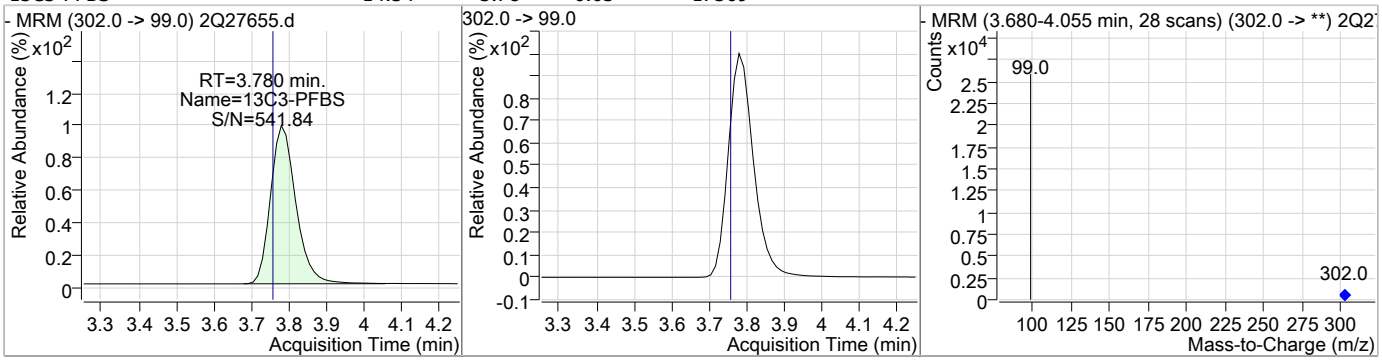


Perfluorinated Compounds by LC/MS/MS

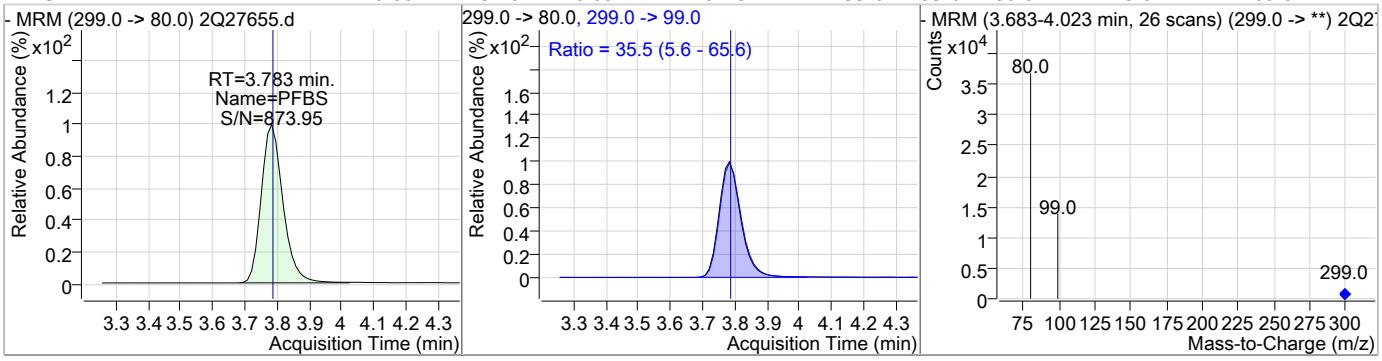
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.60	3.53	0.03	85897				



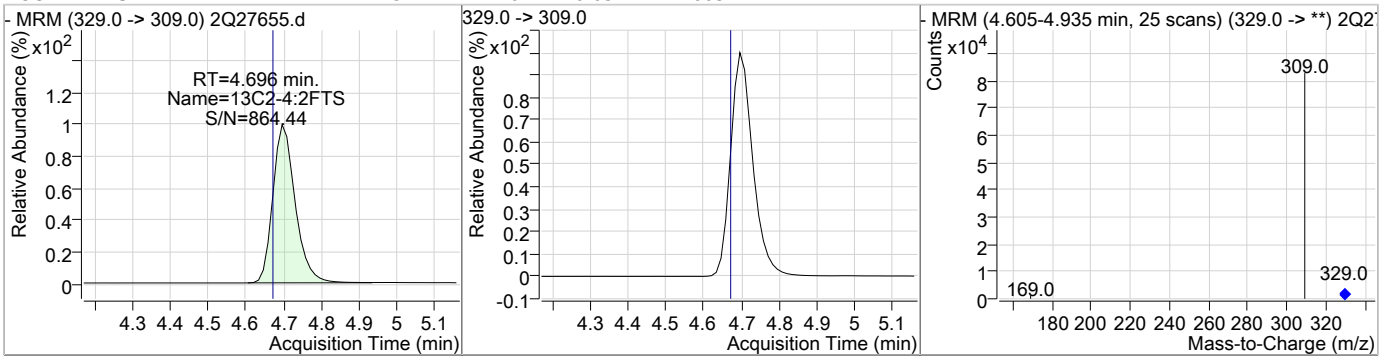
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	14.34	3.78	0.03	17369				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	18.60	3.78	0.03	26779	299.0 -> 99.0	35.5	5.6	65.6

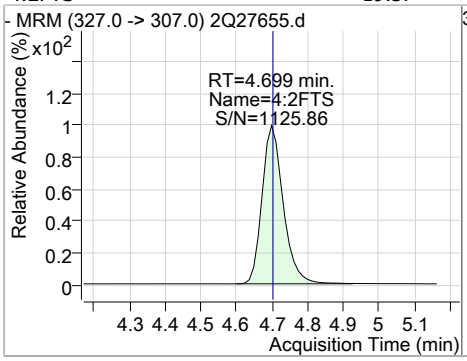


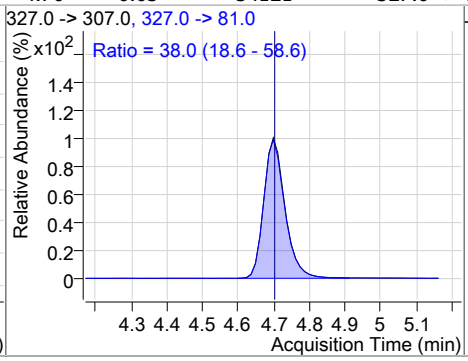
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	14.54	4.70	0.03	60372				

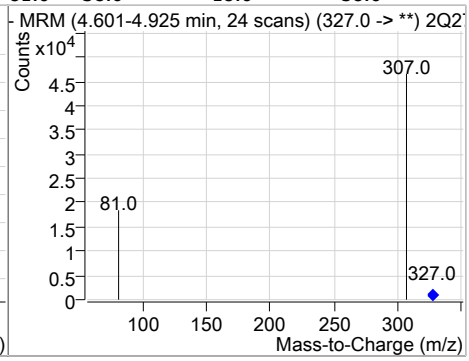


Perfluorinated Compounds by LC/MS/MS

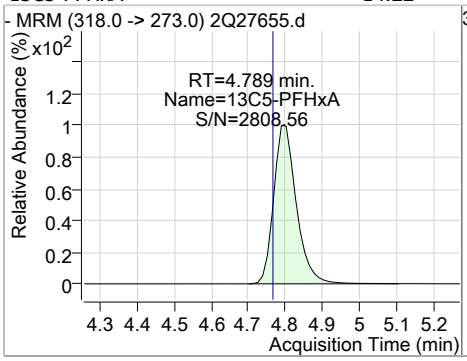
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	19.37	4.70	0.03	34121	327.0 -> 81.0	38.0	18.6	58.6

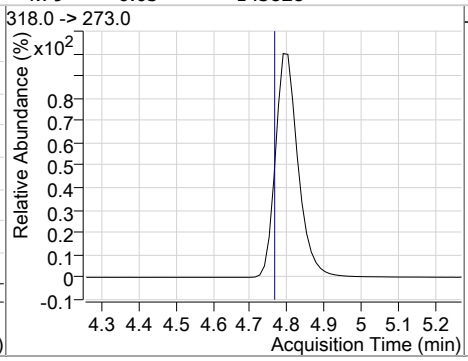


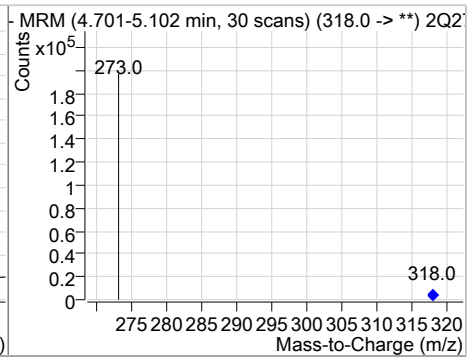




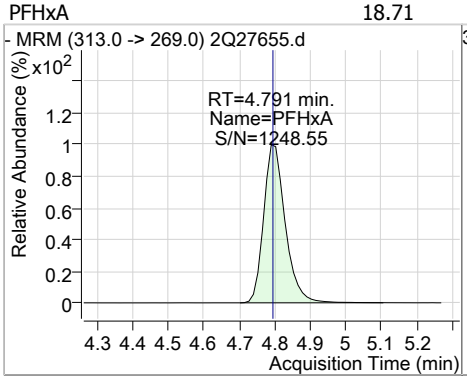
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	14.22	4.79	0.03	145828				

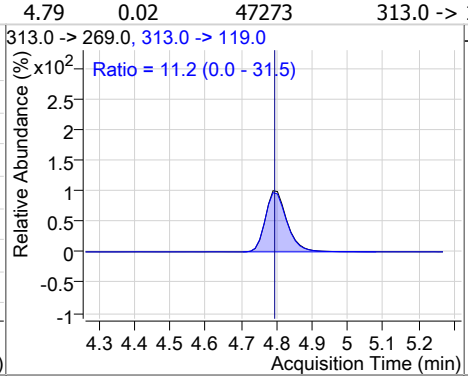


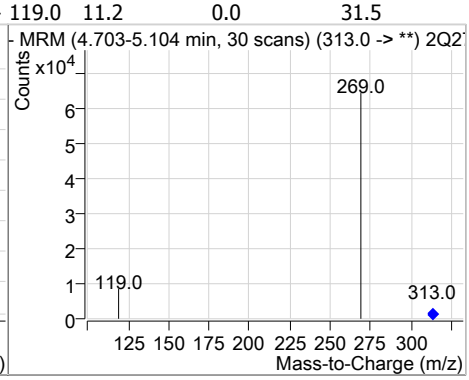




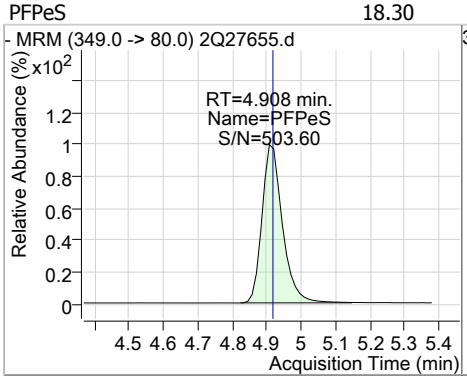
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.71	4.79	0.02	47273	313.0 -> 119.0	11.2	0.0	31.5

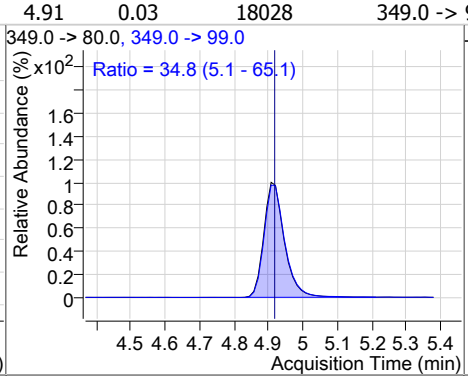


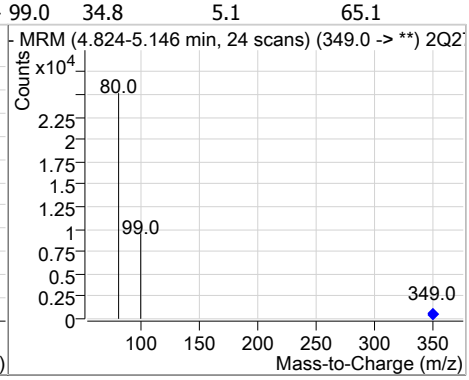




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	18.30	4.91	0.03	18028	349.0 -> 99.0	34.8	5.1	65.1

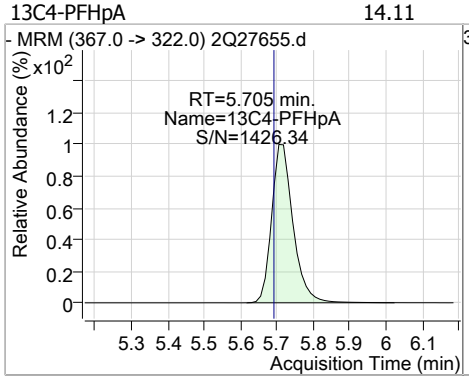


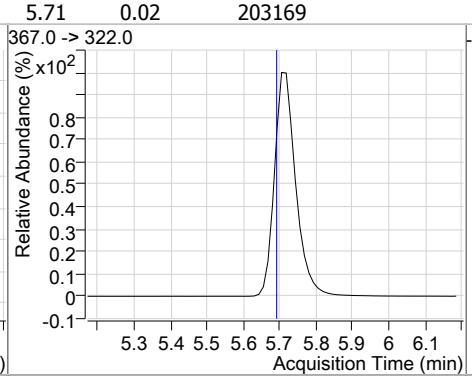


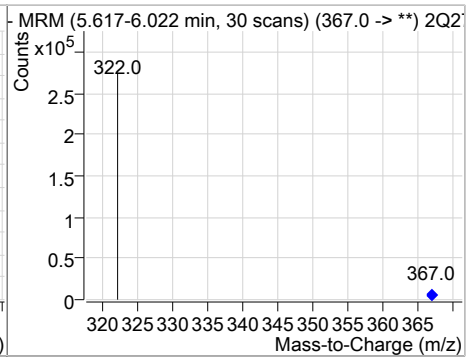


Perfluorinated Compounds by LC/MS/MS

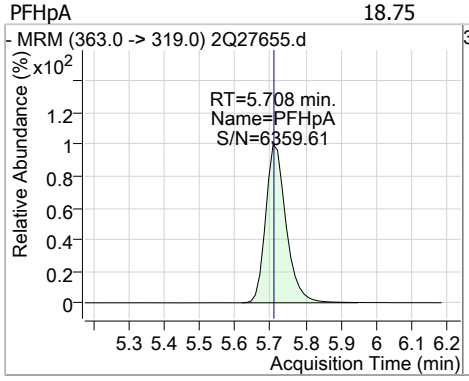
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	14.11	5.71	0.02	203169				

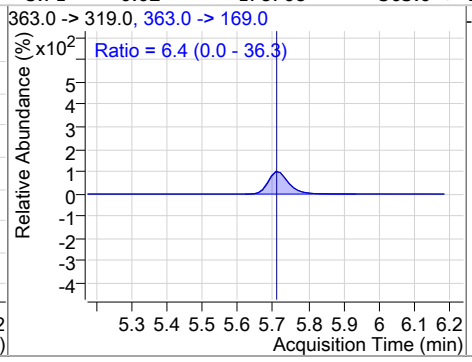


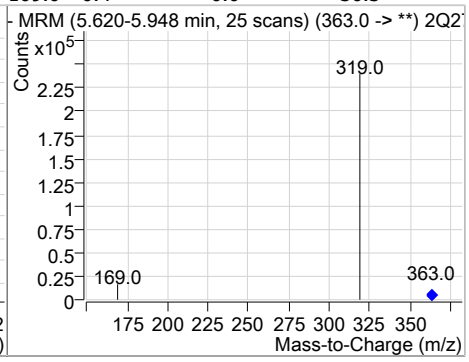




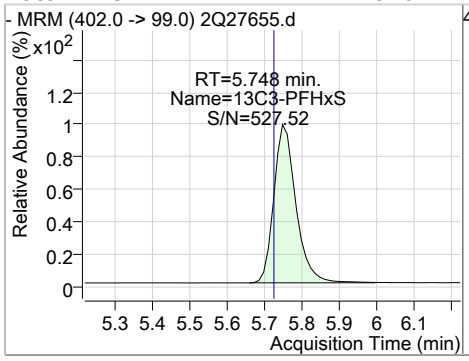
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	18.75	5.71	0.02	178768	363.0 -> 169.0	6.4	0.0	36.3

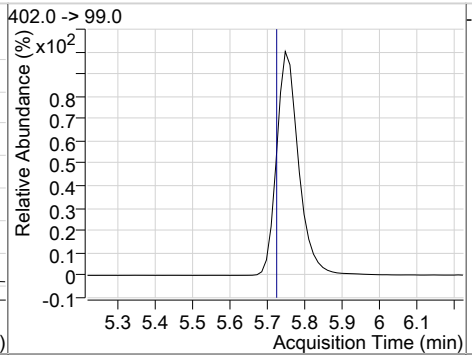


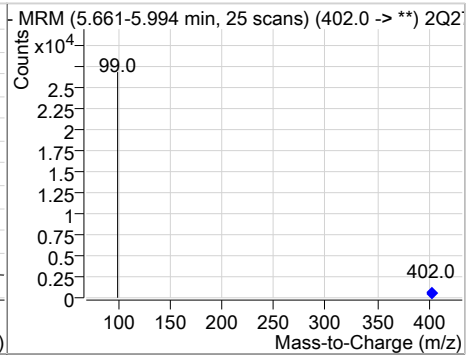




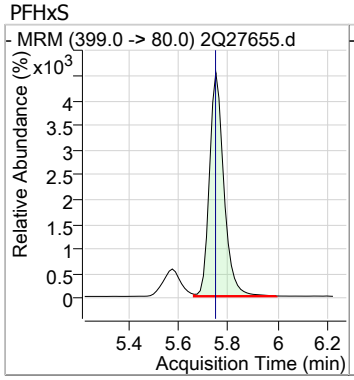
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	13.45	5.75	0.03	18326				

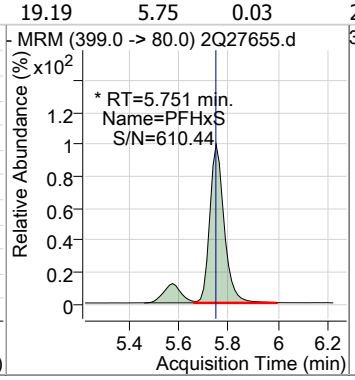


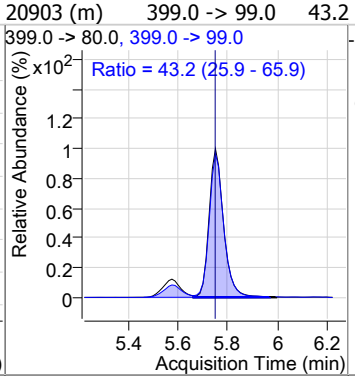


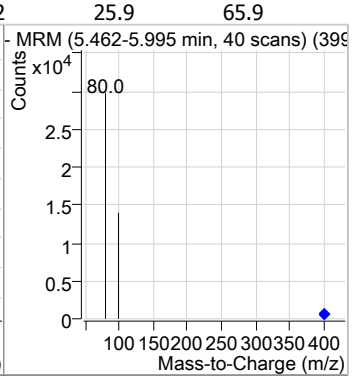


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.19	5.75	0.03	20903 (m)	399.0 -> 99.0	43.2	25.9	65.9



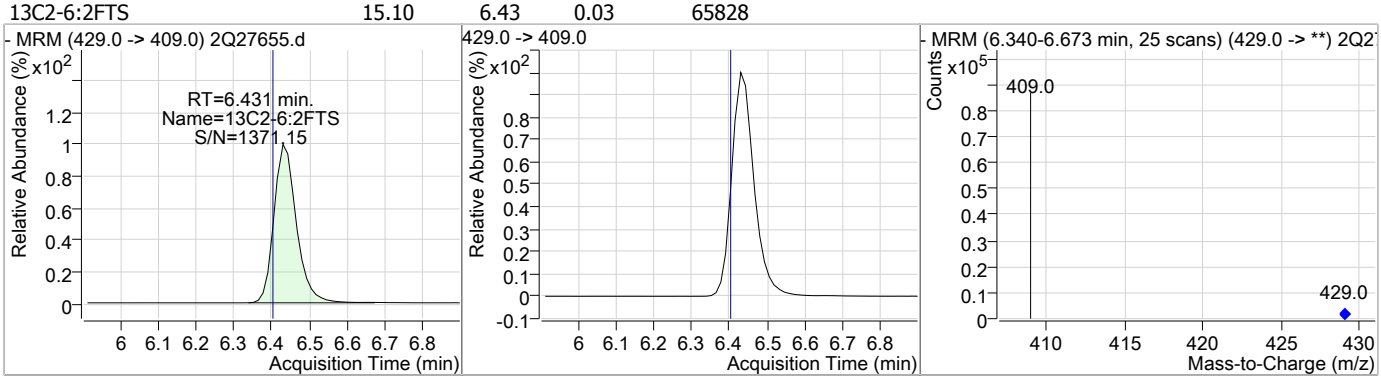




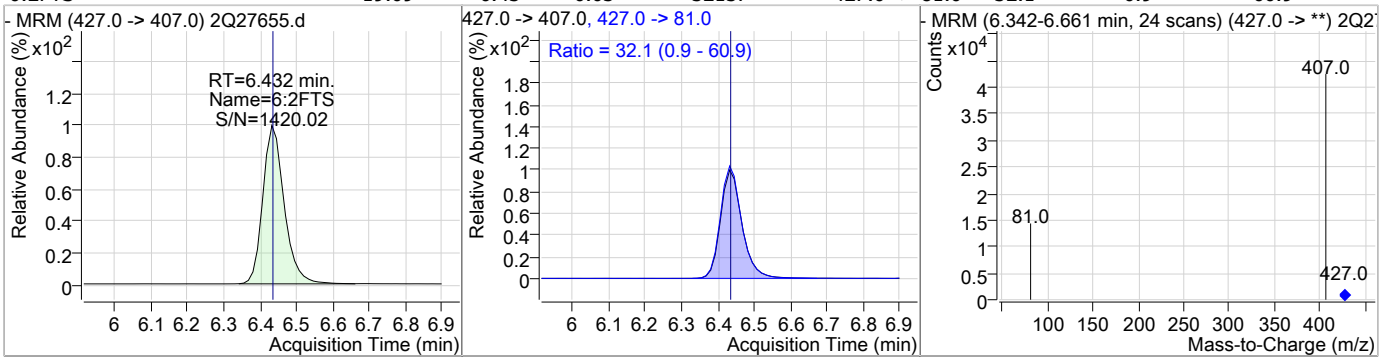


Perfluorinated Compounds by LC/MS/MS

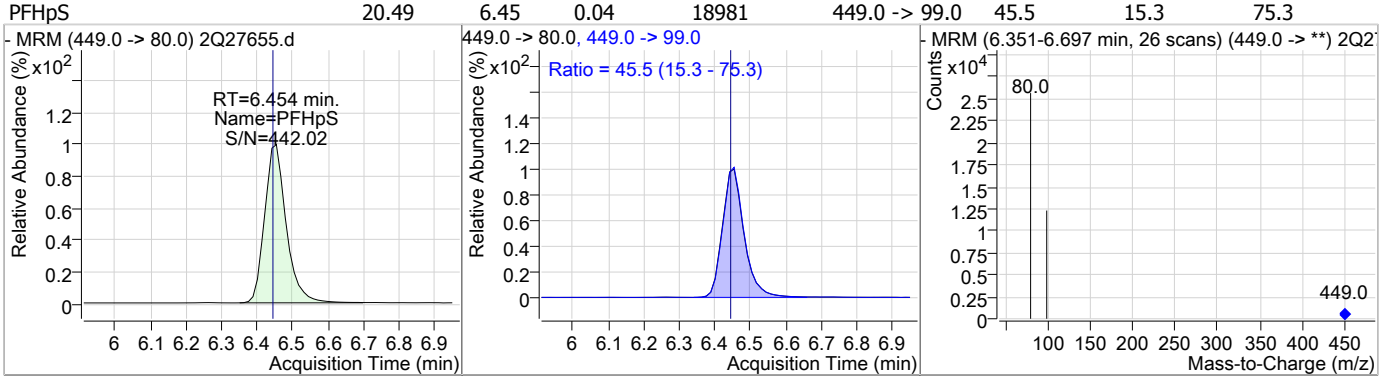
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	15.10	6.43	0.03	65828				



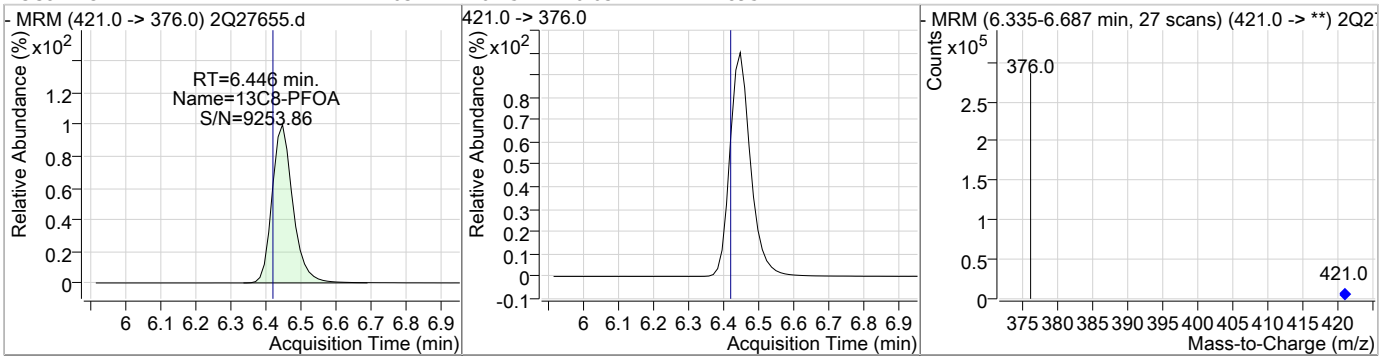
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.09	6.43	0.03	32137	427.0 -> 81.0	32.1	0.9	60.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.49	6.45	0.04	18981	449.0 -> 99.0	45.5	15.3	75.3

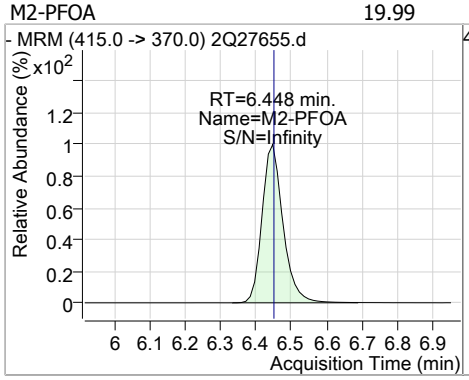


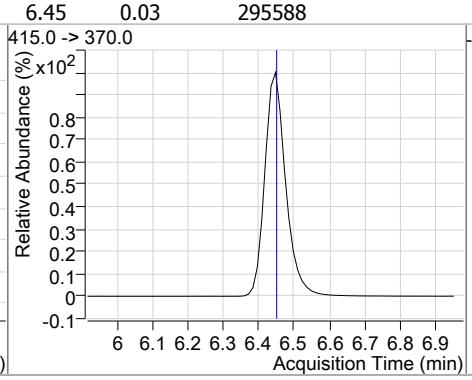
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	14.63	6.45	0.03	217895				

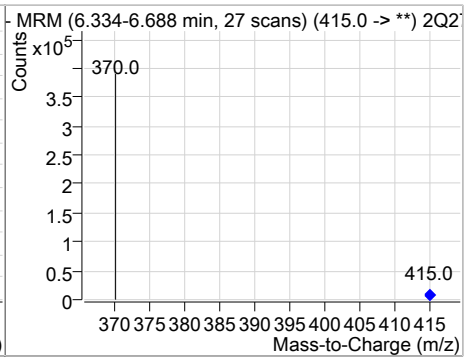


Perfluorinated Compounds by LC/MS/MS

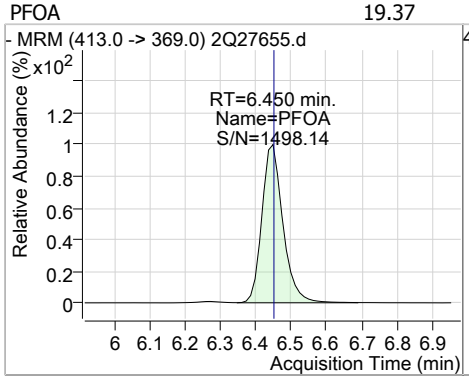
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	295588				

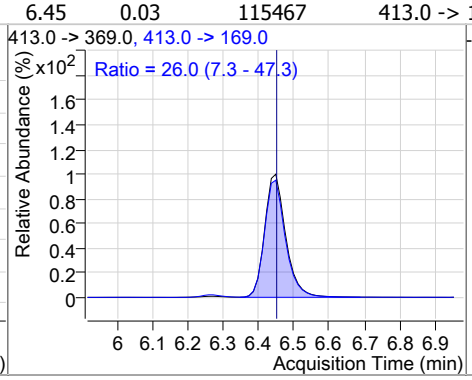


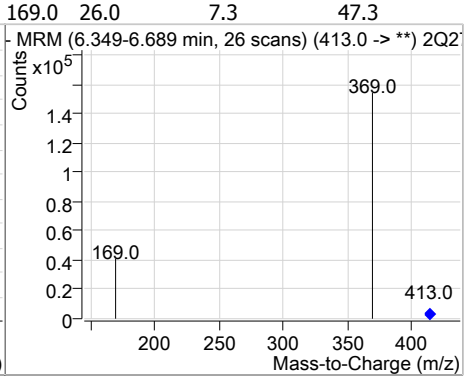




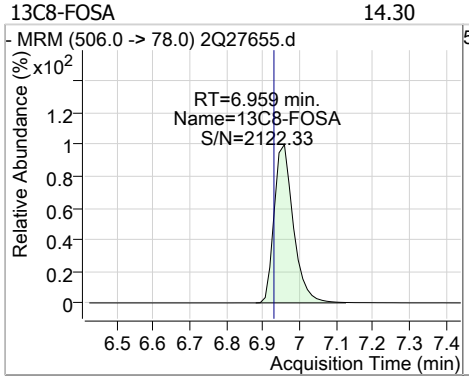
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.37	6.45	0.03	115467	413.0 -> 169.0	26.0	7.3	47.3

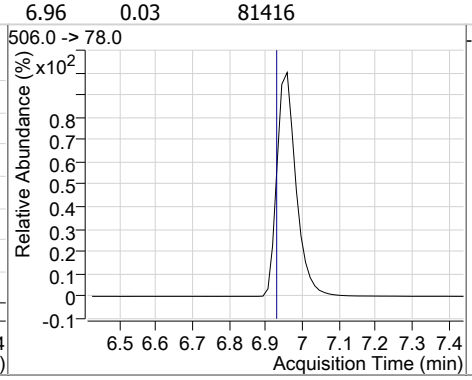


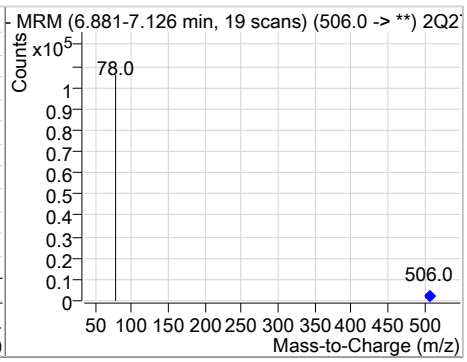




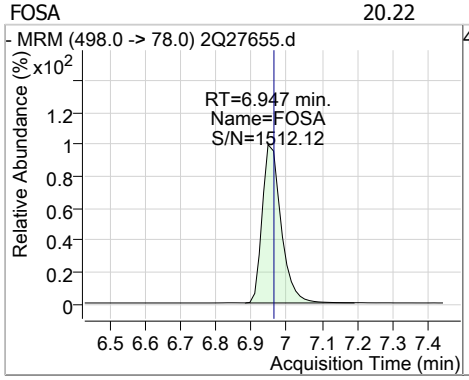
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.30	6.96	0.03	81416				

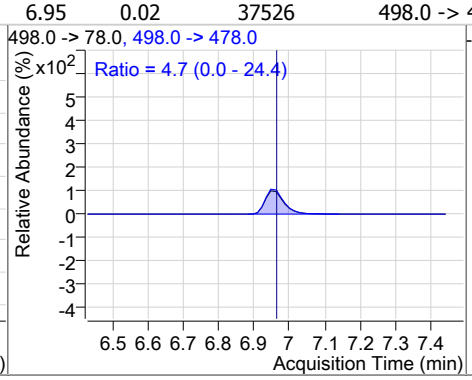


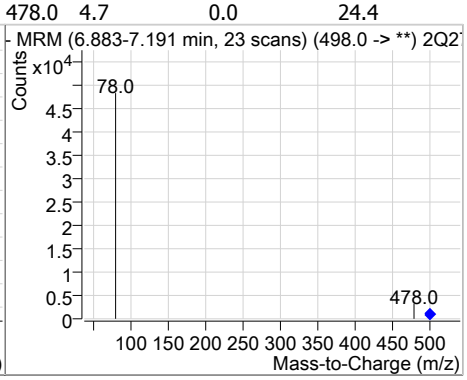




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.22	6.95	0.02	37526	498.0 -> 478.0	4.7	0.0	24.4

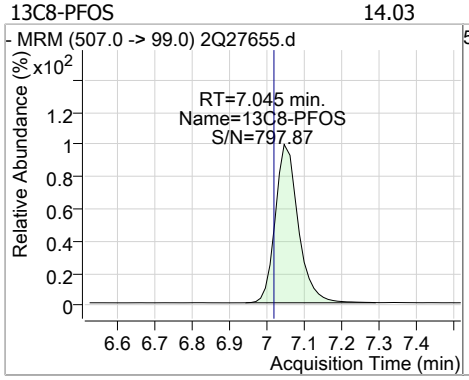


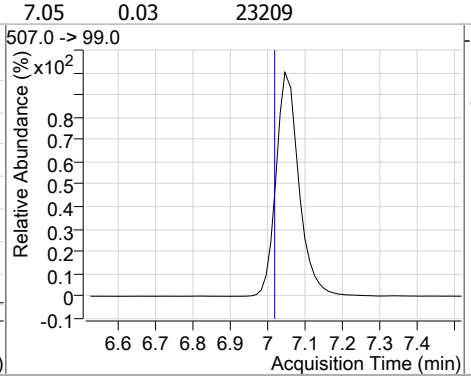


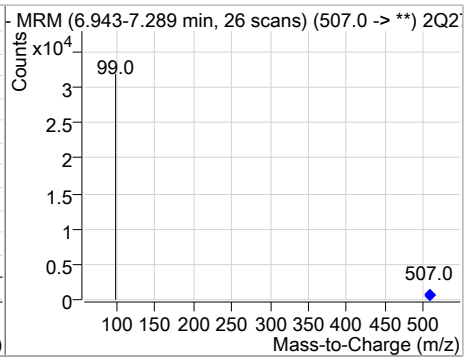


Perfluorinated Compounds by LC/MS/MS

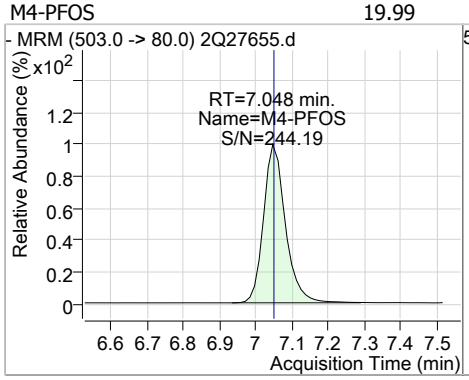
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	14.03	7.05	0.03	23209				

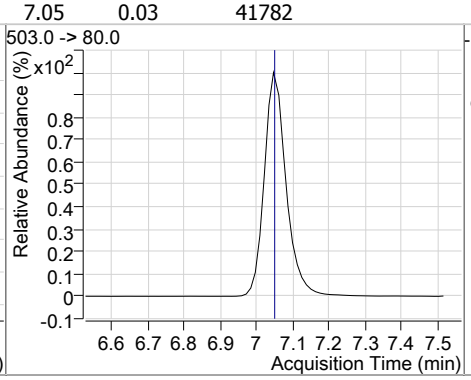


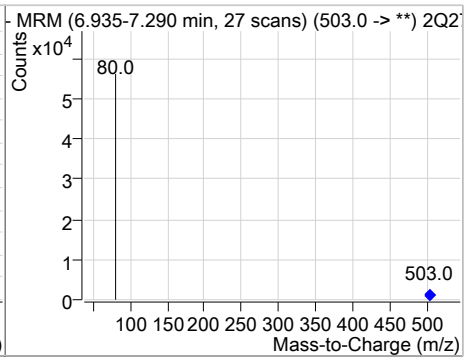




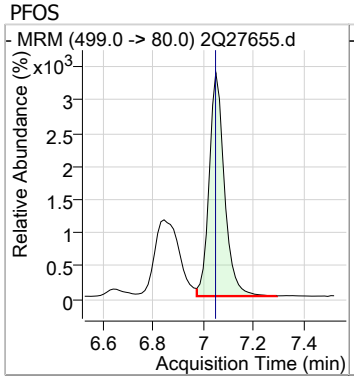
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.03	41782				

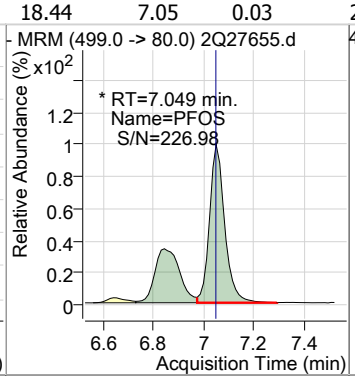


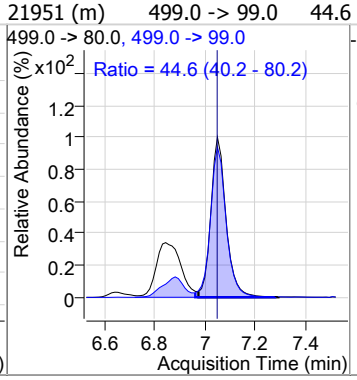


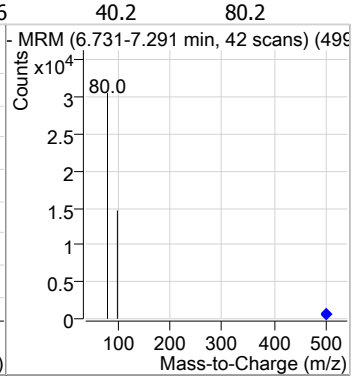


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.44	7.05	0.03	21951 (m)	499.0 -> 99.0	44.6	40.2	80.2

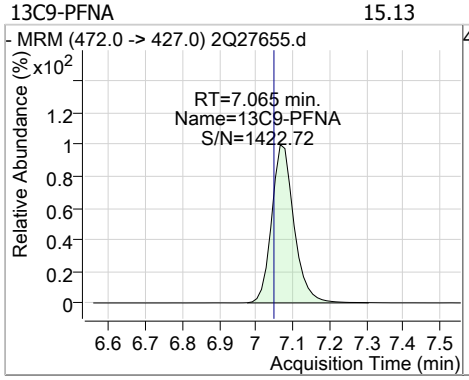


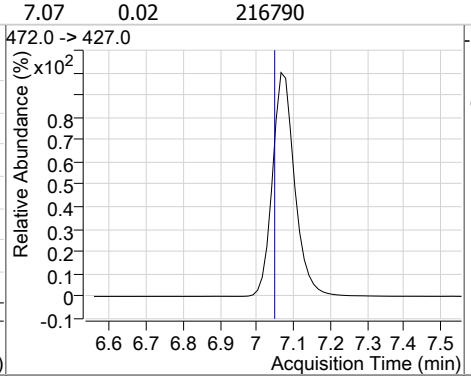


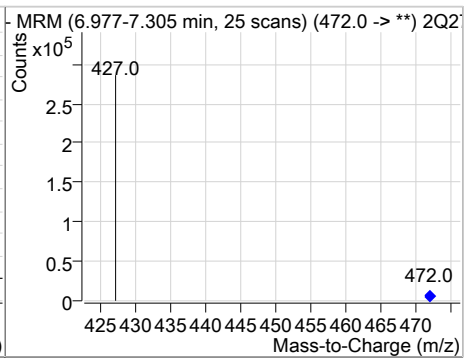




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	15.13	7.07	0.02	216790				

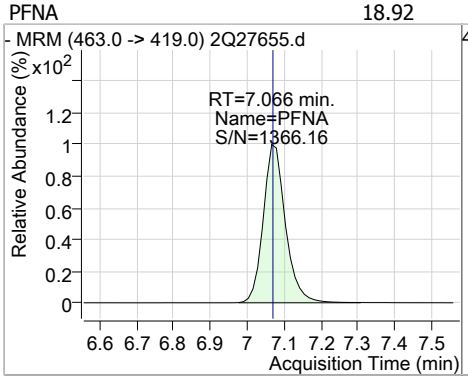


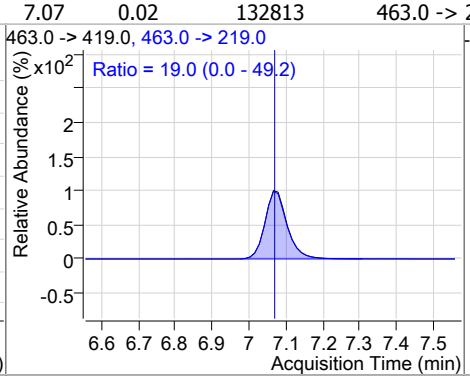


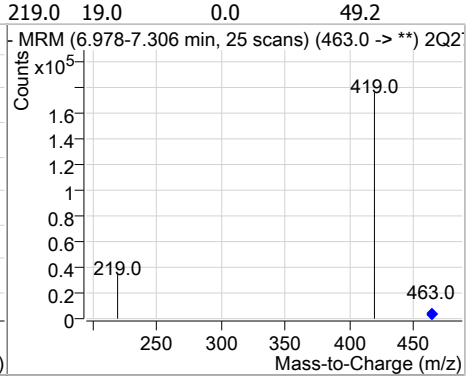


Perfluorinated Compounds by LC/MS/MS

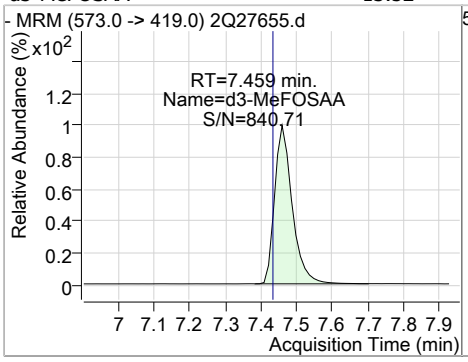
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	18.92	7.07	0.02	132813	463.0 -> 219.0	19.0	0.0	49.2

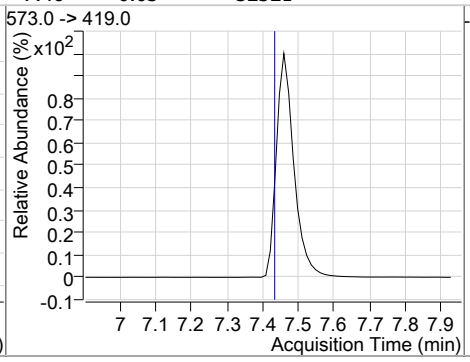


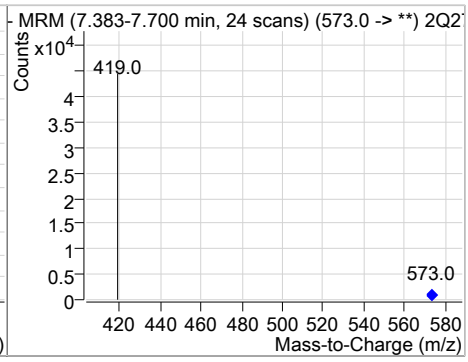




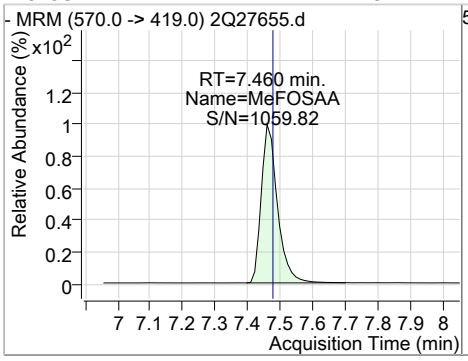
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	13.52	7.46	0.03	32321				

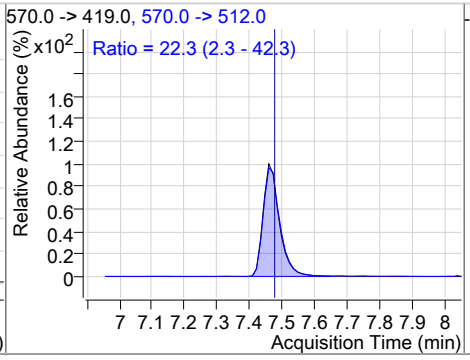


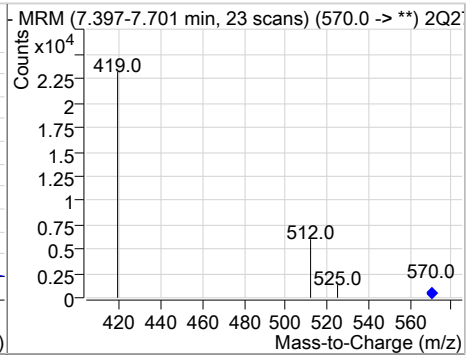




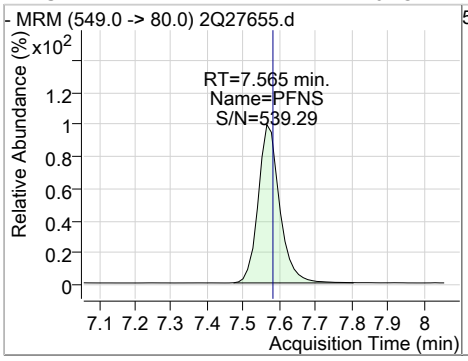
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.72	7.46	0.01	16953	570.0 -> 512.0	22.3	2.3	42.3

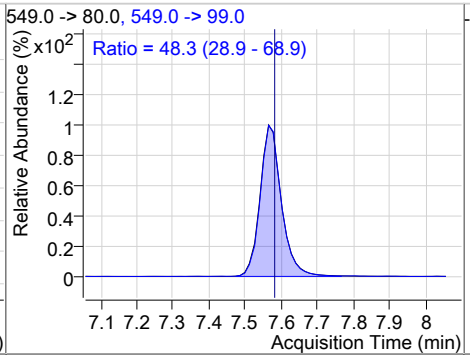


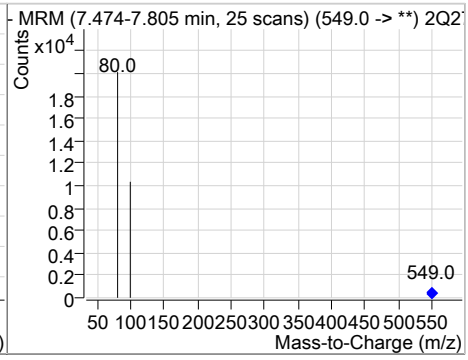




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	16.73	7.57	0.02	14548	549.0 -> 99.0	48.3	28.9	68.9

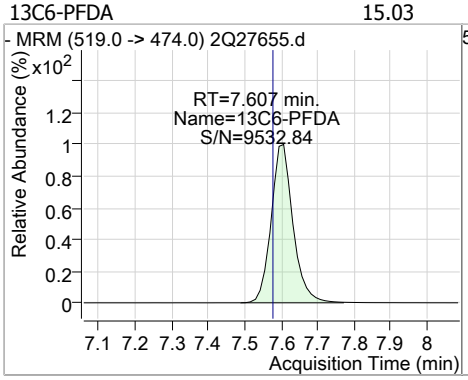


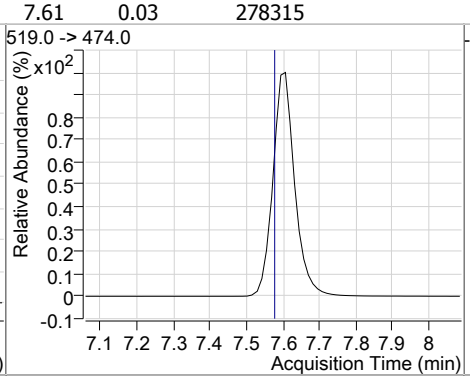


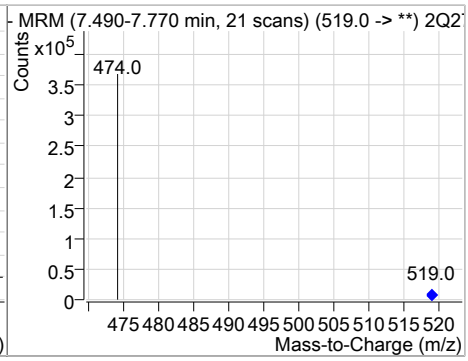


Perfluorinated Compounds by LC/MS/MS

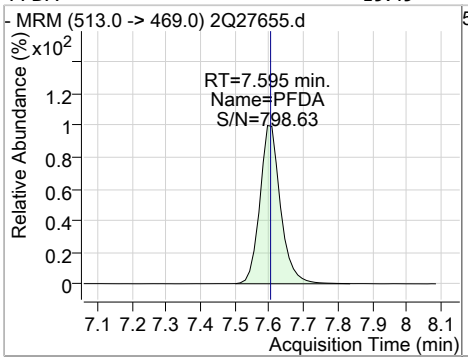
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.03	7.61	0.03	278315				

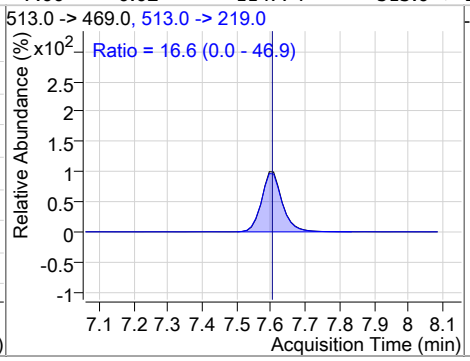


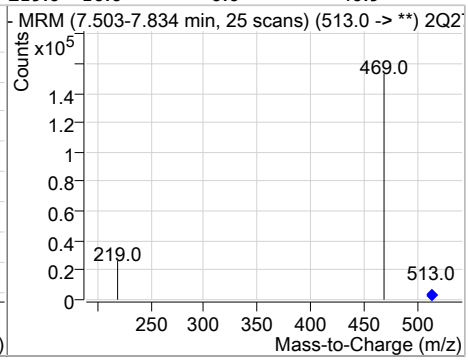




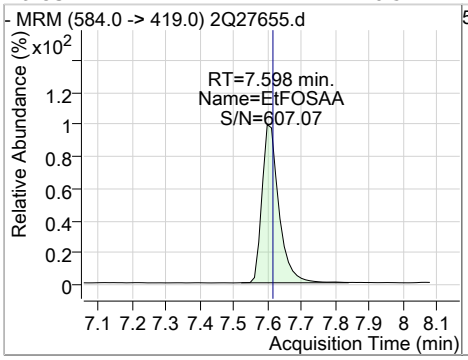
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.49	7.60	0.02	114774	513.0 -> 219.0	16.6	0.0	46.9

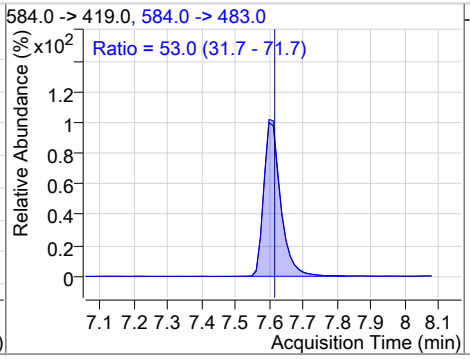


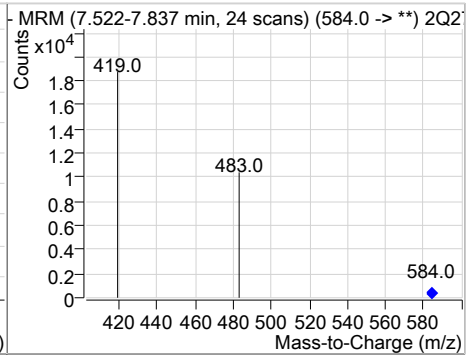




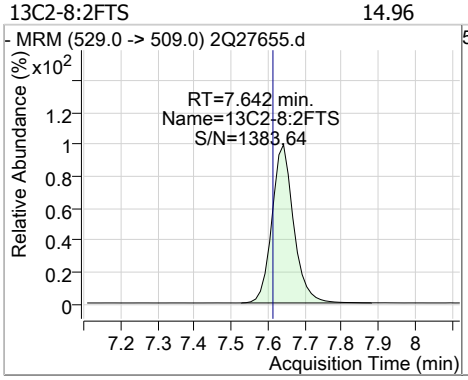
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.57	7.60	0.02	13235	584.0 -> 483.0	53.0	31.7	71.7

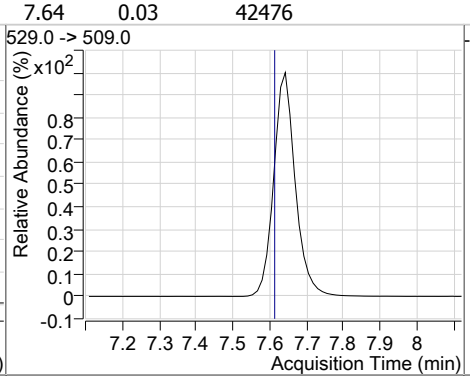


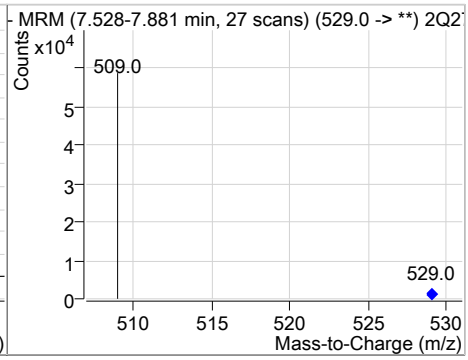




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.96	7.64	0.03	42476				

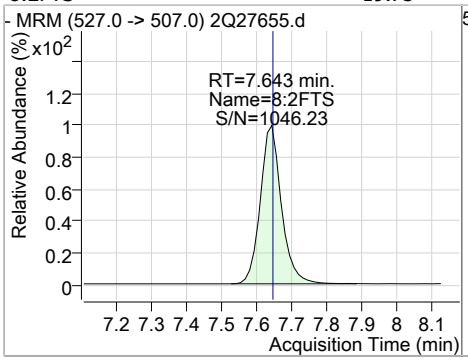


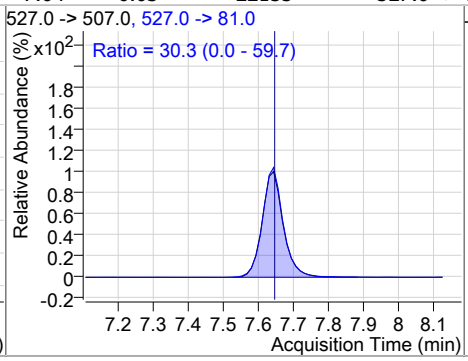


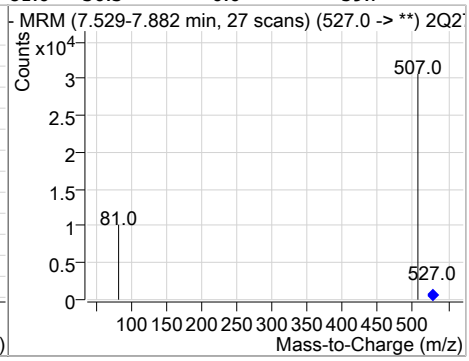


Perfluorinated Compounds by LC/MS/MS

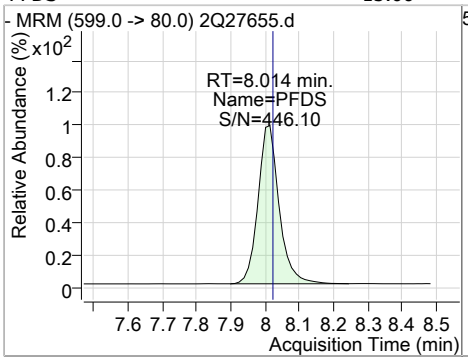
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.75	7.64	0.03	22155	527.0 -> 81.0	30.3	0.0	59.7

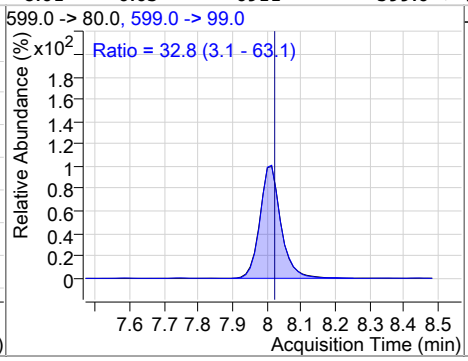


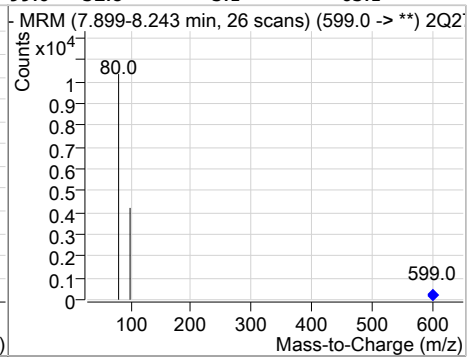




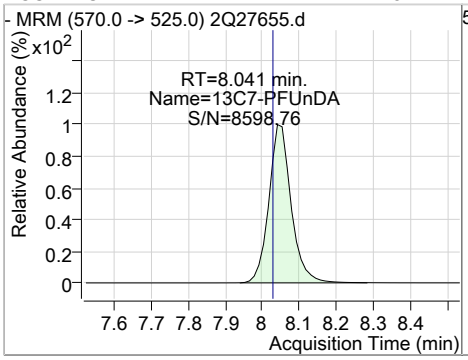
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	15.06	8.01	0.03	6911	599.0 -> 99.0	32.8	3.1	63.1

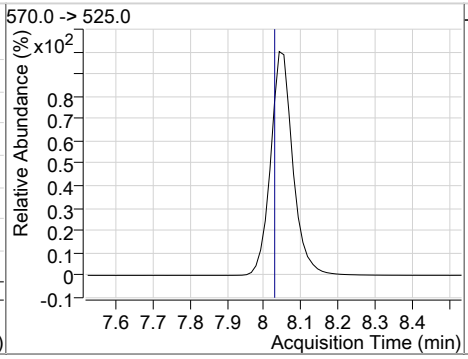


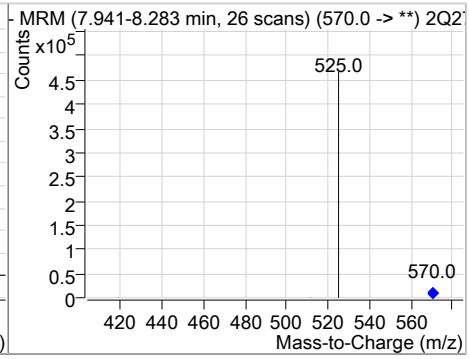




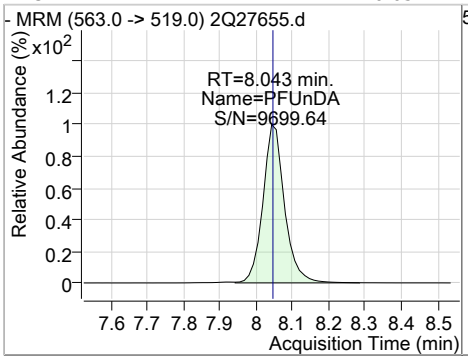
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	14.81	8.04	0.02	354843				

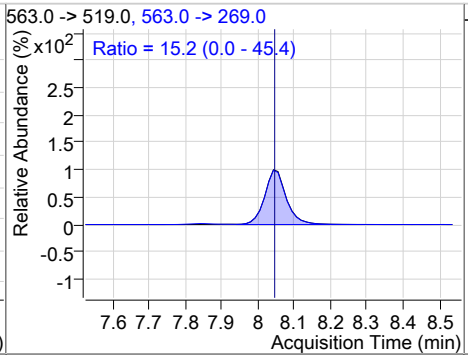


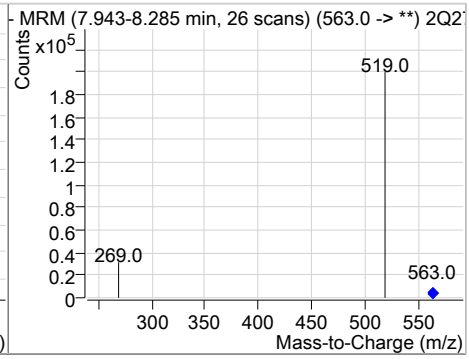




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.05	8.04	0.02	150704	563.0 -> 269.0	15.2	0.0	45.4

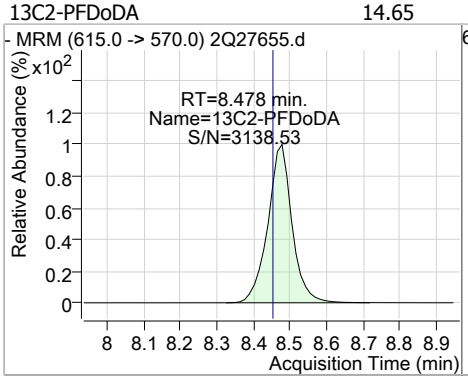


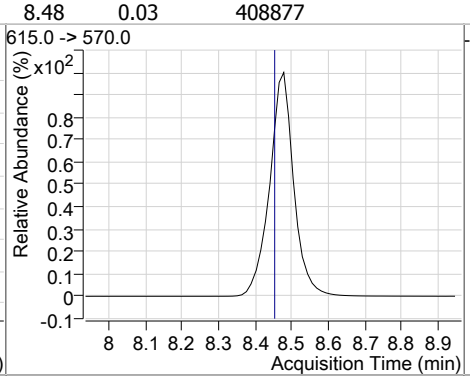


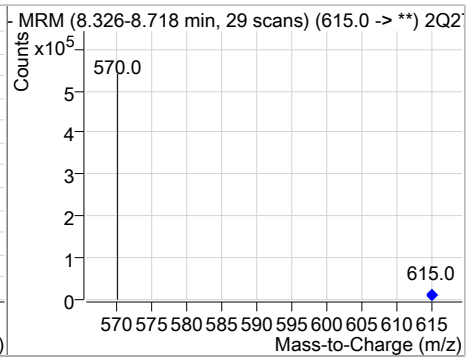


Perfluorinated Compounds by LC/MS/MS

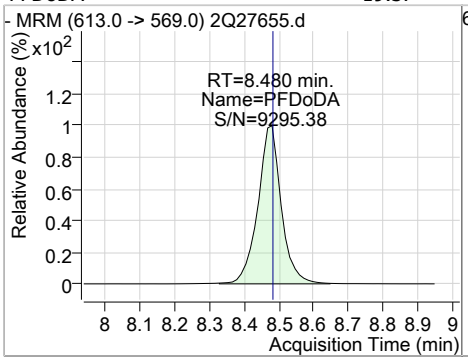
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	14.65	8.48	0.03	408877				

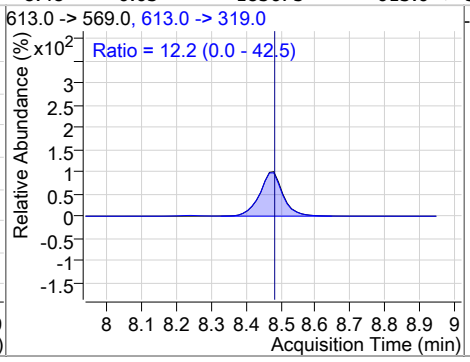


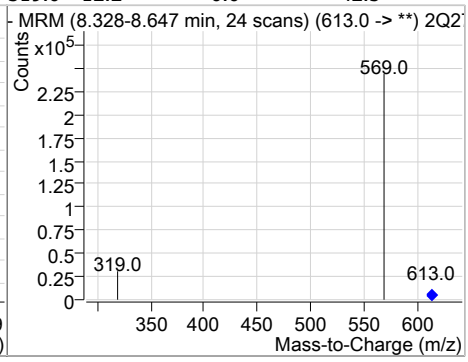




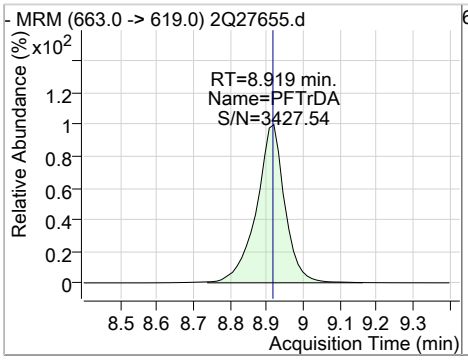
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.37	8.48	0.03	185675	613.0 -> 319.0	12.2	0.0	42.5

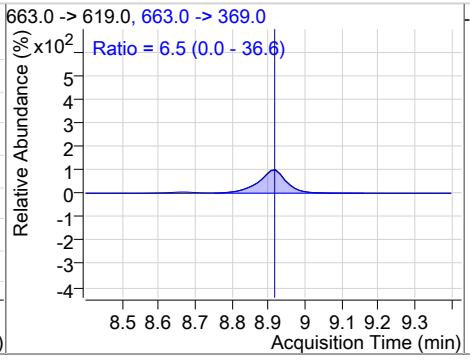


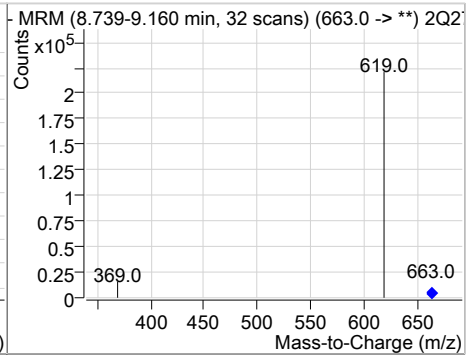




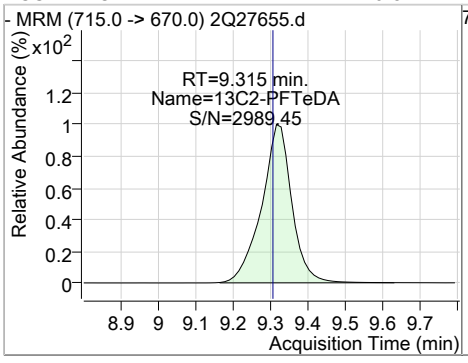
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	21.22	8.92	0.02	167474	663.0 -> 369.0	6.5	0.0	36.6

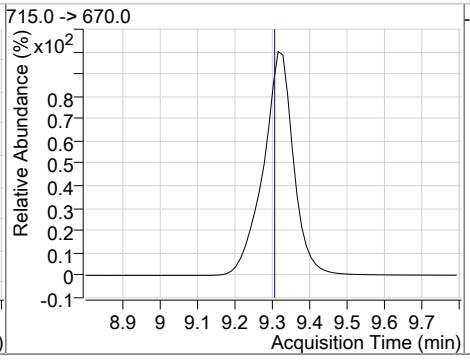


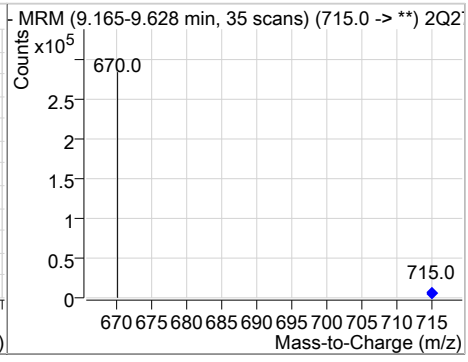




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	10.84	9.31	0.01	209484				

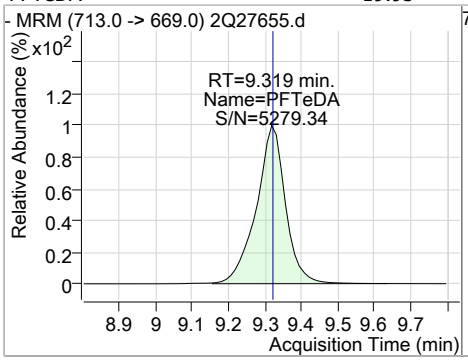


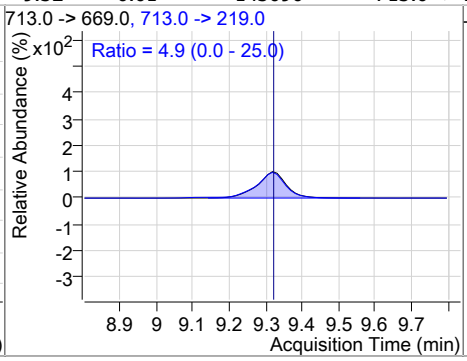


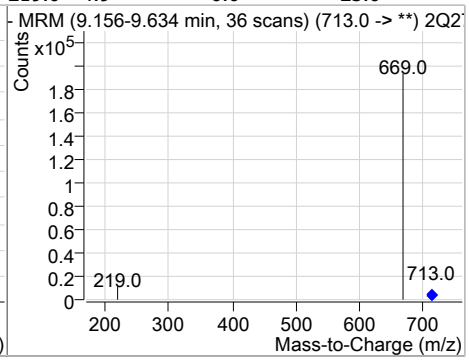


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.95	9.32	0.01	143090	713.0 -> 219.0	4.9	0.0	25.0







Manual Integration Approval Summary

Sample Number: OP74164-BS
Lab FileID: 2Q27655.D
Injection Time: 03/15/19 16:37
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/18/19 09:05 Nancy Saunders
Supervisor approved: 03/18/19 13:59 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27691.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 3:45:29 PM
Sample Name : op74180-bs
Vial : Vial 13
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

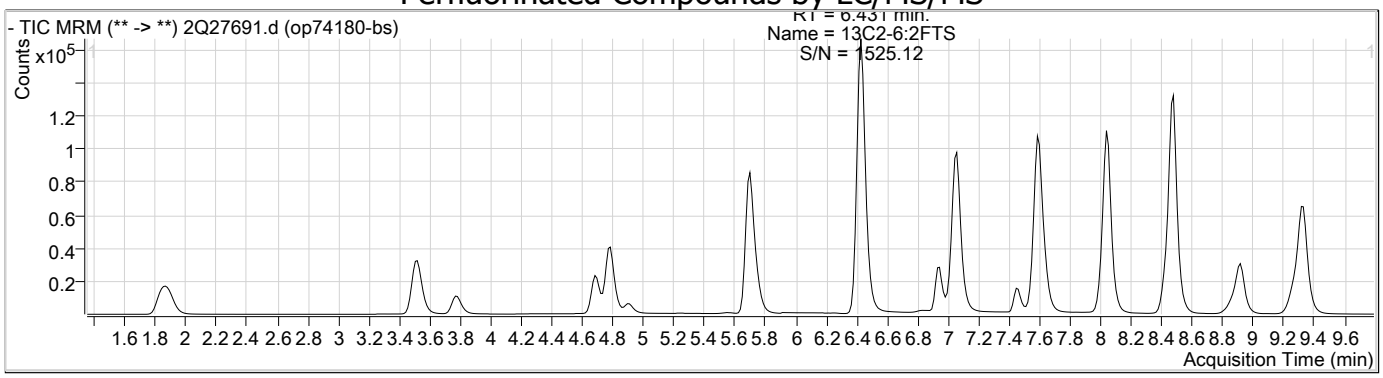
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	250146	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	37068	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	96083	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	82272	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	118261	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	172793	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	181596	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	185776	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	240132	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	298796	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	378526	20.00	µg/L	0.013
M2-PFTeDA	9.328	715.0 -> 670.0	201236	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	66476	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	15321	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	16507	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	21478	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	51928	20.00	µg/L	0.000
M2-6:2FTS	6.431	429.0 -> 409.0	58544	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	39503	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	30151	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	51890	17.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.3%		
13C2-6:2FTS	6.431	429.0 -> 409.0	58490	18.22	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.1%		
13C2-8:2FTS	7.630	529.0 -> 509.0	39524	17.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.1%		
13C2-PFDoDA	8.479	615.0 -> 570.0	378486	20.12	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C2-PFTeDA	9.328	715.0 -> 670.0	201067	15.66	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%		
13C3-PFBS	3.780	302.0 -> 99.0	15324	16.81	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.0%		
13C3-PFHxS	5.748	402.0 -> 99.0	16507	16.19	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
13C4-PFBA	1.865	217.0 -> 172.0	95967	16.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.0%		
13C4-PFHpA	5.705	367.0 -> 322.0	172674	16.70	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.5%		
13C5-PFHxA	4.789	318.0 -> 273.0	118097	16.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	82064	16.14	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C6-PFDA	7.594	519.0 -> 474.0	240089	17.59	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

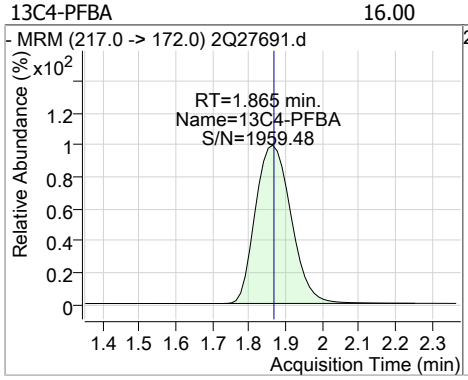
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.0%			
13C7-PFUnDA	8.041	570.0 -> 525.0	298691	17.65	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.2%			
13C8-FOSA	6.944	506.0 -> 78.0	66469	16.39	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%			
13C8-PFOA	6.434	421.0 -> 376.0	181510	17.40	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.0%			
13C8-PFOS	7.045	507.0 -> 99.0	21439	16.45	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.2%			
13C9-PFNA	7.065	472.0 -> 427.0	185689	17.54	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%			
d3-MeFOSAA	7.447	573.0 -> 419.0	30164	15.74	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.7%			
M2-PFOA	6.435	415.0 -> 370.0	250124	19.98	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	37057	19.98	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	30363	21.22	µg/L		99
6:2FTS	6.418	427.0 -> 407.0	30537	21.20	µg/L		100
8:2FTS	7.631	527.0 -> 507.0	21128	21.39	µg/L		98
EtFOSAA	7.598	584.0 -> 419.0	12604	19.66	µg/L		99
FOSA	6.935	498.0 -> 78.0	32229	21.05	µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	16890	21.95	µg/L		99
PFBA	1.860	213.0 -> 169.0	19691	20.75	µg/L		100
PFBS	3.771	299.0 -> 80.0	25239	20.75	µg/L		100
PFDA	7.595	513.0 -> 469.0	110480	21.14	µg/L		100
PFDoDA	8.480	613.0 -> 569.0	176597	20.96	µg/L		100
PFDS	8.001	599.0 -> 80.0	6269	15.85	µg/L		97
PFHpA	5.708	363.0 -> 319.0	153785	20.65	µg/L		100
PFHpS	6.442	449.0 -> 80.0	17532	21.89	µg/L		98
PFHxA	4.791	313.0 -> 269.0	41388	20.32	µg/L		100
PFHxS	5.739	399.0 -> 80.0	19141	20.98	µg/L	m	97
PFNA	7.066	463.0 -> 419.0	127621	20.71	µg/L		100
PFNS	7.565	549.0 -> 80.0	14156	19.23	µg/L		98
PFOA	6.437	413.0 -> 369.0	101315	20.65	µg/L		98
PFOS	7.037	499.0 -> 80.0	21131	20.26	µg/L	m	80
PFPeA	3.515	263.0 -> 219.0	73107	20.53	µg/L		100
PFPeS	4.908	349.0 -> 80.0	16220	20.83	µg/L		98
PFTeDA	9.319	713.0 -> 669.0	149145	21.19	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	149560	20.40	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	129856	21.07	µg/L		99
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

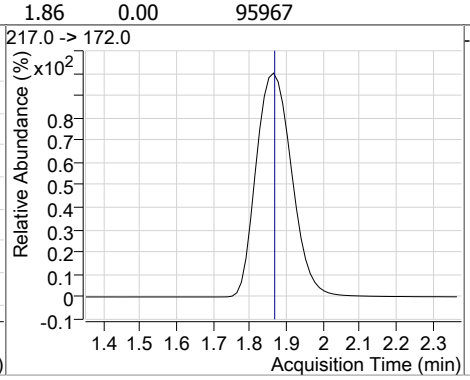
 # = Qualifier out of range, m = manually integrated, + = Area summed

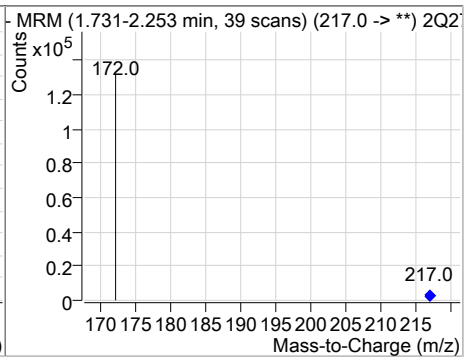
Perfluorinated Compounds by LC/MS/MS



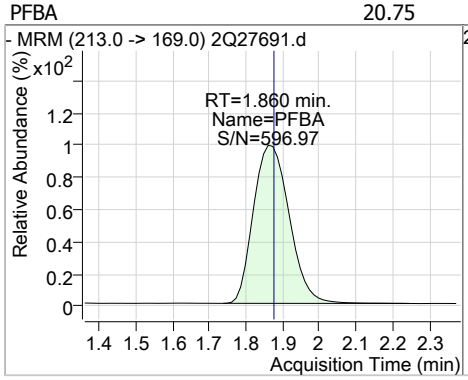
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.00	1.86	0.00	95967				

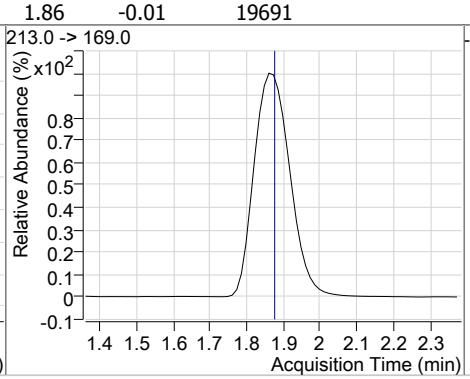


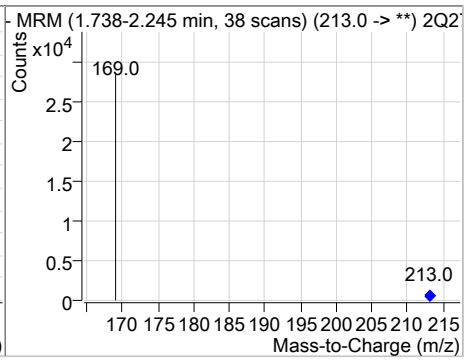




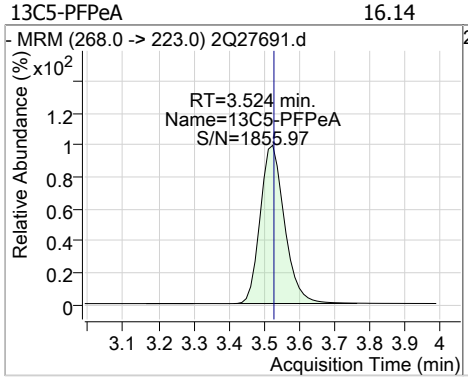
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.75	1.86	-0.01	19691				

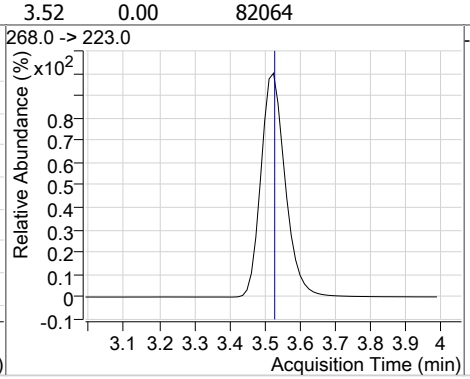


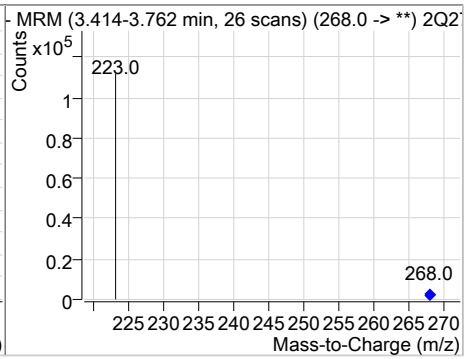




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.14	3.52	0.00	82064				

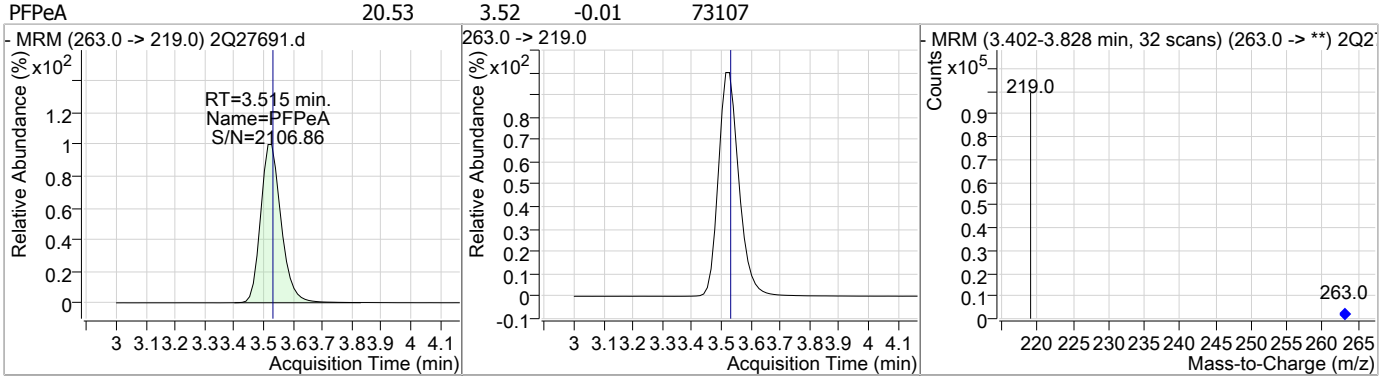




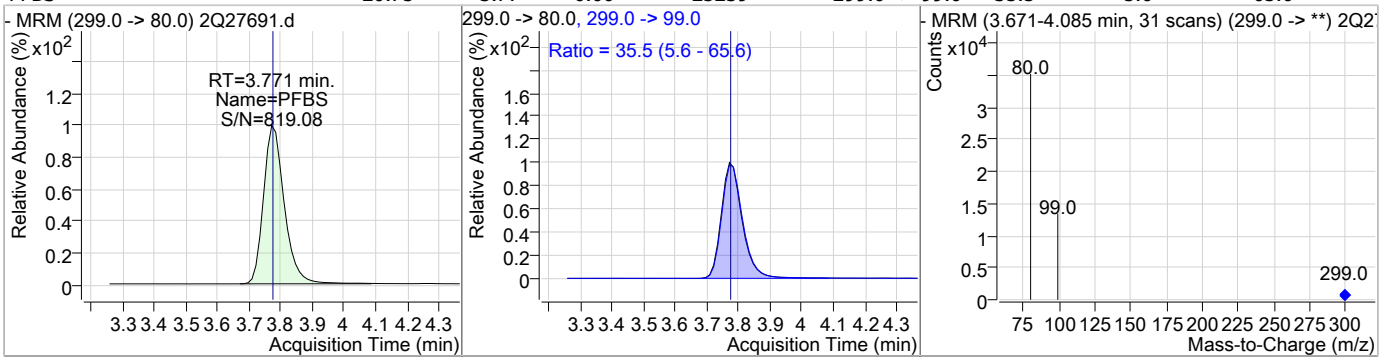


Perfluorinated Compounds by LC/MS/MS

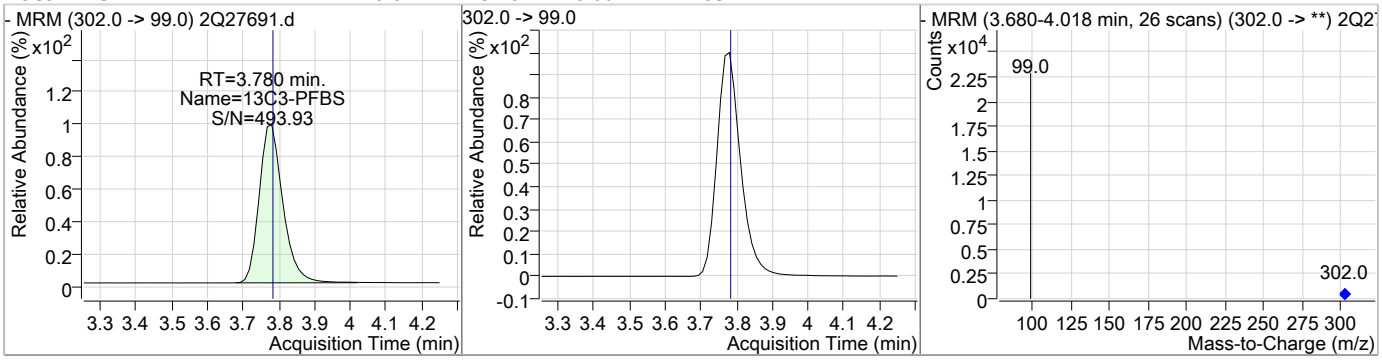
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	20.53	3.52	-0.01	73107				



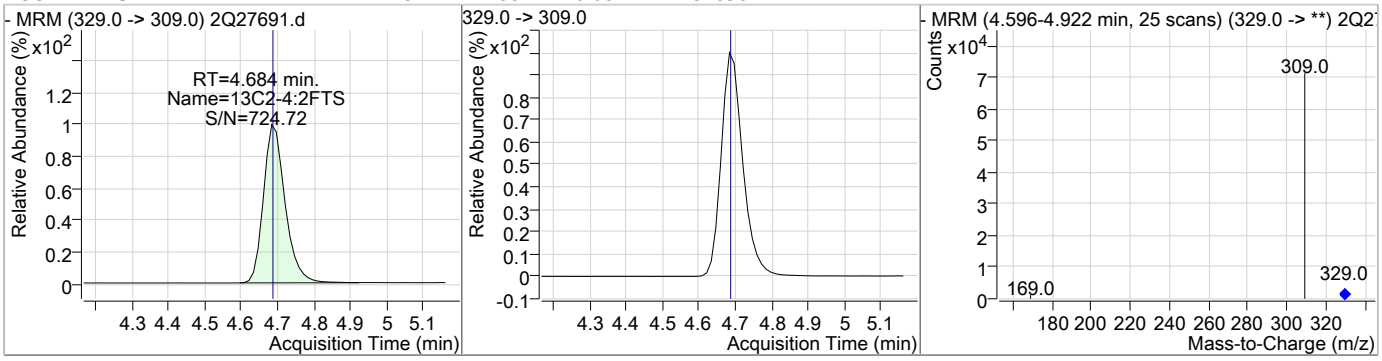
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	20.75	3.77	0.00	25239	299.0 -> 99.0	35.5	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.81	3.78	0.00	15324				

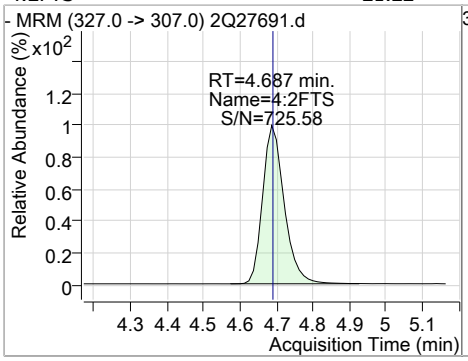


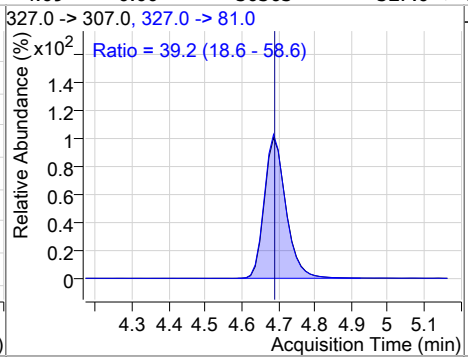
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.45	4.68	0.00	51890				

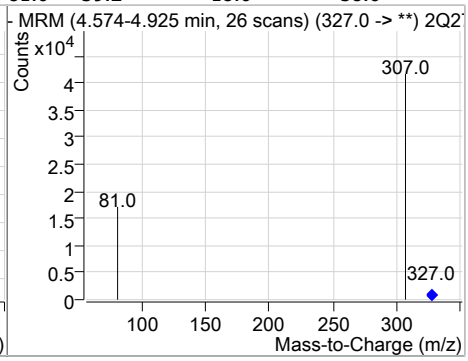


Perfluorinated Compounds by LC/MS/MS

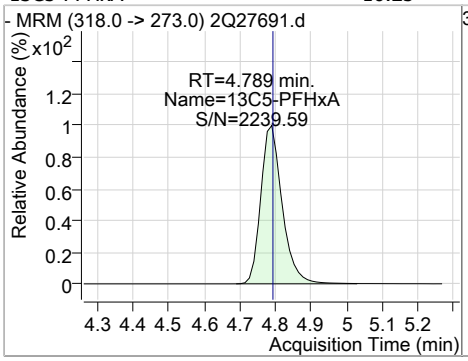
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	21.22	4.69	0.00	30363	327.0 -> 81.0	39.2	18.6	58.6

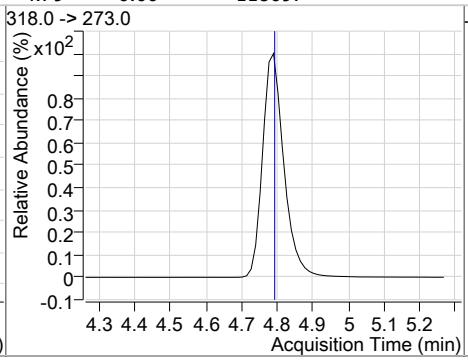


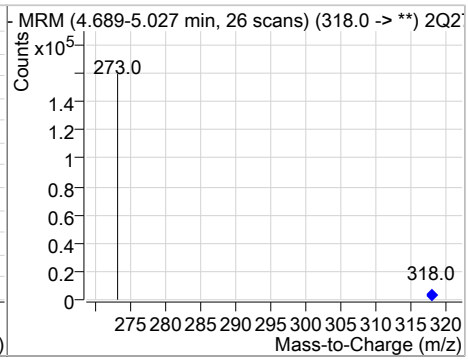




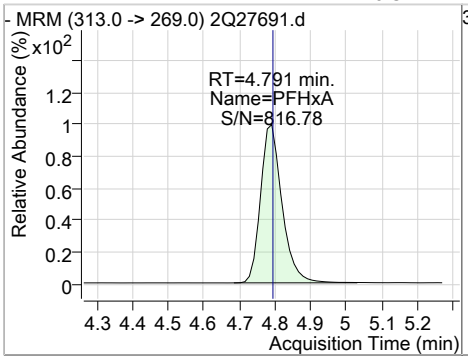
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.25	4.79	0.00	118097				

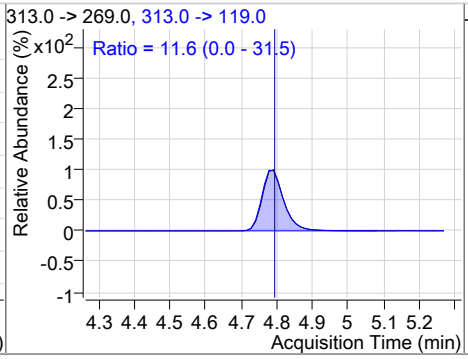


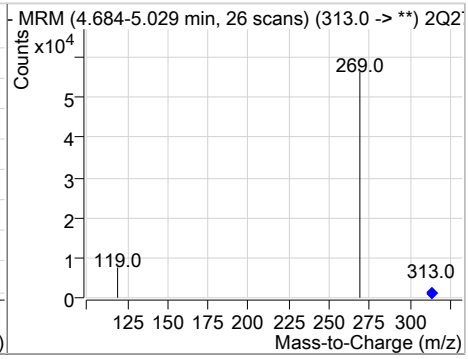




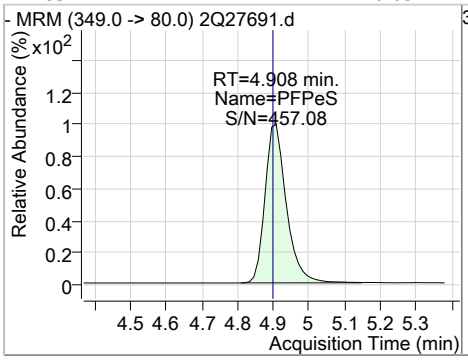
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.32	4.79	0.00	41388	313.0 -> 119.0	11.6	0.0	31.5

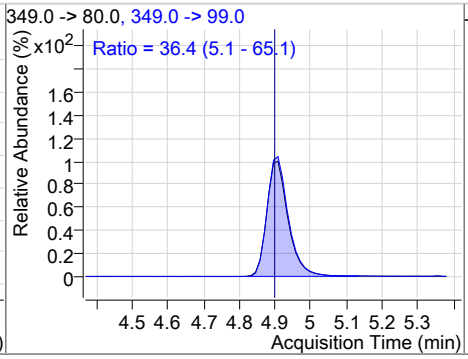


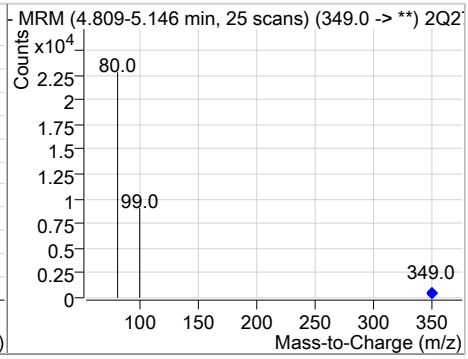




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.83	4.91	0.01	16220	349.0 -> 99.0	36.4	5.1	65.1

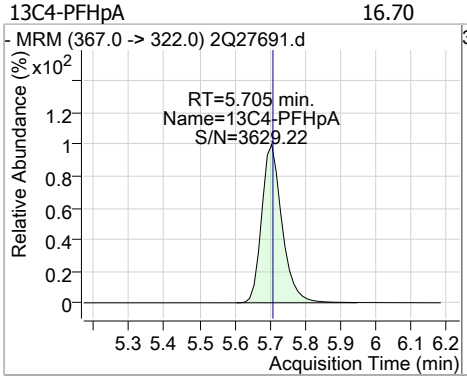


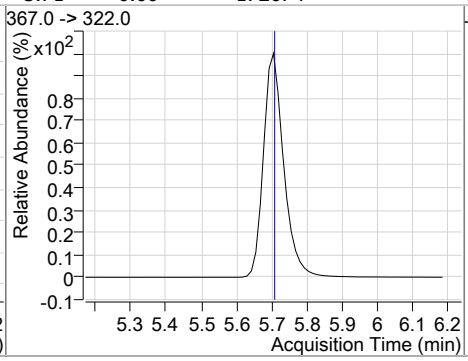


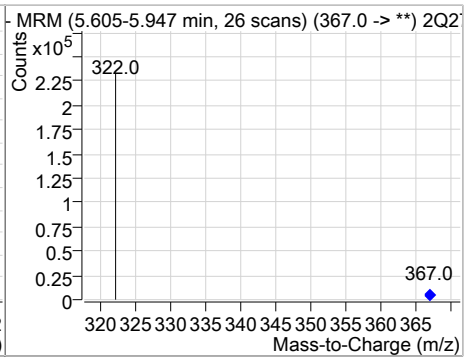


Perfluorinated Compounds by LC/MS/MS

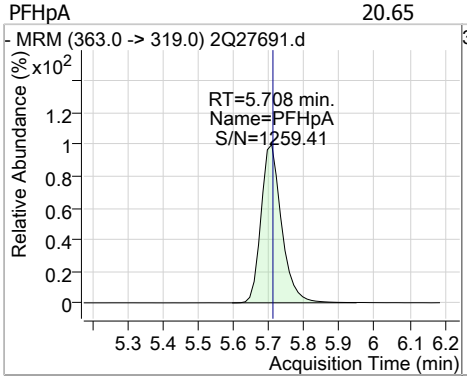
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.70	5.71	0.00	172674				

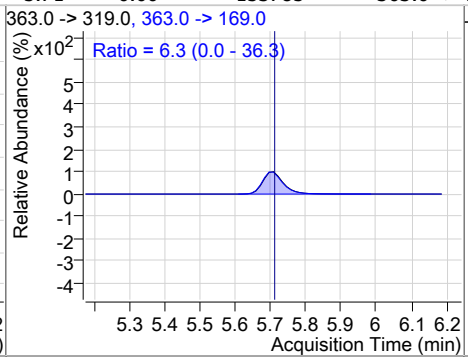


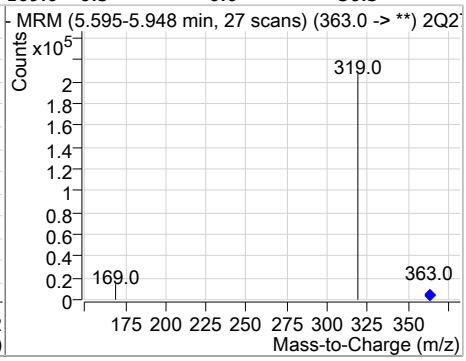




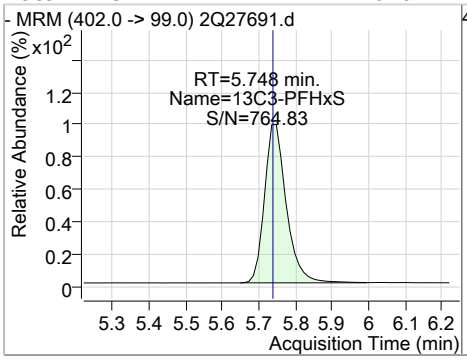
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	20.65	5.71	0.00	153785	363.0 -> 169.0	6.3	0.0	36.3

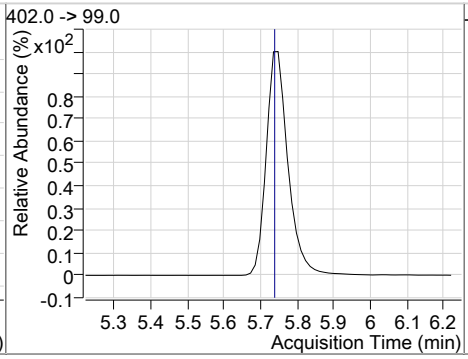


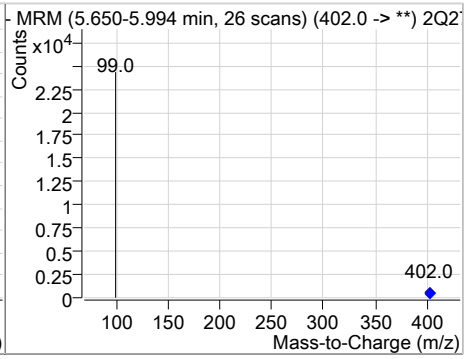




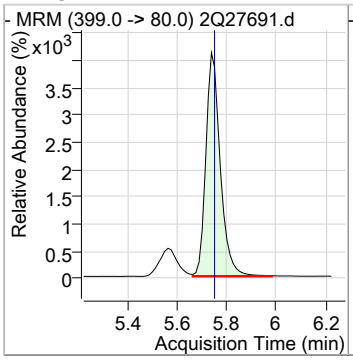
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.19	5.75	0.01	16507				

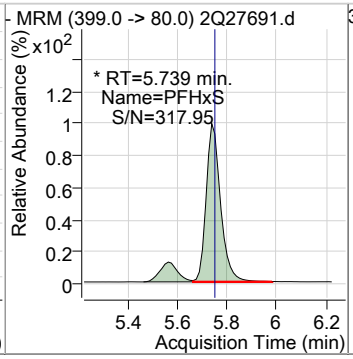


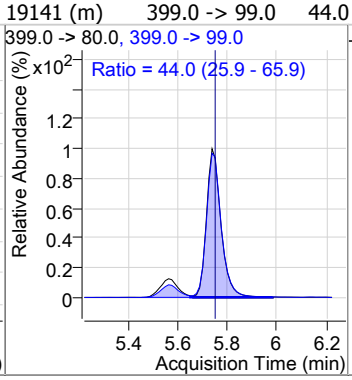


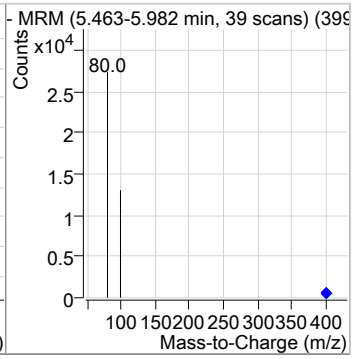


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.98	5.74	0.00	19141 (m)	399.0 -> 99.0	44.0	25.9	65.9



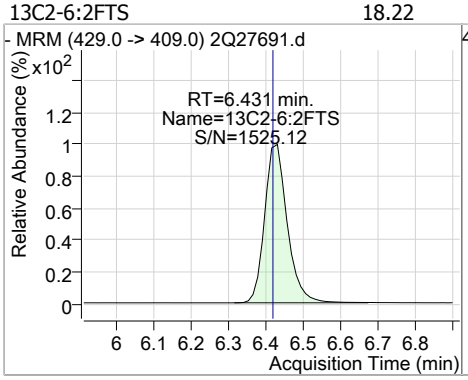


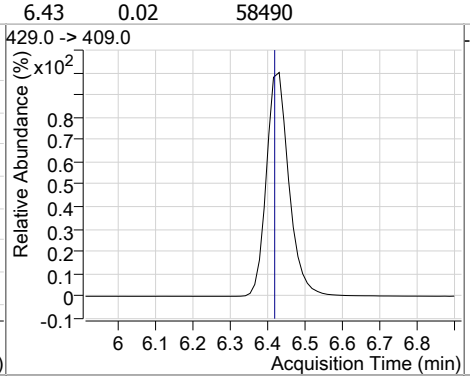


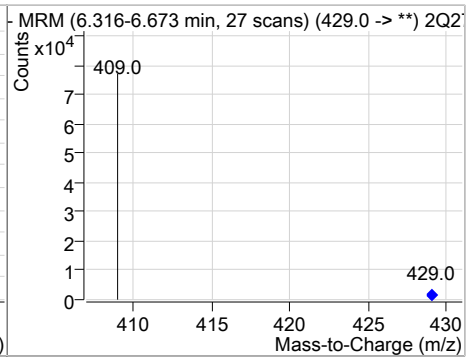


Perfluorinated Compounds by LC/MS/MS

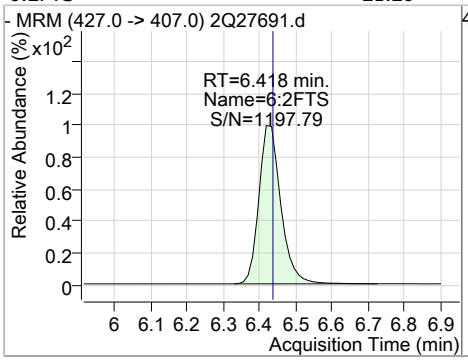
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.22	6.43	0.02	58490				

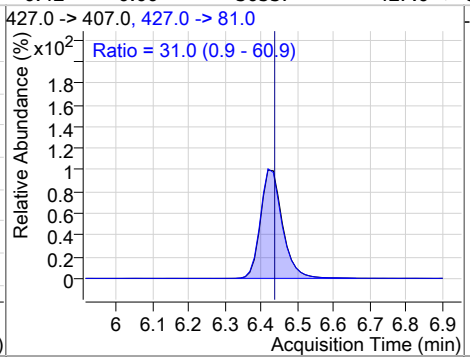


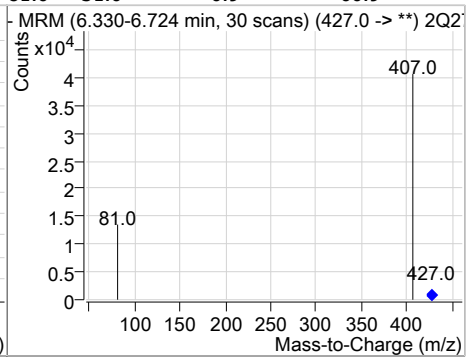




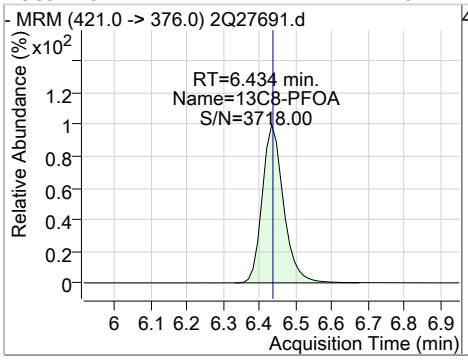
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	21.20	6.42	0.00	30537	427.0 -> 81.0	31.0	0.9	60.9

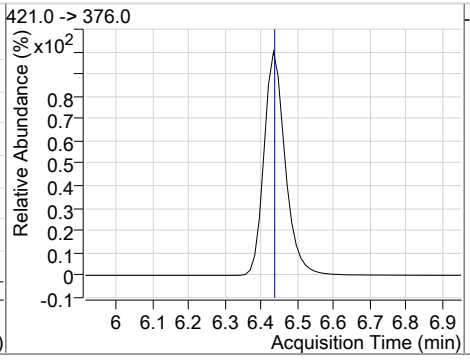


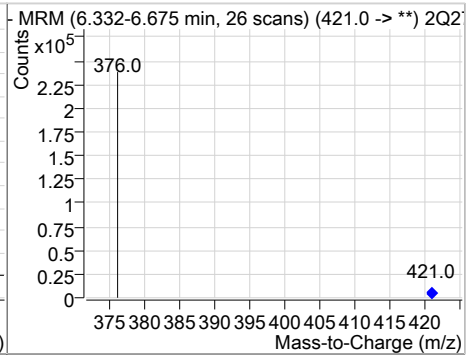




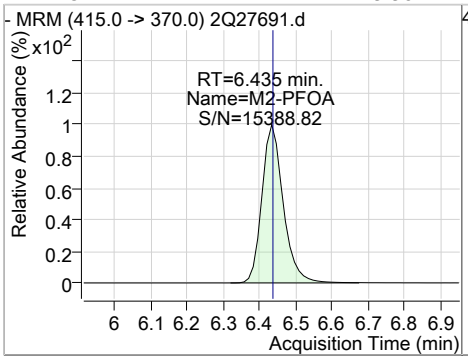
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.40	6.43	0.00	181510				

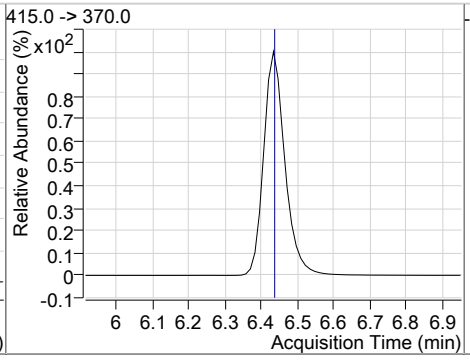


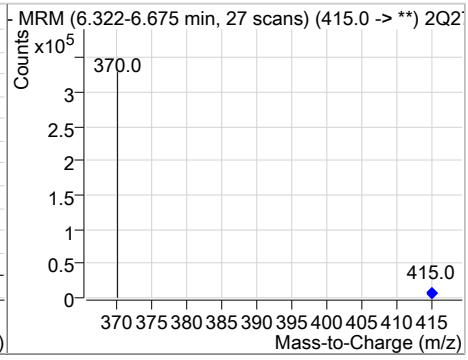




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.44	0.00	250124				

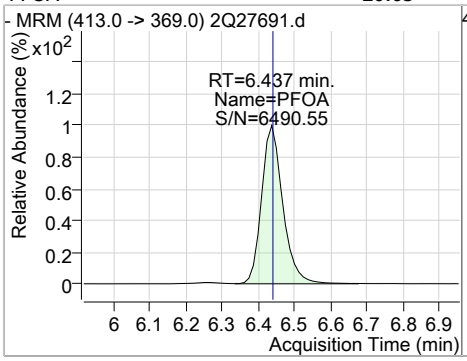


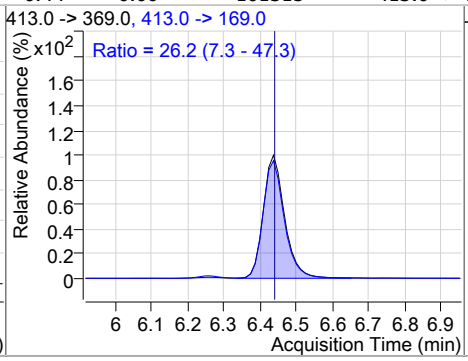


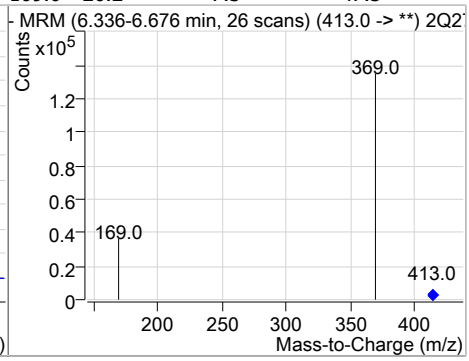


Perfluorinated Compounds by LC/MS/MS

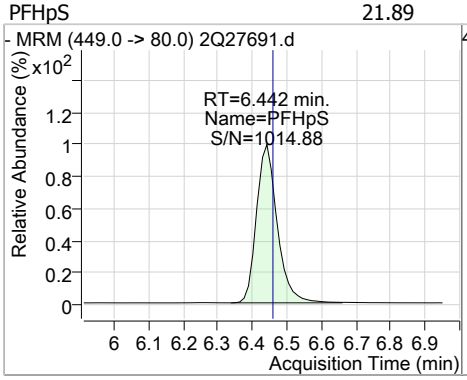
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.65	6.44	0.00	101315	413.0 -> 169.0	26.2	7.3	47.3

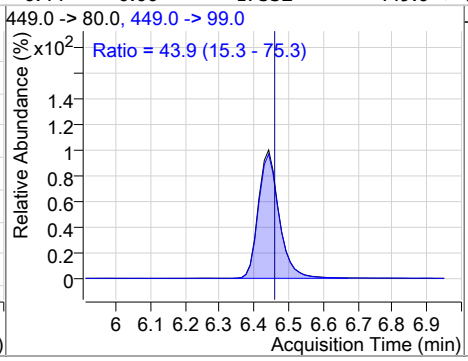


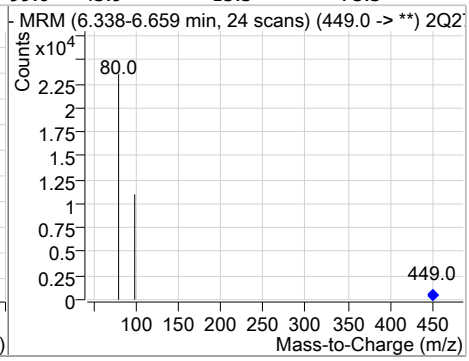




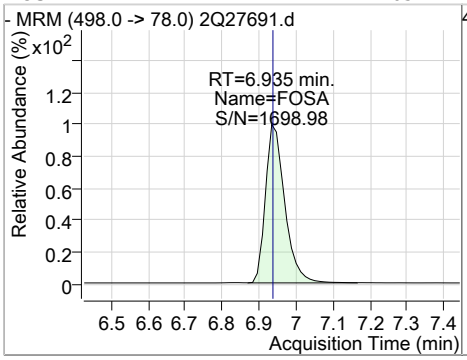
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	21.89	6.44	0.00	17532	449.0 -> 99.0	43.9	15.3	75.3

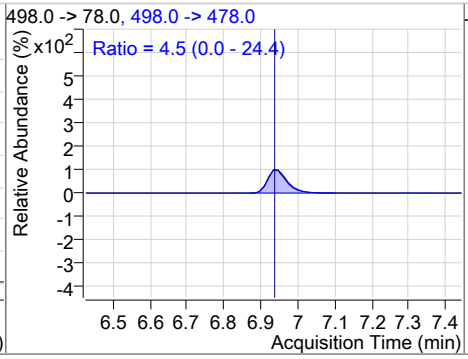


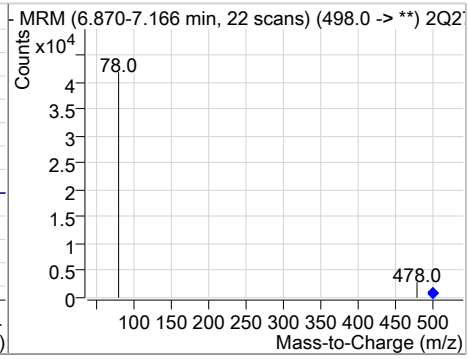




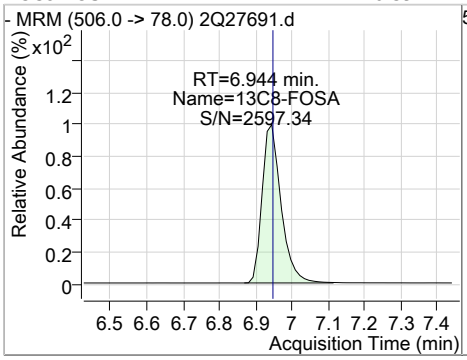
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	21.05	6.93	0.00	32229	498.0 -> 478.0	4.5	0.0	24.4

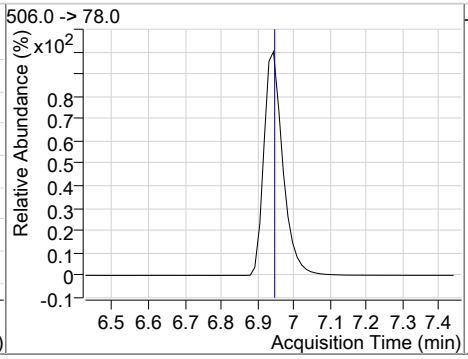


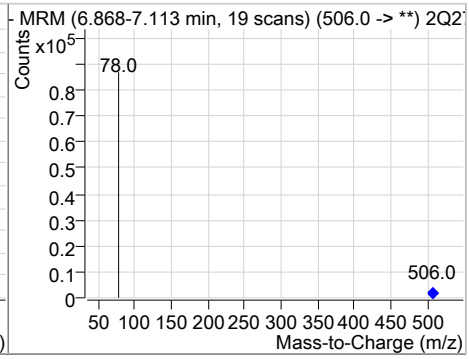




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.39	6.94	0.00	66469				

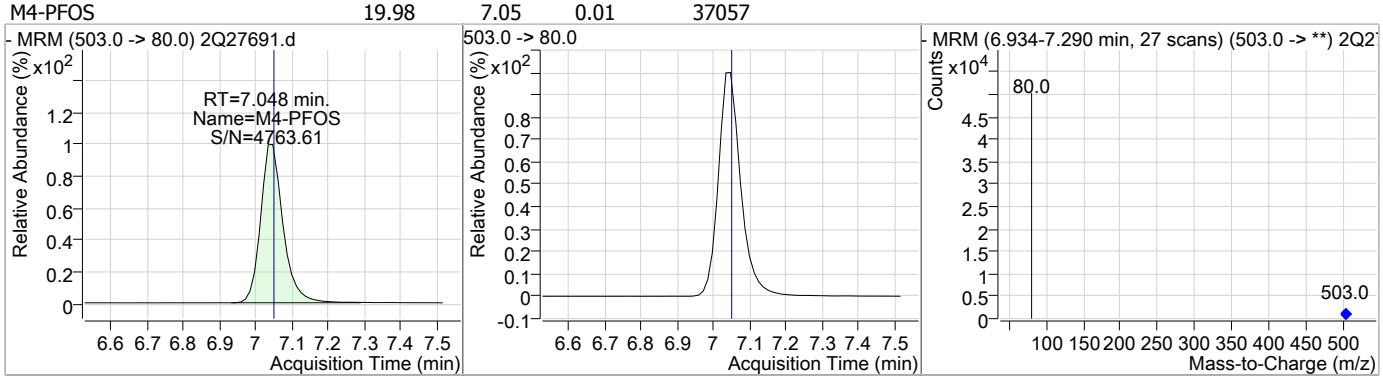




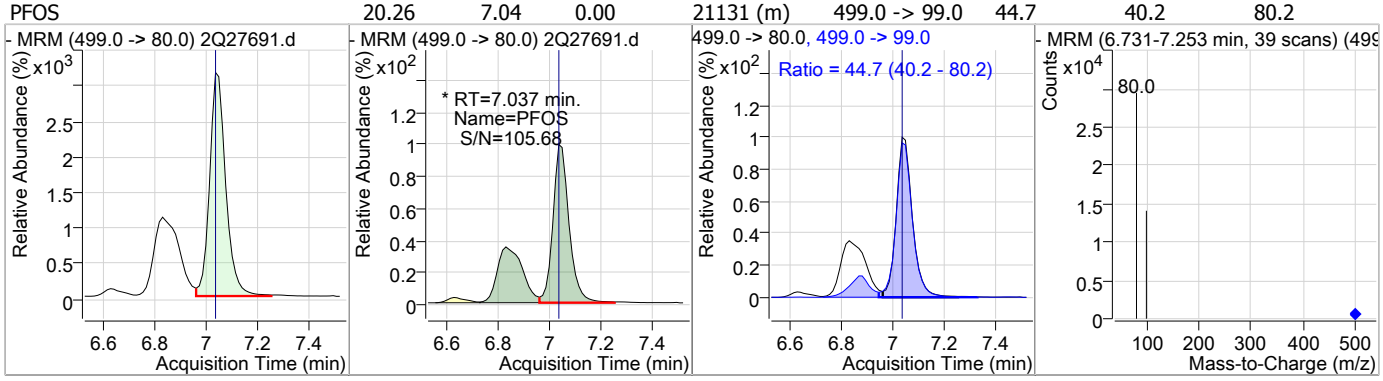


Perfluorinated Compounds by LC/MS/MS

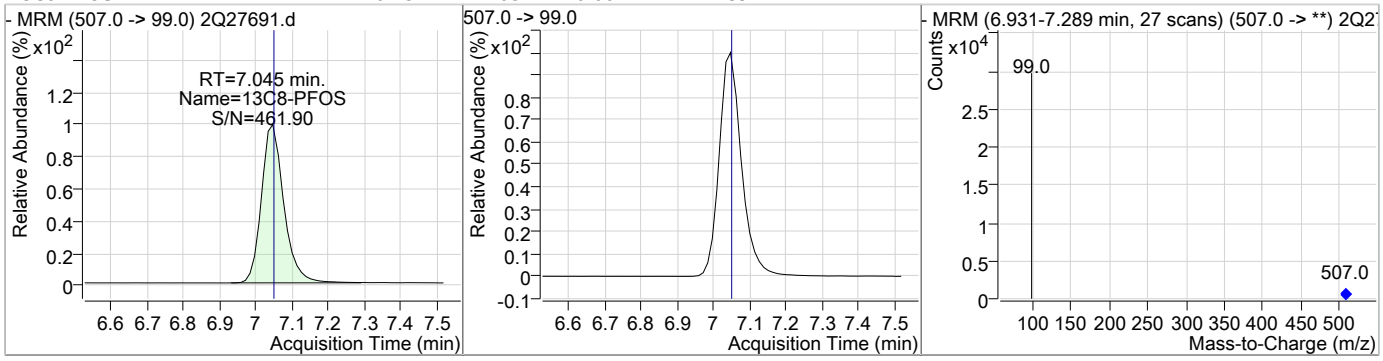
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.05	0.01	37057				



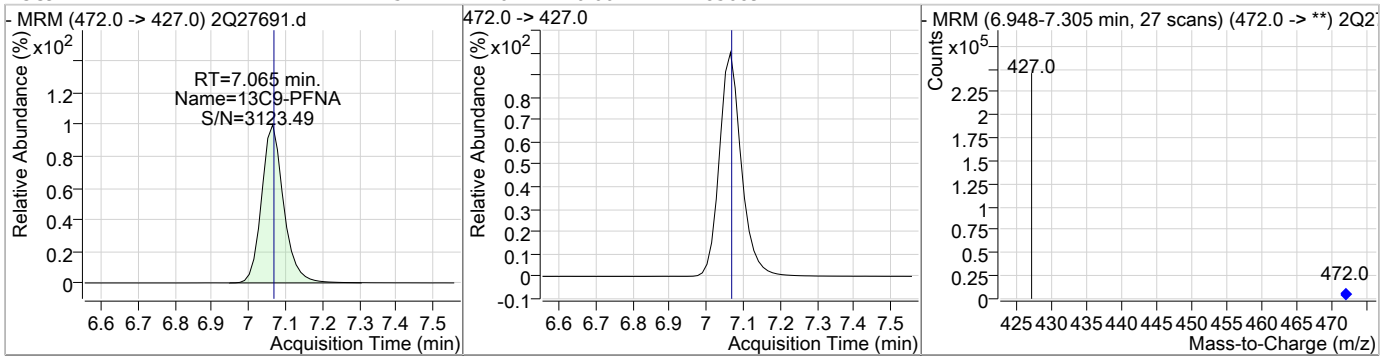
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	20.26	7.04	0.00	21131 (m)	499.0 -> 99.0	44.7	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.45	7.05	0.00	21439				

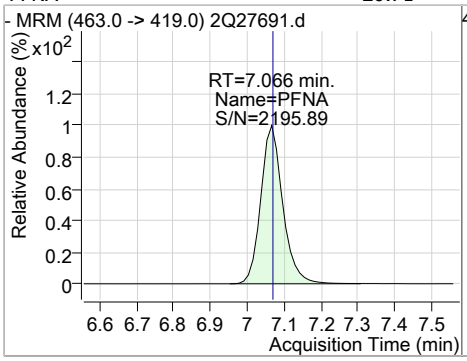


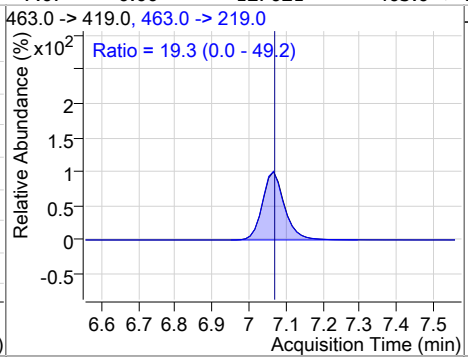
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	17.54	7.07	0.00	185689				

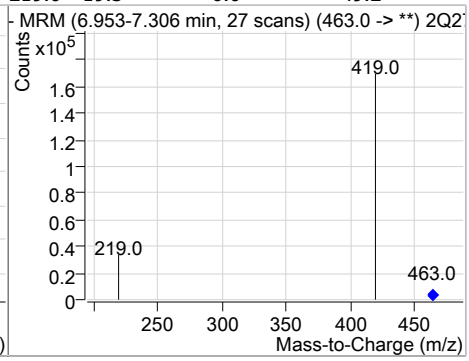


Perfluorinated Compounds by LC/MS/MS

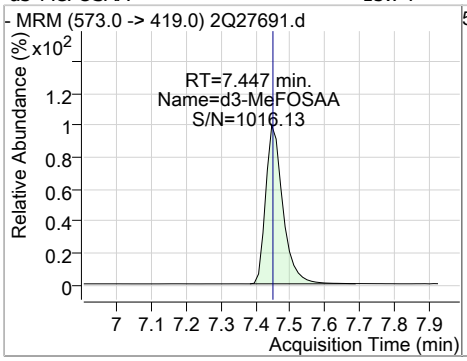
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.71	7.07	0.00	127621	463.0 -> 219.0	19.3	0.0	49.2

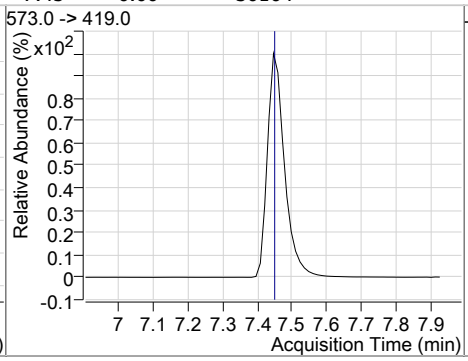


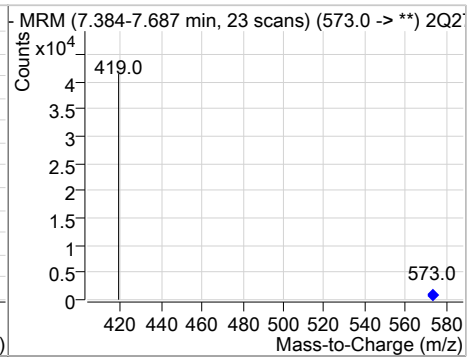




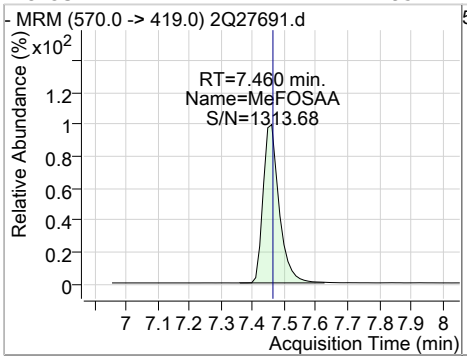
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.74	7.45	0.00	30164				

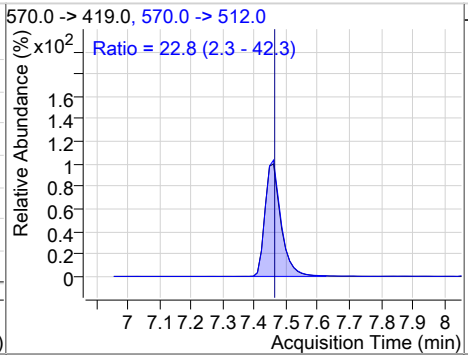


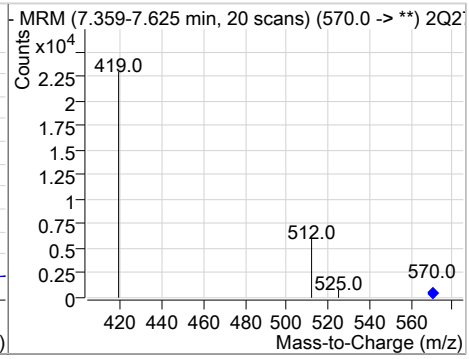




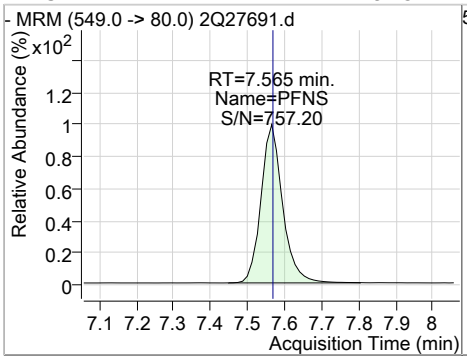
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	21.95	7.46	0.00	16890	570.0 -> 512.0	22.8	2.3	42.3

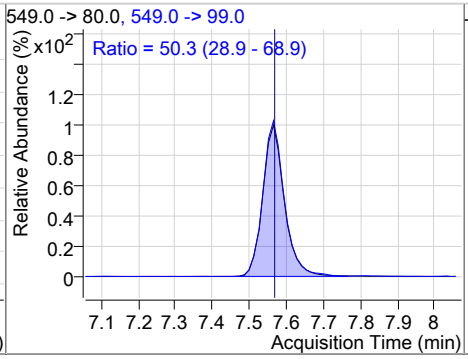


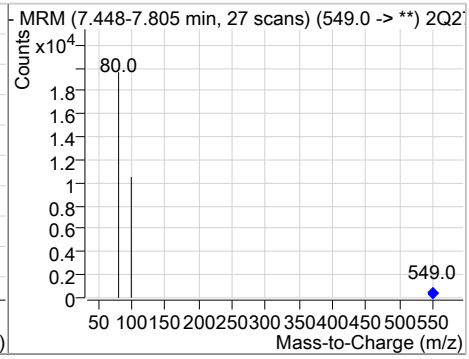




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	19.23	7.57	0.00	14156	549.0 -> 99.0	50.3	28.9	68.9

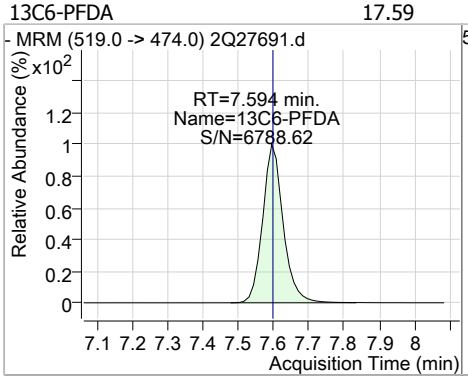


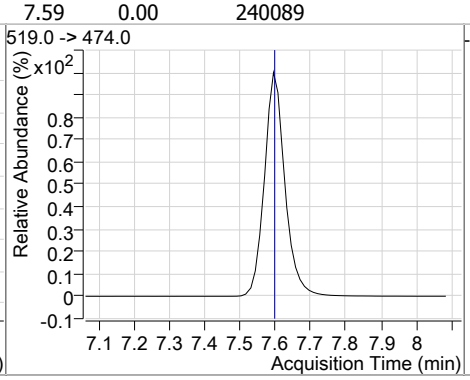


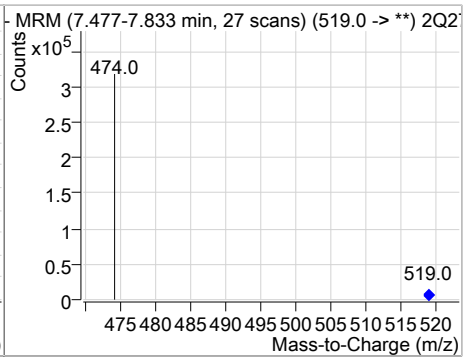


Perfluorinated Compounds by LC/MS/MS

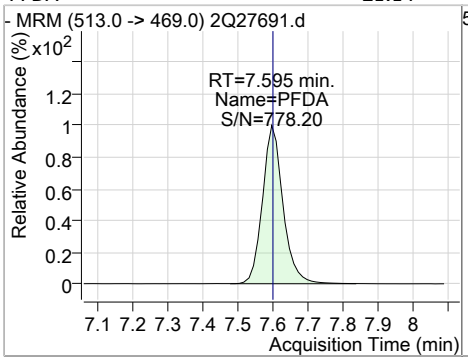
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.59	7.59	0.00	240089				

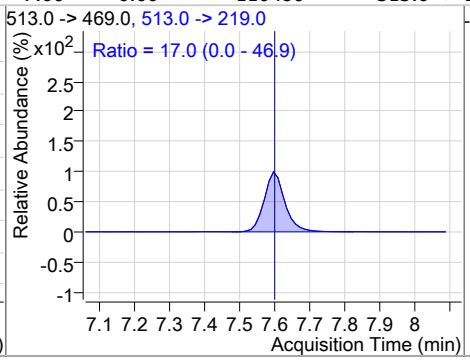


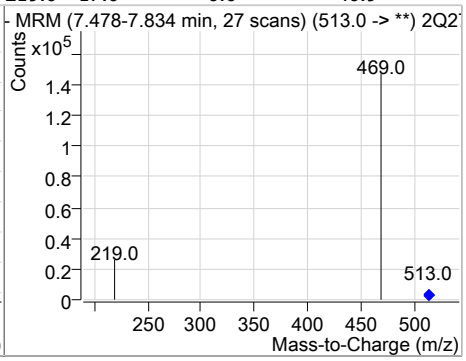




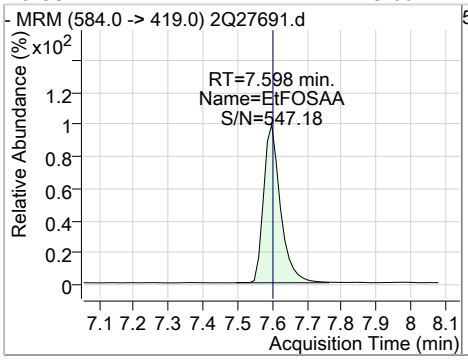
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	21.14	7.60	0.00	110480	513.0 -> 219.0	17.0	0.0	46.9

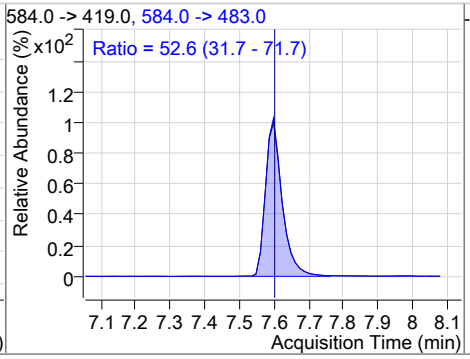


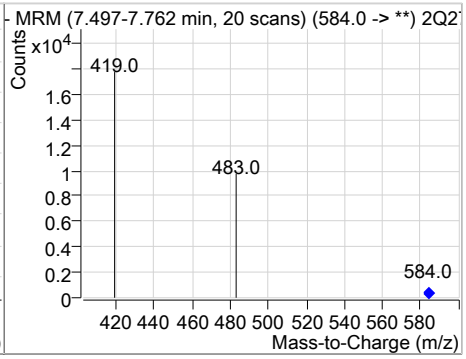




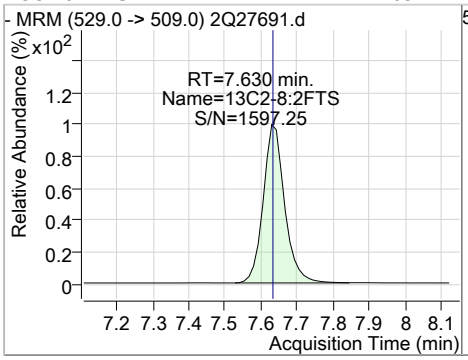
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.66	7.60	0.00	12604	584.0 -> 483.0	52.6	31.7	71.7

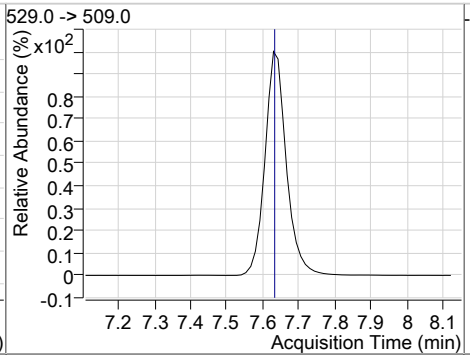


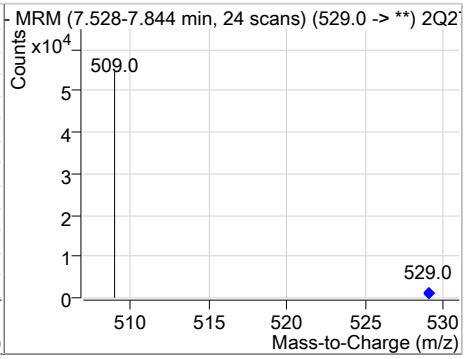




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.83	7.63	0.00	39524				

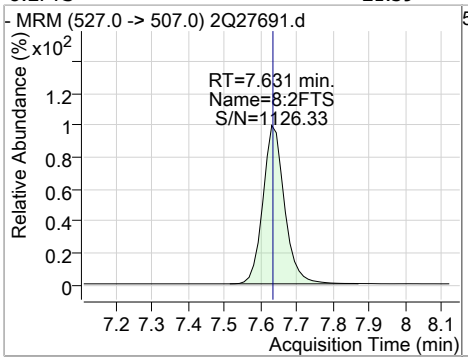


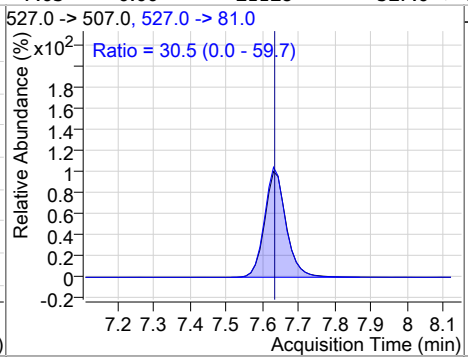


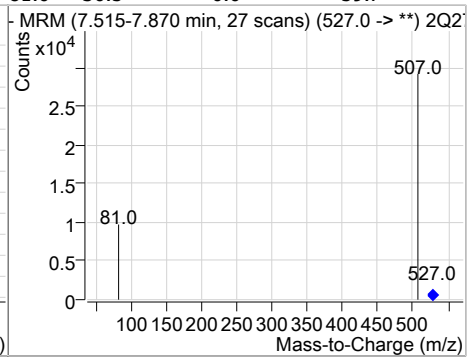


Perfluorinated Compounds by LC/MS/MS

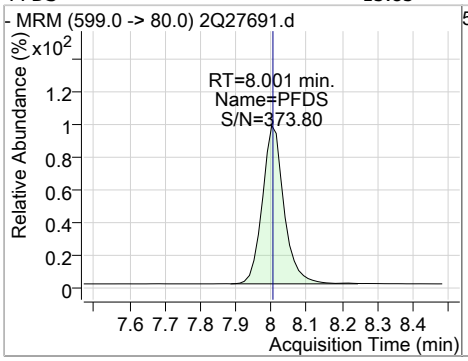
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	21.39	7.63	0.00	21128	527.0 -> 81.0	30.5	0.0	59.7

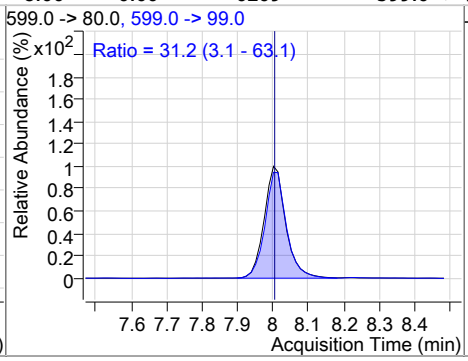


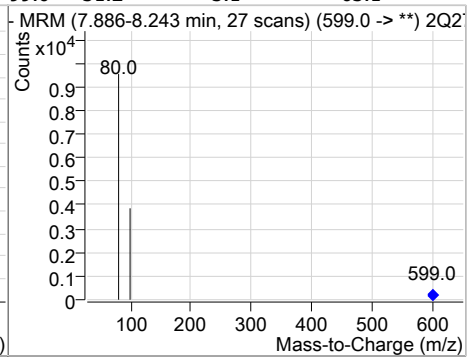




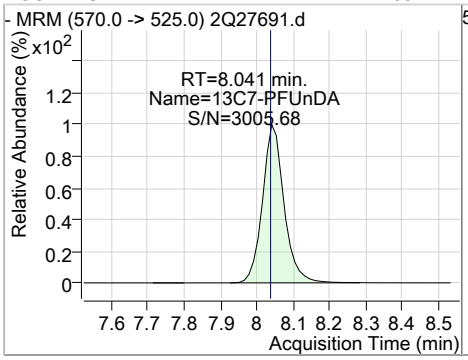
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	15.85	8.00	0.00	6269	599.0 -> 99.0	31.2	3.1	63.1

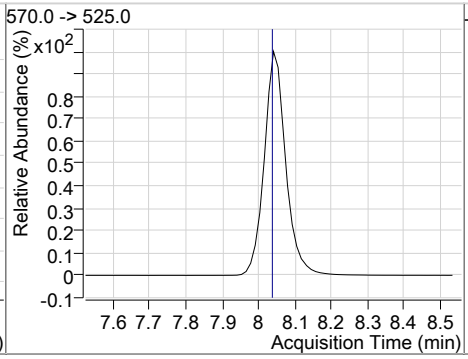


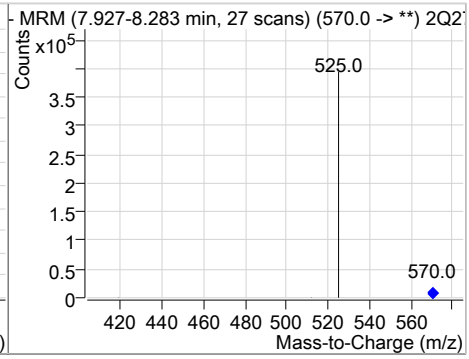




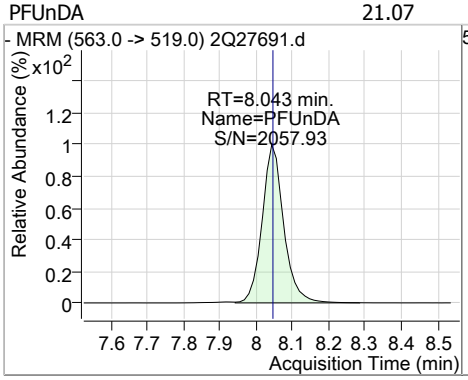
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	17.65	8.04	0.00	298691				

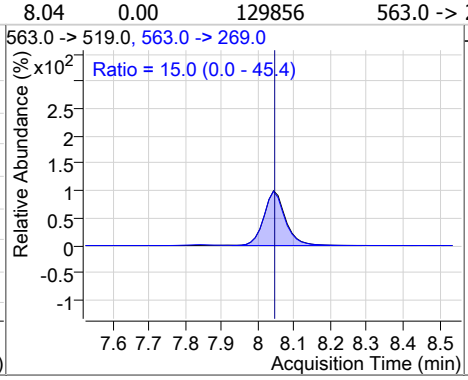


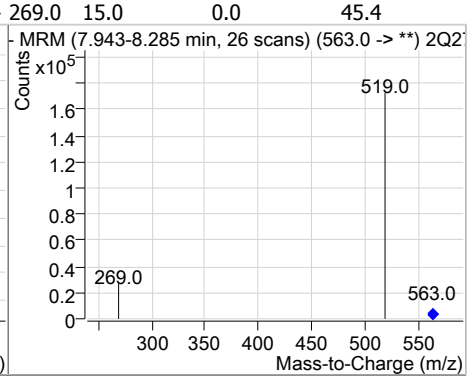




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	21.07	8.04	0.00	129856	563.0 -> 269.0	15.0	0.0	45.4

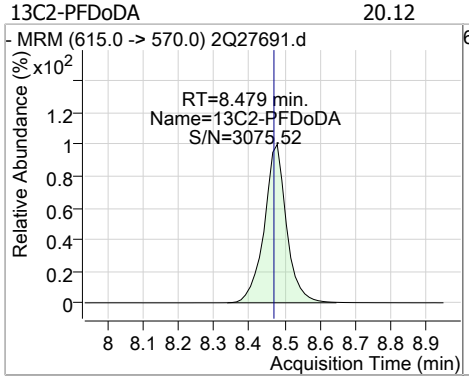


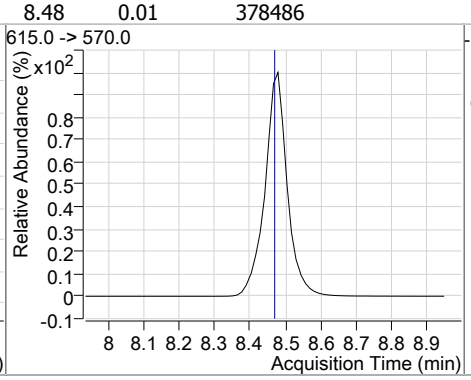


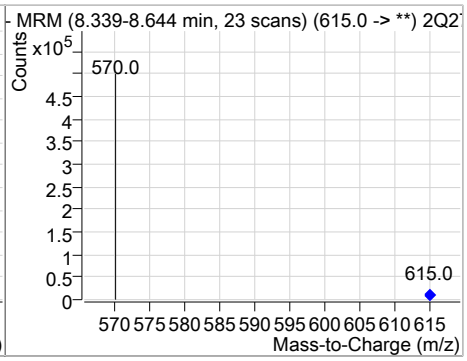


Perfluorinated Compounds by LC/MS/MS

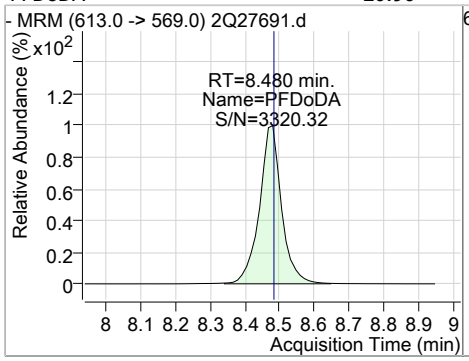
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.12	8.48	0.01	378486				

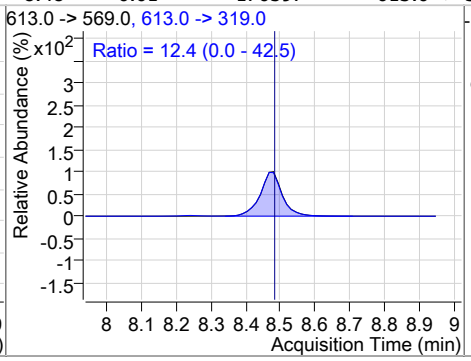


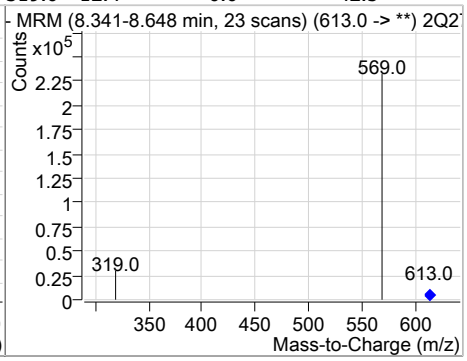




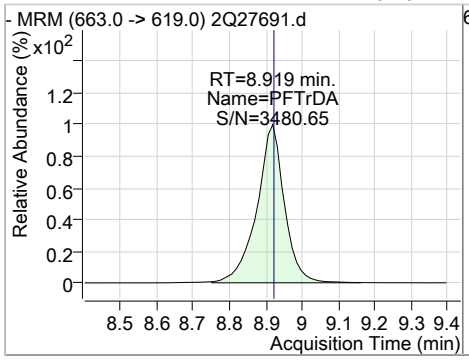
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	20.96	8.48	0.01	176597	613.0 -> 319.0	12.4	0.0	42.5

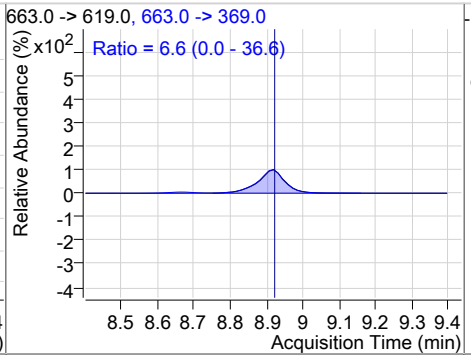


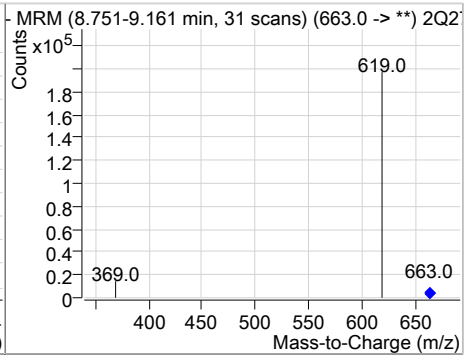




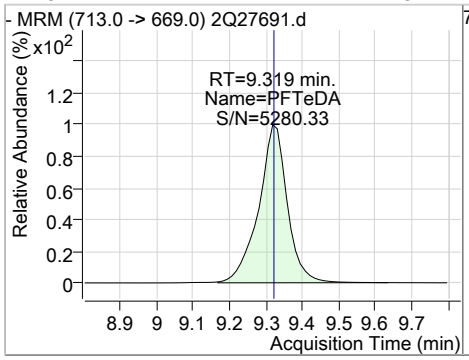
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.40	8.92	0.00	149560	663.0 -> 369.0	6.6	0.0	36.6

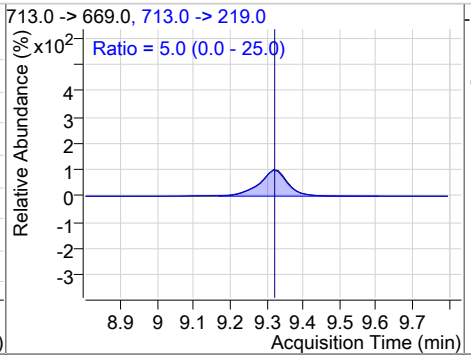


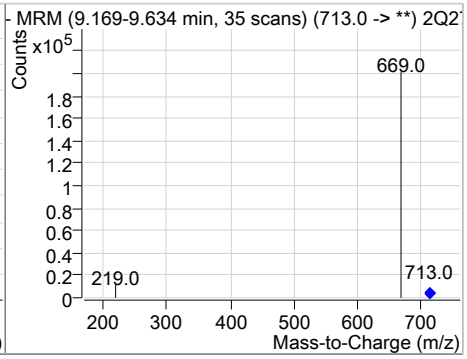




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	21.19	9.32	0.00	149145	713.0 -> 219.0	5.0	0.0	25.0

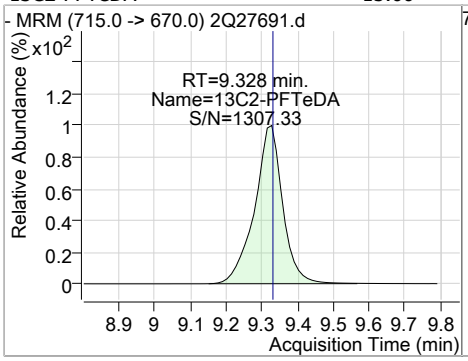


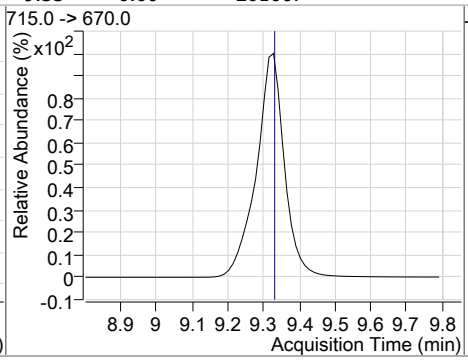


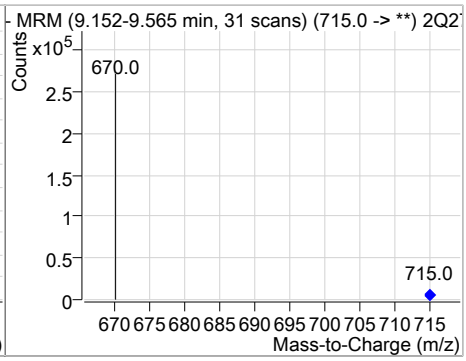


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.66	9.33	0.00	201067				







7.3.2

7

Manual Integration Approval Summary

Sample Number: OP74180-BS
Lab FileID: 2Q27691.D
Injection Time: 03/18/19 15:45
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:49 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1984.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 1:06:04 PM
Sample Name : op74233-bs
Vial : P3-B4
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,130,,,1.0,1,WATER

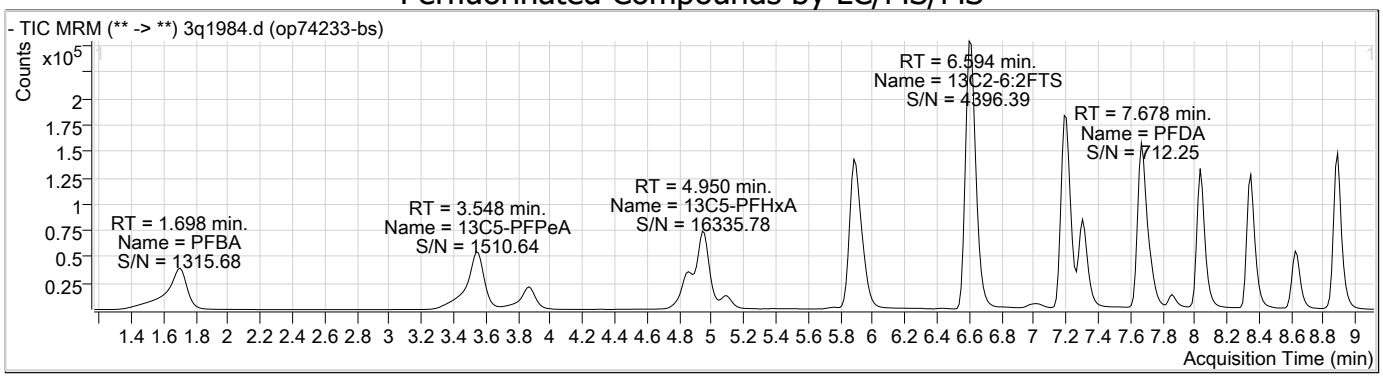
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.702	217.0 -> 172.0	311159	20.00	µg/L	0.000
M5-PFPeA	3.548	268.0 -> 223.0	209854	20.00	µg/L	-0.013
M5-PFHxA	4.950	318.0 -> 273.0	284058	20.00	µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	323722	20.00	µg/L	0.000
M8-PFOA	6.621	421.0 -> 376.0	309883	20.00	µg/L	0.000
M9-PFNA	7.213	472.0 -> 427.0	293717	20.00	µg/L	0.000
M6-PFDA	7.678	519.0 -> 474.0	316946	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	305360	20.00	µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	304485	20.00	µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	304258	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	201976	20.00	µg/L	0.000
M3-PFBS	3.867	302.0 -> 99.0	49168	20.00	µg/L	-0.013
M3-PFHxS	5.934	402.0 -> 99.0	49413	20.00	µg/L	-0.013
M8-PFOS	7.196	507.0 -> 99.0	71092	20.00	µg/L	0.000
M2-4:2FTS	4.845	329.0 -> 309.0	90975	20.00	µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	88390	20.00	µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	51514	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	37742	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
13C2-PFOA	6.622	415.0 -> 370.0	387619	20.00	µg/L	0.000
13C4-PFOS	7.198	503.0 -> 80.0	117123	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.845	329.0 -> 309.0	90843	19.14	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C2-6:2FTS	6.594	429.0 -> 409.0	88877	19.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%		
13C2-8:2FTS	7.701	529.0 -> 509.0	51554	18.44	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C2-PFDoDA	8.352	615.0 -> 570.0	306411	15.67	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%		
13C2-PFTeDA	8.886	715.0 -> 670.0	304316	16.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.2%		
13C3-PFBS	3.867	302.0 -> 99.0	48801	19.35	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%		
13C3-PFHxS	5.934	402.0 -> 99.0	49306	19.51	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%		
13C4-PFBA	1.702	217.0 -> 172.0	305619	18.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.7%		
13C4-PFHpA	5.891	367.0 -> 322.0	323814	19.40	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C5-PFHxA	4.950	318.0 -> 273.0	283117	19.24	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C5-PFPeA	3.548	268.0 -> 223.0	207633	18.75	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.8%		
13C6-PFDA	7.678	519.0 -> 474.0	317038	19.03	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

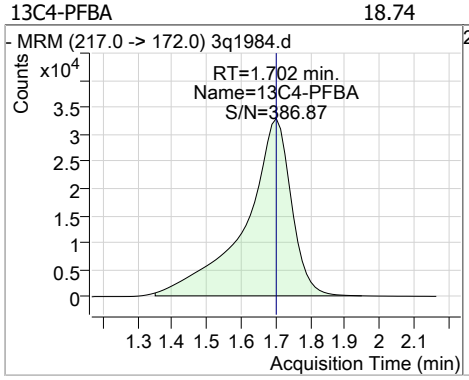
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
13C7-PFUnDA	8.039	570.0 -> 525.0	305311	16.47	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%			
13C8-FOSA	7.311	506.0 -> 78.0	202086	19.20	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.0%			
13C8-PFOA	6.621	421.0 -> 376.0	309891	19.59	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%			
13C8-PFOS	7.196	507.0 -> 99.0	71266	18.50	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%			
13C9-PFNA	7.213	472.0 -> 427.0	293280	19.63	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
d3-MeFOSAA	7.735	573.0 -> 419.0	37739	15.90	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.5%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
M2-PFOA	6.622	415.0 -> 370.0	387619	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.198	503.0 -> 80.0	117123	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	53595	21.55	µg/L		99
6:2FTS	6.595	427.0 -> 407.0	45574	20.90	µg/L		100
8:2FTS	7.702	527.0 -> 507.0	27192	21.32	µg/L		99
EtFOSAA	7.861	584.0 -> 419.0	15961	18.83	µg/L		96
FOSA	7.313	498.0 -> 78.0	95276	21.02	µg/L		99
MeFOSAA	7.735	570.0 -> 419.0	20613	20.41	µg/L		98
PFBA	1.698	213.0 -> 169.0	59918	20.33	µg/L		100
PFBS	3.870	299.0 -> 80.0	70251	20.54	µg/L		100
PFDA	7.678	513.0 -> 469.0	154694	20.61	µg/L		98
PFDoDA	8.354	613.0 -> 569.0	147212	21.21	µg/L		100
PFDS	8.011	599.0 -> 80.0	13641	14.51	µg/L		100
PFHpA	5.894	363.0 -> 319.0	295486	20.62	µg/L		100
PFHpS	6.630	449.0 -> 80.0	48741	20.72	µg/L		99
PFHxA	4.952	313.0 -> 269.0	103895	20.54	µg/L		100
PFHxS	5.937	399.0 -> 80.0	55698	20.50	µg/L	m	99
PFNA	7.214	463.0 -> 419.0	188997	20.71	µg/L		100
PFNS	7.648	549.0 -> 80.0	32614	16.97	µg/L		98
PFOA	6.611	413.0 -> 369.0	175329	21.13	µg/L		100
PFOS	7.199	499.0 -> 80.0	66130	20.09	µg/L	m	99
PFPeA	3.552	263.0 -> 219.0	217003	20.41	µg/L		100
PFPeS	5.094	349.0 -> 80.0	42101	19.79	µg/L		100
PFTeDA	8.890	713.0 -> 669.0	208511	22.03	µg/L		100
PFTrDA	8.628	663.0 -> 619.0	192970	23.82	µg/L		100
PFUnDA	8.041	563.0 -> 519.0	138084	20.85	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

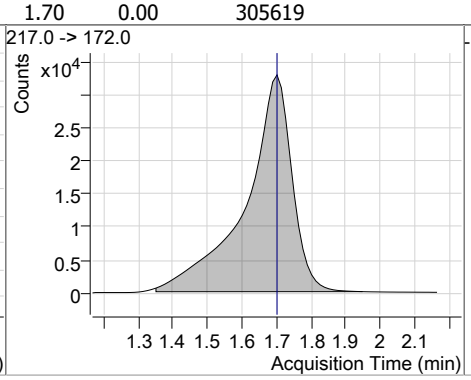
 # = Qualifier out of range, m = manually integrated, + = Area summed

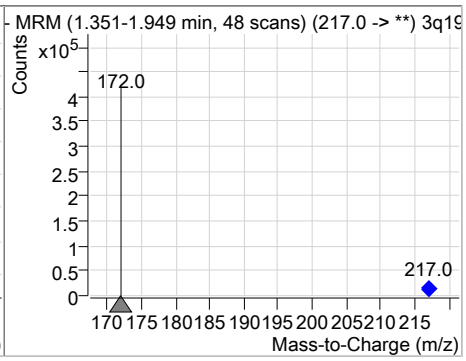
Perfluorinated Compounds by LC/MS/MS



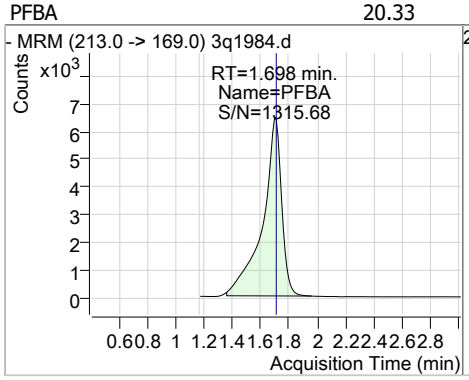
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.74	1.70	0.00	305619				

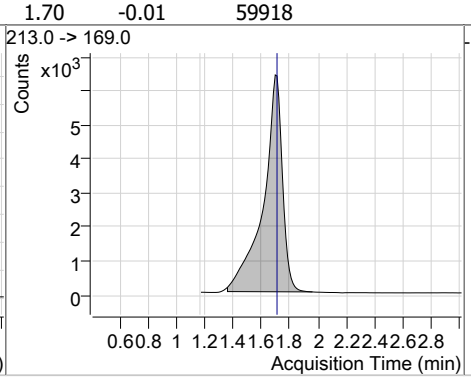


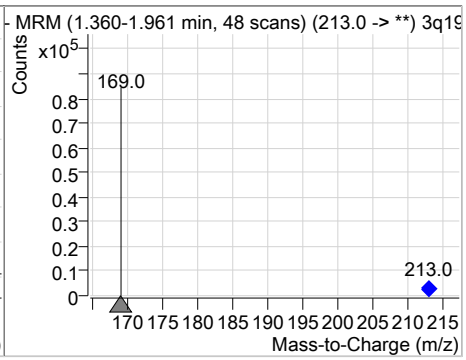




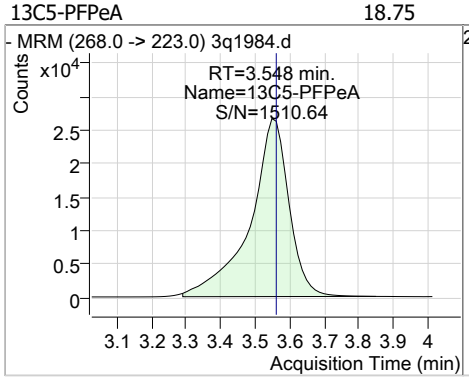
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.33	1.70	-0.01	59918				

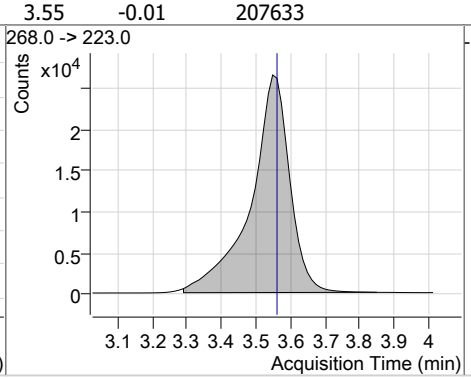


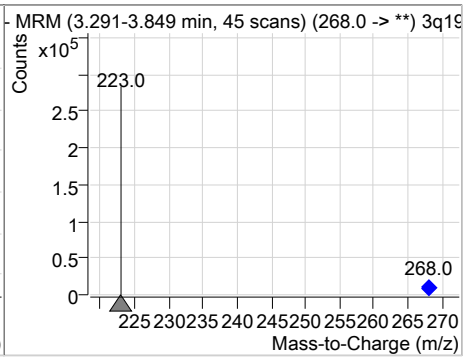




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.75	3.55	-0.01	207633				

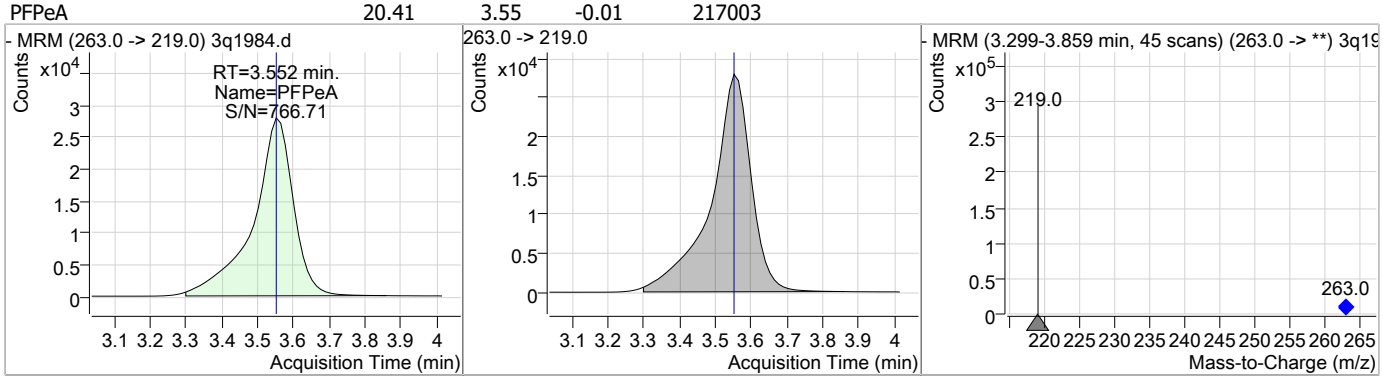




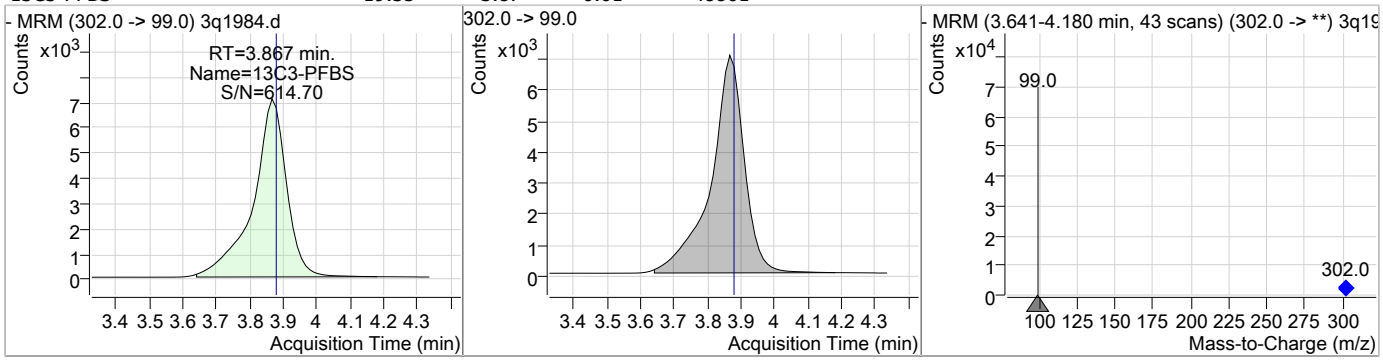


Perfluorinated Compounds by LC/MS/MS

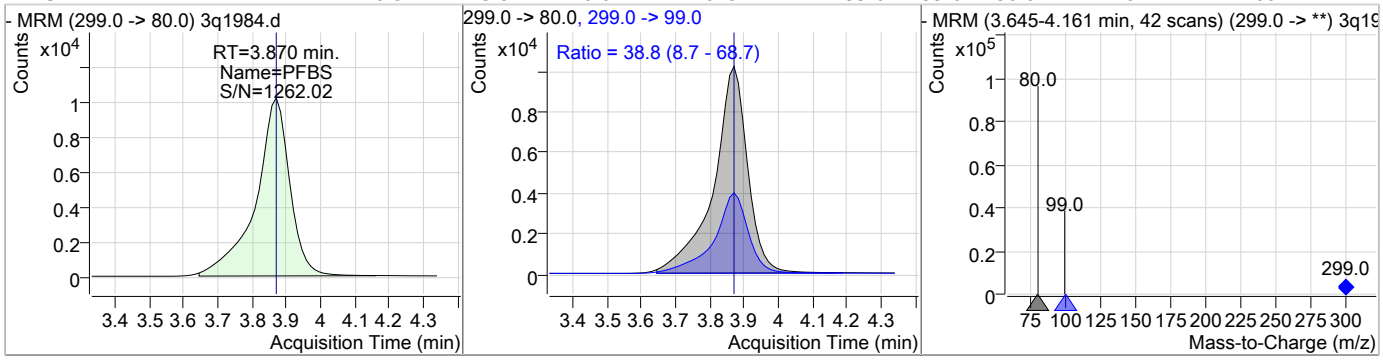
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	20.41	3.55	-0.01	217003				



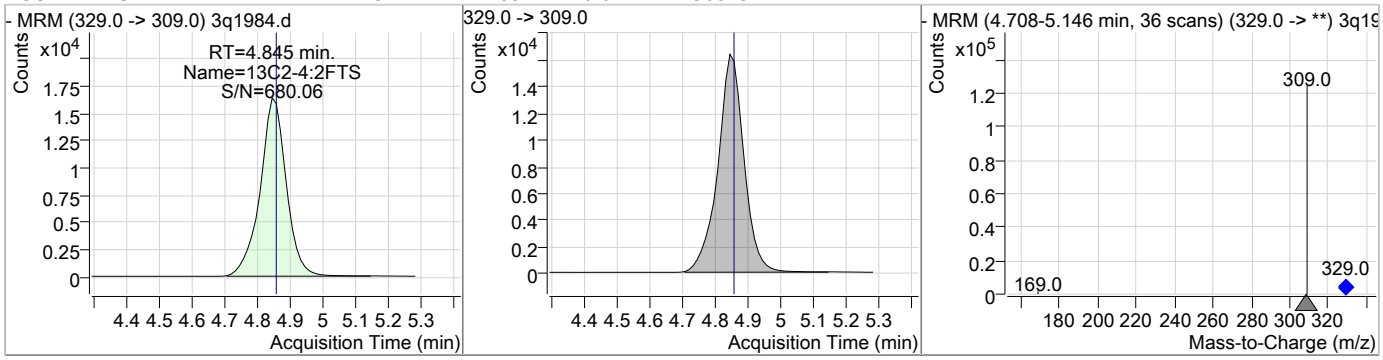
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.35	3.87	-0.01	48801				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	20.54	3.87	-0.01	70251	299.0 -> 99.0	38.8	8.7	68.7

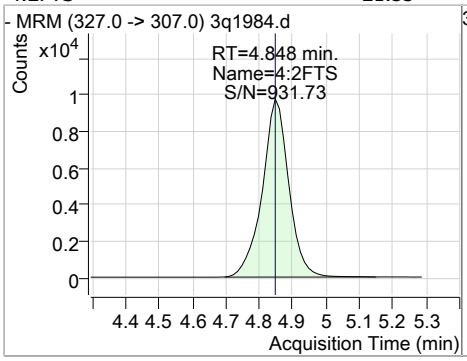


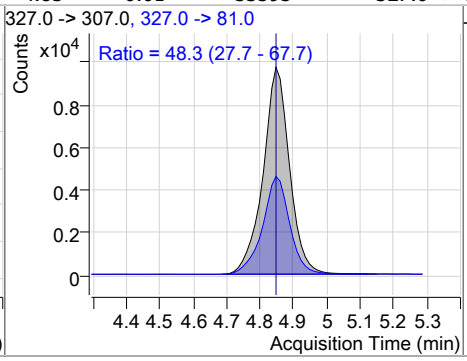
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.14	4.85	-0.01	90843				

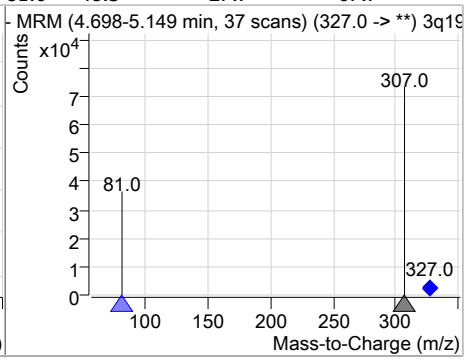


Perfluorinated Compounds by LC/MS/MS

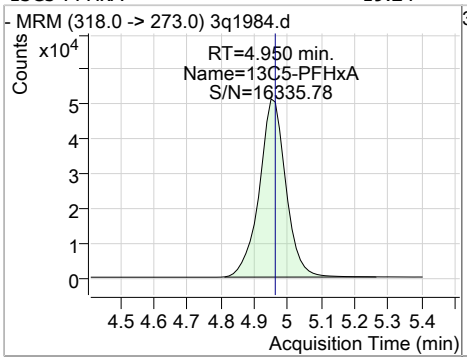
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	21.55	4.85	-0.01	53595	327.0 -> 81.0	48.3	27.7	67.7

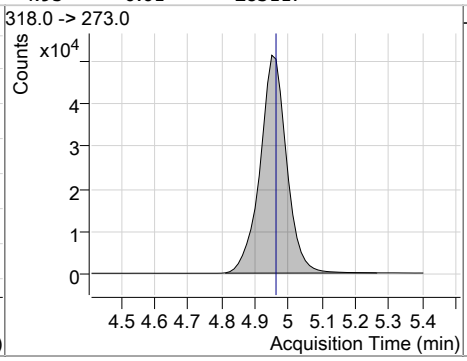


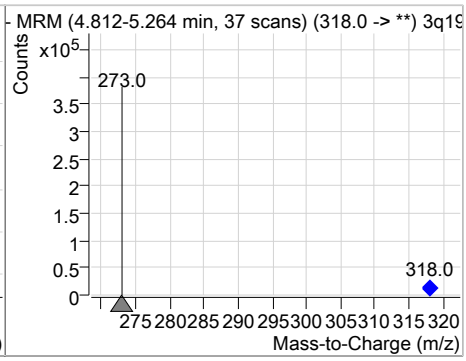




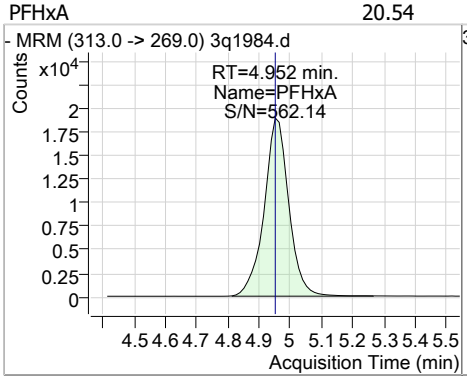
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.24	4.95	-0.01	283117				

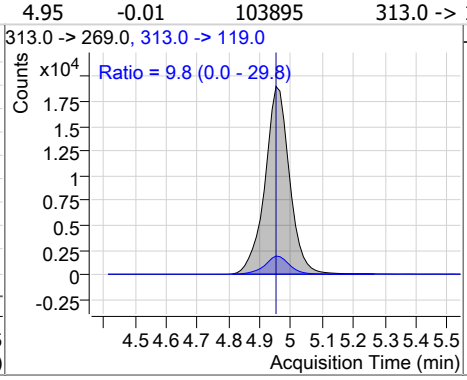


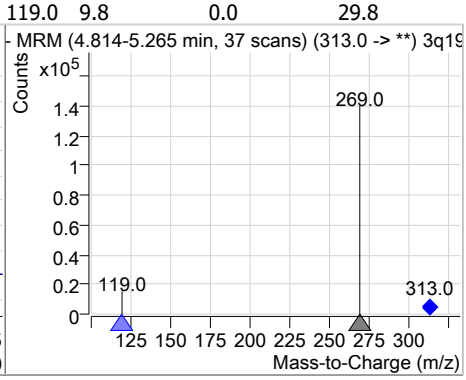




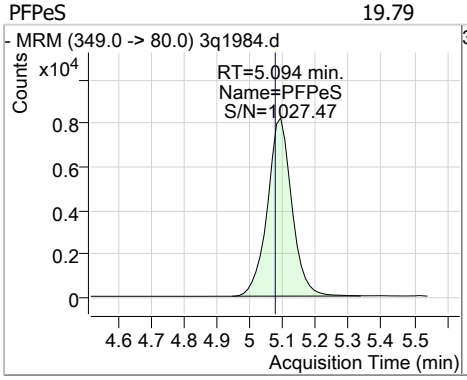
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.54	4.95	-0.01	103895	313.0 -> 119.0	9.8	0.0	29.8

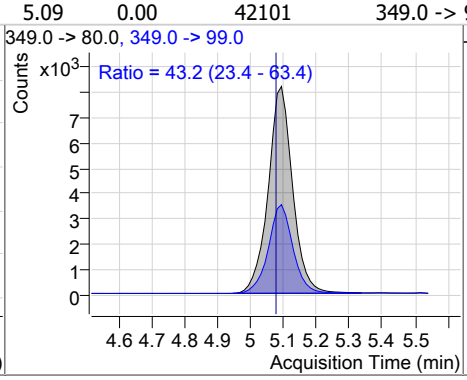


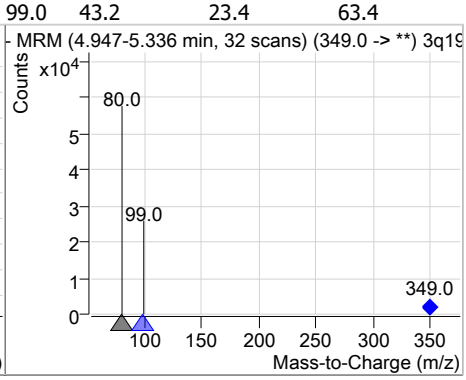




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.79	5.09	0.00	42101	349.0 -> 99.0	43.2	23.4	63.4

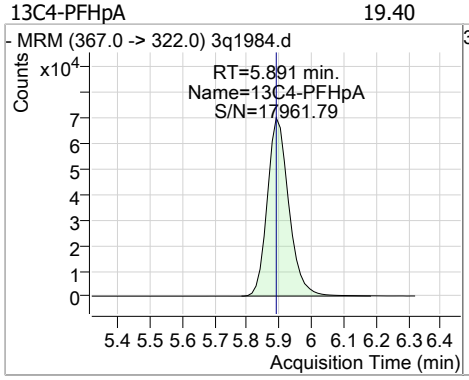


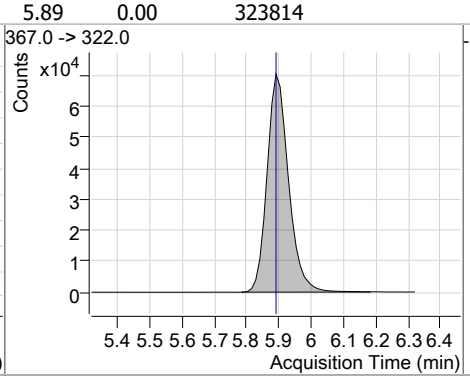


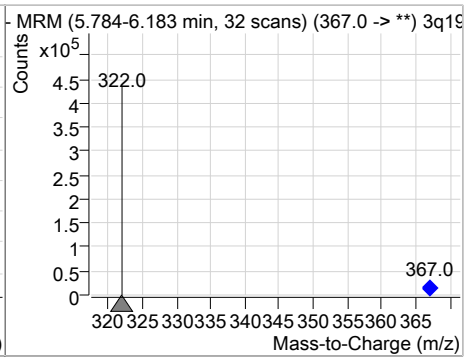


Perfluorinated Compounds by LC/MS/MS

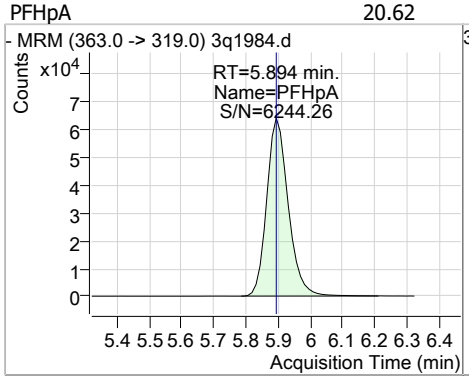
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.40	5.89	0.00	323814				

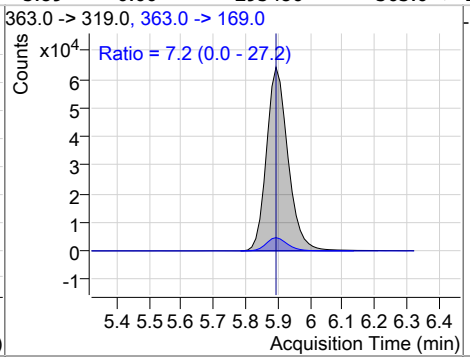


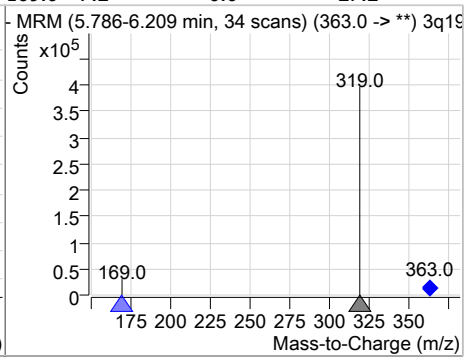




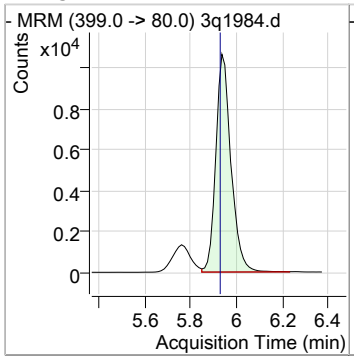
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	20.62	5.89	0.00	295486	363.0 -> 169.0	7.2	0.0	27.2

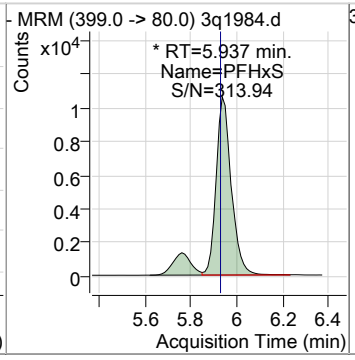


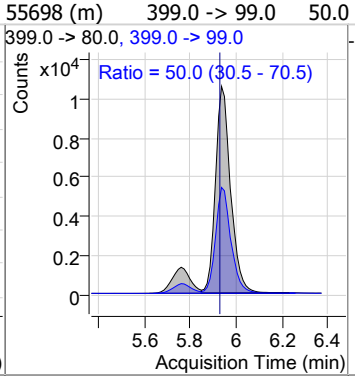


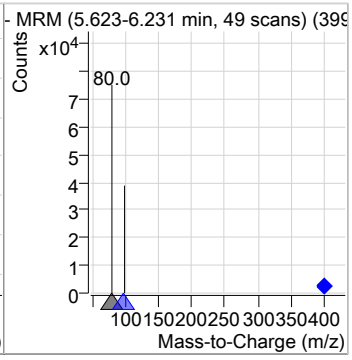


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.50	5.94	0.00	55698 (m)	399.0 -> 99.0	50.0	30.5	70.5

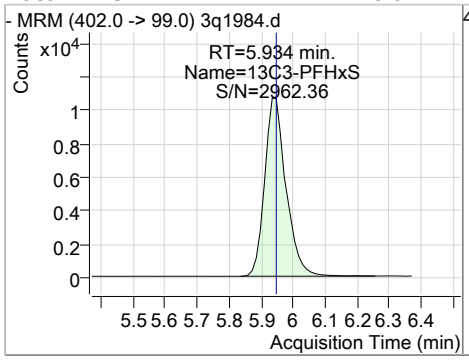


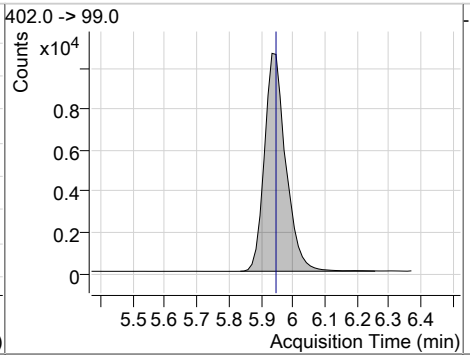


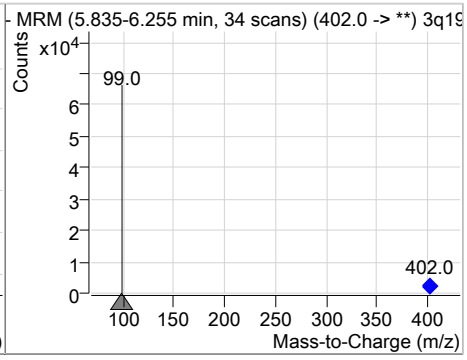




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.51	5.93	-0.01	49306				

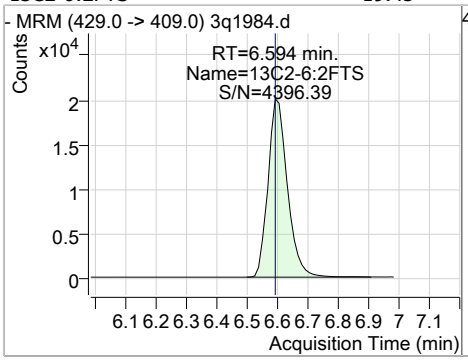


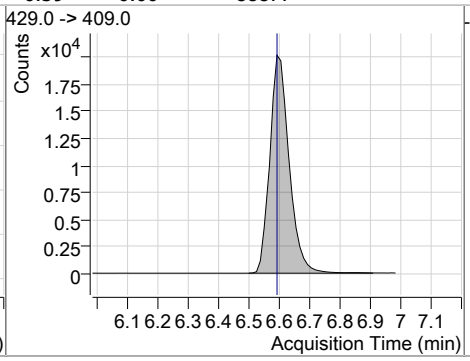


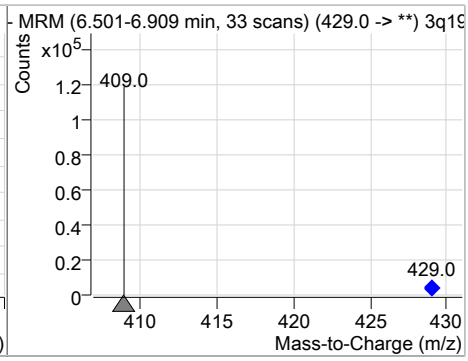


Perfluorinated Compounds by LC/MS/MS

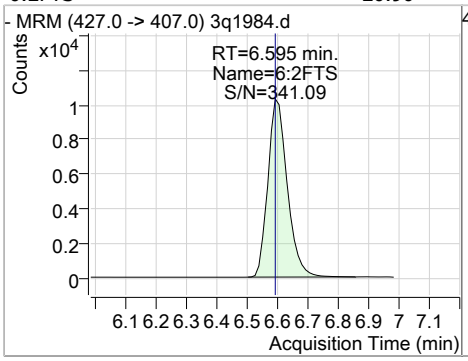
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.45	6.59	0.00	88877				

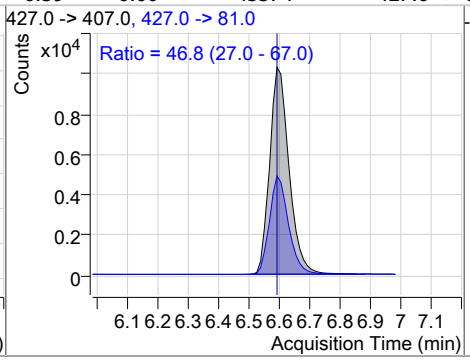


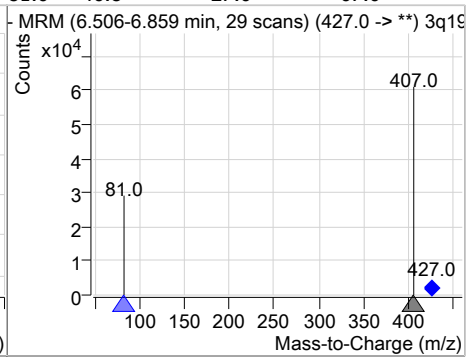




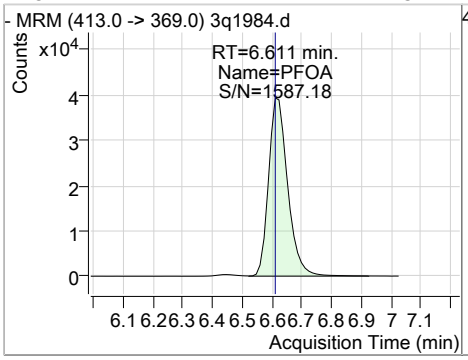
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.90	6.59	0.00	45574	427.0 -> 81.0	46.8	27.0	67.0

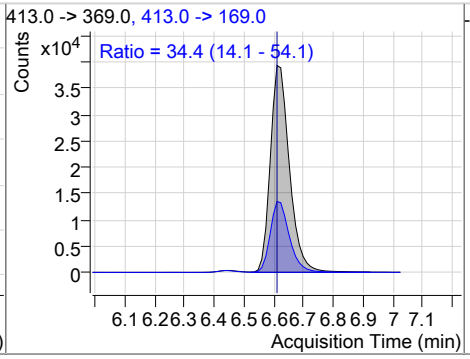


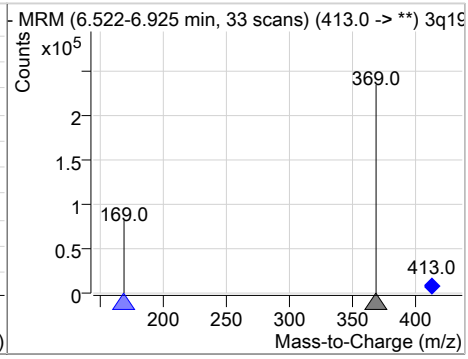




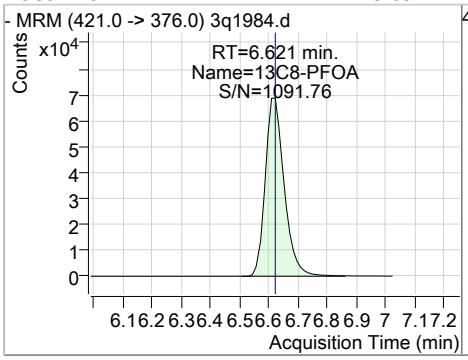
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	21.13	6.61	0.00	175329	413.0 -> 169.0	34.4	14.1	54.1

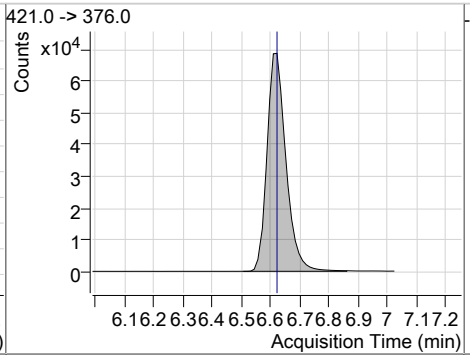


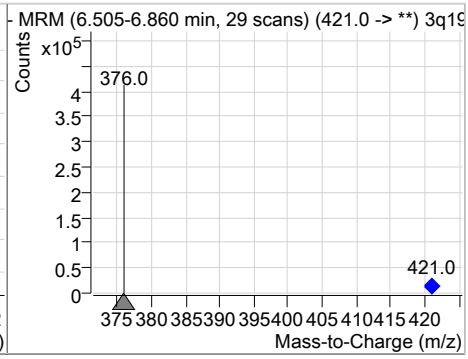




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.59	6.62	0.00	309891				

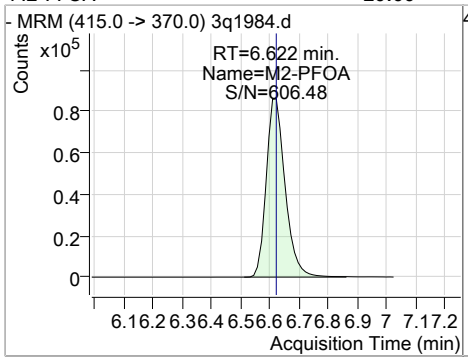


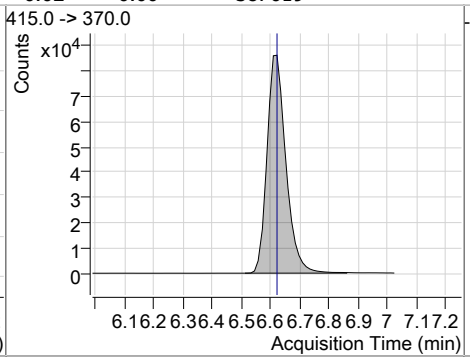


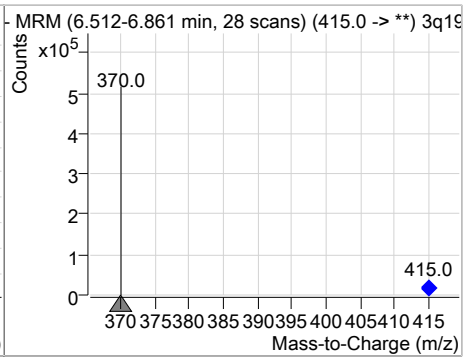


Perfluorinated Compounds by LC/MS/MS

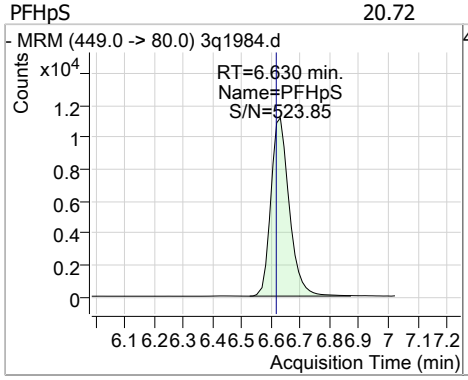
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.62	0.00	387619				

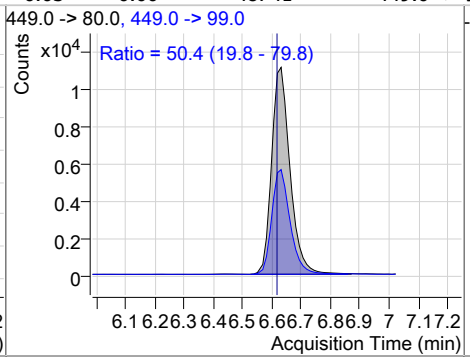


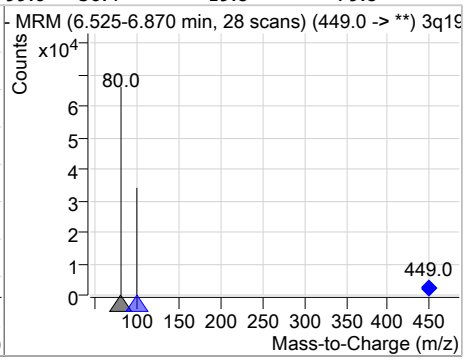




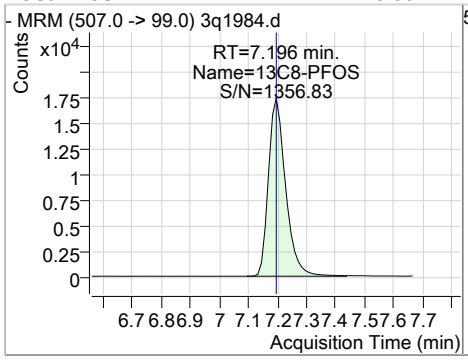
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.72	6.63	0.00	48741	449.0 -> 99.0	50.4	19.8	79.8

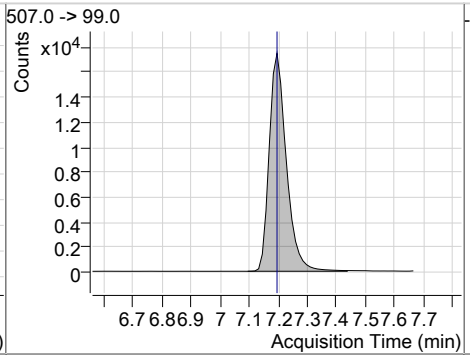


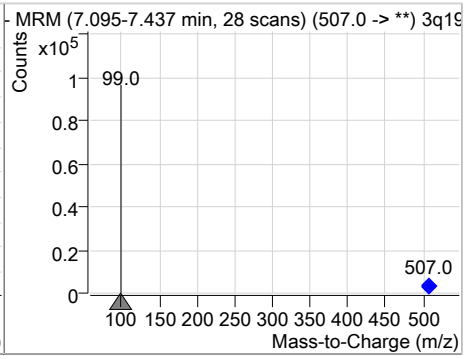




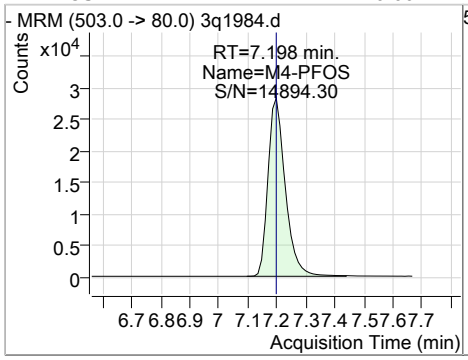
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.50	7.20	0.00	71266				

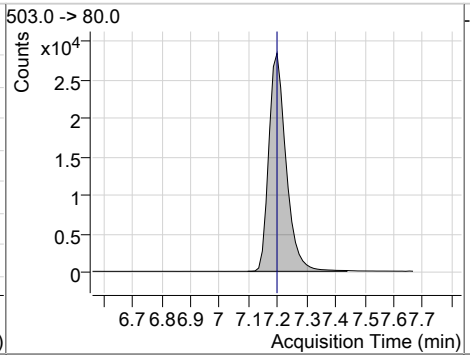


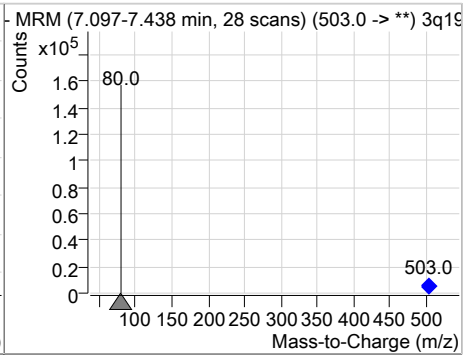




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	117123				

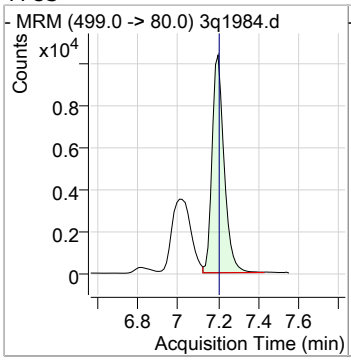


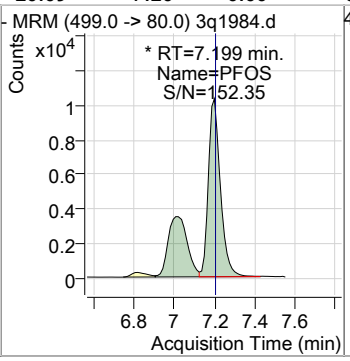


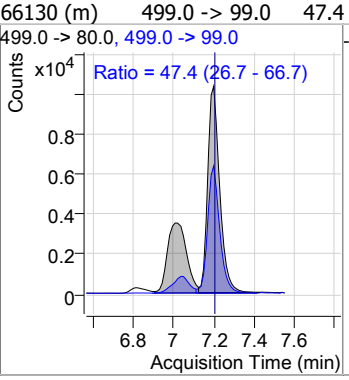


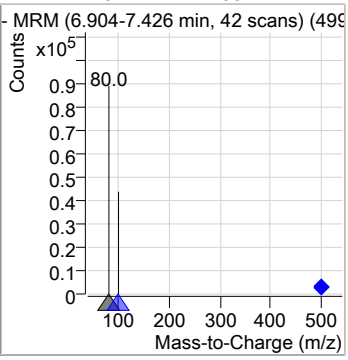
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	20.09	7.20	0.00	66130 (m)	499.0 -> 99.0	47.4	26.7	66.7

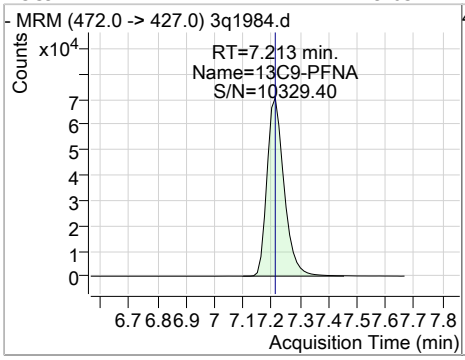


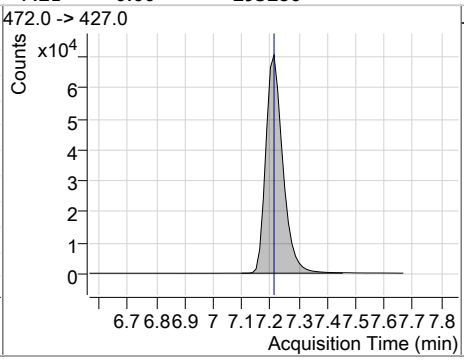


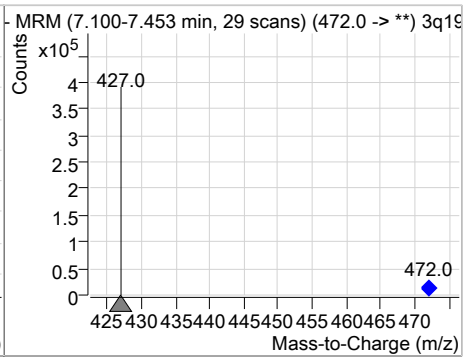




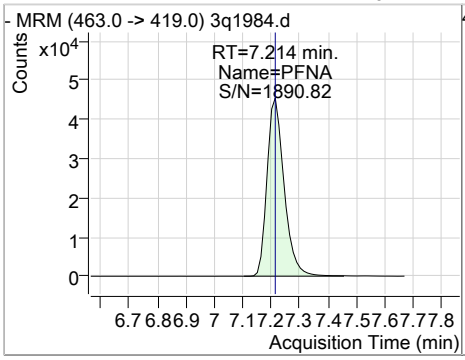
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.63	7.21	0.00	293280				

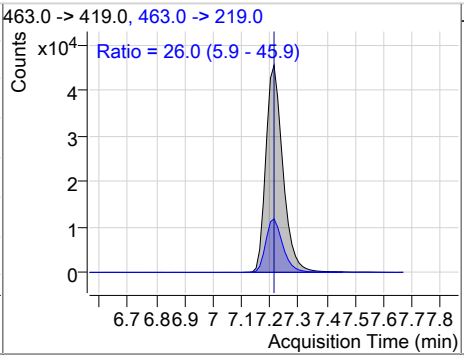


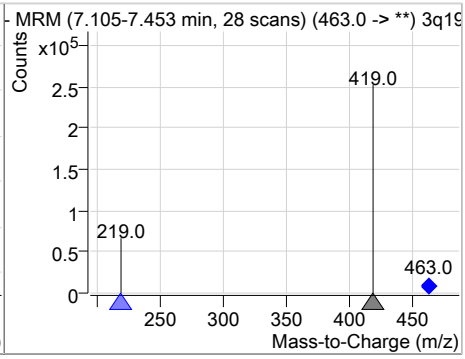




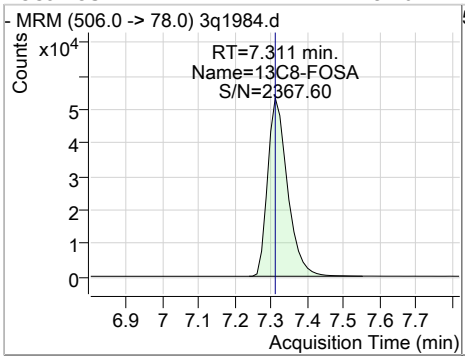
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.71	7.21	0.00	188997	463.0 -> 219.0	26.0	5.9	45.9

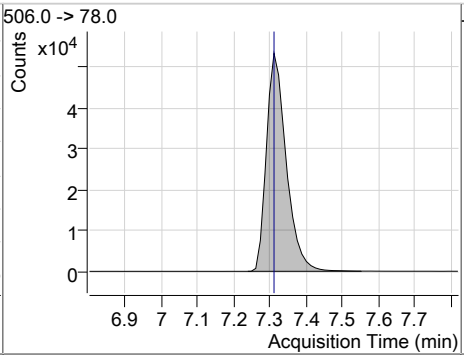


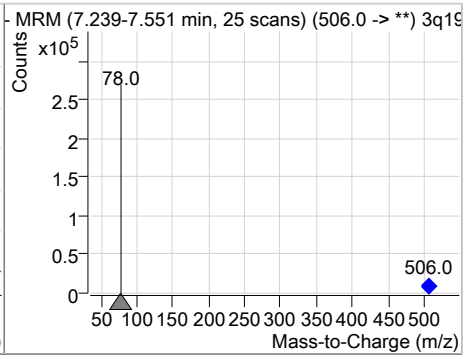




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.20	7.31	0.00	202086				

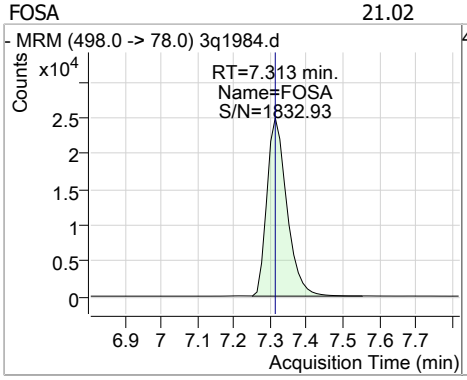


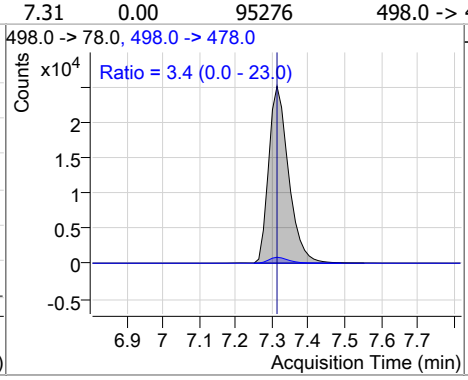


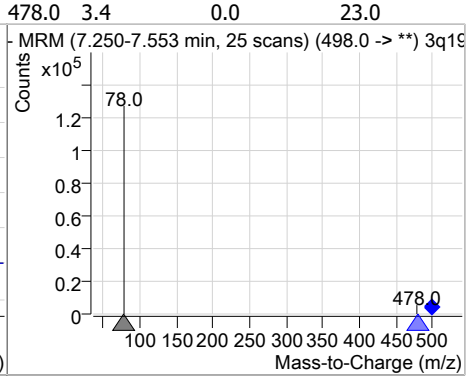


Perfluorinated Compounds by LC/MS/MS

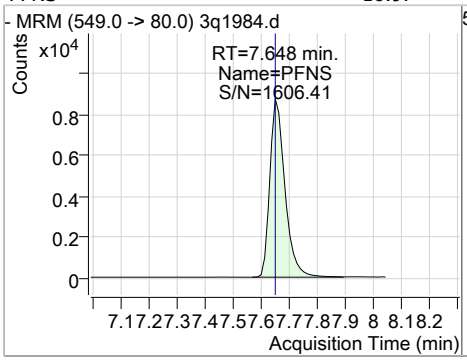
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	21.02	7.31	0.00	95276	498.0 -> 478.0	3.4	0.0	23.0

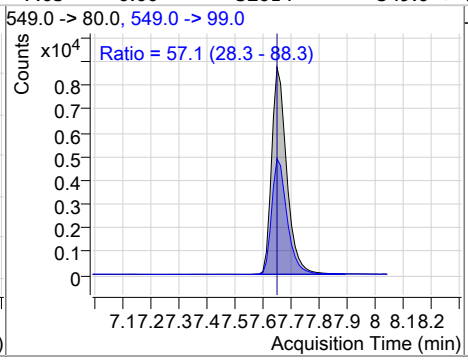


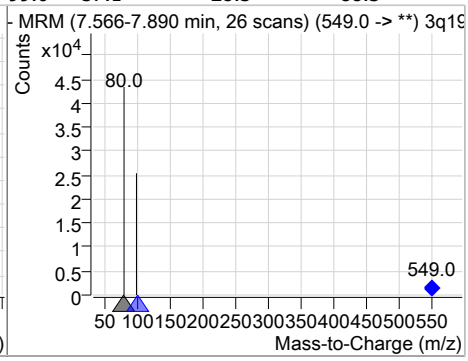




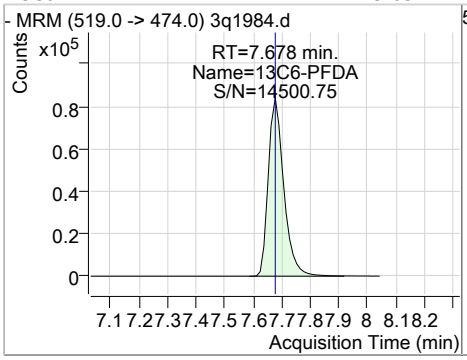
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	16.97	7.65	0.00	32614	549.0 -> 99.0	57.1	28.3	88.3

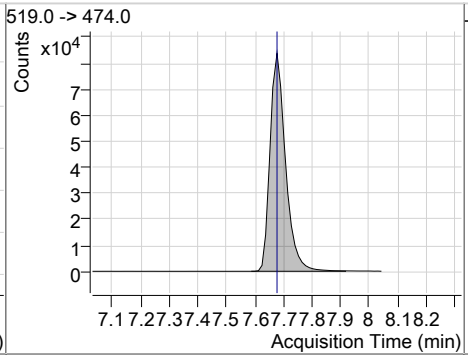


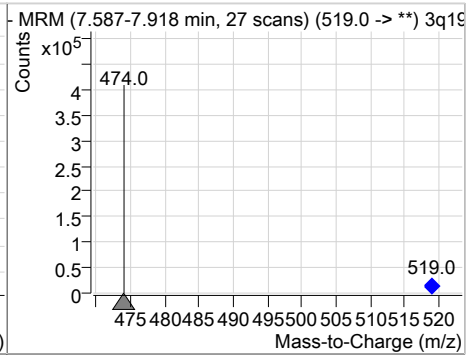




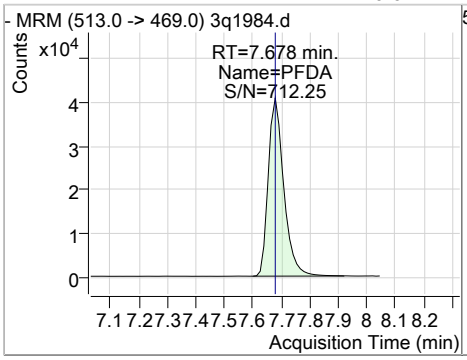
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.03	7.68	0.00	317038				

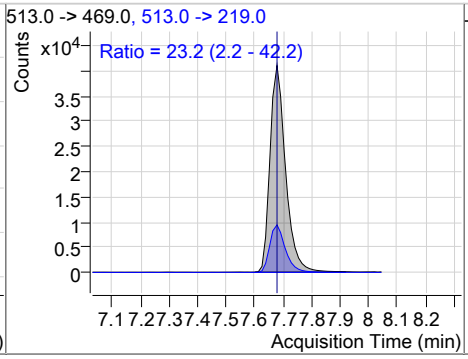


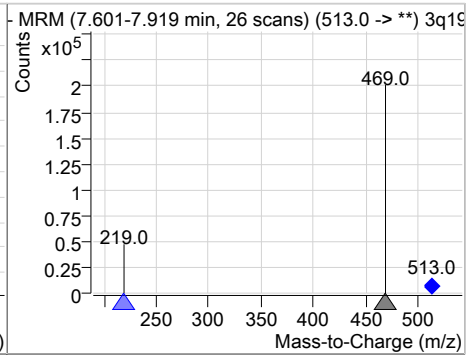




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.61	7.68	0.00	154694	513.0 -> 219.0	23.2	2.2	42.2

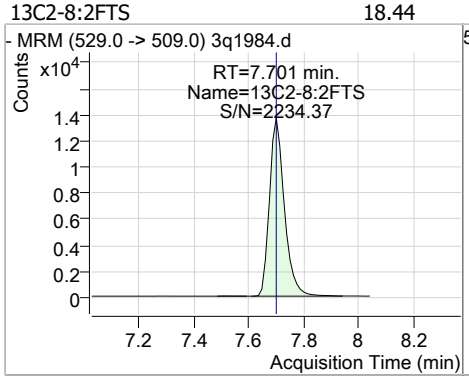


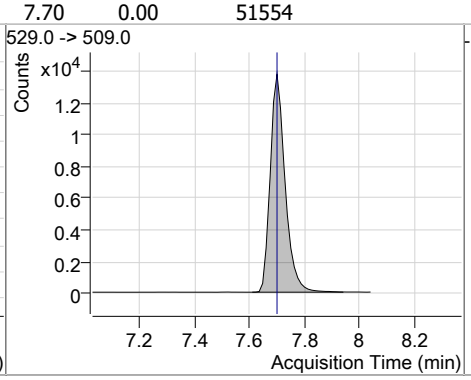


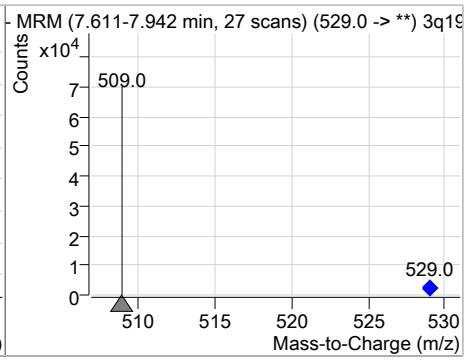


Perfluorinated Compounds by LC/MS/MS

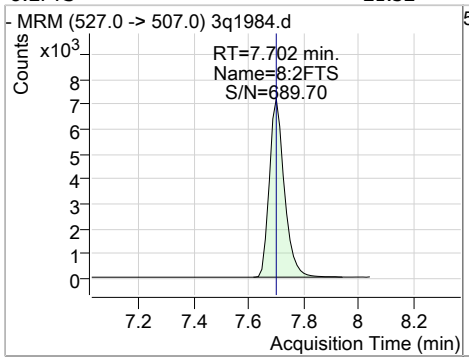
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.44	7.70	0.00	51554				

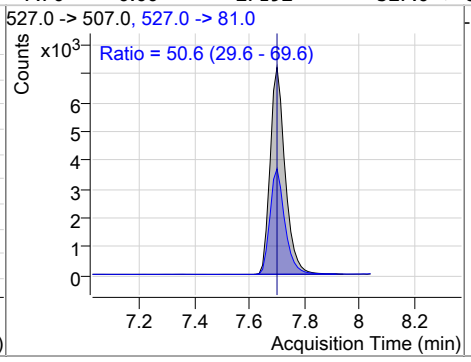


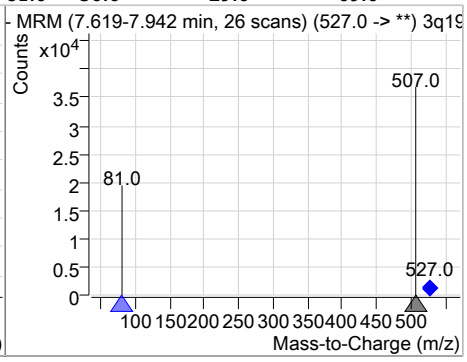




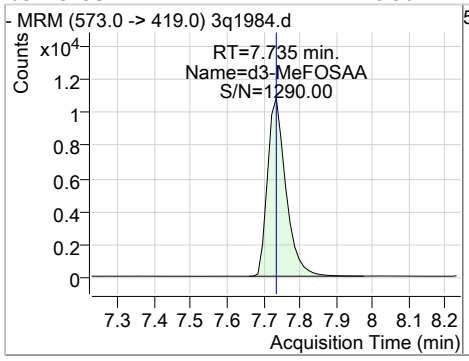
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	21.32	7.70	0.00	27192	527.0 -> 81.0	50.6	29.6	69.6

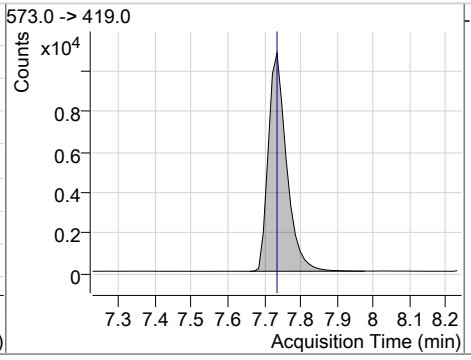


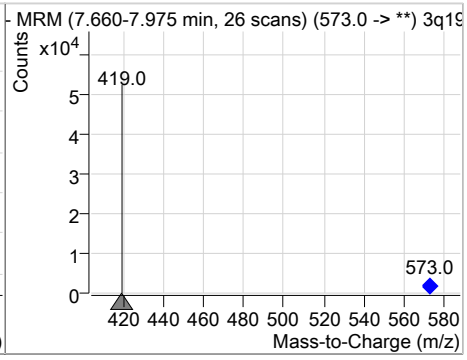




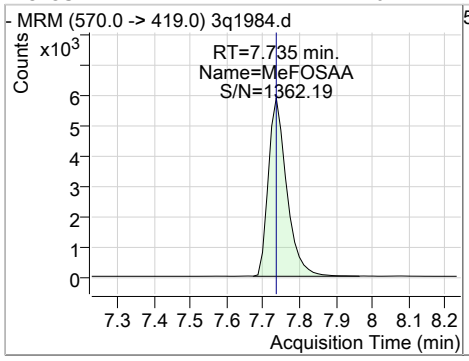
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	15.90	7.73	0.00	37739				

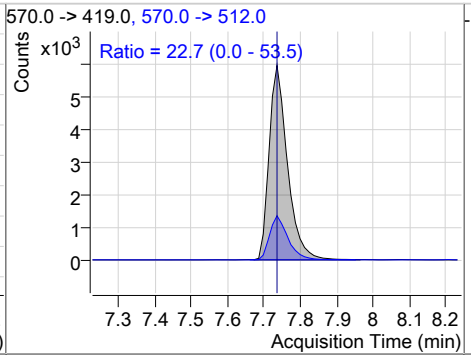


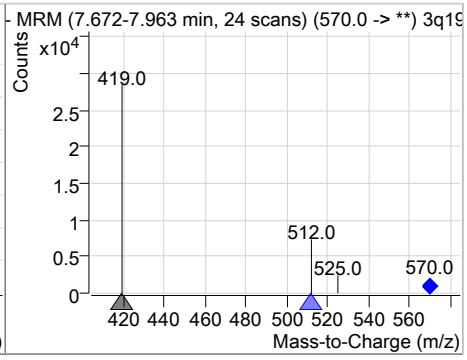




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.41	7.74	0.00	20613	570.0 -> 512.0	22.7	0.0	53.5

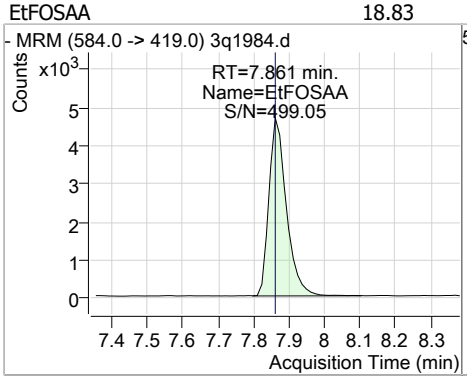


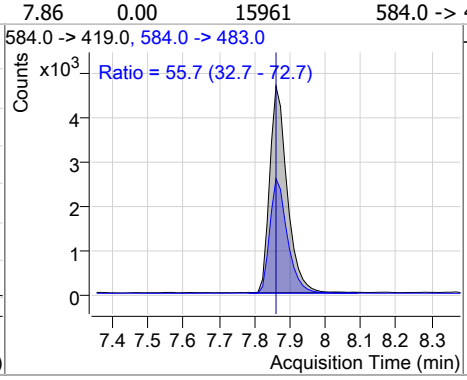


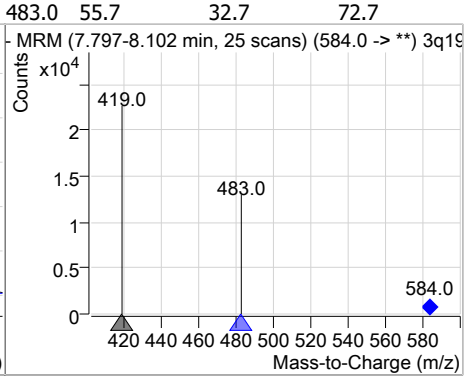


Perfluorinated Compounds by LC/MS/MS

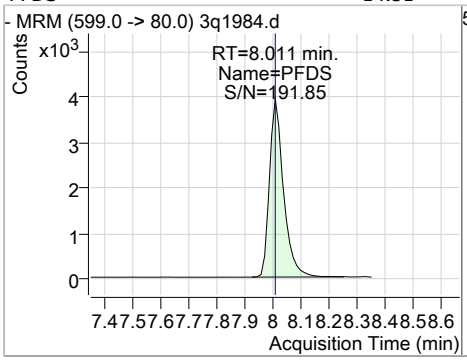
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.83	7.86	0.00	15961	584.0 -> 483.0	55.7	32.7	72.7

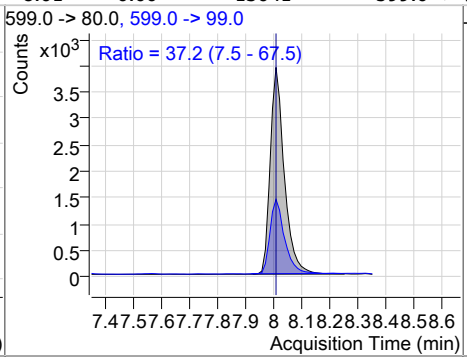


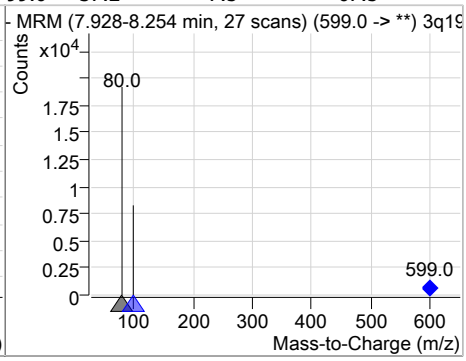




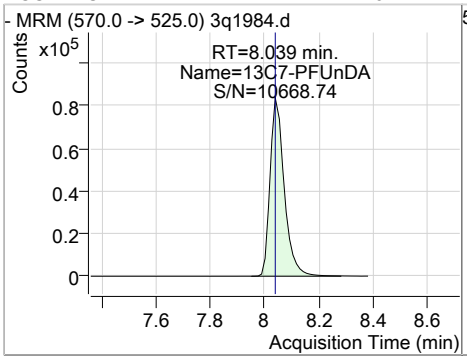
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	14.51	8.01	0.00	13641	599.0 -> 99.0	37.2	7.5	67.5

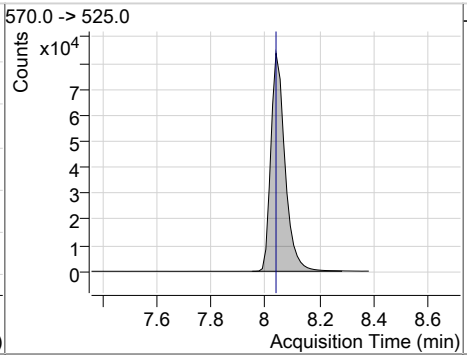


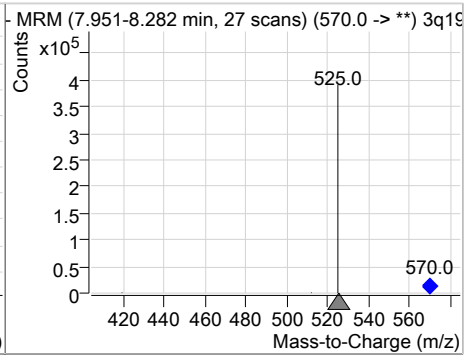




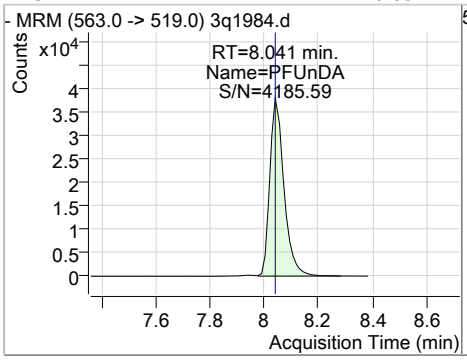
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	16.47	8.04	0.00	305311				

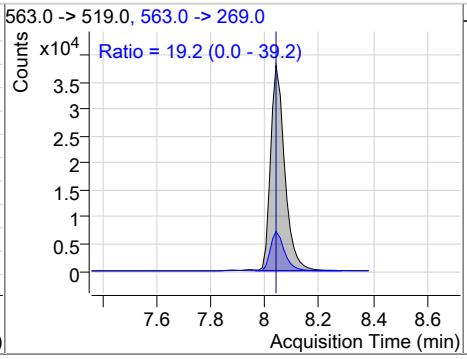


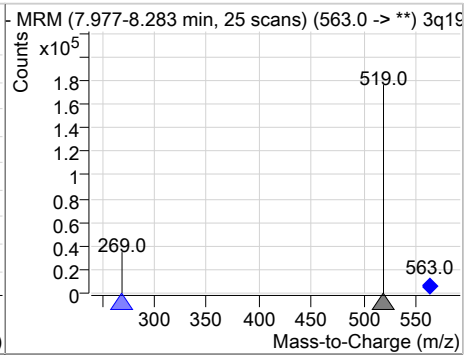




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.85	8.04	0.00	138084	563.0 -> 269.0	19.2	0.0	39.2

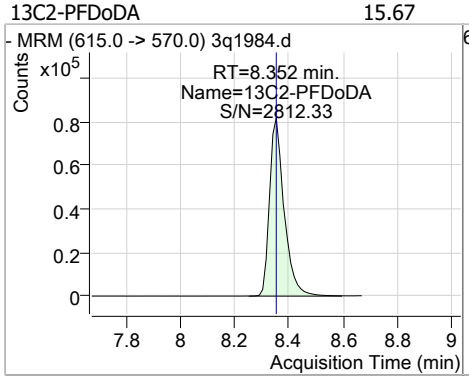


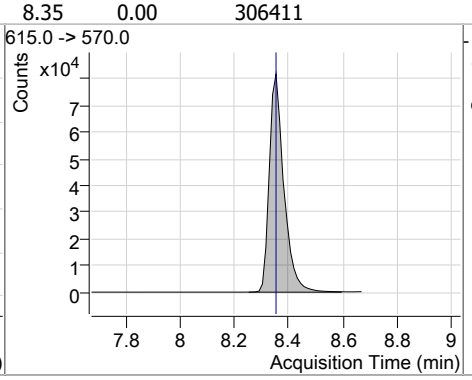


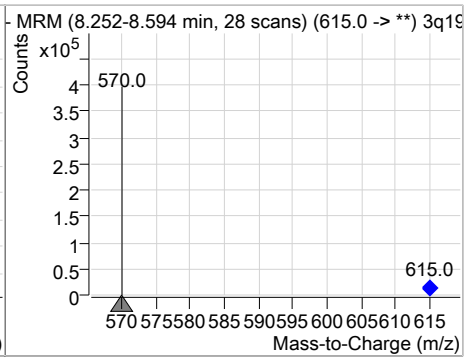


Perfluorinated Compounds by LC/MS/MS

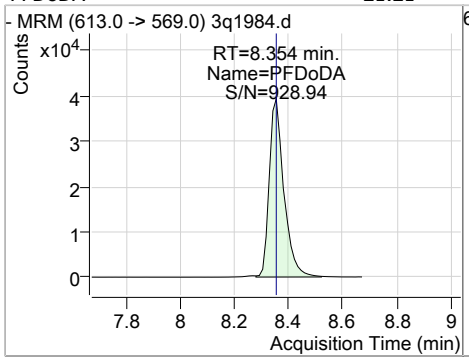
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	15.67	8.35	0.00	306411				

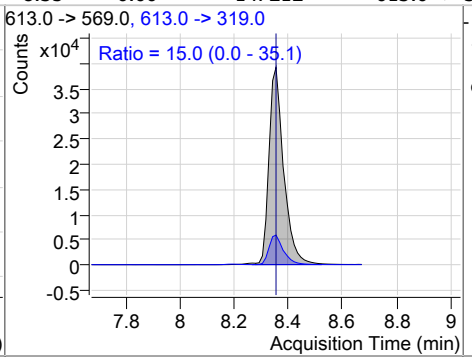


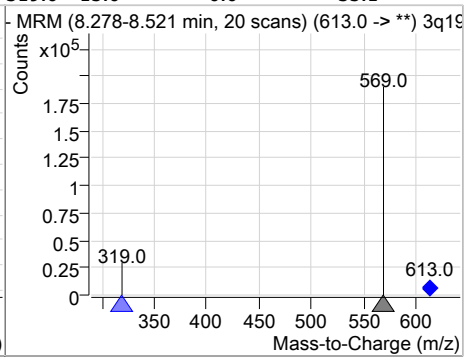




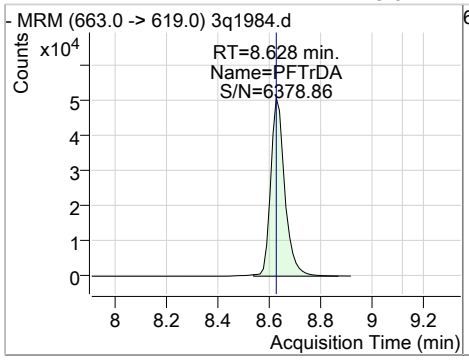
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	21.21	8.35	0.00	147212	613.0 -> 319.0	15.0	0.0	35.1

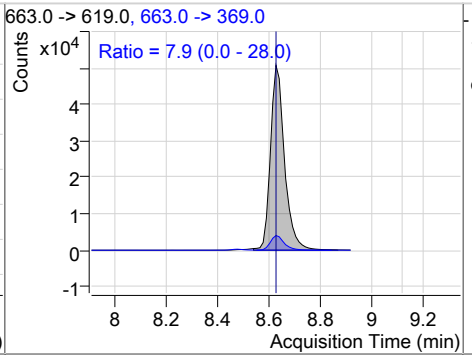


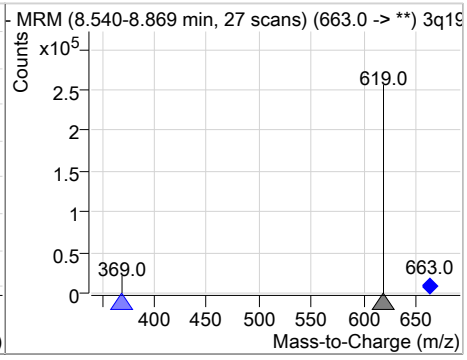




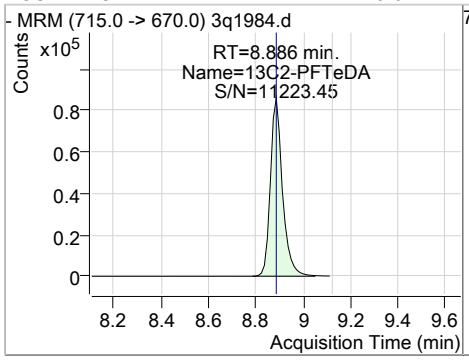
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	23.82	8.63	0.00	192970	663.0 -> 369.0	7.9	0.0	28.0

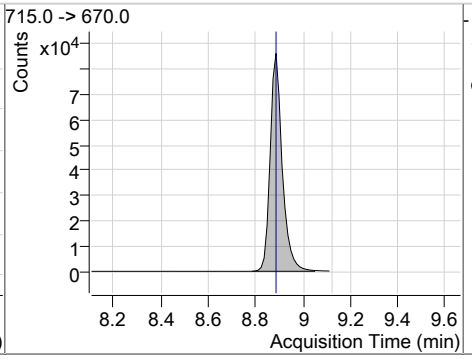


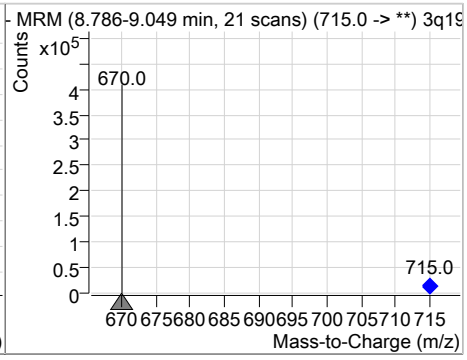




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	16.64	8.89	0.00	304316				

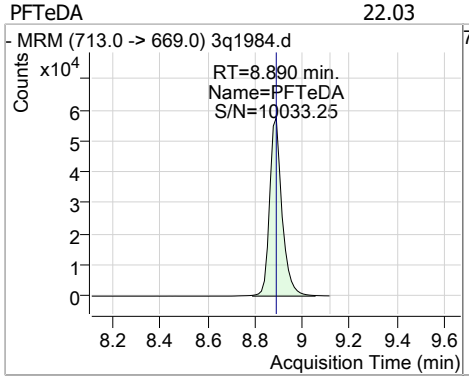


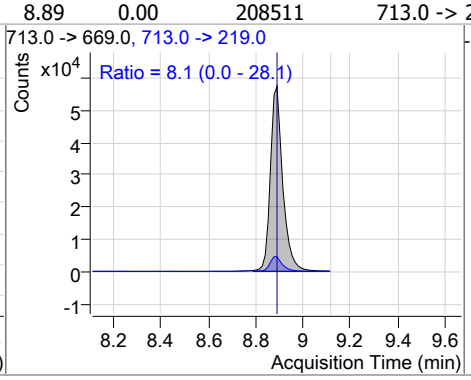


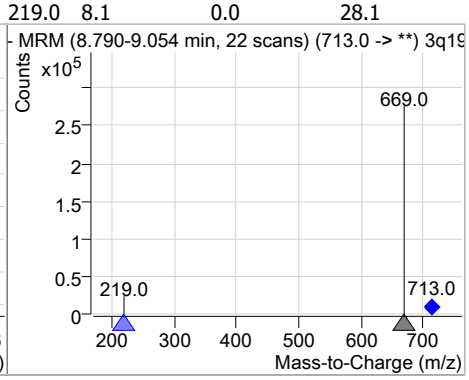


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	22.03	8.89	0.00	208511	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: OP74233-BS
Lab FileID: 3Q1984.D
Injection Time: 03/21/19 13:06
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/18/19 13:59

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27658.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 5:25:11 PM
Sample Name : OP74164-MS
Vial : Vial 57
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

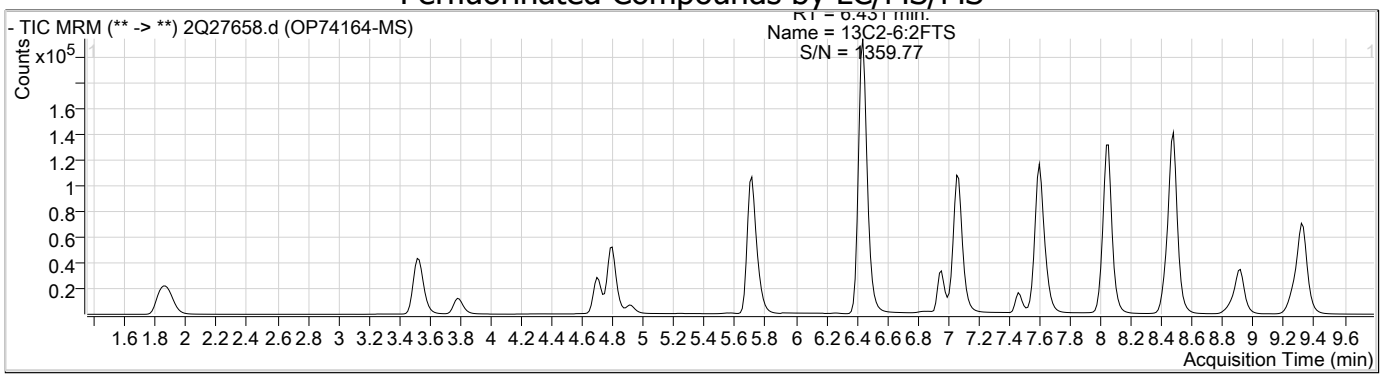
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	326757	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	43017	20.00	µg/L	0.031
M4-PFBA	1.865	217.0 -> 172.0	130795	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	110057	20.00	µg/L	0.032
M5-PFHxA	4.801	318.0 -> 273.0	155749	20.00	µg/L	0.038
M4-PFHpA	5.718	367.0 -> 322.0	223604	20.00	µg/L	0.029
M8-PFOA	6.446	421.0 -> 376.0	244319	20.00	µg/L	0.031
M9-PFNA	7.078	472.0 -> 427.0	224669	20.00	µg/L	0.033
M6-PFDA	7.607	519.0 -> 474.0	274931	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	377595	20.00	µg/L	0.028
M2-PFDoDA	8.478	615.0 -> 570.0	435475	20.00	µg/L	0.028
M2-PFTeDA	9.315	715.0 -> 670.0	231275	20.00	µg/L	0.012
M8-FOSA	6.959	506.0 -> 78.0	81791	20.00	µg/L	0.032
M3-PFBS	3.780	302.0 -> 99.0	18267	20.00	µg/L	0.025
M3-PFHxS	5.748	402.0 -> 99.0	19537	20.00	µg/L	0.026
M8-PFOS	7.045	507.0 -> 99.0	21300	20.00	µg/L	0.030
M2-4:2FTS	4.696	329.0 -> 309.0	66232	20.00	µg/L	0.028
M2-6:2FTS	6.431	429.0 -> 409.0	78974	20.00	µg/L	0.030
M2-8:2FTS	7.642	529.0 -> 509.0	42474	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	32623	20.00	µg/L	0.029
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	66292	15.97	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.8%		
13C2-6:2FTS	6.431	429.0 -> 409.0	78972	18.12	µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%		
13C2-8:2FTS	7.642	529.0 -> 509.0	42474	14.96	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.8%		
13C2-PFDoDA	8.478	615.0 -> 570.0	435108	15.59	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%		
13C2-PFTeDA	9.315	715.0 -> 670.0	230721	11.94	µg/L	0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.7%		
13C3-PFBS	3.780	302.0 -> 99.0	18248	15.07	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.3%		
13C3-PFHxS	5.748	402.0 -> 99.0	19537	14.34	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.7%		
13C4-PFBA	1.865	217.0 -> 172.0	130486	15.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.3%		
13C4-PFHpA	5.718	367.0 -> 322.0	223392	15.52	µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%		
13C5-PFHxA	4.801	318.0 -> 273.0	155744	15.18	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 75.9%		
13C5-PFPeA	3.524	268.0 -> 223.0	109633	15.29	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.4%		
13C6-PFDA	7.607	519.0 -> 474.0	274762	14.84	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

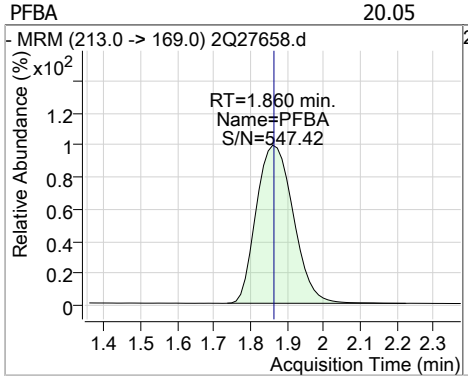
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.2%			
13C7-PFUnDA	8.054	570.0 -> 525.0	377460	15.76	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.8%			
13C8-FOSA	6.959	506.0 -> 78.0	81952	14.39	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.9%			
13C8-PFOA	6.446	421.0 -> 376.0	244173	16.40	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%			
13C8-PFOS	7.045	507.0 -> 99.0	21291	12.87	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.4%			
13C9-PFNA	7.078	472.0 -> 427.0	224510	15.67	µg/L		0.033
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%			
d3-MeFOSAA	7.459	573.0 -> 419.0	32624	13.64	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.2%			
M2-PFOA	6.448	415.0 -> 370.0	326816	19.99	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	43037	20.00	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	35292	18.32	µg/L		100
6:2FTS	6.432	427.0 -> 407.0	37054	18.35	µg/L		99
8:2FTS	7.643	527.0 -> 507.0	20854	18.59	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	13143	18.29	µg/L		99
FOSA	6.963	498.0 -> 78.0	35836	19.24	µg/L		99
MeFOSAA	7.460	570.0 -> 419.0	16866	19.46	µg/L		98
PFBA	1.860	213.0 -> 169.0	25505	20.05	µg/L		100
PFBS	3.783	299.0 -> 80.0	27433	18.18	µg/L		100
PFDA	7.608	513.0 -> 469.0	106735	18.39	µg/L		100
PFDoDA	8.480	613.0 -> 569.0	186750	18.30	µg/L		100
PFDS	8.014	599.0 -> 80.0	7080	16.82	µg/L		99
PFHpA	5.720	363.0 -> 319.0	188046	17.93	µg/L		100
PFHpS	6.454	449.0 -> 80.0	18416	18.61	µg/L		99
PFHxA	4.803	313.0 -> 269.0	50566	18.76	µg/L		99
PFHxS	5.751	399.0 -> 80.0	21582	18.55	µg/L	m	95
PFNA	7.079	463.0 -> 419.0	128434	17.66	µg/L		99
PFNS	7.578	549.0 -> 80.0	12899	16.18	µg/L		98
PFOA	6.450	413.0 -> 369.0	123560	18.49	µg/L		98
PFOS	7.049	499.0 -> 80.0	19008	17.41	µg/L	m	82
PFPeA	3.528	263.0 -> 219.0	99699	19.94	µg/L		100
PFPeS	4.908	349.0 -> 80.0	17930	17.36	µg/L		99
PFTeDA	9.319	713.0 -> 669.0	150868	19.11	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	171682	19.77	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	150008	18.76	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

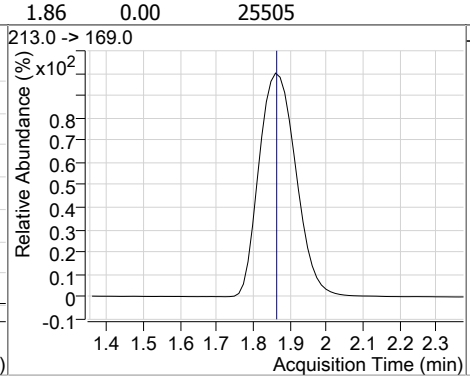
 # = Qualifier out of range, m = manually integrated, + = Area summed

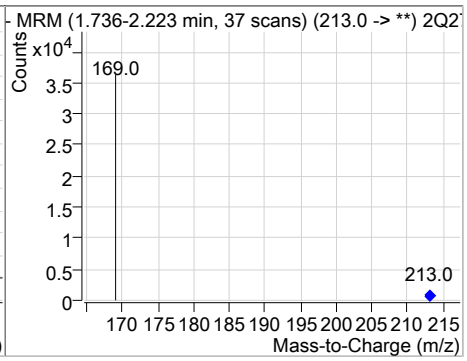
Perfluorinated Compounds by LC/MS/MS



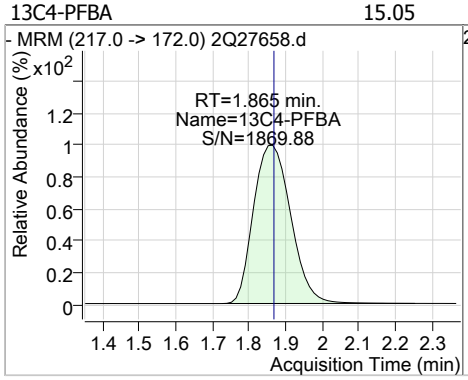
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.05	1.86	0.00	25505				

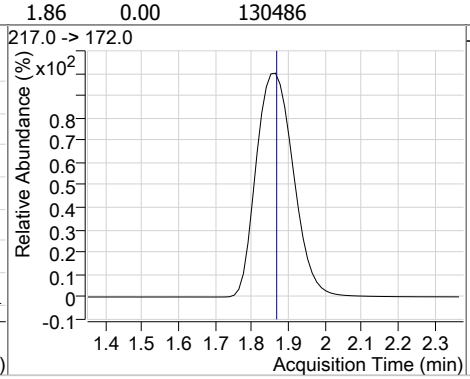


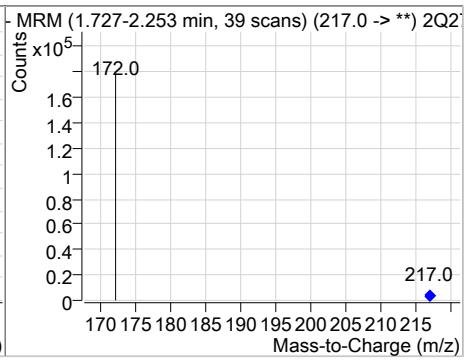




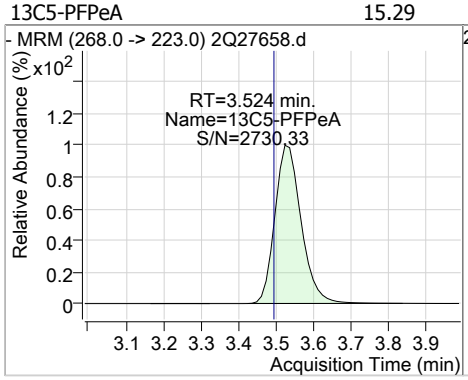
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.05	1.86	0.00	130486				

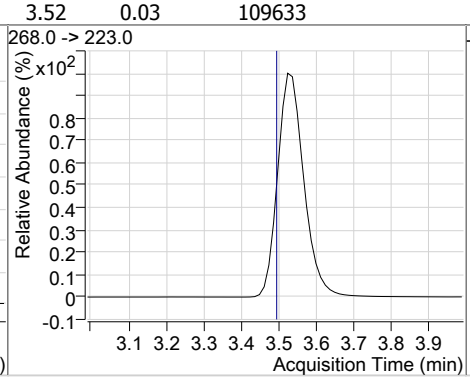


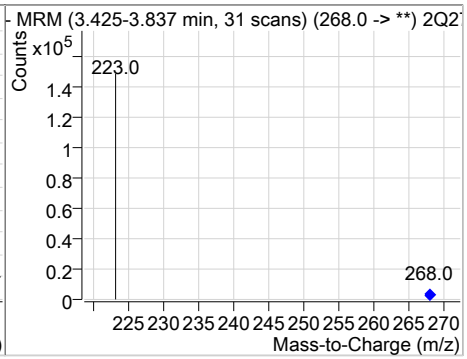




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.29	3.52	0.03	109633				







7.4.1

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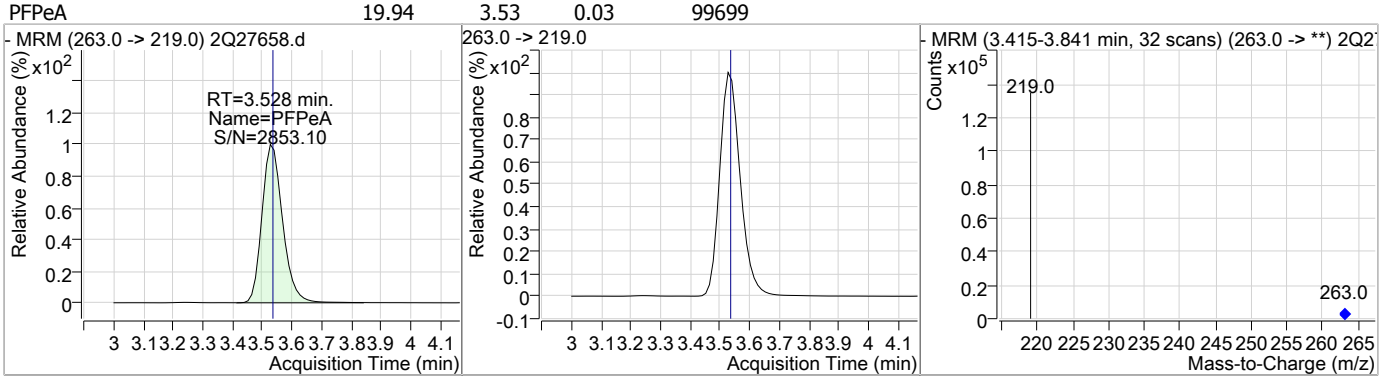
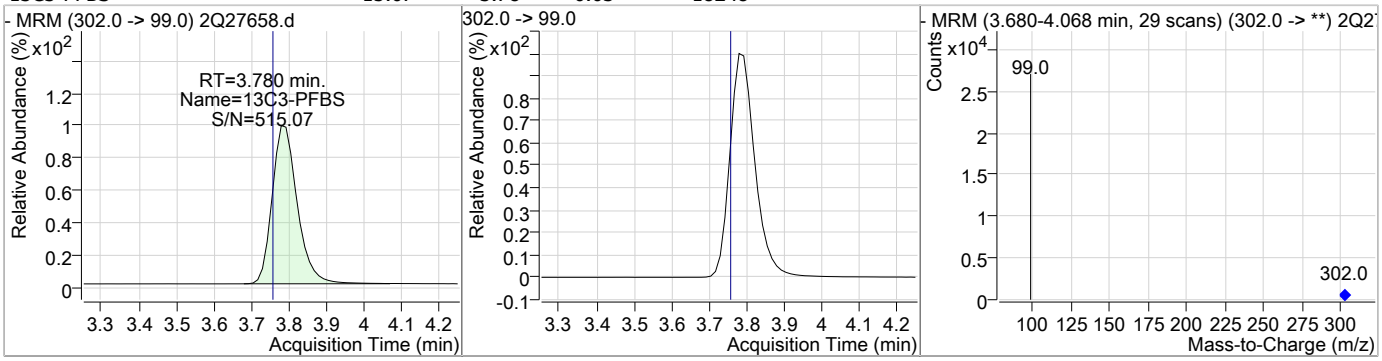
Perfluorinated Compounds by LC/MS/MS

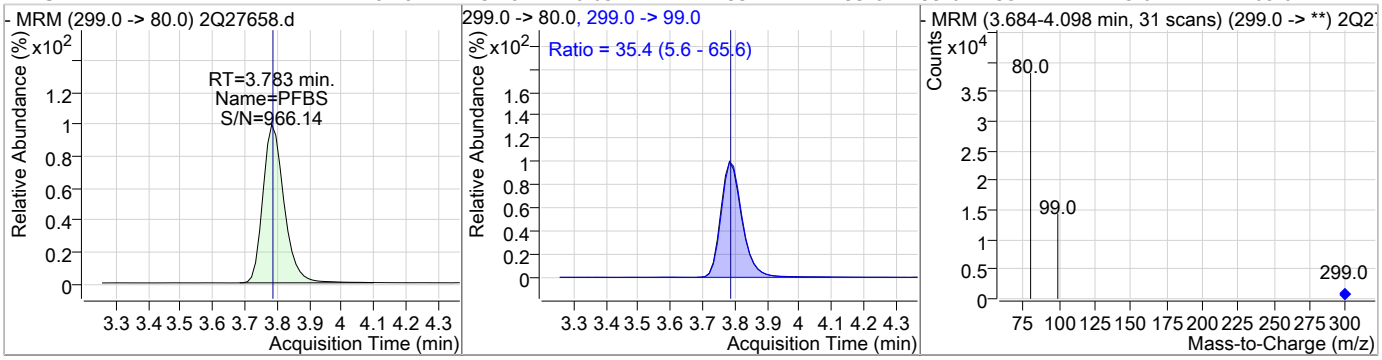
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.94	3.53	0.03	99699				



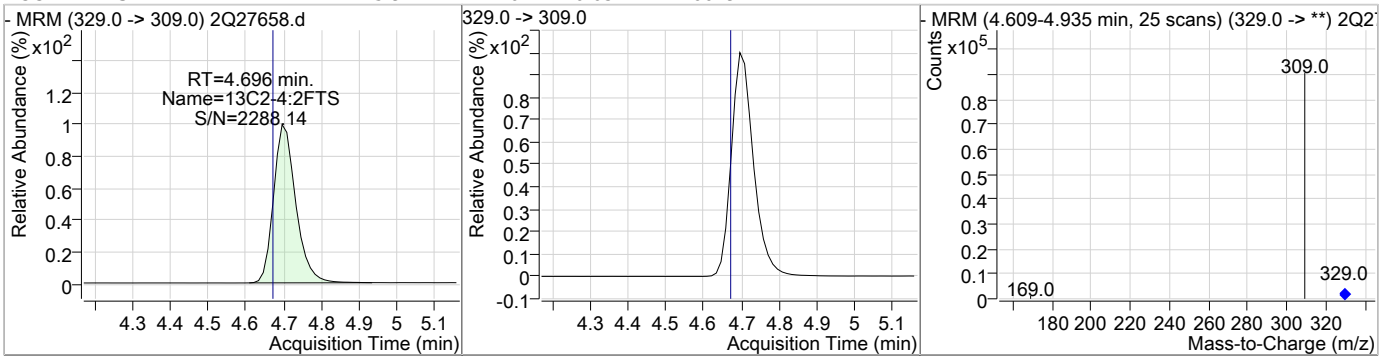
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.07	3.78	0.03	18248				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	18.18	3.78	0.03	27433	299.0 -> 99.0	35.4	5.6	65.6

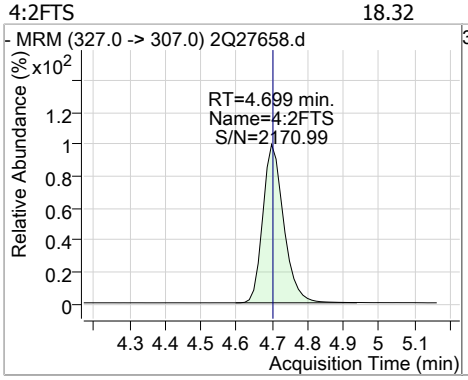


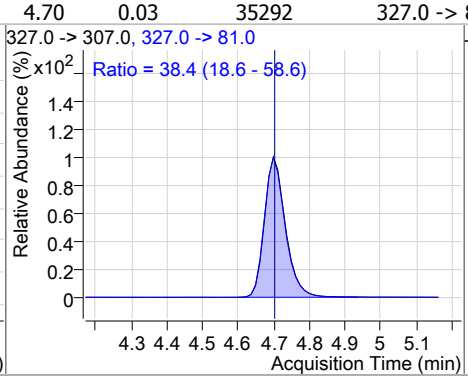
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	15.97	4.70	0.03	66292				

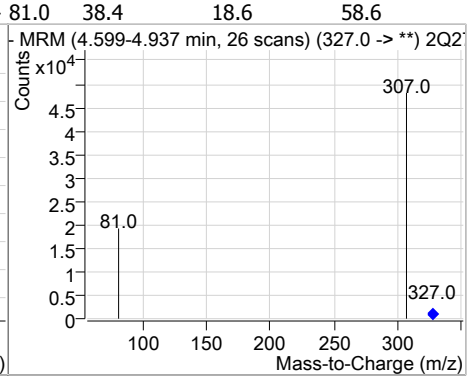


Perfluorinated Compounds by LC/MS/MS

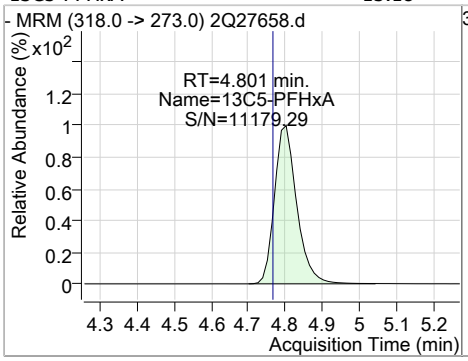
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	18.32	4.70	0.03	35292	327.0 -> 81.0	38.4	18.6	58.6

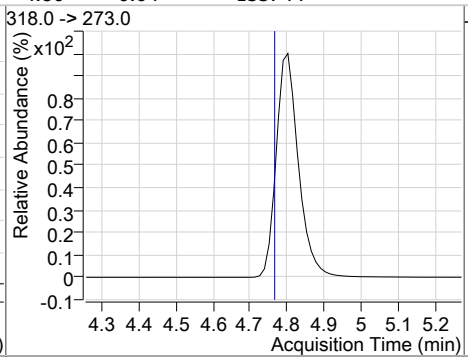


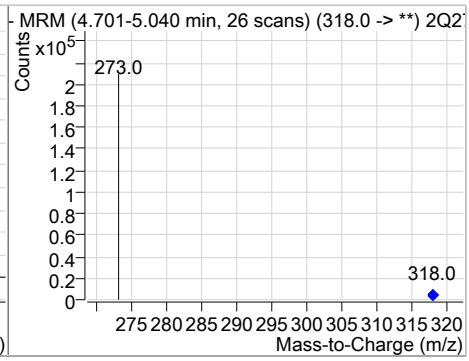




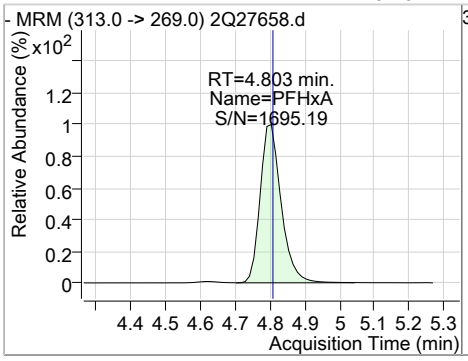
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.18	4.80	0.04	155744				

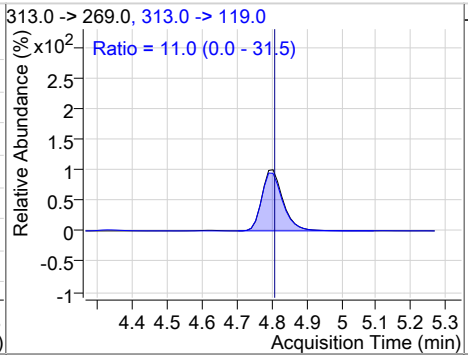


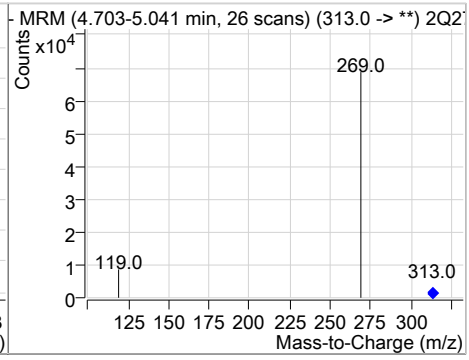




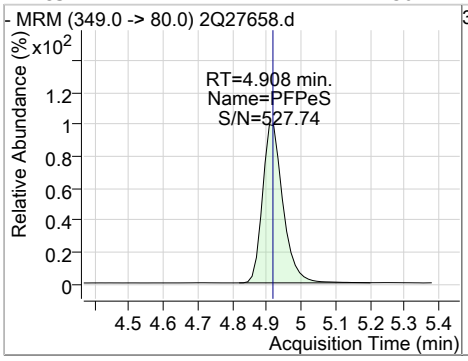
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.76	4.80	0.04	50566	313.0 -> 119.0	11.0	0.0	31.5

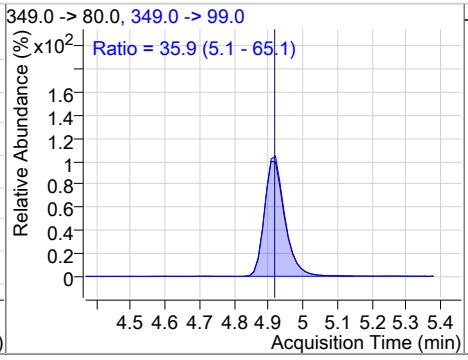


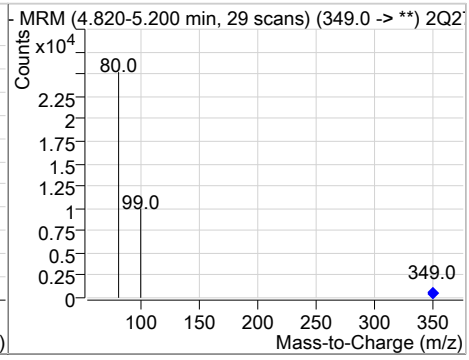




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.36	4.91	0.03	17930	349.0 -> 99.0	35.9	5.1	65.1

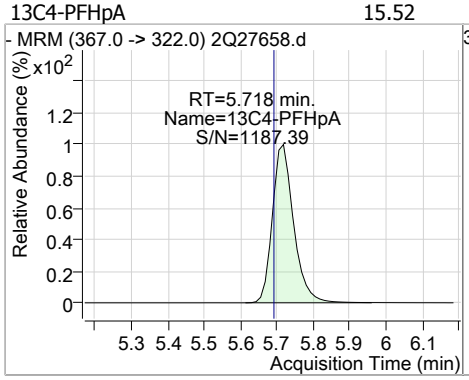


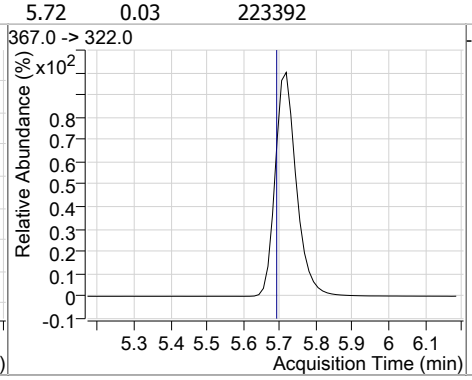


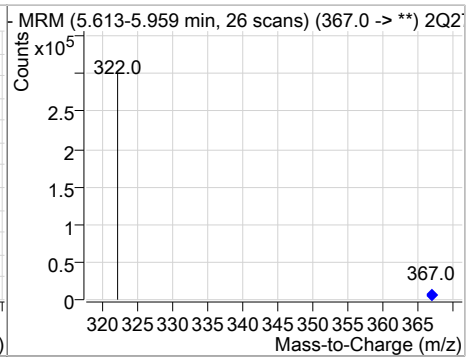


Perfluorinated Compounds by LC/MS/MS

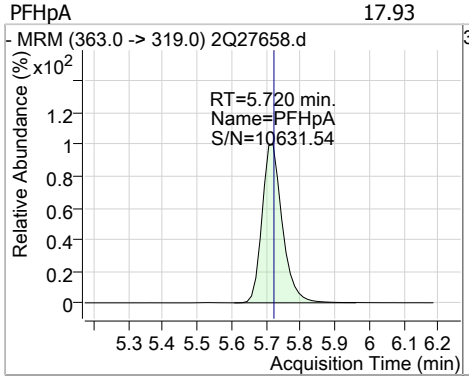
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	15.52	5.72	0.03	223392				

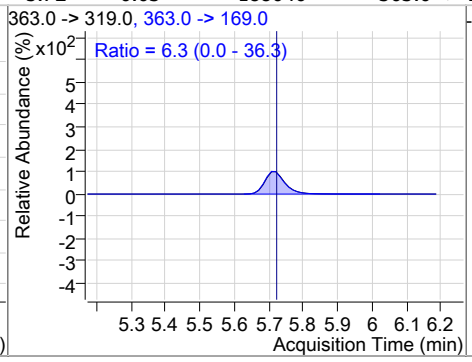


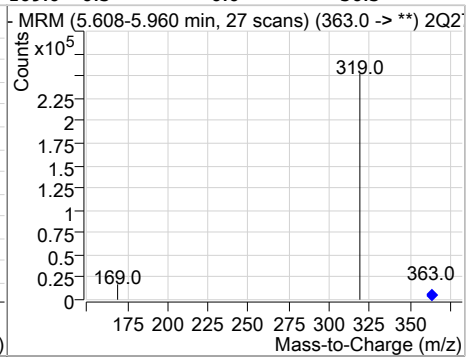




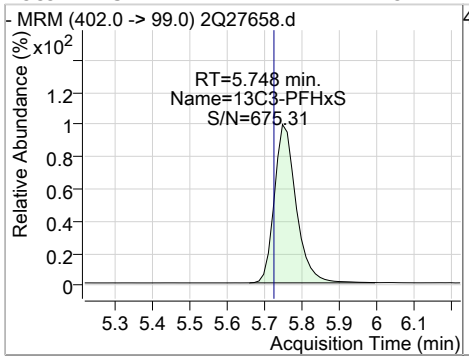
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	17.93	5.72	0.03	188046	363.0 -> 169.0	6.3	0.0	36.3

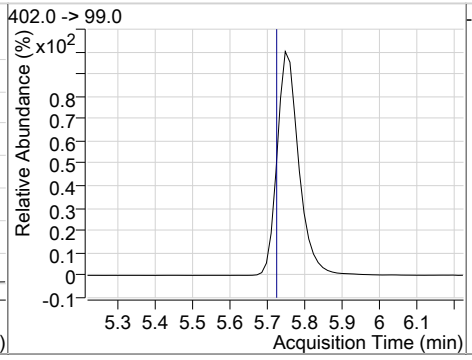


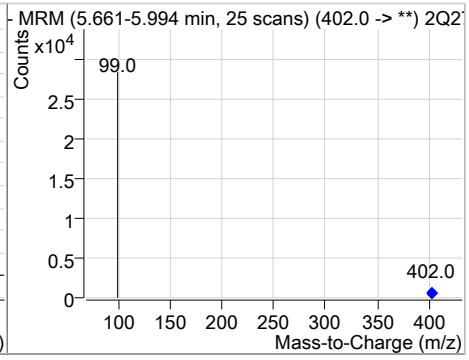




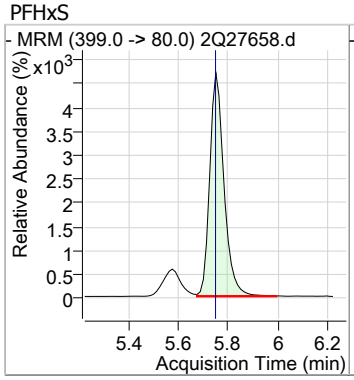
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	14.34	5.75	0.03	19537				

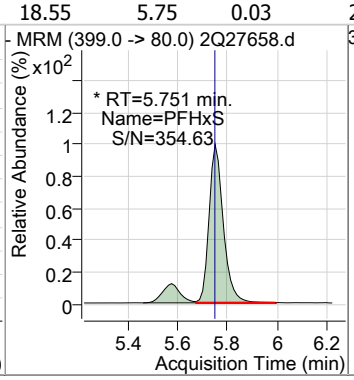


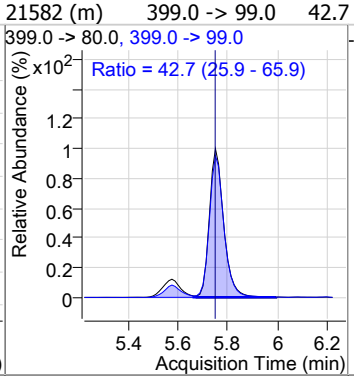


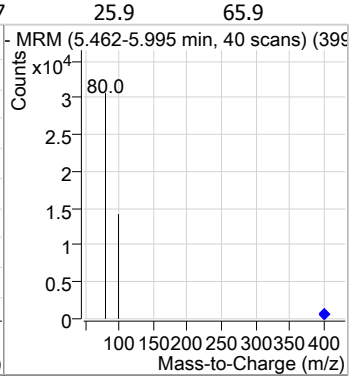


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	18.55	5.75	0.03	21582 (m)	399.0 -> 99.0	42.7	25.9	65.9



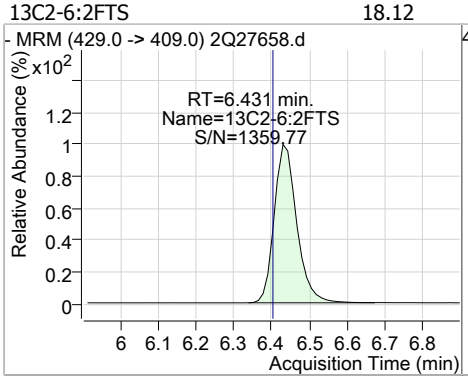


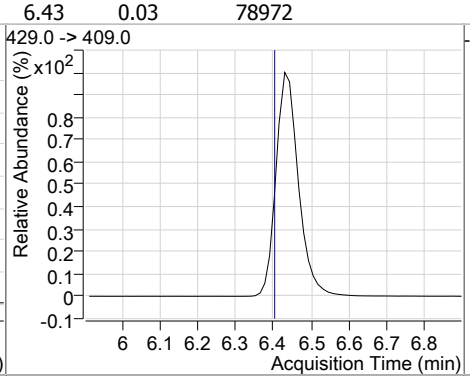


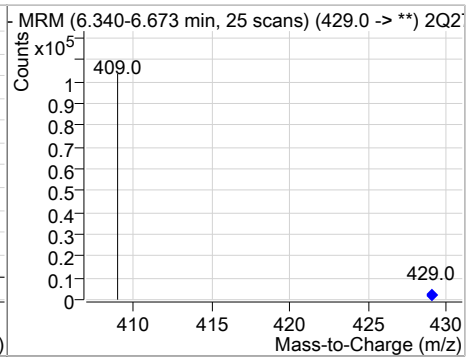


Perfluorinated Compounds by LC/MS/MS

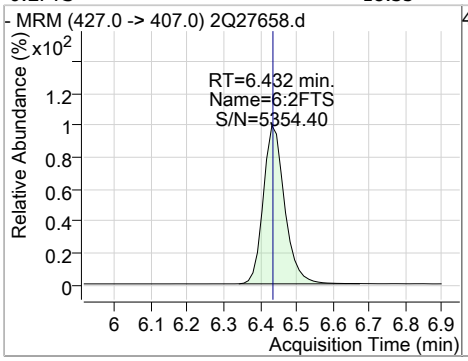
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.12	6.43	0.03	78972				

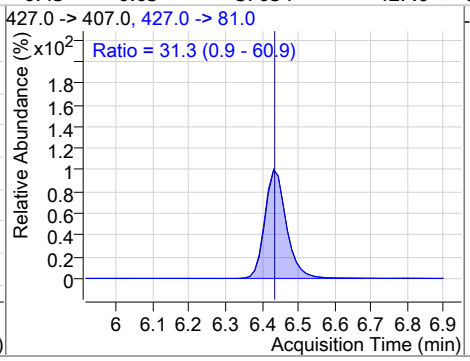


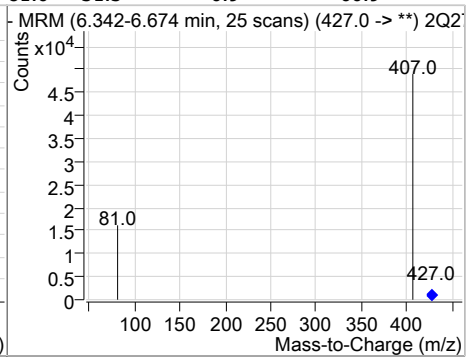




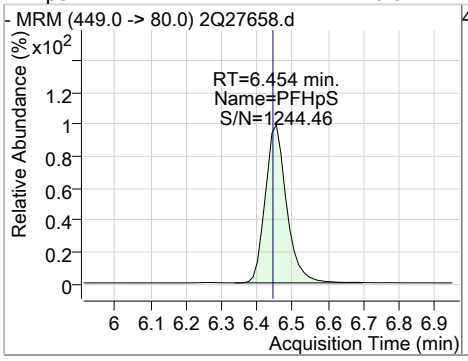
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.35	6.43	0.03	37054	427.0 -> 81.0	31.3	0.9	60.9

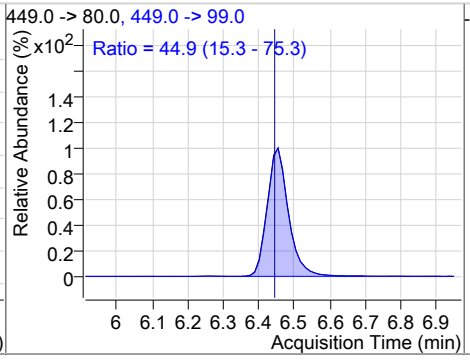


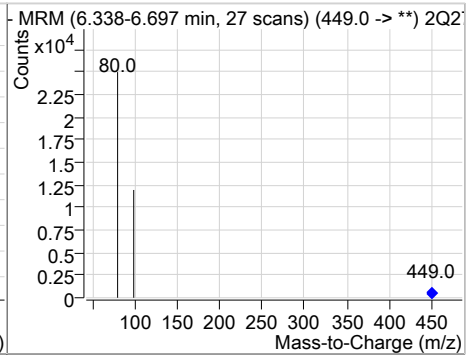




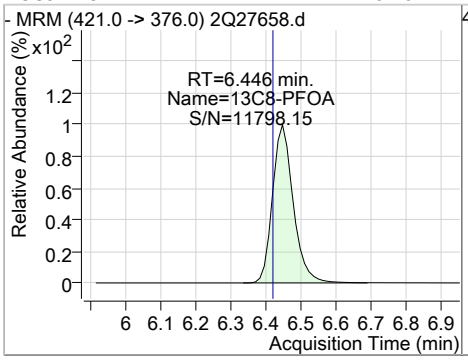
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	18.61	6.45	0.04	18416	449.0 -> 99.0	44.9	15.3	75.3

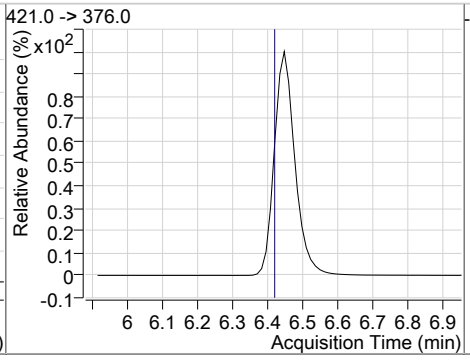


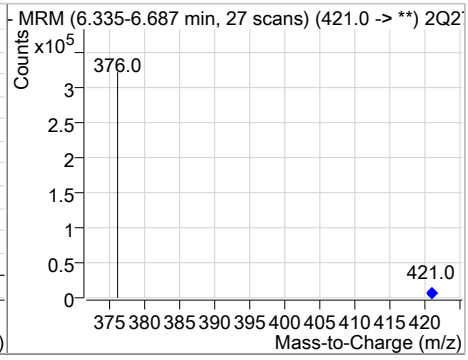




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.40	6.45	0.03	244173				

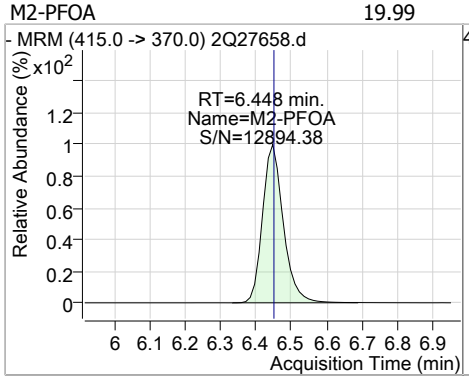


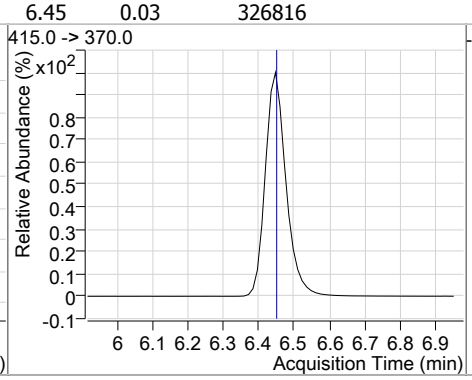


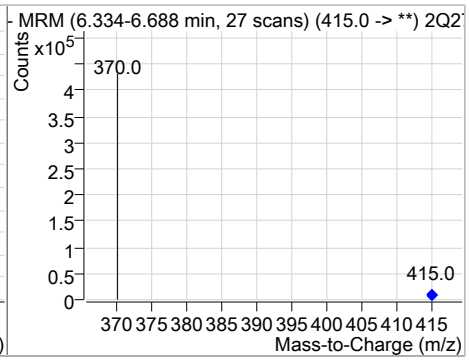


Perfluorinated Compounds by LC/MS/MS

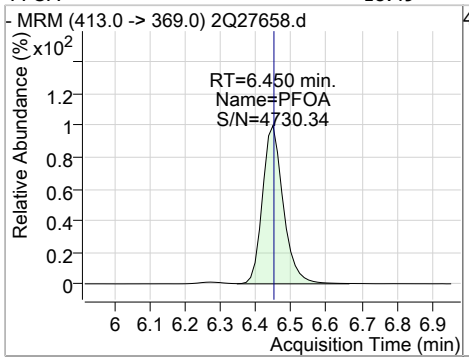
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	326816				

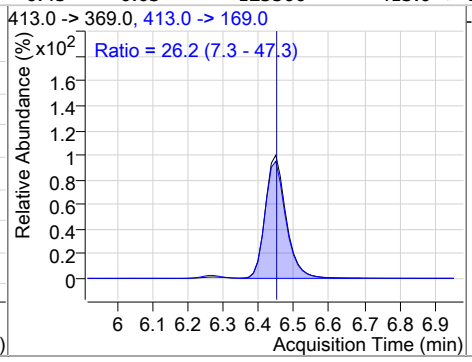


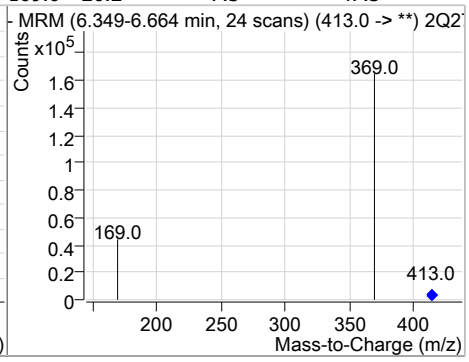




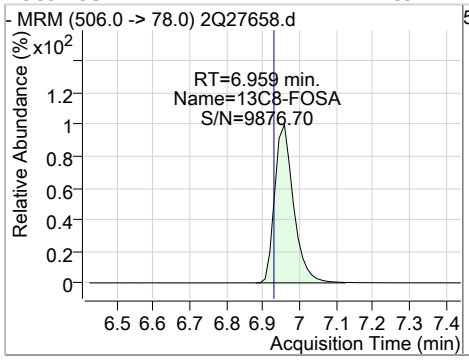
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	18.49	6.45	0.03	123560	413.0 -> 169.0	26.2	7.3	47.3

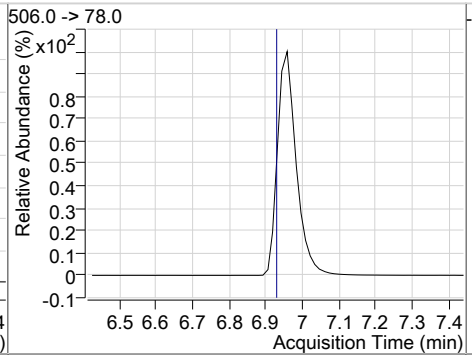


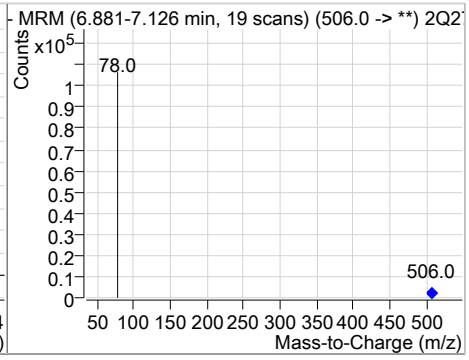




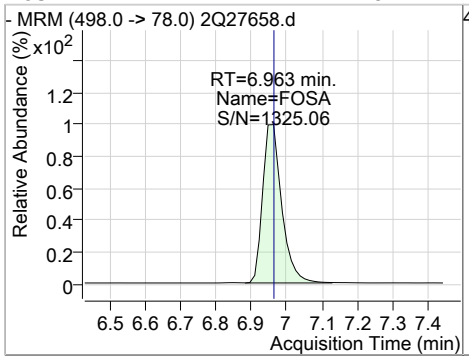
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.39	6.96	0.03	81952				

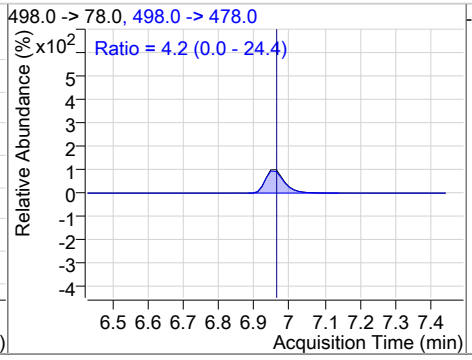


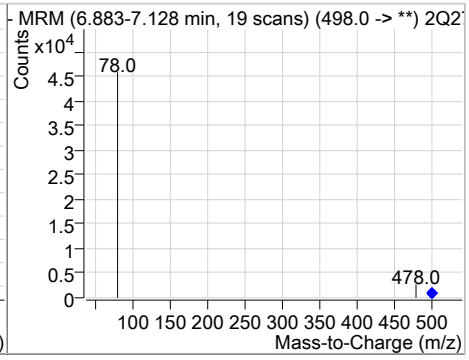




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.24	6.96	0.03	35836	498.0 -> 478.0	4.2	0.0	24.4

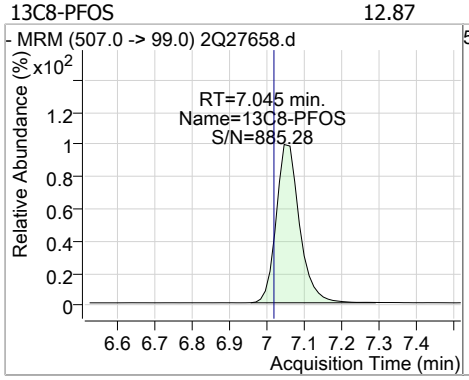


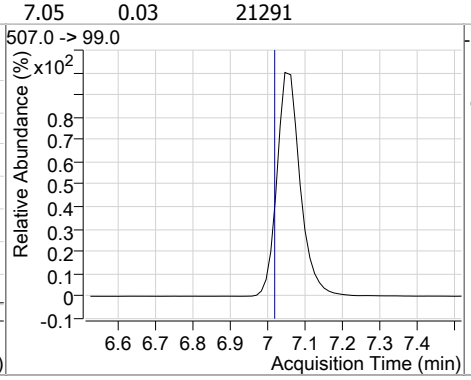


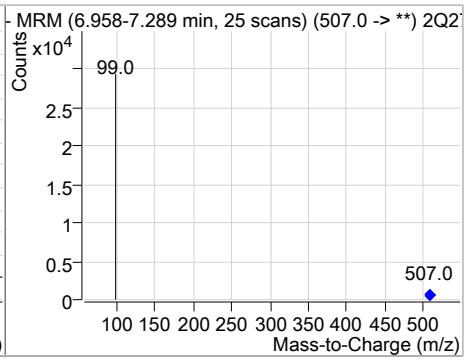


Perfluorinated Compounds by LC/MS/MS

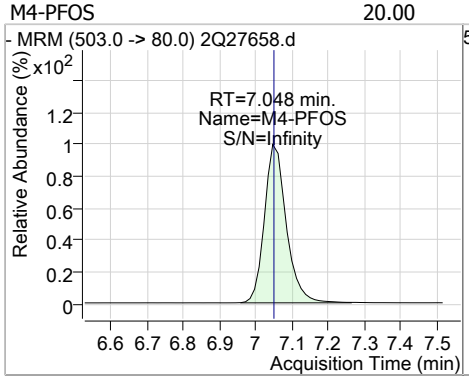
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	12.87	7.05	0.03	21291				

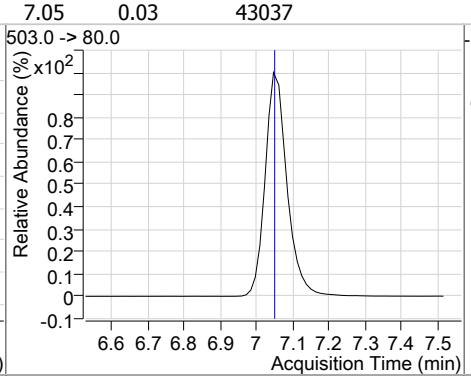


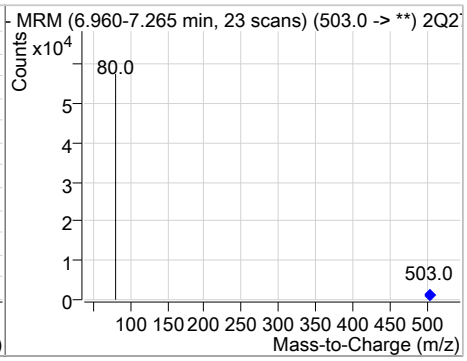




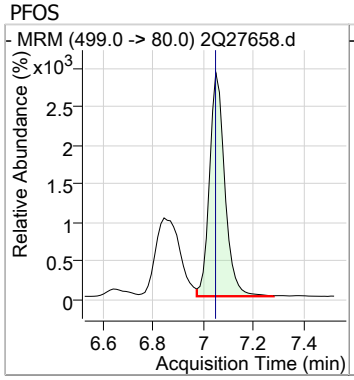
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.03	43037				

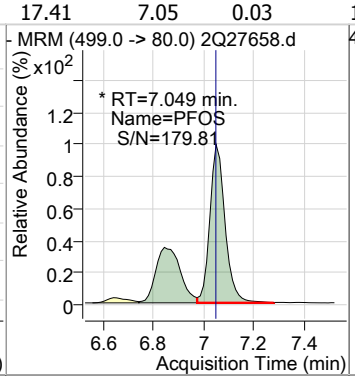


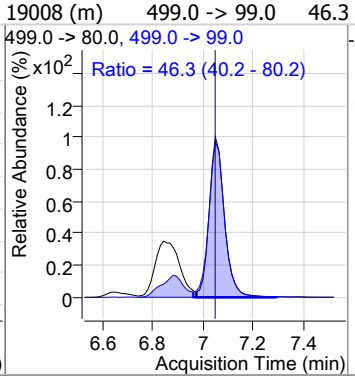


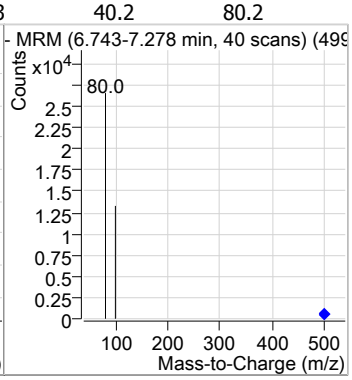


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.41	7.05	0.03	19008 (m)	499.0 -> 99.0	46.3	40.2	80.2

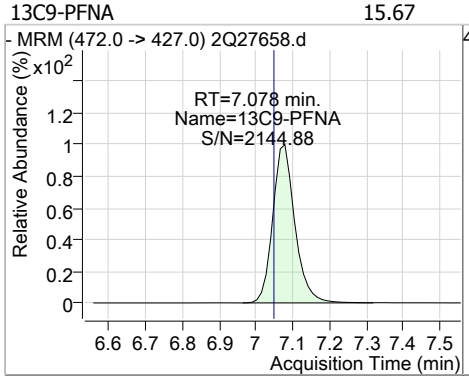


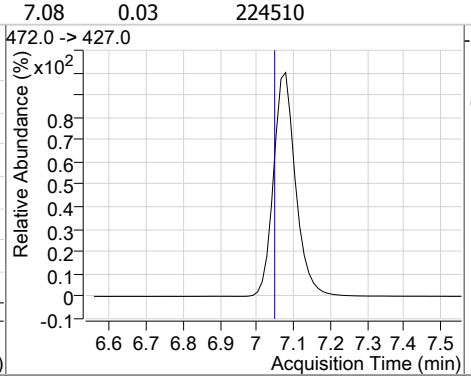


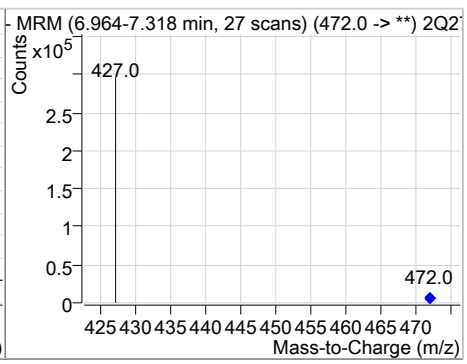




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	15.67	7.08	0.03	224510				

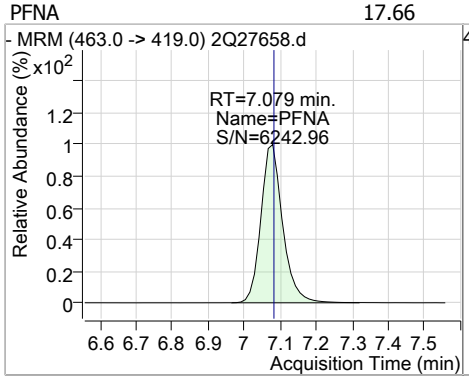


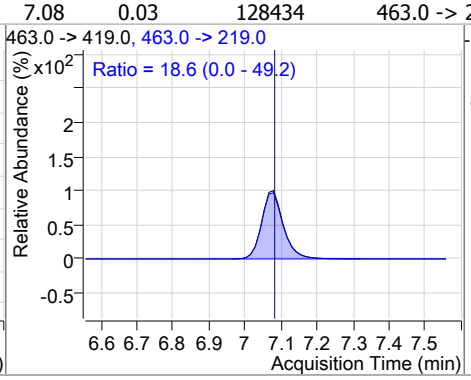


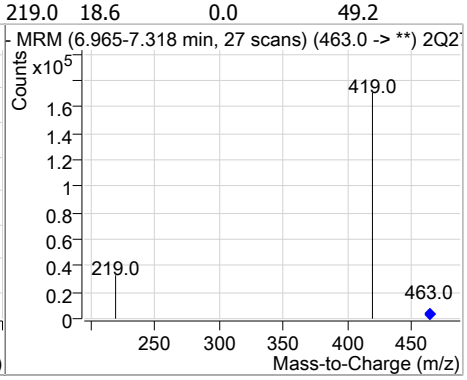


Perfluorinated Compounds by LC/MS/MS

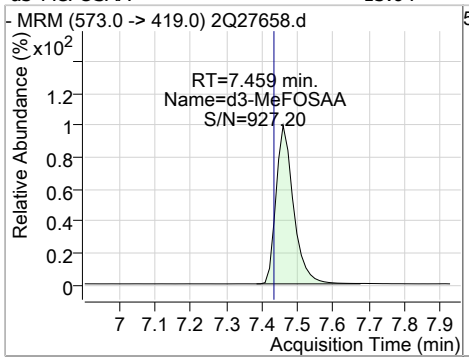
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.66	7.08	0.03	128434	463.0 -> 219.0	18.6	0.0	49.2

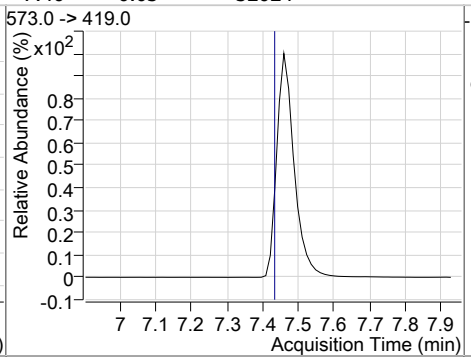


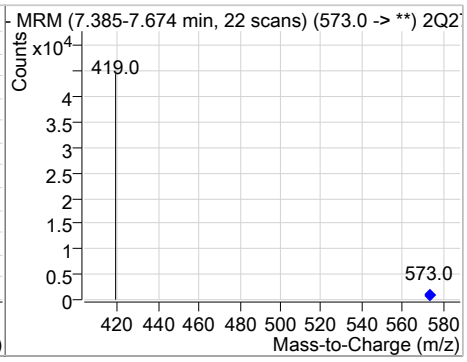




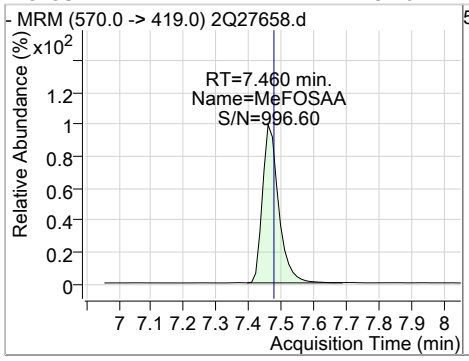
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	13.64	7.46	0.03	32624				

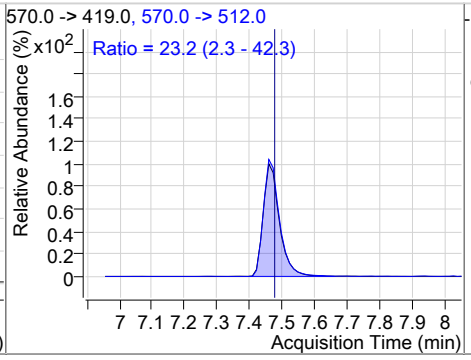


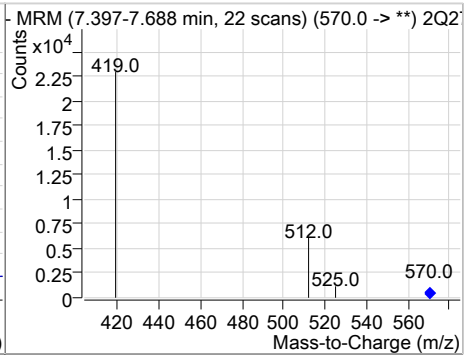




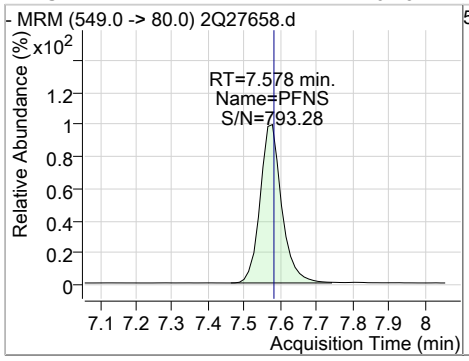
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.46	7.46	0.01	16866	570.0 -> 512.0	23.2	2.3	42.3

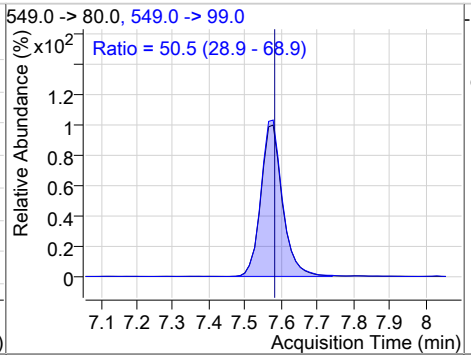


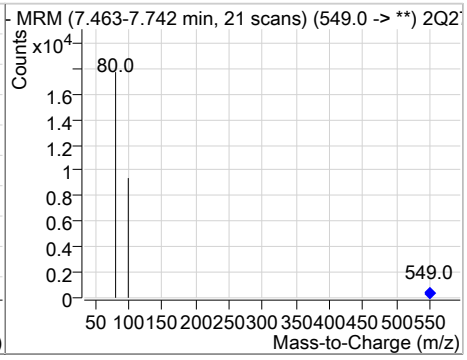




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	16.18	7.58	0.03	12899	549.0 -> 99.0	50.5	28.9	68.9

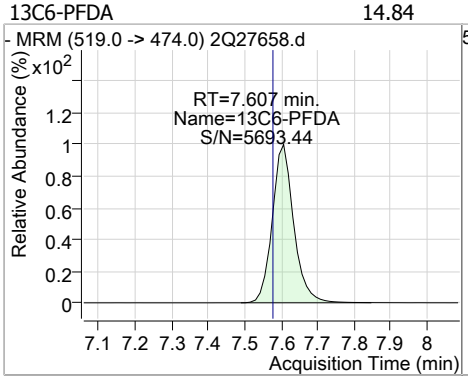


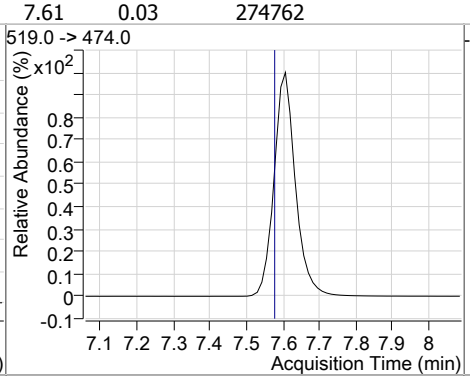


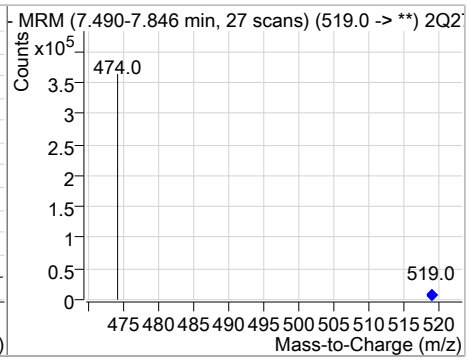


Perfluorinated Compounds by LC/MS/MS

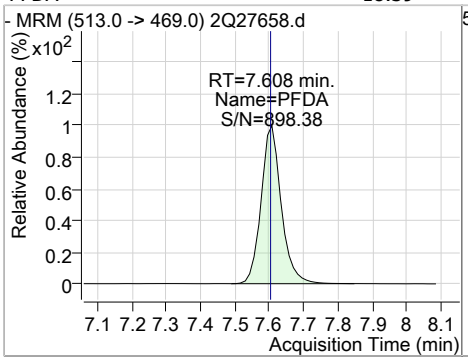
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	14.84	7.61	0.03	274762				

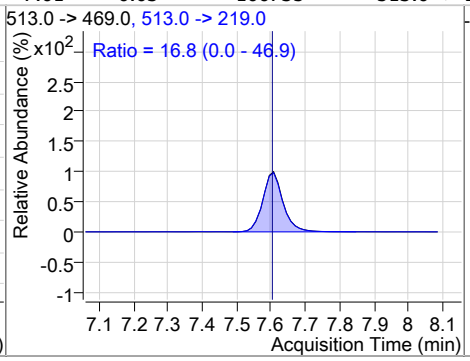


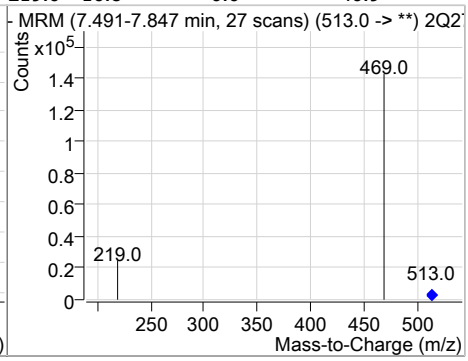




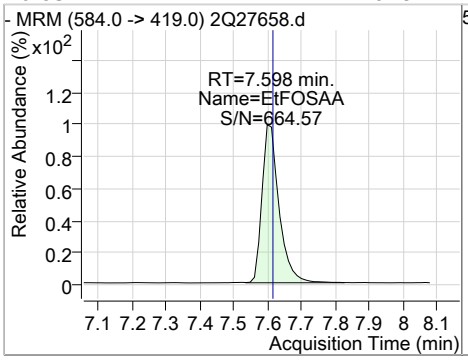
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	18.39	7.61	0.03	106735	513.0 -> 219.0	16.8	0.0	46.9

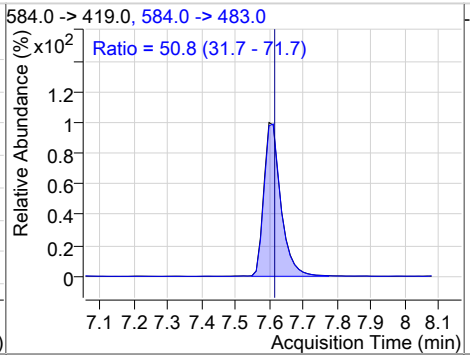


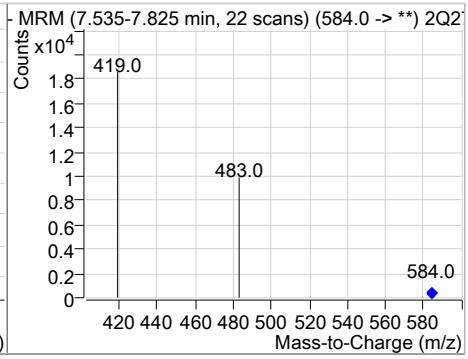




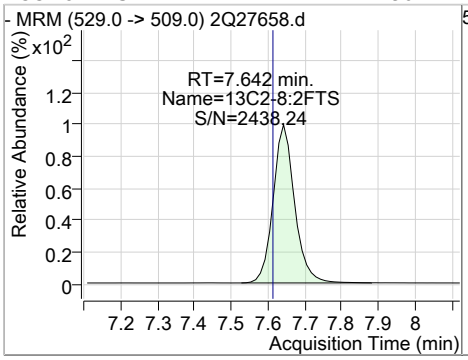
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.29	7.60	0.02	13143	584.0 -> 483.0	50.8	31.7	71.7

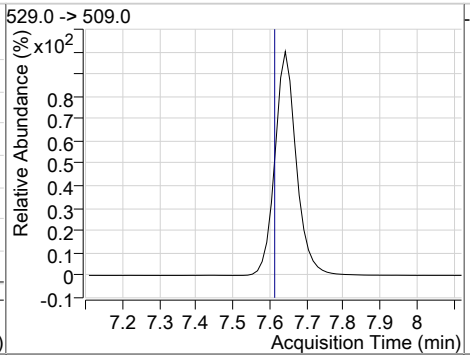


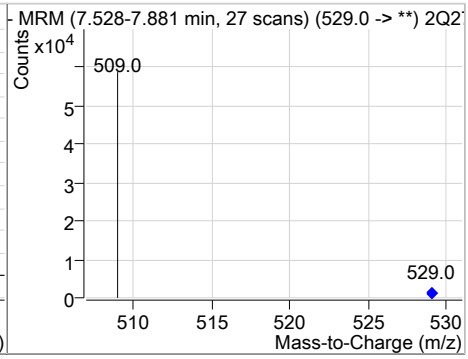




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	14.96	7.64	0.03	42474				

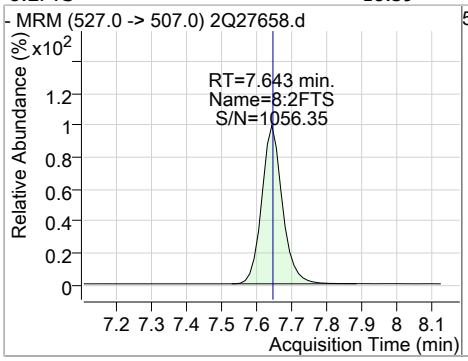


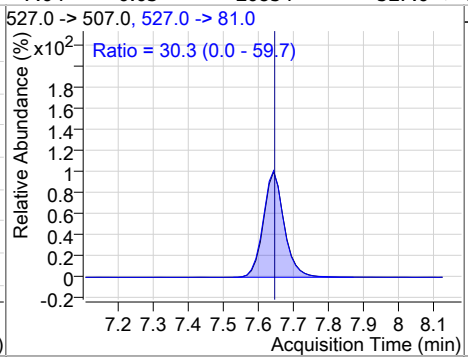


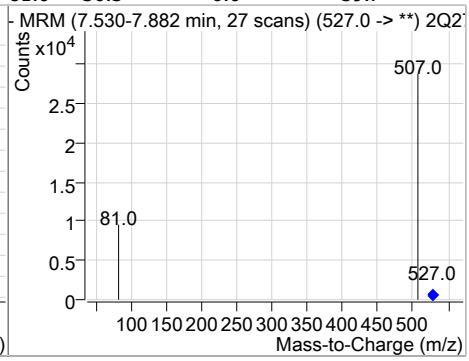


Perfluorinated Compounds by LC/MS/MS

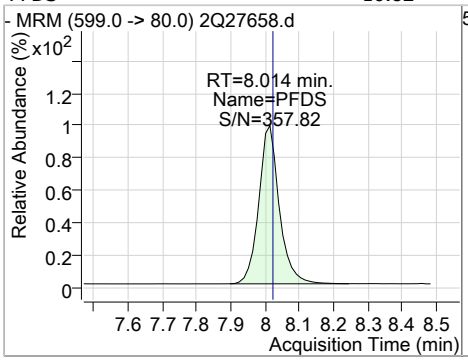
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.59	7.64	0.03	20854	527.0 -> 81.0	30.3	0.0	59.7

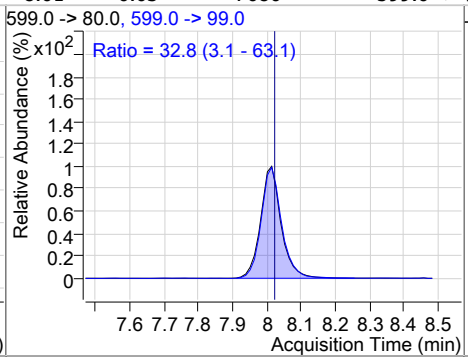


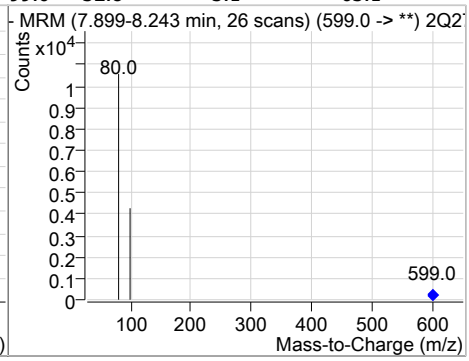




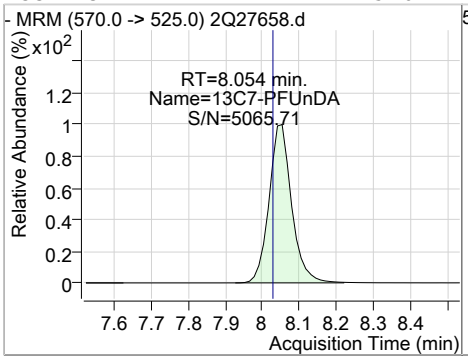
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	16.82	8.01	0.03	7080	599.0 -> 99.0	32.8	3.1	63.1

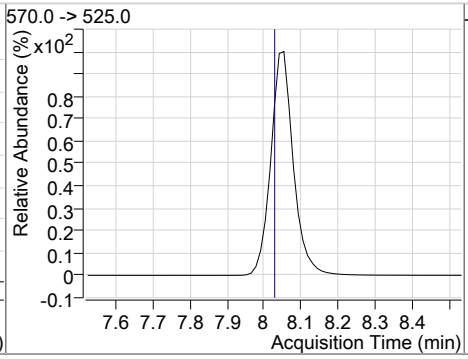


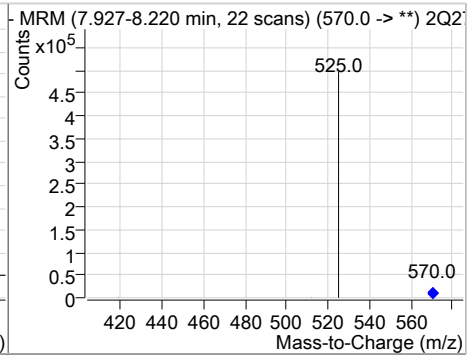




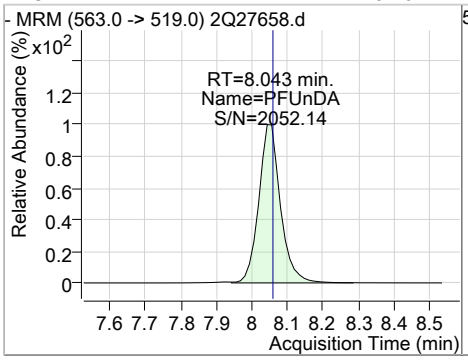
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.76	8.05	0.03	377460				

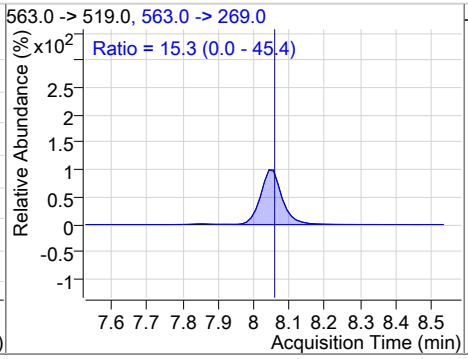


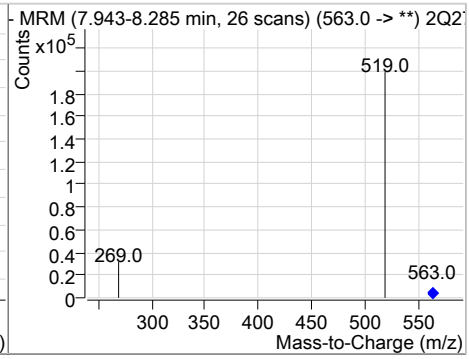




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.76	8.04	0.02	150008	563.0 -> 269.0	15.3	0.0	45.4

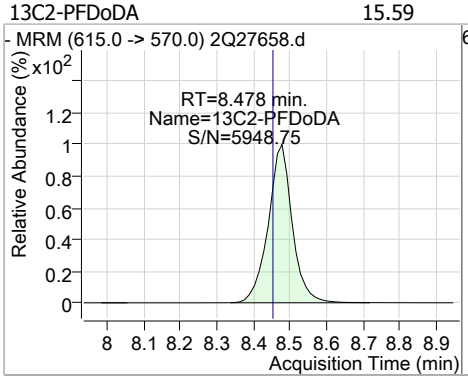


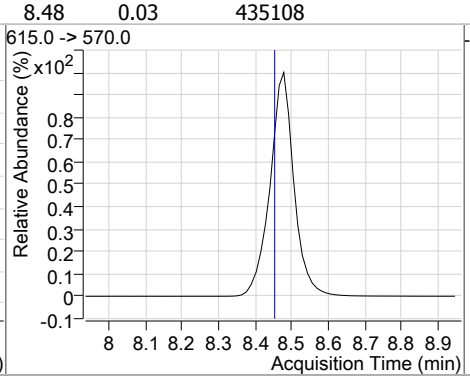


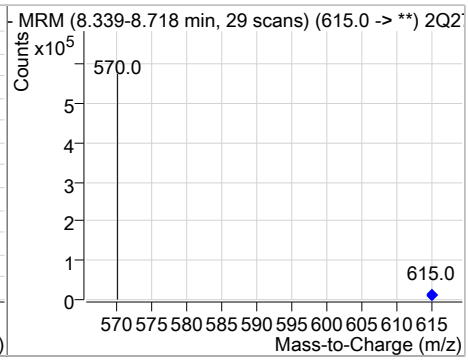


Perfluorinated Compounds by LC/MS/MS

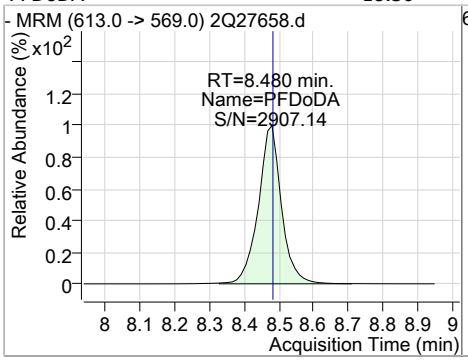
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	15.59	8.48	0.03	435108				

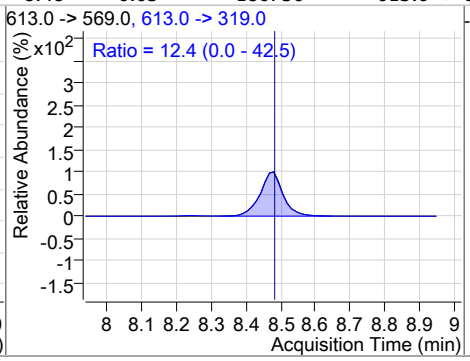


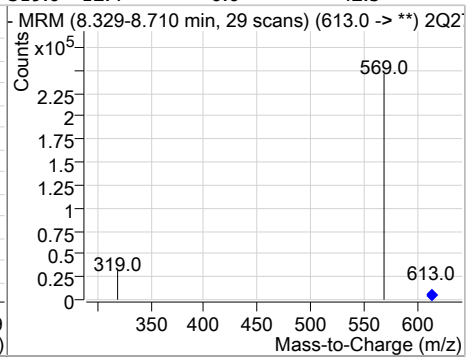




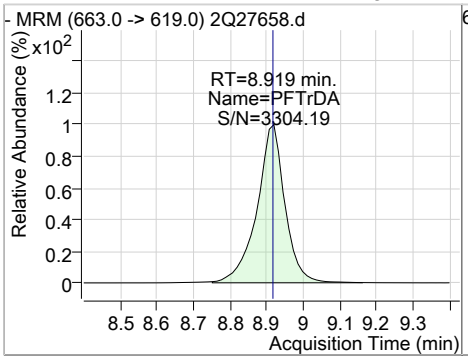
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	18.30	8.48	0.03	186750	613.0 -> 319.0	12.4	0.0	42.5

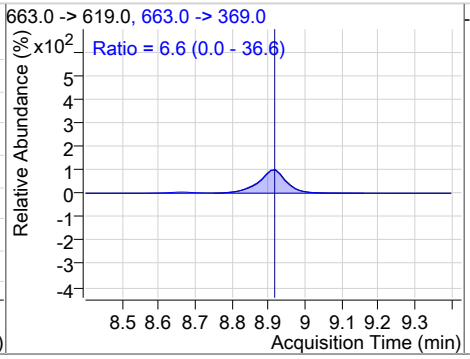


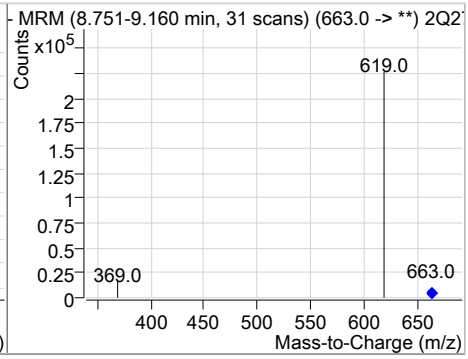




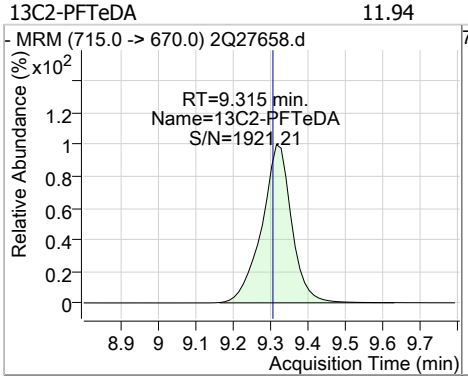
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.77	8.92	0.02	171682	663.0 -> 369.0	6.6	0.0	36.6

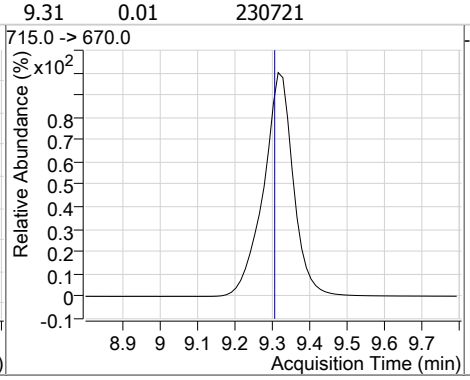


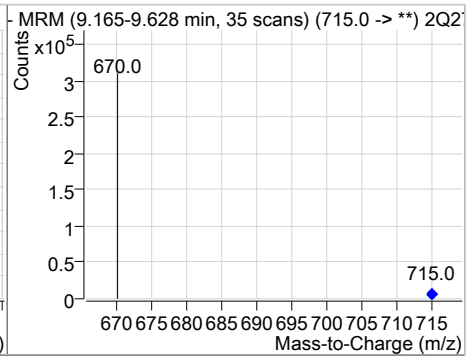




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	11.94	9.31	0.01	230721				

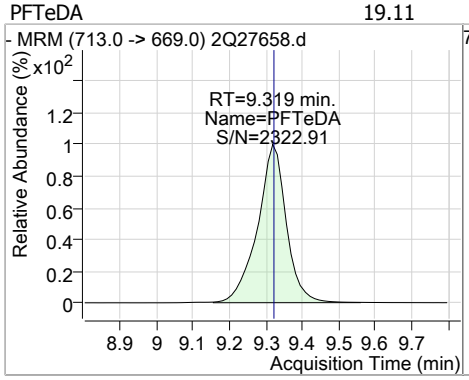


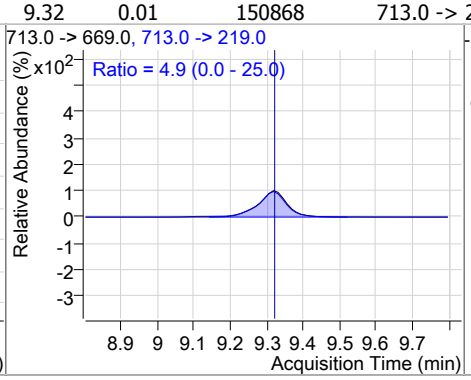


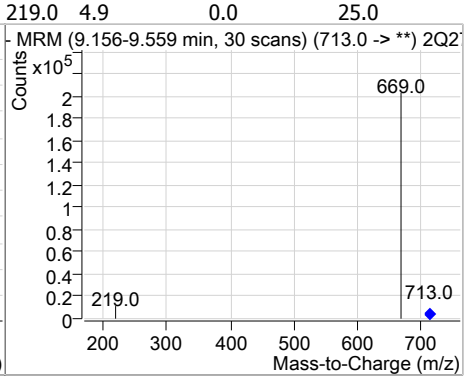


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.11	9.32	0.01	150868	713.0 -> 219.0	4.9	0.0	25.0







Manual Integration Approval Summary

Sample Number:	OP74164-MS	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27658.D	**Analyst approved:**	03/18/19 09:09 Nancy Saunders
Injection Time:	03/15/19 17:25	**Supervisor approved:**	03/18/19 13:59 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27694.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 4:32:39 PM
Sample Name : op74180-ms
Vial : Vial 16
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

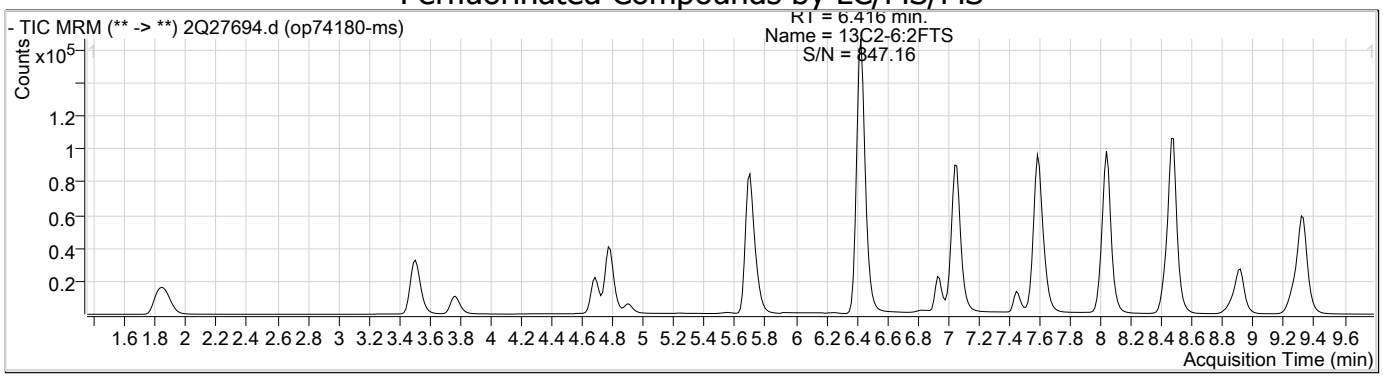
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	249290	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	36670	20.00	µg/L	0.000
M4-PFBA	1.840	217.0 -> 172.0	93784	20.00	µg/L	-0.025
M5-PFPeA	3.511	268.0 -> 223.0	79745	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	113238	20.00	µg/L	-0.013
M4-PFHpA	5.705	367.0 -> 322.0	167549	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	174830	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	172269	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	213588	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	270048	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	321279	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	182491	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	51949	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14163	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	15889	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	18214	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	48850	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	58887	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	35169	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	25959	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	48797	16.41	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.1%		
13C2-6:2FTS	6.416	429.0 -> 409.0	58947	18.37	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%		
13C2-8:2FTS	7.630	529.0 -> 509.0	35186	15.87	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%		
13C2-PFDoDA	8.479	615.0 -> 570.0	321137	17.07	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.4%		
13C2-PFTeDA	9.327	715.0 -> 670.0	181950	14.17	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.9%		
13C3-PFBS	3.767	302.0 -> 99.0	14159	15.53	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.6%		
13C3-PFHxS	5.736	402.0 -> 99.0	15887	15.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.9%		
13C4-PFBA	1.840	217.0 -> 172.0	93679	15.62	µg/L	-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.1%		
13C4-PFHpA	5.705	367.0 -> 322.0	167518	16.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
13C5-PFHxA	4.776	318.0 -> 273.0	113129	15.57	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.8%		
13C5-PFPeA	3.511	268.0 -> 223.0	79589	15.66	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.3%		
13C6-PFDA	7.594	519.0 -> 474.0	213528	15.65	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

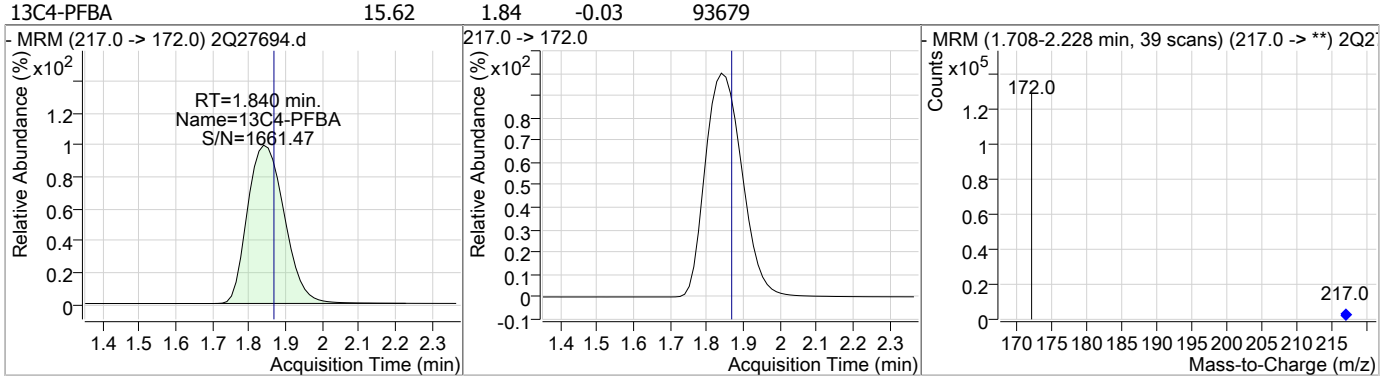
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.2%			
13C7-PFUnDA	8.041	570.0 -> 525.0	269877	15.95	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.7%			
13C8-FOSA	6.932	506.0 -> 78.0	51945	12.81	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.1%			
13C8-PFOA	6.434	421.0 -> 376.0	174811	16.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%			
13C8-PFOS	7.033	507.0 -> 99.0	18188	13.95	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.8%			
13C9-PFNA	7.066	472.0 -> 427.0	172268	16.27	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.4%			
d3-MeFOSAA	7.447	573.0 -> 419.0	25931	13.53	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 67.6%			
M2-PFOA	6.435	415.0 -> 370.0	249294	19.98	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.036	503.0 -> 80.0	36653	19.98	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	28888	21.47	µg/L		100
6:2FTS	6.418	427.0 -> 407.0	30794	21.26	µg/L		100
8:2FTS	7.631	527.0 -> 507.0	19107	21.73	µg/L		100
EtFOSAA	7.598	584.0 -> 419.0	10860	19.68	µg/L		99
FOSA	6.935	498.0 -> 78.0	24905	20.81	µg/L		100
MeFOSAA	7.447	570.0 -> 419.0	13849	20.91	µg/L		96
PFBA	1.848	213.0 -> 169.0	20140	21.74	µg/L		100
PFBS	3.771	299.0 -> 80.0	25177	22.39	µg/L		100
PFDA	7.595	513.0 -> 469.0	99265	21.35	µg/L		100
PFDoDA	8.468	613.0 -> 569.0	147558	20.64	µg/L		99
PFDS	8.001	599.0 -> 80.0	5672	16.91	µg/L		98
PFHpA	5.708	363.0 -> 319.0	156389	21.65	µg/L		100
PFHpS	6.442	449.0 -> 80.0	16399	21.27	µg/L		98
PFHxA	4.778	313.0 -> 269.0	43943	22.53	µg/L		99
PFHxS	5.739	399.0 -> 80.0	19270	21.94	µg/L	m	98
PFNA	7.066	463.0 -> 419.0	121469	21.26	µg/L		98
PFNS	7.565	549.0 -> 80.0	11615	18.61	µg/L		100
PFOA	6.437	413.0 -> 369.0	107316	22.72	µg/L		99
PFOS	7.037	499.0 -> 80.0	20348	23.00	µg/L	m	79
PFPeA	3.515	263.0 -> 219.0	75978	22.01	µg/L		100
PFPeS	4.895	349.0 -> 80.0	15659	21.76	µg/L		98
PFTeDA	9.319	713.0 -> 669.0	135866	21.29	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	135381	20.37	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	117627	21.11	µg/L		99
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

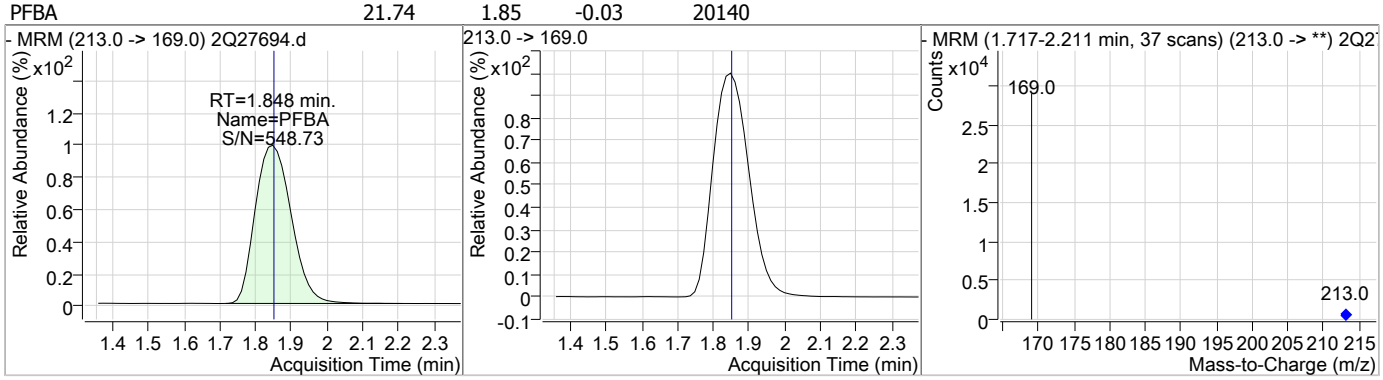
Perfluorinated Compounds by LC/MS/MS



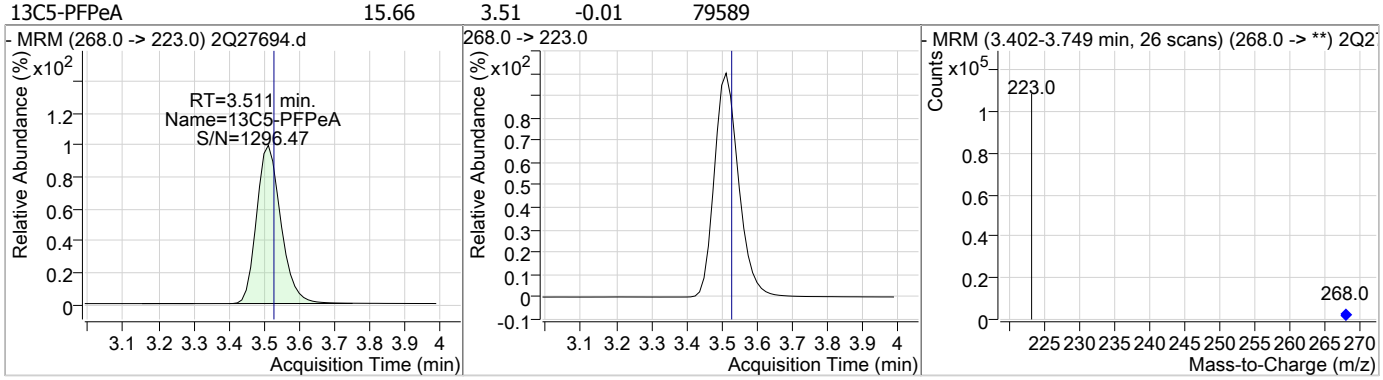
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.62	1.84	-0.03	93679				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	21.74	1.85	-0.03	20140				

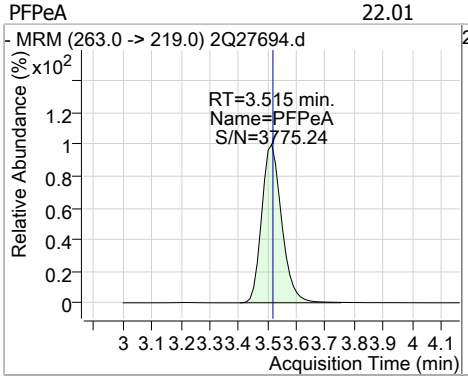


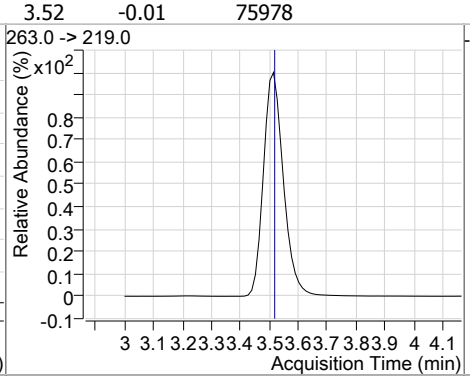
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	15.66	3.51	-0.01	79589				

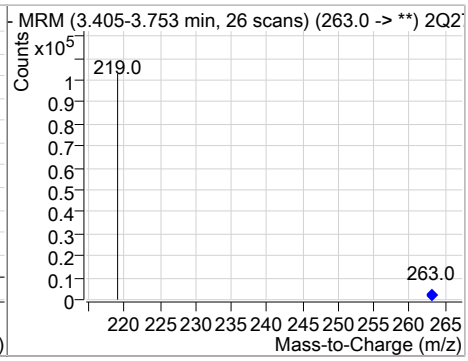


Perfluorinated Compounds by LC/MS/MS

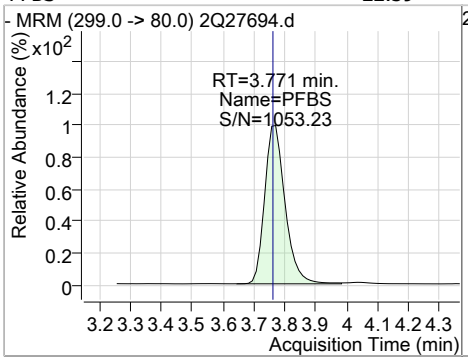
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	22.01	3.52	-0.01	75978				

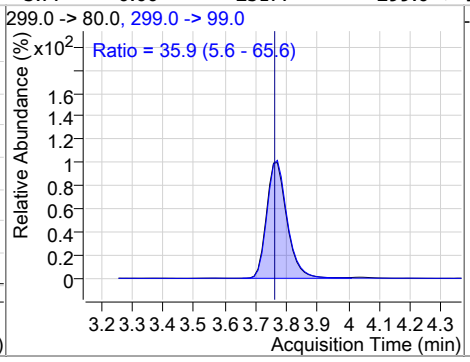


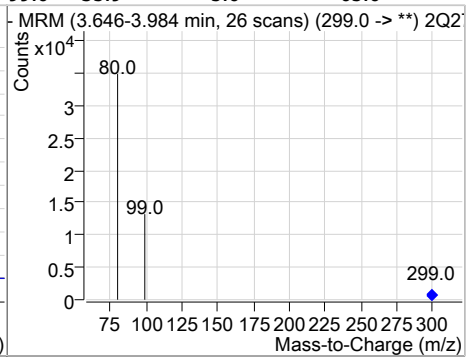




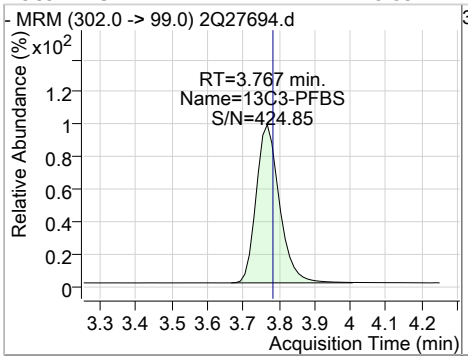
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	22.39	3.77	0.00	25177	299.0 -> 99.0	35.9	5.6	65.6

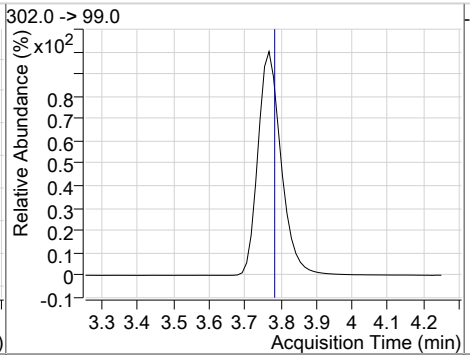


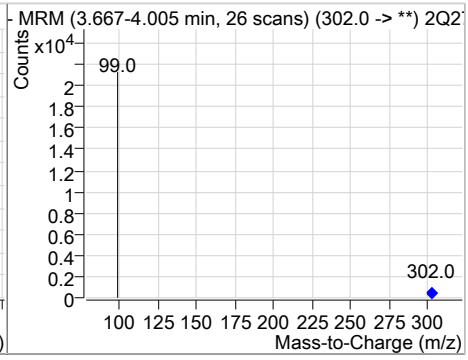




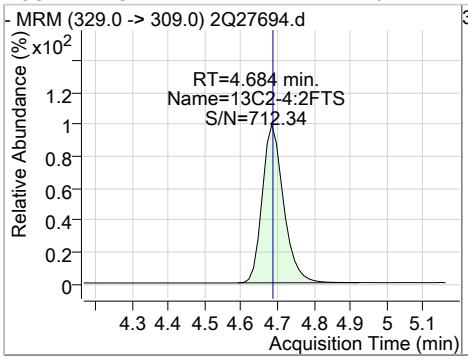
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.53	3.77	-0.01	14159				

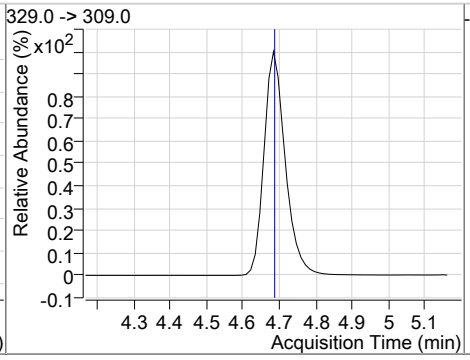


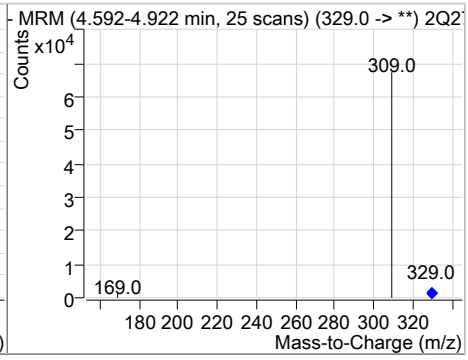




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.41	4.68	0.00	48797				

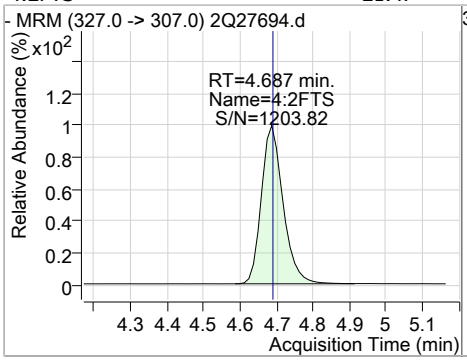


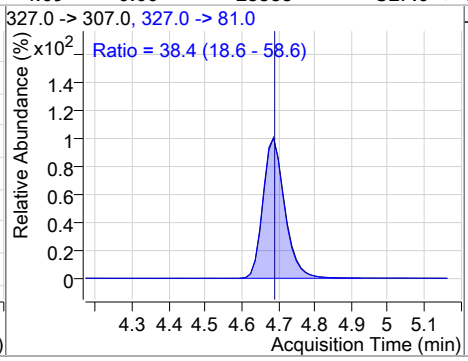


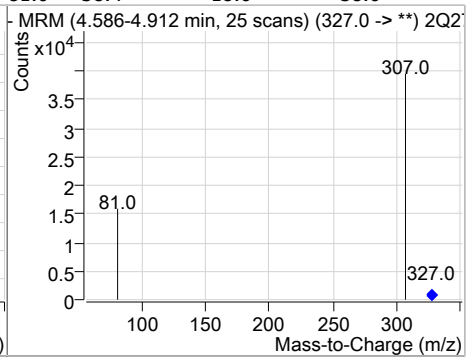


Perfluorinated Compounds by LC/MS/MS

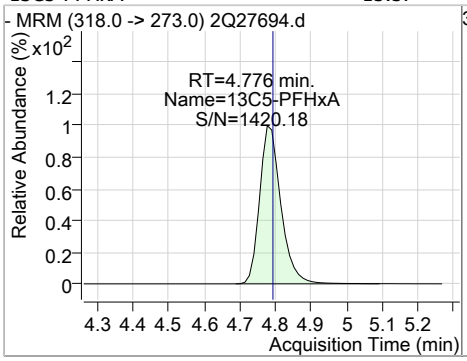
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	21.47	4.69	0.00	28888	327.0 -> 81.0	38.4	18.6	58.6

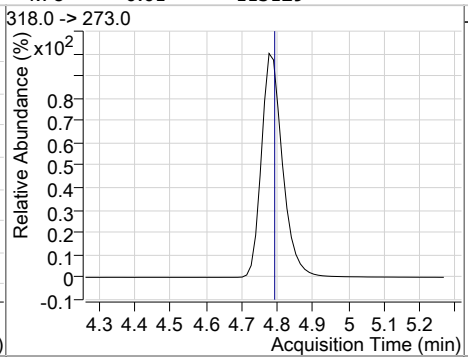


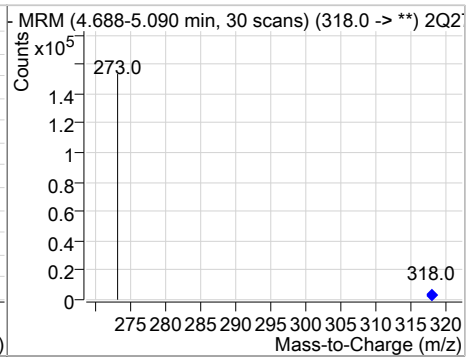




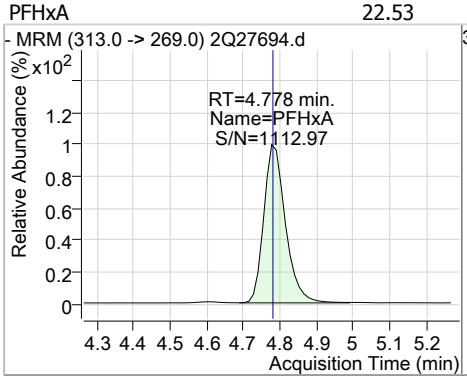
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	15.57	4.78	-0.01	113129				

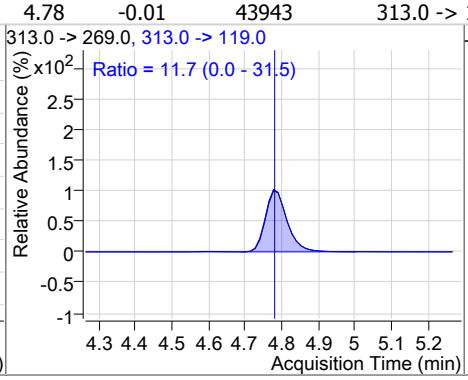


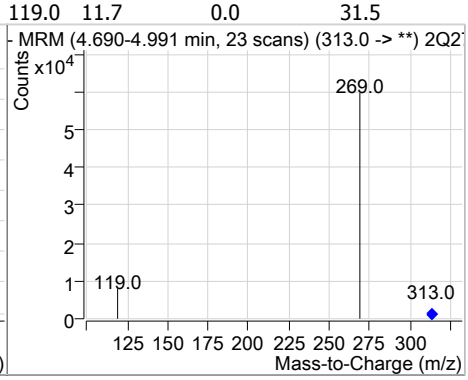




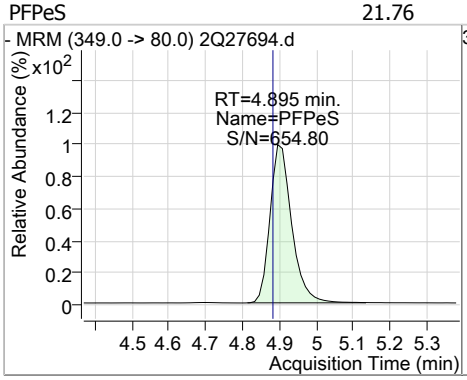
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	22.53	4.78	-0.01	43943	313.0 -> 119.0	11.7	0.0	31.5

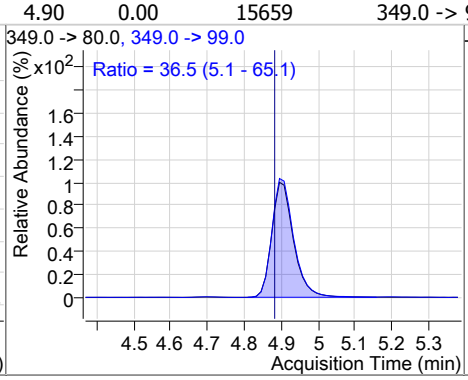


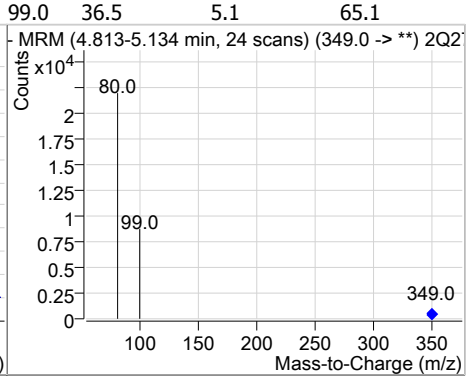




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	21.76	4.90	0.00	15659	349.0 -> 99.0	36.5	5.1	65.1

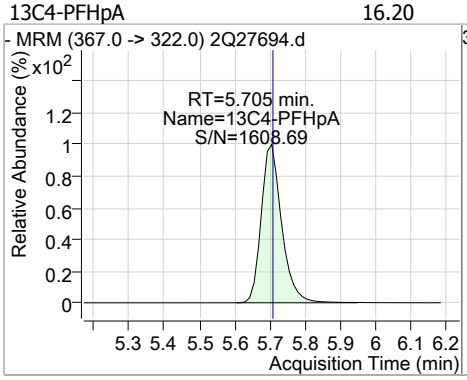


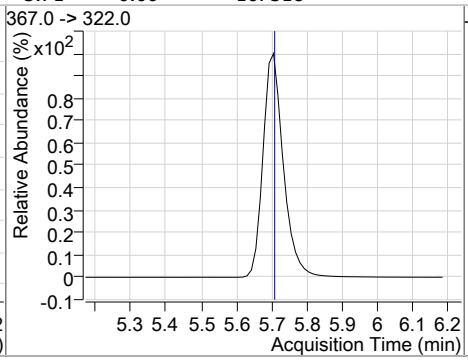


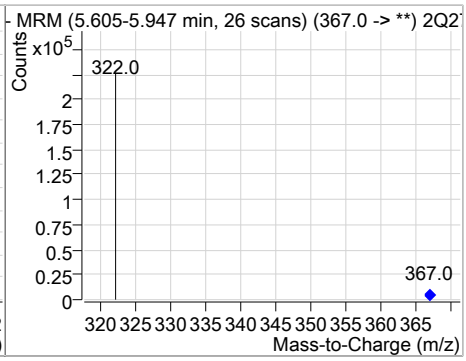


Perfluorinated Compounds by LC/MS/MS

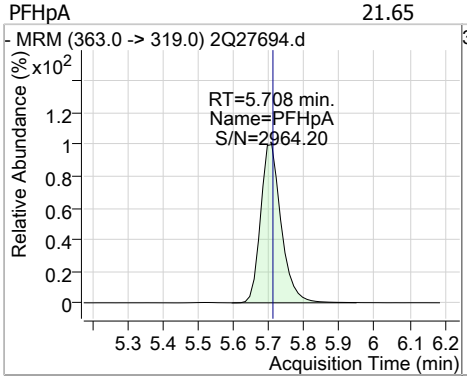
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.20	5.71	0.00	167518				

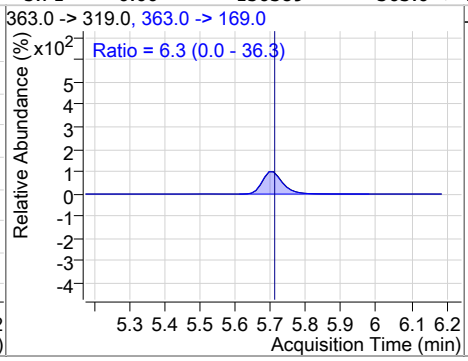


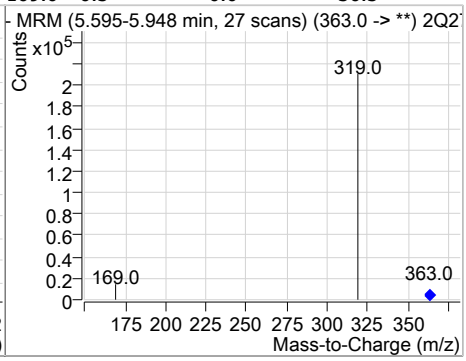




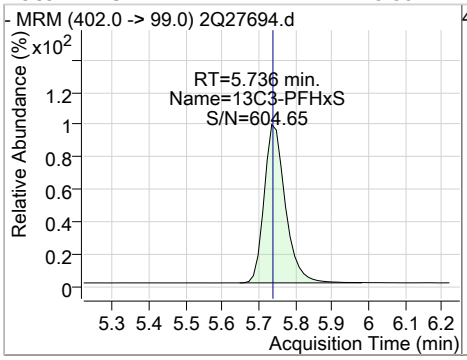
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	21.65	5.71	0.00	156389	363.0 -> 169.0	6.3	0.0	36.3

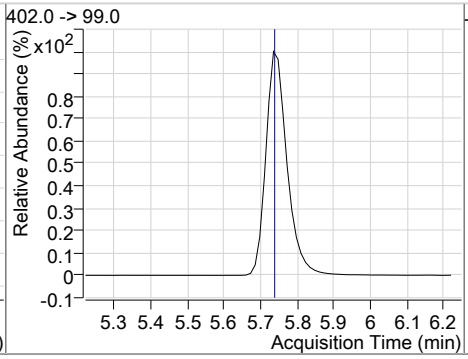


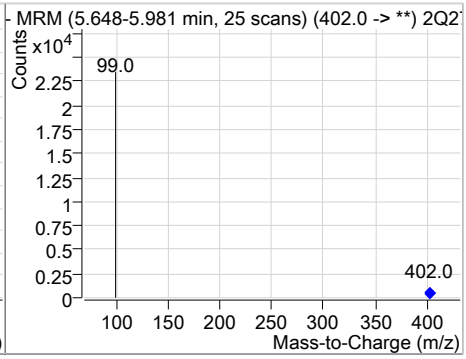




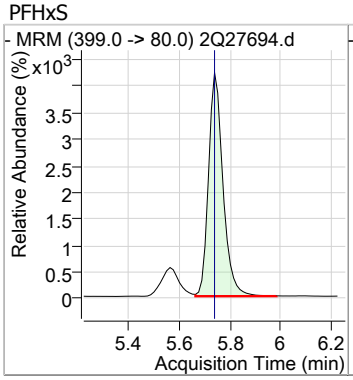
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.58	5.74	0.00	15887				

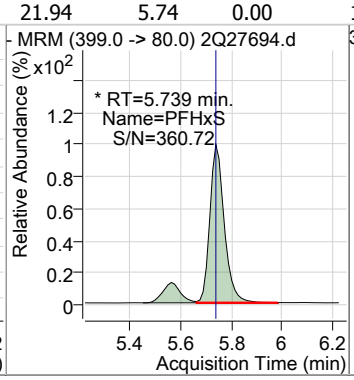


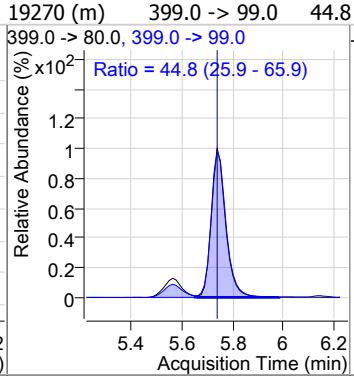


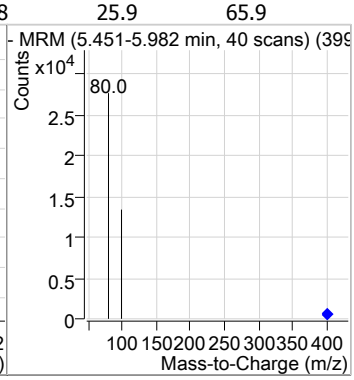


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	21.94	5.74	0.00	19270 (m)	399.0 -> 99.0	44.8	25.9	65.9



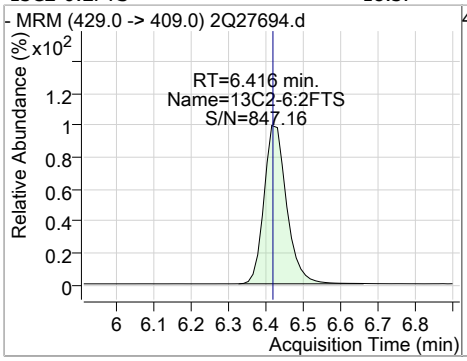


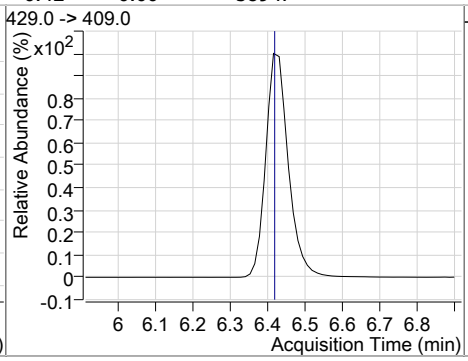


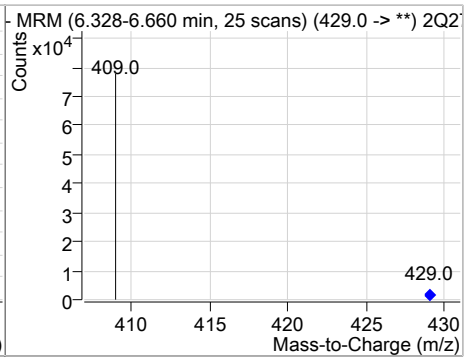


Perfluorinated Compounds by LC/MS/MS

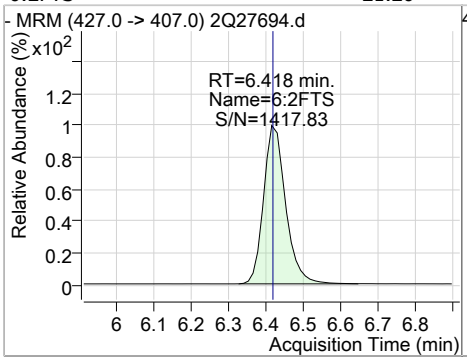
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.37	6.42	0.00	58947				

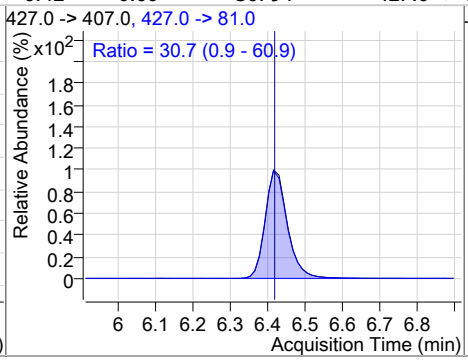


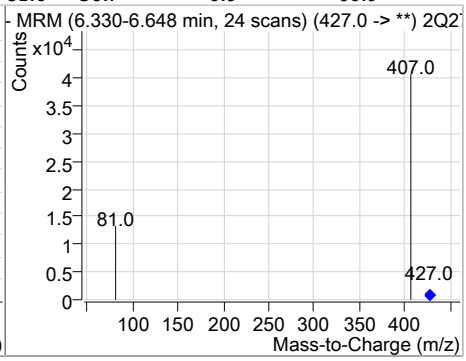




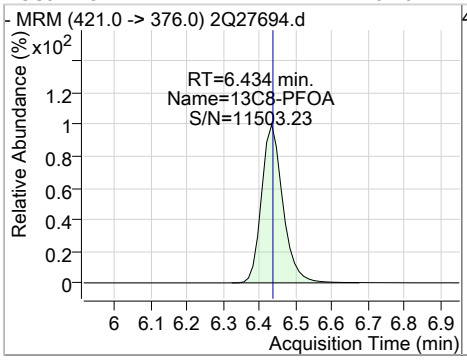
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	21.26	6.42	0.00	30794	427.0 -> 81.0	30.7	0.9	60.9

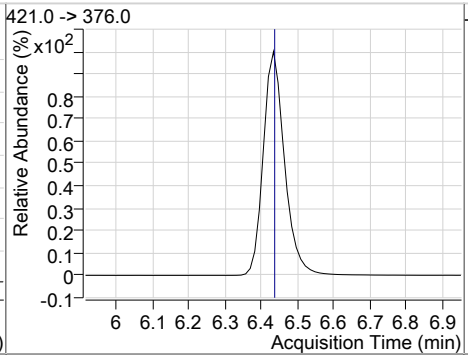


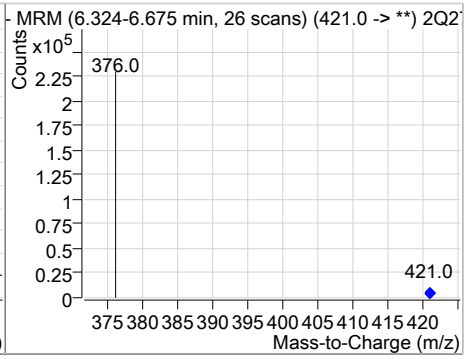




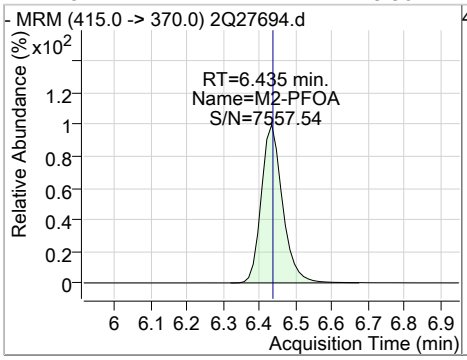
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.76	6.43	0.00	174811				

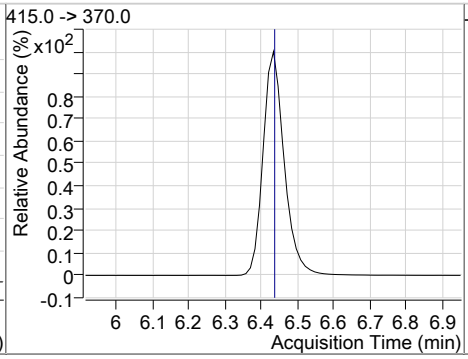


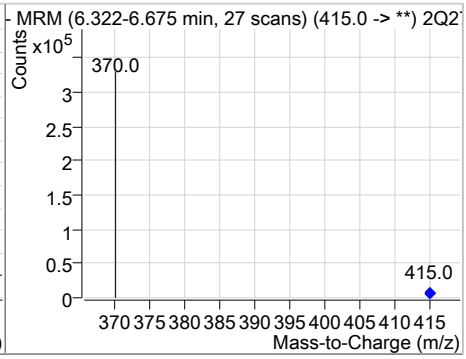




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.44	0.00	249294				

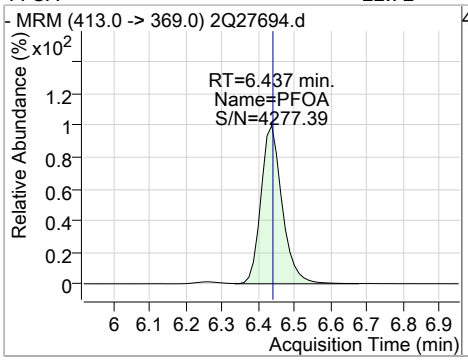


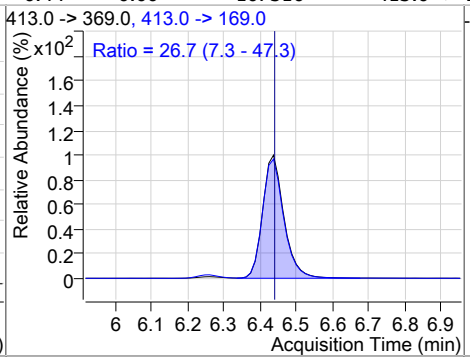


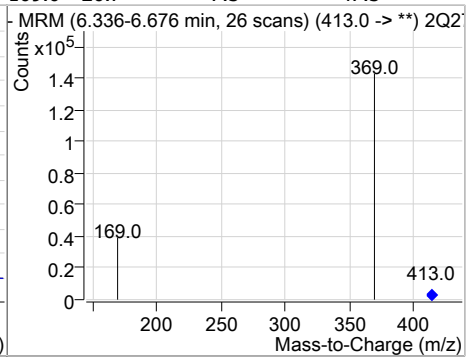


Perfluorinated Compounds by LC/MS/MS

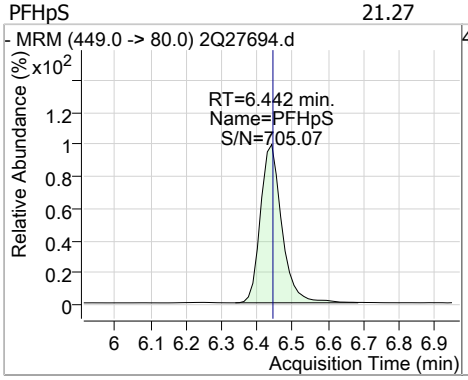
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	22.72	6.44	0.00	107316	413.0 -> 169.0	26.7	7.3	47.3

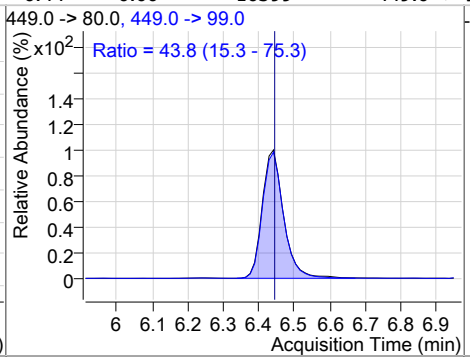


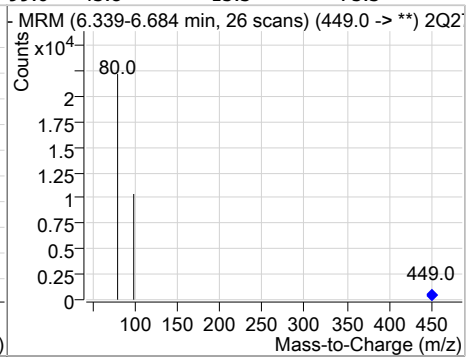




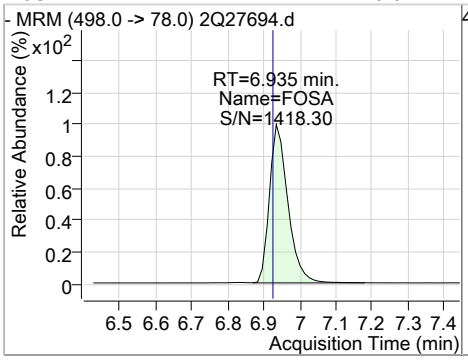
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	21.27	6.44	0.00	16399	449.0 -> 99.0	43.8	15.3	75.3

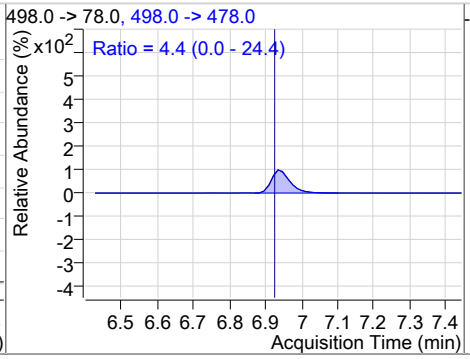


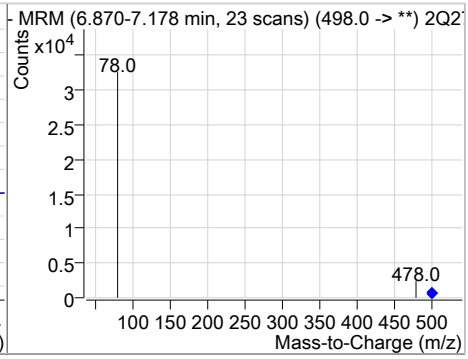




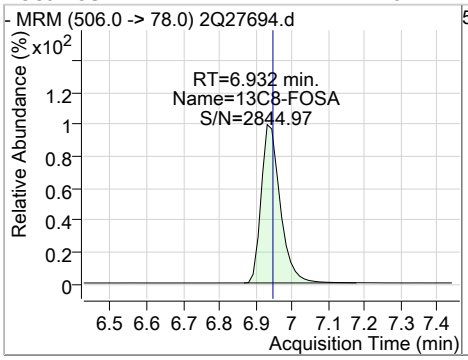
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.81	6.93	0.00	24905	498.0 -> 478.0	4.4	0.0	24.4

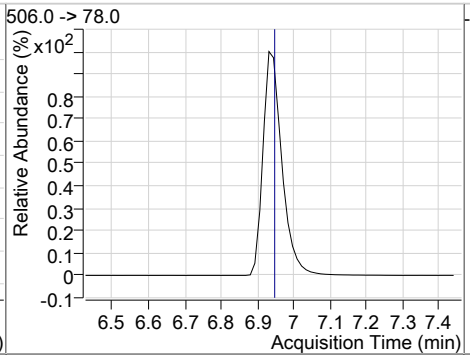


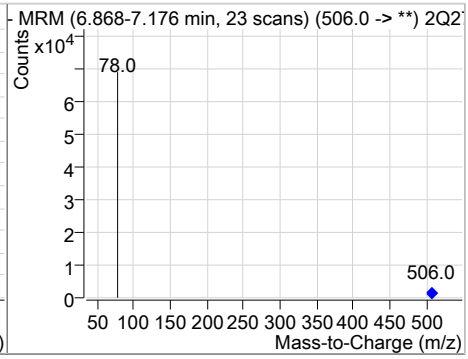




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	12.81	6.93	-0.01	51945				

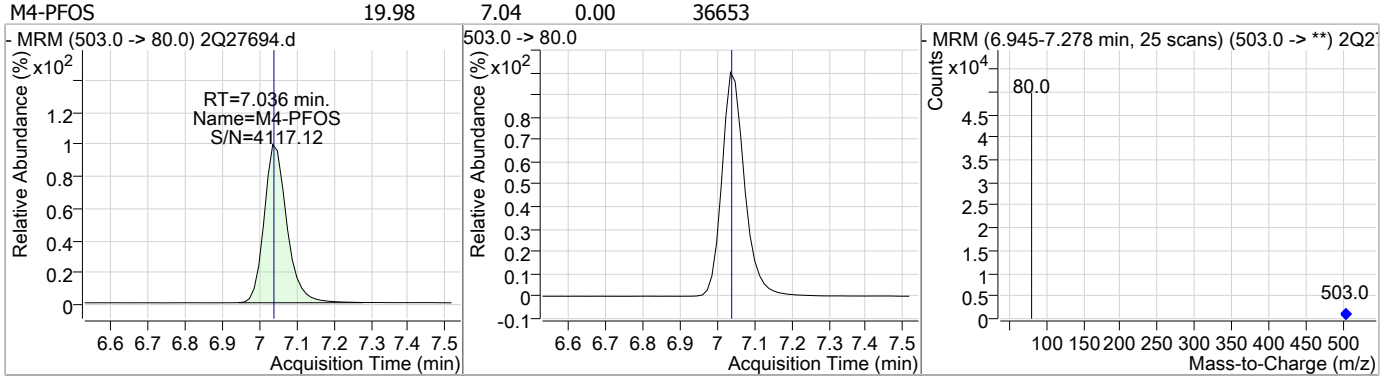




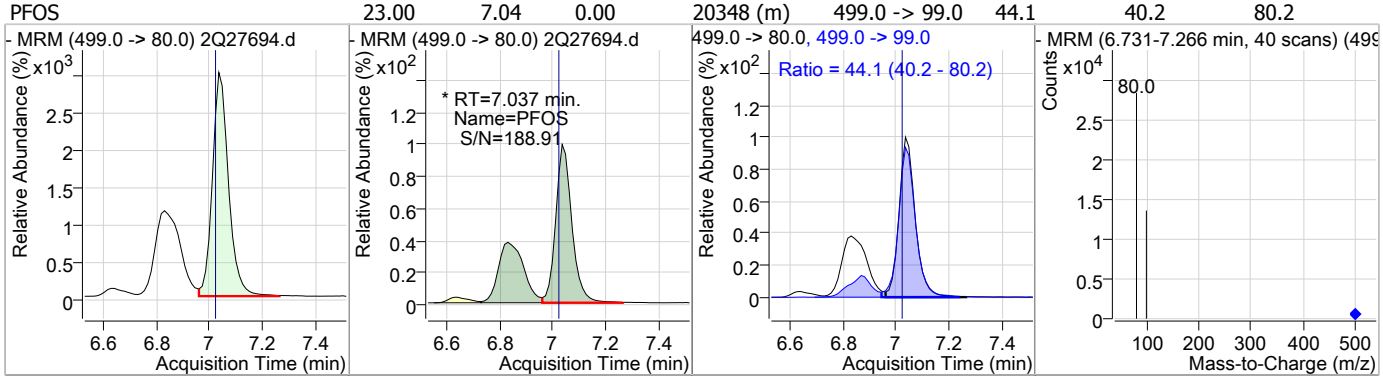


Perfluorinated Compounds by LC/MS/MS

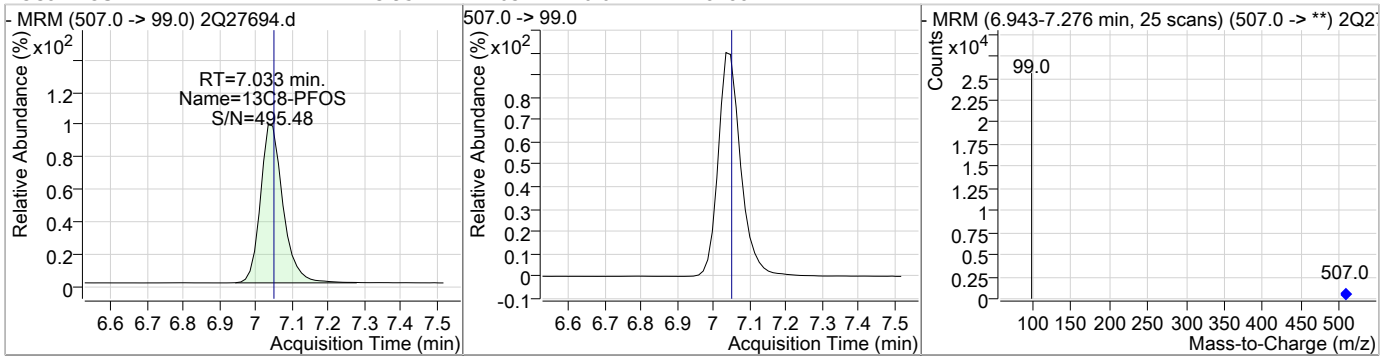
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.04	0.00	36653				



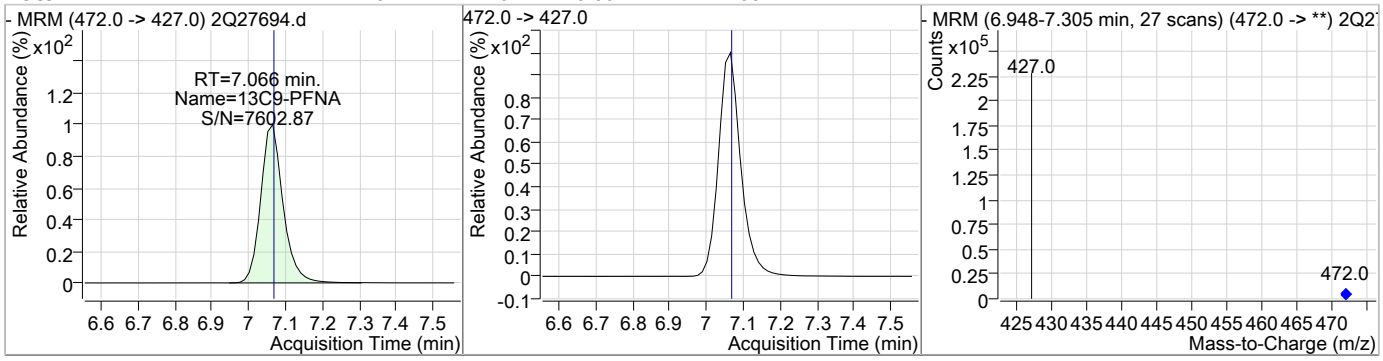
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	23.00	7.04	0.00	20348 (m)	499.0 -> 99.0	44.1	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.95	7.03	-0.01	18188				

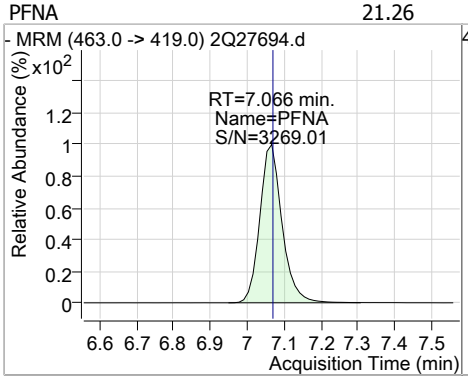


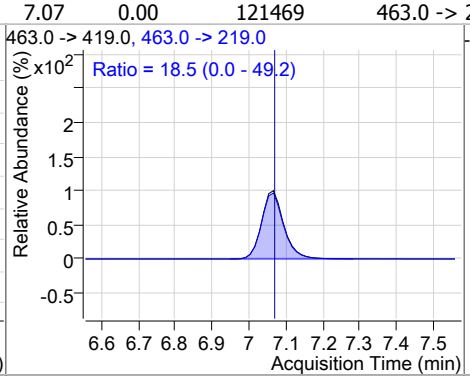
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.27	7.07	0.00	172268				

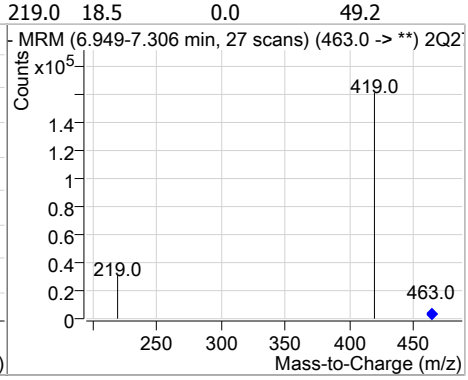


Perfluorinated Compounds by LC/MS/MS

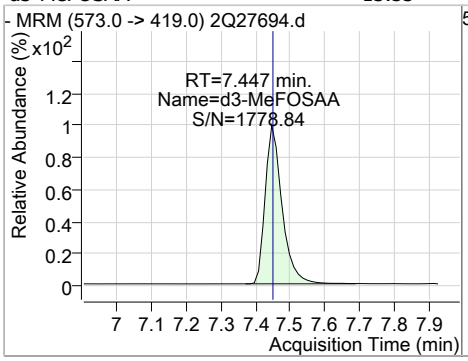
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	21.26	7.07	0.00	121469	463.0 -> 219.0	18.5	0.0	49.2

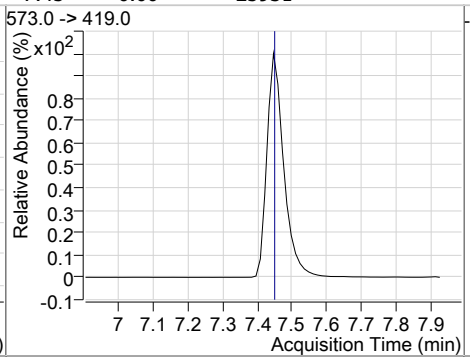


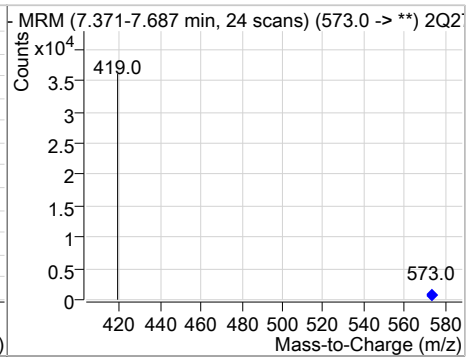




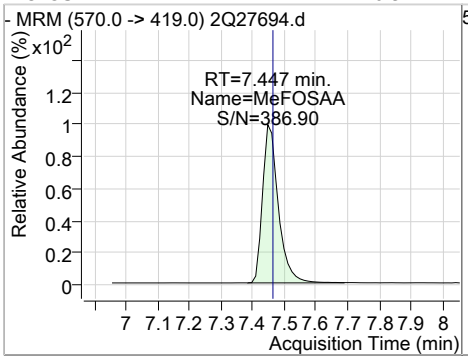
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	13.53	7.45	0.00	25931				

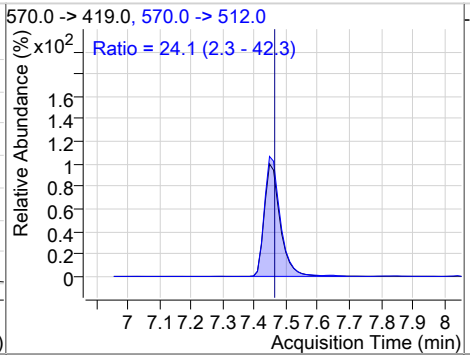


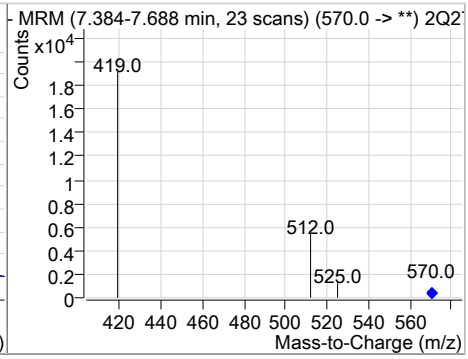




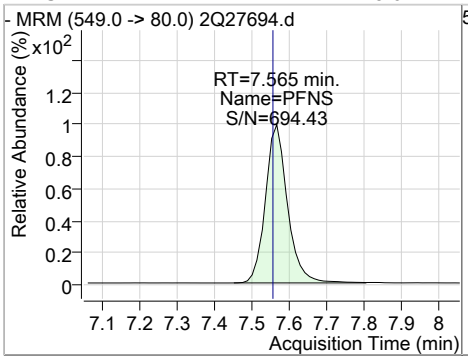
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.91	7.45	-0.01	13849	570.0 -> 512.0	24.1	2.3	42.3

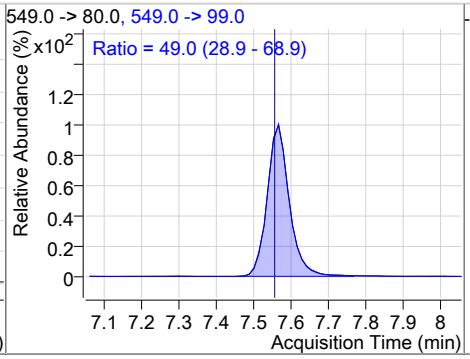


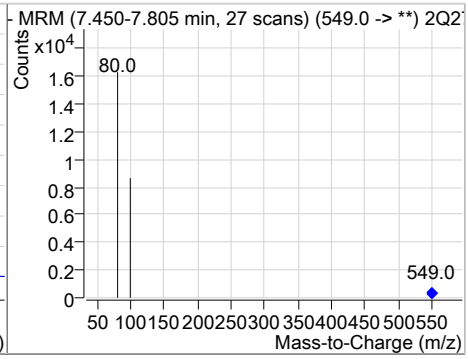




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.61	7.57	0.00	11615	549.0 -> 99.0	49.0	28.9	68.9

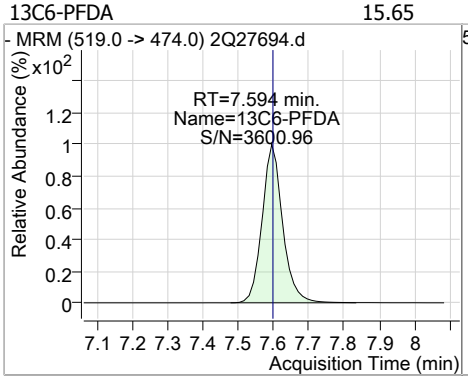


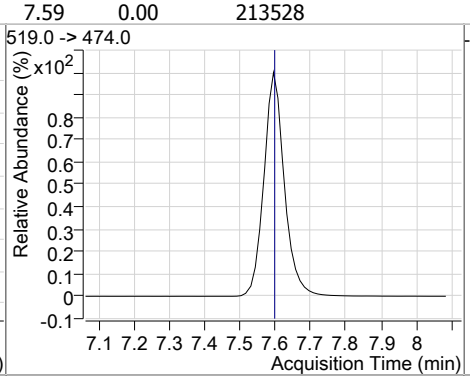


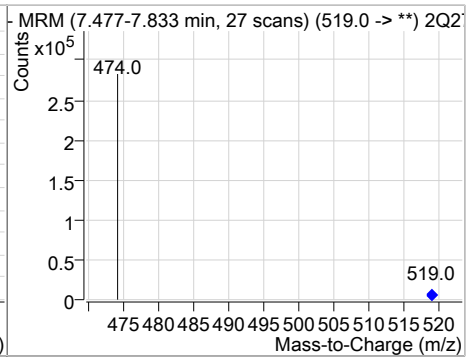


Perfluorinated Compounds by LC/MS/MS

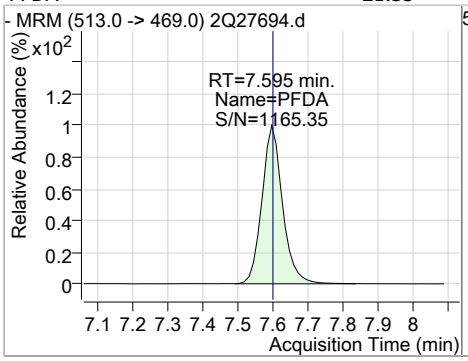
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	15.65	7.59	0.00	213528				

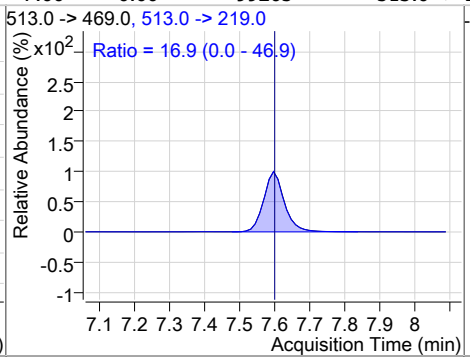


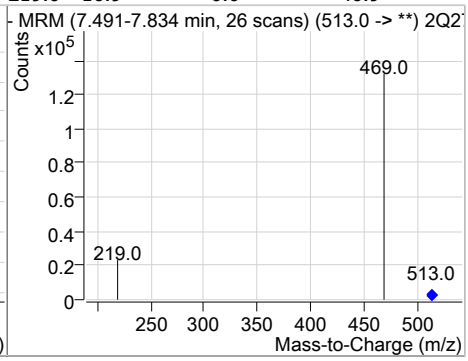




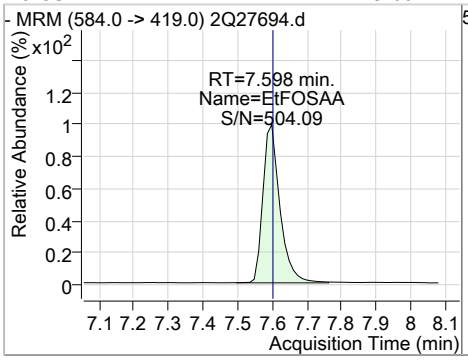
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	21.35	7.60	0.00	99265	513.0 -> 219.0	16.9	0.0	46.9

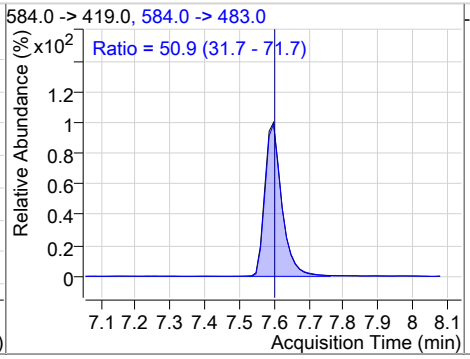


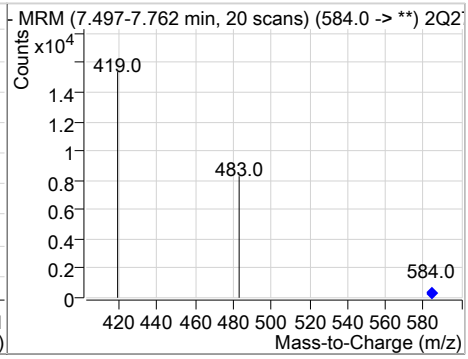




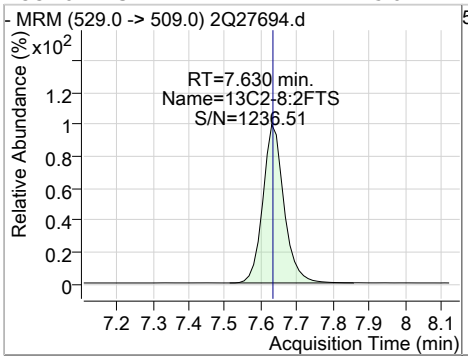
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.68	7.60	0.00	10860	584.0 -> 483.0	50.9	31.7	71.7

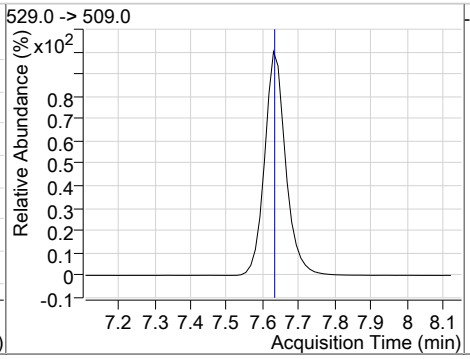


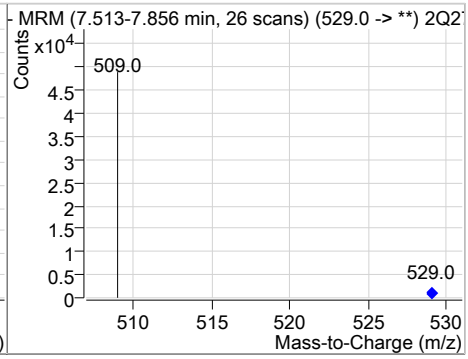




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	15.87	7.63	0.00	35186				

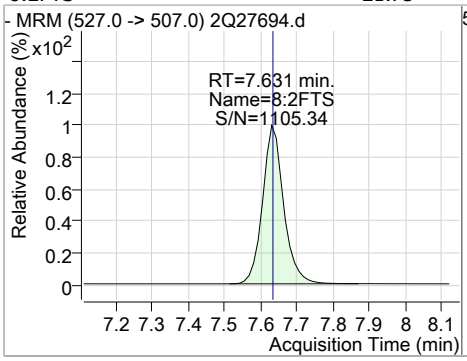


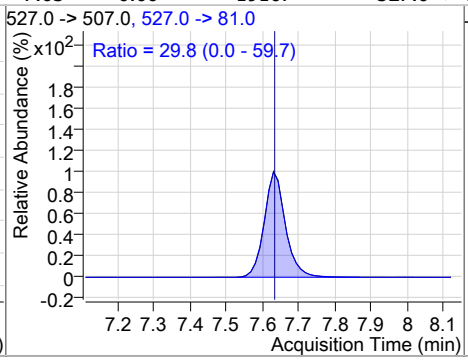


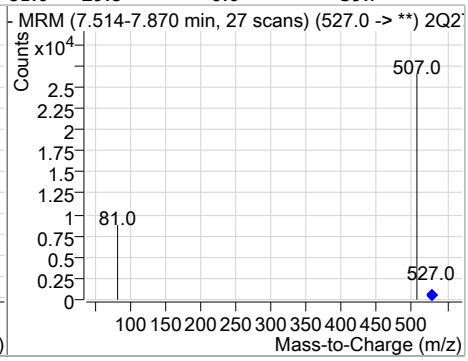


Perfluorinated Compounds by LC/MS/MS

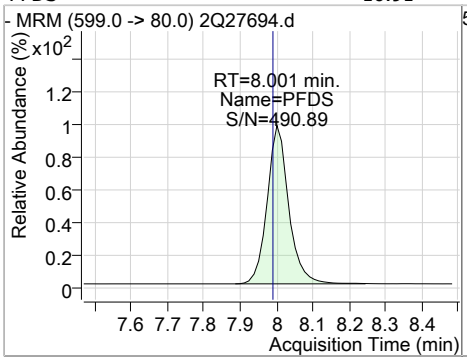
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	21.73	7.63	0.00	19107	527.0 -> 81.0	29.8	0.0	59.7

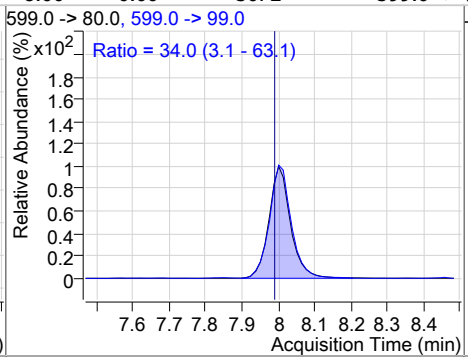


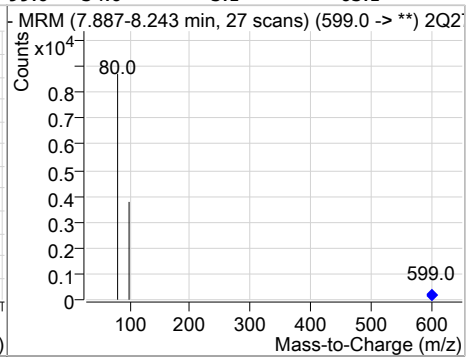




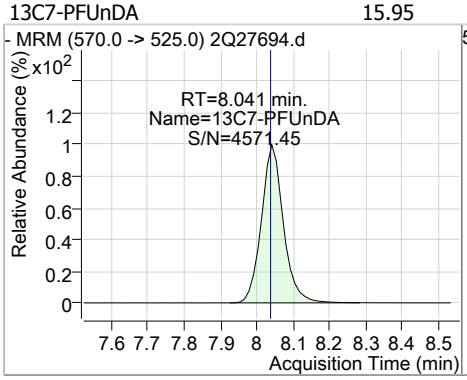
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	16.91	8.00	0.00	5672	599.0 -> 99.0	34.0	3.1	63.1

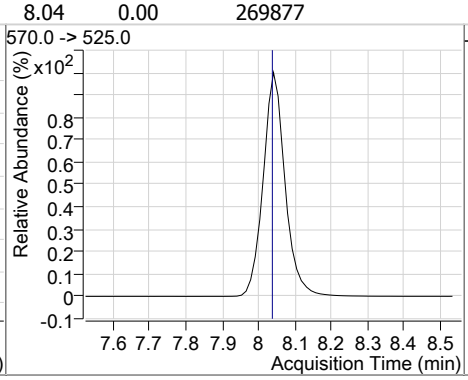


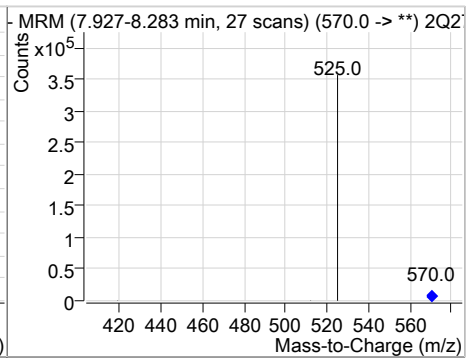




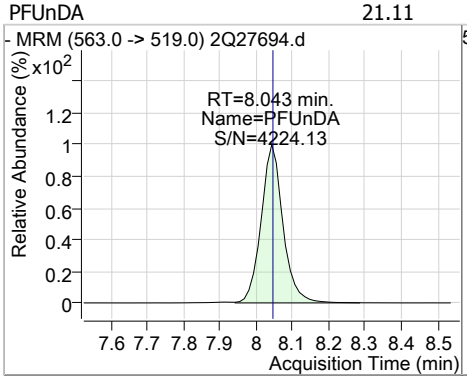
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.95	8.04	0.00	269877				

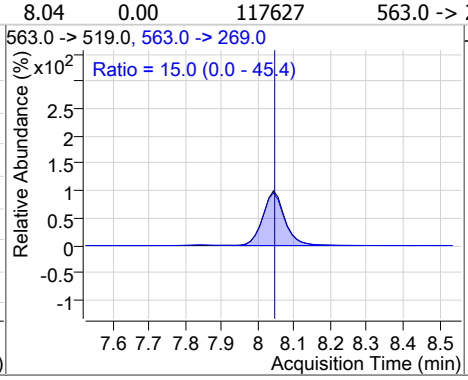


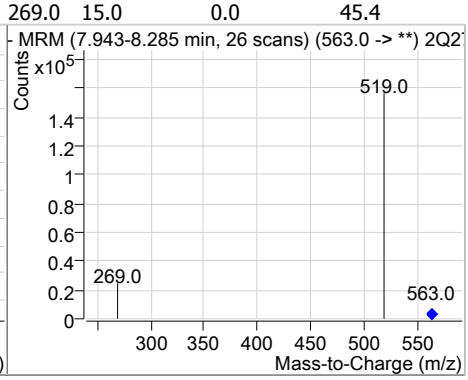




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	21.11	8.04	0.00	117627	563.0 -> 269.0	15.0	0.0	45.4

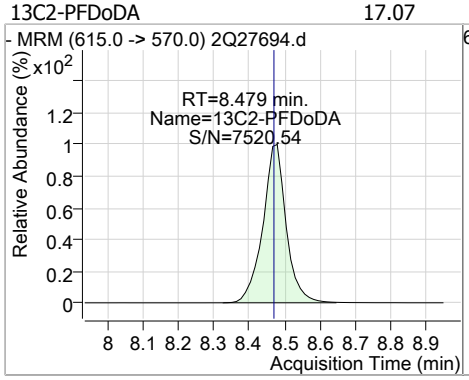


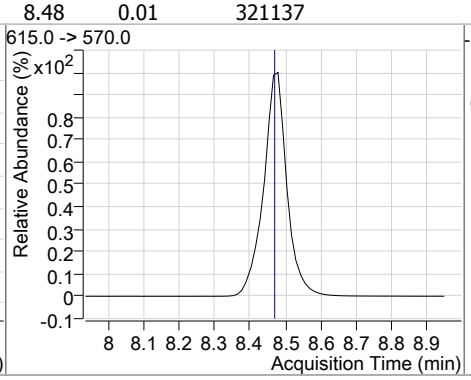


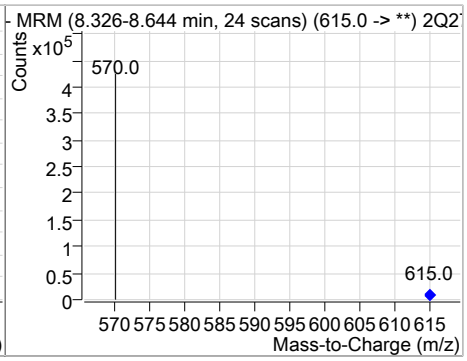


Perfluorinated Compounds by LC/MS/MS

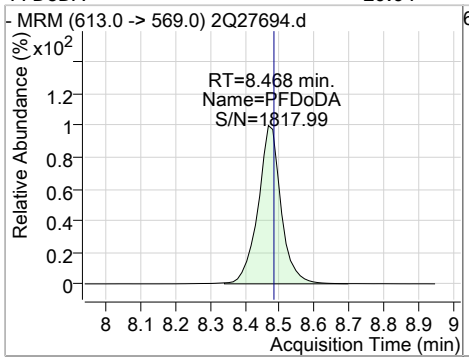
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.07	8.48	0.01	321137				

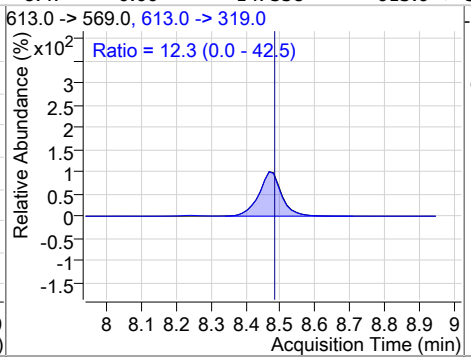


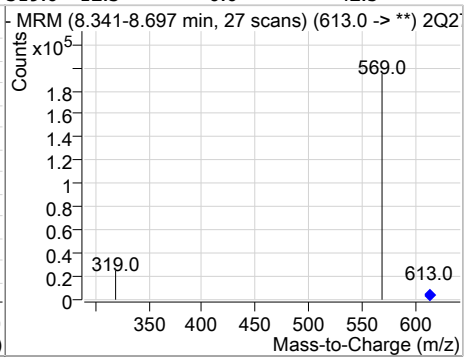




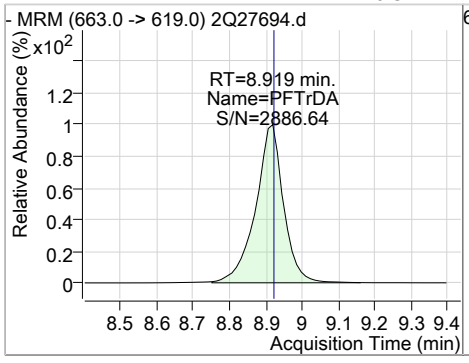
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	20.64	8.47	0.00	147558	613.0 -> 319.0	12.3	0.0	42.5

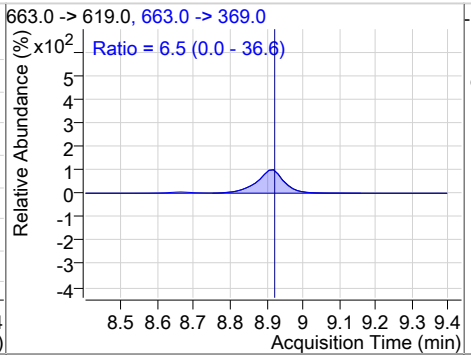


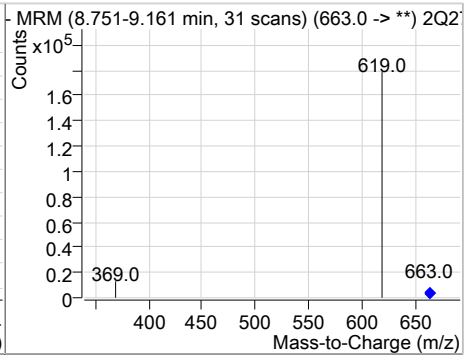




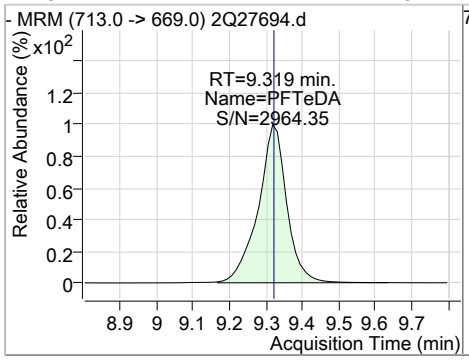
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.37	8.92	0.00	135381	663.0 -> 369.0	6.5	0.0	36.6

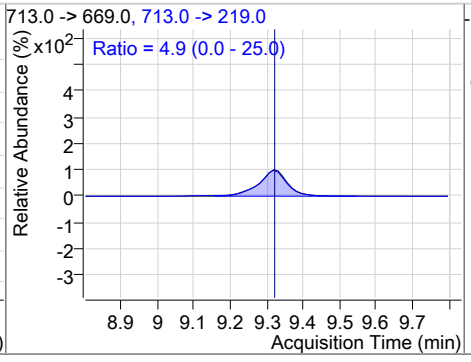


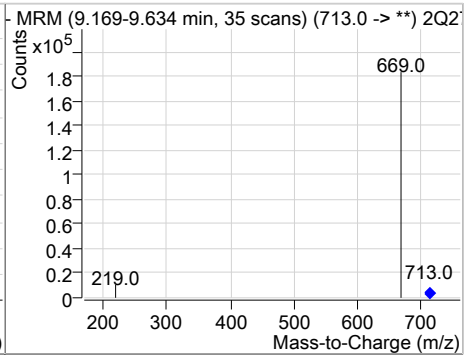




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	21.29	9.32	0.00	135866	713.0 -> 219.0	4.9	0.0	25.0

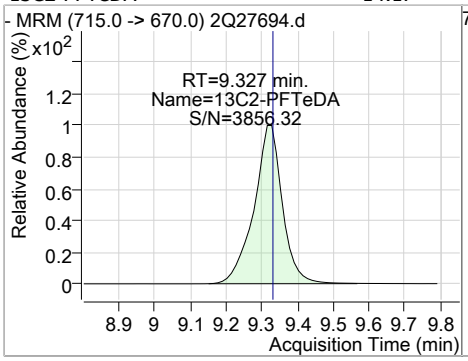


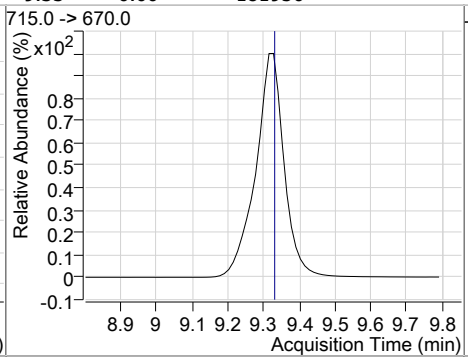


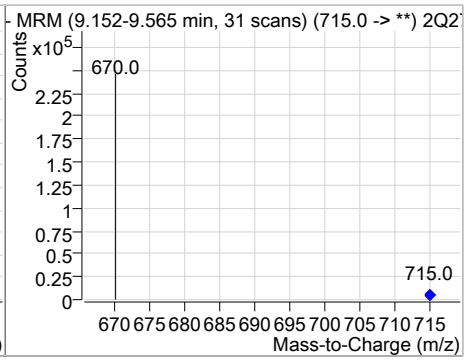


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.17	9.33	0.00	181950				







7.4.2

7

Manual Integration Approval Summary

Sample Number: OP74180-MS
Lab FileID: 2Q27694.D
Injection Time: 03/18/19 16:32
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27695.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 4:48:23 PM
Sample Name : op74180-msd
Vial : Vial 17
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74180,S2Q442,250,,,1.0,1,water

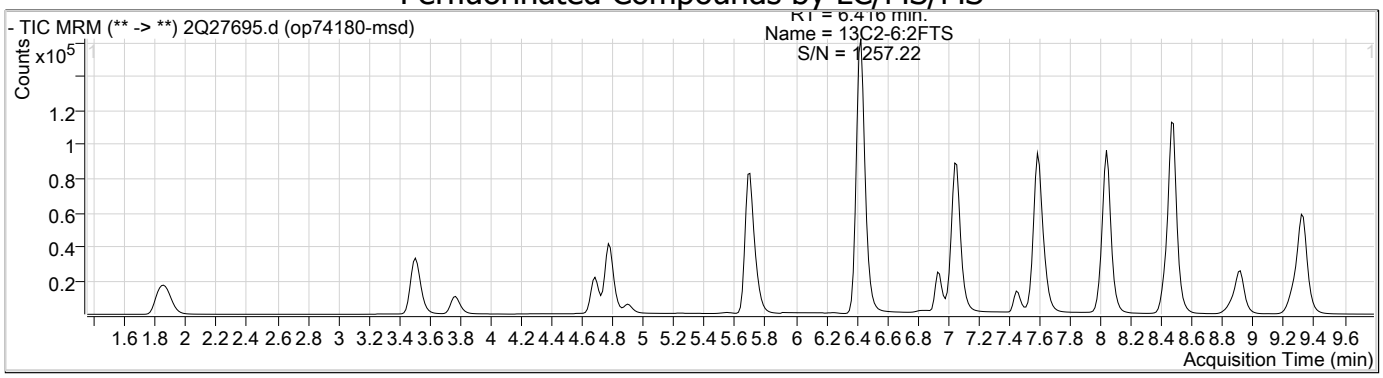
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	240011	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	34143	20.00	µg/L	0.000
M4-PFBA	1.852	217.0 -> 172.0	98439	20.00	µg/L	-0.013
M5-PFPeA	3.511	268.0 -> 223.0	82766	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	117732	20.00	µg/L	-0.013
M4-PFHpA	5.705	367.0 -> 322.0	173514	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	182619	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	178775	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	219012	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	268564	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	340109	20.00	µg/L	0.013
M2-PFTeDA	9.315	715.0 -> 670.0	187325	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	57995	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	14302	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	15760	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	18139	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	49356	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	60453	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	35514	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	27019	20.00	µg/L	0.000
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	49381	16.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.0%		
13C2-6:2FTS	6.416	429.0 -> 409.0	60440	18.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	35505	16.01	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.1%		
13C2-PFDoDA	8.479	615.0 -> 570.0	340090	18.08	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	186637	14.54	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 72.7%		
13C3-PFBS	3.767	302.0 -> 99.0	14347	15.74	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.7%		
13C3-PFHxS	5.736	402.0 -> 99.0	15730	15.43	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 77.2%		
13C4-PFBA	1.852	217.0 -> 172.0	98323	16.40	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%		
13C4-PFHpA	5.705	367.0 -> 322.0	173358	16.76	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.8%		
13C5-PFHxA	4.776	318.0 -> 273.0	117705	16.20	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.0%		
13C5-PFPeA	3.511	268.0 -> 223.0	82689	16.27	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.3%		
13C6-PFDA	7.594	519.0 -> 474.0	218937	16.04	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

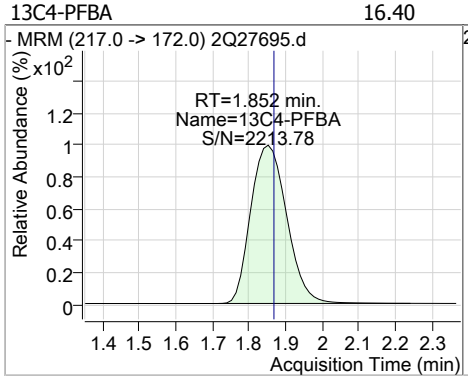
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 80.2%			
13C7-PFUnDA	8.041	570.0 -> 525.0	268374	15.86	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%			
13C8-FOSA	6.932	506.0 -> 78.0	58031	14.31	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 71.6%			
13C8-PFOA	6.434	421.0 -> 376.0	182590	17.50	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.5%			
13C8-PFOS	7.033	507.0 -> 99.0	18126	13.91	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 69.5%			
13C9-PFNA	7.066	472.0 -> 427.0	178637	16.87	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.4%			
d3-MeFOSAA	7.447	573.0 -> 419.0	27059	14.12	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 70.6%			
M2-PFOA	6.435	415.0 -> 370.0	240062	19.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.036	503.0 -> 80.0	34164	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	26926	19.80	µg/L		99
6:2FTS	6.418	427.0 -> 407.0	28638	19.26	µg/L		99
8:2FTS	7.631	527.0 -> 507.0	17438	19.64	µg/L		98
EtFOSAA	7.598	584.0 -> 419.0	10480	18.23	µg/L		95
FOSA	6.935	498.0 -> 78.0	25947	19.43	µg/L		99
MeFOSAA	7.447	570.0 -> 419.0	13394	19.44	µg/L		98
PFBA	1.848	213.0 -> 169.0	19306	19.86	µg/L		100
PFBS	3.771	299.0 -> 80.0	23811	20.97	µg/L		99
PFDA	7.595	513.0 -> 469.0	90813	19.05	µg/L		100
PFDoDA	8.468	613.0 -> 569.0	146597	19.37	µg/L		99
PFDS	8.001	599.0 -> 80.0	5310	15.89	µg/L		99
PFHpA	5.695	363.0 -> 319.0	148394	19.84	µg/L		100
PFHpS	6.442	449.0 -> 80.0	15306	20.02	µg/L		99
PFHxA	4.778	313.0 -> 269.0	42333	20.88	µg/L		100
PFHxS	5.739	399.0 -> 80.0	17925	20.58	µg/L	m	97
PFNA	7.066	463.0 -> 419.0	113404	19.13	µg/L		100
PFNS	7.565	549.0 -> 80.0	10468	16.84	µg/L		100
PFOA	6.437	413.0 -> 369.0	103112	20.90	µg/L		98
PFOS	7.037	499.0 -> 80.0	18430	20.92	µg/L	m	79
PFPeA	3.515	263.0 -> 219.0	73291	20.46	µg/L		100
PFPeS	4.895	349.0 -> 80.0	14624	20.12	µg/L		98
PFTeDA	9.319	713.0 -> 669.0	127557	19.47	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	127026	18.62	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	107587	19.42	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

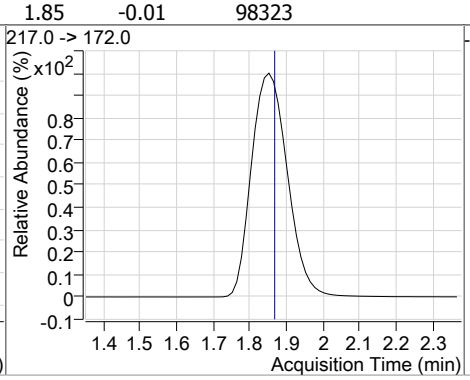
 # = Qualifier out of range, m = manually integrated, + = Area summed

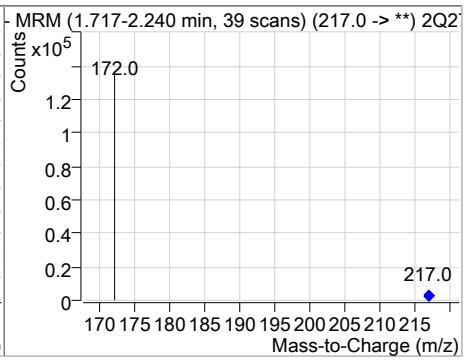
Perfluorinated Compounds by LC/MS/MS



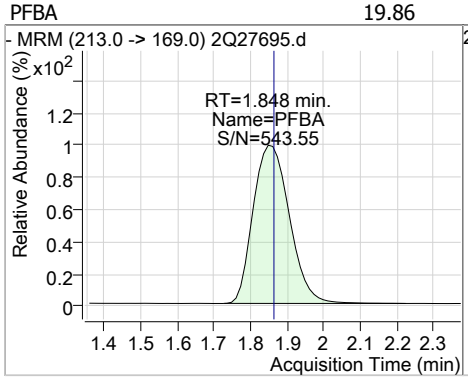
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.40	1.85	-0.01	98323				

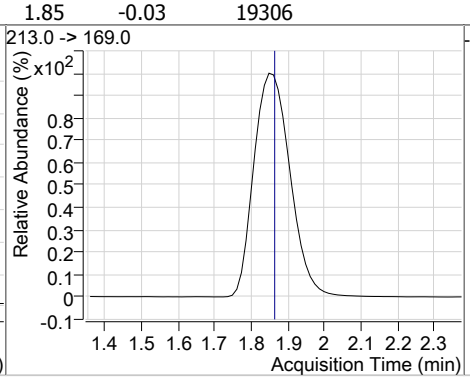


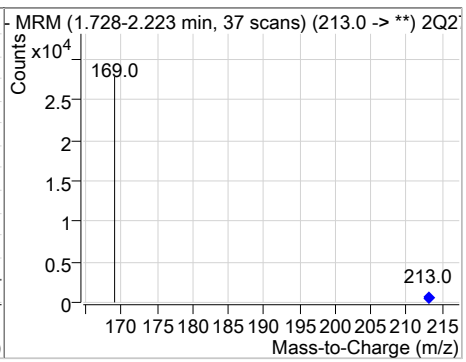




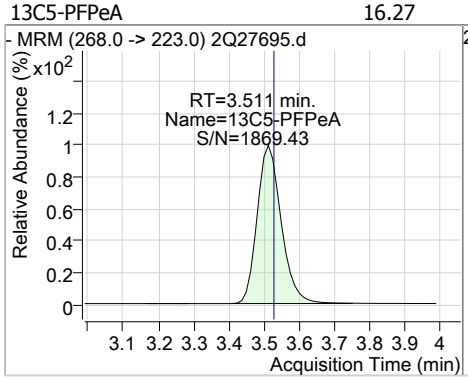
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.86	1.85	-0.03	19306				

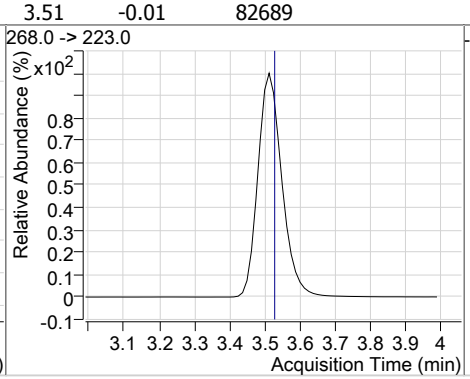


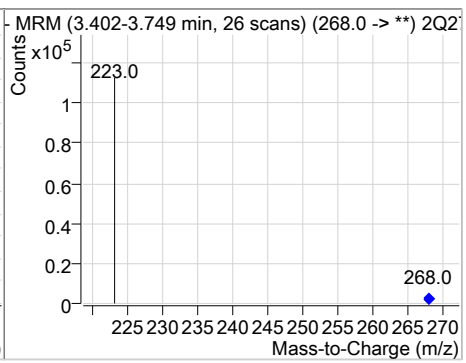




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.27	3.51	-0.01	82689				

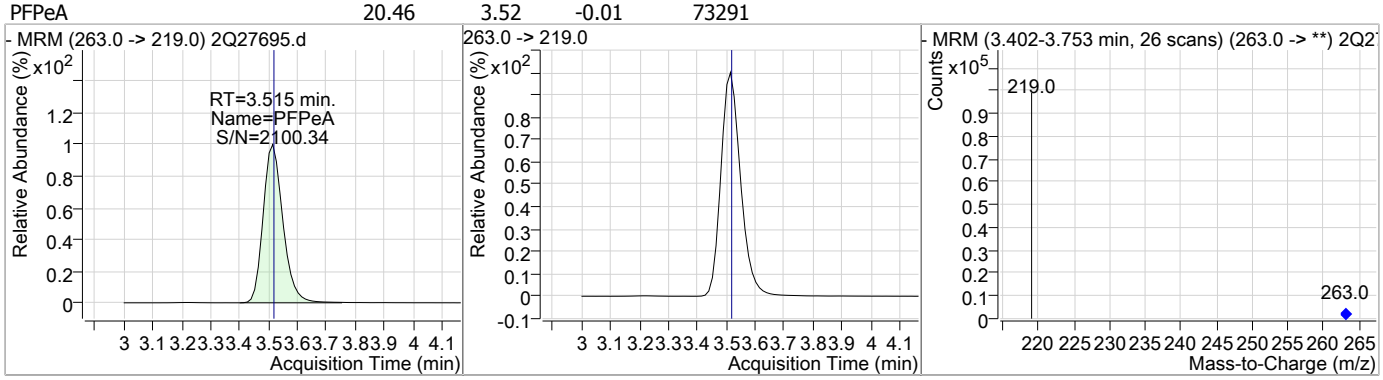




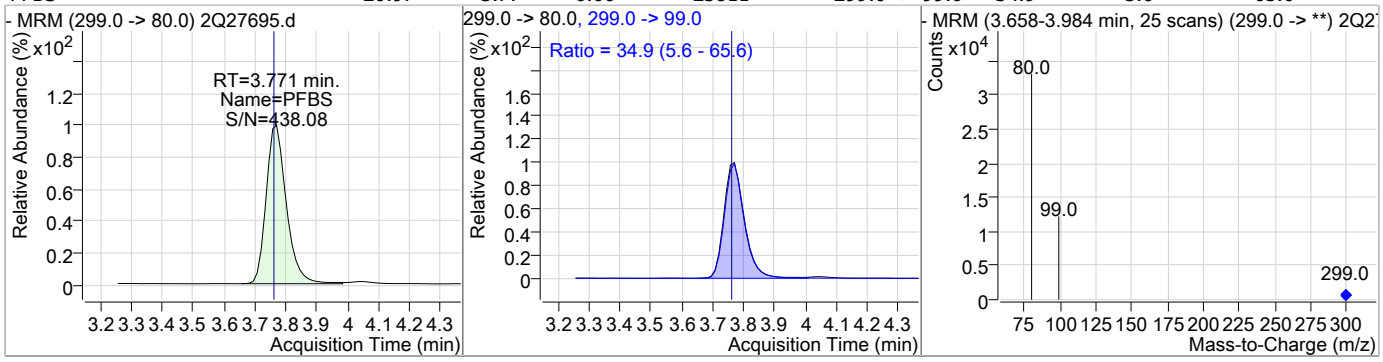


Perfluorinated Compounds by LC/MS/MS

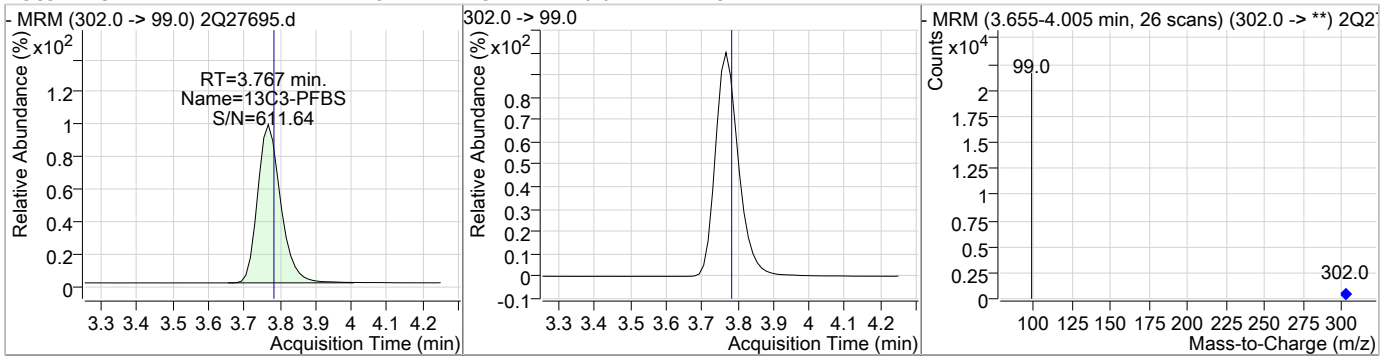
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	20.46	3.52	-0.01	73291				



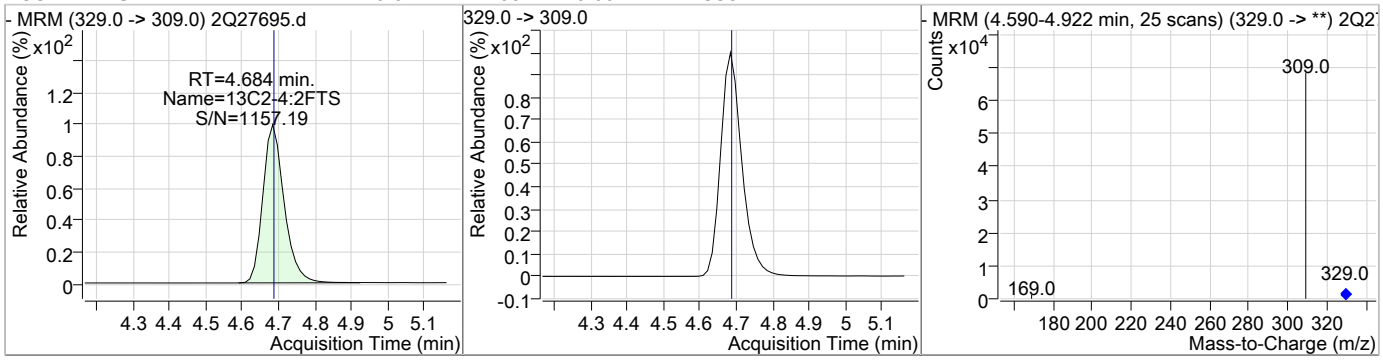
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	20.97	3.77	0.00	23811	299.0 -> 99.0	34.9	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.74	3.77	-0.01	14347				

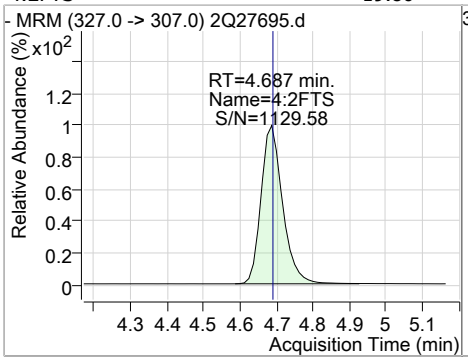


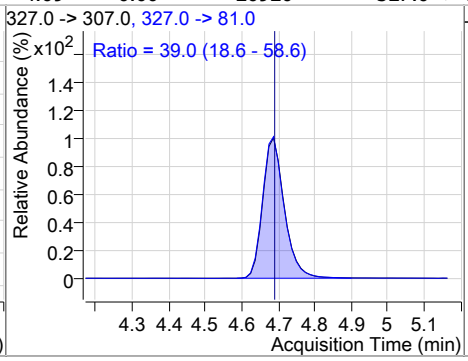
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.61	4.68	0.00	49381				

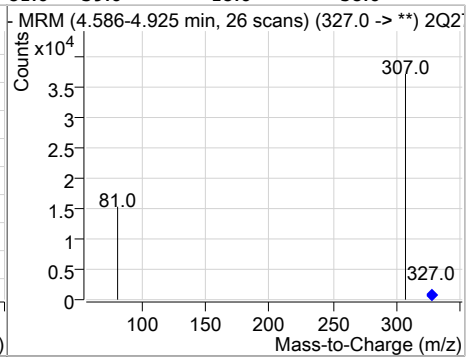


Perfluorinated Compounds by LC/MS/MS

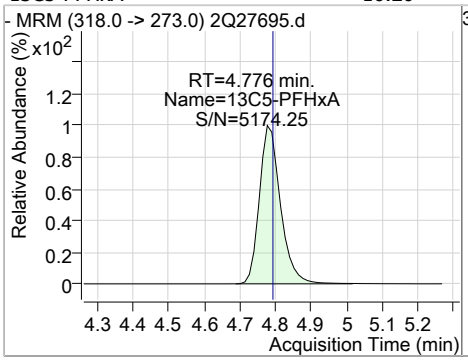
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	19.80	4.69	0.00	26926	327.0 -> 81.0	39.0	18.6	58.6

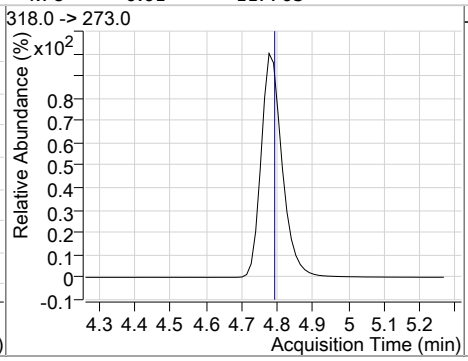


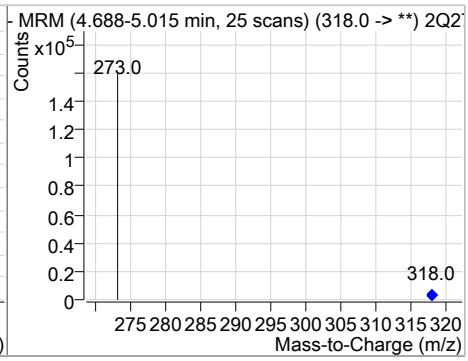




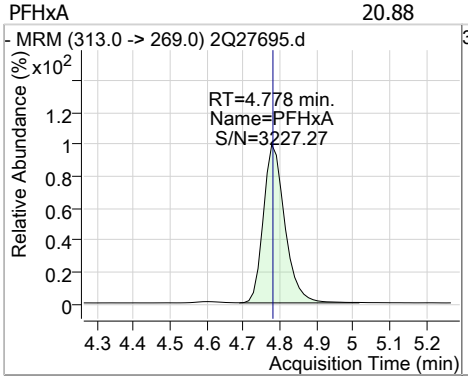
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.20	4.78	-0.01	117705				

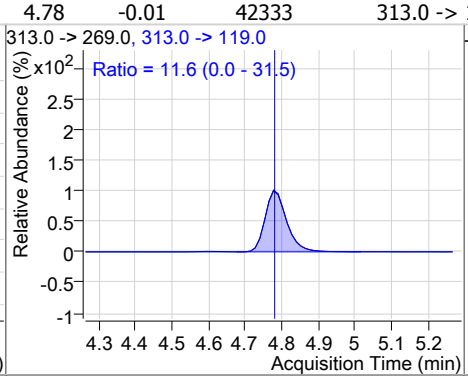


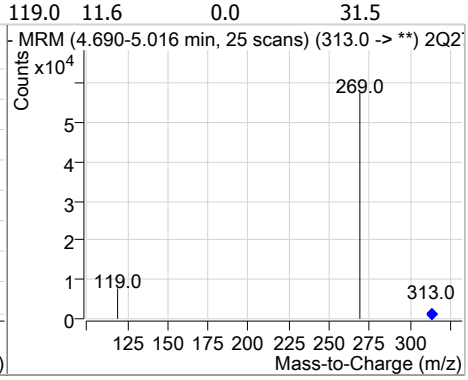




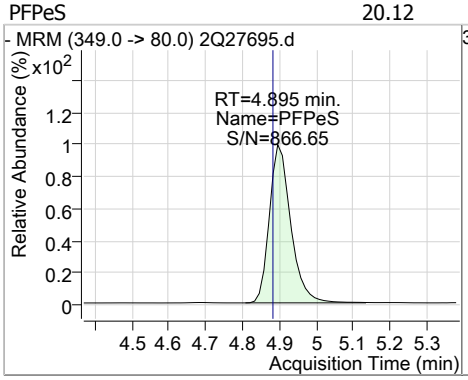
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.88	4.78	-0.01	42333	313.0 -> 119.0	11.6	0.0	31.5

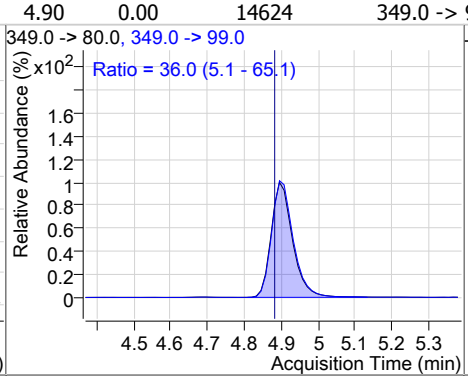


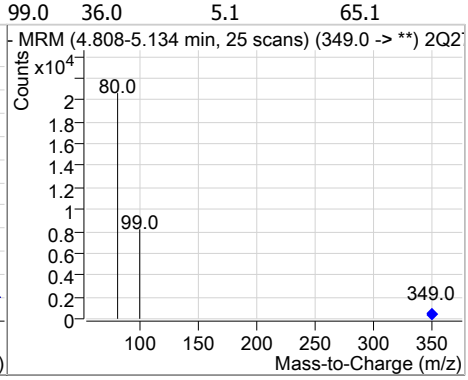




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.12	4.90	0.00	14624	349.0 -> 99.0	36.0	5.1	65.1

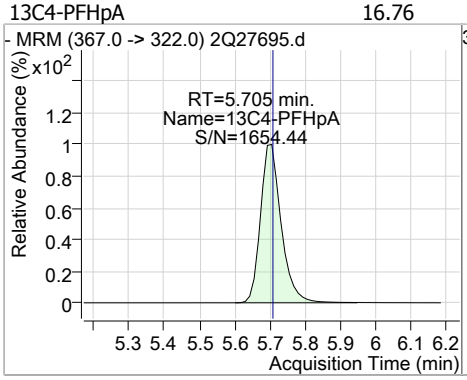


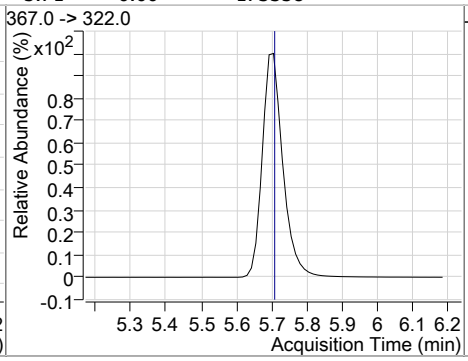


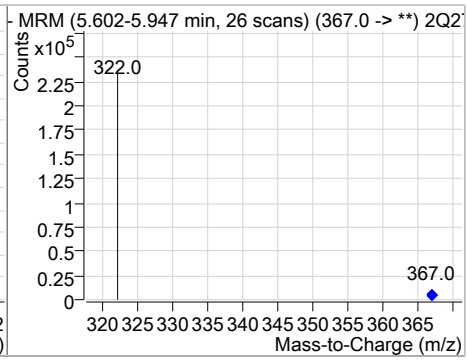


Perfluorinated Compounds by LC/MS/MS

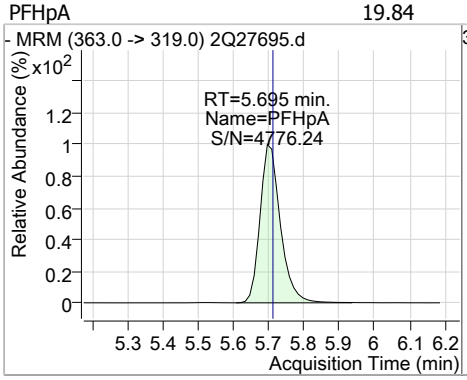
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.76	5.71	0.00	173358				

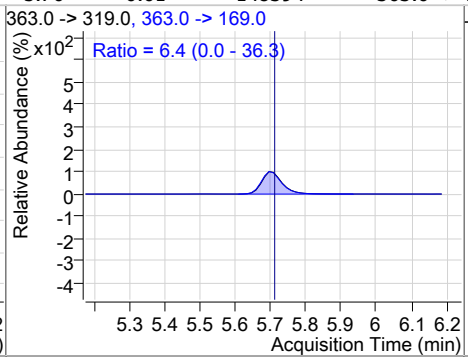


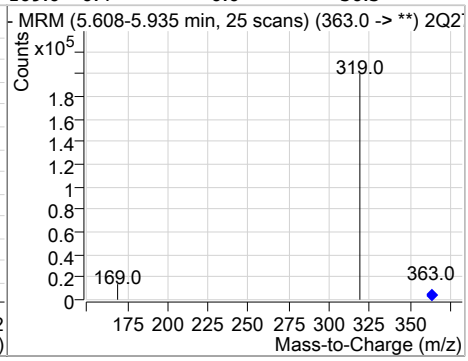




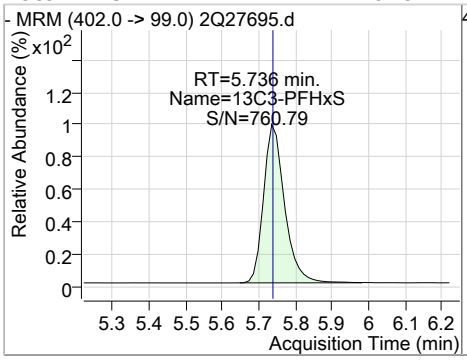
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.84	5.70	-0.01	148394	363.0 -> 169.0	6.4	0.0	36.3

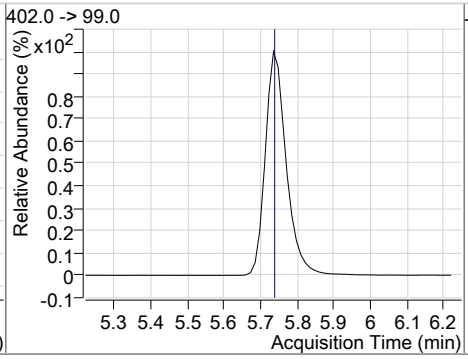


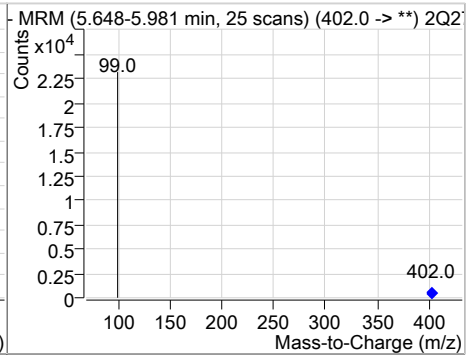




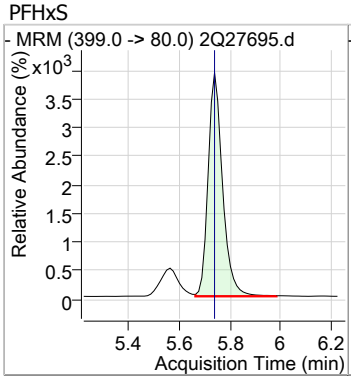
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.43	5.74	0.00	15730				

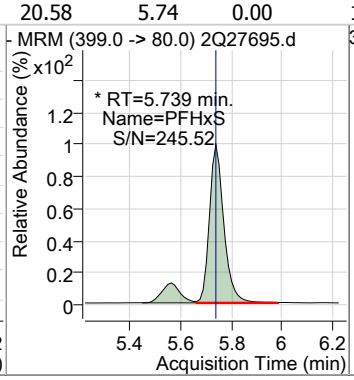


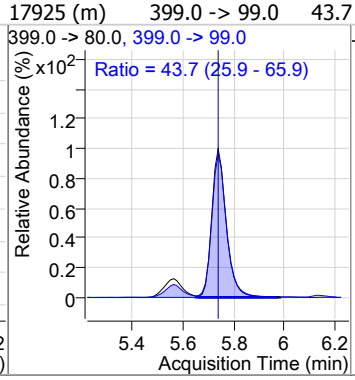


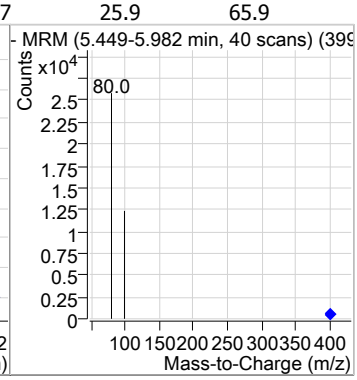


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.58	5.74	0.00	17925 (m)	399.0 -> 99.0	43.7	25.9	65.9



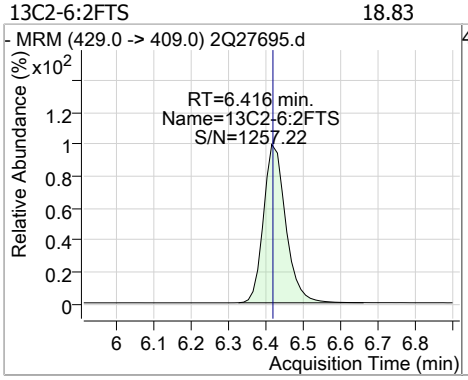


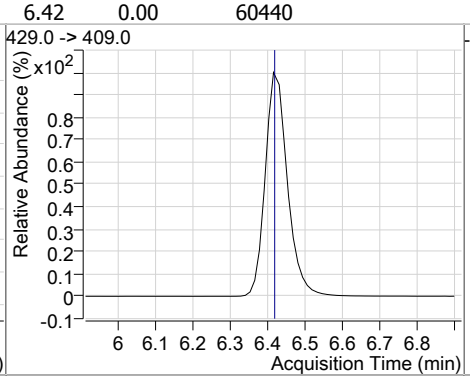


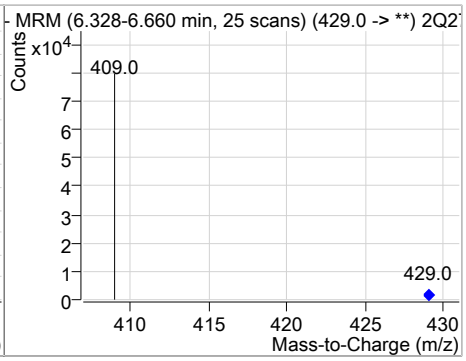


Perfluorinated Compounds by LC/MS/MS

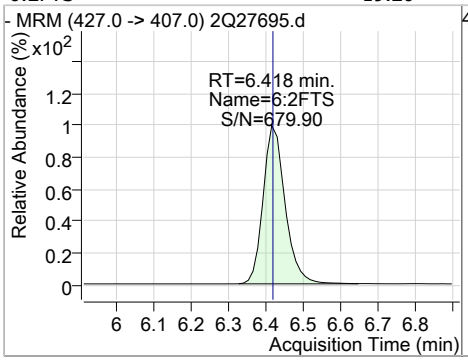
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.83	6.42	0.00	60440				

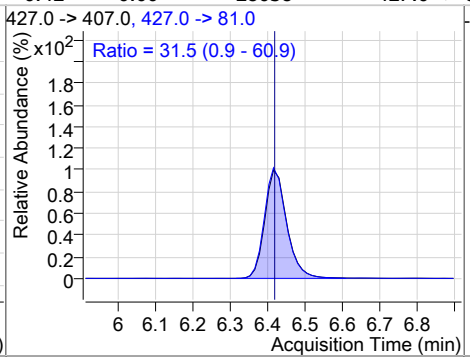


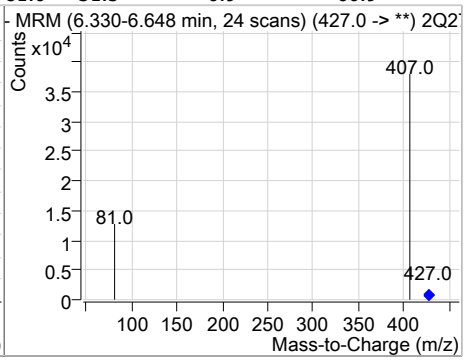




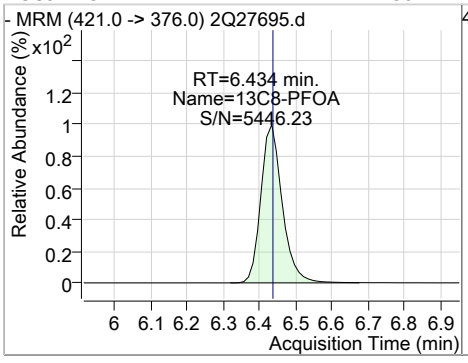
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.26	6.42	0.00	28638	427.0 -> 81.0	31.5	0.9	60.9

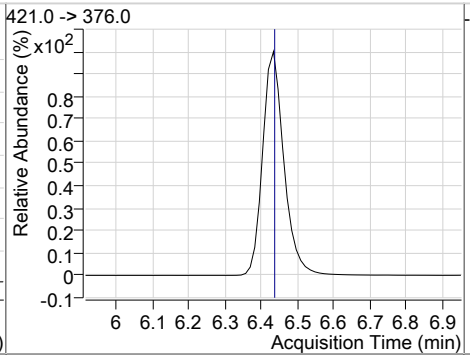


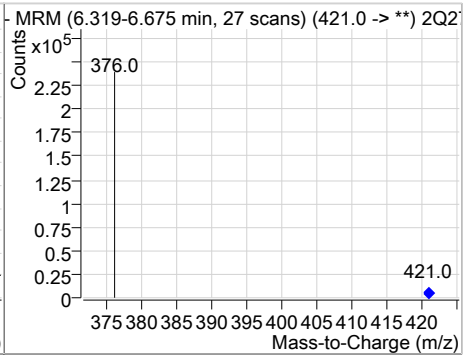




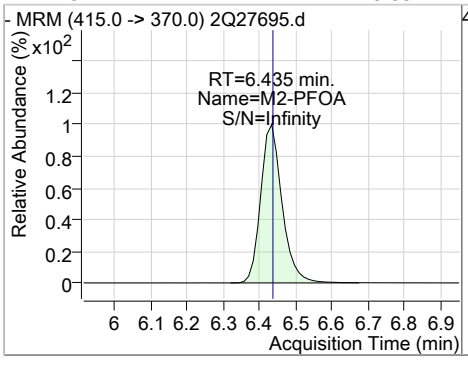
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.50	6.43	0.00	182590				

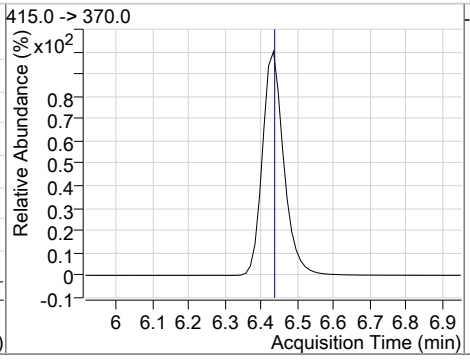


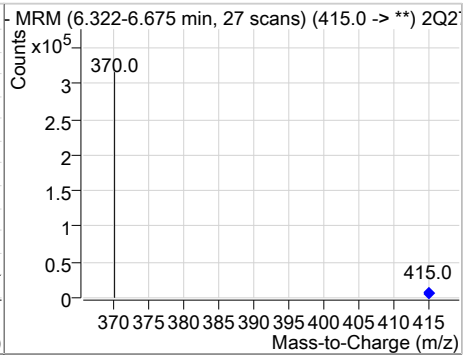




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	240062				

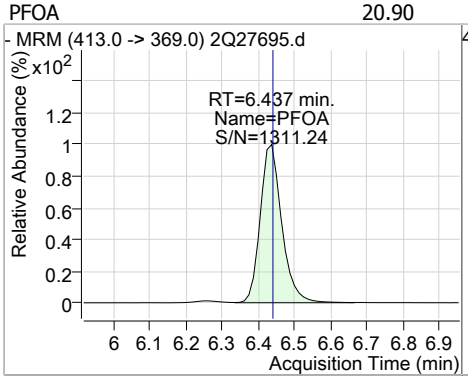


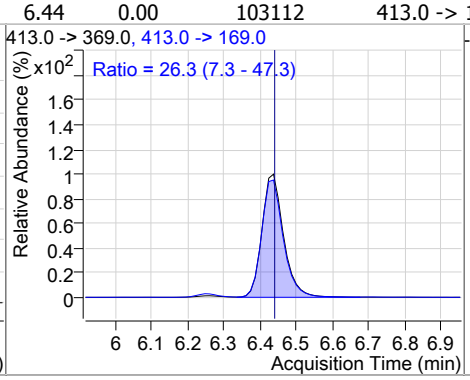


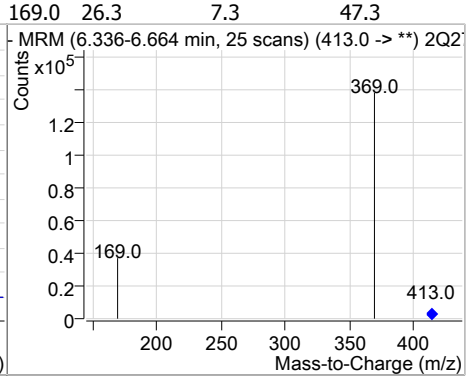


Perfluorinated Compounds by LC/MS/MS

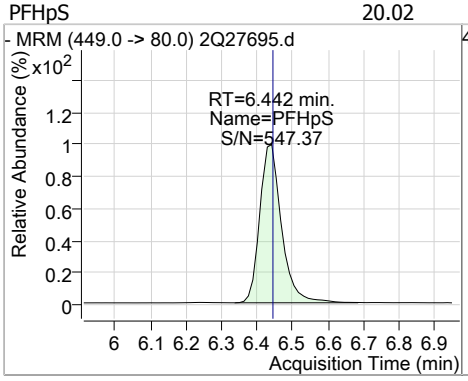
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.90	6.44	0.00	103112	413.0 -> 169.0	26.3	7.3	47.3

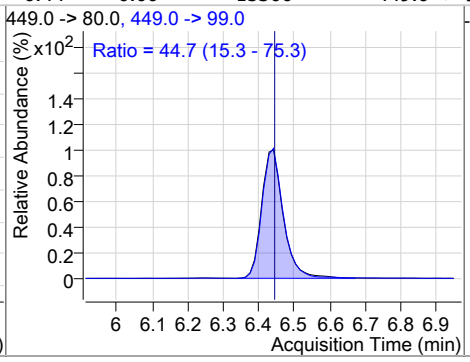


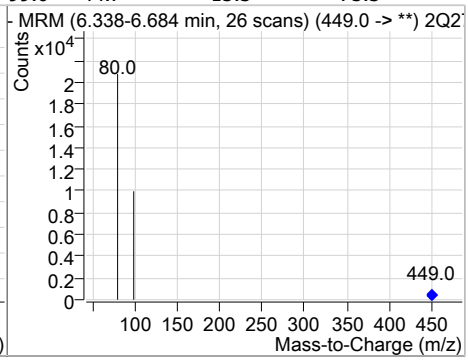




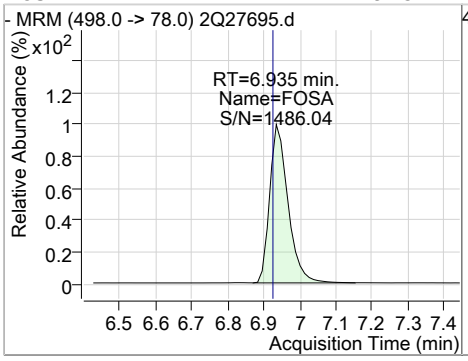
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.02	6.44	0.00	15306	449.0 -> 99.0	44.7	15.3	75.3

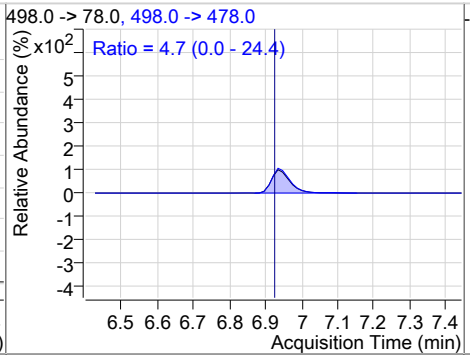


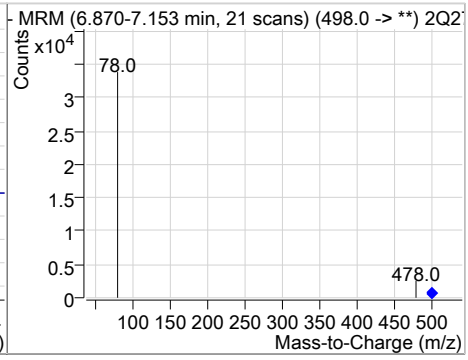




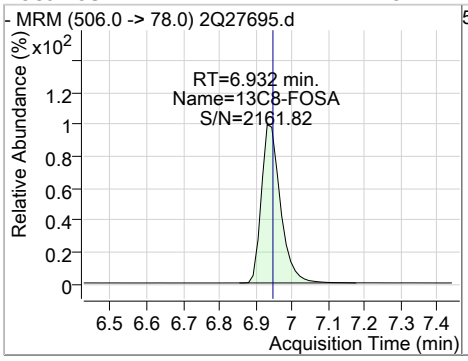
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.43	6.93	0.00	25947	498.0 -> 478.0	4.7	0.0	24.4

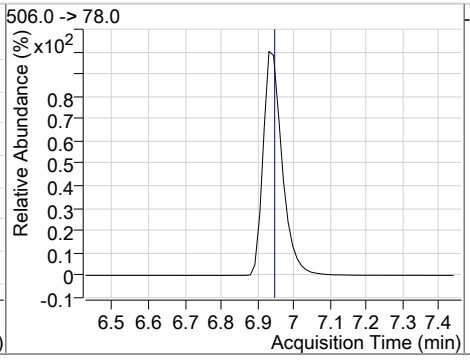


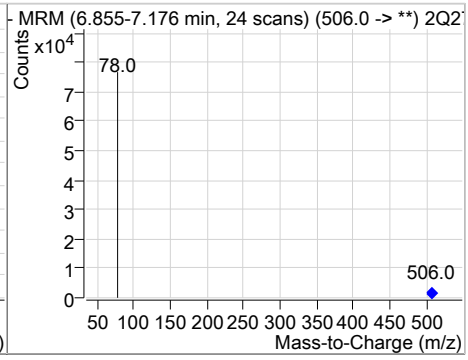




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	14.31	6.93	-0.01	58031				

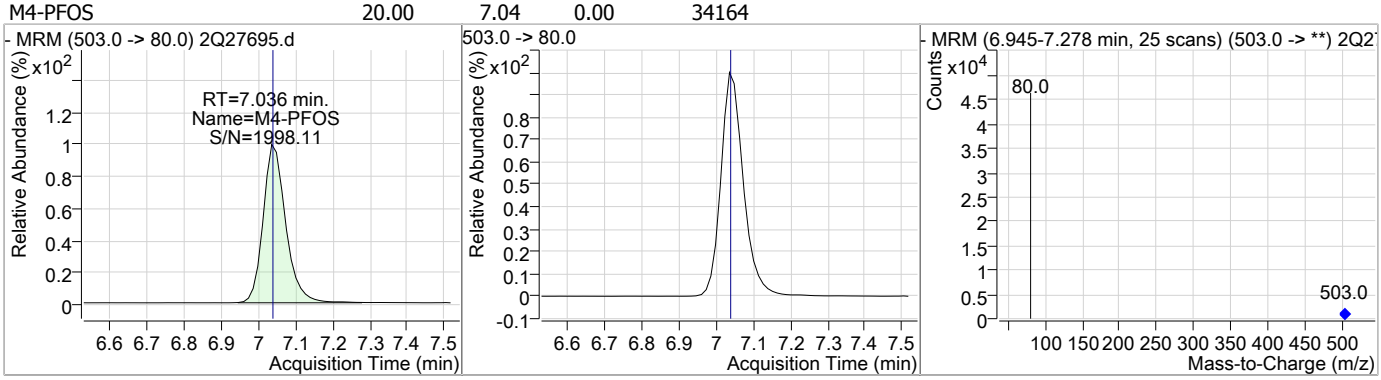




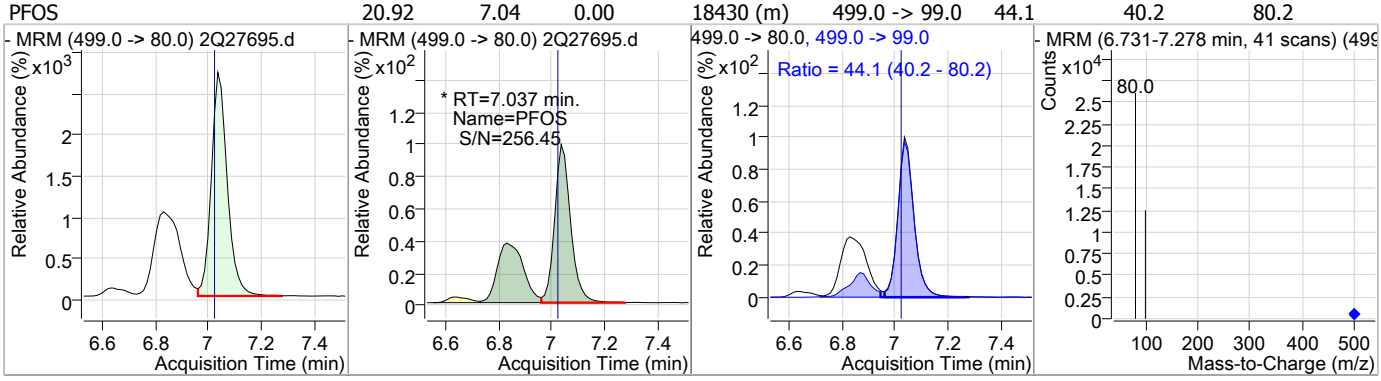


Perfluorinated Compounds by LC/MS/MS

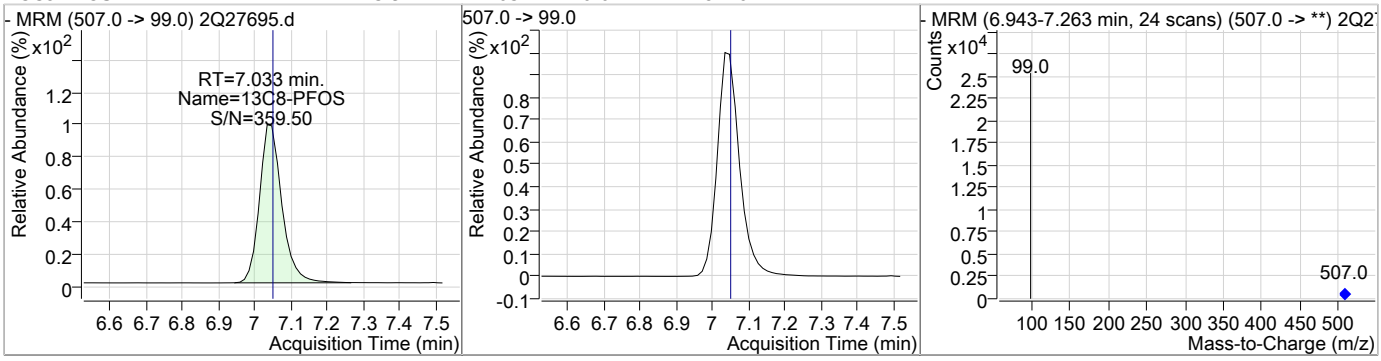
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.04	0.00	34164				



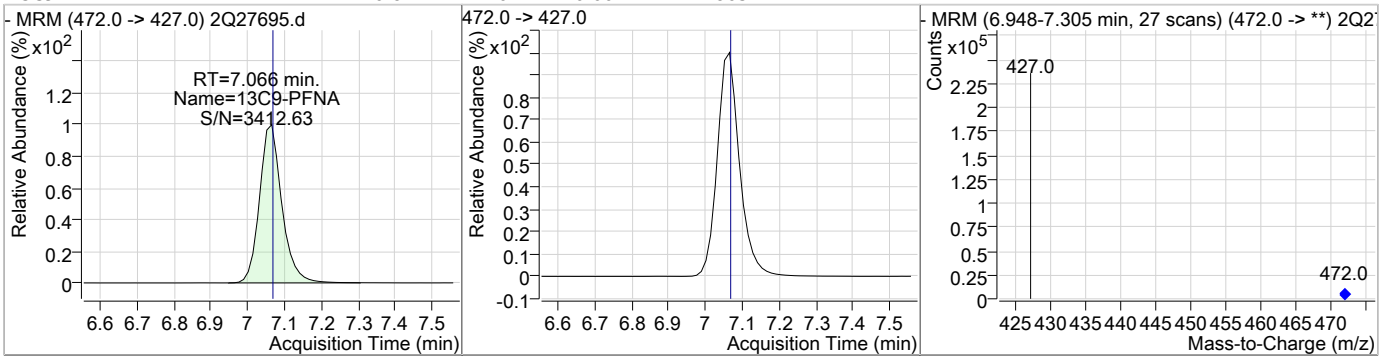
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	20.92	7.04	0.00	18430 (m)	499.0 -> 99.0	44.1	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	13.91	7.03	-0.01	18126				

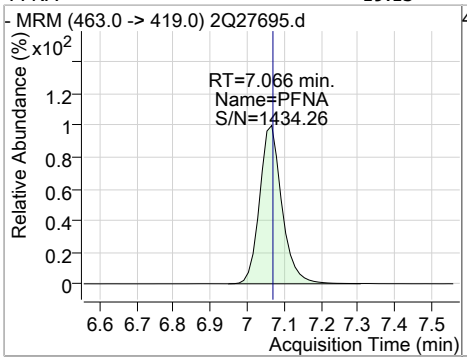


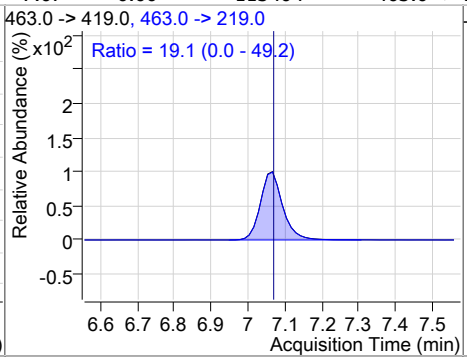
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	16.87	7.07	0.00	178637				

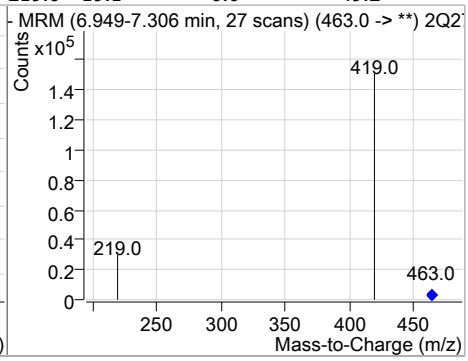


Perfluorinated Compounds by LC/MS/MS

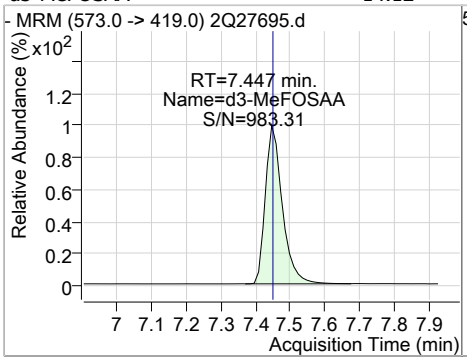
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.13	7.07	0.00	113404	463.0 -> 219.0	19.1	0.0	49.2

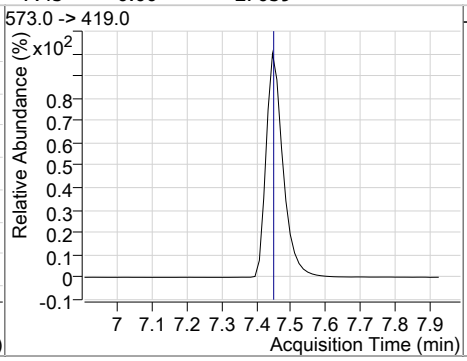


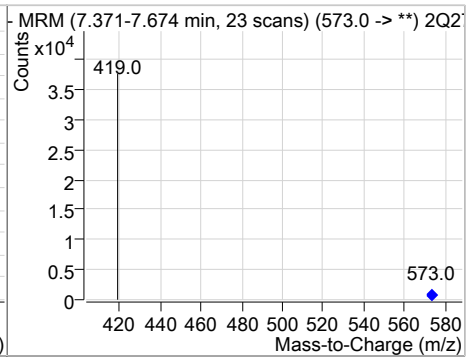




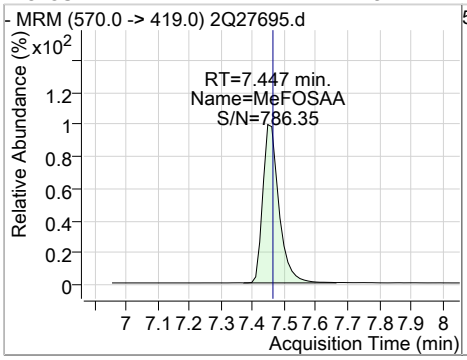
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	14.12	7.45	0.00	27059				

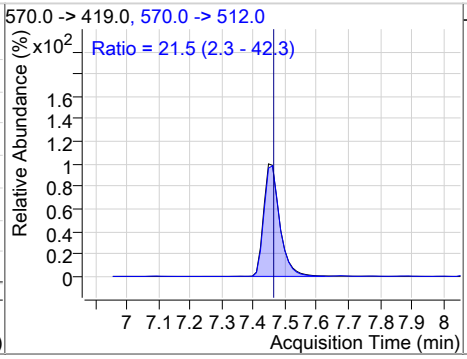


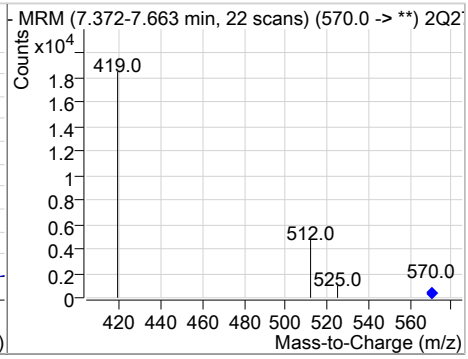




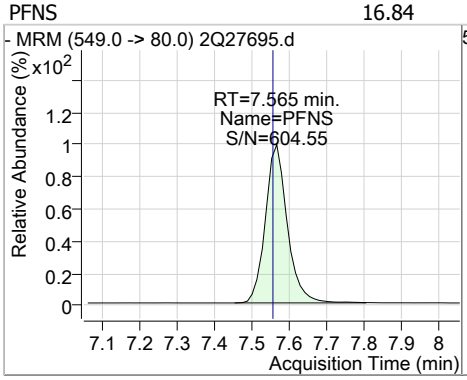
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.44	7.45	-0.01	13394	570.0 -> 512.0	21.5	2.3	42.3

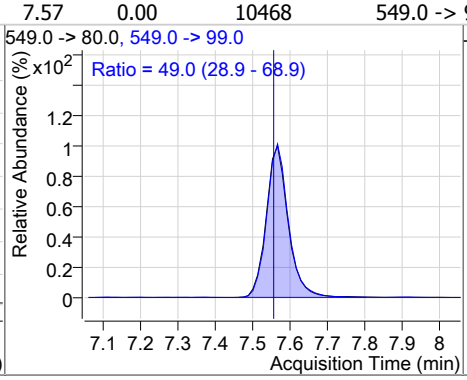


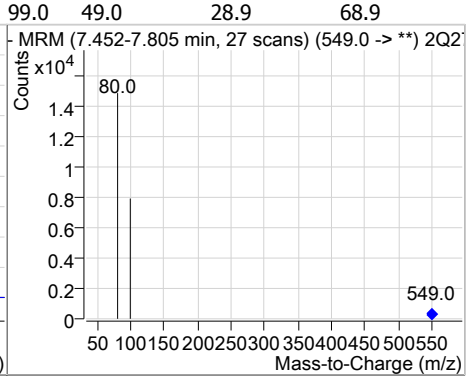




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	16.84	7.57	0.00	10468	549.0 -> 99.0	49.0	28.9	68.9

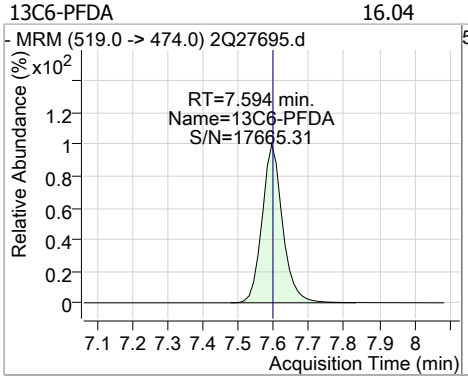


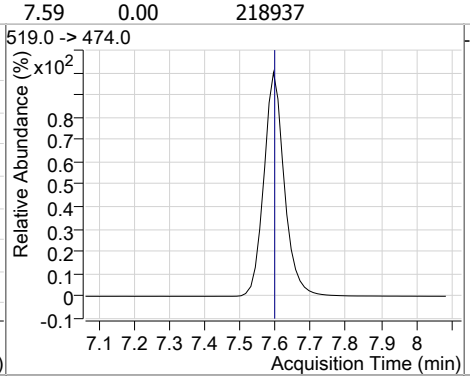


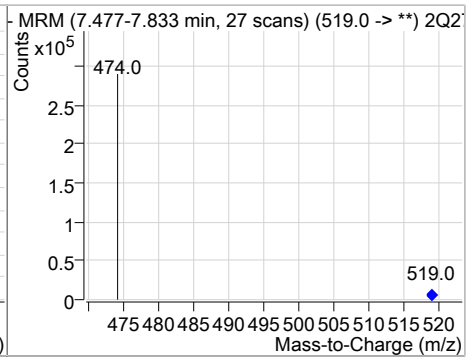


Perfluorinated Compounds by LC/MS/MS

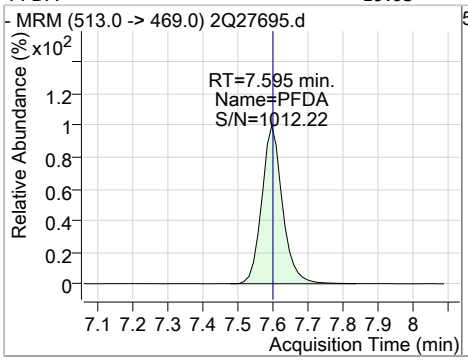
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	16.04	7.59	0.00	218937				

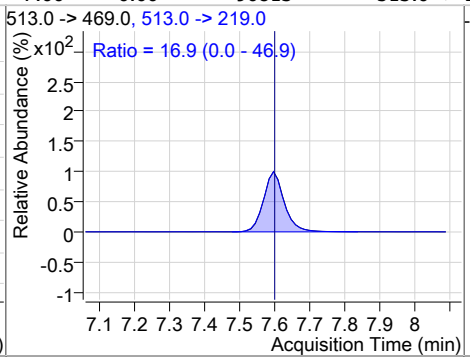


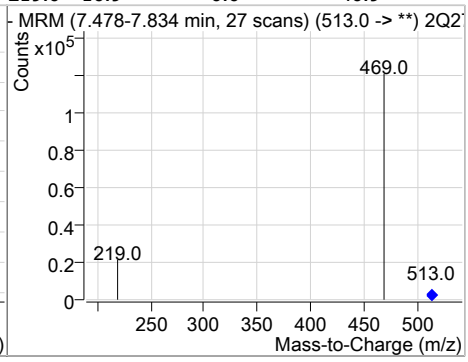




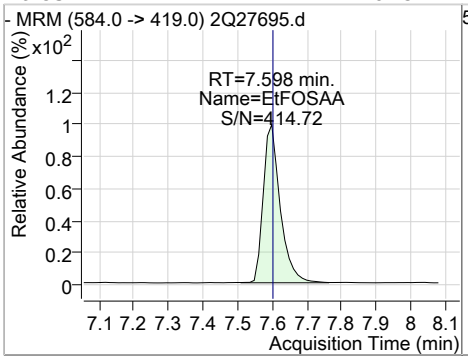
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.05	7.60	0.00	90813	513.0 -> 219.0	16.9	0.0	46.9

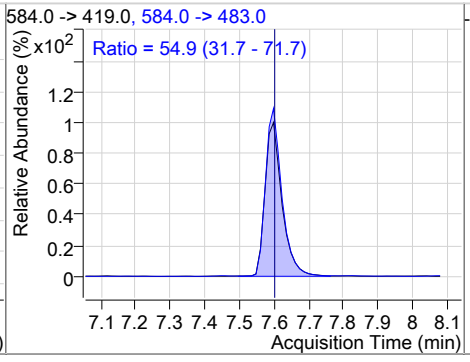


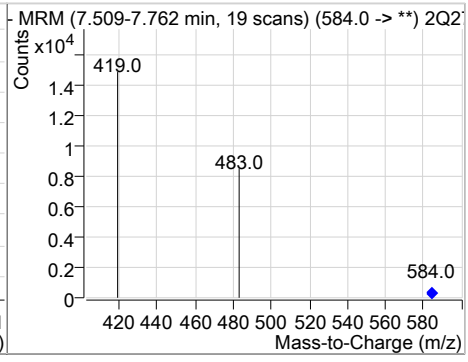




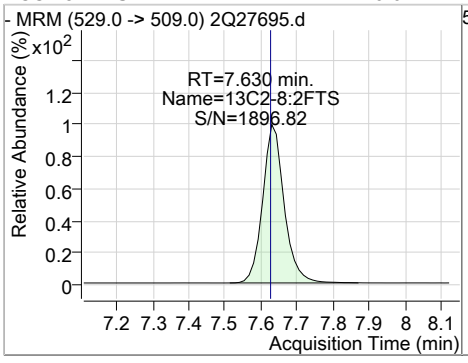
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.23	7.60	0.00	10480	584.0 -> 483.0	54.9	31.7	71.7

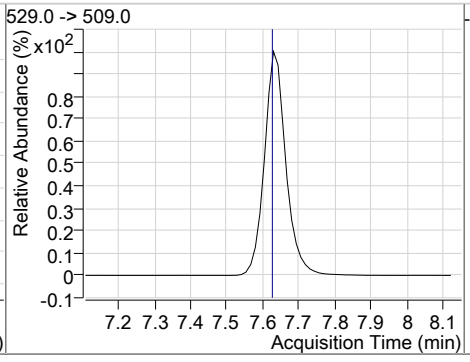


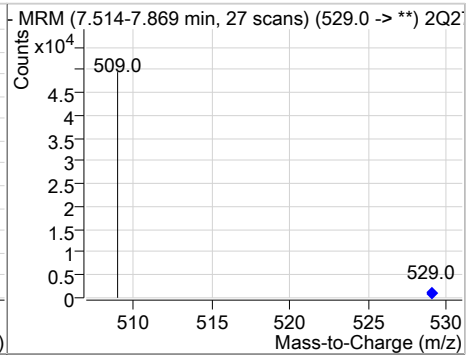




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	16.01	7.63	0.00	35505				

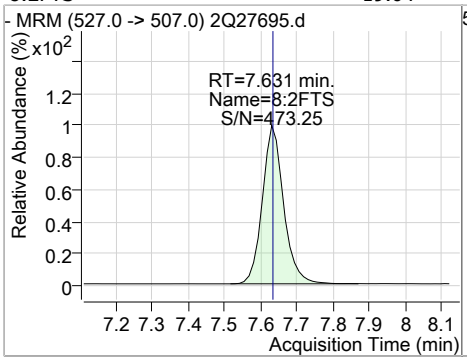


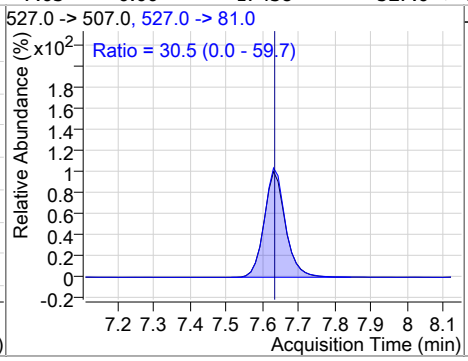


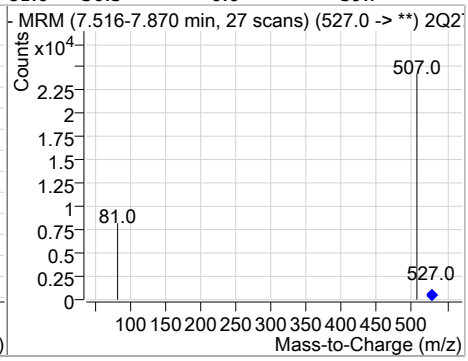


Perfluorinated Compounds by LC/MS/MS

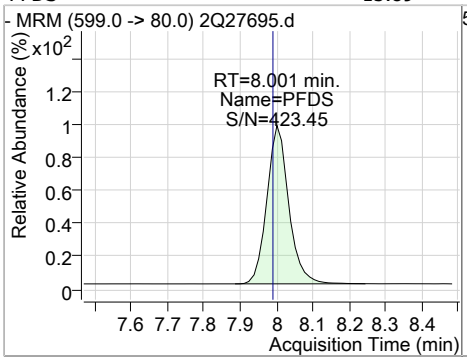
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.64	7.63	0.00	17438	527.0 -> 81.0	30.5	0.0	59.7

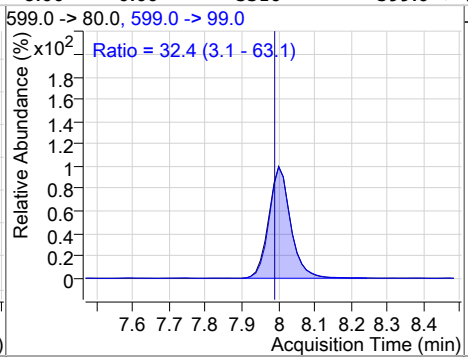


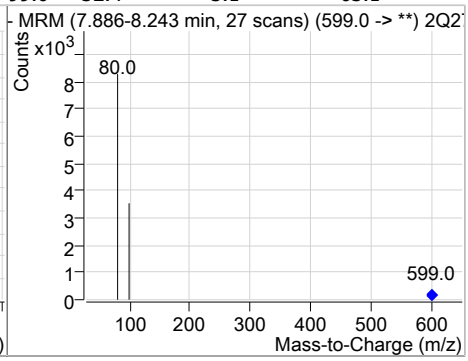




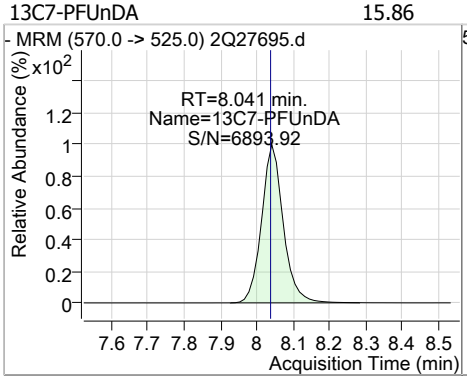
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	15.89	8.00	0.00	5310	599.0 -> 99.0	32.4	3.1	63.1

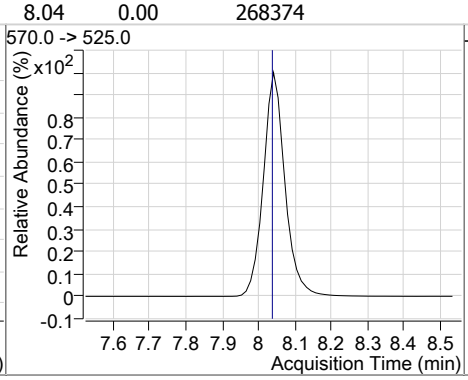


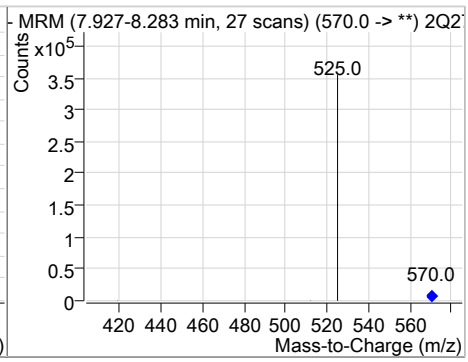




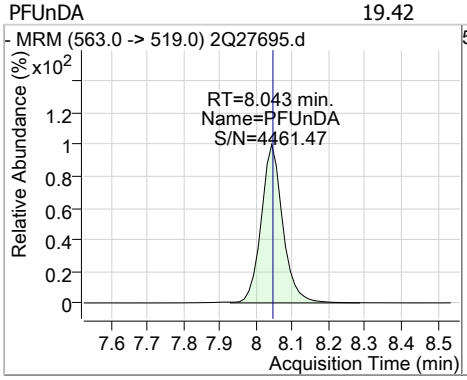
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	15.86	8.04	0.00	268374				

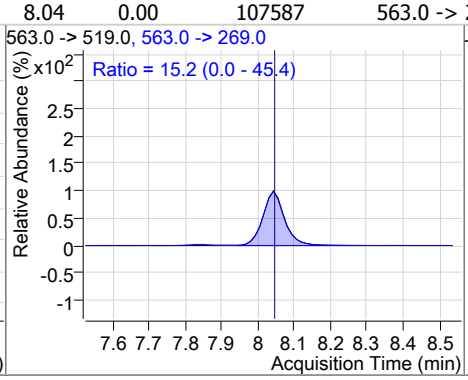


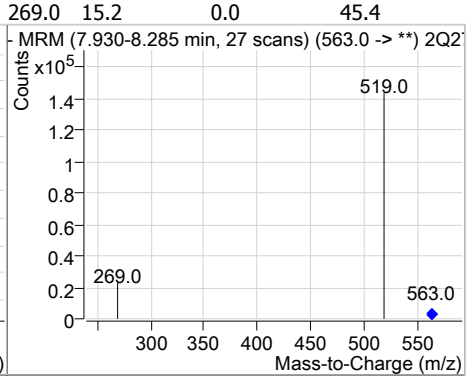




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.42	8.04	0.00	107587	563.0 -> 269.0	15.2	0.0	45.4

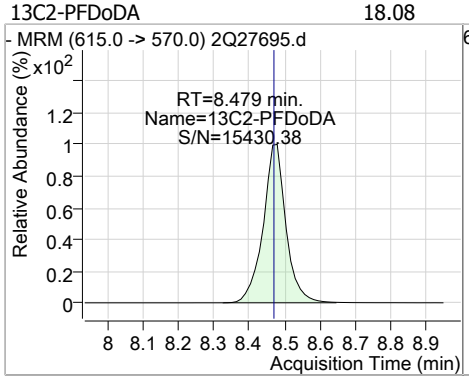


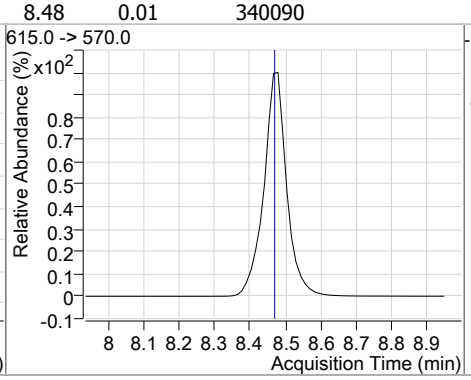


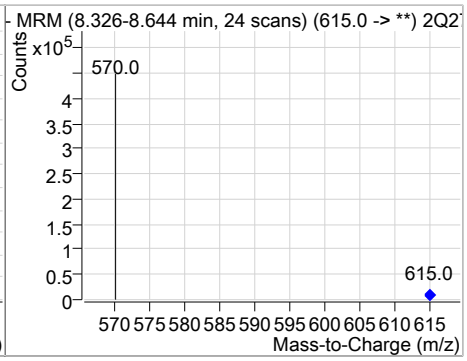


Perfluorinated Compounds by LC/MS/MS

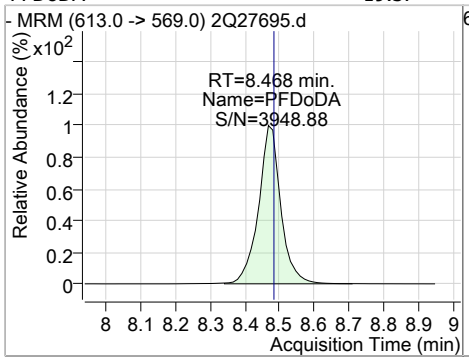
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.08	8.48	0.01	340090				

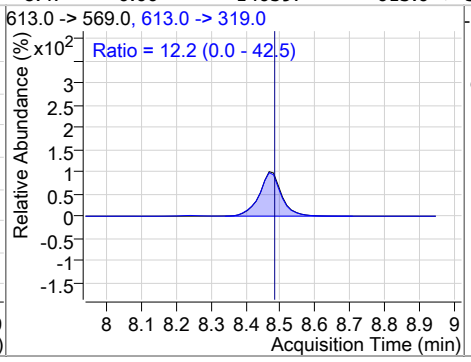


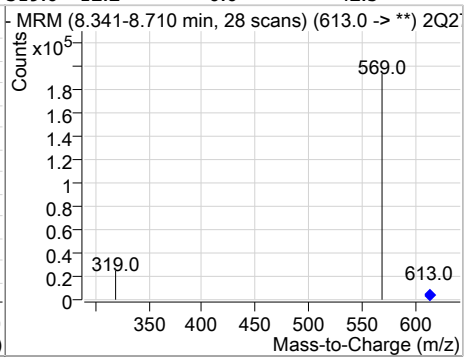




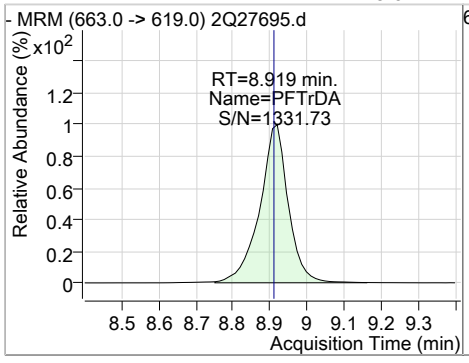
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.37	8.47	0.00	146597	613.0 -> 319.0	12.2	0.0	42.5

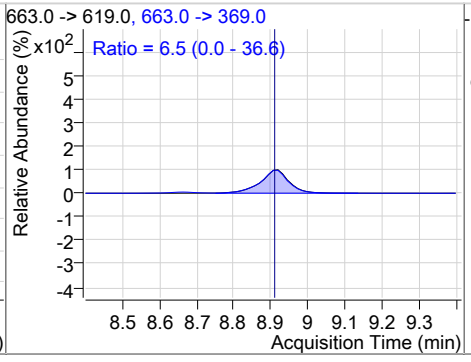


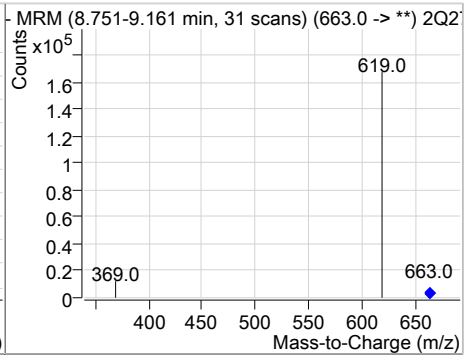




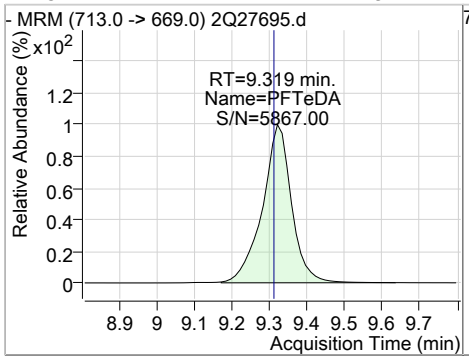
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	18.62	8.92	0.00	127026	663.0 -> 369.0	6.5	0.0	36.6

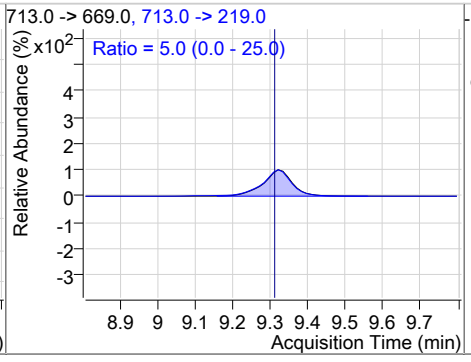


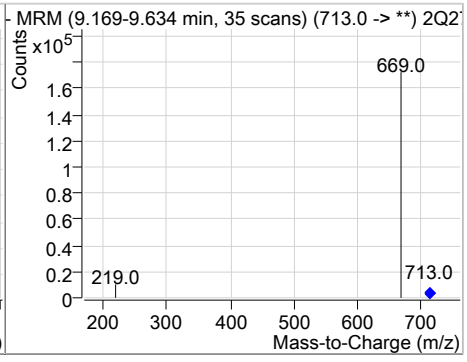




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.47	9.32	0.00	127557	713.0 -> 219.0	5.0	0.0	25.0

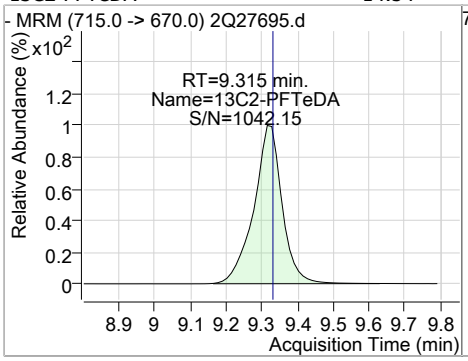


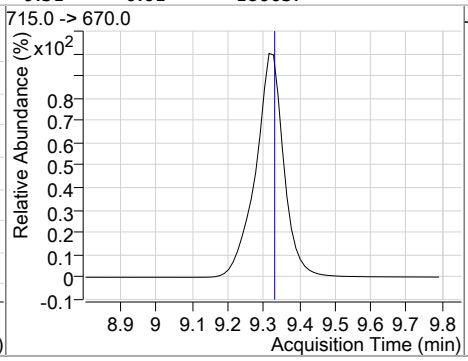


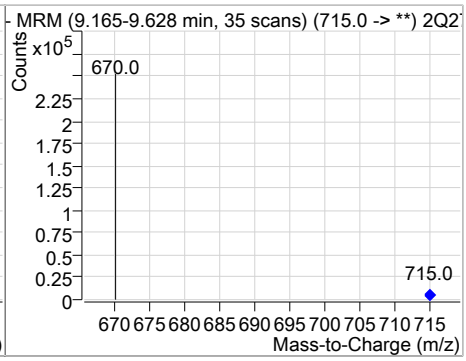


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	14.54	9.31	-0.01	186637				







Manual Integration Approval Summary

Sample Number: OP74180-MSD
Lab FileID: 2Q27695.D
Injection Time: 03/18/19 16:48

Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:52 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1991.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 2:52:04 PM
Sample Name : op74233-ms
Vial : P3-C2
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,130,,,1.0,1,WATER

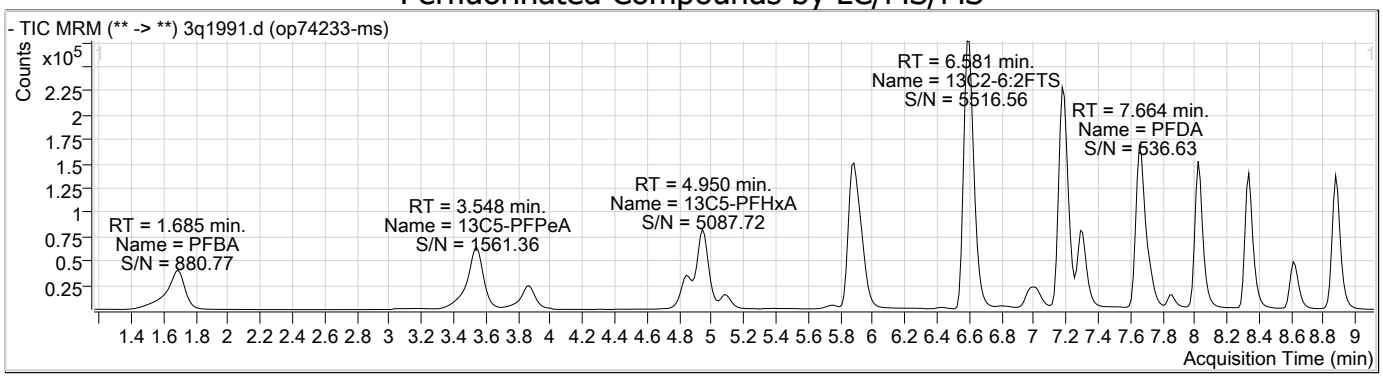
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.689	217.0 -> 172.0	278432	20.00	µg/L	-0.013
M5-PFPeA	3.548	268.0 -> 223.0	201117	20.00	µg/L	-0.013
M5-PFHxA	4.950	318.0 -> 273.0	268551	20.00	µg/L	-0.013
M4-PFHpA	5.879	367.0 -> 322.0	310695	20.00	µg/L	-0.013
M8-PFOA	6.609	421.0 -> 376.0	310420	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	289616	20.00	µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	333336	20.00	µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	340982	20.00	µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	322772	20.00	µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	280688	20.00	µg/L	-0.013
M8-FOSA	7.311	506.0 -> 78.0	192858	20.00	µg/L	0.000
M3-PFBS	3.867	302.0 -> 99.0	45007	20.00	µg/L	-0.013
M3-PFHxS	5.934	402.0 -> 99.0	45673	20.00	µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	68232	20.00	µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	90974	20.00	µg/L	-0.013
M2-6:2FTS	6.581	429.0 -> 409.0	96089	20.00	µg/L	-0.013
M2-8:2FTS	7.689	529.0 -> 509.0	58058	20.00	µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	41407	20.00	µg/L	-0.013
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
13C2-PFOA	6.610	415.0 -> 370.0	399248	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	114135	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.845	329.0 -> 309.0	90907	19.16	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%		
13C2-6:2FTS	6.581	429.0 -> 409.0	96120	21.03	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C2-8:2FTS	7.689	529.0 -> 509.0	58818	21.04	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C2-PFDoDA	8.340	615.0 -> 570.0	321633	16.45	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.2%		
13C2-PFTeDA	8.874	715.0 -> 670.0	280650	15.34	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 76.7%		
13C3-PFBS	3.867	302.0 -> 99.0	44859	17.78	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
13C3-PFHxS	5.934	402.0 -> 99.0	45560	18.03	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%		
13C4-PFBA	1.689	217.0 -> 172.0	276747	16.97	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.8%		
13C4-PFHpA	5.879	367.0 -> 322.0	310695	18.61	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%		
13C5-PFHxA	4.950	318.0 -> 273.0	269253	18.30	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.5%		
13C5-PFPeA	3.548	268.0 -> 223.0	200044	18.07	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.3%		
13C6-PFDA	7.663	519.0 -> 474.0	333856	20.04	µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

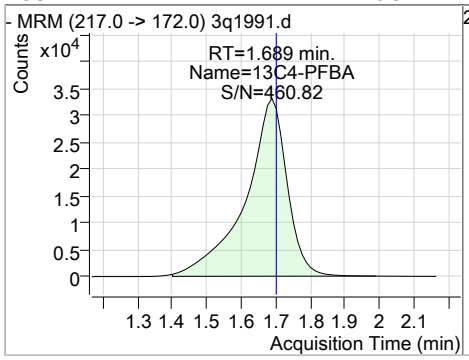
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%			
13C7-PFUnDA	8.026	570.0 -> 525.0	341242	18.41	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.0%			
13C8-FOSA	7.311	506.0 -> 78.0	192702	18.31	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.5%			
13C8-PFOA	6.609	421.0 -> 376.0	310922	19.65	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.3%			
13C8-PFOS	7.183	507.0 -> 99.0	68271	17.72	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.6%			
13C9-PFNA	7.201	472.0 -> 427.0	289967	19.40	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
d3-MeFOSAA	7.722	573.0 -> 419.0	41411	17.44	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.2%			
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.			
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
M2-PFOA	6.610	415.0 -> 370.0	399248	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	114135	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	55360	22.26	µg/L		98
6:2FTS	6.582	427.0 -> 407.0	56096	23.67	µg/L		99
8:2FTS	7.689	527.0 -> 507.0	33283	23.16	µg/L		98
EtFOSAA	7.861	584.0 -> 419.0	18348	19.72	µg/L		100
FOSA	7.301	498.0 -> 78.0	95479	22.06	µg/L		99
MeFOSAA	7.723	570.0 -> 419.0	23941	21.61	µg/L		99
PFBA	1.685	213.0 -> 169.0	63358	24.02	µg/L		100
PFBS	3.870	299.0 -> 80.0	73853	23.59	µg/L		100
PFDA	7.664	513.0 -> 469.0	170132	21.55	µg/L		99
PFDoDA	8.341	613.0 -> 569.0	161287	21.92	µg/L		100
PFDS	7.999	599.0 -> 80.0	15523	14.78	µg/L		93
PFHpA	5.881	363.0 -> 319.0	319466	23.23	µg/L		100
PFHpS	6.618	449.0 -> 80.0	52116	23.97	µg/L		98
PFHxA	4.952	313.0 -> 269.0	125592	26.26	µg/L		100
PFHxS	5.925	399.0 -> 80.0	121865	48.52	µg/L	m	100
PFNA	7.201	463.0 -> 419.0	198370	22.04	µg/L		99
PFNS	7.635	549.0 -> 80.0	36443	19.75	µg/L		97
PFOA	6.611	413.0 -> 369.0	217816	26.21	µg/L	m	98
PFOS	7.186	499.0 -> 80.0	277876	87.94	µg/L	m	98
PFPeA	3.552	263.0 -> 219.0	250434	24.58	µg/L		100
PFPeS	5.082	349.0 -> 80.0	46300	23.78	µg/L		99
PFTeDA	8.877	713.0 -> 669.0	209405	23.99	µg/L		100
PFTrDA	8.615	663.0 -> 619.0	176464	23.62	µg/L		100
PFUnDA	8.028	563.0 -> 519.0	160416	21.69	µg/L		99
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

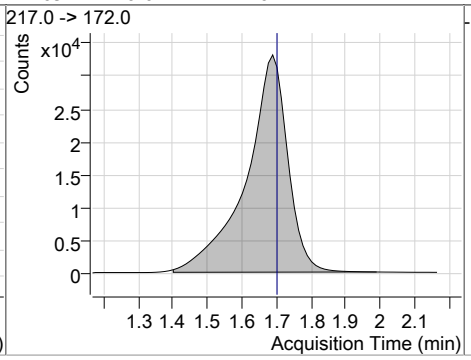
 # = Qualifier out of range, m = manually integrated, + = Area summed

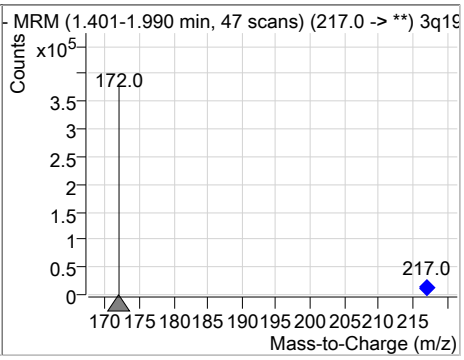
Perfluorinated Compounds by LC/MS/MS



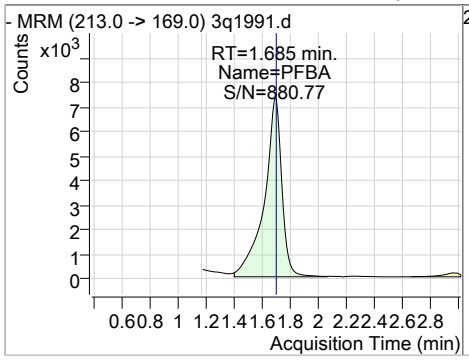
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.97	1.69	-0.01	276747				

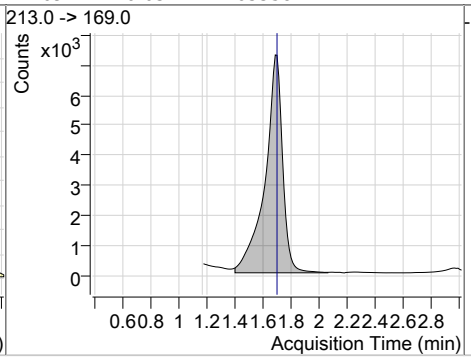


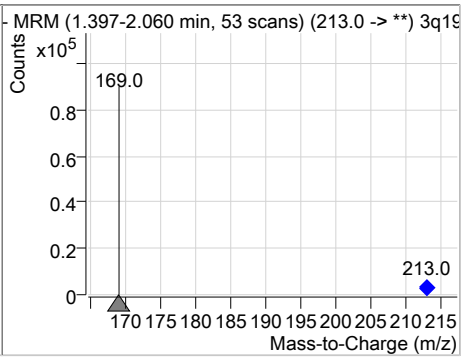




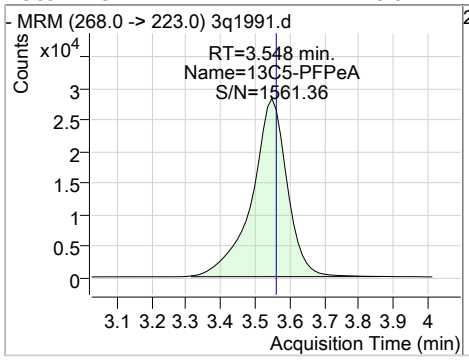
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	24.02	1.69	-0.03	63358				

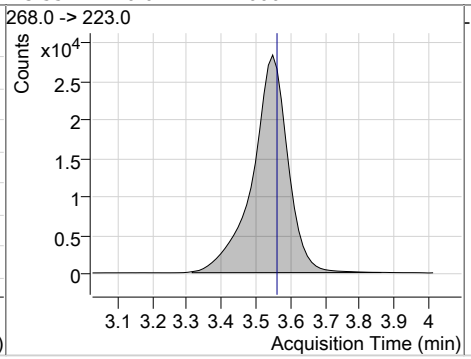


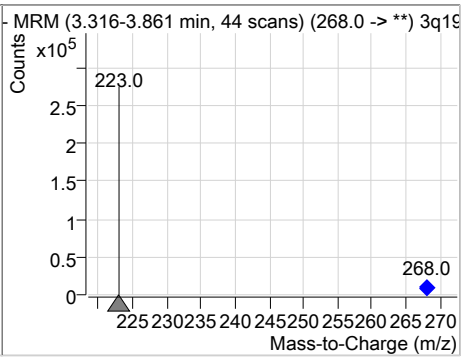




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.07	3.55	-0.01	200044				

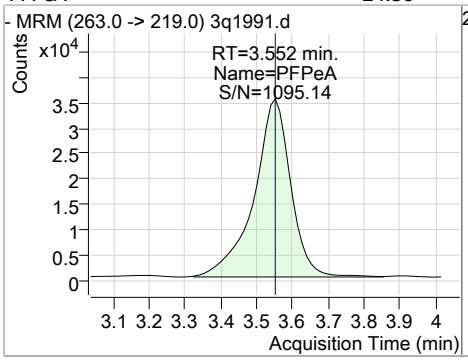


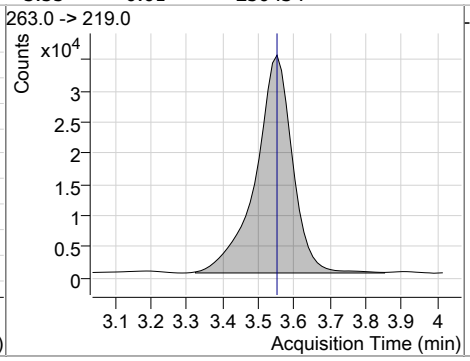


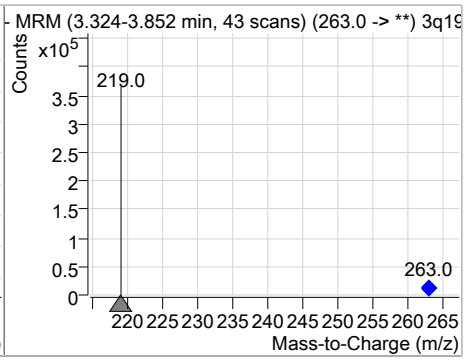


Perfluorinated Compounds by LC/MS/MS

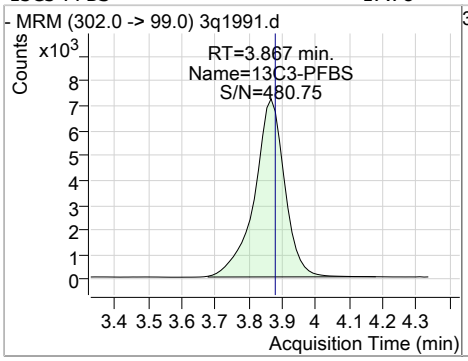
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	24.58	3.55	-0.01	250434				

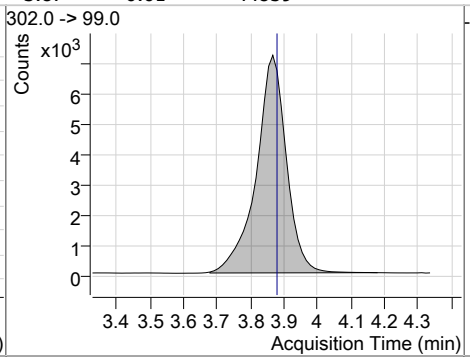


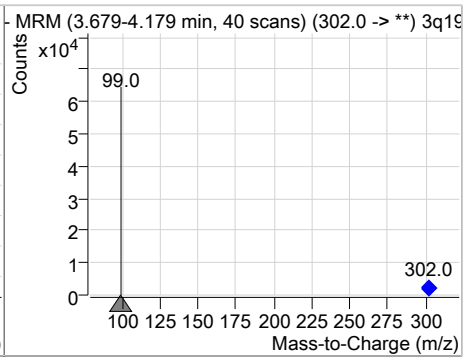




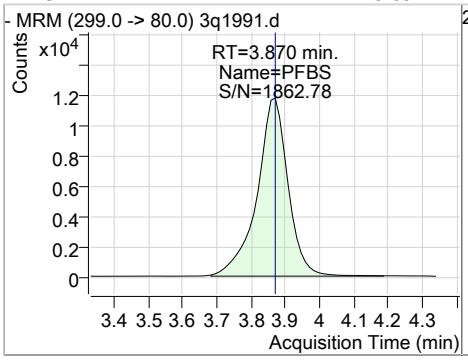
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.78	3.87	-0.01	44859				

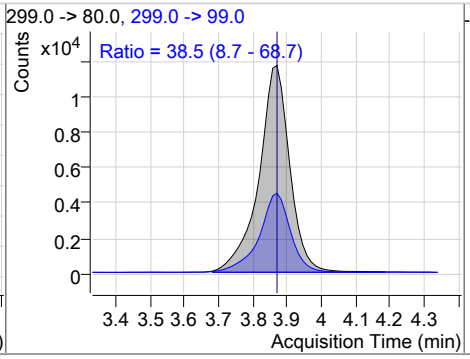


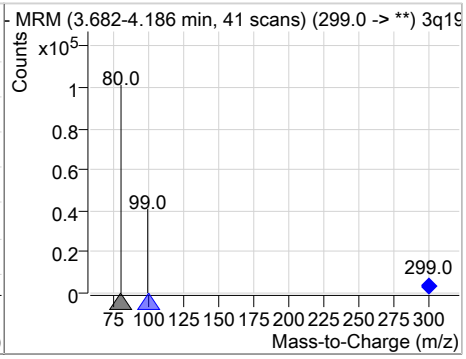




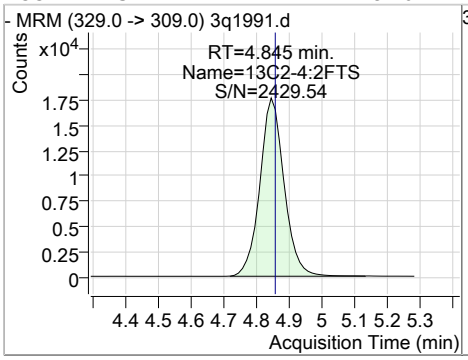
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.59	3.87	-0.01	73853	299.0 -> 99.0	38.5	8.7	68.7

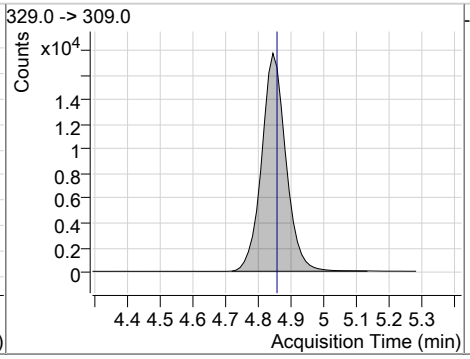


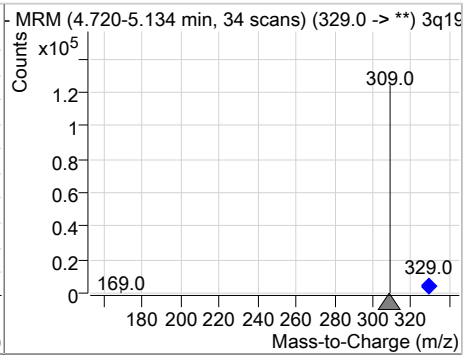




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.16	4.85	-0.01	90907				

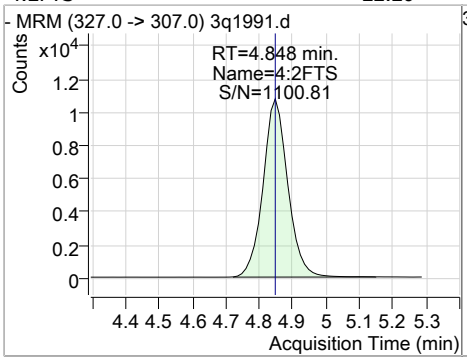


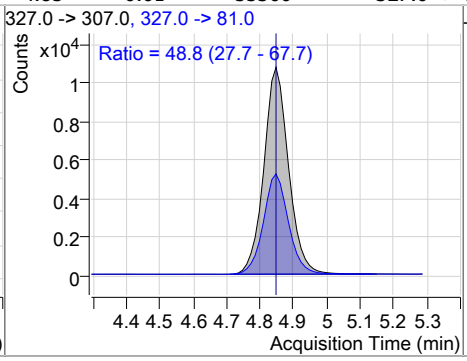


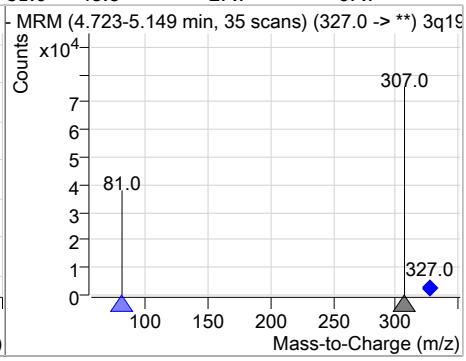


Perfluorinated Compounds by LC/MS/MS

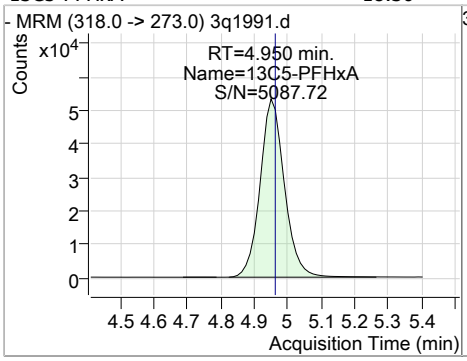
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	22.26	4.85	-0.01	55360	327.0 -> 81.0	48.8	27.7	67.7

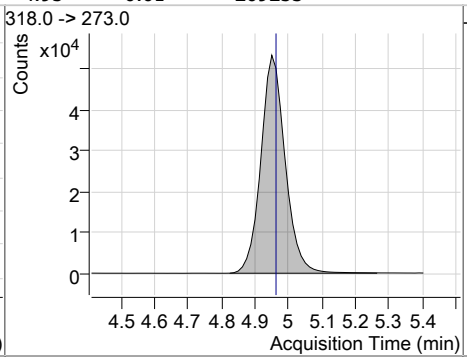


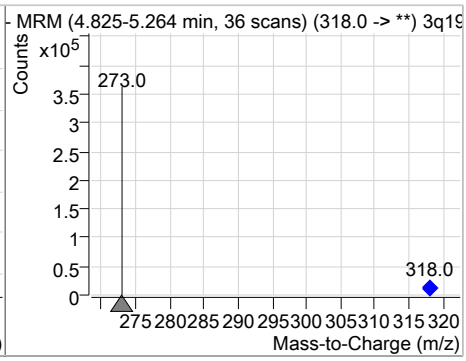




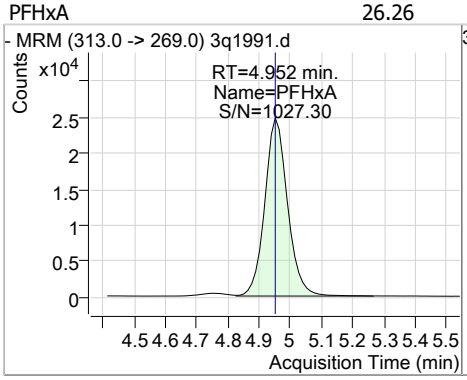
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.30	4.95	-0.01	269253				

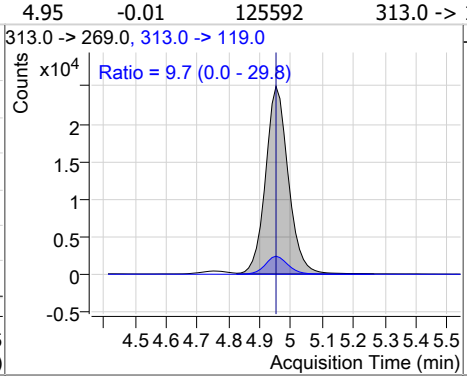


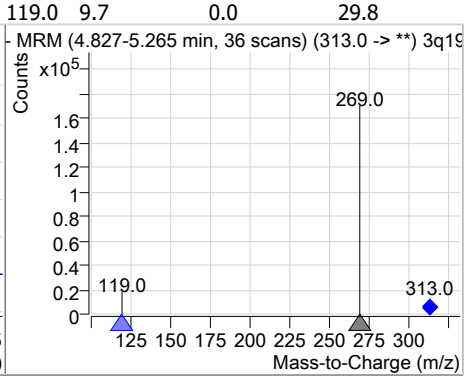




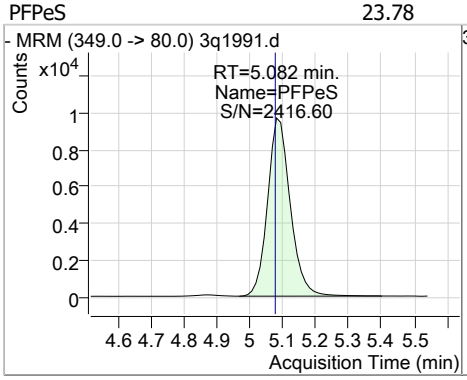
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	26.26	4.95	-0.01	125592	313.0 -> 119.0	9.7	0.0	29.8

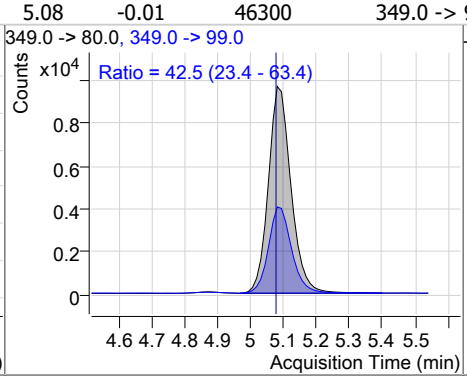


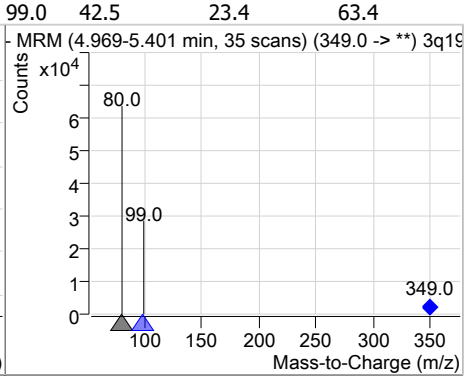




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	23.78	5.08	-0.01	46300	349.0 -> 99.0	42.5	23.4	63.4

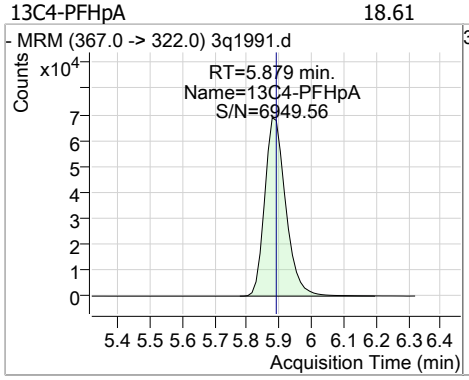


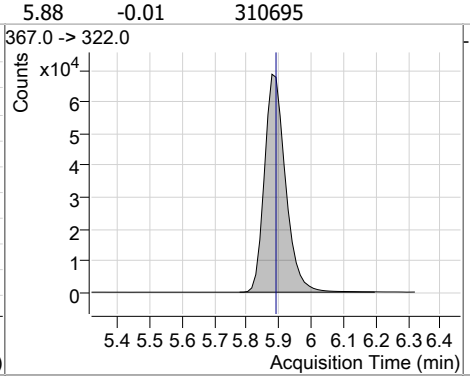


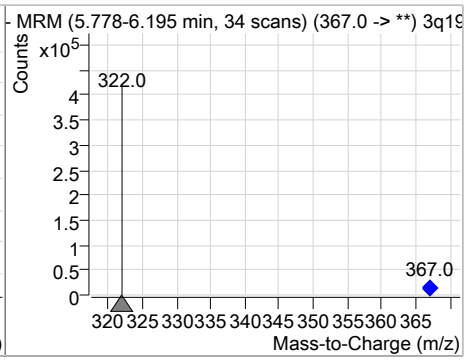


Perfluorinated Compounds by LC/MS/MS

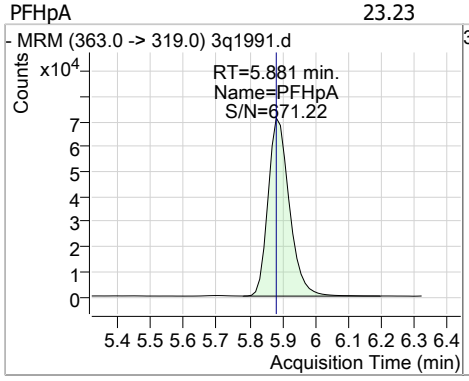
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.61	5.88	-0.01	310695				

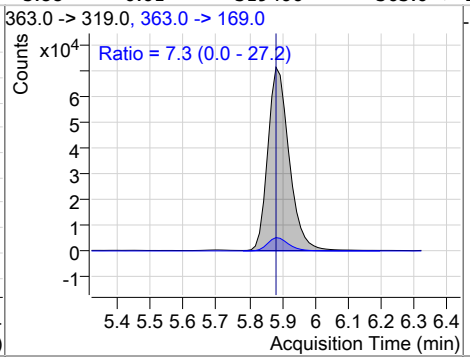


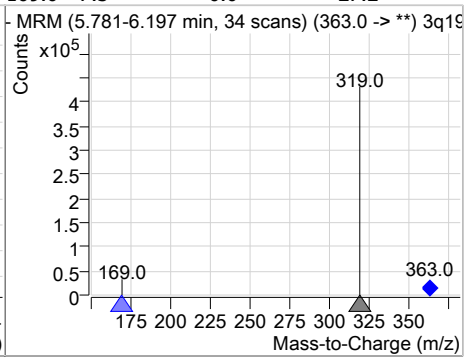




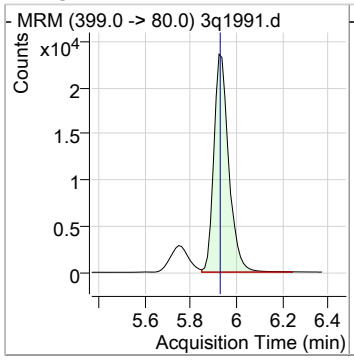
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	23.23	5.88	-0.01	319466	363.0 -> 169.0	7.3	0.0	27.2

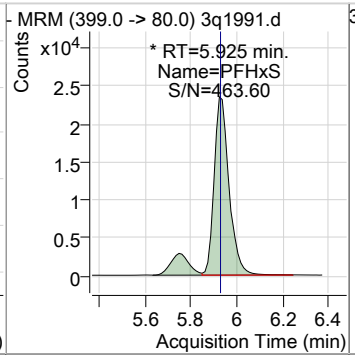


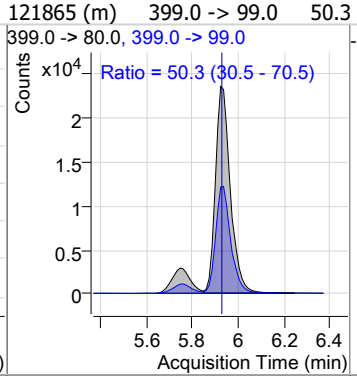


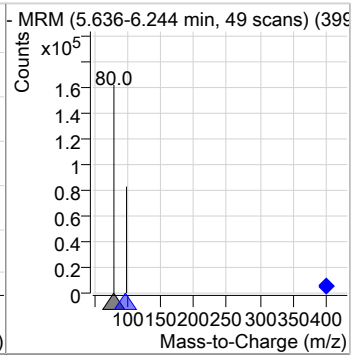


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	48.52	5.92	-0.01	121865 (m)	399.0 -> 99.0	50.3	30.5	70.5

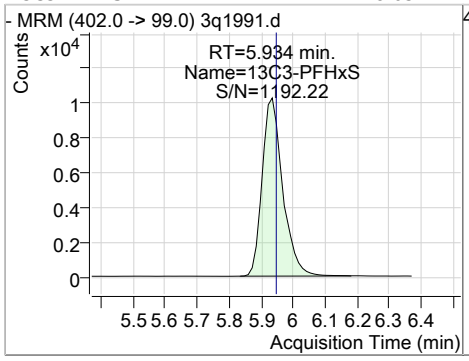


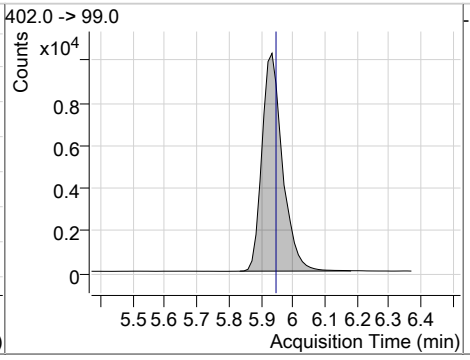


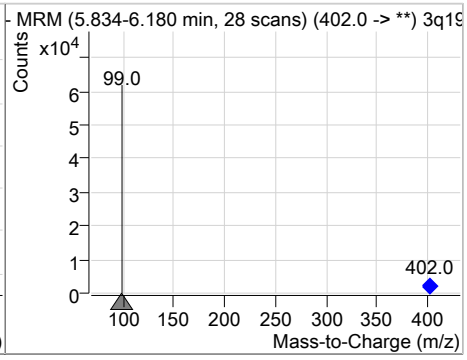




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.03	5.93	-0.01	45560				

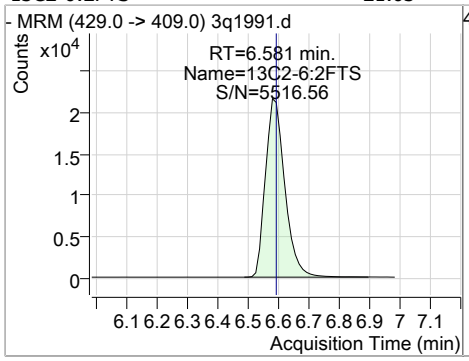


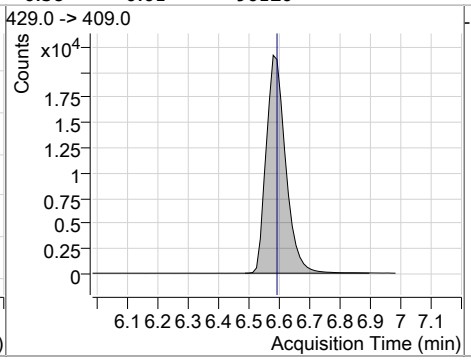


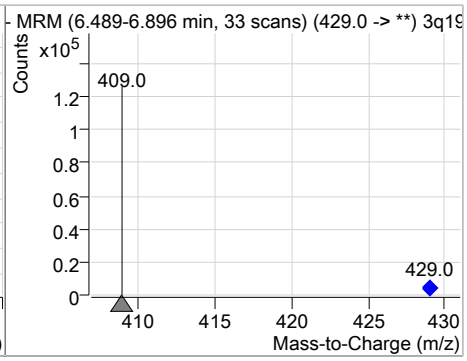


Perfluorinated Compounds by LC/MS/MS

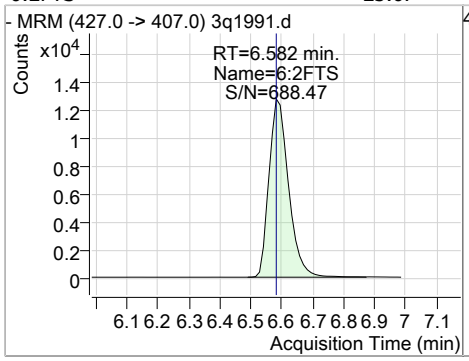
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.03	6.58	-0.01	96120				

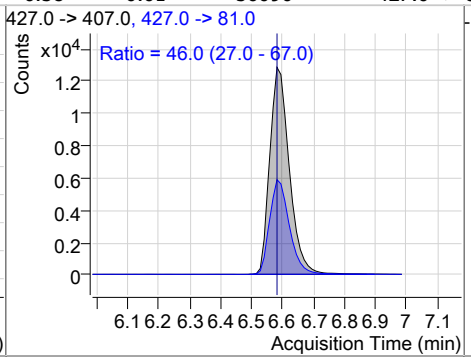


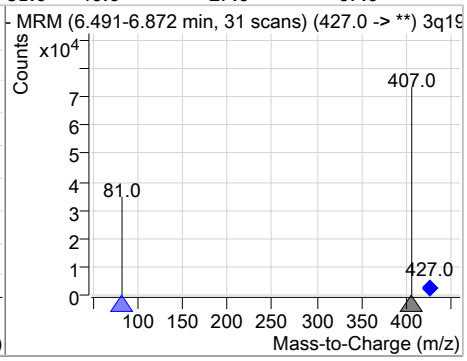




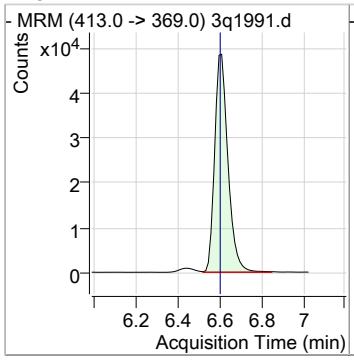
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	23.67	6.58	-0.01	56096	427.0 -> 81.0	46.0	27.0	67.0

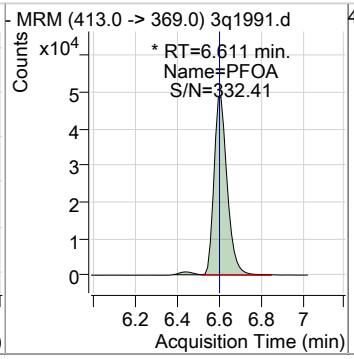


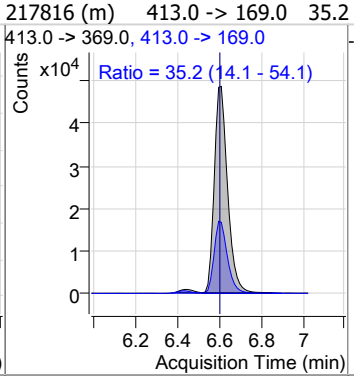


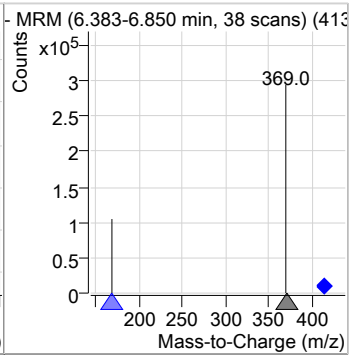


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	26.21	6.61	0.00	217816 (m)	413.0 -> 169.0	35.2	14.1	54.1

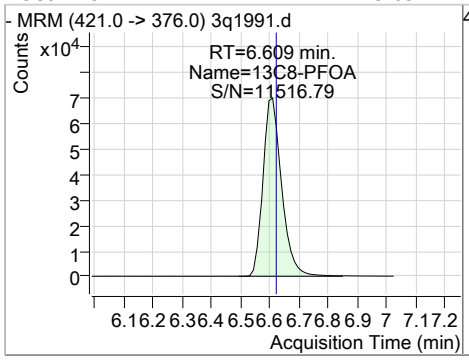


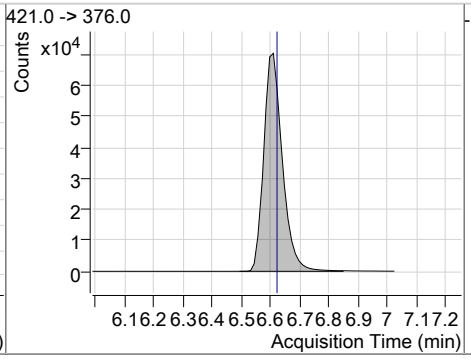


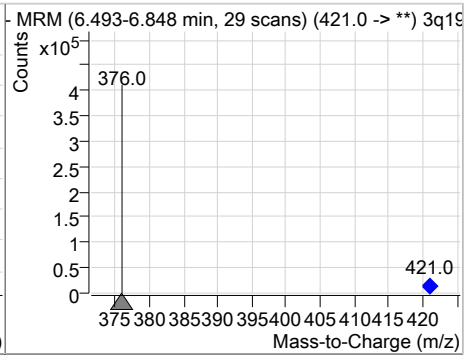




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.65	6.61	-0.01	310922				

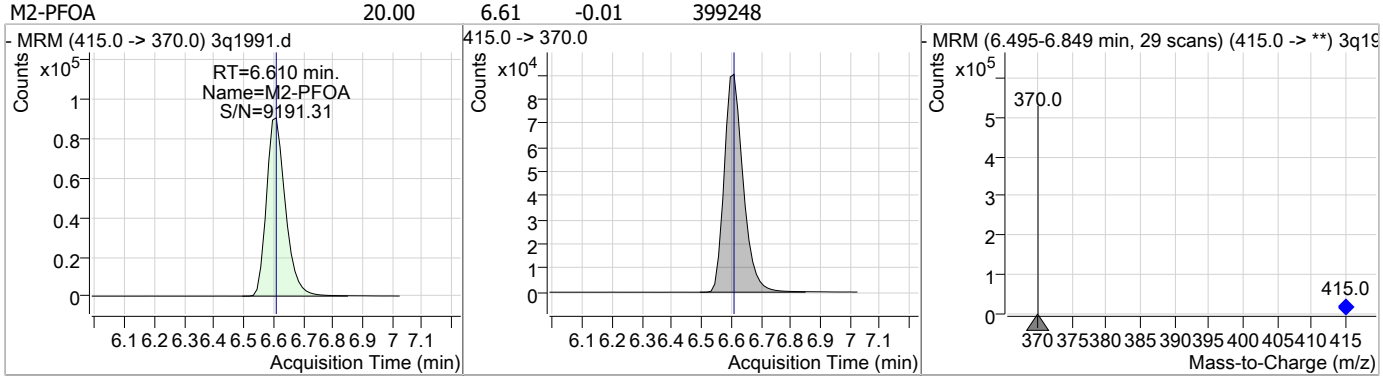




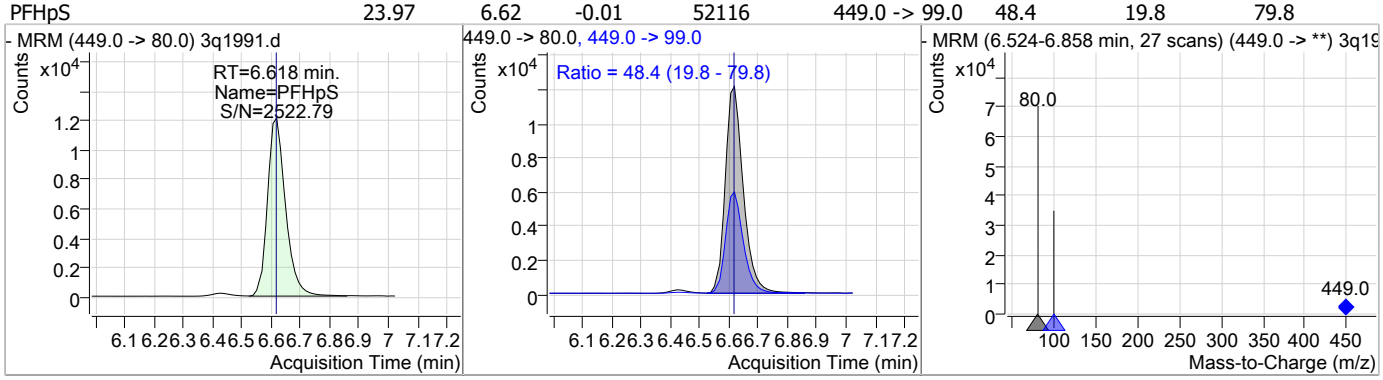


Perfluorinated Compounds by LC/MS/MS

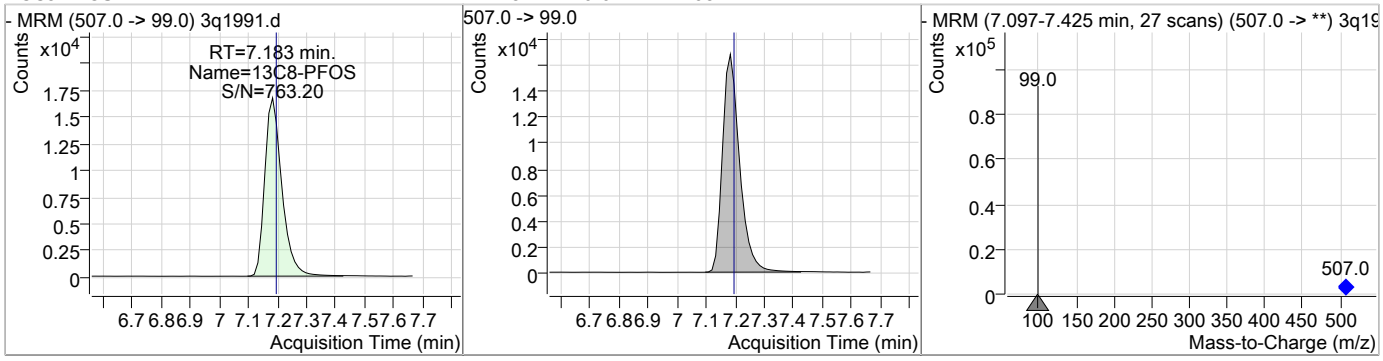
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	399248				



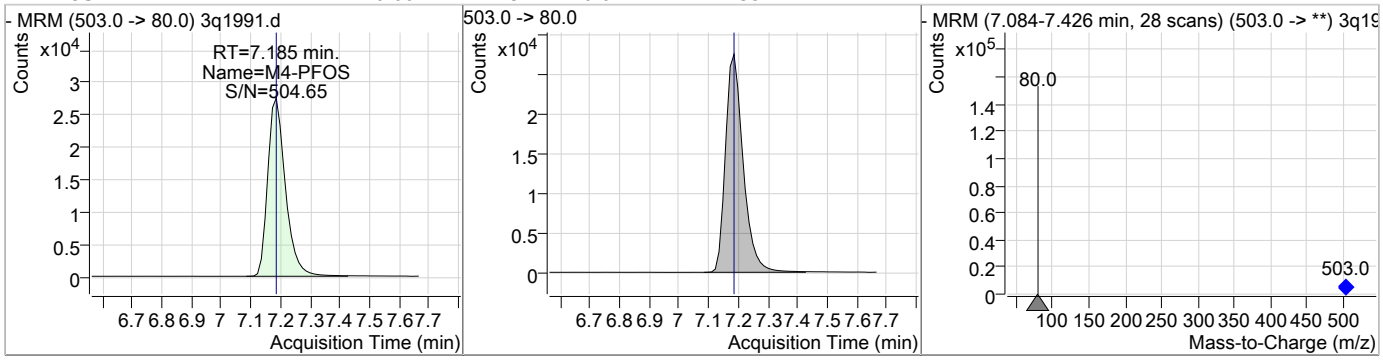
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	23.97	6.62	-0.01	52116	449.0 -> 99.0	48.4	19.8	79.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.72	7.18	-0.01	68271				

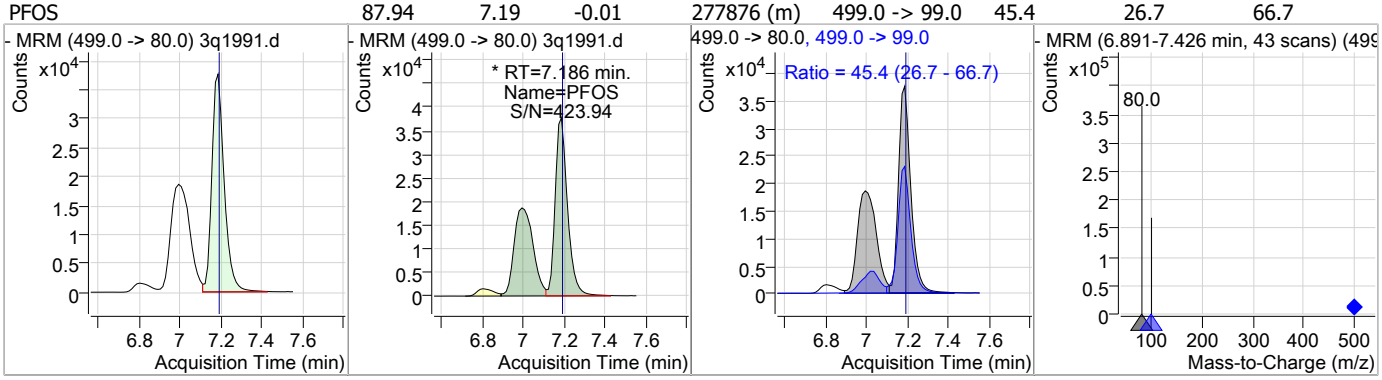


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	114135				

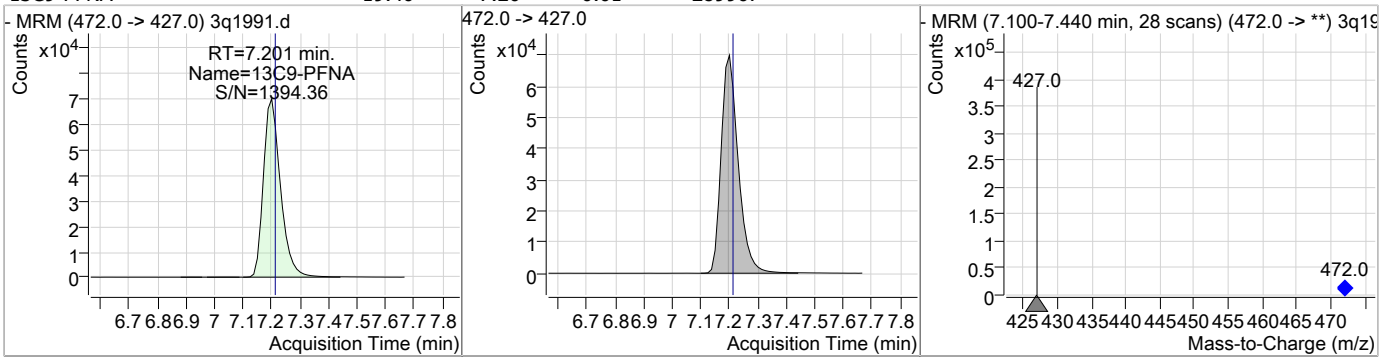


Perfluorinated Compounds by LC/MS/MS

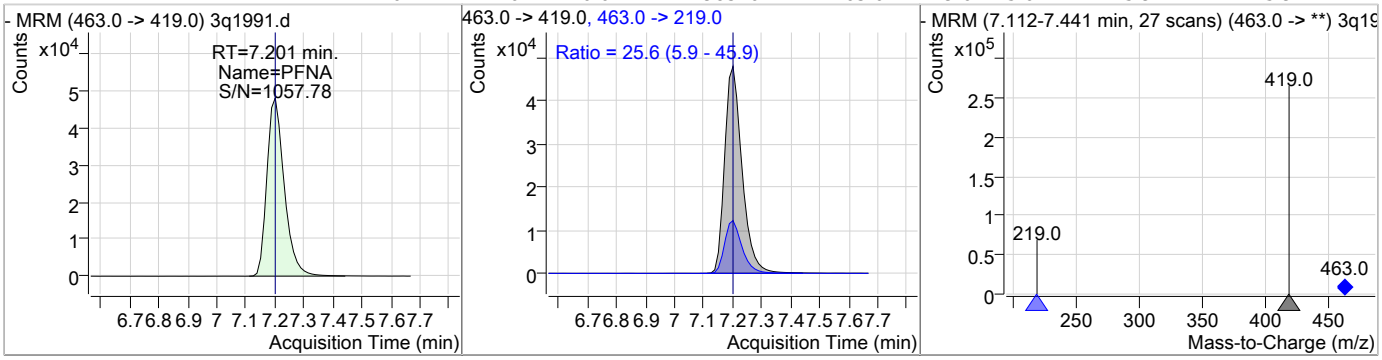
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	87.94	7.19	-0.01	277876 (m)	499.0 -> 99.0	45.4	26.7	66.7



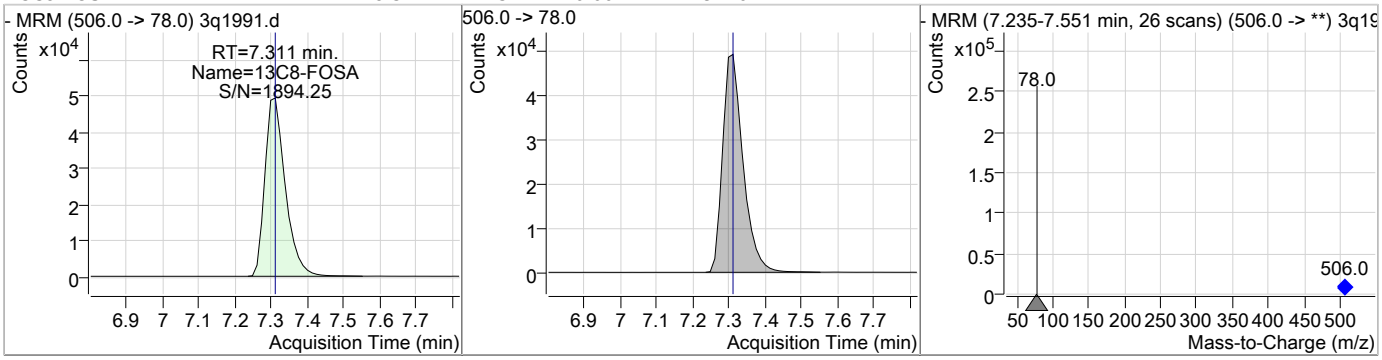
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.40	7.20	-0.01	289967				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	22.04	7.20	-0.01	198370	463.0 -> 219.0	25.6	5.9	45.9

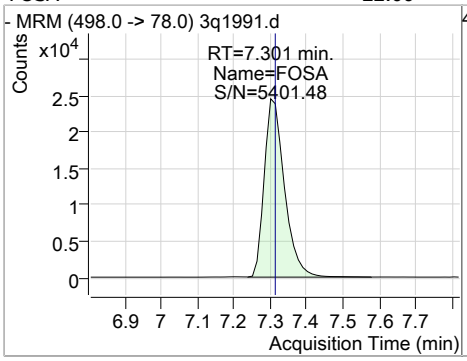


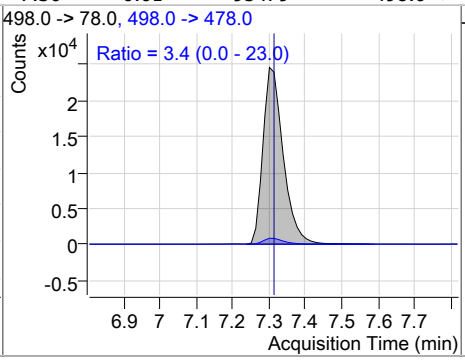
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.31	7.31	0.00	192702				

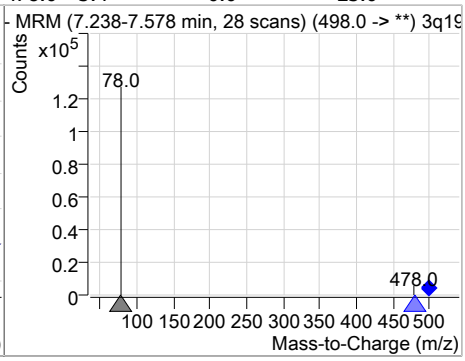


Perfluorinated Compounds by LC/MS/MS

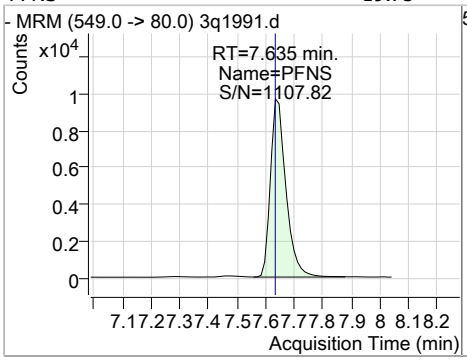
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	22.06	7.30	-0.01	95479	498.0 -> 478.0	3.4	0.0	23.0

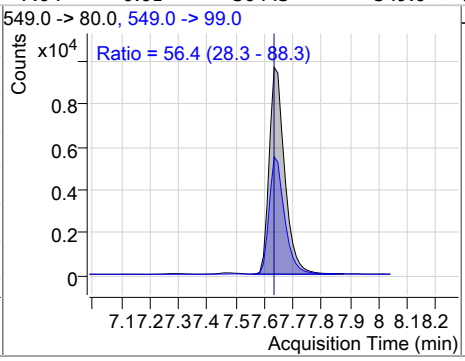


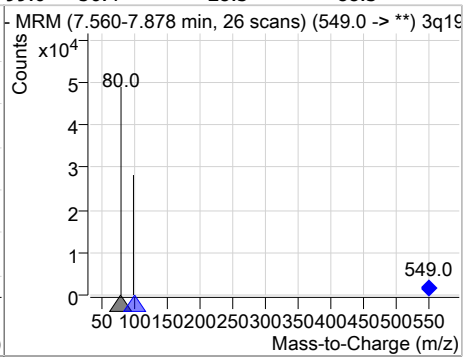




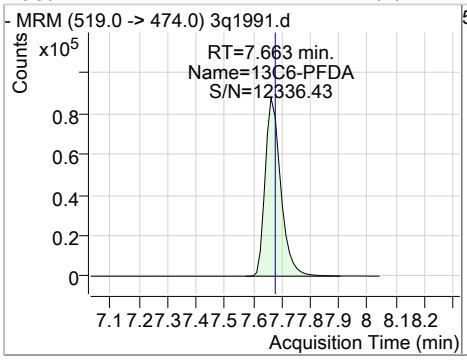
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	19.75	7.64	-0.01	36443	549.0 -> 99.0	56.4	28.3	88.3

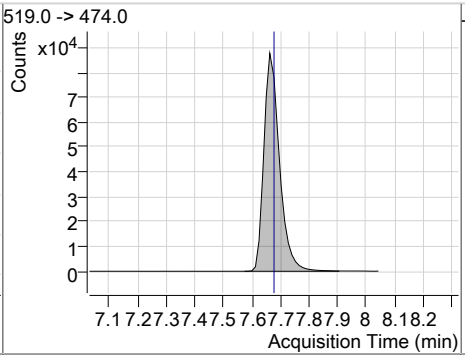


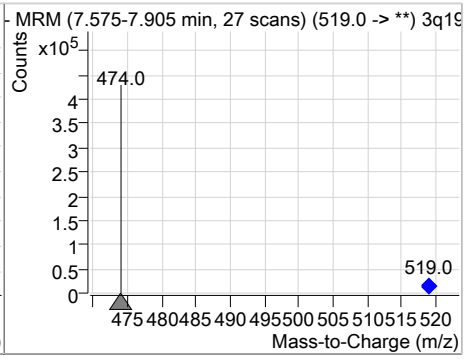




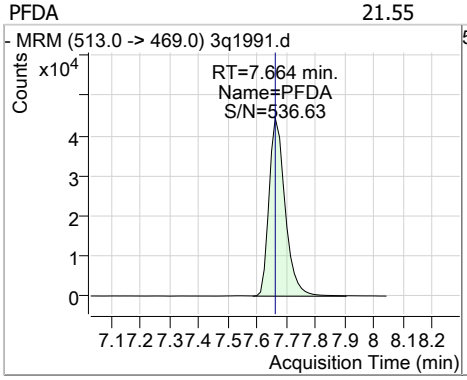
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.04	7.66	-0.01	333856				

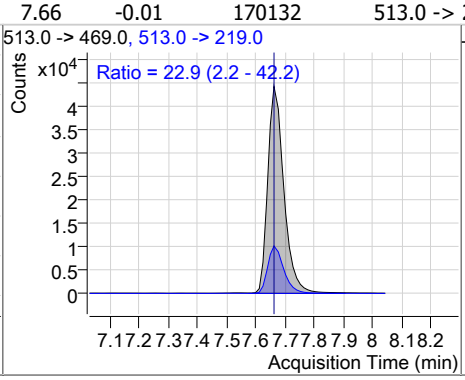


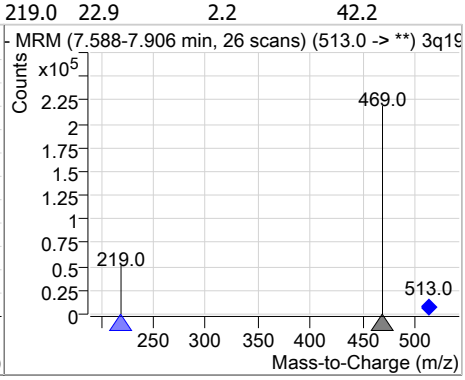




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	21.55	7.66	-0.01	170132	513.0 -> 219.0	22.9	2.2	42.2

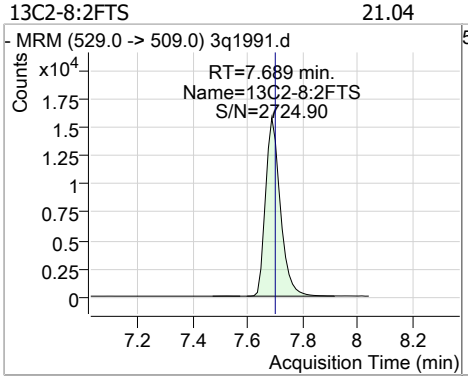


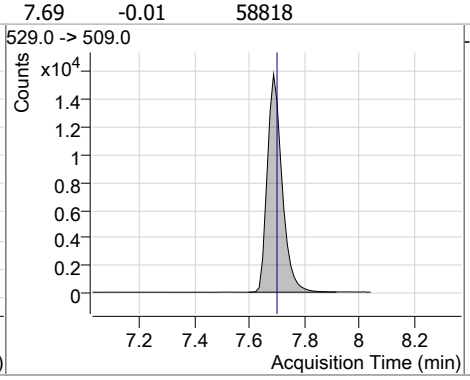


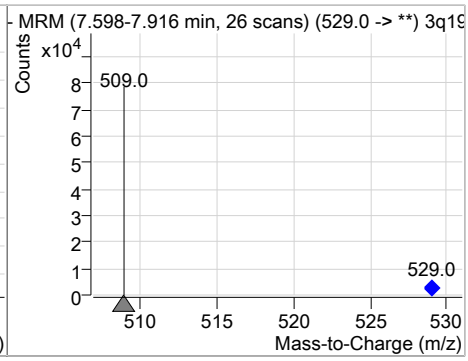


Perfluorinated Compounds by LC/MS/MS

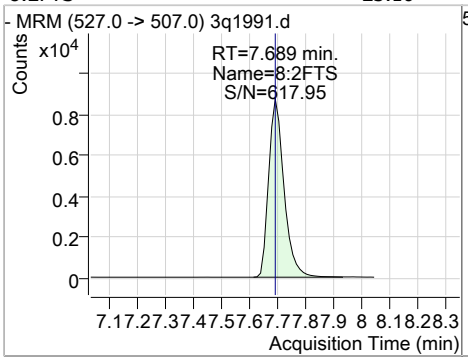
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	21.04	7.69	-0.01	58818				

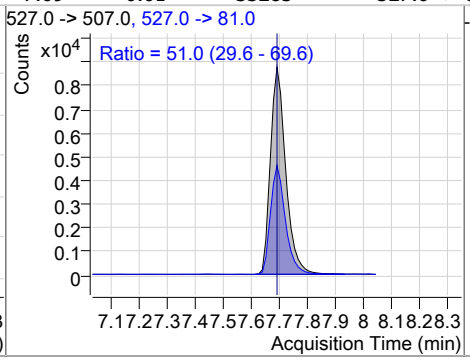


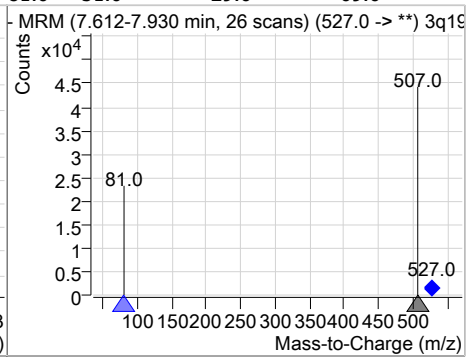




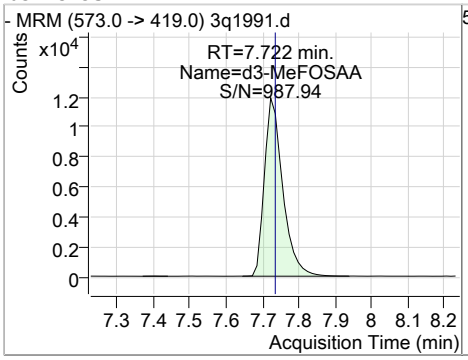
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	23.16	7.69	-0.01	33283	527.0 -> 81.0	51.0	29.6	69.6

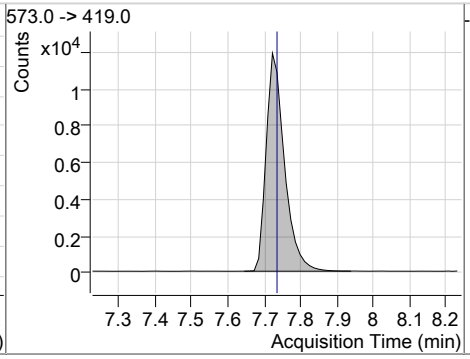


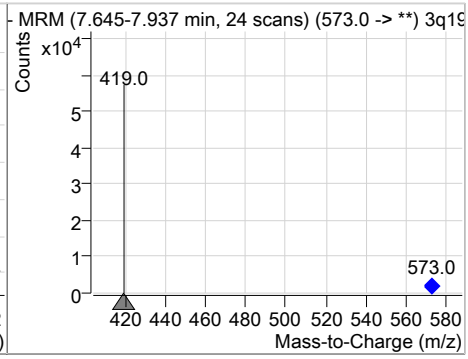




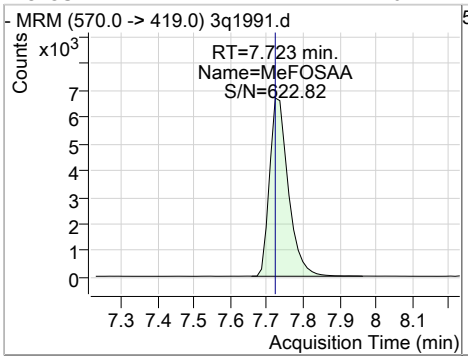
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	17.44	7.72	-0.01	41411				

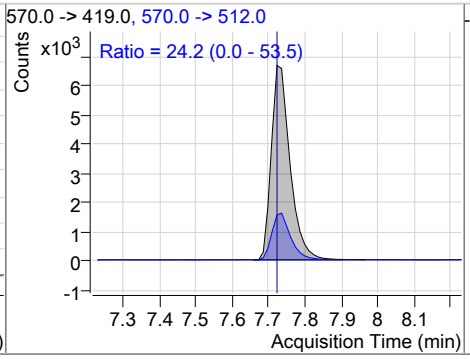


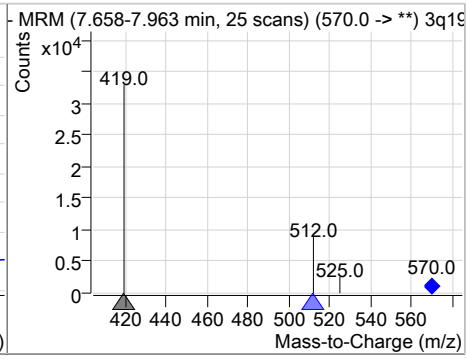




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	21.61	7.72	-0.01	23941	570.0 -> 512.0	24.2	0.0	53.5

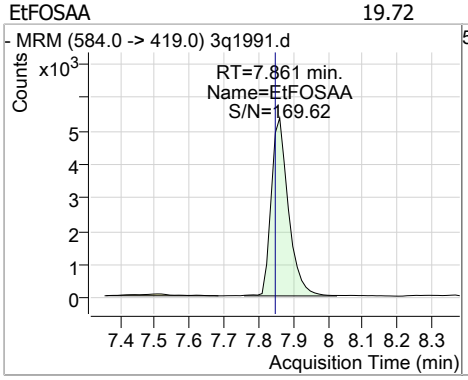


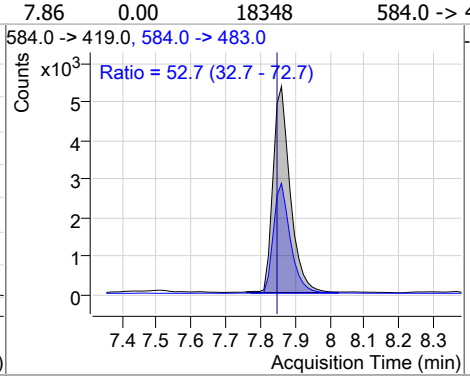


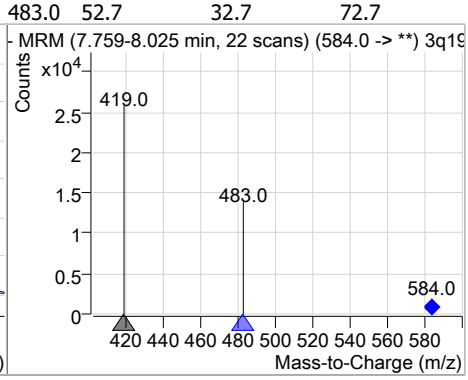


Perfluorinated Compounds by LC/MS/MS

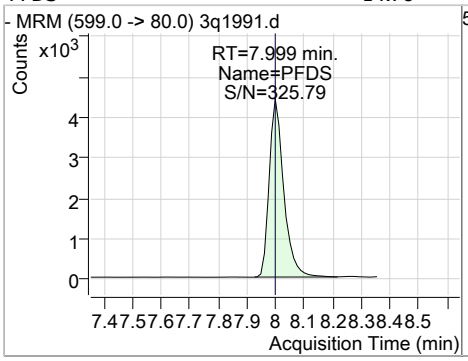
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.72	7.86	0.00	18348	584.0 -> 483.0	52.7	32.7	72.7

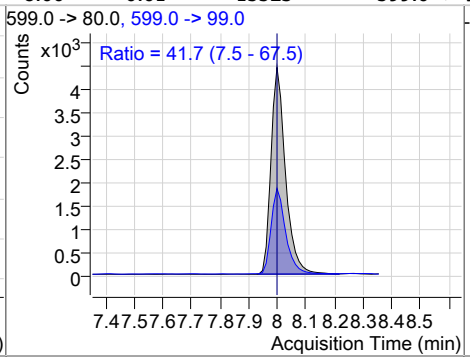


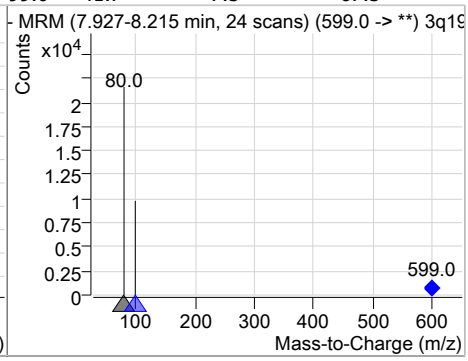




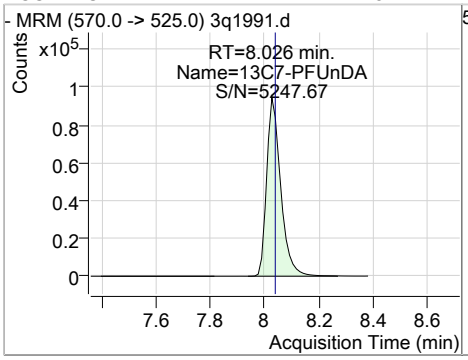
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	14.78	8.00	-0.01	15523	599.0 -> 99.0	41.7	7.5	67.5

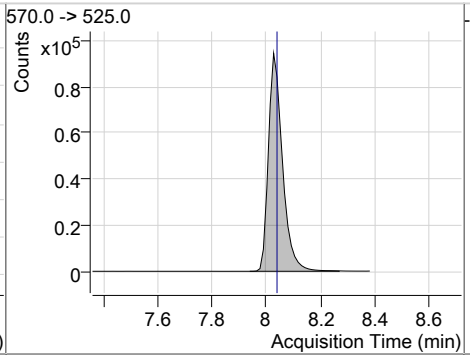


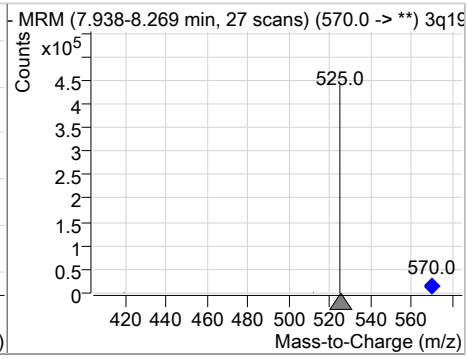




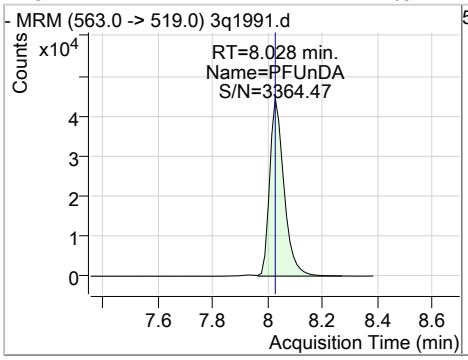
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.41	8.03	-0.01	341242				

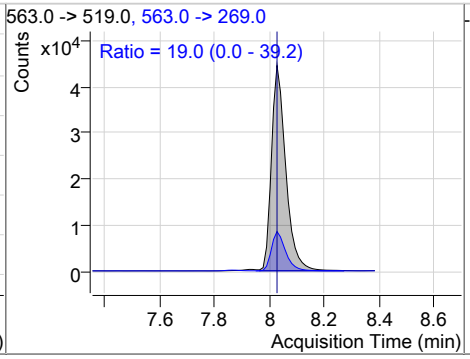


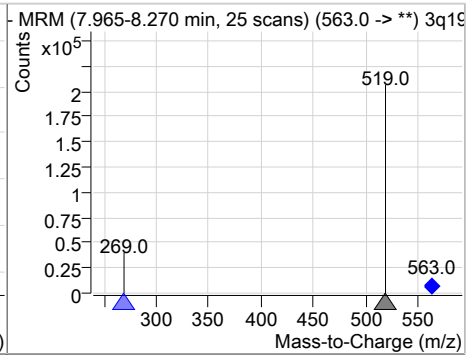




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	21.69	8.03	-0.01	160416	563.0 -> 269.0	19.0	0.0	39.2

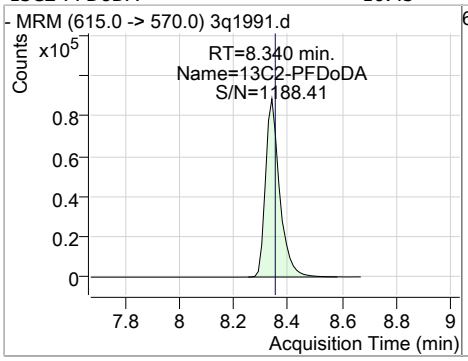


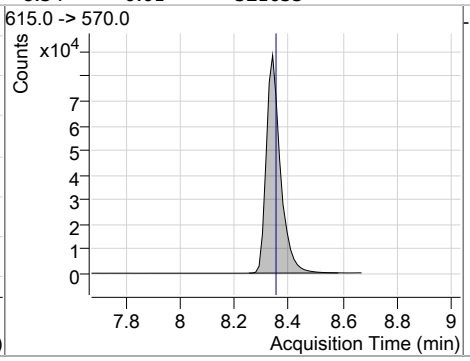


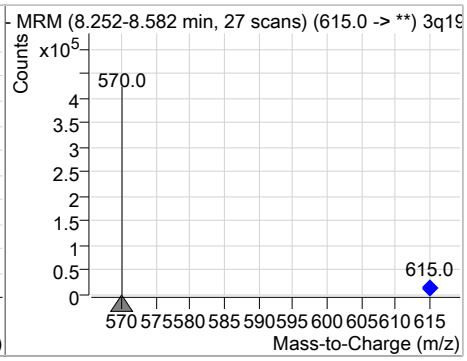


Perfluorinated Compounds by LC/MS/MS

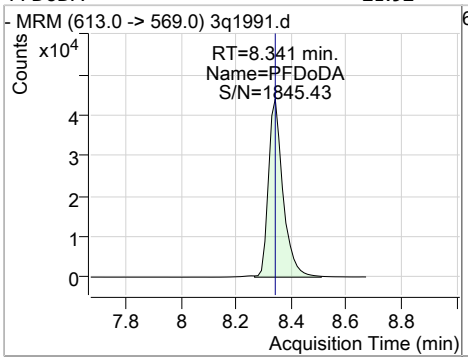
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.45	8.34	-0.01	321633				

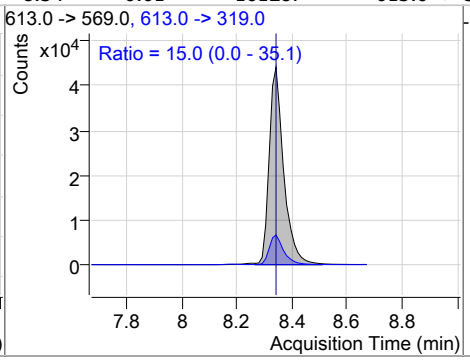


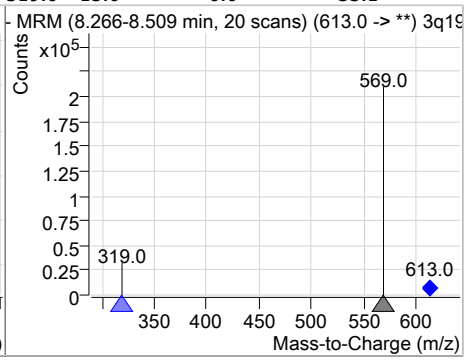




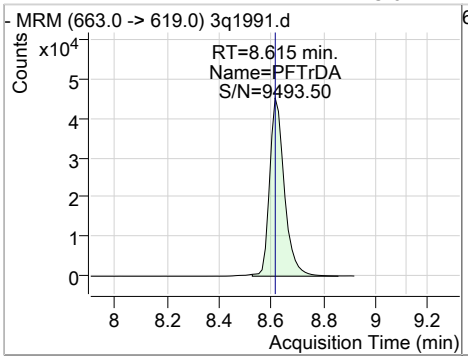
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	21.92	8.34	-0.01	161287	613.0 -> 319.0	15.0	0.0	35.1

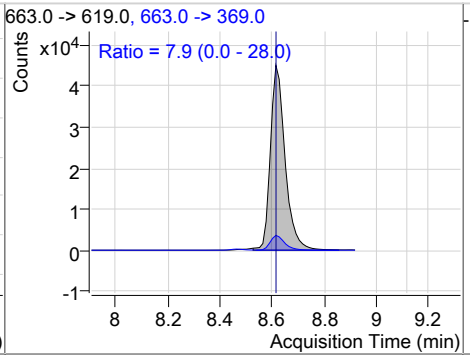


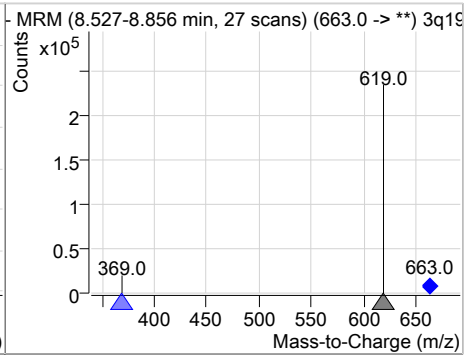




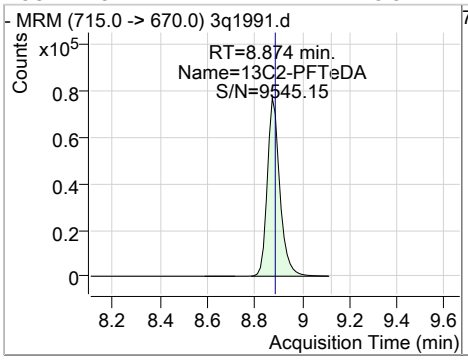
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	23.62	8.62	-0.01	176464	663.0 -> 369.0	7.9	0.0	28.0

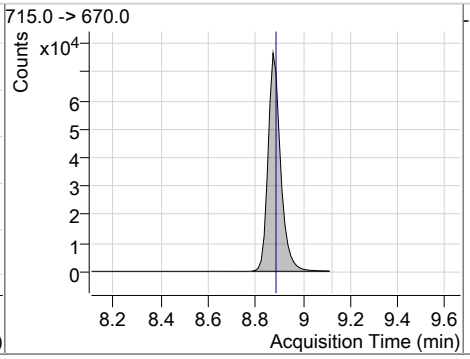


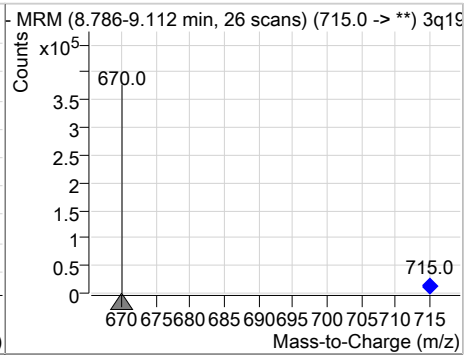




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.34	8.87	-0.01	280650				

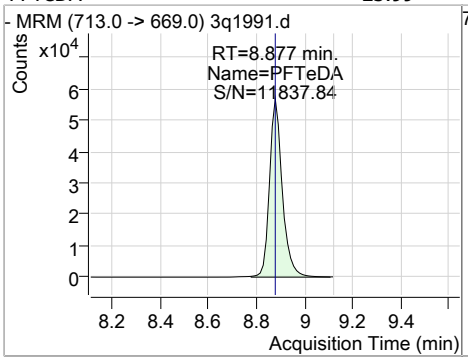


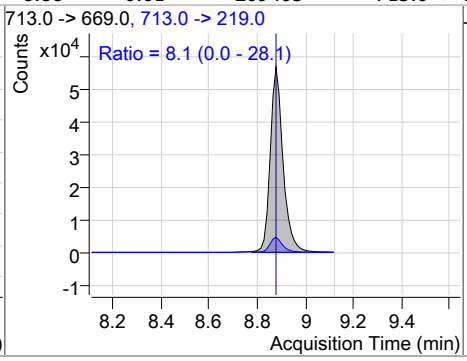


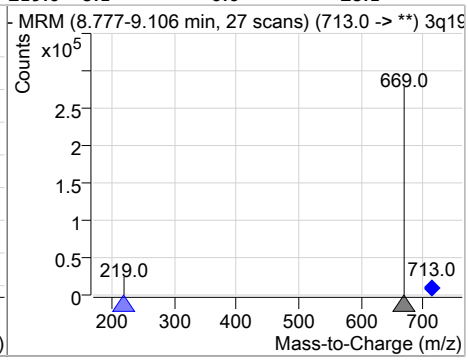


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	23.99	8.88	-0.01	209405	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: OP74233-MS
Lab FileID: 3Q1991.D
Injection Time: 03/21/19 14:52
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:49 Nancy Saunders
Supervisor approved: 03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.92	Split peak
Perfluorooctanoic acid	335-67-1		6.61	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27660.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 5:56:40 PM
Sample Name : OP74164-DUP
Vial : Vial 59
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op74164,S2Q441,250,,,1.0,1,water

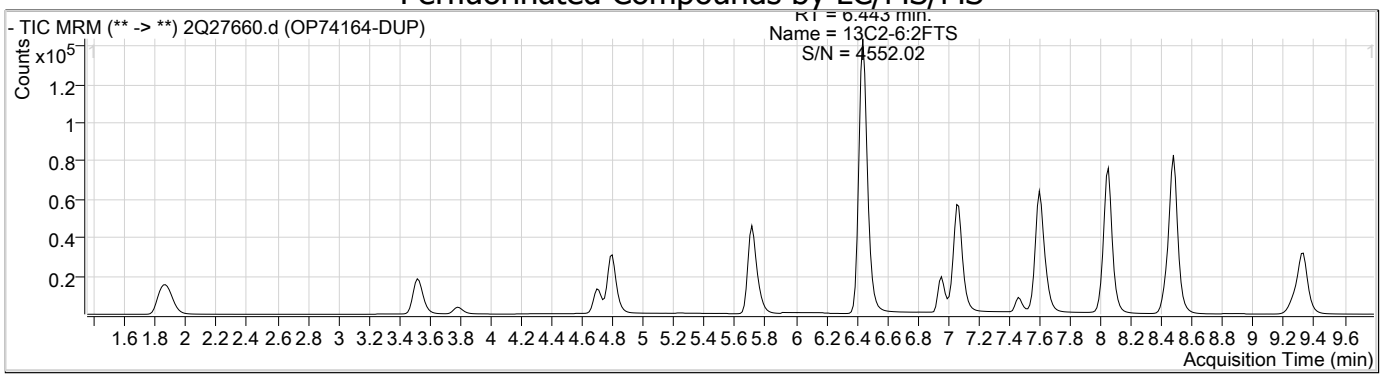
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	310735	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	40520	20.00	µg/L	0.031
M4-PFBA	1.865	217.0 -> 172.0	102698	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	86272	20.00	µg/L	0.032
M5-PFHxA	4.801	318.0 -> 273.0	123486	20.00	µg/L	0.038
M4-PFHpA	5.718	367.0 -> 322.0	178634	20.00	µg/L	0.029
M8-PFOA	6.446	421.0 -> 376.0	203016	20.00	µg/L	0.031
M9-PFNA	7.078	472.0 -> 427.0	184857	20.00	µg/L	0.033
M6-PFDA	7.607	519.0 -> 474.0	231324	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	310391	20.00	µg/L	0.028
M2-PFDoDA	8.478	615.0 -> 570.0	365327	20.00	µg/L	0.028
M2-PFTeDA	9.327	715.0 -> 670.0	177916	20.00	µg/L	0.025
M8-FOSA	6.959	506.0 -> 78.0	66907	20.00	µg/L	0.032
M3-PFBS	3.780	302.0 -> 99.0	15664	20.00	µg/L	0.025
M3-PFHxS	5.761	402.0 -> 99.0	16719	20.00	µg/L	0.038
M8-PFOS	7.061	507.0 -> 99.0	17537	20.00	µg/L	0.046
M2-4:2FTS	4.696	329.0 -> 309.0	51940	20.00	µg/L	0.028
M2-6:2FTS	6.443	429.0 -> 409.0	64509	20.00	µg/L	0.042
M2-8:2FTS	7.642	529.0 -> 509.0	33092	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	26132	20.00	µg/L	0.029
M3-HFPO-DA	-	287.0 -> 169.0	-	N.D.		
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	51965	12.52	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.6%		
13C2-6:2FTS	6.443	429.0 -> 409.0	64501	14.80	µg/L	0.042
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 74.0%		
13C2-8:2FTS	7.642	529.0 -> 509.0	33089	11.65	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.3%		
13C2-PFDoDA	8.478	615.0 -> 570.0	365356	13.09	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 65.5%		
13C2-PFTeDA	9.327	715.0 -> 670.0	177306	9.17	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 45.9%		
13C3-PFBS	3.780	302.0 -> 99.0	15665	12.94	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.7%		
13C3-PFHxS	5.761	402.0 -> 99.0	16695	12.26	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 61.3%		
13C4-PFBA	1.865	217.0 -> 172.0	102468	11.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 59.1%		
13C4-PFHpA	5.718	367.0 -> 322.0	178504	12.40	µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.0%		
13C5-PFHxA	4.801	318.0 -> 273.0	123374	12.03	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.1%		
13C5-PFPeA	3.524	268.0 -> 223.0	86268	12.03	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 60.1%		
13C6-PFDA	7.607	519.0 -> 474.0	231410	12.50	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

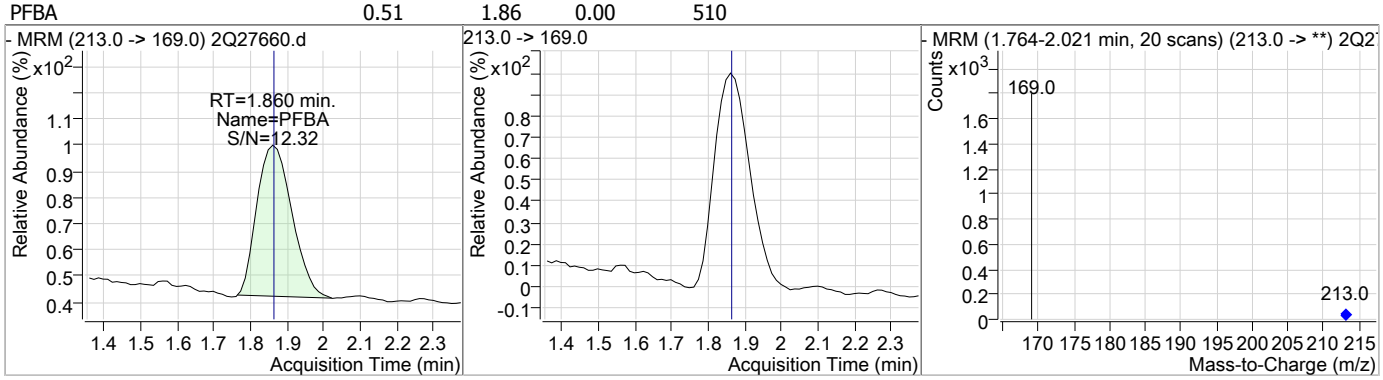
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 62.5%	
13C7-PFUnDA	8.054	570.0 -> 525.0	310307	12.95 µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.8%	
13C8-FOSA	6.959	506.0 -> 78.0	66912	11.75 µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 58.7%	
13C8-PFOA	6.446	421.0 -> 376.0	202959	13.63 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 68.1%	
13C8-PFOS	7.061	507.0 -> 99.0	17559	10.62 µg/L	0.046
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 53.1%	
13C9-PFNA	7.078	472.0 -> 427.0	184854	12.90 µg/L	0.033
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 64.5%	
d3-MeFOSAA	7.459	573.0 -> 419.0	26130	10.93 µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 54.6%	
M2-PFOA	6.448	415.0 -> 370.0	310922	19.99 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
M4-PFOS	7.048	503.0 -> 80.0	40518	19.99 µg/L	0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	-	287.0 -> 169.0	-	N.D.	
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%	
Target Compounds					**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.	
6:2FTS	-	427.0 -> 407.0	-	N.D.	
8:2FTS	-	527.0 -> 507.0	-	N.D.	
EtFOSAA	-	584.0 -> 419.0	-	N.D.	
FOSA	-	498.0 -> 78.0	-	N.D.	
MeFOSAA	-	570.0 -> 419.0	-	N.D.	
PFBA	1.860	213.0 -> 169.0	510	0.51 µg/L	100
PFBS	-	299.0 -> 80.0	-	N.D.	
PFDA	-	513.0 -> 469.0	-	N.D.	
PFDoDA	-	613.0 -> 569.0	-	N.D.	
PFDS	-	599.0 -> 80.0	-	N.D.	
PFHpA	-	363.0 -> 319.0	-	N.D.	
PFHpS	-	449.0 -> 80.0	-	N.D.	
PFHxA	-	313.0 -> 269.0	-	N.D.	
PFHxS	-	399.0 -> 80.0	-	N.D.	
PFNA	-	463.0 -> 419.0	-	N.D.	
PFNS	-	549.0 -> 80.0	-	N.D.	
PFOA	-	413.0 -> 369.0	-	N.D.	
PFOS	-	499.0 -> 80.0	-	N.D.	
PFPeA	-	263.0 -> 219.0	-	N.D.	
PFPeS	-	349.0 -> 80.0	-	N.D.	
PFTeDA	-	713.0 -> 669.0	-	N.D.	
PFTrDA	-	663.0 -> 619.0	-	N.D.	
PFUnDA	-	563.0 -> 519.0	-	N.D.	
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.	
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.	
ADONA	-	377.0 -> 251.0	-	N.D.	
HFPO-DA	-	329.0 -> 169.0	-	N.D.	

 # = Qualifier out of range, m = manually integrated, + = Area summed

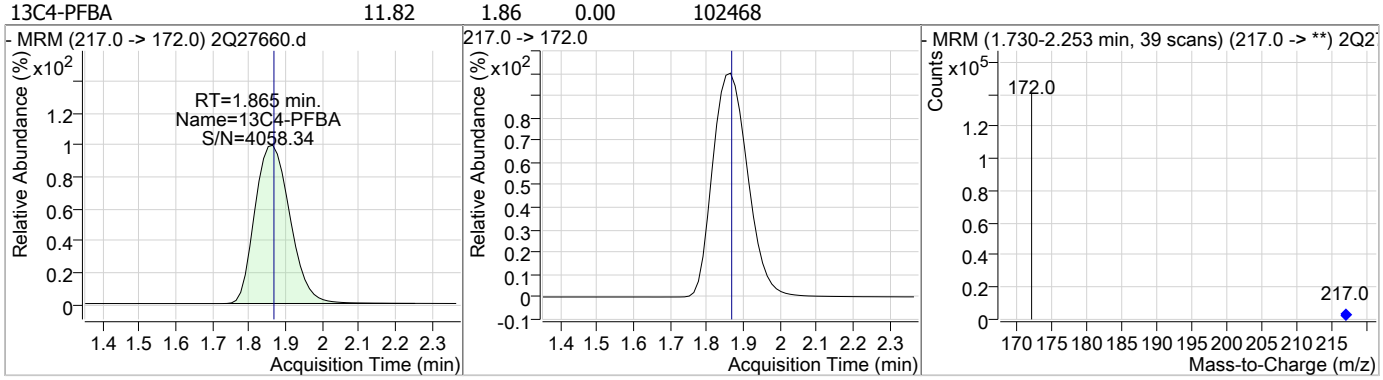
Perfluorinated Compounds by LC/MS/MS



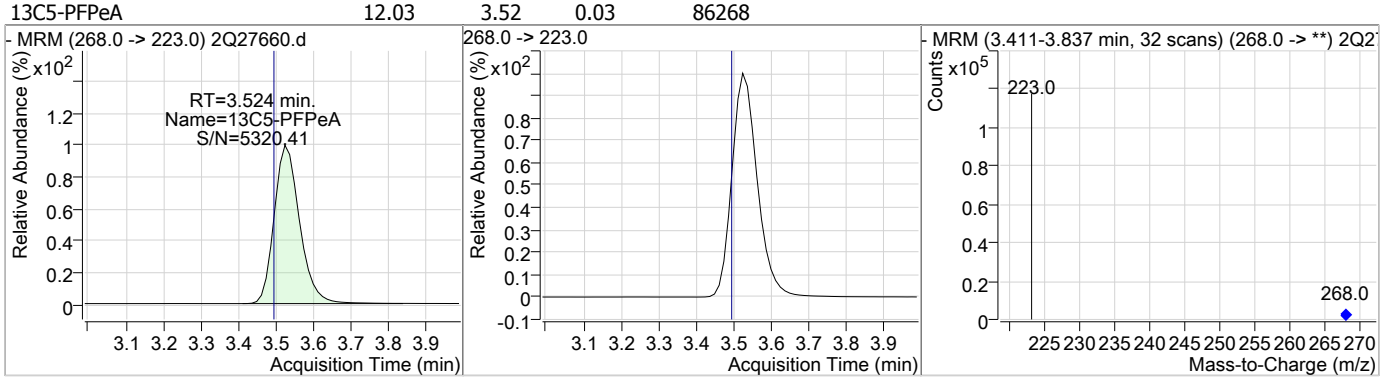
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.51	1.86	0.00	510				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	11.82	1.86	0.00	102468				

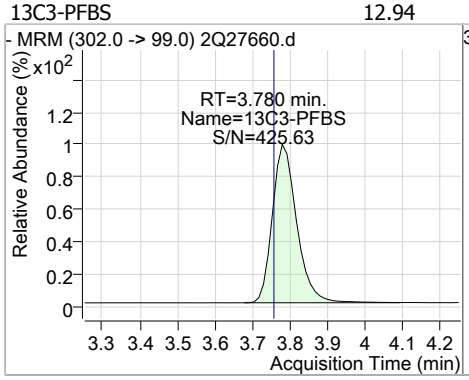


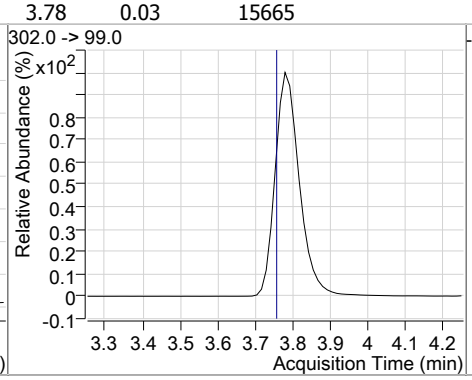
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	12.03	3.52	0.03	86268				

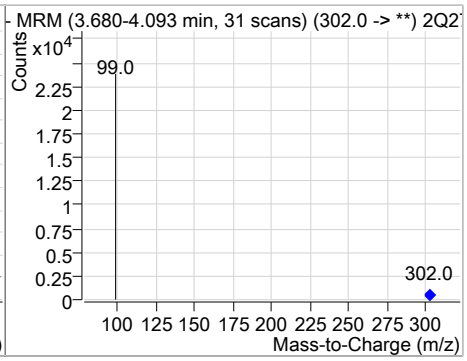


Perfluorinated Compounds by LC/MS/MS

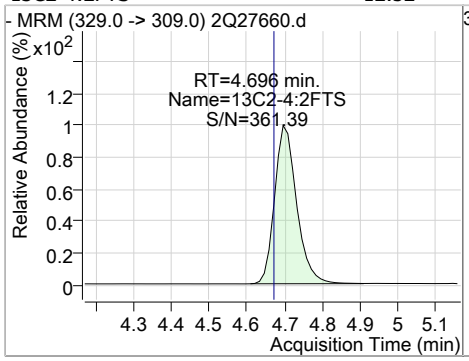
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	12.94	3.78	0.03	15665				

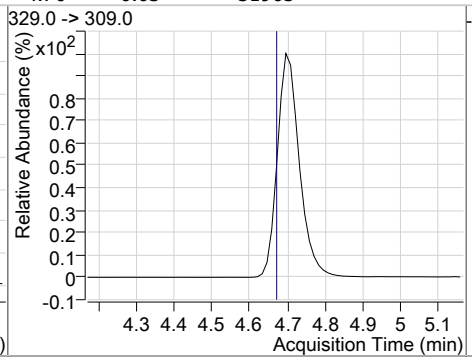


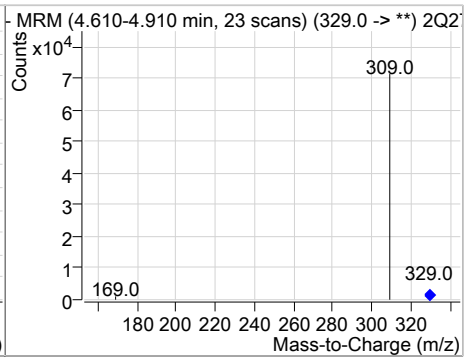




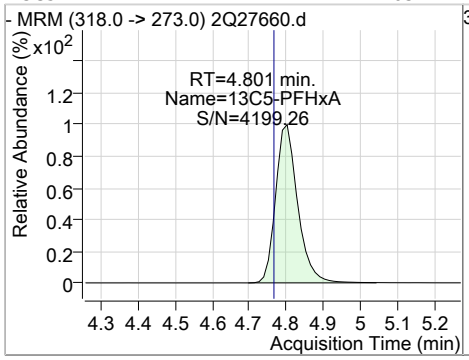
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	12.52	4.70	0.03	51965				

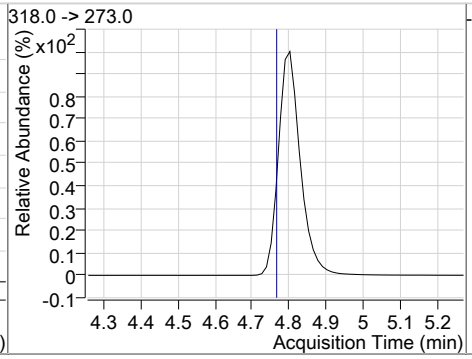


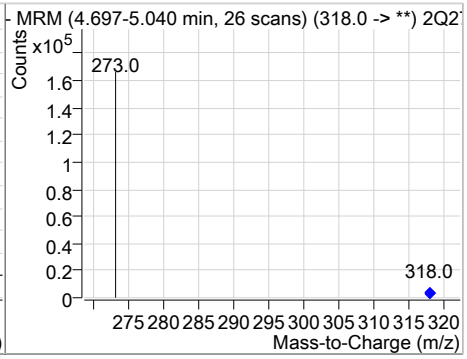




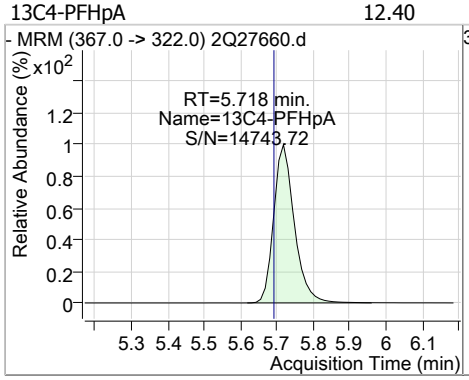
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	12.03	4.80	0.04	123374				

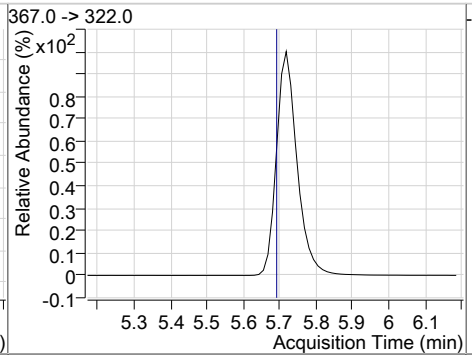


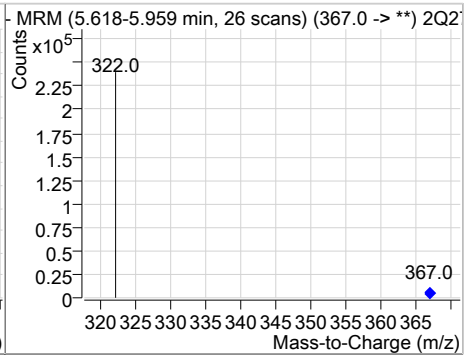




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	12.40	5.72	0.03	178504				

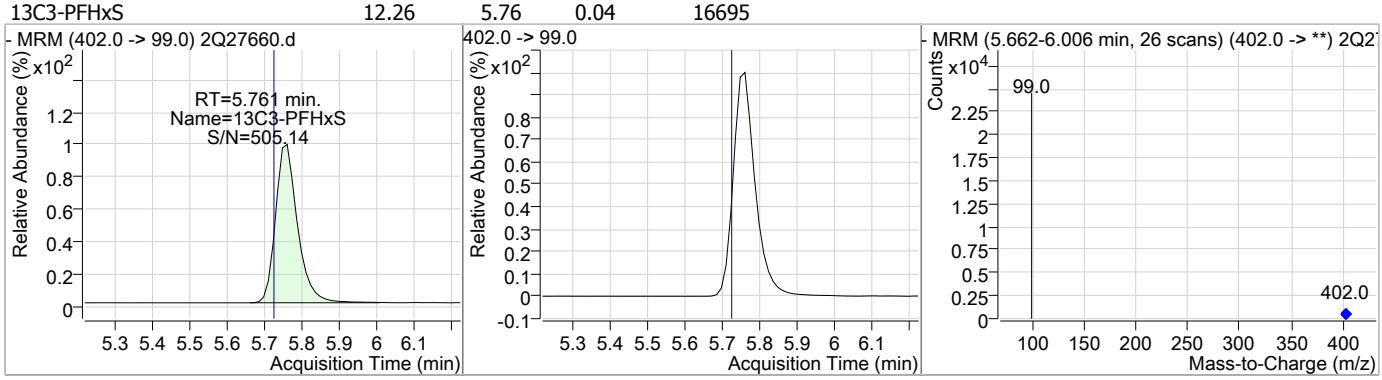




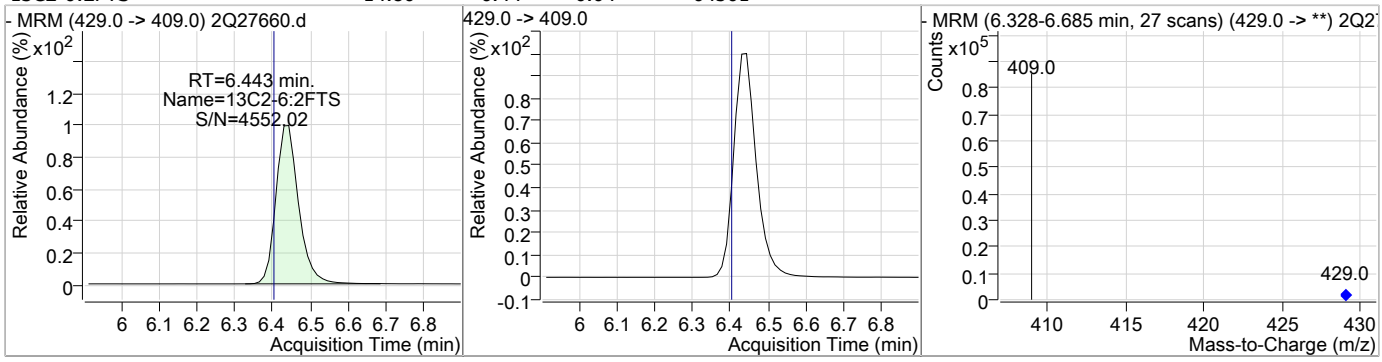


Perfluorinated Compounds by LC/MS/MS

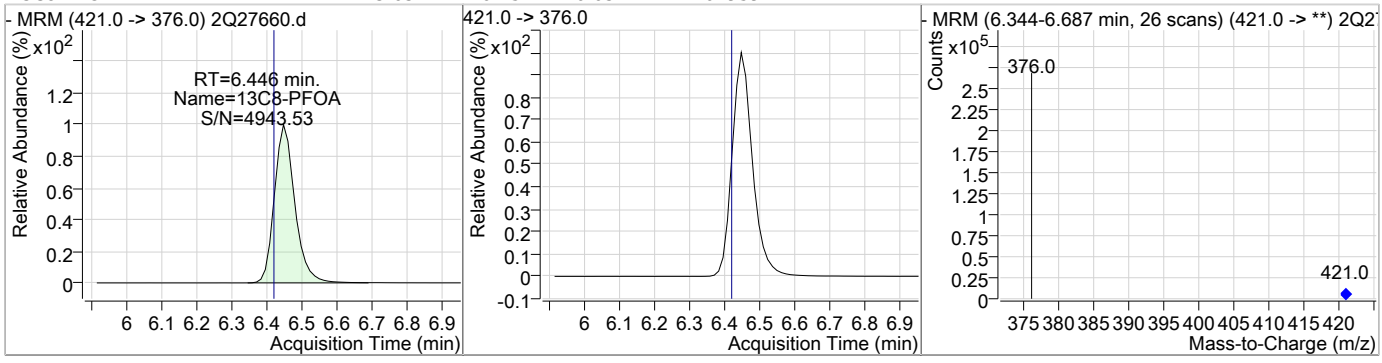
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	12.26	5.76	0.04	16695				



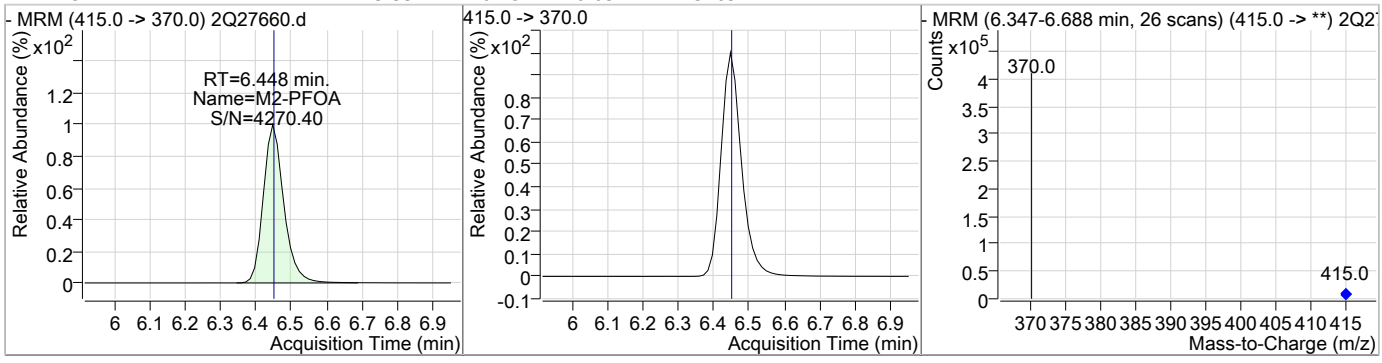
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	14.80	6.44	0.04	64501				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	13.63	6.45	0.03	202959				

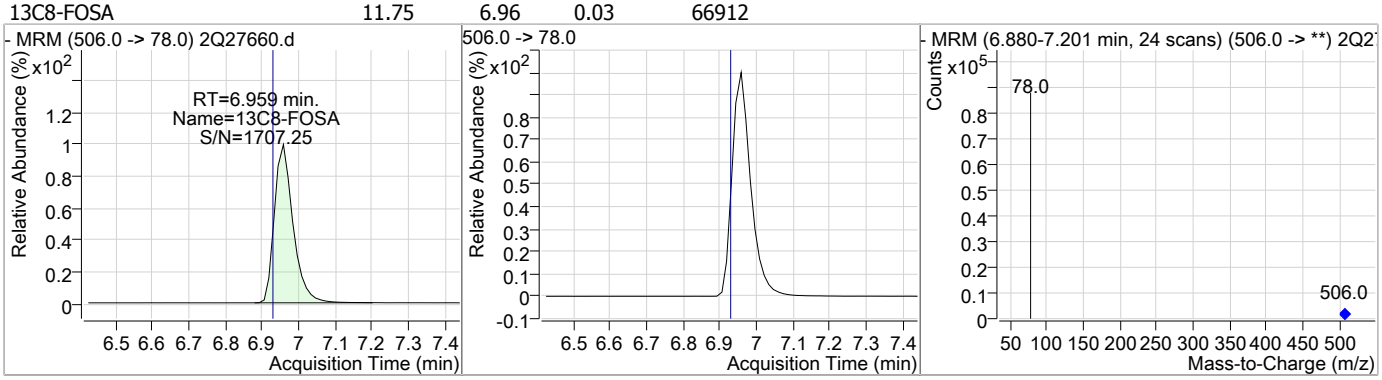


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	310922				

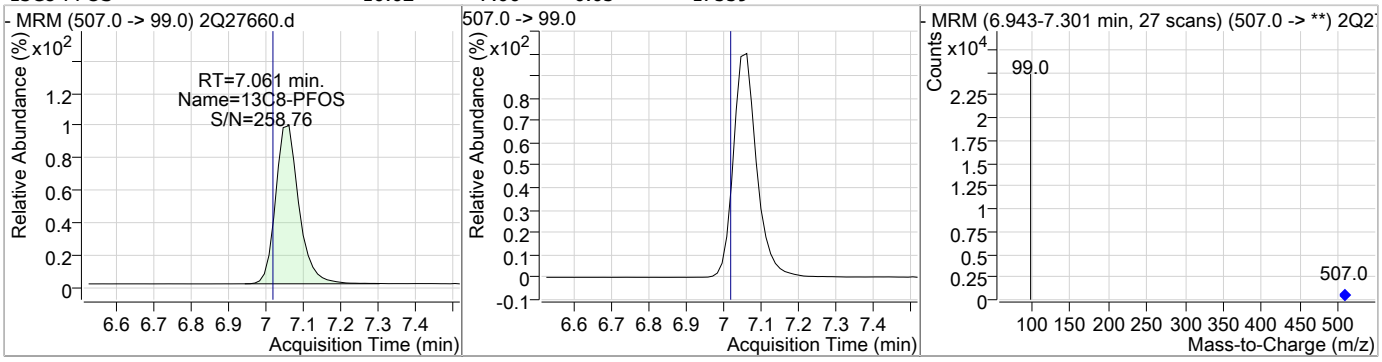


Perfluorinated Compounds by LC/MS/MS

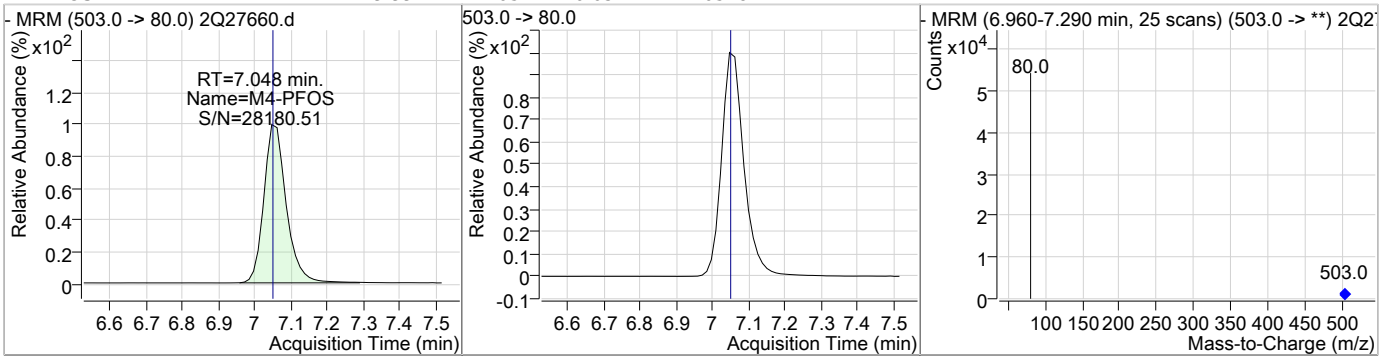
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	11.75	6.96	0.03	66912				



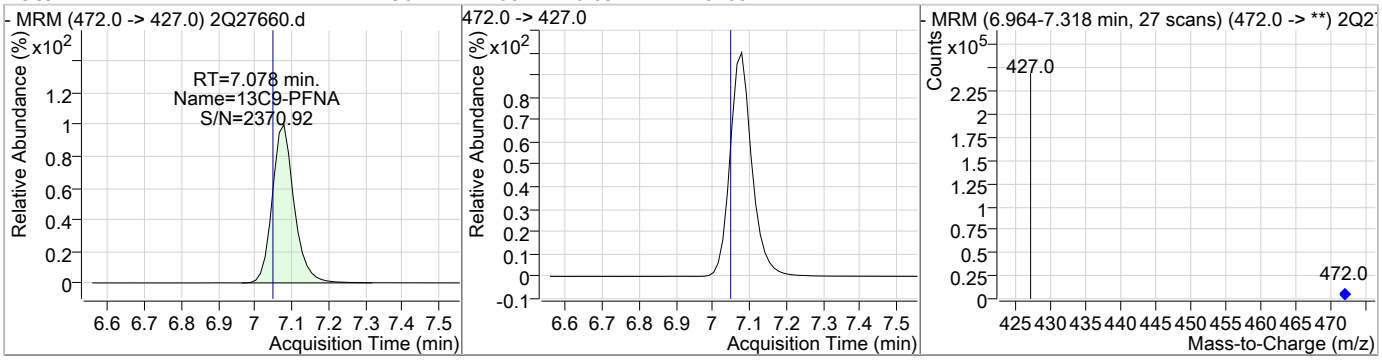
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	10.62	7.06	0.05	17559				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.03	40518				

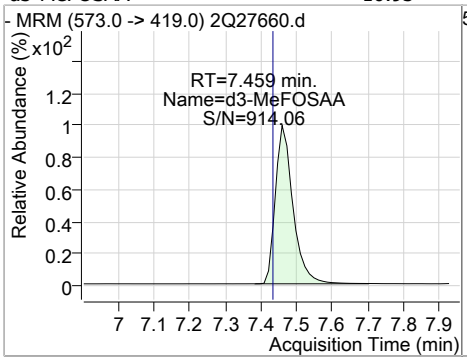


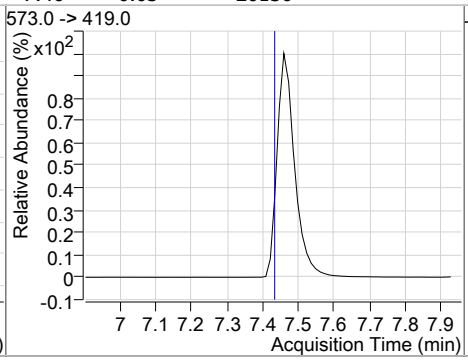
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	12.90	7.08	0.03	184854				

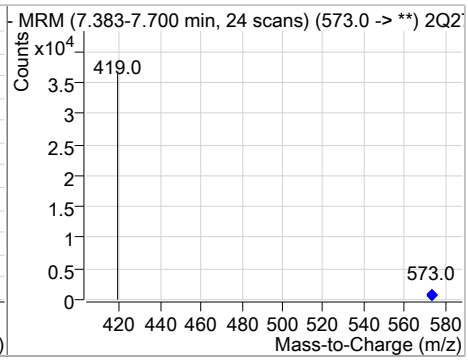


Perfluorinated Compounds by LC/MS/MS

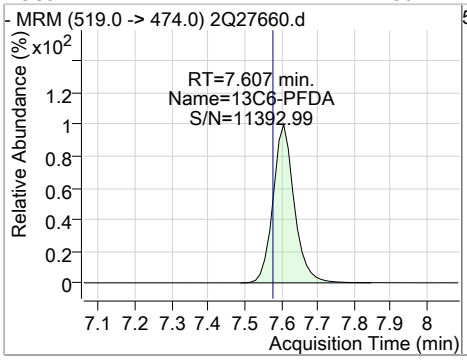
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	10.93	7.46	0.03	26130				

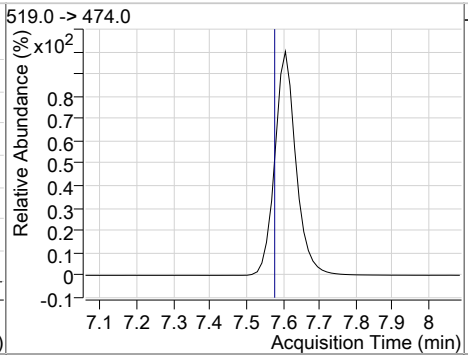


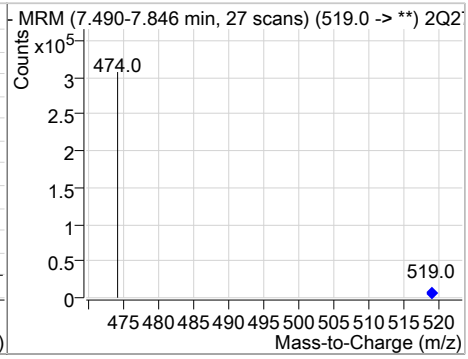




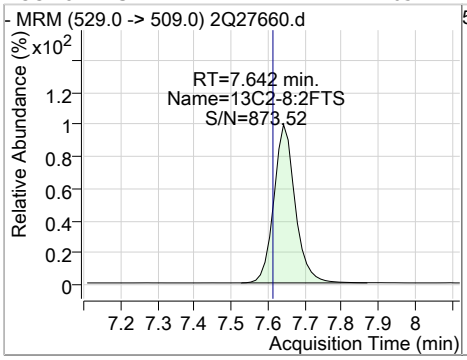
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	12.50	7.61	0.03	231410				

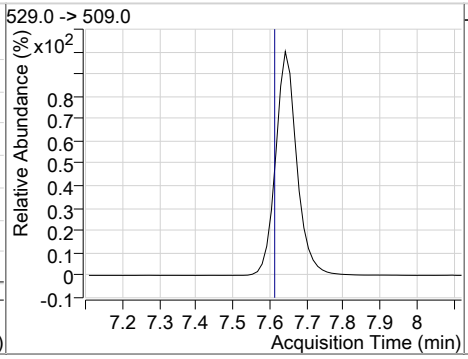


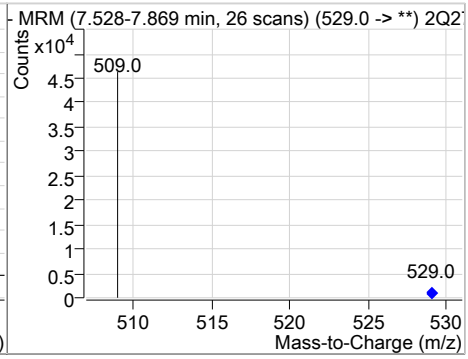




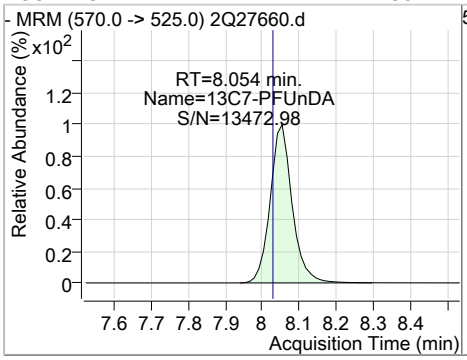
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	11.65	7.64	0.03	33089				

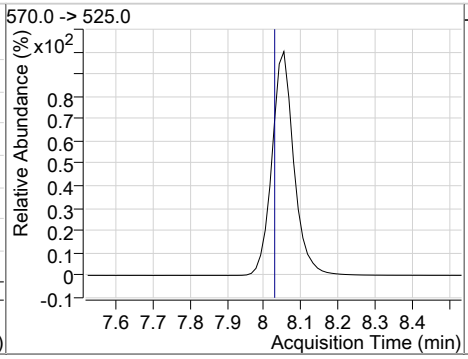


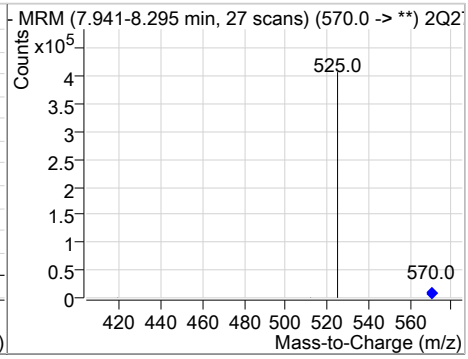




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	12.95	8.05	0.03	310307				

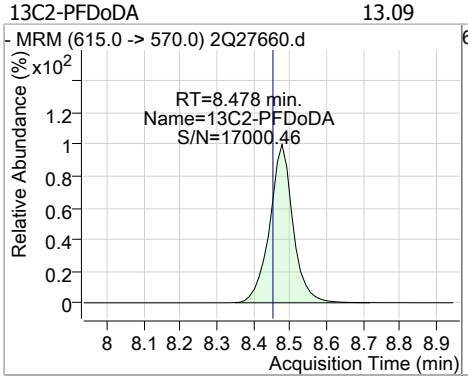


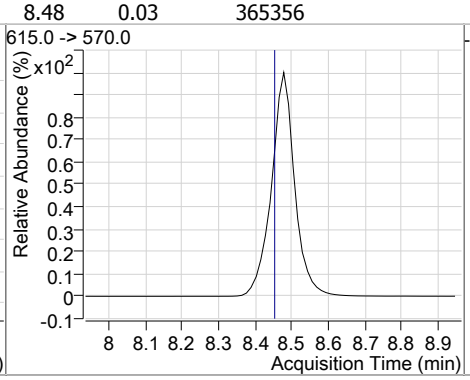


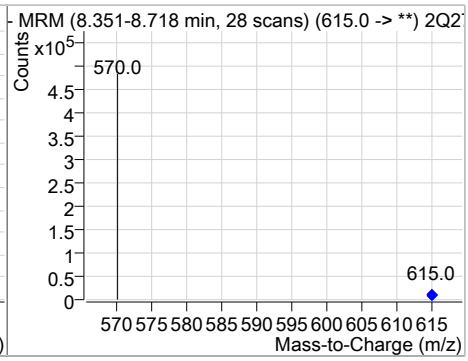


Perfluorinated Compounds by LC/MS/MS

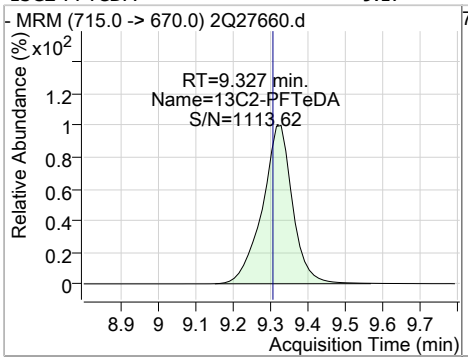
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	13.09	8.48	0.03	365356				

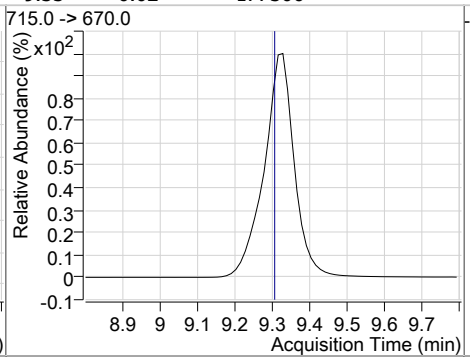


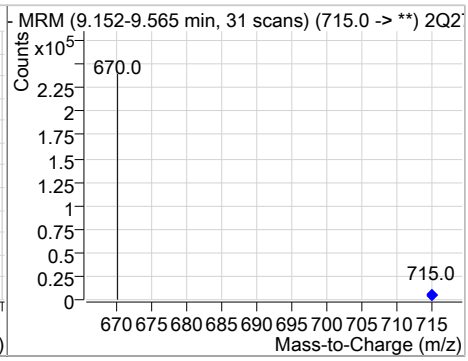




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	9.17	9.33	0.02	177306				







Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:15

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1989.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 2:21:37 PM
Sample Name : op74233-dup
Vial : P3-B9
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74233,S3Q54,130,,,1.0,1,WATER

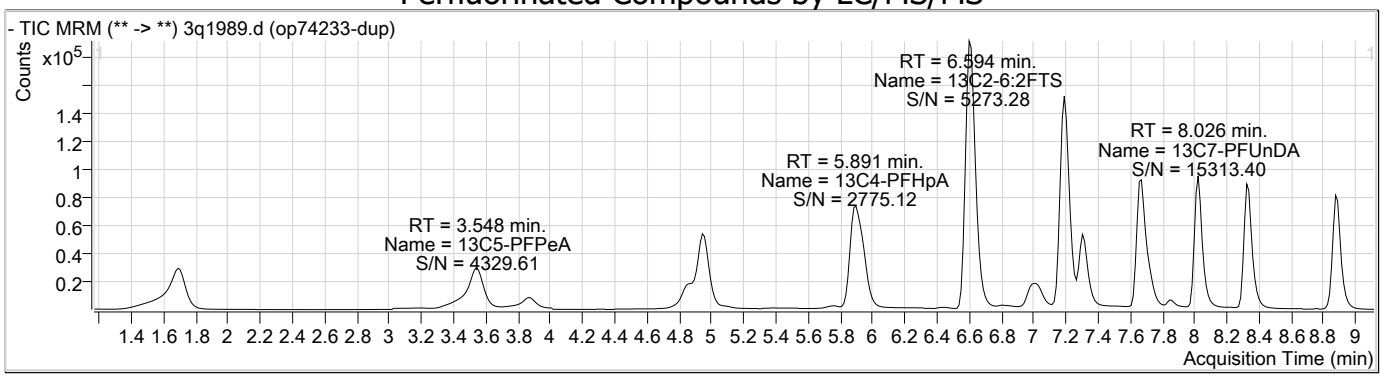
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Internal Standards							
M4-PFBA	1.689	217.0 -> 172.0	262213	20.00	µg/L		-0.013
M5-PFPeA	3.548	268.0 -> 223.0	188142	20.00	µg/L		-0.013
M5-PFHxA	4.950	318.0 -> 273.0	255249	20.00	µg/L		-0.013
M4-PFHpA	5.891	367.0 -> 322.0	292186	20.00	µg/L		0.000
M8-PFOA	6.609	421.0 -> 376.0	300021	20.00	µg/L		-0.013
M9-PFNA	7.213	472.0 -> 427.0	274477	20.00	µg/L		0.000
M6-PFDA	7.663	519.0 -> 474.0	321149	20.00	µg/L		-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	334690	20.00	µg/L		-0.013
M2-PFDoDA	8.327	615.0 -> 570.0	323297	20.00	µg/L		-0.025
M2-PFTeDA	8.874	715.0 -> 670.0	297856	20.00	µg/L		-0.013
M8-FOSA	7.311	506.0 -> 78.0	184844	20.00	µg/L		0.000
M3-PFBS	3.867	302.0 -> 99.0	42495	20.00	µg/L		-0.013
M3-PFHxS	5.934	402.0 -> 99.0	43456	20.00	µg/L		-0.013
M8-PFOS	7.196	507.0 -> 99.0	64082	20.00	µg/L		0.000
M2-4:2FTS	4.845	329.0 -> 309.0	80282	20.00	µg/L		-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	85382	20.00	µg/L		0.000
M2-8:2FTS	7.689	529.0 -> 509.0	52695	20.00	µg/L		-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	40272	20.00	µg/L		-0.013
M3-HFPO-DA	5.217	287.0 -> 169.0	0	100.00	µg/L	m	-0.038
13C2-PFOA	6.610	415.0 -> 370.0	405278	20.00	µg/L		-0.013
13C4-PFOS	7.198	503.0 -> 80.0	113003	20.00	µg/L		0.000
System Monitoring Compounds							
13C2-4:2FTS	4.845	329.0 -> 309.0	80231	16.91	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.5%			
13C2-6:2FTS	6.594	429.0 -> 409.0	85115	18.63	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%			
13C2-8:2FTS	7.689	529.0 -> 509.0	52645	18.83	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.2%			
13C2-PFDoDA	8.327	615.0 -> 570.0	323431	16.54	µg/L		-0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.7%			
13C2-PFTeDA	8.874	715.0 -> 670.0	297869	16.28	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.4%			
13C3-PFBS	3.867	302.0 -> 99.0	42210	16.73	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%			
13C3-PFHxS	5.934	402.0 -> 99.0	43398	17.17	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.9%			
13C4-PFBA	1.689	217.0 -> 172.0	258684	15.86	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.3%			
13C4-PFHpA	5.891	367.0 -> 322.0	292751	17.54	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.7%			
13C5-PFHxA	4.950	318.0 -> 273.0	255790	17.38	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.9%			
13C5-PFPeA	3.548	268.0 -> 223.0	187094	16.90	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.5%			
13C6-PFDA	7.663	519.0 -> 474.0	321243	19.28	µg/L		-0.015

Perfluorinated Compounds by LC/MS/MS

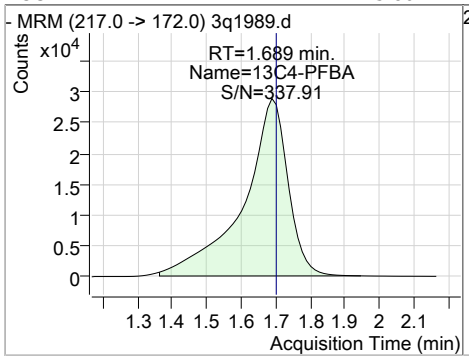
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%			
13C7-PFUnDA	8.026	570.0 -> 525.0	334725	18.05	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.3%			
13C8-FOSA	7.311	506.0 -> 78.0	184919	17.57	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%			
13C8-PFOA	6.609	421.0 -> 376.0	300061	18.97	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%			
13C8-PFOS	7.196	507.0 -> 99.0	64301	16.69	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.5%			
13C9-PFNA	7.213	472.0 -> 427.0	274492	18.37	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.8%			
d3-MeFOSAA	7.722	573.0 -> 419.0	40289	16.97	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.9%			
13C3-HFPO-DA	5.217	287.0 -> 169.0	0	0.00	µg/L	m	-0.038
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = NA%			
M2-PFOA	6.610	415.0 -> 370.0	405278	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.198	503.0 -> 80.0	113003	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	6.595	427.0 -> 407.0	6042	2.87	µg/L		98
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	-	584.0 -> 419.0	-	N.D.			
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	-	570.0 -> 419.0	-	N.D.			
PFBA	1.698	213.0 -> 169.0	3672	1.48	µg/L		100
PFBS	3.870	299.0 -> 80.0	5663	1.92	µg/L		94
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.894	363.0 -> 319.0	23424	1.81	µg/L	m	100
PFHpS	6.630	449.0 -> 80.0	3616	1.75	µg/L	m	98
PFHxA	4.952	313.0 -> 269.0	22602	4.97	µg/L		99
PFHxS	5.937	399.0 -> 80.0	67098	28.08	µg/L	m	99
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.611	413.0 -> 369.0	33420	4.16	µg/L	m	94
PFOS	7.186	499.0 -> 80.0	206330	69.53	µg/L	m	97
PFPeA	3.552	263.0 -> 219.0	30044	3.15	µg/L		100
PFPeS	5.094	349.0 -> 80.0	4602	2.50	µg/L	m	91
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

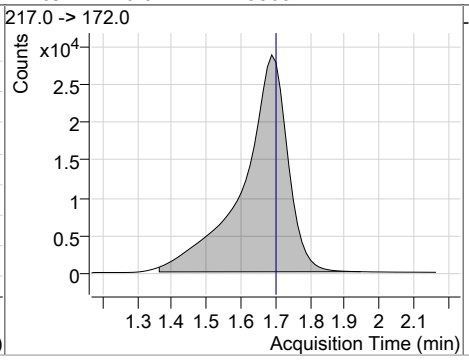
 # = Qualifier out of range, m = manually integrated, + = Area summed

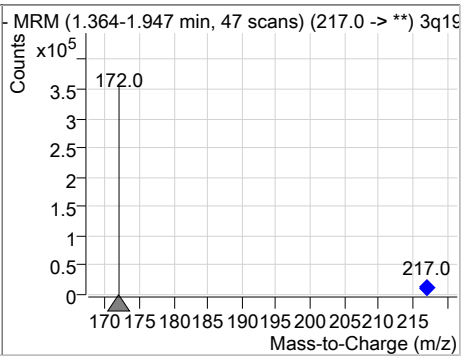
Perfluorinated Compounds by LC/MS/MS



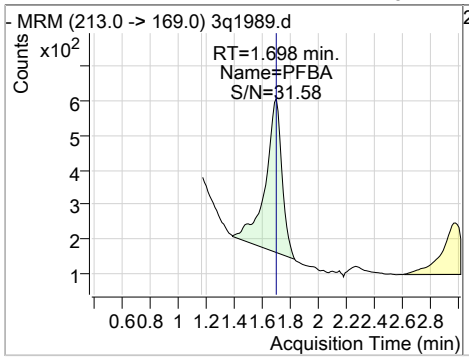
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.86	1.69	-0.01	258684				

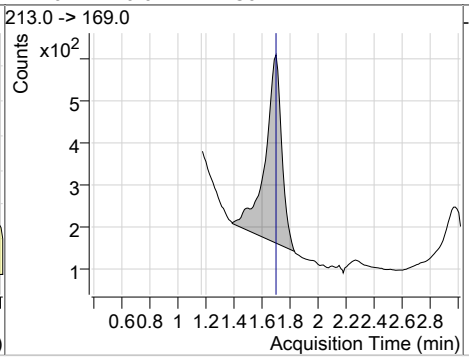


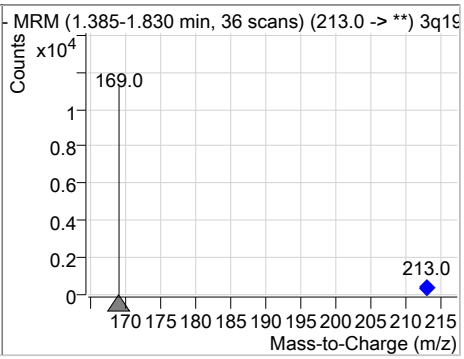




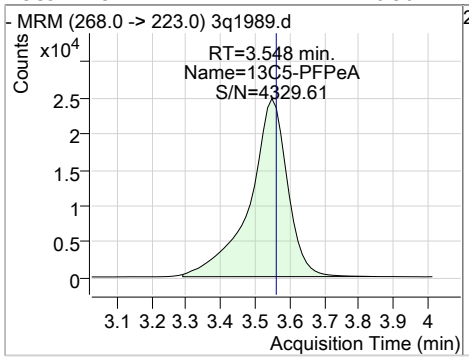
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.48	1.70	-0.01	3672				

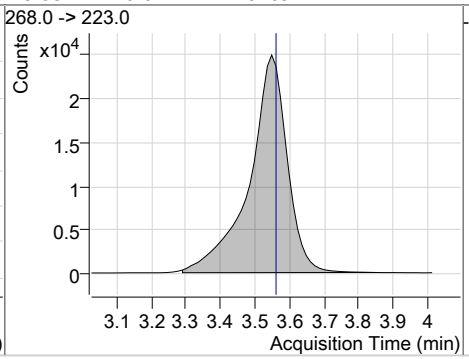


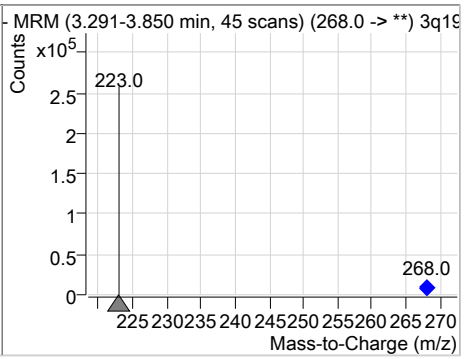




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.90	3.55	-0.01	187094				

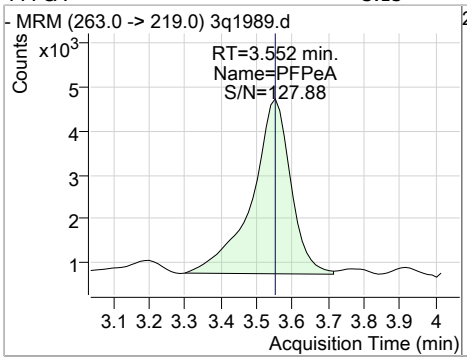


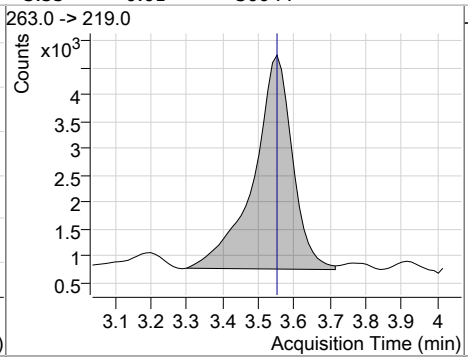


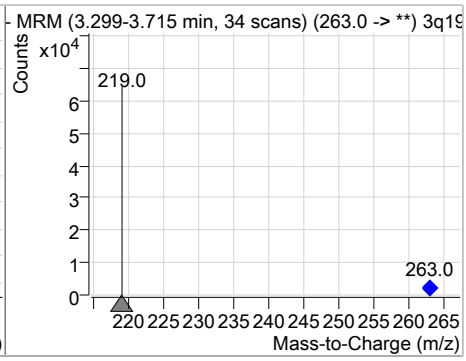


Perfluorinated Compounds by LC/MS/MS

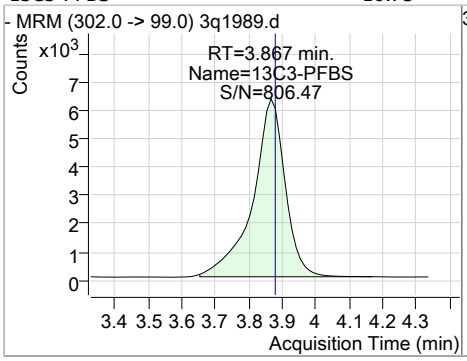
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	3.15	3.55	-0.01	30044				

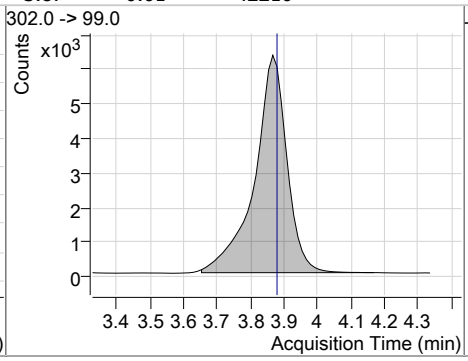


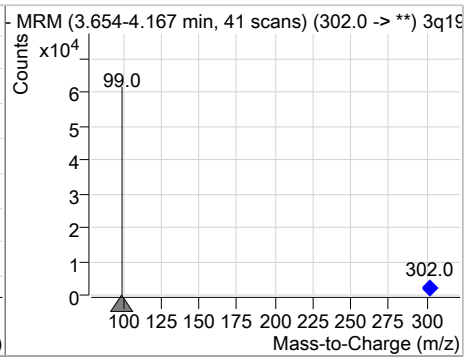




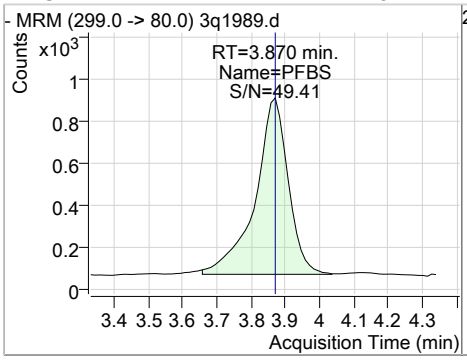
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	16.73	3.87	-0.01	42210				

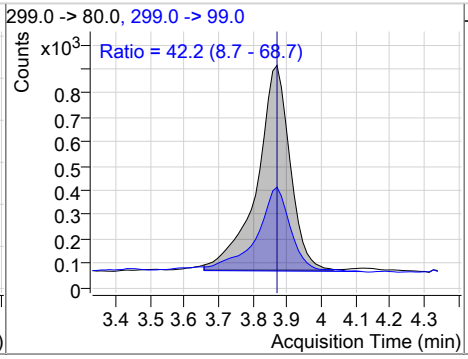


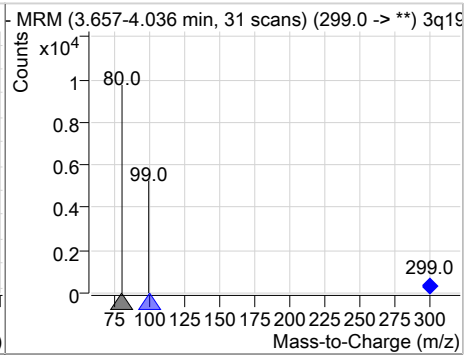




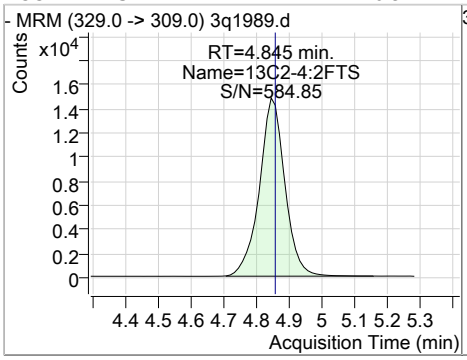
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.92	3.87	-0.01	5663	299.0 -> 99.0	42.2	8.7	68.7

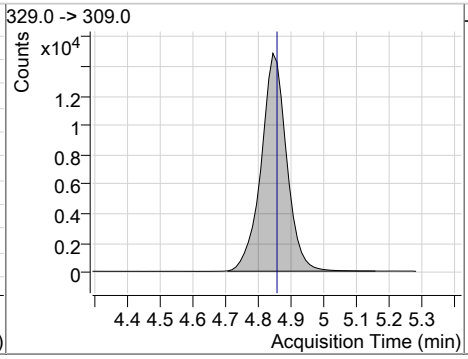


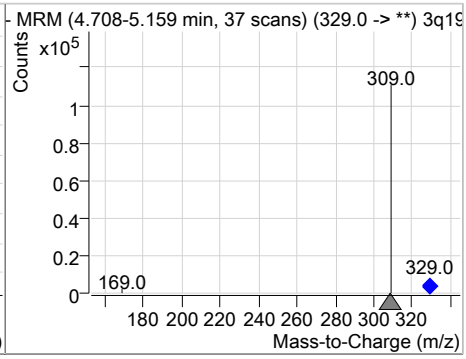




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.91	4.85	-0.01	80231				

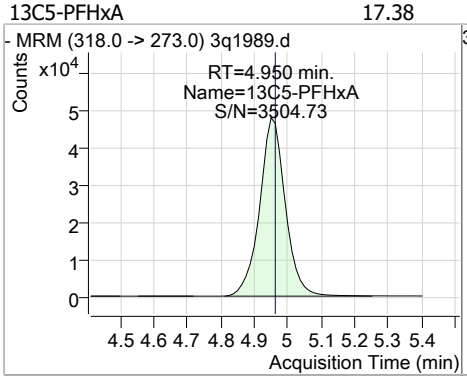


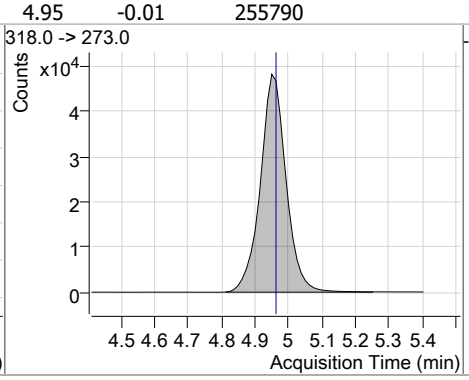


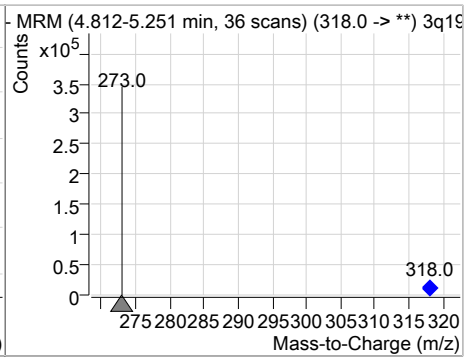


Perfluorinated Compounds by LC/MS/MS

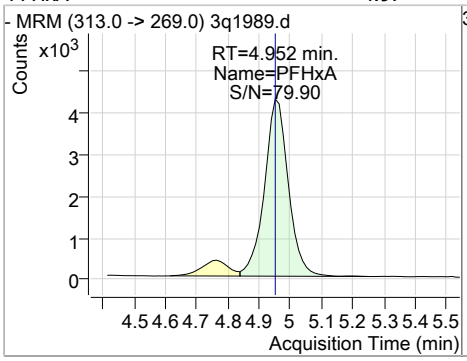
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.38	4.95	-0.01	255790				

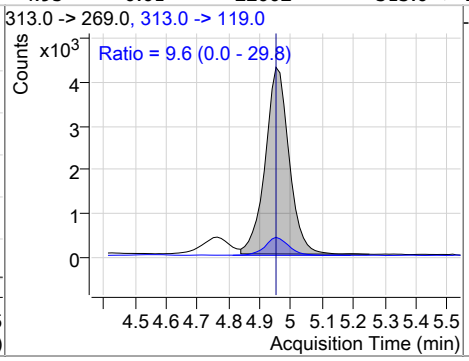


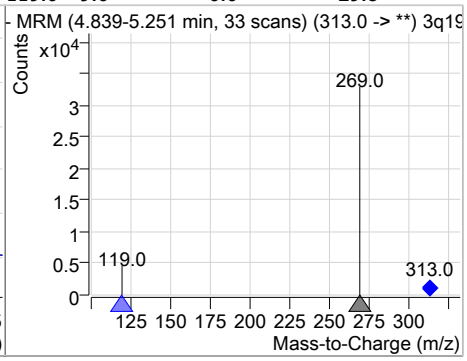




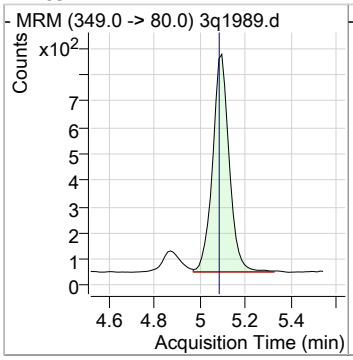
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.97	4.95	-0.01	22602	313.0 -> 119.0	9.6	0.0	29.8

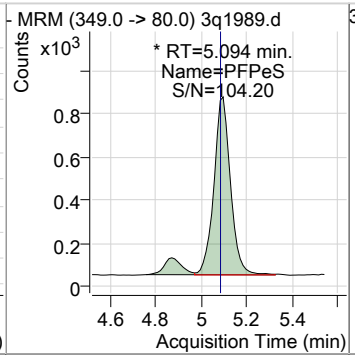


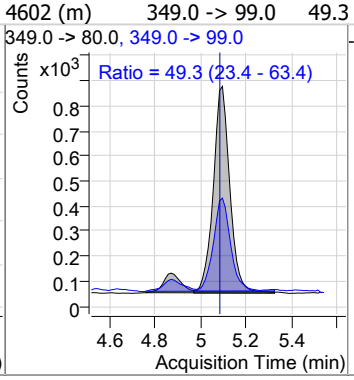


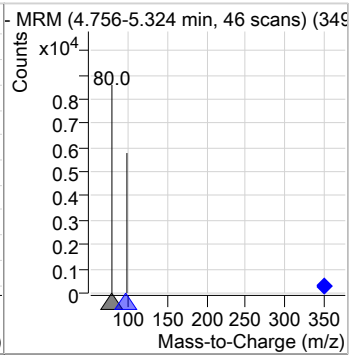


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.50	5.09	0.00	4602 (m)	349.0 -> 99.0	49.3	23.4	63.4

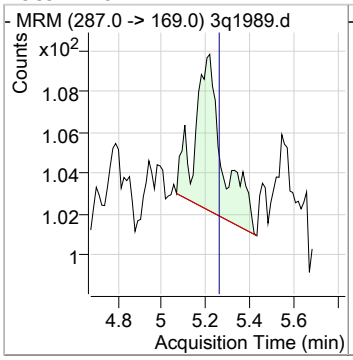


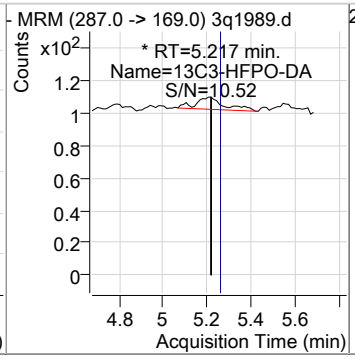


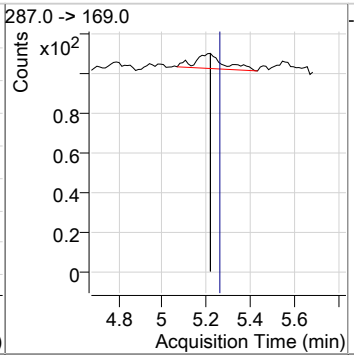


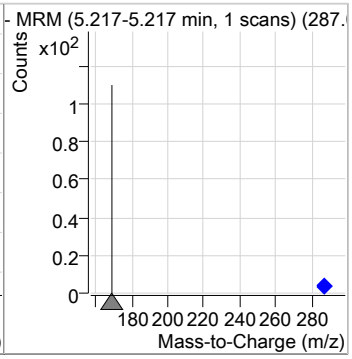


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	d	0		0				



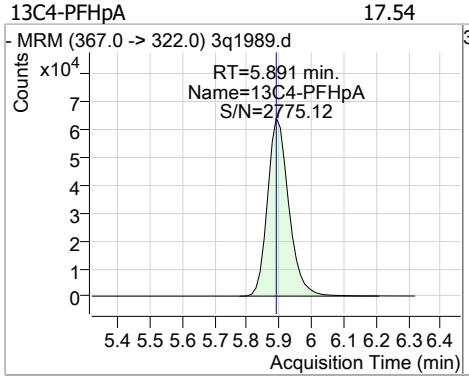


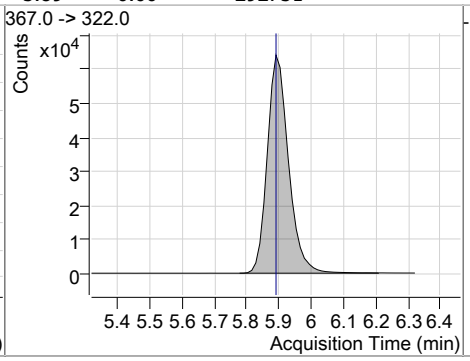


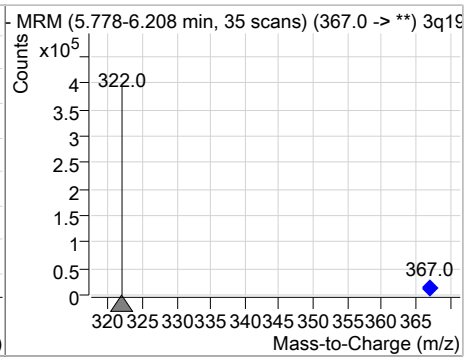


Perfluorinated Compounds by LC/MS/MS

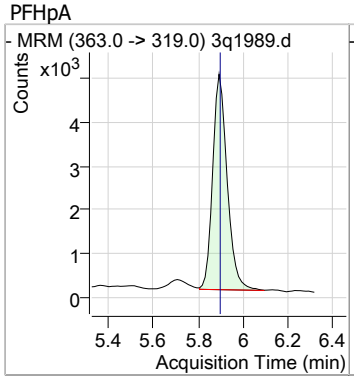
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.54	5.89	0.00	292751				

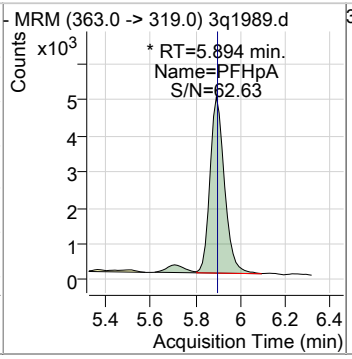


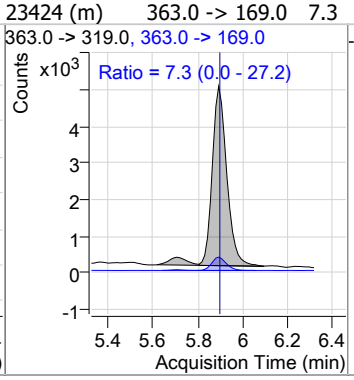


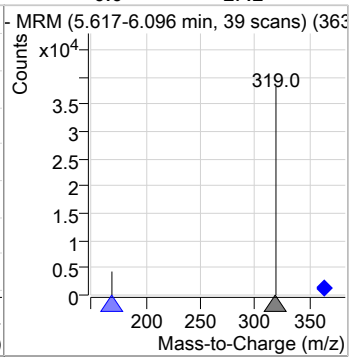


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.81	5.89	0.00	23424 (m)	363.0 -> 169.0	7.3	0.0	27.2

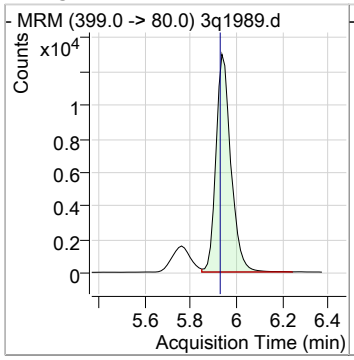


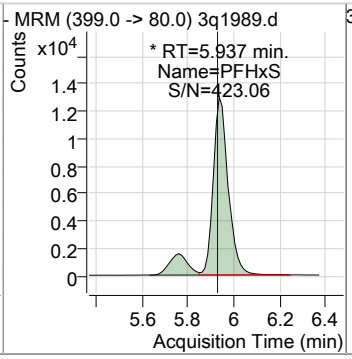


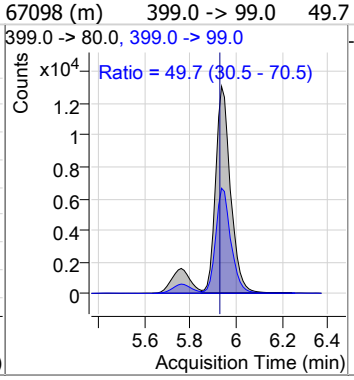


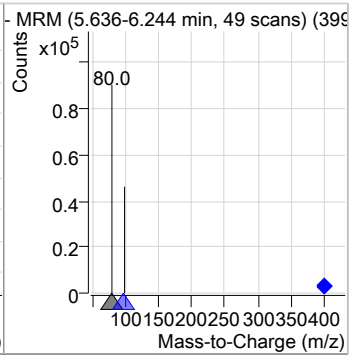


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	28.08	5.94	0.00	67098 (m)	399.0 -> 99.0	49.7	30.5	70.5

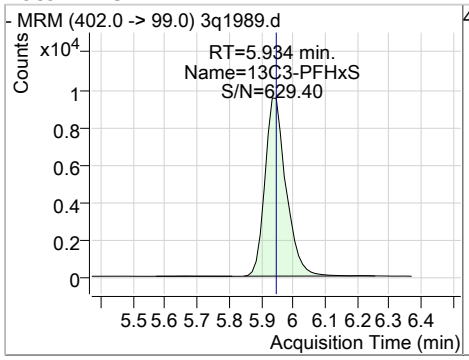


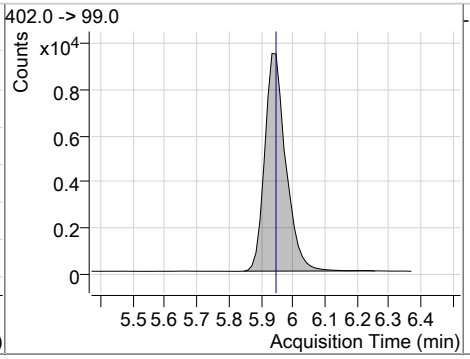


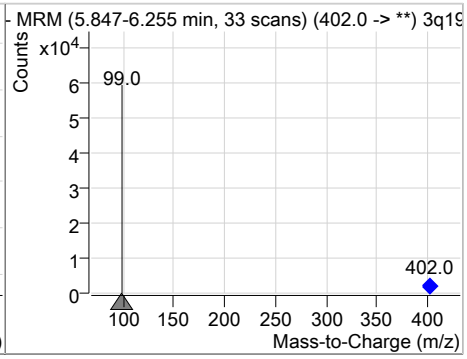




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	17.17	5.93	-0.01	43398				

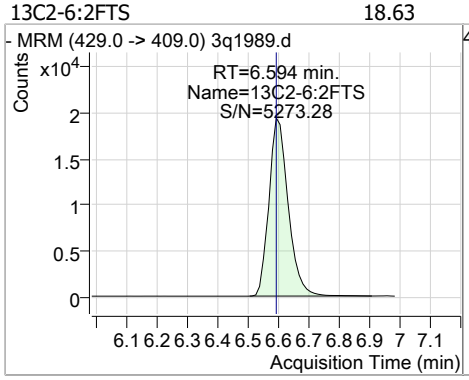


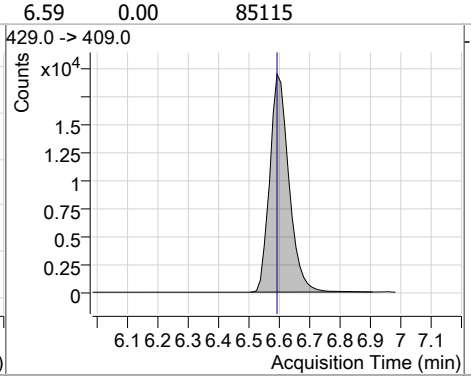


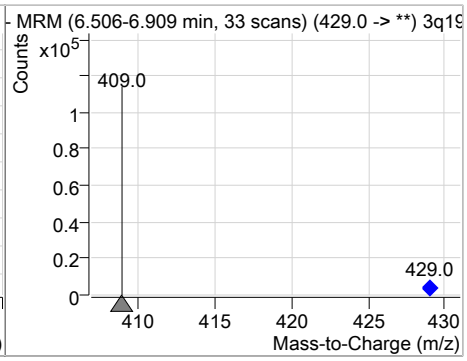


Perfluorinated Compounds by LC/MS/MS

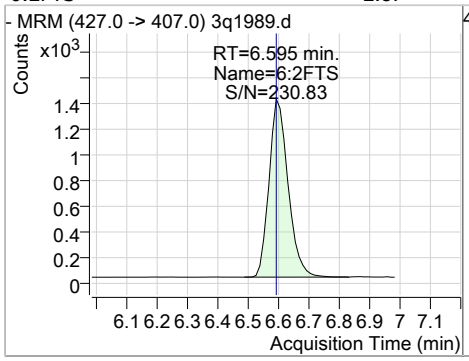
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.63	6.59	0.00	85115				

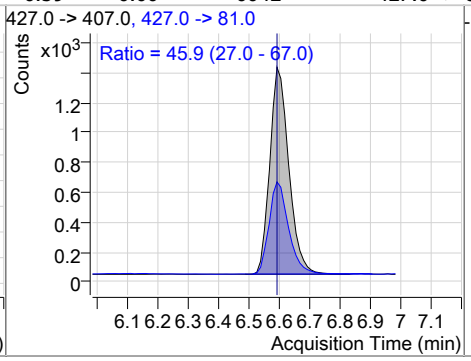


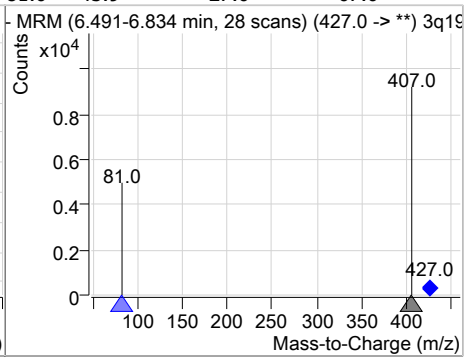




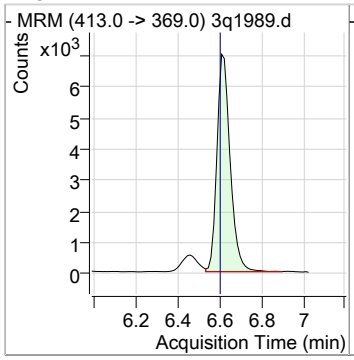
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	2.87	6.59	0.00	6042	427.0 -> 81.0	45.9	27.0	67.0

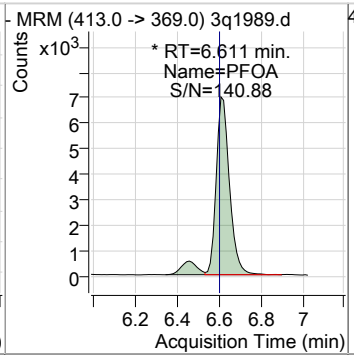


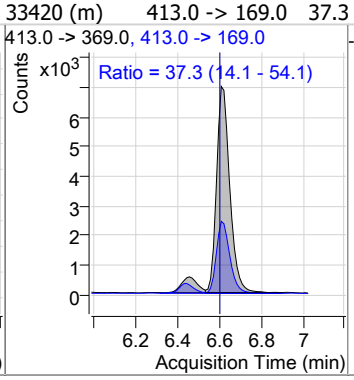


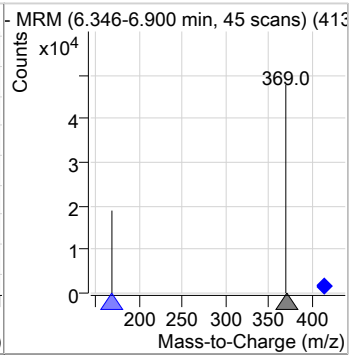


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	4.16	6.61	0.00	33420 (m)	413.0 -> 169.0	37.3	14.1	54.1

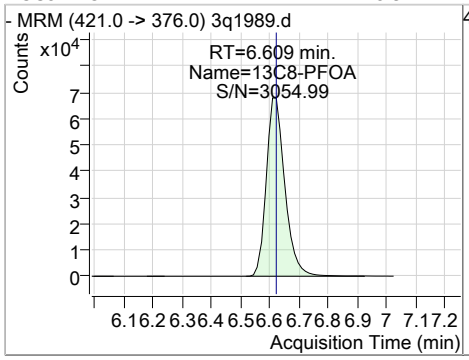


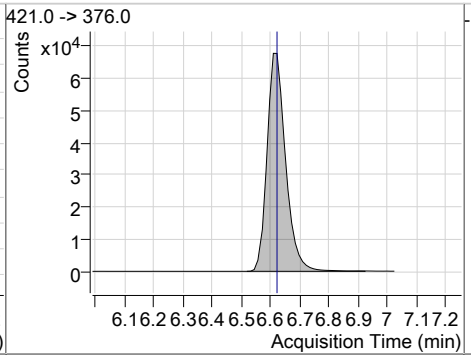


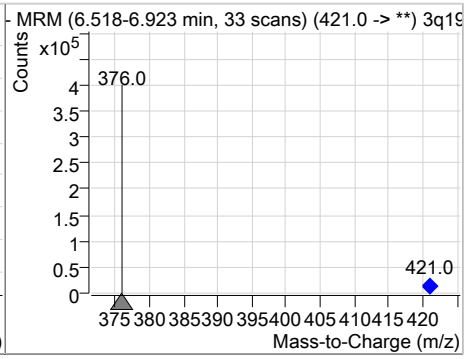




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.97	6.61	-0.01	300061				

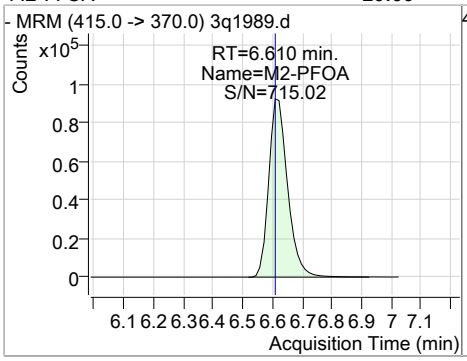


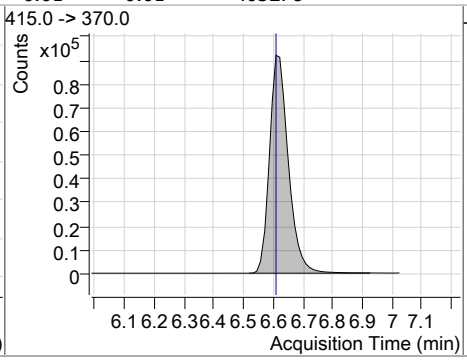


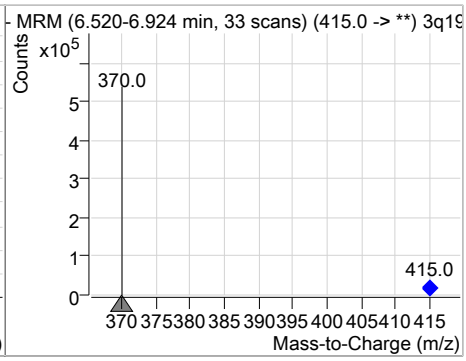


Perfluorinated Compounds by LC/MS/MS

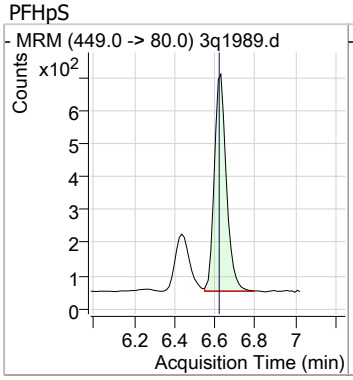
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	405278				

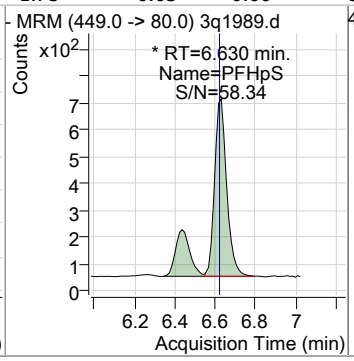


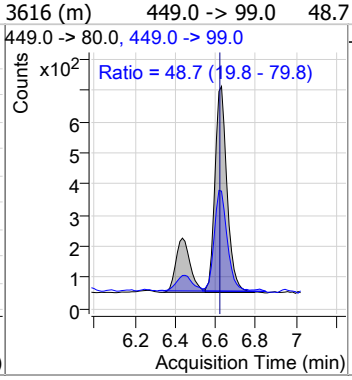


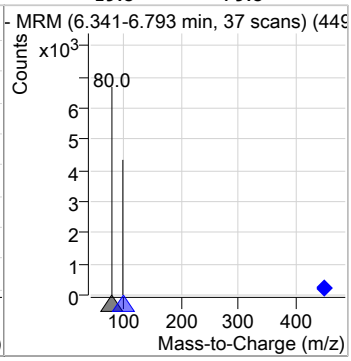


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.75	6.63	0.00	3616 (m)	449.0 -> 99.0	48.7	19.8	79.8

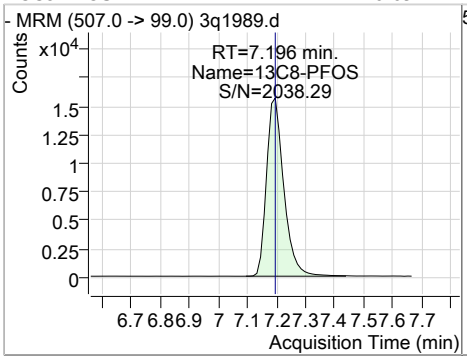


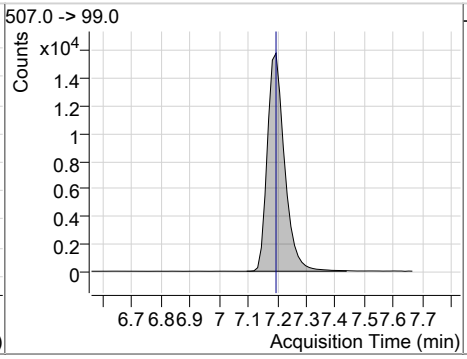


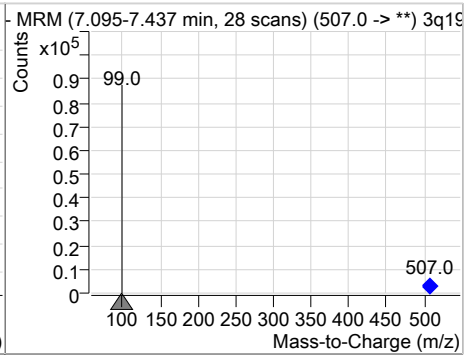




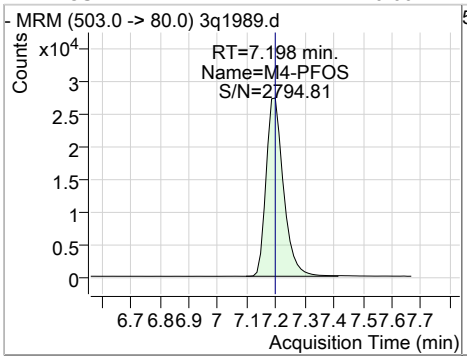
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.69	7.20	0.00	64301				

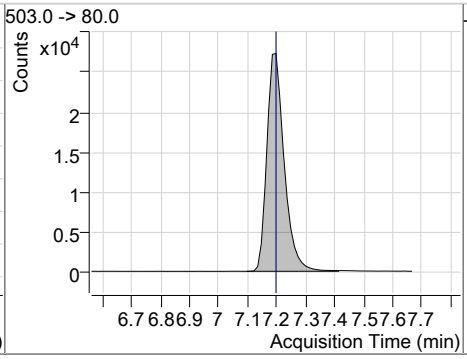


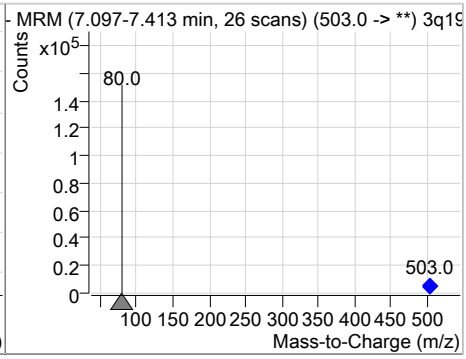




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	113003				

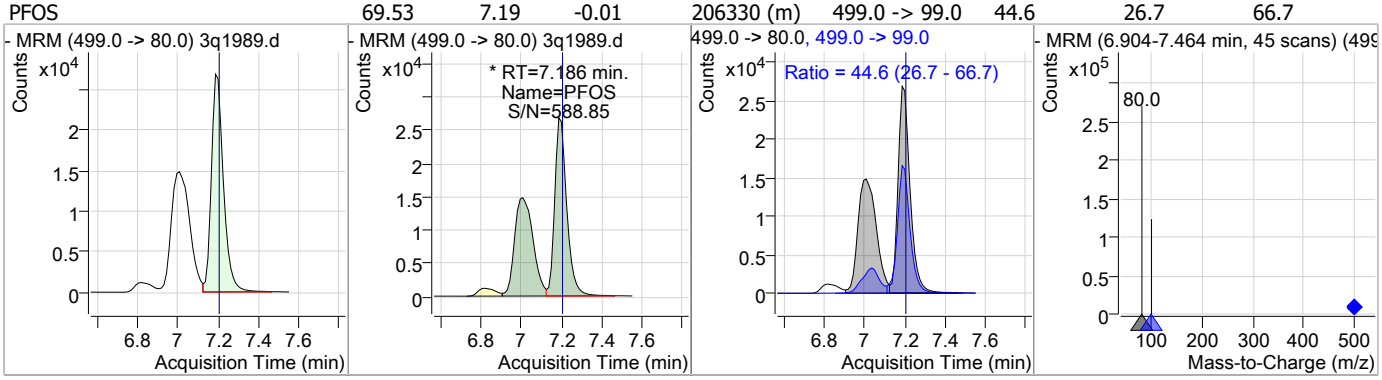




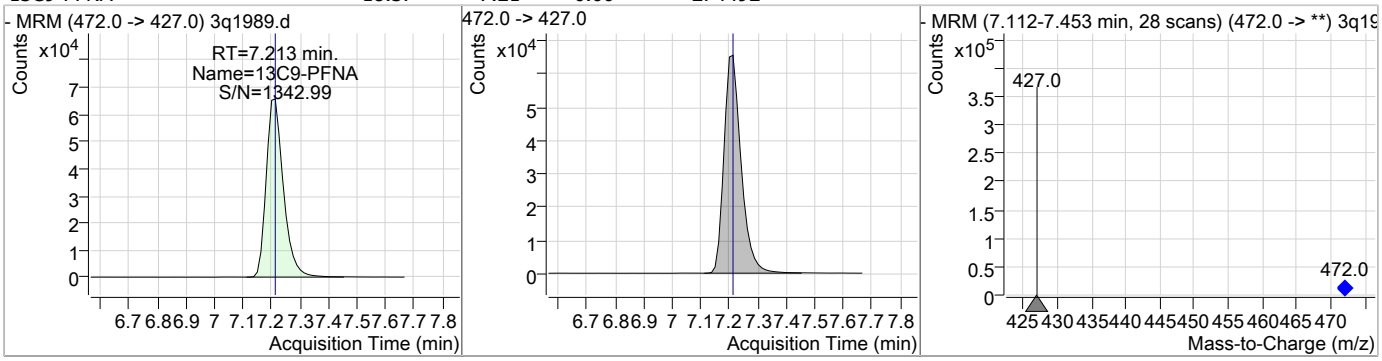


Perfluorinated Compounds by LC/MS/MS

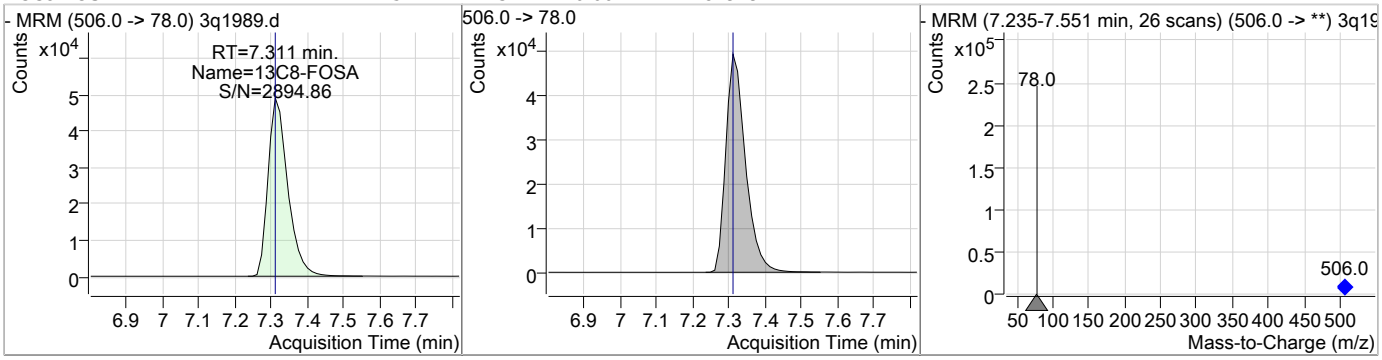
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	69.53	7.19	-0.01	206330 (m)	499.0 -> 99.0	44.6	26.7	66.7



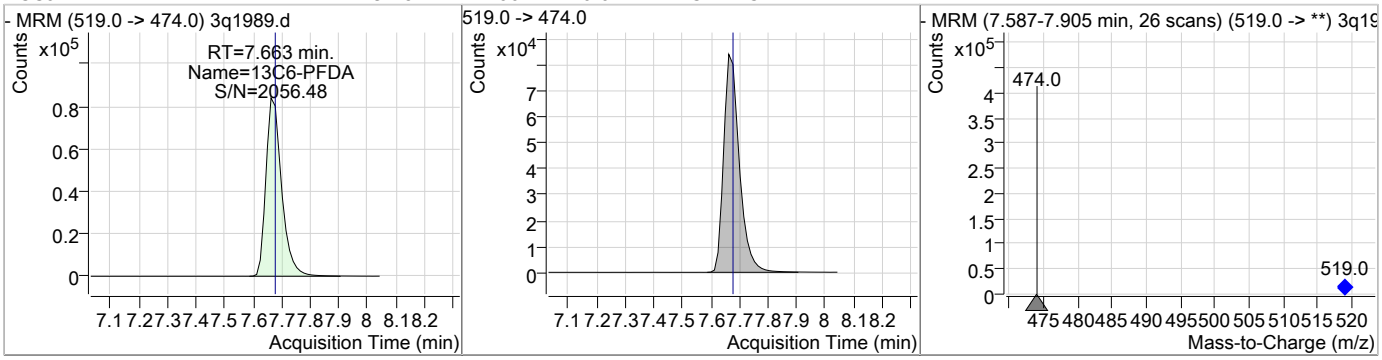
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.37	7.21	0.00	274492				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.57	7.31	0.00	184919				

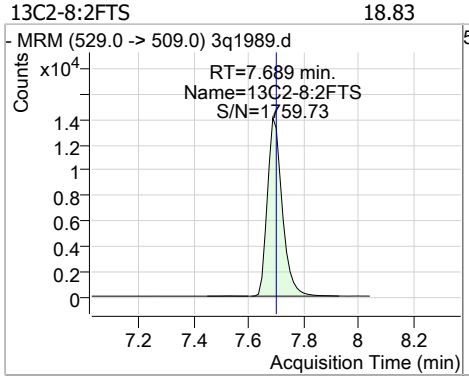


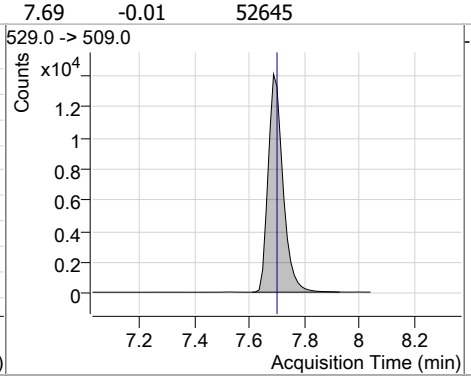
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.28	7.66	-0.01	321243				

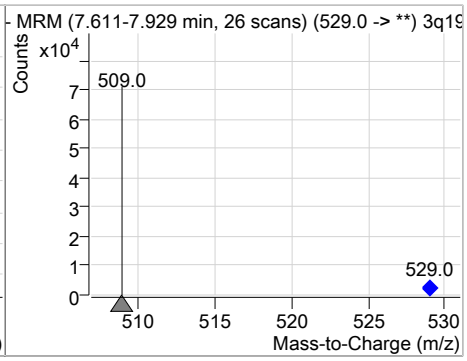


Perfluorinated Compounds by LC/MS/MS

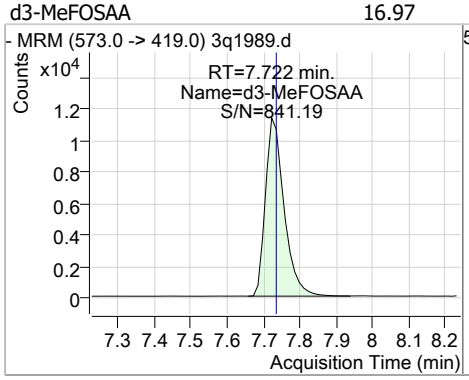
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.83	7.69	-0.01	52645				

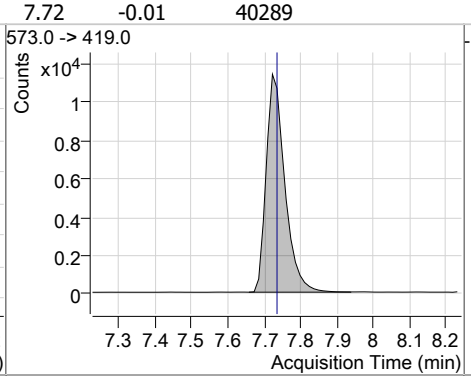


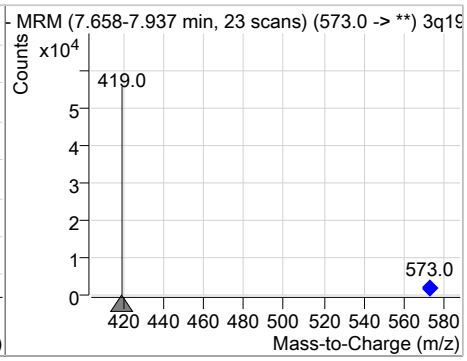




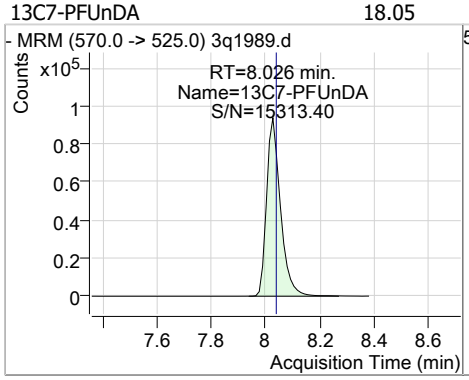
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	16.97	7.72	-0.01	40289				

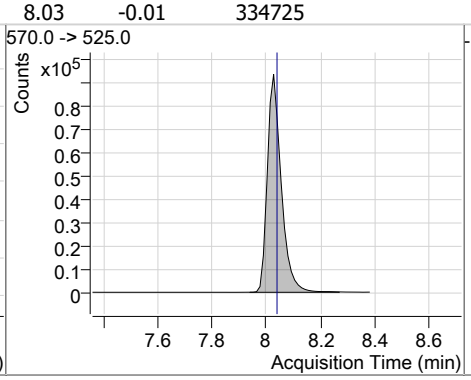


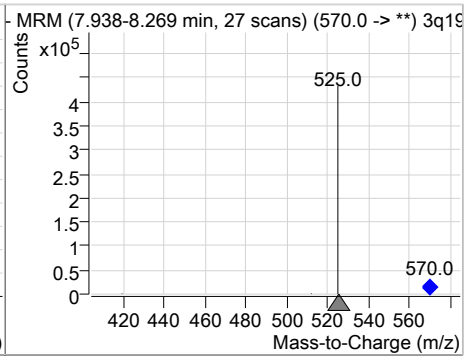




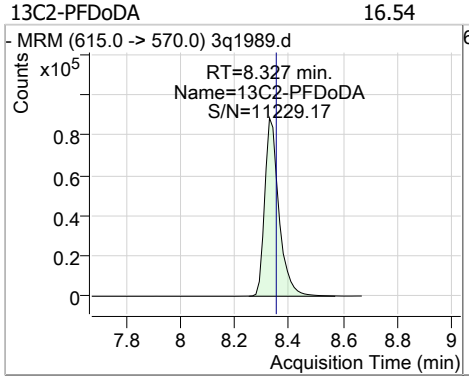
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.05	8.03	-0.01	334725				

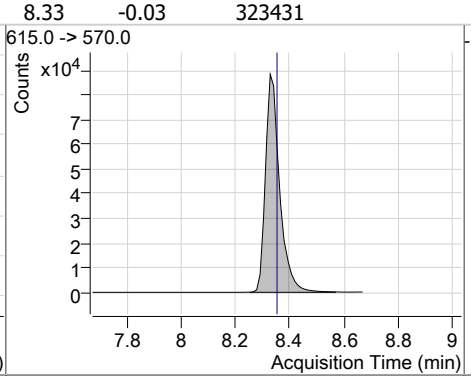


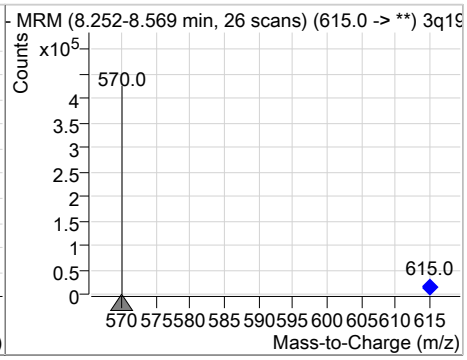




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	16.54	8.33	-0.03	323431				

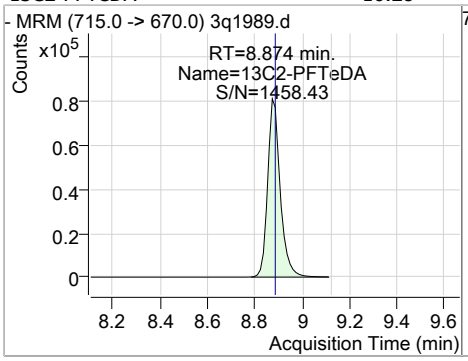


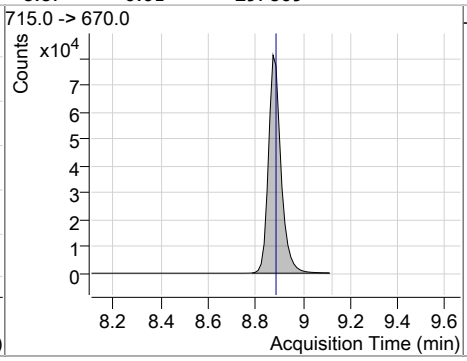


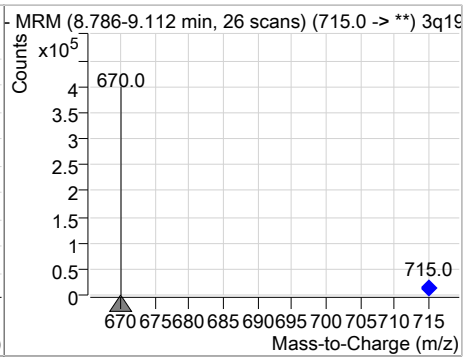


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	16.28	8.87	-0.01	297869				







Manual Integration Approval Summary

Sample Number: OP74233-DUP
Lab FileID: 3Q1989.D
Injection Time: 03/21/19 14:21
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:49 Nancy Saunders
Supervisor approved: 03/24/19 19:15 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanesulfonic acid	2706-91-4		5.09	Split peak
Perfluoroheptanoic acid	375-85-9		5.89	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanoic acid	335-67-1		6.61	Split peak
Perfluoroheptanesulfonic acid	375-92-8		6.63	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27563.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 10:44:33 AM
Sample Name : ic439-0.5
Vial : Vial 2
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

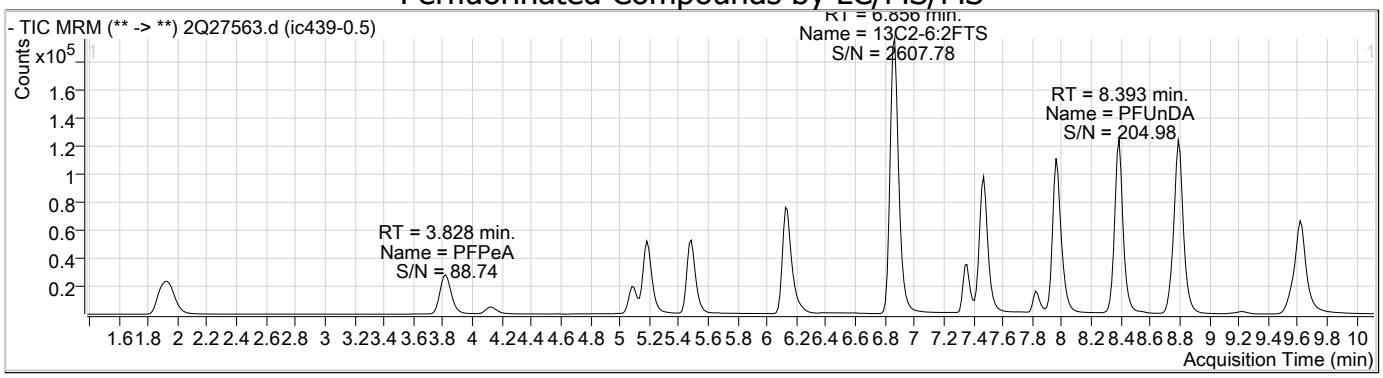
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	409921	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	58557	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	180082	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	148197	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	212637	20.00	µg/L	0.013
M4-PFHpA	6.129	367.0 -> 322.0	299427	20.00	µg/L	0.011
M8-PFOA	6.872	421.0 -> 376.0	313298	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	298997	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	385138	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	492860	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	562181	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	394327	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	122041	20.00	µg/L	0.011
M3-PFBS	4.118	302.0 -> 99.0	25086	20.00	µg/L	0.025
M3-PFHxS	6.174	402.0 -> 99.0	27992	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	34529	20.00	µg/L	0.012
M2-4:2FTS	5.084	329.0 -> 309.0	80784	20.00	µg/L	0.013
M2-6:2FTS	6.856	429.0 -> 409.0	86698	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	54331	20.00	µg/L	0.001
M3-MeFOSAA	7.822	573.0 -> 419.0	49551	20.00	µg/L	-0.001
M3-HFPO-DA	5.494	287.0 -> 169.0	211369	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.084	329.0 -> 309.0	80861	19.48	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C2-6:2FTS	6.856	429.0 -> 409.0	86654	19.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C2-8:2FTS	8.005	529.0 -> 509.0	54327	19.13	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C2-PFDoDA	8.792	615.0 -> 570.0	561138	20.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C2-PFTeDA	9.616	715.0 -> 670.0	387783	20.06	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.3%		
13C3-PFBS	4.118	302.0 -> 99.0	24934	20.59	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C3-PFHxS	6.174	402.0 -> 99.0	27921	20.50	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%		
13C4-PFBA	1.927	217.0 -> 172.0	179116	20.66	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C4-PFHpA	6.129	367.0 -> 322.0	299225	20.78	µg/L	0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C5-PFHxA	5.189	318.0 -> 273.0	212317	20.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C5-PFPeA	3.824	268.0 -> 223.0	147989	20.64	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C6-PFDA	7.968	519.0 -> 474.0	385082	20.80	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

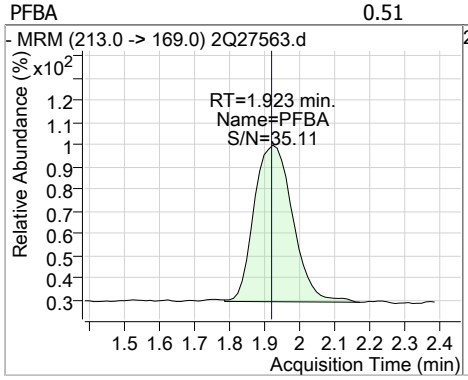
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C7-PFUnDA	8.392	570.0 -> 525.0	492405	20.55 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
13C8-FOSA	7.358	506.0 -> 78.0	122034	21.43 µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.1%		
13C8-PFOA	6.872	421.0 -> 376.0	312923	21.01 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.1%		
13C8-PFOS	7.461	507.0 -> 99.0	34489	20.85 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
13C9-PFNA	7.479	472.0 -> 427.0	298901	20.86 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
d3-MeFOSAA	7.822	573.0 -> 419.0	49571	20.73 µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%		
M2-PFOA	6.874	415.0 -> 370.0	410094	19.99 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.463	503.0 -> 80.0	58565	20.00 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.494	287.0 -> 169.0	211369	104.06 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
Target Compounds						**QValue**
4:2FTS	5.087	327.0 -> 307.0	1277	0.54 µg/L		95
6:2FTS	6.858	427.0 -> 407.0	1319	0.60 µg/L		91
8:2FTS	8.006	527.0 -> 507.0	848	0.59 µg/L		95
EtFOSAA	7.961	584.0 -> 419.0	611	0.55 µg/L		94
FOSA	7.347	498.0 -> 78.0	1613	0.59 µg/L		99
MeFOSAA	7.823	570.0 -> 419.0	735	0.56 µg/L		99
PFBA	1.923	213.0 -> 169.0	901	0.51 µg/L		100
PFBS	4.121	299.0 -> 80.0	1054	0.51 µg/L		96
PFDA	7.969	513.0 -> 469.0	4404	0.54 µg/L		97
PFDoDA	8.793	613.0 -> 569.0	6702	0.51 µg/L		99
PFDS	8.352	599.0 -> 80.0	355	0.52 µg/L		83
PFHpA	6.132	363.0 -> 319.0	7043	0.50 µg/L		100
PFHpS	6.880	449.0 -> 80.0	708	0.50 µg/L		97
PFHxA	5.191	313.0 -> 269.0	2013	0.55 µg/L		99
PFHxS	6.176	399.0 -> 80.0	928	0.56 µg/L	m	87
PFNA	7.480	463.0 -> 419.0	4929	0.51 µg/L		94
PFNS	7.939	549.0 -> 80.0	714	0.55 µg/L		97
PFOA	6.875	413.0 -> 369.0	4645	0.54 µg/L		98
PFOS	7.464	499.0 -> 80.0	1030	0.58 µg/L	m	84
PFPeA	3.828	263.0 -> 219.0	3641	0.54 µg/L		100
PFPeS	5.321	349.0 -> 80.0	719	0.51 µg/L		97
PFTeDA	9.620	713.0 -> 669.0	7261	0.54 µg/L		100
PFTrDA	9.220	663.0 -> 619.0	7699	0.52 µg/L		99
PFUnDA	8.393	563.0 -> 519.0	5113	0.49 µg/L		98
11Cl-PF3OUdS	8.538	631.0 -> 451.0	3886	0.55 µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	745	0.54 µg/L		100
ADONA	6.241	377.0 -> 251.0	7823	0.50 µg/L		100
HFPO-DA	5.486	329.0 -> 169.0	6959	2.71 µg/L		100

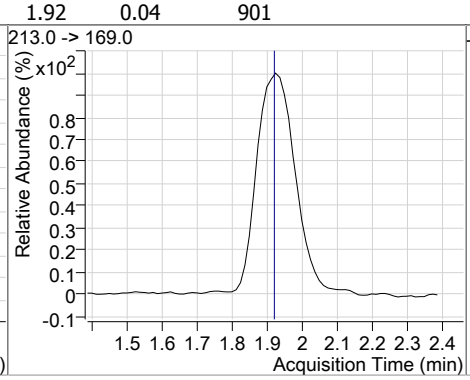
 # = Qualifier out of range, m = manually integrated, + = Area summed

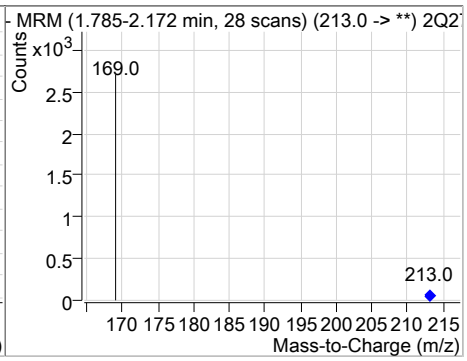
Perfluorinated Compounds by LC/MS/MS



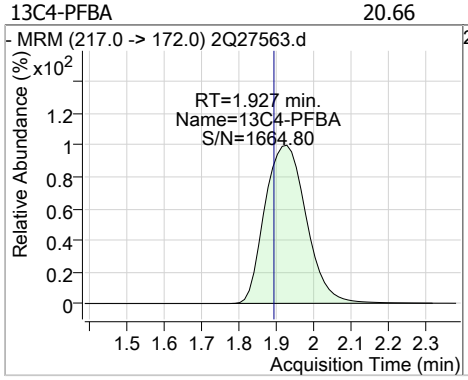
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.51	1.92	0.04	901				

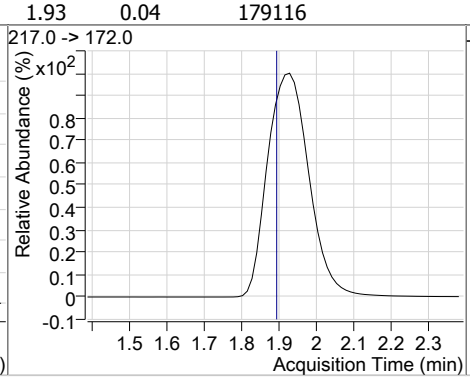


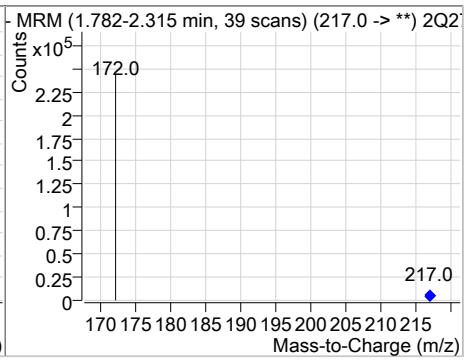




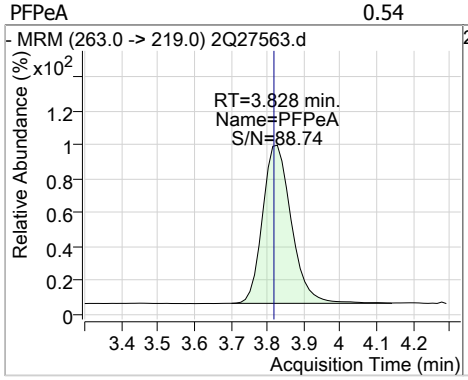
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.66	1.93	0.04	179116				

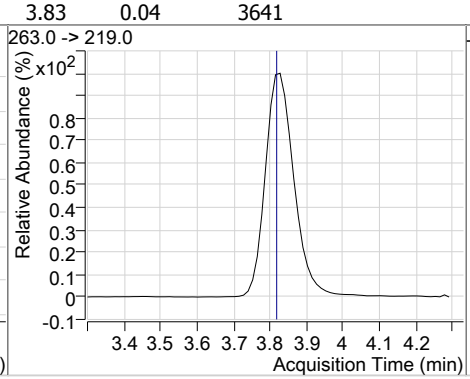


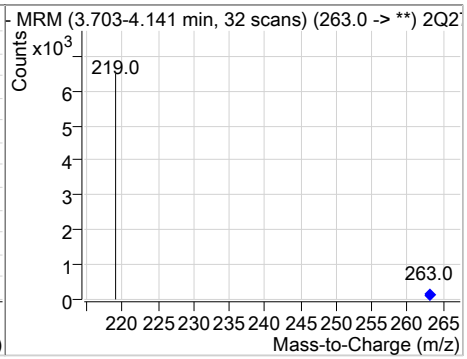




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.54	3.83	0.04	3641				

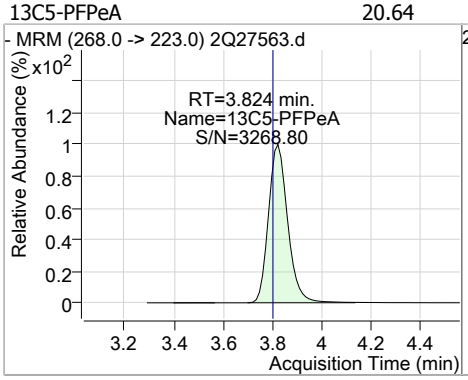


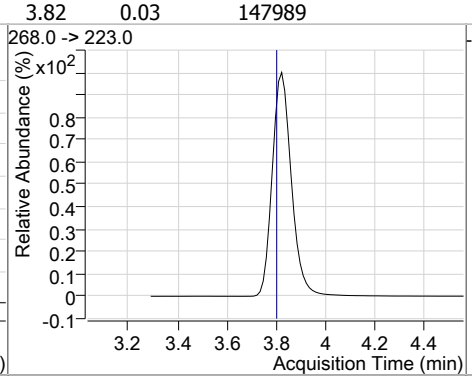


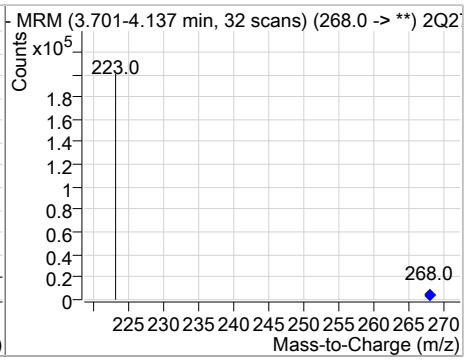


Perfluorinated Compounds by LC/MS/MS

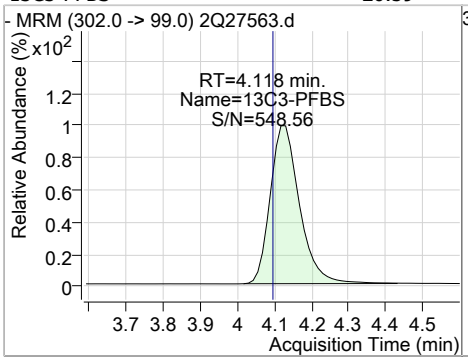
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.64	3.82	0.03	147989				

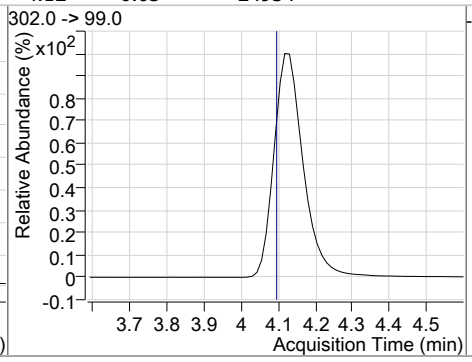


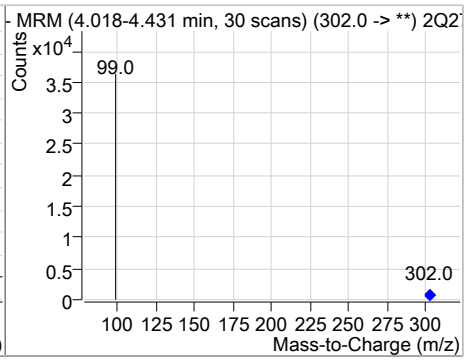




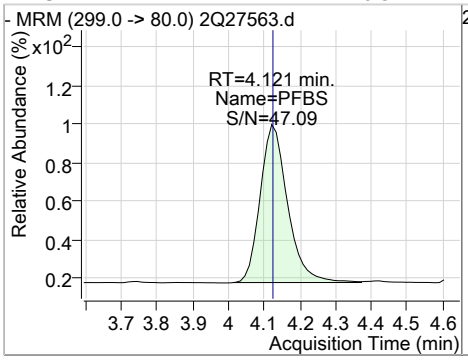
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.59	4.12	0.03	24934				

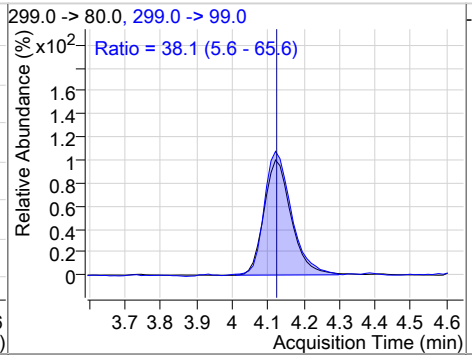


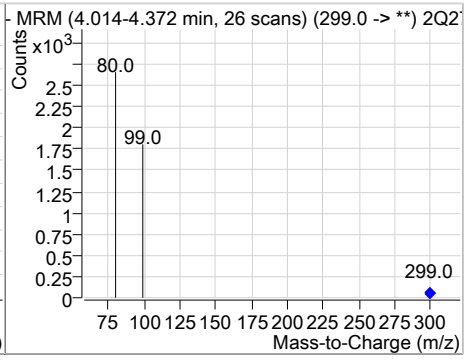




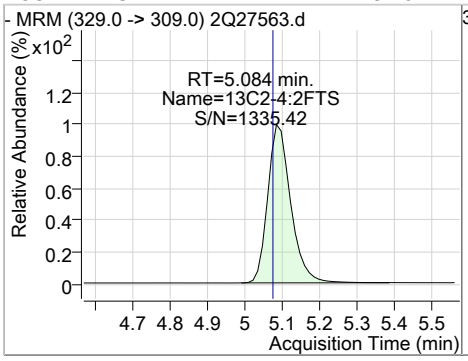
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.51	4.12	0.03	1054	299.0 -> 99.0	38.1	5.6	65.6

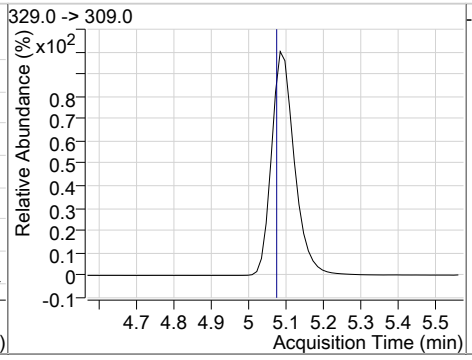


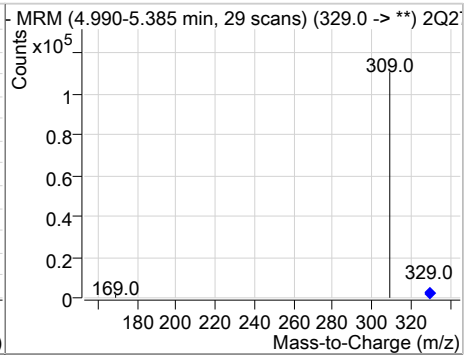




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.48	5.08	0.01	80861				

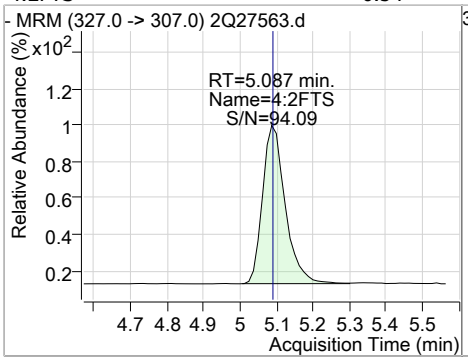


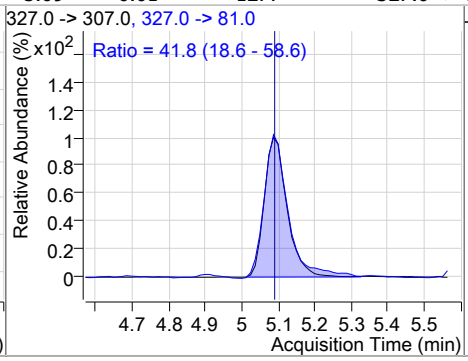


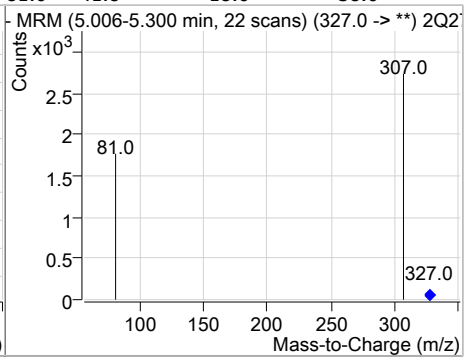


Perfluorinated Compounds by LC/MS/MS

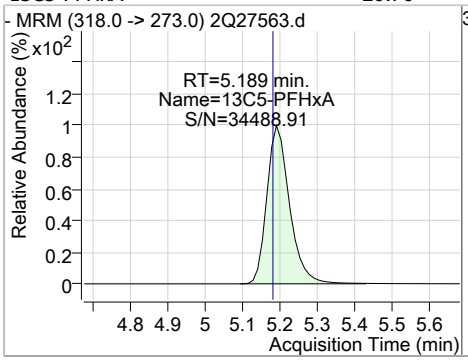
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.54	5.09	0.01	1277	327.0 -> 81.0	41.8	18.6	58.6

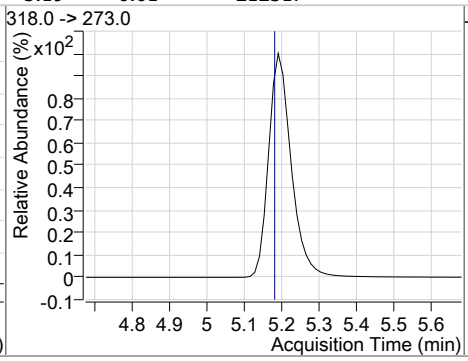


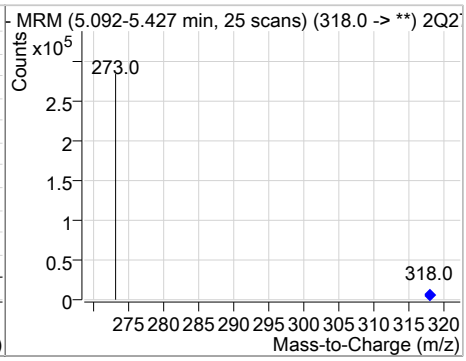




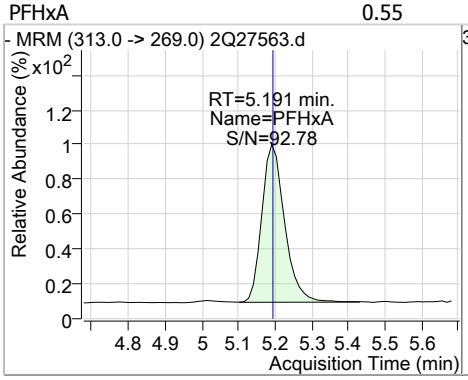
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.70	5.19	0.01	212317				

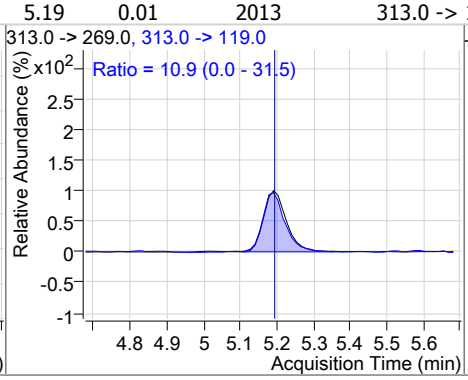


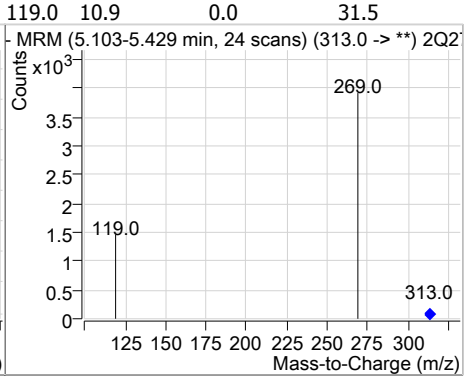




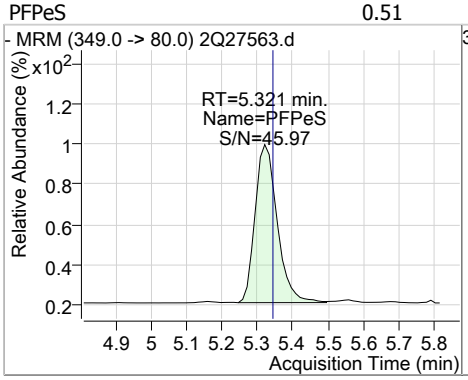
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.55	5.19	0.01	2013	313.0 -> 119.0	10.9	0.0	31.5

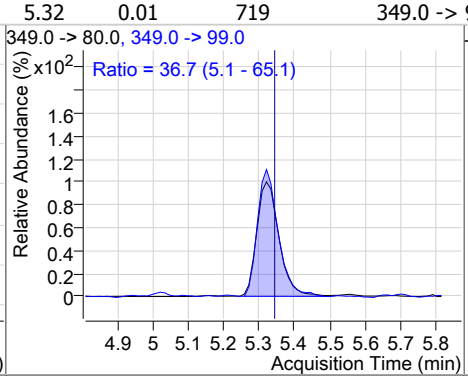


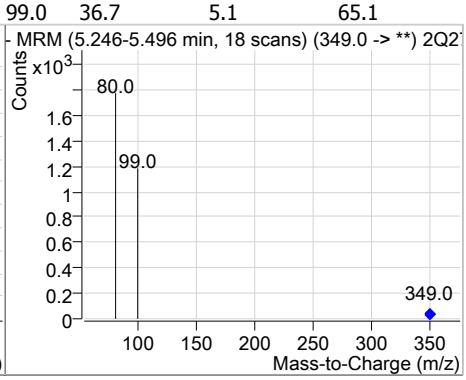




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.51	5.32	0.01	719	349.0 -> 99.0	36.7	5.1	65.1

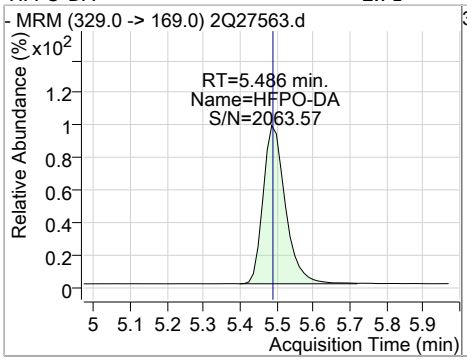


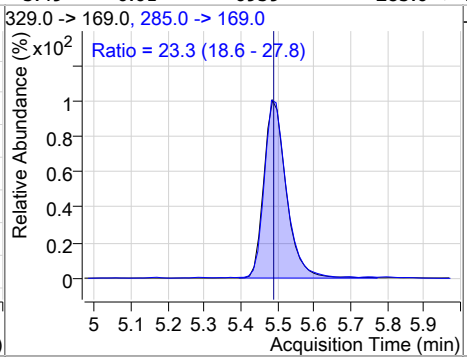


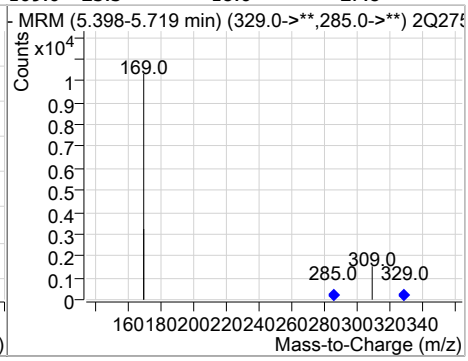


Perfluorinated Compounds by LC/MS/MS

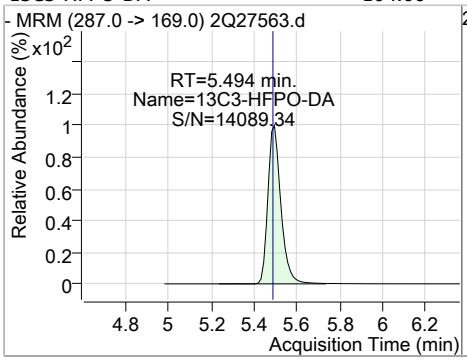
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	2.71	5.49	0.01	6959	285.0 -> 169.0	23.3	18.6	27.8

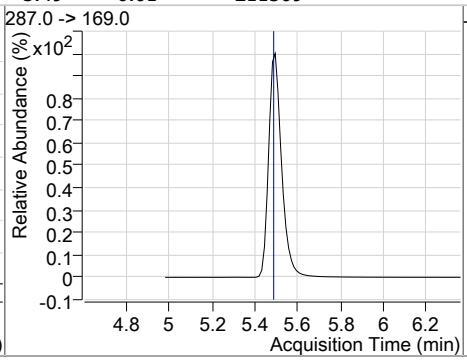


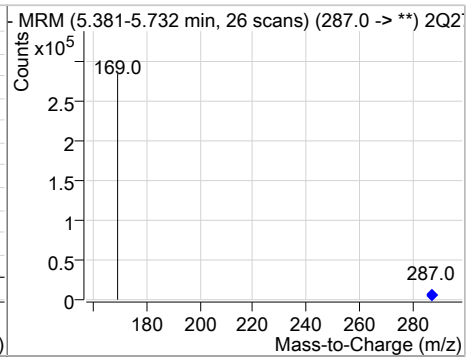




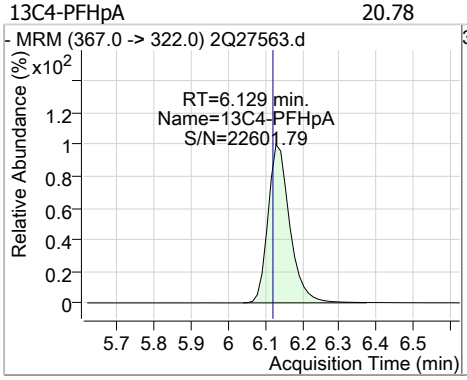
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	104.06	5.49	0.01	211369				

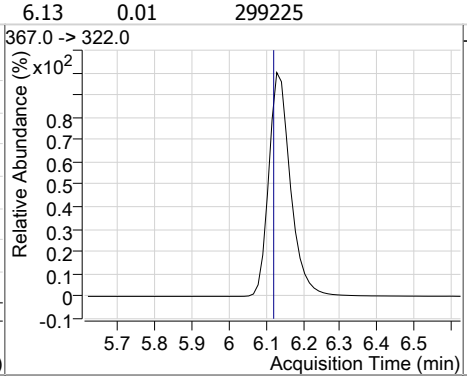


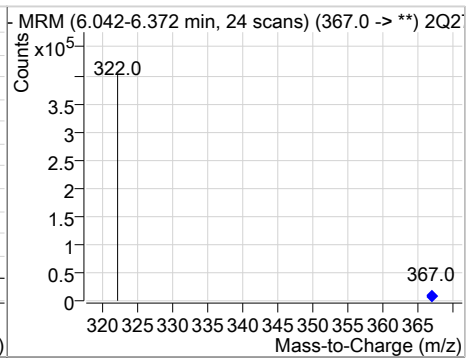




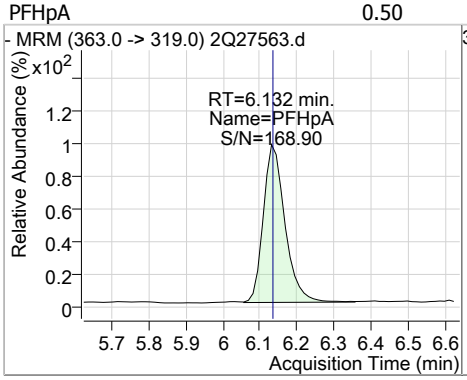
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.78	6.13	0.01	299225				

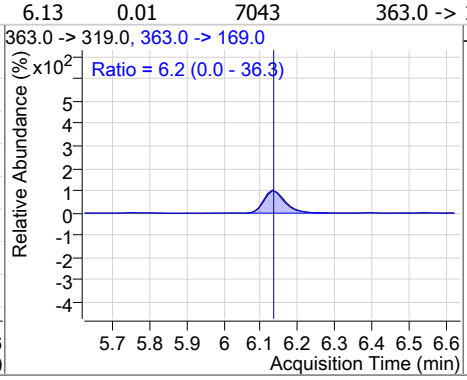


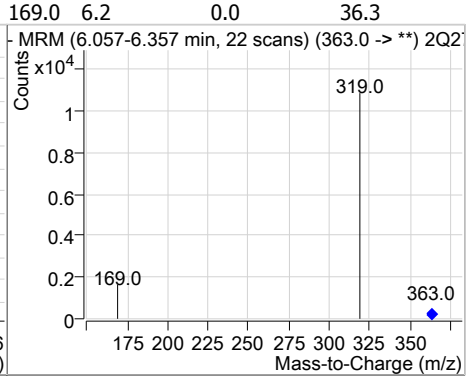




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.50	6.13	0.01	7043	363.0 -> 169.0	6.2	0.0	36.3

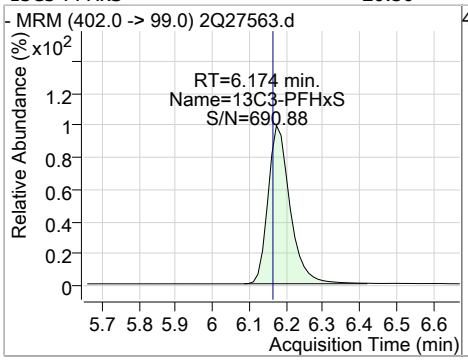


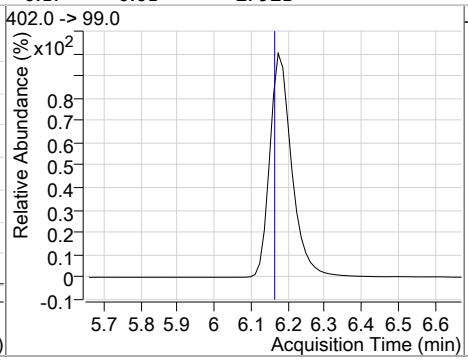


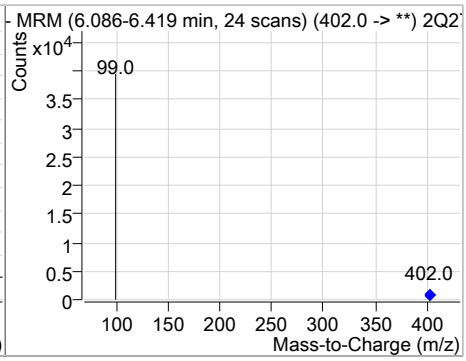


Perfluorinated Compounds by LC/MS/MS

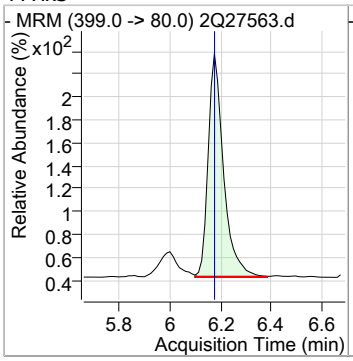
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.50	6.17	0.01	27921				

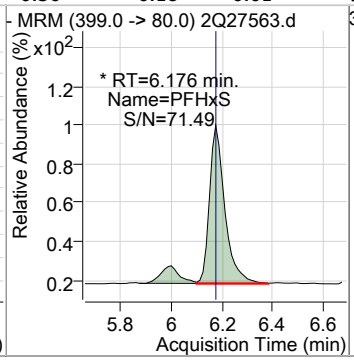


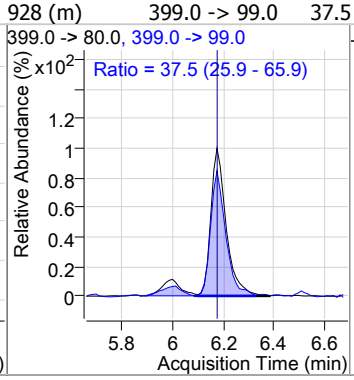


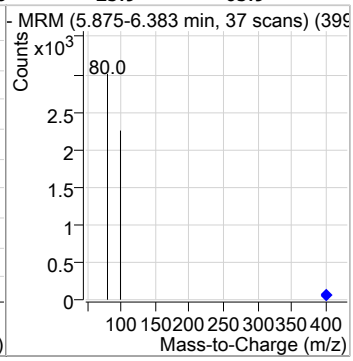


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.56	6.18	0.01	928 (m)	399.0 -> 99.0	37.5	25.9	65.9

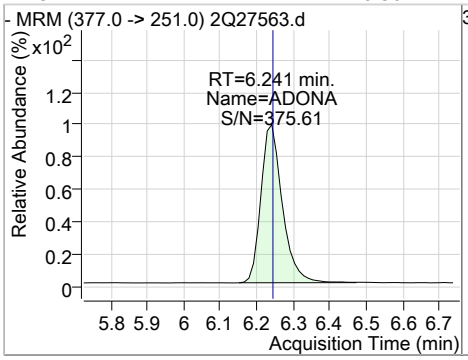


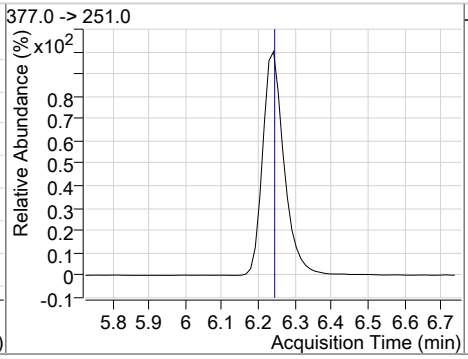


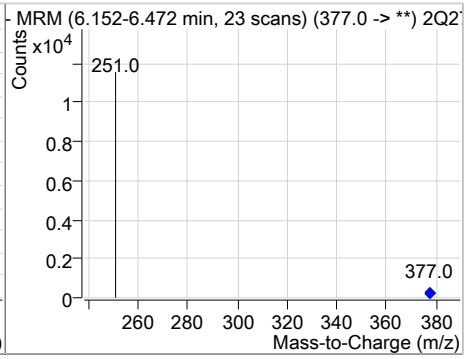




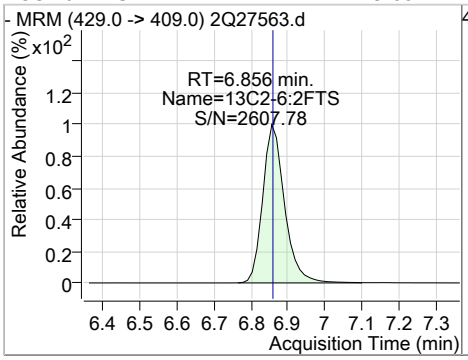
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.50	6.24	0.01	7823				

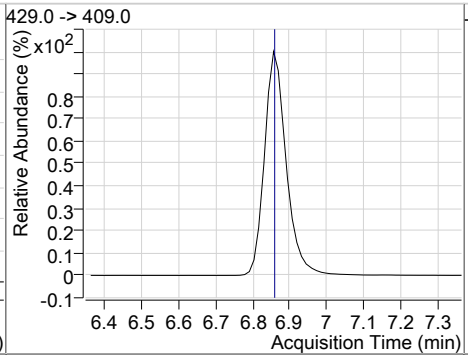


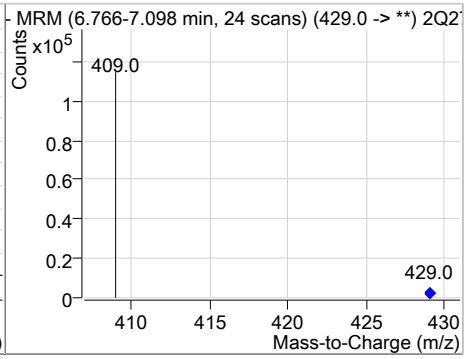




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.88	6.86	0.00	86654				

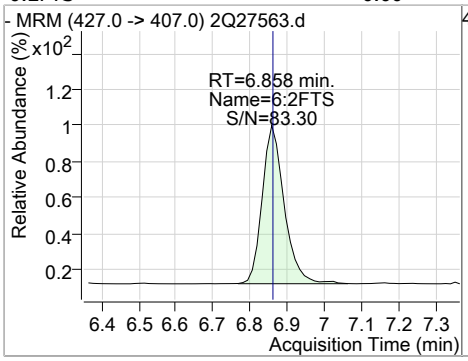


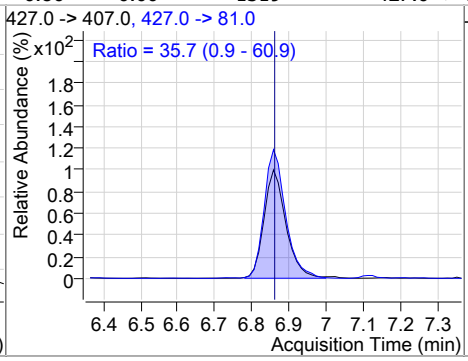


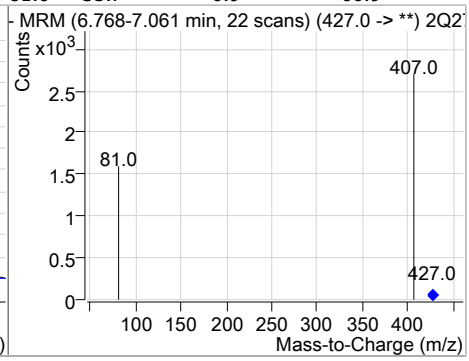


Perfluorinated Compounds by LC/MS/MS

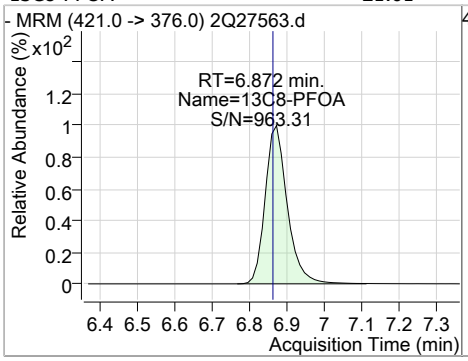
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.60	6.86	0.00	1319	427.0 -> 81.0	35.7	0.9	60.9

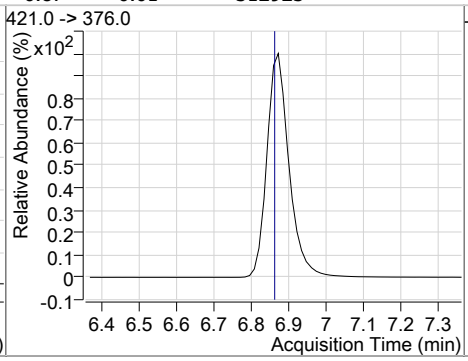


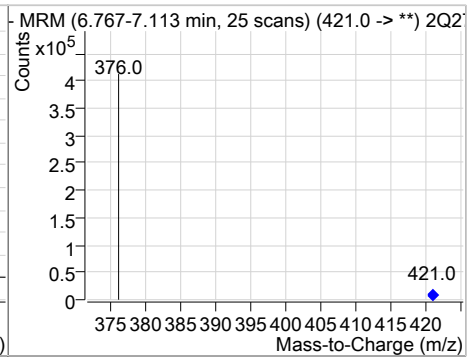




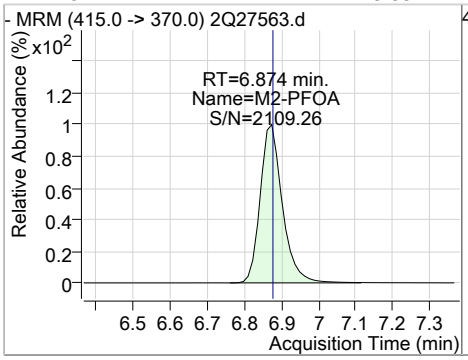
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.01	6.87	0.01	312923				

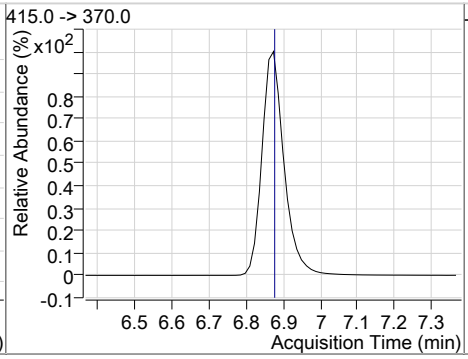


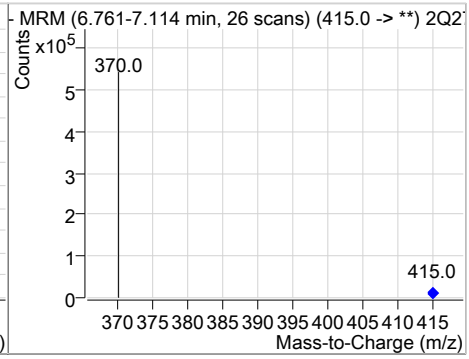




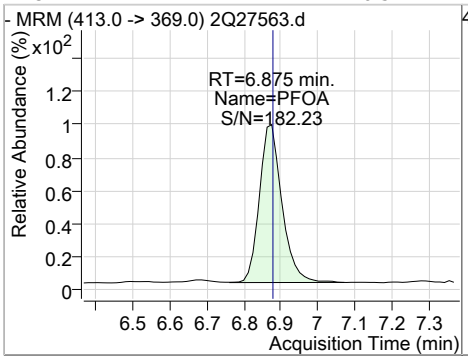
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.87	0.01	410094				

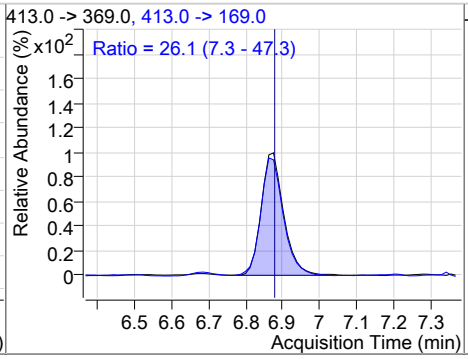


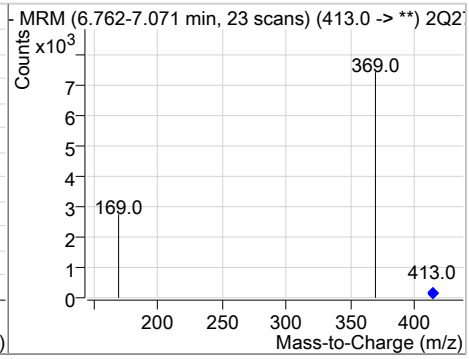




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.54	6.88	0.01	4645	413.0 -> 169.0	26.1	7.3	47.3

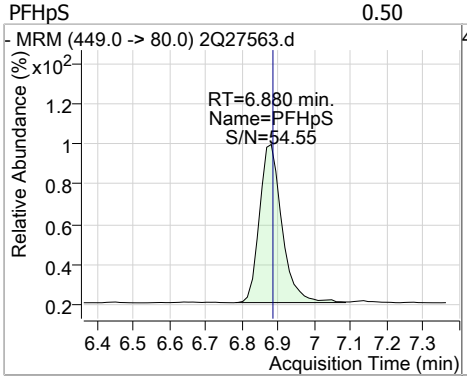


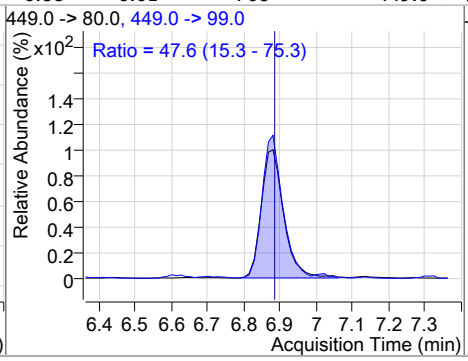


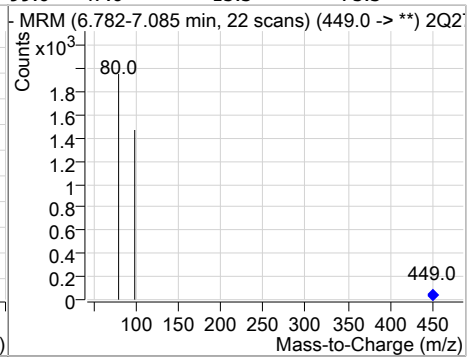


Perfluorinated Compounds by LC/MS/MS

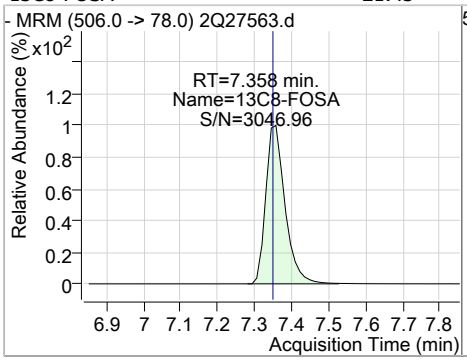
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.50	6.88	0.01	708	449.0 -> 99.0	47.6	15.3	75.3

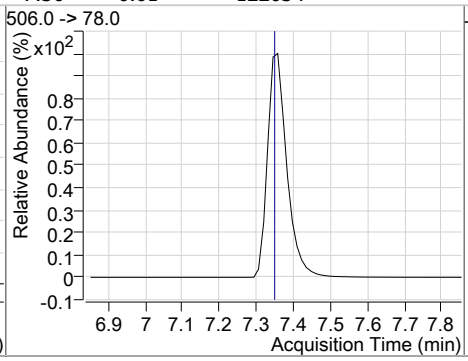


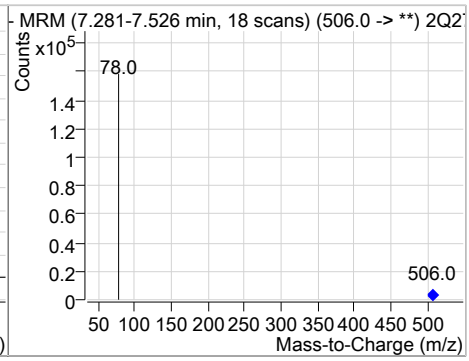




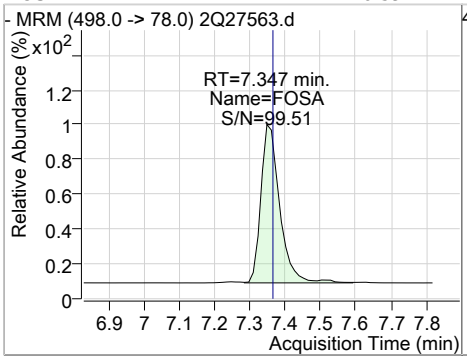
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.43	7.36	0.01	122034				

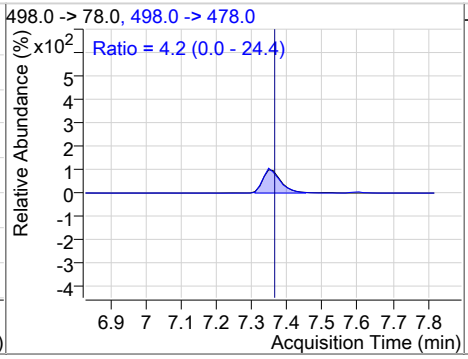


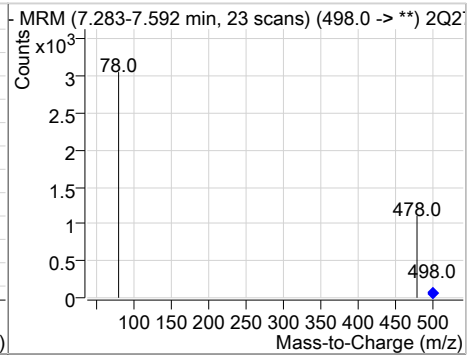




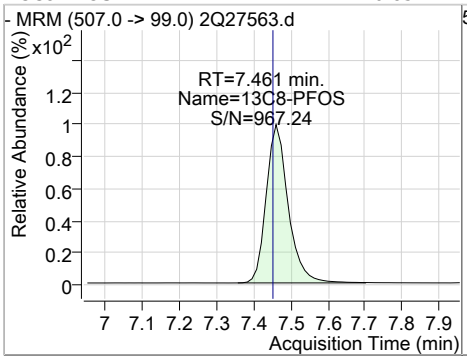
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.59	7.35	0.00	1613	498.0 -> 478.0	4.2	0.0	24.4

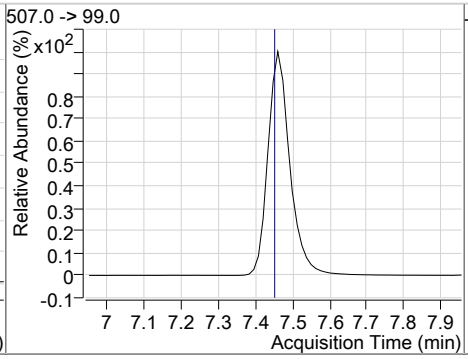


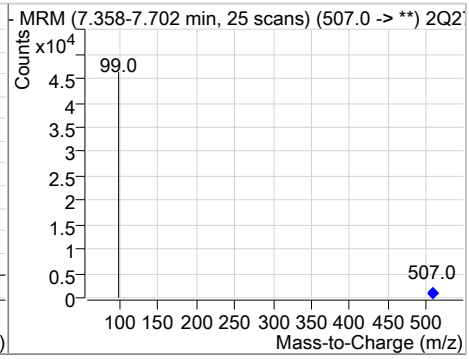




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.85	7.46	0.01	34489				

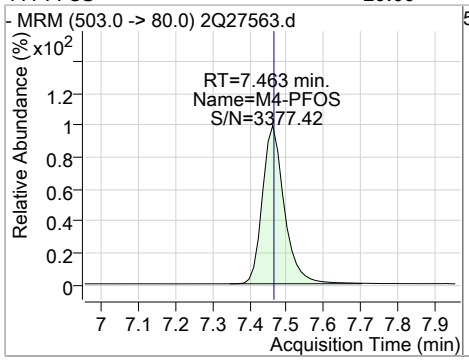


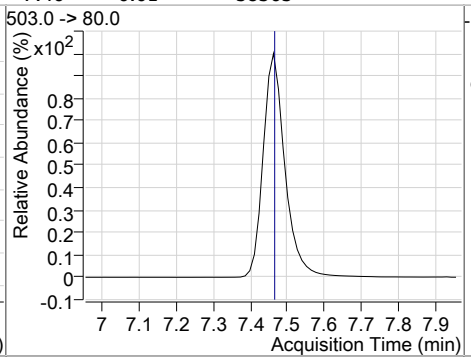


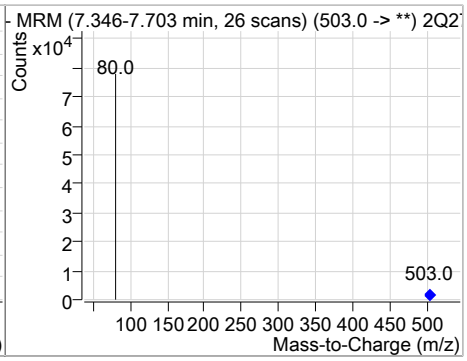


Perfluorinated Compounds by LC/MS/MS

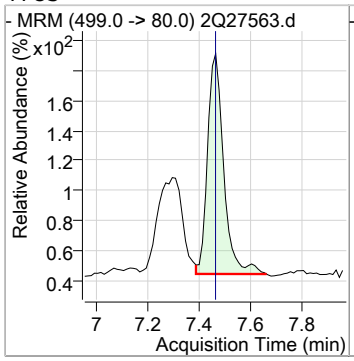
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.46	0.01	58565				

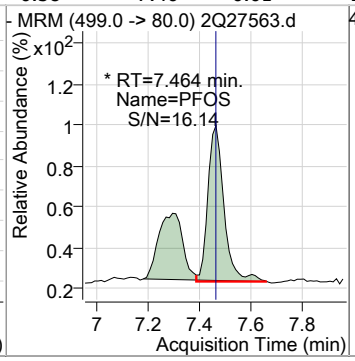


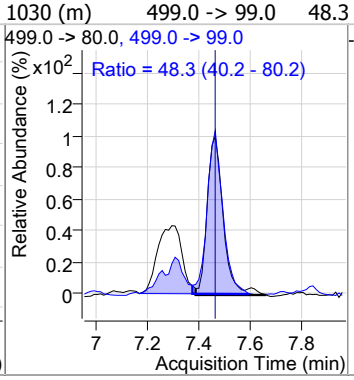


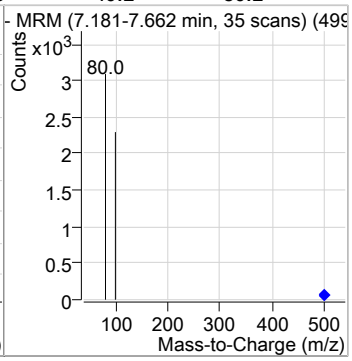


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.58	7.46	0.01	1030 (m)	499.0 -> 99.0	48.3	40.2	80.2

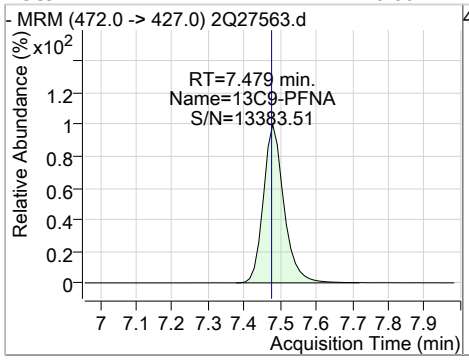


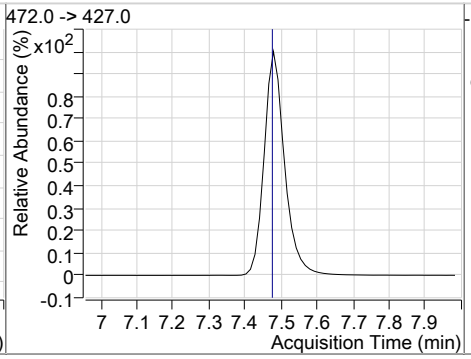


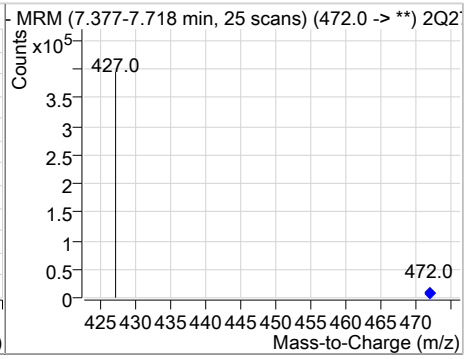




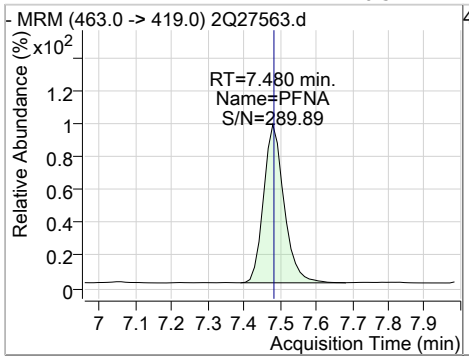
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.86	7.48	0.00	298901				

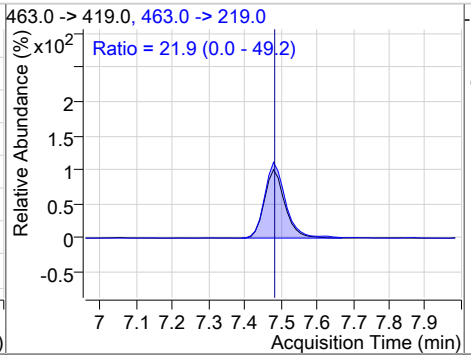


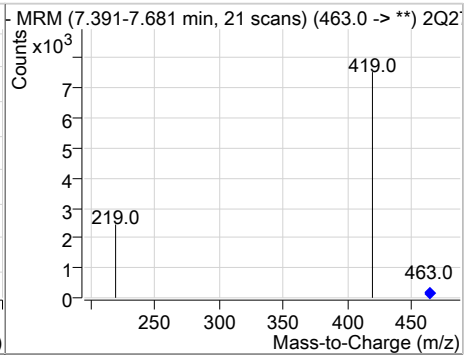




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.51	7.48	0.00	4929	463.0 -> 219.0	21.9	0.0	49.2

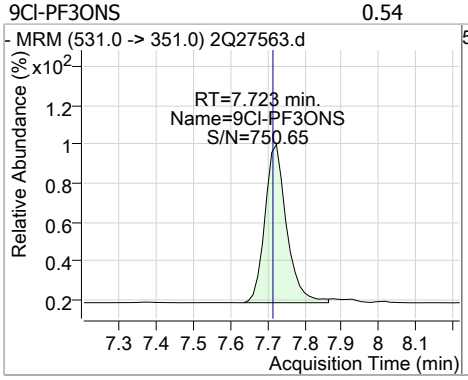


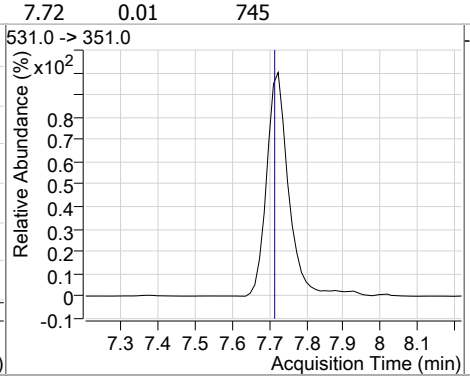


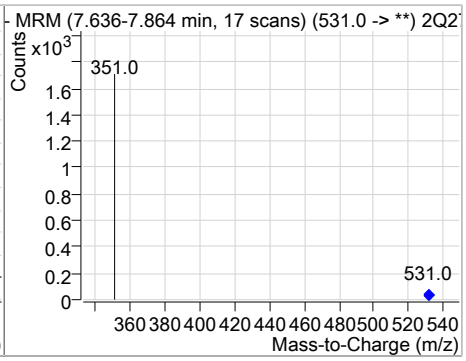


Perfluorinated Compounds by LC/MS/MS

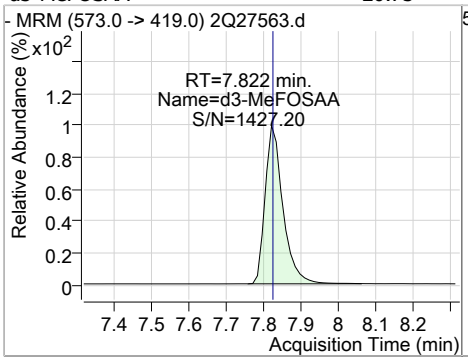
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.54	7.72	0.01	745				

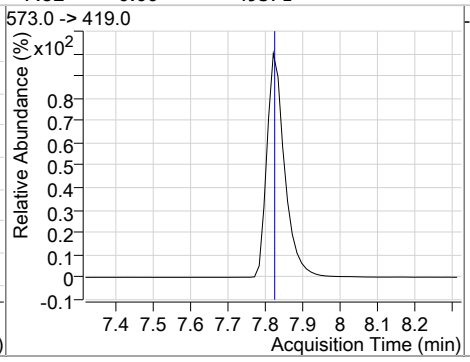


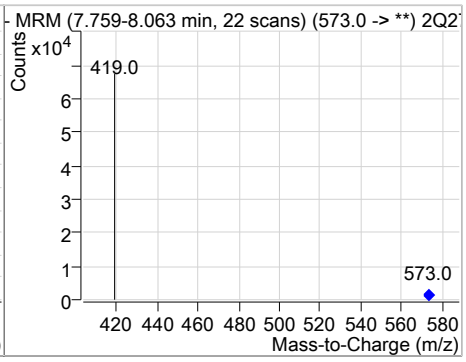




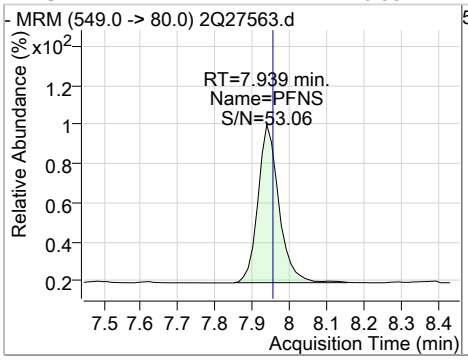
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.73	7.82	0.00	49571				

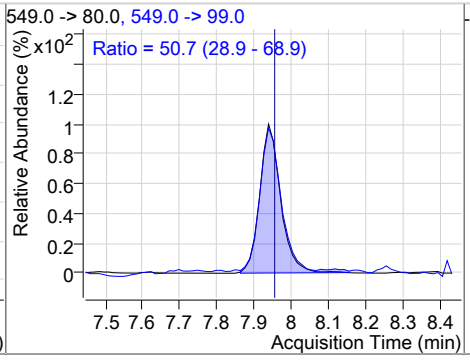


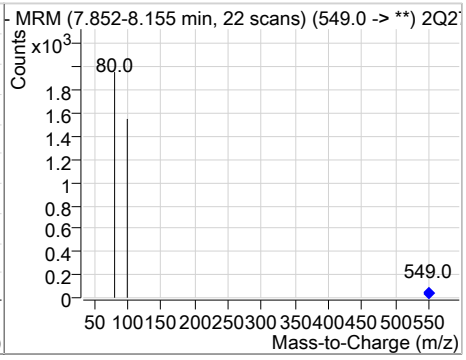




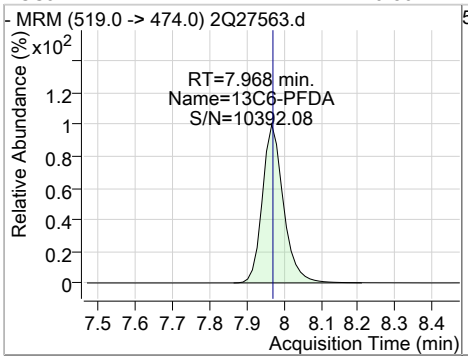
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.55	7.94	0.00	714	549.0 -> 99.0	50.7	28.9	68.9

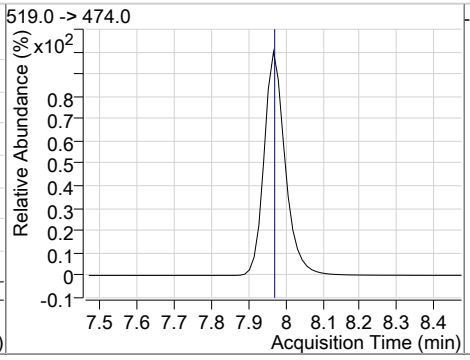


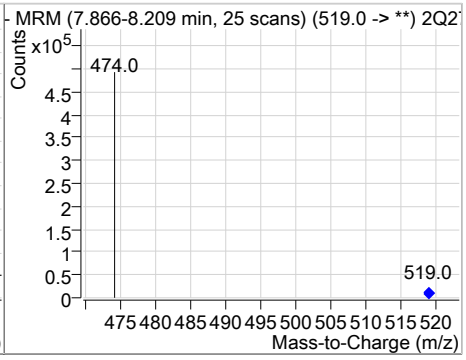




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.80	7.97	0.00	385082				

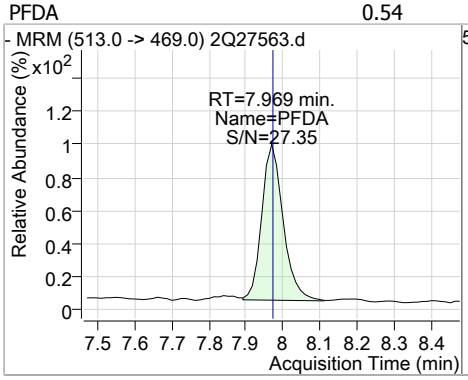


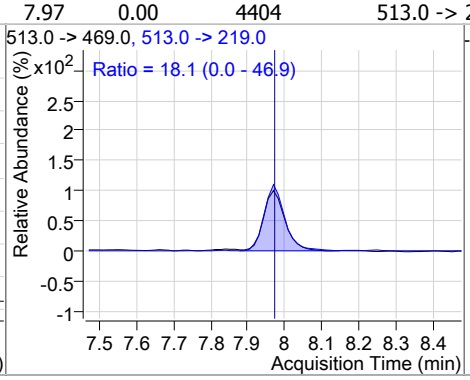


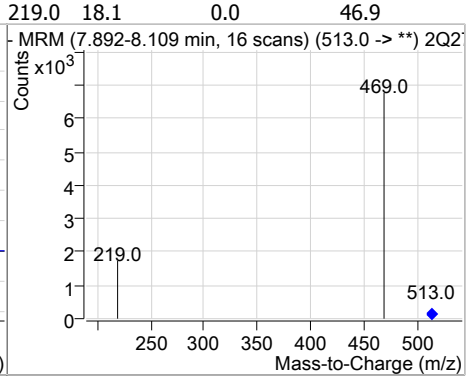


Perfluorinated Compounds by LC/MS/MS

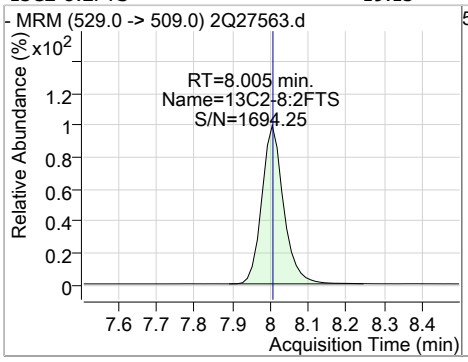
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.54	7.97	0.00	4404	513.0 -> 219.0	18.1	0.0	46.9

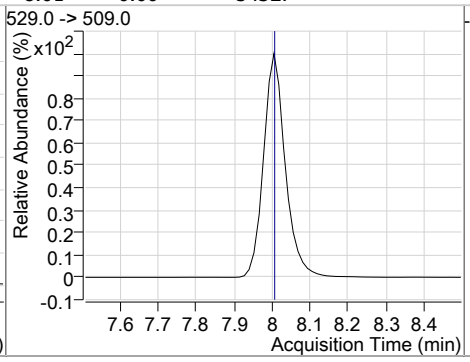


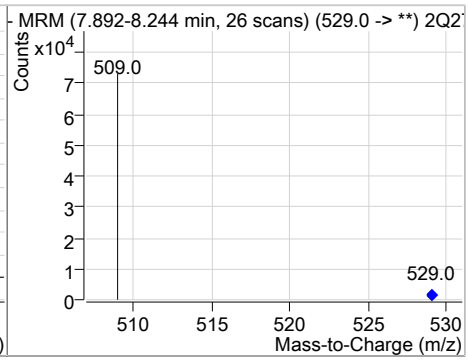




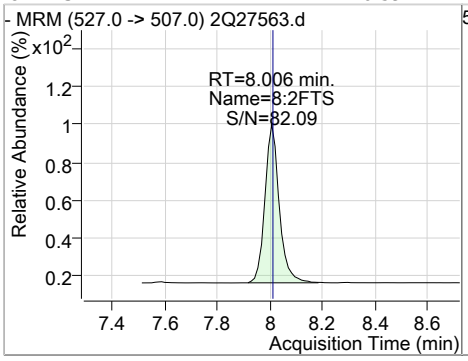
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.13	8.01	0.00	54327				

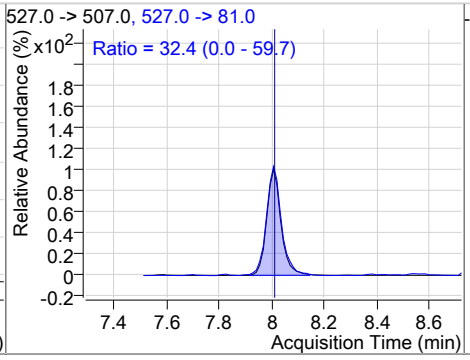


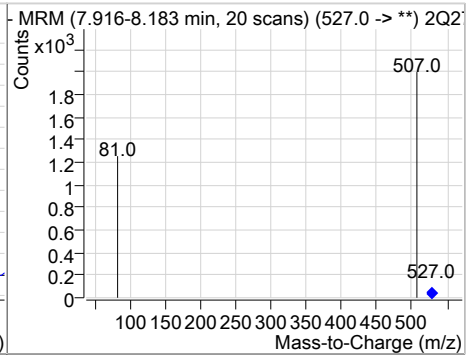




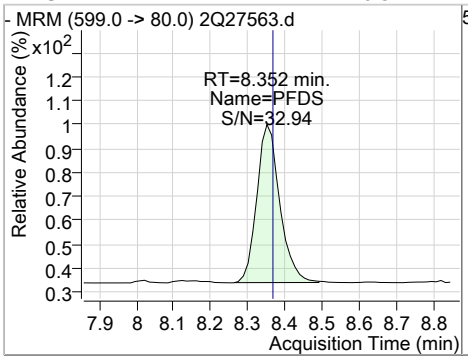
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.59	8.01	0.00	848	527.0 -> 81.0	32.4	0.0	59.7

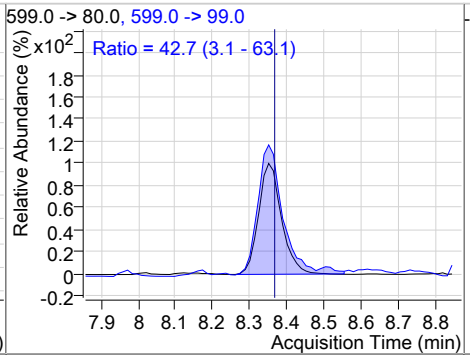


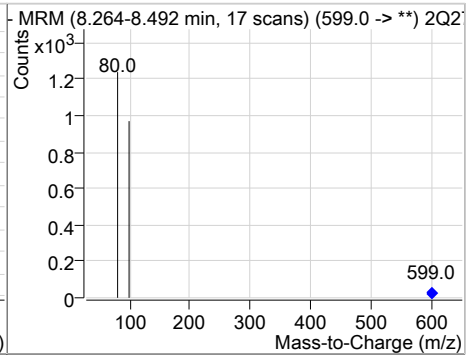




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.52	8.35	0.00	355	599.0 -> 99.0	42.7	3.1	63.1

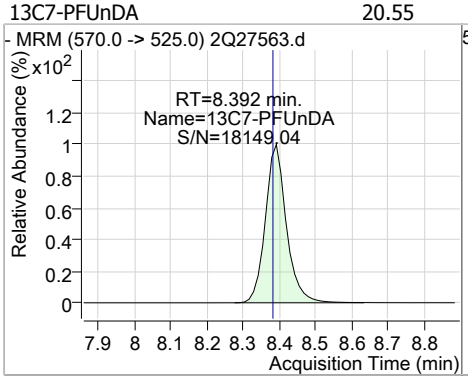


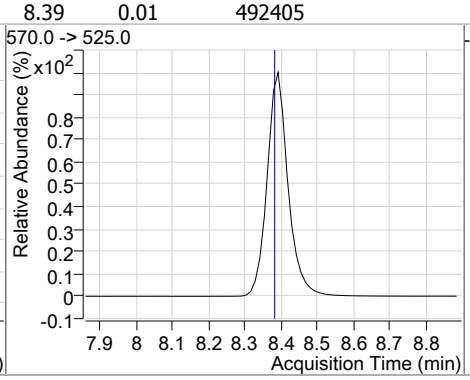


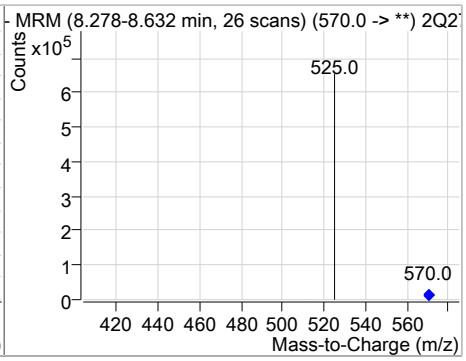


Perfluorinated Compounds by LC/MS/MS

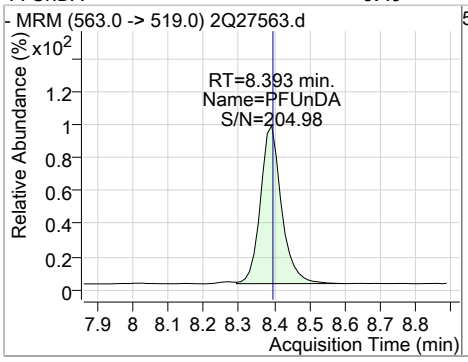
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.55	8.39	0.01	492405				

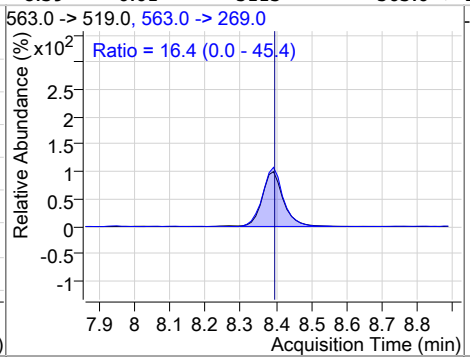


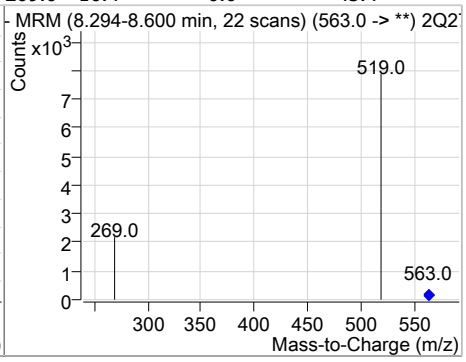




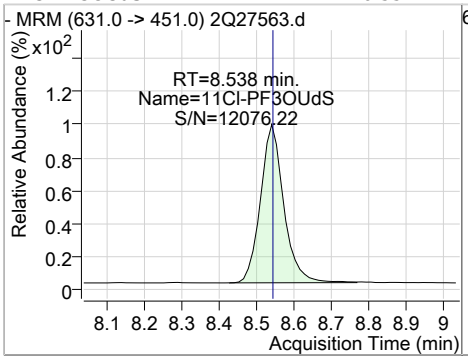
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.49	8.39	0.01	5113	563.0 -> 269.0	16.4	0.0	45.4

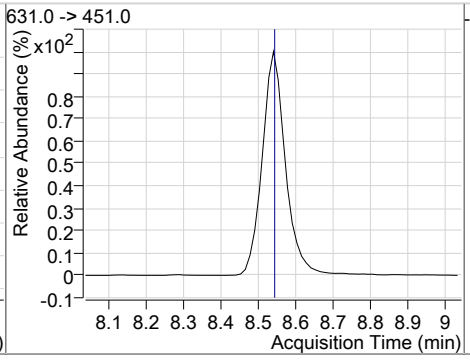


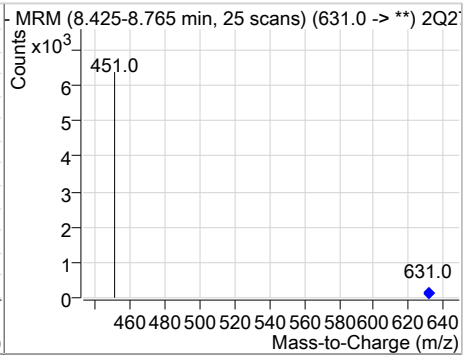




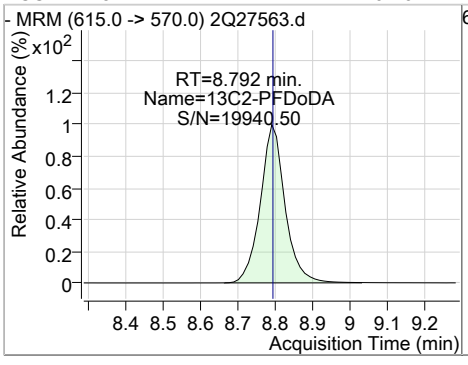
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.55	8.54	0.00	3886				

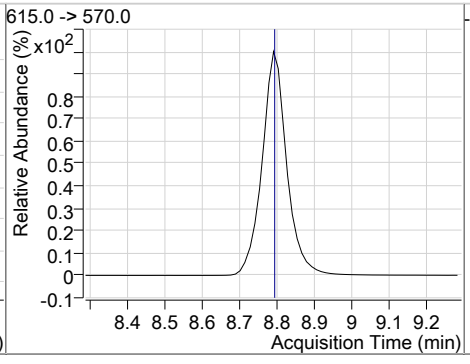


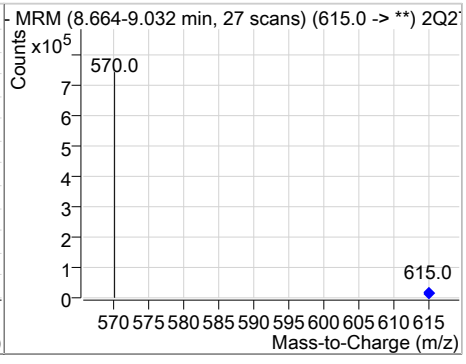




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.10	8.79	0.00	561138				

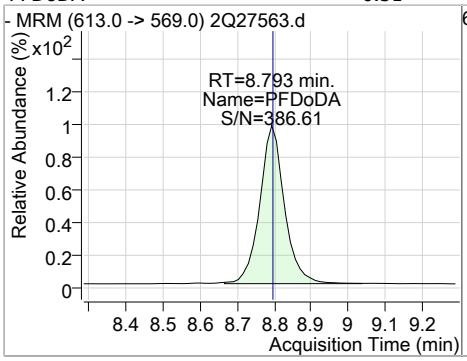


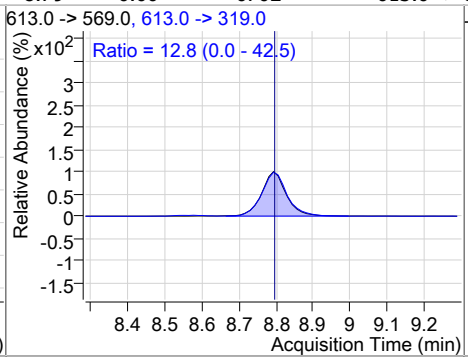


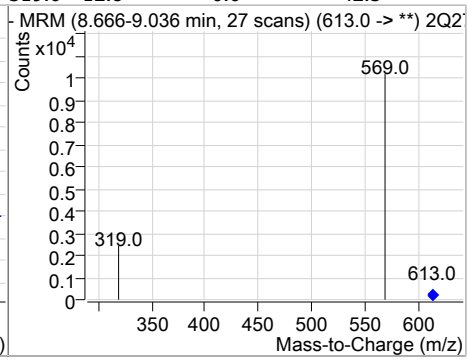


Perfluorinated Compounds by LC/MS/MS

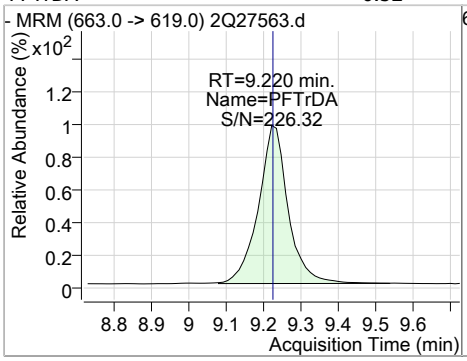
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.51	8.79	0.00	6702	613.0 -> 319.0	12.8	0.0	42.5

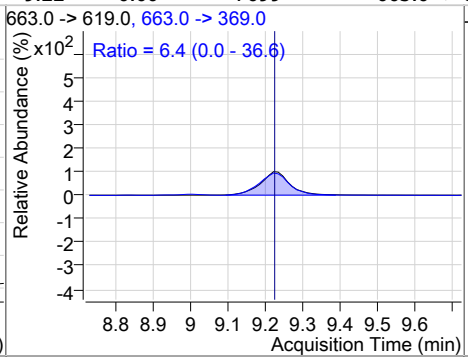


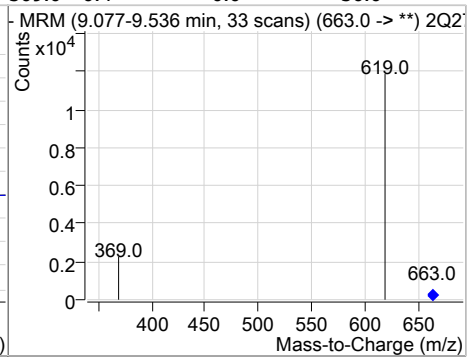




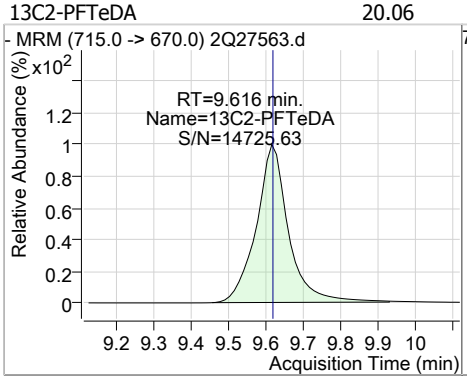
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.52	9.22	0.00	7699	663.0 -> 369.0	6.4	0.0	36.6

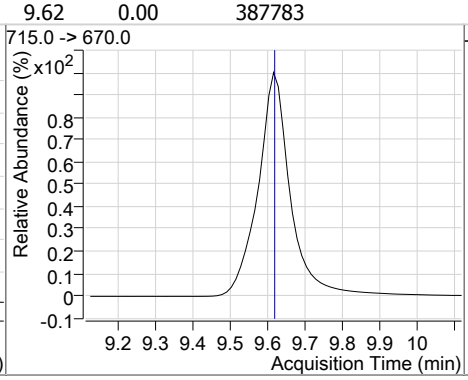


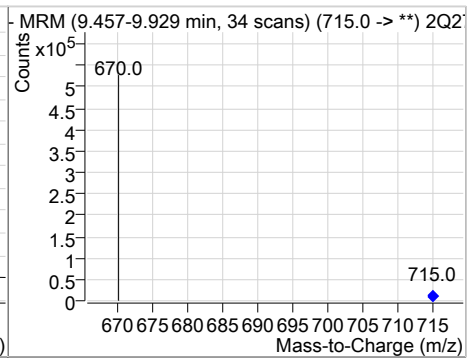




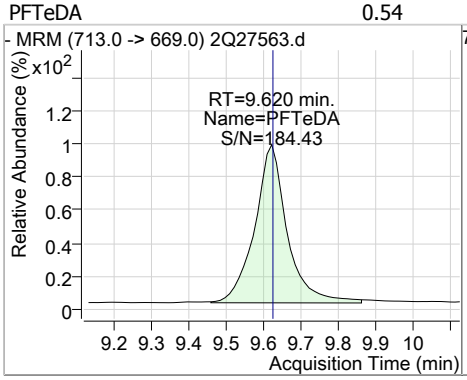
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.06	9.62	0.00	387783				

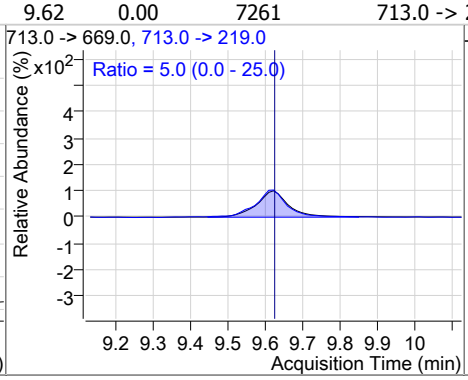


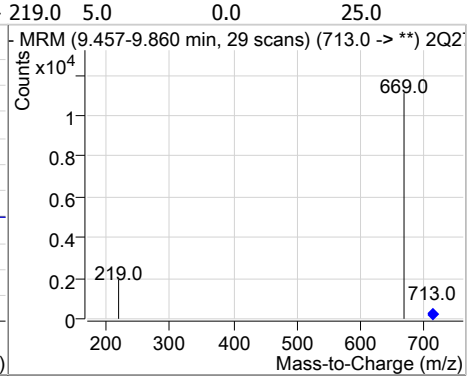




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.54	9.62	0.00	7261	713.0 -> 219.0	5.0	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27563.D
Injection Time: 03/13/19 10:44
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27564.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 11:00:17 AM
Sample Name : ic439-1.0
Vial : Vial 3
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

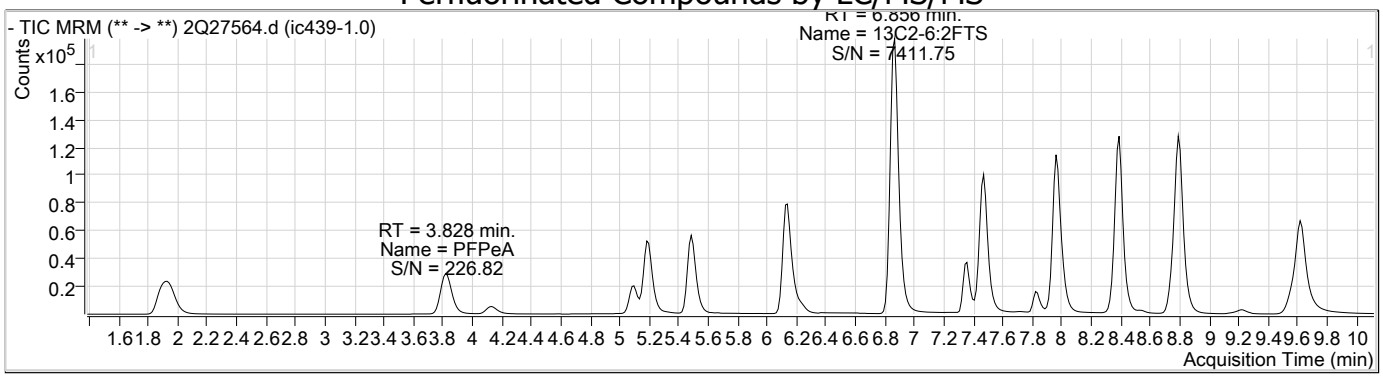
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	399343	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	57395	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	182263	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	150830	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	215268	20.00	µg/L	0.013
M4-PFHpA	6.129	367.0 -> 322.0	306932	20.00	µg/L	0.011
M8-PFOA	6.872	421.0 -> 376.0	319880	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	303399	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	393199	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	501659	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	574805	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	403380	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	124891	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	25749	20.00	µg/L	0.038
M3-PFHxS	6.174	402.0 -> 99.0	29051	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	34892	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	81749	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	87102	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	55022	20.00	µg/L	0.001
M3-MeFOSAA	7.822	573.0 -> 419.0	49504	20.00	µg/L	-0.001
M3-HFPO-DA	5.494	287.0 -> 169.0	216180	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	81678	19.67	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C2-6:2FTS	6.856	429.0 -> 409.0	87183	20.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C2-8:2FTS	8.005	529.0 -> 509.0	55046	19.39	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C2-PFDoDA	8.792	615.0 -> 570.0	574512	20.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.9%		
13C2-PFTeDA	9.616	715.0 -> 670.0	408236	21.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C3-PFBS	4.130	302.0 -> 99.0	25593	21.14	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.7%		
13C3-PFHxS	6.174	402.0 -> 99.0	28993	21.29	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.4%		
13C4-PFBA	1.927	217.0 -> 172.0	181265	20.91	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C4-PFHpA	6.129	367.0 -> 322.0	306387	21.28	µg/L	0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.4%		
13C5-PFHxA	5.189	318.0 -> 273.0	215080	20.97	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.8%		
13C5-PFPeA	3.824	268.0 -> 223.0	150926	21.05	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C6-PFDA	7.968	519.0 -> 474.0	393137	21.23	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

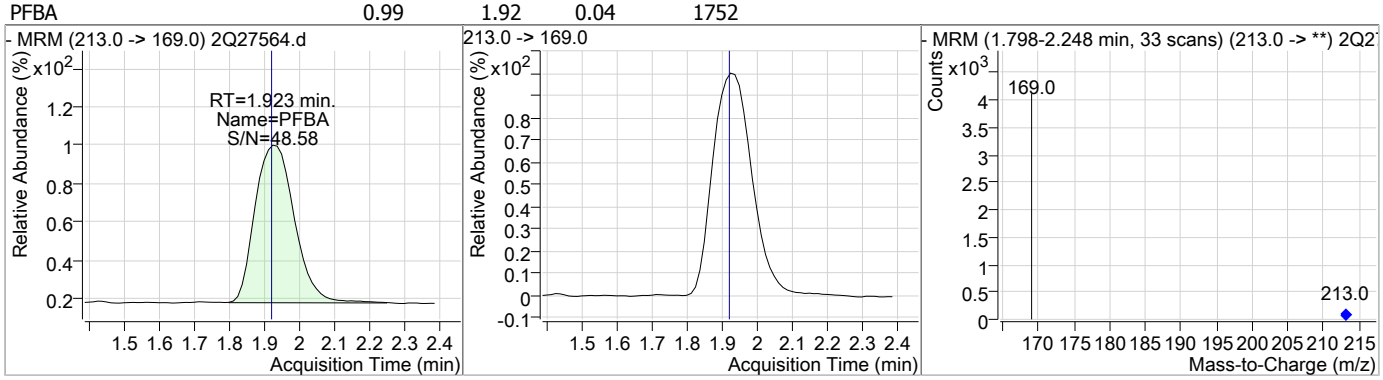
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.2%		
13C7-PFUnDA	8.392	570.0 -> 525.0	501171	20.92 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C8-FOSA	7.358	506.0 -> 78.0	124850	21.92 µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.6%		
13C8-PFOA	6.872	421.0 -> 376.0	319679	21.47 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.3%		
13C8-PFOS	7.461	507.0 -> 99.0	34877	21.09 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.4%		
13C9-PFNA	7.479	472.0 -> 427.0	303050	21.15 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.7%		
d3-MeFOSAA	7.822	573.0 -> 419.0	49479	20.69 µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
M2-PFOA	6.874	415.0 -> 370.0	399779	20.00 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.463	503.0 -> 80.0	57408	20.00 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.494	287.0 -> 169.0	216180	106.42 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 106.4%		
Target Compounds						**QValue**
4:2FTS	5.087	327.0 -> 307.0	2460	1.03 µg/L		96
6:2FTS	6.858	427.0 -> 407.0	2322	1.04 µg/L		98
8:2FTS	8.006	527.0 -> 507.0	1424	0.98 µg/L		92
EtFOSAA	7.961	584.0 -> 419.0	1122	1.02 µg/L		94
FOSA	7.347	498.0 -> 78.0	2836	1.01 µg/L		99
MeFOSAA	7.835	570.0 -> 419.0	1268	0.97 µg/L		96
PFBA	1.923	213.0 -> 169.0	1752	0.99 µg/L		100
PFBS	4.121	299.0 -> 80.0	2145	1.01 µg/L		99
PFDA	7.969	513.0 -> 469.0	8236	0.99 µg/L		99
PFDoDA	8.793	613.0 -> 569.0	12954	0.96 µg/L		99
PFDS	8.352	599.0 -> 80.0	724	1.05 µg/L		94
PFHpA	6.132	363.0 -> 319.0	13841	0.96 µg/L		100
PFHpS	6.880	449.0 -> 80.0	1415	0.96 µg/L		97
PFHxA	5.191	313.0 -> 269.0	3806	1.02 µg/L		98
PFHxS	6.176	399.0 -> 80.0	1643	0.95 µg/L	m	99
PFNA	7.480	463.0 -> 419.0	9433	0.96 µg/L		98
PFNS	7.939	549.0 -> 80.0	1280	0.98 µg/L		98
PFOA	6.875	413.0 -> 369.0	8447	0.97 µg/L		99
PFOS	7.464	499.0 -> 80.0	1788	1.00 µg/L	m	87
PFPeA	3.828	263.0 -> 219.0	6805	0.99 µg/L		100
PFPeS	5.321	349.0 -> 80.0	1433	0.98 µg/L		99
PFTeDA	9.620	713.0 -> 669.0	13630	0.99 µg/L		99
PFTrDA	9.220	663.0 -> 619.0	14514	0.96 µg/L		100
PFUnDA	8.393	563.0 -> 519.0	9818	0.92 µg/L		98
11Cl-PF3OUdS	8.538	631.0 -> 451.0	7035	0.97 µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	1485	1.05 µg/L		100
ADONA	6.241	377.0 -> 251.0	15702	0.98 µg/L		100
HFPO-DA	5.498	329.0 -> 169.0	13281	5.06 µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

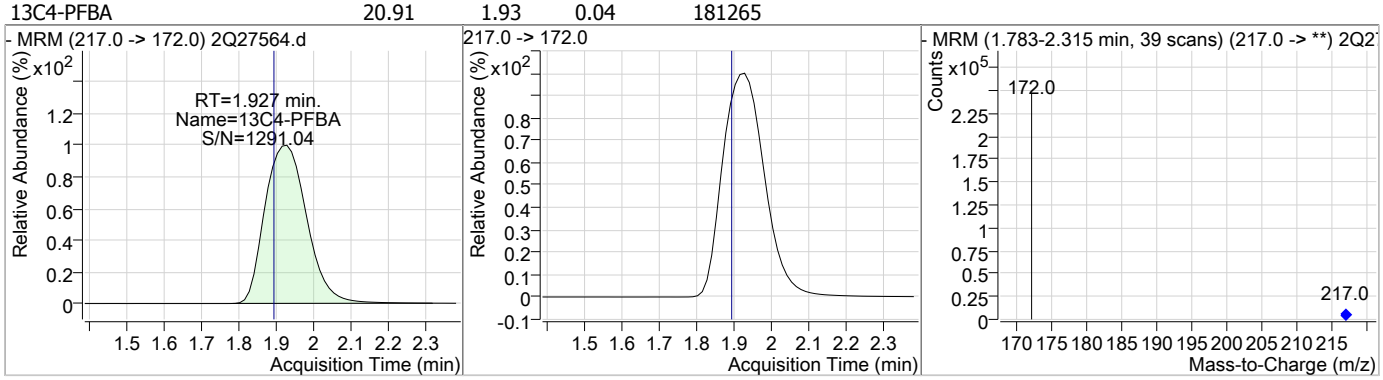
Perfluorinated Compounds by LC/MS/MS



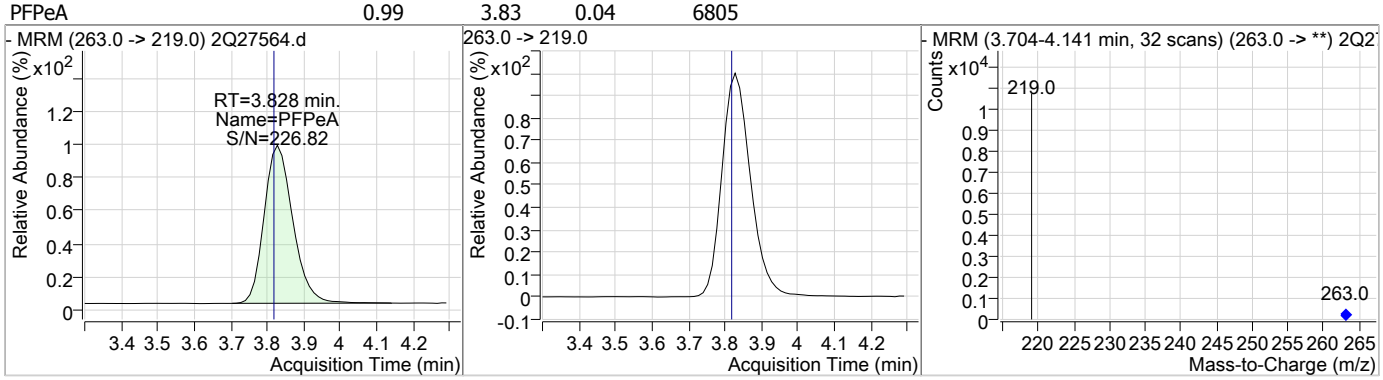
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.99	1.92	0.04	1752				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.91	1.93	0.04	181265				

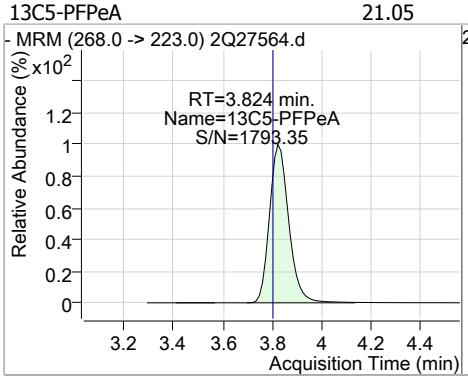


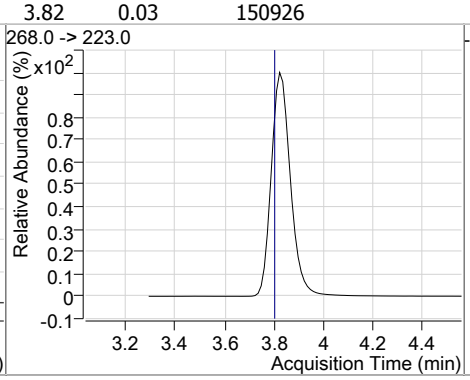
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.99	3.83	0.04	6805				

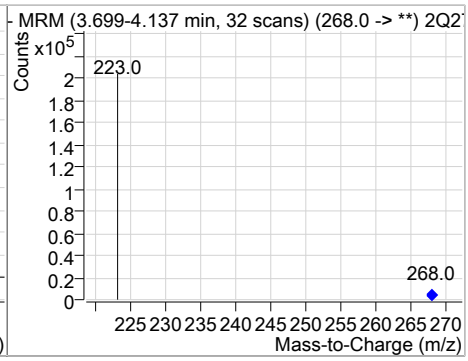


Perfluorinated Compounds by LC/MS/MS

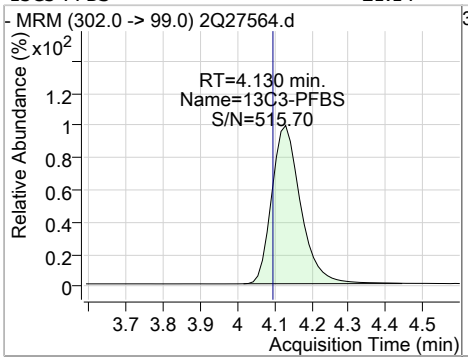
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.05	3.82	0.03	150926				

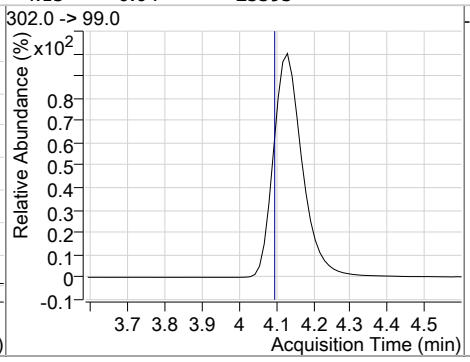


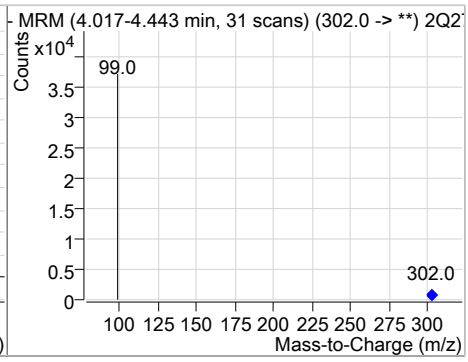




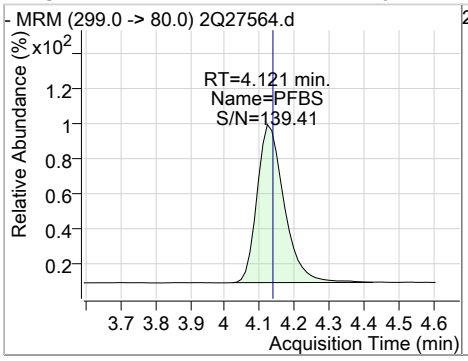
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.14	4.13	0.04	25593				

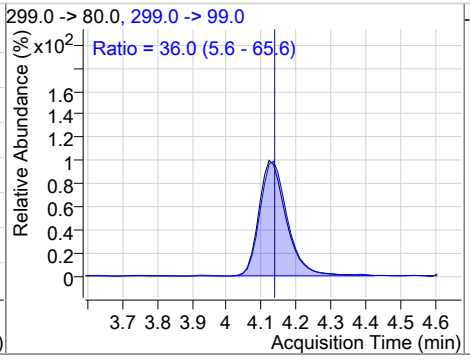


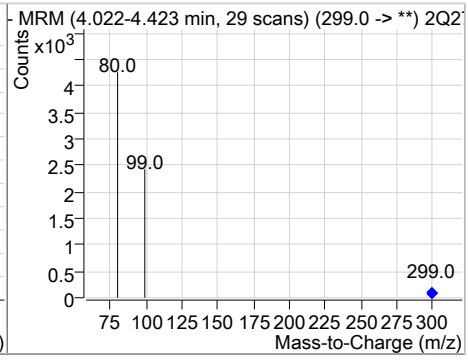




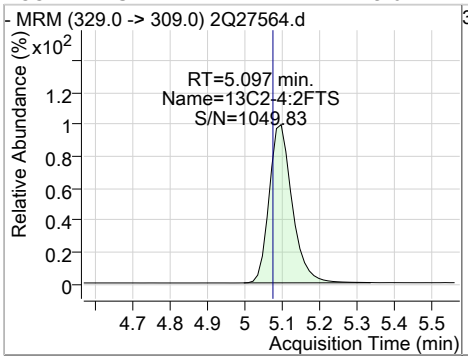
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.01	4.12	0.03	2145	299.0 -> 99.0	36.0	5.6	65.6

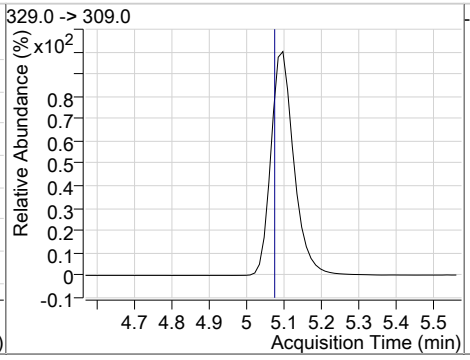


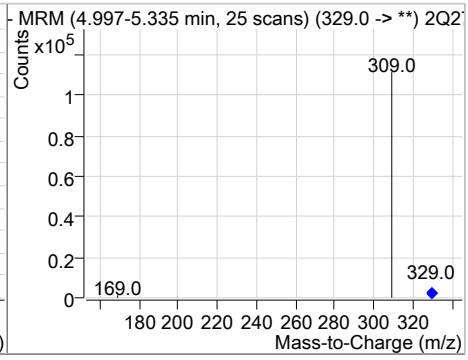




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.67	5.10	0.03	81678				

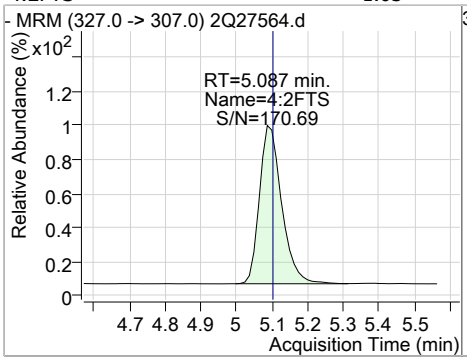


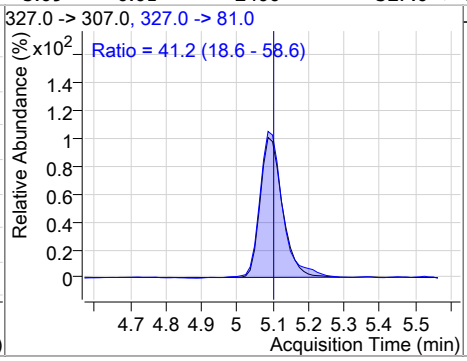


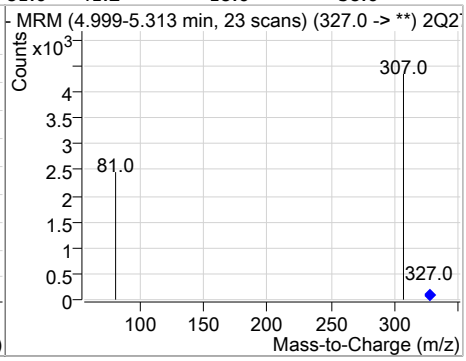


Perfluorinated Compounds by LC/MS/MS

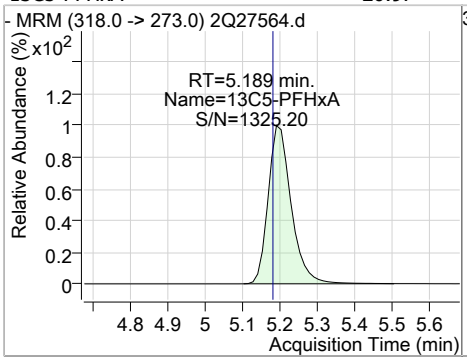
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.03	5.09	0.01	2460	327.0 -> 81.0	41.2	18.6	58.6

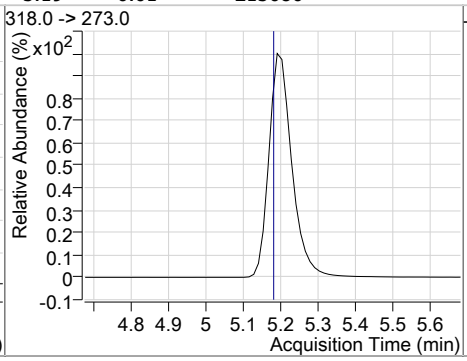


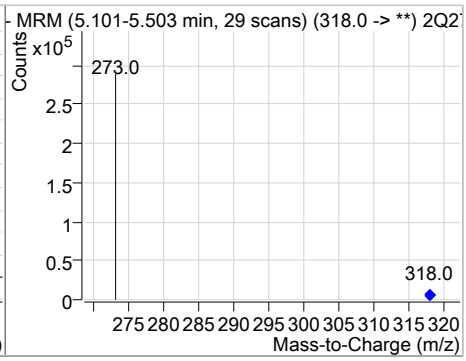




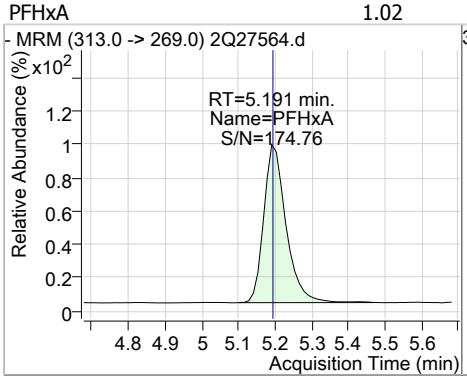
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.97	5.19	0.01	215080				

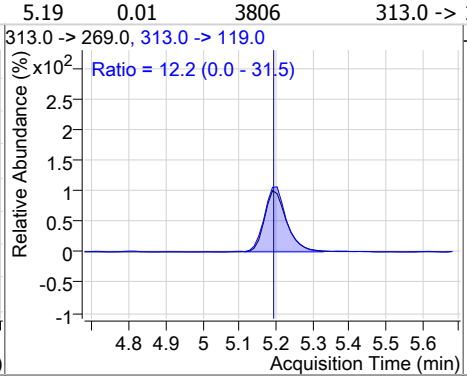


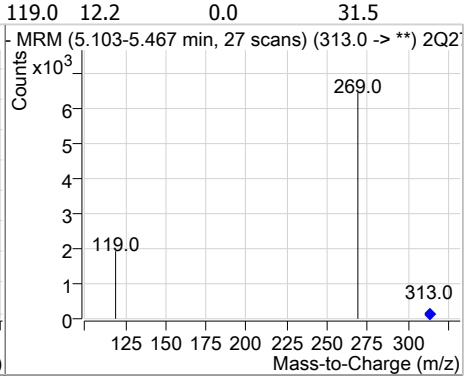




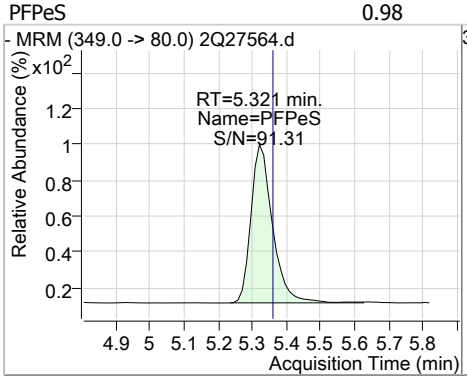
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.02	5.19	0.01	3806	313.0 -> 119.0	12.2	0.0	31.5

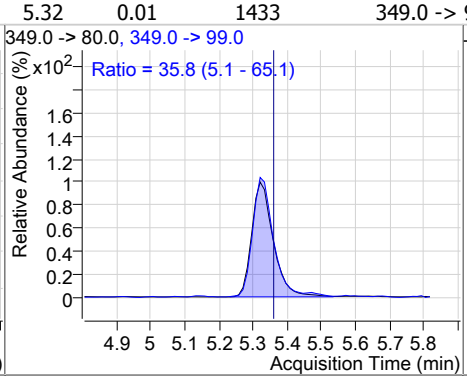


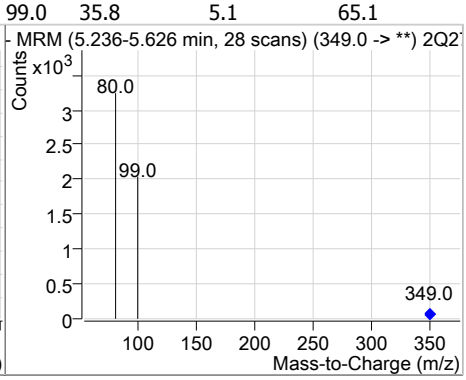




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.98	5.32	0.01	1433	349.0 -> 99.0	35.8	5.1	65.1

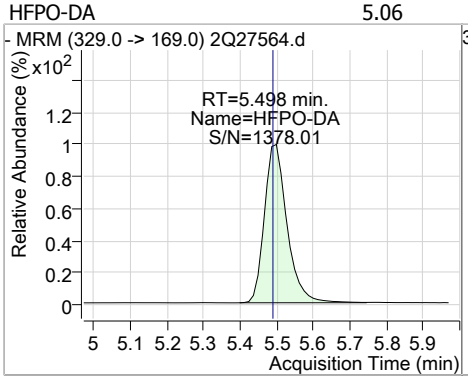


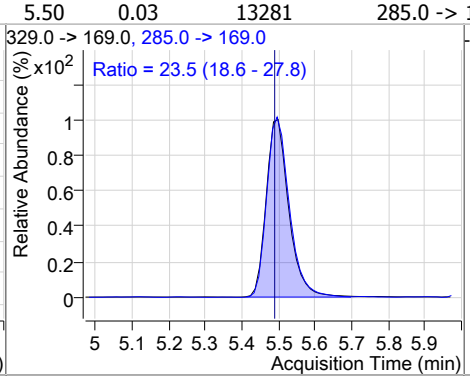


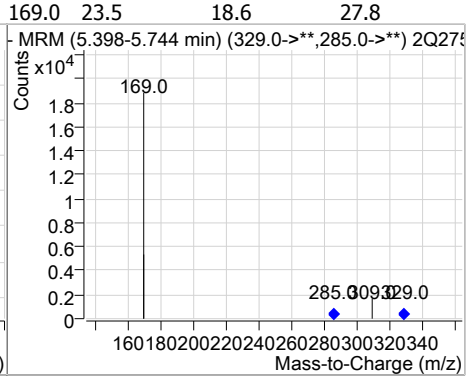


Perfluorinated Compounds by LC/MS/MS

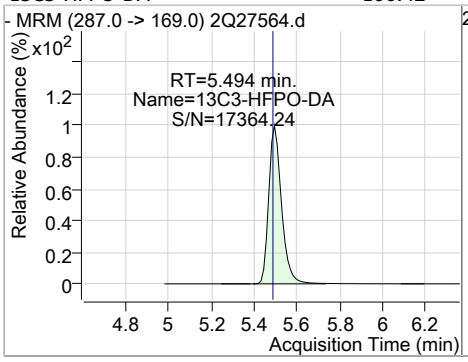
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.06	5.50	0.03	13281	285.0 -> 169.0	23.5	18.6	27.8

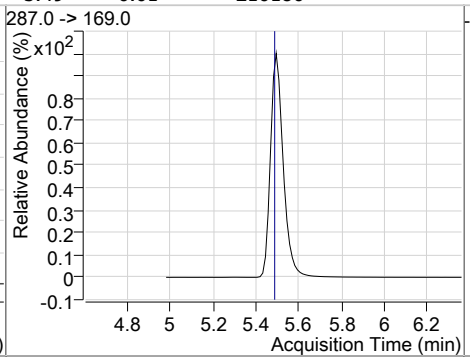


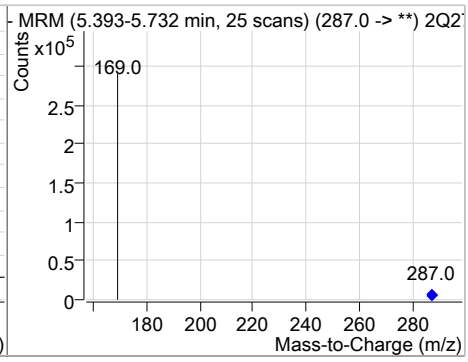




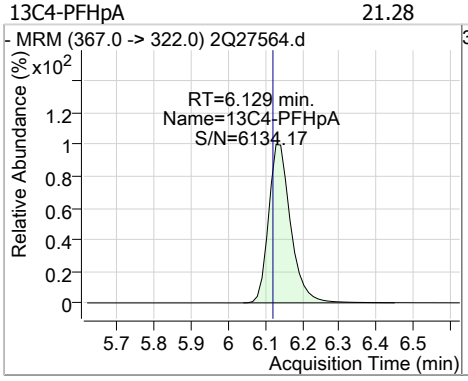
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	106.42	5.49	0.01	216180				

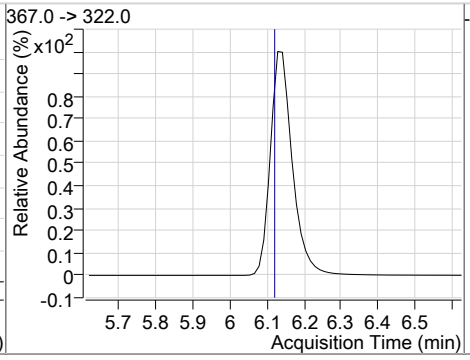


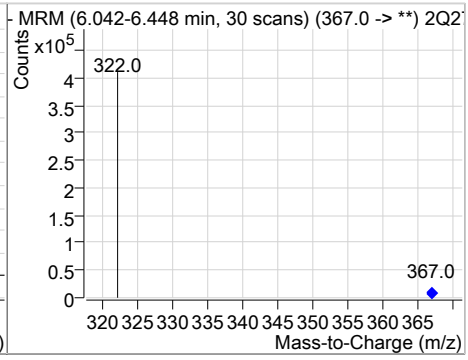




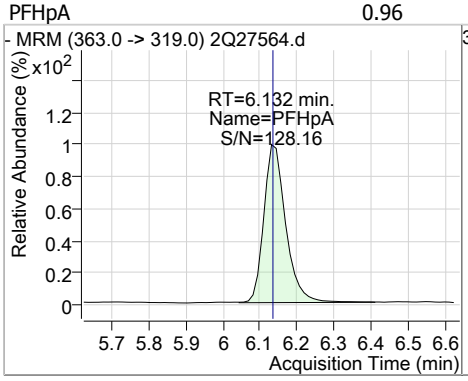
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.28	6.13	0.01	306387				

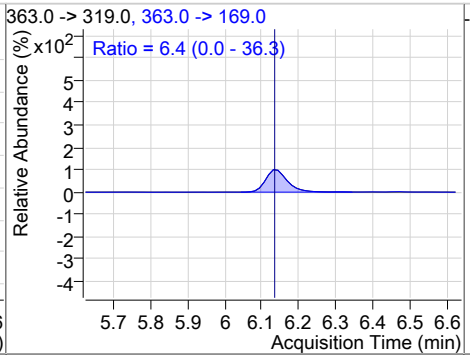


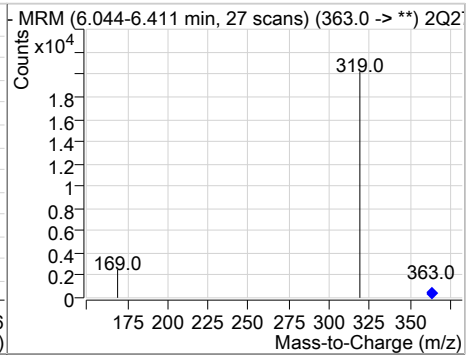




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.96	6.13	0.01	13841	363.0 -> 169.0	6.4	0.0	36.3

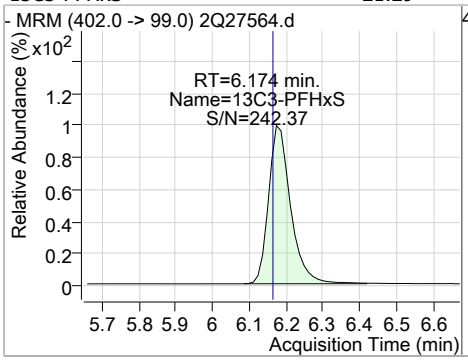


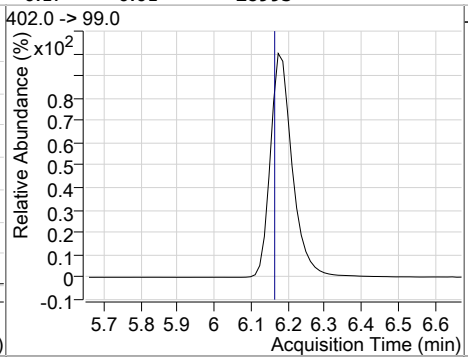


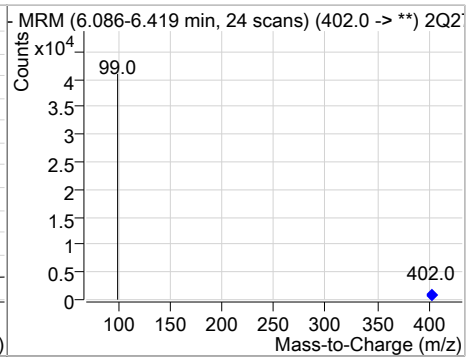


Perfluorinated Compounds by LC/MS/MS

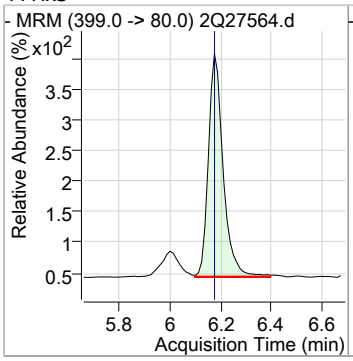
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.29	6.17	0.01	28993				

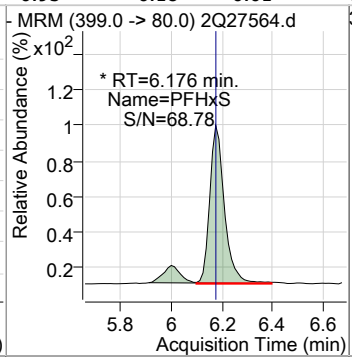


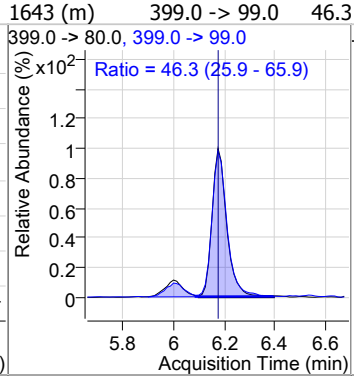


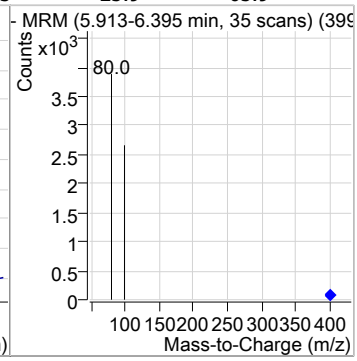


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.95	6.18	0.01	1643 (m)	399.0 -> 99.0	46.3	25.9	65.9

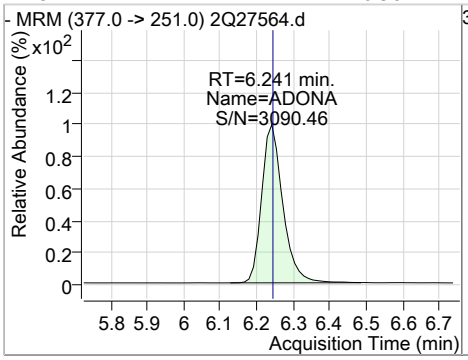


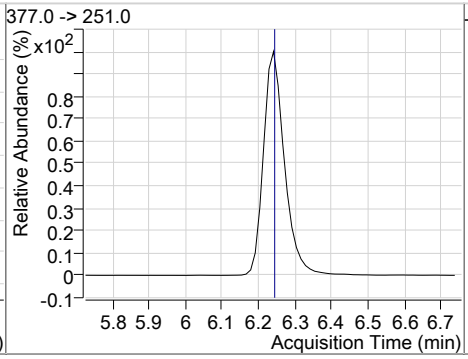


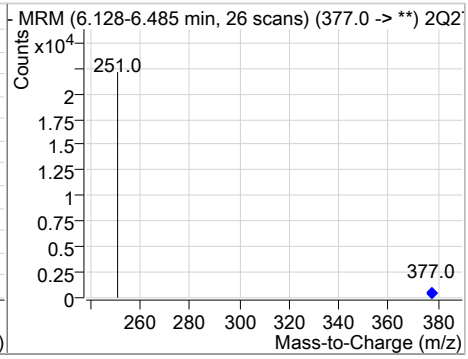




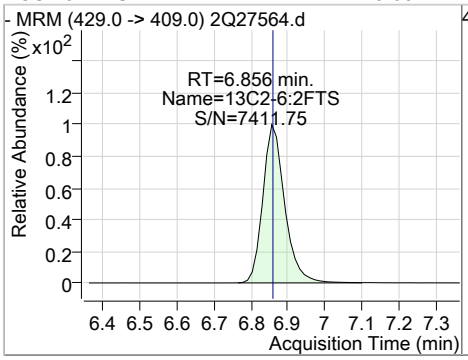
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.98	6.24	0.01	15702				

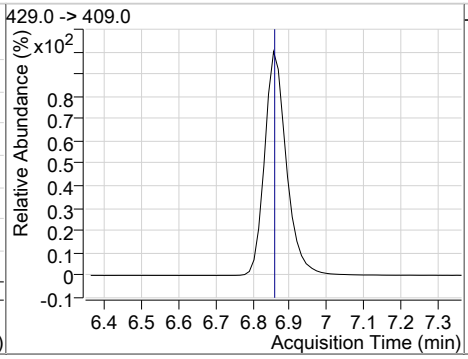


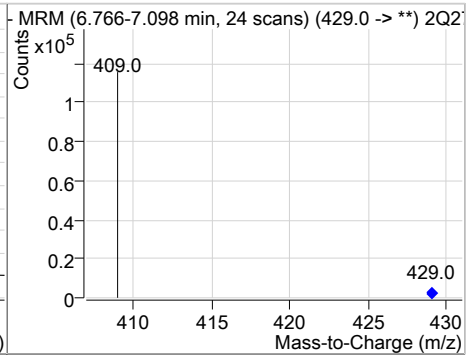




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.00	6.86	0.00	87183				

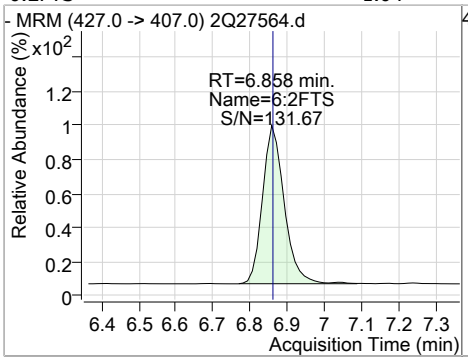


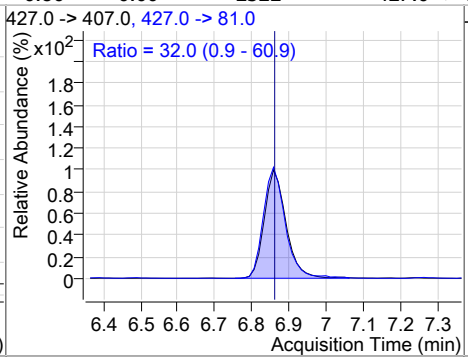


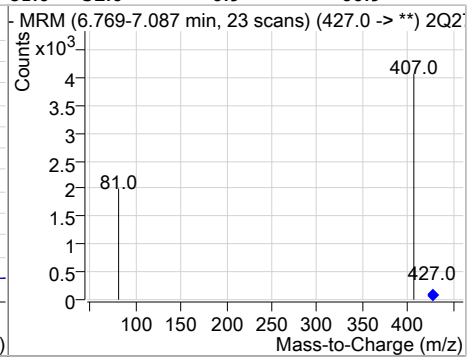


Perfluorinated Compounds by LC/MS/MS

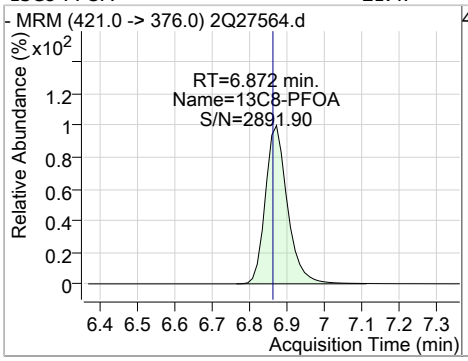
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.04	6.86	0.00	2322	427.0 -> 81.0	32.0	0.9	60.9

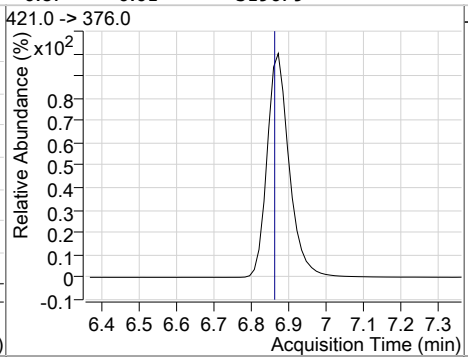


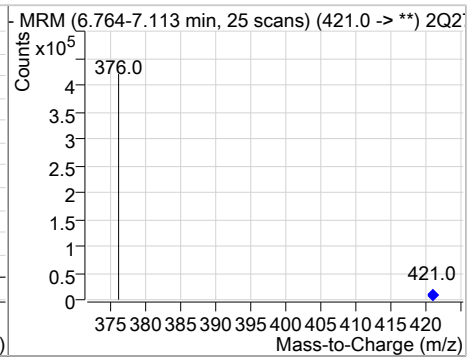




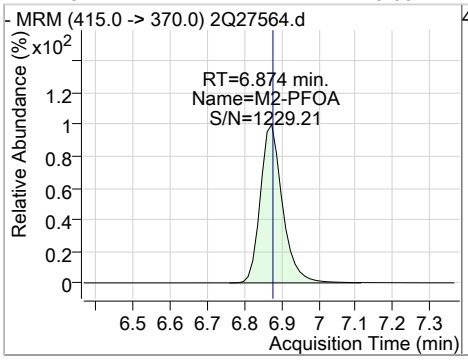
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.47	6.87	0.01	319679				

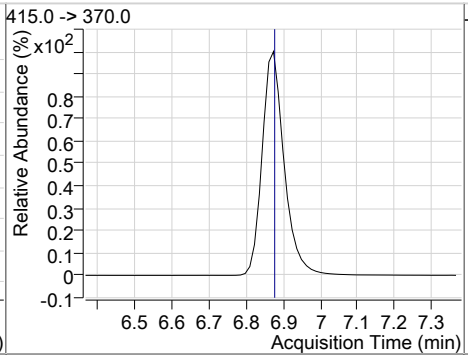


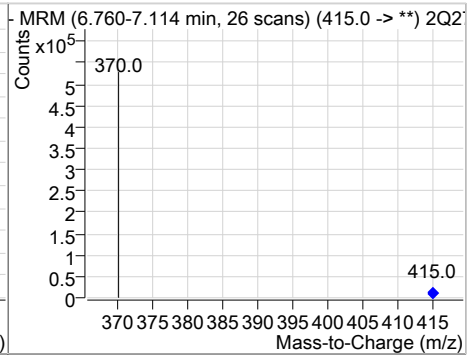




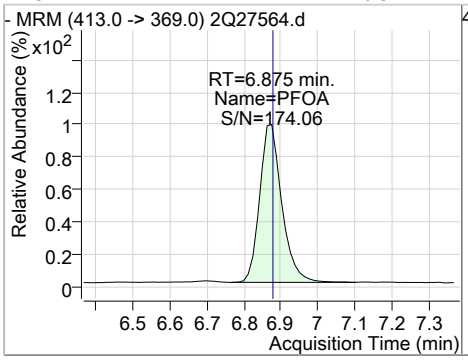
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.87	0.01	399779				

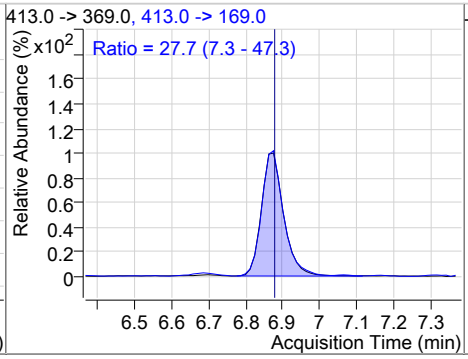


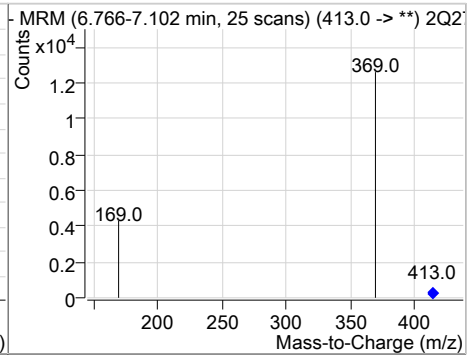




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.97	6.88	0.01	8447	413.0 -> 169.0	27.7	7.3	47.3

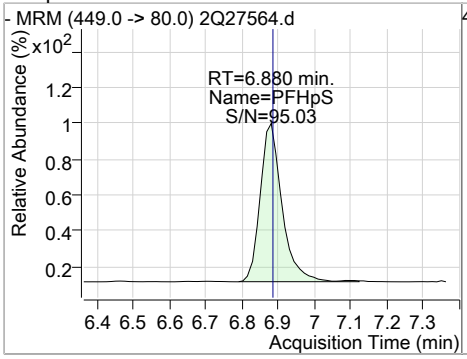


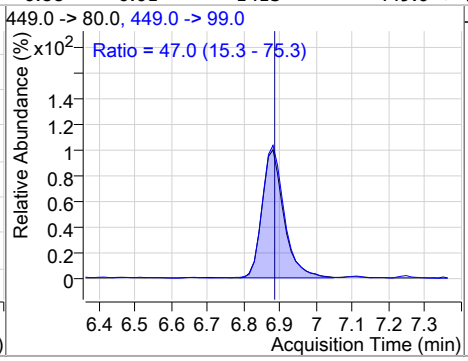


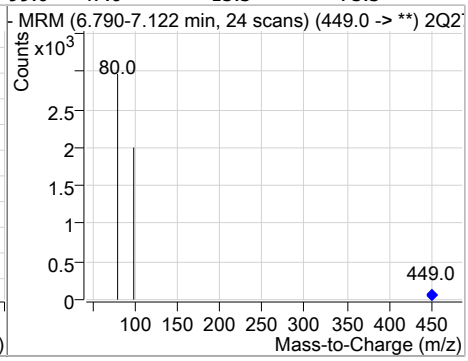


Perfluorinated Compounds by LC/MS/MS

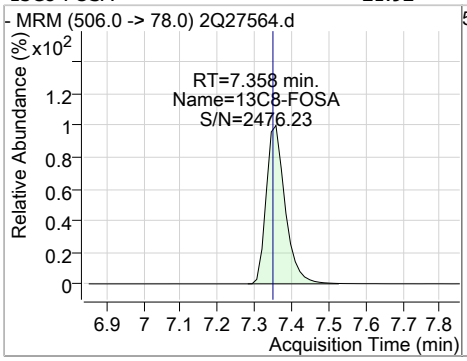
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.96	6.88	0.01	1415	449.0 -> 99.0	47.0	15.3	75.3

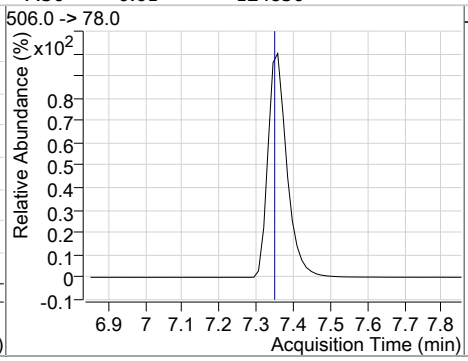


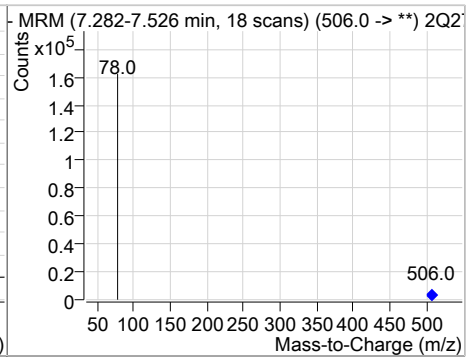




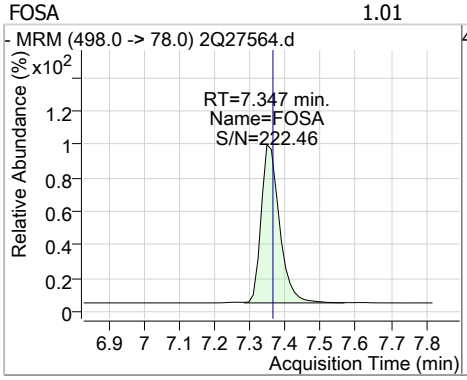
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.92	7.36	0.01	124850				

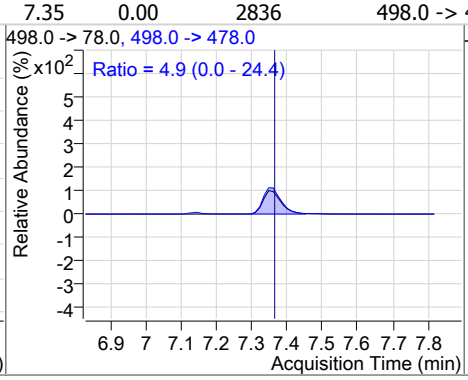


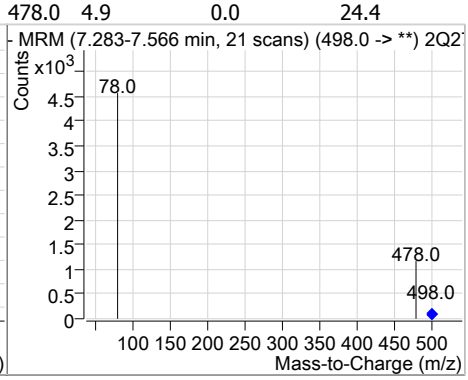




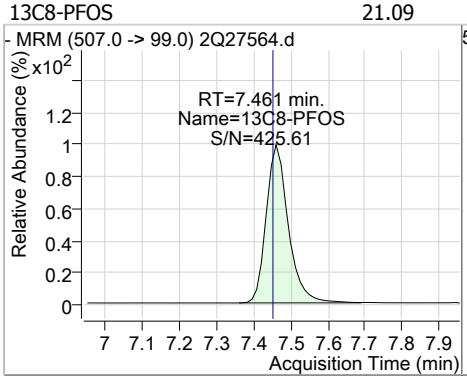
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.01	7.35	0.00	2836	498.0 -> 478.0	4.9	0.0	24.4

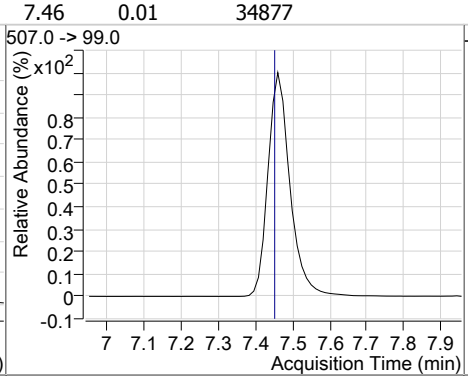


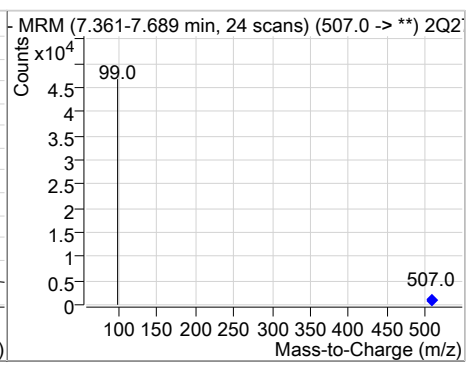




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.09	7.46	0.01	34877				

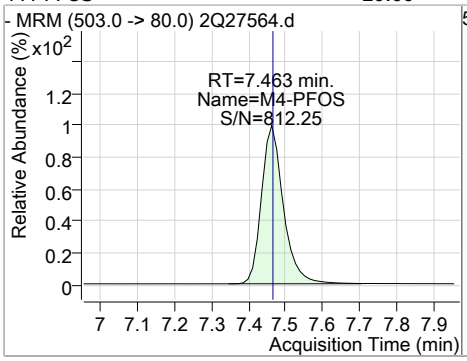


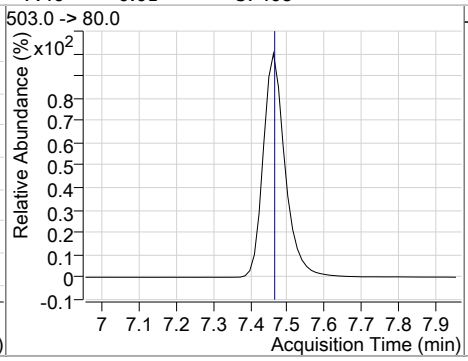


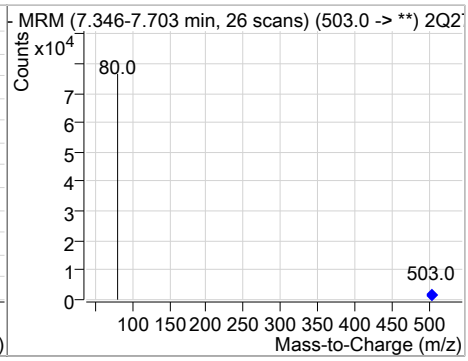


Perfluorinated Compounds by LC/MS/MS

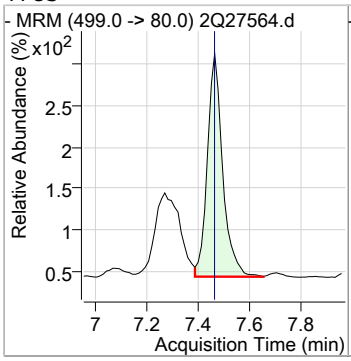
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.46	0.01	57408				

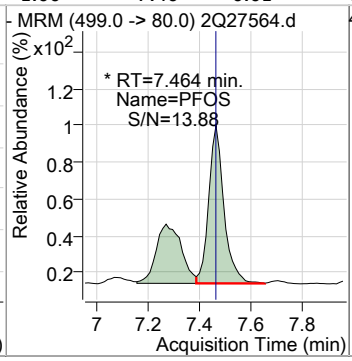


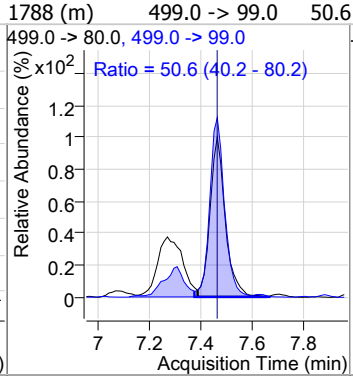


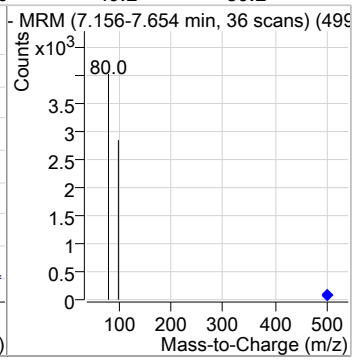


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.00	7.46	0.01	1788 (m)	499.0 -> 99.0	50.6	40.2	80.2

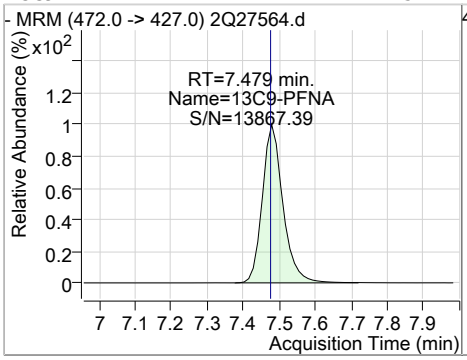


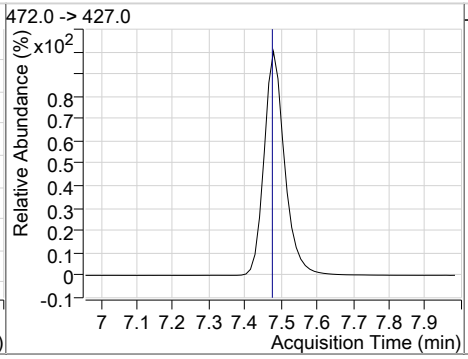


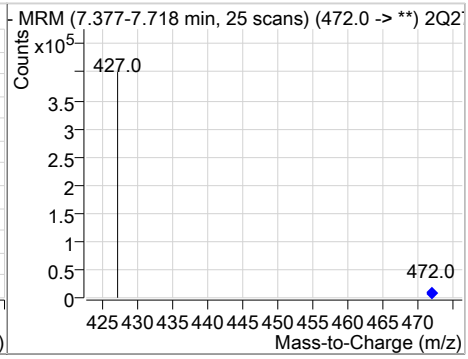




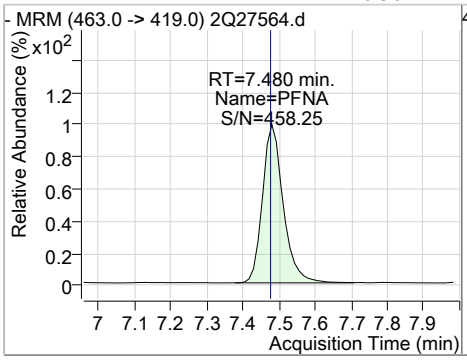
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.15	7.48	0.00	303050				

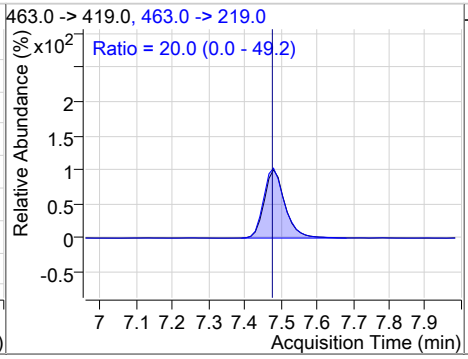


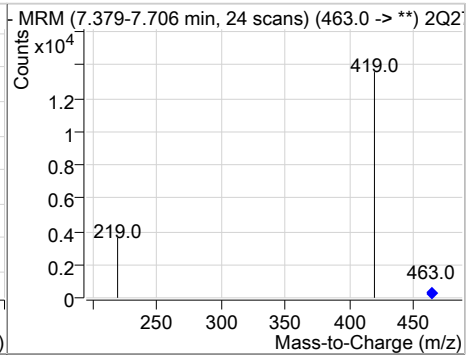




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.96	7.48	0.00	9433	463.0 -> 219.0	20.0	0.0	49.2

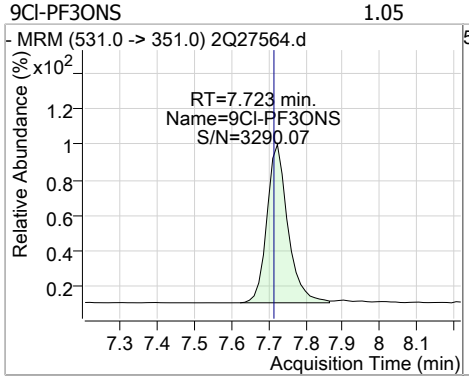


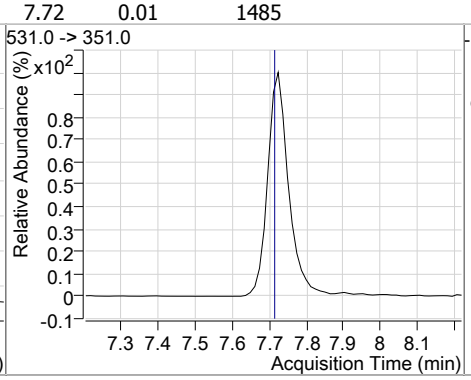


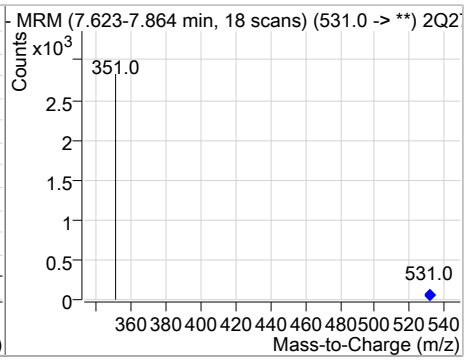


Perfluorinated Compounds by LC/MS/MS

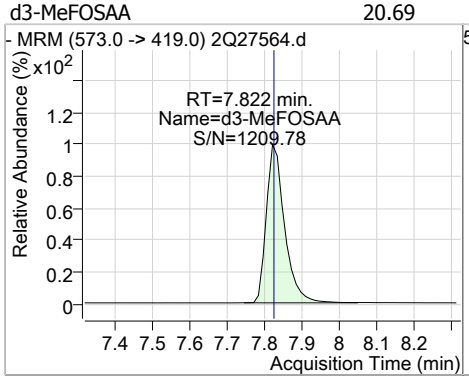
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.05	7.72	0.01	1485				

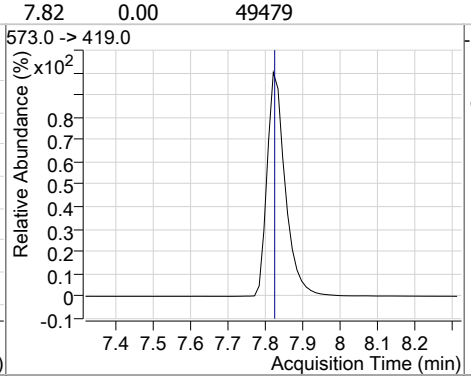


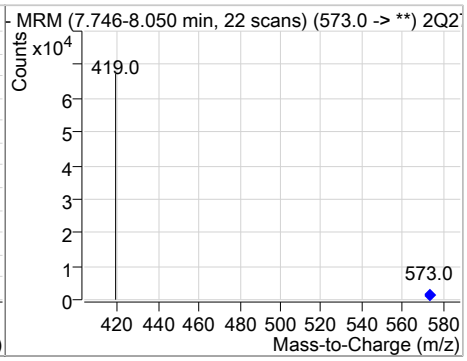




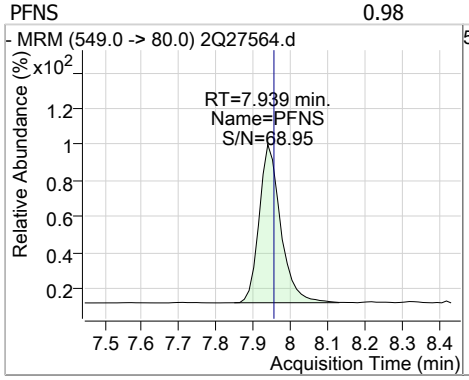
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.69	7.82	0.00	49479				

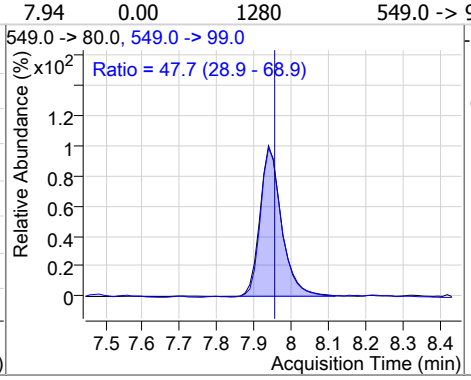


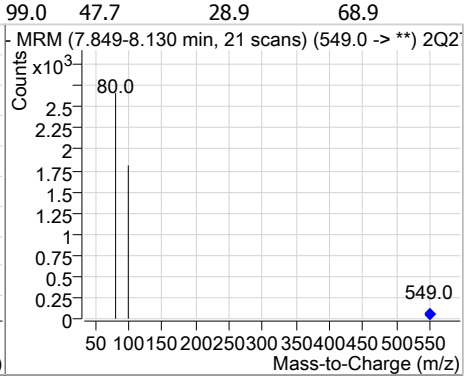




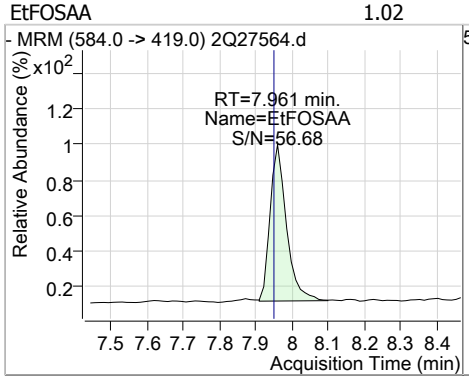
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.98	7.94	0.00	1280	549.0 -> 99.0	47.7	28.9	68.9

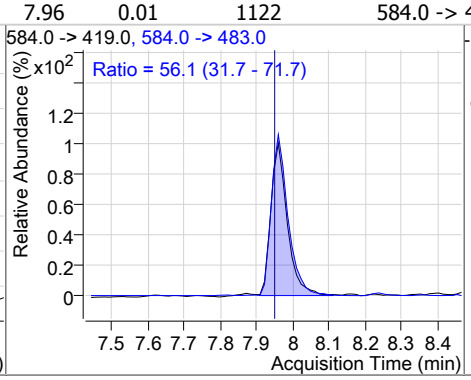


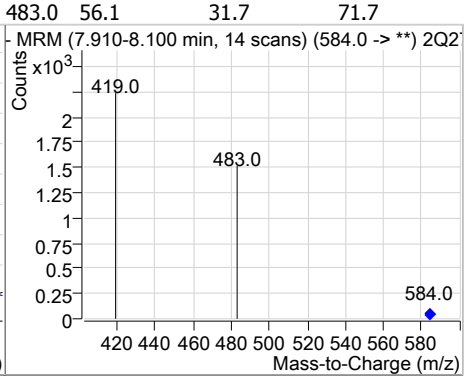




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.02	7.96	0.01	1122	584.0 -> 483.0	56.1	31.7	71.7

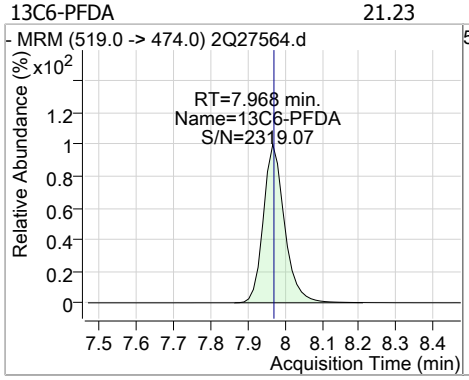


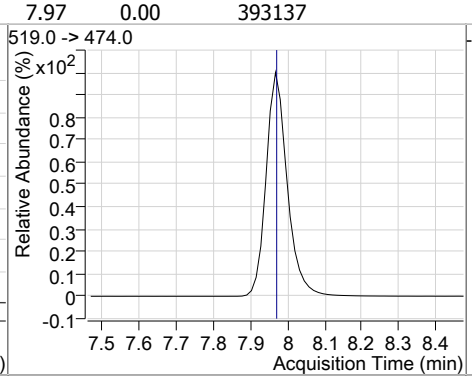


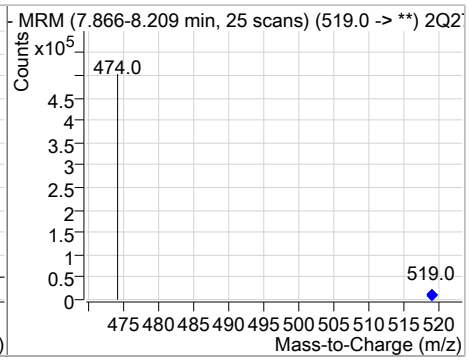


Perfluorinated Compounds by LC/MS/MS

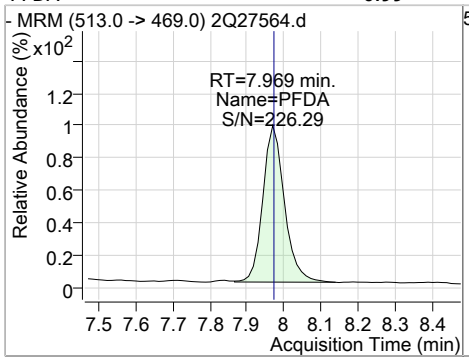
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.23	7.97	0.00	393137				

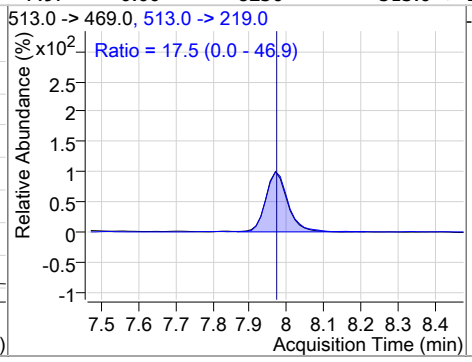


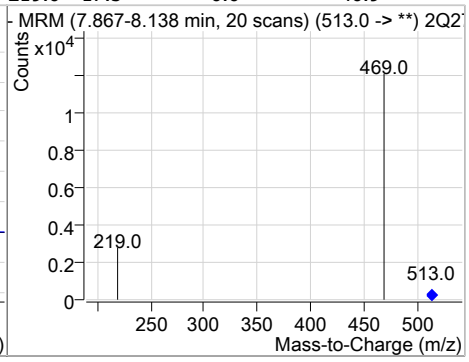




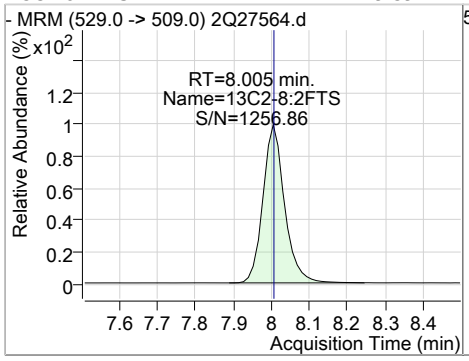
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.99	7.97	0.00	8236	513.0 -> 219.0	17.5	0.0	46.9

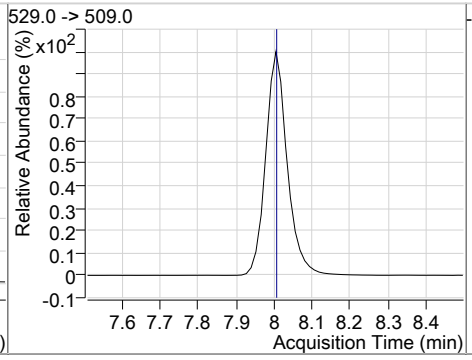


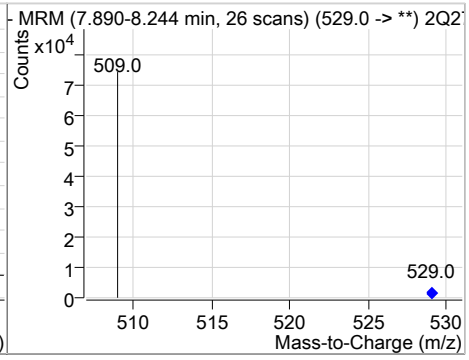




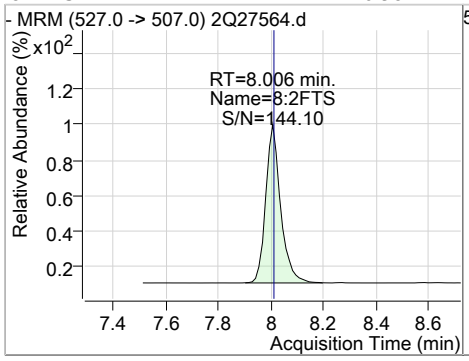
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.39	8.01	0.00	55046				

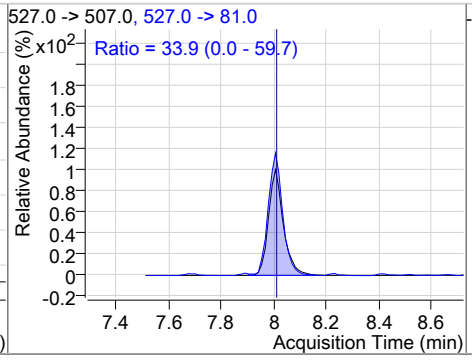


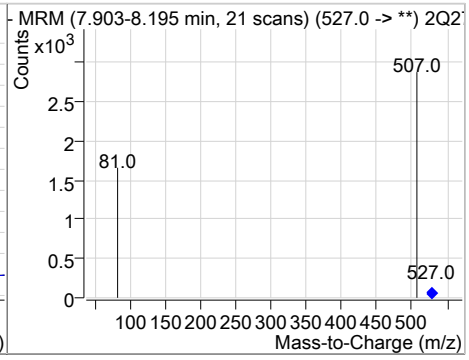




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.98	8.01	0.00	1424	527.0 -> 81.0	33.9	0.0	59.7

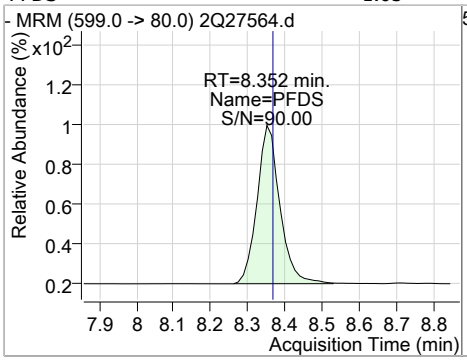


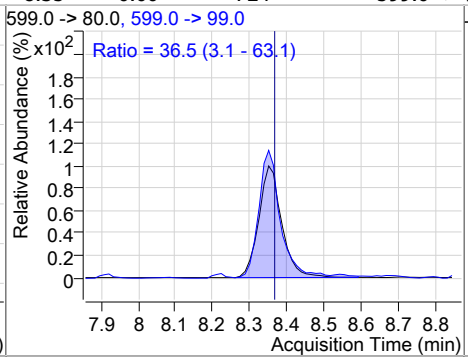


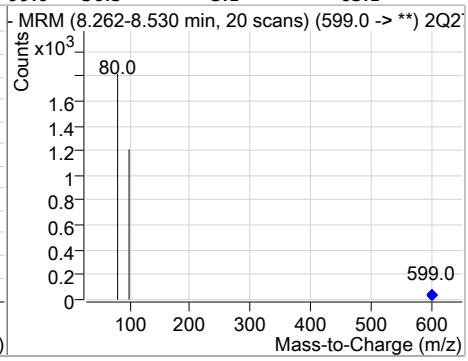


Perfluorinated Compounds by LC/MS/MS

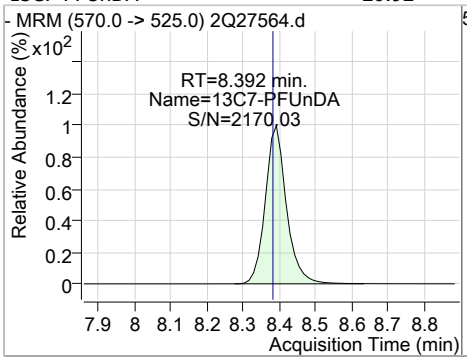
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.05	8.35	0.00	724	599.0 -> 99.0	36.5	3.1	63.1

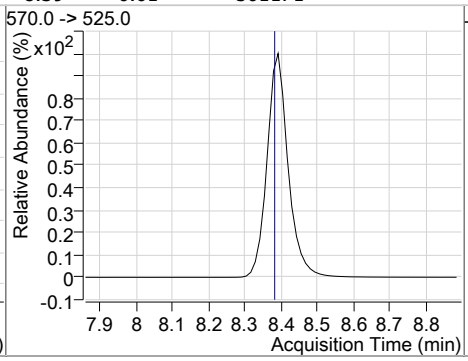


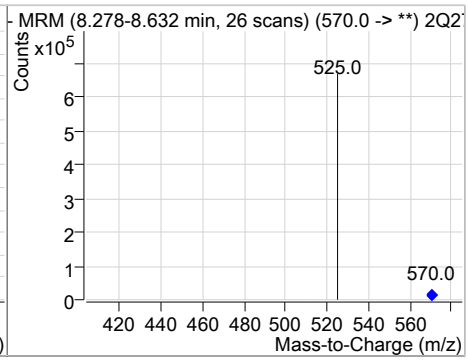




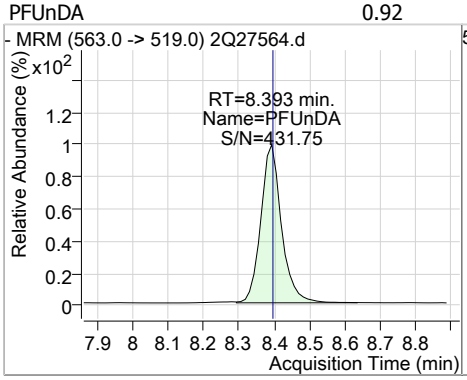
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.92	8.39	0.01	501171				

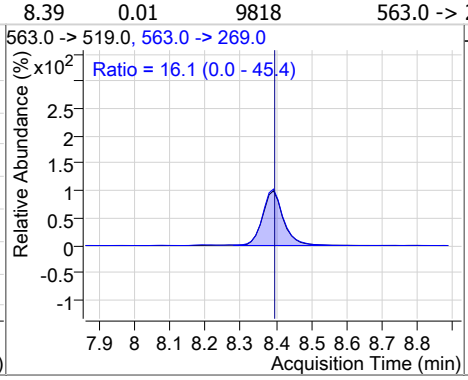


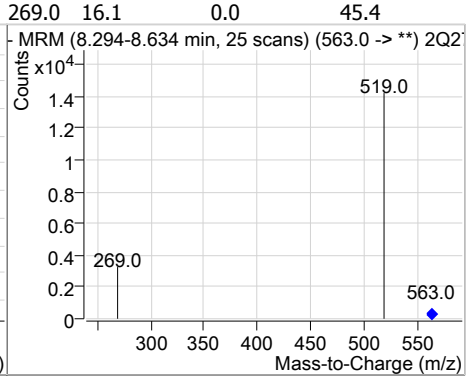




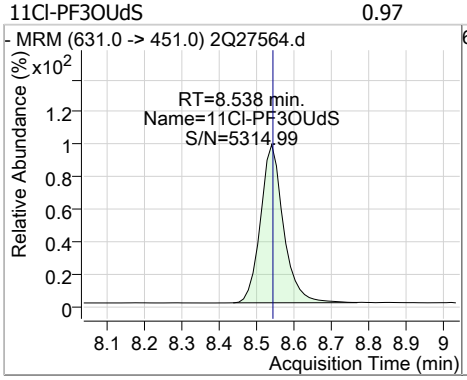
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.92	8.39	0.01	9818	563.0 -> 269.0	16.1	0.0	45.4

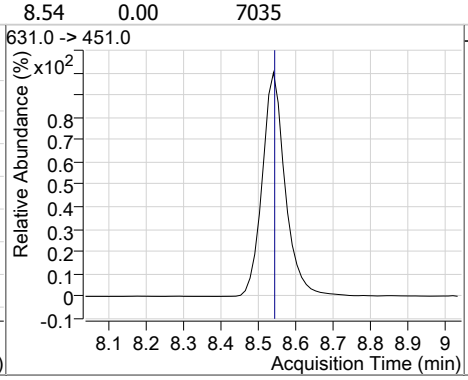


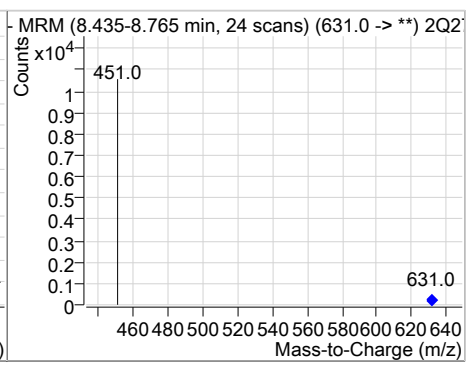




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.97	8.54	0.00	7035				

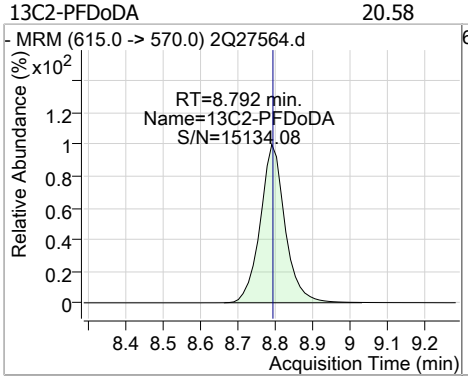


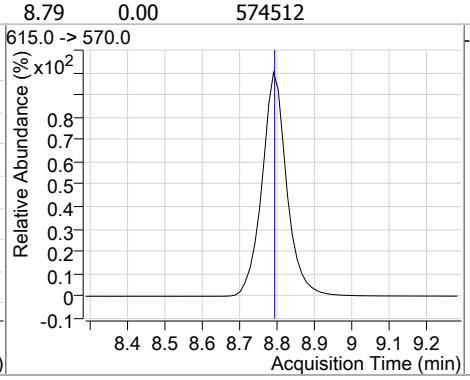


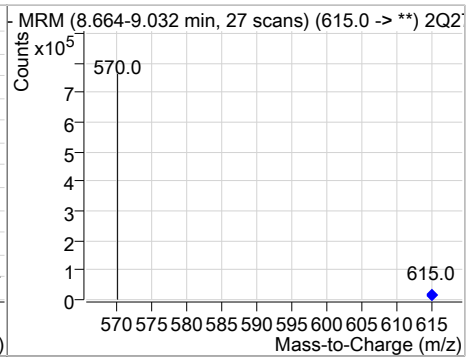


Perfluorinated Compounds by LC/MS/MS

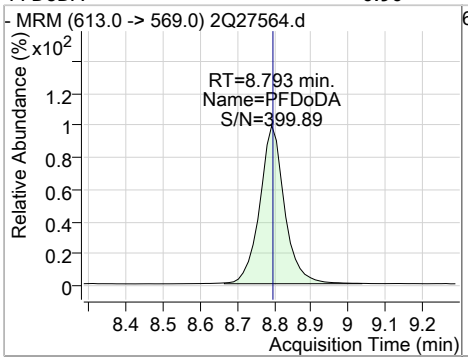
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.58	8.79	0.00	574512				

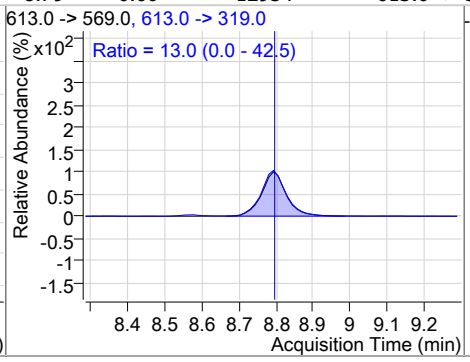


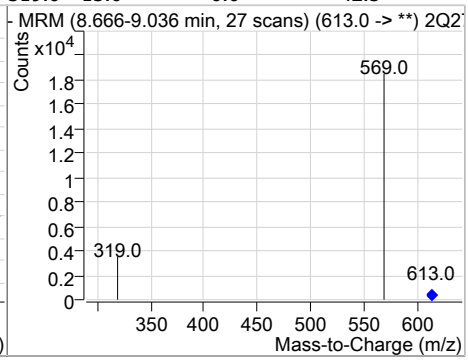




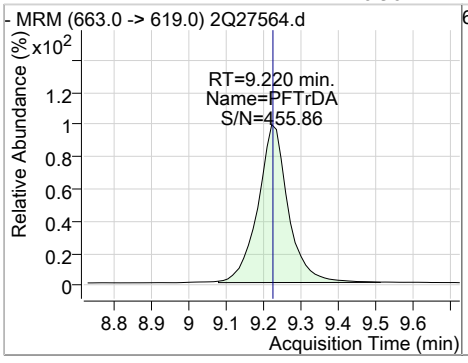
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.96	8.79	0.00	12954	613.0 -> 319.0	13.0	0.0	42.5

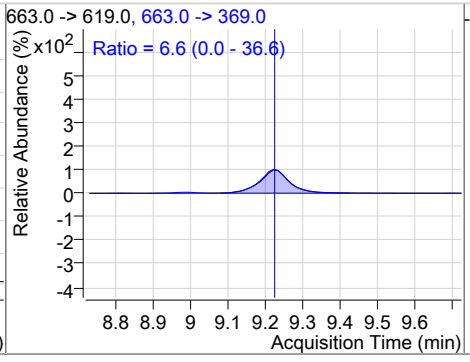


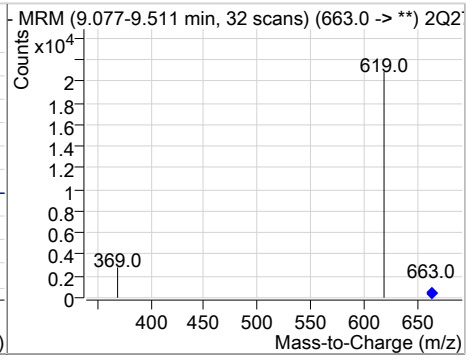




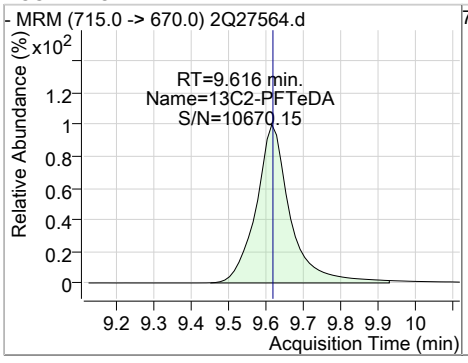
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.96	9.22	0.00	14514	663.0 -> 369.0	6.6	0.0	36.6

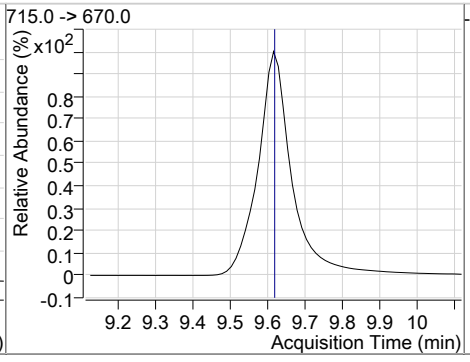


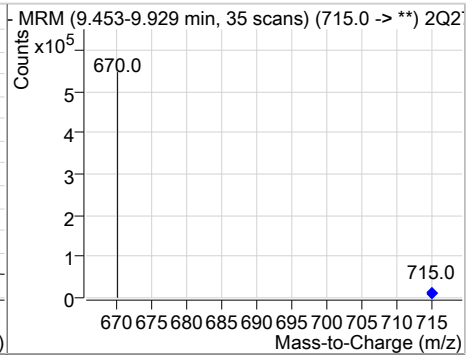




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.12	9.62	0.00	408236				

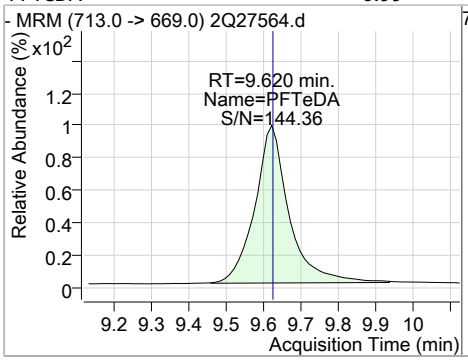


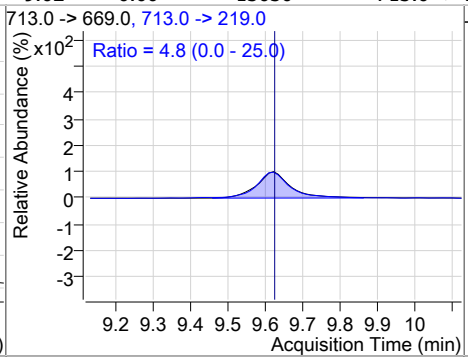


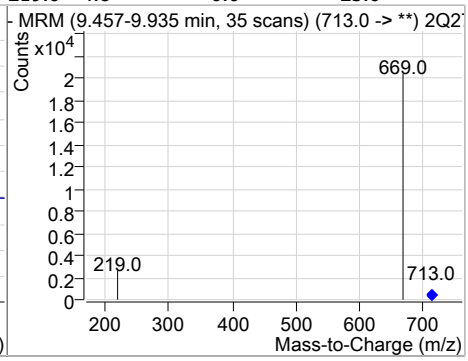


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.99	9.62	0.00	13630	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27564.D
Injection Time: 03/13/19 11:00
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27565.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 11:16:00 AM
Sample Name : ic439-2.0
Vial : Vial 4
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

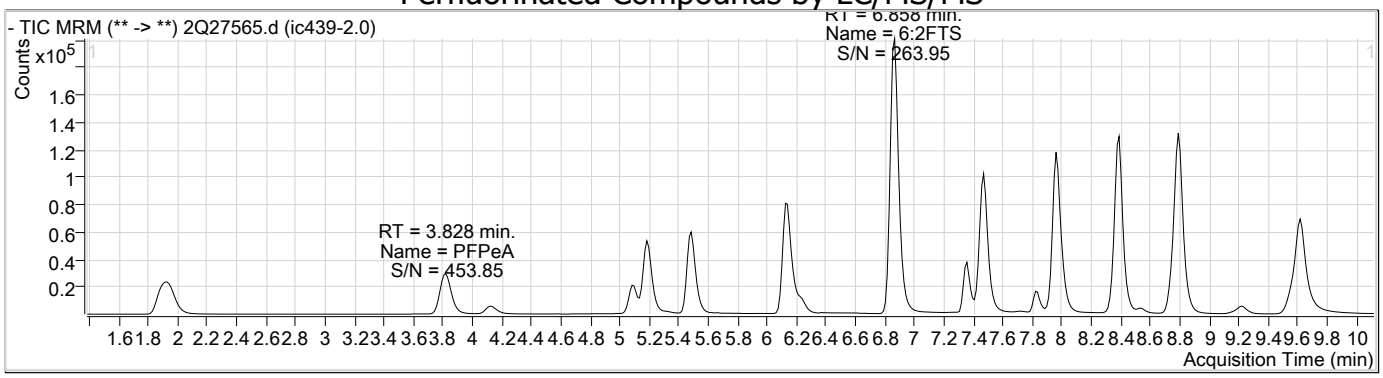
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	403289	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	58393	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	180174	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	148432	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	213643	20.00	µg/L	0.013
M4-PFHpA	6.129	367.0 -> 322.0	299358	20.00	µg/L	0.011
M8-PFOA	6.872	421.0 -> 376.0	314718	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	300843	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	393043	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	503376	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	579382	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	410649	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	122580	20.00	µg/L	0.011
M3-PFBS	4.118	302.0 -> 99.0	25061	20.00	µg/L	0.025
M3-PFHxS	6.174	402.0 -> 99.0	28449	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	34315	20.00	µg/L	0.012
M2-4:2FTS	5.084	329.0 -> 309.0	82103	20.00	µg/L	0.013
M2-6:2FTS	6.856	429.0 -> 409.0	86828	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	54616	20.00	µg/L	0.001
M3-MeFOSAA	7.822	573.0 -> 419.0	49418	20.00	µg/L	-0.001
M3-HFPO-DA	5.494	287.0 -> 169.0	217111	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.084	329.0 -> 309.0	81766	19.70	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C2-6:2FTS	6.856	429.0 -> 409.0	86818	19.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C2-8:2FTS	8.005	529.0 -> 509.0	54597	19.23	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%		
13C2-PFDoDA	8.792	615.0 -> 570.0	580103	20.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C2-PFTeDA	9.616	715.0 -> 670.0	402412	20.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C3-PFBS	4.118	302.0 -> 99.0	24985	20.63	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C3-PFHxS	6.174	402.0 -> 99.0	28563	20.97	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C4-PFBA	1.927	217.0 -> 172.0	179239	20.68	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%		
13C4-PFHpA	6.129	367.0 -> 322.0	300954	20.90	µg/L	0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%		
13C5-PFHxA	5.189	318.0 -> 273.0	213553	20.82	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C5-PFPeA	3.824	268.0 -> 223.0	148221	20.67	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C6-PFDA	7.968	519.0 -> 474.0	392896	21.22	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

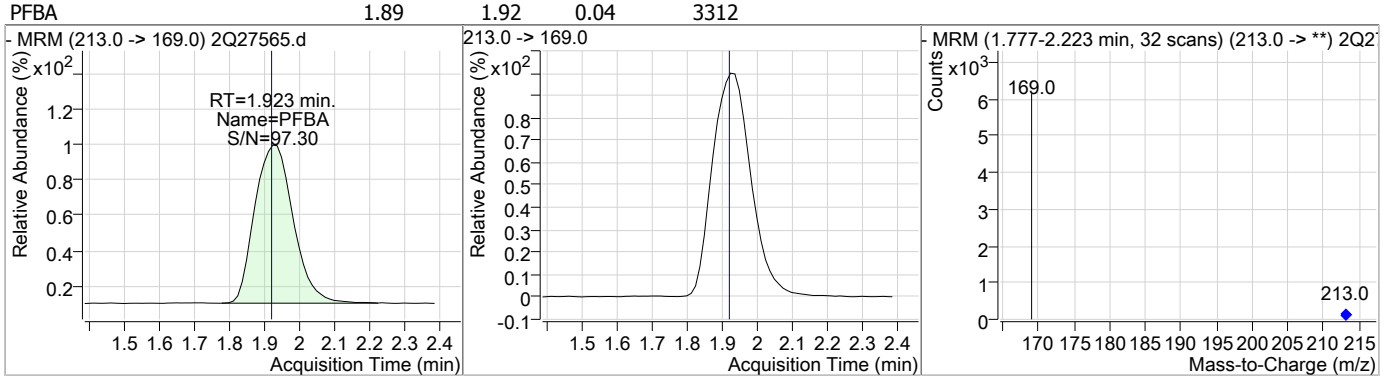
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.1%		
13C7-PFUnDA	8.392	570.0 -> 525.0	503256	21.01 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.0%		
13C8-FOSA	7.358	506.0 -> 78.0	122583	21.52 µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.6%		
13C8-PFOA	6.872	421.0 -> 376.0	314285	21.10 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%		
13C8-PFOS	7.461	507.0 -> 99.0	34241	20.70 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C9-PFNA	7.479	472.0 -> 427.0	300631	20.98 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
d3-MeFOSAA	7.822	573.0 -> 419.0	49360	20.64 µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
M2-PFOA	6.874	415.0 -> 370.0	403494	19.99 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.463	503.0 -> 80.0	58424	20.01 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.494	287.0 -> 169.0	217111	106.88 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 106.9%		
Target Compounds						**QValue**
4:2FTS	5.087	327.0 -> 307.0	4705	1.97 µg/L		97
6:2FTS	6.858	427.0 -> 407.0	4413	1.99 µg/L		99
8:2FTS	8.006	527.0 -> 507.0	3151	2.18 µg/L		100
EtFOSAA	7.961	584.0 -> 419.0	2271	2.07 µg/L		94
FOSA	7.360	498.0 -> 78.0	5355	1.94 µg/L		99
MeFOSAA	7.835	570.0 -> 419.0	2710	2.08 µg/L		96
PFBA	1.923	213.0 -> 169.0	3312	1.89 µg/L		100
PFBS	4.121	299.0 -> 80.0	4017	1.94 µg/L		98
PFDA	7.969	513.0 -> 469.0	15456	1.86 µg/L		100
PFDoDA	8.793	613.0 -> 569.0	25274	1.86 µg/L		99
PFDS	8.352	599.0 -> 80.0	1375	2.03 µg/L		100
PFHpA	6.132	363.0 -> 319.0	26146	1.86 µg/L		99
PFHpS	6.880	449.0 -> 80.0	2774	1.93 µg/L		97
PFHxA	5.191	313.0 -> 269.0	6923	1.87 µg/L		100
PFHxS	6.176	399.0 -> 80.0	3263	1.93 µg/L	m	95
PFNA	7.480	463.0 -> 419.0	17269	1.77 µg/L		96
PFNS	7.939	549.0 -> 80.0	2550	1.99 µg/L		96
PFOA	6.875	413.0 -> 369.0	16196	1.88 µg/L		98
PFOS	7.464	499.0 -> 80.0	3536	2.01 µg/L	m	78
PFPeA	3.828	263.0 -> 219.0	12758	1.89 µg/L		100
PFPeS	5.321	349.0 -> 80.0	2753	1.94 µg/L		99
PFTeDA	9.620	713.0 -> 669.0	25494	1.82 µg/L		100
PFTrDA	9.220	663.0 -> 619.0	28288	1.83 µg/L		99
PFUnDA	8.393	563.0 -> 519.0	19710	1.85 µg/L		99
11Cl-PF3OUdS	8.538	631.0 -> 451.0	13951	1.90 µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	2739	1.93 µg/L		100
ADONA	6.241	377.0 -> 251.0	30386	1.92 µg/L		100
HFPO-DA	5.486	329.0 -> 169.0	25619	9.73 µg/L		98

 # = Qualifier out of range, m = manually integrated, + = Area summed

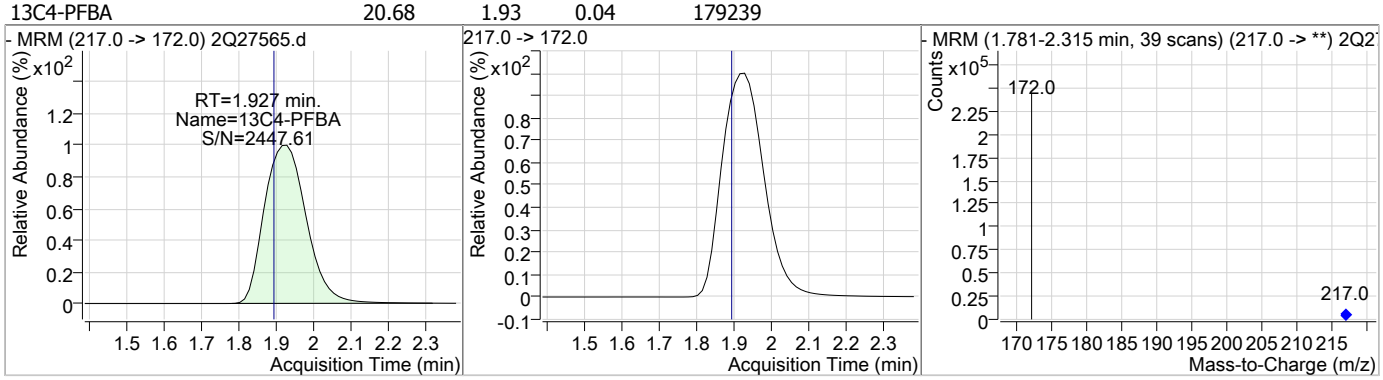
Perfluorinated Compounds by LC/MS/MS



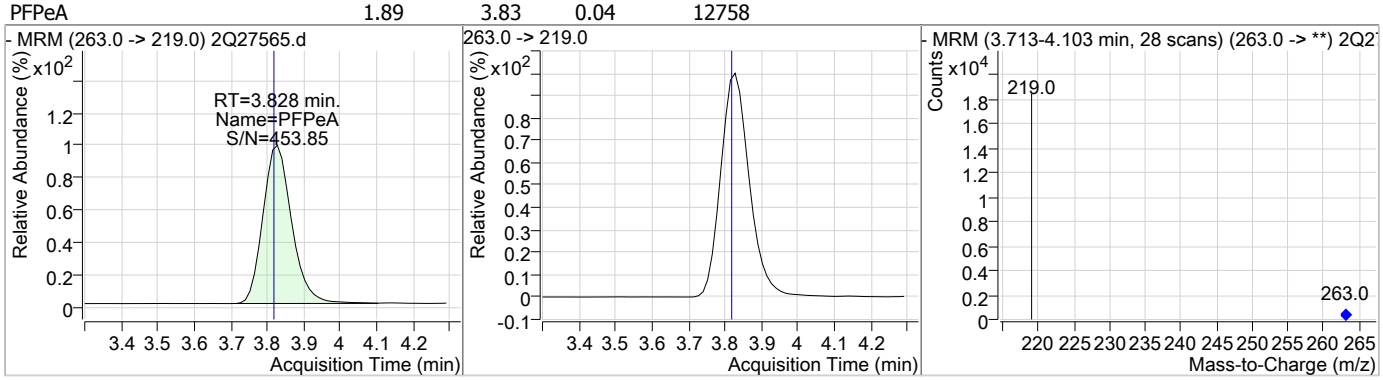
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.89	1.92	0.04	3312				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.68	1.93	0.04	179239				

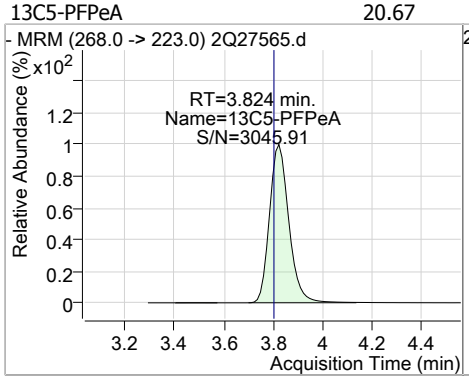


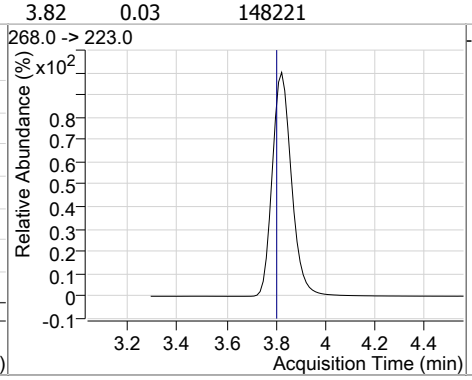
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.89	3.83	0.04	12758				

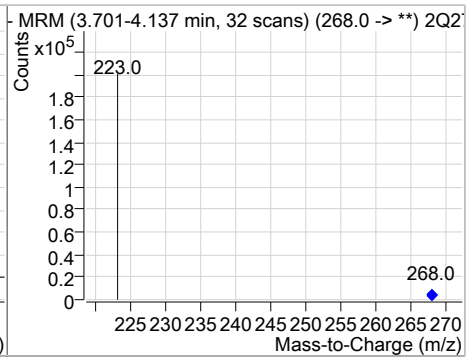


Perfluorinated Compounds by LC/MS/MS

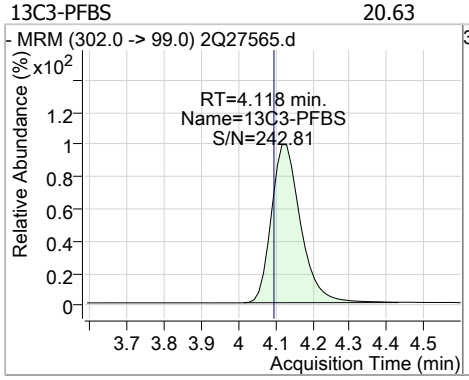
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.67	3.82	0.03	148221				

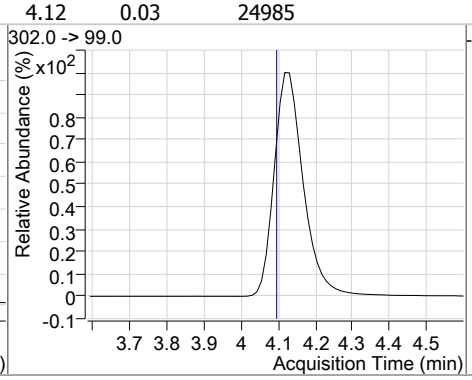


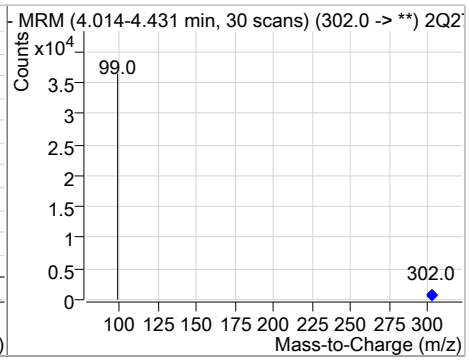




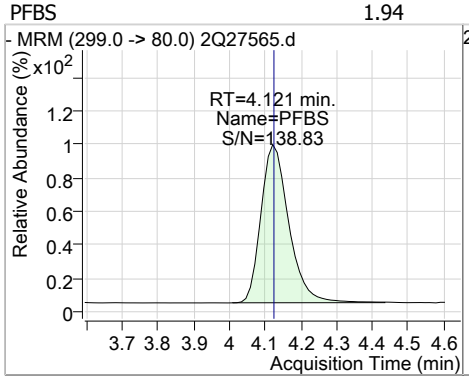
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.63	4.12	0.03	24985				

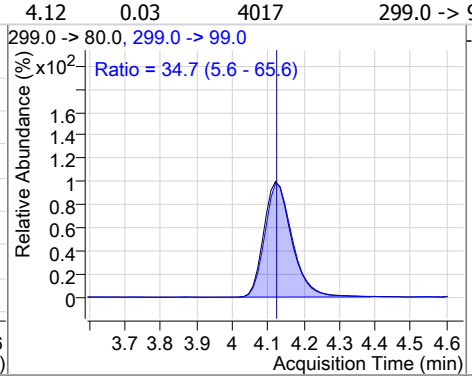


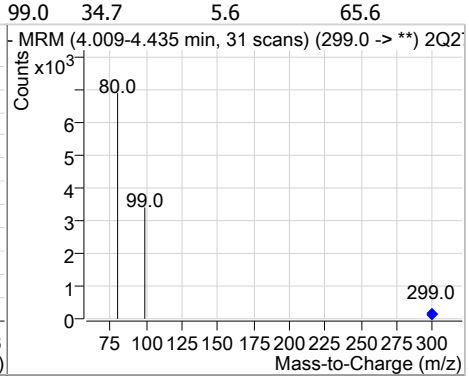




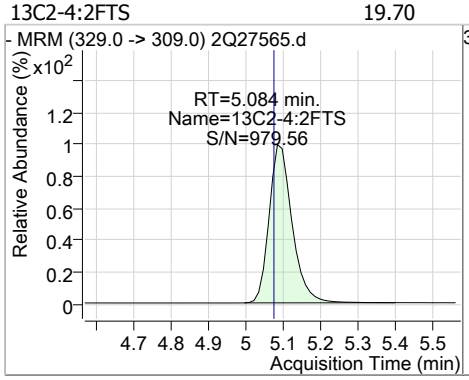
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.94	4.12	0.03	4017	299.0 -> 99.0	34.7	5.6	65.6

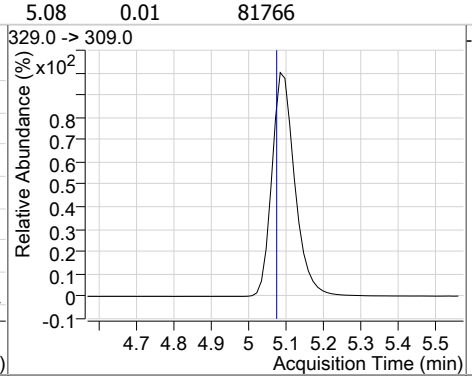


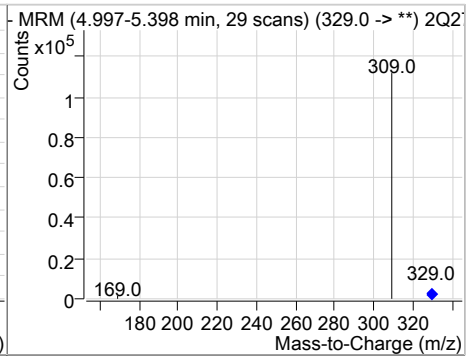




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.70	5.08	0.01	81766				

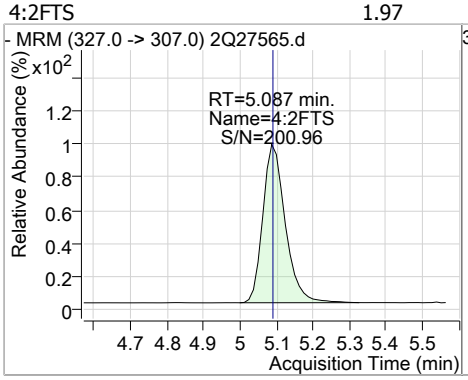


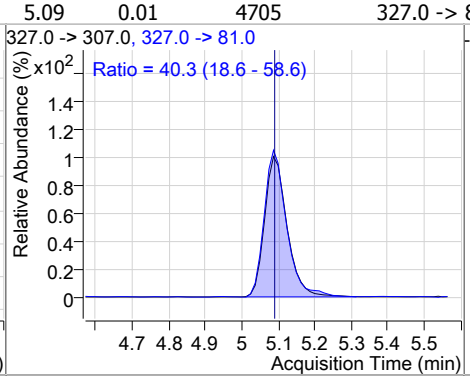


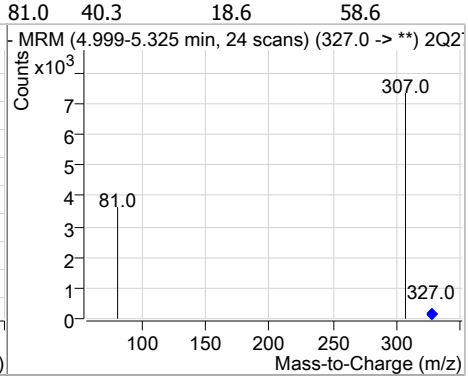


Perfluorinated Compounds by LC/MS/MS

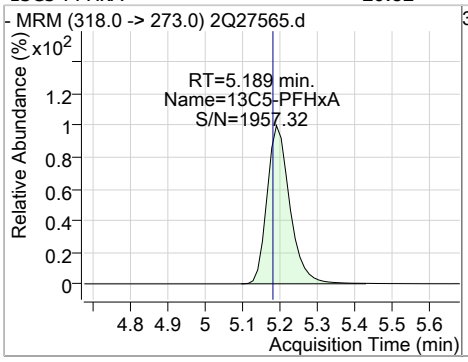
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.97	5.09	0.01	4705	327.0 -> 81.0	40.3	18.6	58.6

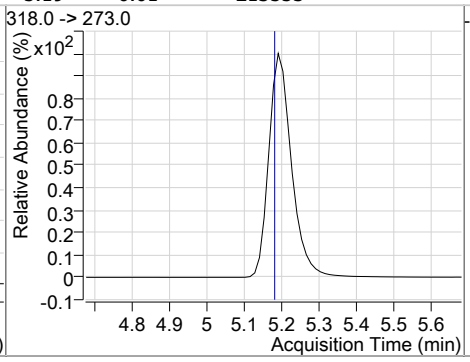


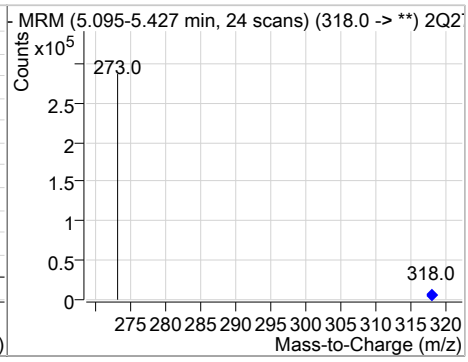




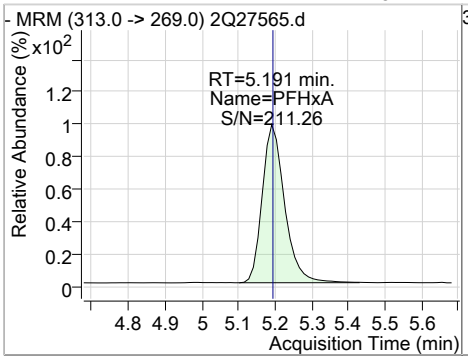
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.82	5.19	0.01	213553				

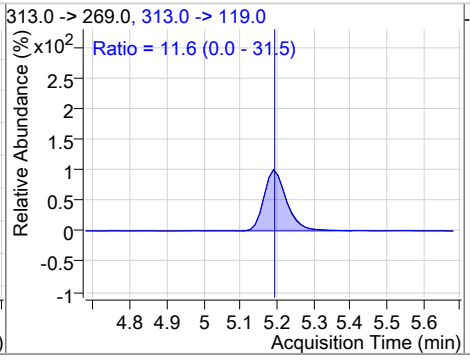


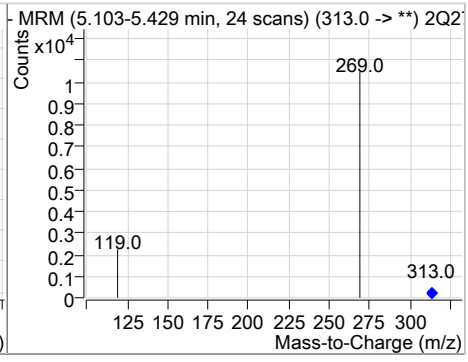




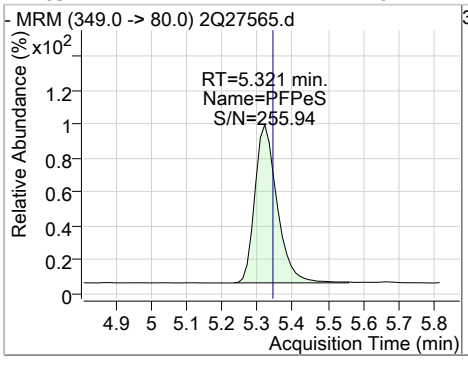
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.87	5.19	0.01	6923	313.0 -> 119.0	11.6	0.0	31.5

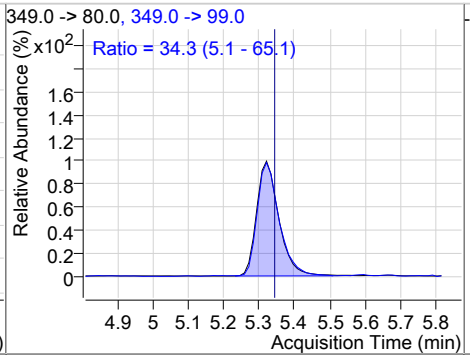


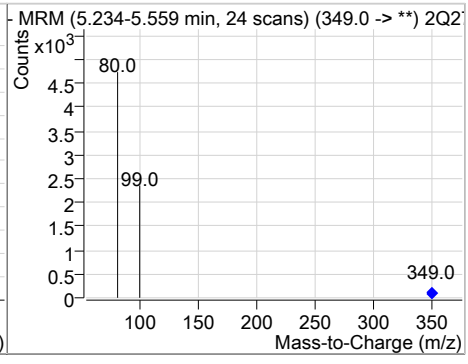




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.94	5.32	0.01	2753	349.0 -> 99.0	34.3	5.1	65.1

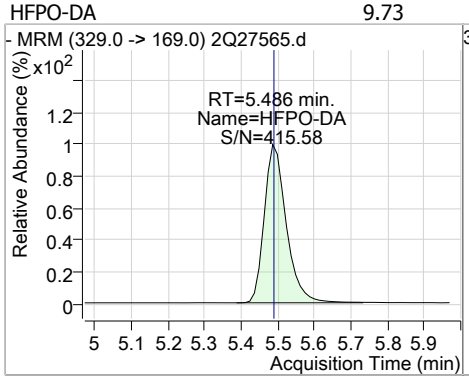


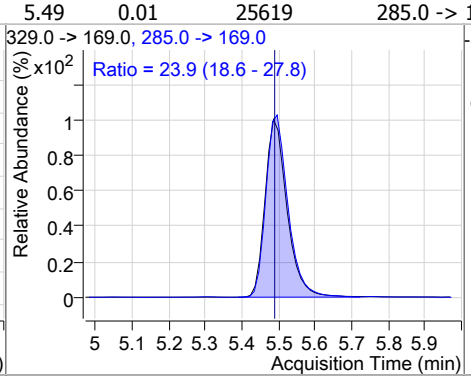


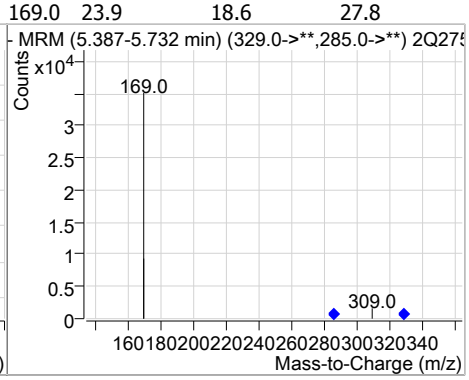


Perfluorinated Compounds by LC/MS/MS

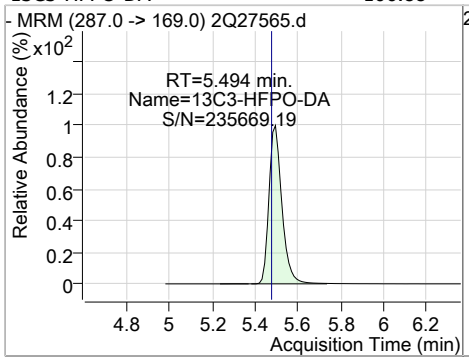
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.73	5.49	0.01	25619	285.0 -> 169.0	23.9	18.6	27.8

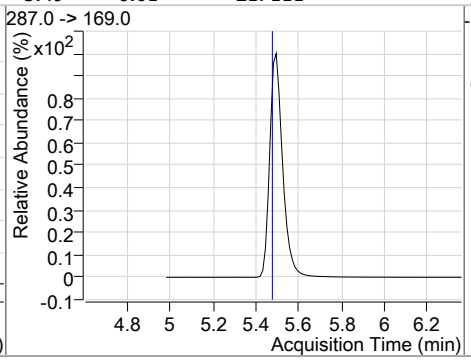


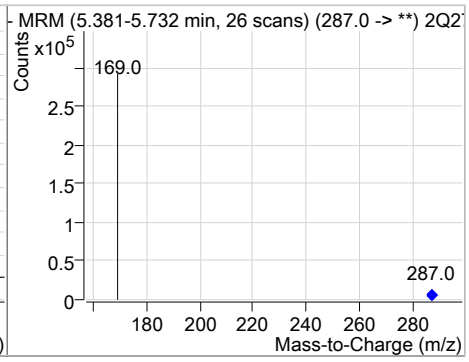




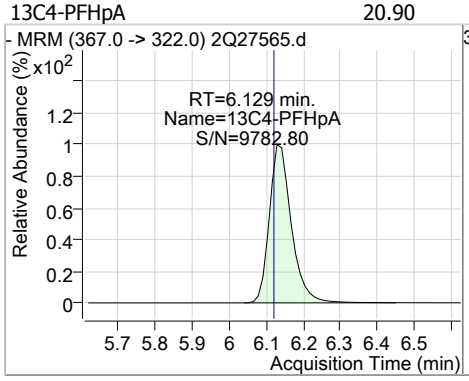
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	106.88	5.49	0.01	217111				

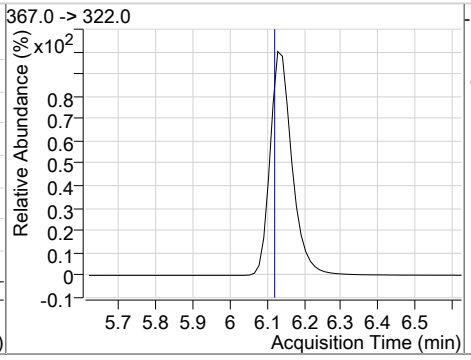


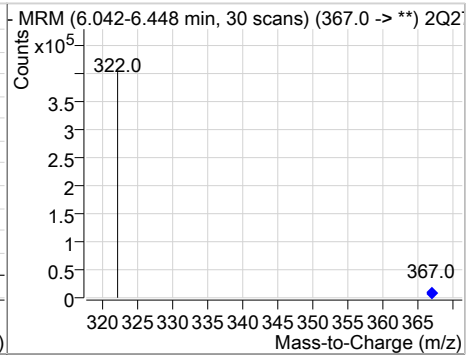




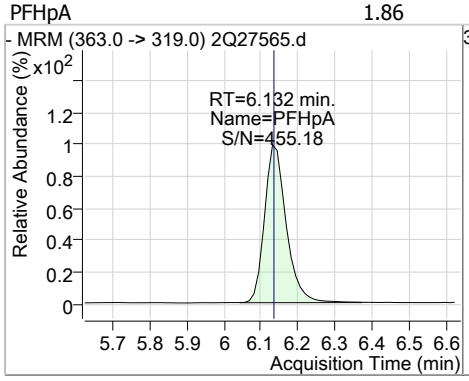
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.90	6.13	0.01	300954				

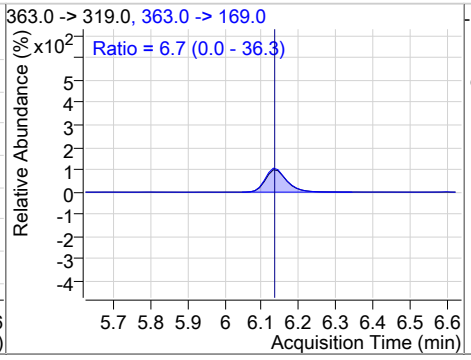


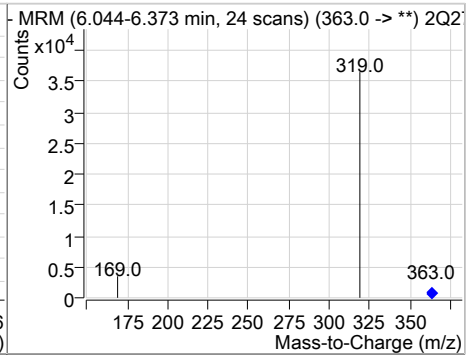




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.86	6.13	0.01	26146	363.0 -> 169.0	6.7	0.0	36.3

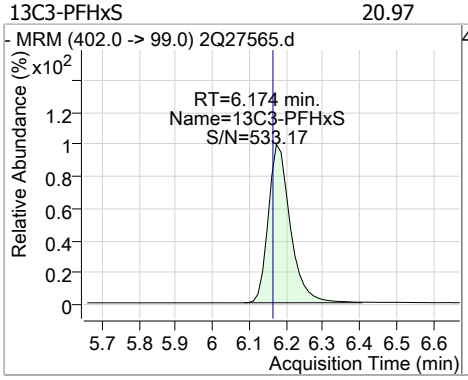


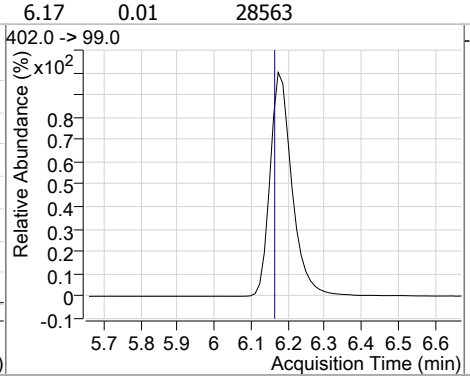


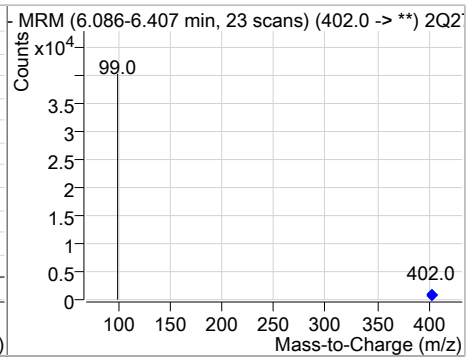


Perfluorinated Compounds by LC/MS/MS

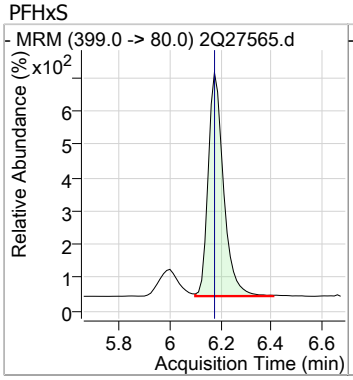
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.97	6.17	0.01	28563				

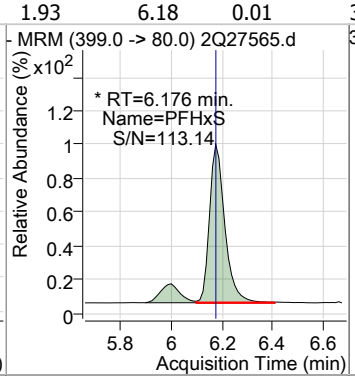


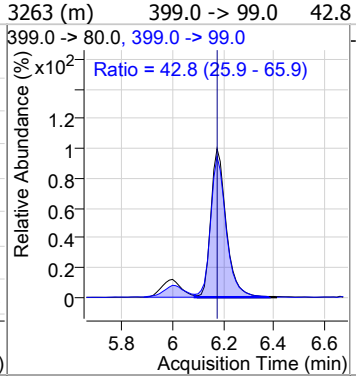


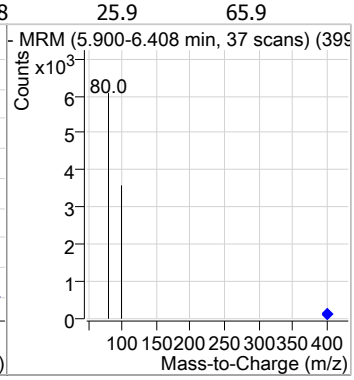


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.93	6.18	0.01	3263 (m)	399.0 -> 99.0	42.8	25.9	65.9

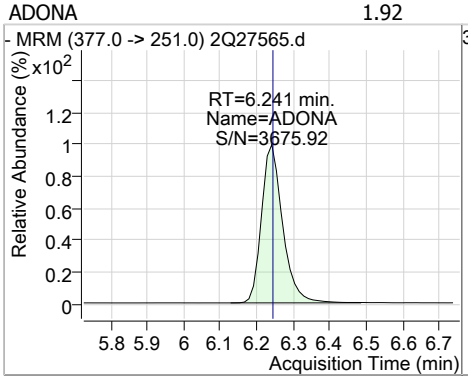


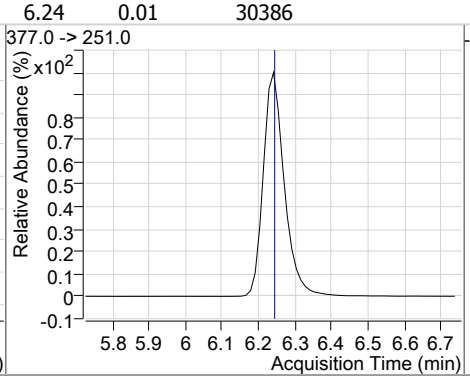


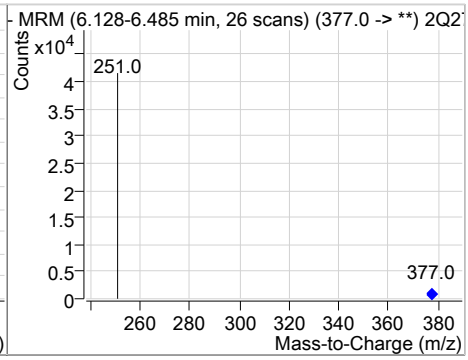




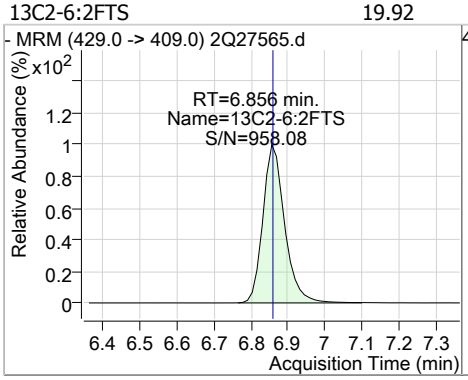
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	1.92	6.24	0.01	30386				

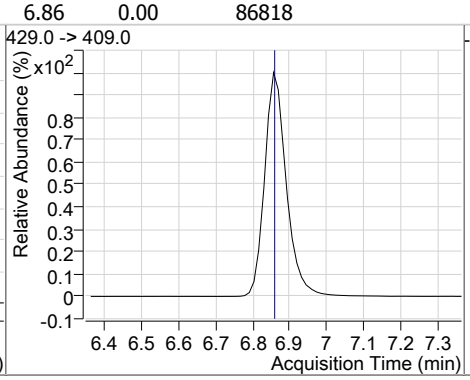


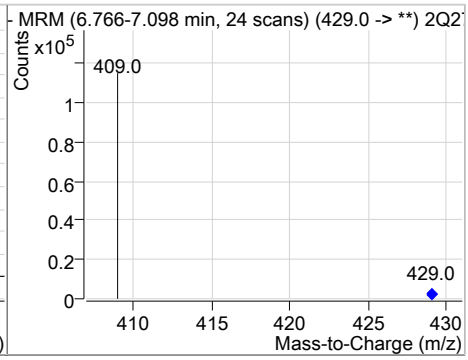




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.92	6.86	0.00	86818				

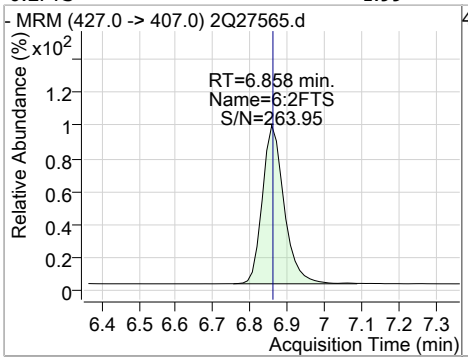


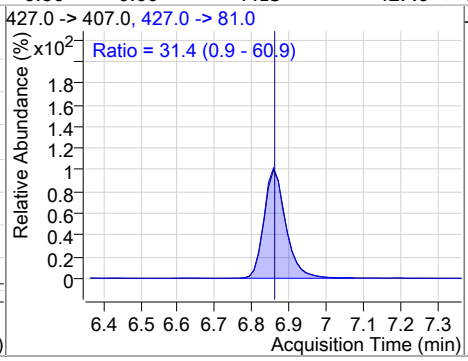


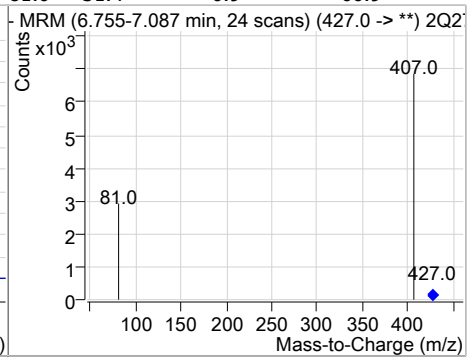


Perfluorinated Compounds by LC/MS/MS

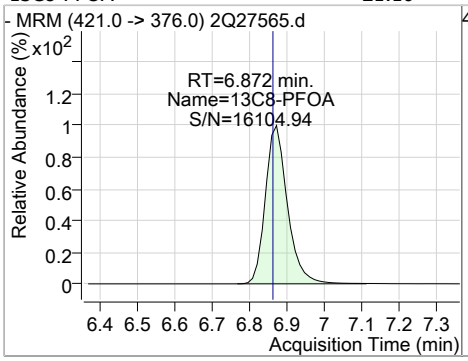
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.99	6.86	0.00	4413	427.0 -> 81.0	31.4	0.9	60.9

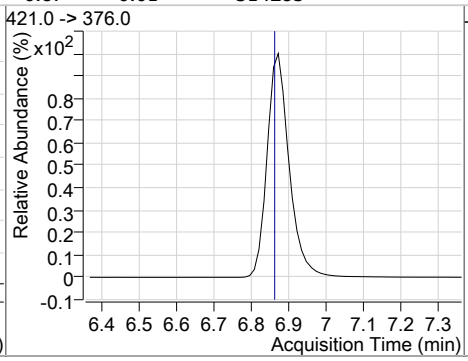


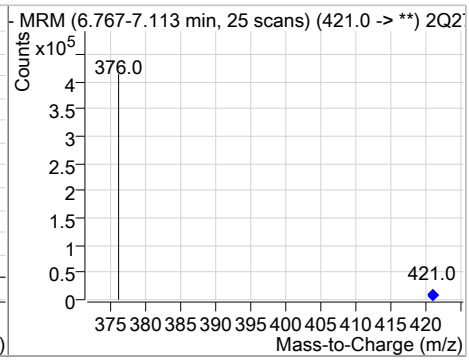




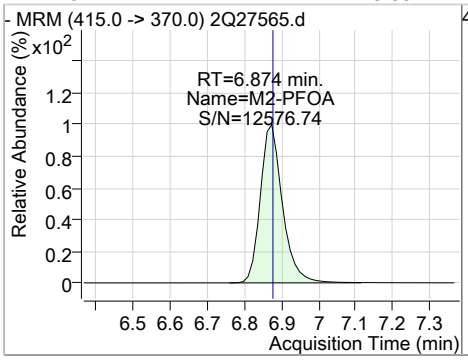
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.10	6.87	0.01	314285				

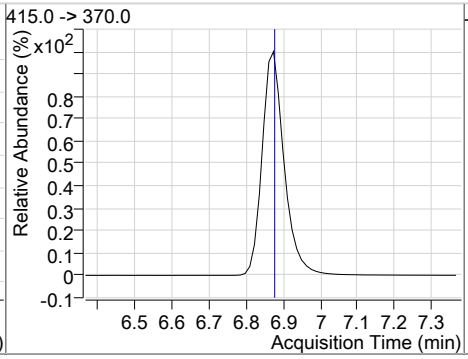


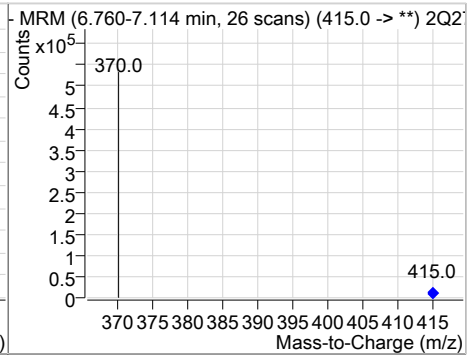




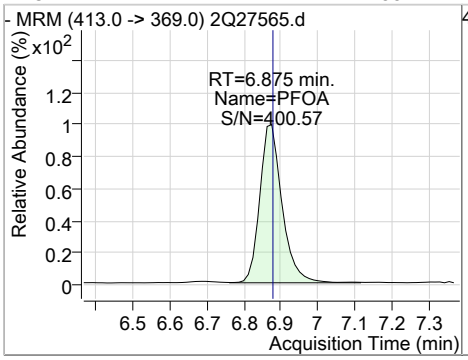
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.87	0.01	403494				

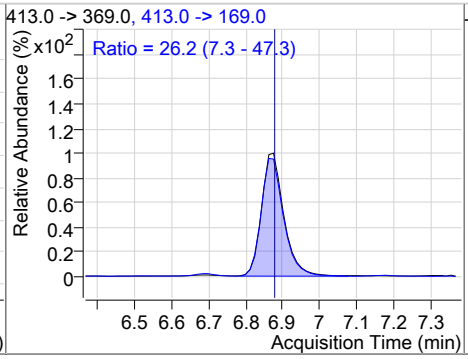


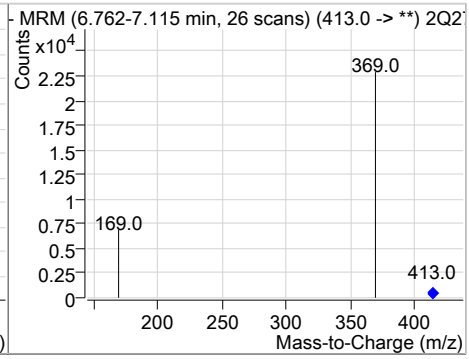




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.88	6.88	0.01	16196	413.0 -> 169.0	26.2	7.3	47.3

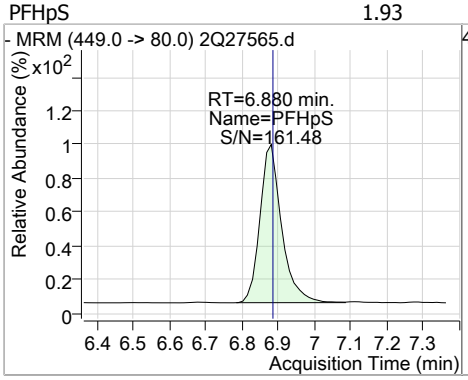


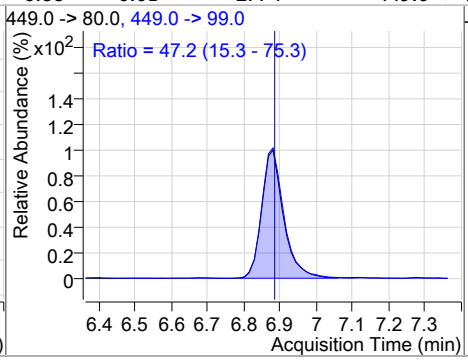


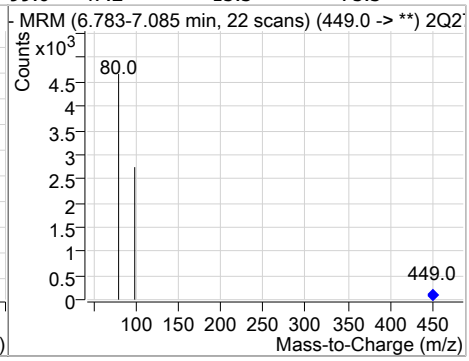


Perfluorinated Compounds by LC/MS/MS

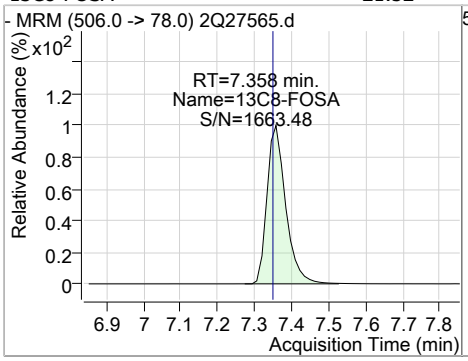
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.93	6.88	0.01	2774	449.0 -> 99.0	47.2	15.3	75.3

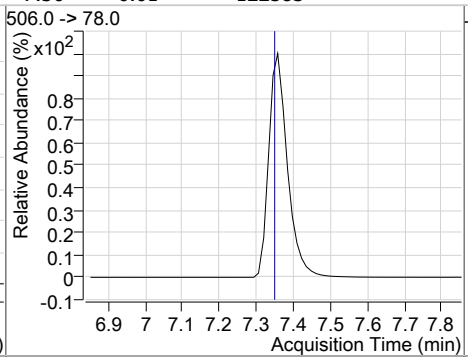


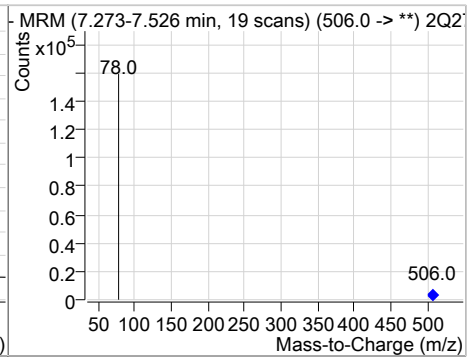




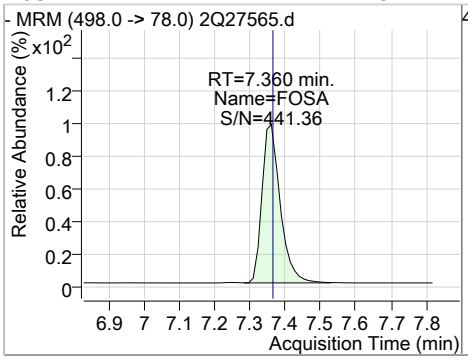
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.52	7.36	0.01	122583				

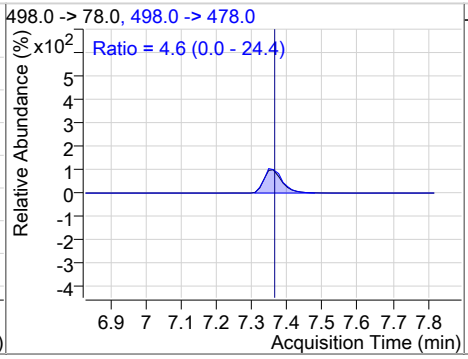


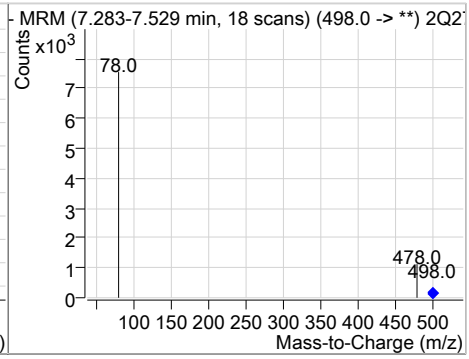




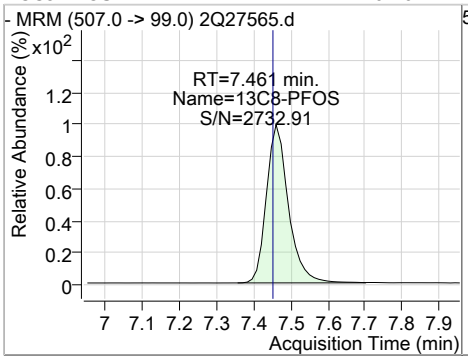
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.94	7.36	0.01	5355	498.0 -> 478.0	4.6	0.0	24.4

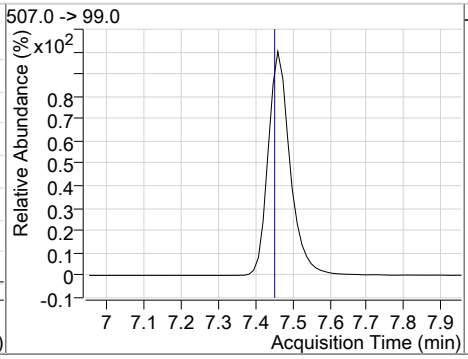


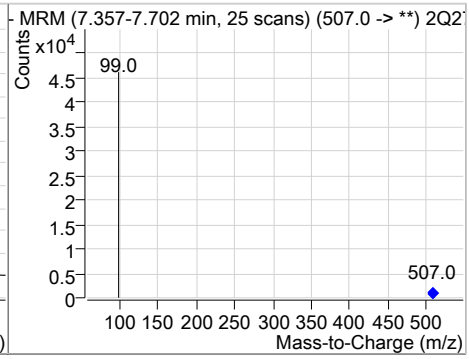




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.70	7.46	0.01	34241				

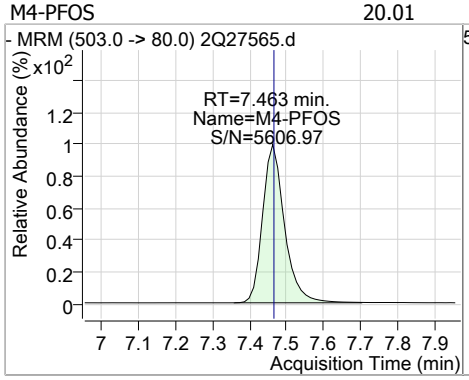


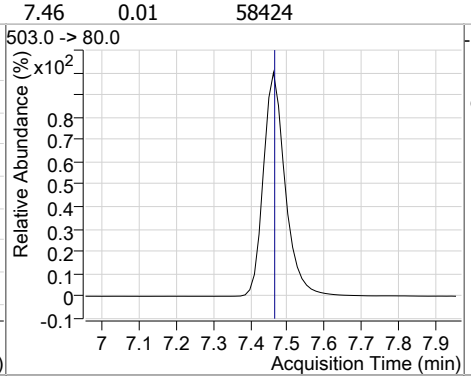


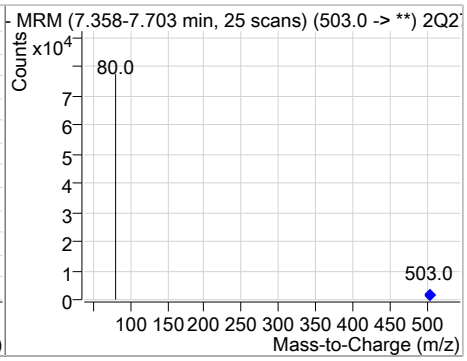


Perfluorinated Compounds by LC/MS/MS

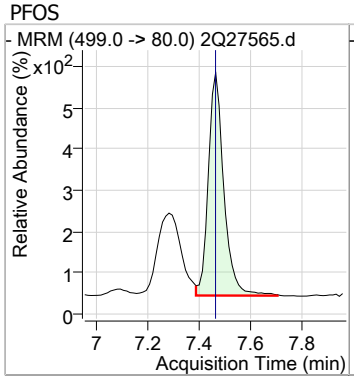
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.46	0.01	58424				

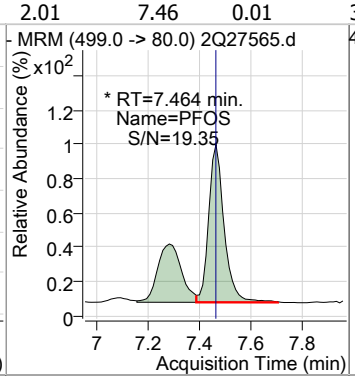


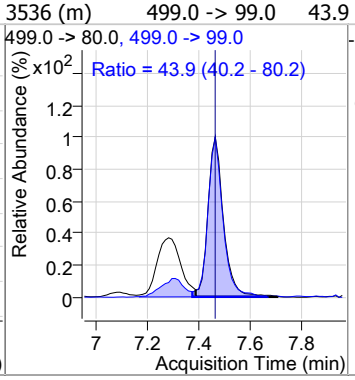


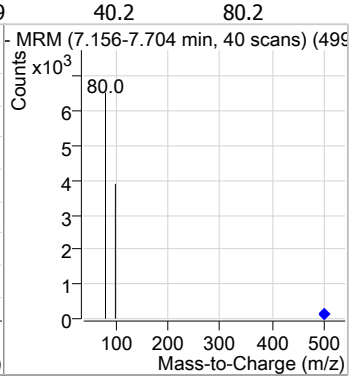


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.01	7.46	0.01	3536 (m)	499.0 -> 99.0	43.9	40.2	80.2

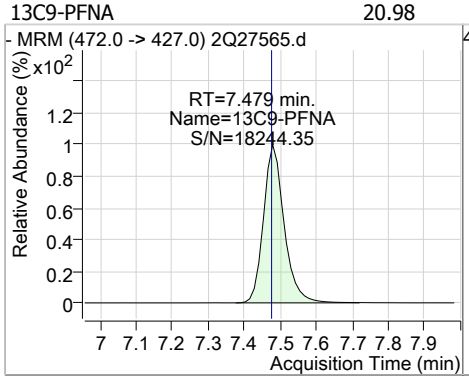


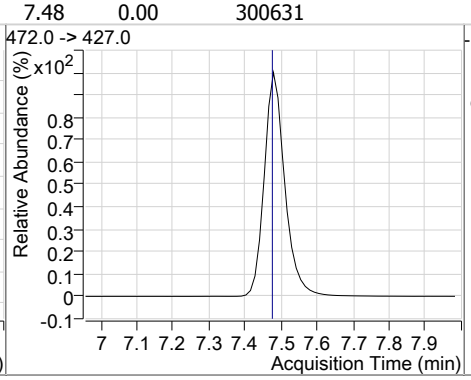


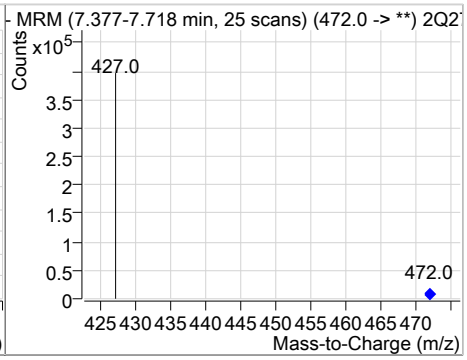




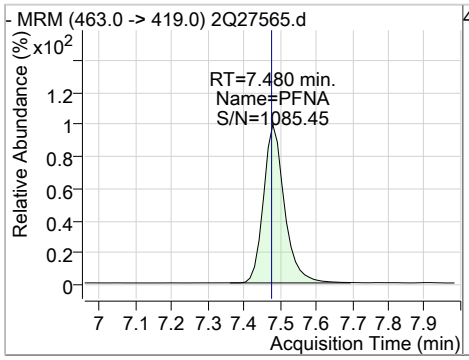
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.98	7.48	0.00	300631				

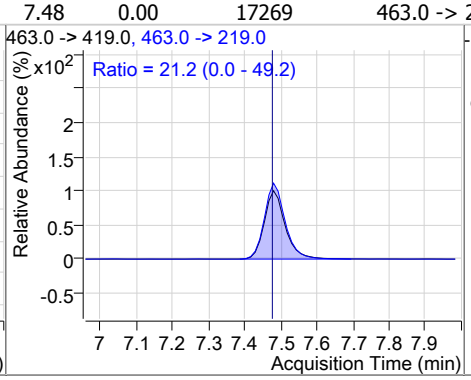


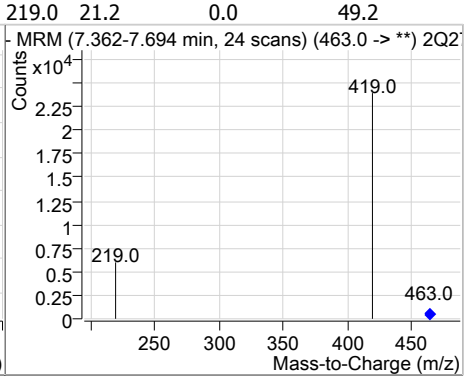




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.77	7.48	0.00	17269	463.0 -> 219.0	21.2	0.0	49.2

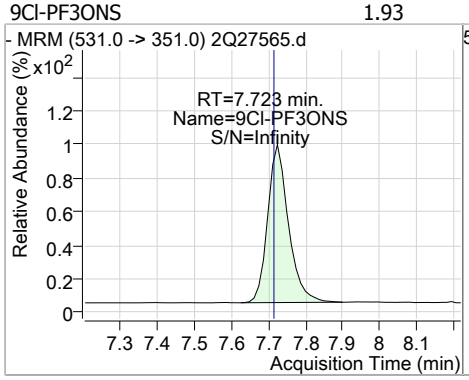


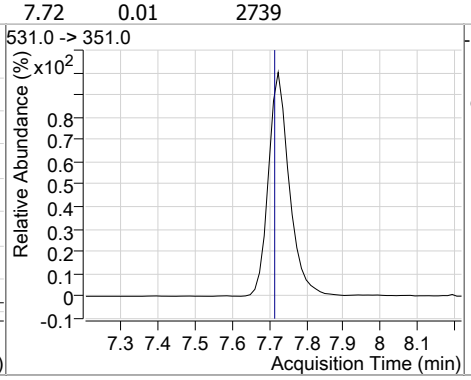


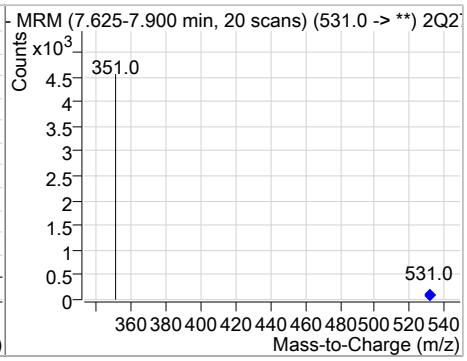


Perfluorinated Compounds by LC/MS/MS

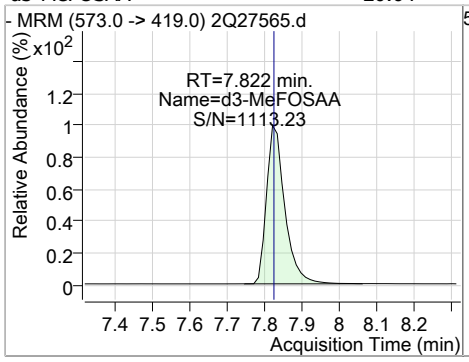
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.93	7.72	0.01	2739				

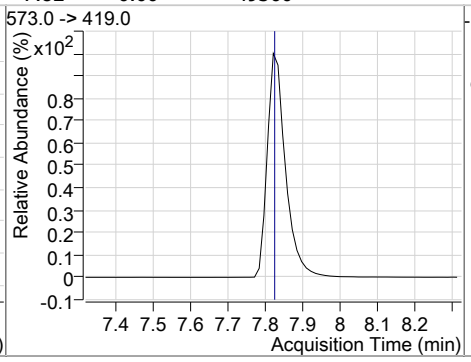


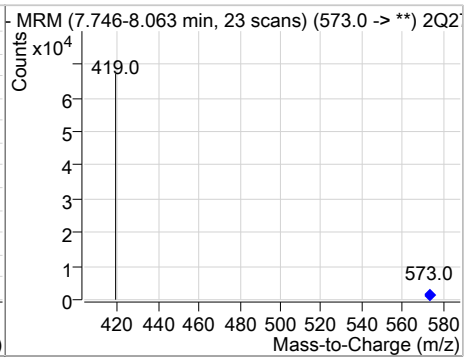




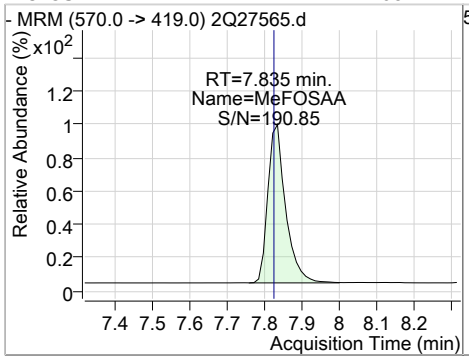
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.64	7.82	0.00	49360				

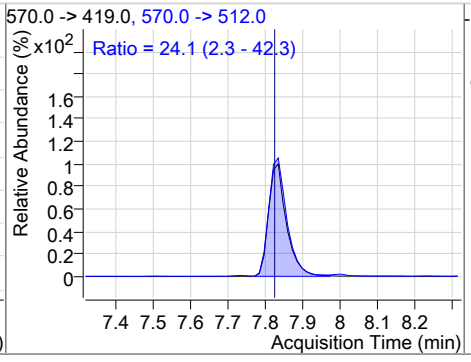


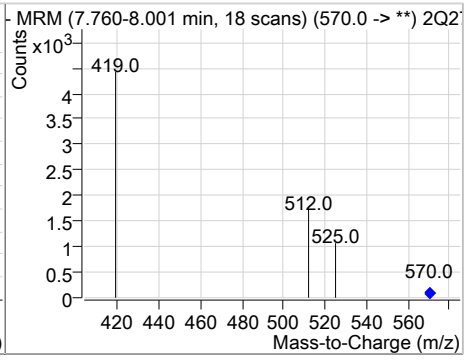




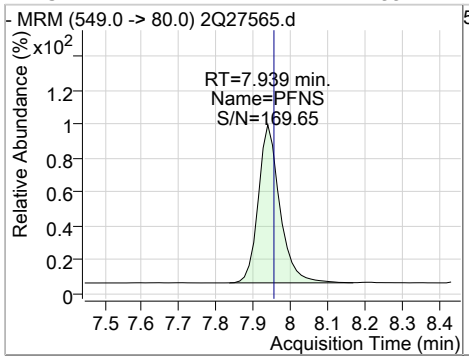
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.08	7.84	0.01	2710	570.0 -> 512.0	24.1	2.3	42.3

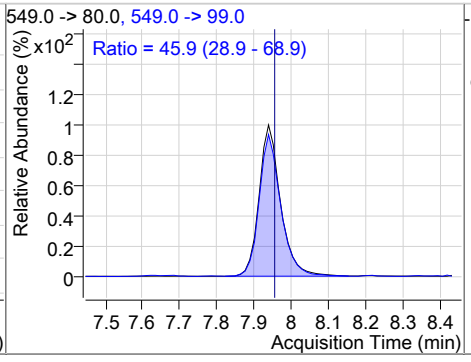


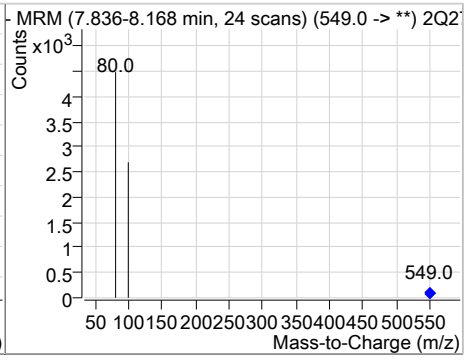




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.99	7.94	0.00	2550	549.0 -> 99.0	45.9	28.9	68.9

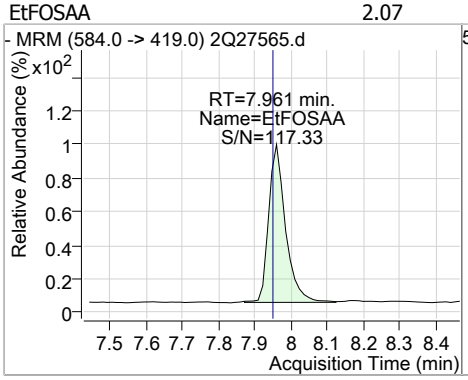


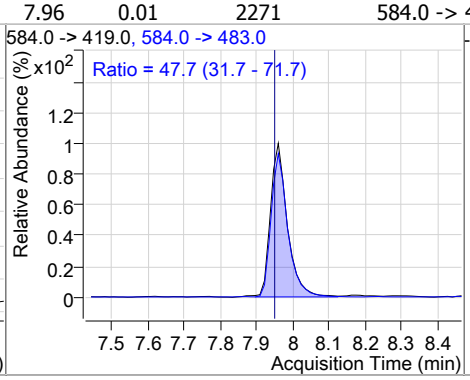


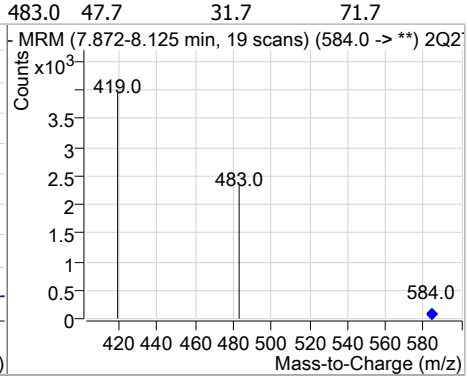


Perfluorinated Compounds by LC/MS/MS

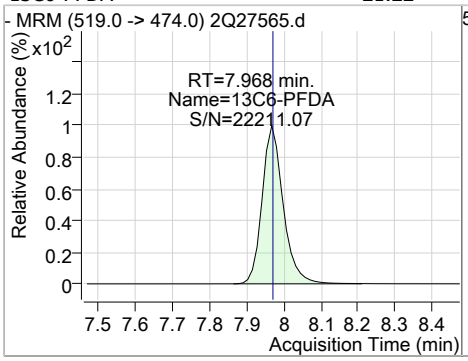
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.07	7.96	0.01	2271	584.0 -> 483.0	47.7	31.7	71.7

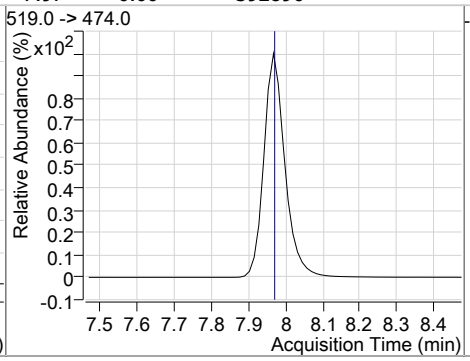


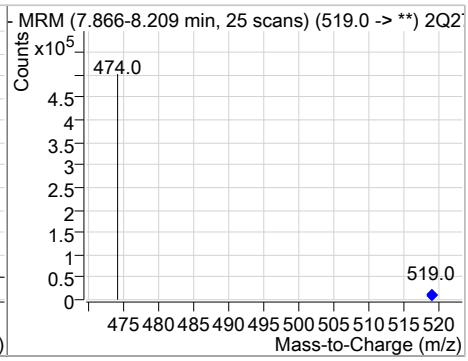




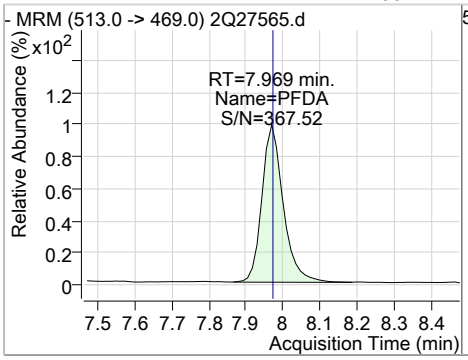
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.22	7.97	0.00	392896				

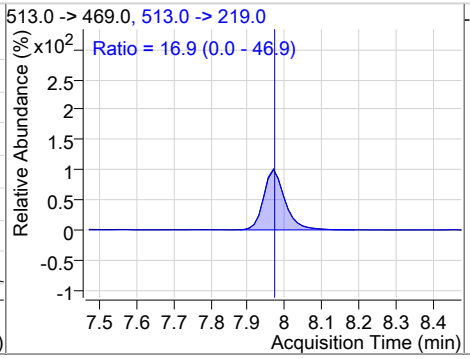


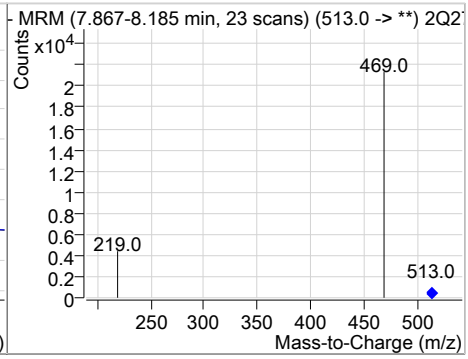




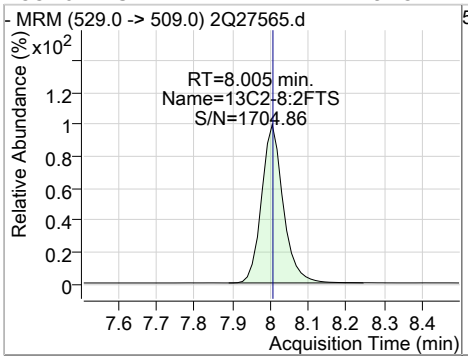
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.86	7.97	0.00	15456	513.0 -> 219.0	16.9	0.0	46.9

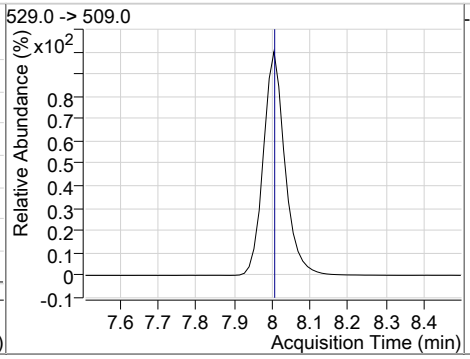


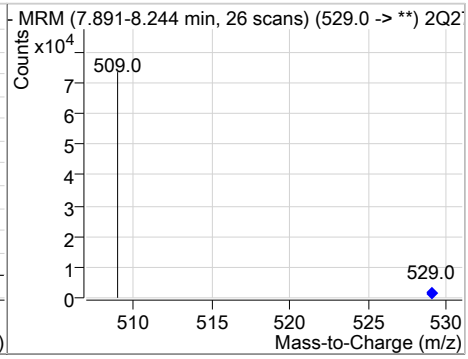




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.23	8.01	0.00	54597				

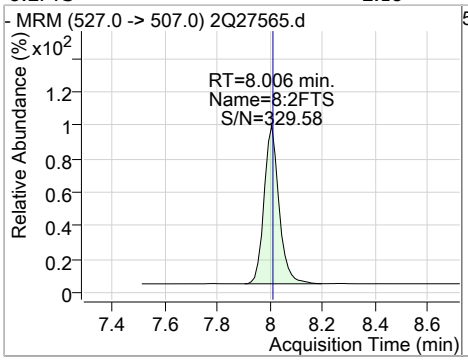


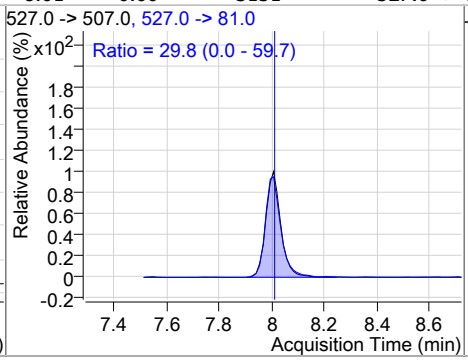


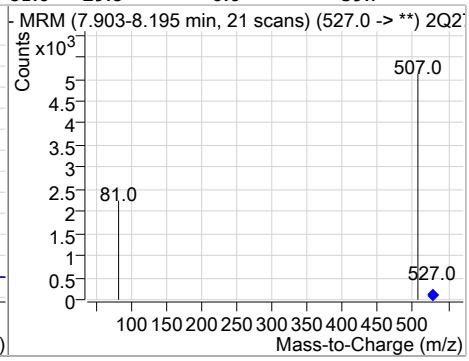


Perfluorinated Compounds by LC/MS/MS

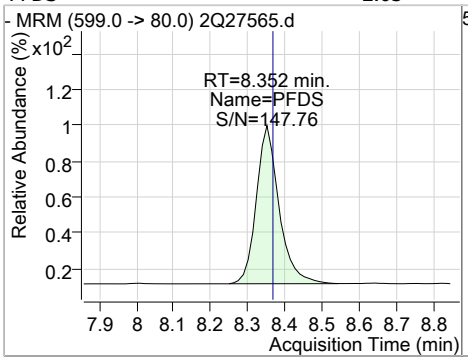
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	2.18	8.01	0.00	3151	527.0 -> 81.0	29.8	0.0	59.7

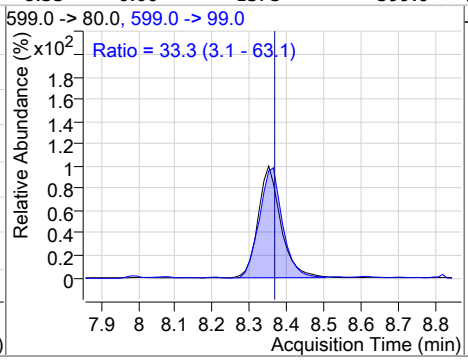


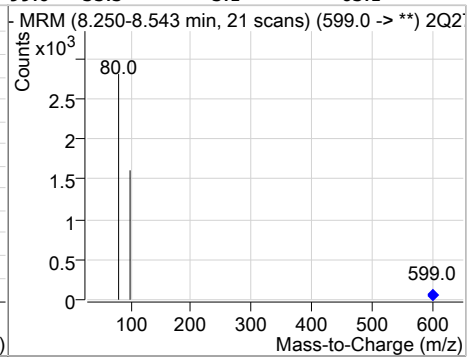




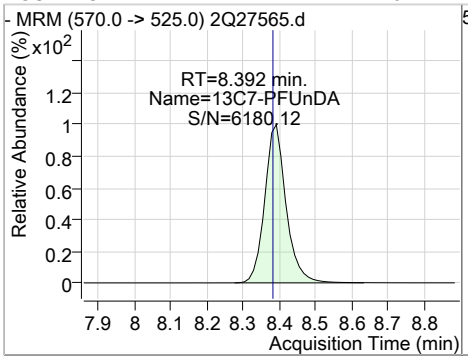
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.03	8.35	0.00	1375	599.0 -> 99.0	33.3	3.1	63.1

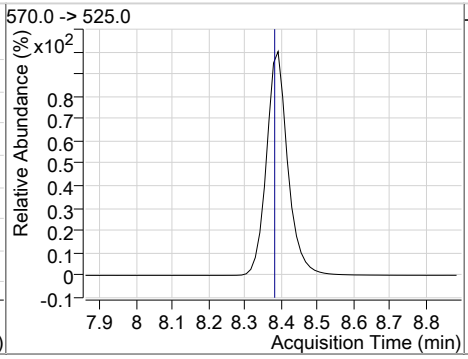


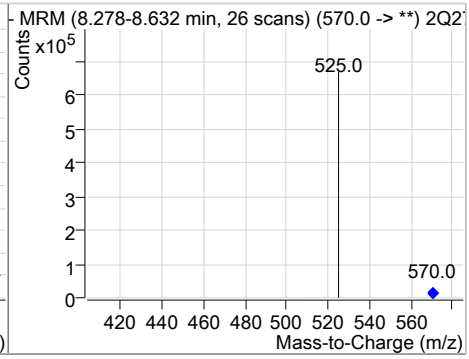




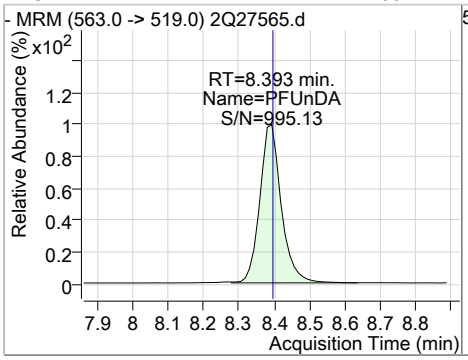
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.01	8.39	0.01	503256				

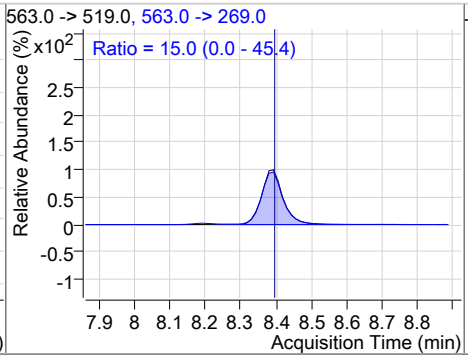


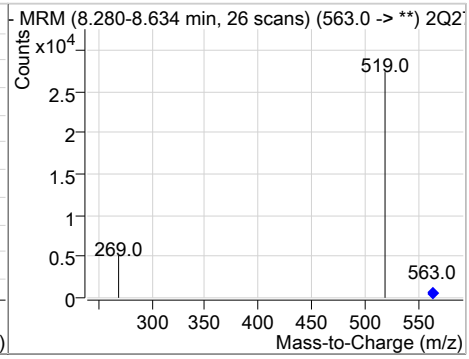




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	1.85	8.39	0.01	19710	563.0 -> 269.0	15.0	0.0	45.4

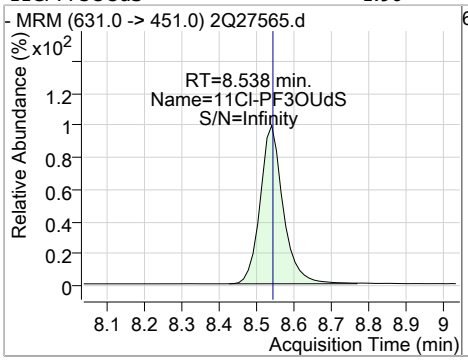


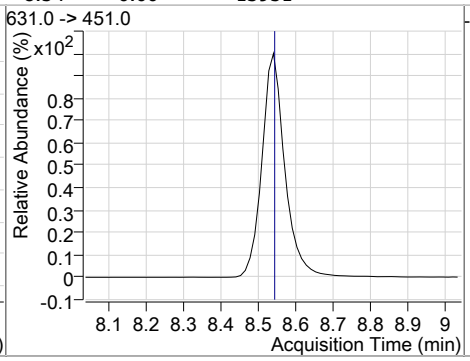


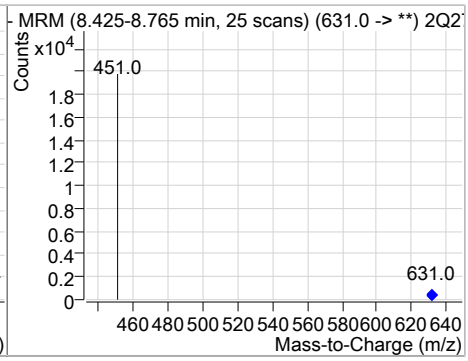


Perfluorinated Compounds by LC/MS/MS

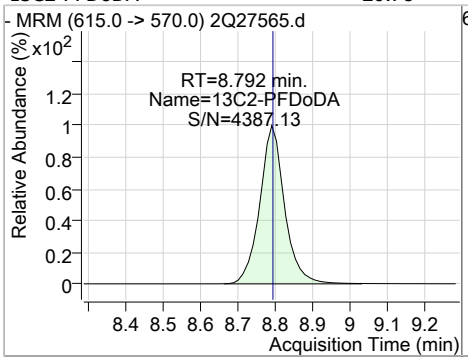
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.90	8.54	0.00	13951				

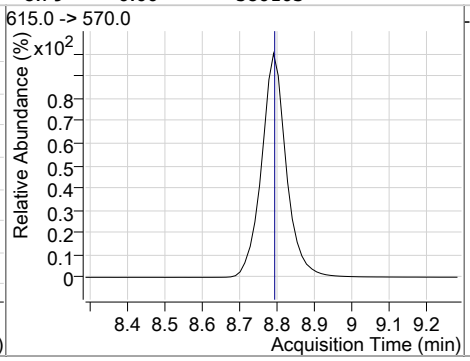


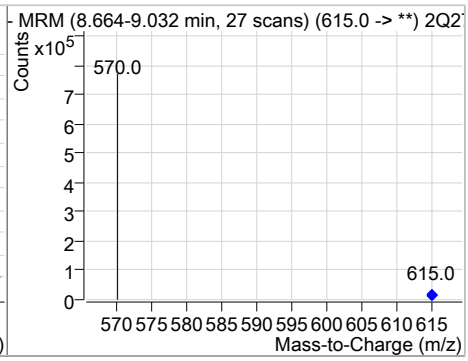




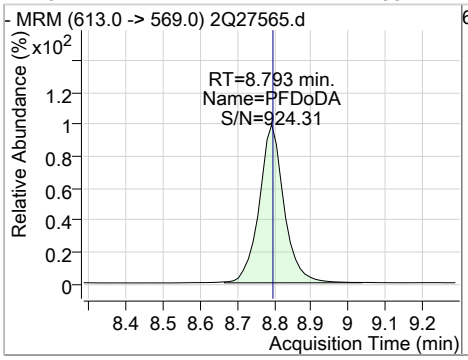
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.78	8.79	0.00	580103				

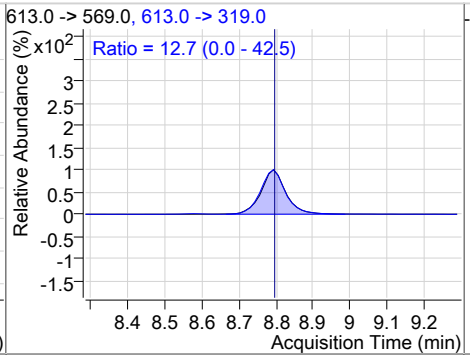


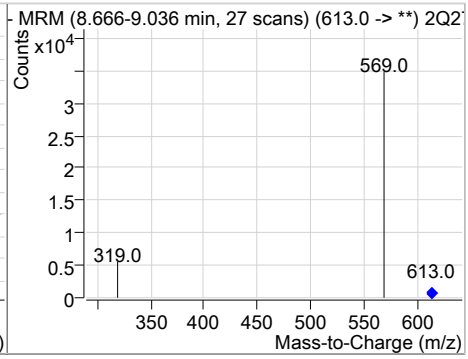




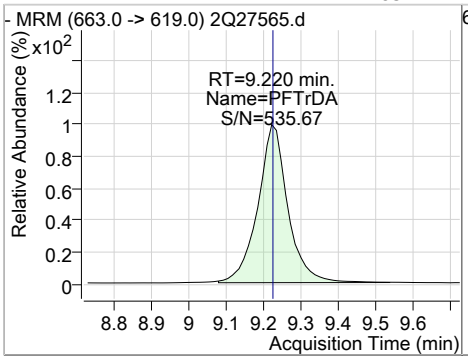
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.86	8.79	0.00	25274	613.0 -> 319.0	12.7	0.0	42.5

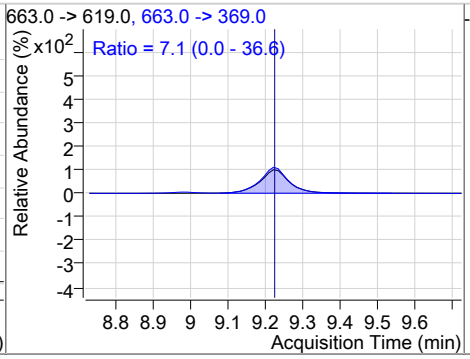


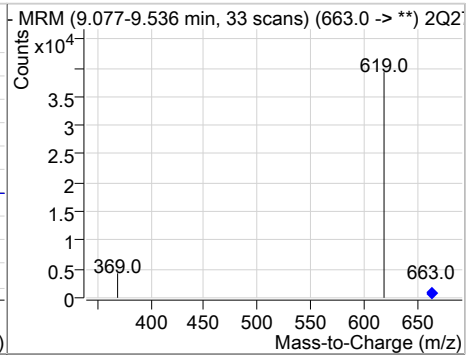




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.83	9.22	0.00	28288	663.0 -> 369.0	7.1	0.0	36.6

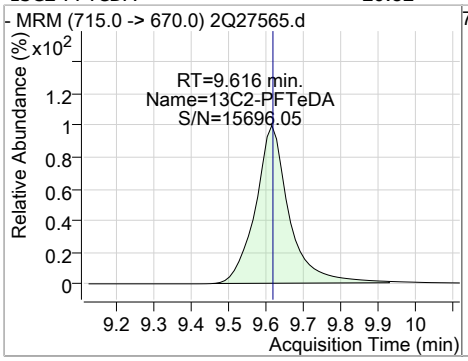


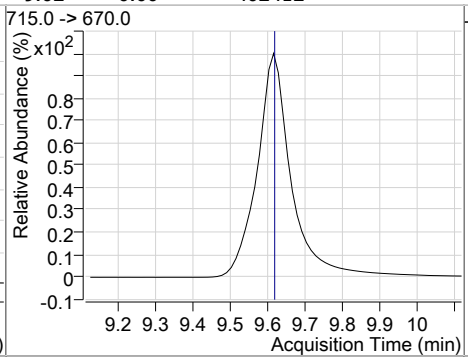


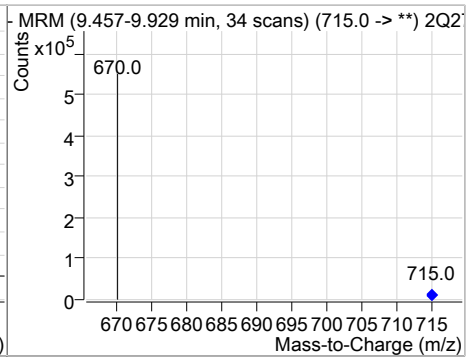


Perfluorinated Compounds by LC/MS/MS

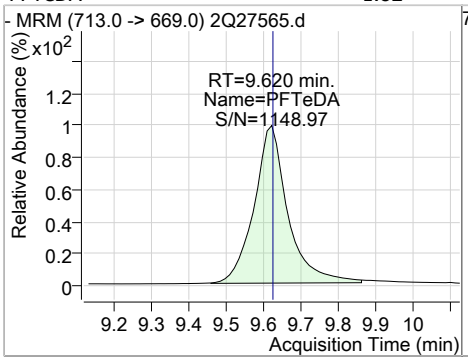
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.82	9.62	0.00	402412				

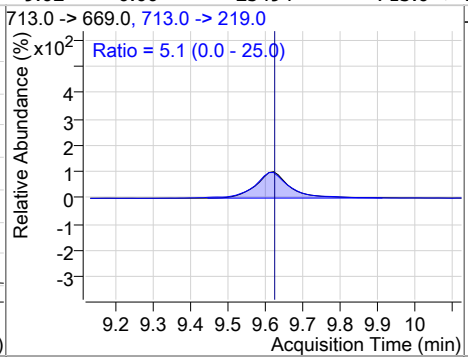


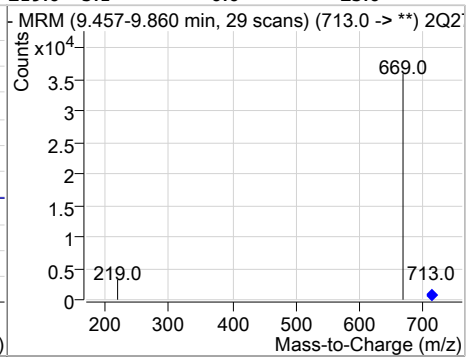




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.82	9.62	0.00	25494	713.0 -> 219.0	5.1	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27565.D
Injection Time: 03/13/19 11:16
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27566.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 11:31:44 AM
Sample Name : ic439-5.0
Vial : Vial 5
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

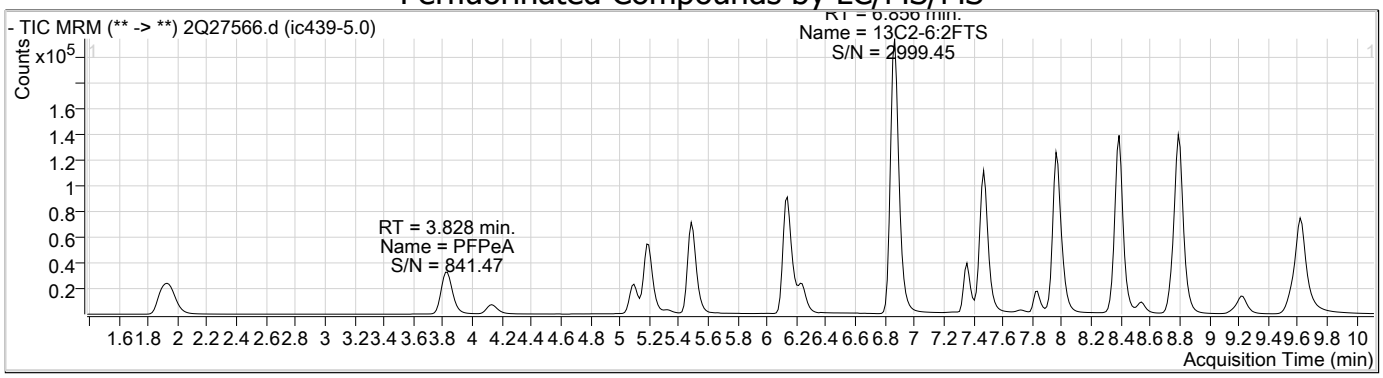
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	408176	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	59113	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	177357	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	146501	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	210257	20.00	µg/L	0.013
M4-PFHpA	6.142	367.0 -> 322.0	294802	20.00	µg/L	0.024
M8-PFOA	6.872	421.0 -> 376.0	310327	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	296127	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	386950	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	496739	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	570603	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	402539	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	119382	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	24709	20.00	µg/L	0.038
M3-PFHxS	6.174	402.0 -> 99.0	28269	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	34129	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	80292	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	85977	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	55349	20.00	µg/L	0.001
M3-MeFOSAA	7.822	573.0 -> 419.0	49096	20.00	µg/L	-0.001
M3-HFPO-DA	5.494	287.0 -> 169.0	216599	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	79926	19.25	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.3%		
13C2-6:2FTS	6.856	429.0 -> 409.0	85943	19.72	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C2-8:2FTS	8.005	529.0 -> 509.0	55462	19.53	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-PFDoDA	8.792	615.0 -> 570.0	570755	20.45	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C2-PFTeDA	9.616	715.0 -> 670.0	402452	20.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C3-PFBS	4.130	302.0 -> 99.0	24665	20.37	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C3-PFHxS	6.174	402.0 -> 99.0	28268	20.75	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
13C4-PFBA	1.927	217.0 -> 172.0	176423	20.35	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C4-PFHpA	6.142	367.0 -> 322.0	294325	20.44	µg/L	0.024
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C5-PFHxA	5.189	318.0 -> 273.0	209827	20.46	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
13C5-PFPeA	3.824	268.0 -> 223.0	146343	20.41	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C6-PFDA	7.968	519.0 -> 474.0	386833	20.89	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

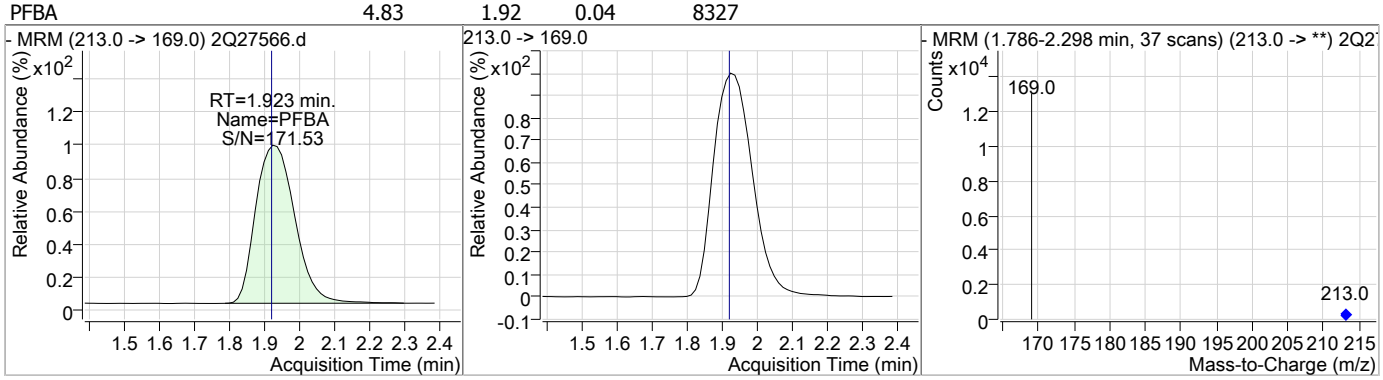
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%			
13C7-PFUnDA	8.392	570.0 -> 525.0	496867	20.74	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%			
13C8-FOSA	7.358	506.0 -> 78.0	119363	20.96	µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.8%			
13C8-PFOA	6.872	421.0 -> 376.0	310225	20.83	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%			
13C8-PFOS	7.461	507.0 -> 99.0	34066	20.60	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%			
13C9-PFNA	7.479	472.0 -> 427.0	296036	20.66	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%			
d3-MeFOSAA	7.822	573.0 -> 419.0	49146	20.55	µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%			
M2-PFOA	6.874	415.0 -> 370.0	408656	20.01	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.463	503.0 -> 80.0	59089	19.99	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	5.494	287.0 -> 169.0	216599	106.63	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 106.6%			
Target Compounds							**QValue**
4:2FTS	5.100	327.0 -> 307.0	12190	5.22	µg/L		98
6:2FTS	6.858	427.0 -> 407.0	11220	5.10	µg/L		100
8:2FTS	8.006	527.0 -> 507.0	7188	4.92	µg/L		97
EtFOSAA	7.961	584.0 -> 419.0	5416	4.97	µg/L		100
FOSA	7.360	498.0 -> 78.0	13489	5.01	µg/L		99
MeFOSAA	7.835	570.0 -> 419.0	6288	4.86	µg/L		95
PFBA	1.923	213.0 -> 169.0	8327	4.83	µg/L		100
PFBS	4.134	299.0 -> 80.0	9787	4.79	µg/L		99
PFDA	7.969	513.0 -> 469.0	38434	4.70	µg/L		98
PFDoDA	8.793	613.0 -> 569.0	63652	4.76	µg/L		100
PFDS	8.352	599.0 -> 80.0	3217	4.77	µg/L		96
PFHpA	6.132	363.0 -> 319.0	66273	4.79	µg/L		100
PFHpS	6.880	449.0 -> 80.0	7014	4.90	µg/L		100
PFHxA	5.191	313.0 -> 269.0	17421	4.79	µg/L		99
PFHxS	6.176	399.0 -> 80.0	7889	4.69	µg/L	m	98
PFNA	7.480	463.0 -> 419.0	44413	4.63	µg/L		99
PFNS	7.939	549.0 -> 80.0	6513	5.10	µg/L		95
PFOA	6.875	413.0 -> 369.0	40216	4.74	µg/L		98
PFOS	7.464	499.0 -> 80.0	8314	4.75	µg/L	m	81
PFPeA	3.828	263.0 -> 219.0	31633	4.75	µg/L		100
PFPeS	5.321	349.0 -> 80.0	6918	4.95	µg/L		100
PFTeDA	9.620	713.0 -> 669.0	64089	4.66	µg/L		100
PFTrDA	9.220	663.0 -> 619.0	72138	4.77	µg/L		100
PFUnDA	8.393	563.0 -> 519.0	49572	4.71	µg/L		99
11Cl-PF3OUdS	8.538	631.0 -> 451.0	34886	4.83	µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	7001	4.98	µg/L		100
ADONA	6.241	377.0 -> 251.0	76066	4.86	µg/L		100
HFPO-DA	5.498	329.0 -> 169.0	63670	24.23	µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

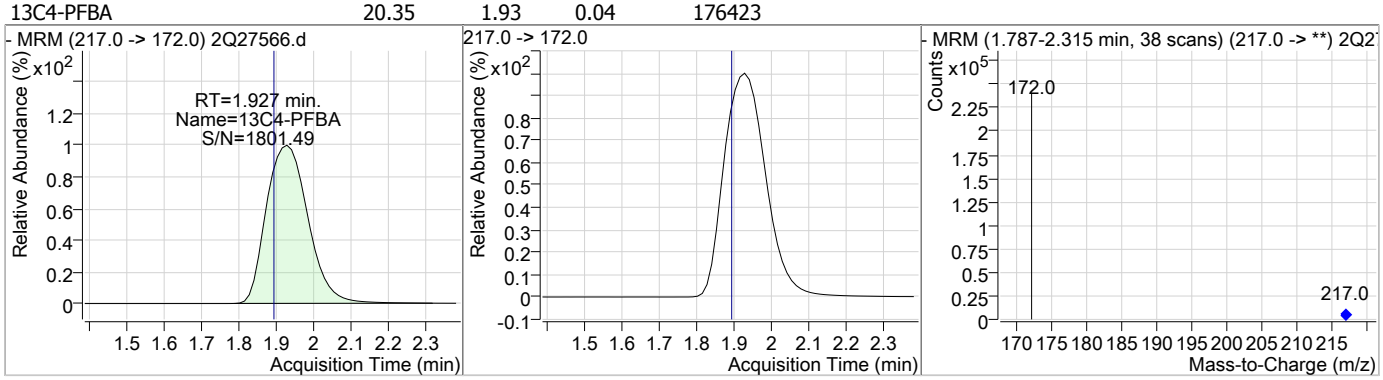
Perfluorinated Compounds by LC/MS/MS



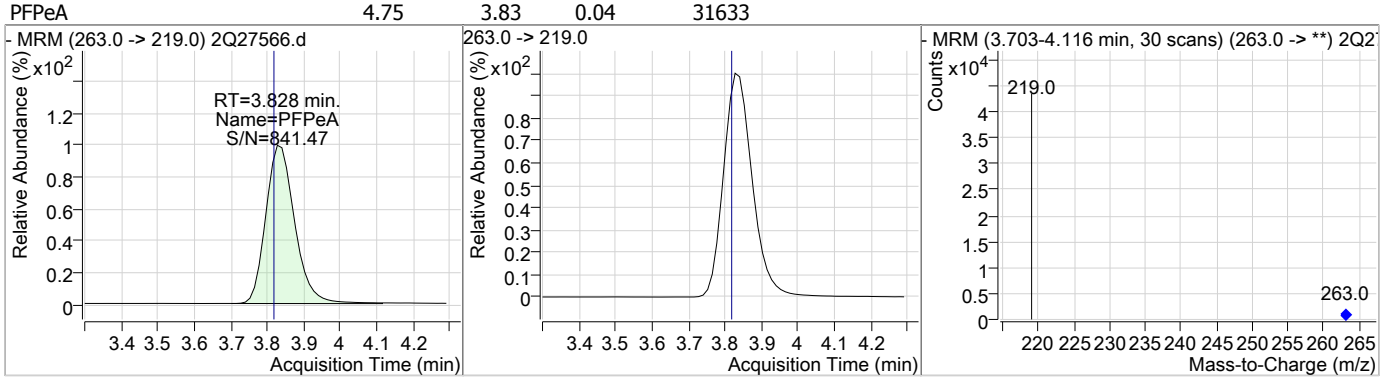
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	4.83	1.92	0.04	8327				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.35	1.93	0.04	176423				

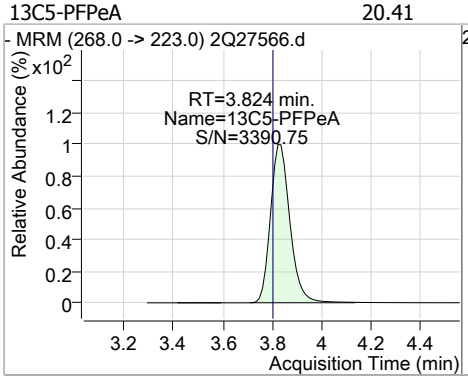


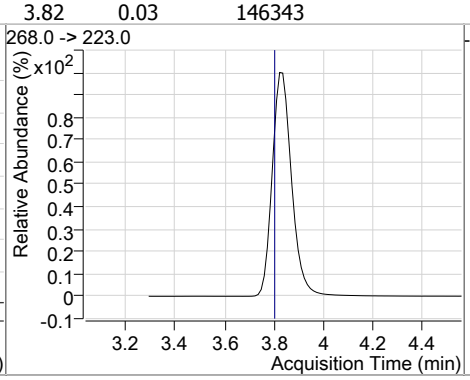
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.75	3.83	0.04	31633				

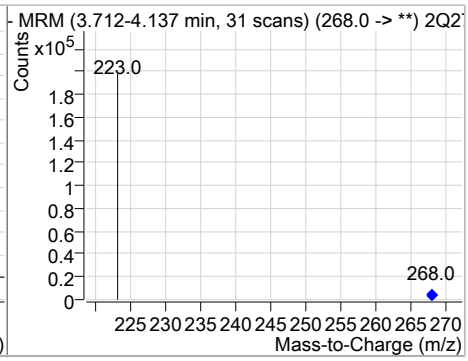


Perfluorinated Compounds by LC/MS/MS

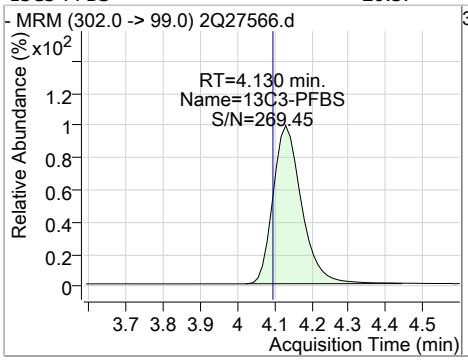
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.41	3.82	0.03	146343				

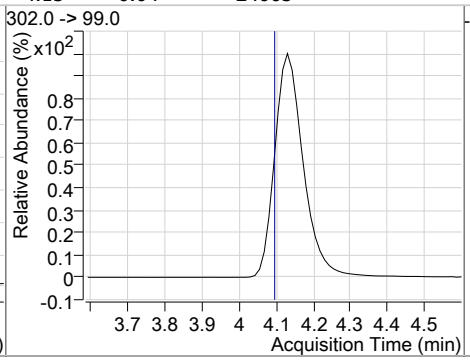


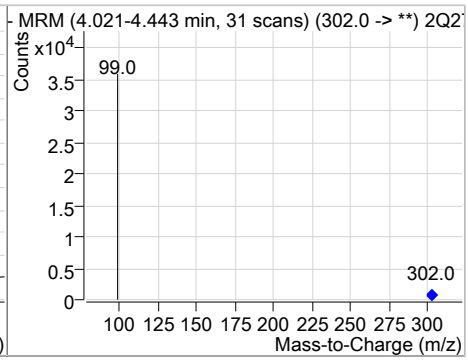




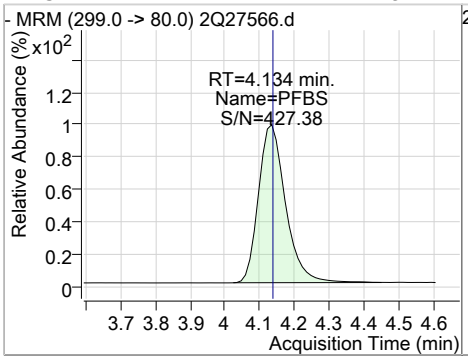
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.37	4.13	0.04	24665				

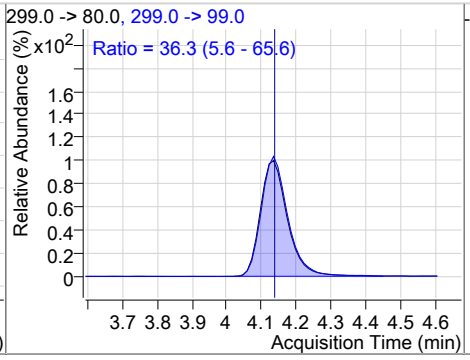


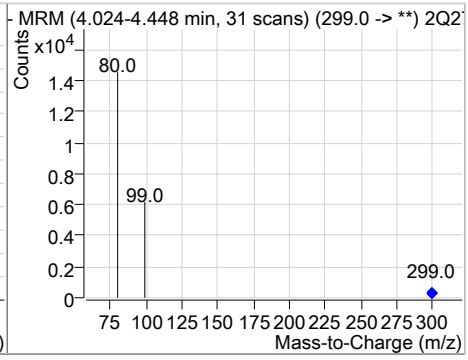




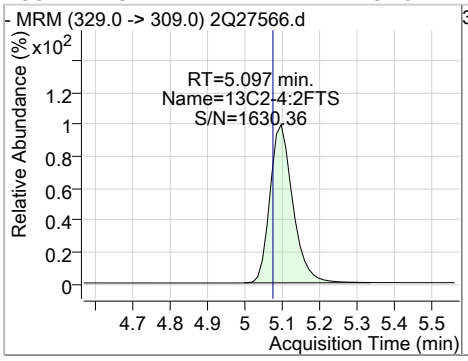
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.79	4.13	0.04	9787	299.0 -> 99.0	36.3	5.6	65.6

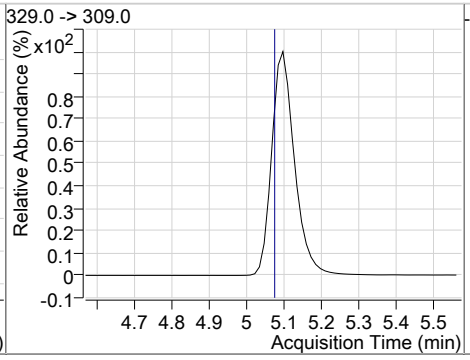


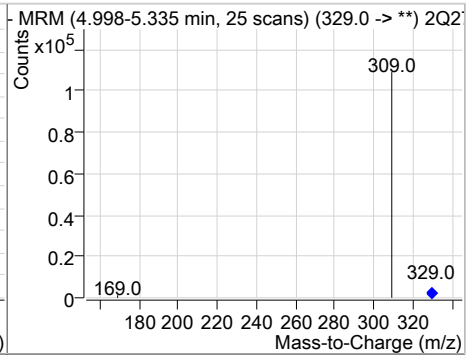




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.25	5.10	0.03	79926				

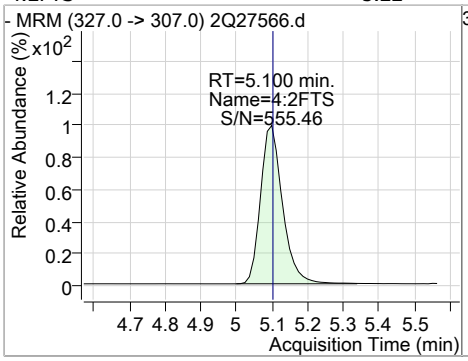


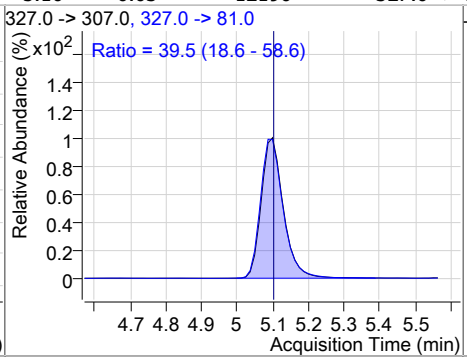


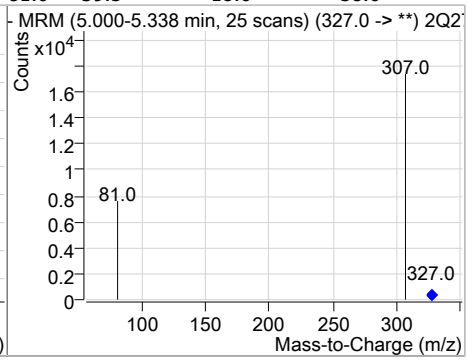


Perfluorinated Compounds by LC/MS/MS

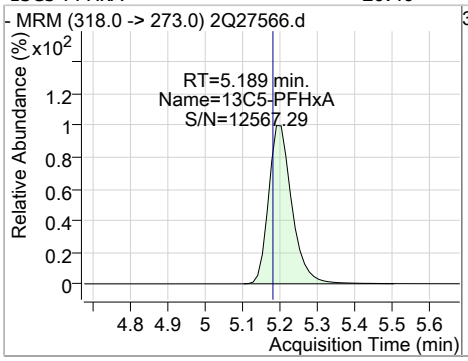
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	5.22	5.10	0.03	12190	327.0 -> 81.0	39.5	18.6	58.6

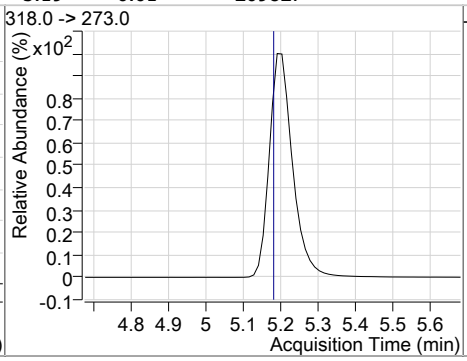


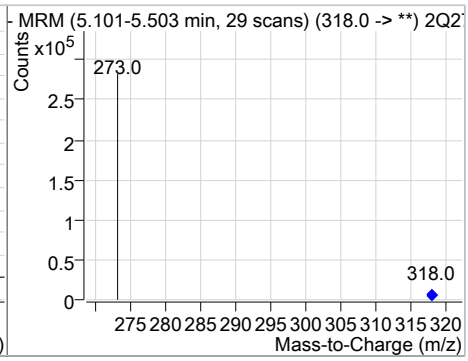




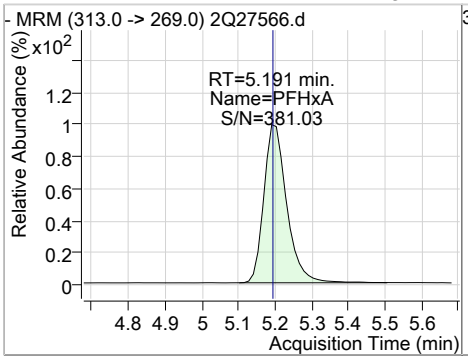
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.46	5.19	0.01	209827				

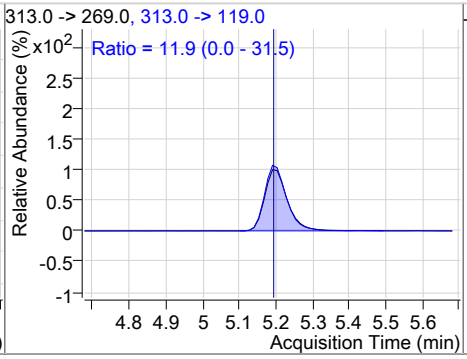


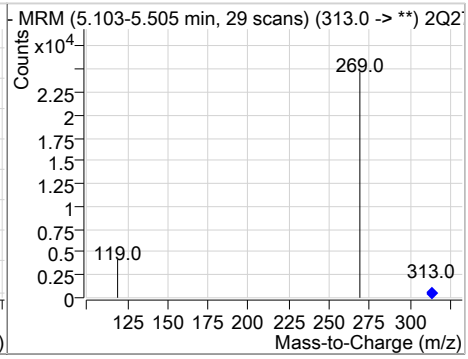




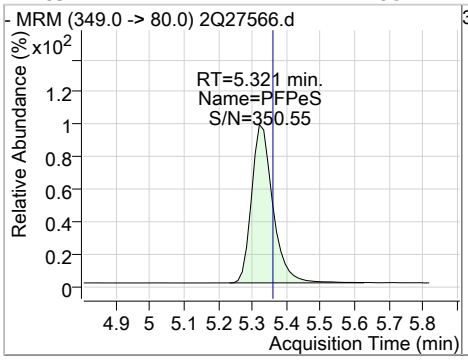
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.79	5.19	0.01	17421	313.0 -> 119.0	11.9	0.0	31.5

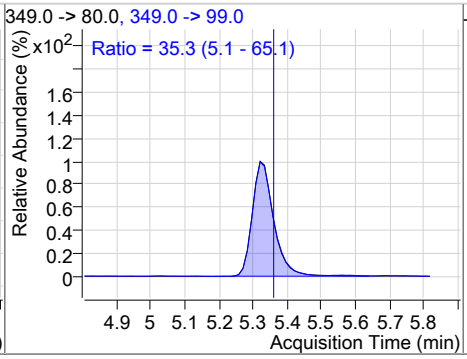


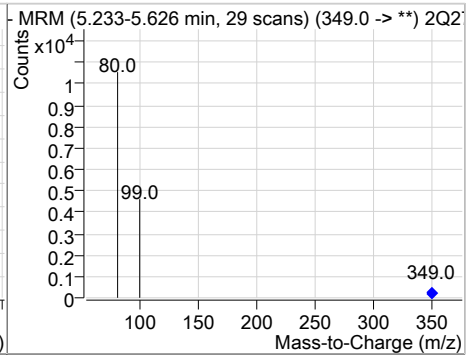




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	4.95	5.32	0.01	6918	349.0 -> 99.0	35.3	5.1	65.1

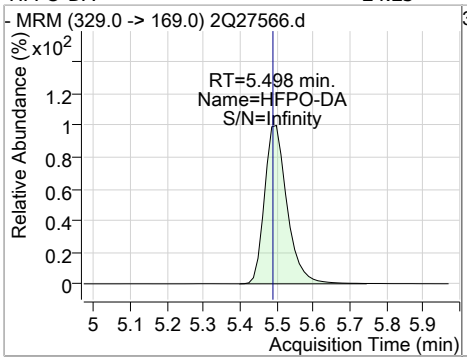


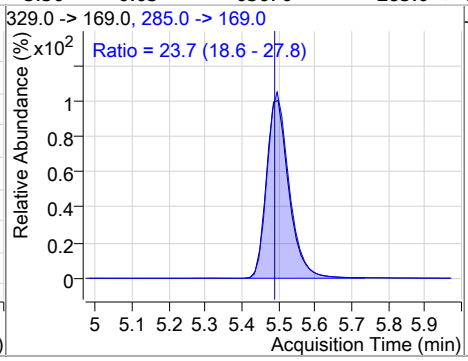


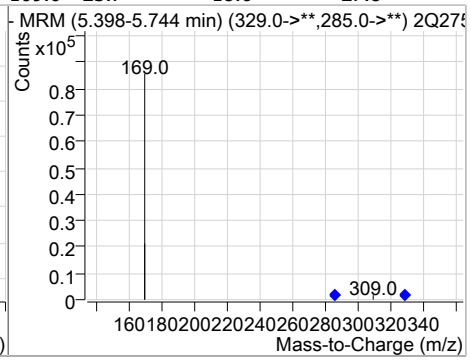


Perfluorinated Compounds by LC/MS/MS

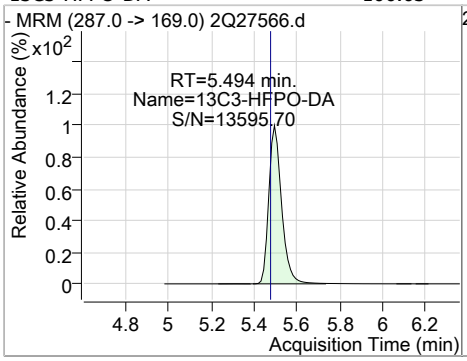
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.23	5.50	0.03	63670	285.0 -> 169.0	23.7	18.6	27.8

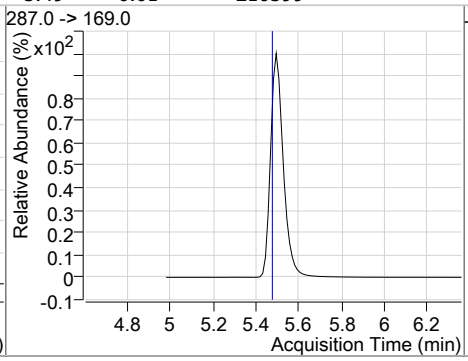


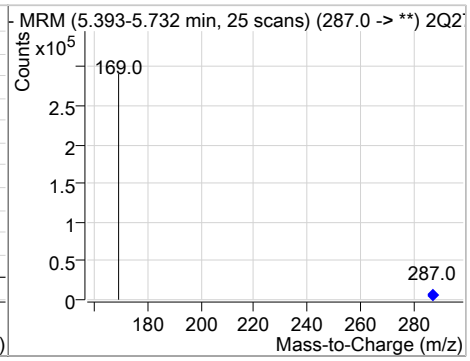




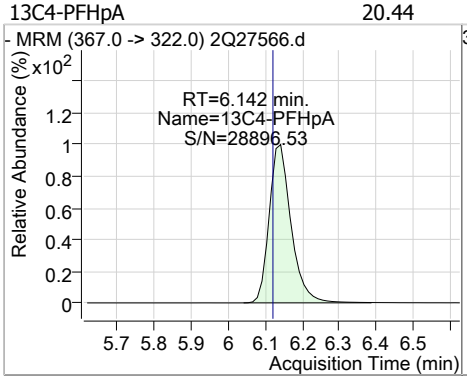
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	106.63	5.49	0.01	216599				

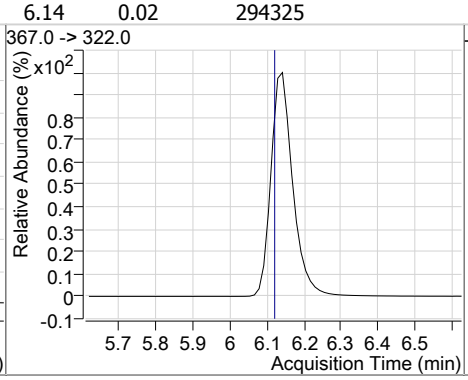


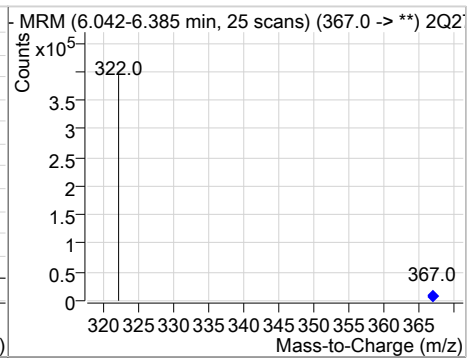




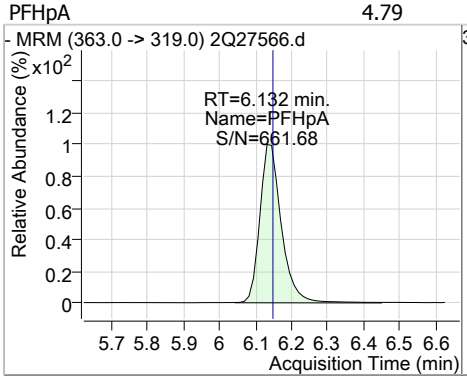
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.44	6.14	0.02	294325				

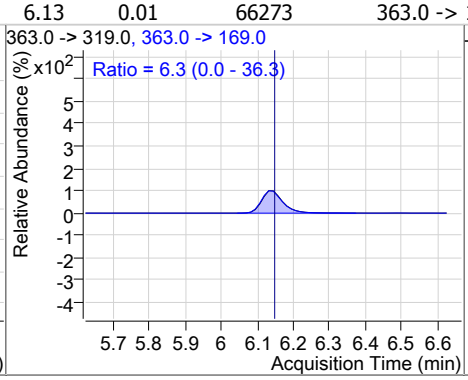


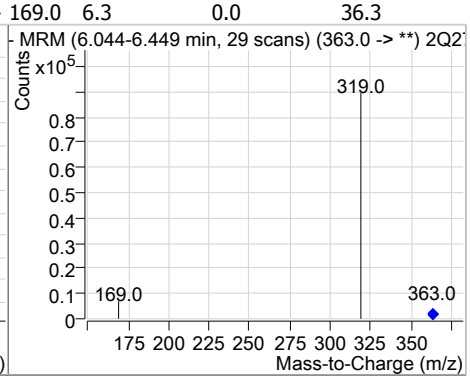




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	4.79	6.13	0.01	66273	363.0 -> 169.0	6.3	0.0	36.3

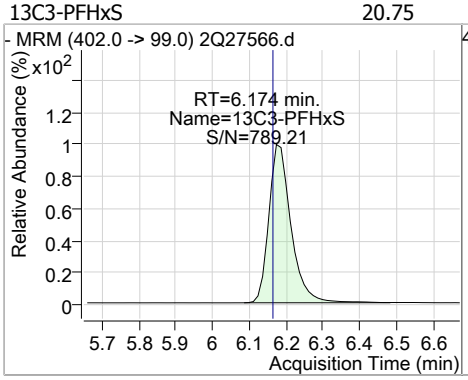


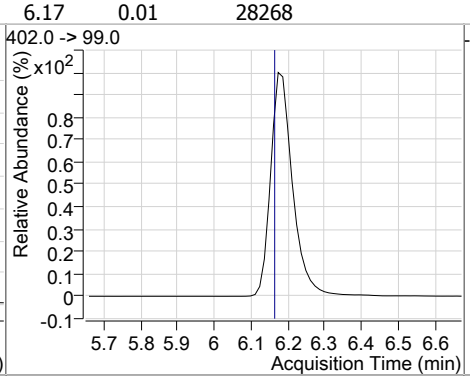


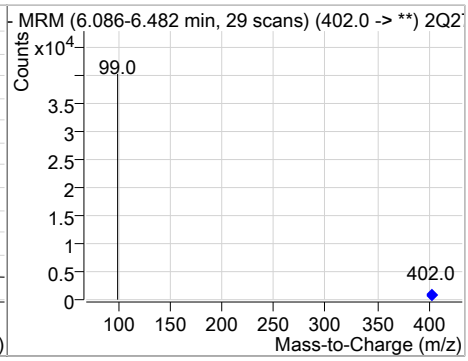


Perfluorinated Compounds by LC/MS/MS

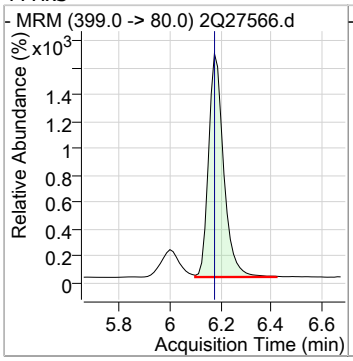
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.75	6.17	0.01	28268				

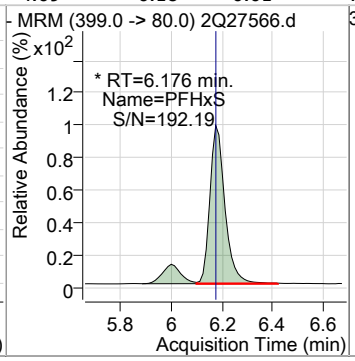


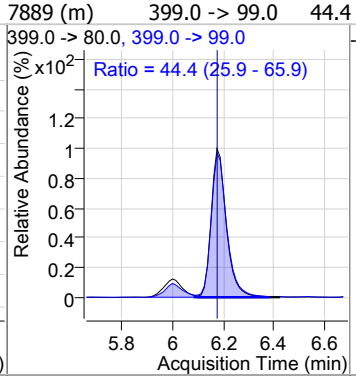


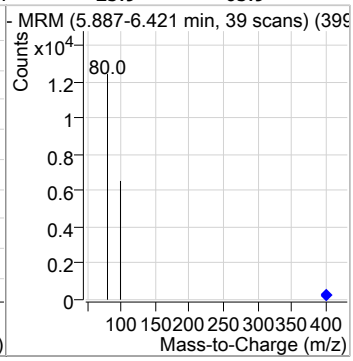


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.69	6.18	0.01	7889 (m)	399.0 -> 99.0	44.4	25.9	65.9

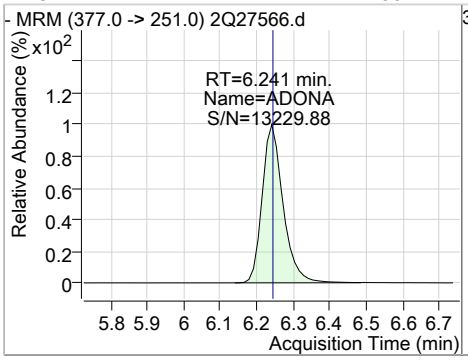


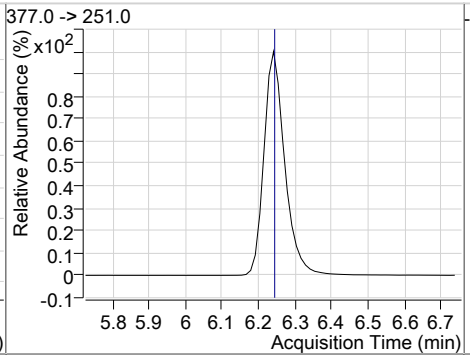


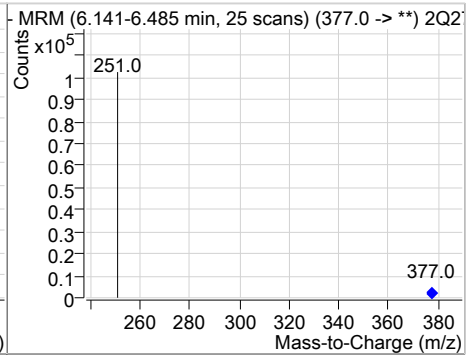




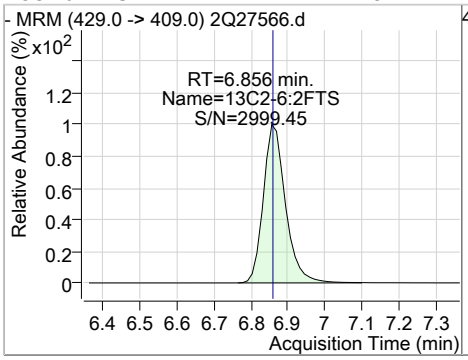
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.86	6.24	0.01	76066				

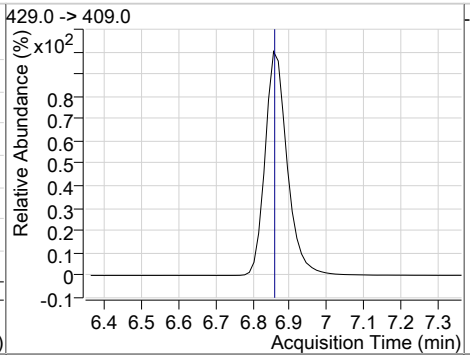


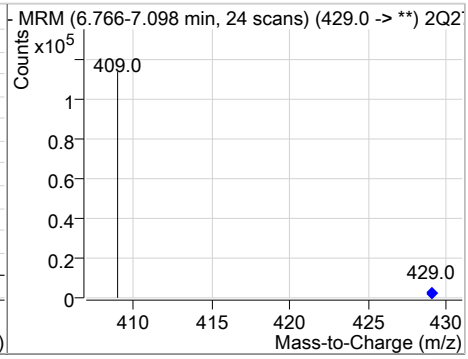




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.72	6.86	0.00	85943				

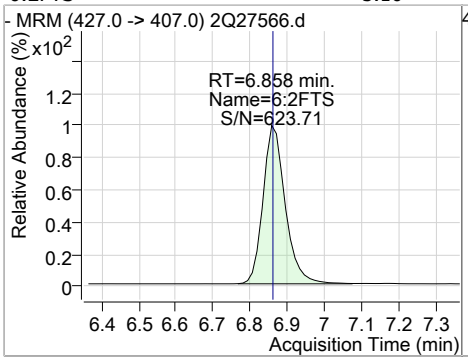


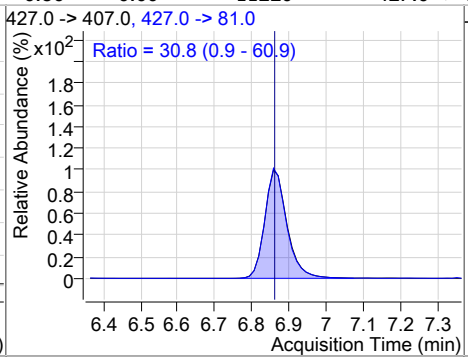


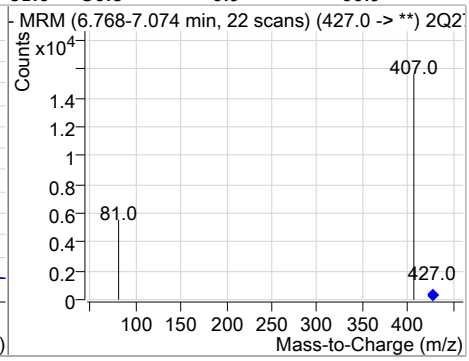


Perfluorinated Compounds by LC/MS/MS

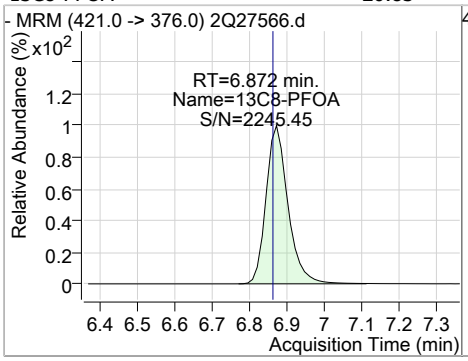
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	5.10	6.86	0.00	11220	427.0 -> 81.0	30.8	0.9	60.9

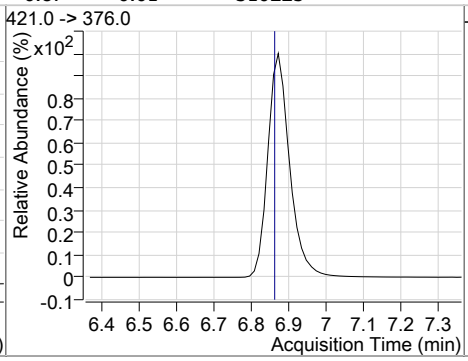


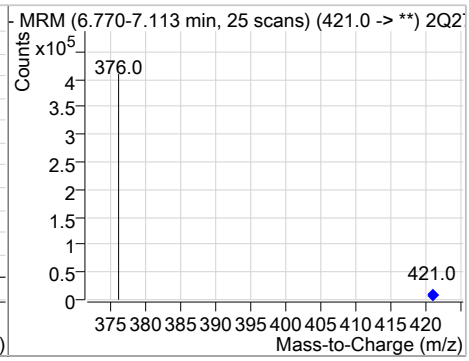




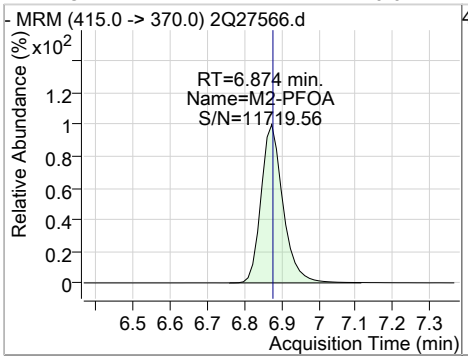
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.83	6.87	0.01	310225				

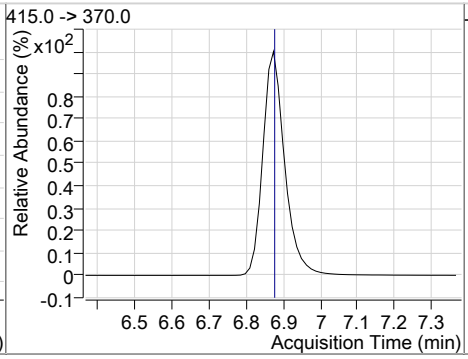


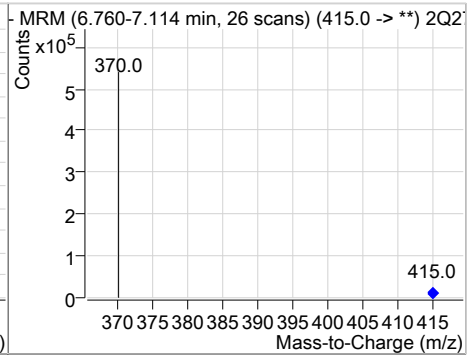




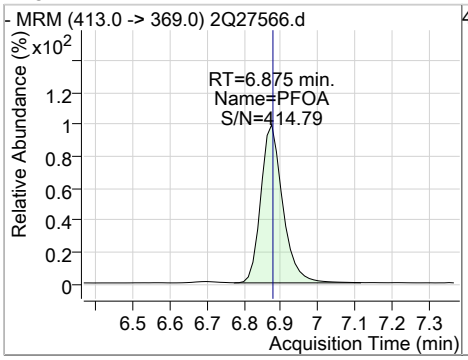
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.87	0.01	408656				

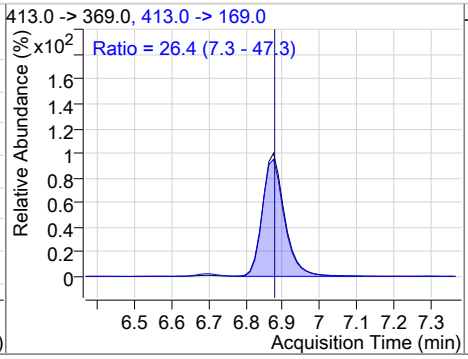


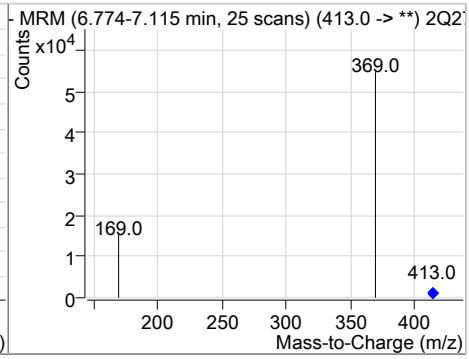




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	4.74	6.88	0.01	40216	413.0 -> 169.0	26.4	7.3	47.3

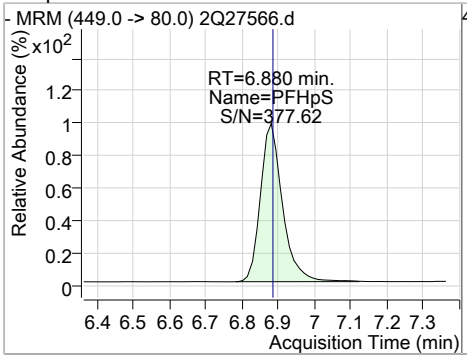


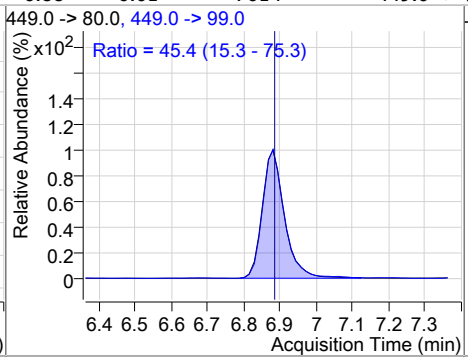


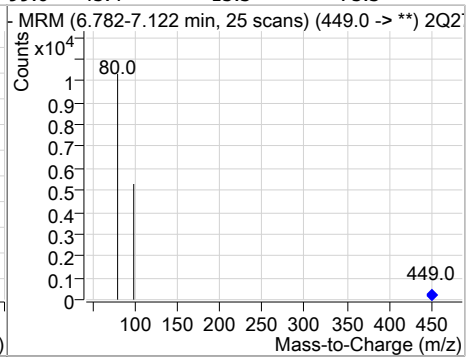


Perfluorinated Compounds by LC/MS/MS

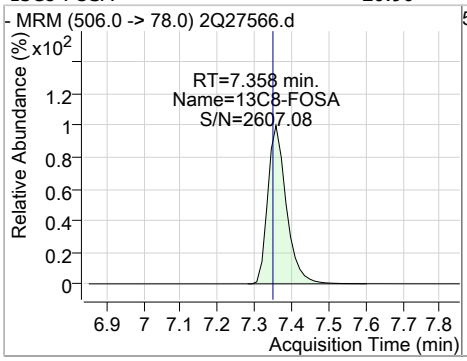
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	4.90	6.88	0.01	7014	449.0 -> 99.0	45.4	15.3	75.3

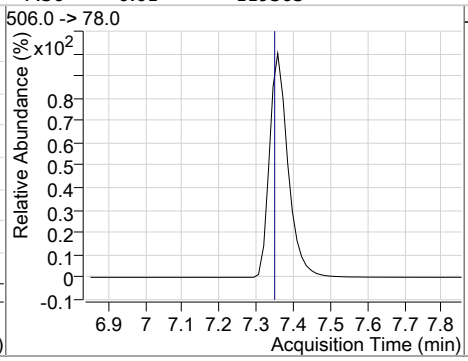


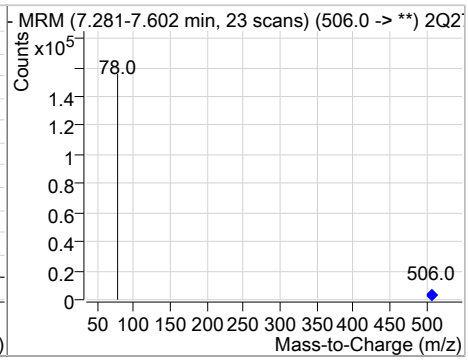




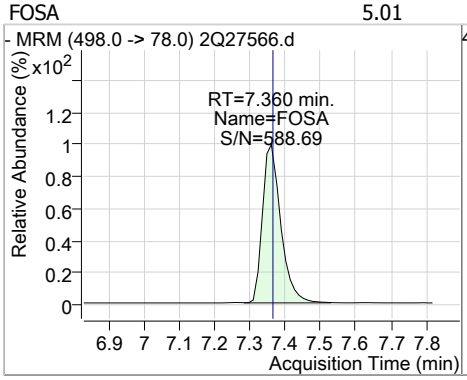
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.96	7.36	0.01	119363				

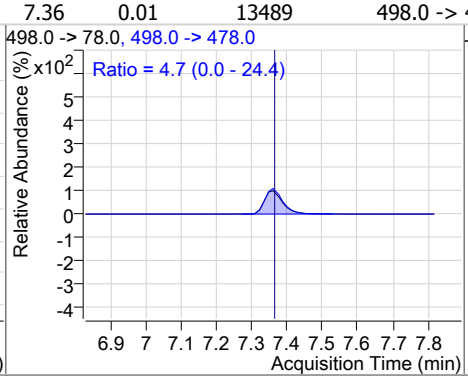


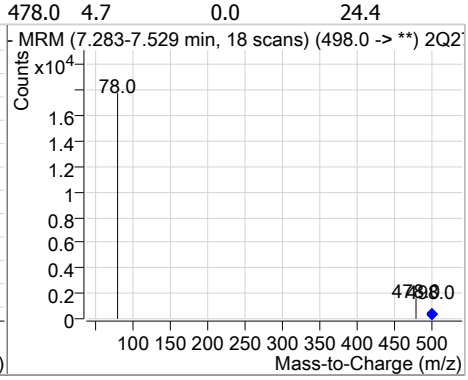




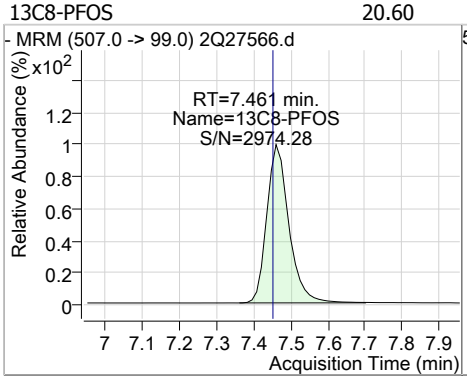
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	5.01	7.36	0.01	13489	498.0 -> 478.0	4.7	0.0	24.4

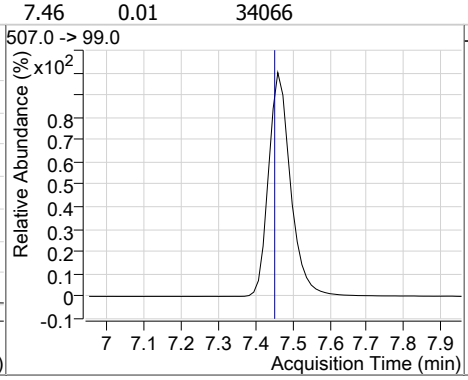


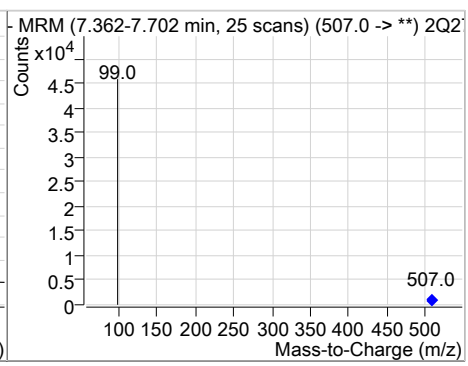




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.60	7.46	0.01	34066				

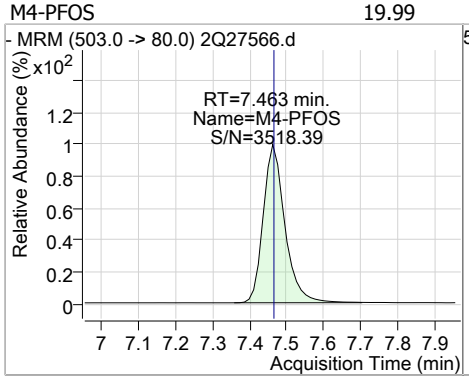


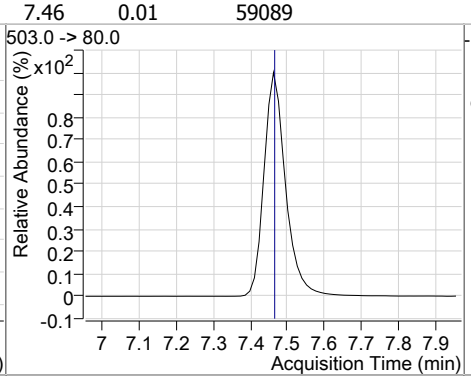


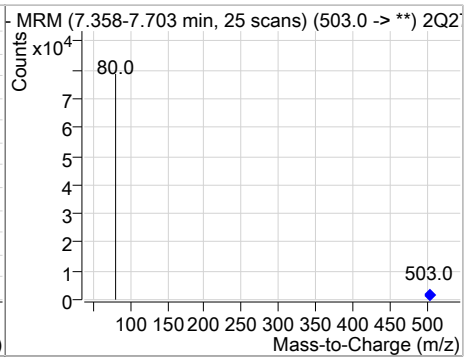


Perfluorinated Compounds by LC/MS/MS

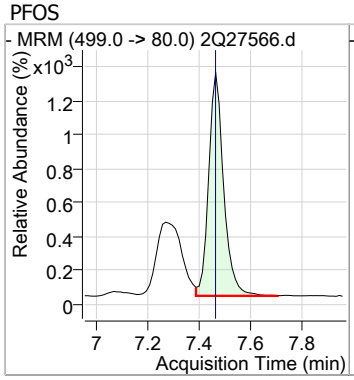
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.46	0.01	59089				

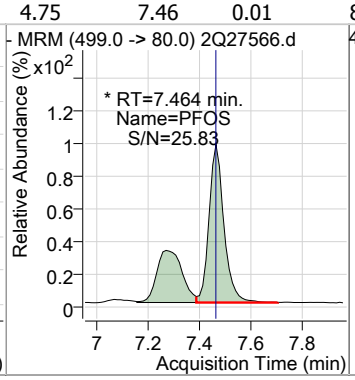


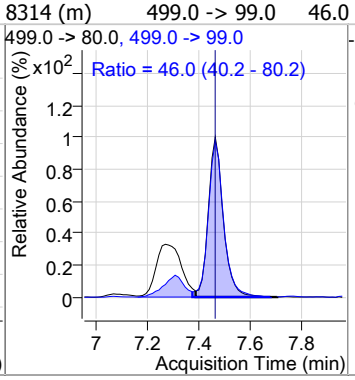


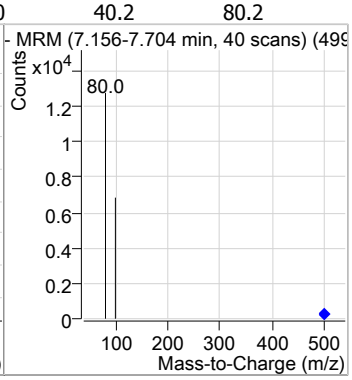


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.75	7.46	0.01	8314 (m)	499.0 -> 99.0	46.0	40.2	80.2

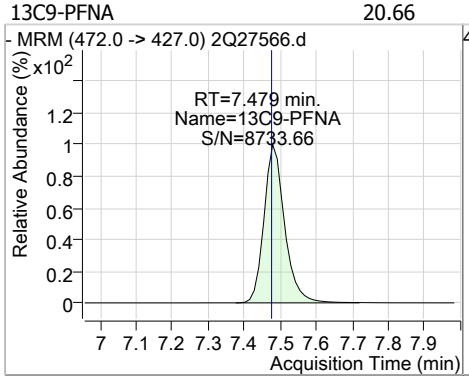


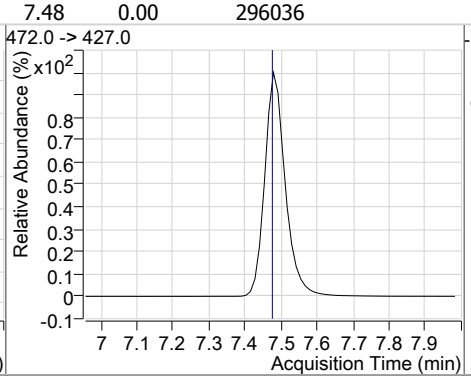


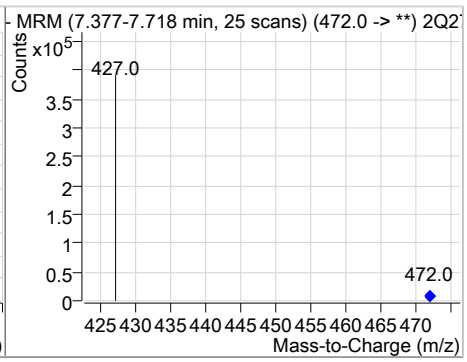




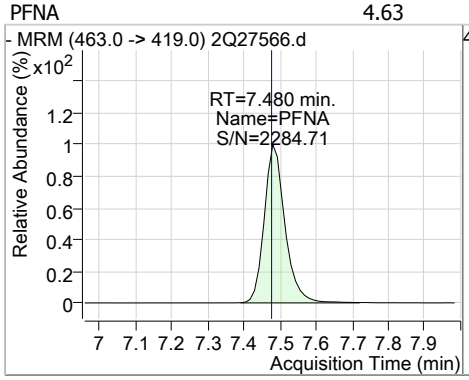
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.66	7.48	0.00	296036				

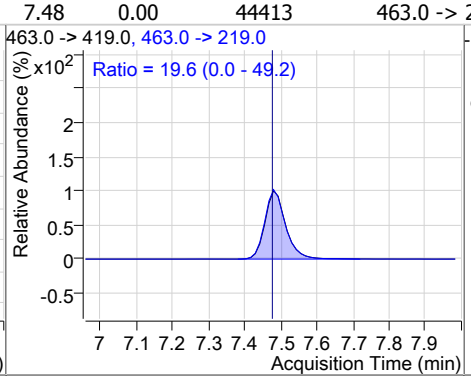


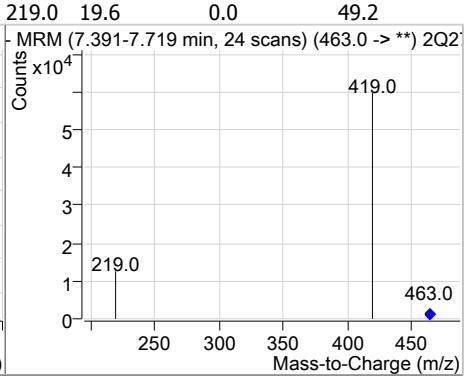




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.63	7.48	0.00	44413	463.0 -> 219.0	19.6	0.0	49.2

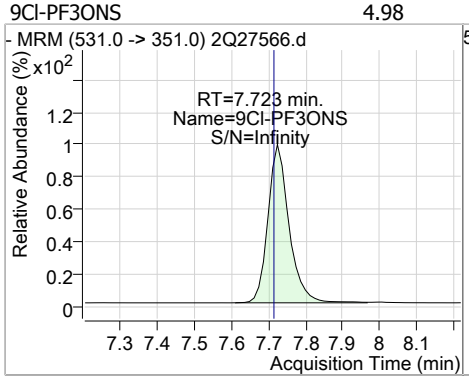


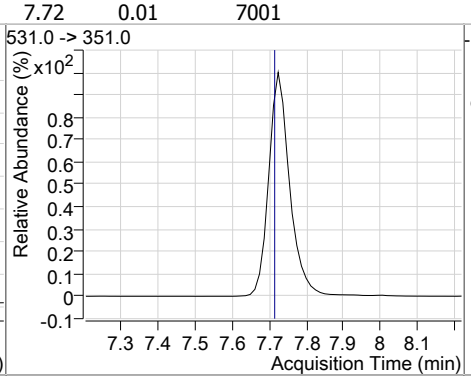


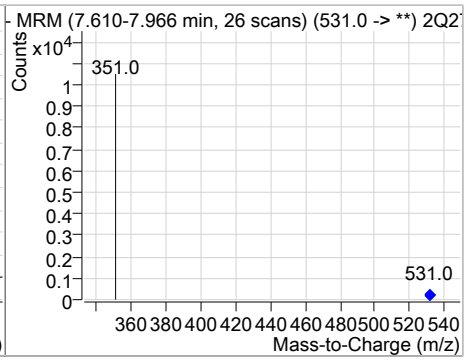


Perfluorinated Compounds by LC/MS/MS

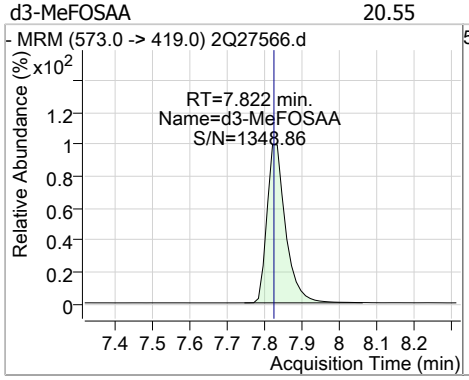
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.98	7.72	0.01	7001				

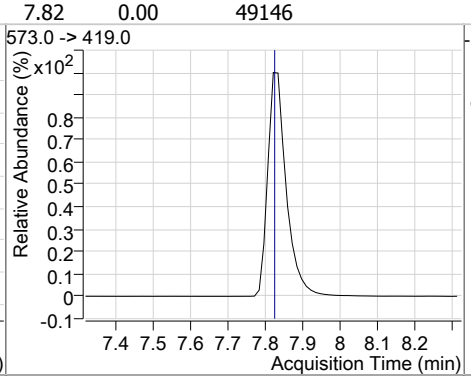


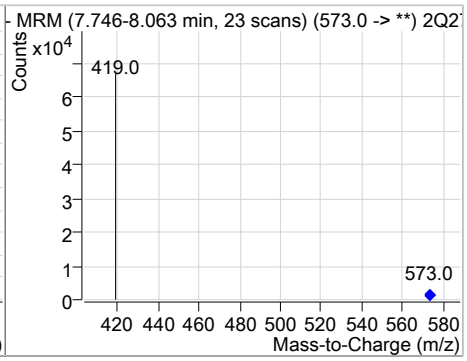




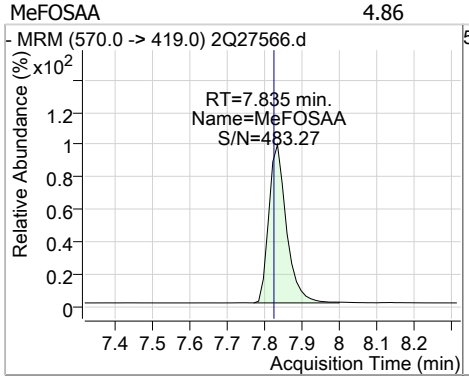
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.55	7.82	0.00	49146				

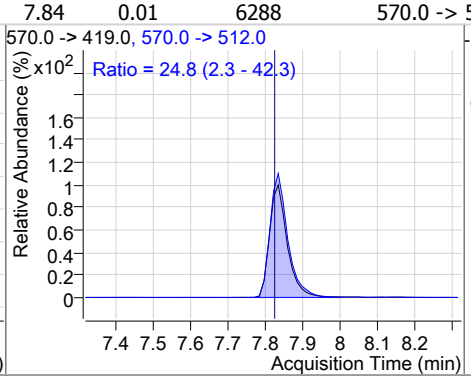


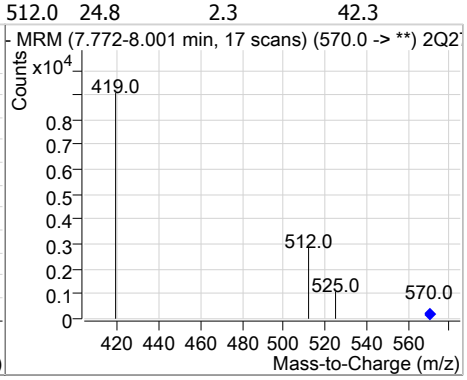




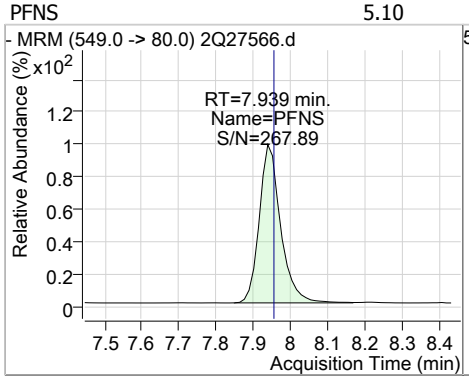
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	4.86	7.84	0.01	6288	570.0 -> 512.0	24.8	2.3	42.3

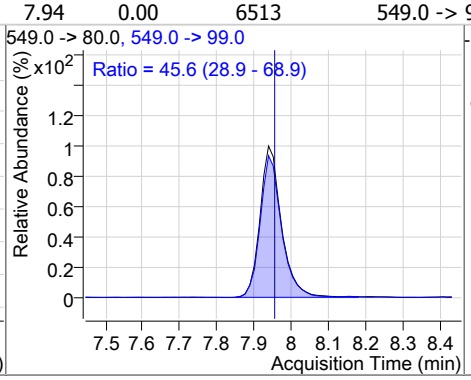


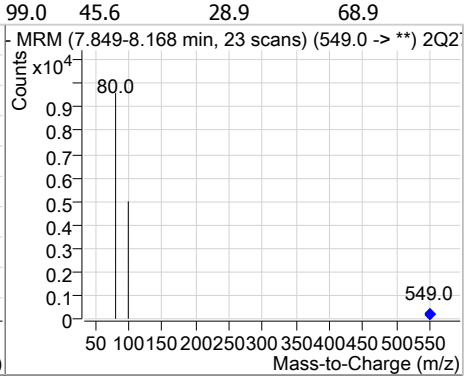




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	5.10	7.94	0.00	6513	549.0 -> 99.0	45.6	28.9	68.9

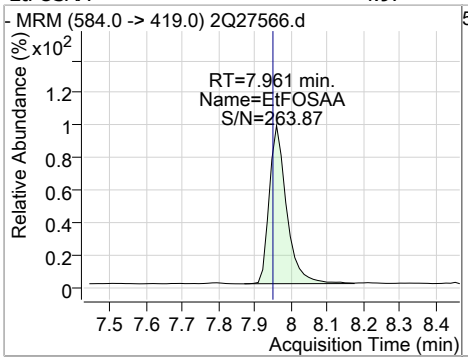


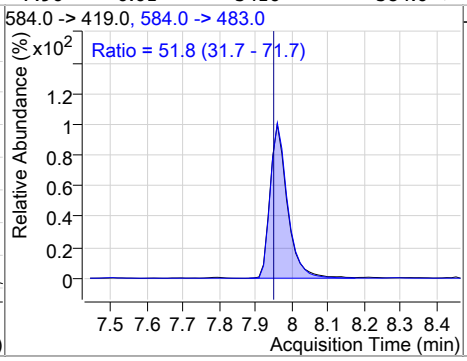


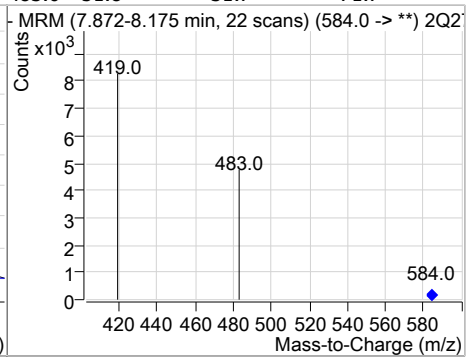


Perfluorinated Compounds by LC/MS/MS

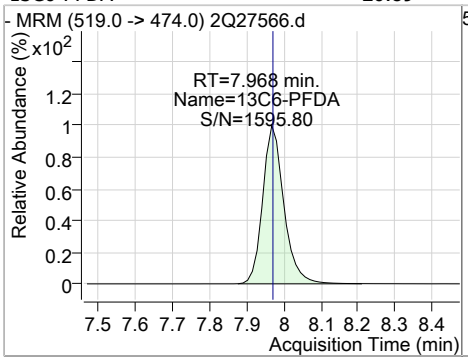
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.97	7.96	0.01	5416	584.0 -> 483.0	51.8	31.7	71.7

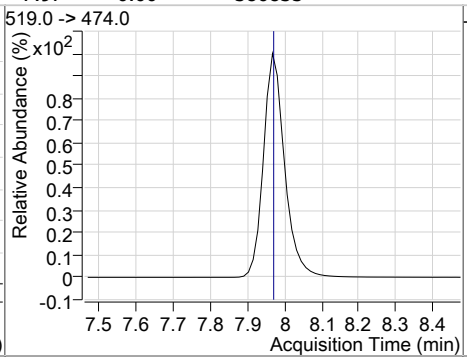


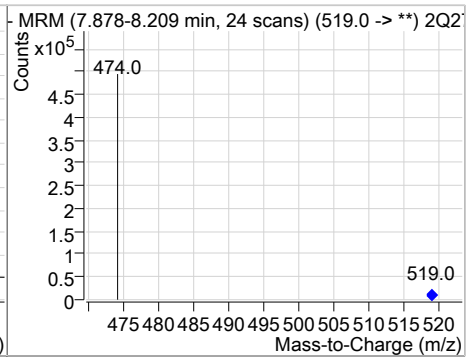




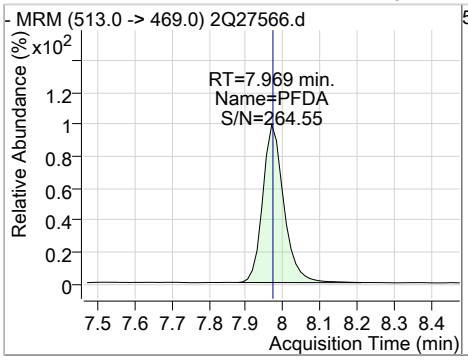
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.89	7.97	0.00	386833				

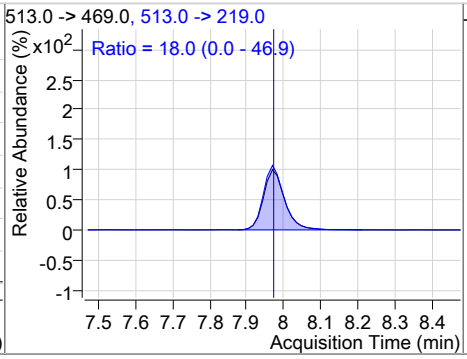


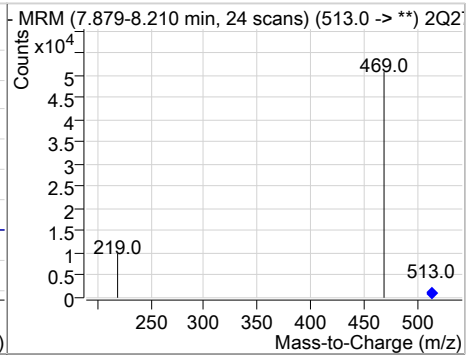




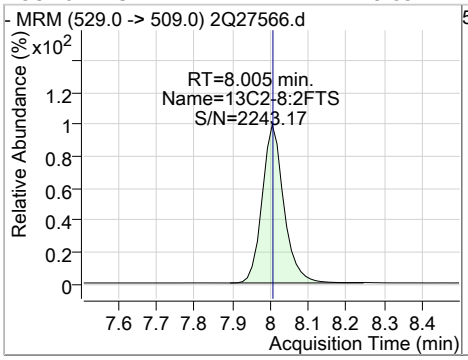
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	4.70	7.97	0.00	38434	513.0 -> 219.0	18.0	0.0	46.9

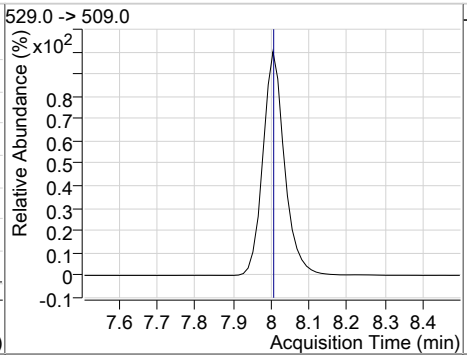


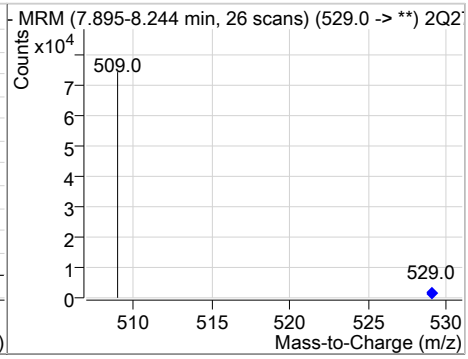




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.53	8.01	0.00	55462				

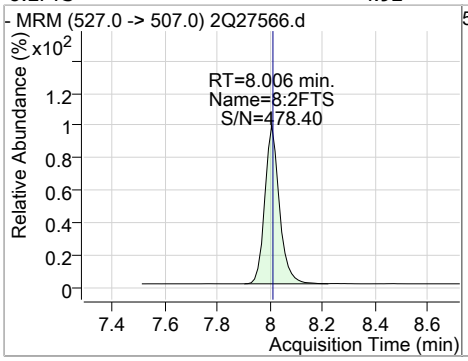


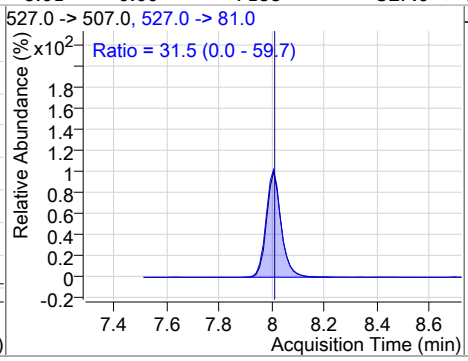


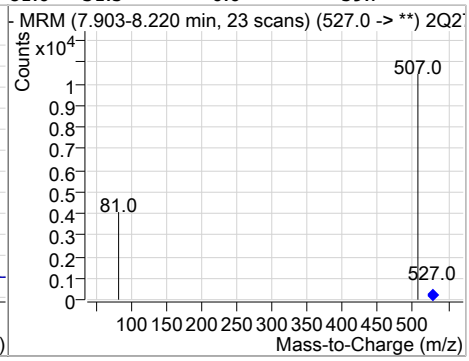


Perfluorinated Compounds by LC/MS/MS

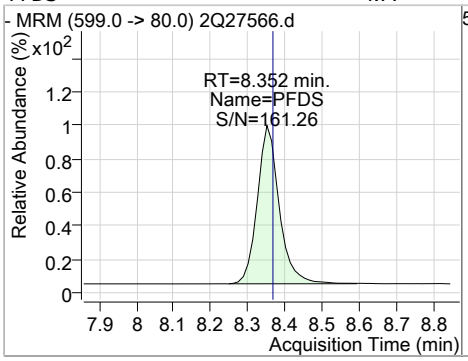
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	4.92	8.01	0.00	7188	527.0 -> 81.0	31.5	0.0	59.7

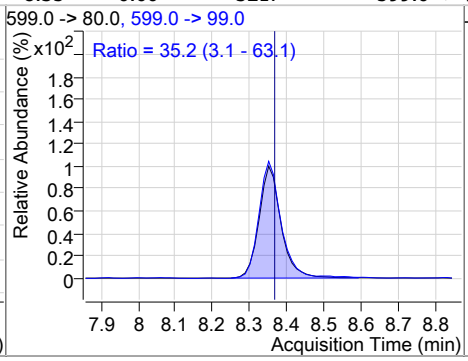


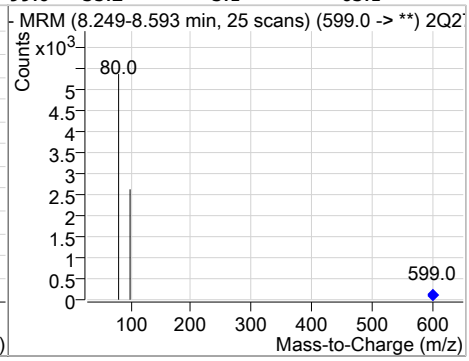




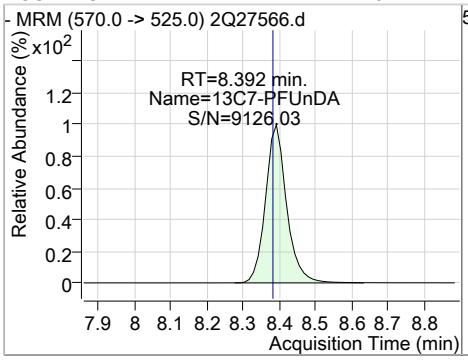
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	4.77	8.35	0.00	3217	599.0 -> 99.0	35.2	3.1	63.1

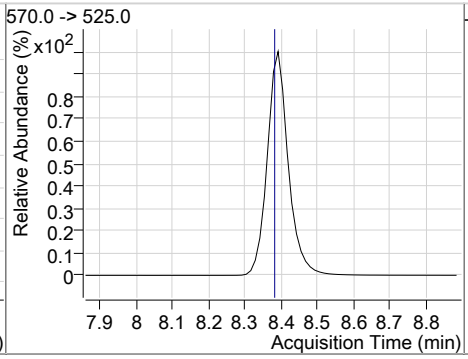


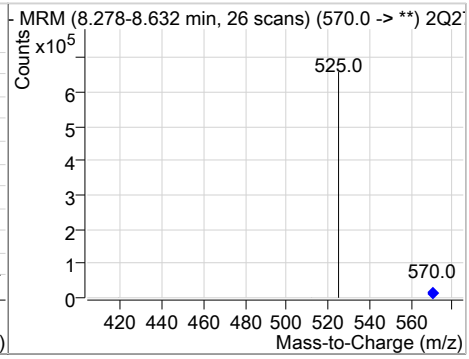




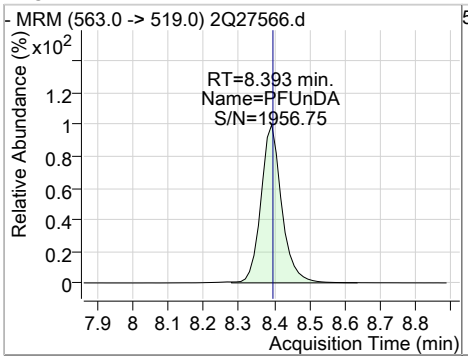
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.74	8.39	0.01	496867				

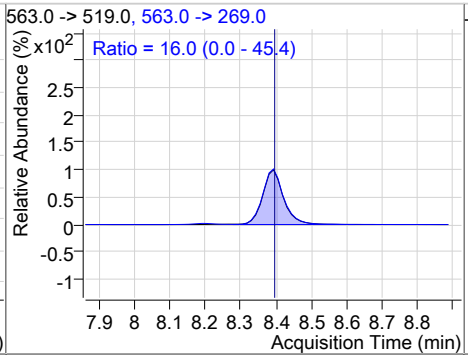


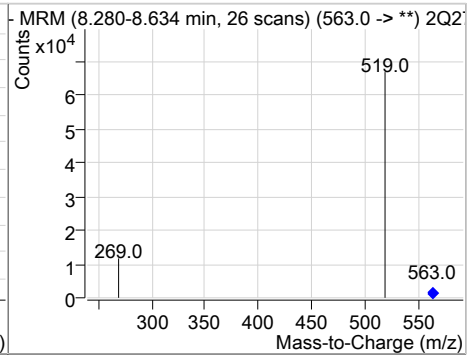




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	4.71	8.39	0.01	49572	563.0 -> 269.0	16.0	0.0	45.4

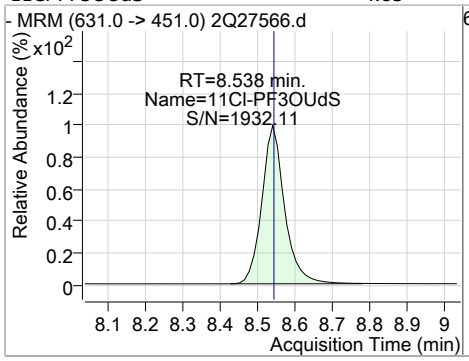


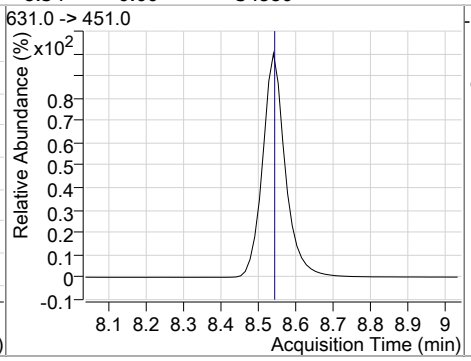


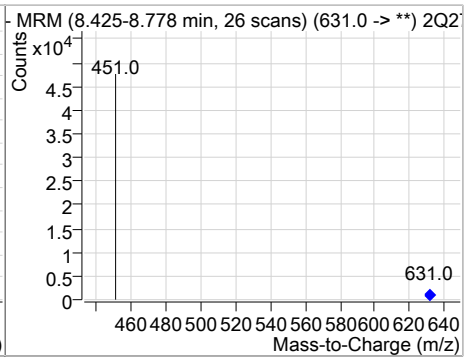


Perfluorinated Compounds by LC/MS/MS

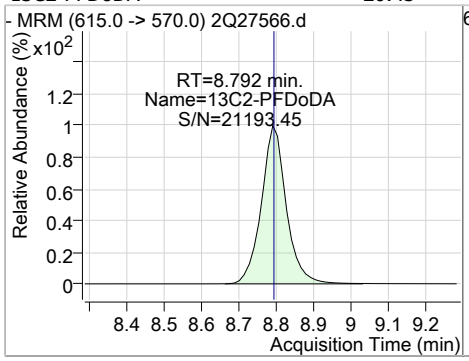
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.83	8.54	0.00	34886				

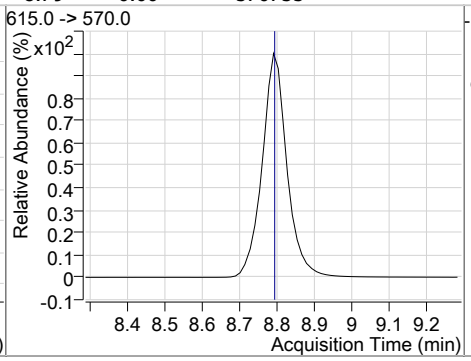


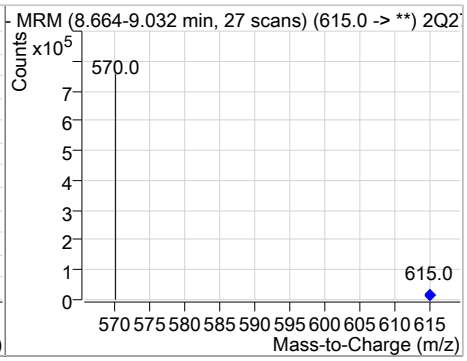




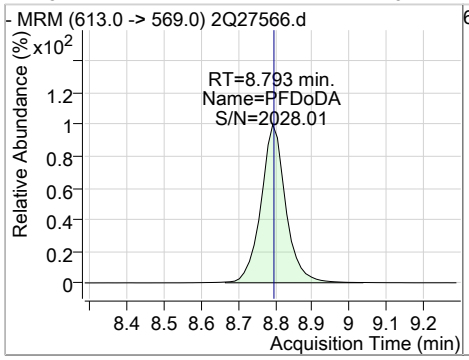
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.45	8.79	0.00	570755				

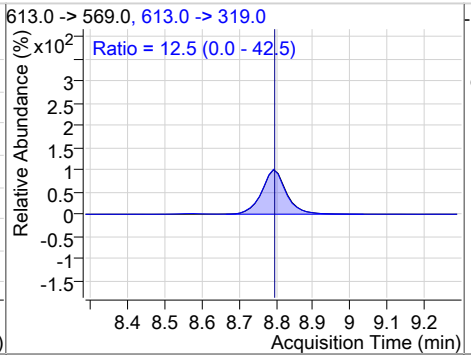


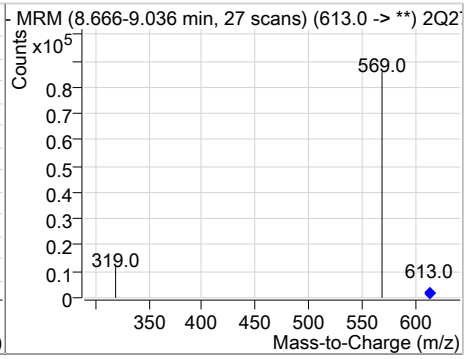




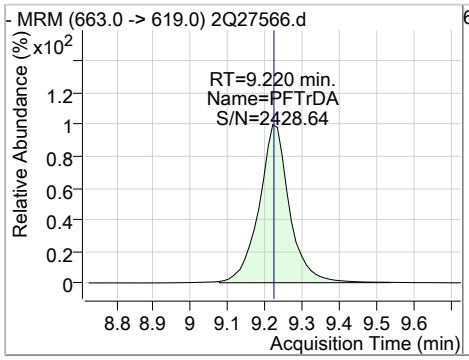
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	4.76	8.79	0.00	63652	613.0 -> 319.0	12.5	0.0	42.5

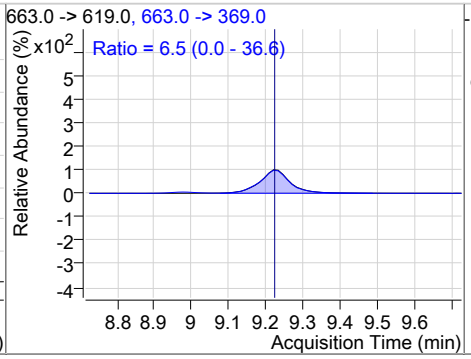


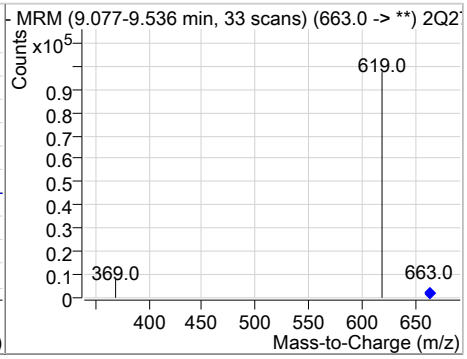




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	4.77	9.22	0.00	72138	663.0 -> 369.0	6.5	0.0	36.6

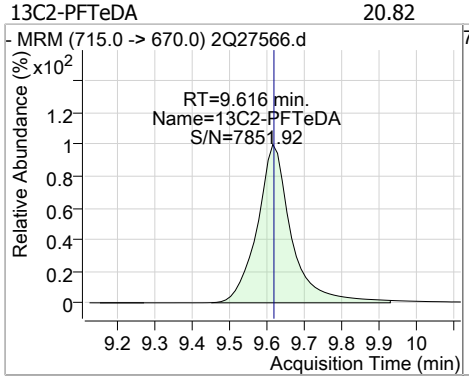


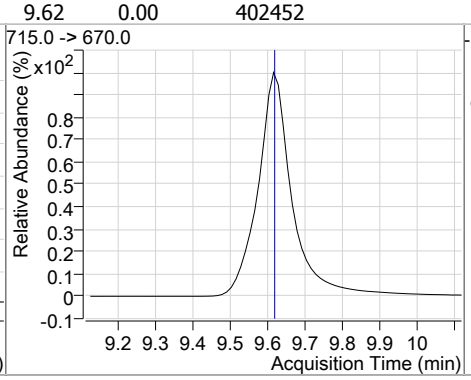


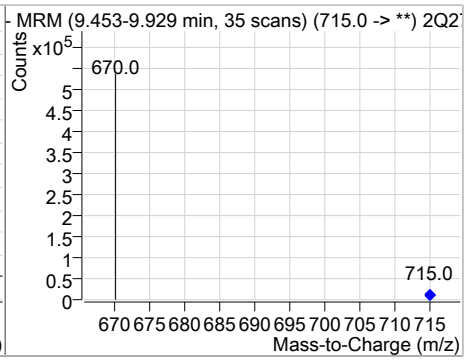


Perfluorinated Compounds by LC/MS/MS

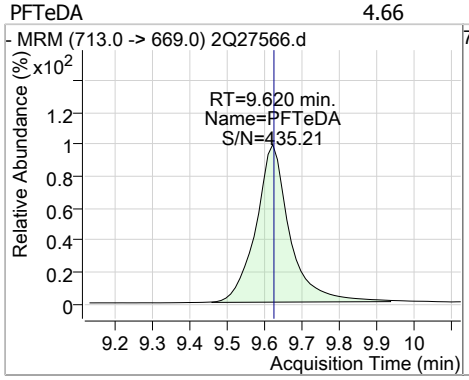
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.82	9.62	0.00	402452				

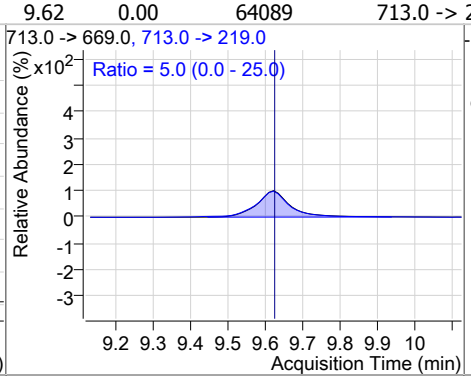


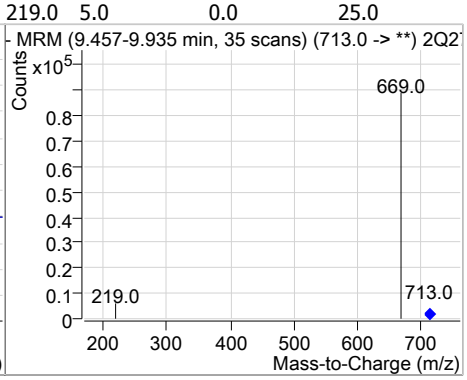




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	4.66	9.62	0.00	64089	713.0 -> 219.0	5.0	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27566.D
Injection Time: 03/13/19 11:31
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27567.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 11:47:28 AM
Sample Name : ic439-10
Vial : Vial 6
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

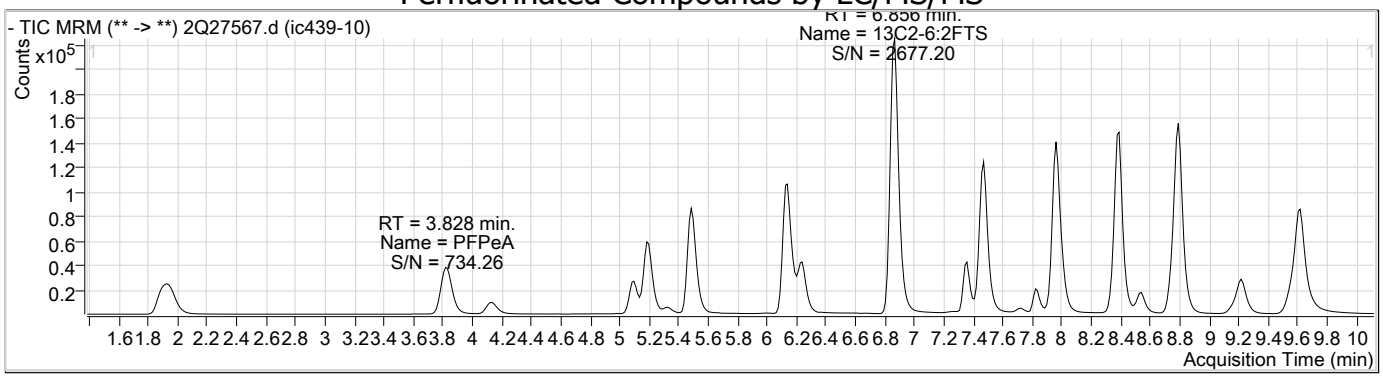
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	401943	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	58477	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	176340	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	145301	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	208877	20.00	µg/L	0.013
M4-PFHpA	6.142	367.0 -> 322.0	293305	20.00	µg/L	0.024
M8-PFOA	6.872	421.0 -> 376.0	303820	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	292795	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	383640	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	491923	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	569546	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	398279	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	118557	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	24565	20.00	µg/L	0.038
M3-PFHxS	6.174	402.0 -> 99.0	27858	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	34319	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	80193	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	85746	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	55778	20.00	µg/L	0.001
M3-MeFOSAA	7.822	573.0 -> 419.0	49261	20.00	µg/L	-0.001
M3-HFPO-DA	5.494	287.0 -> 169.0	210776	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	80186	19.32	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C2-6:2FTS	6.856	429.0 -> 409.0	85706	19.66	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.3%		
13C2-8:2FTS	8.005	529.0 -> 509.0	55716	19.62	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C2-PFDoDA	8.792	615.0 -> 570.0	569373	20.40	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C2-PFTeDA	9.616	715.0 -> 670.0	391714	20.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C3-PFBS	4.130	302.0 -> 99.0	24514	20.25	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C3-PFHxS	6.174	402.0 -> 99.0	27762	20.38	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
13C4-PFBA	1.927	217.0 -> 172.0	175457	20.24	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C4-PFHpA	6.142	367.0 -> 322.0	292800	20.34	µg/L	0.024
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C5-PFHxA	5.189	318.0 -> 273.0	208796	20.36	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C5-PFPeA	3.824	268.0 -> 223.0	145393	20.27	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C6-PFDA	7.968	519.0 -> 474.0	383918	20.74	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

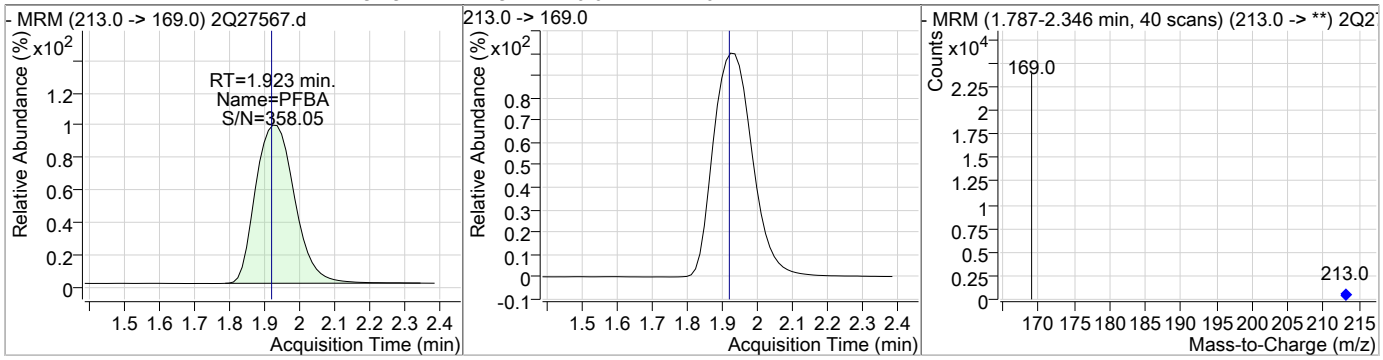
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%		
13C7-PFUnDA	8.392	570.0 -> 525.0	492133	20.54 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C8-FOSA	7.358	506.0 -> 78.0	118562	20.82 µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C8-PFOA	6.872	421.0 -> 376.0	303521	20.38 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%		
13C8-PFOS	7.461	507.0 -> 99.0	34260	20.71 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%		
13C9-PFNA	7.479	472.0 -> 427.0	292757	20.43 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
d3-MeFOSAA	7.822	573.0 -> 419.0	49291	20.61 µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
M2-PFOA	6.874	415.0 -> 370.0	402254	20.00 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.463	503.0 -> 80.0	58496	20.00 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.494	287.0 -> 169.0	210776	103.76 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
Target Compounds						**QValue**
4:2FTS	5.100	327.0 -> 307.0	23797	10.20 µg/L		99
6:2FTS	6.858	427.0 -> 407.0	21650	9.87 µg/L		98
8:2FTS	8.006	527.0 -> 507.0	14760	10.02 µg/L		98
EtFOSAA	7.961	584.0 -> 419.0	10577	9.70 µg/L		99
FOSA	7.360	498.0 -> 78.0	26827	10.00 µg/L		100
MeFOSAA	7.823	570.0 -> 419.0	12633	9.71 µg/L		98
PFBA	1.923	213.0 -> 169.0	16274	9.49 µg/L		100
PFBS	4.134	299.0 -> 80.0	19386	9.55 µg/L		100
PFDA	7.969	513.0 -> 469.0	76978	9.50 µg/L		100
PFDoDA	8.793	613.0 -> 569.0	126062	9.44 µg/L		100
PFDS	8.352	599.0 -> 80.0	6510	9.60 µg/L		100
PFHpA	6.132	363.0 -> 319.0	130335	9.48 µg/L		100
PFHpS	6.880	449.0 -> 80.0	13948	9.88 µg/L		97
PFHxA	5.191	313.0 -> 269.0	34474	9.54 µg/L		100
PFHxS	6.176	399.0 -> 80.0	15392	9.28 µg/L	m	99
PFNA	7.480	463.0 -> 419.0	88283	9.31 µg/L		100
PFNS	7.939	549.0 -> 80.0	12257	9.54 µg/L		99
PFOA	6.875	413.0 -> 369.0	78787	9.48 µg/L		99
PFOS	7.464	499.0 -> 80.0	16200	9.21 µg/L	m	79
PFPeA	3.828	263.0 -> 219.0	62047	9.40 µg/L		100
PFPeS	5.321	349.0 -> 80.0	13404	9.65 µg/L		95
PFTeDA	9.607	713.0 -> 669.0	129249	9.51 µg/L		100
PFTrDA	9.220	663.0 -> 619.0	143691	9.61 µg/L		100
PFUnDA	8.393	563.0 -> 519.0	96832	9.30 µg/L		99
11Cl-PF3OUdS	8.538	631.0 -> 451.0	70590	9.79 µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	13429	9.59 µg/L		100
ADONA	6.241	377.0 -> 251.0	149707	9.71 µg/L		100
HFPO-DA	5.486	329.0 -> 169.0	124103	48.53 µg/L		100

 # = Qualifier out of range, m = manually integrated, + = Area summed

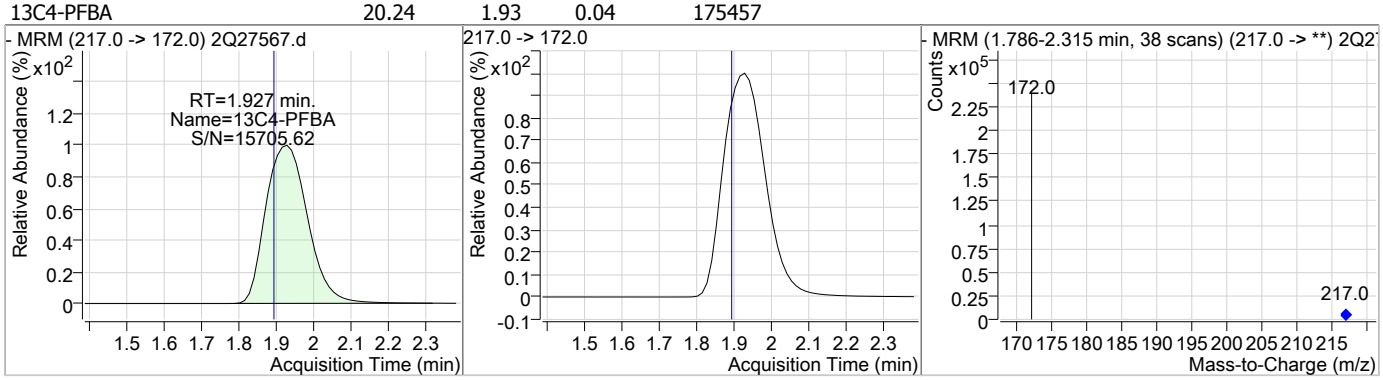
Perfluorinated Compounds by LC/MS/MS



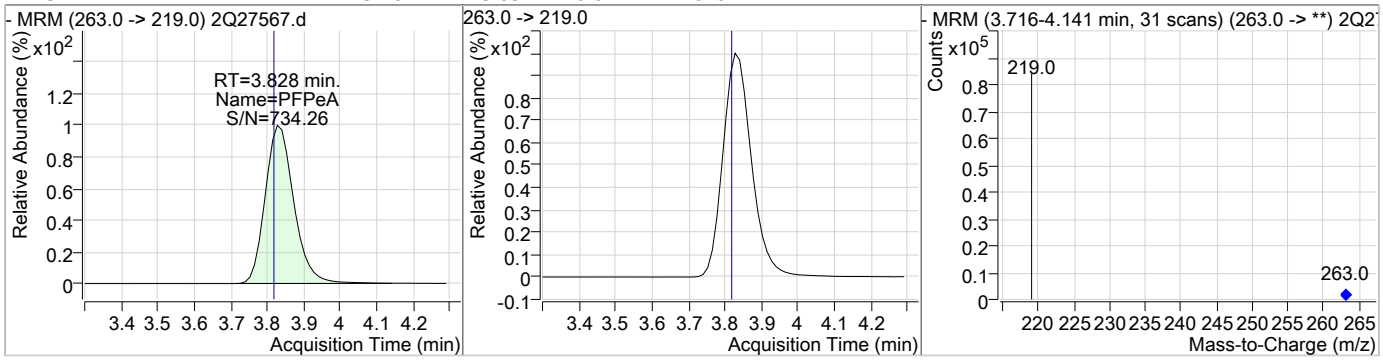
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	9.49	1.92	0.04	16274				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.24	1.93	0.04	175457				

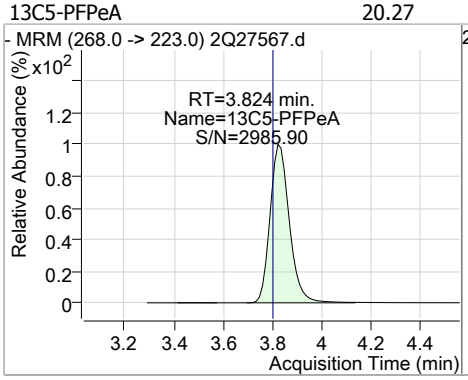


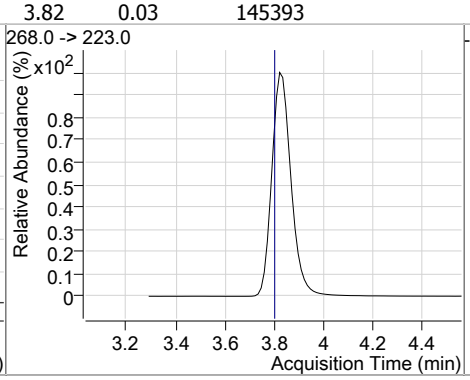
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.40	3.83	0.04	62047				

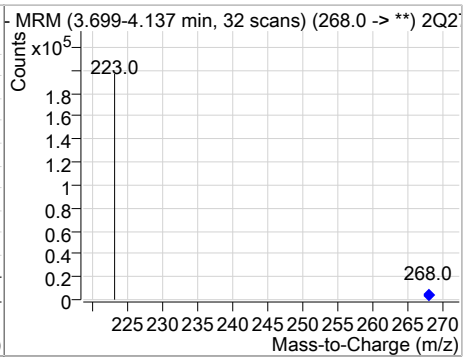


Perfluorinated Compounds by LC/MS/MS

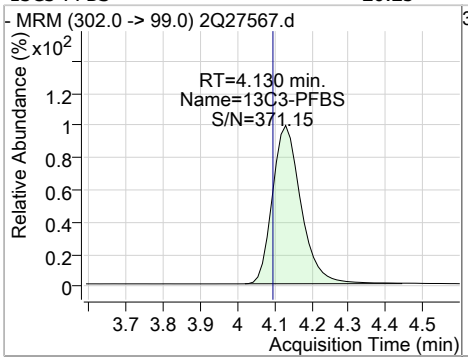
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.27	3.82	0.03	145393				

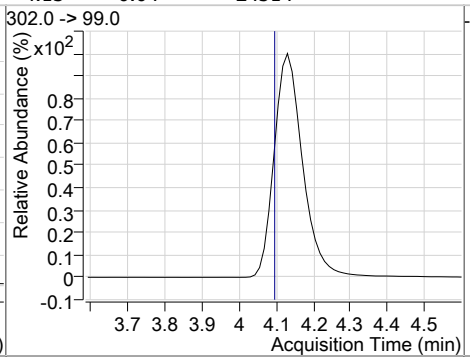


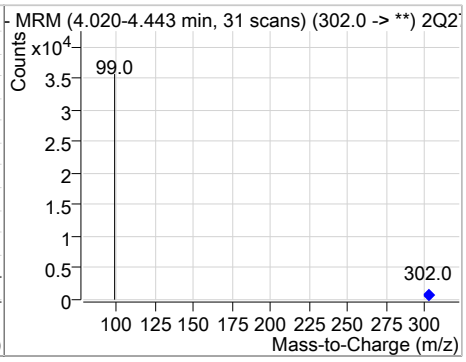




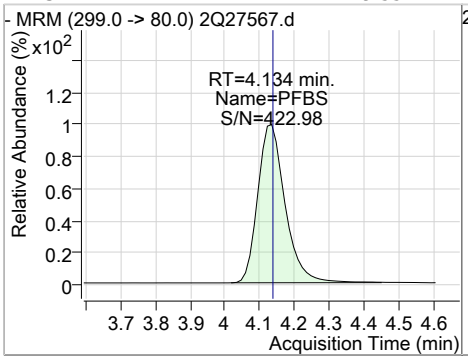
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.25	4.13	0.04	24514				

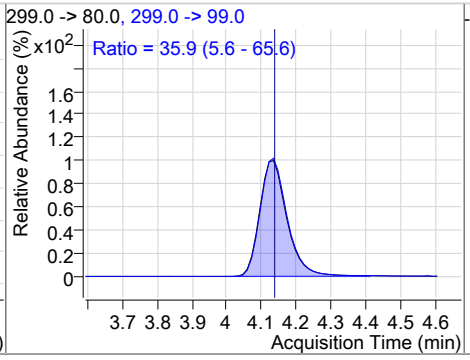


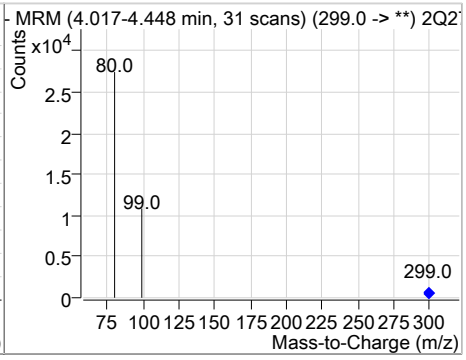




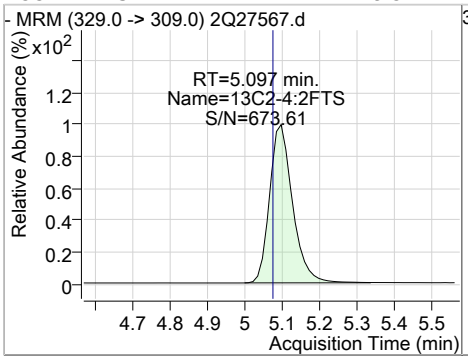
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	9.55	4.13	0.04	19386	299.0 -> 99.0	35.9	5.6	65.6

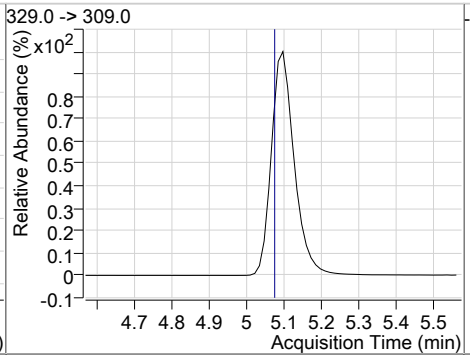


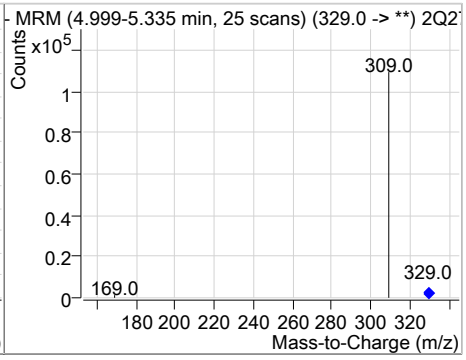




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.32	5.10	0.03	80186				

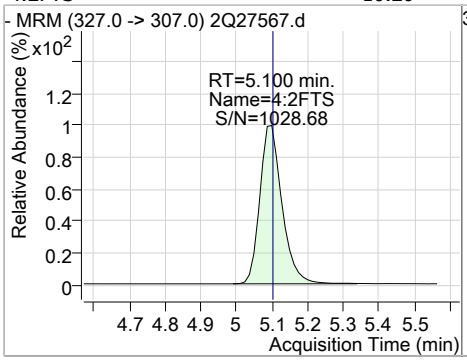


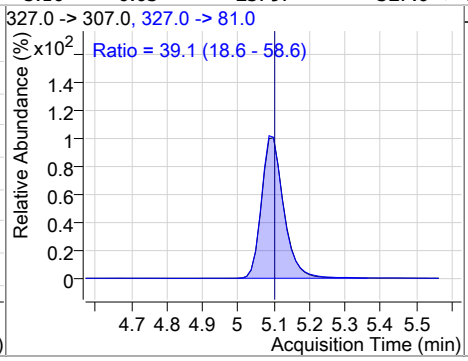


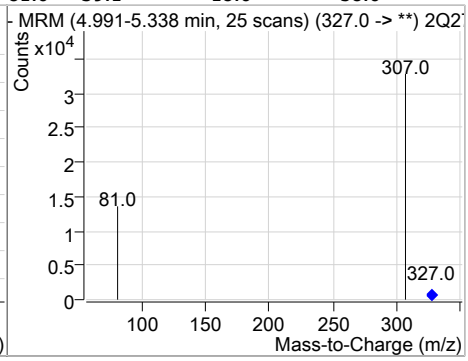


Perfluorinated Compounds by LC/MS/MS

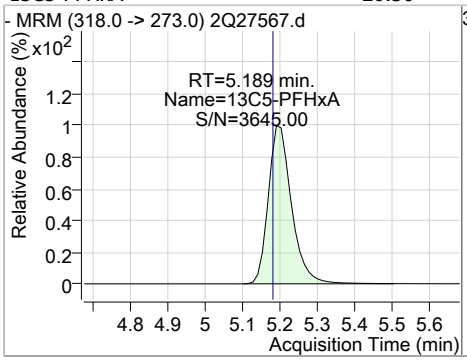
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	10.20	5.10	0.03	23797	327.0 -> 81.0	39.1	18.6	58.6

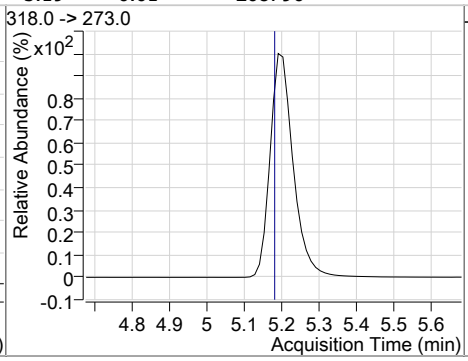


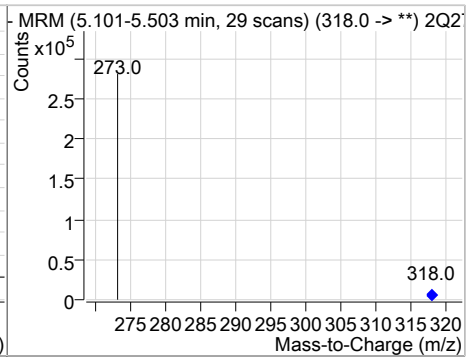




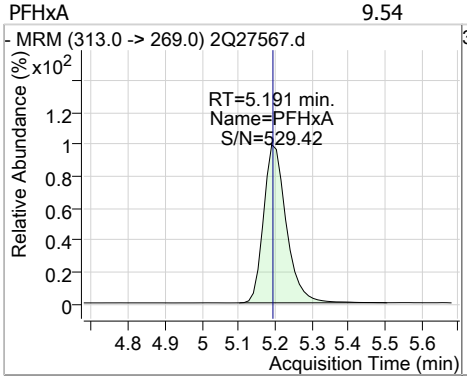
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.36	5.19	0.01	208796				

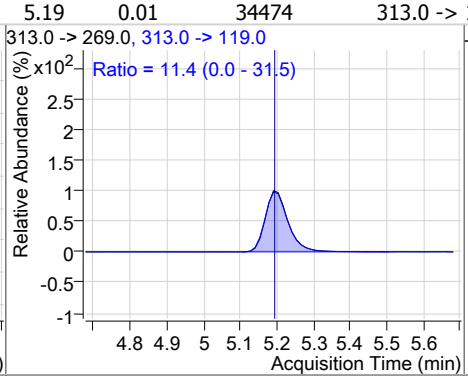


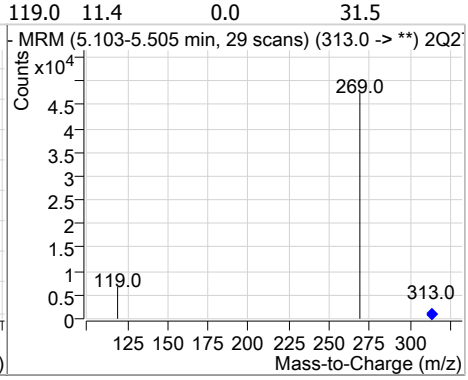




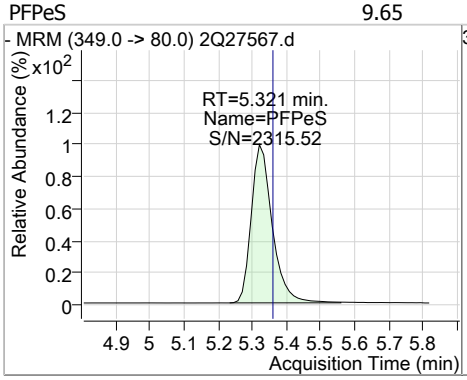
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	9.54	5.19	0.01	34474	313.0 -> 119.0	11.4	0.0	31.5

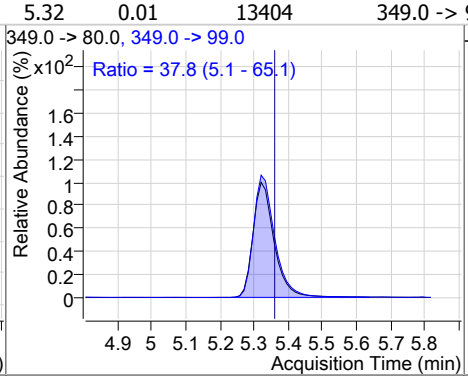


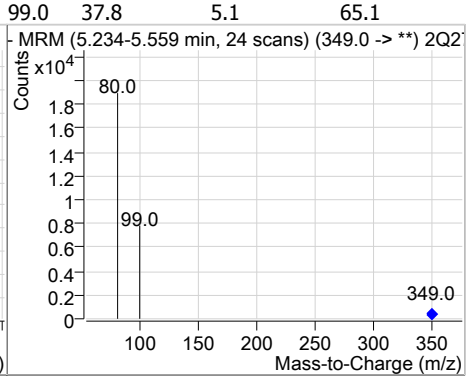




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	9.65	5.32	0.01	13404	349.0 -> 99.0	37.8	5.1	65.1

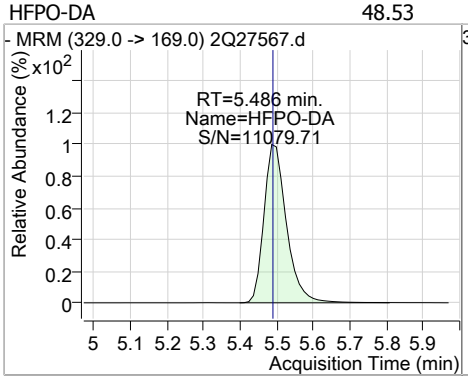


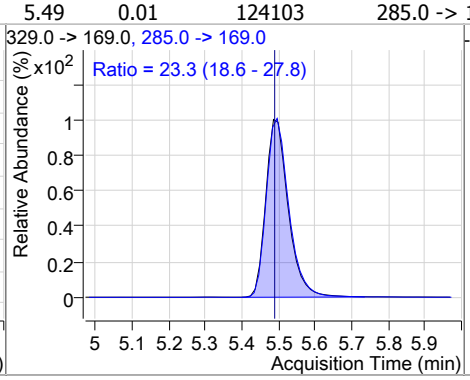


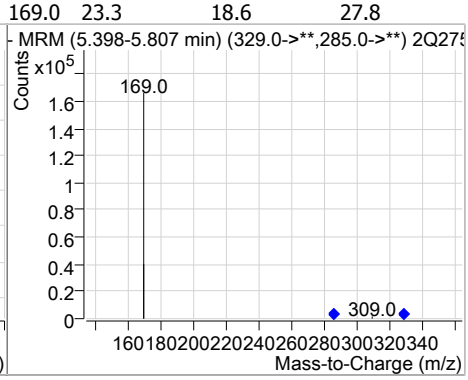


Perfluorinated Compounds by LC/MS/MS

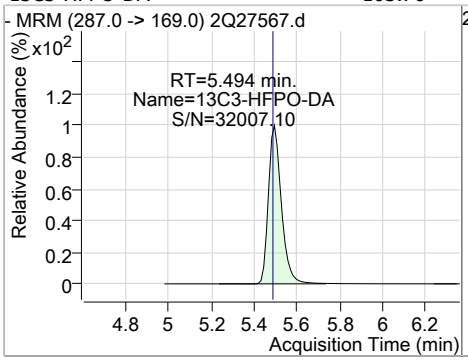
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	48.53	5.49	0.01	124103	285.0 -> 169.0	23.3	18.6	27.8

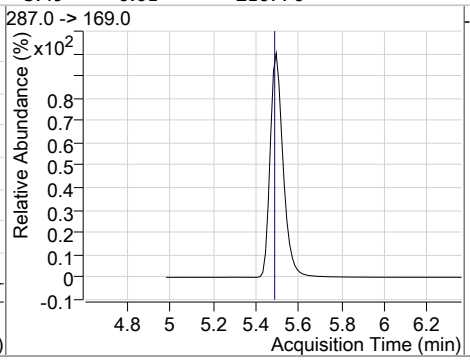


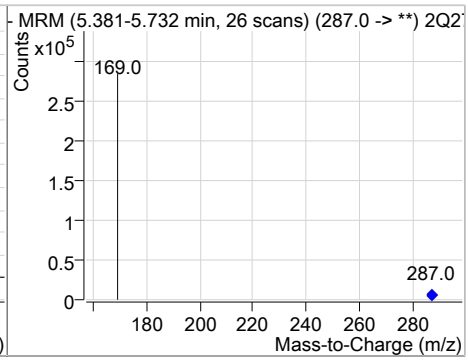




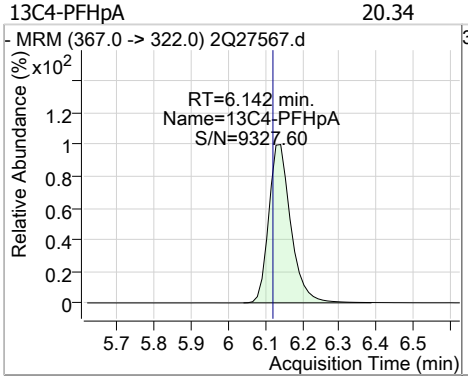
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.76	5.49	0.01	210776				

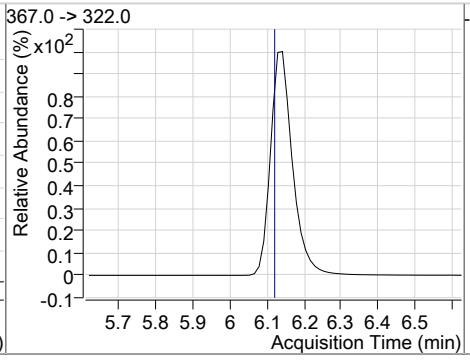


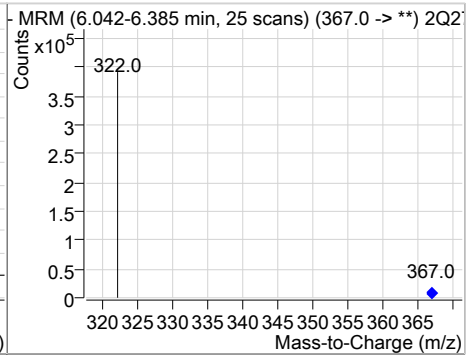




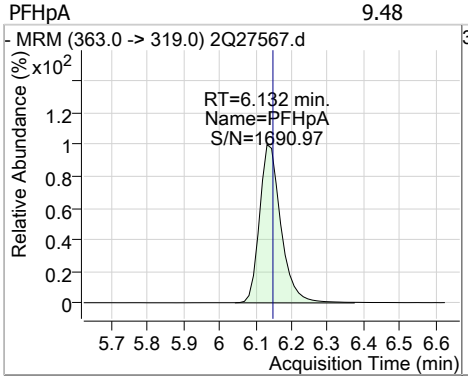
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.34	6.14	0.02	292800				

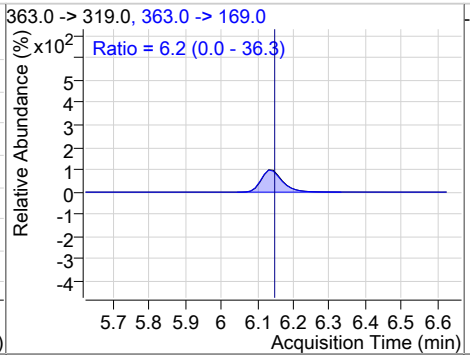


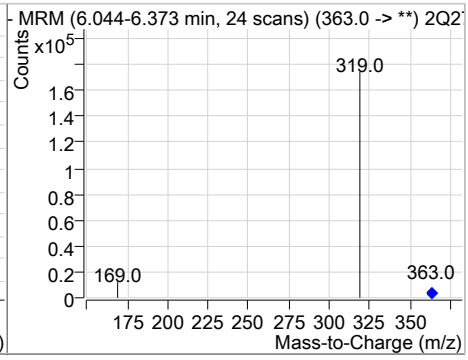




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	9.48	6.13	0.01	130335	363.0 -> 169.0	6.2	0.0	36.3

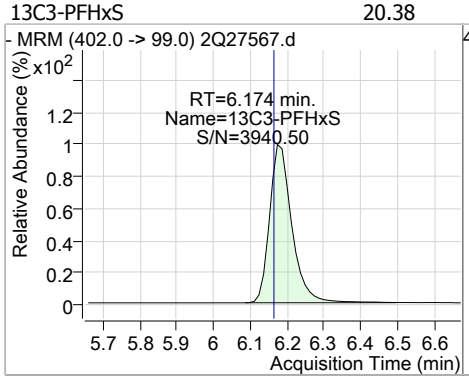


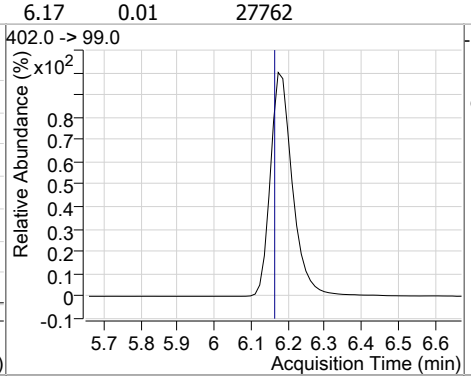


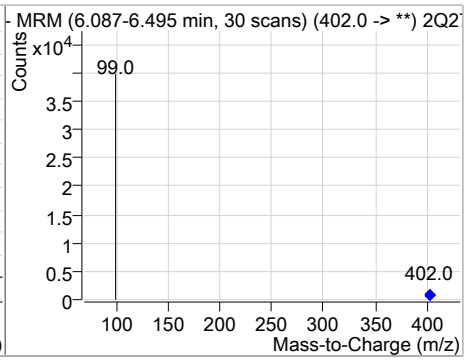


Perfluorinated Compounds by LC/MS/MS

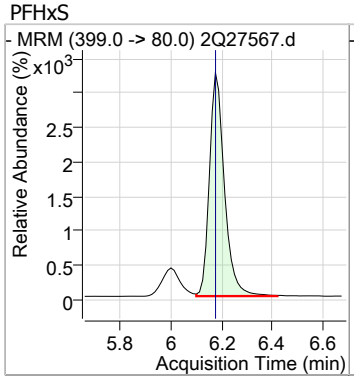
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.38	6.17	0.01	27762				

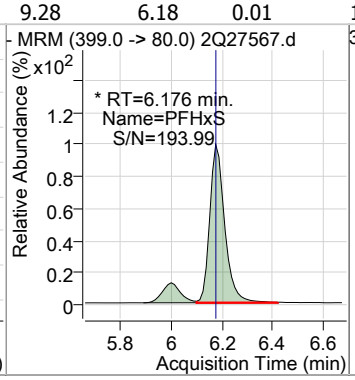


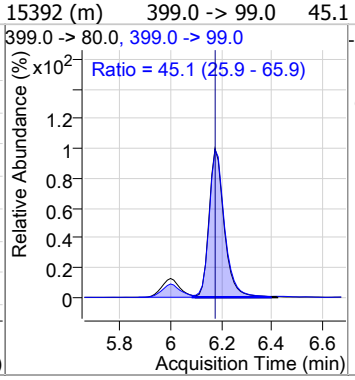


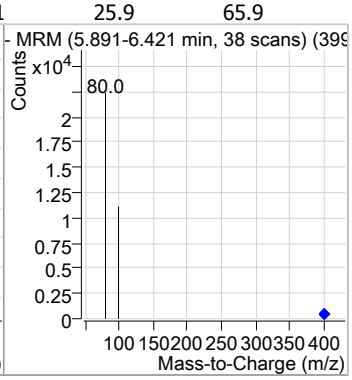


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	9.28	6.18	0.01	15392 (m)	399.0 -> 99.0	45.1	25.9	65.9

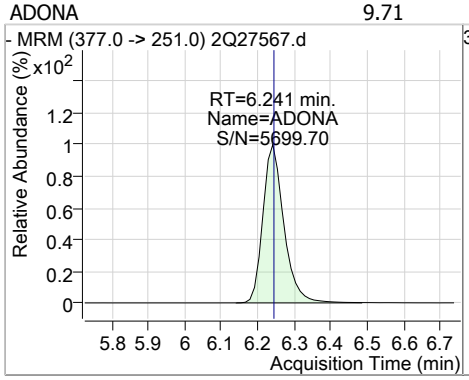


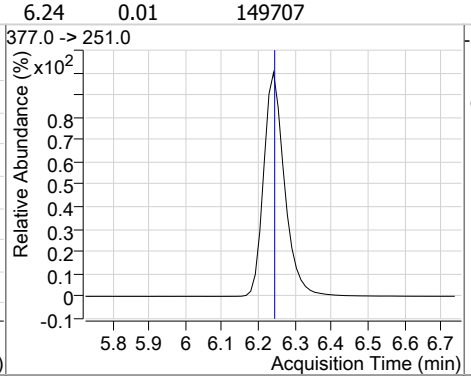


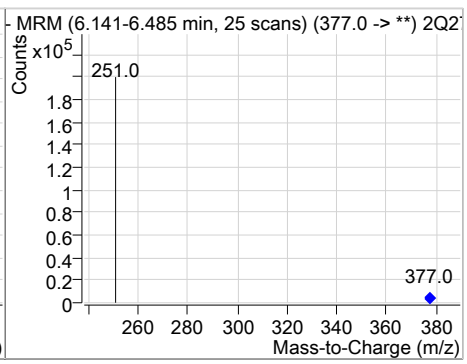




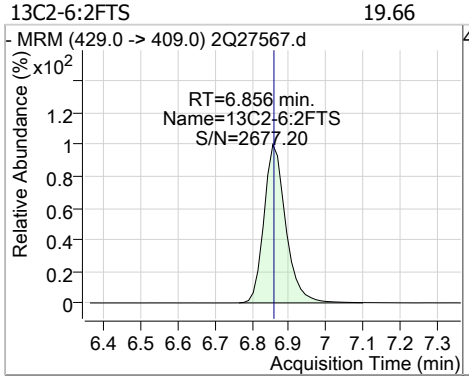
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.71	6.24	0.01	149707				

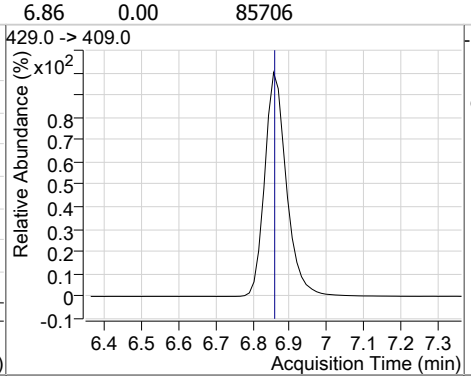


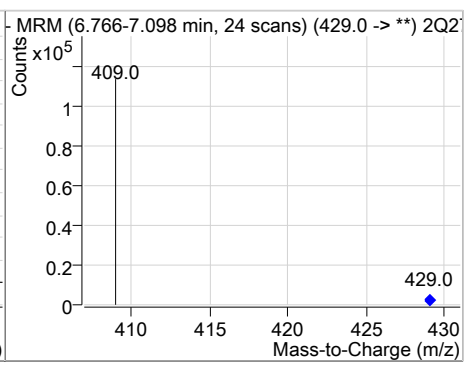




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.66	6.86	0.00	85706				

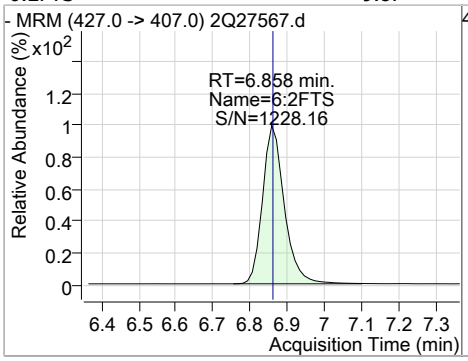


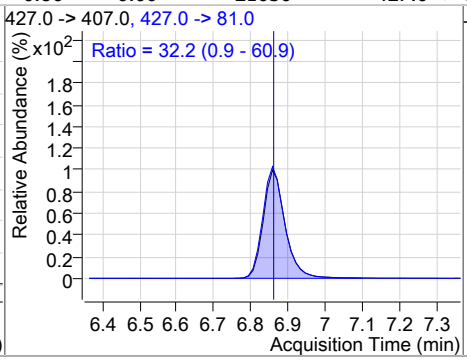


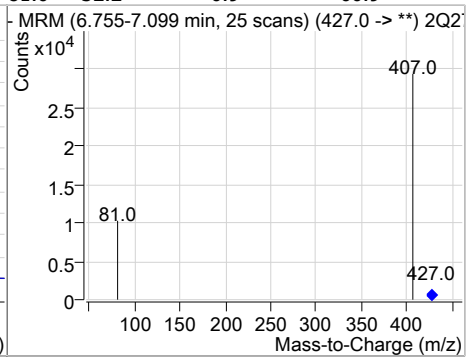


Perfluorinated Compounds by LC/MS/MS

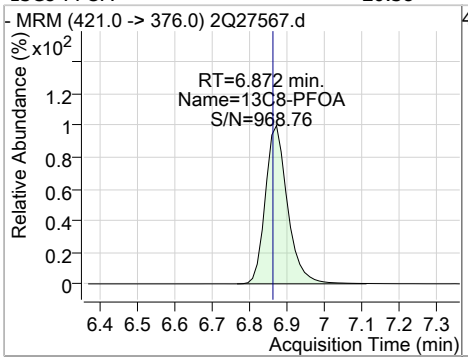
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	9.87	6.86	0.00	21650	427.0 -> 81.0	32.2	0.9	60.9

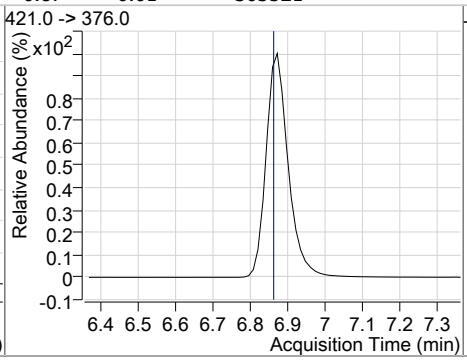


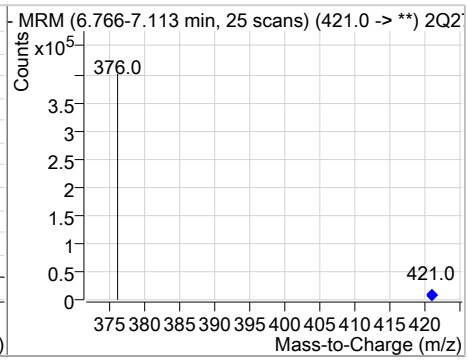




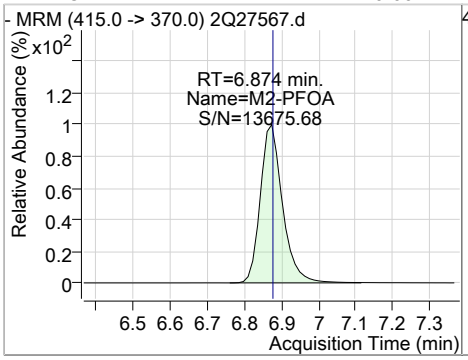
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.38	6.87	0.01	303521				

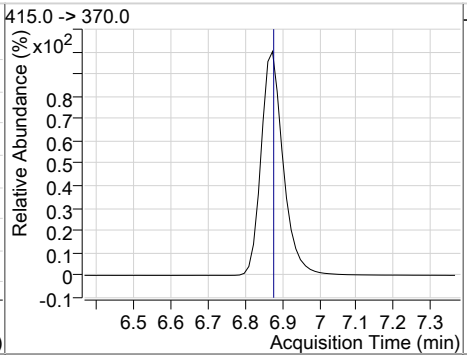


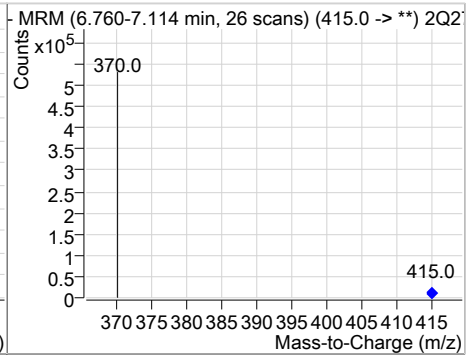




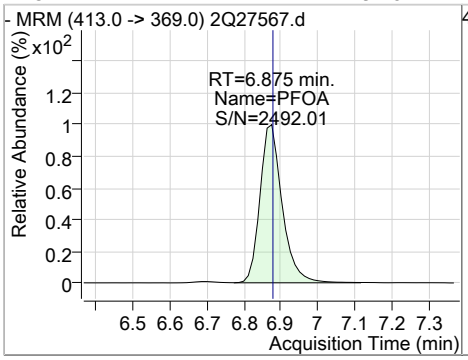
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.87	0.01	402254				

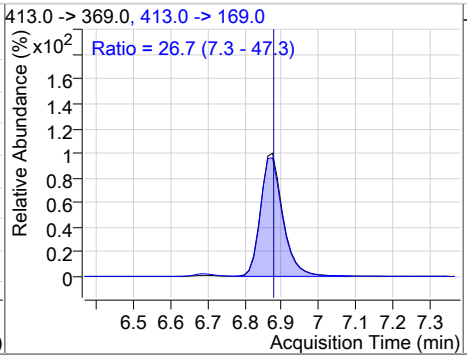


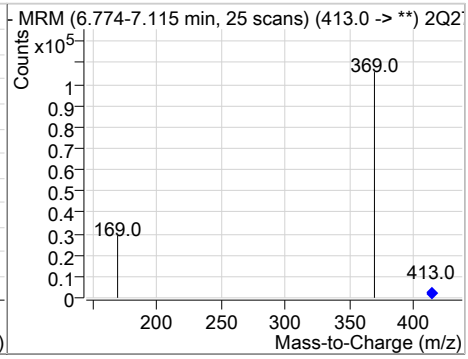




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	9.48	6.88	0.01	78787	413.0 -> 169.0	26.7	7.3	47.3

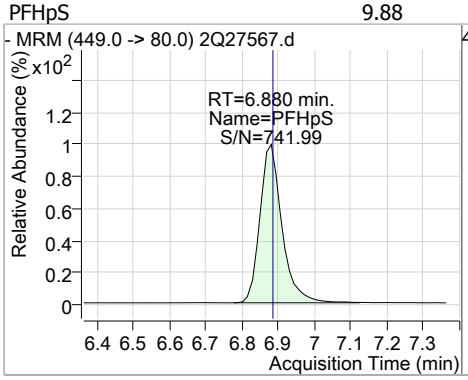


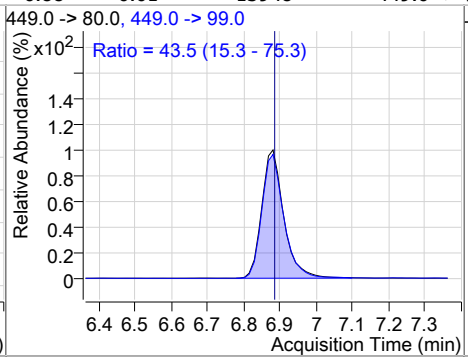


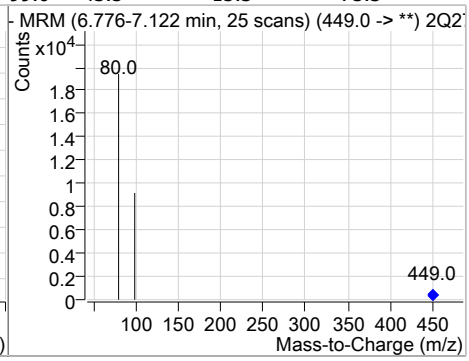


Perfluorinated Compounds by LC/MS/MS

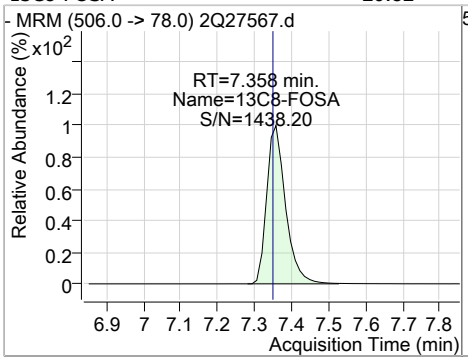
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	9.88	6.88	0.01	13948	449.0 -> 99.0	43.5	15.3	75.3

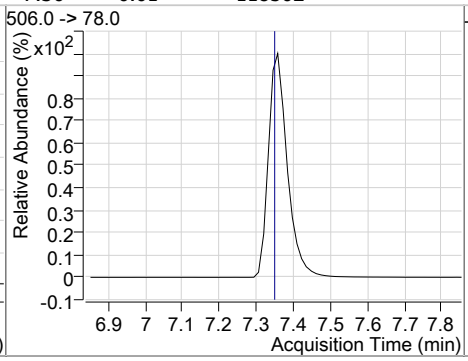


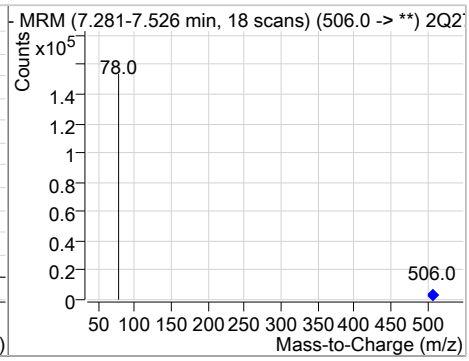




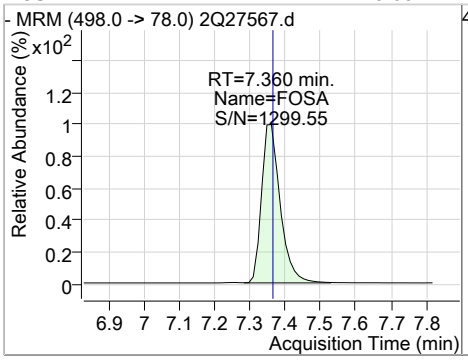
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.82	7.36	0.01	118562				

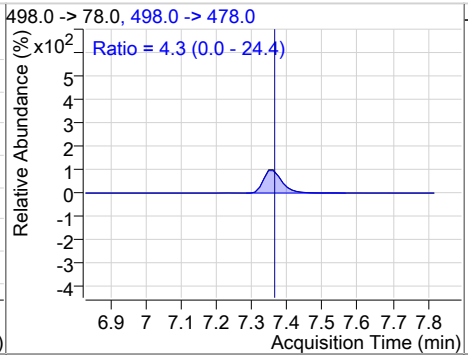


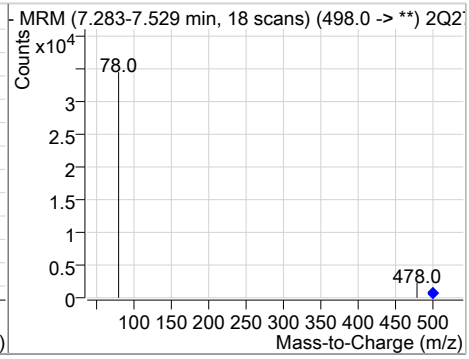




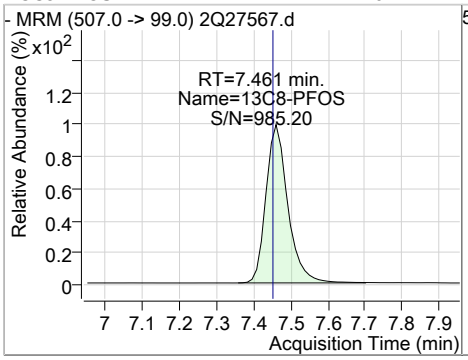
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	10.00	7.36	0.01	26827	498.0 -> 478.0	4.3	0.0	24.4

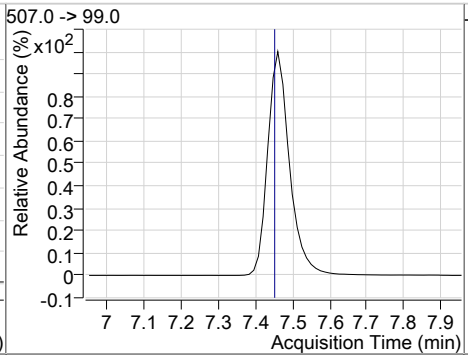


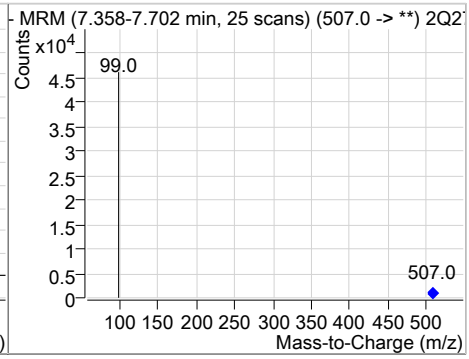




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.71	7.46	0.01	34260				

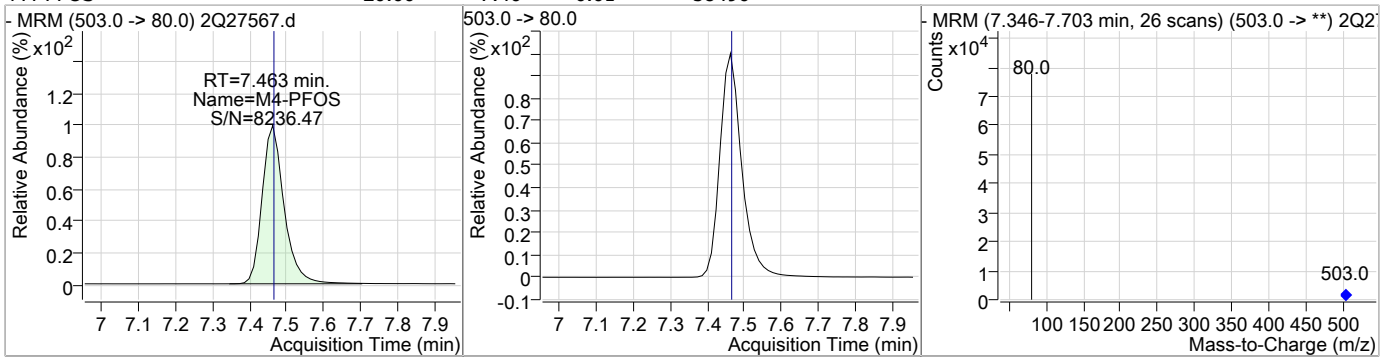




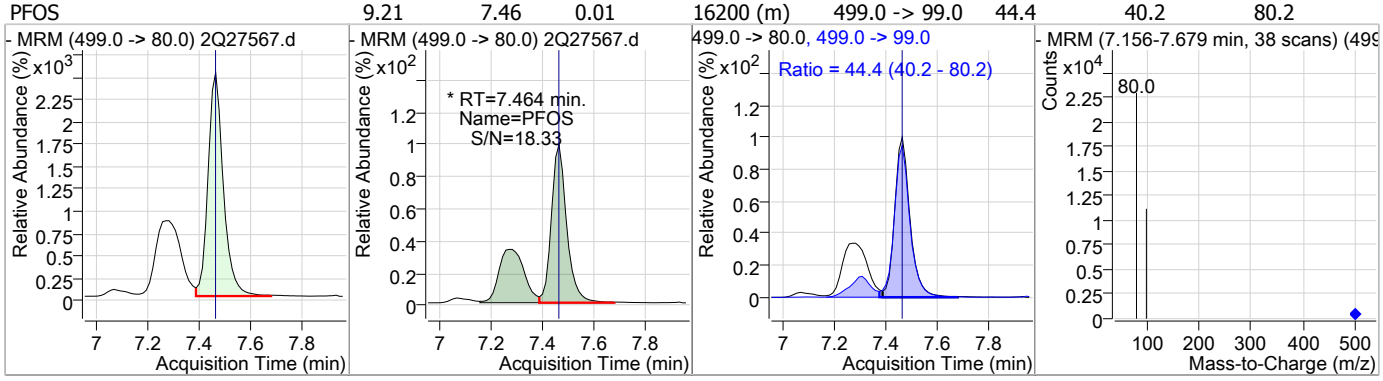


Perfluorinated Compounds by LC/MS/MS

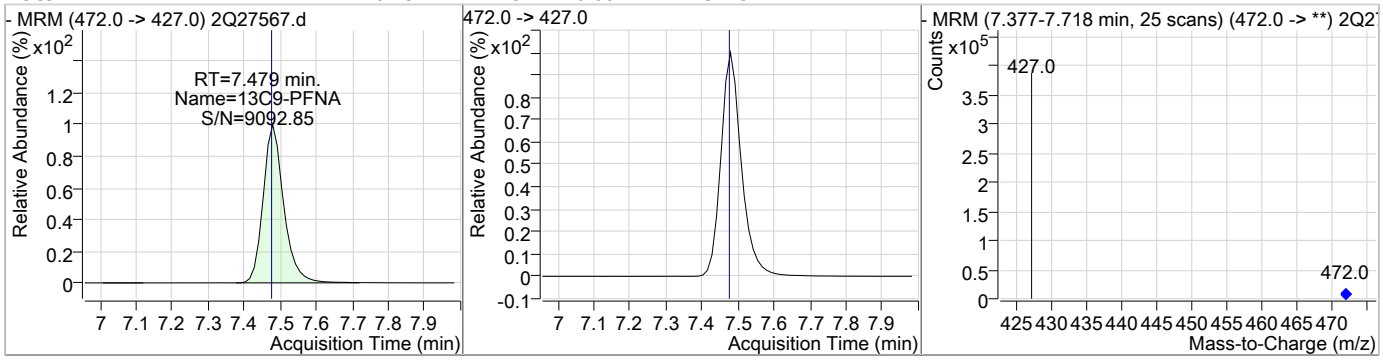
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.46	0.01	58496				



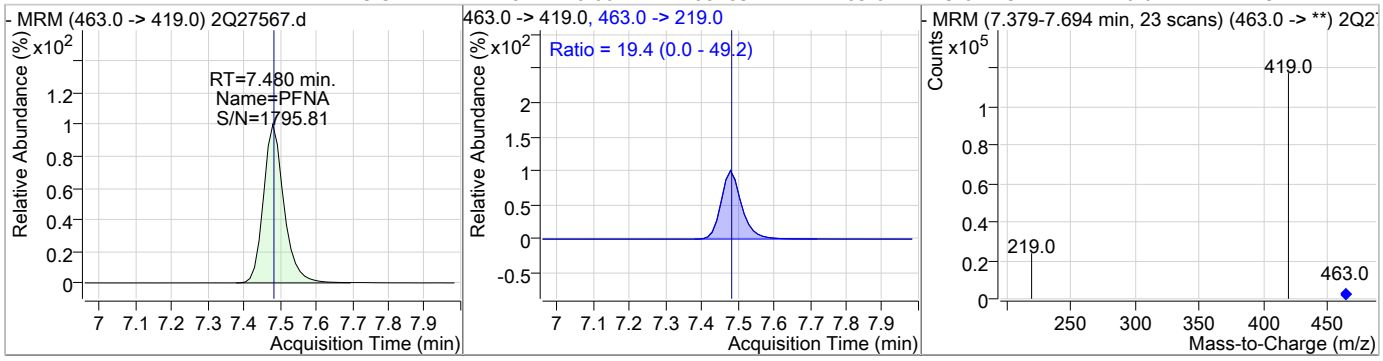
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	9.21	7.46	0.01	16200 (m)	499.0 -> 99.0	44.4	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.43	7.48	0.00	292757				

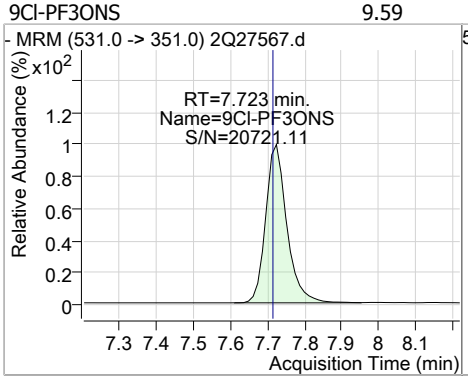


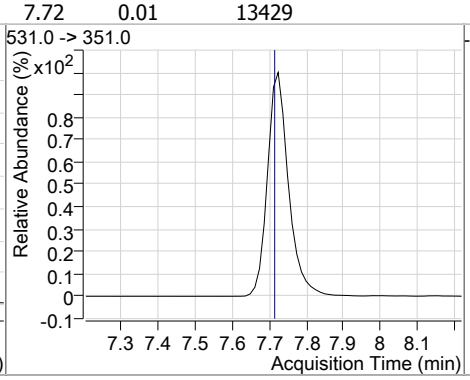
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	9.31	7.48	0.00	88283	463.0 -> 219.0	19.4	0.0	49.2

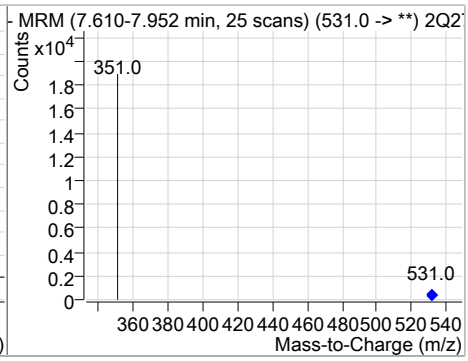


Perfluorinated Compounds by LC/MS/MS

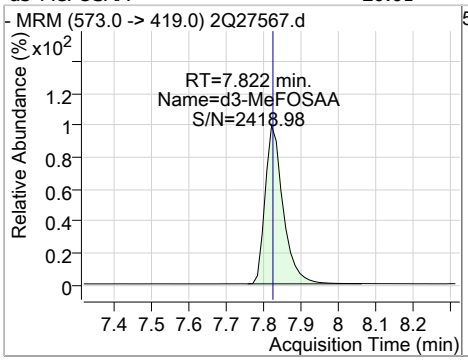
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	9.59	7.72	0.01	13429				

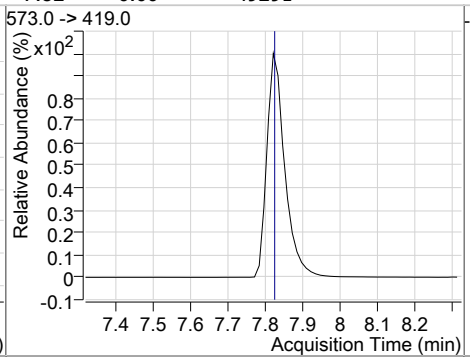


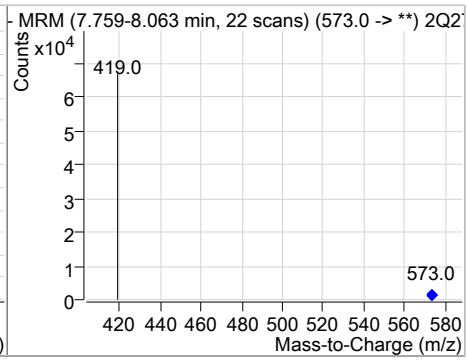




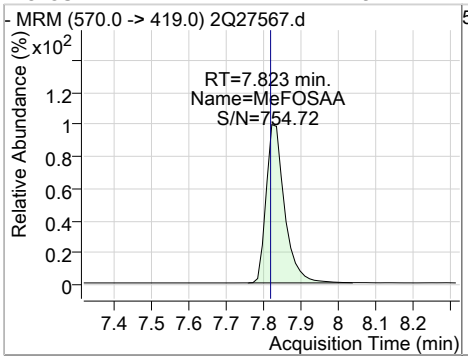
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.61	7.82	0.00	49291				

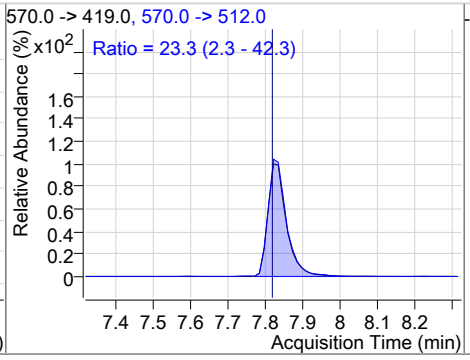


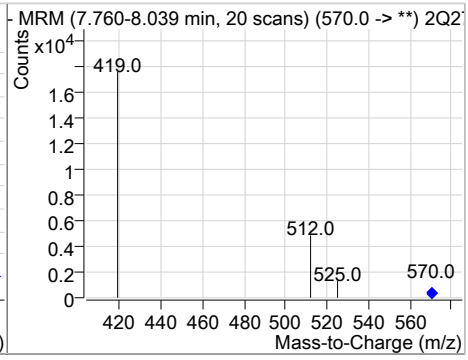




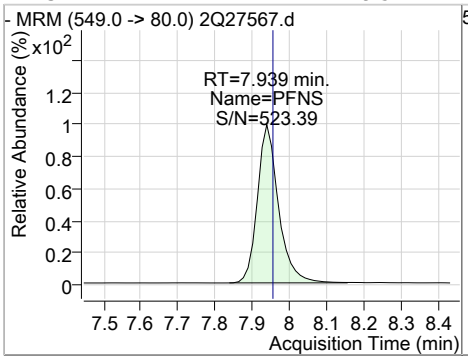
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	9.71	7.82	0.00	12633	570.0 -> 512.0	23.3	2.3	42.3

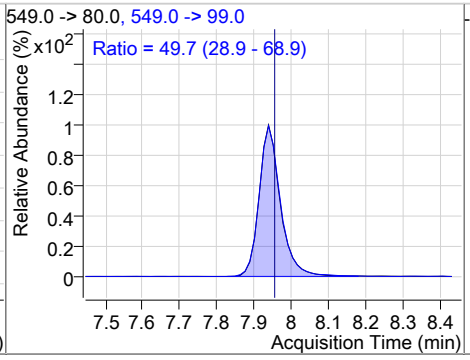


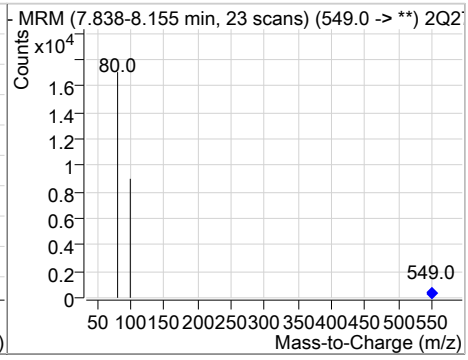




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	9.54	7.94	0.00	12257	549.0 -> 99.0	49.7	28.9	68.9

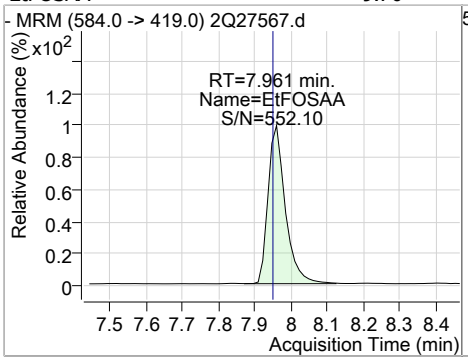


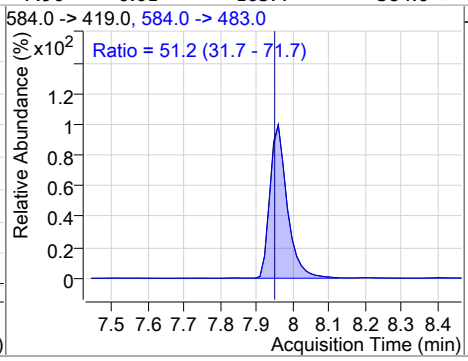


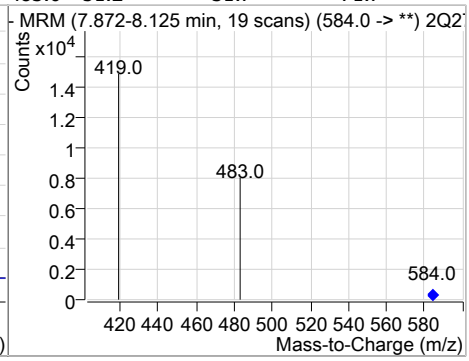


Perfluorinated Compounds by LC/MS/MS

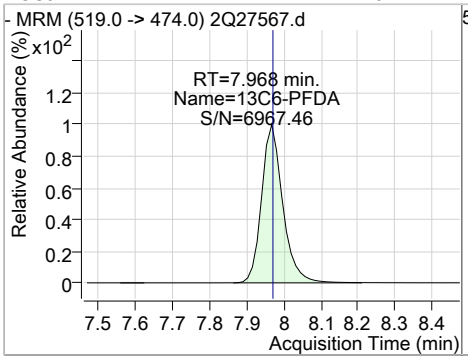
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	9.70	7.96	0.01	10577	584.0 -> 483.0	51.2	31.7	71.7

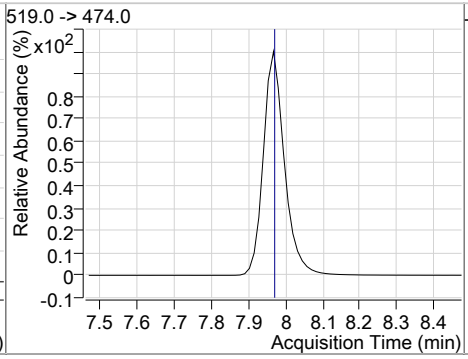


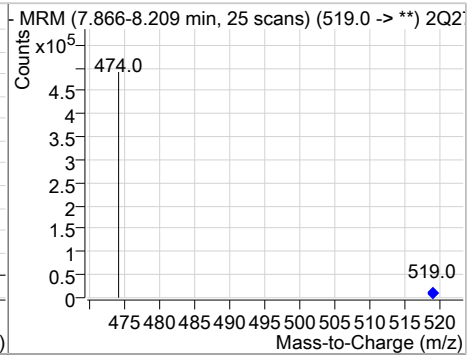




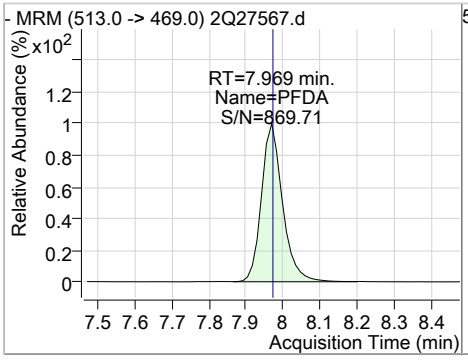
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.74	7.97	0.00	383918				

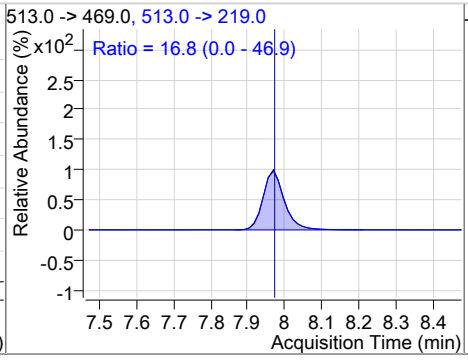


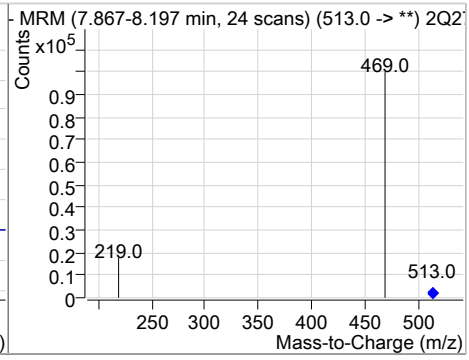




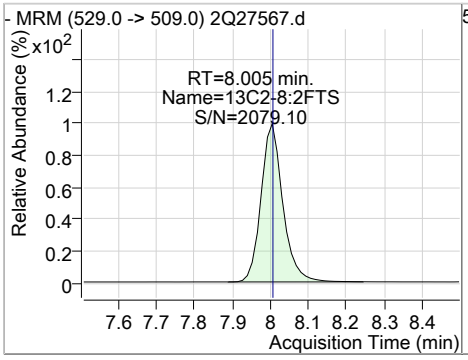
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	9.50	7.97	0.00	76978	513.0 -> 219.0	16.8	0.0	46.9

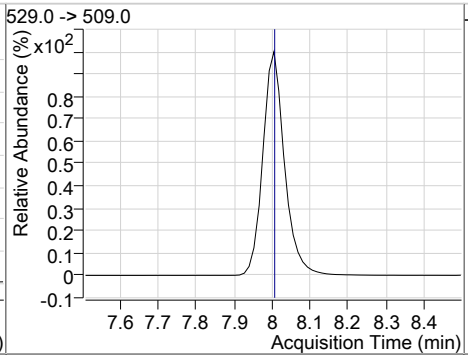


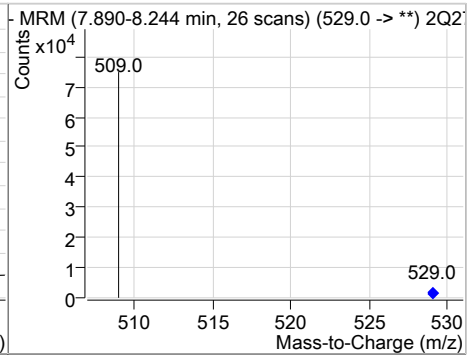




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.62	8.01	0.00	55716				

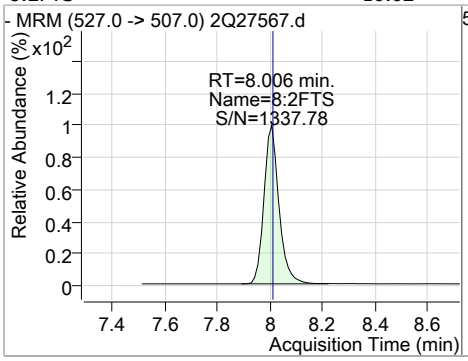


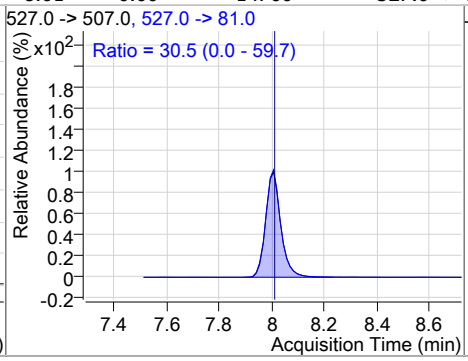


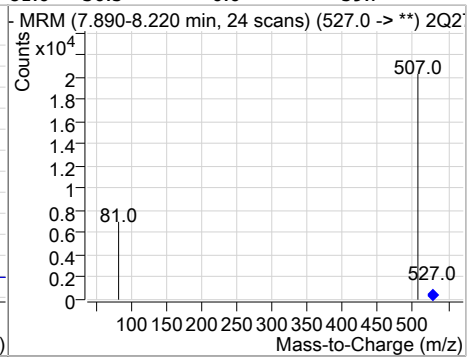


Perfluorinated Compounds by LC/MS/MS

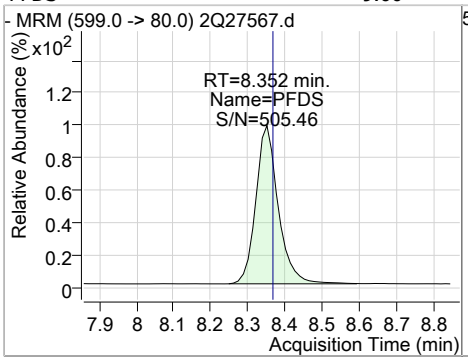
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	10.02	8.01	0.00	14760	527.0 -> 81.0	30.5	0.0	59.7

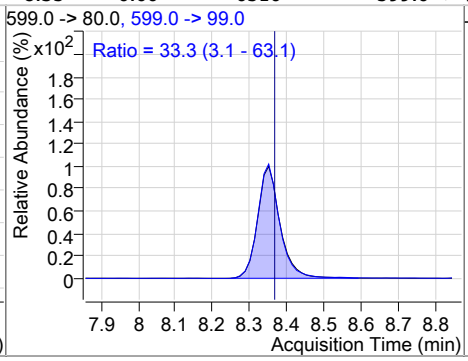


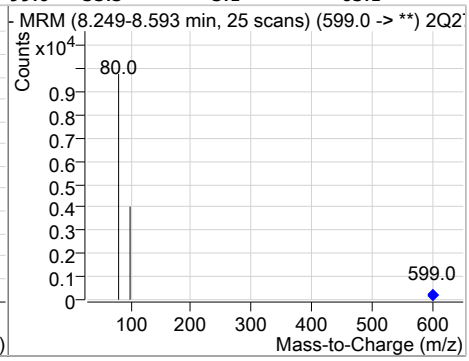




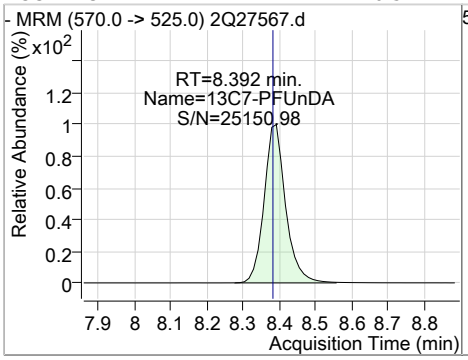
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	9.60	8.35	0.00	6510	599.0 -> 99.0	33.3	3.1	63.1

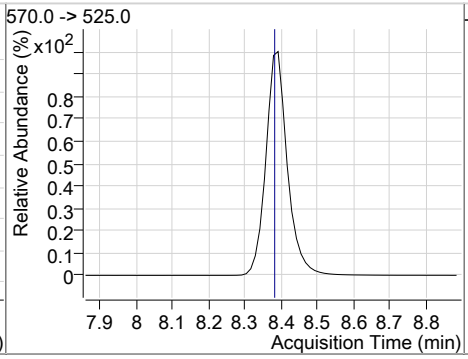


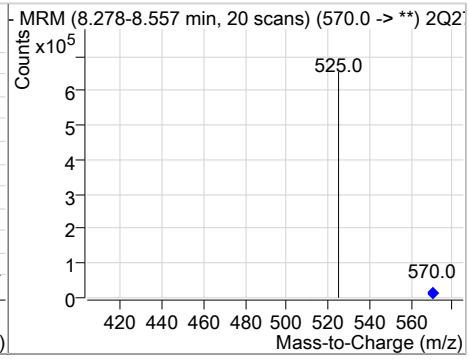




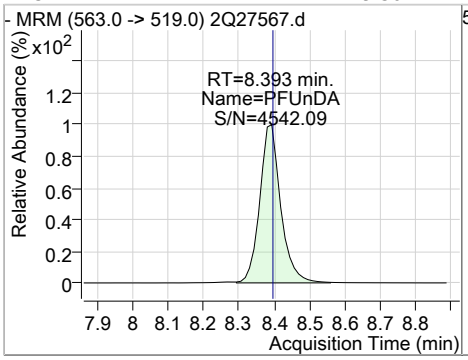
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.54	8.39	0.01	492133				

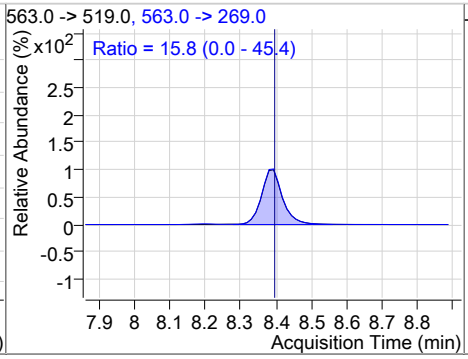


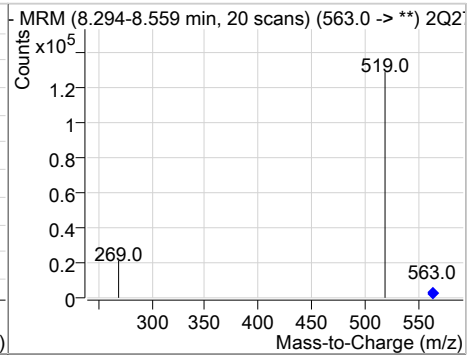




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	9.30	8.39	0.01	96832	563.0 -> 269.0	15.8	0.0	45.4

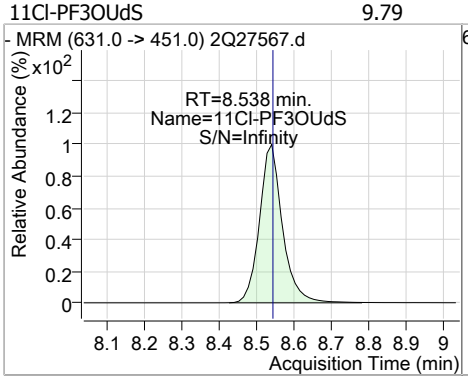


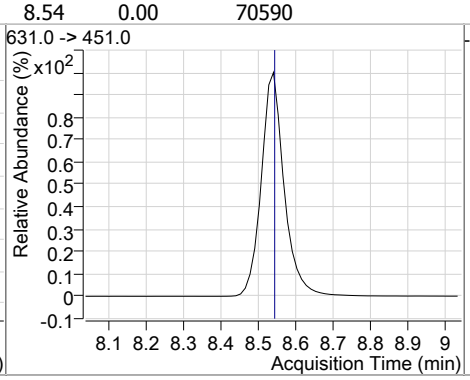


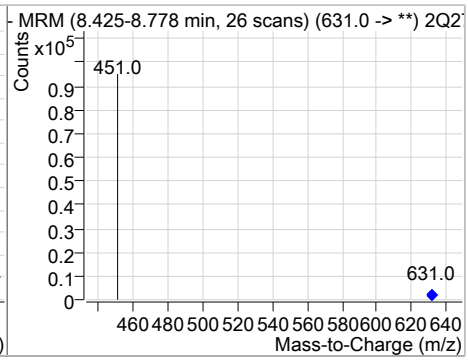


Perfluorinated Compounds by LC/MS/MS

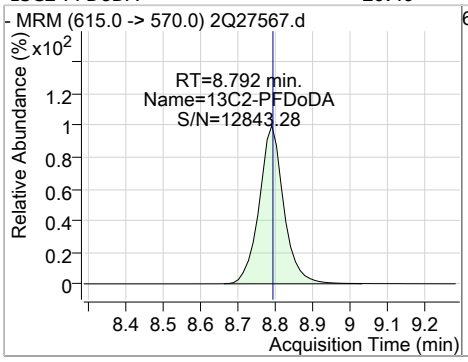
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	9.79	8.54	0.00	70590				

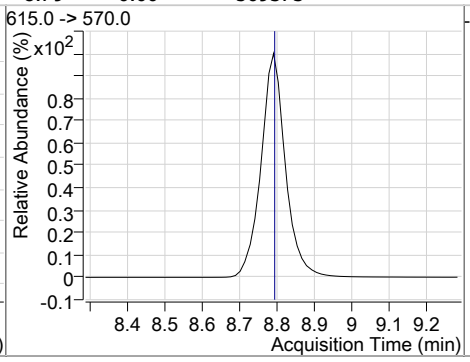


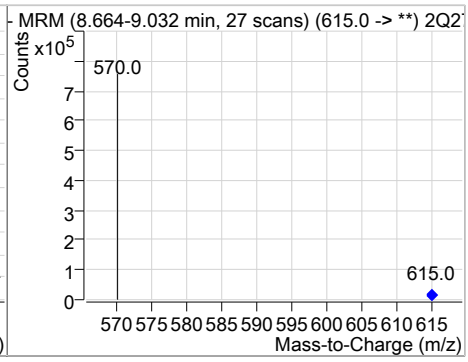




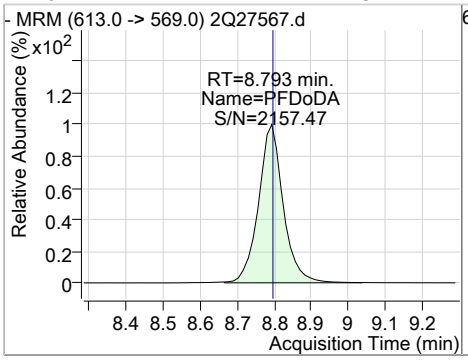
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.40	8.79	0.00	569373				

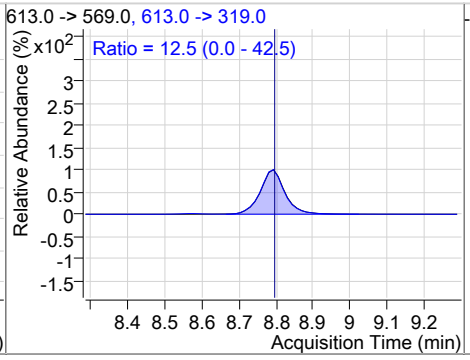


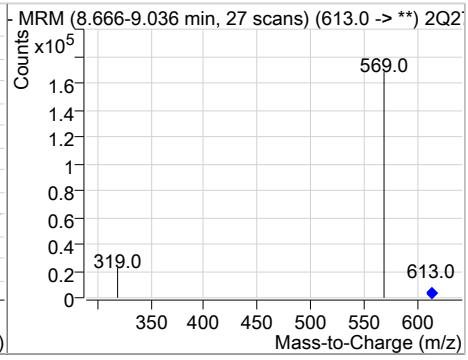




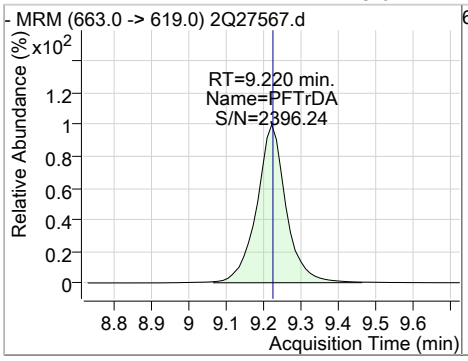
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	9.44	8.79	0.00	126062	613.0 -> 319.0	12.5	0.0	42.5

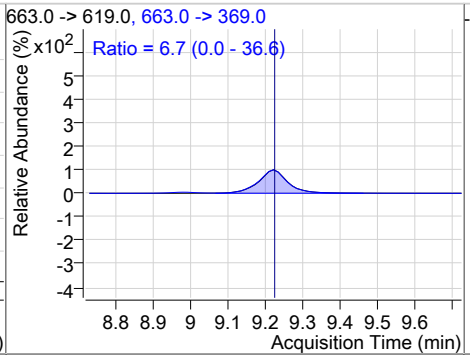


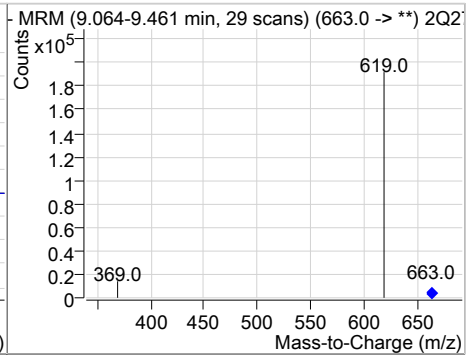




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	9.61	9.22	0.00	143691	663.0 -> 369.0	6.7	0.0	36.6

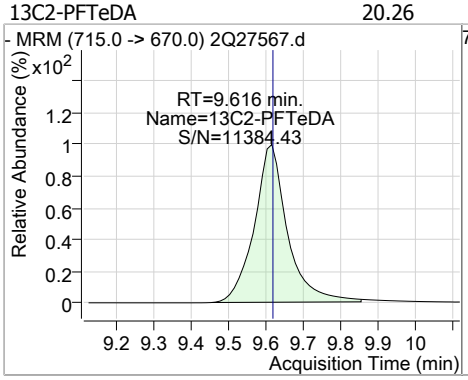


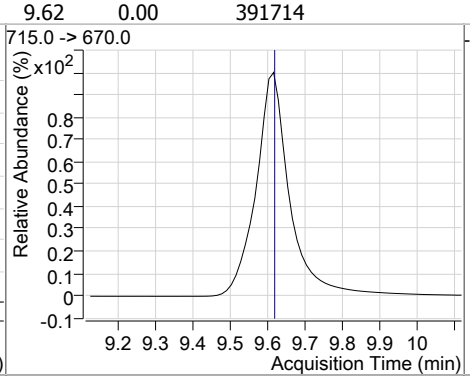


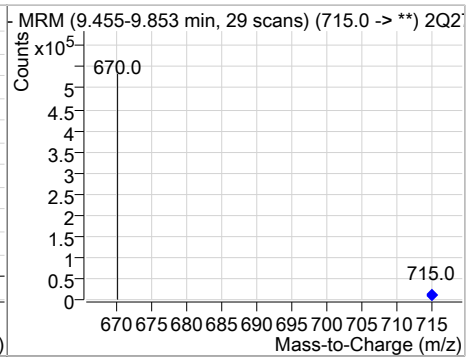


Perfluorinated Compounds by LC/MS/MS

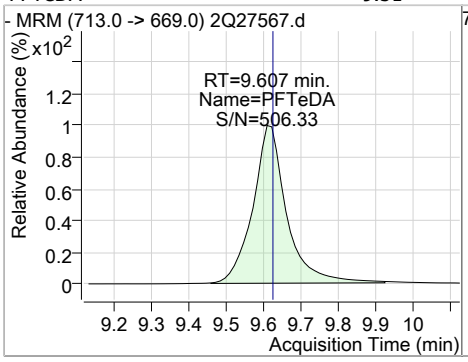
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.26	9.62	0.00	391714				

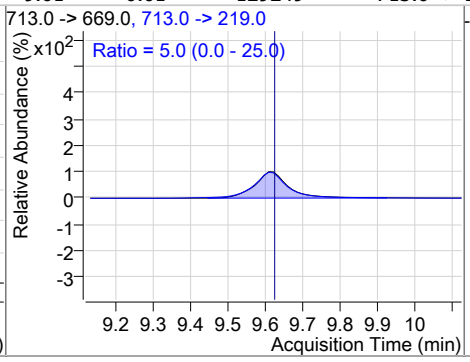


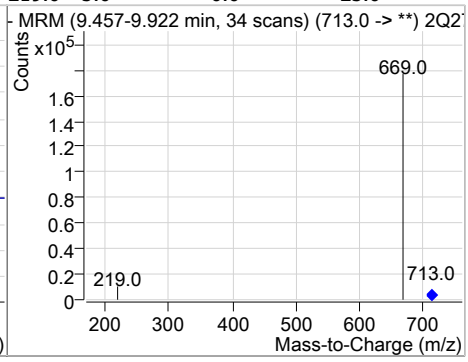




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	9.51	9.61	-0.01	129249	713.0 -> 219.0	5.0	0.0	25.0







7.6.5

7

Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27567.D
Injection Time: 03/13/19 11:47

Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27568.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 12:03:12 PM
Sample Name : icc439-20
Vial : Vial 7
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

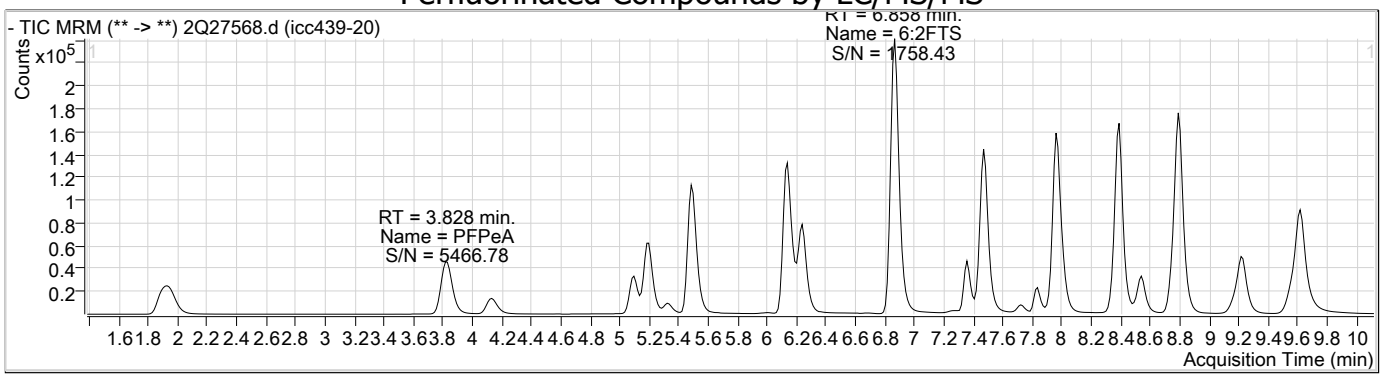
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	358299	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	52649	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	161181	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	132817	20.00	µg/L	0.025
M5-PFHxA	5.202	318.0 -> 273.0	189791	20.00	µg/L	0.025
M4-PFHpA	6.142	367.0 -> 322.0	266270	20.00	µg/L	0.024
M8-PFOA	6.872	421.0 -> 376.0	276598	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	267252	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	345006	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	446290	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	528650	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	334540	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	105657	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	22489	20.00	µg/L	0.038
M3-PFHxS	6.174	402.0 -> 99.0	25188	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	30663	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	76025	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	80905	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	53083	20.00	µg/L	0.001
M3-MeFOSAA	7.834	573.0 -> 419.0	44437	20.00	µg/L	0.012
M3-HFPO-DA	5.494	287.0 -> 169.0	194289	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	76039	18.32	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.6%		
13C2-6:2FTS	6.856	429.0 -> 409.0	80924	18.57	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%		
13C2-8:2FTS	8.005	529.0 -> 509.0	53081	18.70	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.5%		
13C2-PFDoDA	8.792	615.0 -> 570.0	529046	18.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%		
13C2-PFTeDA	9.616	715.0 -> 670.0	334497	17.30	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.5%		
13C3-PFBS	4.130	302.0 -> 99.0	22373	18.48	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.4%		
13C3-PFHxS	6.174	402.0 -> 99.0	25206	18.51	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C4-PFBA	1.927	217.0 -> 172.0	160378	18.50	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C4-PFHpA	6.142	367.0 -> 322.0	265855	18.47	µg/L	0.024
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%		
13C5-PFHxA	5.202	318.0 -> 273.0	189625	18.49	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.4%		
13C5-PFPeA	3.824	268.0 -> 223.0	132649	18.50	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C6-PFDA	7.968	519.0 -> 474.0	344713	18.62	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

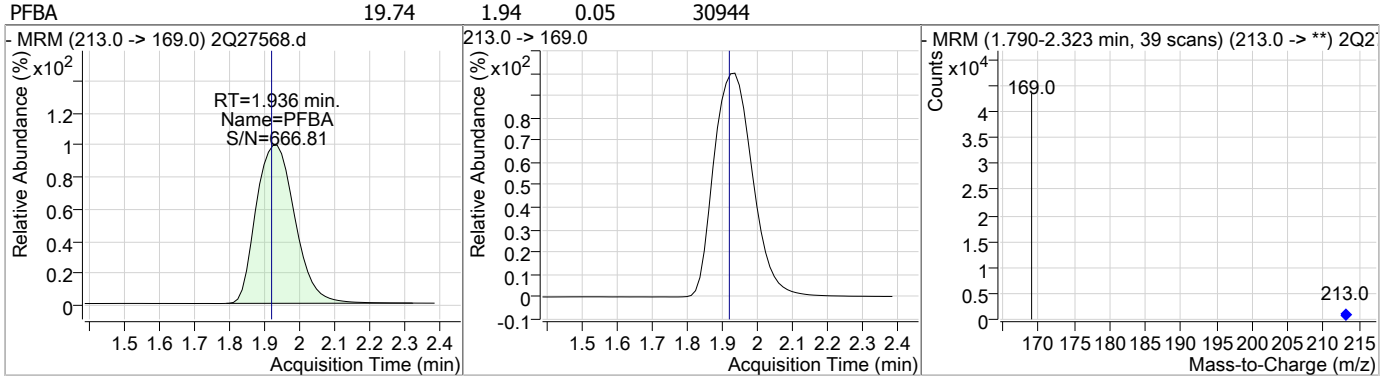
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%			
13C7-PFUnDA	8.392	570.0 -> 525.0	446179	18.63	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%			
13C8-FOSA	7.358	506.0 -> 78.0	105660	18.55	µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%			
13C8-PFOA	6.872	421.0 -> 376.0	276526	18.57	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%			
13C8-PFOS	7.461	507.0 -> 99.0	30692	18.56	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%			
13C9-PFNA	7.479	472.0 -> 427.0	267180	18.64	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.2%			
d3-MeFOSAA	7.834	573.0 -> 419.0	44446	18.59	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.9%			
M2-PFOA	6.874	415.0 -> 370.0	358631	20.00	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.463	503.0 -> 80.0	52608	19.98	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	5.494	287.0 -> 169.0	194289	95.65	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 95.6%			
Target Compounds							**QValue**
4:2FTS	5.100	327.0 -> 307.0	45680	20.65	µg/L		99
6:2FTS	6.858	427.0 -> 407.0	41708	20.16	µg/L		99
8:2FTS	8.006	527.0 -> 507.0	27779	19.81	µg/L		98
EtFOSAA	7.961	584.0 -> 419.0	20260	20.73	µg/L		97
FOSA	7.360	498.0 -> 78.0	49077	20.38	µg/L		100
MeFOSAA	7.835	570.0 -> 419.0	23679	20.05	µg/L		100
PFBA	1.936	213.0 -> 169.0	30944	19.74	µg/L		100
PFBS	4.134	299.0 -> 80.0	36666	19.74	µg/L		100
PFDA	7.969	513.0 -> 469.0	146399	20.10	µg/L		99
PFDoDA	8.793	613.0 -> 569.0	245205	19.79	µg/L		100
PFDS	8.352	599.0 -> 80.0	12350	20.38	µg/L		99
PFHpA	6.144	363.0 -> 319.0	246230	19.72	µg/L		100
PFHpS	6.880	449.0 -> 80.0	26244	20.57	µg/L		99
PFHxA	5.203	313.0 -> 269.0	65318	19.89	µg/L		100
PFHxS	6.176	399.0 -> 80.0	29333	19.55	µg/L	m	96
PFNA	7.480	463.0 -> 419.0	171057	19.77	µg/L		100
PFNS	7.939	549.0 -> 80.0	23676	20.63	µg/L		99
PFOA	6.875	413.0 -> 369.0	149686	19.78	µg/L		99
PFOS	7.464	499.0 -> 80.0	30608	19.47	µg/L	m	79
PFPeA	3.828	263.0 -> 219.0	117734	19.51	µg/L		100
PFPeS	5.321	349.0 -> 80.0	25707	20.21	µg/L		100
PFTeDA	9.620	713.0 -> 669.0	222698	19.50	µg/L		100
PFTrDA	9.220	663.0 -> 619.0	254547	20.26	µg/L		100
PFUnDA	8.393	563.0 -> 519.0	186925	19.78	µg/L		100
11Cl-PF3OUdS	8.538	631.0 -> 451.0	133877	20.01	µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	25774	20.21	µg/L		100
ADONA	6.241	377.0 -> 251.0	286190	20.15	µg/L		100
HFPO-DA	5.486	329.0 -> 169.0	232910	98.81	µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

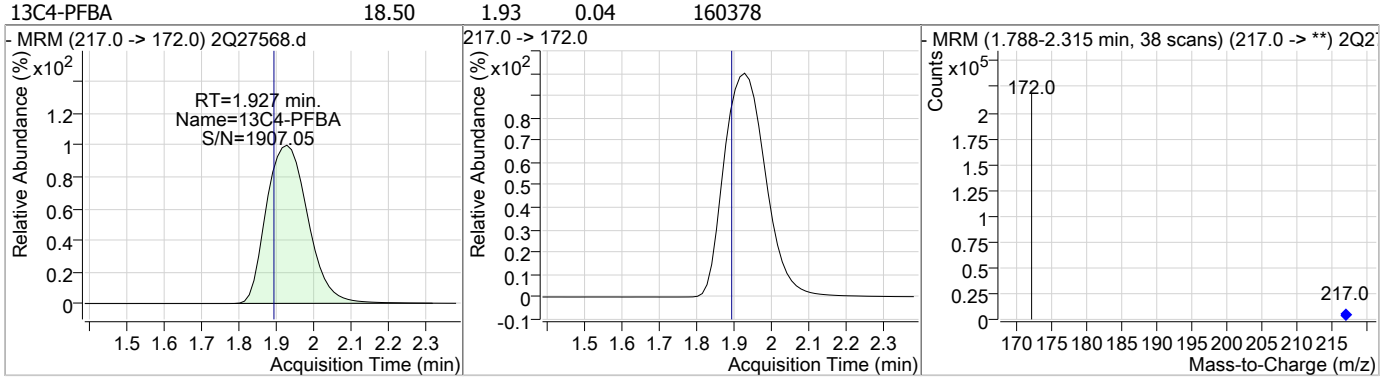
Perfluorinated Compounds by LC/MS/MS



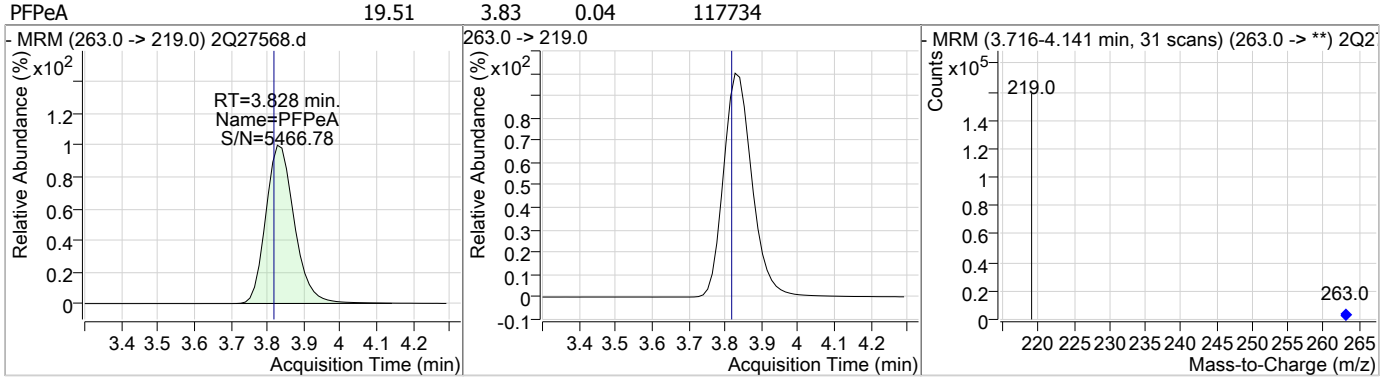
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.74	1.94	0.05	30944				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.50	1.93	0.04	160378				

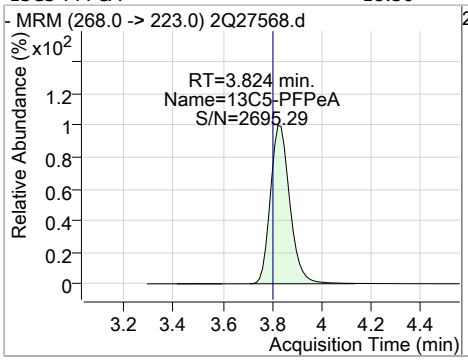


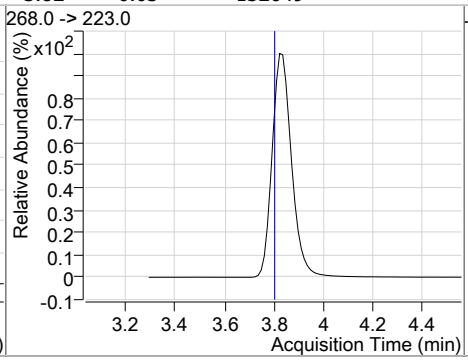
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.51	3.83	0.04	117734				

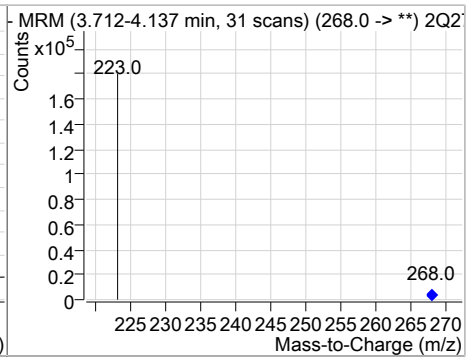


Perfluorinated Compounds by LC/MS/MS

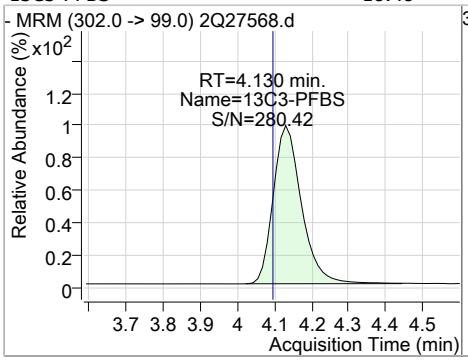
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.50	3.82	0.03	132649				

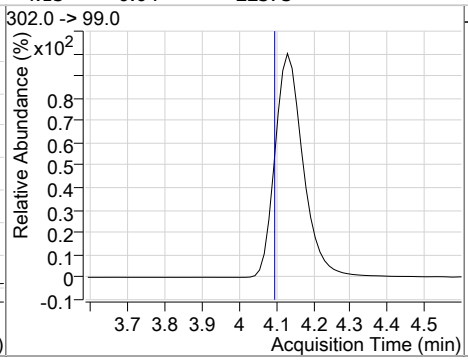


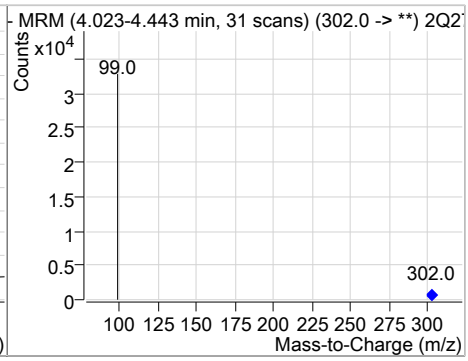




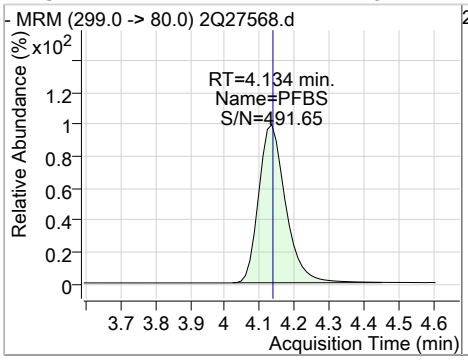
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.48	4.13	0.04	22373				

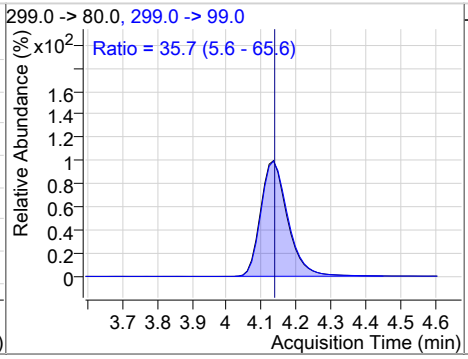


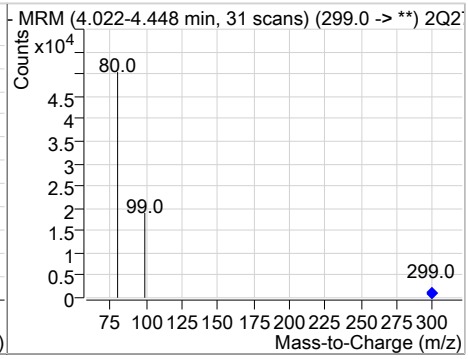




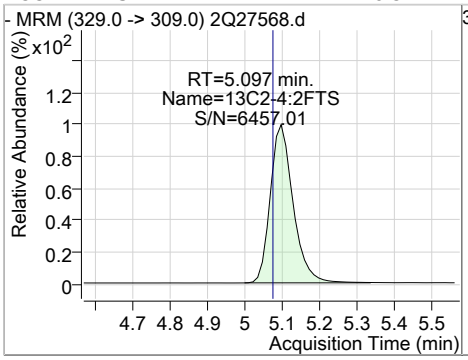
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.74	4.13	0.04	36666	299.0 -> 99.0	35.7	5.6	65.6

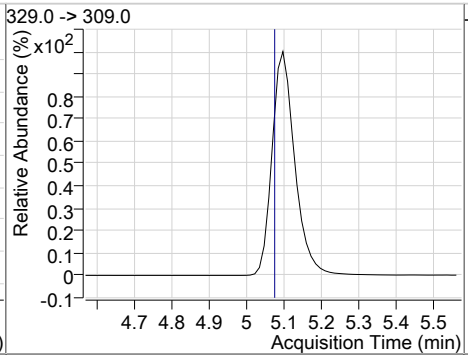


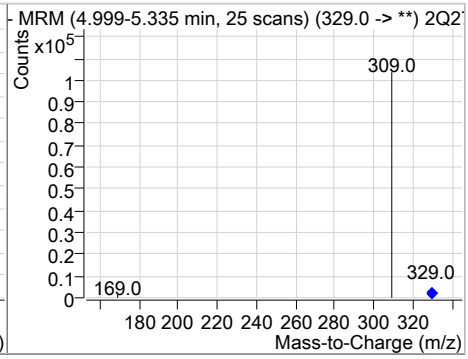




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.32	5.10	0.03	76039				

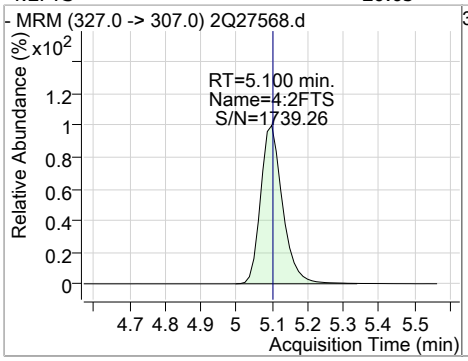


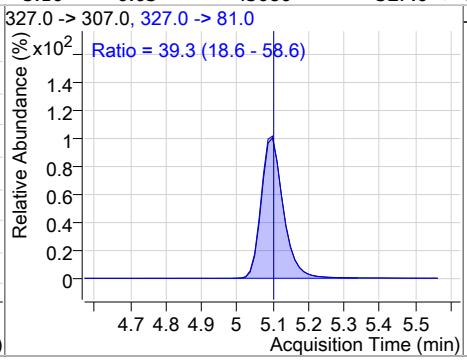


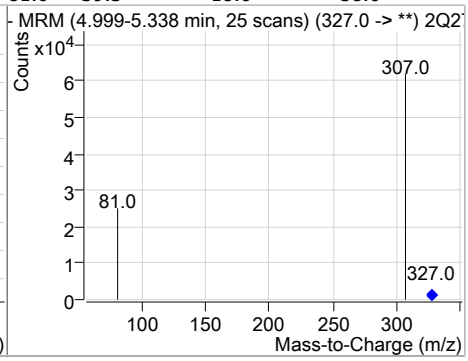


Perfluorinated Compounds by LC/MS/MS

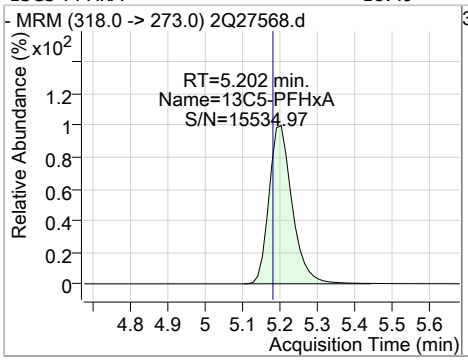
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.65	5.10	0.03	45680	327.0 -> 81.0	39.3	18.6	58.6

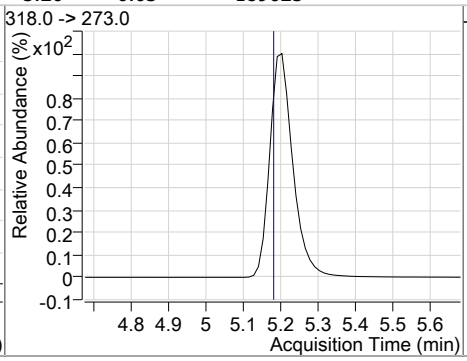


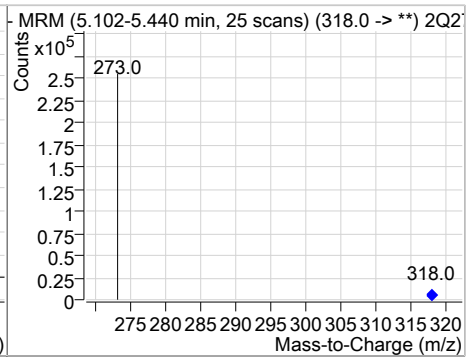




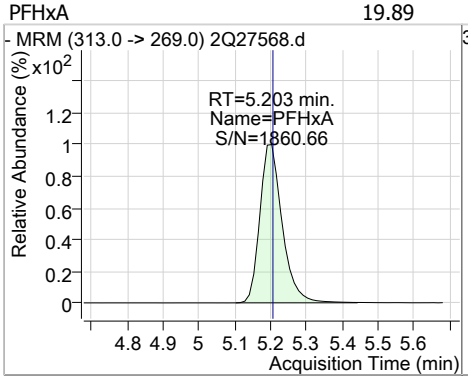
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.49	5.20	0.03	189625				

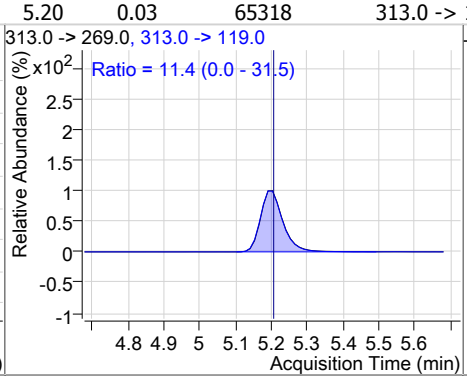


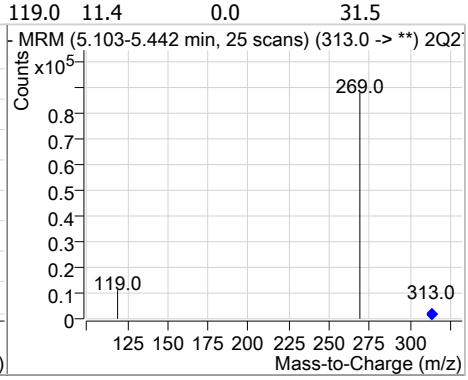




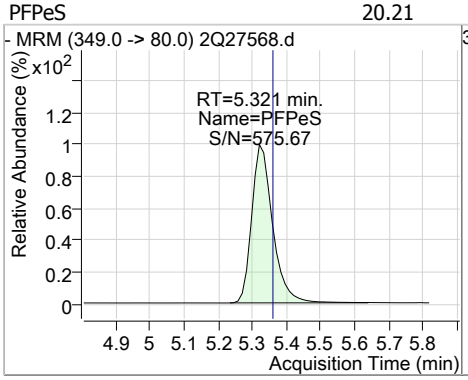
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.89	5.20	0.03	65318	313.0 -> 119.0	11.4	0.0	31.5

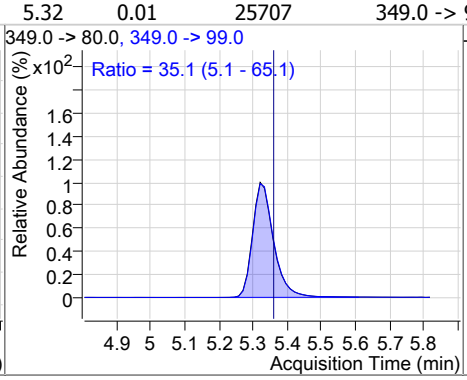


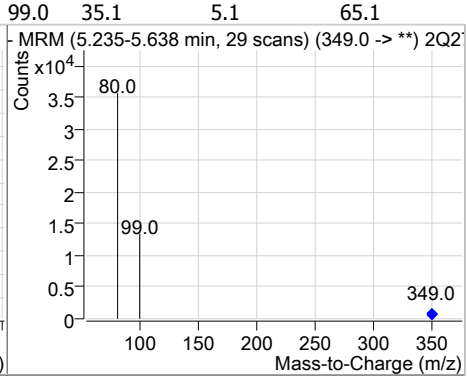




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.21	5.32	0.01	25707	349.0 -> 99.0	35.1	5.1	65.1

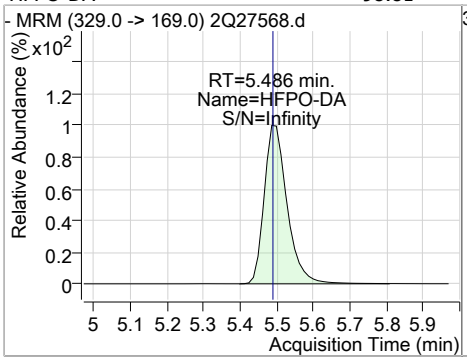


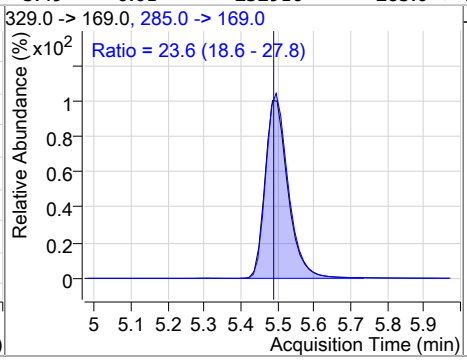


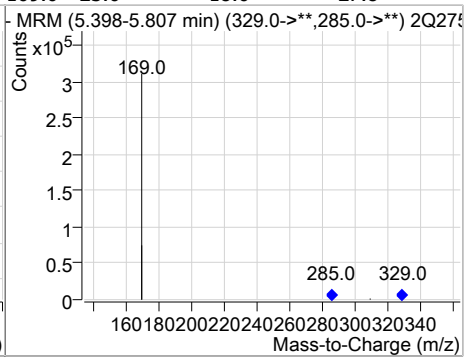


Perfluorinated Compounds by LC/MS/MS

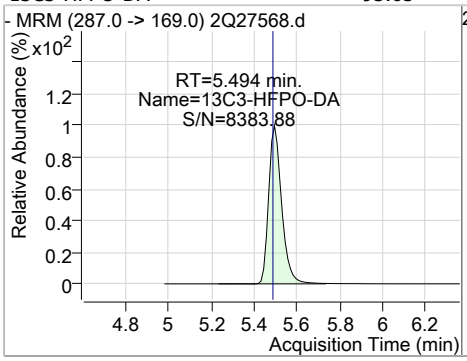
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	98.81	5.49	0.01	232910	285.0 -> 169.0	23.6	18.6	27.8

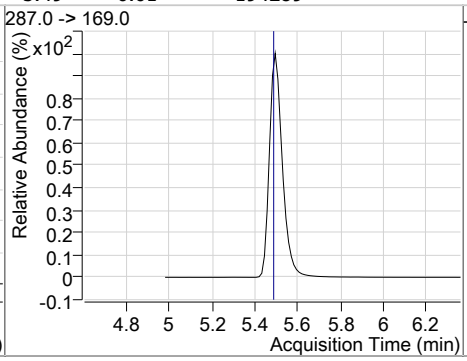


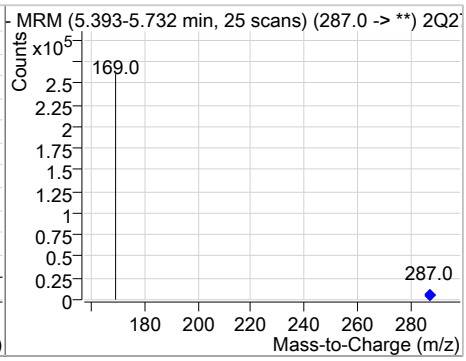




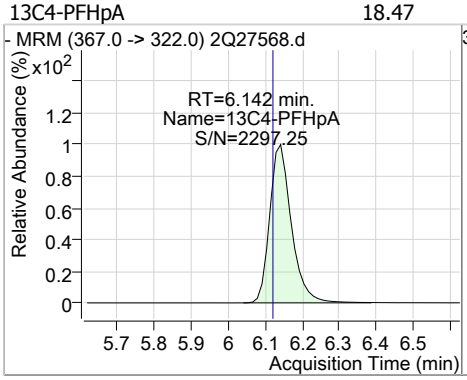
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	95.65	5.49	0.01	194289				

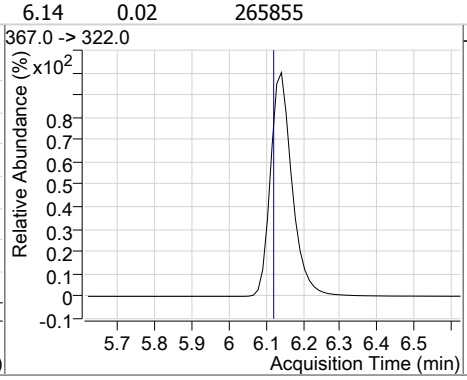


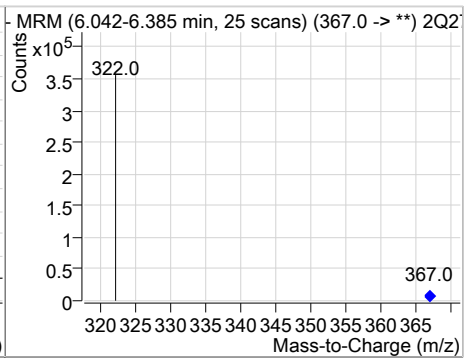




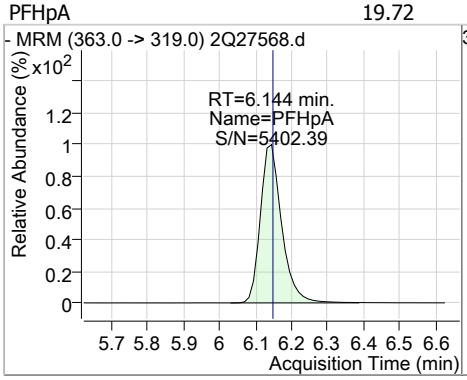
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.47	6.14	0.02	265855				

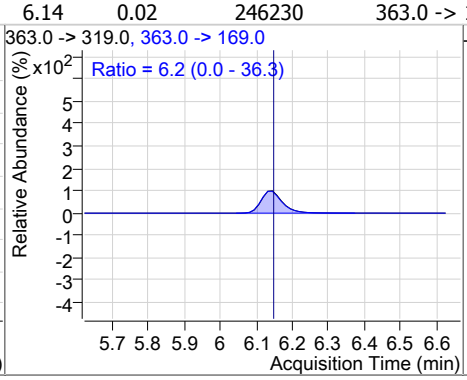


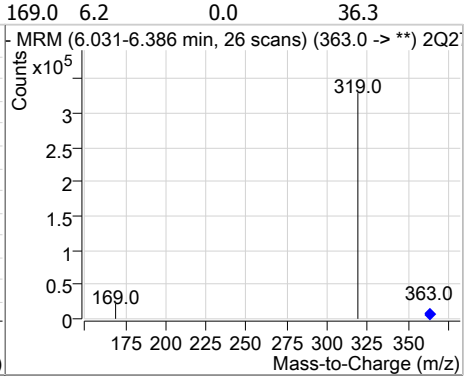




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.72	6.14	0.02	246230	363.0 -> 169.0	6.2	0.0	36.3

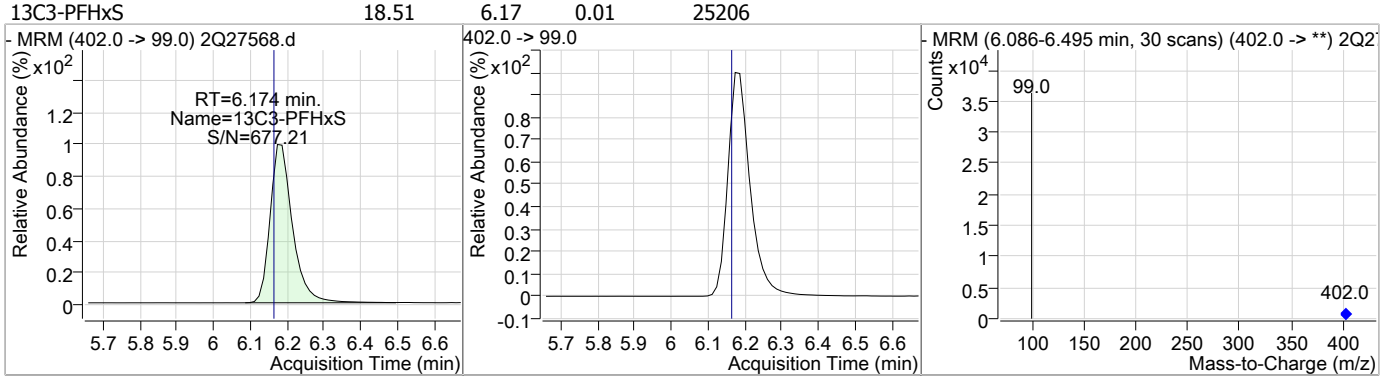




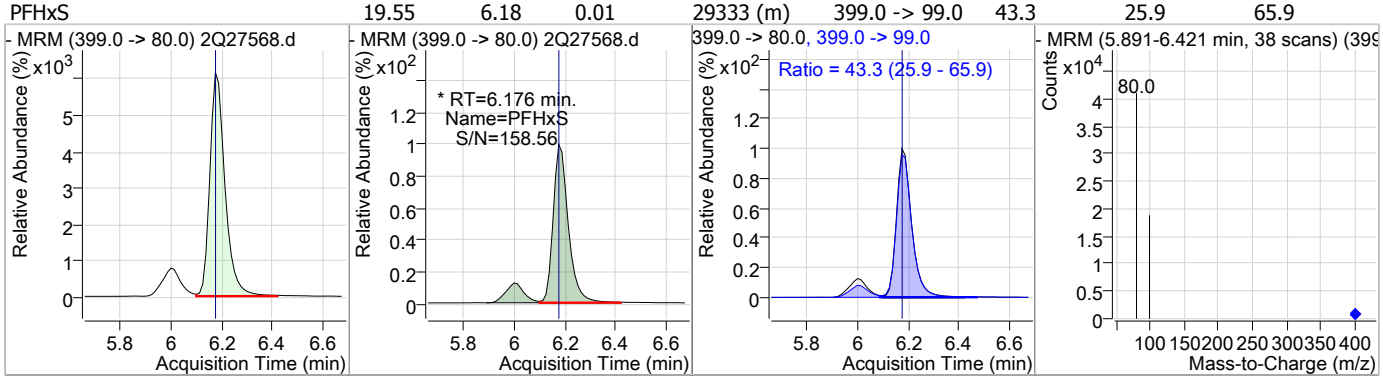


Perfluorinated Compounds by LC/MS/MS

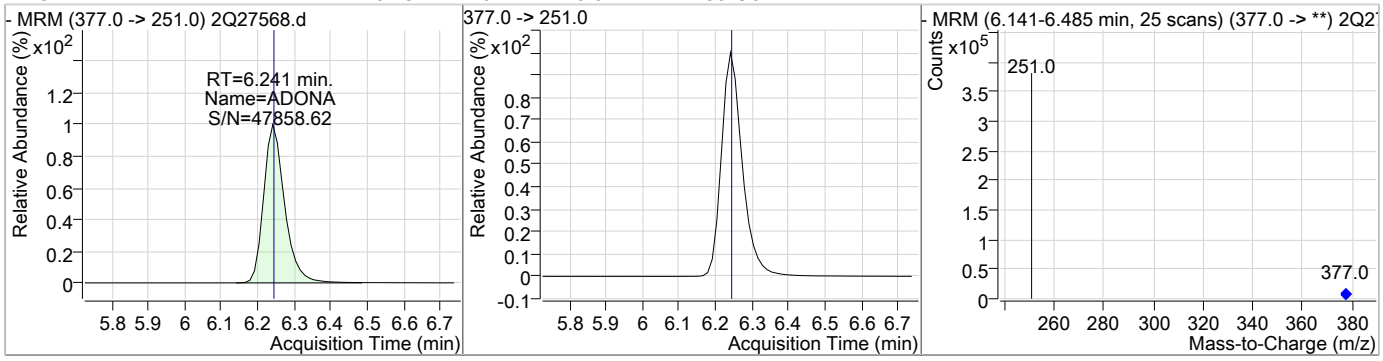
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.51	6.17	0.01	25206				



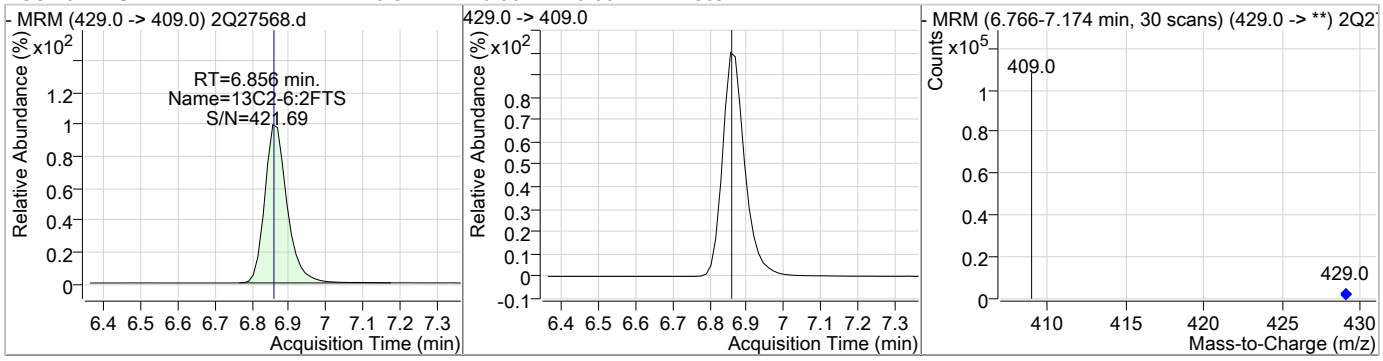
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.55	6.18	0.01	29333 (m)	399.0 -> 99.0	43.3	25.9	65.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	20.15	6.24	0.01	286190				

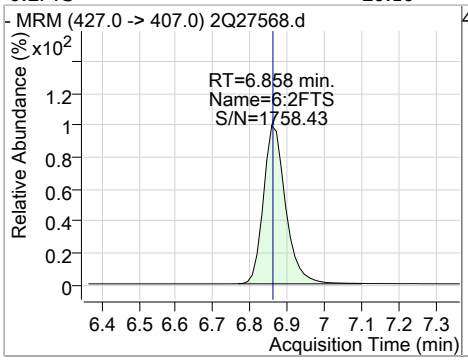


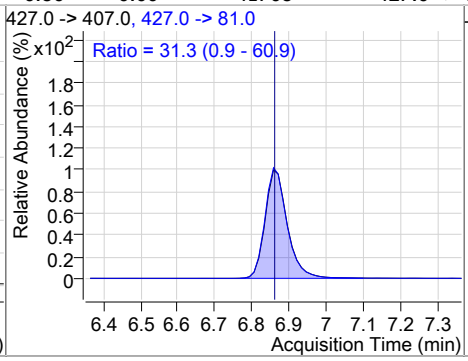
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.57	6.86	0.00	80924				

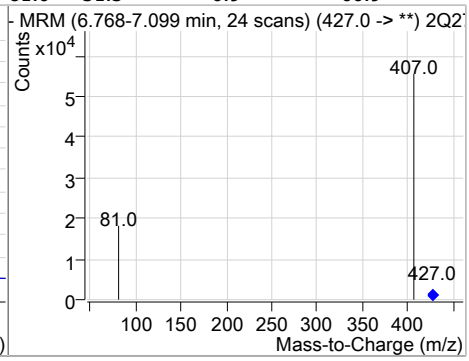


Perfluorinated Compounds by LC/MS/MS

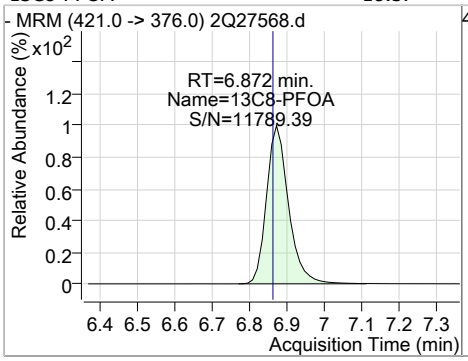
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.16	6.86	0.00	41708	427.0 -> 81.0	31.3	0.9	60.9

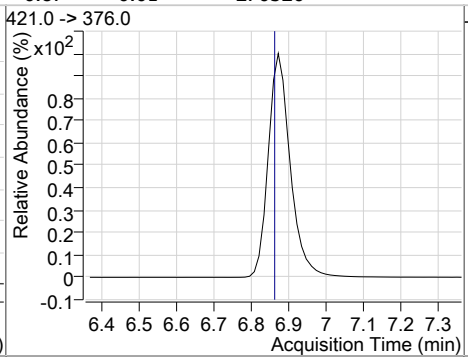


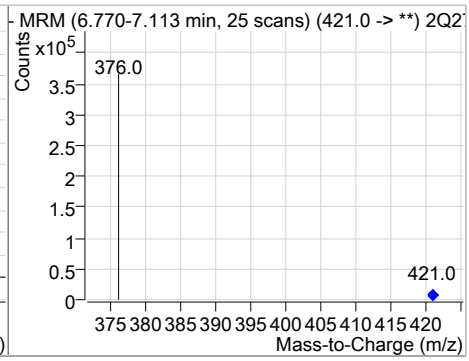




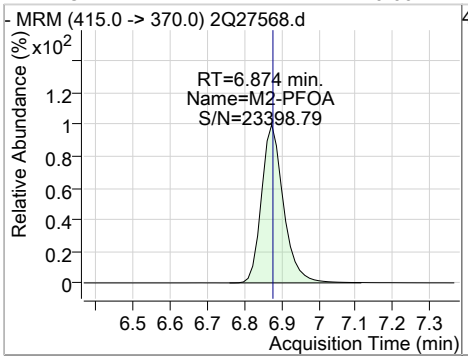
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.57	6.87	0.01	276526				

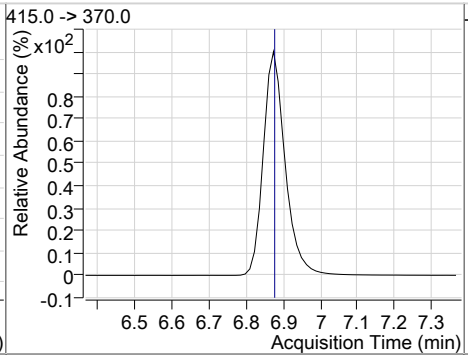


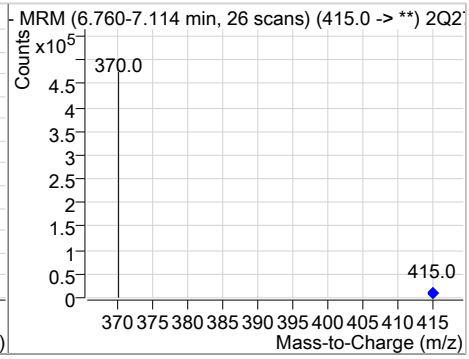




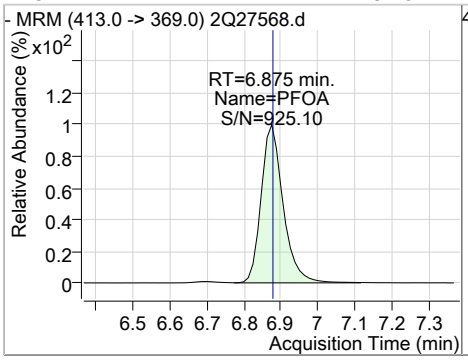
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.87	0.01	358631				

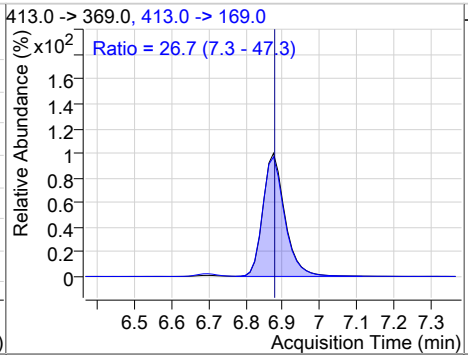


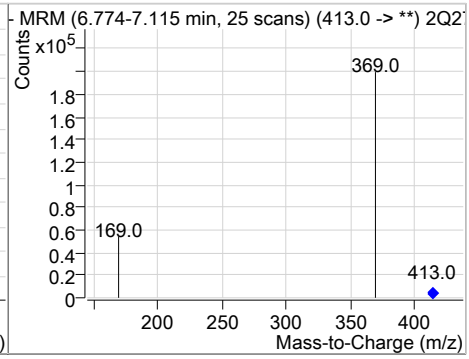




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.78	6.88	0.01	149686	413.0 -> 169.0	26.7	7.3	47.3

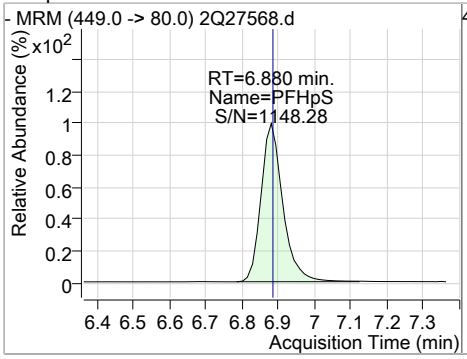


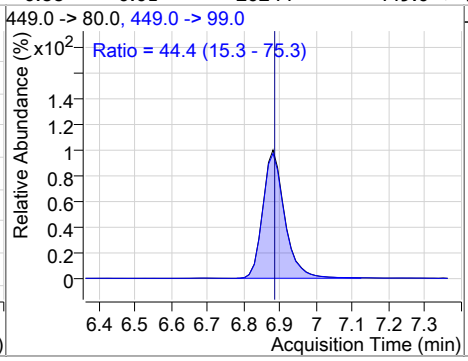


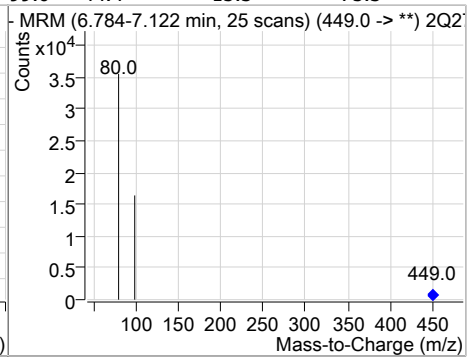


Perfluorinated Compounds by LC/MS/MS

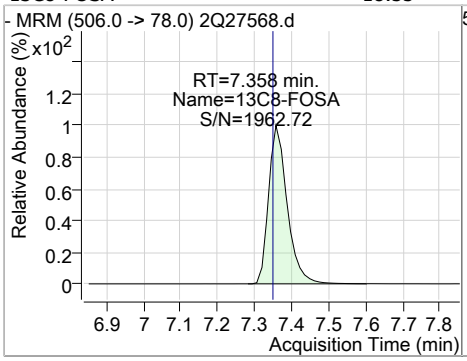
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.57	6.88	0.01	26244	449.0 -> 99.0	44.4	15.3	75.3

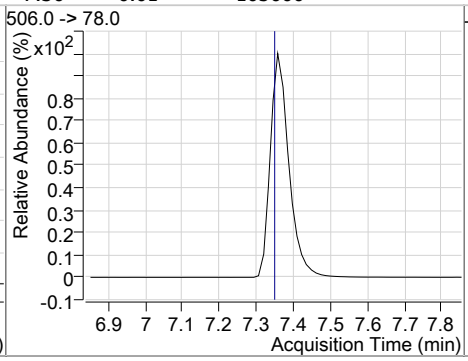


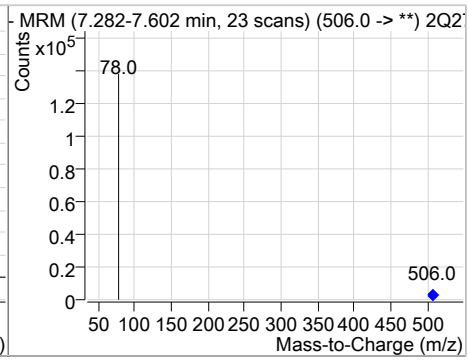




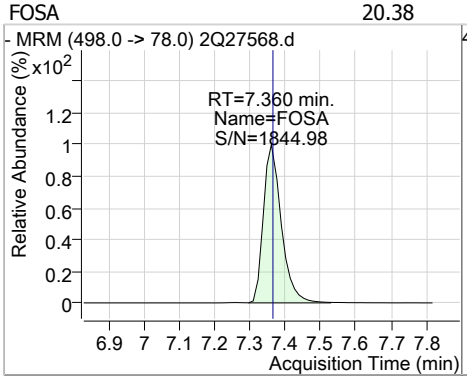
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.55	7.36	0.01	105660				

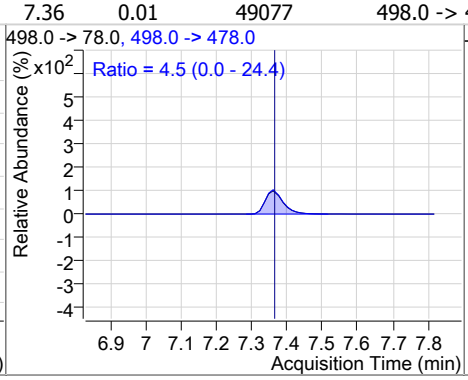


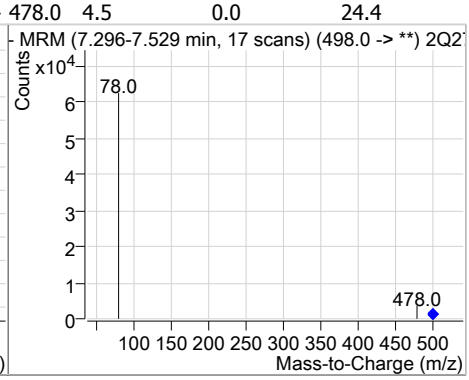




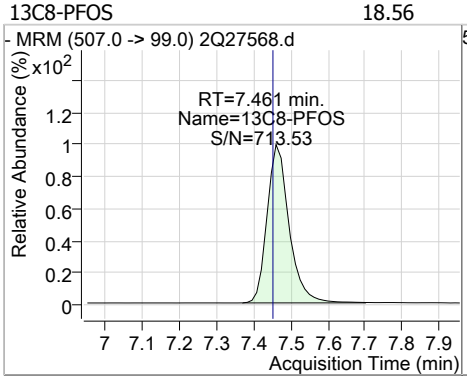
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.38	7.36	0.01	49077	498.0 -> 478.0	4.5	0.0	24.4

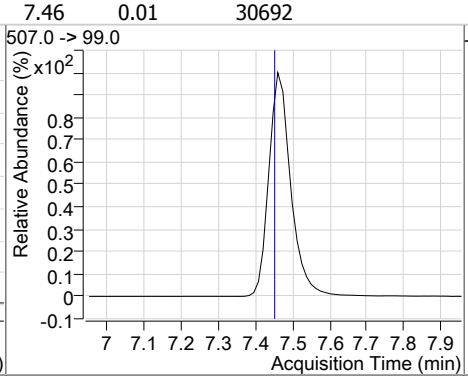


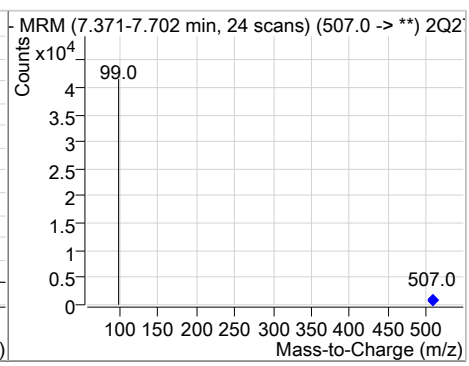




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.56	7.46	0.01	30692				

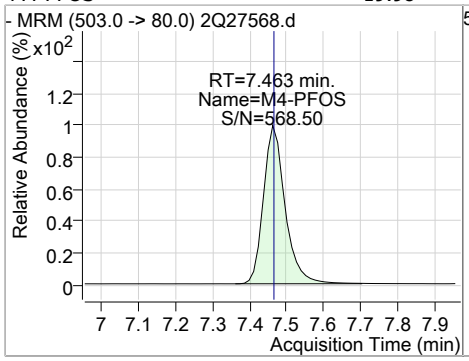


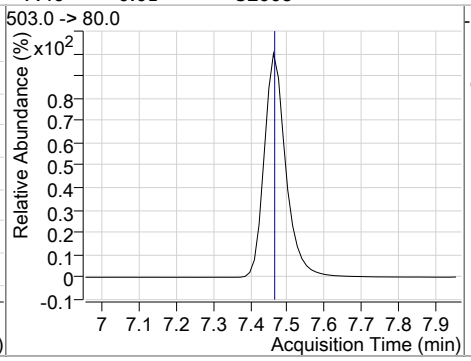


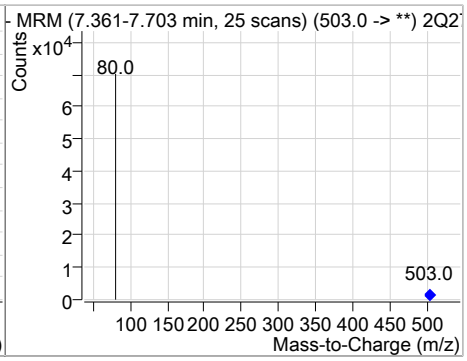


Perfluorinated Compounds by LC/MS/MS

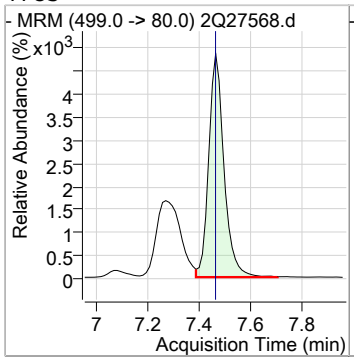
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.46	0.01	52608				

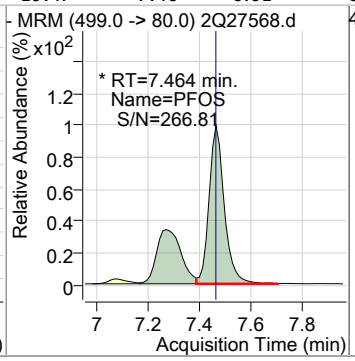


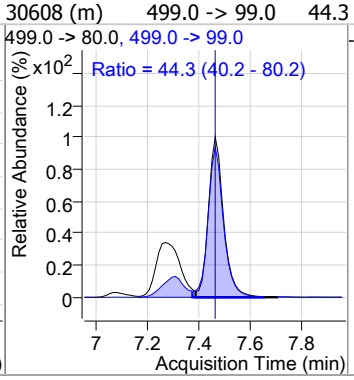


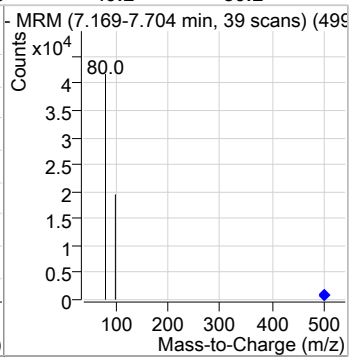


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.47	7.46	0.01	30608 (m)	499.0 -> 99.0	44.3	40.2	80.2

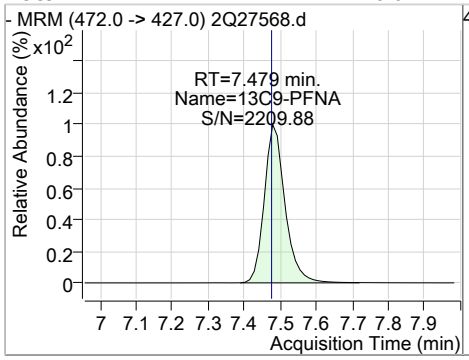


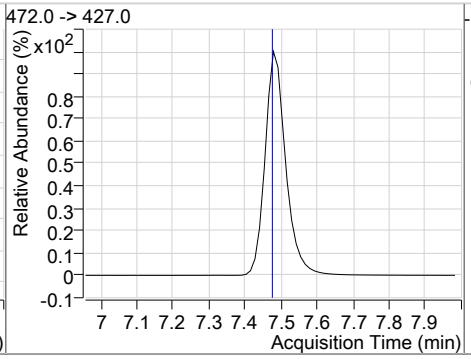


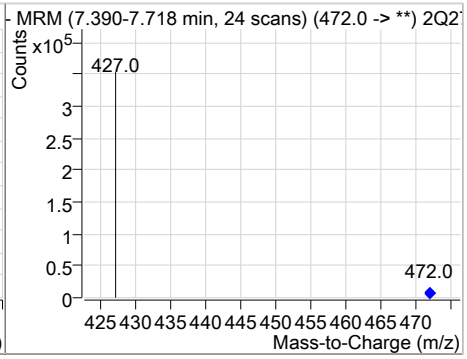




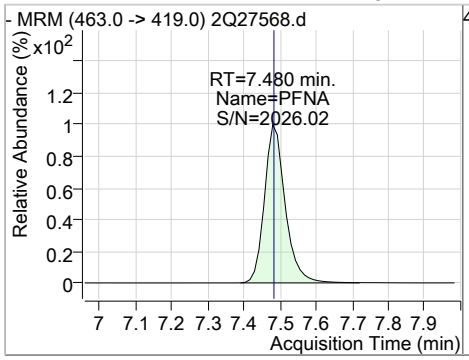
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.64	7.48	0.00	267180				

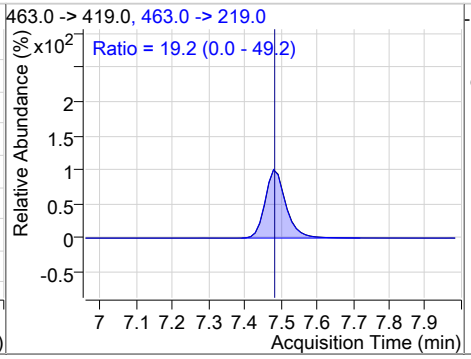


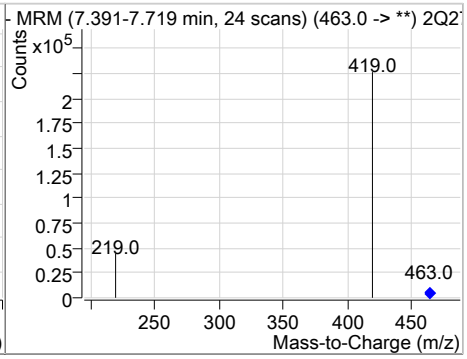




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.77	7.48	0.00	171057	463.0 -> 219.0	19.2	0.0	49.2

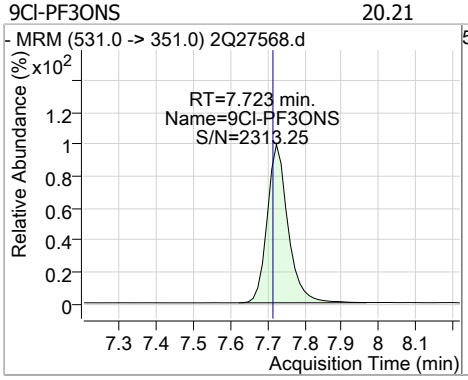


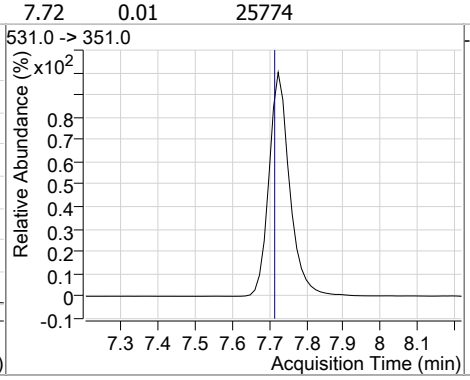


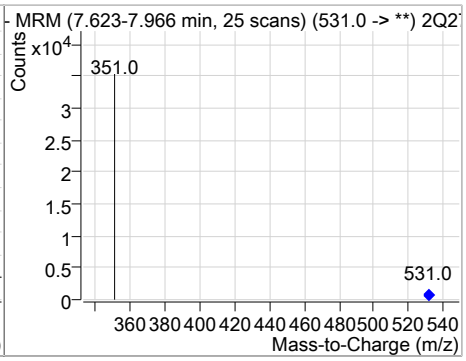


Perfluorinated Compounds by LC/MS/MS

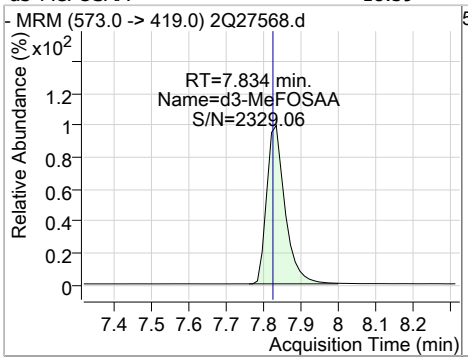
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	20.21	7.72	0.01	25774				

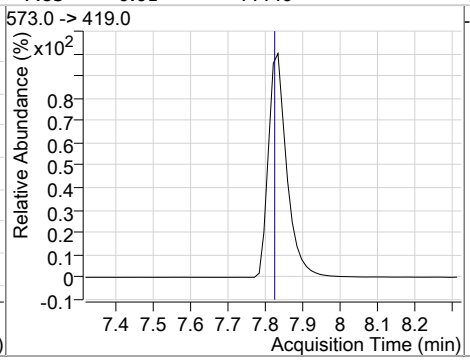


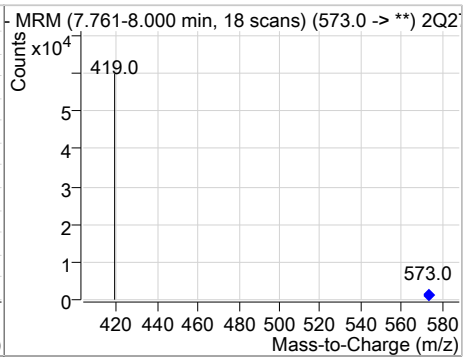




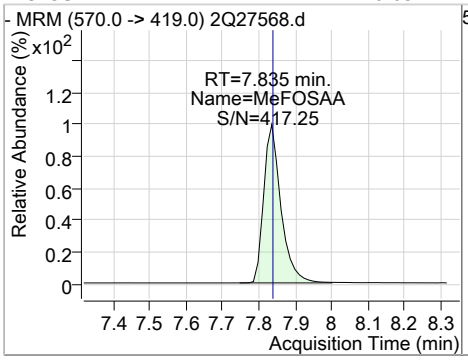
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.59	7.83	0.01	44446				

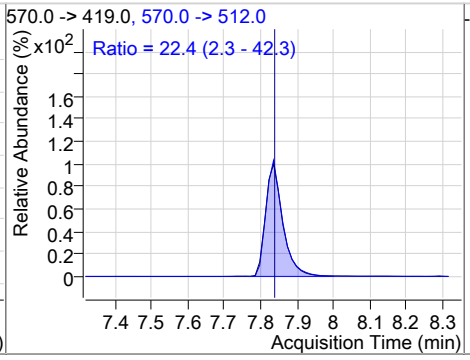


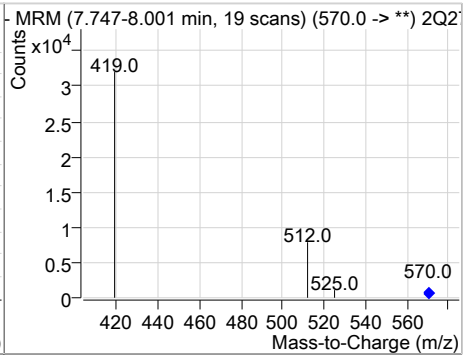




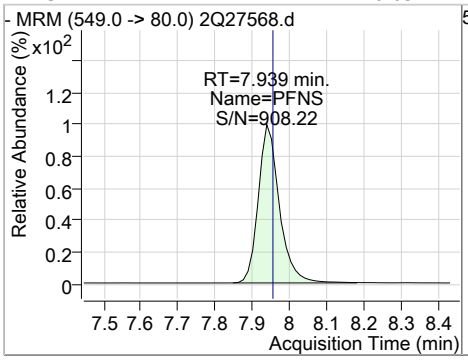
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.05	7.84	0.01	23679	570.0 -> 512.0	22.4	2.3	42.3

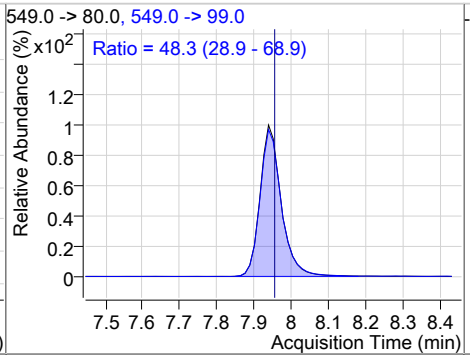


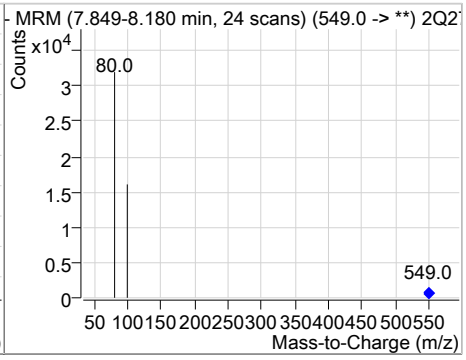




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.63	7.94	0.00	23676	549.0 -> 99.0	48.3	28.9	68.9

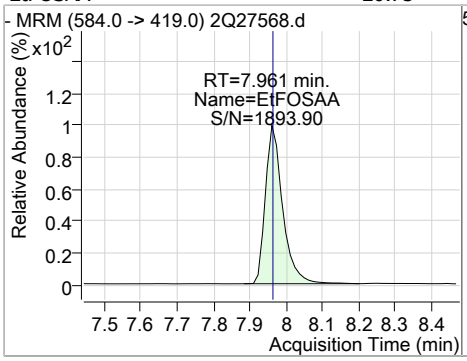


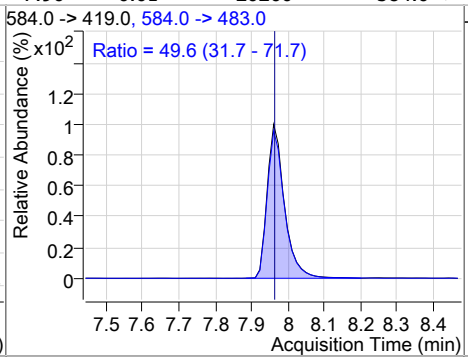


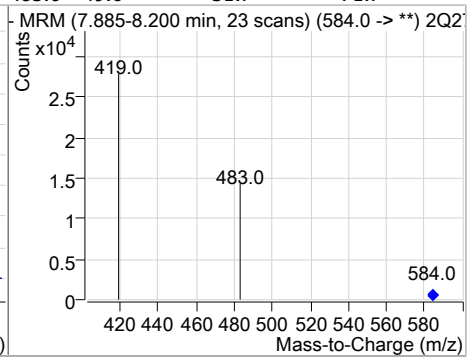


Perfluorinated Compounds by LC/MS/MS

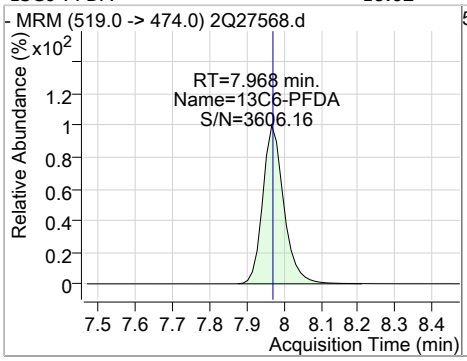
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.73	7.96	0.01	20260	584.0 -> 483.0	49.6	31.7	71.7

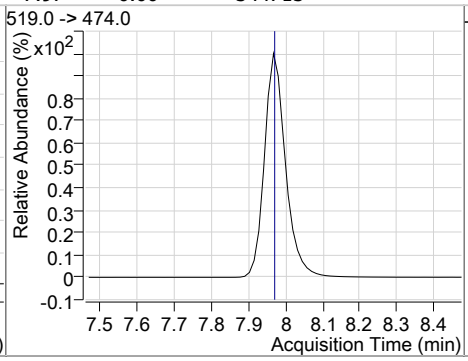


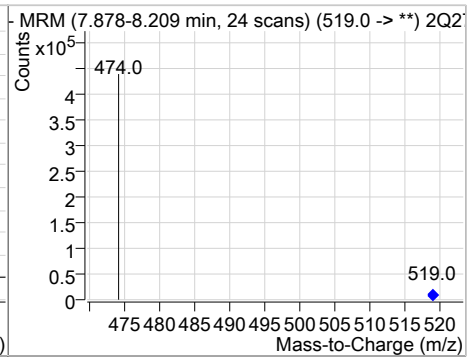




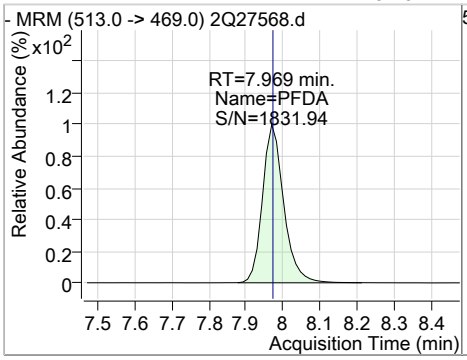
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.62	7.97	0.00	344713				

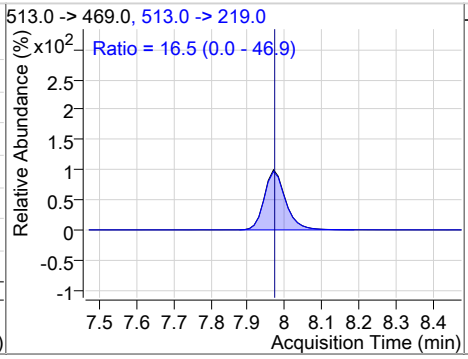


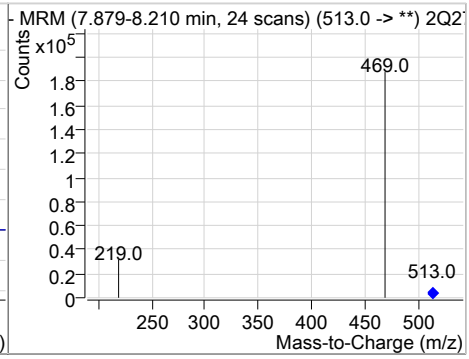




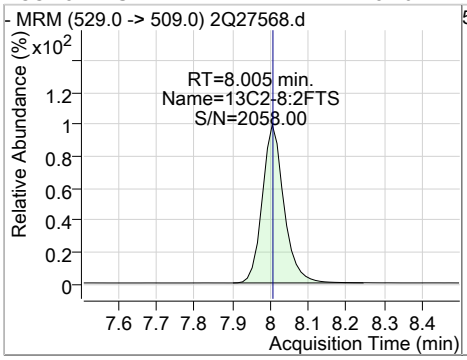
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.10	7.97	0.00	146399	513.0 -> 219.0	16.5	0.0	46.9

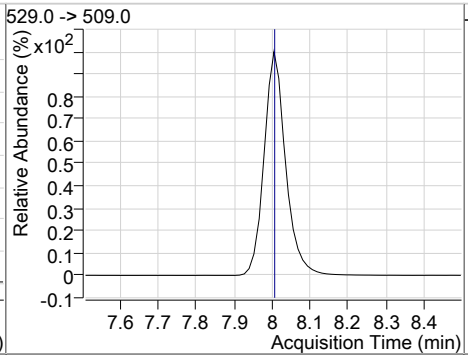


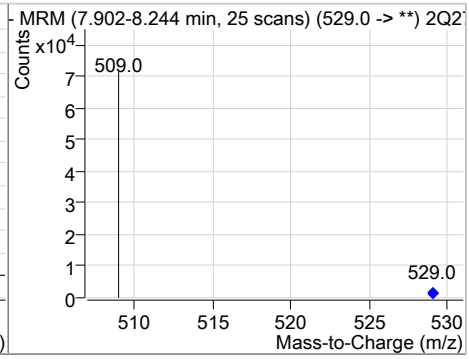




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.70	8.01	0.00	53081				

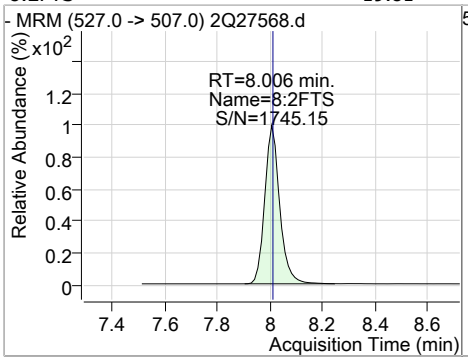


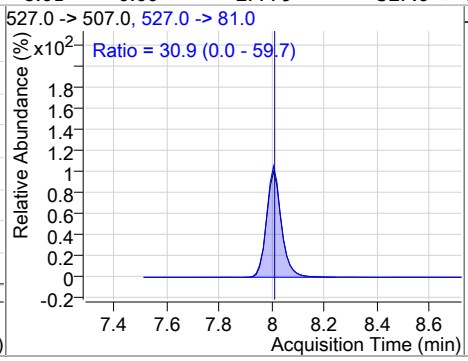


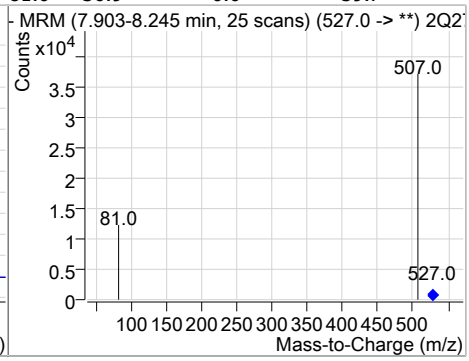


Perfluorinated Compounds by LC/MS/MS

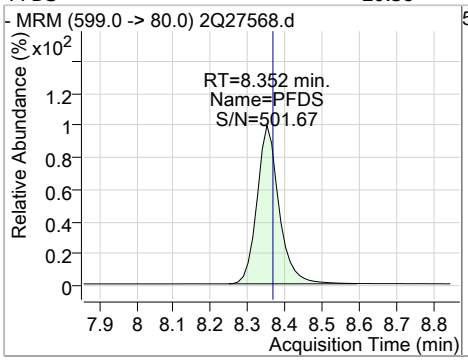
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.81	8.01	0.00	27779	527.0 -> 81.0	30.9	0.0	59.7

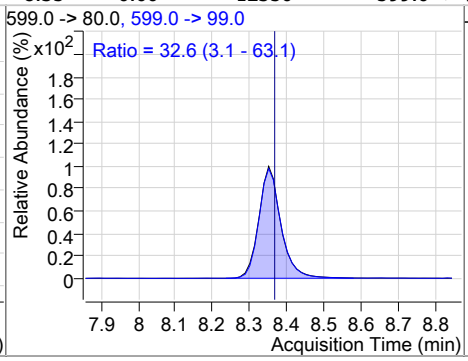


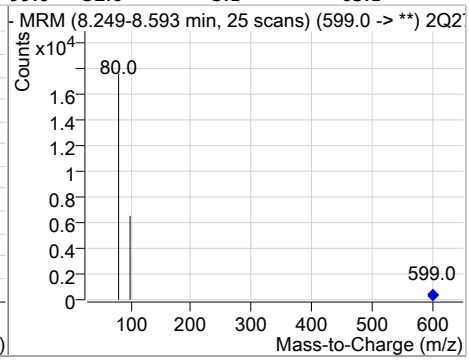




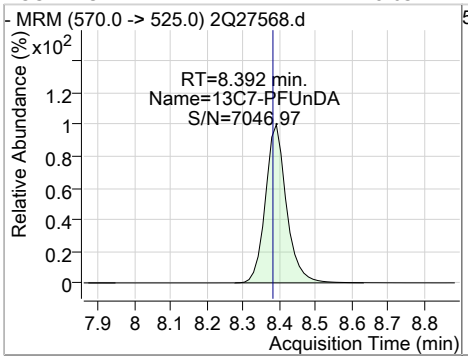
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.38	8.35	0.00	12350	599.0 -> 99.0	32.6	3.1	63.1

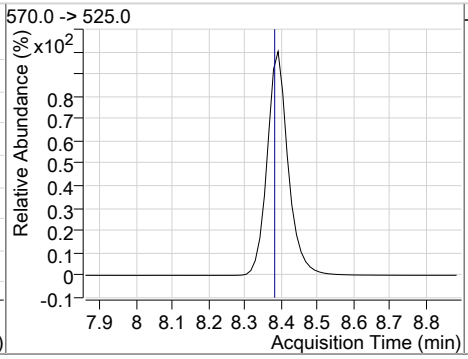


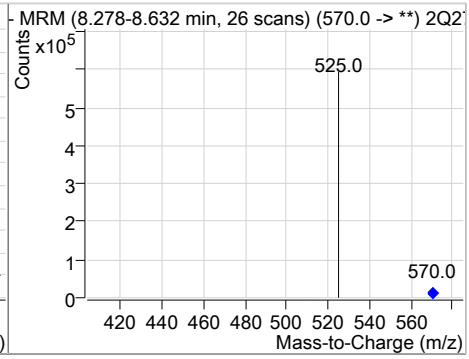




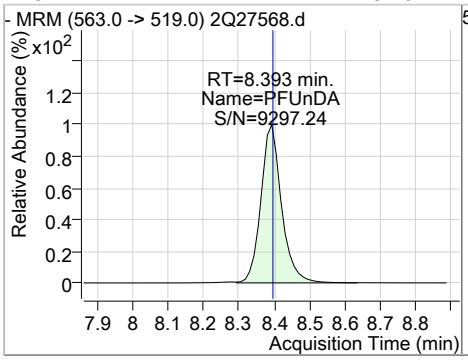
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.63	8.39	0.01	446179				

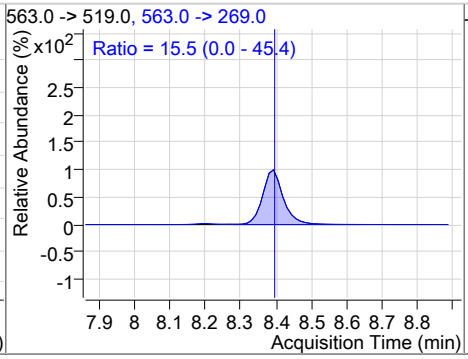


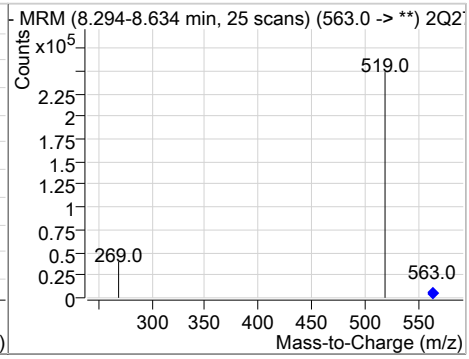




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.78	8.39	0.01	186925	563.0 -> 269.0	15.5	0.0	45.4

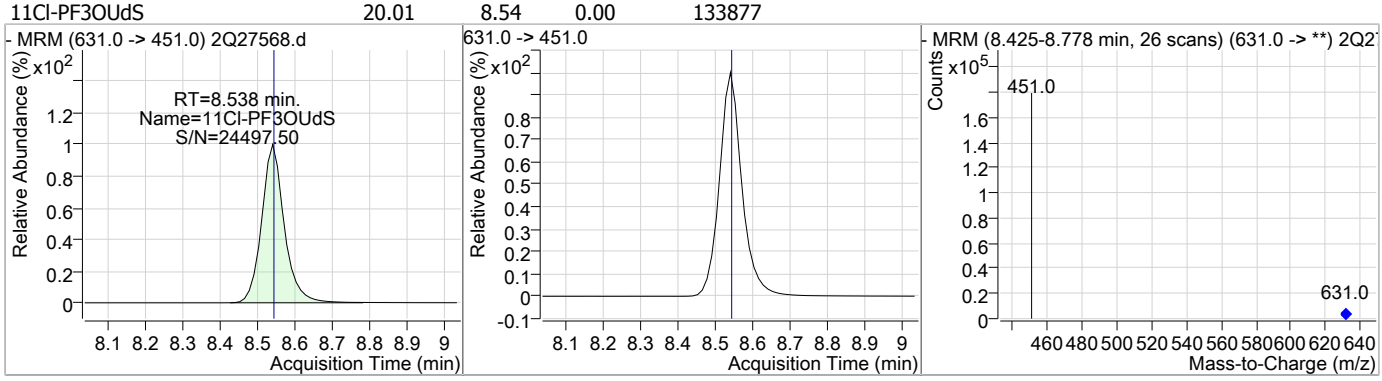




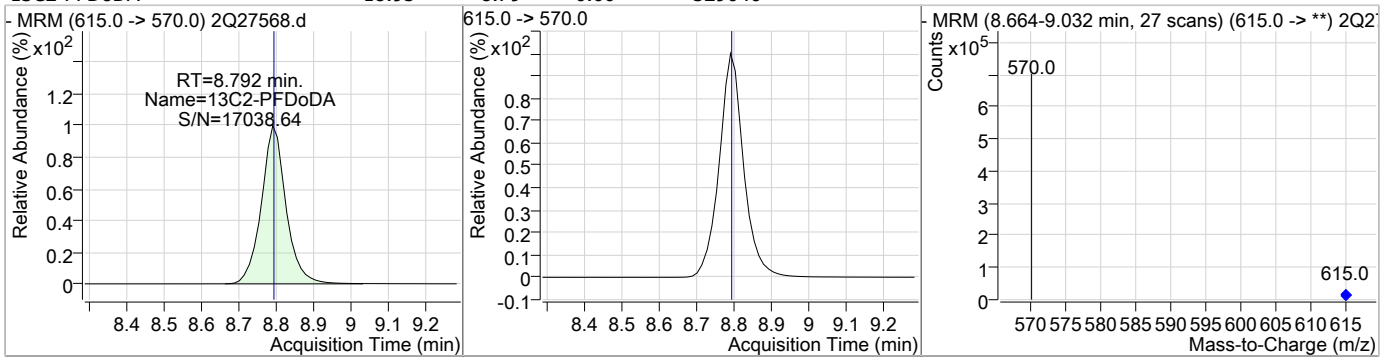


Perfluorinated Compounds by LC/MS/MS

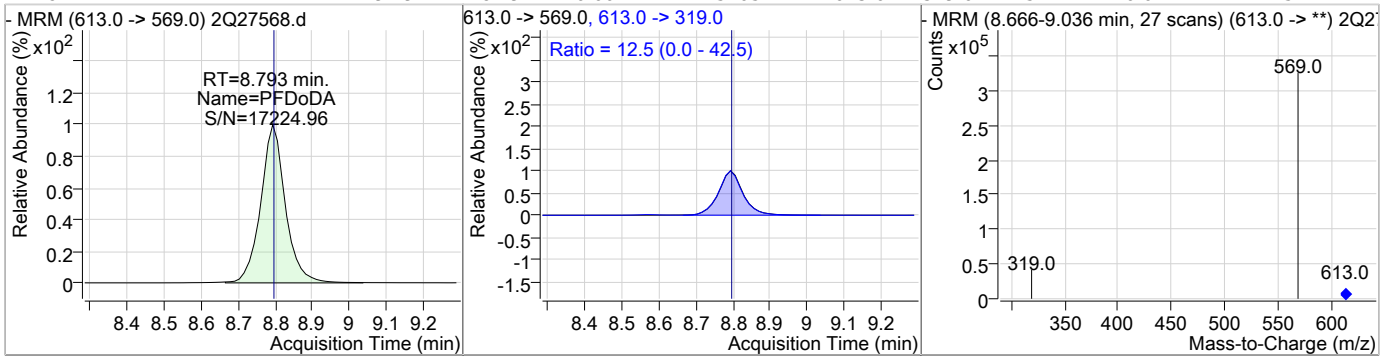
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	20.01	8.54	0.00	133877				



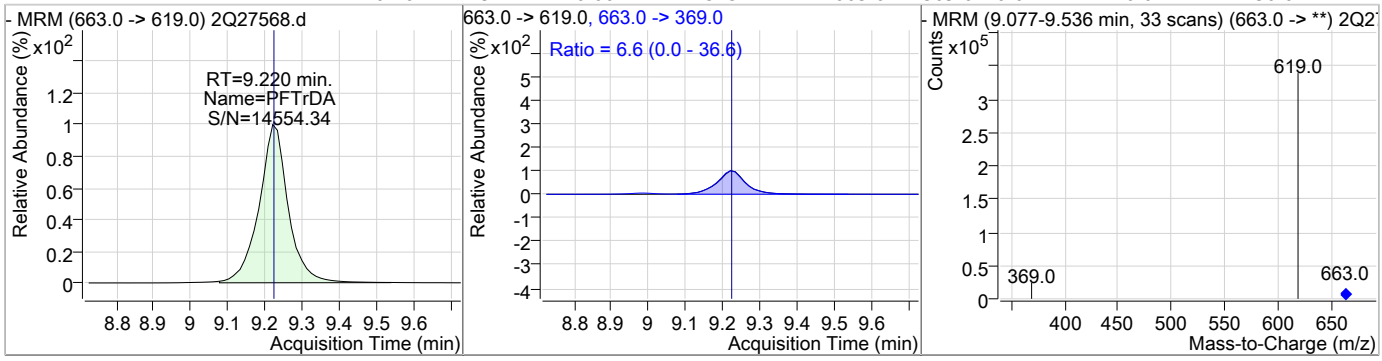
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.95	8.79	0.00	529046				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.79	8.79	0.00	245205	613.0 -> 319.0	12.5	0.0	42.5

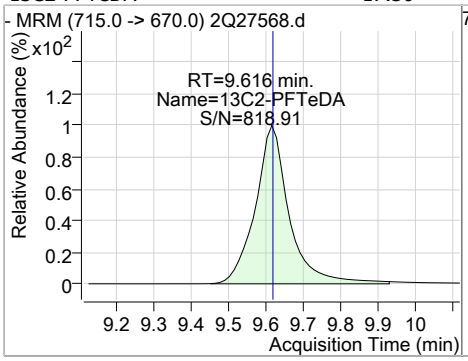


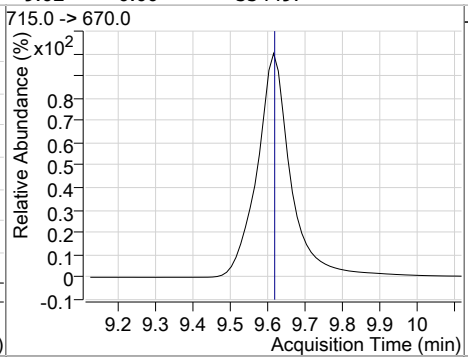
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.26	9.22	0.00	254547	663.0 -> 369.0	6.6	0.0	36.6

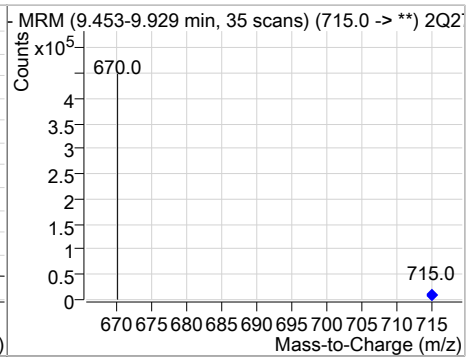


Perfluorinated Compounds by LC/MS/MS

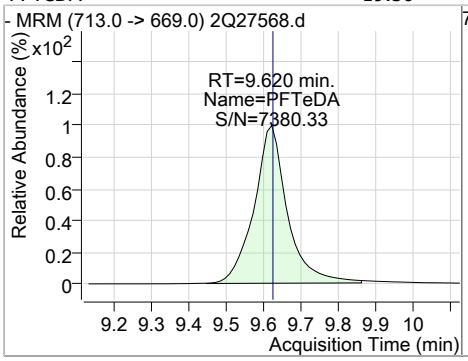
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.30	9.62	0.00	334497				

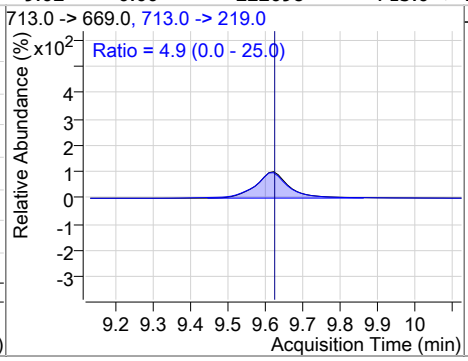


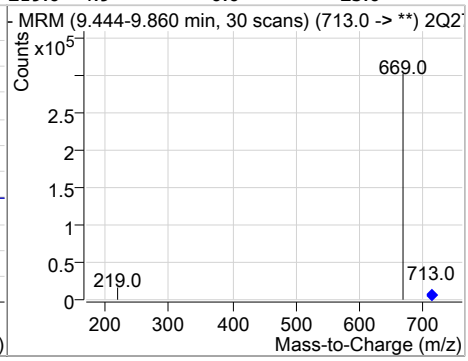




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.50	9.62	0.00	222698	713.0 -> 219.0	4.9	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-ICC439
Lab FileID: 2Q27568.D
Injection Time: 03/13/19 12:03
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

2Q27569.D

Manual Integrations APPROVED (compounds with "m" flag)

Mike Eger 03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27569.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 12:18:56 PM
Sample Name : ic439-50
Vial : Vial 8
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

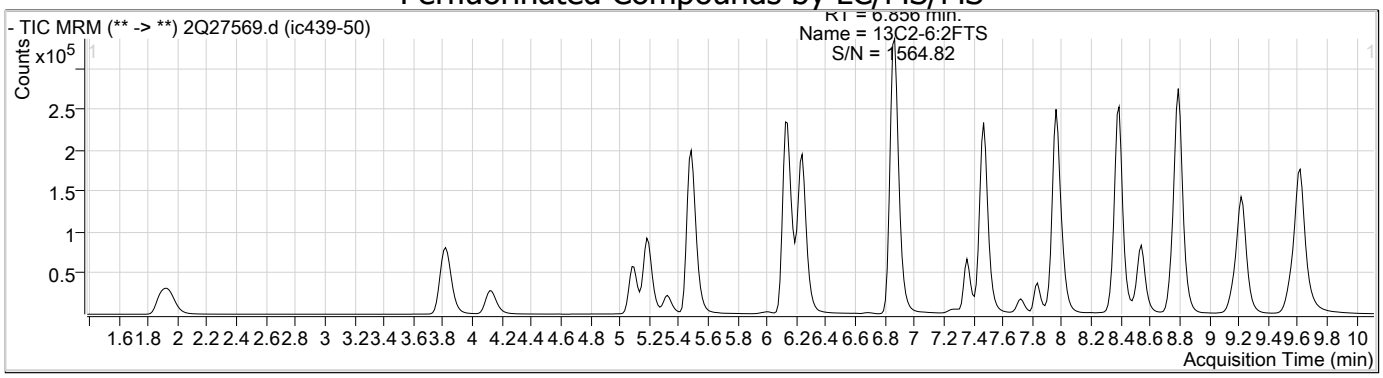
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	363435	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	53630	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	168375	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	138757	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	198032	20.00	µg/L	0.013
M4-PFHpA	6.129	367.0 -> 322.0	276183	20.00	µg/L	0.011
M8-PFOA	6.872	421.0 -> 376.0	279142	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	273073	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	347540	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	459524	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	543981	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	384749	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	104438	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	23433	20.00	µg/L	0.038
M3-PFHxS	6.174	402.0 -> 99.0	25941	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	31433	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	87058	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	88401	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	59274	20.00	µg/L	0.001
M3-MeFOSAA	7.835	573.0 -> 419.0	45705	20.00	µg/L	0.012
M3-HFPO-DA	5.481	287.0 -> 169.0	184322	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	86860	20.92	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C2-6:2FTS	6.856	429.0 -> 409.0	88460	20.29	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C2-8:2FTS	8.005	529.0 -> 509.0	59277	20.88	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C2-PFDoDA	8.792	615.0 -> 570.0	543604	19.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C2-PFTeDA	9.616	715.0 -> 670.0	380668	19.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C3-PFBS	4.130	302.0 -> 99.0	23384	19.31	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C3-PFHxS	6.174	402.0 -> 99.0	25932	19.04	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
13C4-PFBA	1.927	217.0 -> 172.0	167482	19.32	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C4-PFHpA	6.129	367.0 -> 322.0	275910	19.16	µg/L	0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%		
13C5-PFHxA	5.189	318.0 -> 273.0	198142	19.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C5-PFPeA	3.824	268.0 -> 223.0	138596	19.33	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C6-PFDA	7.968	519.0 -> 474.0	347571	18.77	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

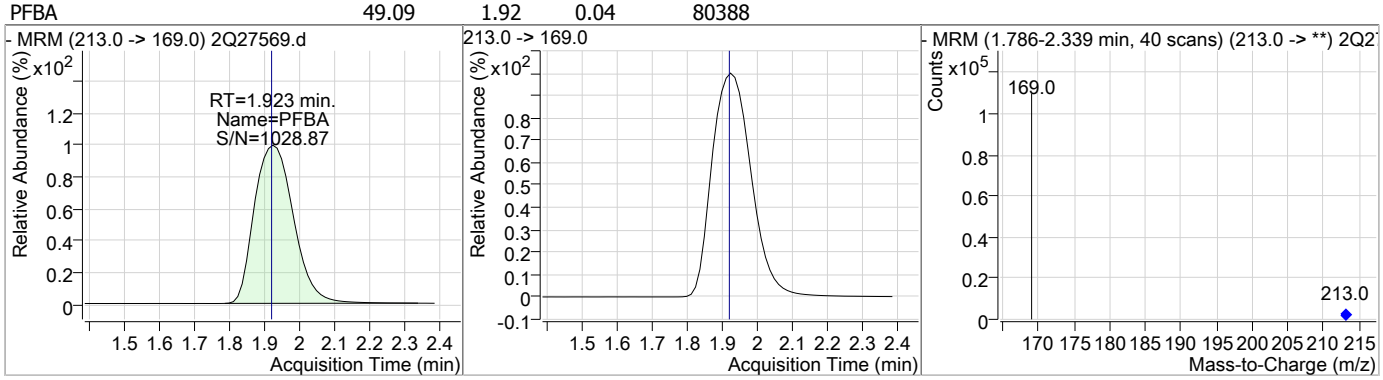
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.9%		
13C7-PFUnDA	8.392	570.0 -> 525.0	459344	19.17 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C8-FOSA	7.358	506.0 -> 78.0	104400	18.33 µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.7%		
13C8-PFOA	6.872	421.0 -> 376.0	278874	18.73 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%		
13C8-PFOS	7.461	507.0 -> 99.0	31469	19.03 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%		
13C9-PFNA	7.479	472.0 -> 427.0	272836	19.04 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
d3-MeFOSAA	7.835	573.0 -> 419.0	45713	19.12 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%		
M2-PFOA	6.874	415.0 -> 370.0	363921	20.01 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.463	503.0 -> 80.0	53650	20.00 µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.481	287.0 -> 169.0	184322	90.74 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 90.7%		
Target Compounds						**QValue**
4:2FTS	5.087	327.0 -> 307.0	118271	46.70 µg/L		100
6:2FTS	6.858	427.0 -> 407.0	104687	46.31 µg/L		100
8:2FTS	8.006	527.0 -> 507.0	72763	46.48 µg/L		99
EtFOSAA	7.961	584.0 -> 419.0	49063	49.63 µg/L		99
FOSA	7.360	498.0 -> 78.0	120930	49.77 µg/L		100
MeFOSAA	7.835	570.0 -> 419.0	61845	50.09 µg/L		98
PFBA	1.923	213.0 -> 169.0	80388	49.09 µg/L		100
PFBS	4.121	299.0 -> 80.0	95569	49.37 µg/L		100
PFDA	7.969	513.0 -> 469.0	362981	49.47 µg/L		100
PFDoDA	8.793	613.0 -> 569.0	629882	49.41 µg/L		100
PFDS	8.352	599.0 -> 80.0	30897	49.75 µg/L		99
PFHpA	6.132	363.0 -> 319.0	634406	48.98 µg/L		100
PFHpS	6.880	449.0 -> 80.0	65679	49.99 µg/L		99
PFHxA	5.191	313.0 -> 269.0	167231	48.81 µg/L		99
PFHxS	6.176	399.0 -> 80.0	75581	48.92 µg/L	m	96
PFNA	7.480	463.0 -> 419.0	431648	48.82 µg/L		100
PFNS	7.939	549.0 -> 80.0	58855	50.02 µg/L		99
PFOA	6.875	413.0 -> 369.0	378465	49.57 µg/L		98
PFOS	7.464	499.0 -> 80.0	78901	48.96 µg/L	m	80
PFPeA	3.828	263.0 -> 219.0	308646	48.97 µg/L		100
PFPeS	5.321	349.0 -> 80.0	65832	49.68 µg/L		99
PFTeDA	9.620	713.0 -> 669.0	645380	49.14 µg/L		100
PFTrDA	9.220	663.0 -> 619.0	719250	49.78 µg/L		100
PFUnDA	8.393	563.0 -> 519.0	473763	48.70 µg/L		99
11Cl-PF3OUdS	8.538	631.0 -> 451.0	344357	50.01 µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	66560	50.02 µg/L		100
ADONA	6.241	377.0 -> 251.0	741692	50.03 µg/L		100
HFPO-DA	5.486	329.0 -> 169.0	562246	251.43 µg/L		98

 # = Qualifier out of range, m = manually integrated, + = Area summed

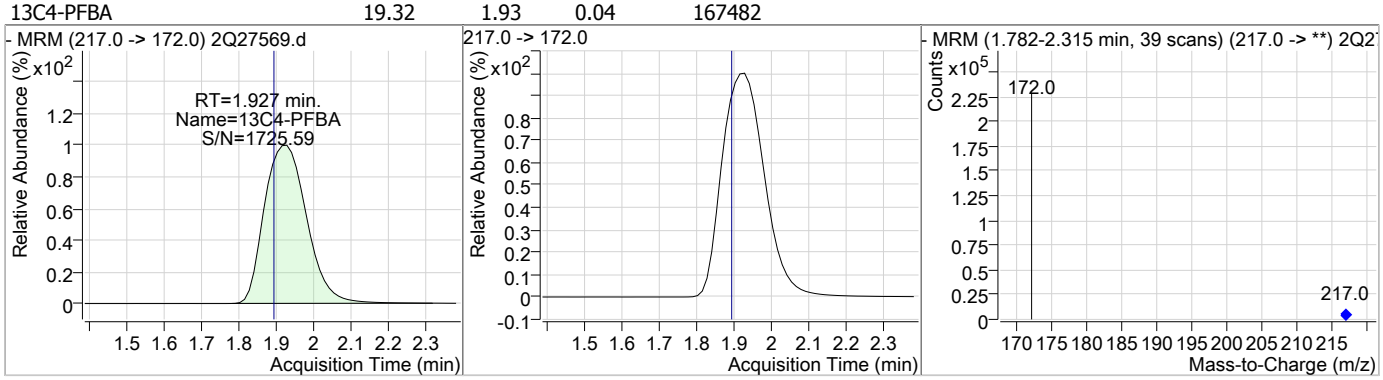
Perfluorinated Compounds by LC/MS/MS



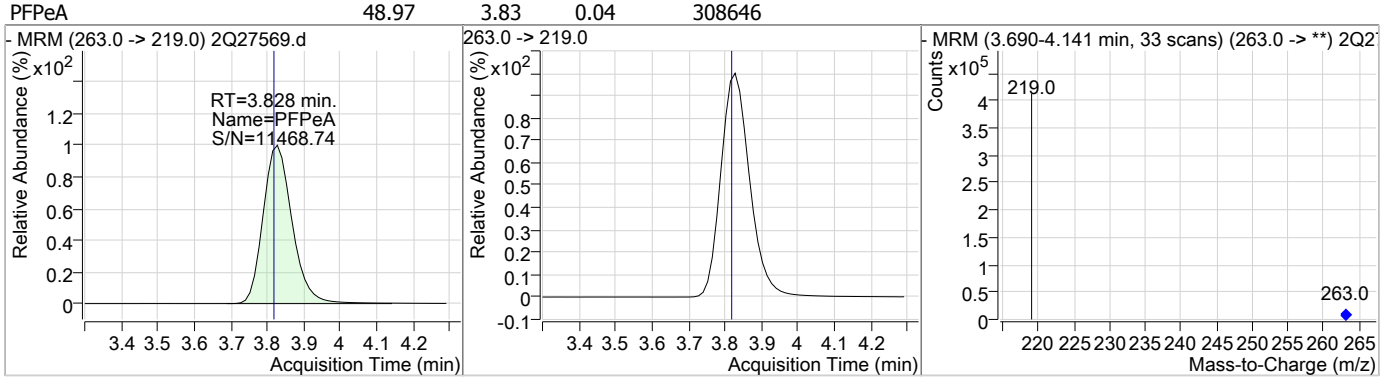
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	49.09	1.92	0.04	80388				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.32	1.93	0.04	167482				

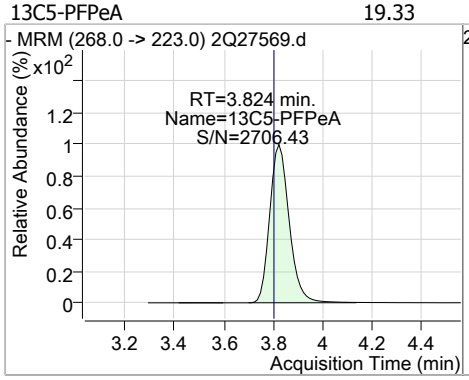


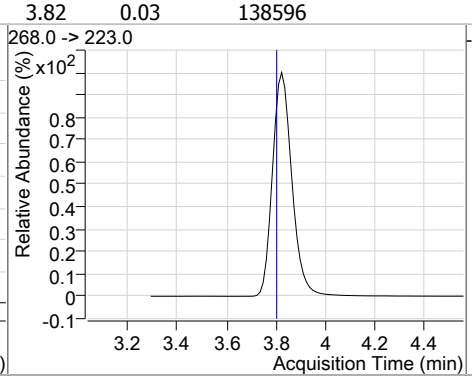
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	48.97	3.83	0.04	308646				

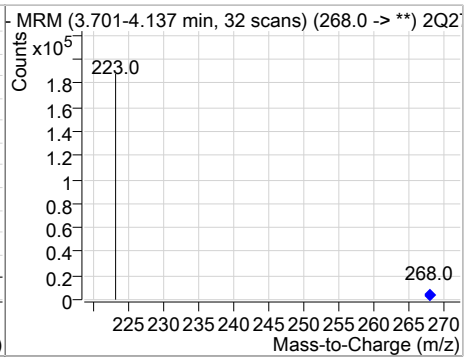


Perfluorinated Compounds by LC/MS/MS

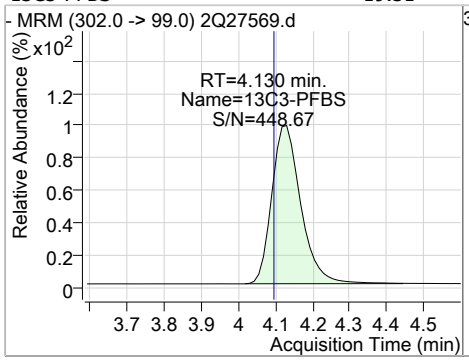
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.33	3.82	0.03	138596				

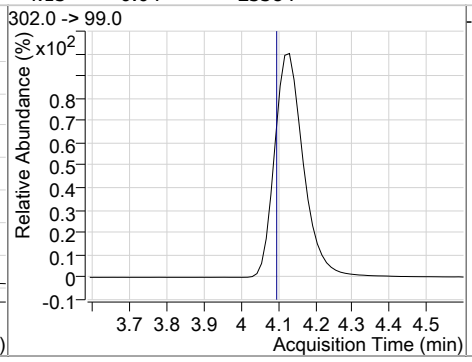


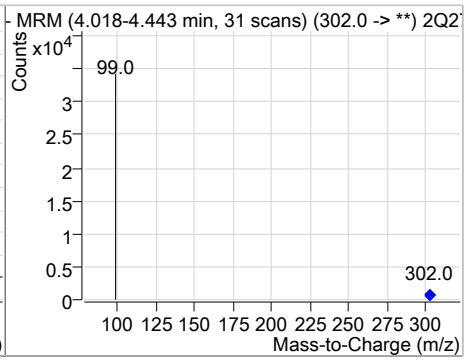




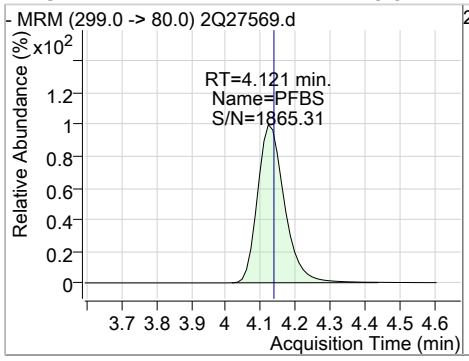
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.31	4.13	0.04	23384				

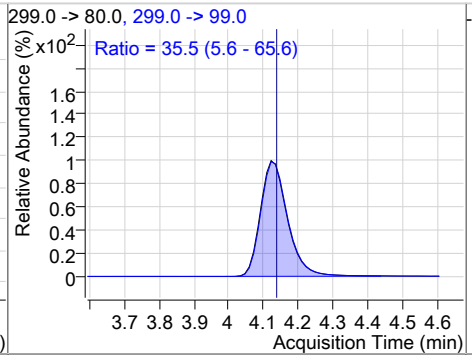


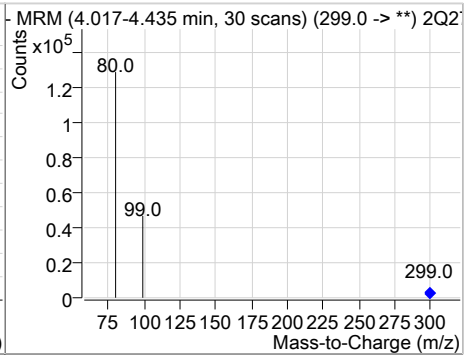




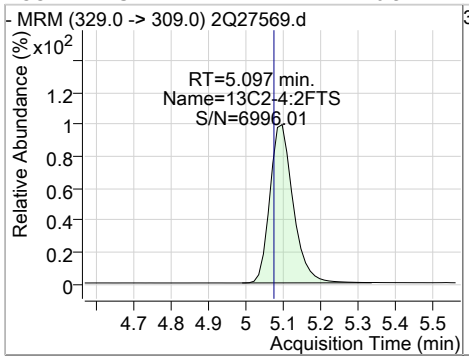
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	49.37	4.12	0.03	95569	299.0 -> 99.0	35.5	5.6	65.6

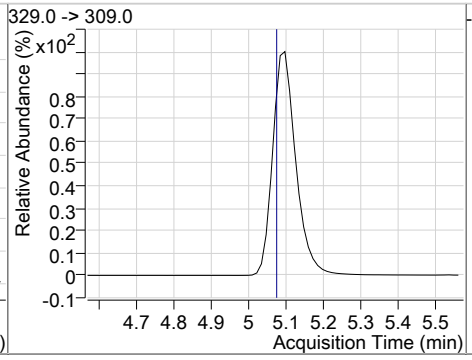


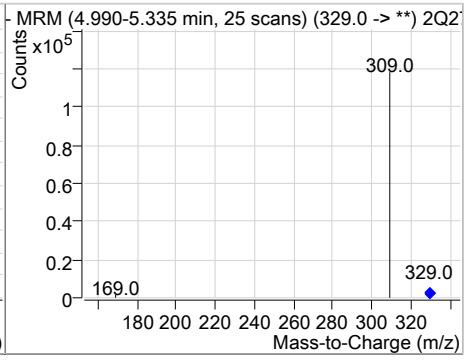




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.92	5.10	0.03	86860				

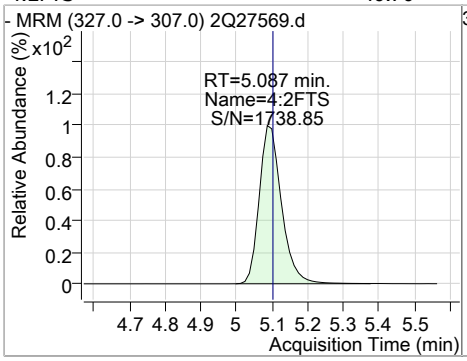


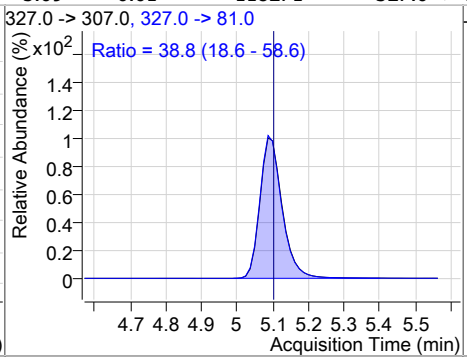


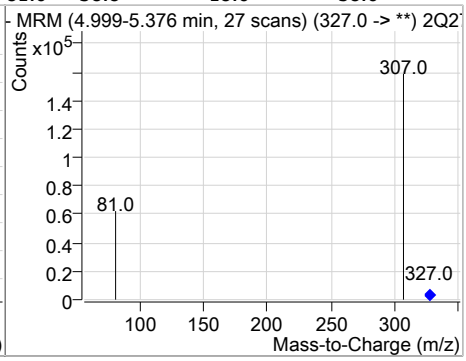


Perfluorinated Compounds by LC/MS/MS

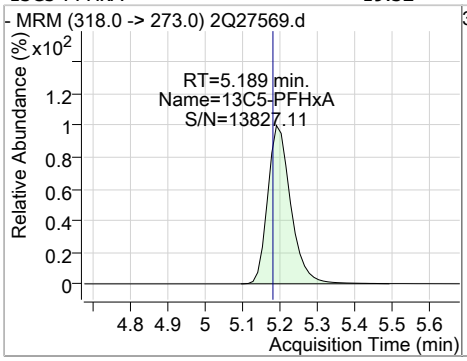
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	46.70	5.09	0.01	118271	327.0 -> 81.0	38.8	18.6	58.6

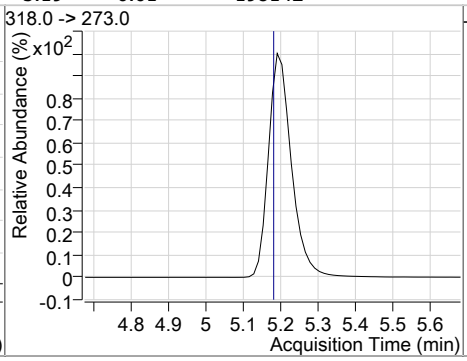


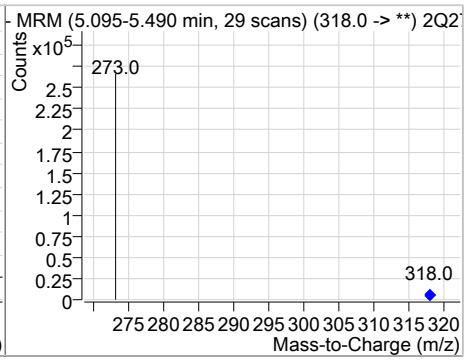




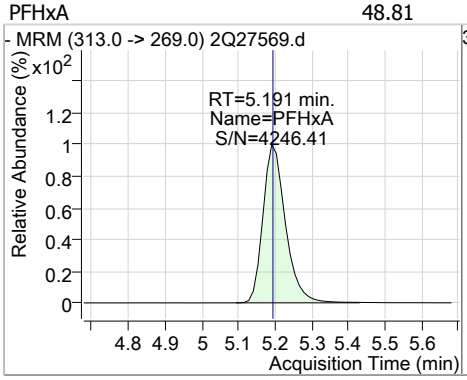
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.32	5.19	0.01	198142				

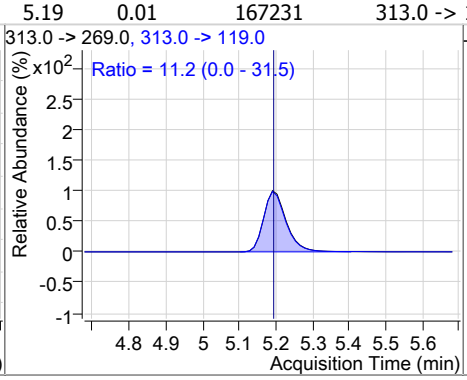


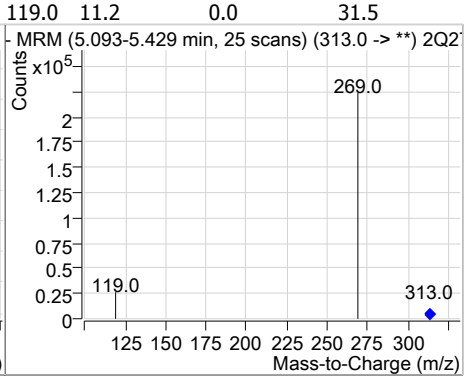




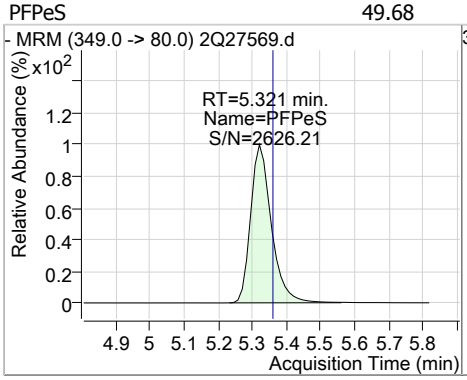
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	48.81	5.19	0.01	167231	313.0 -> 119.0	11.2	0.0	31.5

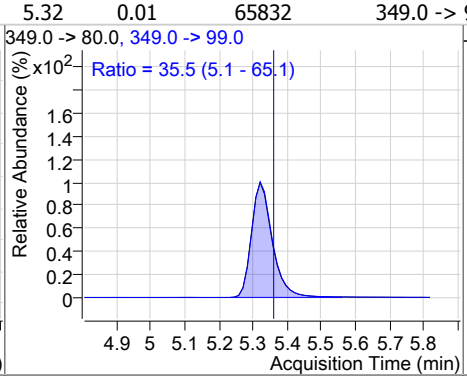


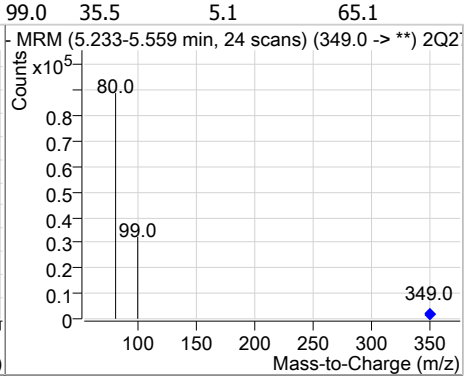




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	49.68	5.32	0.01	65832	349.0 -> 99.0	35.5	5.1	65.1

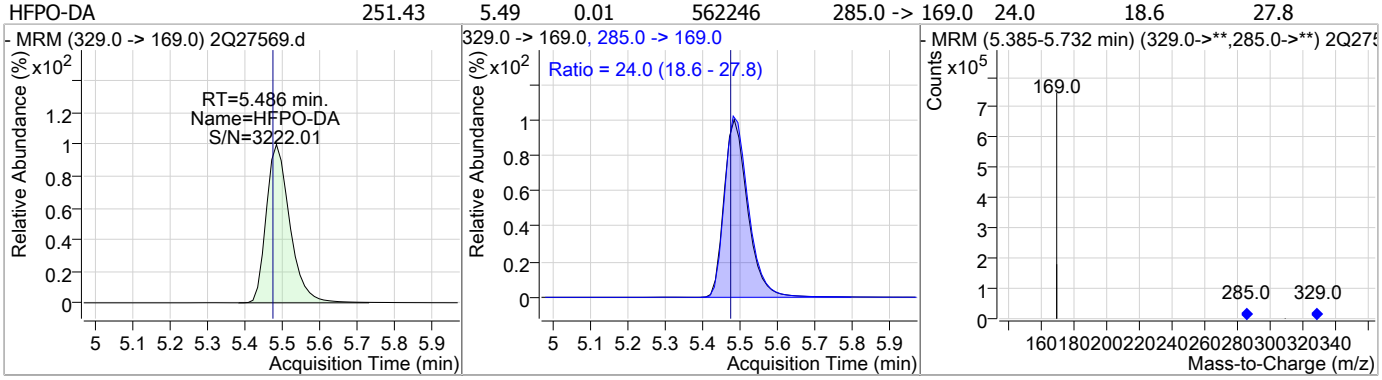




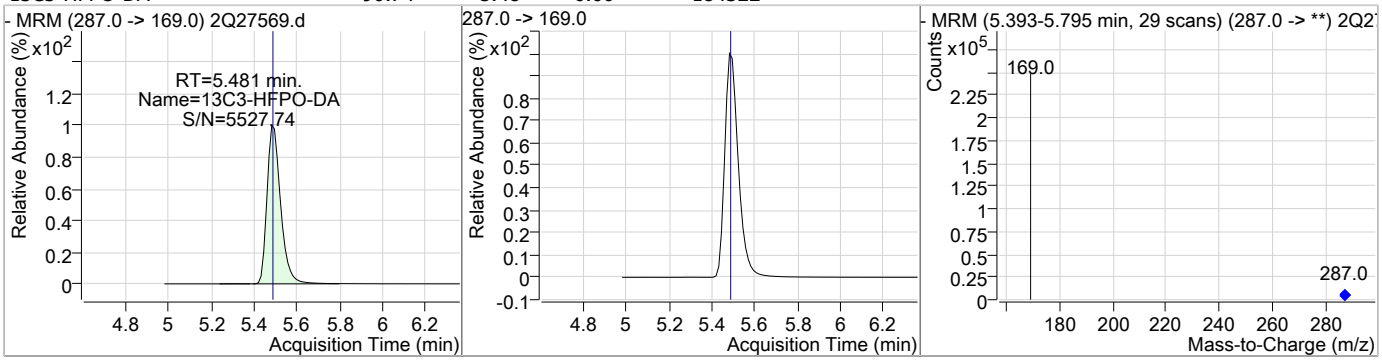


Perfluorinated Compounds by LC/MS/MS

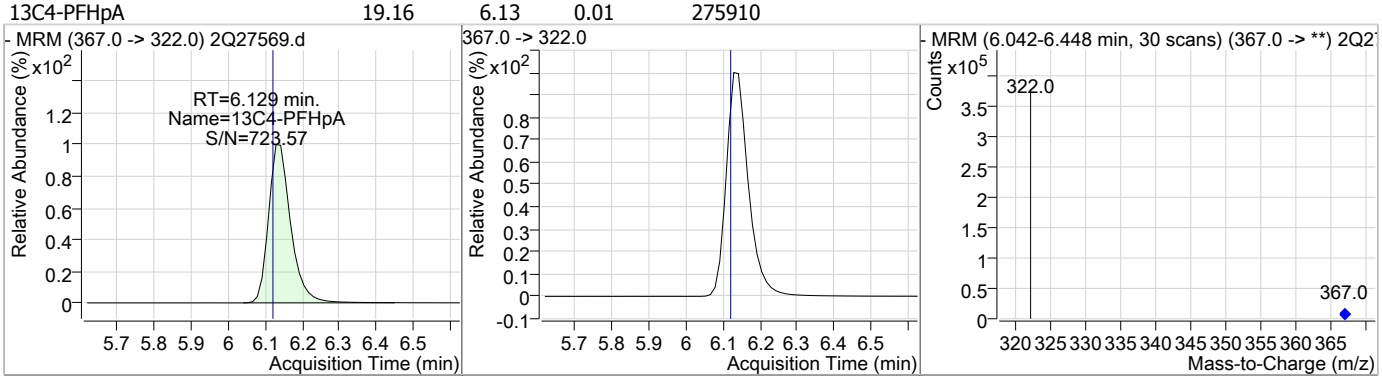
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	251.43	5.49	0.01	562246	285.0 -> 169.0	24.0	18.6	27.8



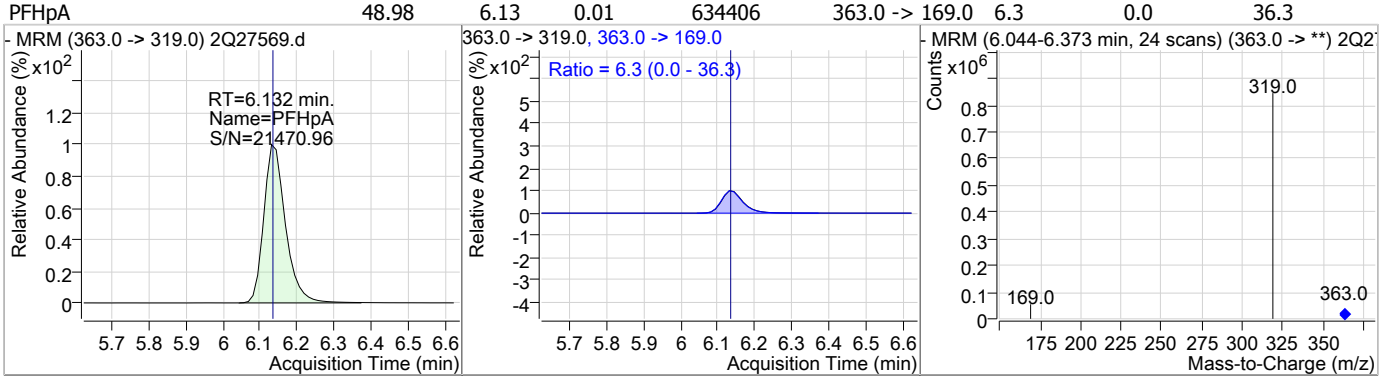
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	90.74	5.48	0.00	184322				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.16	6.13	0.01	275910				

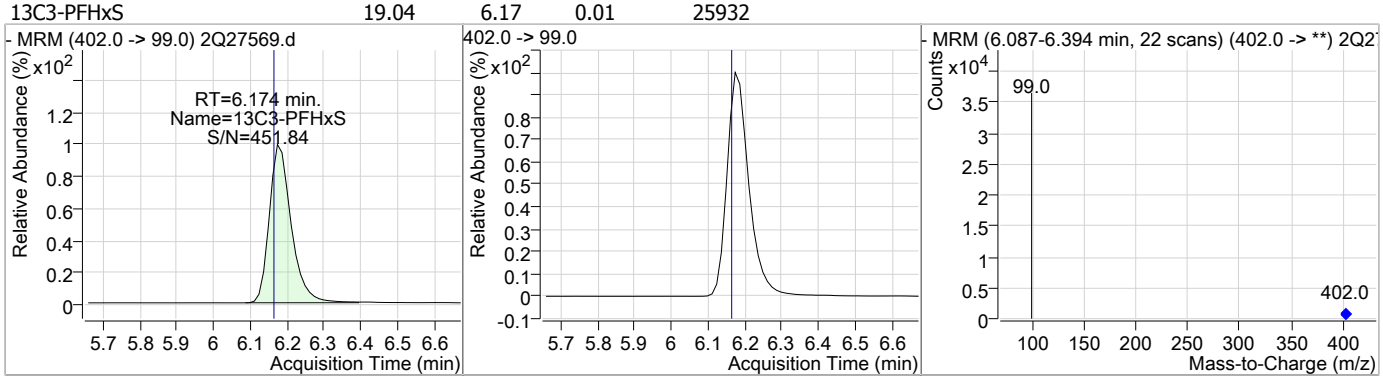


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	48.98	6.13	0.01	634406	363.0 -> 169.0	6.3	0.0	36.3

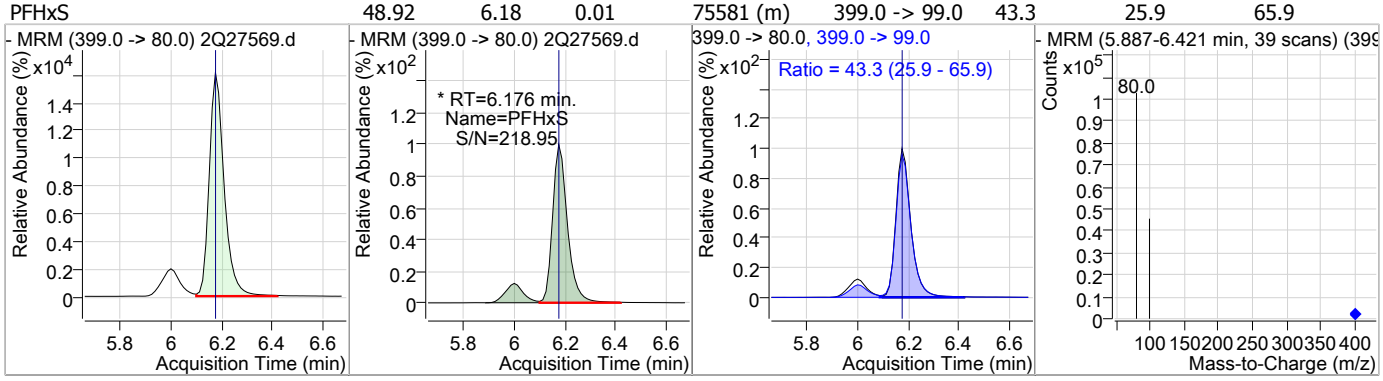


Perfluorinated Compounds by LC/MS/MS

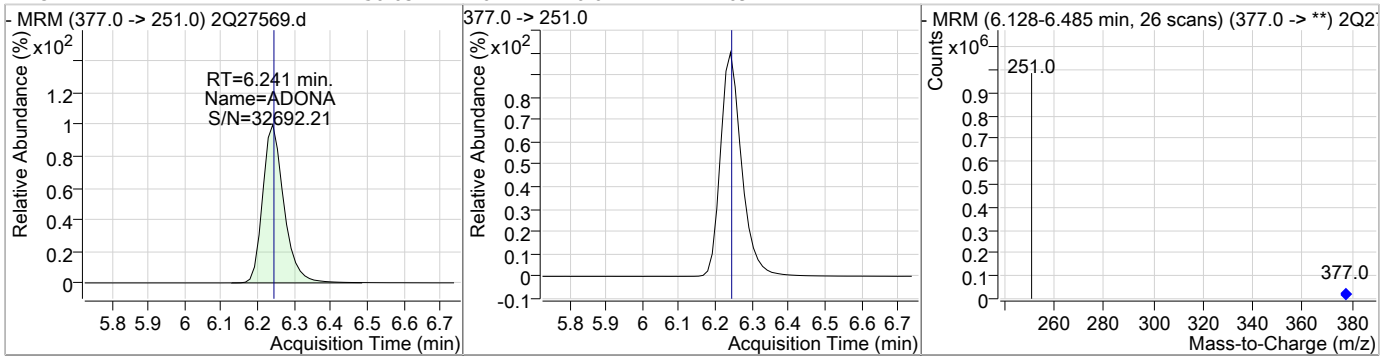
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.04	6.17	0.01	25932				



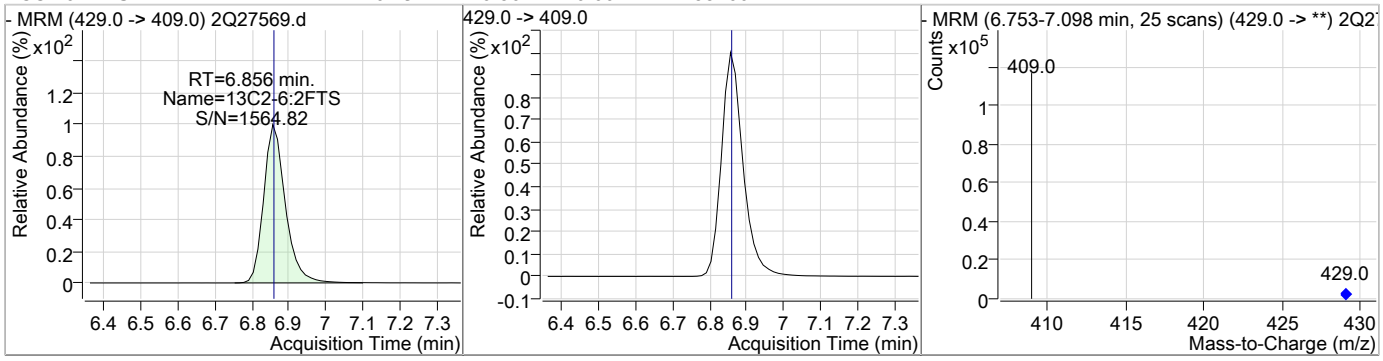
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	48.92	6.18	0.01	75581 (m)	399.0 -> 99.0	43.3	25.9	65.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	50.03	6.24	0.01	741692				

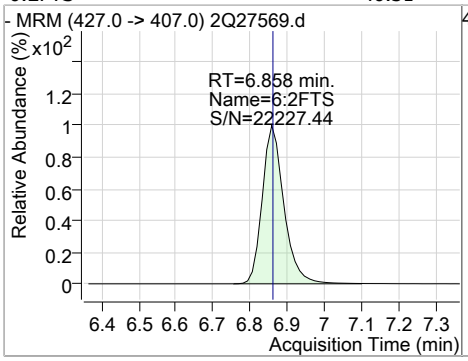


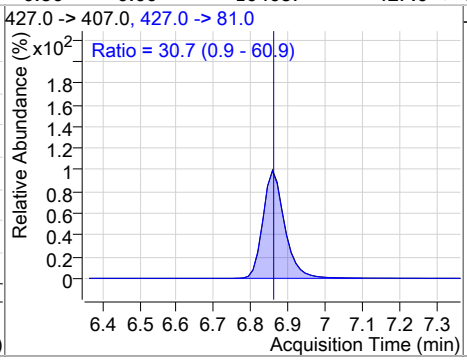
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.29	6.86	0.00	88460				

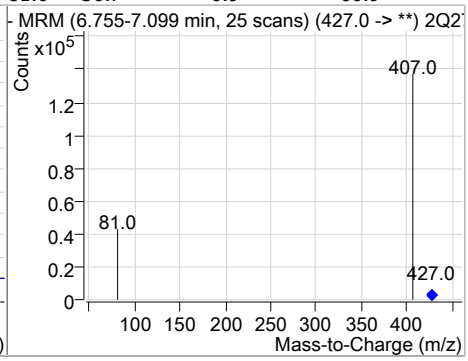


Perfluorinated Compounds by LC/MS/MS

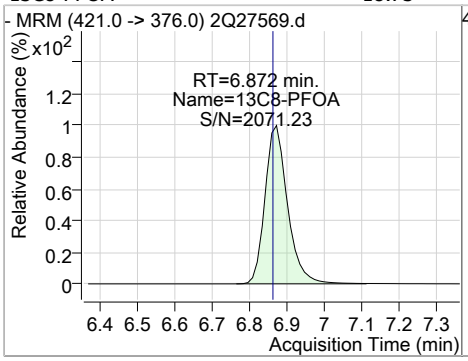
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	46.31	6.86	0.00	104687	427.0 -> 81.0	30.7	0.9	60.9

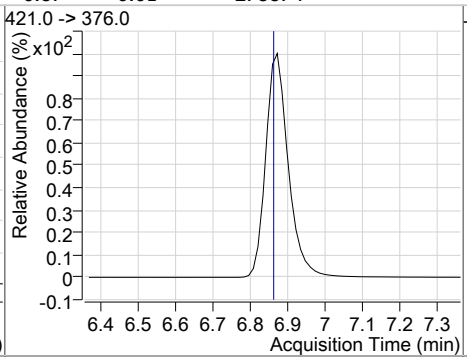


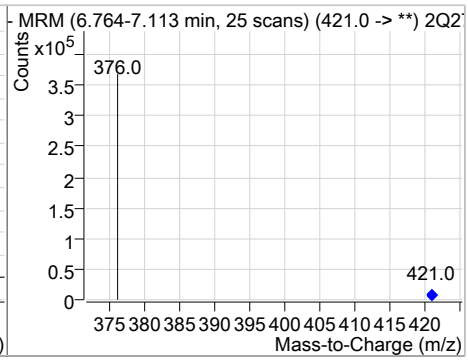




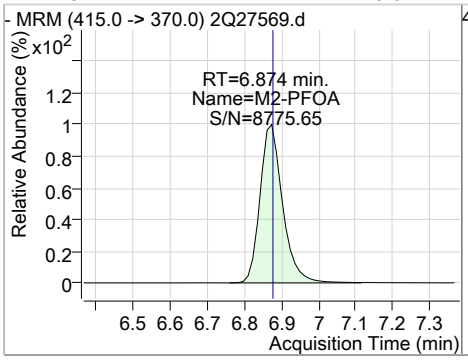
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.73	6.87	0.01	278874				

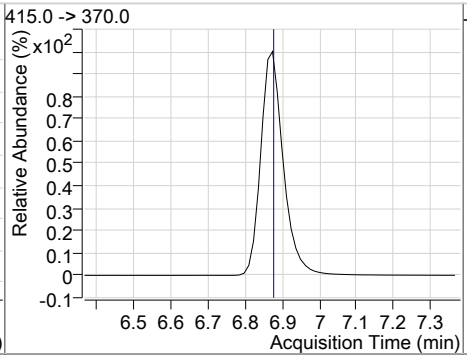


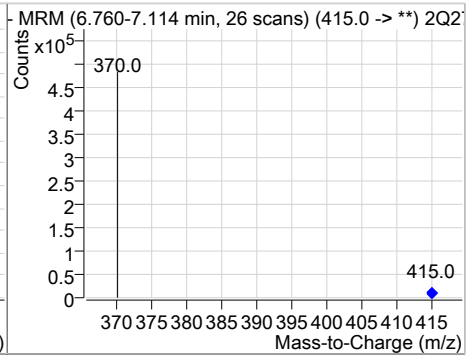




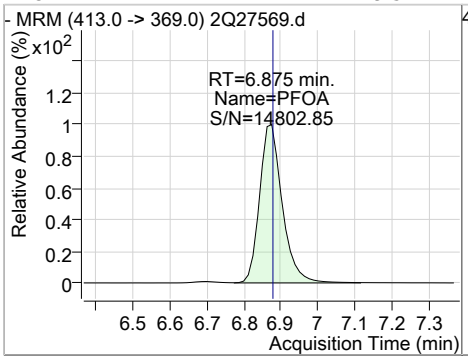
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.87	0.01	363921				

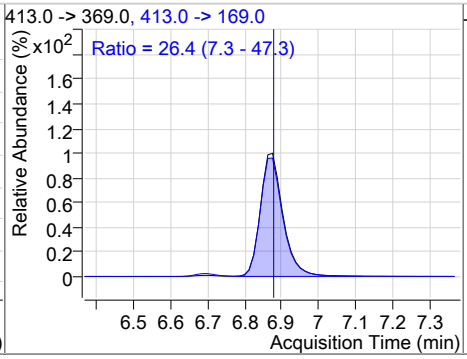


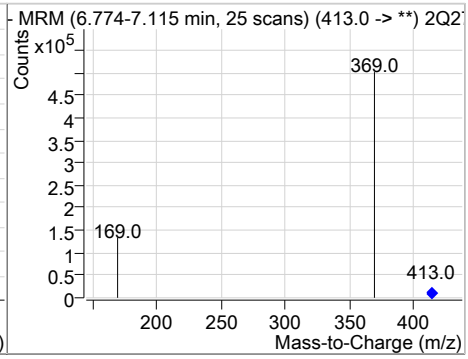




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	49.57	6.88	0.01	378465	413.0 -> 169.0	26.4	7.3	47.3

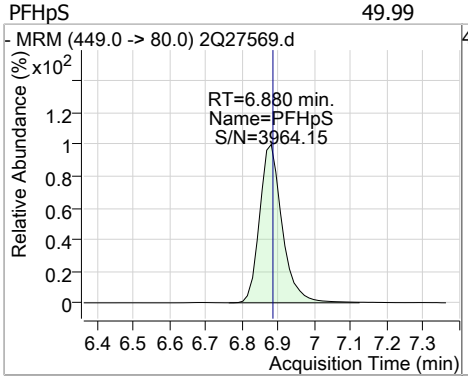


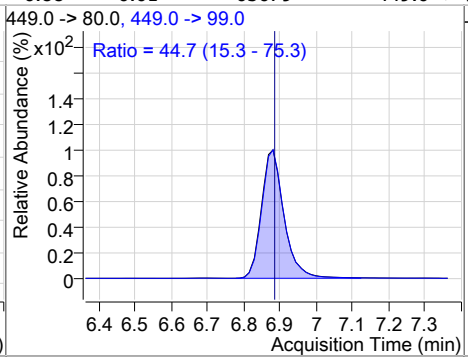


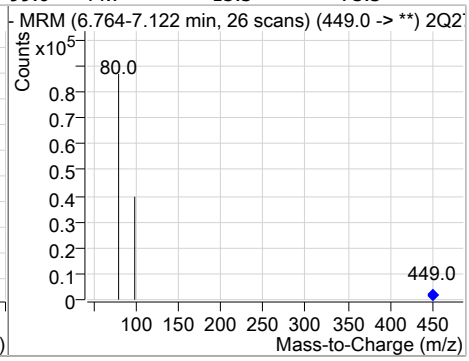


Perfluorinated Compounds by LC/MS/MS

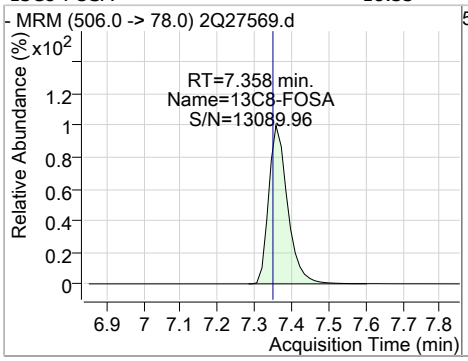
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	49.99	6.88	0.01	65679	449.0 -> 99.0	44.7	15.3	75.3

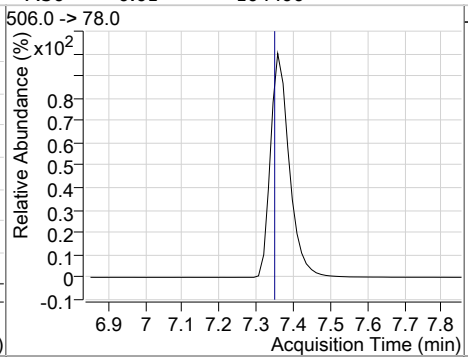


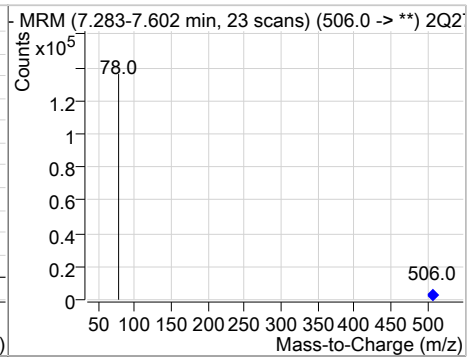




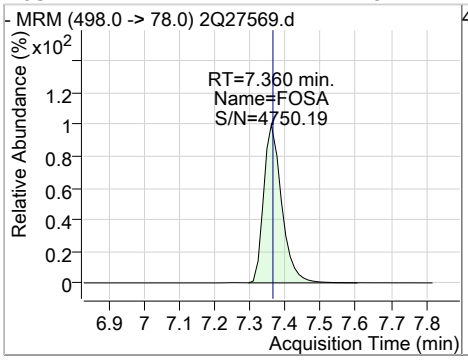
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.33	7.36	0.01	104400				

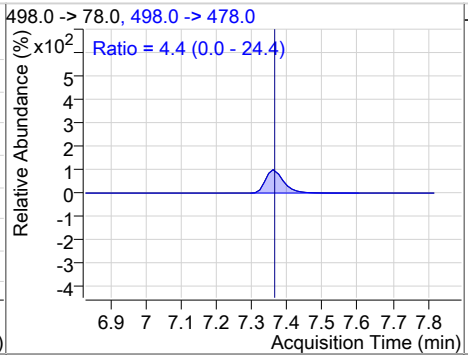


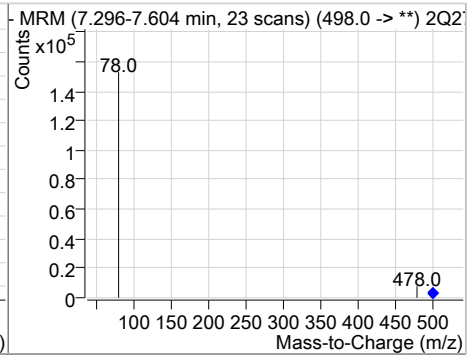




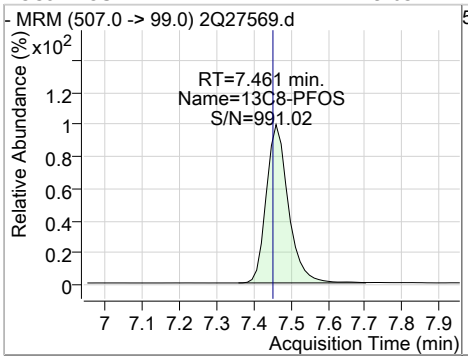
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	49.77	7.36	0.01	120930	498.0 -> 478.0	4.4	0.0	24.4

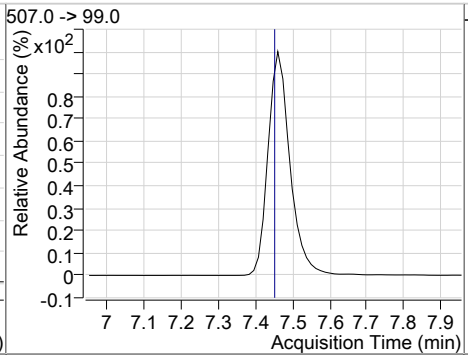


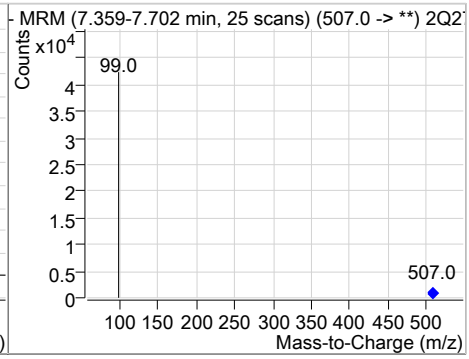




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.03	7.46	0.01	31469				

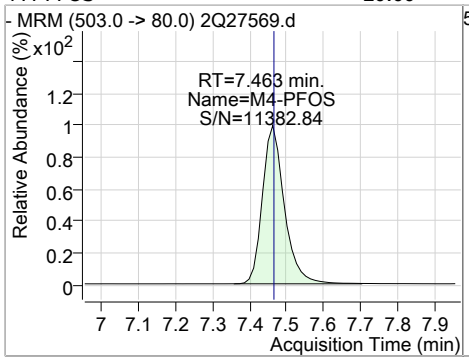


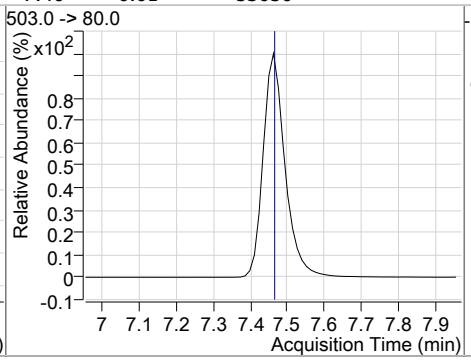


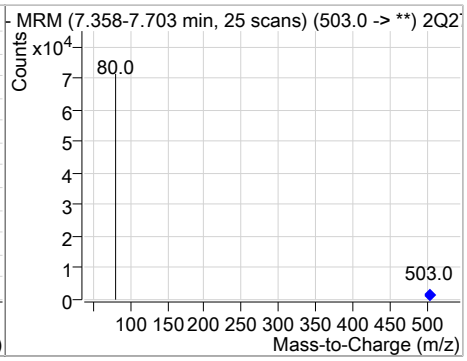


Perfluorinated Compounds by LC/MS/MS

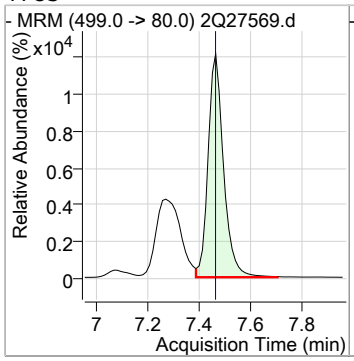
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.46	0.01	53650				

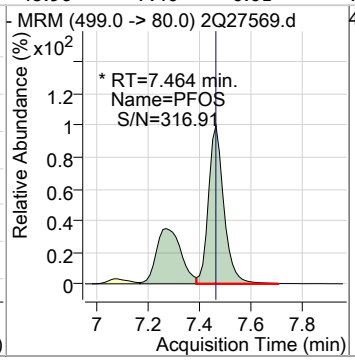


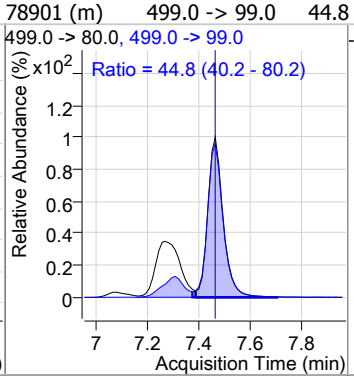


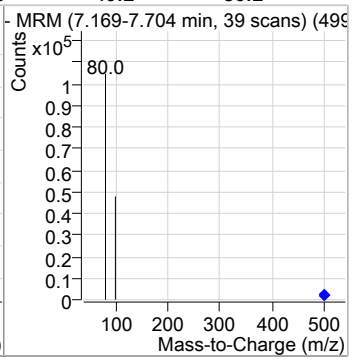


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	48.96	7.46	0.01	78901 (m)	499.0 -> 99.0	44.8	40.2	80.2

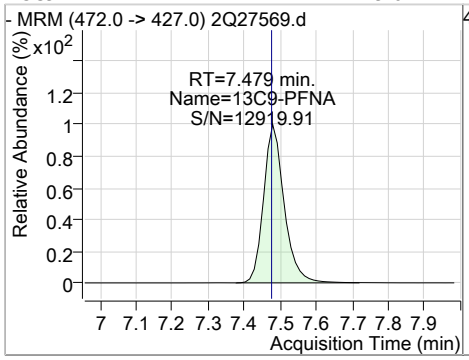


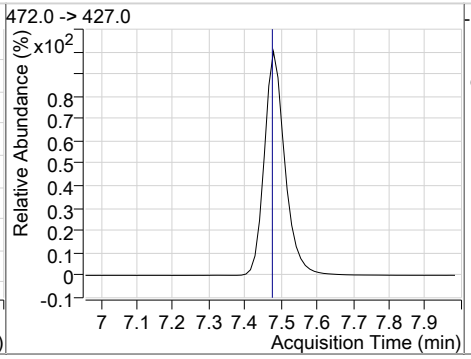


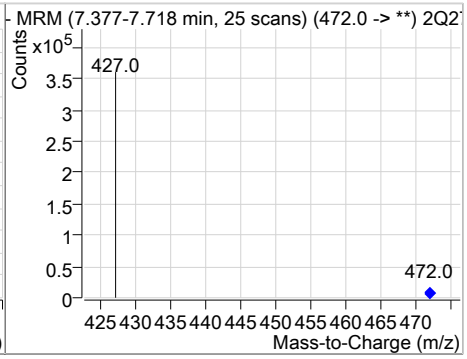




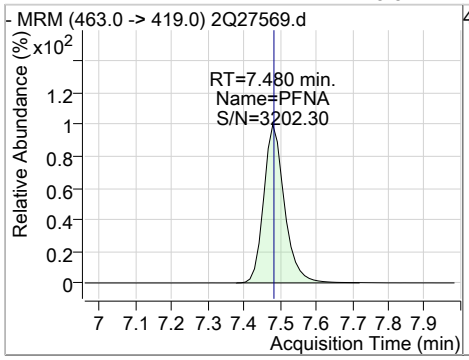
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.04	7.48	0.00	272836				

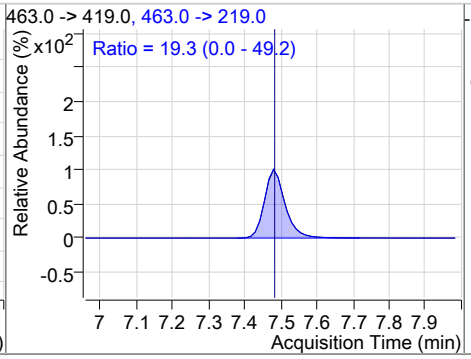


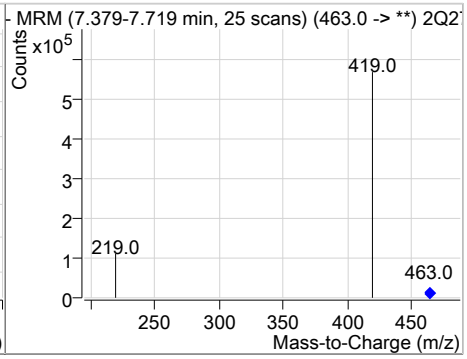




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	48.82	7.48	0.00	431648	463.0 -> 219.0	19.3	0.0	49.2

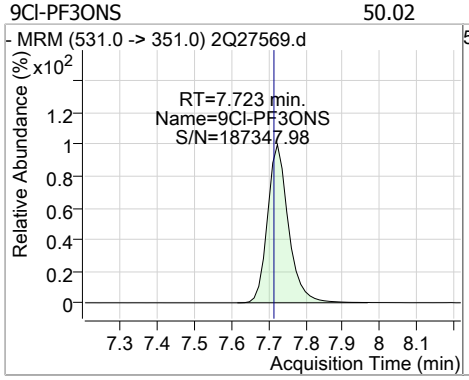


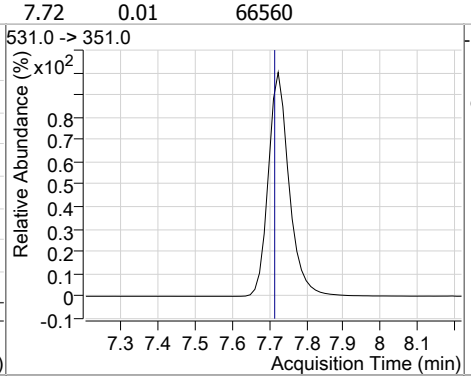


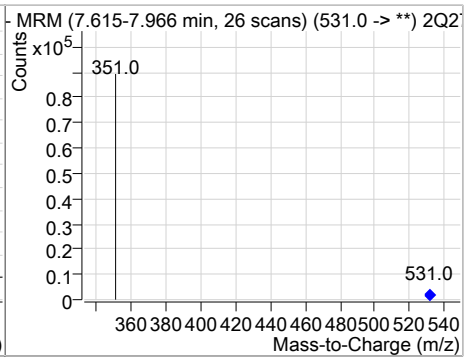


Perfluorinated Compounds by LC/MS/MS

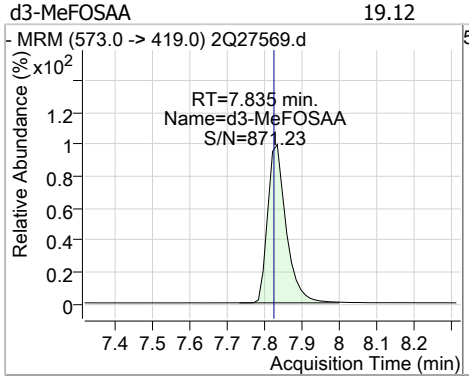
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	50.02	7.72	0.01	66560				

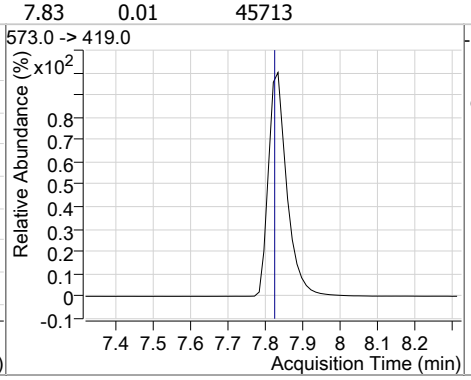


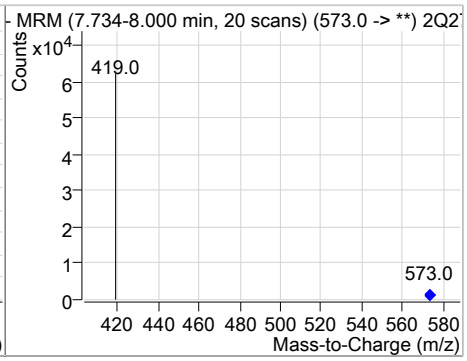




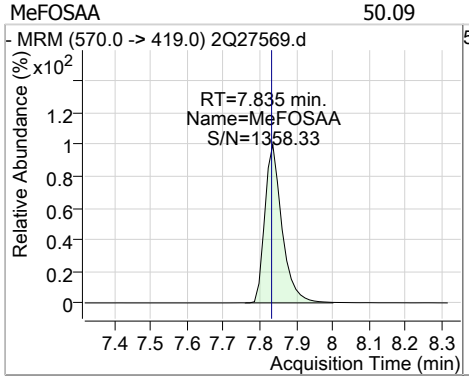
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.12	7.83	0.01	45713				

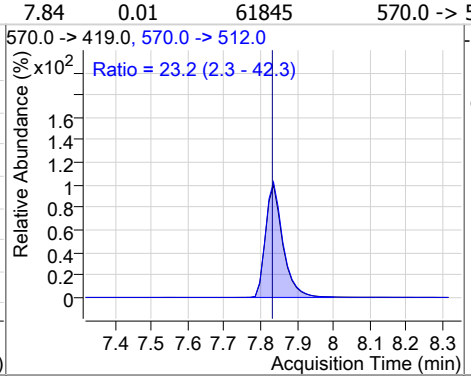


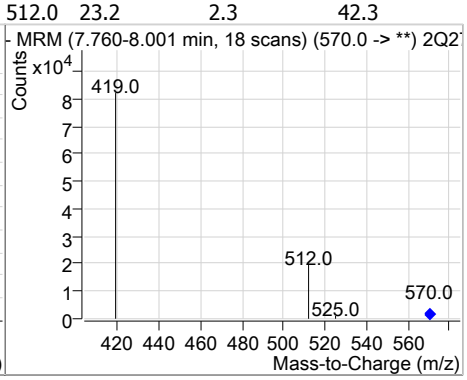




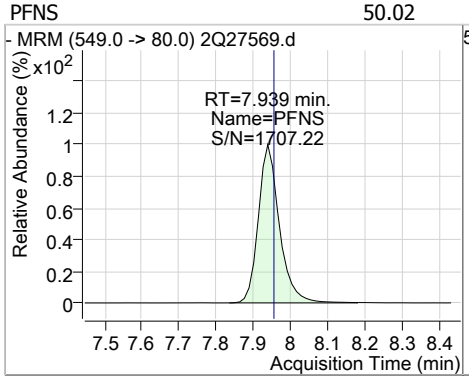
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	50.09	7.84	0.01	61845	570.0 -> 512.0	23.2	2.3	42.3

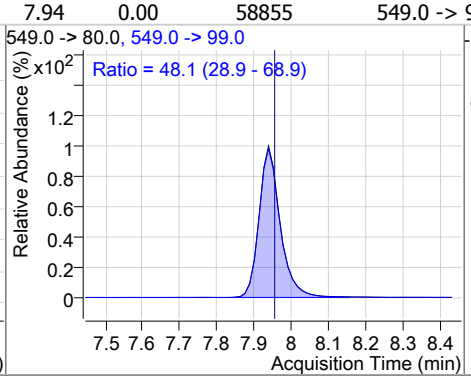


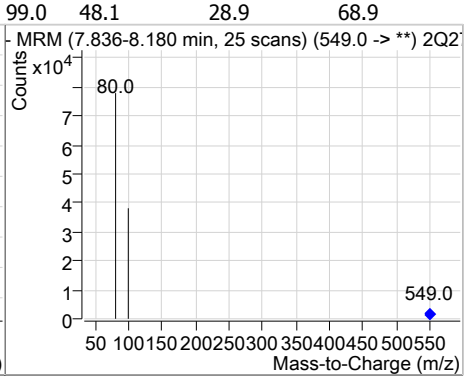




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	50.02	7.94	0.00	58855	549.0 -> 99.0	48.1	28.9	68.9

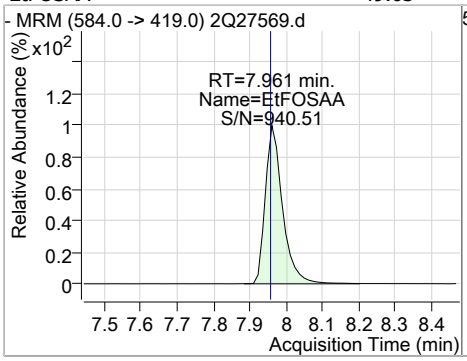


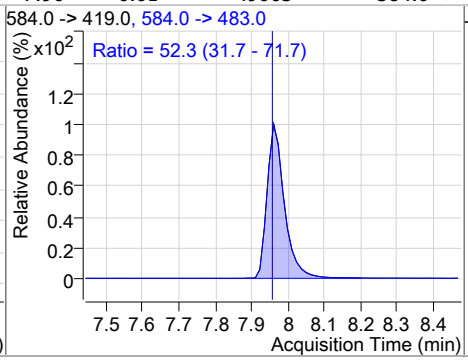


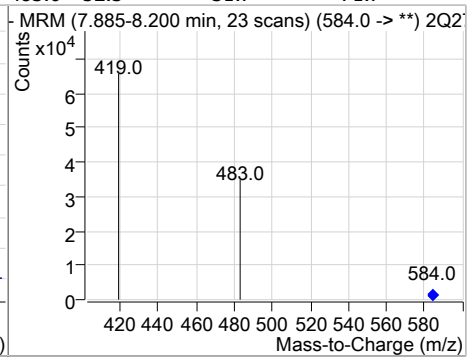


Perfluorinated Compounds by LC/MS/MS

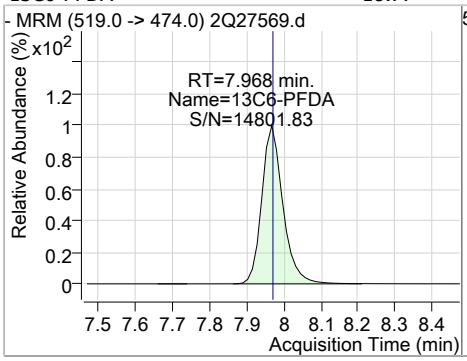
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	49.63	7.96	0.01	49063	584.0 -> 483.0	52.3	31.7	71.7

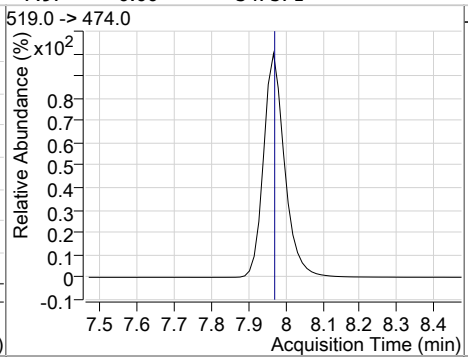


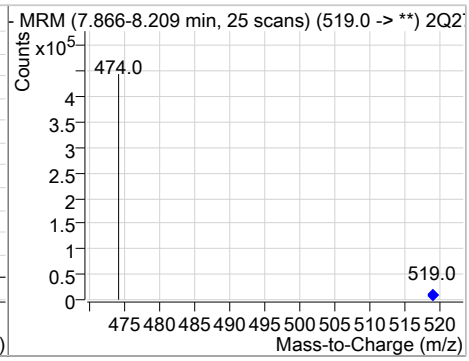




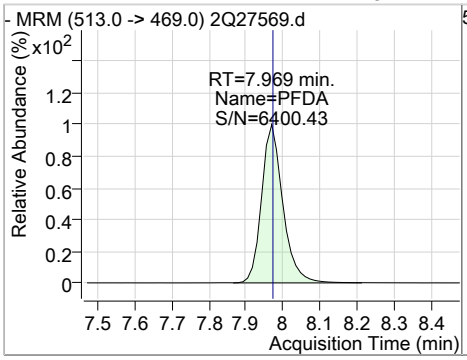
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.77	7.97	0.00	347571				

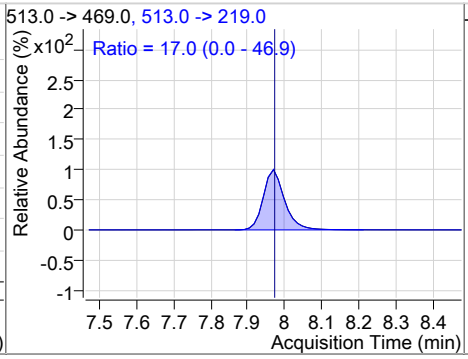


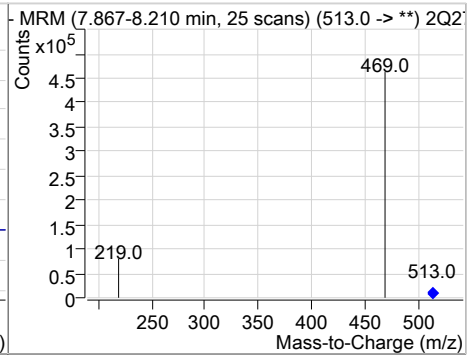




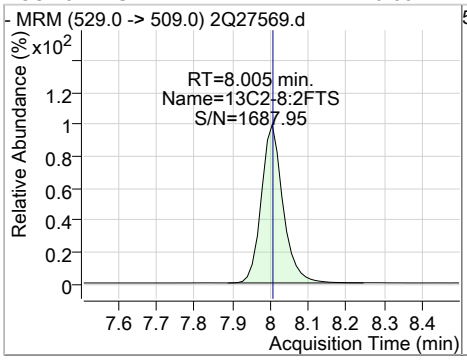
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	49.47	7.97	0.00	362981	513.0 -> 219.0	17.0	0.0	46.9

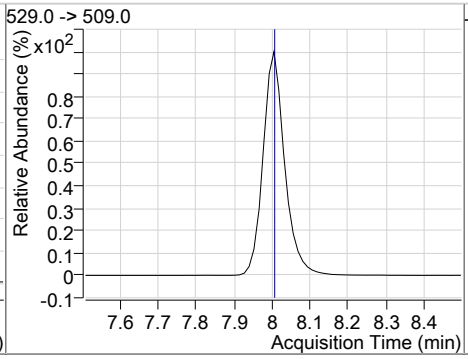


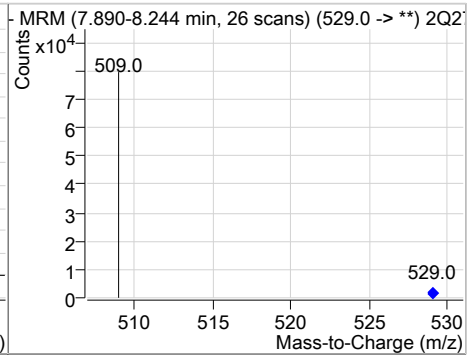




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.88	8.01	0.00	59277				

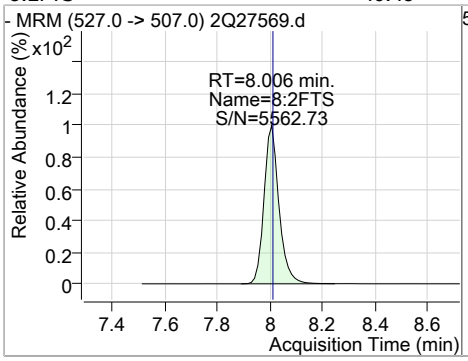


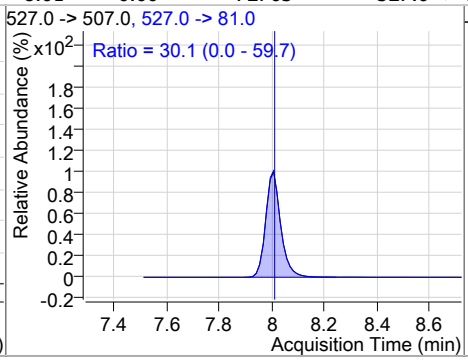


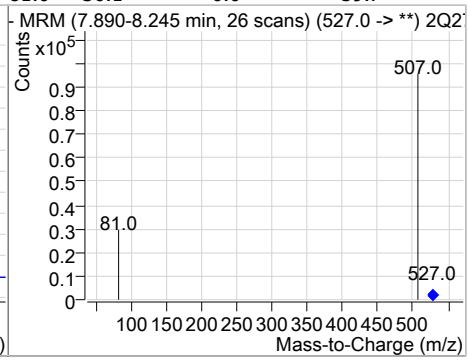


Perfluorinated Compounds by LC/MS/MS

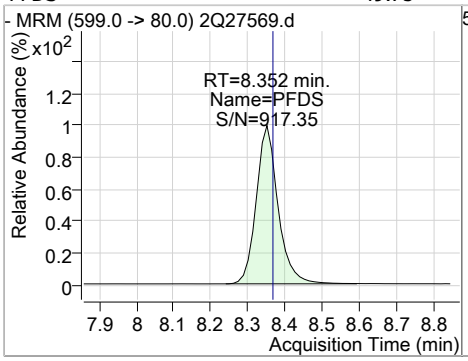
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	46.48	8.01	0.00	72763	527.0 -> 81.0	30.1	0.0	59.7

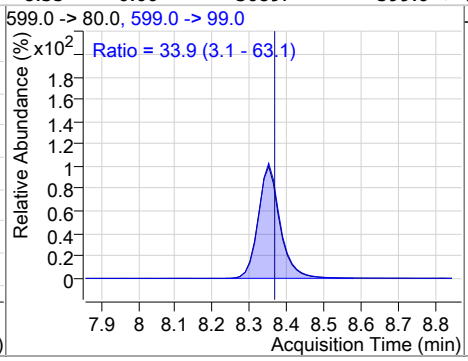


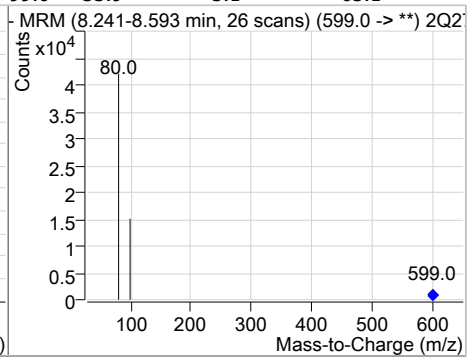




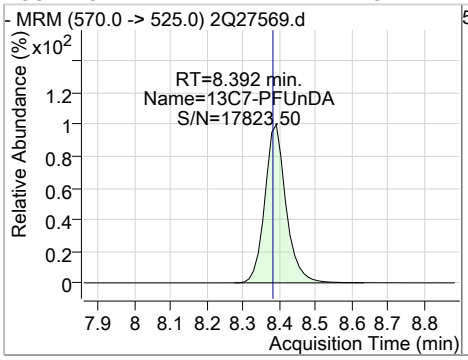
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	49.75	8.35	0.00	30897	599.0 -> 99.0	33.9	3.1	63.1

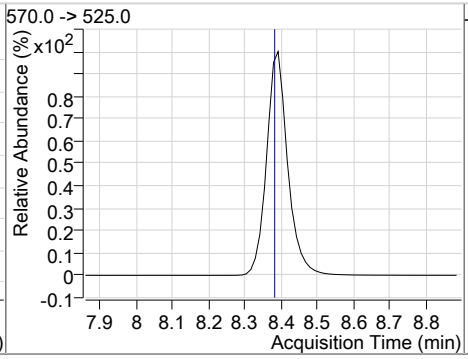


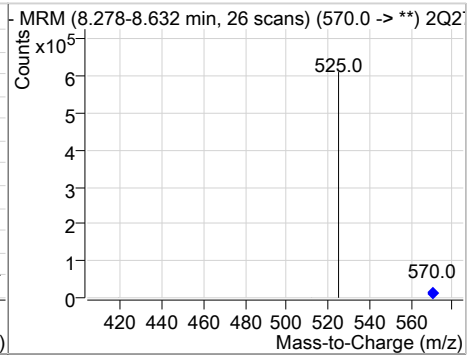




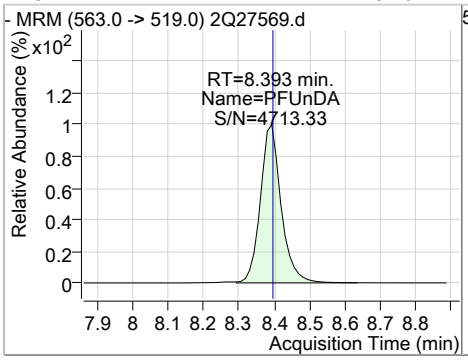
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.17	8.39	0.01	459344				

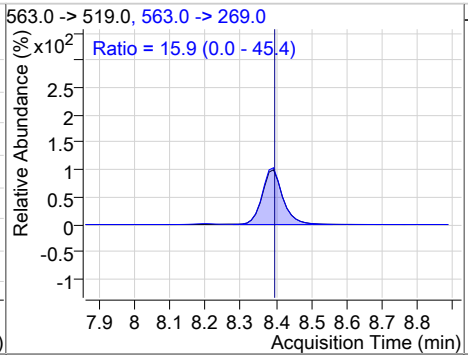


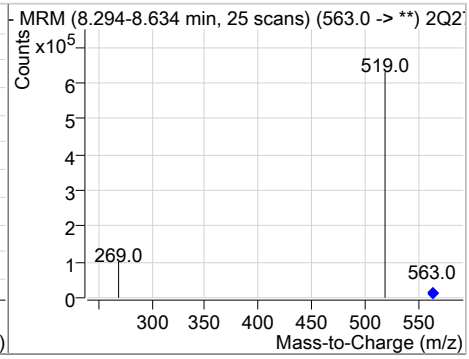




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	48.70	8.39	0.01	473763	563.0 -> 269.0	15.9	0.0	45.4

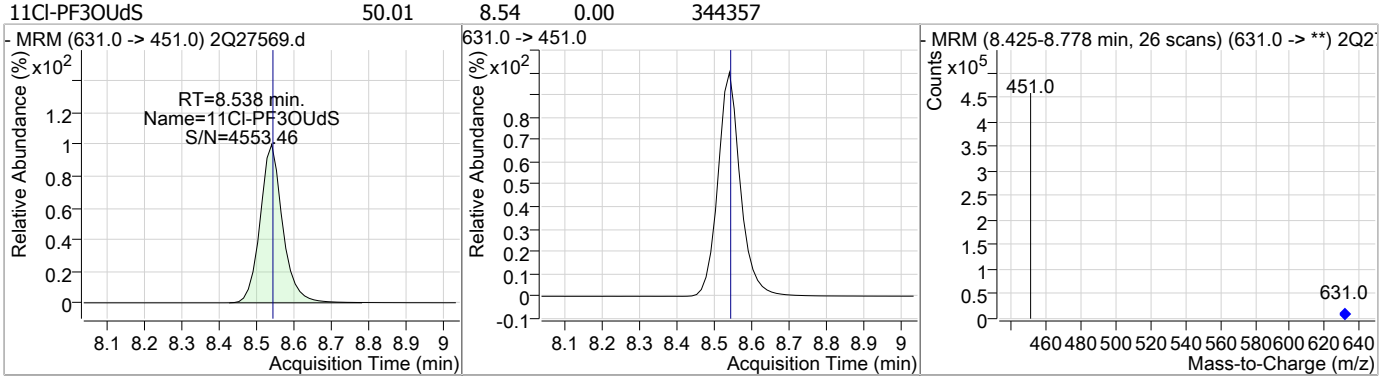




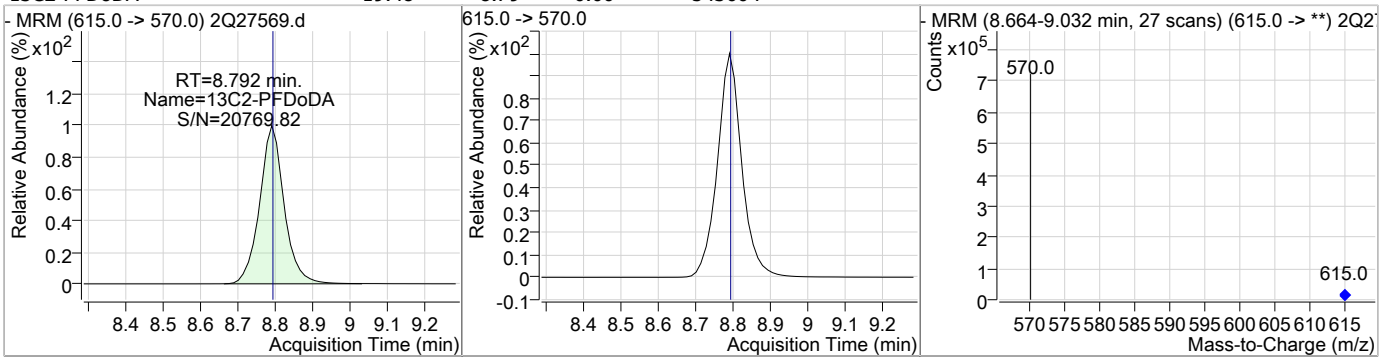


Perfluorinated Compounds by LC/MS/MS

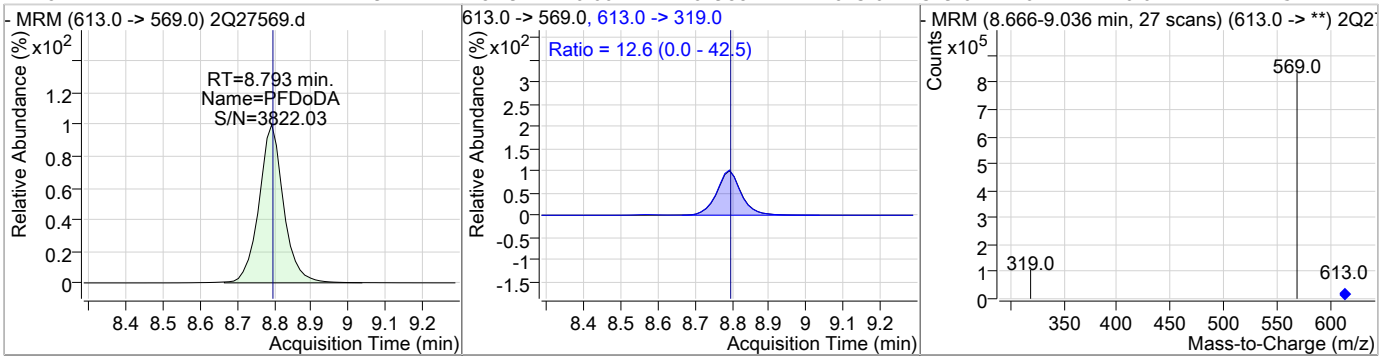
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	50.01	8.54	0.00	344357				



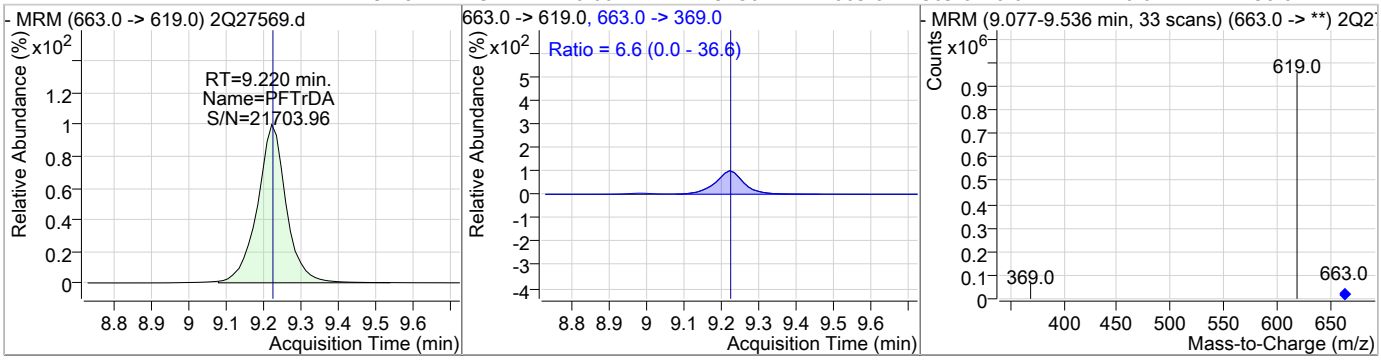
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.48	8.79	0.00	543604				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	49.41	8.79	0.00	629882	613.0 -> 319.0	12.6	0.0	42.5

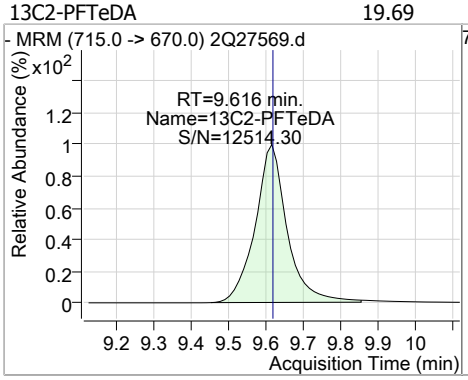


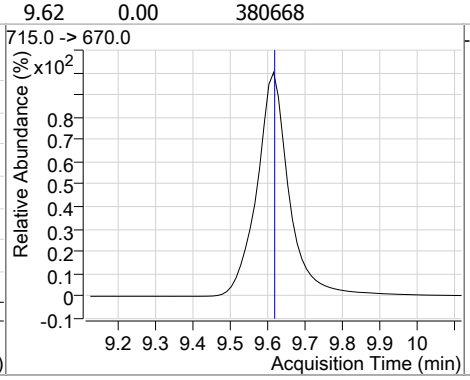
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	49.78	9.22	0.00	719250	663.0 -> 369.0	6.6	0.0	36.6

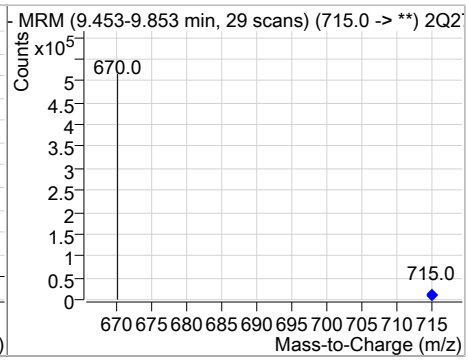


Perfluorinated Compounds by LC/MS/MS

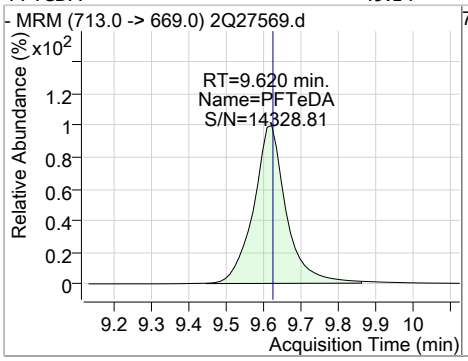
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.69	9.62	0.00	380668				

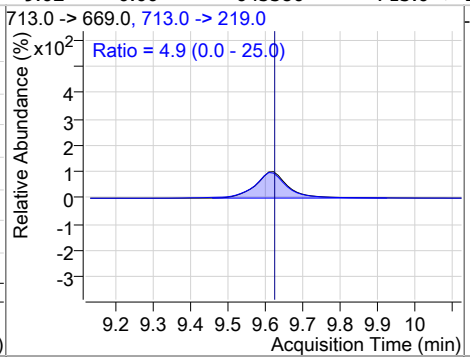


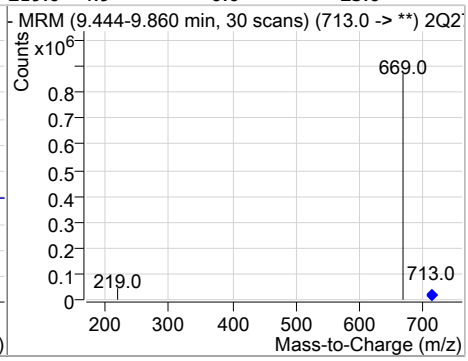




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	49.14	9.62	0.00	645380	713.0 -> 219.0	4.9	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27569.D
Injection Time: 03/13/19 12:18
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27570.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 12:34:40 PM
Sample Name : ic439-100
Vial : Vial 9
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

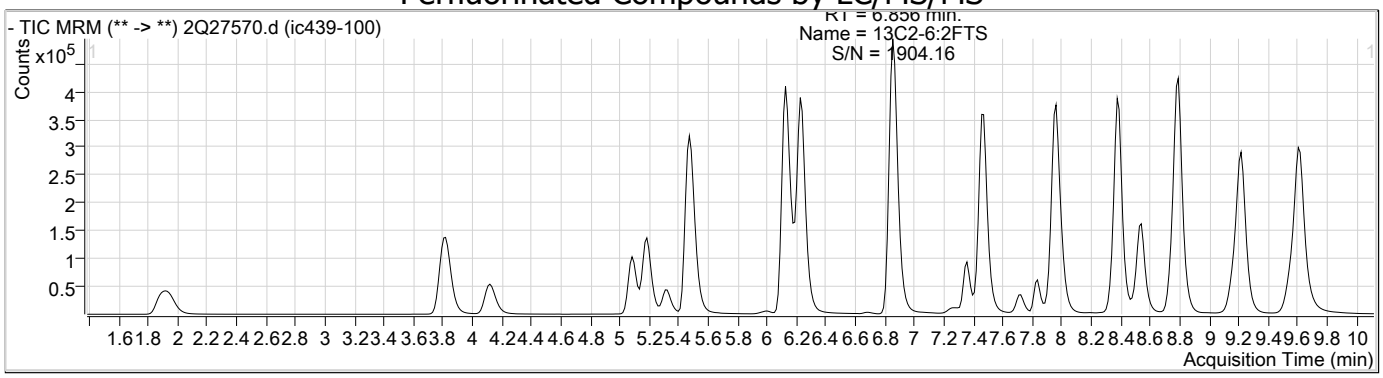
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.861	415.0 -> 370.0	371228	20.00	µg/L	0.000
13C4-PFOS	7.450	503.0 -> 80.0	54641	20.00	µg/L	-0.001
M4-PFBA	1.915	217.0 -> 172.0	168608	20.00	µg/L	0.025
M5-PFPeA	3.824	268.0 -> 223.0	137545	20.00	µg/L	0.025
M5-PFHxA	5.189	318.0 -> 273.0	193878	20.00	µg/L	0.013
M4-PFHpA	6.129	367.0 -> 322.0	268438	20.00	µg/L	0.011
M8-PFOA	6.860	421.0 -> 376.0	266751	20.00	µg/L	0.000
M9-PFNA	7.479	472.0 -> 427.0	261498	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	327886	20.00	µg/L	0.000
M7-PFUnDA	8.380	570.0 -> 525.0	441457	20.00	µg/L	0.000
M2-PFDoDA	8.792	615.0 -> 570.0	536789	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	388637	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	93775	20.00	µg/L	0.011
M3-PFBS	4.118	302.0 -> 99.0	23316	20.00	µg/L	0.025
M3-PFHxS	6.174	402.0 -> 99.0	25264	20.00	µg/L	0.013
M8-PFOS	7.461	507.0 -> 99.0	30543	20.00	µg/L	0.012
M2-4:2FTS	5.084	329.0 -> 309.0	97107	20.00	µg/L	0.013
M2-6:2FTS	6.856	429.0 -> 409.0	95761	20.00	µg/L	0.000
M2-8:2FTS	7.993	529.0 -> 509.0	66778	20.00	µg/L	-0.011
M3-MeFOSAA	7.834	573.0 -> 419.0	45599	20.00	µg/L	0.012
M3-HFPO-DA	5.481	287.0 -> 169.0	174387	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	5.084	329.0 -> 309.0	96913	23.34	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.7%		
13C2-6:2FTS	6.856	429.0 -> 409.0	95736	21.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.8%		
13C2-8:2FTS	7.993	529.0 -> 509.0	66762	23.51	µg/L	-0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.6%		
13C2-PFDoDA	8.792	615.0 -> 570.0	537233	19.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C2-PFTeDA	9.616	715.0 -> 670.0	385145	19.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C3-PFBS	4.118	302.0 -> 99.0	23290	19.23	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C3-PFHxS	6.174	402.0 -> 99.0	25286	18.56	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%		
13C4-PFBA	1.915	217.0 -> 172.0	167568	19.33	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%		
13C4-PFHpA	6.129	367.0 -> 322.0	268023	18.62	µg/L	0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.1%		
13C5-PFHxA	5.189	318.0 -> 273.0	193715	18.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.4%		
13C5-PFPeA	3.824	268.0 -> 223.0	137328	19.15	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C6-PFDA	7.968	519.0 -> 474.0	328060	17.72	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

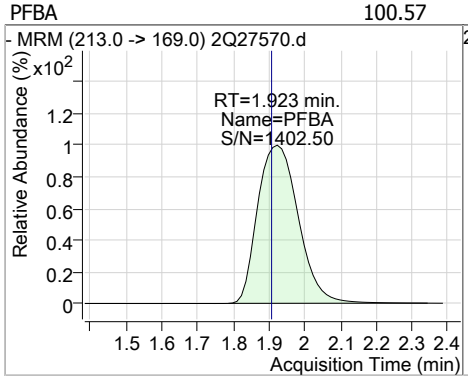
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.6%			
13C7-PFUnDA	8.380	570.0 -> 525.0	441534	18.43	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%			
13C8-FOSA	7.358	506.0 -> 78.0	93799	16.47	µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.3%			
13C8-PFOA	6.860	421.0 -> 376.0	266610	17.90	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.5%			
13C8-PFOS	7.461	507.0 -> 99.0	30538	18.46	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%			
13C9-PFNA	7.479	472.0 -> 427.0	261638	18.26	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.3%			
d3-MeFOSAA	7.834	573.0 -> 419.0	45574	19.06	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.3%			
M2-PFOA	6.861	415.0 -> 370.0	371494	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.450	503.0 -> 80.0	54717	20.02	µg/L		-0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
13C3-HFPO-DA	5.481	287.0 -> 169.0	174387	85.85	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 85.9%			
Target Compounds							**QValue**
4:2FTS	5.087	327.0 -> 307.0	243769	86.29	µg/L		99
6:2FTS	6.858	427.0 -> 407.0	203470	83.10	µg/L		99
8:2FTS	7.994	527.0 -> 507.0	148070	83.96	µg/L		99
EtFOSAA	7.961	584.0 -> 419.0	95776	100.07	µg/L		99
FOSA	7.360	498.0 -> 78.0	225790	100.04	µg/L		100
MeFOSAA	7.835	570.0 -> 419.0	126546	99.98	µg/L		99
PFBA	1.923	213.0 -> 169.0	164895	100.57	µg/L		100
PFBS	4.121	299.0 -> 80.0	193438	100.43	µg/L		100
PFDA	7.969	513.0 -> 469.0	694355	100.31	µg/L		100
PFDoDA	8.793	613.0 -> 569.0	1263211	100.41	µg/L		100
PFDS	8.352	599.0 -> 80.0	60404	100.10	µg/L		100
PFHpA	6.132	363.0 -> 319.0	1266865	100.63	µg/L		100
PFHpS	6.867	449.0 -> 80.0	127856	99.91	µg/L		98
PFHxA	5.191	313.0 -> 269.0	337739	100.68	µg/L		100
PFHxS	6.176	399.0 -> 80.0	151537	100.72	µg/L	m	96
PFNA	7.480	463.0 -> 419.0	852799	100.73	µg/L		100
PFNS	7.939	549.0 -> 80.0	114232	99.91	µg/L		99
PFOA	6.863	413.0 -> 369.0	732011	100.33	µg/L		99
PFOS	7.451	499.0 -> 80.0	157695	100.71	µg/L	m	78
PFPeA	3.828	263.0 -> 219.0	629075	100.69	µg/L		100
PFPeS	5.321	349.0 -> 80.0	132064	100.16	µg/L		100
PFTeDA	9.607	713.0 -> 669.0	1334438	100.60	µg/L		100
PFTrDA	9.220	663.0 -> 619.0	1461007	100.11	µg/L		100
PFUnDA	8.381	563.0 -> 519.0	941992	100.78	µg/L		100
11Cl-PF3OUdS	8.538	631.0 -> 451.0	682584	100.45	µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	132794	99.99	µg/L		100
ADONA	6.229	377.0 -> 251.0	1495067	99.99	µg/L		100
HFPO-DA	5.473	329.0 -> 169.0	1057247	499.71	µg/L		98

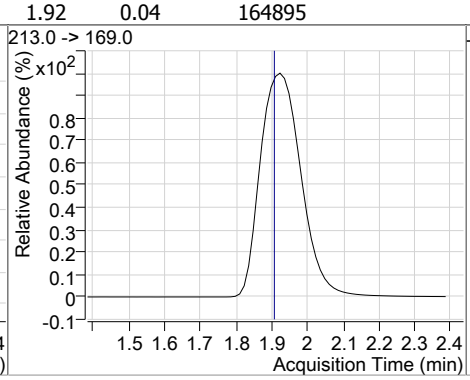
 # = Qualifier out of range, m = manually integrated, + = Area summed

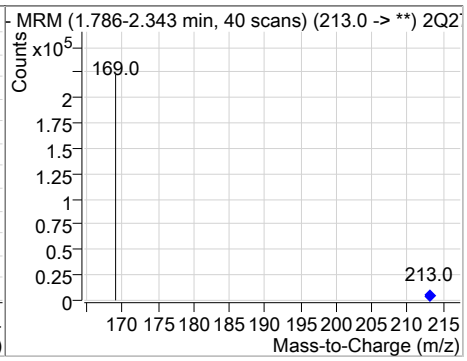
Perfluorinated Compounds by LC/MS/MS



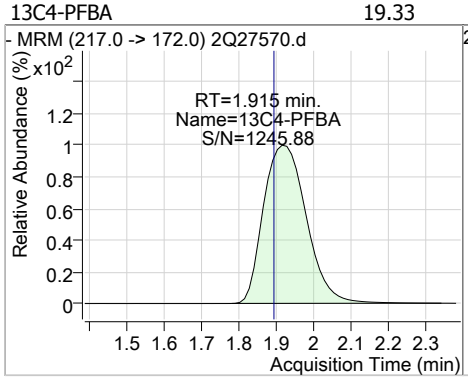
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	100.57	1.92	0.04	164895				

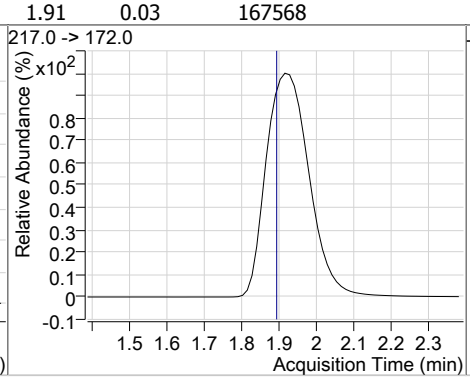


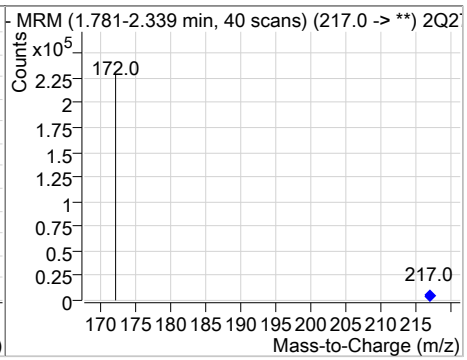




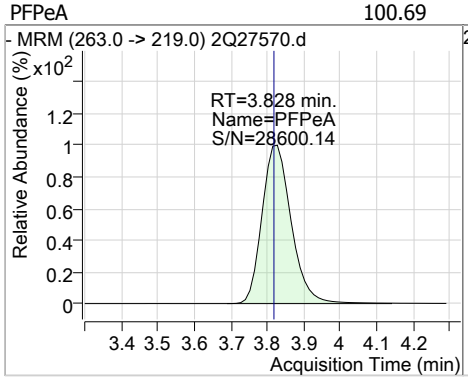
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.33	1.91	0.03	167568				

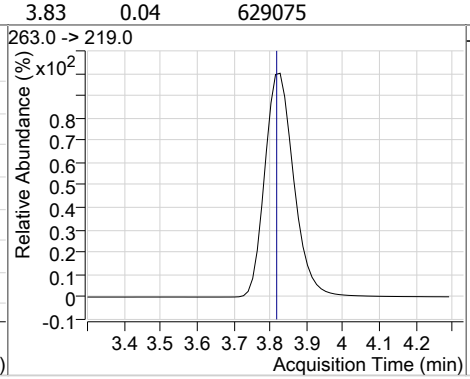


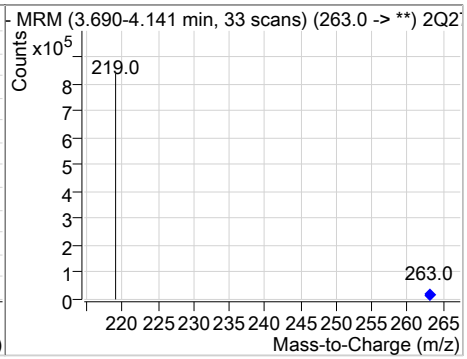




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	100.69	3.83	0.04	629075				

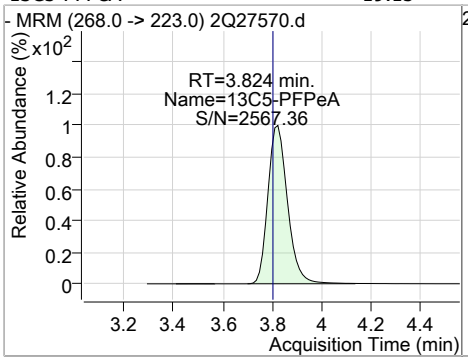


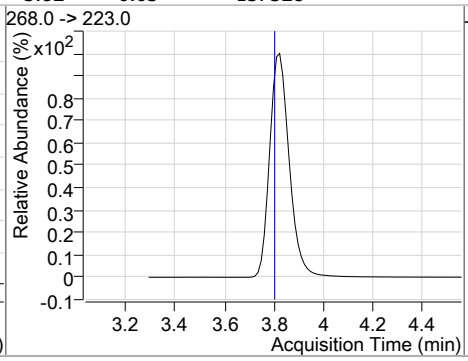


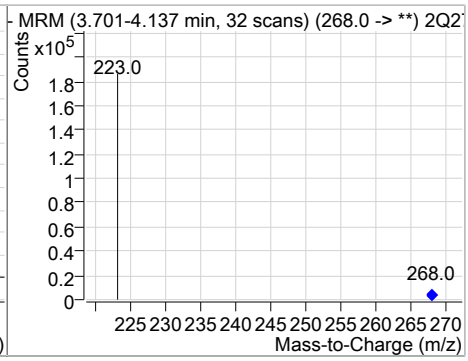


Perfluorinated Compounds by LC/MS/MS

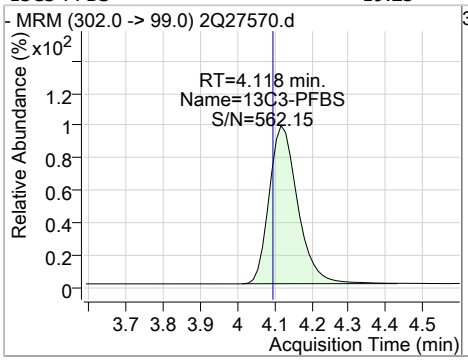
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.15	3.82	0.03	137328				

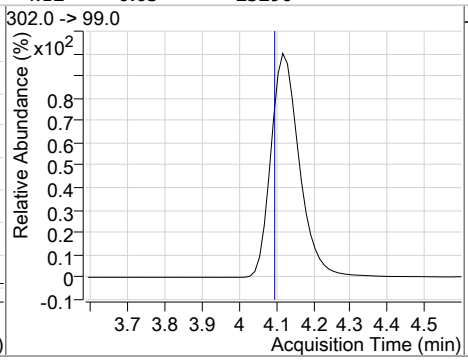


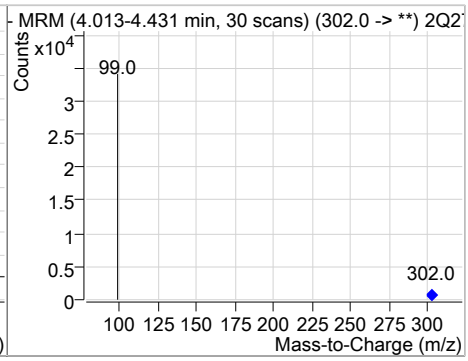




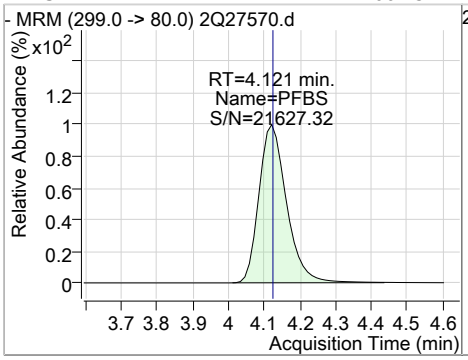
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.23	4.12	0.03	23290				

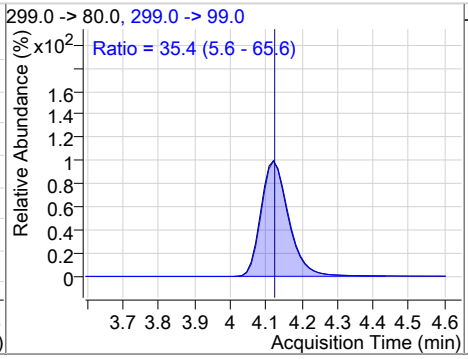


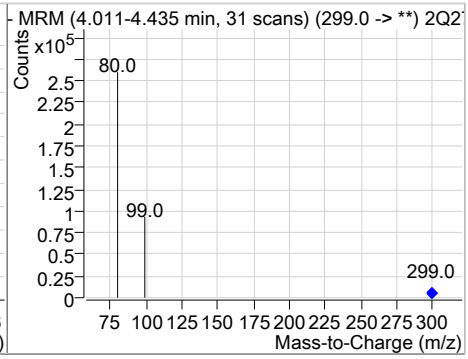




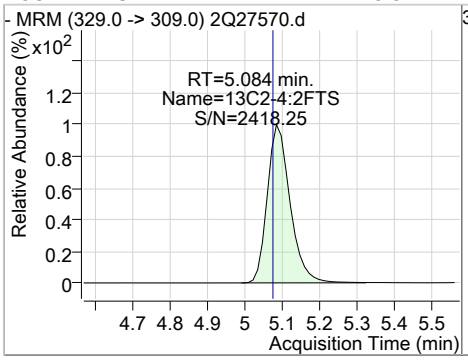
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	100.43	4.12	0.03	193438	299.0 -> 99.0	35.4	5.6	65.6

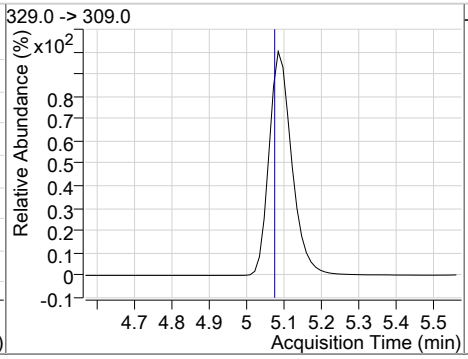


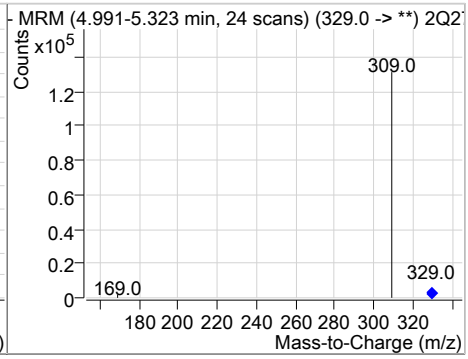




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	23.34	5.08	0.01	96913				

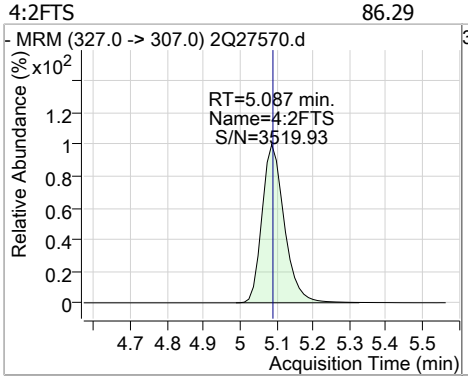


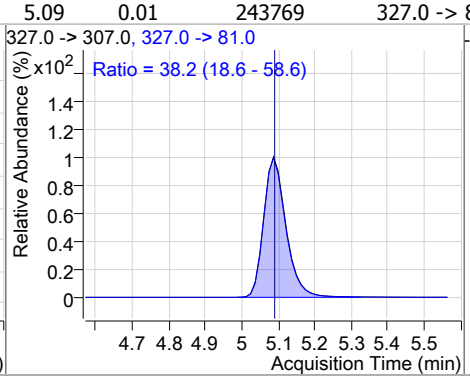


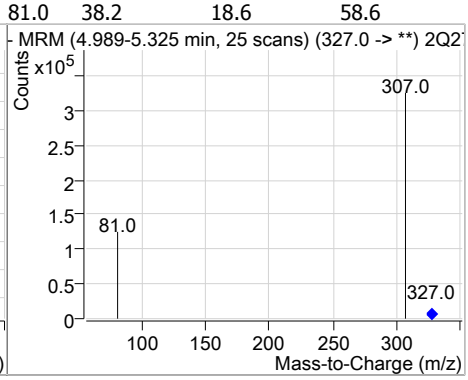


Perfluorinated Compounds by LC/MS/MS

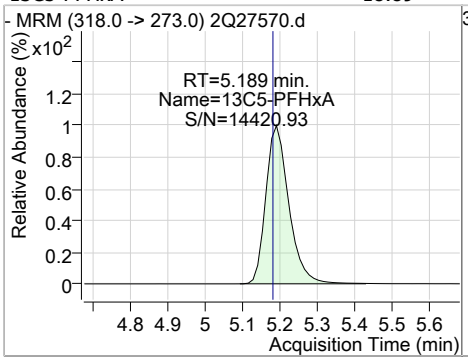
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	86.29	5.09	0.01	243769	327.0 -> 81.0	38.2	18.6	58.6

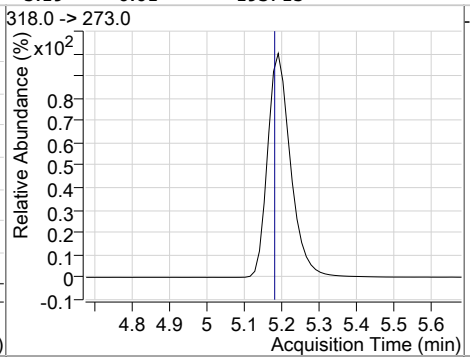


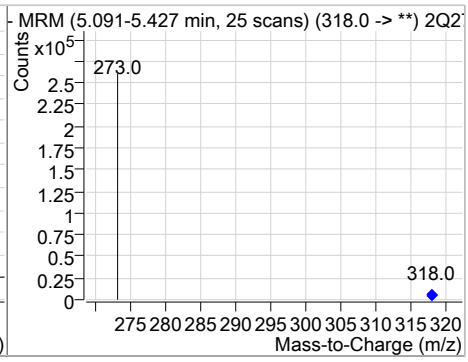




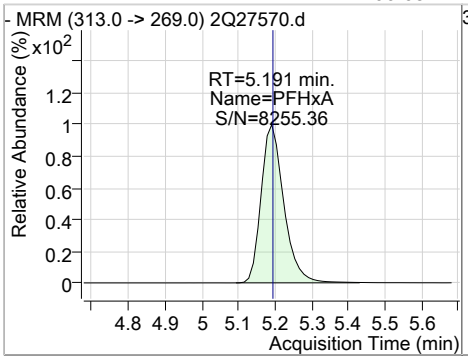
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.89	5.19	0.01	193715				

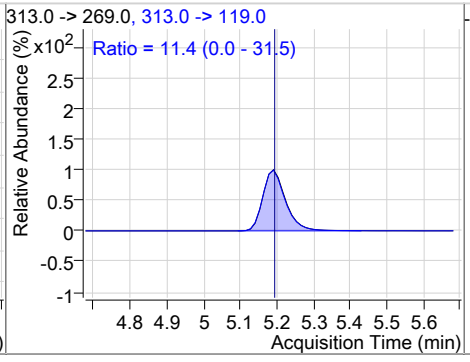


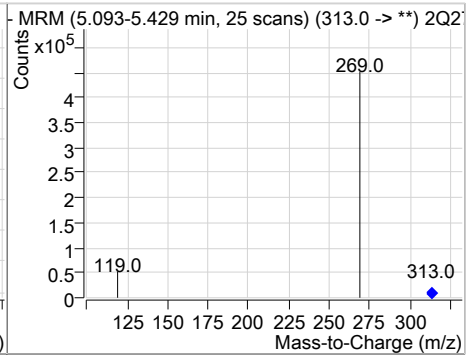




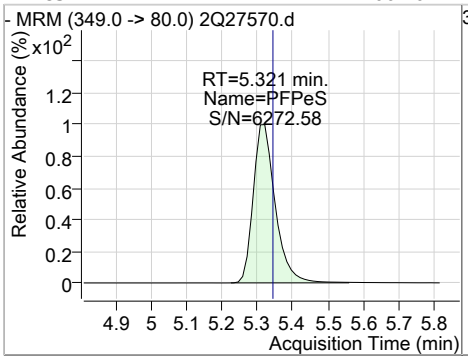
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	100.68	5.19	0.01	337739	313.0 -> 119.0	11.4	0.0	31.5

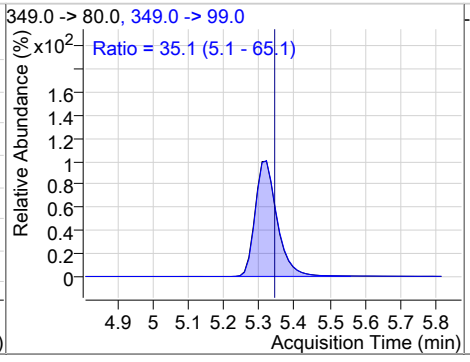


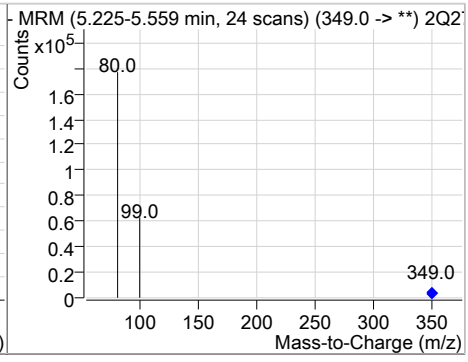




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	100.16	5.32	0.01	132064	349.0 -> 99.0	35.1	5.1	65.1

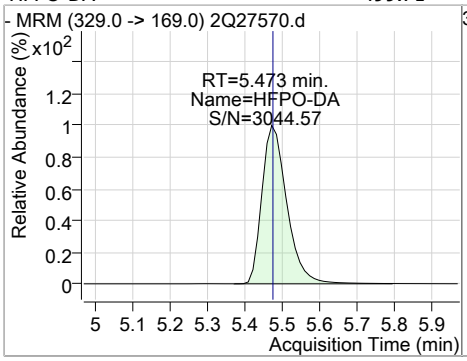


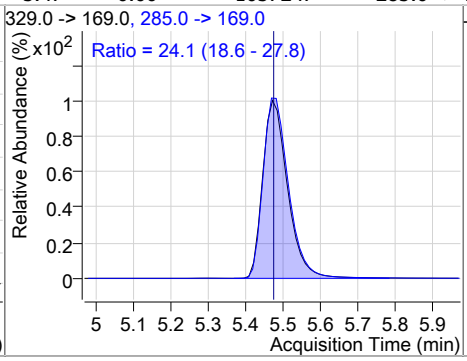


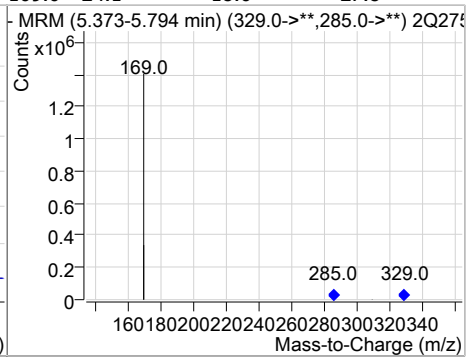


Perfluorinated Compounds by LC/MS/MS

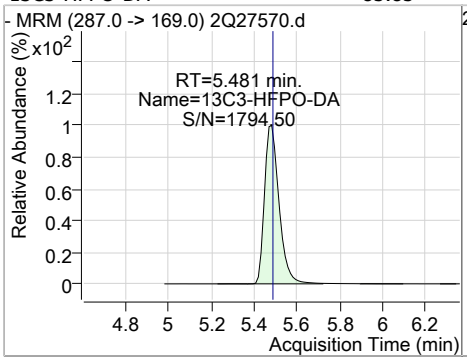
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	499.71	5.47	0.00	1057247	285.0 -> 169.0	24.1	18.6	27.8

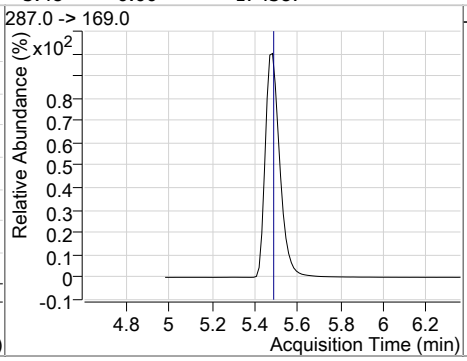


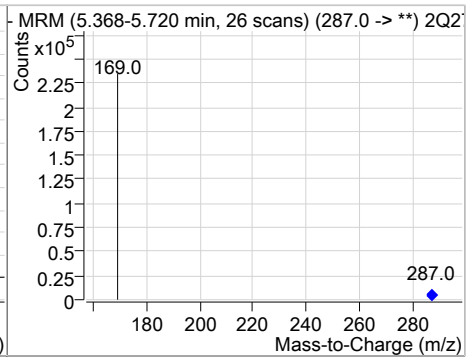




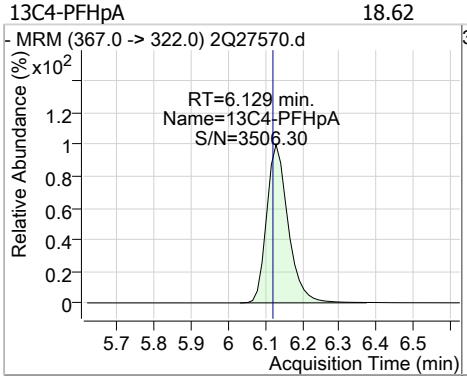
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	85.85	5.48	0.00	174387				

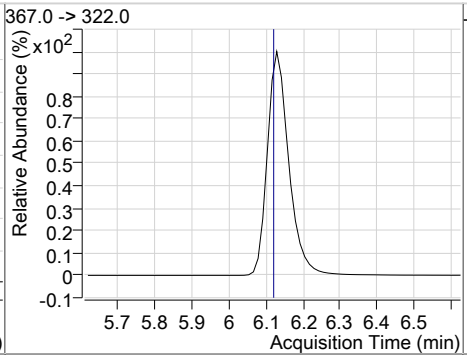


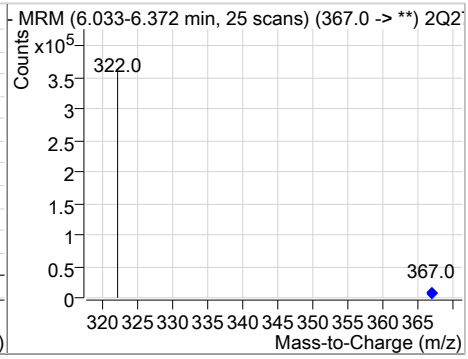




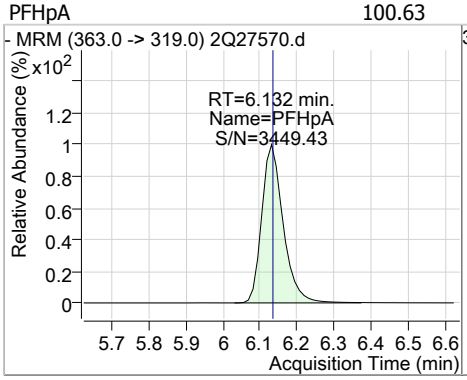
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.62	6.13	0.01	268023				

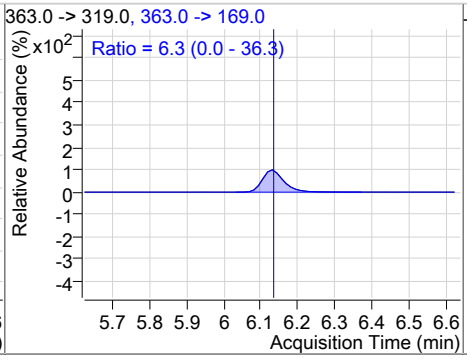


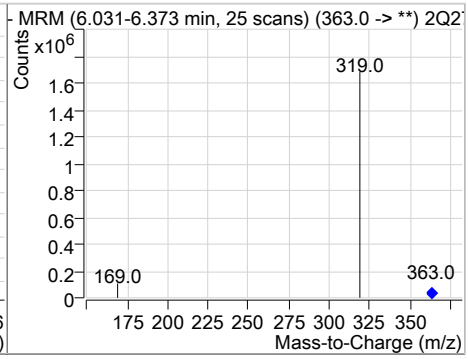




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	100.63	6.13	0.01	1266865	363.0 -> 169.0	6.3	0.0	36.3

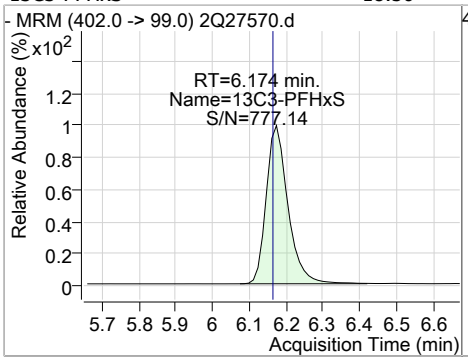


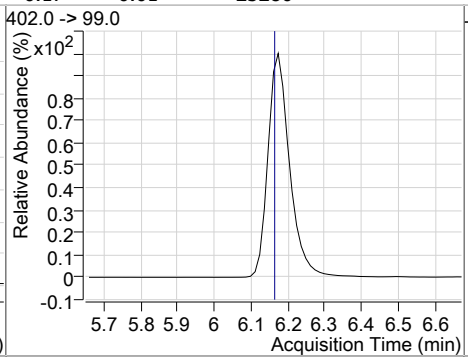


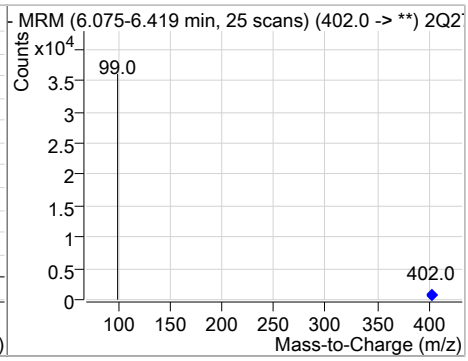


Perfluorinated Compounds by LC/MS/MS

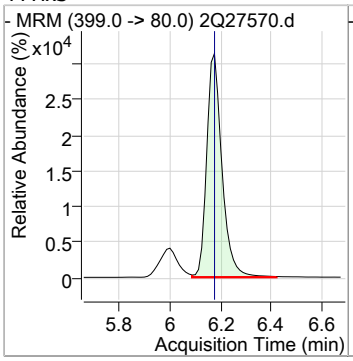
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.56	6.17	0.01	25286				

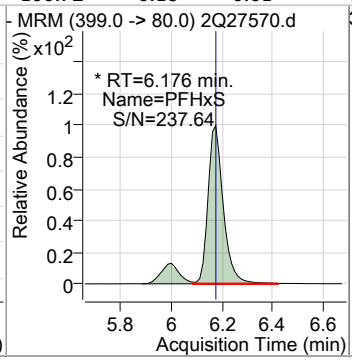


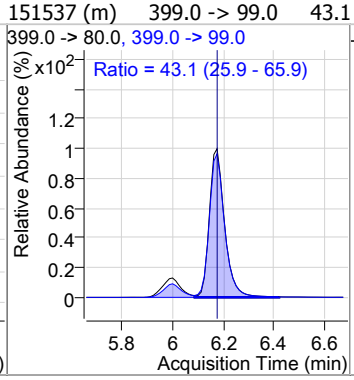


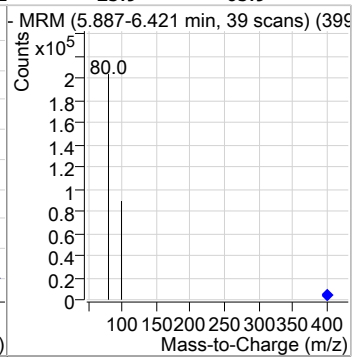


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	100.72	6.18	0.01	151537 (m)	399.0 -> 99.0	43.1	25.9	65.9

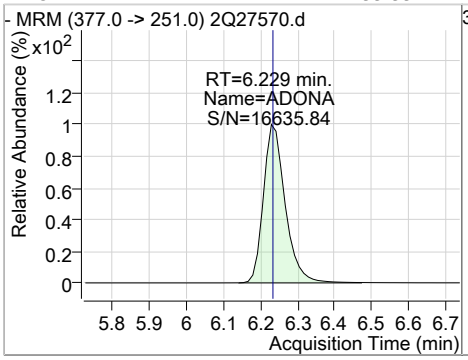


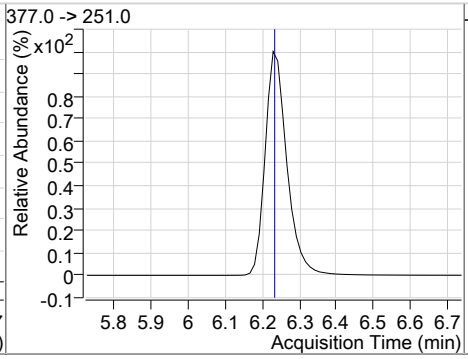


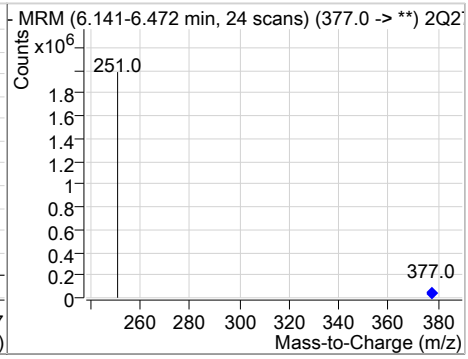




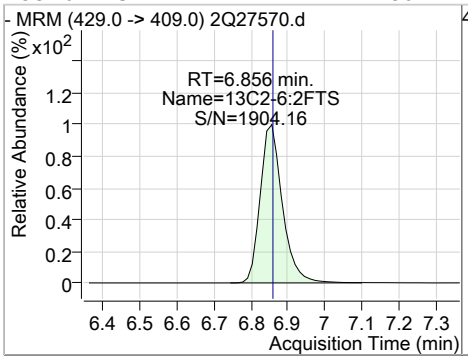
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	99.99	6.23	0.00	1495067				

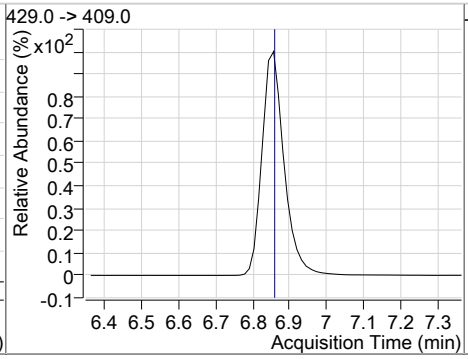


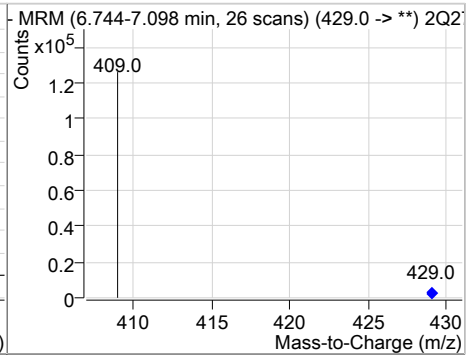




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.96	6.86	0.00	95736				

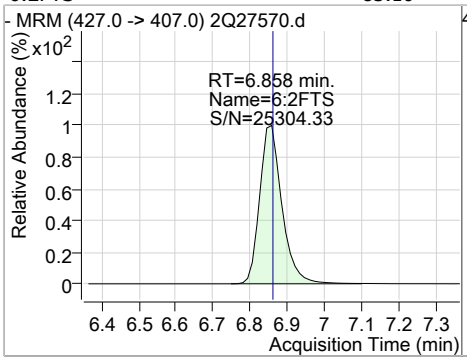


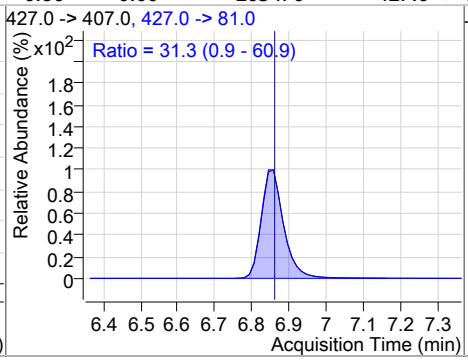


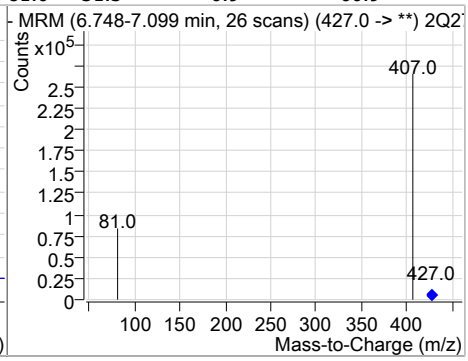


Perfluorinated Compounds by LC/MS/MS

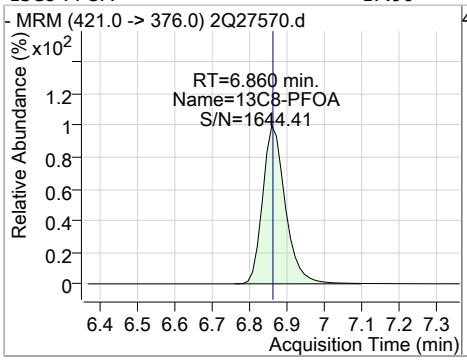
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	83.10	6.86	0.00	203470	427.0 -> 81.0	31.3	0.9	60.9

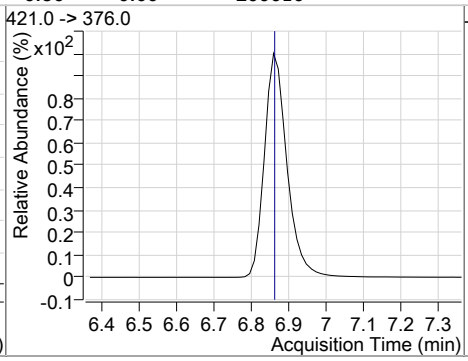


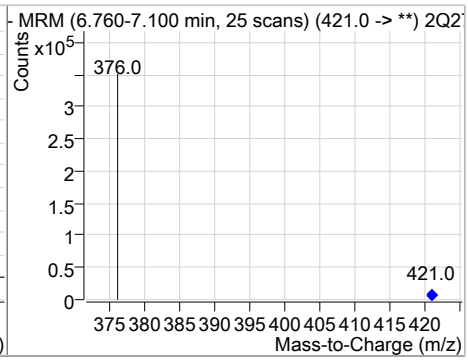




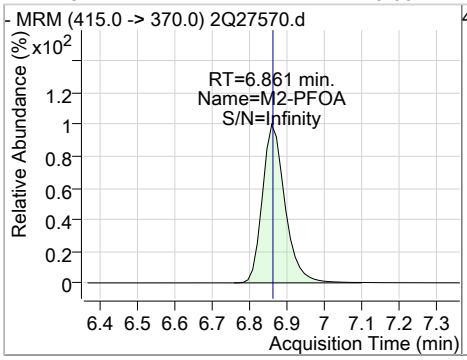
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.90	6.86	0.00	266610				

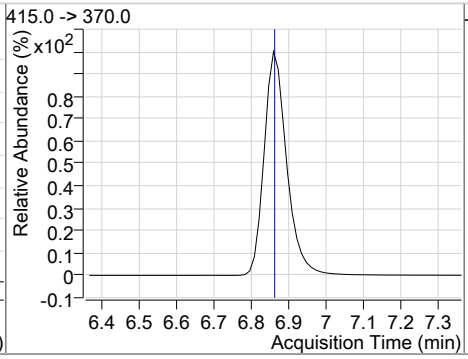


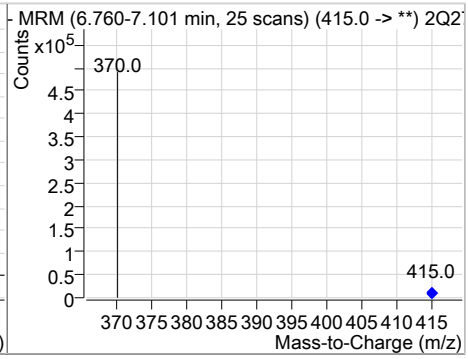




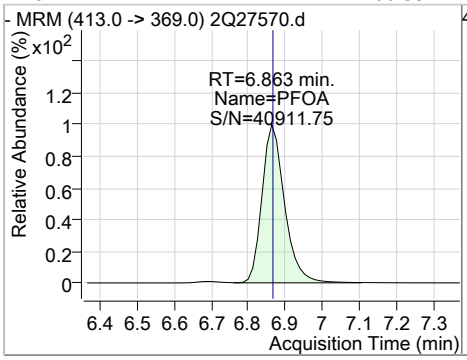
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.86	0.00	371494				

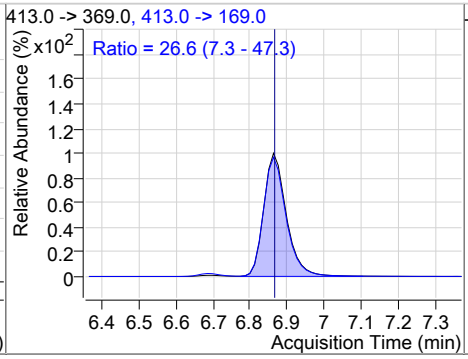


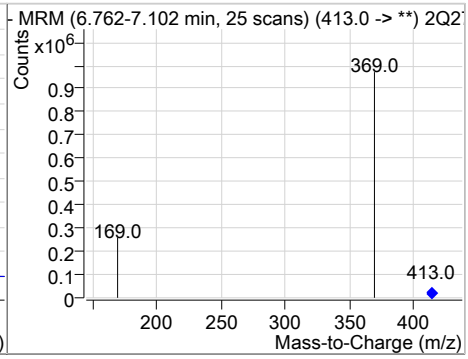




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	100.33	6.86	0.00	732011	413.0 -> 169.0	26.6	7.3	47.3

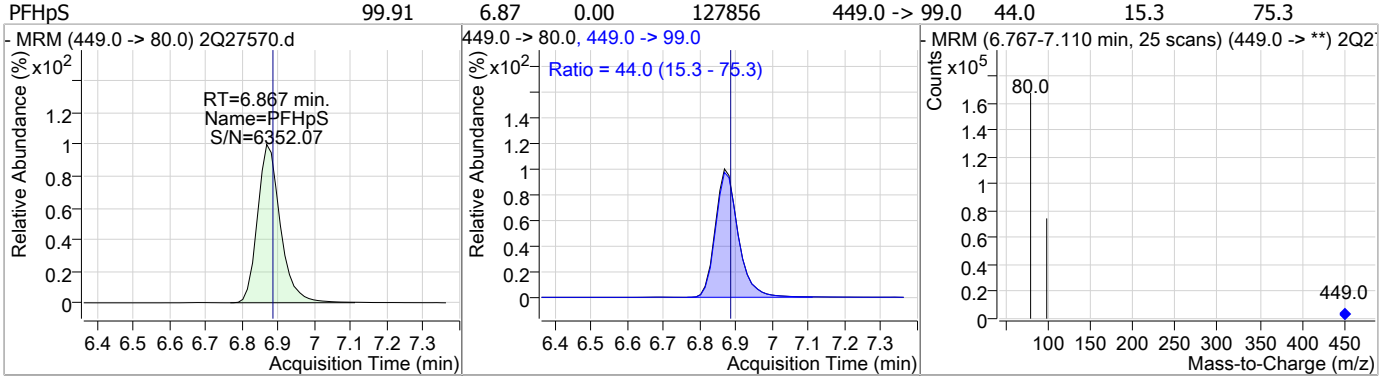




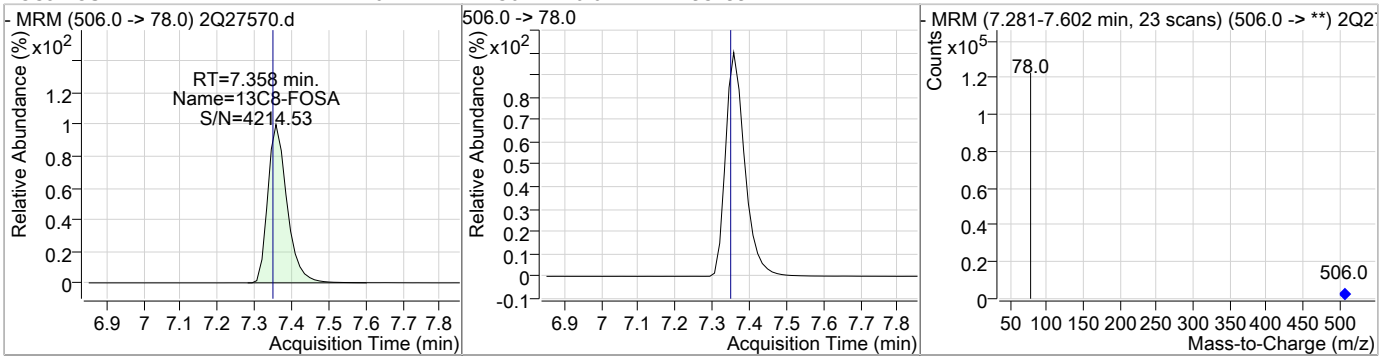


Perfluorinated Compounds by LC/MS/MS

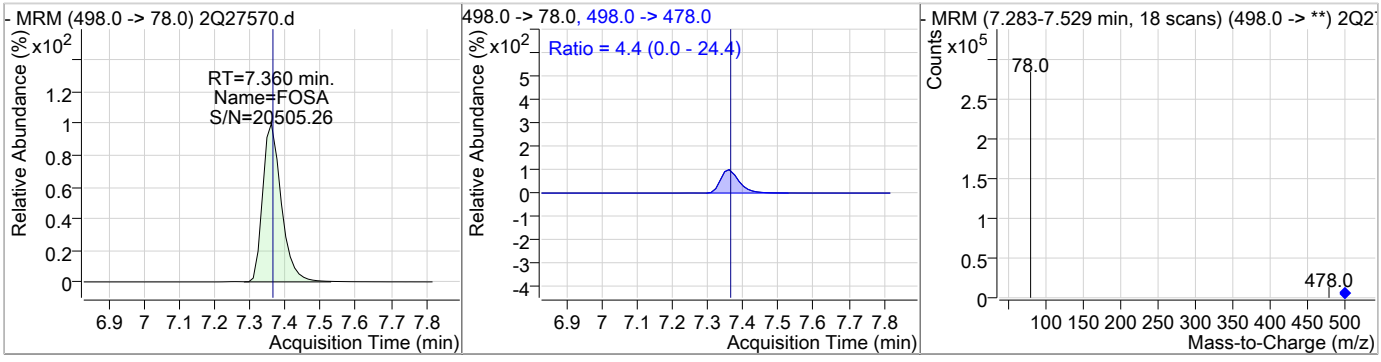
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	99.91	6.87	0.00	127856	449.0 -> 99.0	44.0	15.3	75.3



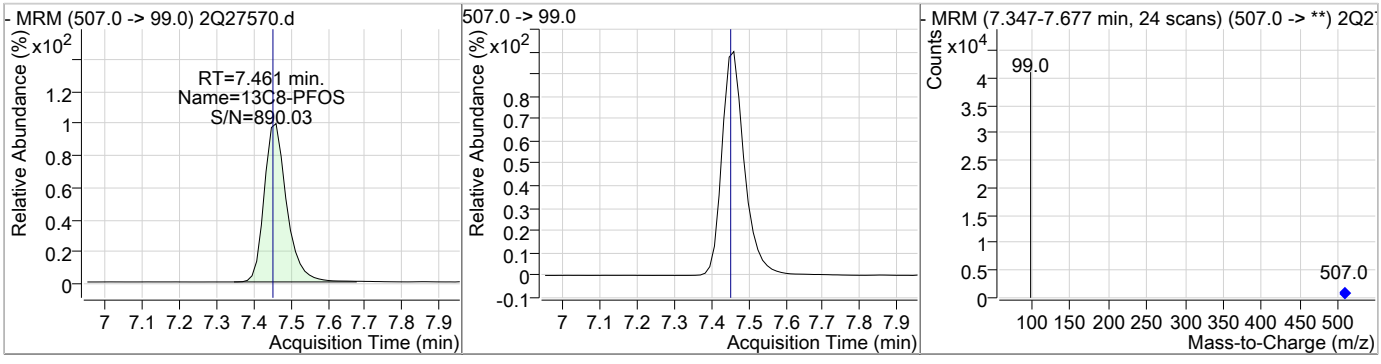
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.47	7.36	0.01	93799				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	100.04	7.36	0.01	225790	498.0 -> 478.0	4.4	0.0	24.4

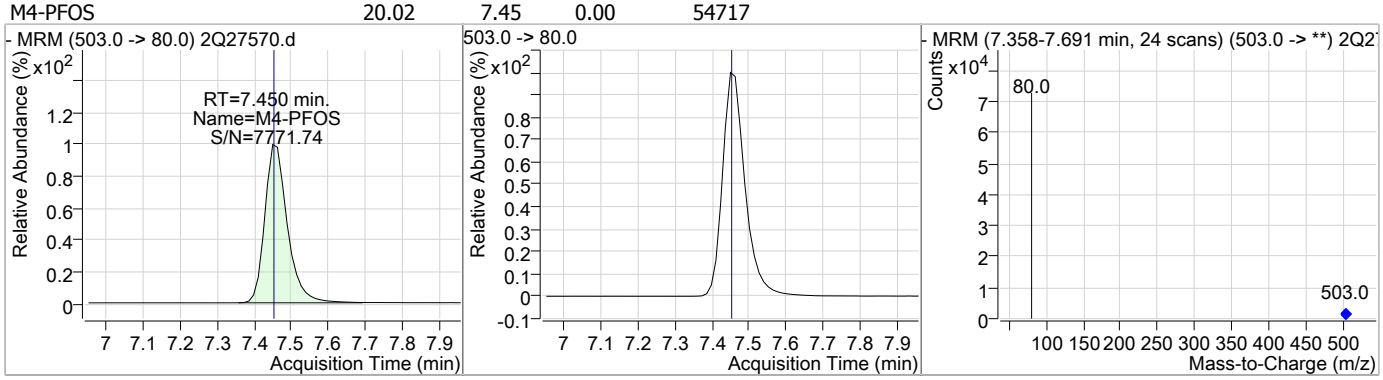


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.46	7.46	0.01	30538				

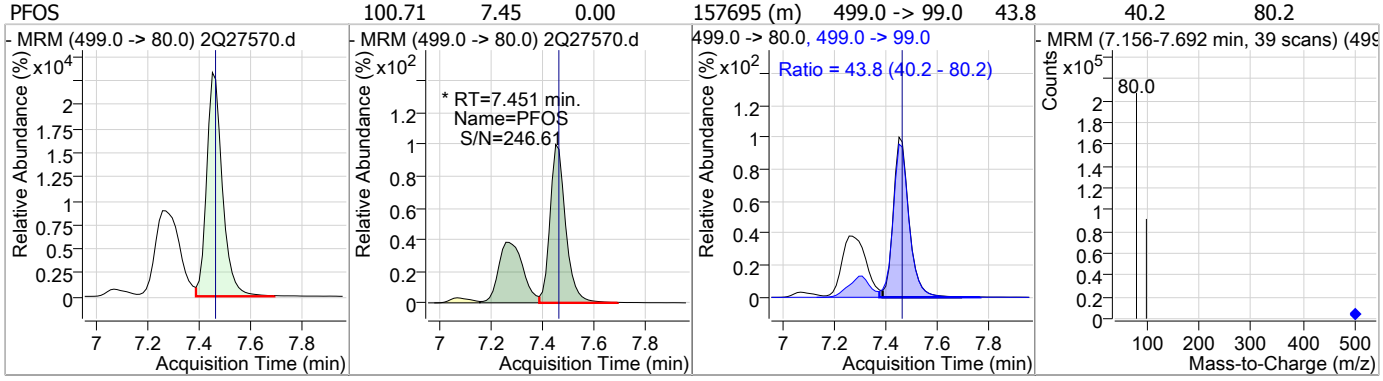


Perfluorinated Compounds by LC/MS/MS

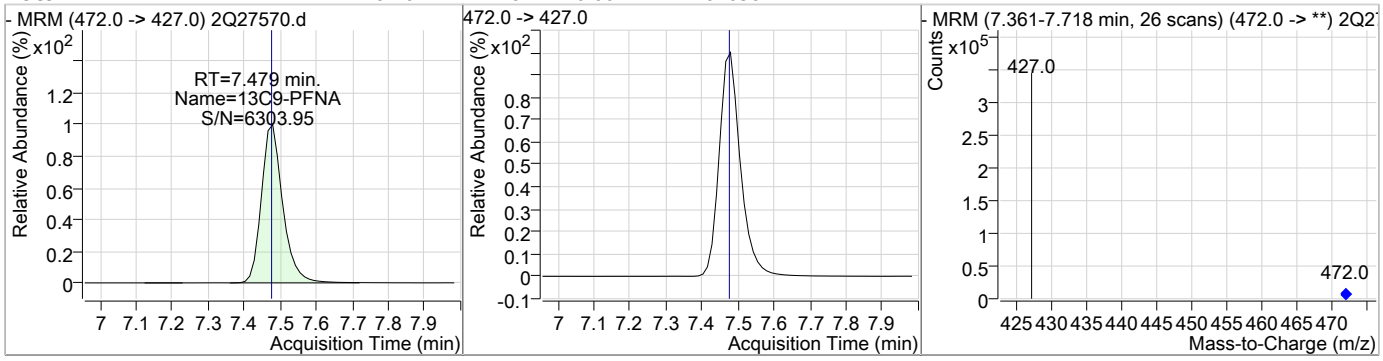
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.45	0.00	54717				



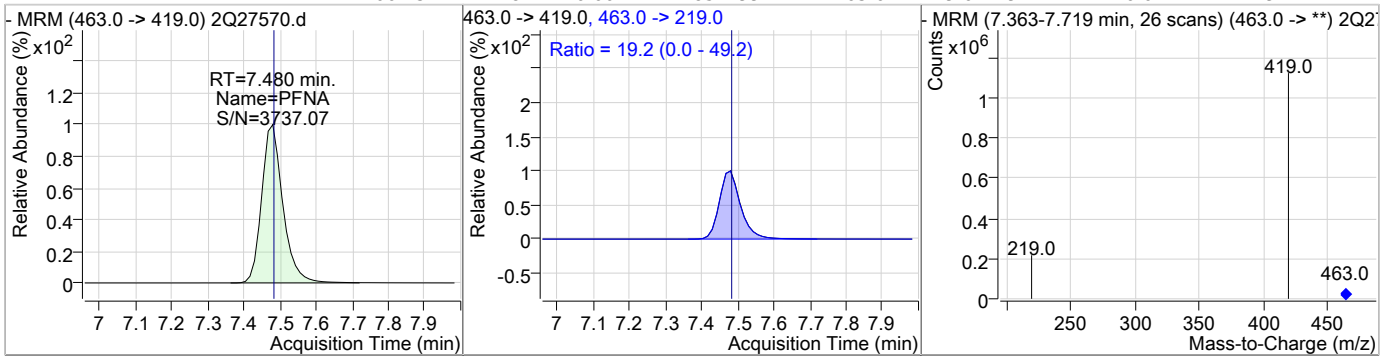
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	100.71	7.45	0.00	157695 (m)	499.0 -> 99.0	43.8	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.26	7.48	0.00	261638				

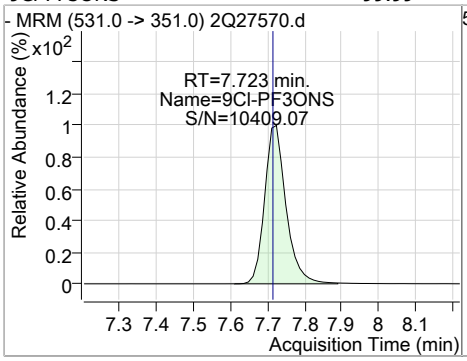


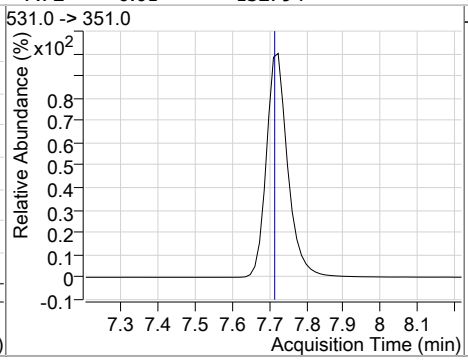
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	100.73	7.48	0.00	852799	463.0 -> 219.0	19.2	0.0	49.2

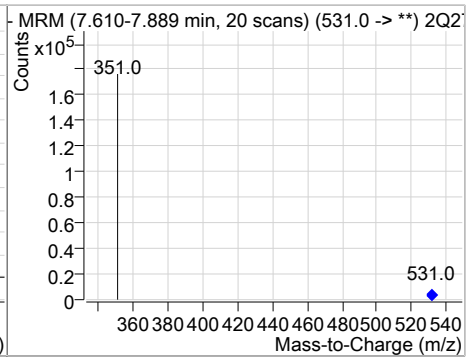


Perfluorinated Compounds by LC/MS/MS

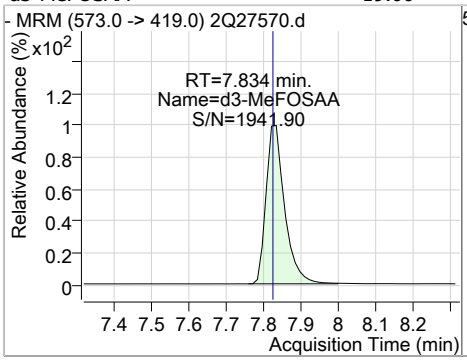
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	99.99	7.72	0.01	132794				

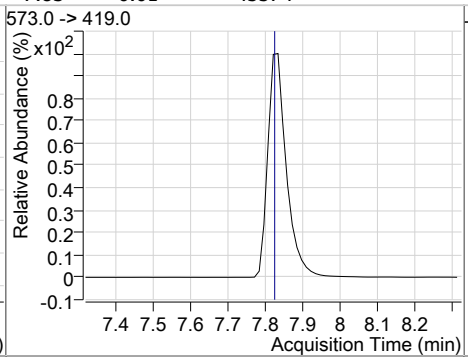


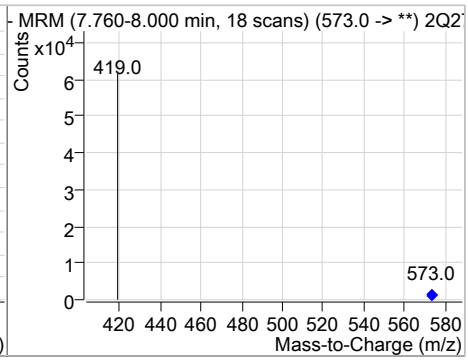




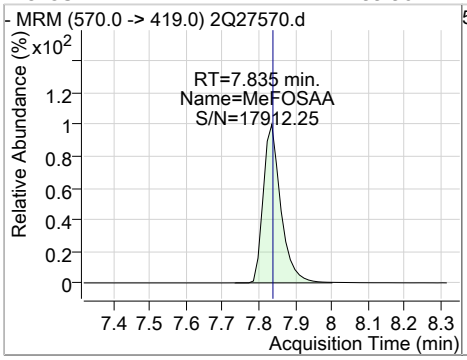
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.06	7.83	0.01	45574				

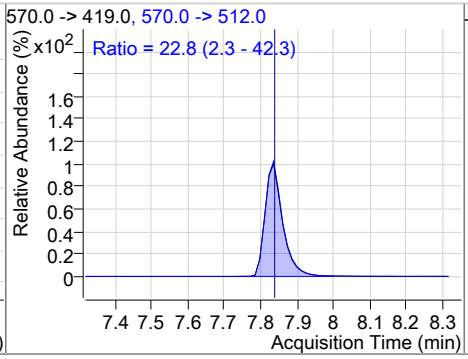


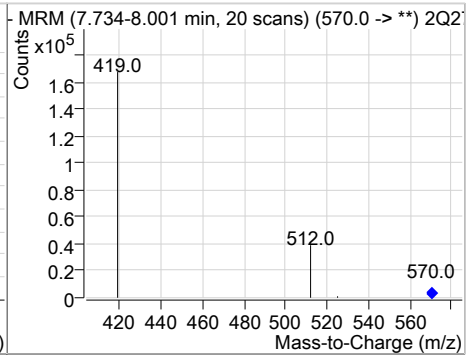




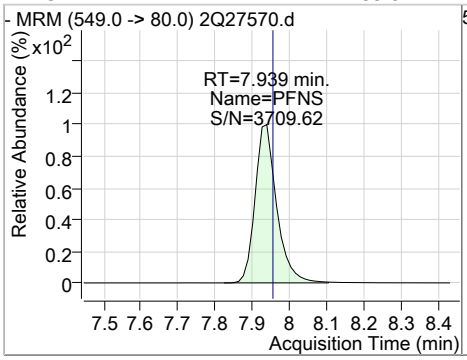
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	99.98	7.84	0.01	126546	570.0 -> 512.0	22.8	2.3	42.3

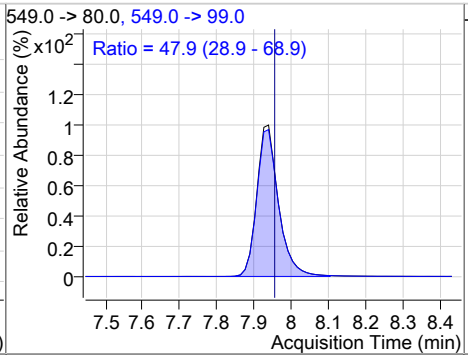


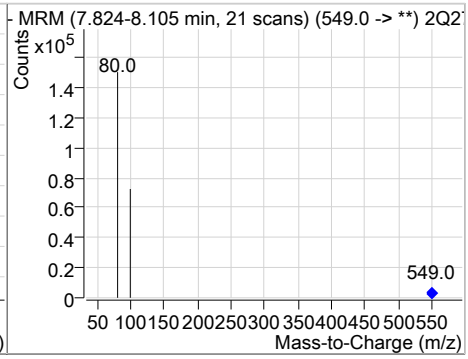




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	99.91	7.94	0.00	114232	549.0 -> 99.0	47.9	28.9	68.9

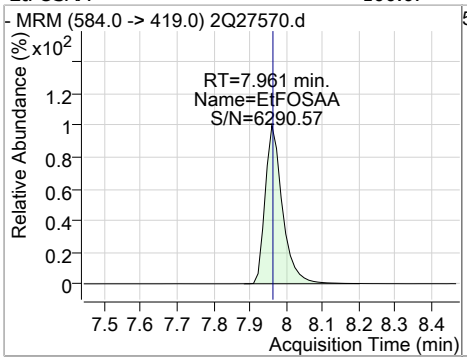


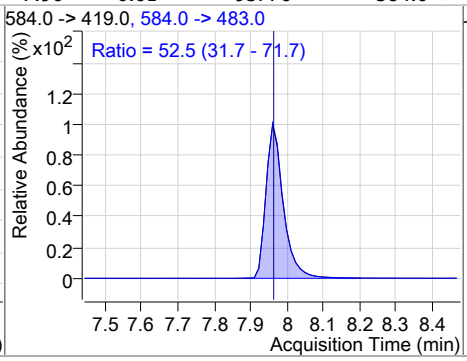


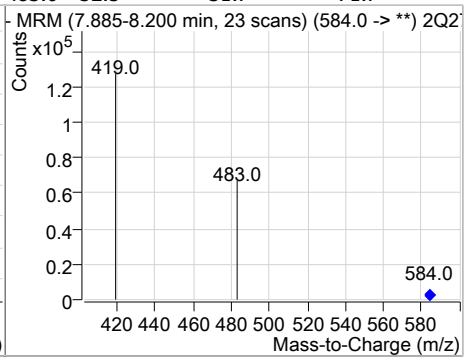


Perfluorinated Compounds by LC/MS/MS

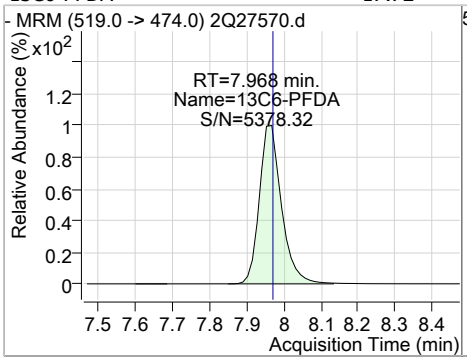
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	100.07	7.96	0.01	95776	584.0 -> 483.0	52.5	31.7	71.7

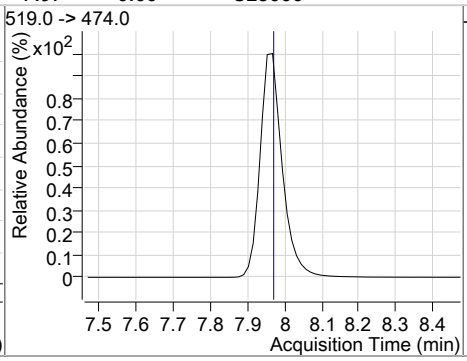


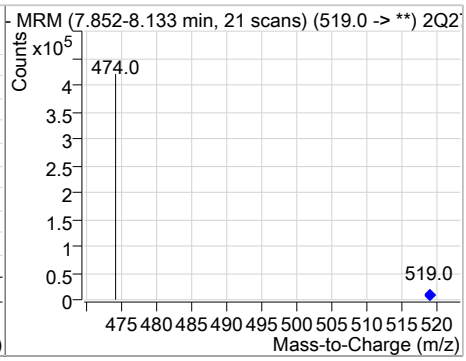




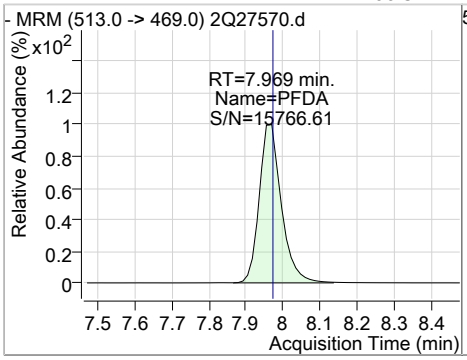
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.72	7.97	0.00	328060				

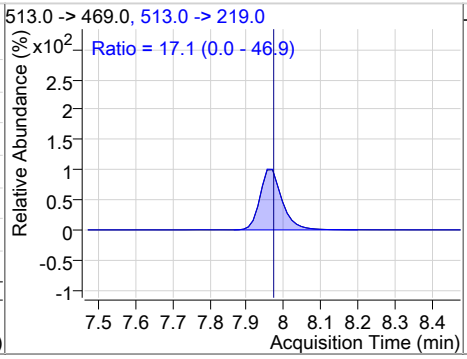


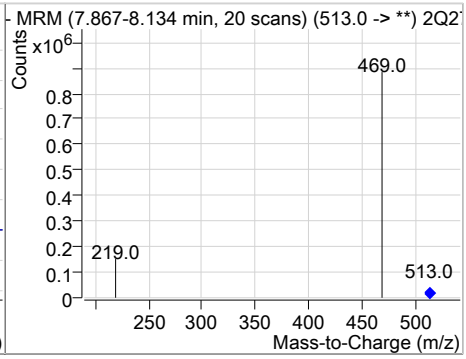




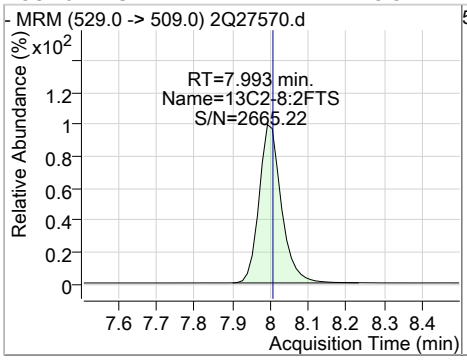
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	100.31	7.97	0.00	694355	513.0 -> 219.0	17.1	0.0	46.9

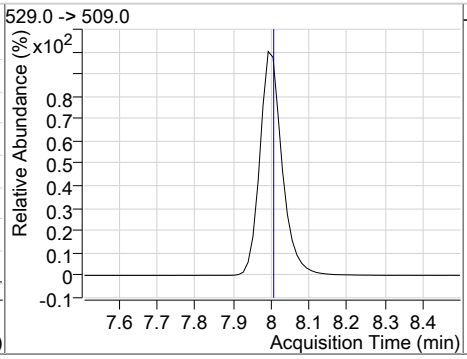


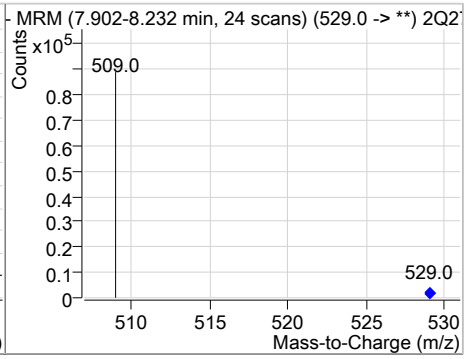




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.51	7.99	-0.01	66762				

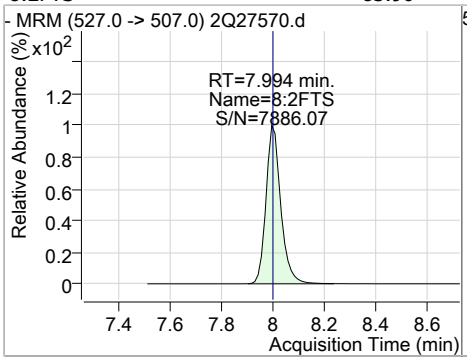


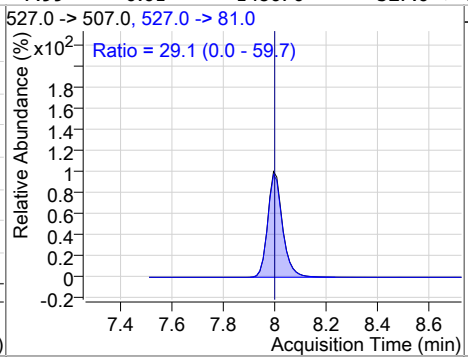


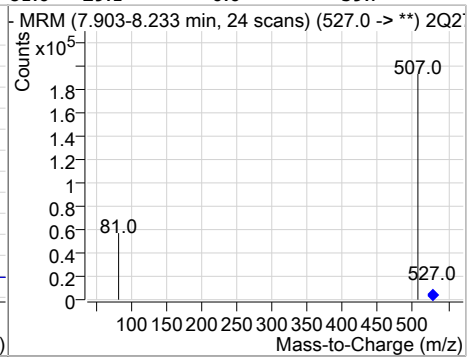


Perfluorinated Compounds by LC/MS/MS

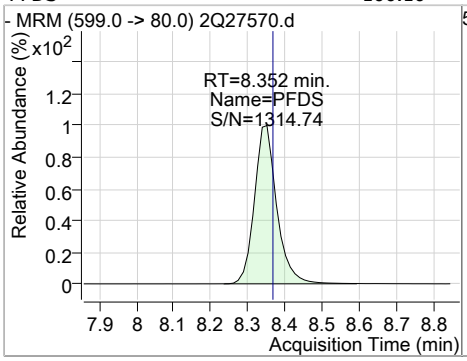
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	83.96	7.99	-0.01	148070	527.0 -> 81.0	29.1	0.0	59.7

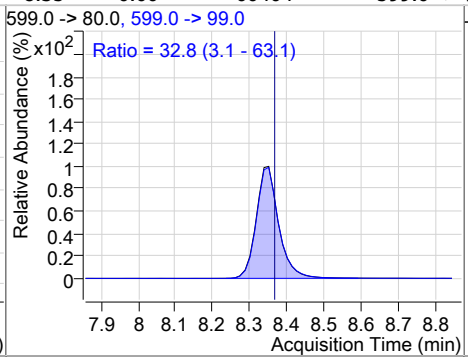


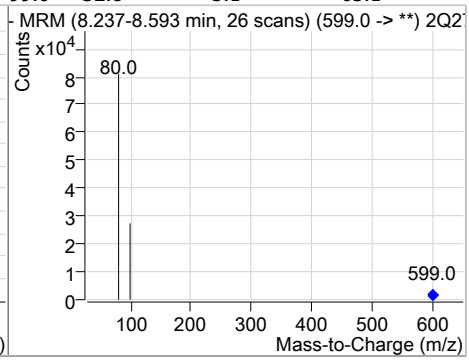




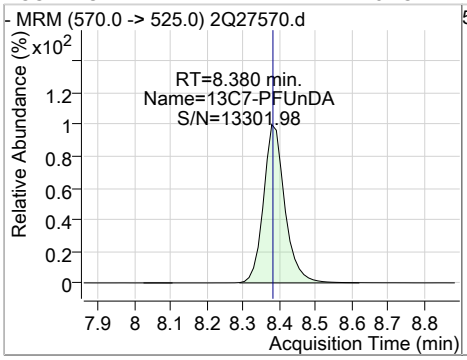
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	100.10	8.35	0.00	60404	599.0 -> 99.0	32.8	3.1	63.1

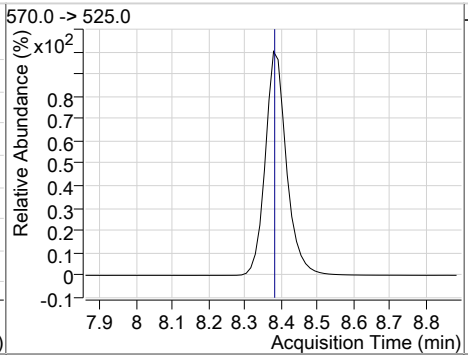


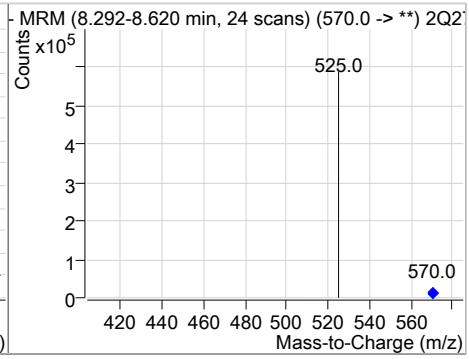




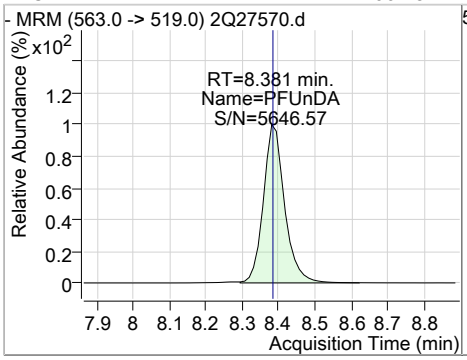
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.43	8.38	0.00	441534				

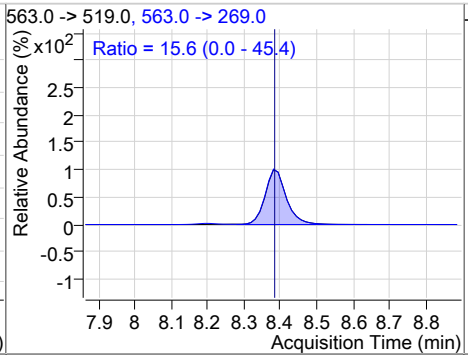


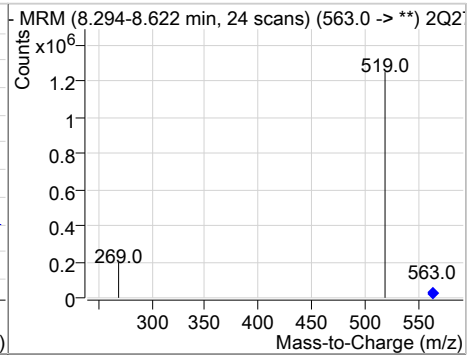




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	100.78	8.38	0.00	941992	563.0 -> 269.0	15.6	0.0	45.4

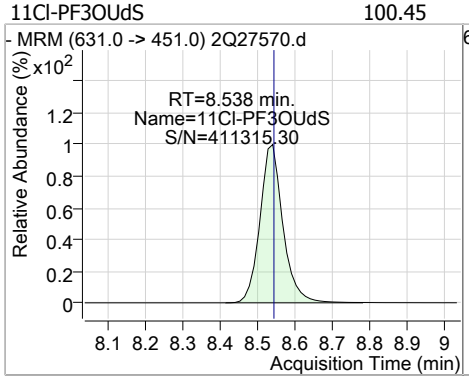


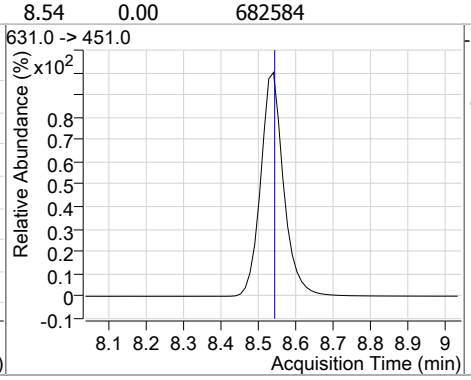


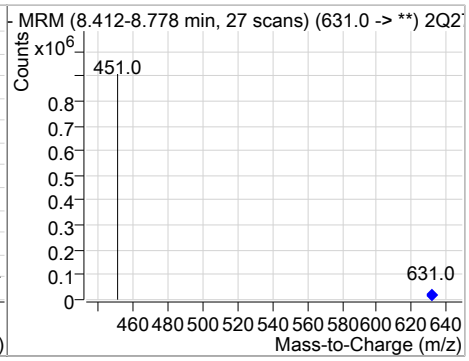


Perfluorinated Compounds by LC/MS/MS

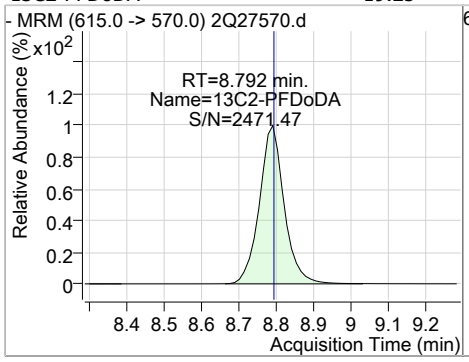
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	100.45	8.54	0.00	682584				

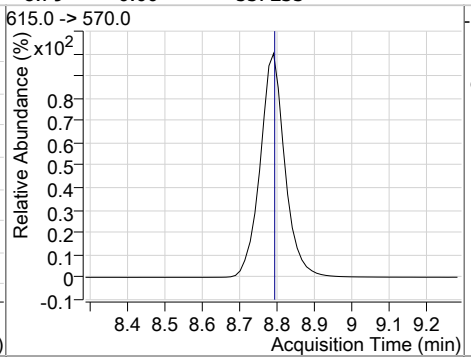


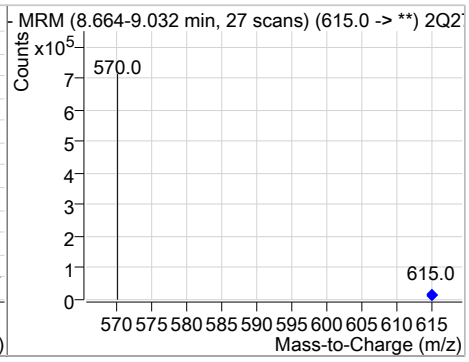




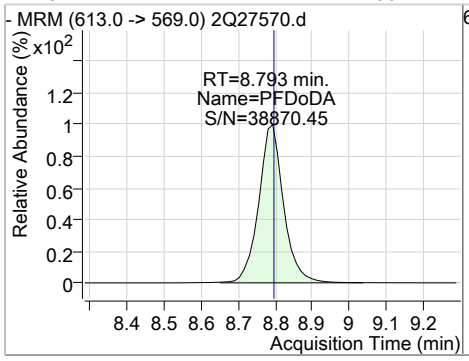
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.25	8.79	0.00	537233				

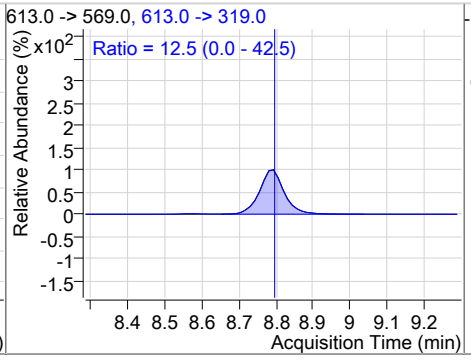


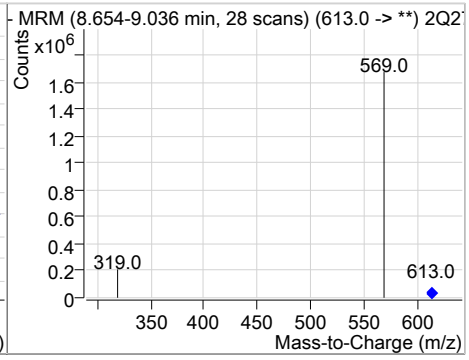




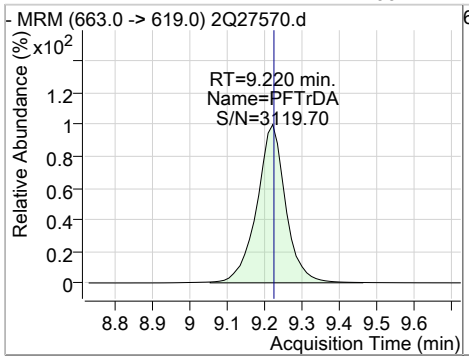
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	100.41	8.79	0.00	1263211	613.0 -> 319.0	12.5	0.0	42.5

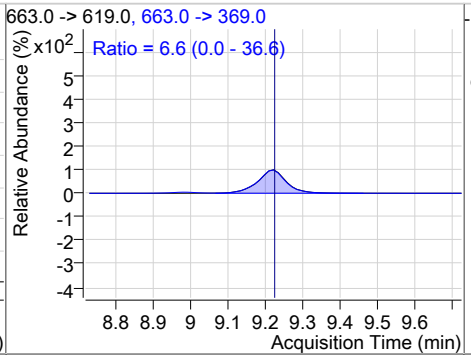


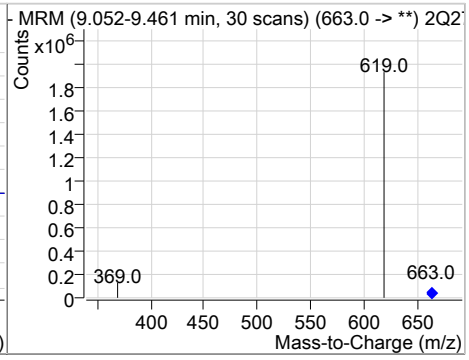




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	100.11	9.22	0.00	1461007	663.0 -> 369.0	6.6	0.0	36.6

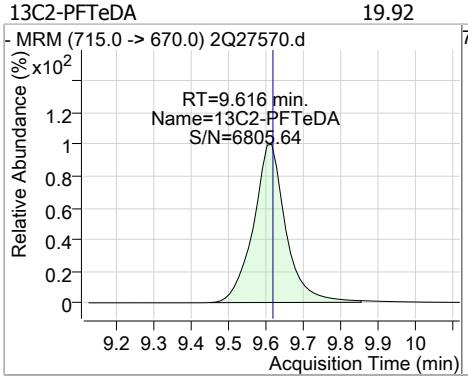


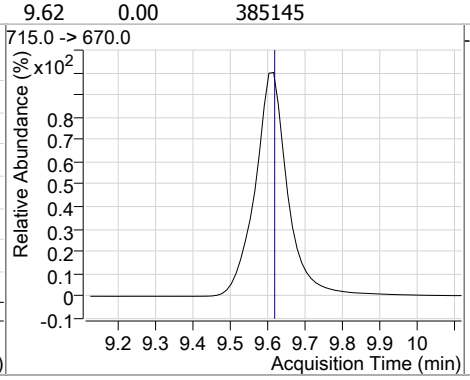


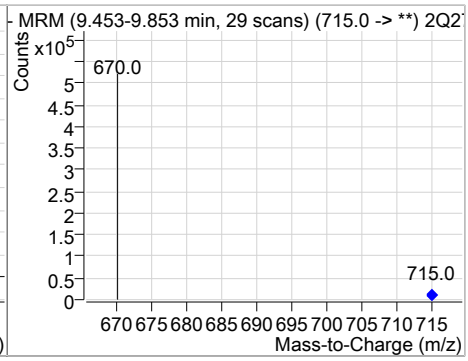


Perfluorinated Compounds by LC/MS/MS

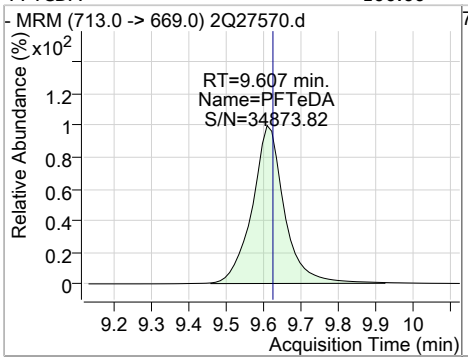
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.92	9.62	0.00	385145				

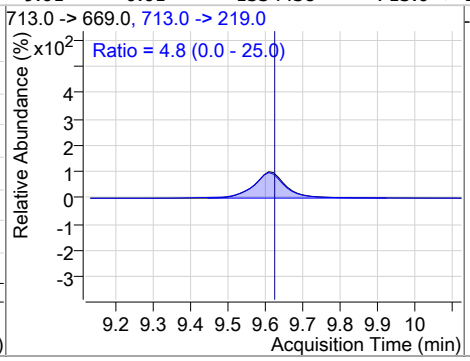


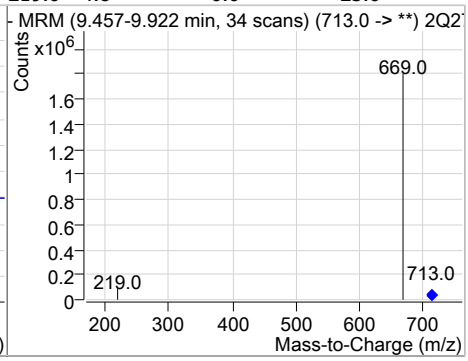




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	100.60	9.61	-0.01	1334438	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-IC439
Lab FileID: 2Q27570.D
Injection Time: 03/13/19 12:34
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.45	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27572.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 1:06:07 PM
Sample Name : icv439-20
Vial : Vial 10
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

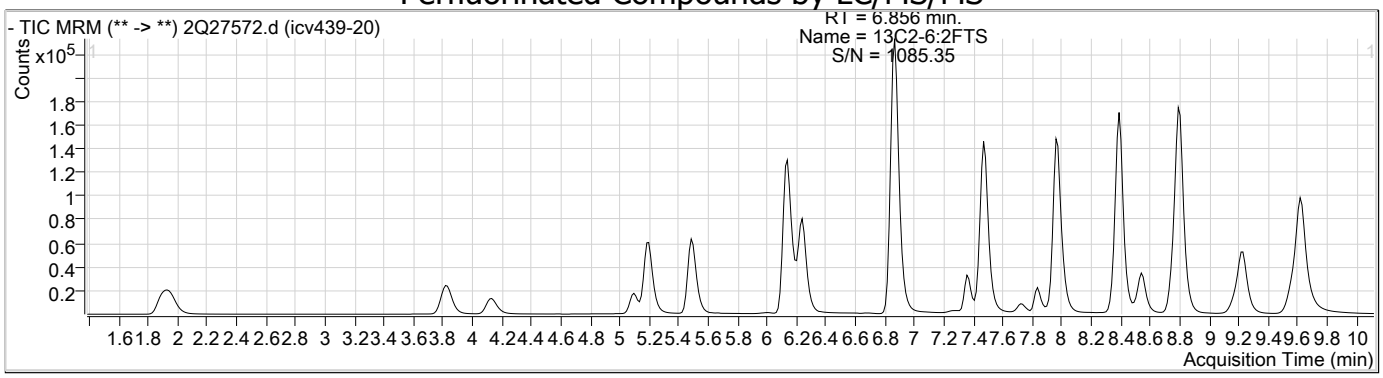
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.874	415.0 -> 370.0	402015	20.00	µg/L	0.013
13C4-PFOS	7.463	503.0 -> 80.0	56550	20.00	µg/L	0.012
M4-PFBA	1.927	217.0 -> 172.0	158860	20.00	µg/L	0.038
M5-PFPeA	3.824	268.0 -> 223.0	130957	20.00	µg/L	0.025
M5-PFHxA	5.202	318.0 -> 273.0	187333	20.00	µg/L	0.025
M4-PFHpA	6.142	367.0 -> 322.0	262351	20.00	µg/L	0.024
M8-PFOA	6.872	421.0 -> 376.0	279392	20.00	µg/L	0.013
M9-PFNA	7.479	472.0 -> 427.0	265760	20.00	µg/L	0.000
M6-PFDA	7.968	519.0 -> 474.0	354949	20.00	µg/L	0.000
M7-PFUnDA	8.392	570.0 -> 525.0	458213	20.00	µg/L	0.013
M2-PFDoDA	8.792	615.0 -> 570.0	532476	20.00	µg/L	0.000
M2-PFTeDA	9.616	715.0 -> 670.0	359406	20.00	µg/L	0.000
M8-FOSA	7.358	506.0 -> 78.0	110410	20.00	µg/L	0.011
M3-PFBS	4.130	302.0 -> 99.0	21964	20.00	µg/L	0.038
M3-PFHxS	6.186	402.0 -> 99.0	24867	20.00	µg/L	0.025
M8-PFOS	7.461	507.0 -> 99.0	30019	20.00	µg/L	0.012
M2-4:2FTS	5.097	329.0 -> 309.0	71860	20.00	µg/L	0.025
M2-6:2FTS	6.856	429.0 -> 409.0	77787	20.00	µg/L	0.000
M2-8:2FTS	8.005	529.0 -> 509.0	50052	20.00	µg/L	0.001
M3-MeFOSAA	7.835	573.0 -> 419.0	45273	20.00	µg/L	0.012
M3-HFPO-DA	5.494	287.0 -> 169.0	205828	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	5.097	329.0 -> 309.0	71855	17.31	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 86.5%		
13C2-6:2FTS	6.856	429.0 -> 409.0	77707	17.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.1%		
13C2-8:2FTS	8.005	529.0 -> 509.0	50068	17.63	µg/L	0.001
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.2%		
13C2-PFDoDA	8.792	615.0 -> 570.0	533392	19.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%		
13C2-PFTeDA	9.616	715.0 -> 670.0	359693	18.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C3-PFBS	4.130	302.0 -> 99.0	21836	18.03	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.2%		
13C3-PFHxS	6.186	402.0 -> 99.0	24905	18.28	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%		
13C4-PFBA	1.927	217.0 -> 172.0	157984	18.23	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.1%		
13C4-PFHpA	6.142	367.0 -> 322.0	262123	18.21	µg/L	0.024
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.0%		
13C5-PFHxA	5.202	318.0 -> 273.0	187047	18.24	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C5-PFPeA	3.824	268.0 -> 223.0	130785	18.24	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C6-PFDA	7.968	519.0 -> 474.0	354926	19.17	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

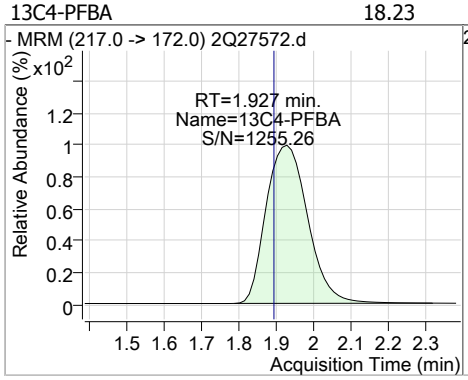
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%			
13C7-PFUnDA	8.392	570.0 -> 525.0	457775	19.11	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.5%			
13C8-FOSA	7.358	506.0 -> 78.0	110412	19.39	µg/L		0.011
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%			
13C8-PFOA	6.872	421.0 -> 376.0	279087	18.74	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.7%			
13C8-PFOS	7.461	507.0 -> 99.0	30049	18.17	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.8%			
13C9-PFNA	7.479	472.0 -> 427.0	265634	18.54	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.7%			
d3-MeFOSAA	7.835	573.0 -> 419.0	45265	18.93	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.7%			
M2-PFOA	6.874	415.0 -> 370.0	402163	19.99	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.463	503.0 -> 80.0	56575	20.00	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	5.494	287.0 -> 169.0	205828	101.33	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 101.3%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	7.961	584.0 -> 419.0	18917	18.98	µg/L	m	98
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	7.835	570.0 -> 419.0	21387	17.80	µg/L	m	92
PFBA	-	213.0 -> 169.0	-	N.D.			
PFBS	4.134	299.0 -> 80.0	35634	19.64	µg/L		100
PFDA	7.969	513.0 -> 469.0	146803	19.59	µg/L		100
PFDoDA	8.793	613.0 -> 569.0	242594	19.44	µg/L		100
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	6.144	363.0 -> 319.0	244332	19.86	µg/L		100
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	5.191	313.0 -> 269.0	63783	19.68	µg/L		100
PFHxS	6.176	399.0 -> 80.0	29148	19.68	µg/L	m	96
PFNA	7.480	463.0 -> 419.0	175282	20.37	µg/L		99
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.875	413.0 -> 369.0	154611	20.23	µg/L		99
PFOS	7.464	499.0 -> 80.0	30336	19.71	µg/L	m	79
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	9.620	713.0 -> 669.0	240334	19.59	µg/L		99
PFTrDA	9.232	663.0 -> 619.0	273449	20.26	µg/L		100
PFUnDA	8.393	563.0 -> 519.0	192458	19.84	µg/L		99
11Cl-PF3OUdS	8.538	631.0 -> 451.0	140508	20.85	µg/L		100
9Cl-PF3ONS	7.723	531.0 -> 351.0	27323	20.81	µg/L		100
ADONA	6.241	377.0 -> 251.0	295798	20.61	µg/L		100
HFPO-DA	5.498	329.0 -> 169.0	46048	18.44	µg/L		96

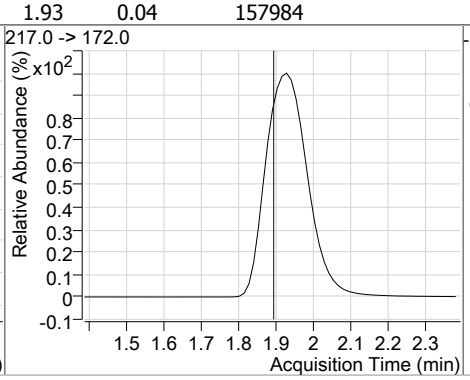
 # = Qualifier out of range, m = manually integrated, + = Area summed

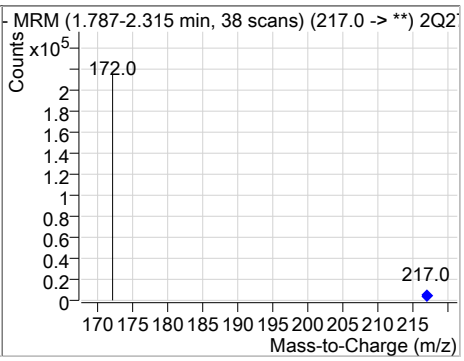
Perfluorinated Compounds by LC/MS/MS



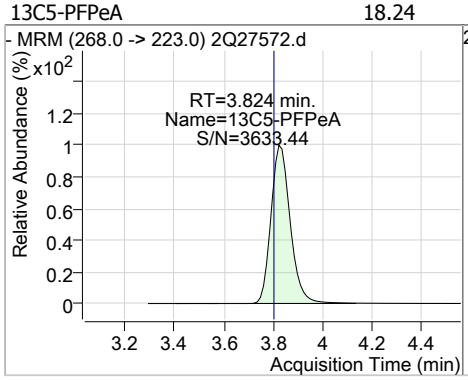
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.23	1.93	0.04	157984				

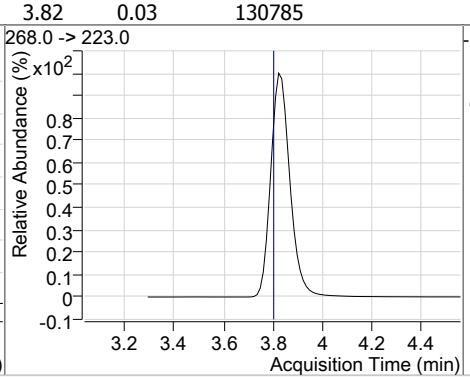


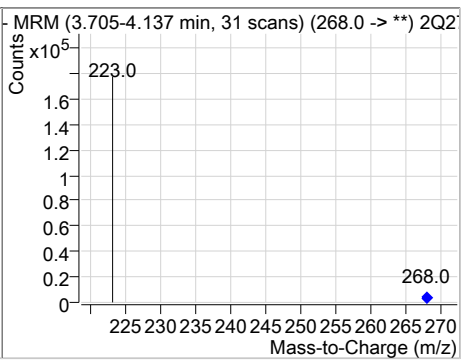




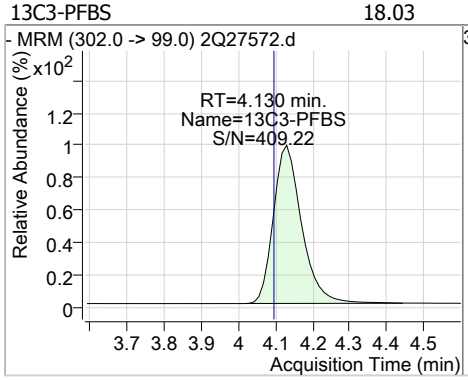
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.24	3.82	0.03	130785				

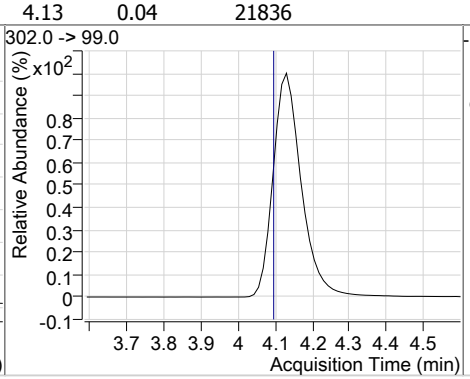


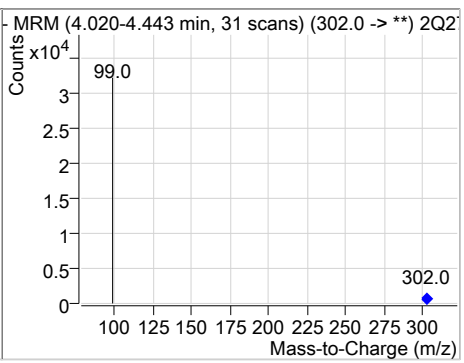




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.03	4.13	0.04	21836				

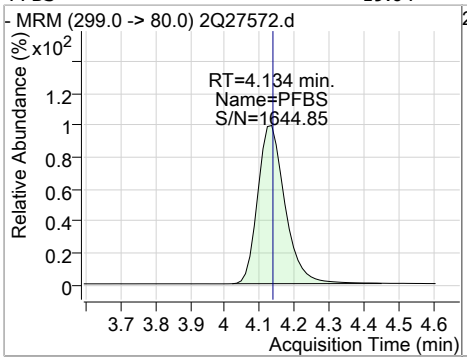


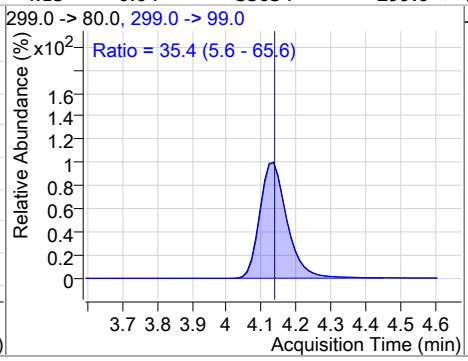


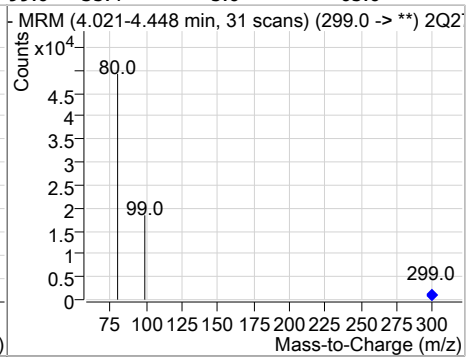


Perfluorinated Compounds by LC/MS/MS

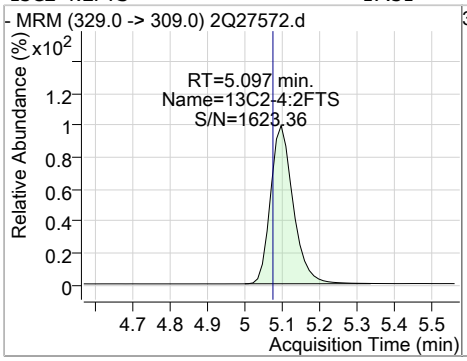
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.64	4.13	0.04	35634	299.0 -> 99.0	35.4	5.6	65.6

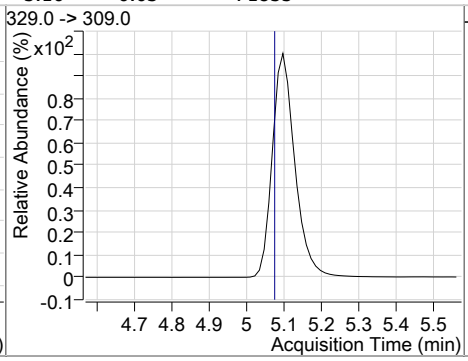


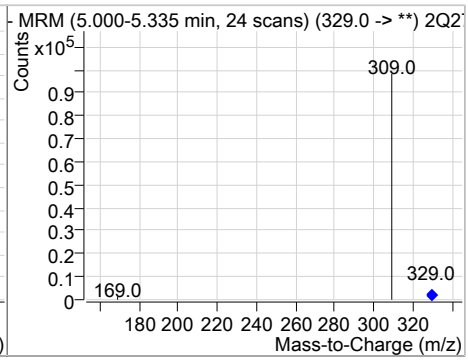




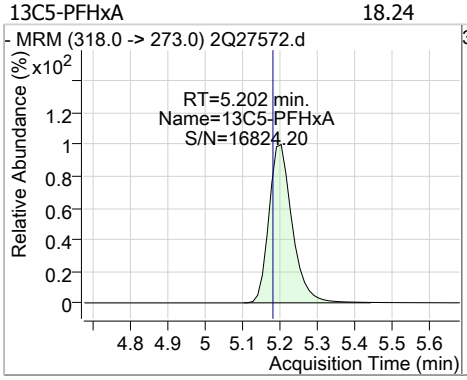
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.31	5.10	0.03	71855				

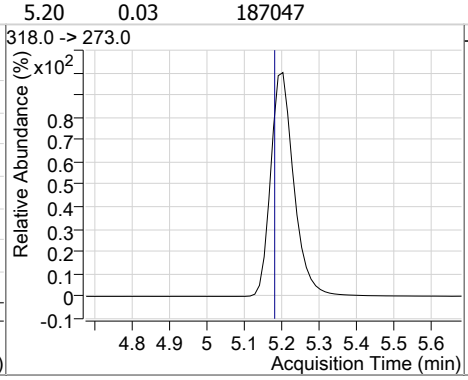


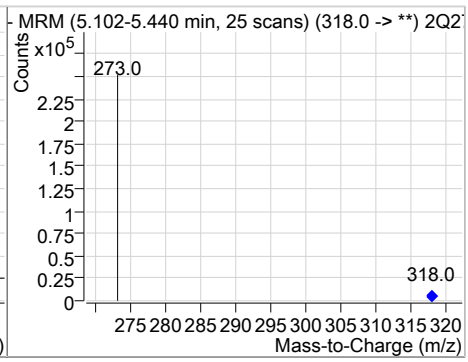




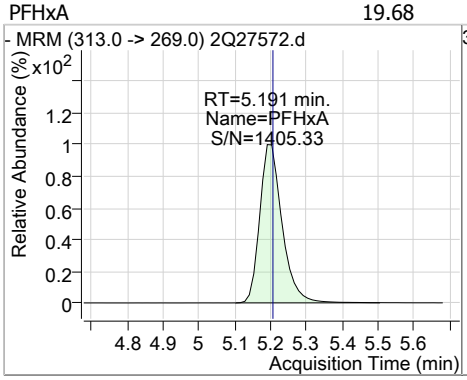
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.24	5.20	0.03	187047				

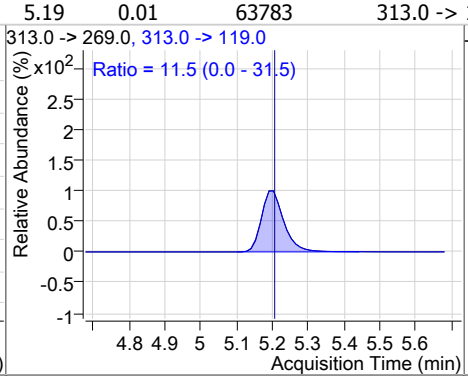


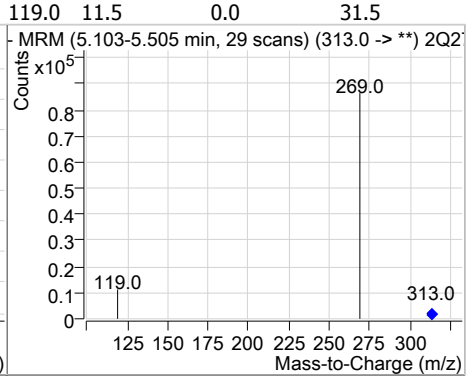




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.68	5.19	0.01	63783	313.0 -> 119.0	11.5	0.0	31.5

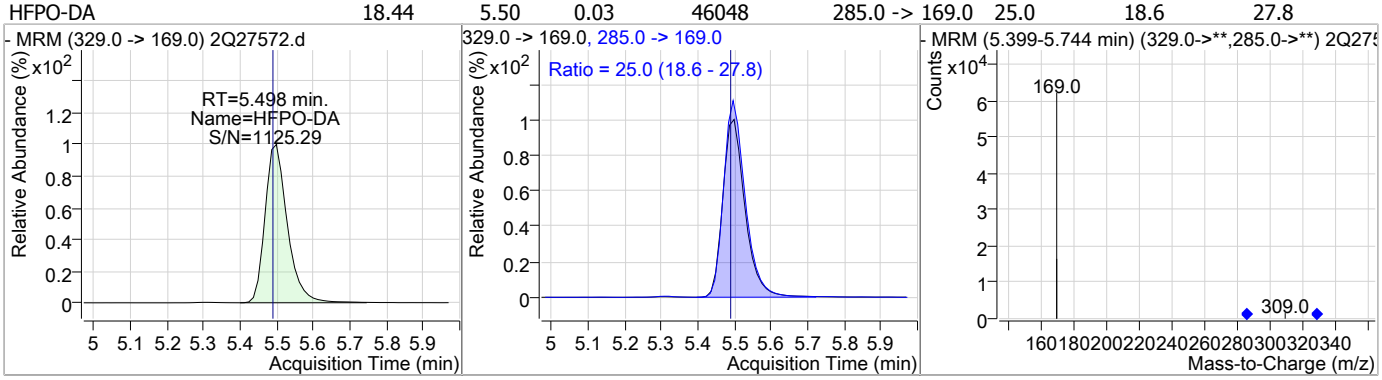




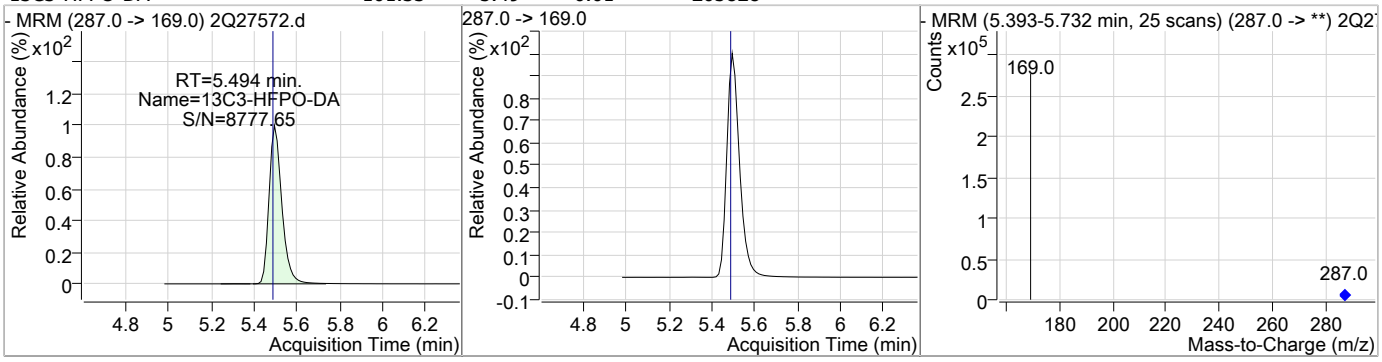


Perfluorinated Compounds by LC/MS/MS

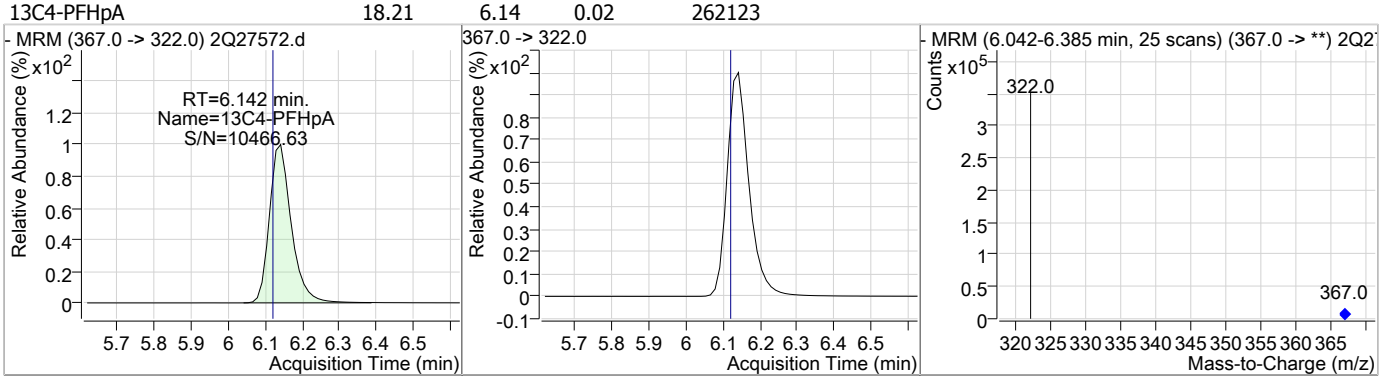
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.44	5.50	0.03	46048	285.0 -> 169.0	25.0	18.6	27.8



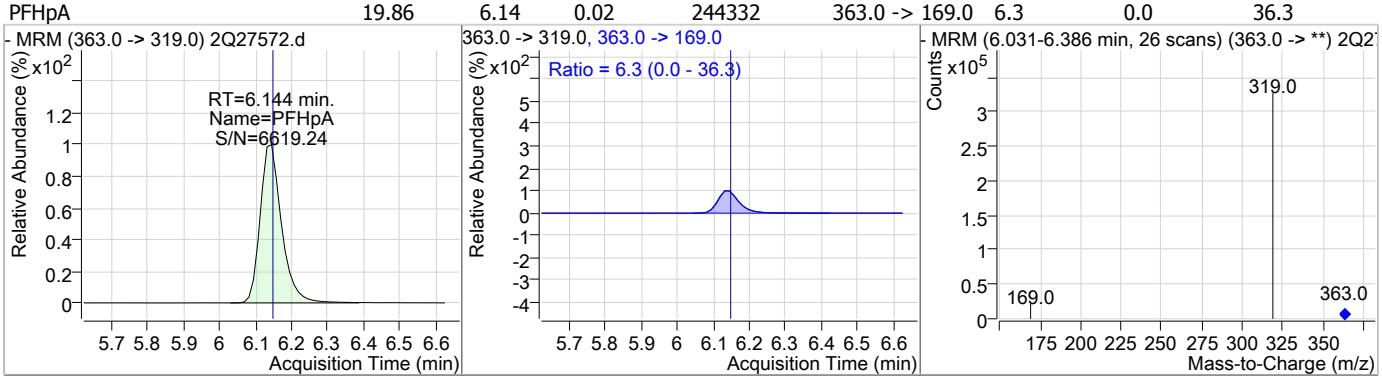
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	101.33	5.49	0.01	205828				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.21	6.14	0.02	262123				

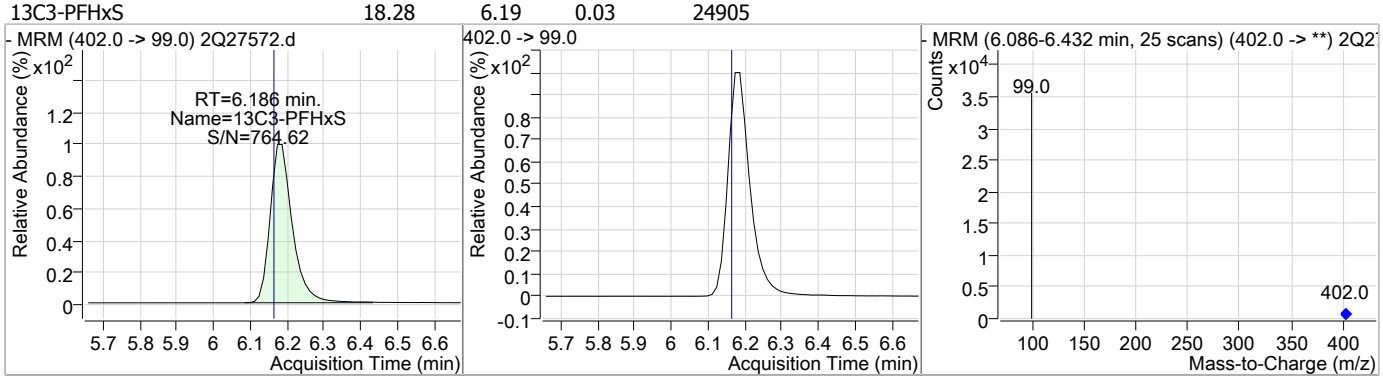


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.86	6.14	0.02	244332	363.0 -> 169.0	6.3	0.0	36.3

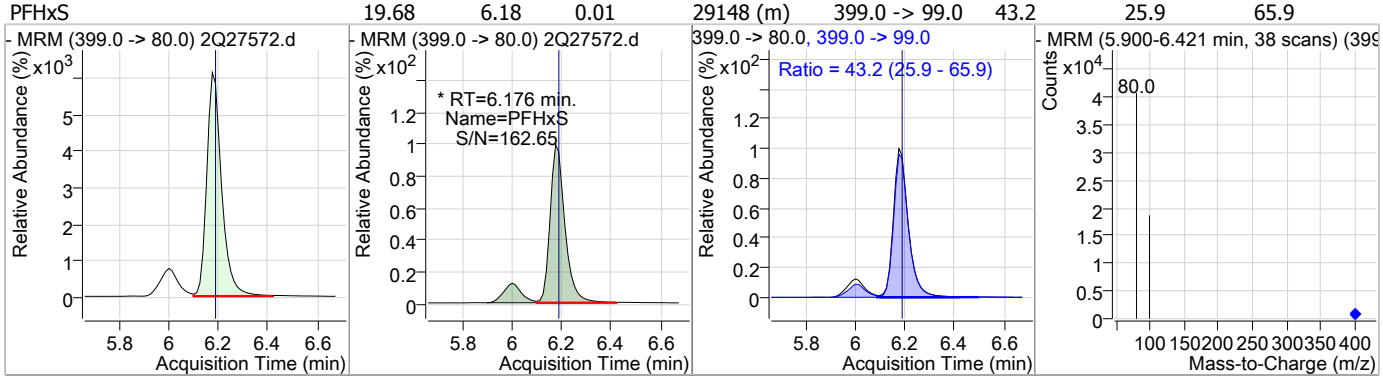


Perfluorinated Compounds by LC/MS/MS

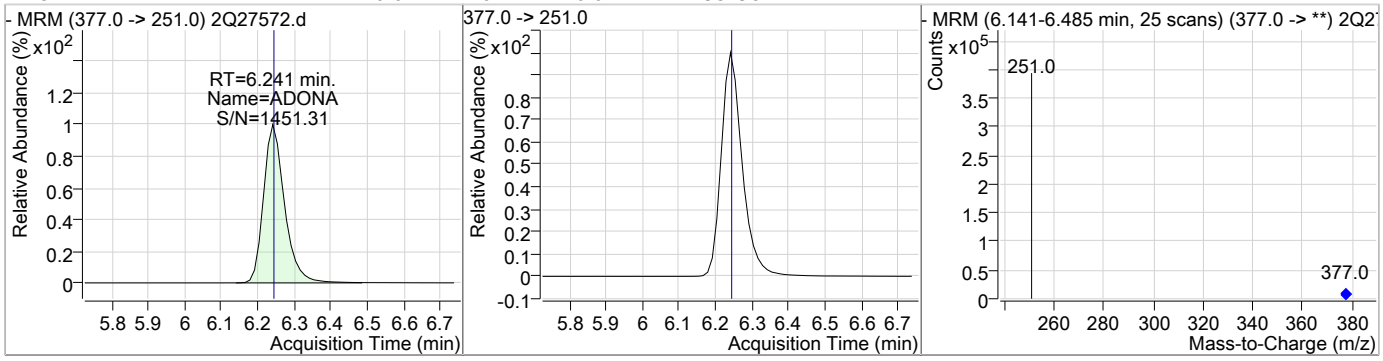
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.28	6.19	0.03	24905				



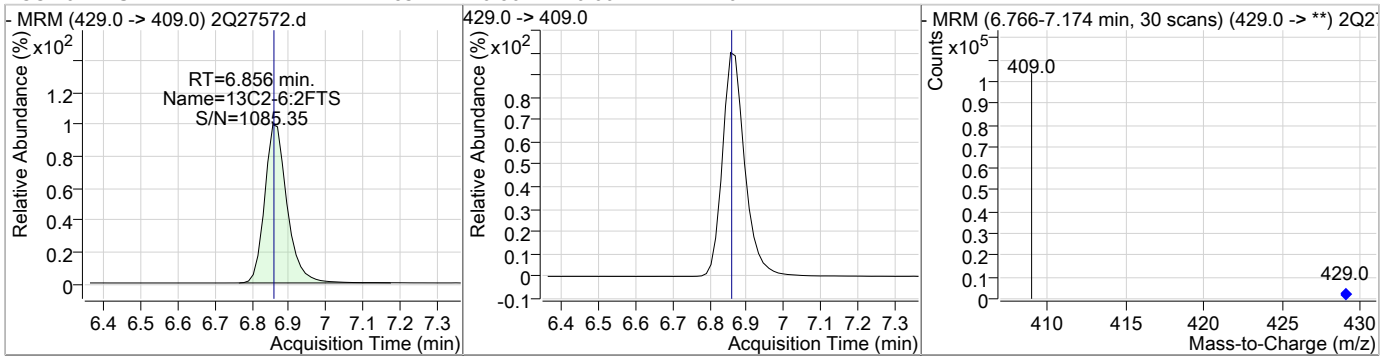
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.68	6.18	0.01	29148 (m)	399.0 -> 99.0	43.2	25.9	65.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	20.61	6.24	0.01	295798				

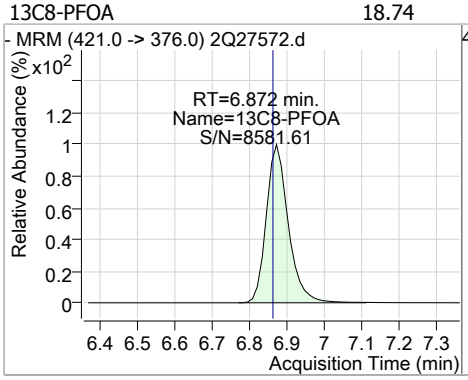


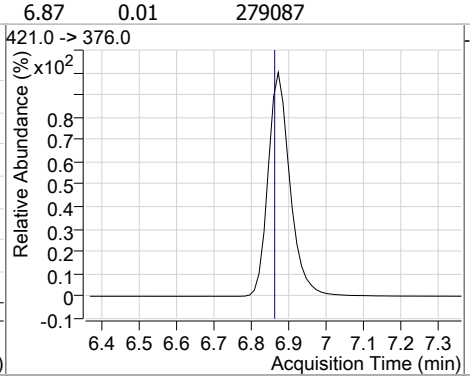
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	17.83	6.86	0.00	77707				

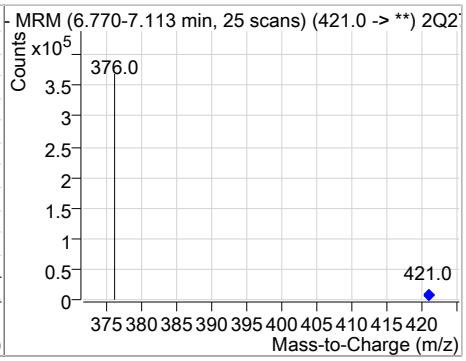


Perfluorinated Compounds by LC/MS/MS

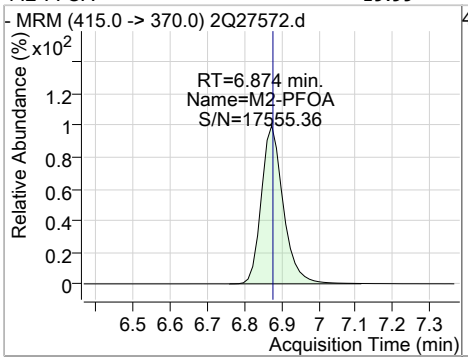
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.74	6.87	0.01	279087				

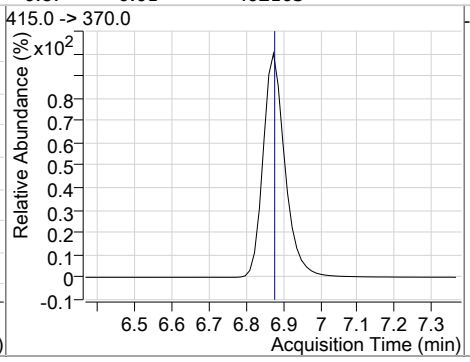


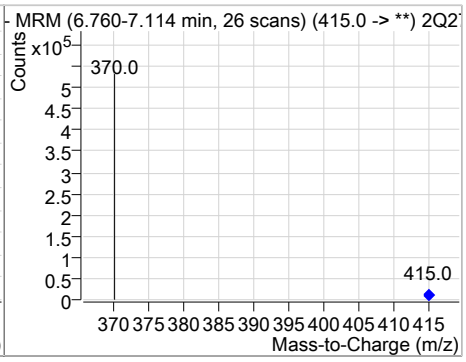




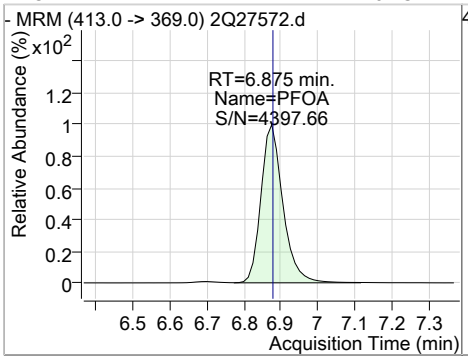
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.87	0.01	402163				

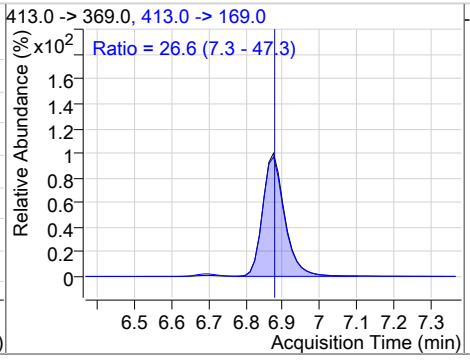


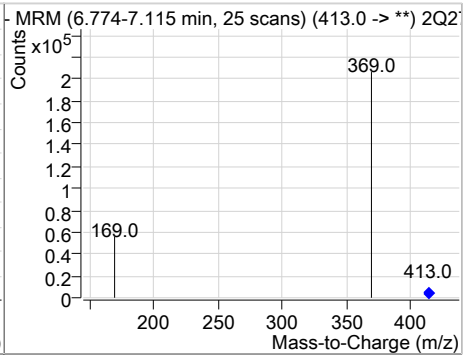




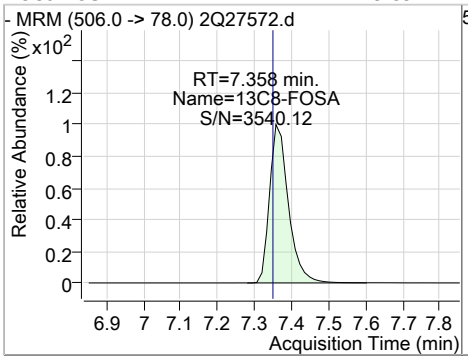
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.23	6.88	0.01	154611	413.0 -> 169.0	26.6	7.3	47.3

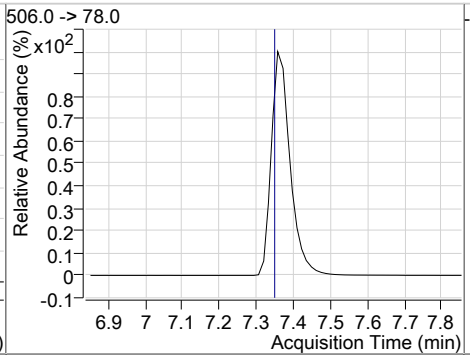


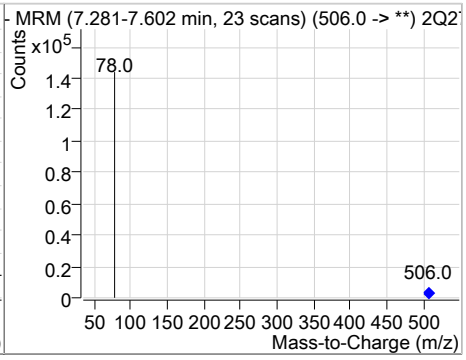




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.39	7.36	0.01	110412				

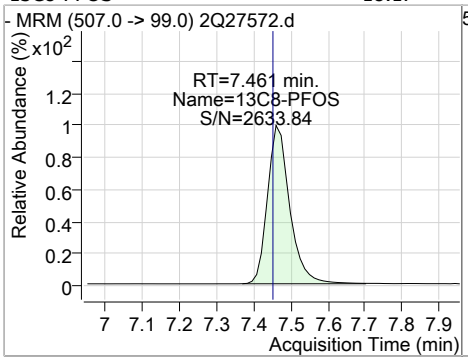


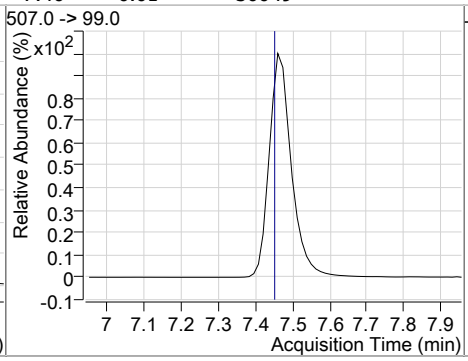


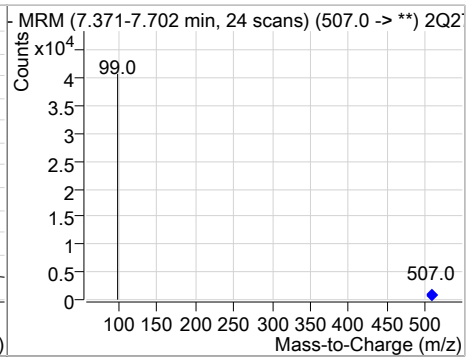


Perfluorinated Compounds by LC/MS/MS

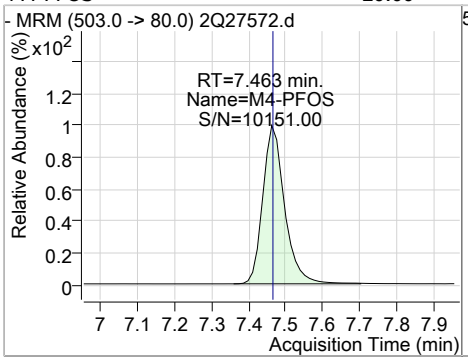
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.17	7.46	0.01	30049				

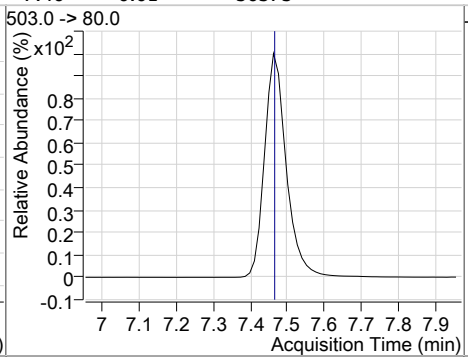


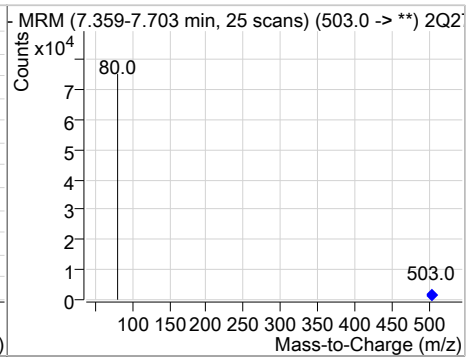




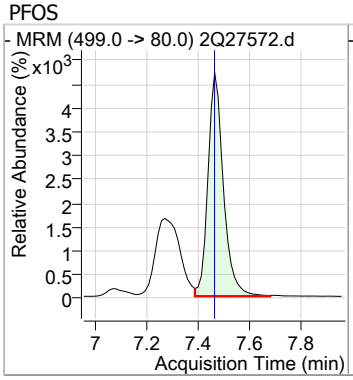
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.46	0.01	56575				

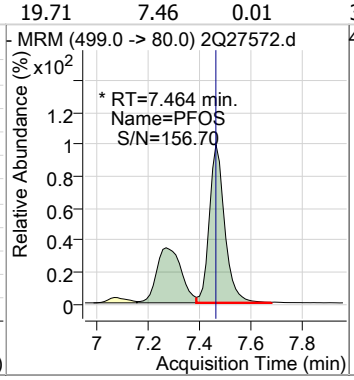


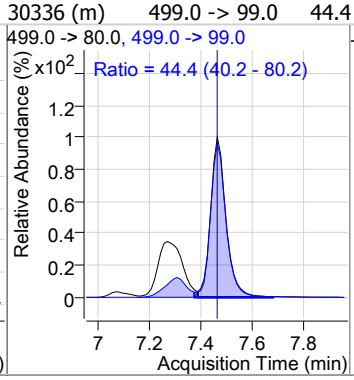


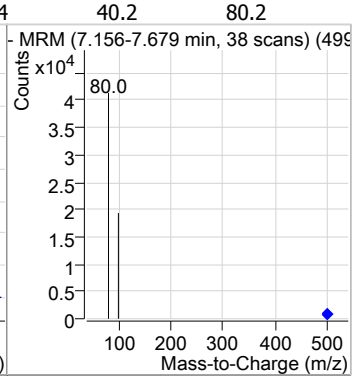


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.71	7.46	0.01	30336 (m)	499.0 -> 99.0	44.4	40.2	80.2

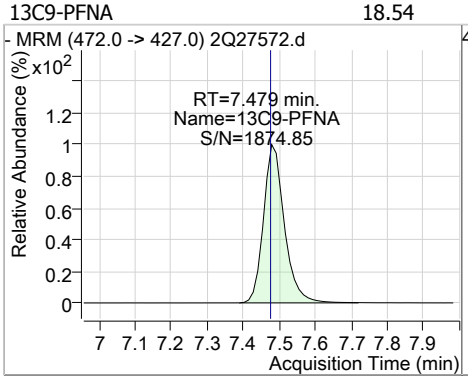


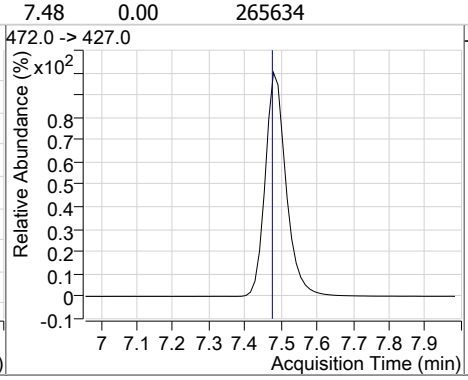


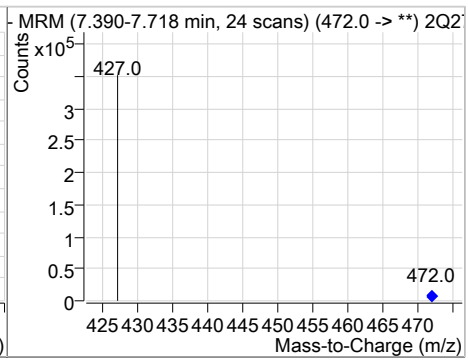




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.54	7.48	0.00	265634				

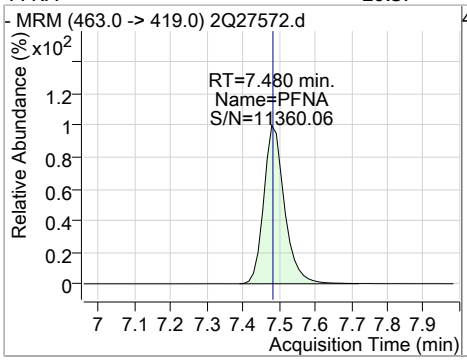


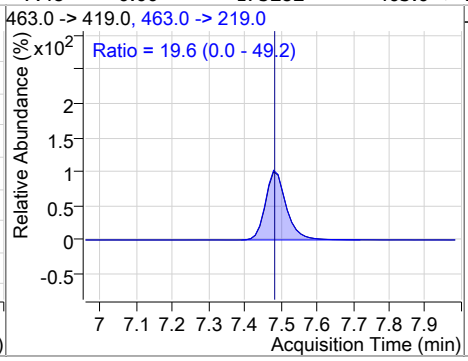


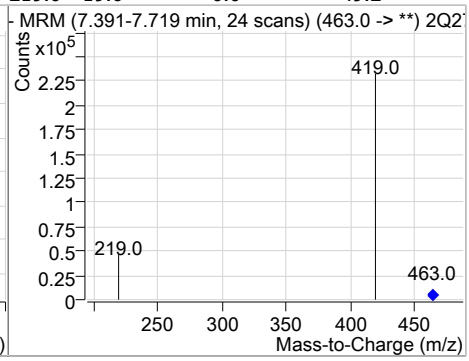


Perfluorinated Compounds by LC/MS/MS

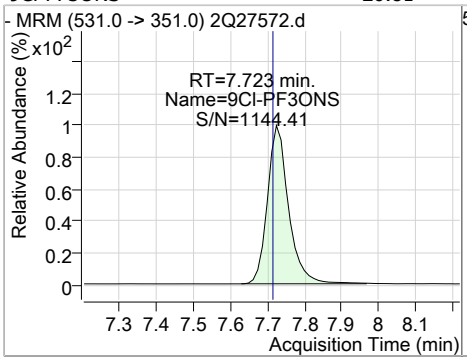
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.37	7.48	0.00	175282	463.0 -> 219.0	19.6	0.0	49.2

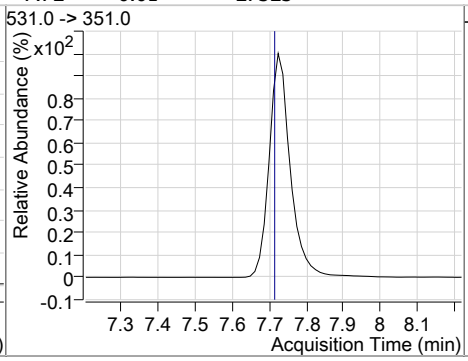


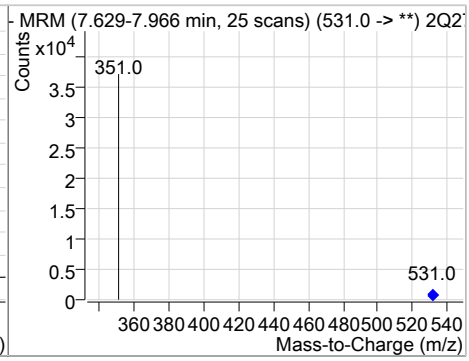




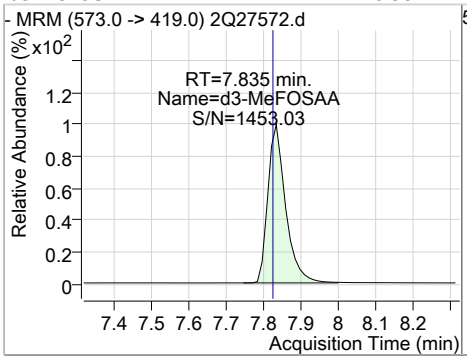
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	20.81	7.72	0.01	27323				

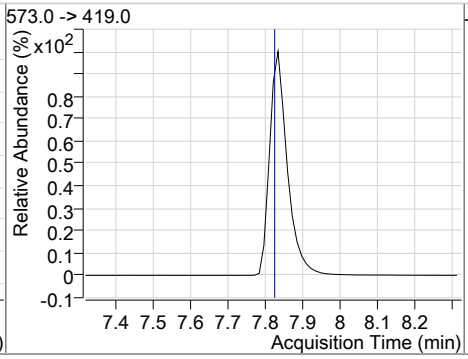


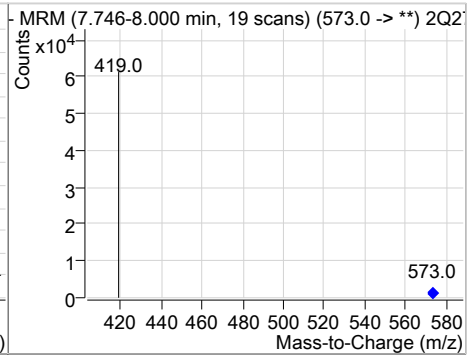




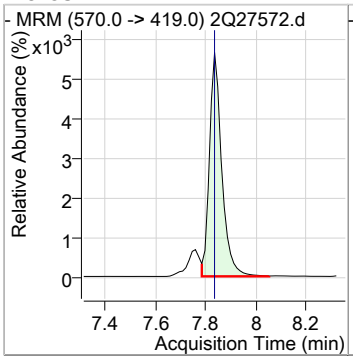
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.93	7.83	0.01	45265				

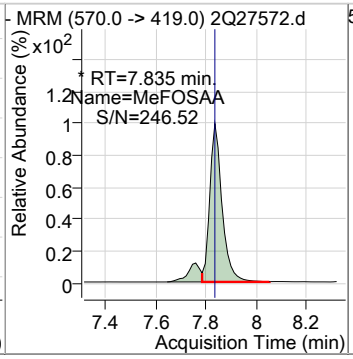


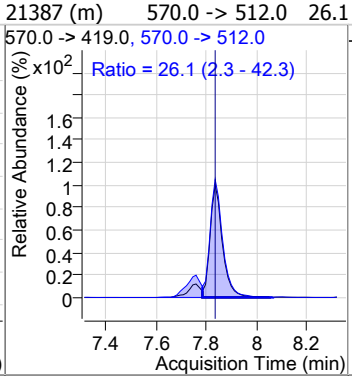


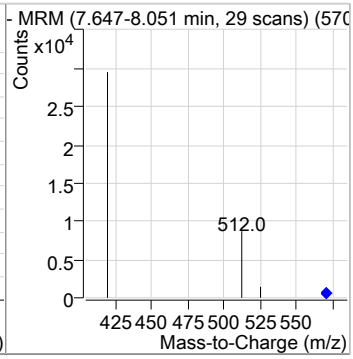


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.80	7.84	0.01	21387 (m)	570.0 -> 512.0	26.1	2.3	42.3



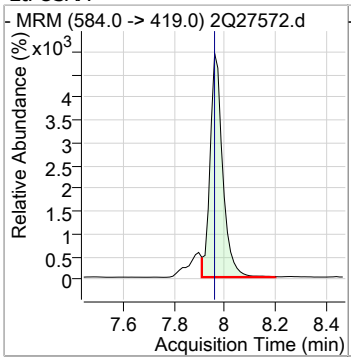


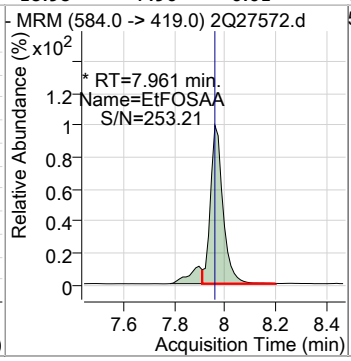


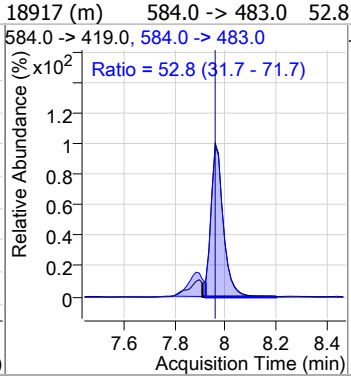


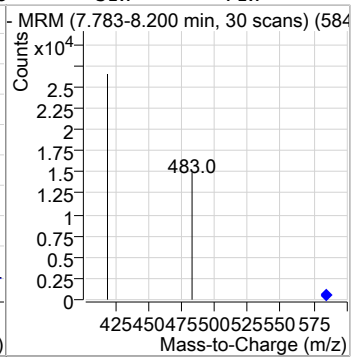
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.98	7.96	0.01	18917 (m)	584.0 -> 483.0	52.8	31.7	71.7

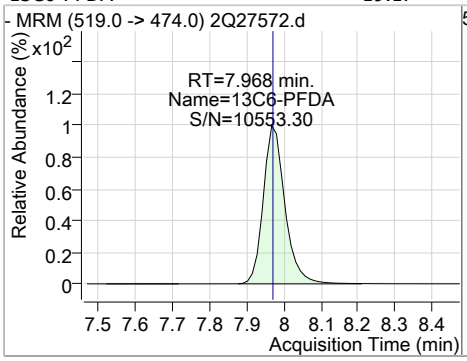


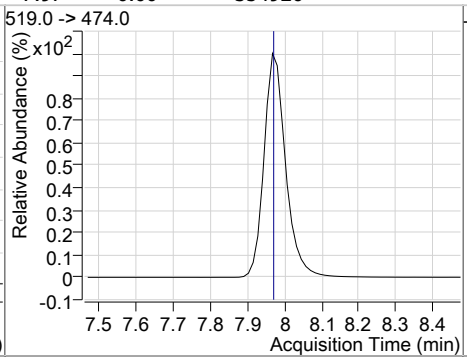


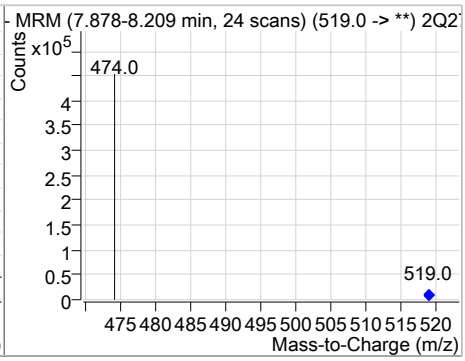




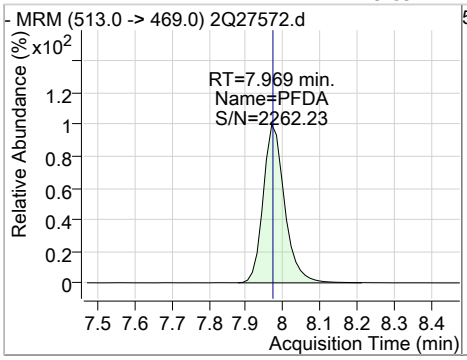
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.17	7.97	0.00	354926				

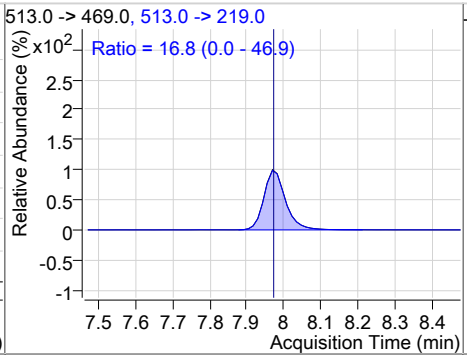


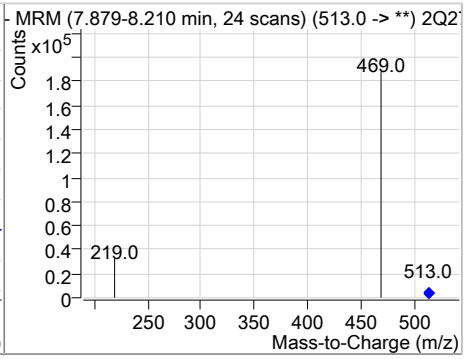




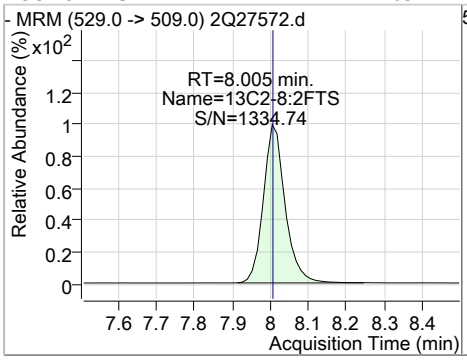
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.59	7.97	0.00	146803	513.0 -> 219.0	16.8	0.0	46.9

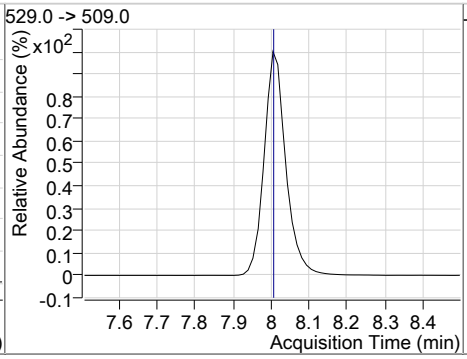


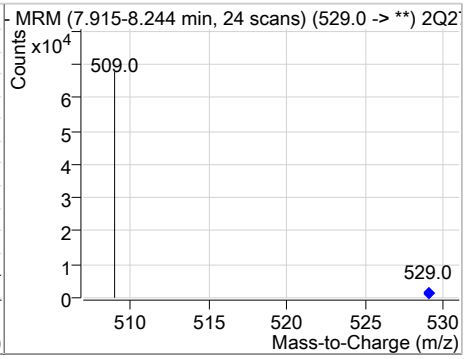




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	17.63	8.01	0.00	50068				

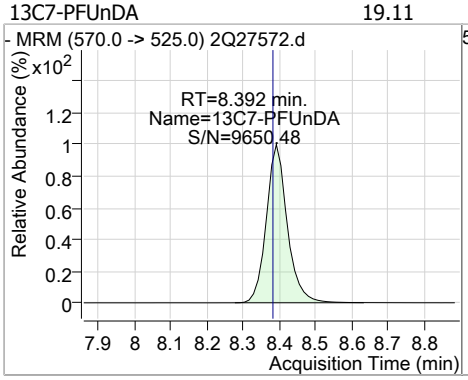


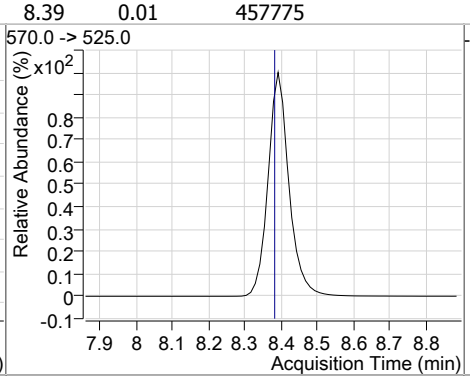


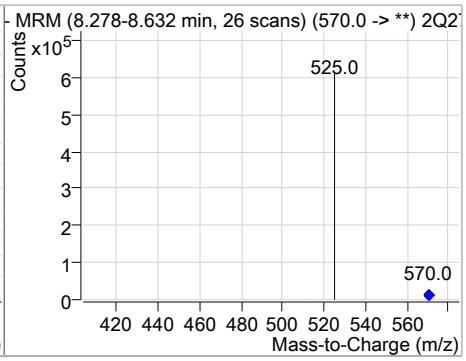


Perfluorinated Compounds by LC/MS/MS

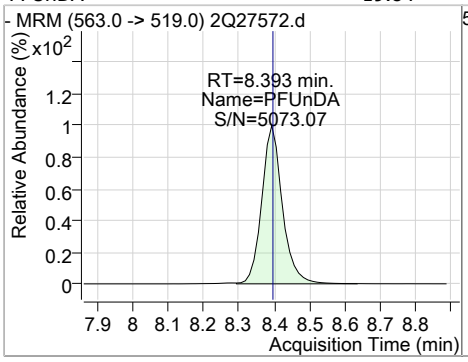
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.11	8.39	0.01	457775				

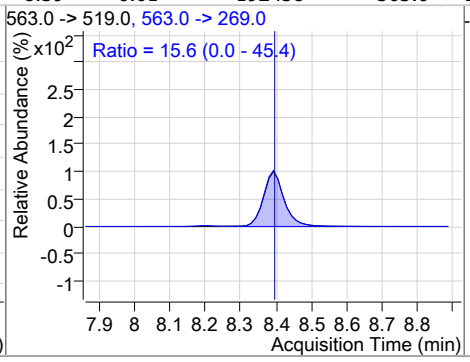


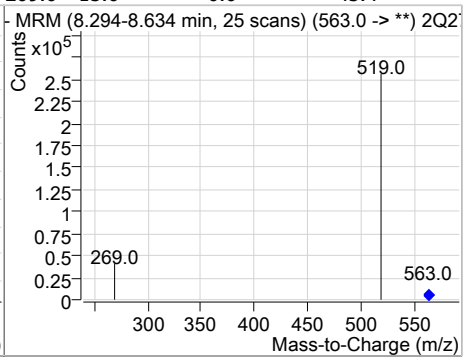




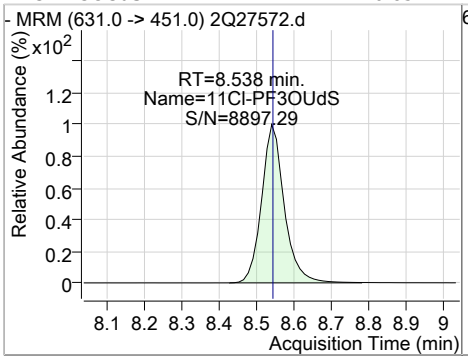
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.84	8.39	0.01	192458	563.0 -> 269.0	15.6	0.0	45.4

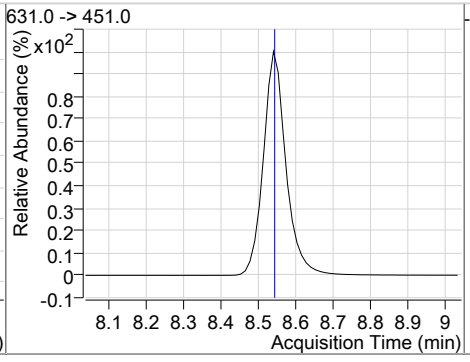


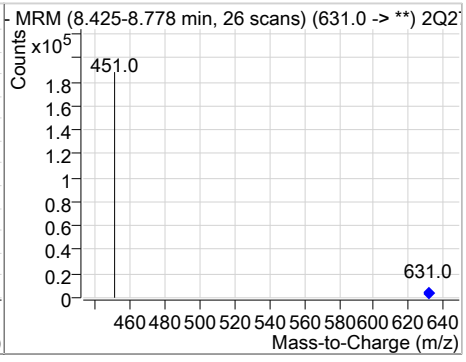




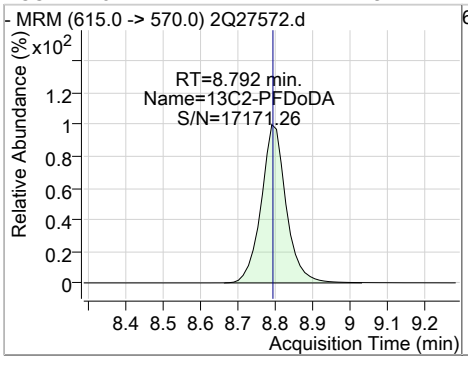
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	20.85	8.54	0.00	140508				

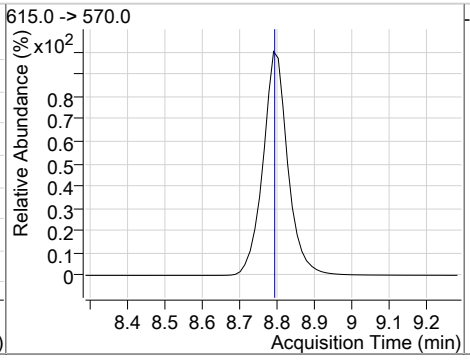


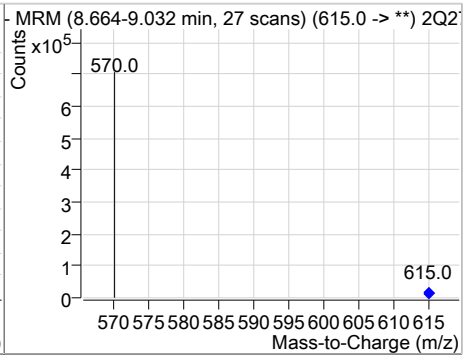




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.11	8.79	0.00	533392				

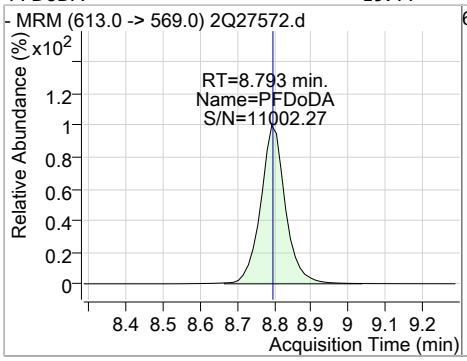


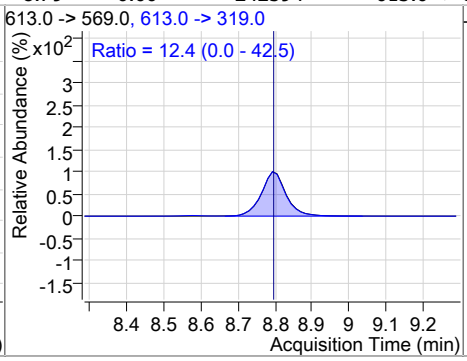


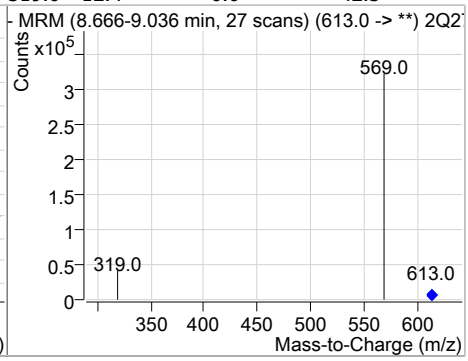


Perfluorinated Compounds by LC/MS/MS

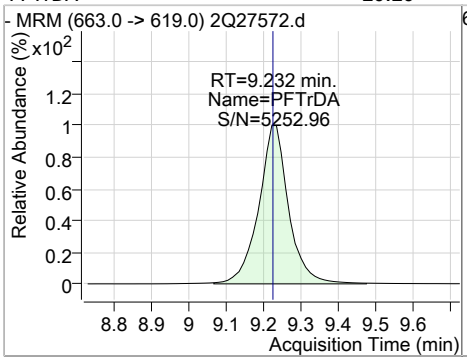
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.44	8.79	0.00	242594	613.0 -> 319.0	12.4	0.0	42.5

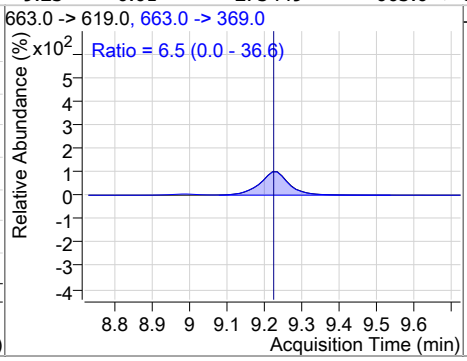


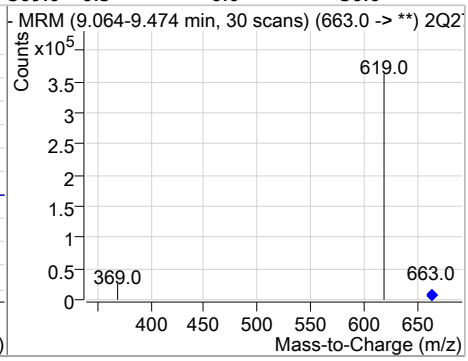




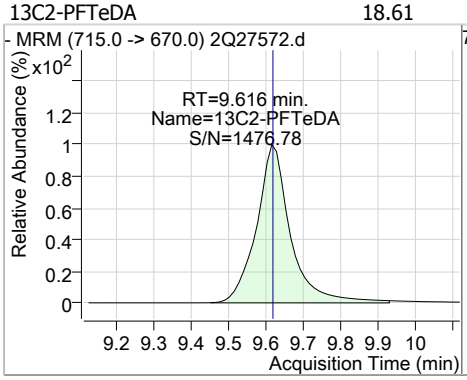
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.26	9.23	0.01	273449	663.0 -> 369.0	6.5	0.0	36.6

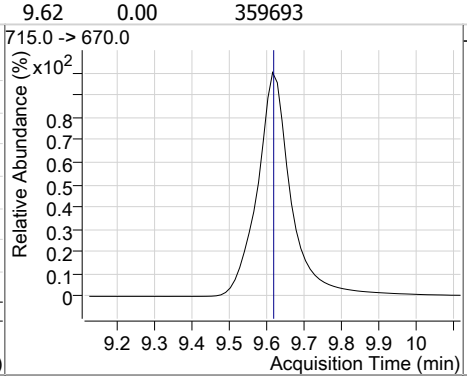


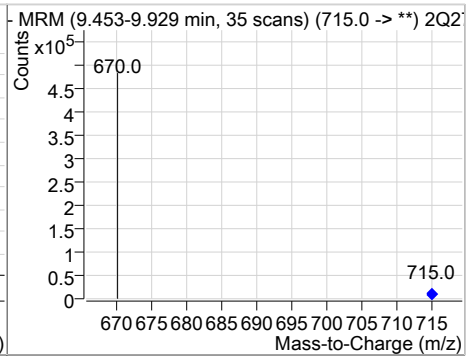




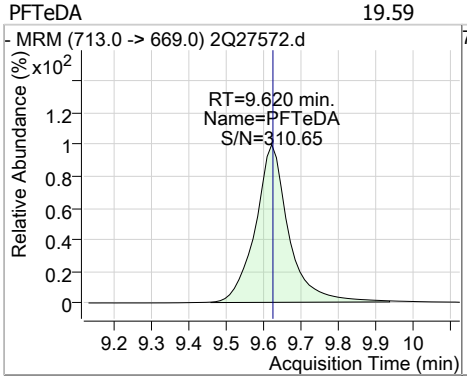
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.61	9.62	0.00	359693				

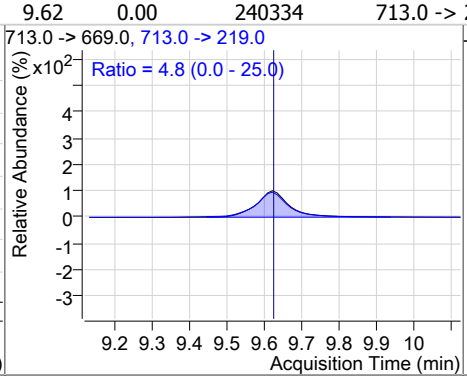


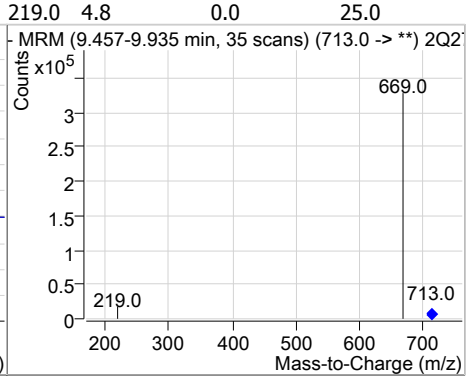




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.59	9.62	0.00	240334	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-ICV439
Lab FileID: 2Q27572.D
Injection Time: 03/13/19 13:06
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.18	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.46	Split peak
MeFOSAA	2355-31-9		7.83	Split peak
EtFOSAA	2991-50-6		7.96	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27573.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 1:23:46 PM
Sample Name : icv439-20
Vial : Vial 11
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

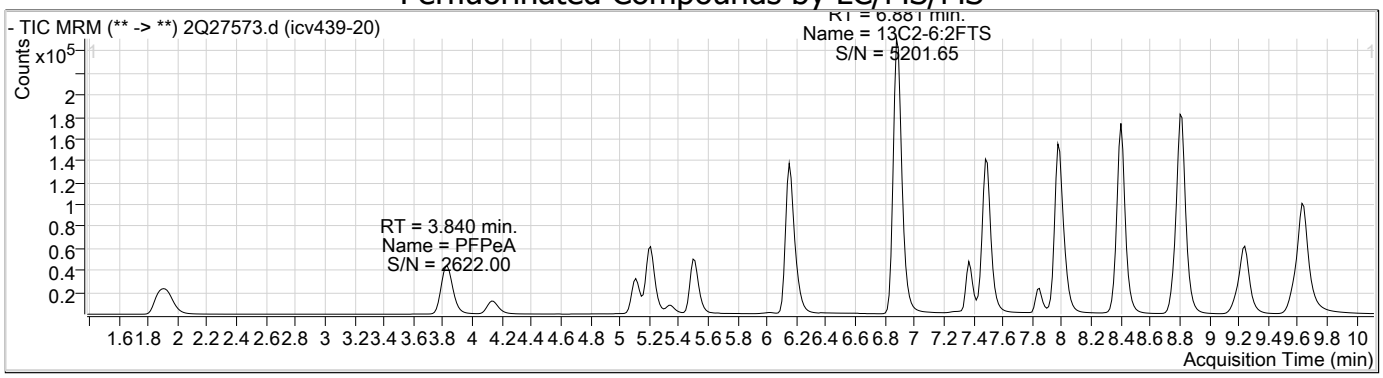
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.886	415.0 -> 370.0	403894	20.00	µg/L	0.025
13C4-PFOS	7.476	503.0 -> 80.0	58871	20.00	µg/L	0.025
M4-PFBA	1.902	217.0 -> 172.0	158344	20.00	µg/L	0.013
M5-PFPeA	3.837	268.0 -> 223.0	132719	20.00	µg/L	0.038
M5-PFHxA	5.214	318.0 -> 273.0	191122	20.00	µg/L	0.038
M4-PFHpA	6.155	367.0 -> 322.0	267134	20.00	µg/L	0.036
M8-PFOA	6.885	421.0 -> 376.0	277950	20.00	µg/L	0.025
M9-PFNA	7.504	472.0 -> 427.0	269016	20.00	µg/L	0.025
M6-PFDA	7.981	519.0 -> 474.0	352507	20.00	µg/L	0.013
M7-PFUnDA	8.405	570.0 -> 525.0	459010	20.00	µg/L	0.025
M2-PFDoDA	8.804	615.0 -> 570.0	549207	20.00	µg/L	0.013
M2-PFTeDA	9.628	715.0 -> 670.0	379826	20.00	µg/L	0.013
M8-FOSA	7.372	506.0 -> 78.0	108240	20.00	µg/L	0.026
M3-PFBS	4.143	302.0 -> 99.0	22417	20.00	µg/L	0.050
M3-PFHxS	6.199	402.0 -> 99.0	25178	20.00	µg/L	0.038
M8-PFOS	7.474	507.0 -> 99.0	30825	20.00	µg/L	0.025
M2-4:2FTS	5.109	329.0 -> 309.0	77076	20.00	µg/L	0.038
M2-6:2FTS	6.881	429.0 -> 409.0	81419	20.00	µg/L	0.025
M2-8:2FTS	8.018	529.0 -> 509.0	53460	20.00	µg/L	0.014
M3-MeFOSAA	7.834	573.0 -> 419.0	45474	20.00	µg/L	0.012
M3-HFPO-DA	5.506	287.0 -> 169.0	209449	100.00	µg/L	0.025
System Monitoring Compounds						
13C2-4:2FTS	5.109	329.0 -> 309.0	76843	18.51	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.5%		
13C2-6:2FTS	6.881	429.0 -> 409.0	81318	18.66	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C2-8:2FTS	8.018	529.0 -> 509.0	53492	18.84	µg/L	0.014
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.2%		
13C2-PFDoDA	8.804	615.0 -> 570.0	549273	19.68	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C2-PFTeDA	9.628	715.0 -> 670.0	373258	19.31	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C3-PFBS	4.143	302.0 -> 99.0	22320	18.43	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C3-PFHxS	6.199	402.0 -> 99.0	25142	18.46	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.3%		
13C4-PFBA	1.902	217.0 -> 172.0	157354	18.15	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.8%		
13C4-PFHpA	6.155	367.0 -> 322.0	266687	18.52	µg/L	0.036
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.6%		
13C5-PFHxA	5.214	318.0 -> 273.0	190327	18.56	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.8%		
13C5-PFPeA	3.837	268.0 -> 223.0	132469	18.47	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.4%		
13C6-PFDA	7.981	519.0 -> 474.0	352621	19.05	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

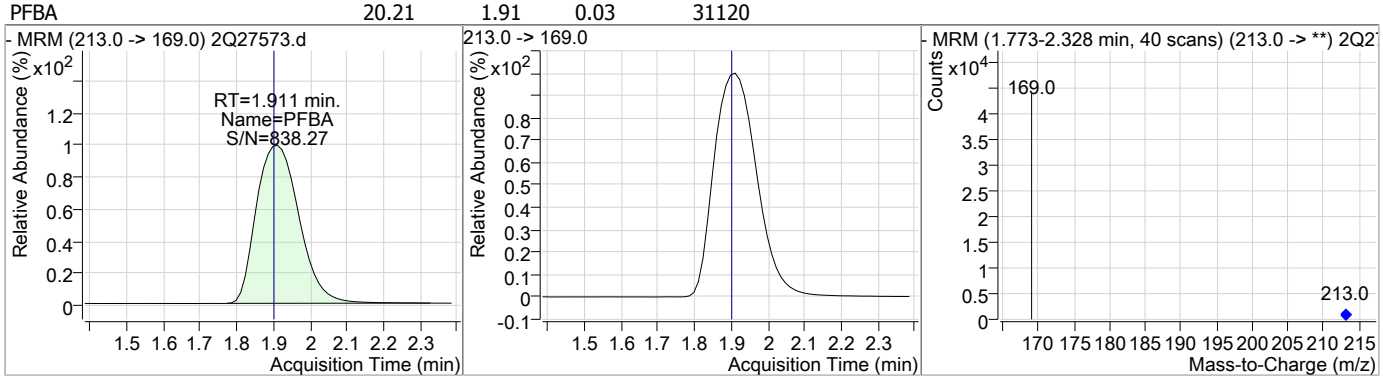
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
13C7-PFUnDA	8.405	570.0 -> 525.0	458895	19.16	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%			
13C8-FOSA	7.372	506.0 -> 78.0	108274	19.01	µg/L		0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%			
13C8-PFOA	6.885	421.0 -> 376.0	277535	18.64	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.2%			
13C8-PFOS	7.474	507.0 -> 99.0	30857	18.66	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.3%			
13C9-PFNA	7.504	472.0 -> 427.0	268832	18.76	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.8%			
d3-MeFOSAA	7.834	573.0 -> 419.0	45498	19.03	µg/L		0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%			
M2-PFOA	6.886	415.0 -> 370.0	404113	19.99	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.476	503.0 -> 80.0	58854	19.99	µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	5.506	287.0 -> 169.0	209449	103.11	µg/L		0.025
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.1%			
Target Compounds							**QValue**
4:2FTS	5.112	327.0 -> 307.0	42991	19.17	µg/L		99
6:2FTS	6.883	427.0 -> 407.0	41070	19.73	µg/L		100
8:2FTS	8.019	527.0 -> 507.0	27826	19.71	µg/L		98
EtFOSAA	7.973	584.0 -> 419.0	20808	20.80	µg/L		98
FOSA	7.376	498.0 -> 78.0	52802	21.38	µg/L		100
MeFOSAA	7.848	570.0 -> 419.0	24943	20.64	µg/L		99
PFBA	1.911	213.0 -> 169.0	31120	20.21	µg/L		100
PFBS	4.134	299.0 -> 80.0	31584	17.05	µg/L		99
PFDA	7.982	513.0 -> 469.0	139824	18.79	µg/L		100
PFDoDA	8.806	613.0 -> 569.0	270424	21.01	µg/L		100
PFDS	8.364	599.0 -> 80.0	11321	18.59	µg/L		98
PFHpA	6.157	363.0 -> 319.0	262028	20.92	µg/L		100
PFHpS	6.892	449.0 -> 80.0	25090	19.67	µg/L		100
PFHxA	5.216	313.0 -> 269.0	60385	18.26	µg/L		100
PFHxS	6.201	399.0 -> 80.0	25796	17.20	µg/L	m	98
PFNA	7.505	463.0 -> 419.0	162528	18.66	µg/L		100
PFNS	7.951	549.0 -> 80.0	22086	19.14	µg/L		99
PFOA	6.888	413.0 -> 369.0	155982	20.52	µg/L		97
PFOS	7.477	499.0 -> 80.0	30988	19.61	µg/L	m	85
PFPeA	3.840	263.0 -> 219.0	114709	19.03	µg/L		100
PFPeS	5.346	349.0 -> 80.0	21756	17.16	µg/L		98
PFTeDA	9.632	713.0 -> 669.0	240086	18.52	µg/L		100
PFTrDA	9.245	663.0 -> 619.0	318720	22.35	µg/L		100
PFUnDA	8.406	563.0 -> 519.0	198889	20.47	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

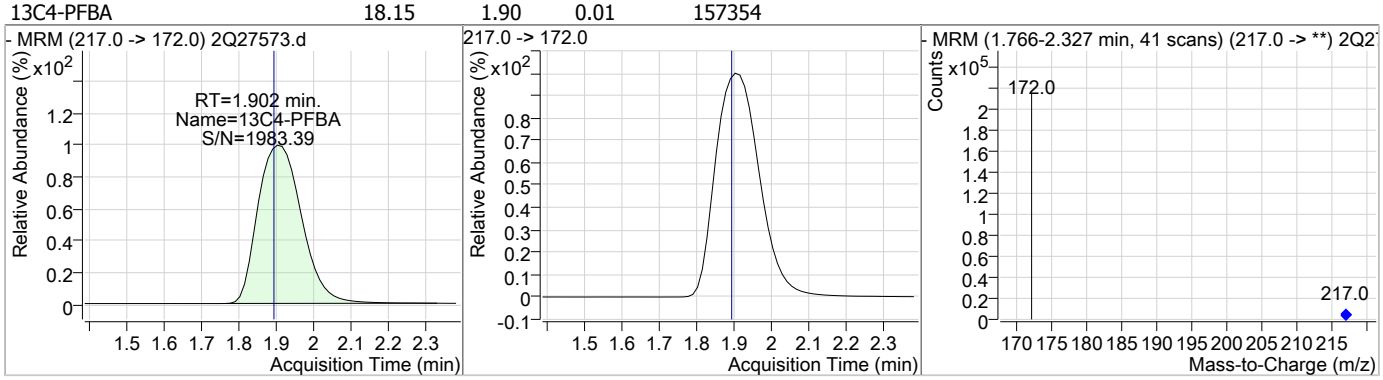
Perfluorinated Compounds by LC/MS/MS



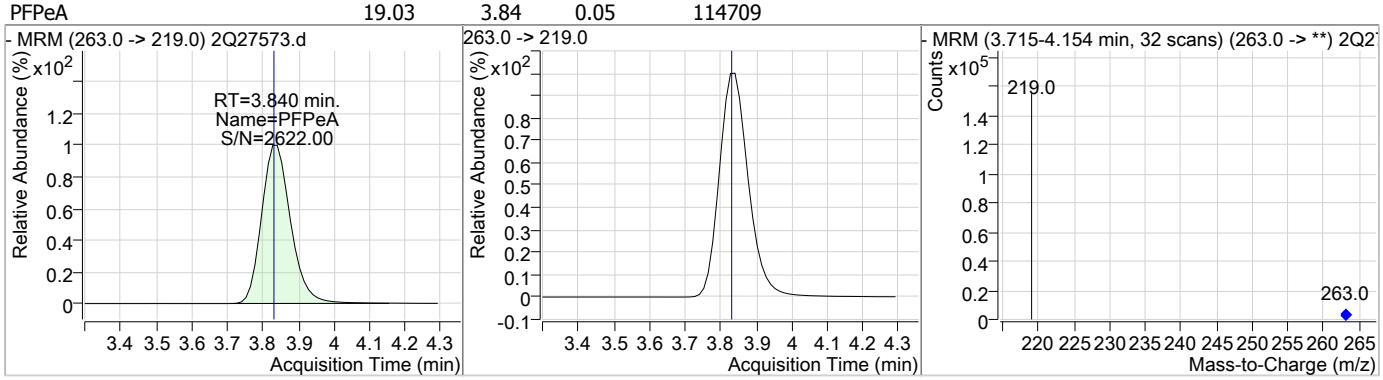
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.21	1.91	0.03	31120				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.15	1.90	0.01	157354				

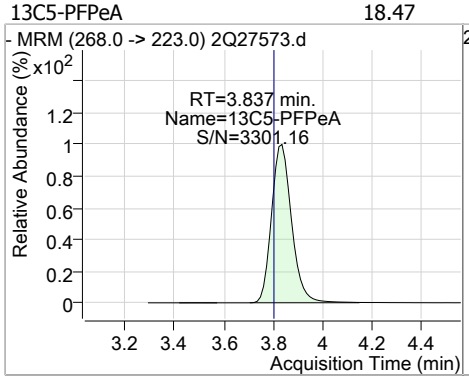


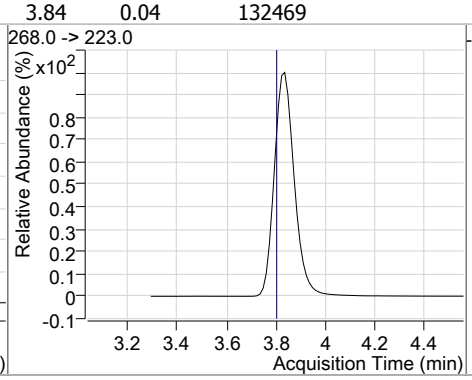
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.03	3.84	0.05	114709				

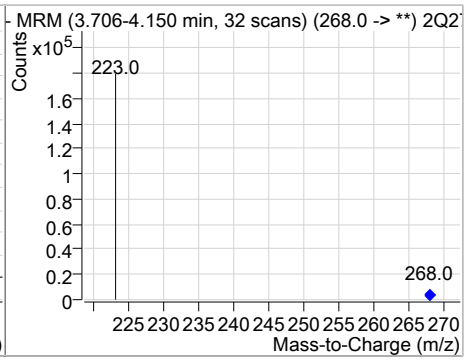


Perfluorinated Compounds by LC/MS/MS

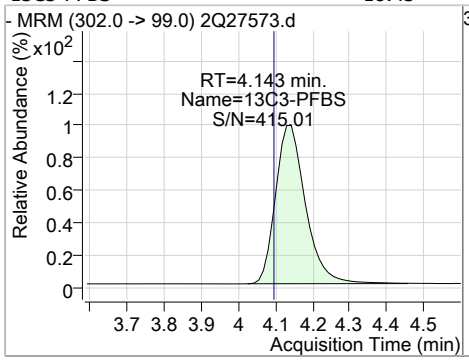
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.47	3.84	0.04	132469				

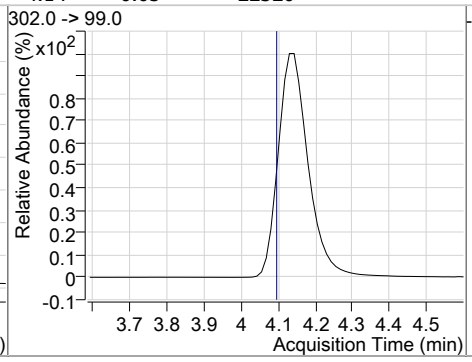


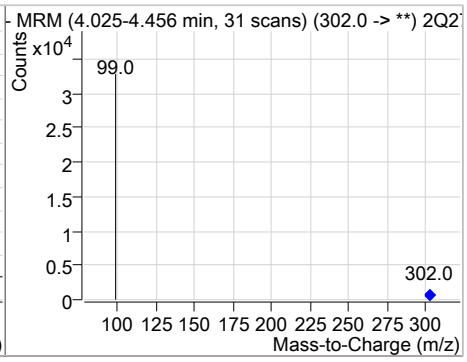




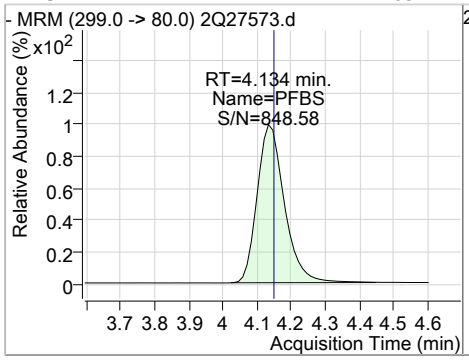
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.43	4.14	0.05	22320				

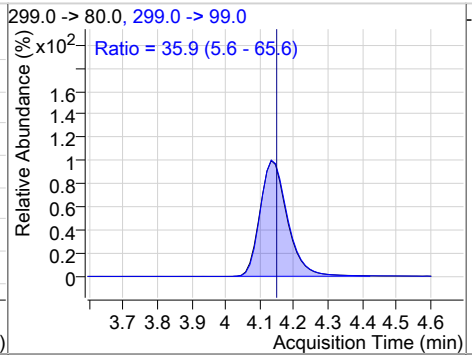


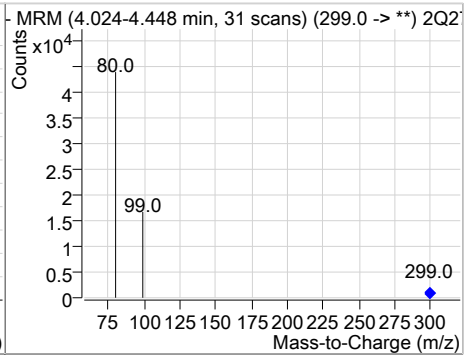




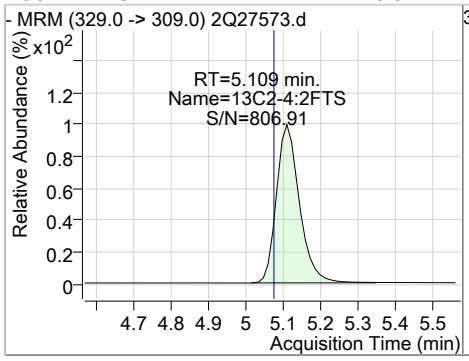
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	17.05	4.13	0.04	31584	299.0 -> 99.0	35.9	5.6	65.6

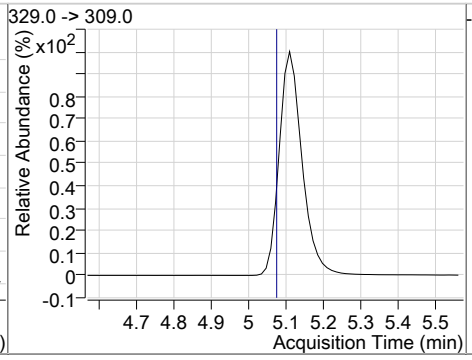


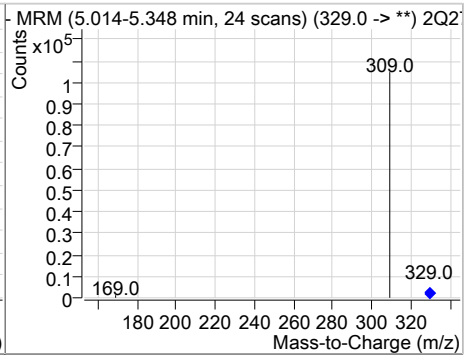




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.51	5.11	0.04	76843				

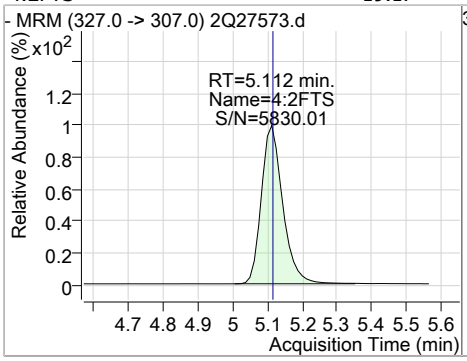


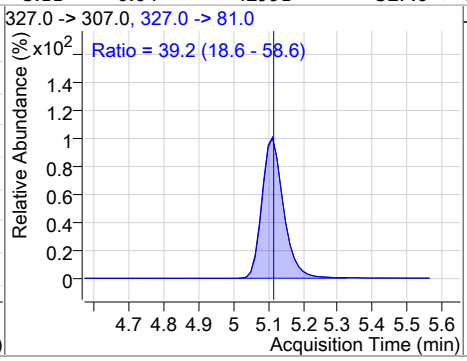


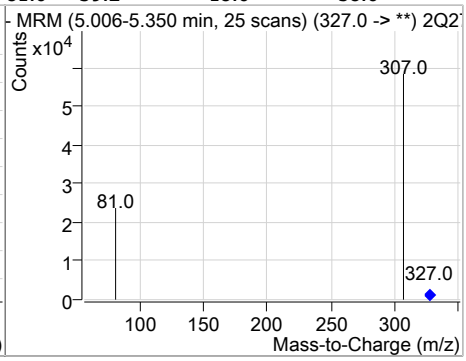


Perfluorinated Compounds by LC/MS/MS

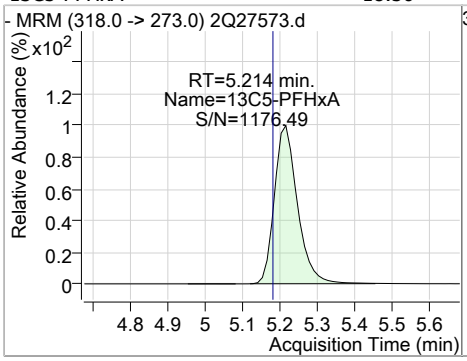
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	19.17	5.11	0.04	42991	327.0 -> 81.0	39.2	18.6	58.6

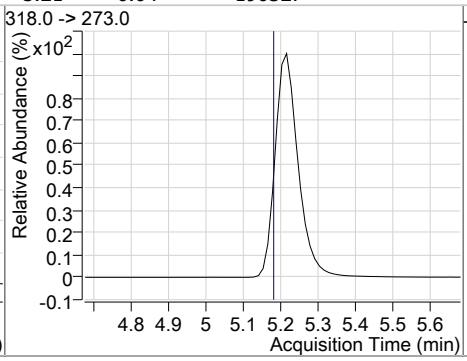


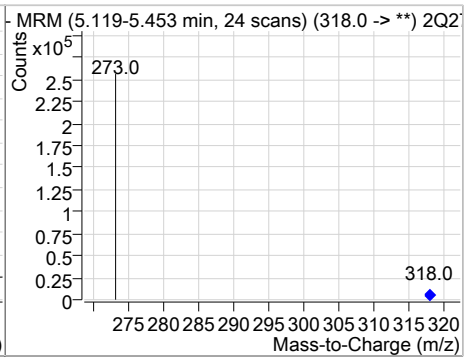




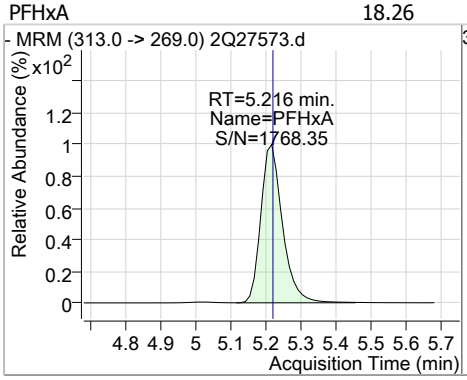
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.56	5.21	0.04	190327				

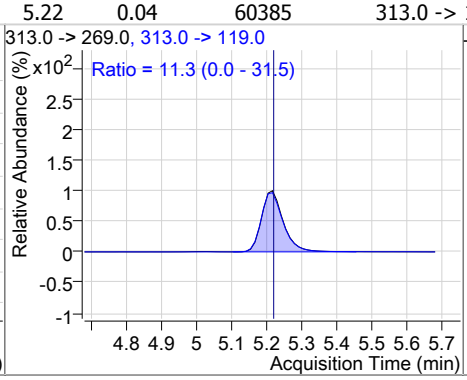


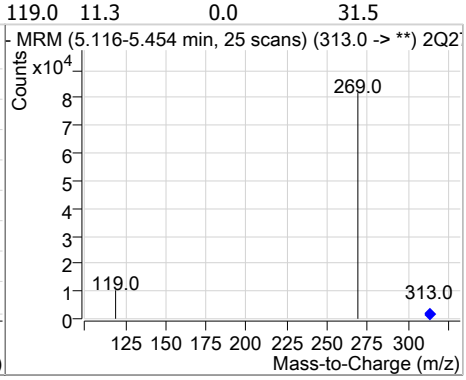




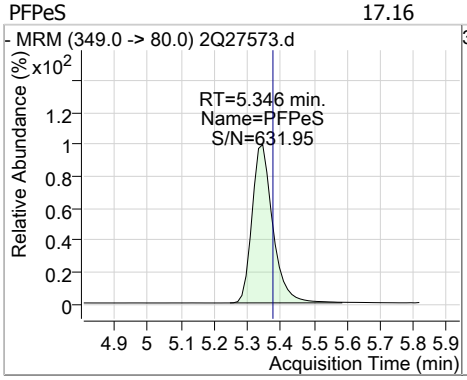
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.26	5.22	0.04	60385	313.0 -> 119.0	11.3	0.0	31.5

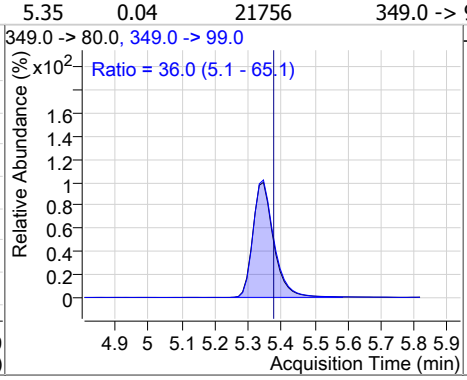


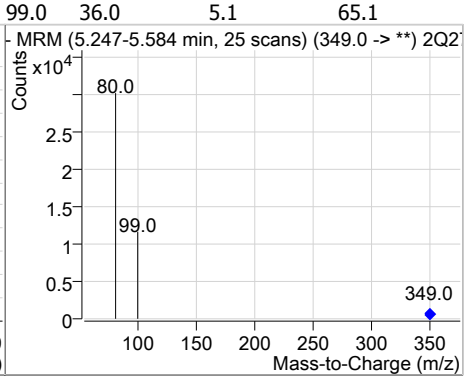




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	17.16	5.35	0.04	21756	349.0 -> 99.0	36.0	5.1	65.1

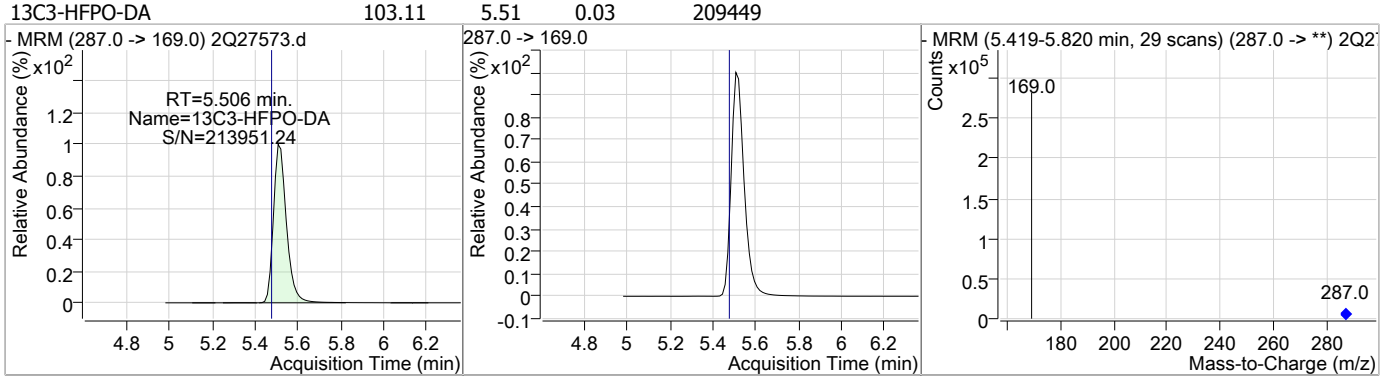




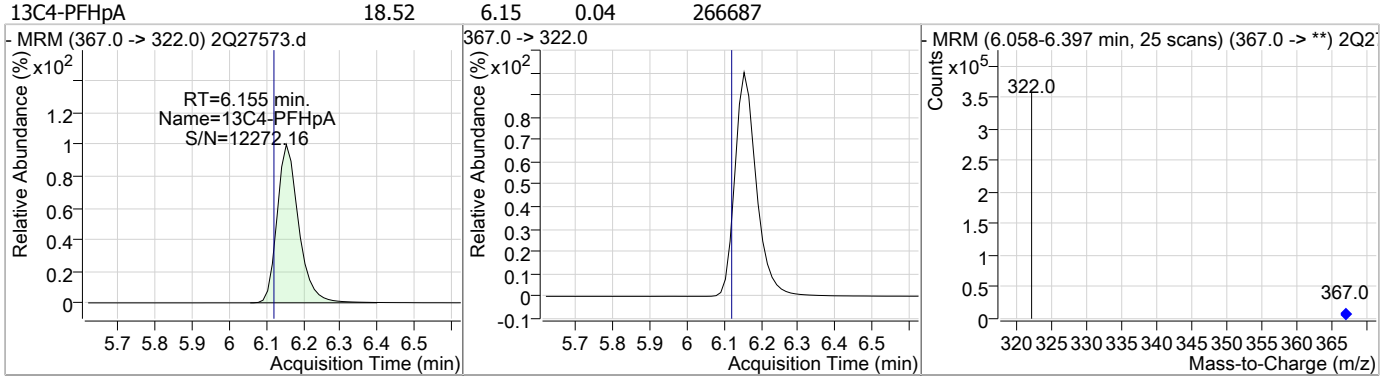


Perfluorinated Compounds by LC/MS/MS

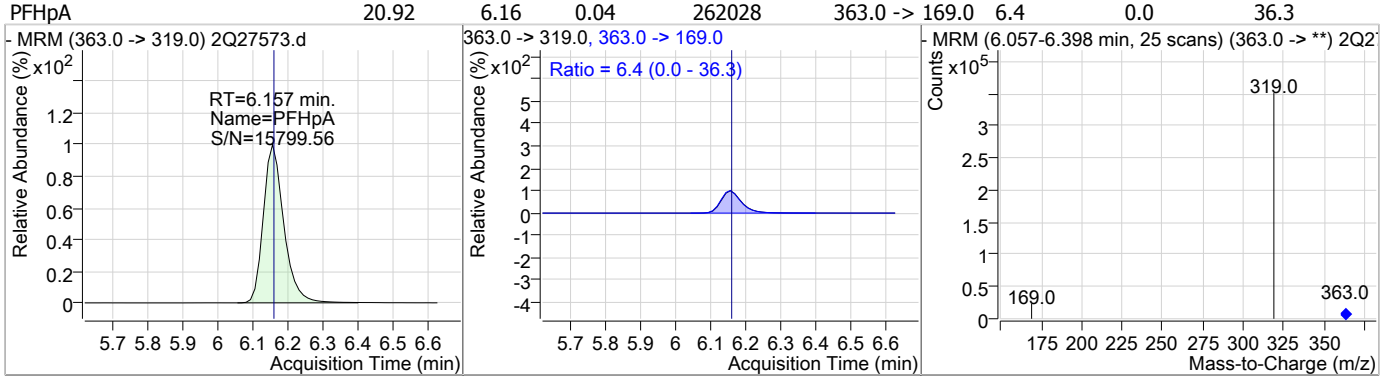
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.11	5.51	0.03	209449				



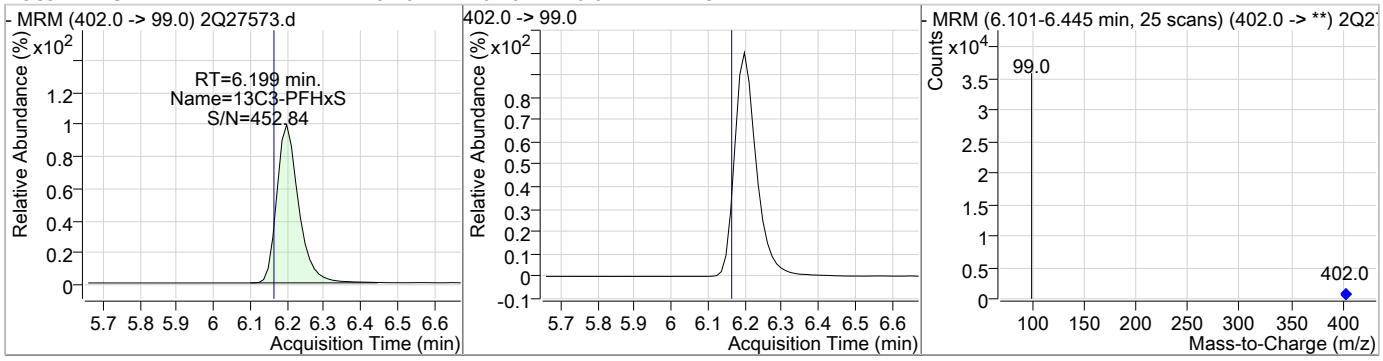
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.52	6.15	0.04	266687				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	20.92	6.16	0.04	262028	363.0 -> 169.0	6.4	0.0	36.3

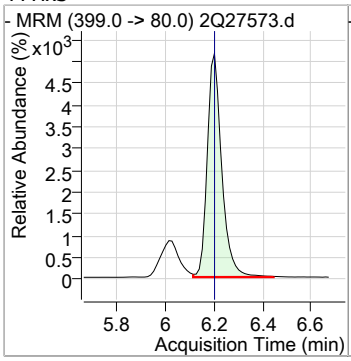


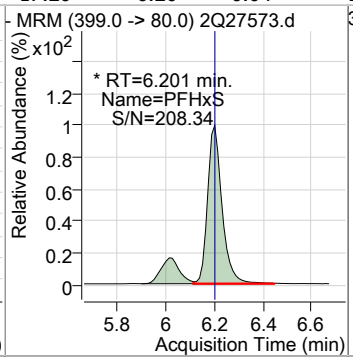
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.46	6.20	0.04	25142				

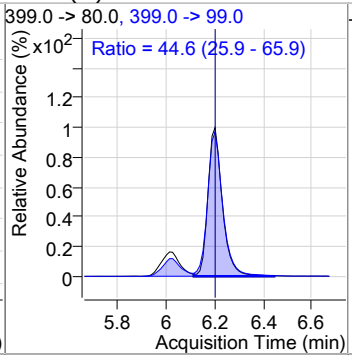


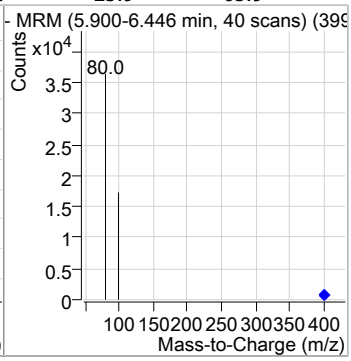
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	17.20	6.20	0.04	25796 (m)	399.0 -> 99.0	44.6	25.9	65.9

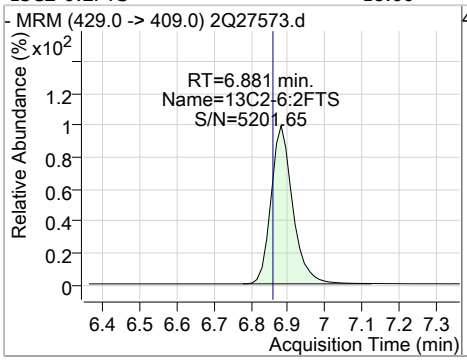


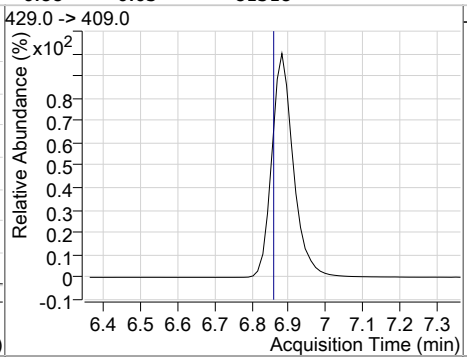


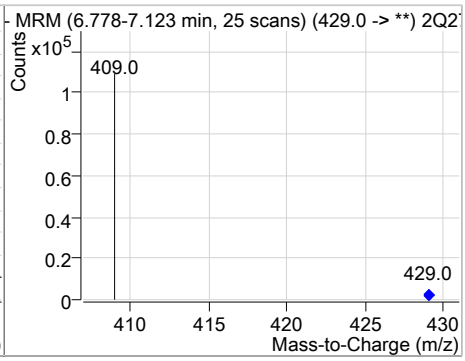




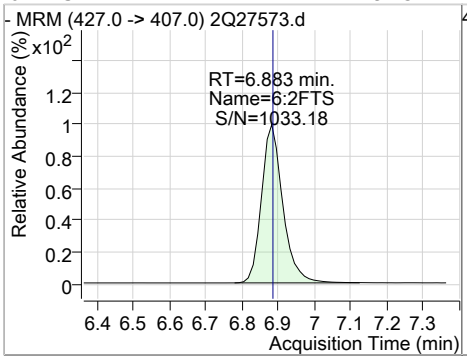
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.66	6.88	0.03	81318				

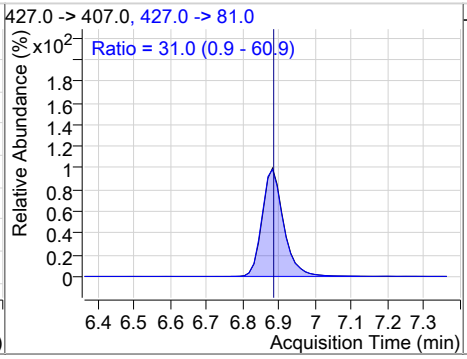


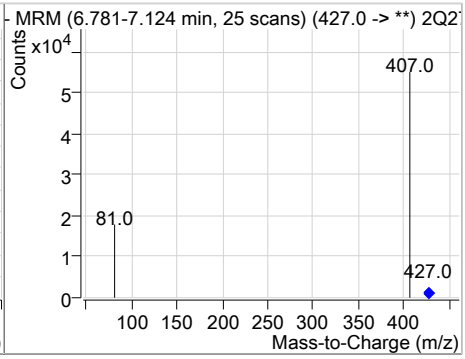




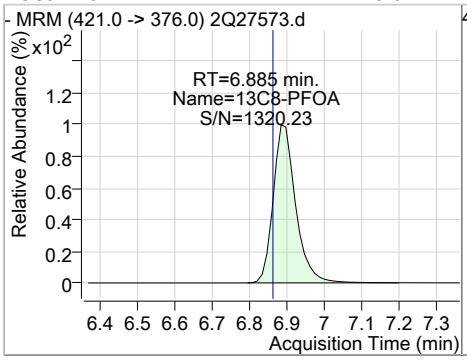
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.73	6.88	0.03	41070	427.0 -> 81.0	31.0	0.9	60.9

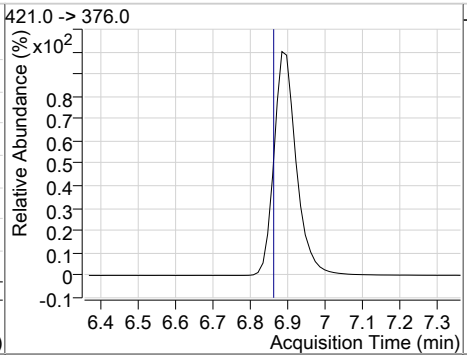


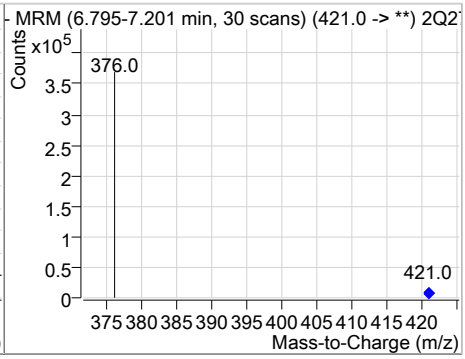




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.64	6.88	0.03	277535				

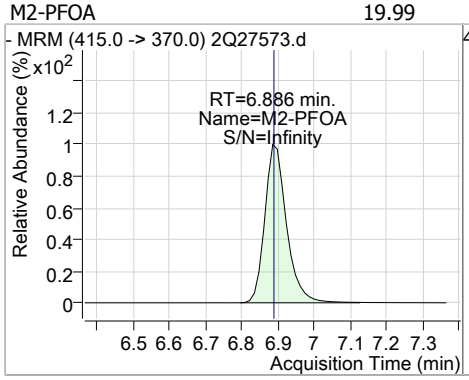


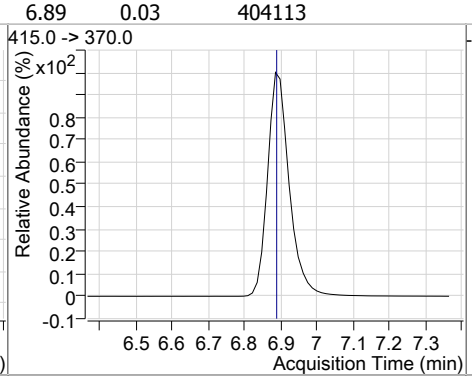


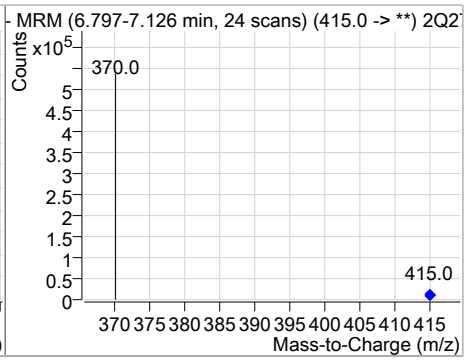


Perfluorinated Compounds by LC/MS/MS

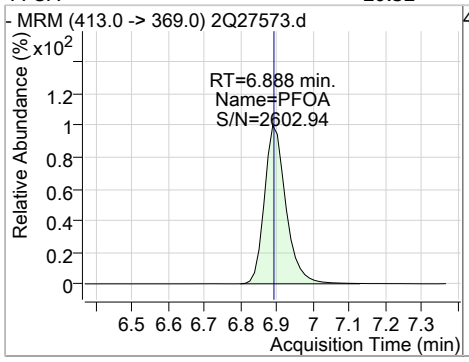
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.89	0.03	404113				

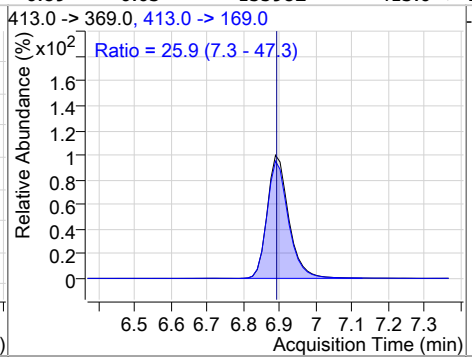


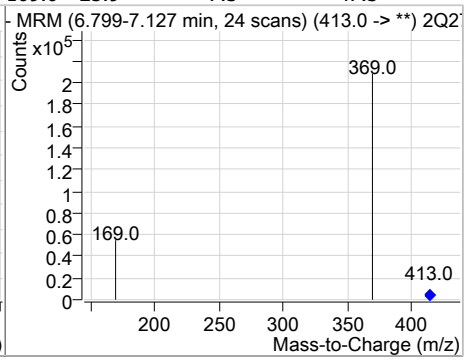




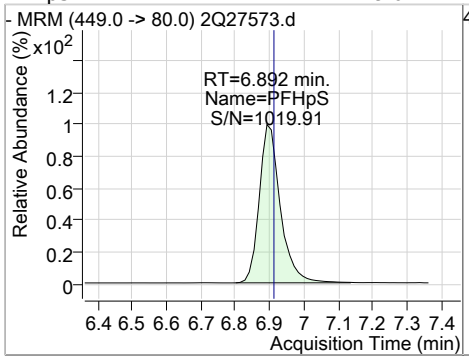
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.52	6.89	0.03	155982	413.0 -> 169.0	25.9	7.3	47.3

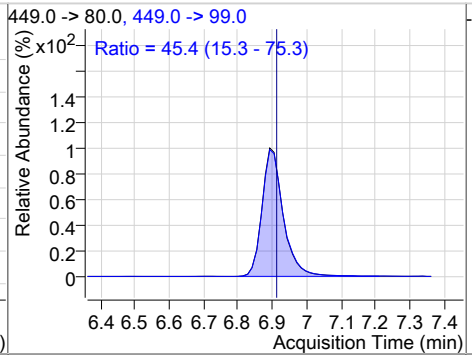


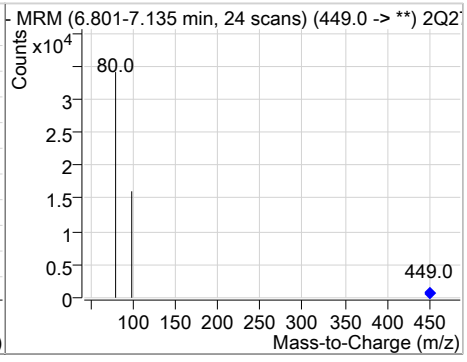




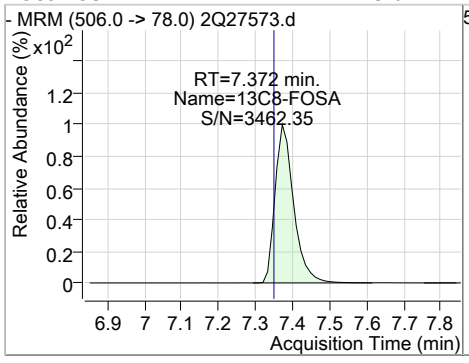
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	19.67	6.89	0.03	25090	449.0 -> 99.0	45.4	15.3	75.3

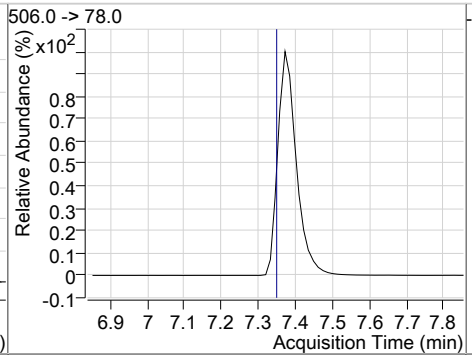


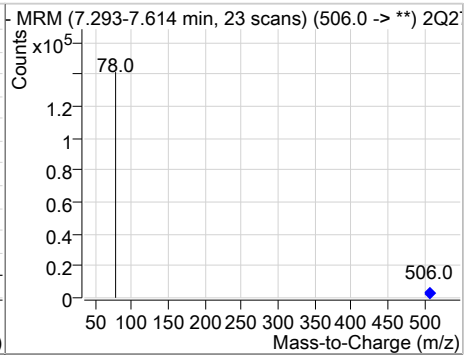




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.01	7.37	0.03	108274				

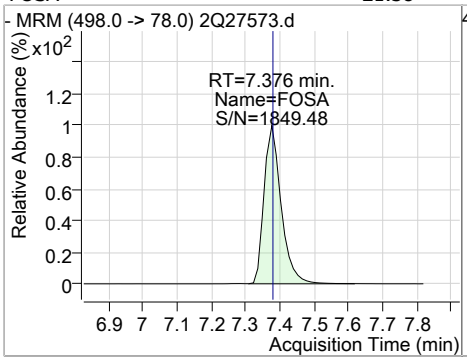


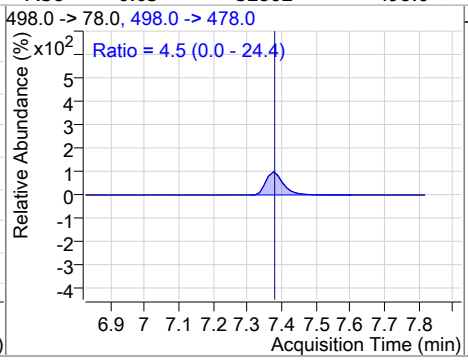


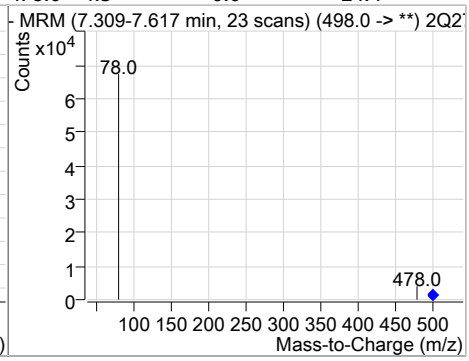


Perfluorinated Compounds by LC/MS/MS

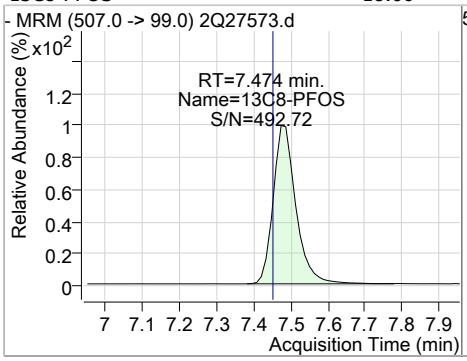
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	21.38	7.38	0.03	52802	498.0 -> 478.0	4.5	0.0	24.4

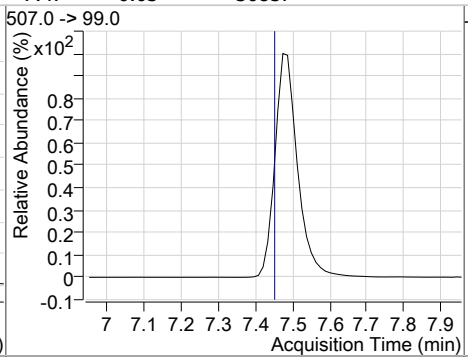


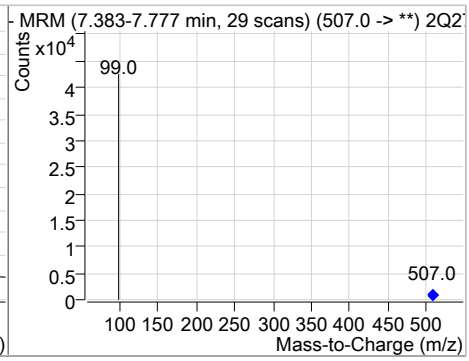




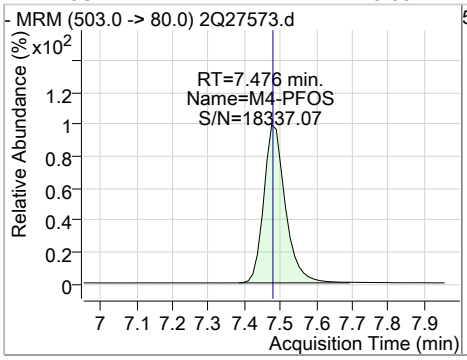
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.66	7.47	0.03	30857				

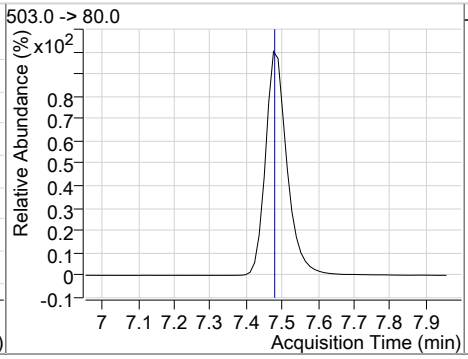


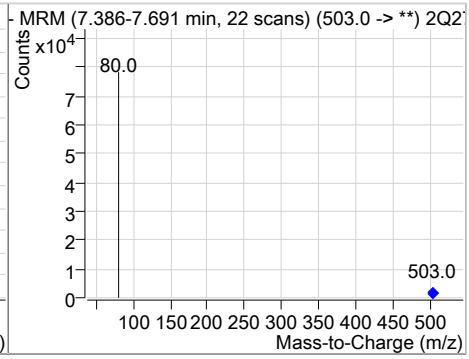




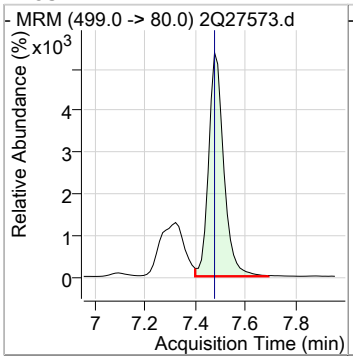
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.48	0.03	58854				

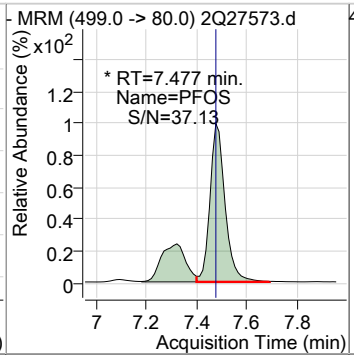


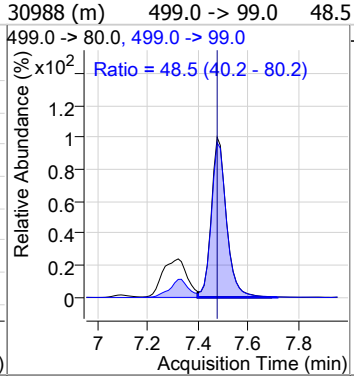


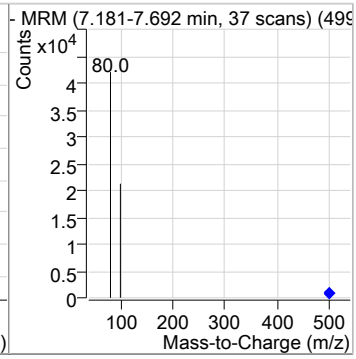


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.61	7.48	0.03	30988 (m)	499.0 -> 99.0	48.5	40.2	80.2



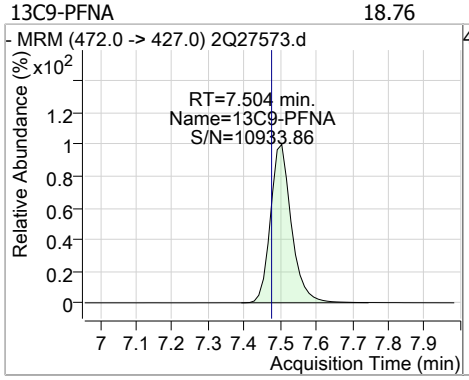


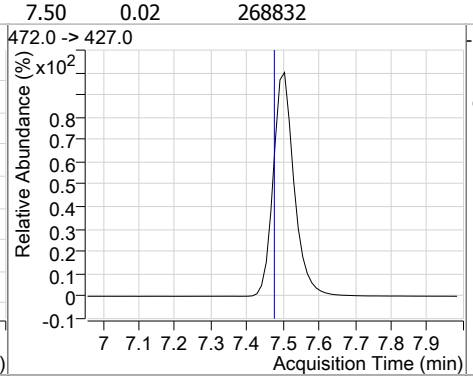


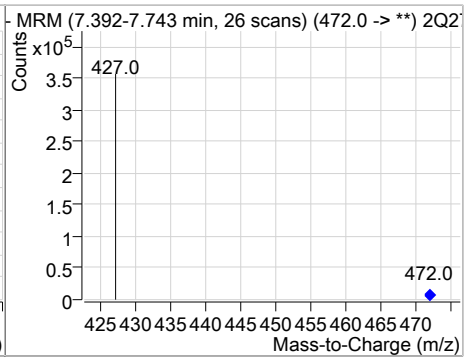


Perfluorinated Compounds by LC/MS/MS

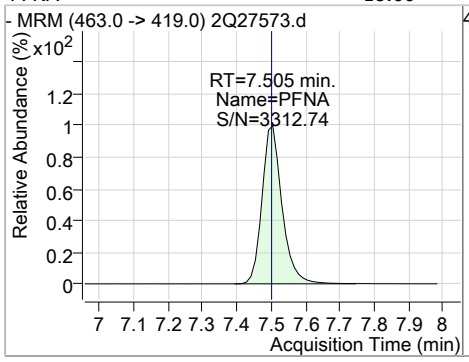
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.76	7.50	0.02	268832				

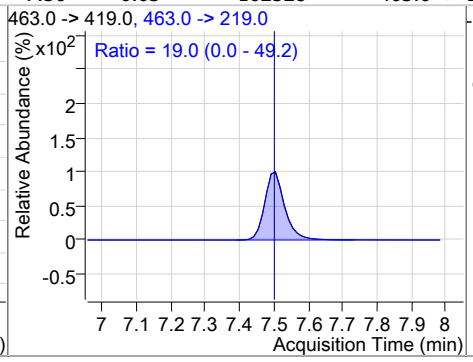


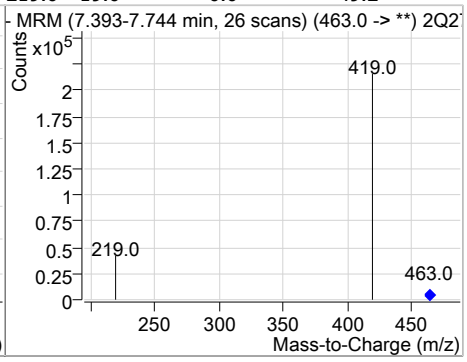




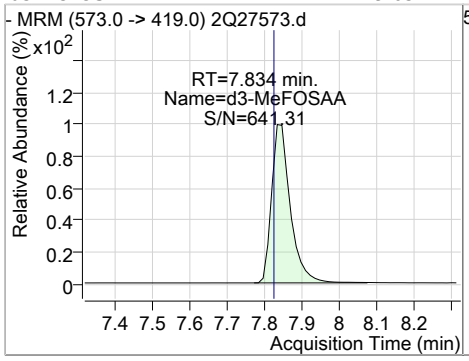
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	18.66	7.50	0.03	162528	463.0 -> 219.0	19.0	0.0	49.2

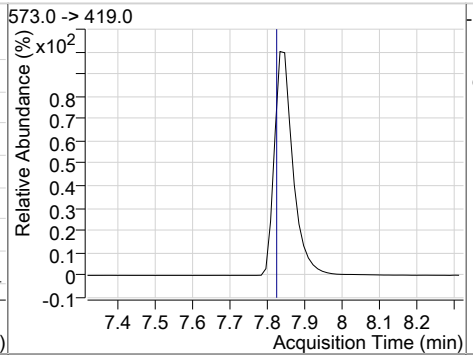


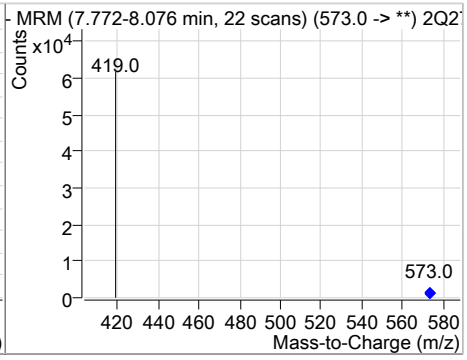




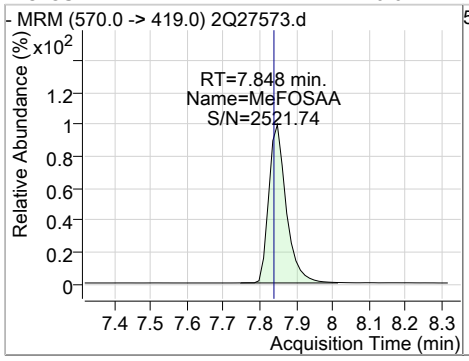
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.03	7.83	0.01	45498				

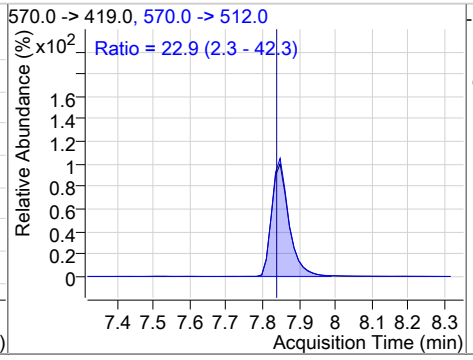


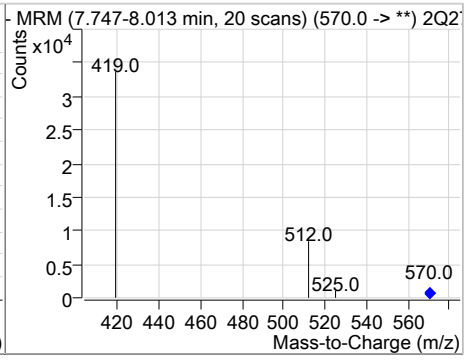




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.64	7.85	0.02	24943	570.0 -> 512.0	22.9	2.3	42.3

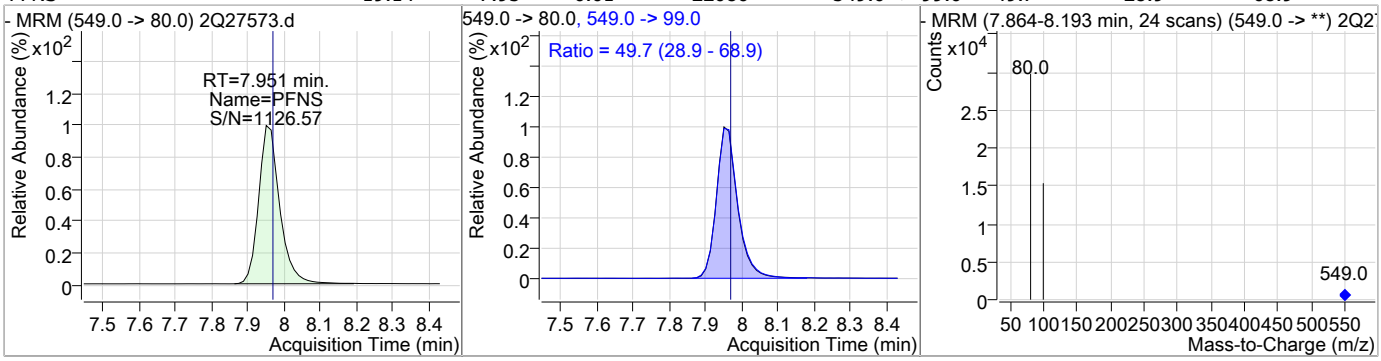




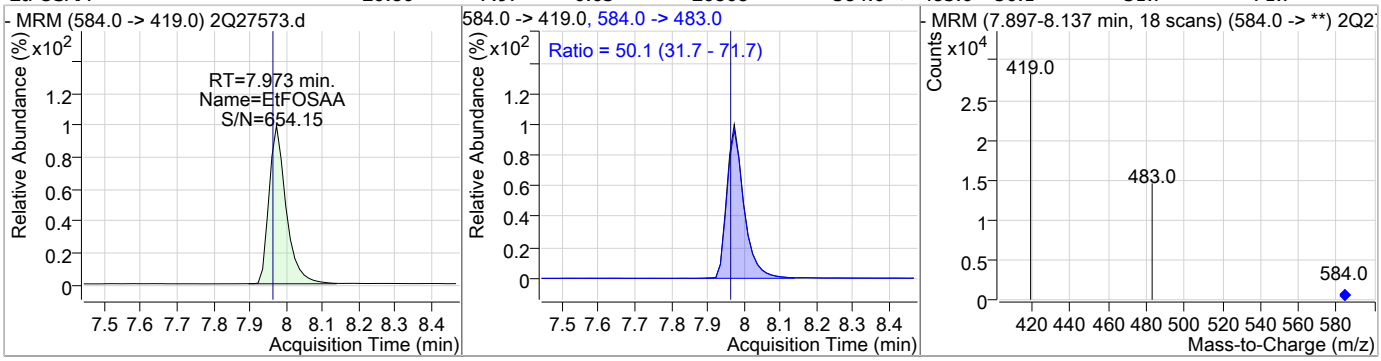


Perfluorinated Compounds by LC/MS/MS

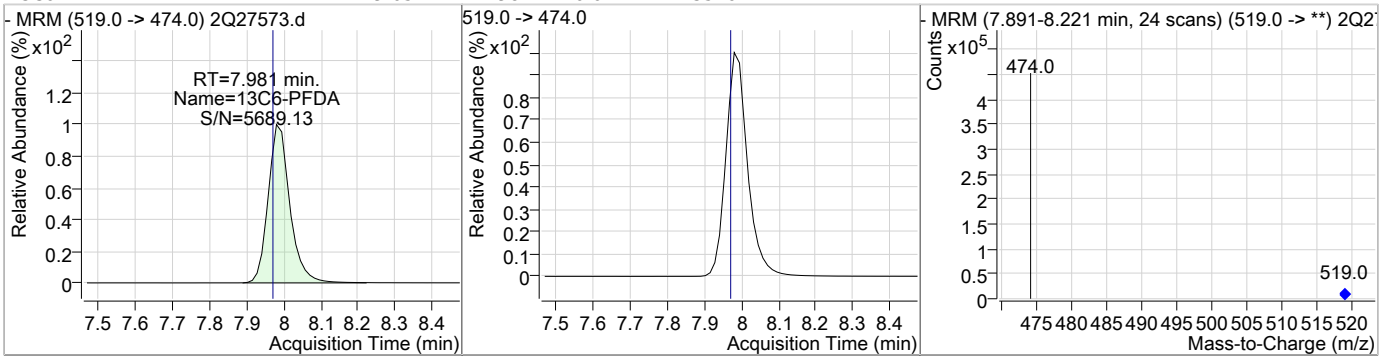
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	19.14	7.95	0.01	22086	549.0 -> 99.0	49.7	28.9	68.9



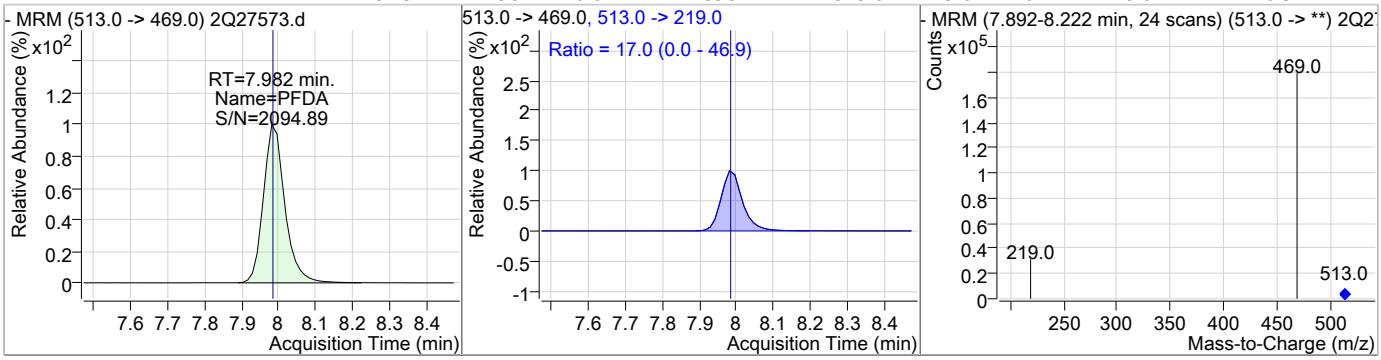
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.80	7.97	0.03	20808	584.0 -> 483.0	50.1	31.7	71.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.05	7.98	0.01	352621				

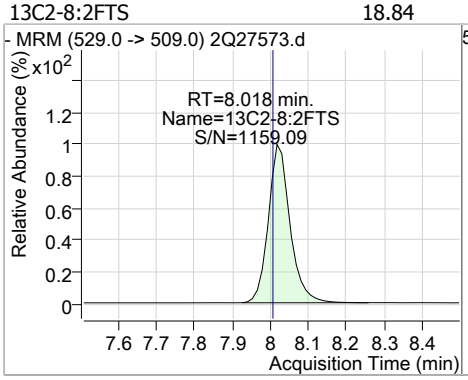


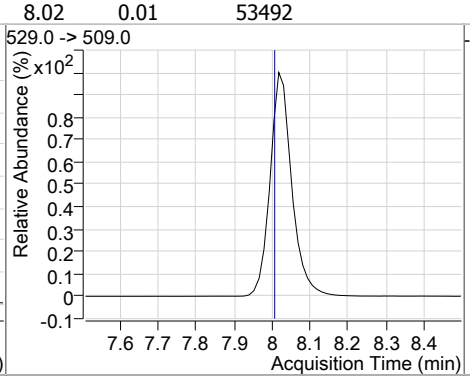
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	18.79	7.98	0.01	139824	513.0 -> 219.0	17.0	0.0	46.9

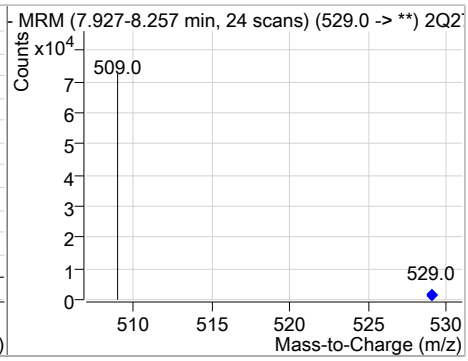


Perfluorinated Compounds by LC/MS/MS

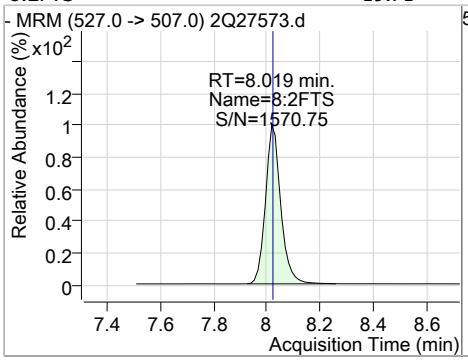
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.84	8.02	0.01	53492				

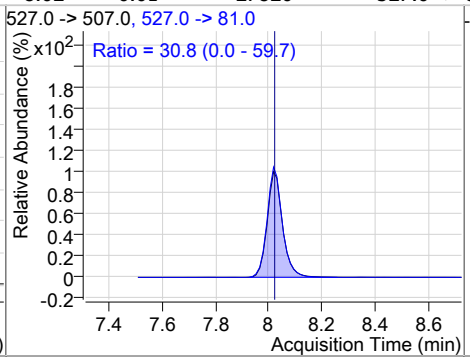


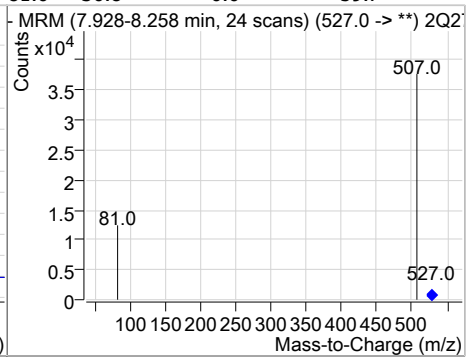




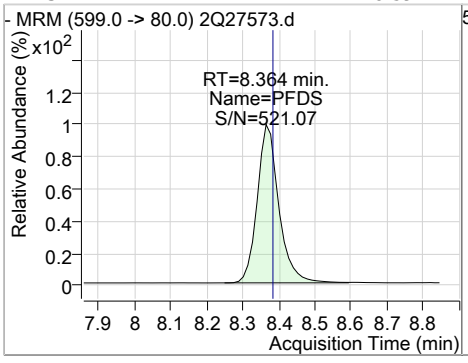
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.71	8.02	0.01	27826	527.0 -> 81.0	30.8	0.0	59.7

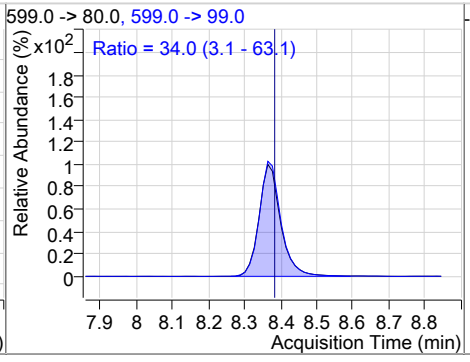


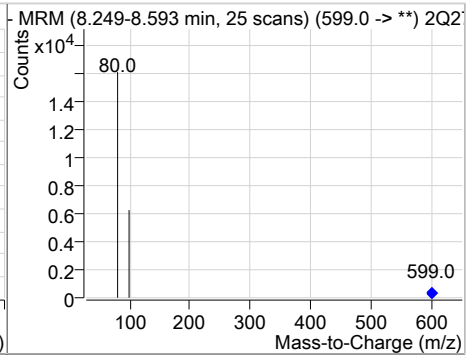




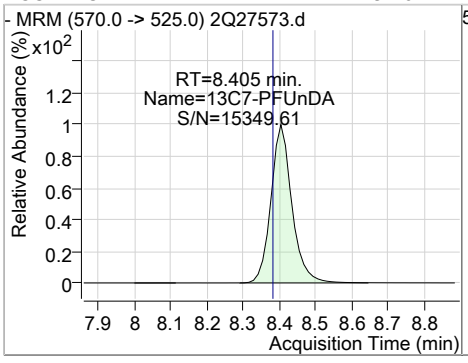
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	18.59	8.36	0.01	11321	599.0 -> 99.0	34.0	3.1	63.1

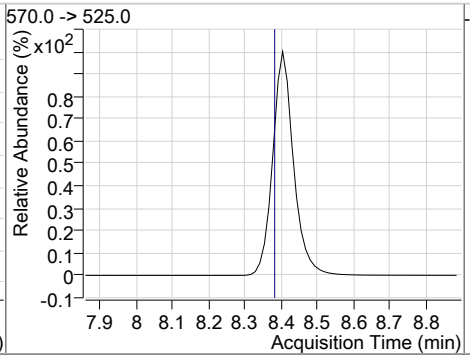


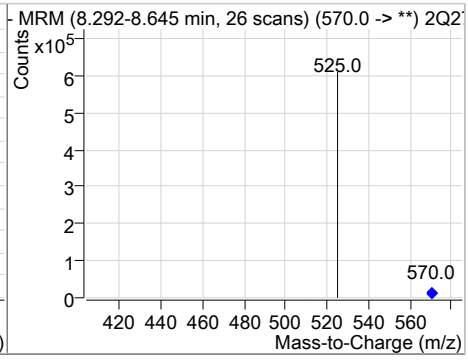




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.16	8.40	0.03	458895				

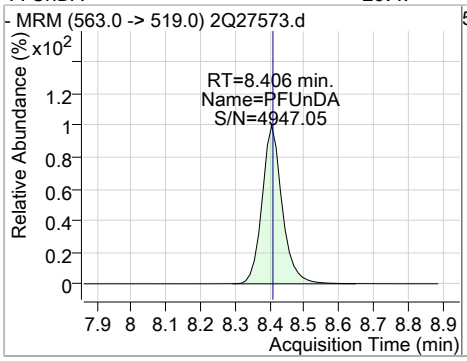


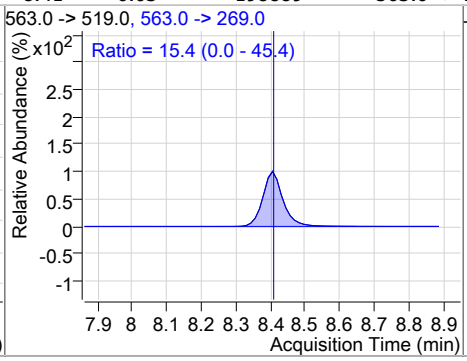


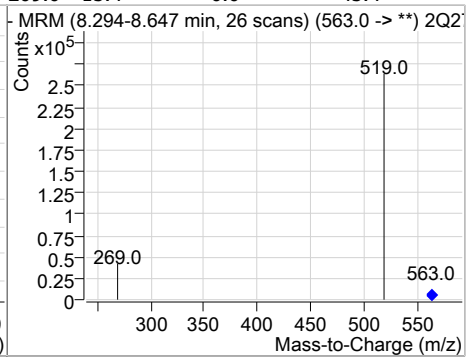


Perfluorinated Compounds by LC/MS/MS

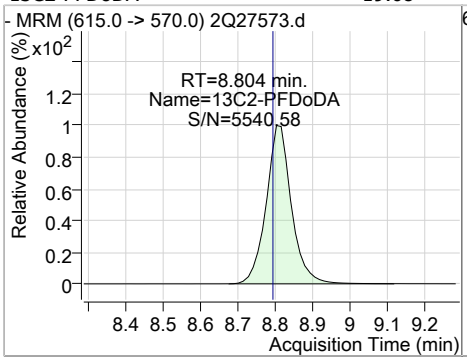
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.47	8.41	0.03	198889	563.0 -> 269.0	15.4	0.0	45.4

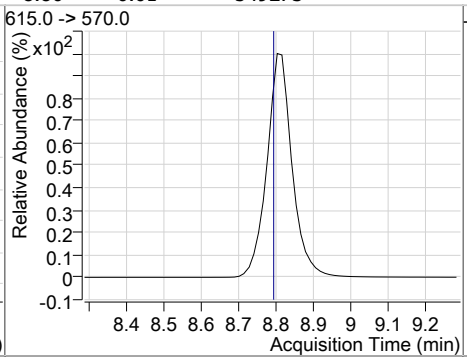


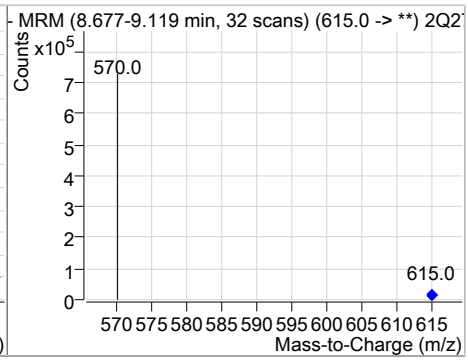




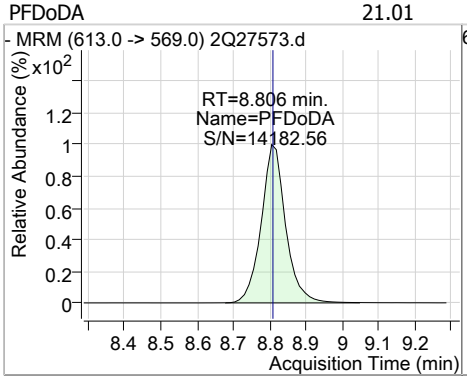
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.68	8.80	0.01	549273				

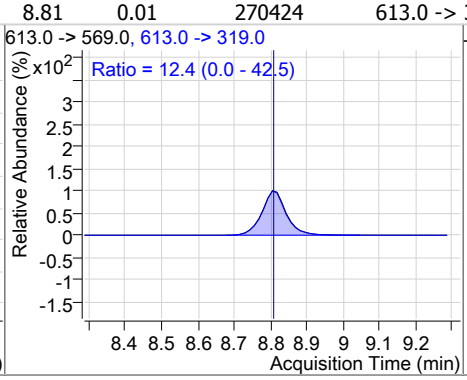


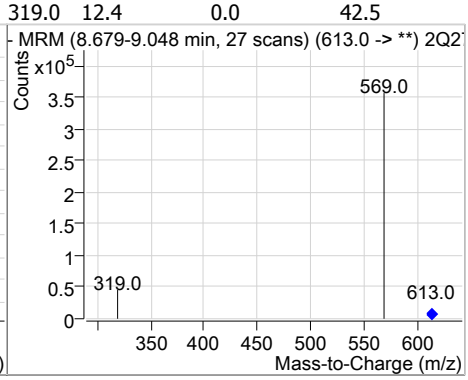




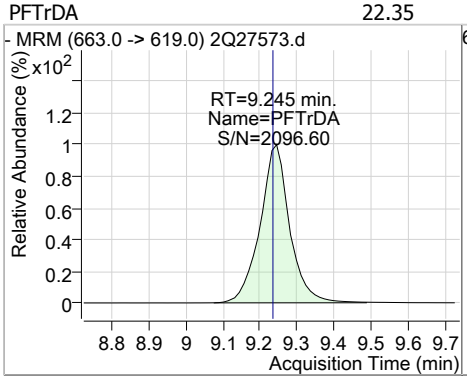
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	21.01	8.81	0.01	270424	613.0 -> 319.0	12.4	0.0	42.5

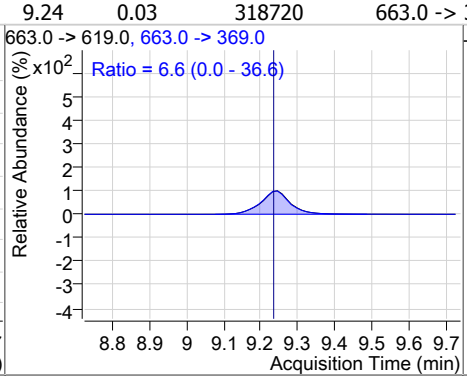


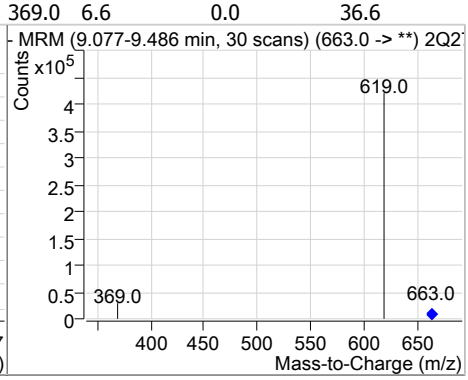




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	22.35	9.24	0.03	318720	663.0 -> 369.0	6.6	0.0	36.6

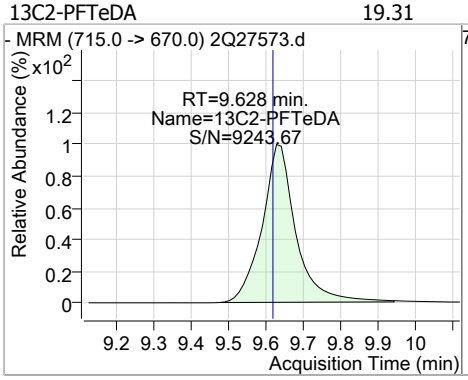


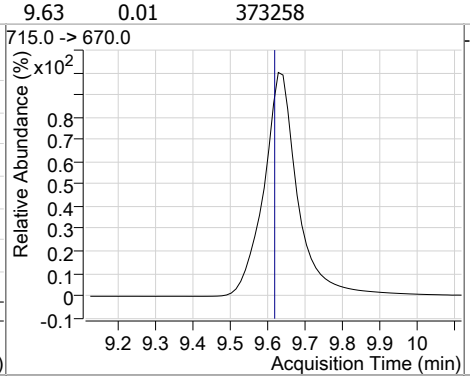


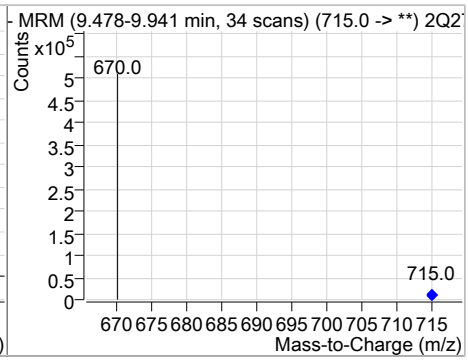


Perfluorinated Compounds by LC/MS/MS

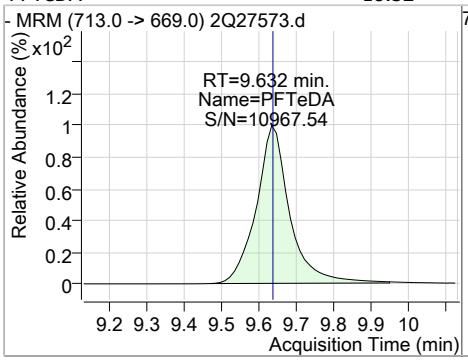
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.31	9.63	0.01	373258				

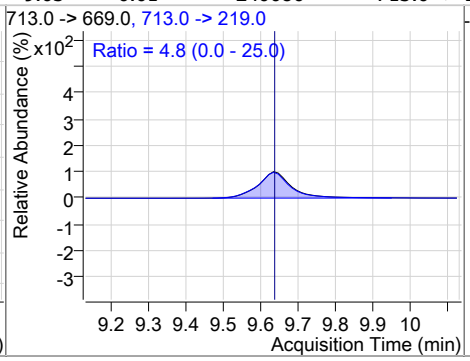


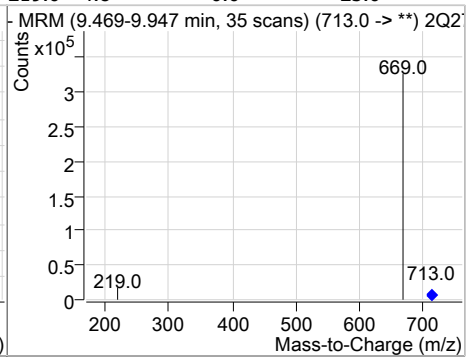




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	18.52	9.63	0.01	240086	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q439-ICV439
Lab FileID: 2Q27573.D
Injection Time: 03/13/19 13:23
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.20	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.48	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/14/19 15:20

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27574.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/13/2019 1:39:29 PM
Sample Name : icv439-20
Vial : Vial 12
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q439.batch.bin
Sample Information : op73501,S2Q439,250,,,1.0,1,water

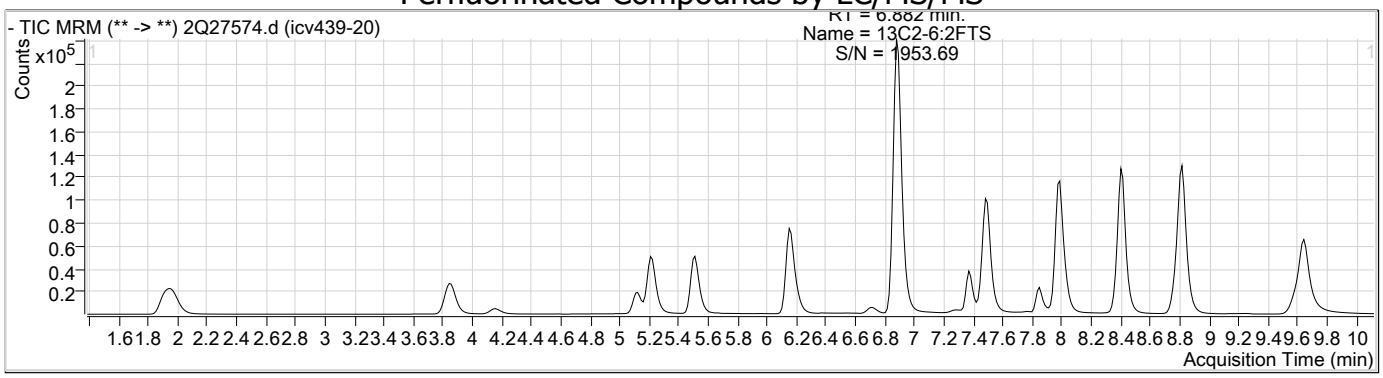
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.886	415.0 -> 370.0	437152	20.00	µg/L	0.025
13C4-PFOS	7.476	503.0 -> 80.0	59994	20.00	µg/L	0.025
M4-PFBA	1.940	217.0 -> 172.0	175729	20.00	µg/L	0.050
M5-PFPeA	3.849	268.0 -> 223.0	145741	20.00	µg/L	0.050
M5-PFHxA	5.214	318.0 -> 273.0	210047	20.00	µg/L	0.038
M4-PFHpA	6.155	367.0 -> 322.0	296736	20.00	µg/L	0.036
M8-PFOA	6.885	421.0 -> 376.0	314798	20.00	µg/L	0.025
M9-PFNA	7.504	472.0 -> 427.0	299183	20.00	µg/L	0.025
M6-PFDA	7.995	519.0 -> 474.0	399892	20.00	µg/L	0.027
M7-PFUnDA	8.405	570.0 -> 525.0	514639	20.00	µg/L	0.025
M2-PFDoDA	8.817	615.0 -> 570.0	605370	20.00	µg/L	0.025
M2-PFTeDA	9.641	715.0 -> 670.0	419260	20.00	µg/L	0.025
M8-FOSA	7.372	506.0 -> 78.0	126007	20.00	µg/L	0.026
M3-PFBS	4.155	302.0 -> 99.0	24355	20.00	µg/L	0.063
M3-PFHxS	6.199	402.0 -> 99.0	27755	20.00	µg/L	0.038
M8-PFOS	7.474	507.0 -> 99.0	33984	20.00	µg/L	0.025
M2-4:2FTS	5.122	329.0 -> 309.0	79947	20.00	µg/L	0.050
M2-6:2FTS	6.882	429.0 -> 409.0	89181	20.00	µg/L	0.025
M2-8:2FTS	8.031	529.0 -> 509.0	56026	20.00	µg/L	0.026
M3-MeFOSAA	7.847	573.0 -> 419.0	48613	20.00	µg/L	0.025
M3-HFPO-DA	5.519	287.0 -> 169.0	209590	100.00	µg/L	0.038
System Monitoring Compounds						
13C2-4:2FTS	5.122	329.0 -> 309.0	79774	19.22	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%		
13C2-6:2FTS	6.882	429.0 -> 409.0	89186	20.46	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
13C2-8:2FTS	8.031	529.0 -> 509.0	56030	19.73	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.7%		
13C2-PFDoDA	8.817	615.0 -> 570.0	604239	21.65	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.2%		
13C2-PFTeDA	9.641	715.0 -> 670.0	409486	21.18	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.9%		
13C3-PFBS	4.155	302.0 -> 99.0	24318	20.08	µg/L	0.063
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C3-PFHxS	6.199	402.0 -> 99.0	27737	20.36	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%		
13C4-PFBA	1.940	217.0 -> 172.0	174651	20.15	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C4-PFHpA	6.155	367.0 -> 322.0	296263	20.58	µg/L	0.036
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.9%		
13C5-PFHxA	5.214	318.0 -> 273.0	209665	20.44	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C5-PFPeA	3.849	268.0 -> 223.0	145529	20.29	µg/L	0.050
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C6-PFDA	7.995	519.0 -> 474.0	399785	21.59	µg/L	0.027

Perfluorinated Compounds by LC/MS/MS

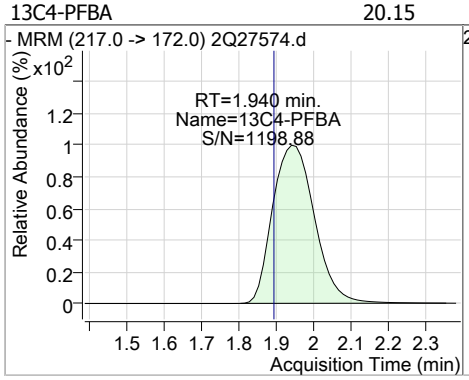
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.0%		
13C7-PFUnDA	8.405	570.0 -> 525.0	514340	21.47 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.4%		
13C8-FOSA	7.372	506.0 -> 78.0	126043	22.13 µg/L		0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.7%		
13C8-PFOA	6.885	421.0 -> 376.0	314439	21.12 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C8-PFOS	7.474	507.0 -> 99.0	33973	20.54 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C9-PFNA	7.504	472.0 -> 427.0	298953	20.86 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
d3-MeFOSAA	7.847	573.0 -> 419.0	48627	20.34 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
M2-PFOA	6.886	415.0 -> 370.0	437689	20.01 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.476	503.0 -> 80.0	60024	20.01 µg/L		0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.519	287.0 -> 169.0	209590	103.18 µg/L		0.038
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	7.973	584.0 -> 419.0	17367	16.20 µg/L	m	92
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	7.848	570.0 -> 419.0	22558	17.49 µg/L	m	95
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	6.892	449.0 -> 80.0	0	0.00 µg/L	m	1
PFHxA	-	313.0 -> 269.0	-	N.D.		
PFHxS	6.201	399.0 -> 80.0	0	0.00 µg/L	m	1
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.888	413.0 -> 369.0	143695	16.69 µg/L	m	98
PFOS	7.477	499.0 -> 80.0	32564	18.69 µg/L	m	75
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

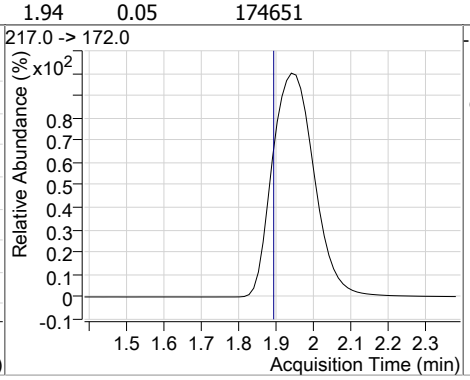
 # = Qualifier out of range, m = manually integrated, + = Area summed

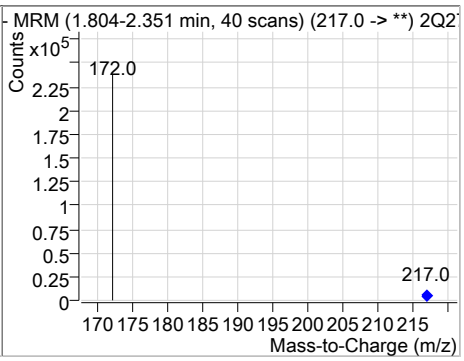
Perfluorinated Compounds by LC/MS/MS



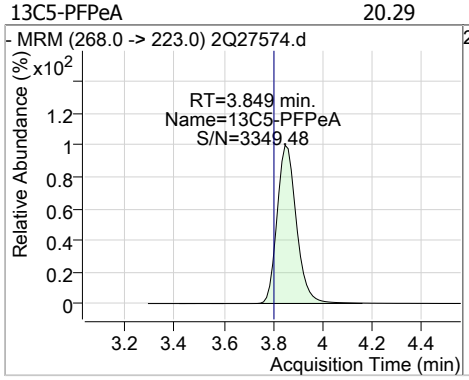
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.15	1.94	0.05	174651				

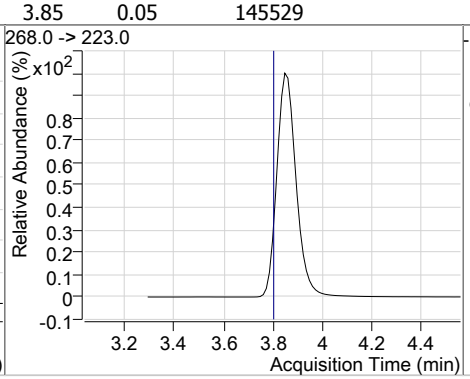


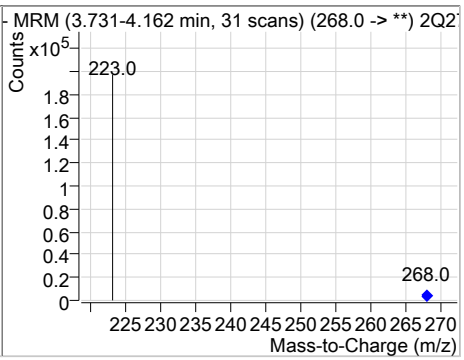




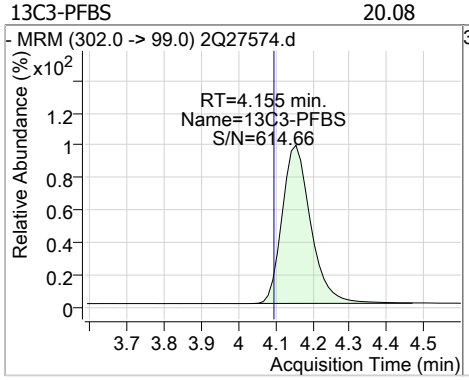
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.29	3.85	0.05	145529				

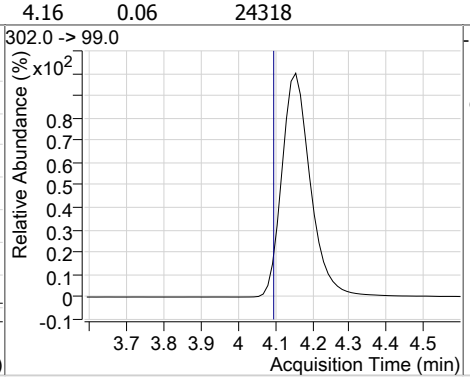


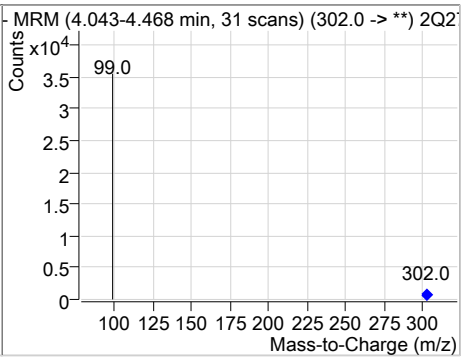




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.08	4.16	0.06	24318				

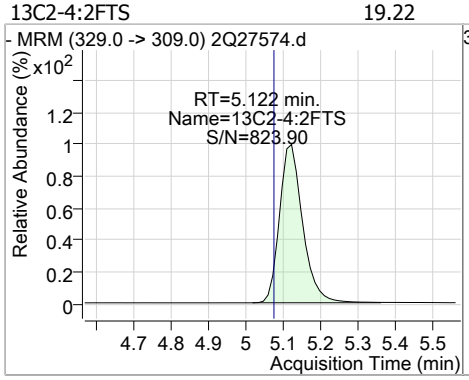


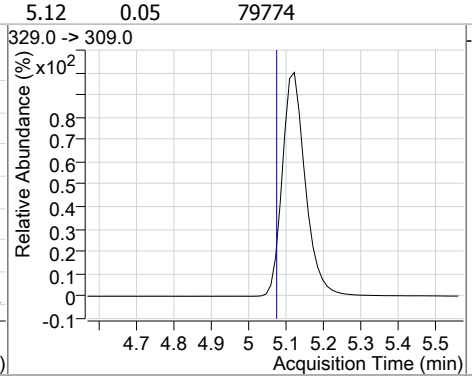


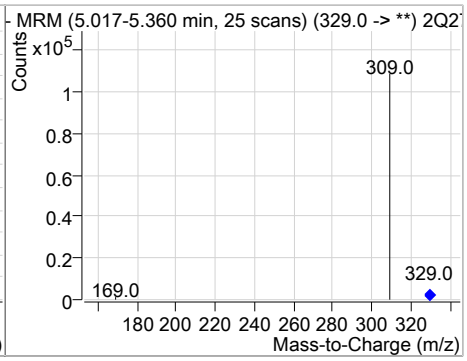


Perfluorinated Compounds by LC/MS/MS

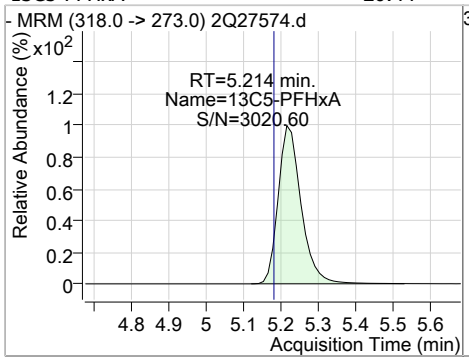
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.22	5.12	0.05	79774				

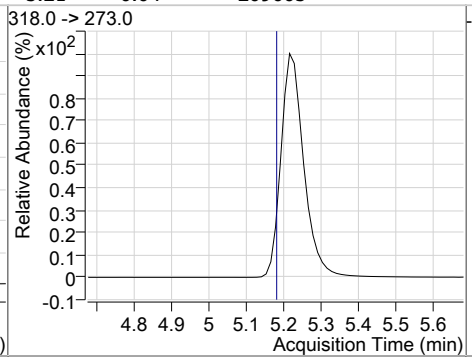


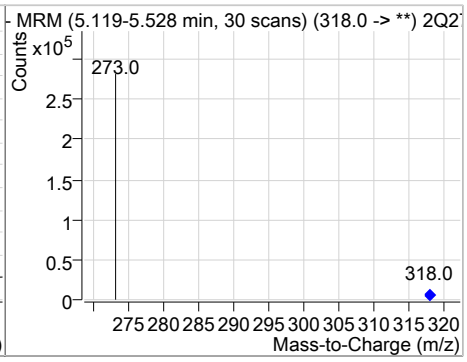




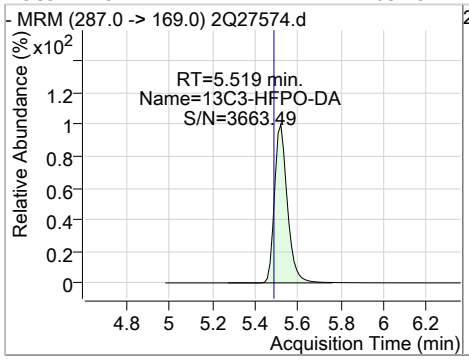
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.44	5.21	0.04	209665				

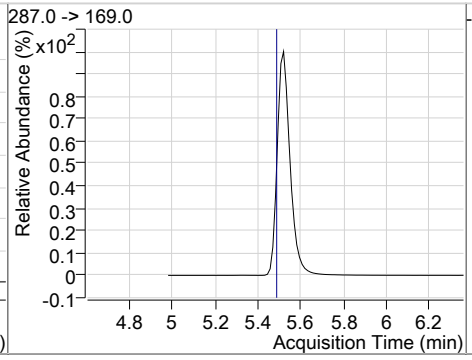


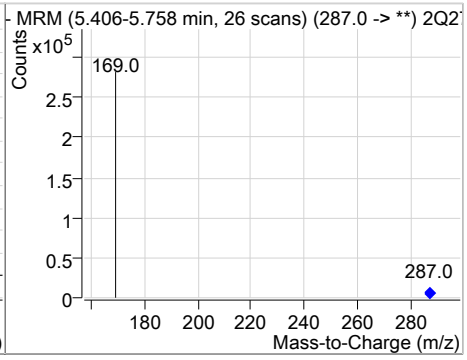




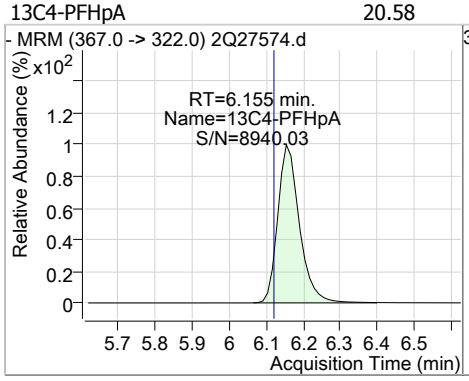
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.18	5.52	0.04	209590				

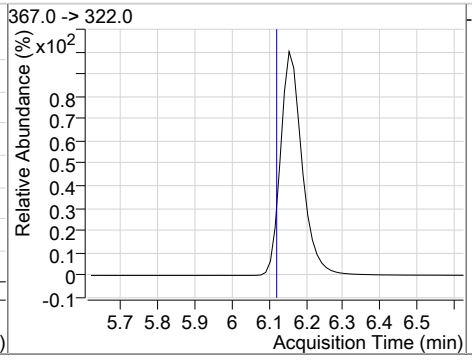


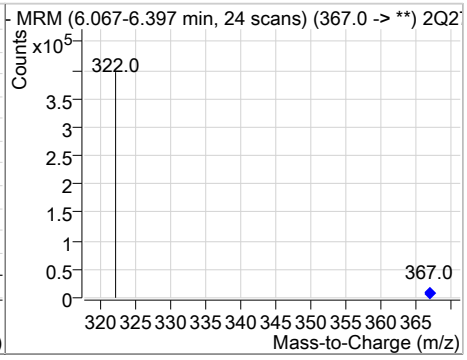




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.58	6.15	0.04	296263				

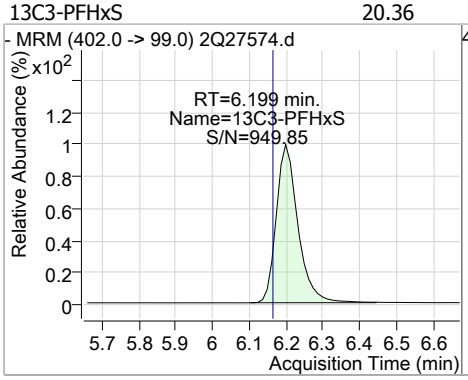


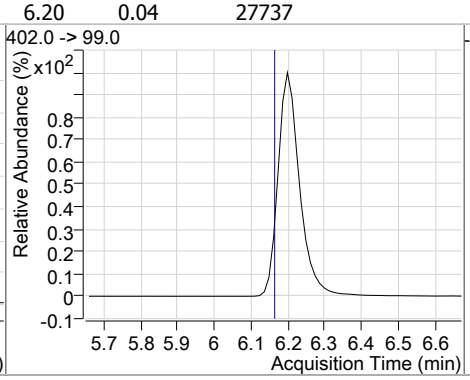


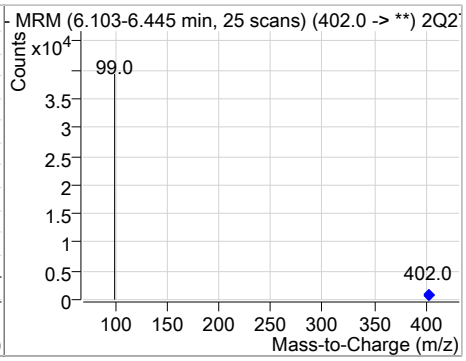


Perfluorinated Compounds by LC/MS/MS

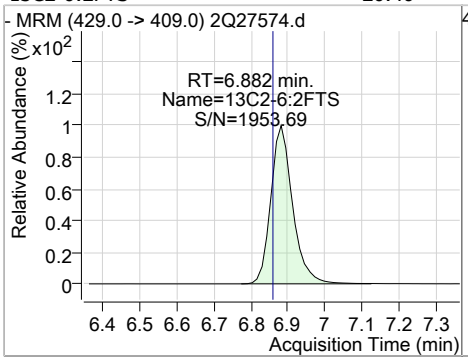
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.36	6.20	0.04	27737				

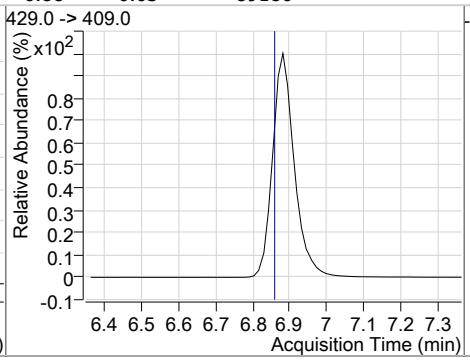


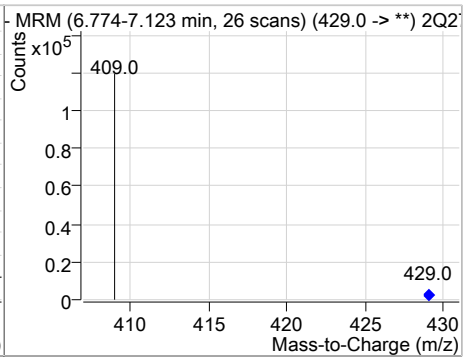




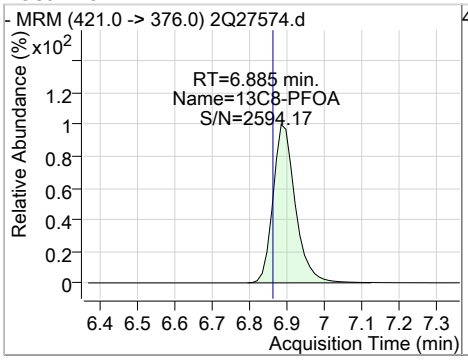
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.46	6.88	0.03	89186				

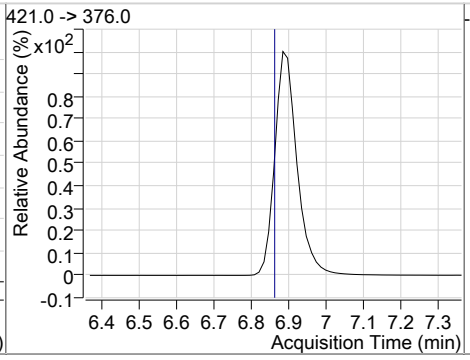


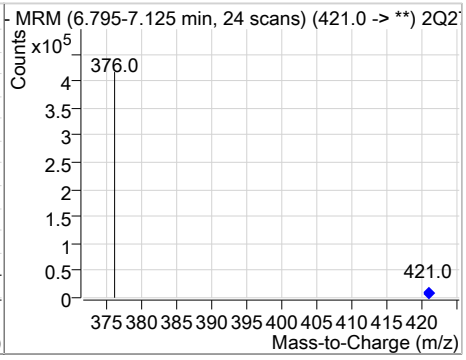




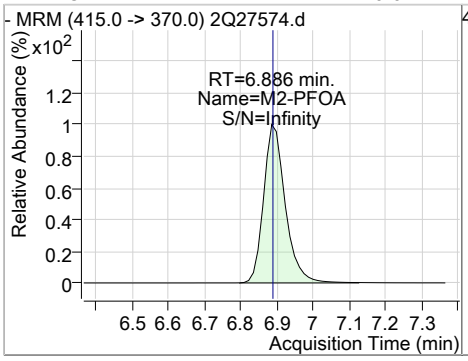
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.12	6.88	0.03	314439				

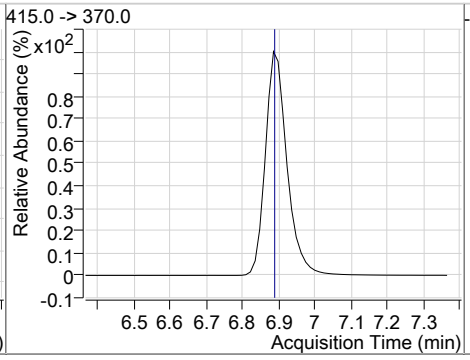


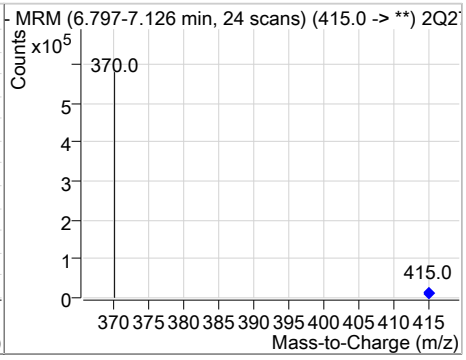




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.89	0.03	437689				

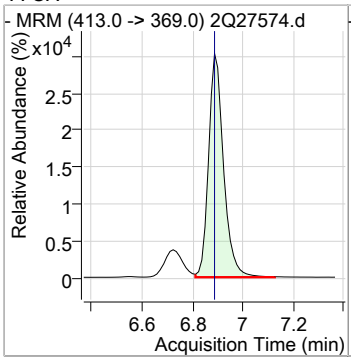


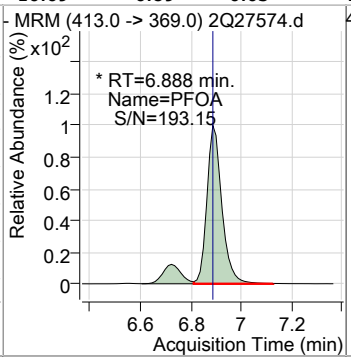


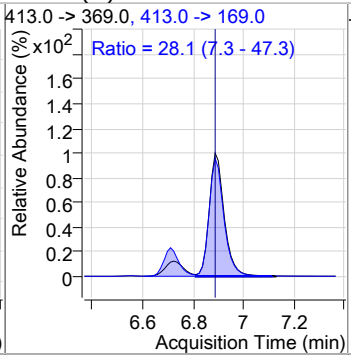


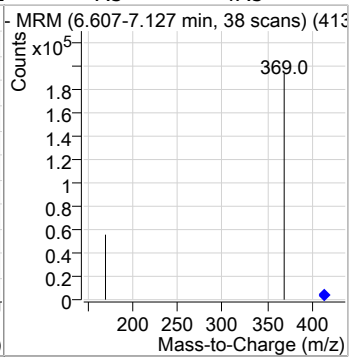
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	16.69	6.89	0.03	143695 (m)	413.0 -> 169.0	28.1	7.3	47.3

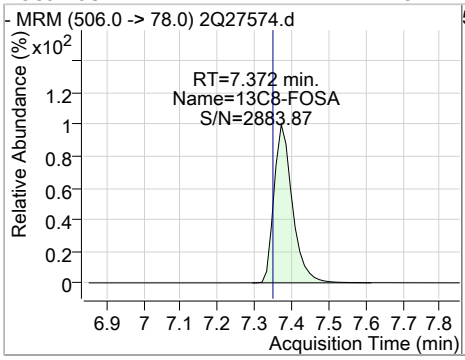


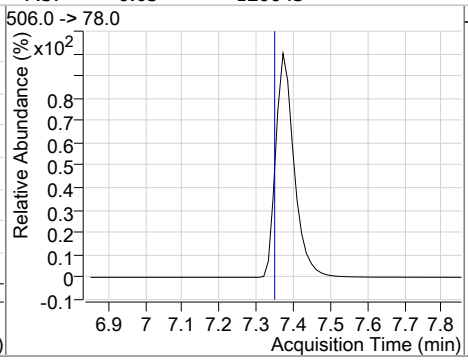


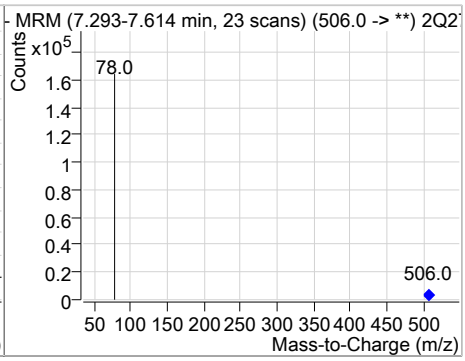




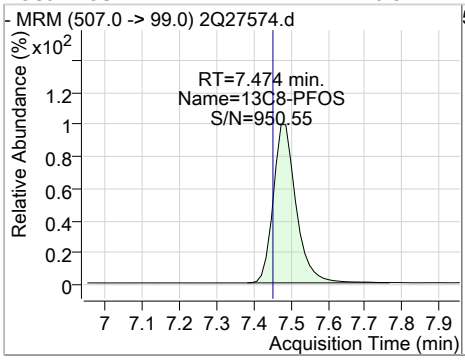
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.13	7.37	0.03	126043				

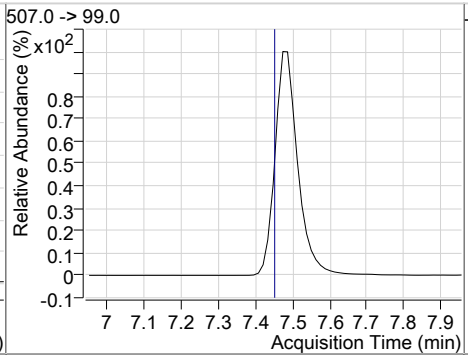


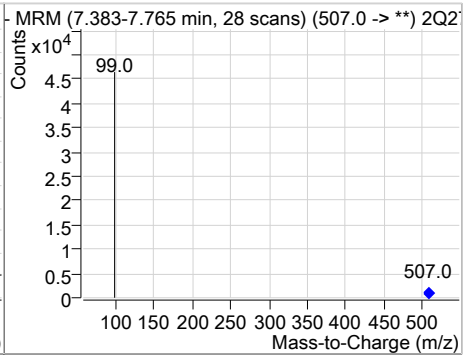




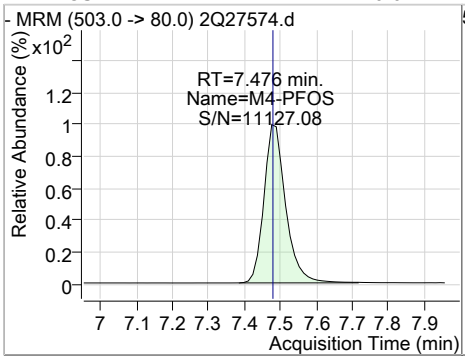
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.54	7.47	0.03	33973				

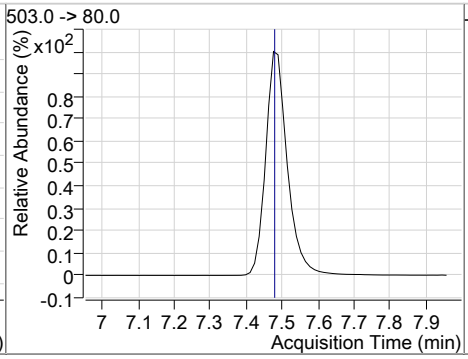


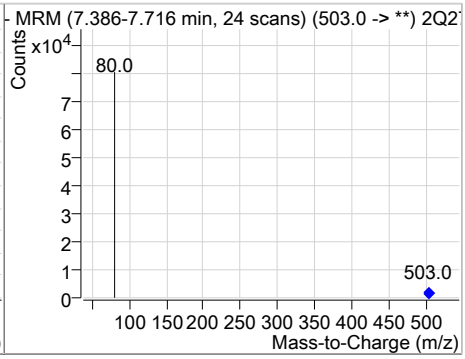




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.48	0.03	60024				

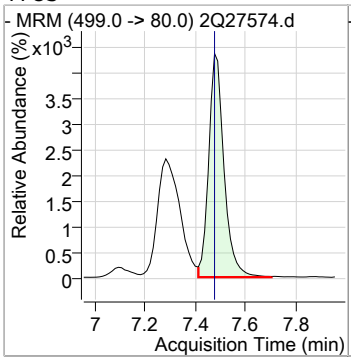


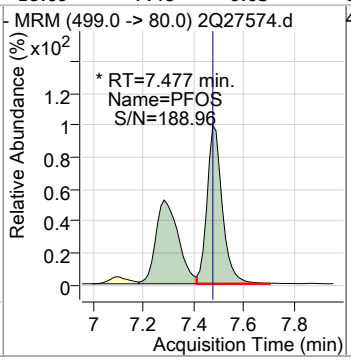


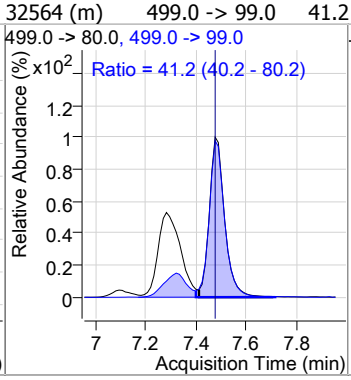


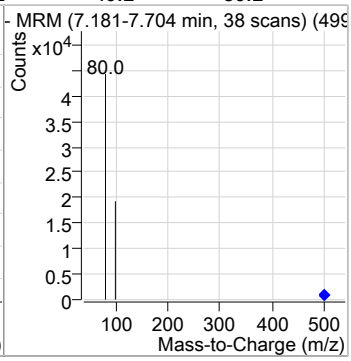
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.69	7.48	0.03	32564 (m)	499.0 -> 99.0	41.2	40.2	80.2

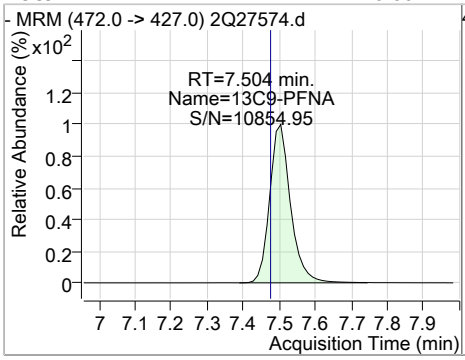


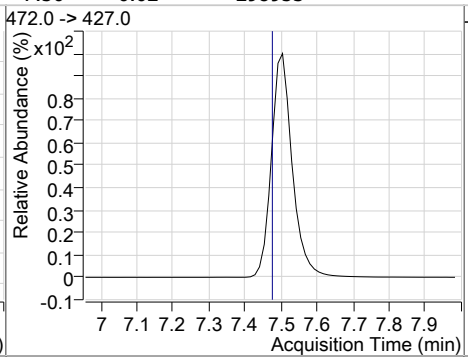


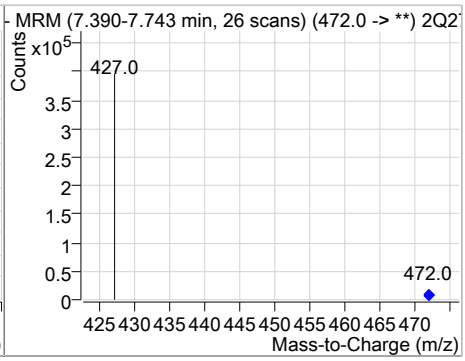




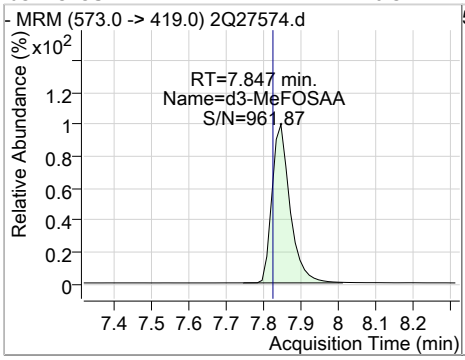
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.86	7.50	0.02	298953				

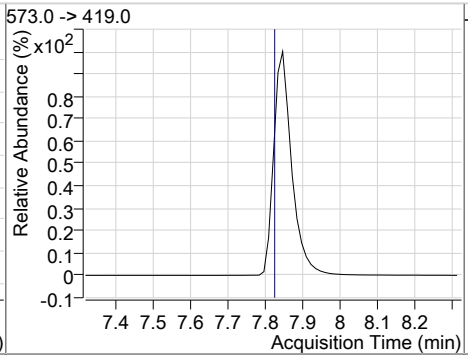


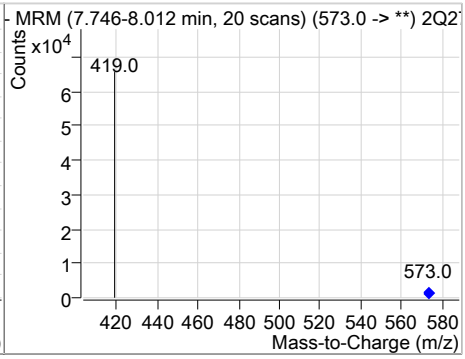




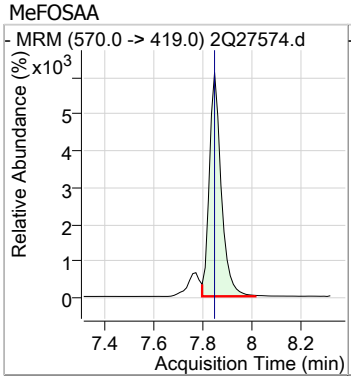
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.34	7.85	0.02	48627				

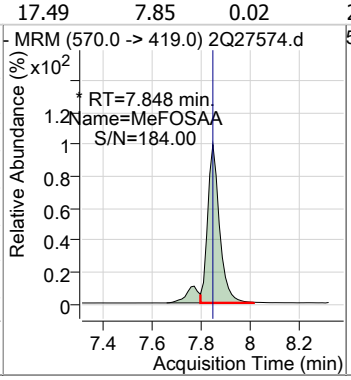


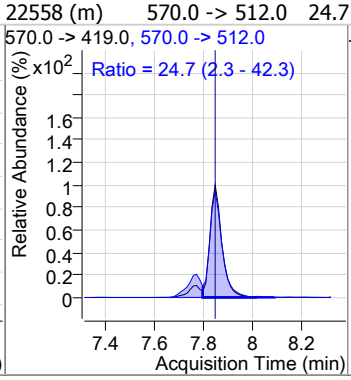


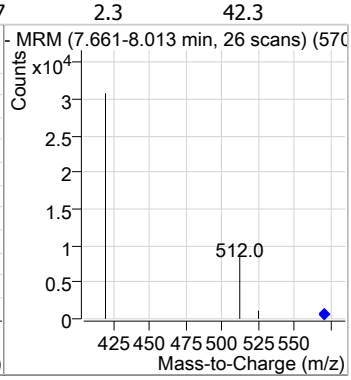


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.49	7.85	0.02	22558 (m)	570.0 -> 512.0	24.7	2.3	42.3



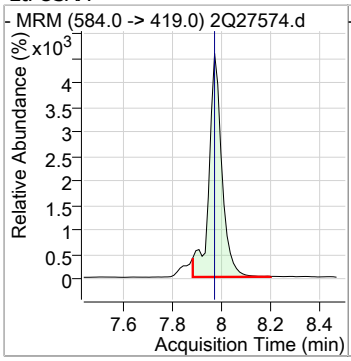


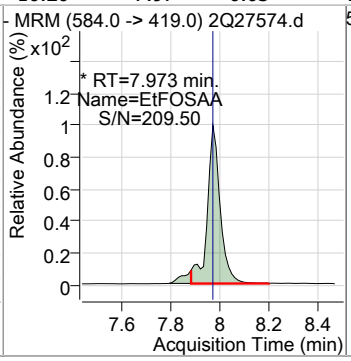


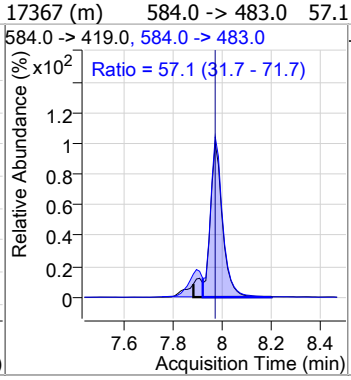


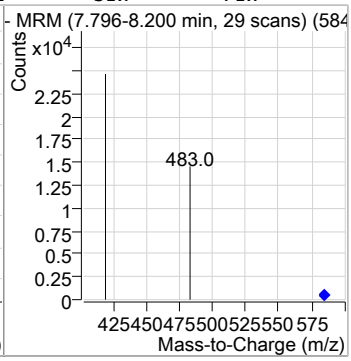
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	16.20	7.97	0.03	17367 (m)	584.0 -> 483.0	57.1	31.7	71.7

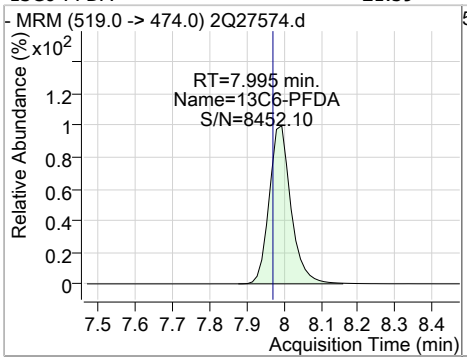


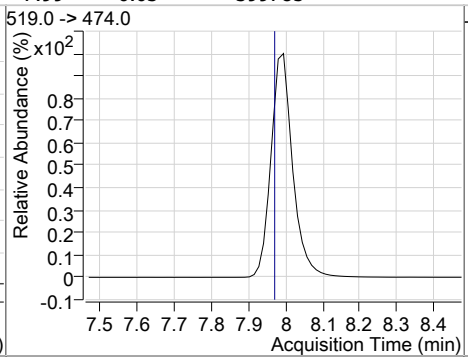


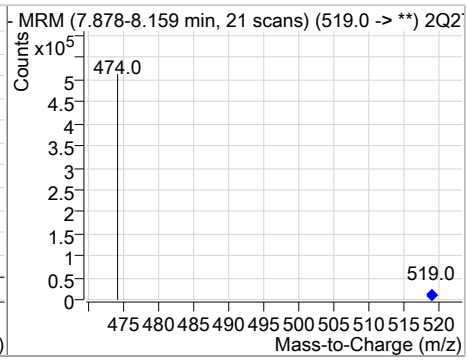




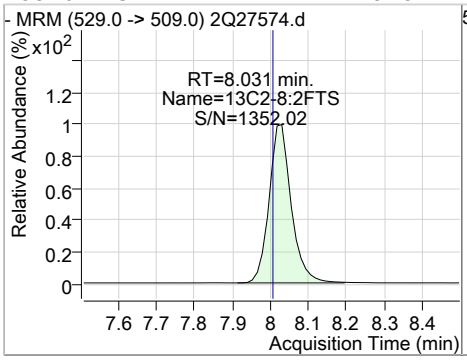
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.59	7.99	0.03	399785				

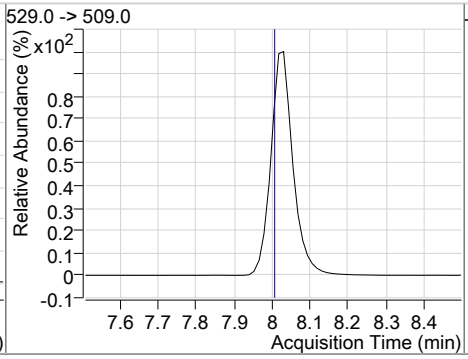


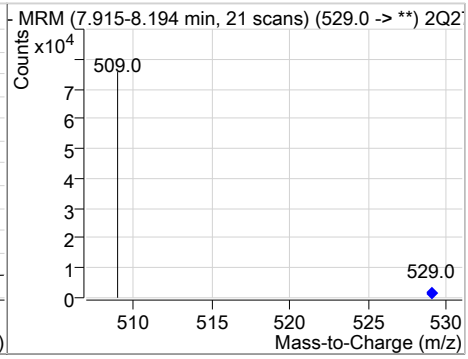




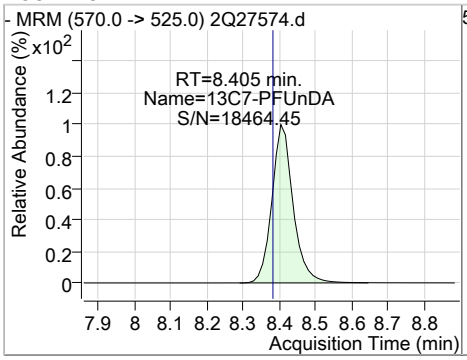
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.73	8.03	0.03	56030				

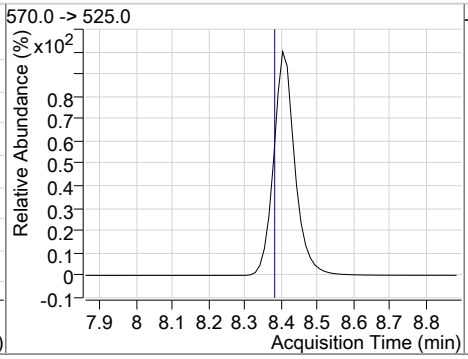


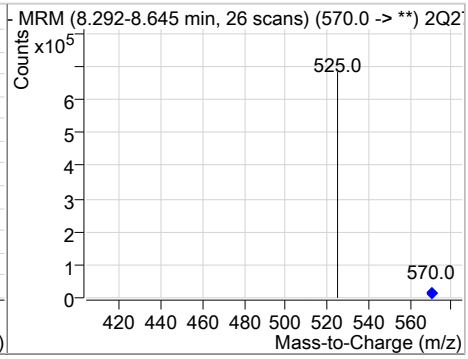




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.47	8.40	0.03	514340				

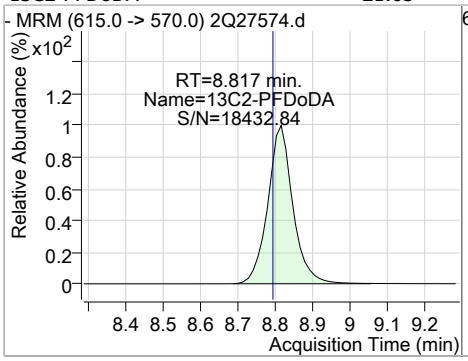


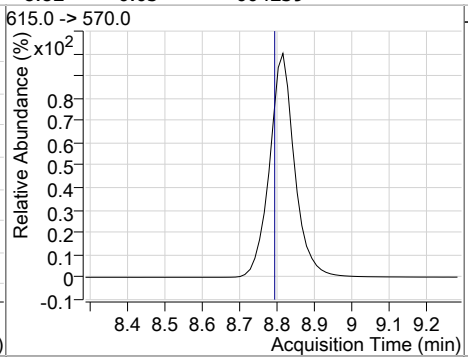


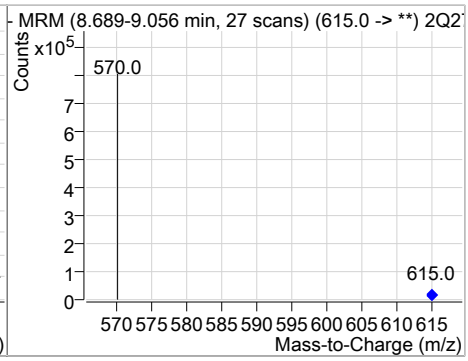


Perfluorinated Compounds by LC/MS/MS

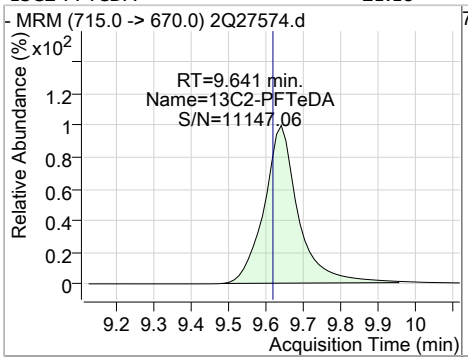
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.65	8.82	0.03	604239				

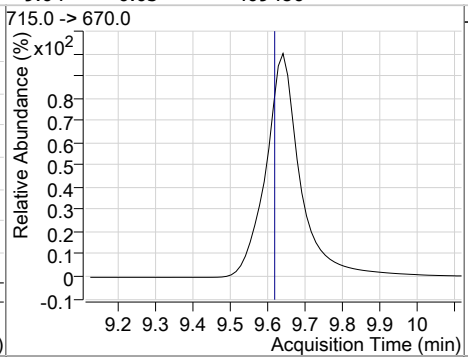


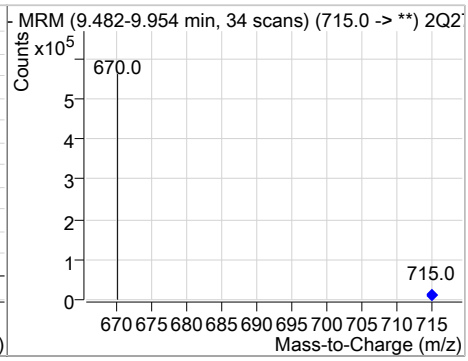




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.18	9.64	0.03	409486				







Manual Integration Approval Summary

Sample Number: S2Q439-ICV439
Lab FileID: 2Q27574.D
Injection Time: 03/13/19 13:39
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/14/19 09:05 Nancy Saunders
Supervisor approved: 03/14/19 15:20 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.89	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.48	Split peak
MeFOSAA	2355-31-9		7.85	Split peak
EtFOSAA	2991-50-6		7.97	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/18/19 13:59

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27653.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 4:06:32 PM
Sample Name : CC439-20
Vial : Vial 7
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op73501,S2Q441,250,,,1.0,1,water

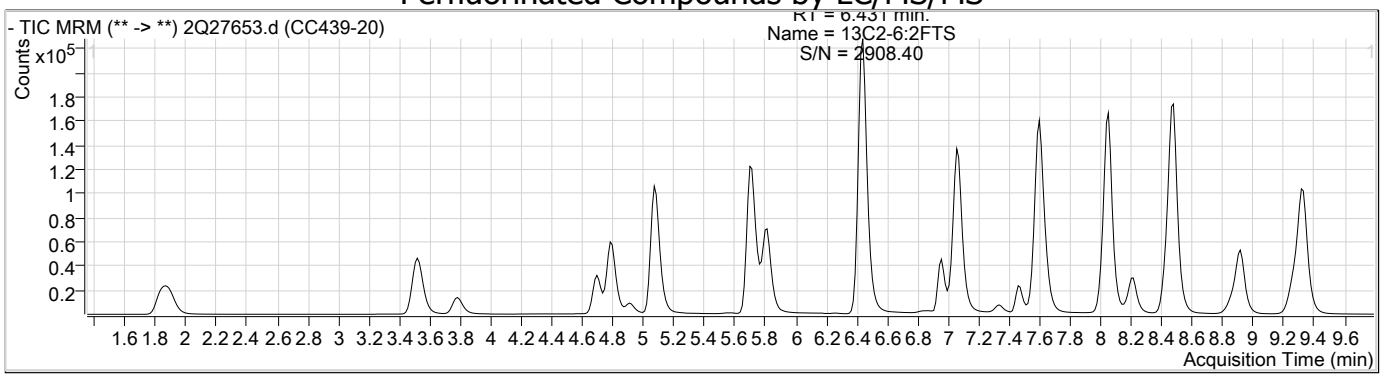
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	349896	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	49627	20.00	µg/L	0.031
M4-PFBA	1.865	217.0 -> 172.0	146607	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	126379	20.00	µg/L	0.032
M5-PFHxA	4.789	318.0 -> 273.0	180100	20.00	µg/L	0.026
M4-PFHpA	5.705	367.0 -> 322.0	253097	20.00	µg/L	0.017
M8-PFOA	6.446	421.0 -> 376.0	267625	20.00	µg/L	0.031
M9-PFNA	7.065	472.0 -> 427.0	276181	20.00	µg/L	0.020
M6-PFDA	7.607	519.0 -> 474.0	374984	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	469185	20.00	µg/L	0.028
M2-PFDoDA	8.478	615.0 -> 570.0	549018	20.00	µg/L	0.028
M2-PFTeDA	9.327	715.0 -> 670.0	345814	20.00	µg/L	0.025
M8-FOSA	6.959	506.0 -> 78.0	107724	20.00	µg/L	0.032
M3-PFBS	3.780	302.0 -> 99.0	20799	20.00	µg/L	0.025
M3-PFHxS	5.748	402.0 -> 99.0	22970	20.00	µg/L	0.026
M8-PFOS	7.045	507.0 -> 99.0	29844	20.00	µg/L	0.030
M2-4:2FTS	4.696	329.0 -> 309.0	73305	20.00	µg/L	0.028
M2-6:2FTS	6.431	429.0 -> 409.0	79094	20.00	µg/L	0.030
M2-8:2FTS	7.642	529.0 -> 509.0	57913	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	46883	20.00	µg/L	0.029
M3-HFPO-DA	5.081	287.0 -> 169.0	177858	100.00	µg/L	0.026
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	73292	17.65	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.3%		
13C2-6:2FTS	6.431	429.0 -> 409.0	79238	18.18	µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.9%		
13C2-8:2FTS	7.642	529.0 -> 509.0	57910	20.40	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C2-PFDoDA	8.478	615.0 -> 570.0	548451	19.65	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.2%		
13C2-PFTeDA	9.327	715.0 -> 670.0	344802	17.84	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.2%		
13C3-PFBS	3.780	302.0 -> 99.0	20672	17.07	µg/L	0.025
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 85.4%		
13C3-PFHxS	5.748	402.0 -> 99.0	22941	16.84	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.2%		
13C4-PFBA	1.865	217.0 -> 172.0	146033	16.85	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.2%		
13C4-PFHpA	5.705	367.0 -> 322.0	253009	17.57	µg/L	0.017
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%		
13C5-PFHxA	4.789	318.0 -> 273.0	180107	17.56	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.8%		
13C5-PFPeA	3.524	268.0 -> 223.0	126364	17.62	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%		
13C6-PFDA	7.607	519.0 -> 474.0	374951	20.25	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

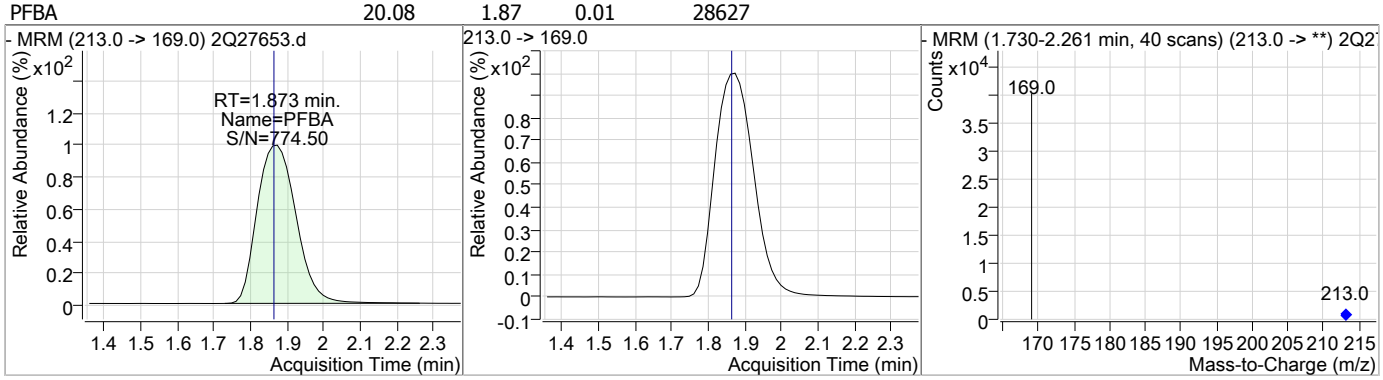
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%			
13C7-PFUnDA	8.054	570.0 -> 525.0	468948	19.58	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%			
13C8-FOSA	6.959	506.0 -> 78.0	107665	18.90	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%			
13C8-PFOA	6.446	421.0 -> 376.0	267374	17.95	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.8%			
13C8-PFOS	7.045	507.0 -> 99.0	29820	18.03	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%			
13C9-PFNA	7.065	472.0 -> 427.0	276094	19.26	µg/L		0.020
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.3%			
d3-MeFOSAA	7.459	573.0 -> 419.0	46870	19.60	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%			
M2-PFOA	6.448	415.0 -> 370.0	349882	19.98	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
M4-PFOS	7.048	503.0 -> 80.0	49638	20.00	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	177858	87.56	µg/L		0.026
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 87.6%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	43146	20.23	µg/L		100
6:2FTS	6.432	427.0 -> 407.0	40234	19.89	µg/L		100
8:2FTS	7.643	527.0 -> 507.0	30525	19.96	µg/L		100
EtFOSAA	7.610	584.0 -> 419.0	21377	20.73	µg/L		100
FOSA	6.963	498.0 -> 78.0	50923	20.73	µg/L		100
MeFOSAA	7.473	570.0 -> 419.0	25911	20.79	µg/L		99
PFBA	1.873	213.0 -> 169.0	28627	20.08	µg/L		100
PFBS	3.783	299.0 -> 80.0	33756	19.65	µg/L		99
PFDA	7.608	513.0 -> 469.0	157508	19.90	µg/L		99
PFDoDA	8.468	613.0 -> 569.0	254455	19.78	µg/L		99
PFDS	8.014	599.0 -> 80.0	11818	20.04	µg/L		99
PFHpA	5.708	363.0 -> 319.0	229969	19.37	µg/L		100
PFHpS	6.454	449.0 -> 80.0	23883	20.53	µg/L		99
PFHxA	4.791	313.0 -> 269.0	60518	19.42	µg/L		100
PFHxS	5.751	399.0 -> 80.0	26893	19.66	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	172284	19.27	µg/L		99
PFNS	7.565	549.0 -> 80.0	23111	20.69	µg/L		99
PFOA	6.450	413.0 -> 369.0	145689	19.90	µg/L		97
PFOS	7.049	499.0 -> 80.0	29413	19.23	µg/L	m	80
PFPeA	3.528	263.0 -> 219.0	110488	19.25	µg/L		100
PFPeS	4.908	349.0 -> 80.0	23249	19.77	µg/L		98
PFTeDA	9.319	713.0 -> 669.0	233690	19.80	µg/L		99
PFTrDA	8.919	663.0 -> 619.0	262915	20.25	µg/L		100
PFUnDA	8.056	563.0 -> 519.0	199681	20.10	µg/L		99
11Cl-PF3OUdS	8.212	631.0 -> 451.0	126772	18.24	µg/L		100
9Cl-PF3ONS	7.335	531.0 -> 351.0	25721	18.59	µg/L		100
ADONA	5.817	377.0 -> 251.0	266541	19.41	µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	219937	101.93	µg/L		100

 # = Qualifier out of range, m = manually integrated, + = Area summed

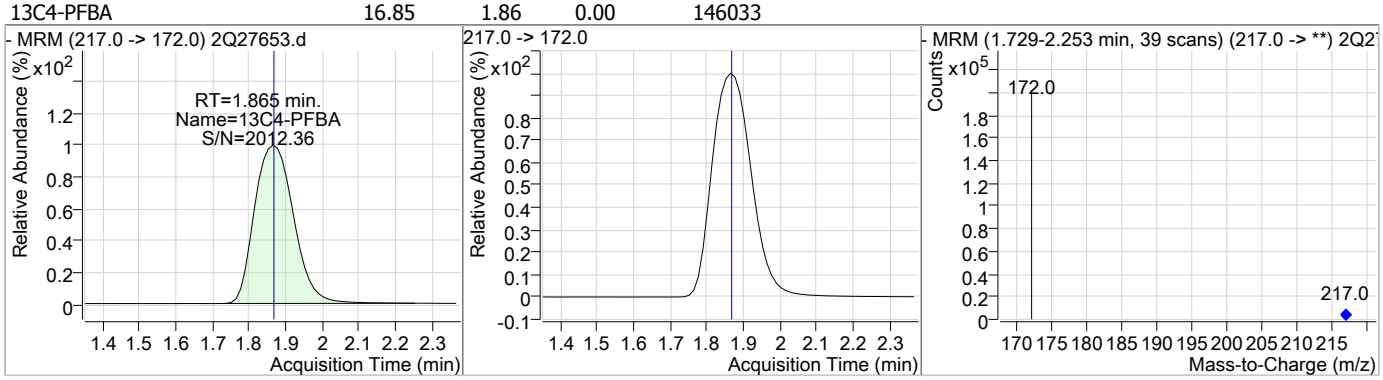
Perfluorinated Compounds by LC/MS/MS



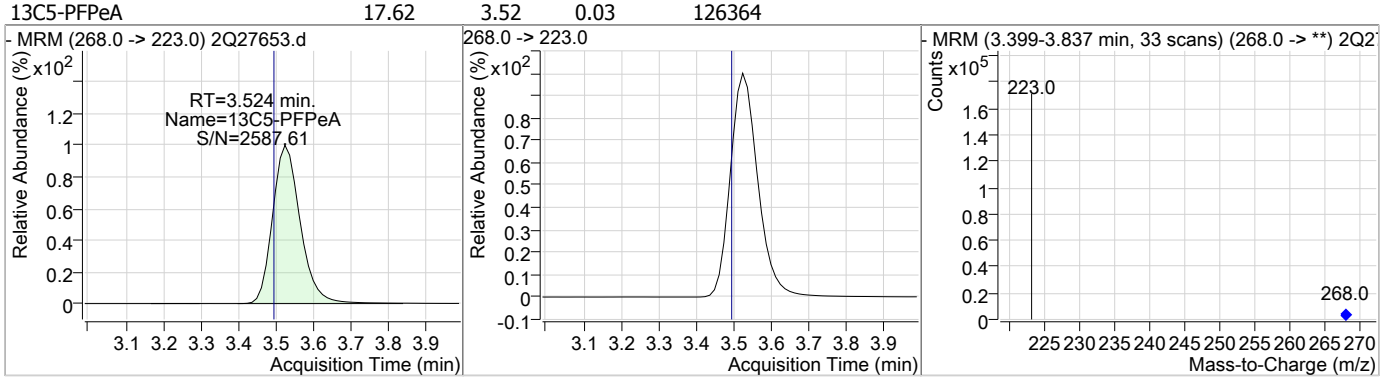
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.08	1.87	0.01	28627				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	16.85	1.86	0.00	146033				

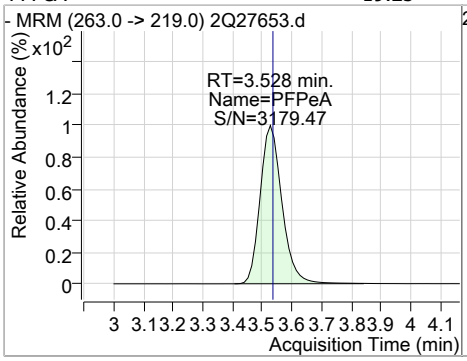


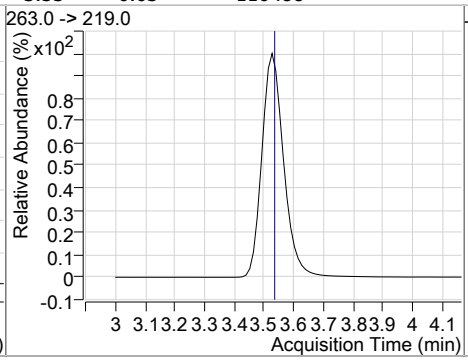
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	17.62	3.52	0.03	126364				

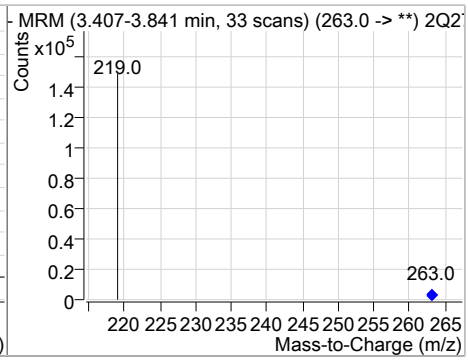


Perfluorinated Compounds by LC/MS/MS

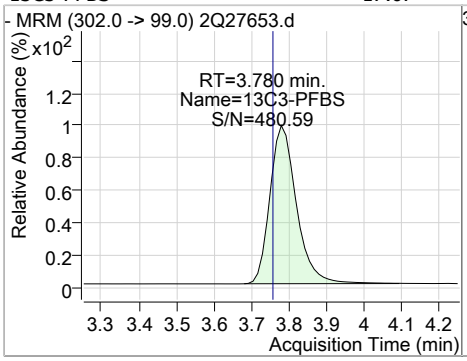
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.25	3.53	0.03	110488				

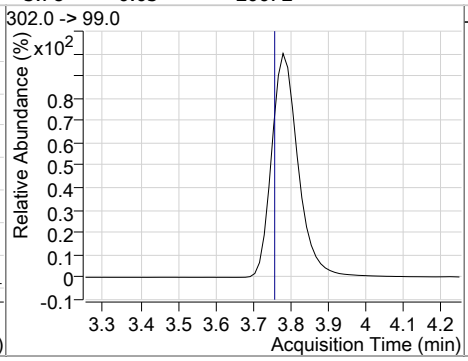


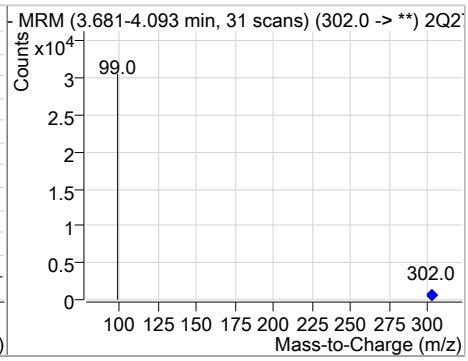




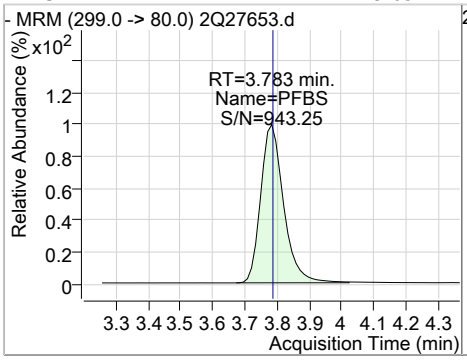
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	17.07	3.78	0.03	20672				

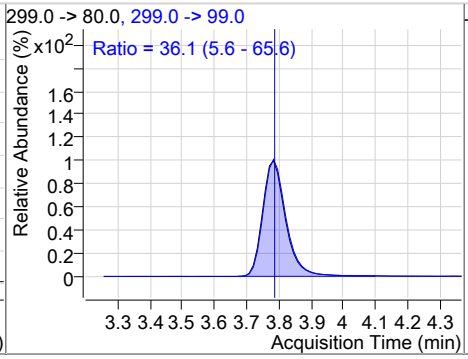


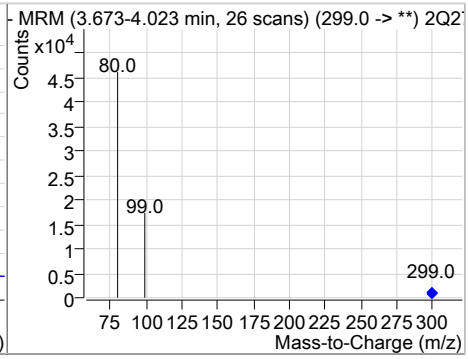




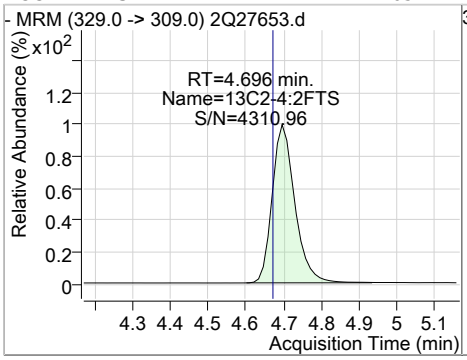
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.65	3.78	0.03	33756	299.0 -> 99.0	36.1	5.6	65.6

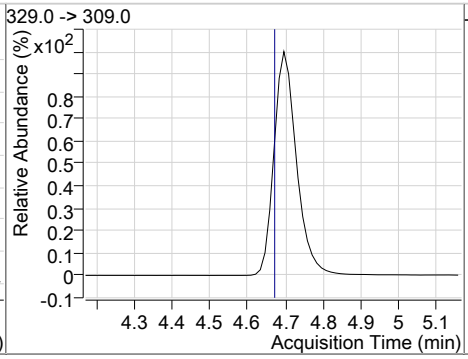


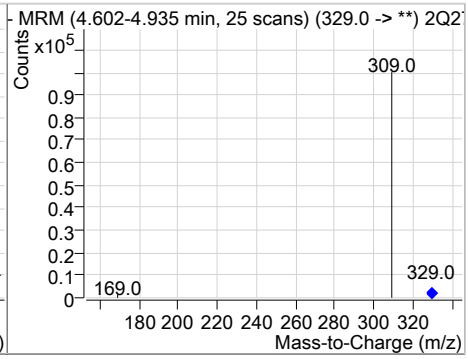




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	17.65	4.70	0.03	73292				

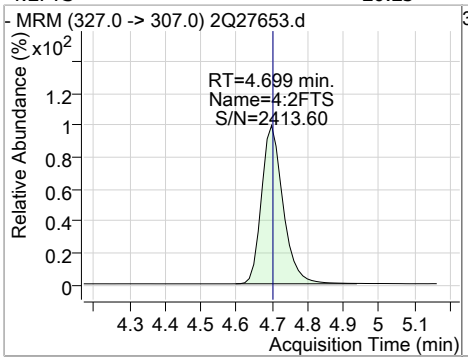


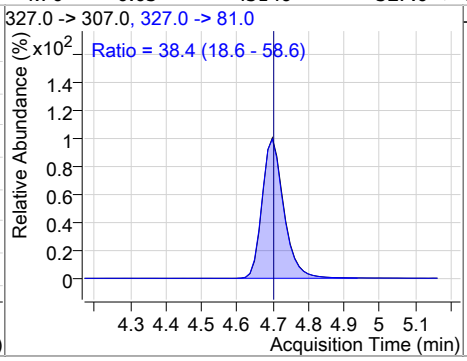


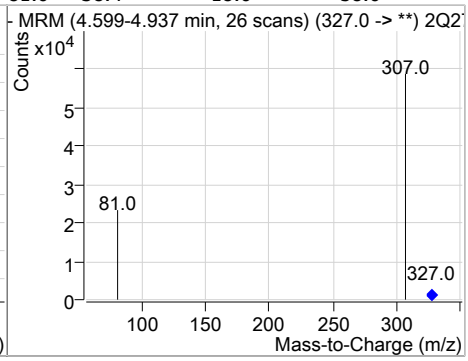


Perfluorinated Compounds by LC/MS/MS

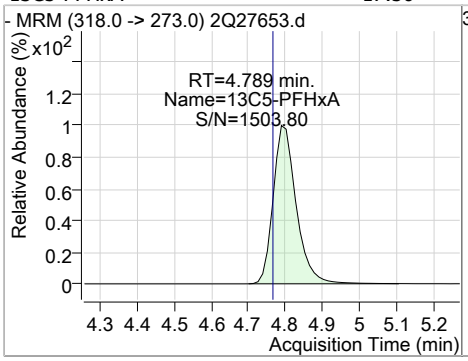
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.23	4.70	0.03	43146	327.0 -> 81.0	38.4	18.6	58.6

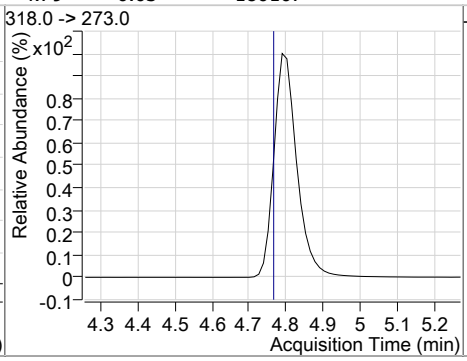


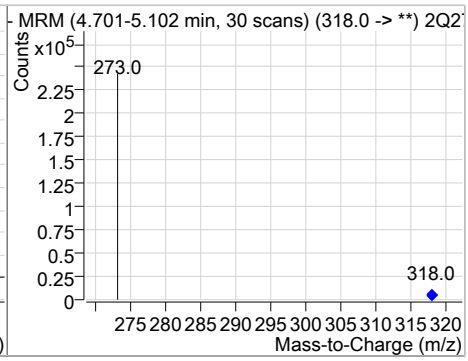




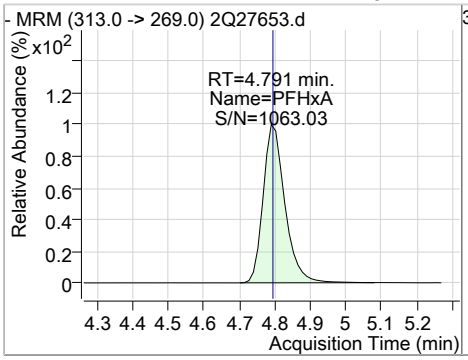
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	17.56	4.79	0.03	180107				

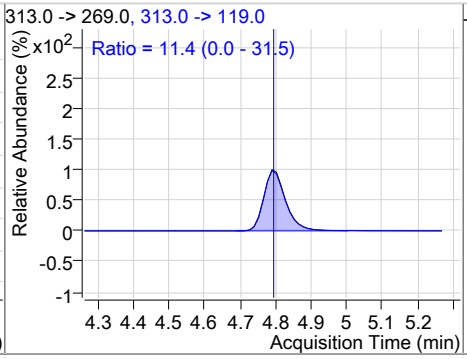


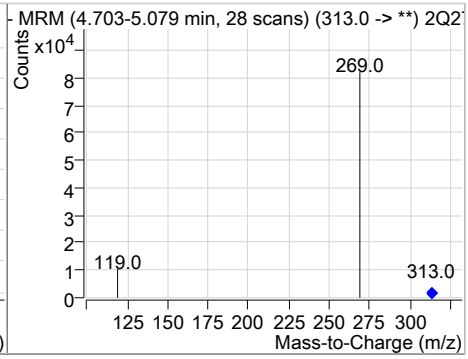




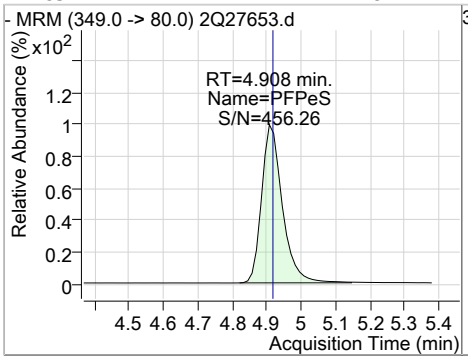
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.42	4.79	0.02	60518	313.0 -> 119.0	11.4	0.0	31.5

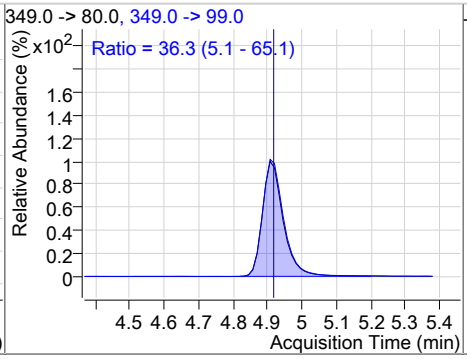


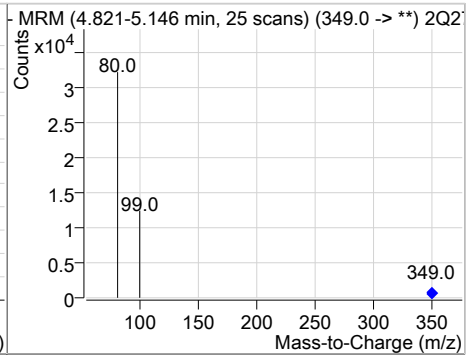




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.77	4.91	0.03	23249	349.0 -> 99.0	36.3	5.1	65.1

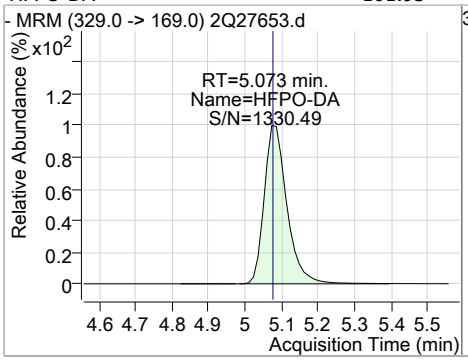


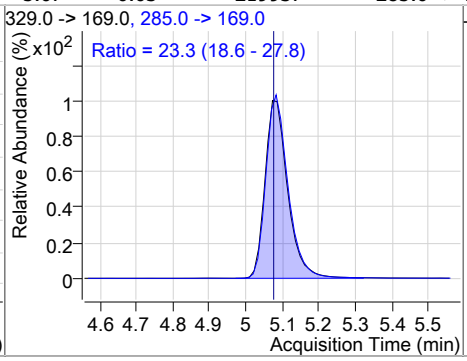


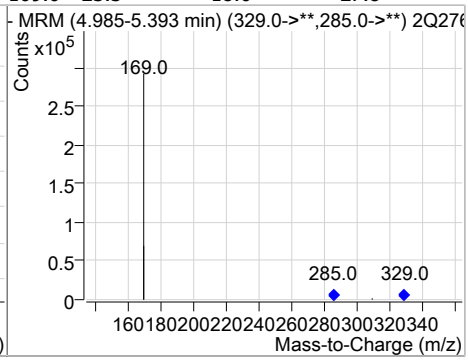


Perfluorinated Compounds by LC/MS/MS

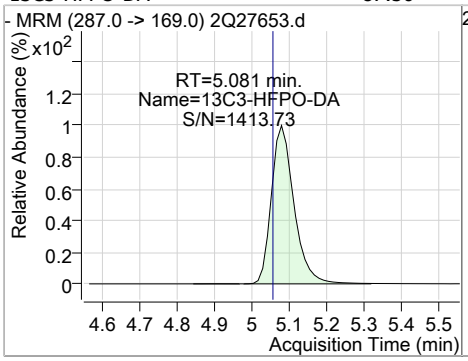
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	101.93	5.07	0.03	219937	285.0 -> 169.0	23.3	18.6	27.8

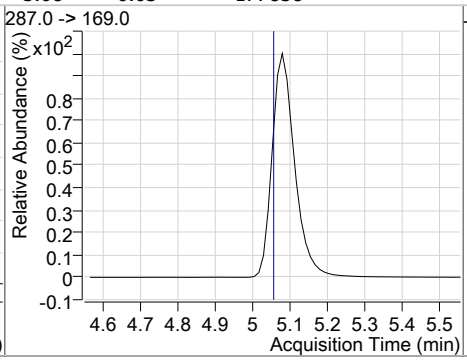


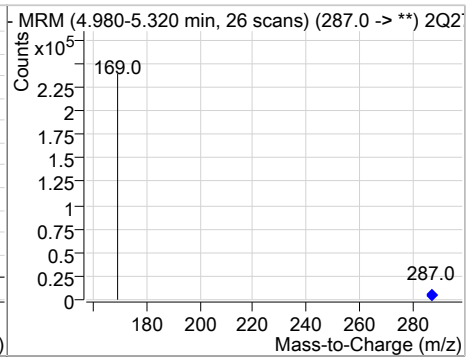




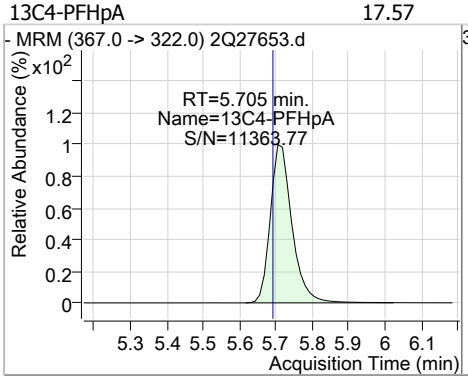
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	87.56	5.08	0.03	177858				

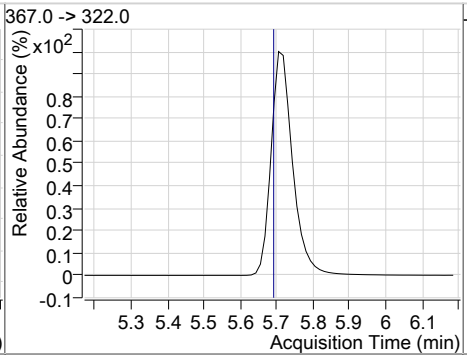


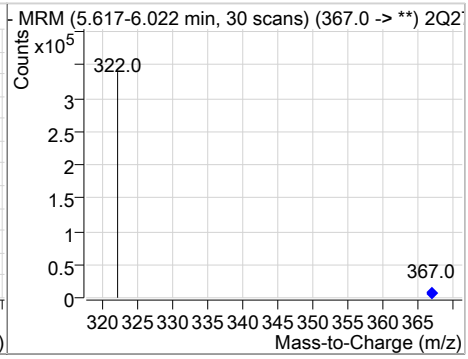




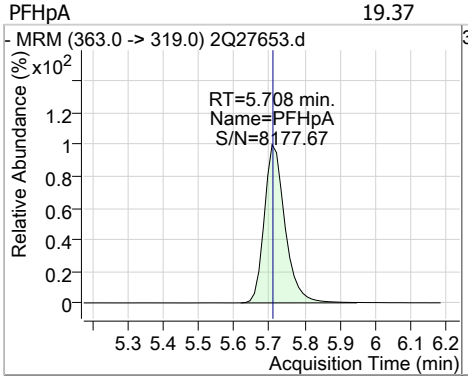
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	17.57	5.71	0.02	253009				

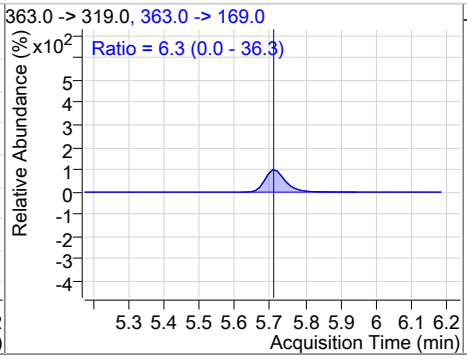


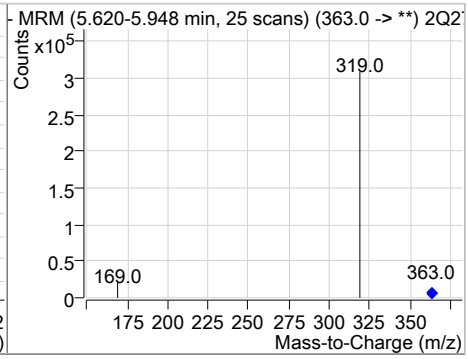




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.37	5.71	0.02	229969	363.0 -> 169.0	6.3	0.0	36.3

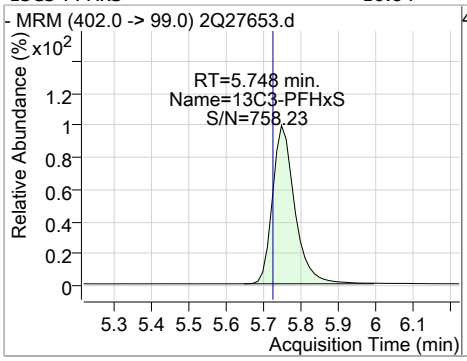


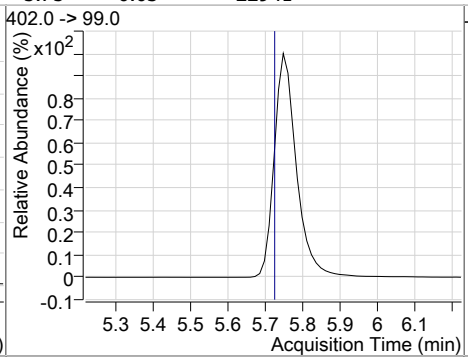


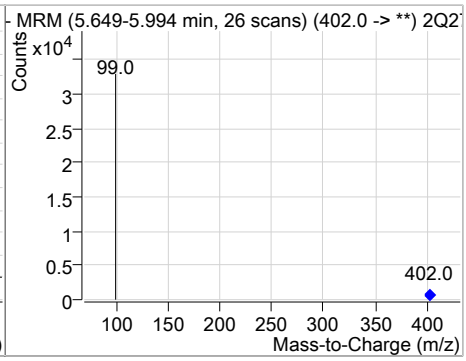


Perfluorinated Compounds by LC/MS/MS

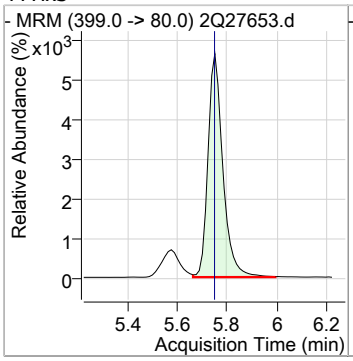
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	16.84	5.75	0.03	22941				

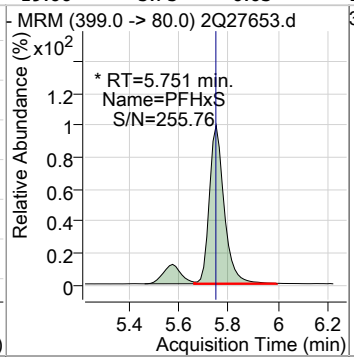


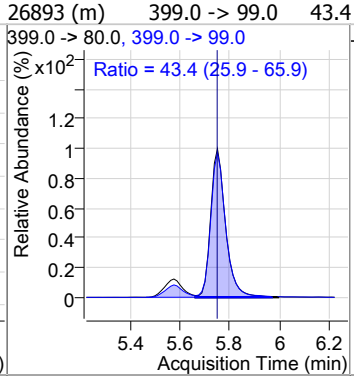


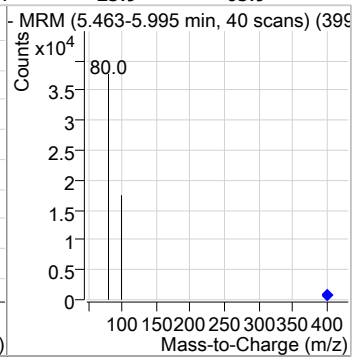


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.66	5.75	0.03	26893 (m)	399.0 -> 99.0	43.4	25.9	65.9

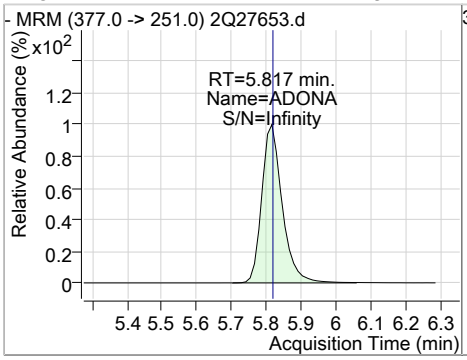


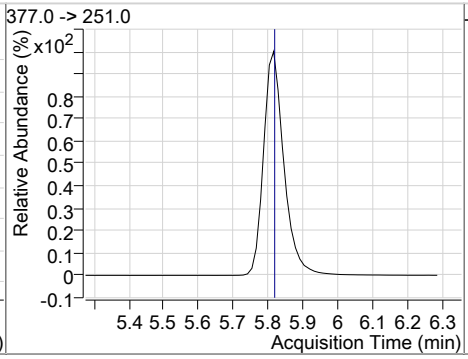


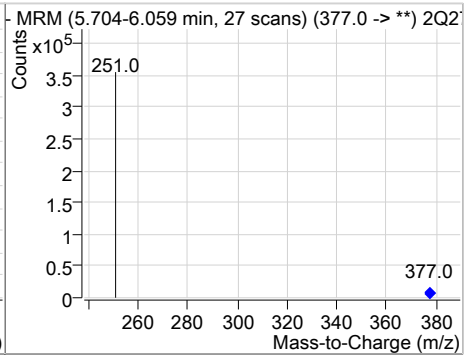




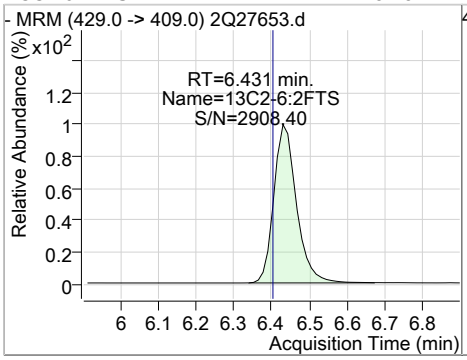
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.41	5.82	0.03	266541				

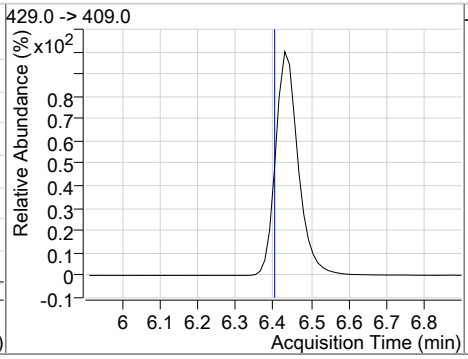


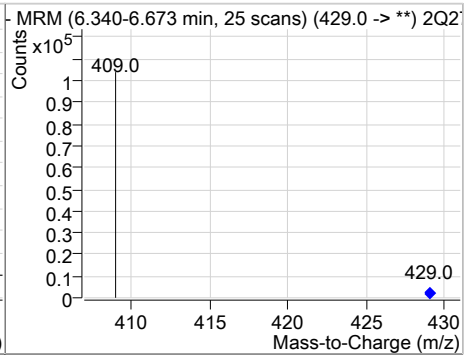




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.18	6.43	0.03	79238				

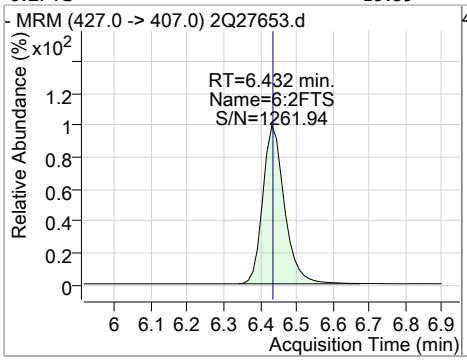


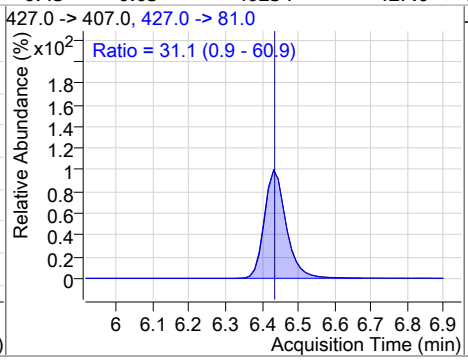


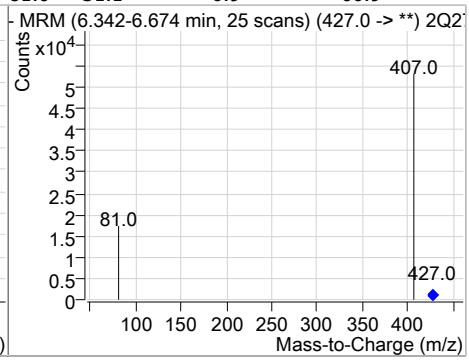


Perfluorinated Compounds by LC/MS/MS

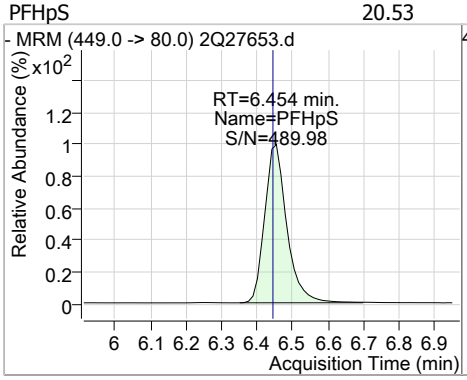
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.89	6.43	0.03	40234	427.0 -> 81.0	31.1	0.9	60.9

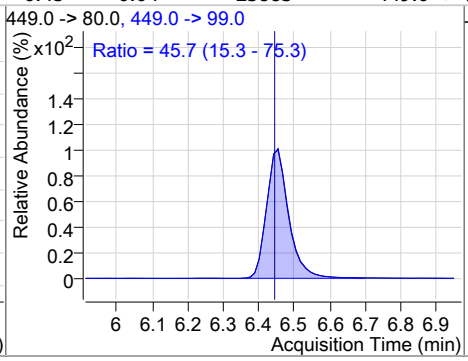


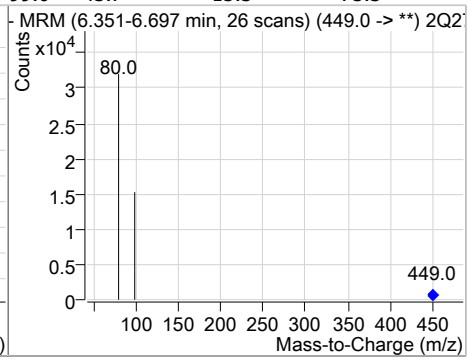




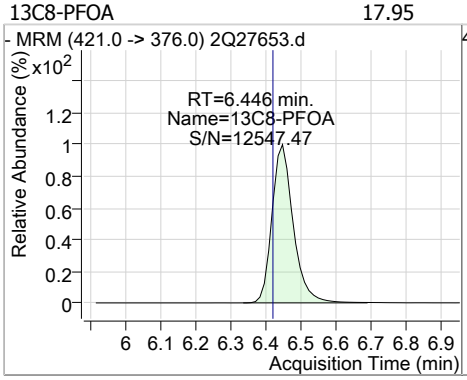
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.53	6.45	0.04	23883	449.0 -> 99.0	45.7	15.3	75.3

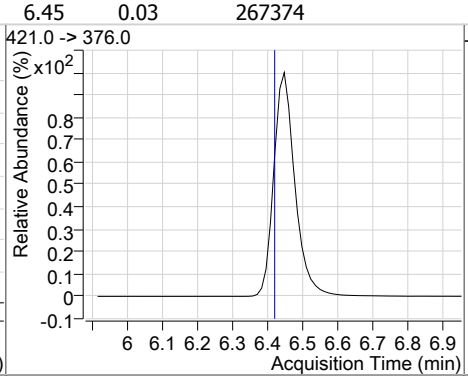


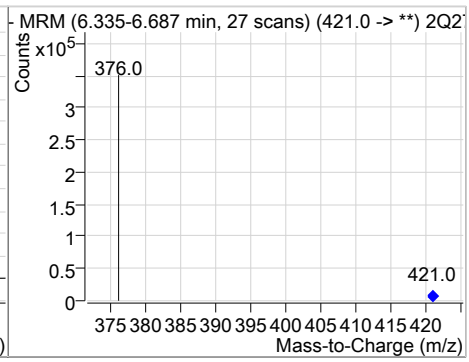




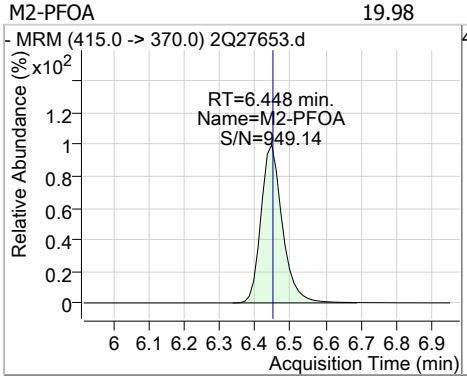
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.95	6.45	0.03	267374				

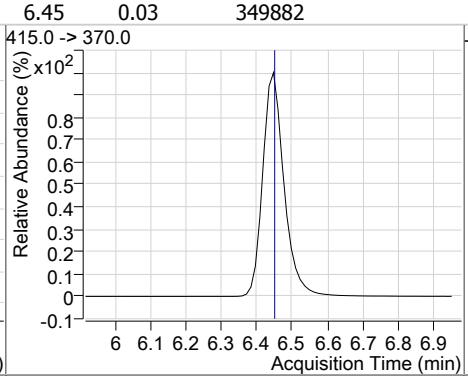


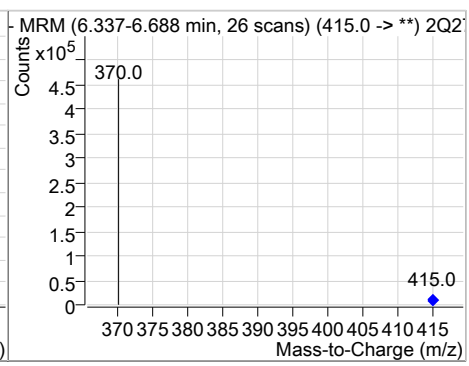




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.45	0.03	349882				

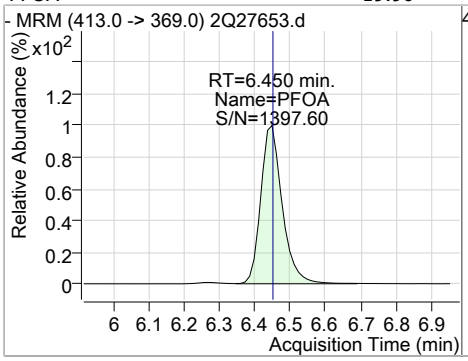


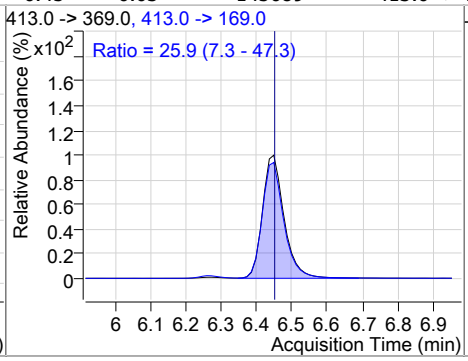


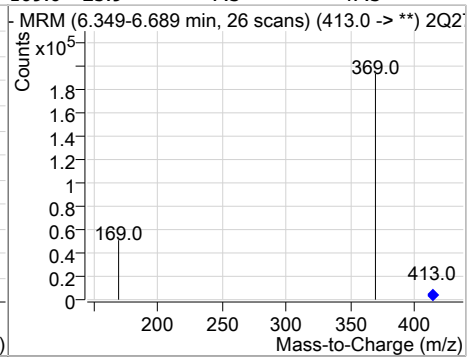


Perfluorinated Compounds by LC/MS/MS

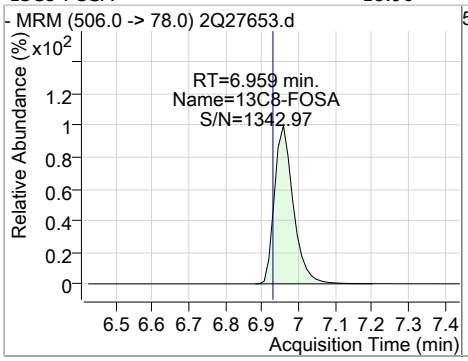
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.90	6.45	0.03	145689	413.0 -> 169.0	25.9	7.3	47.3

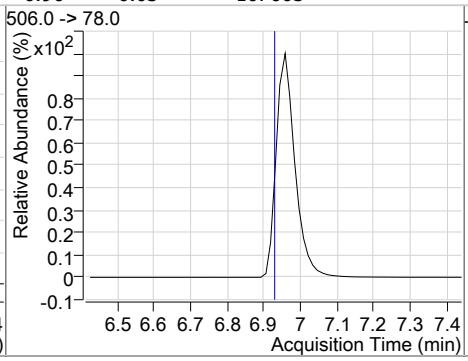


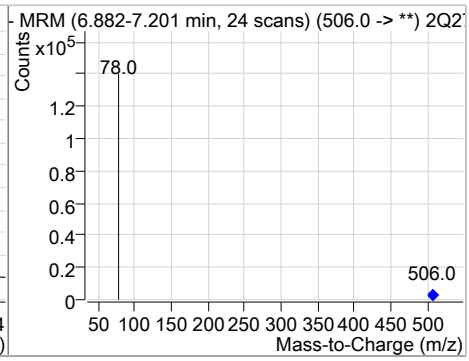




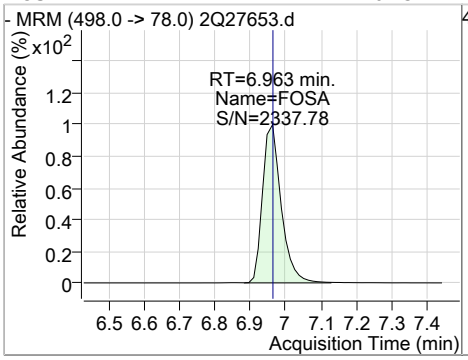
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.90	6.96	0.03	107665				

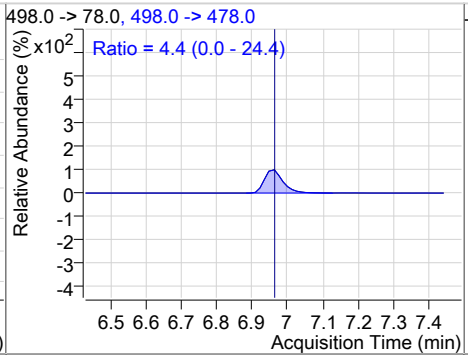


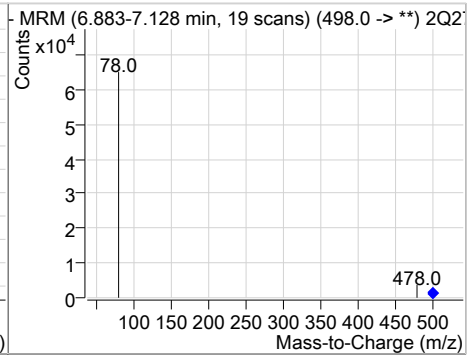




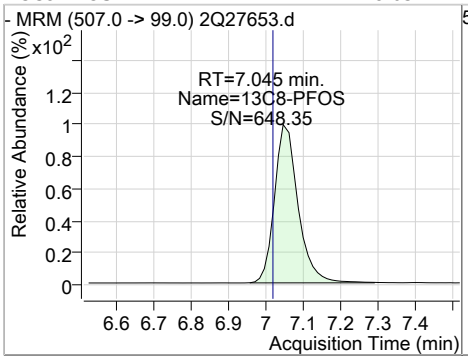
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.73	6.96	0.03	50923	498.0 -> 478.0	4.4	0.0	24.4

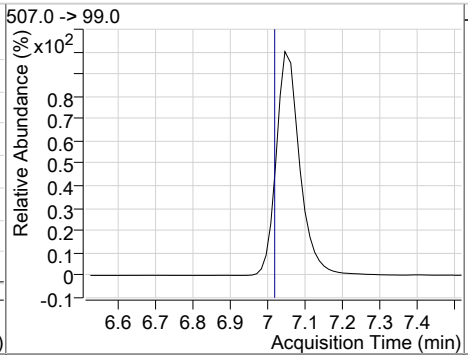


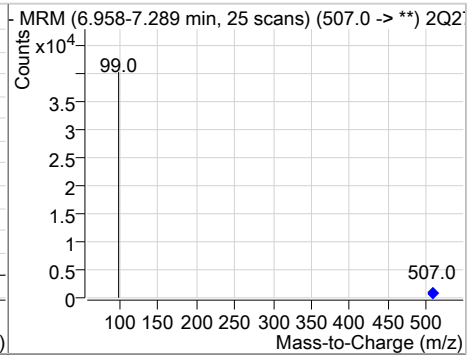




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.03	7.05	0.03	29820				

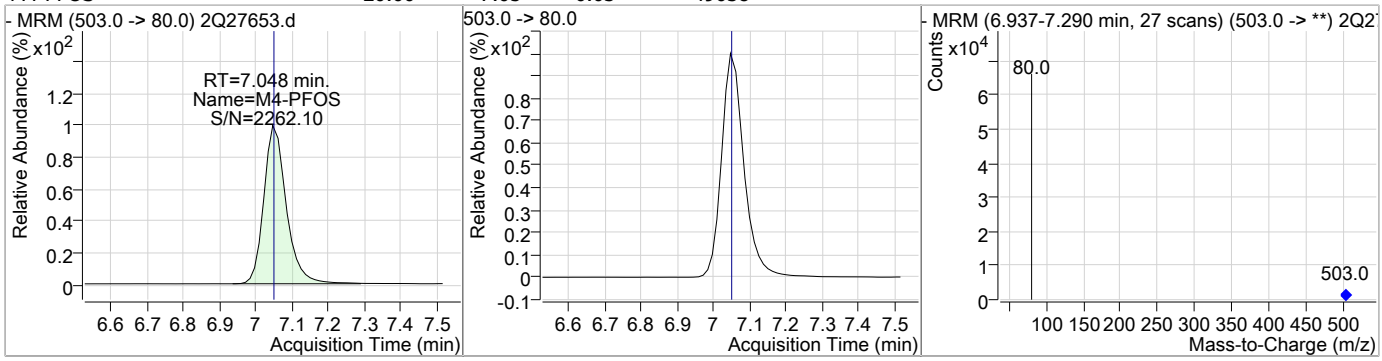




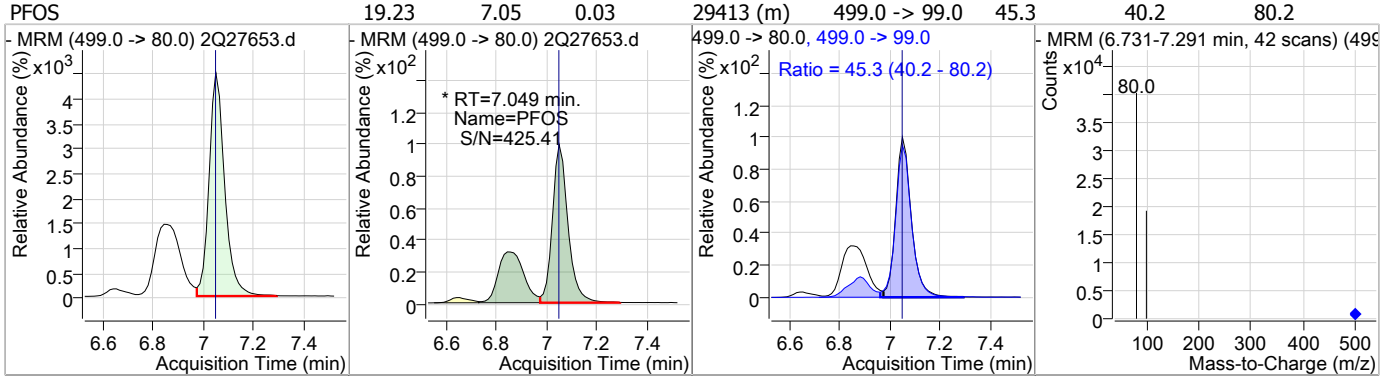


Perfluorinated Compounds by LC/MS/MS

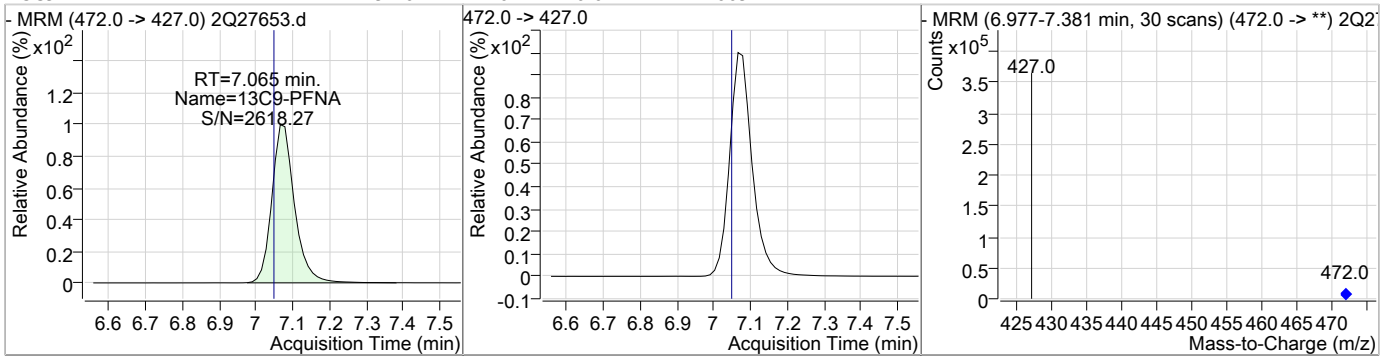
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.03	49638				



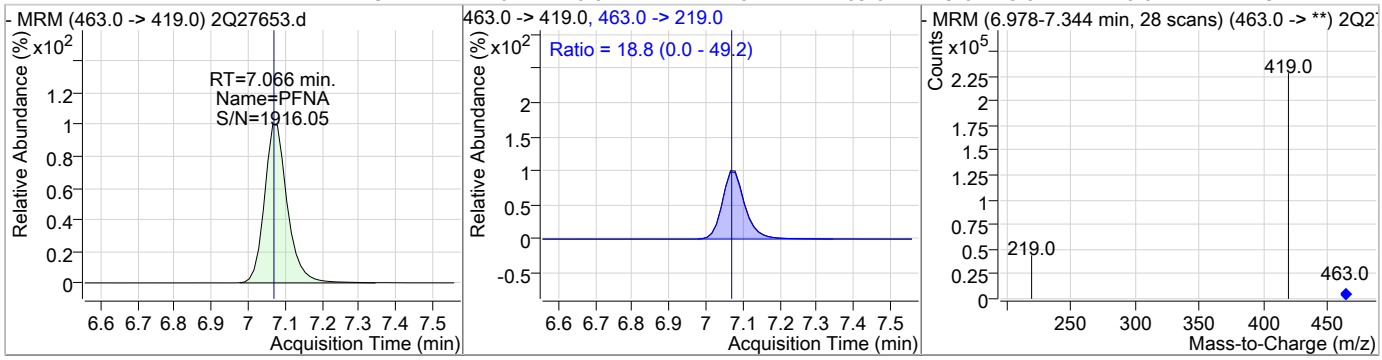
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.23	7.05	0.03	29413 (m)	499.0 -> 99.0	45.3	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.26	7.07	0.02	276094				

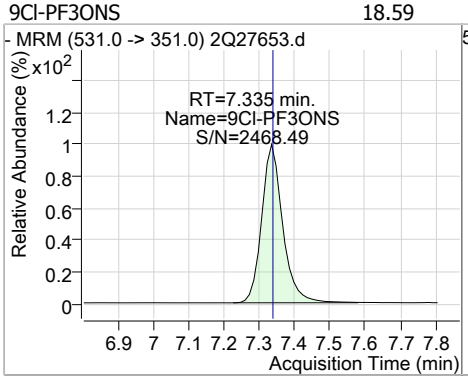


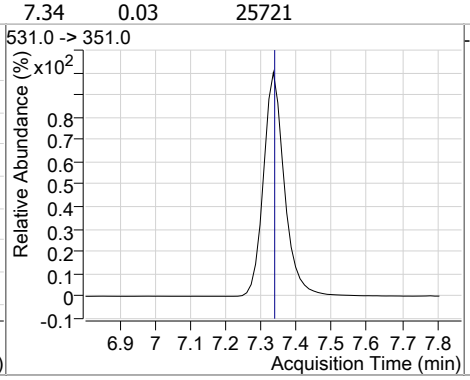
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.27	7.07	0.02	172284	463.0 -> 219.0	18.8	0.0	49.2

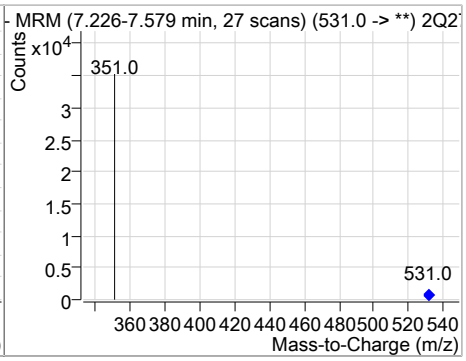


Perfluorinated Compounds by LC/MS/MS

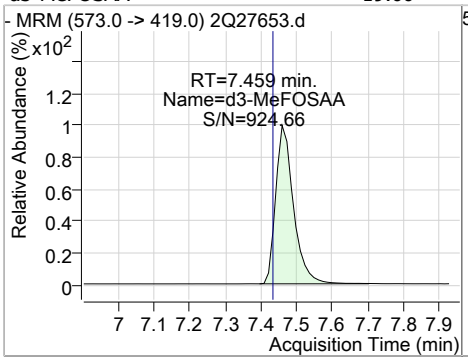
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.59	7.34	0.03	25721				

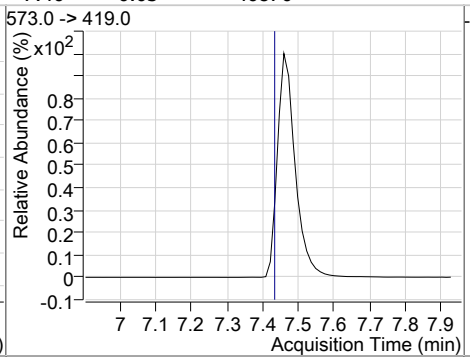


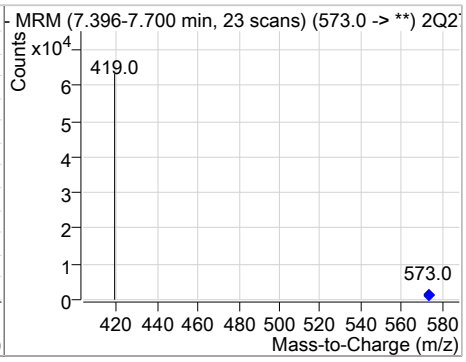




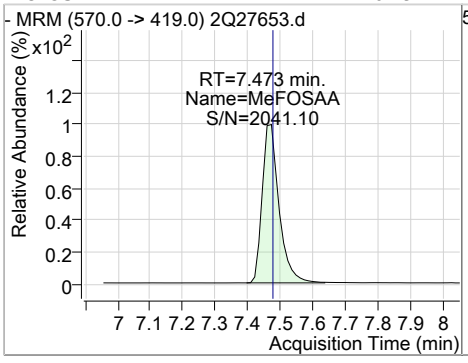
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.60	7.46	0.03	46870				

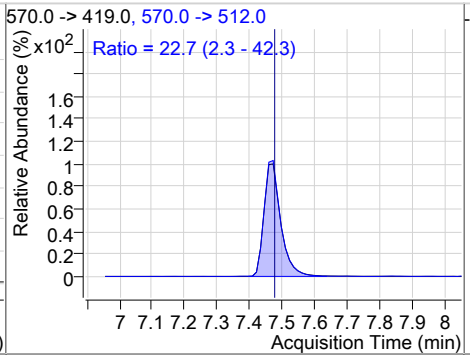


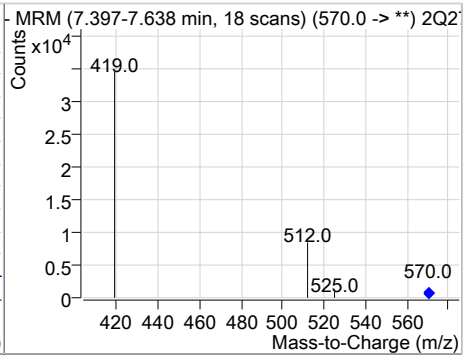




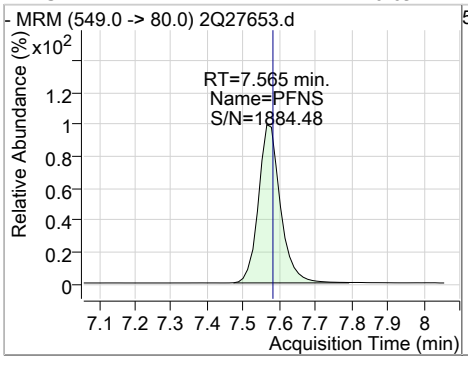
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.79	7.47	0.03	25911	570.0 -> 512.0	22.7	2.3	42.3

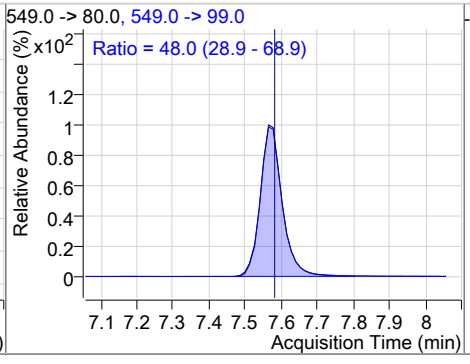


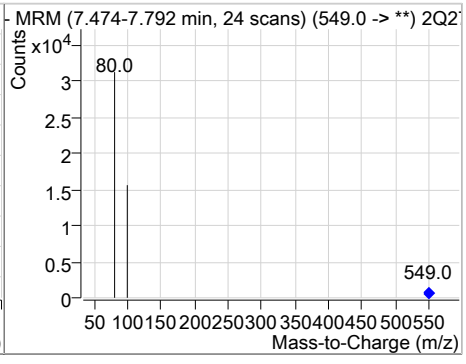




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.69	7.57	0.02	23111	549.0 -> 99.0	48.0	28.9	68.9

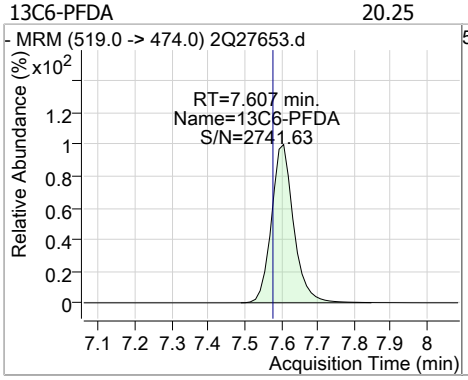


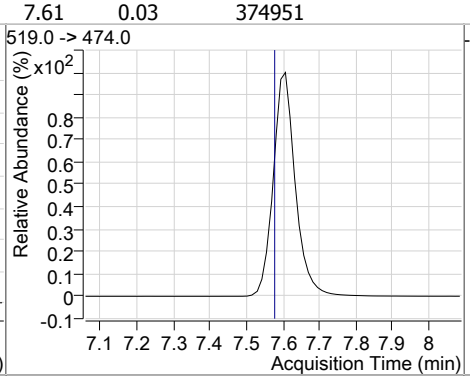


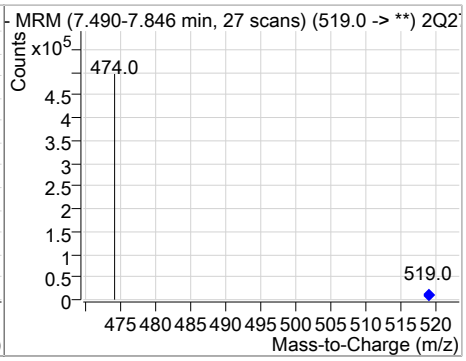


Perfluorinated Compounds by LC/MS/MS

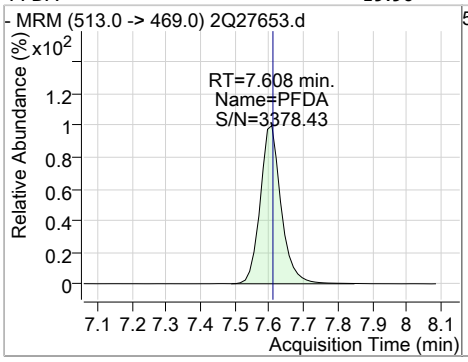
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.25	7.61	0.03	374951				

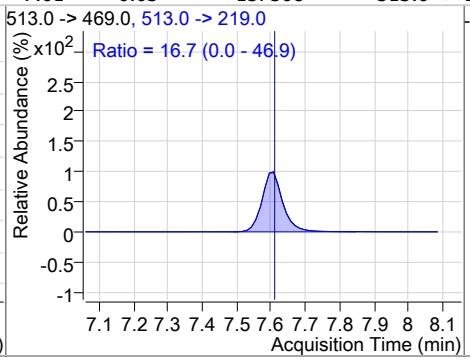


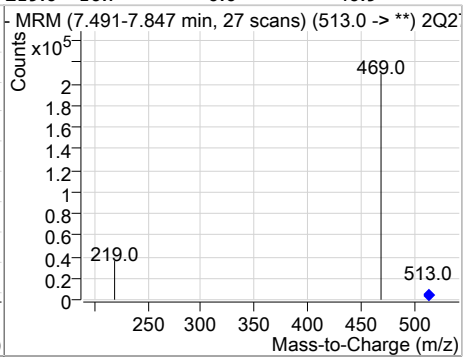




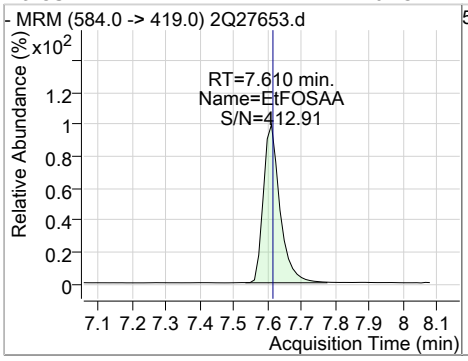
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.90	7.61	0.03	157508	513.0 -> 219.0	16.7	0.0	46.9

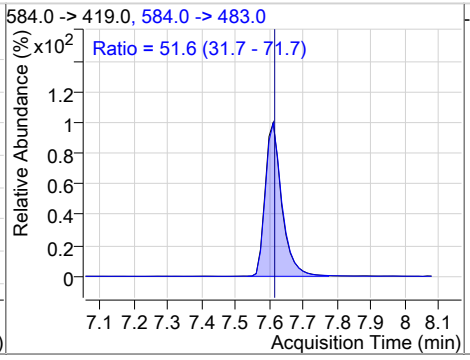


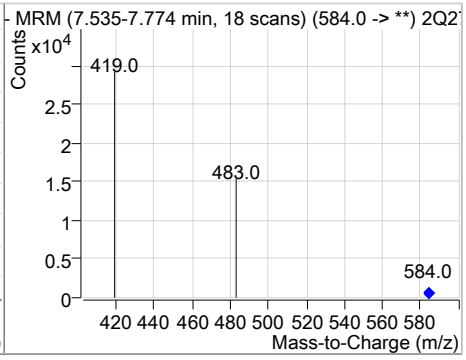




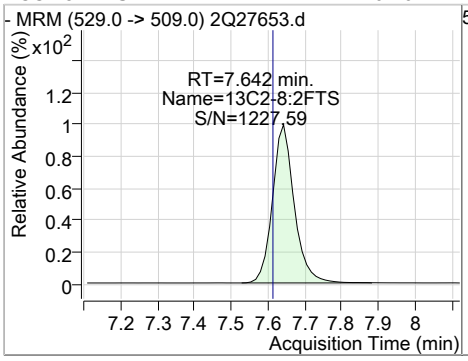
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.73	7.61	0.03	21377	584.0 -> 483.0	51.6	31.7	71.7

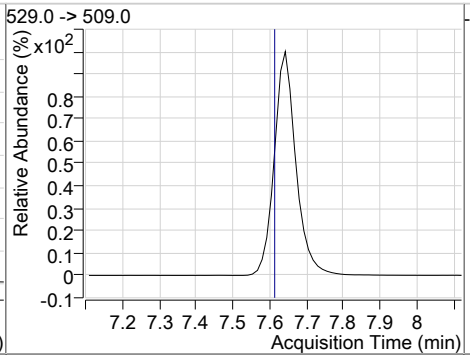


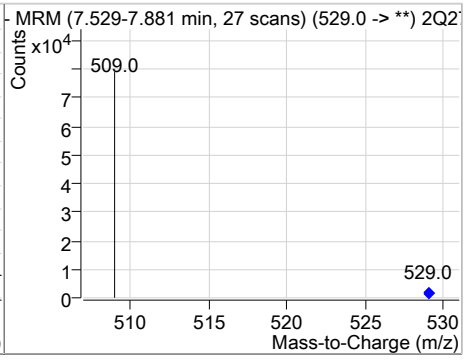




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.40	7.64	0.03	57910				

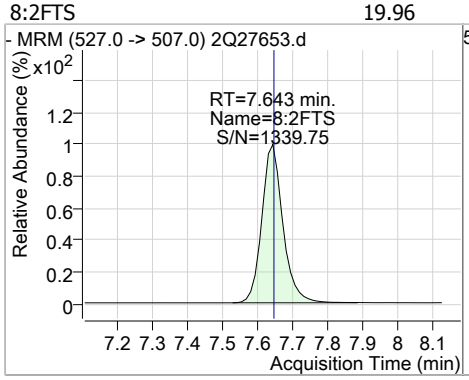


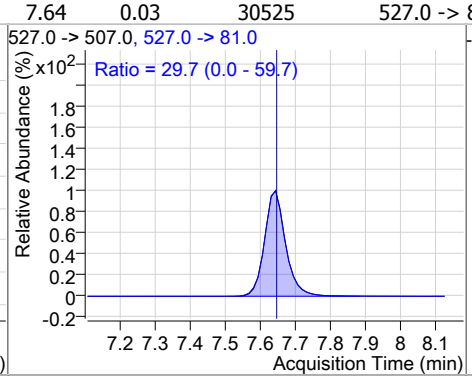


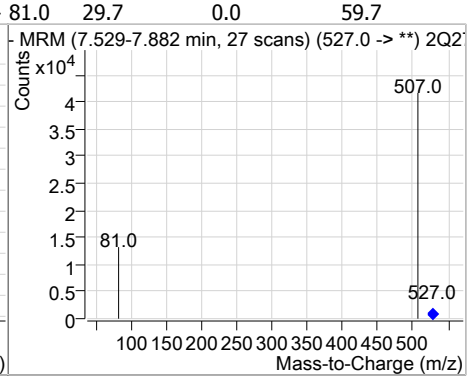


Perfluorinated Compounds by LC/MS/MS

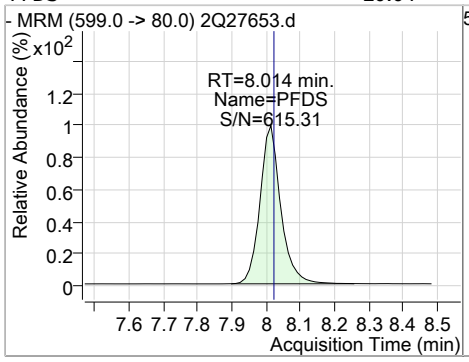
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.96	7.64	0.03	30525	527.0 -> 81.0	29.7	0.0	59.7

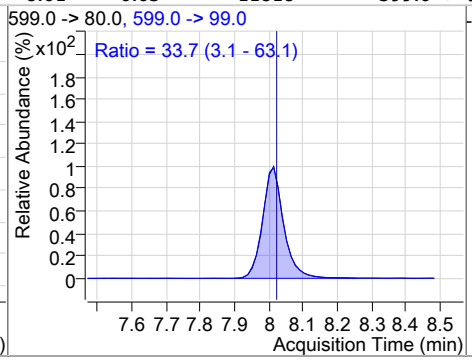


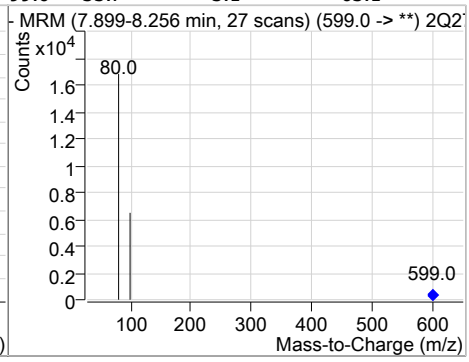




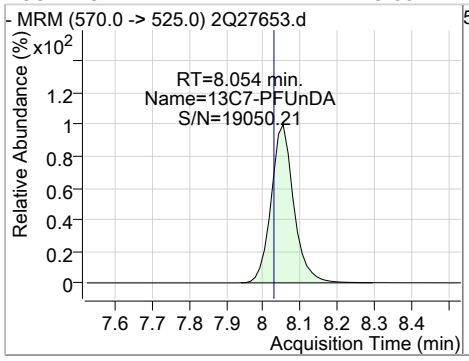
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.04	8.01	0.03	11818	599.0 -> 99.0	33.7	3.1	63.1

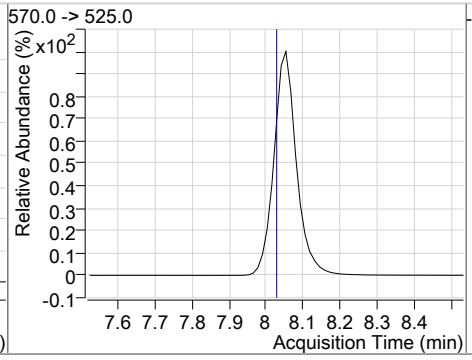


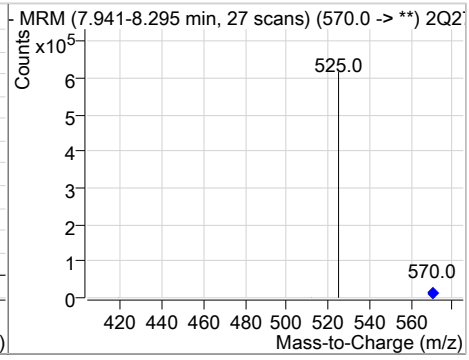




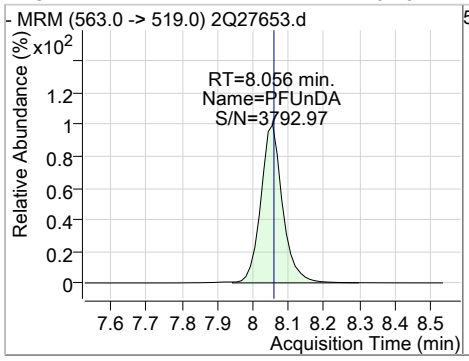
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.58	8.05	0.03	468948				

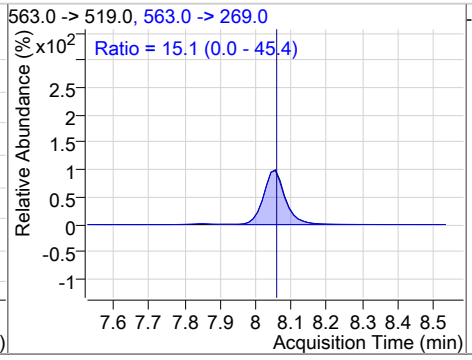


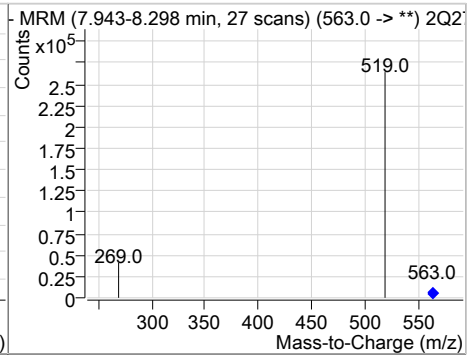




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.10	8.06	0.03	199681	563.0 -> 269.0	15.1	0.0	45.4

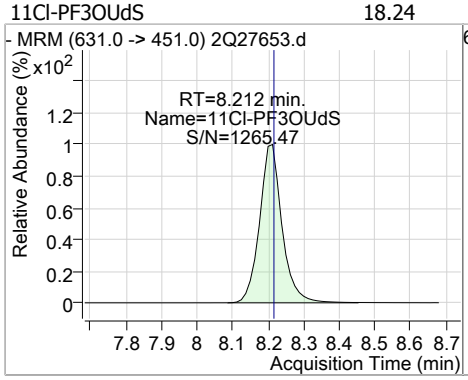


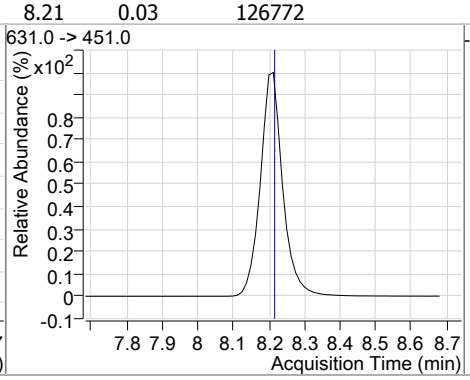


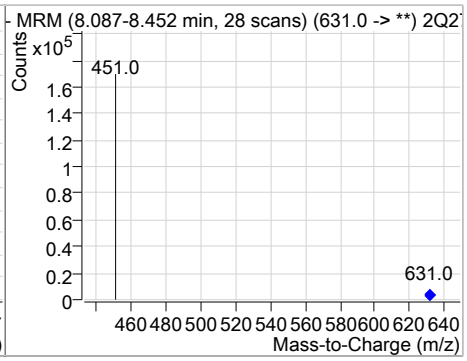


Perfluorinated Compounds by LC/MS/MS

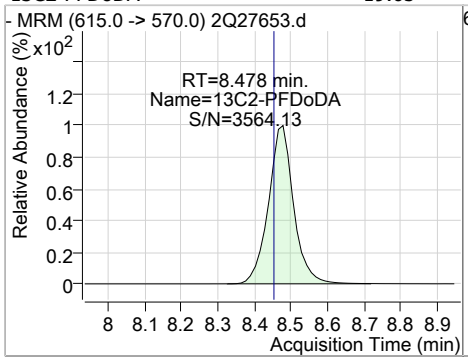
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.24	8.21	0.03	126772				

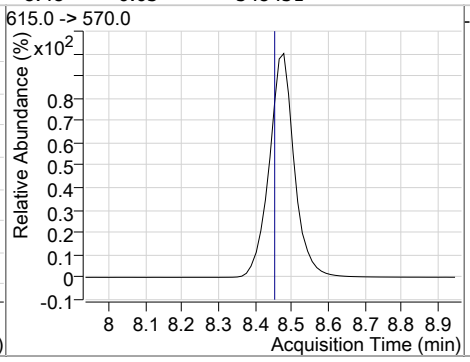


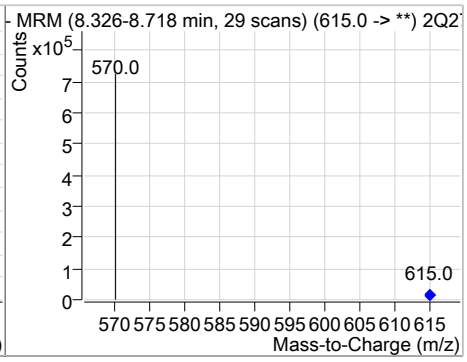




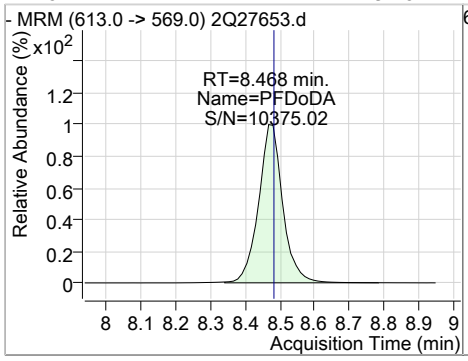
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.65	8.48	0.03	548451				

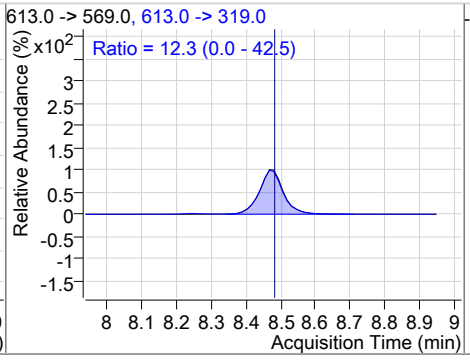


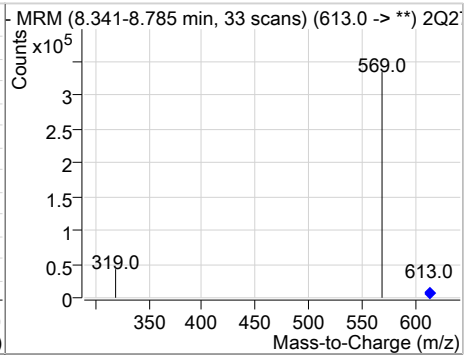




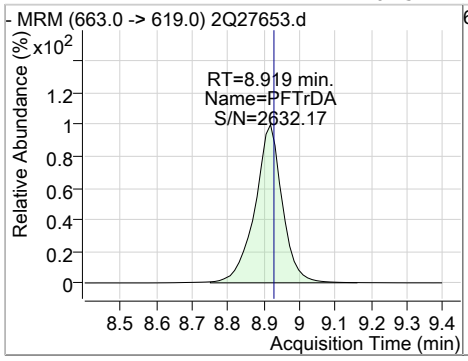
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.78	8.47	0.02	254455	613.0 -> 319.0	12.3	0.0	42.5

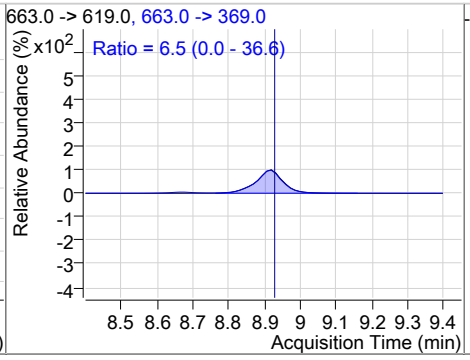


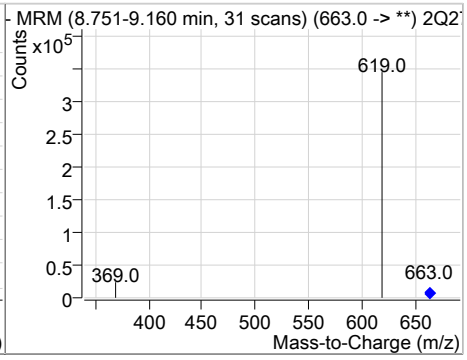




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.25	8.92	0.02	262915	663.0 -> 369.0	6.5	0.0	36.6

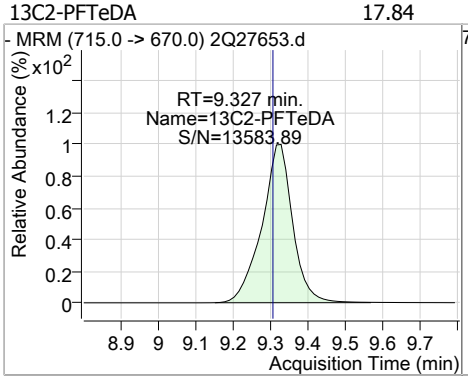


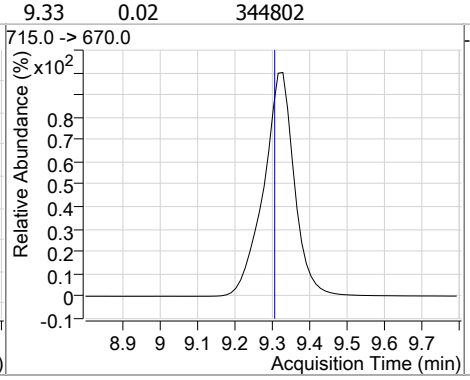


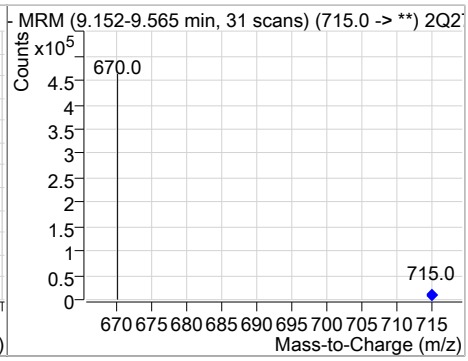


Perfluorinated Compounds by LC/MS/MS

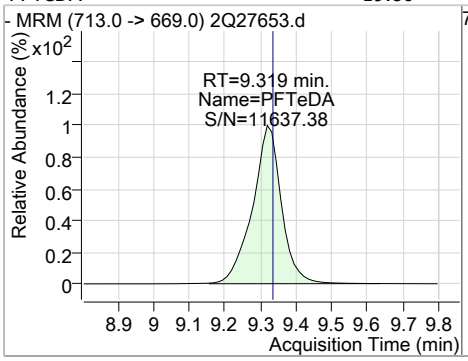
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	17.84	9.33	0.02	344802				

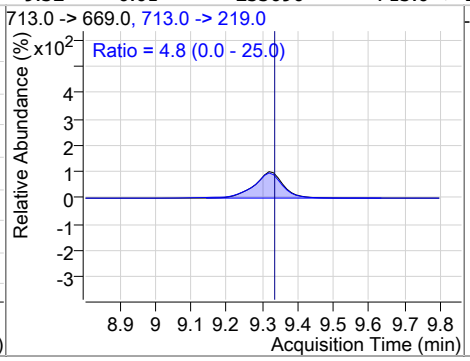


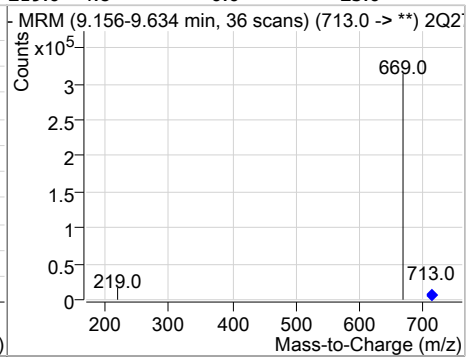




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.80	9.32	0.01	233690	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q441-CC439
Lab FileID: 2Q27653.D
Injection Time: 03/15/19 16:06
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/18/19 08:53 Nancy Saunders
Supervisor approved: 03/18/19 13:59 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/18/19 13:59

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27663.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/15/2019 6:43:50 PM
Sample Name : ECC439-20
Vial : Vial 7
DA Method File : ID_GENX_031319_S2Q439.quantmethod.xml
Batch Name : S2Q441.batch.bin
Sample Information : op73501,S2Q441,250,,,1.0,1,water

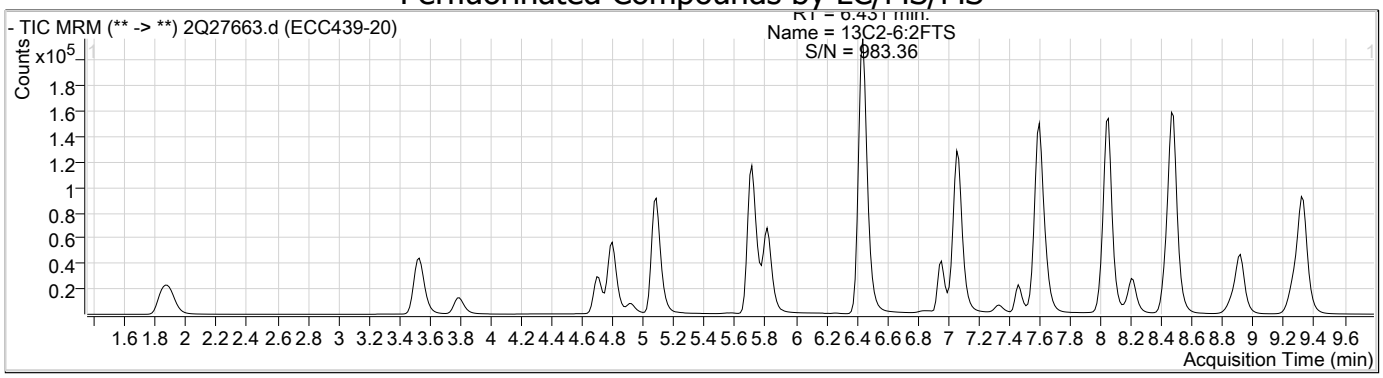
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	327096	20.00	µg/L	0.031
13C4-PFOS	7.048	503.0 -> 80.0	46482	20.00	µg/L	0.031
M4-PFBA	1.865	217.0 -> 172.0	136698	20.00	µg/L	0.000
M5-PFPeA	3.536	268.0 -> 223.0	117527	20.00	µg/L	0.045
M5-PFHxA	4.801	318.0 -> 273.0	167924	20.00	µg/L	0.038
M4-PFHpA	5.718	367.0 -> 322.0	235387	20.00	µg/L	0.029
M8-PFOA	6.446	421.0 -> 376.0	252479	20.00	µg/L	0.031
M9-PFNA	7.065	472.0 -> 427.0	259649	20.00	µg/L	0.020
M6-PFDA	7.607	519.0 -> 474.0	348721	20.00	µg/L	0.033
M7-PFUnDA	8.054	570.0 -> 525.0	435203	20.00	µg/L	0.028
M2-PFDoDA	8.466	615.0 -> 570.0	497808	20.00	µg/L	0.015
M2-PFTeDA	9.315	715.0 -> 670.0	304468	20.00	µg/L	0.012
M8-FOSA	6.959	506.0 -> 78.0	100144	20.00	µg/L	0.032
M3-PFBS	3.792	302.0 -> 99.0	19305	20.00	µg/L	0.038
M3-PFHxS	5.748	402.0 -> 99.0	21501	20.00	µg/L	0.026
M8-PFOS	7.045	507.0 -> 99.0	27683	20.00	µg/L	0.030
M2-4:2FTS	4.696	329.0 -> 309.0	68390	20.00	µg/L	0.028
M2-6:2FTS	6.431	429.0 -> 409.0	73949	20.00	µg/L	0.030
M2-8:2FTS	7.642	529.0 -> 509.0	53974	20.00	µg/L	0.032
M3-MeFOSAA	7.459	573.0 -> 419.0	44876	20.00	µg/L	0.029
M3-HFPO-DA	5.081	287.0 -> 169.0	155576	100.00	µg/L	0.026
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	68115	16.41	µg/L	0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%		
13C2-6:2FTS	6.431	429.0 -> 409.0	73866	16.95	µg/L	0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.7%		
13C2-8:2FTS	7.642	529.0 -> 509.0	53877	18.98	µg/L	0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.9%		
13C2-PFDoDA	8.466	615.0 -> 570.0	496868	17.80	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.0%		
13C2-PFTeDA	9.315	715.0 -> 670.0	303342	15.69	µg/L	0.012
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C3-PFBS	3.792	302.0 -> 99.0	19295	15.94	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 79.7%		
13C3-PFHxS	5.748	402.0 -> 99.0	21463	15.76	µg/L	0.026
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.8%		
13C4-PFBA	1.865	217.0 -> 172.0	136019	15.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 78.5%		
13C4-PFHpA	5.718	367.0 -> 322.0	235400	16.35	µg/L	0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.8%		
13C5-PFHxA	4.801	318.0 -> 273.0	167710	16.35	µg/L	0.038
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.8%		
13C5-PFPeA	3.536	268.0 -> 223.0	117543	16.39	µg/L	0.045
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 82.0%		
13C6-PFDA	7.607	519.0 -> 474.0	348629	18.83	µg/L	0.033

Perfluorinated Compounds by LC/MS/MS

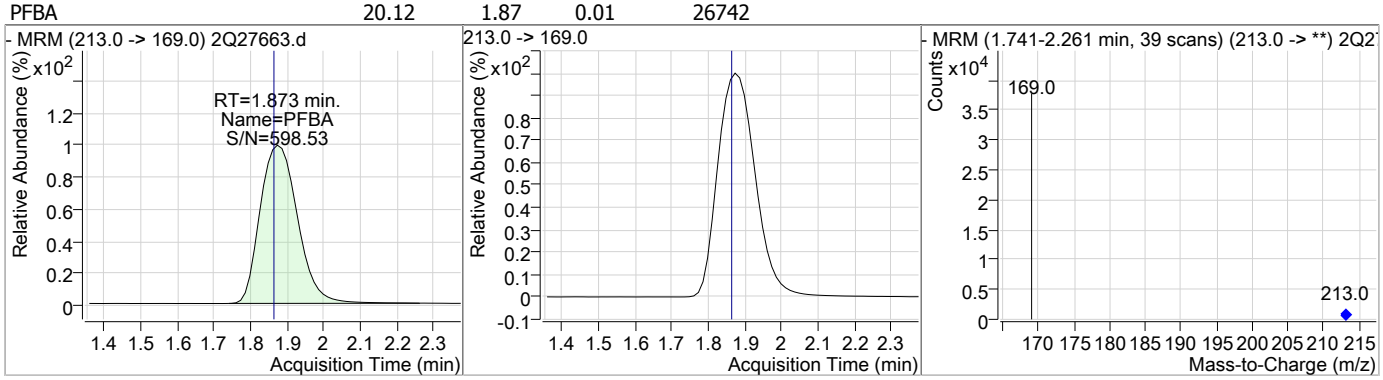
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.2%			
13C7-PFUnDA	8.054	570.0 -> 525.0	435222	18.17	µg/L		0.028
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.8%			
13C8-FOSA	6.959	506.0 -> 78.0	100145	17.58	µg/L		0.032
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%			
13C8-PFOA	6.446	421.0 -> 376.0	252306	16.94	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 84.7%			
13C8-PFOS	7.045	507.0 -> 99.0	27671	16.73	µg/L		0.030
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 83.7%			
13C9-PFNA	7.065	472.0 -> 427.0	259499	18.11	µg/L		0.020
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.5%			
d3-MeFOSAA	7.459	573.0 -> 419.0	44913	18.78	µg/L		0.029
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.9%			
M2-PFOA	6.448	415.0 -> 370.0	327257	19.99	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	46428	19.97	µg/L		0.031
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	155576	76.59	µg/L		0.026
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 76.6%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	40143	20.18	µg/L		100
6:2FTS	6.432	427.0 -> 407.0	38392	20.30	µg/L		100
8:2FTS	7.643	527.0 -> 507.0	28489	19.99	µg/L		100
EtFOSAA	7.598	584.0 -> 419.0	20268	20.53	µg/L		100
FOSA	6.963	498.0 -> 78.0	46862	20.53	µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	24559	20.59	µg/L		98
PFBA	1.873	213.0 -> 169.0	26742	20.12	µg/L		100
PFBS	3.783	299.0 -> 80.0	31682	19.87	µg/L		100
PFDA	7.608	513.0 -> 469.0	144390	19.61	µg/L		100
PFDoDA	8.468	613.0 -> 569.0	231132	19.81	µg/L		100
PFDS	8.014	599.0 -> 80.0	10807	19.76	µg/L		96
PFHpA	5.720	363.0 -> 319.0	216417	19.60	µg/L		100
PFHpS	6.454	449.0 -> 80.0	22671	20.82	µg/L		99
PFHxA	4.803	313.0 -> 269.0	57420	19.76	µg/L		99
PFHxS	5.751	399.0 -> 80.0	25200	19.68	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	161230	19.18	µg/L		99
PFNS	7.565	549.0 -> 80.0	21783	21.02	µg/L		96
PFOA	6.450	413.0 -> 369.0	137044	19.84	µg/L		98
PFOS	7.049	499.0 -> 80.0	26947	18.99	µg/L	m	80
PFPeA	3.540	263.0 -> 219.0	103750	19.43	µg/L		100
PFPeS	4.920	349.0 -> 80.0	21710	19.89	µg/L		100
PFTeDA	9.319	713.0 -> 669.0	203871	19.62	µg/L		99
PFTrDA	8.919	663.0 -> 619.0	231496	20.25	µg/L		100
PFUnDA	8.056	563.0 -> 519.0	184761	20.05	µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	116006	18.41	µg/L		100
9Cl-PF3ONS	7.335	531.0 -> 351.0	23922	18.59	µg/L		100
ADONA	5.817	377.0 -> 251.0	249696	19.28	µg/L		100
HFPO-DA	5.085	329.0 -> 169.0	190374	100.86	µg/L		100

 # = Qualifier out of range, m = manually integrated, + = Area summed

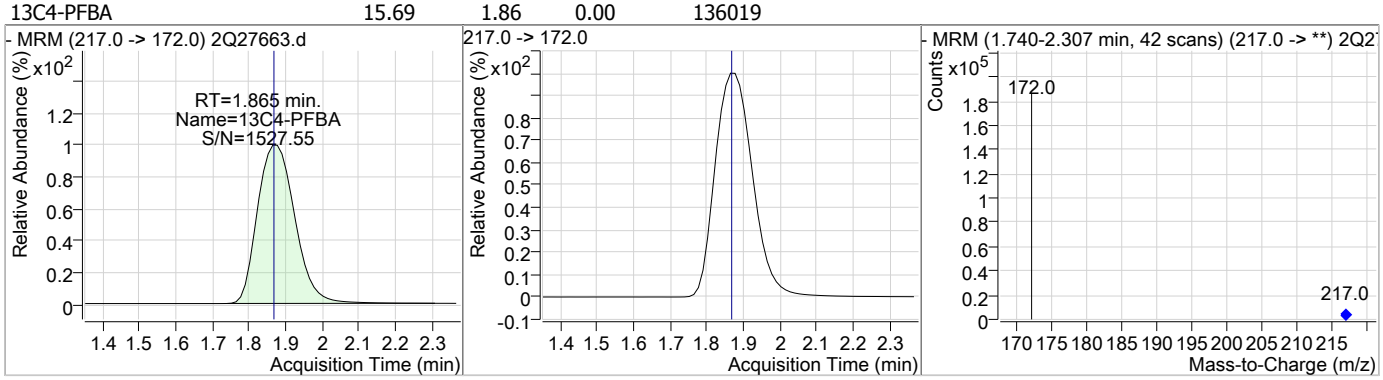
Perfluorinated Compounds by LC/MS/MS



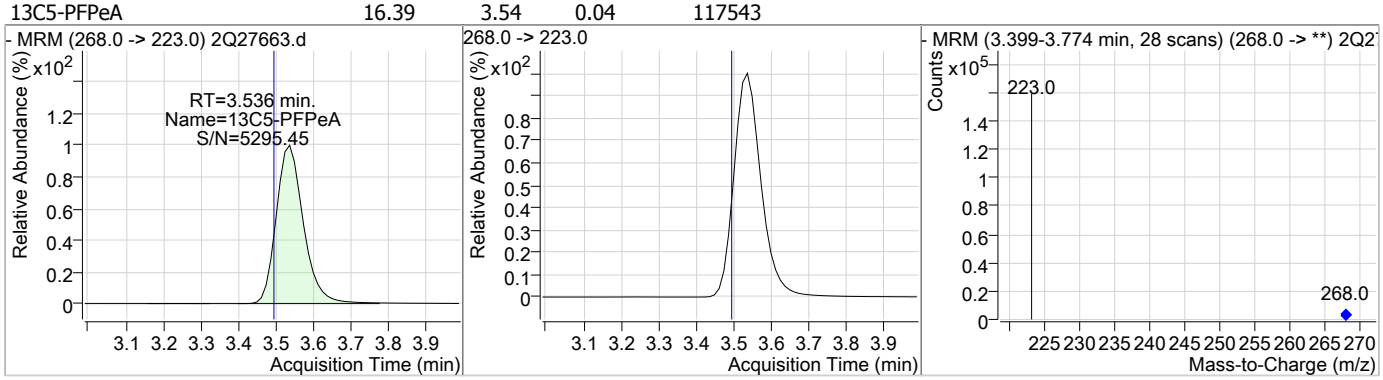
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	20.12	1.87	0.01	26742				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	15.69	1.86	0.00	136019				

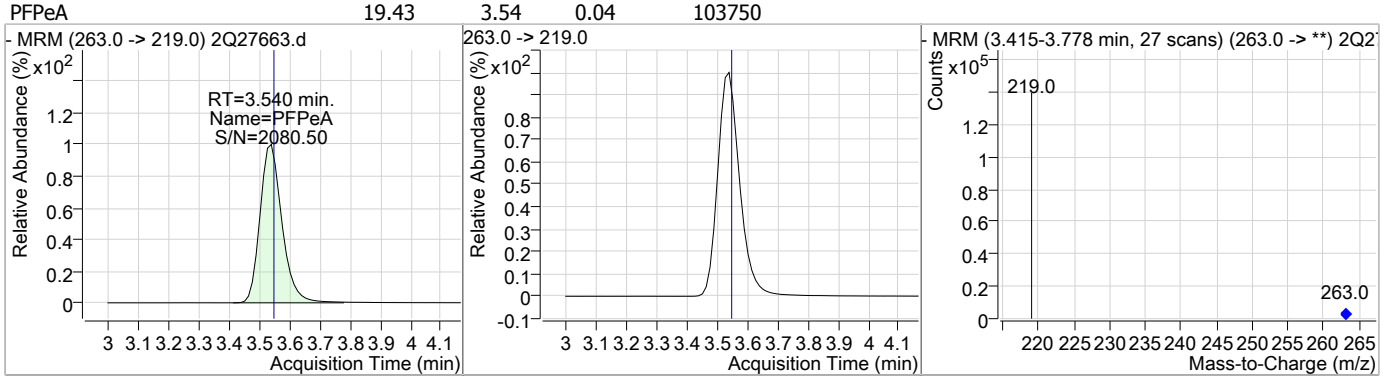


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	16.39	3.54	0.04	117543				

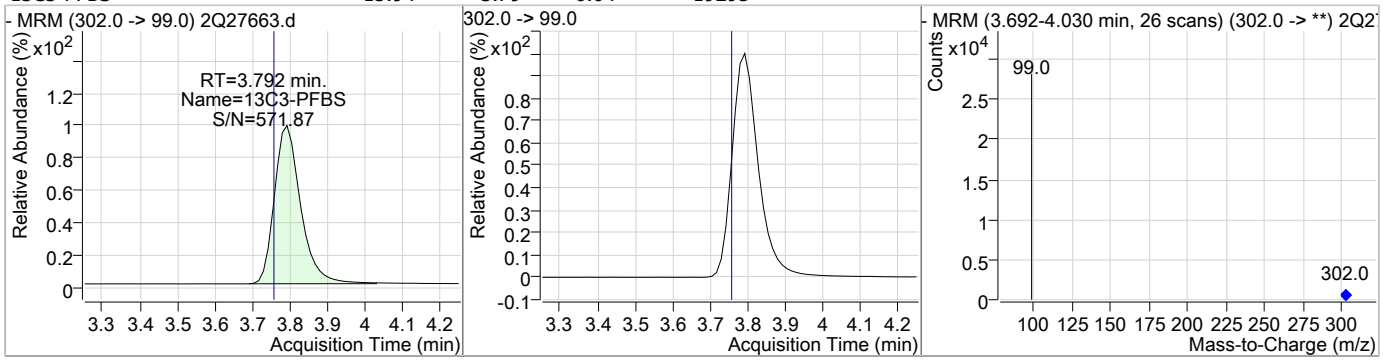


Perfluorinated Compounds by LC/MS/MS

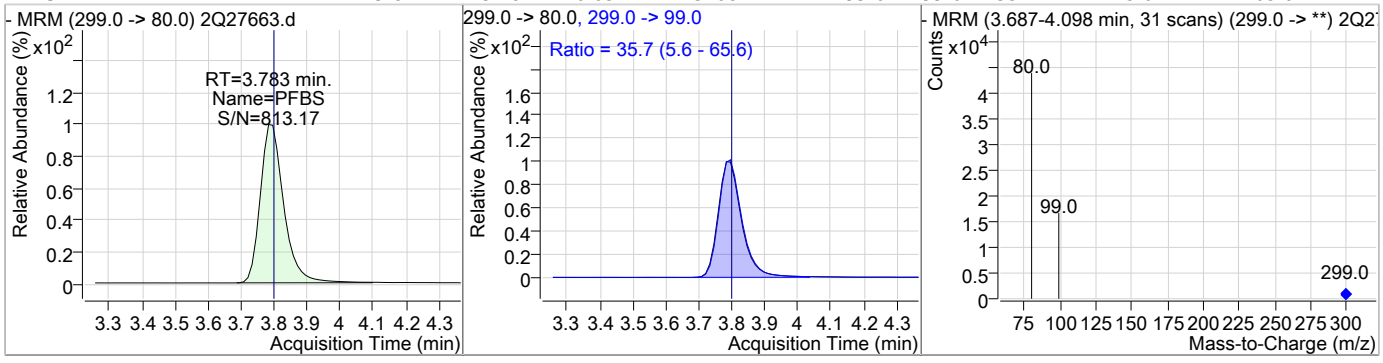
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.43	3.54	0.04	103750				



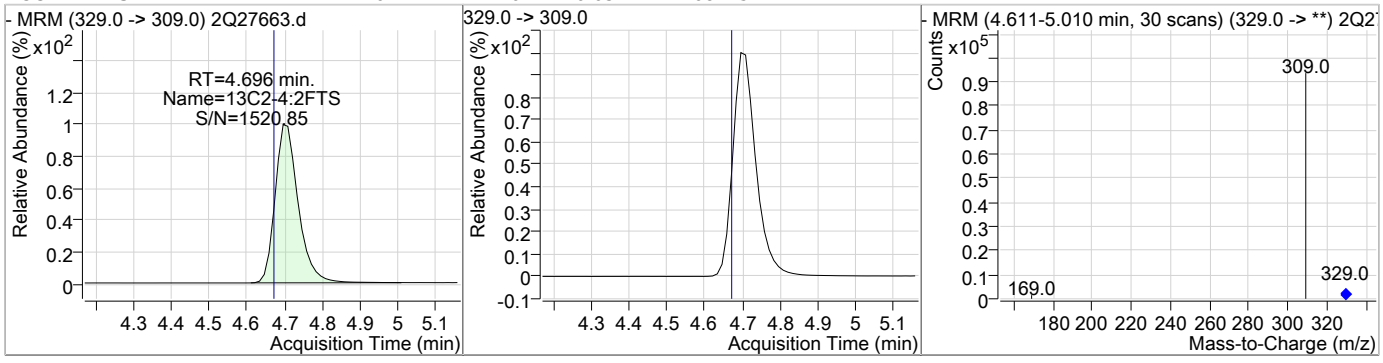
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	15.94	3.79	0.04	19295				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.87	3.78	0.03	31682	299.0 -> 99.0	35.7	5.6	65.6

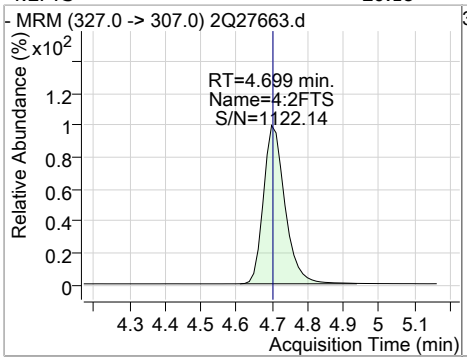


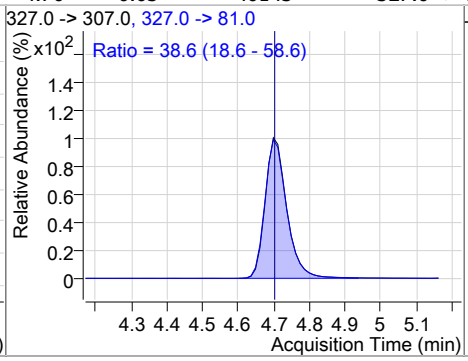
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	16.41	4.70	0.03	68115				

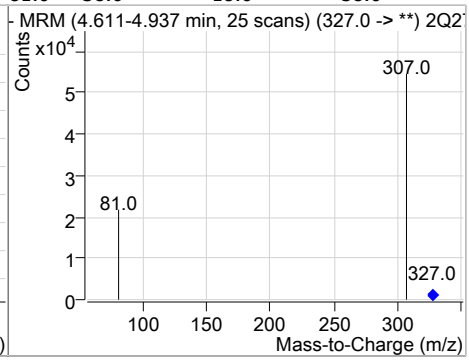


Perfluorinated Compounds by LC/MS/MS

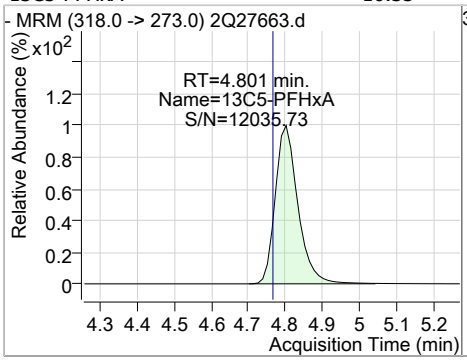
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.18	4.70	0.03	40143	327.0 -> 81.0	38.6	18.6	58.6

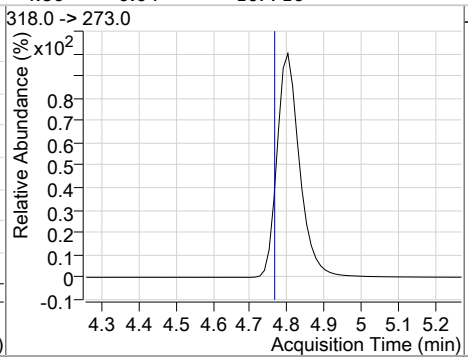


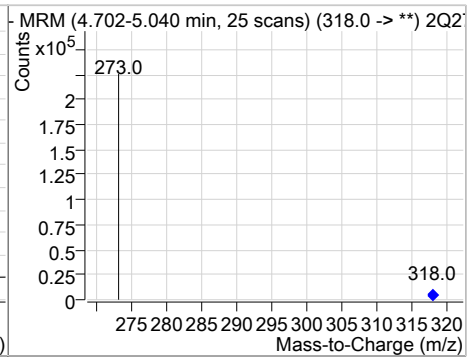




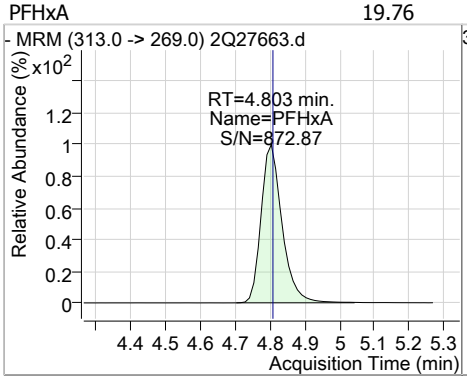
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	16.35	4.80	0.04	167710				

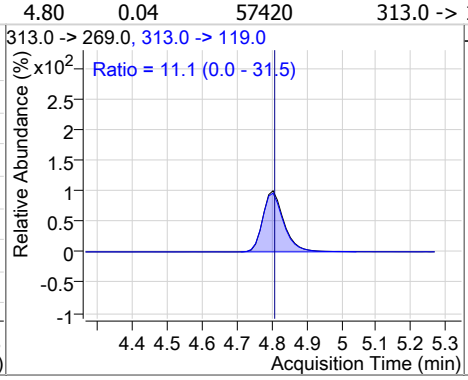


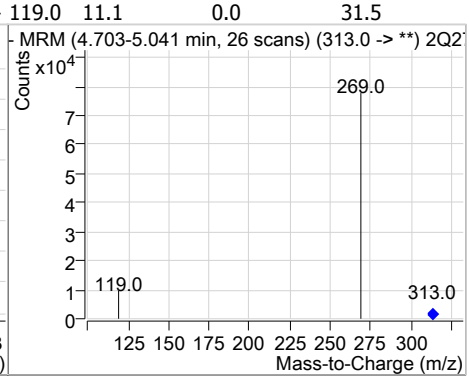




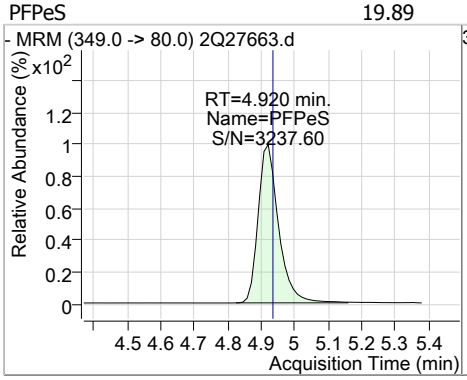
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.76	4.80	0.04	57420	313.0 -> 119.0	11.1	0.0	31.5

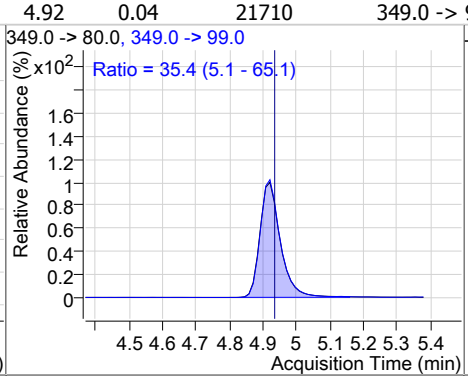


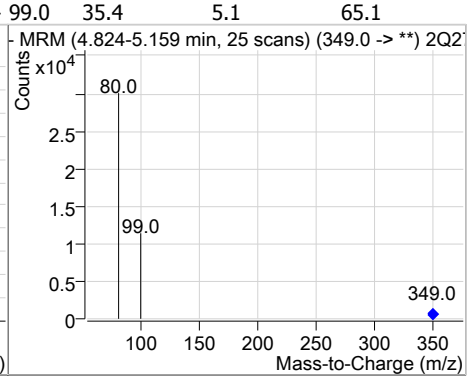




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.89	4.92	0.04	21710	349.0 -> 99.0	35.4	5.1	65.1

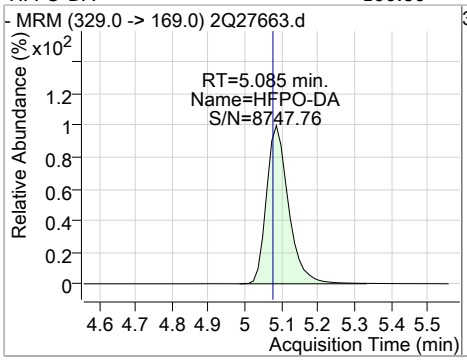


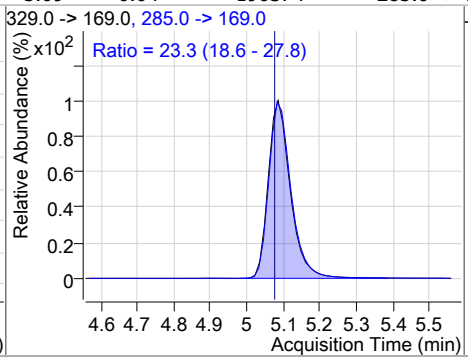


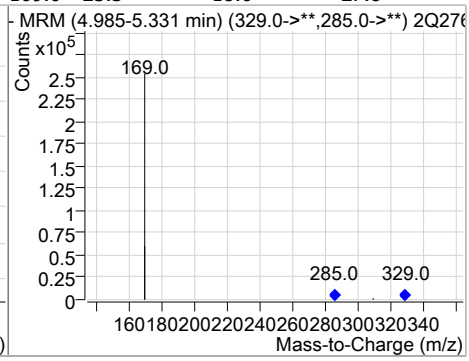


Perfluorinated Compounds by LC/MS/MS

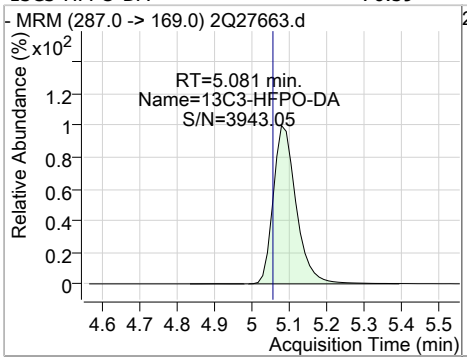
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	100.86	5.09	0.04	190374	285.0 -> 169.0	23.3	18.6	27.8

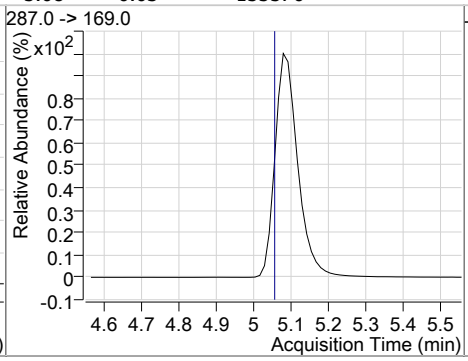


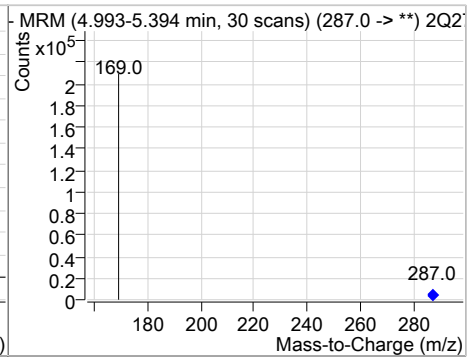




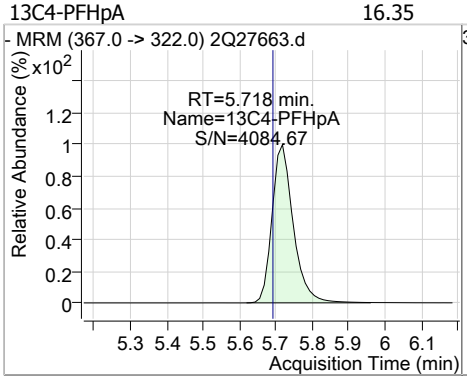
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	76.59	5.08	0.03	155576				

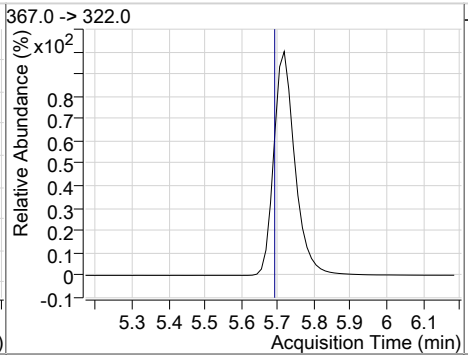


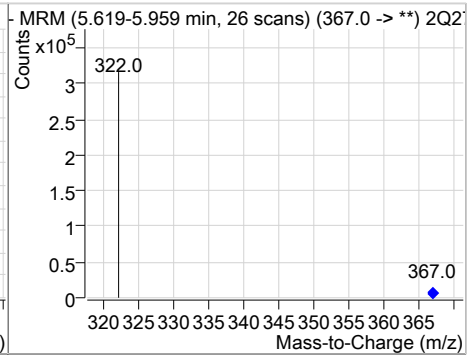




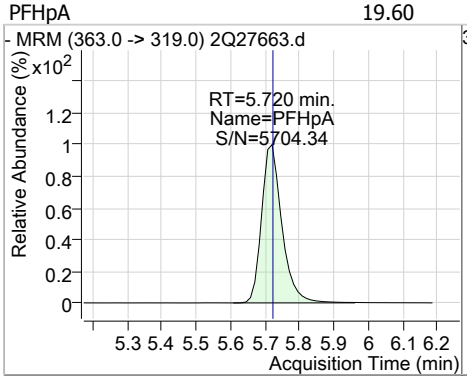
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	16.35	5.72	0.03	235400				

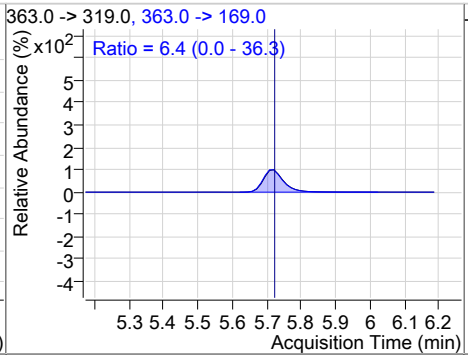


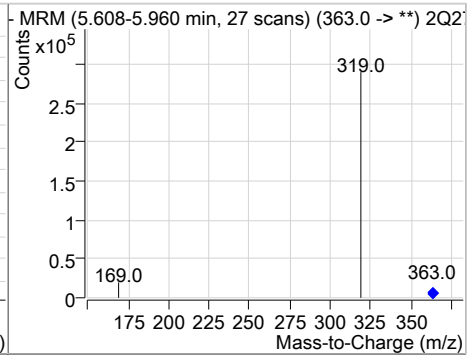




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.60	5.72	0.03	216417	363.0 -> 169.0	6.4	0.0	36.3

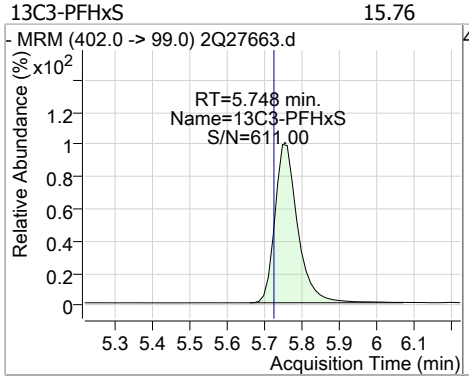


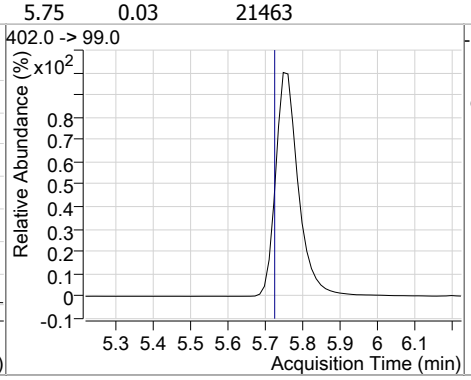


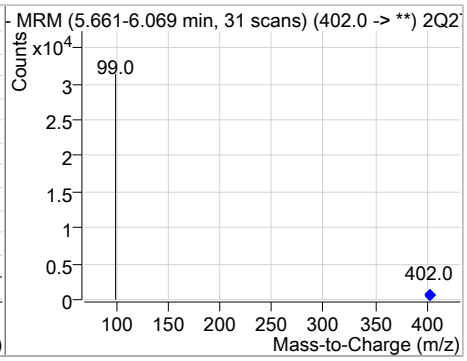


Perfluorinated Compounds by LC/MS/MS

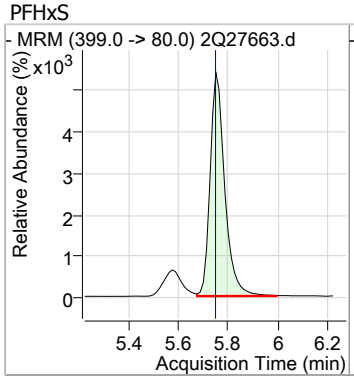
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	15.76	5.75	0.03	21463				

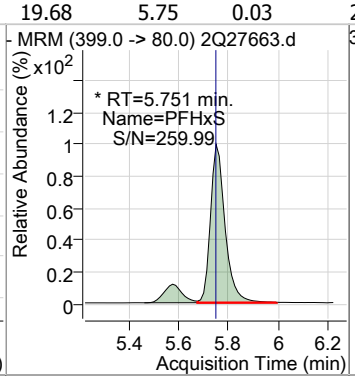


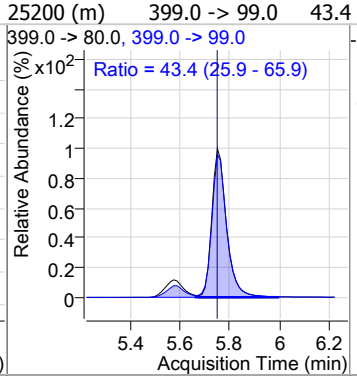


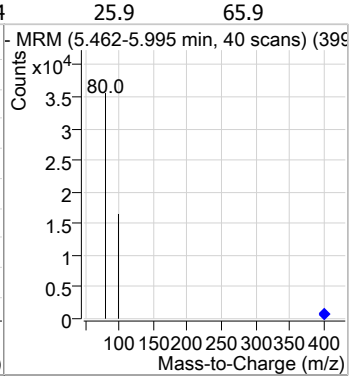


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.68	5.75	0.03	25200 (m)	399.0 -> 99.0	43.4	25.9	65.9

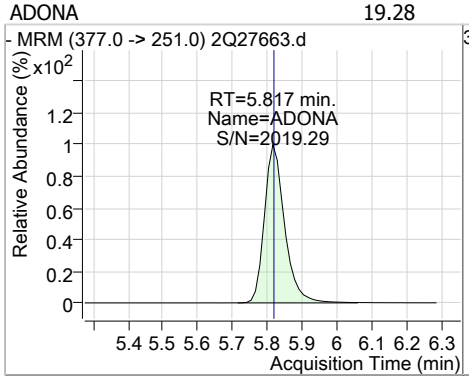


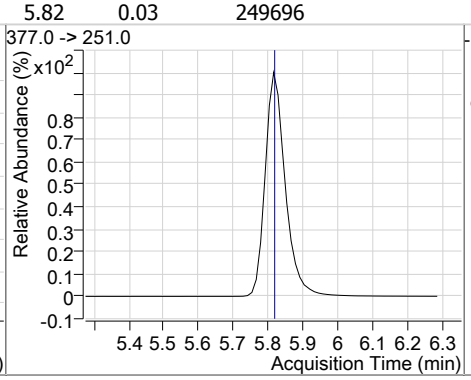


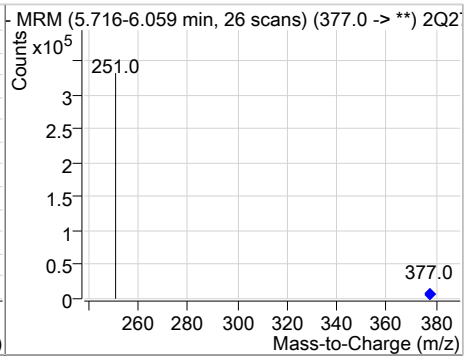




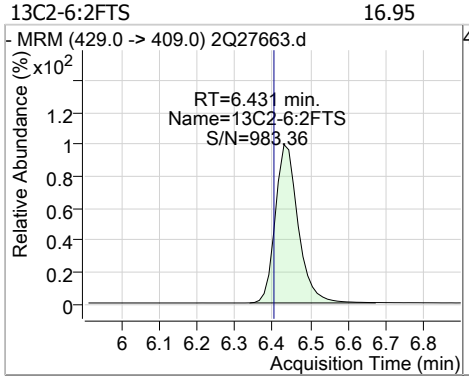
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.28	5.82	0.03	249696				

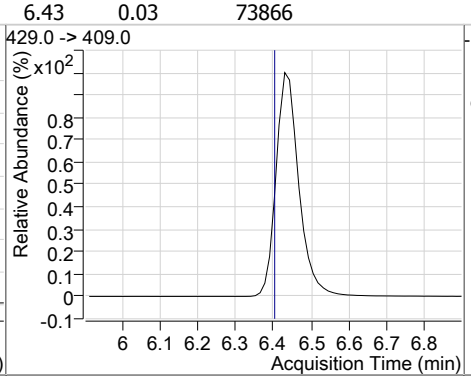


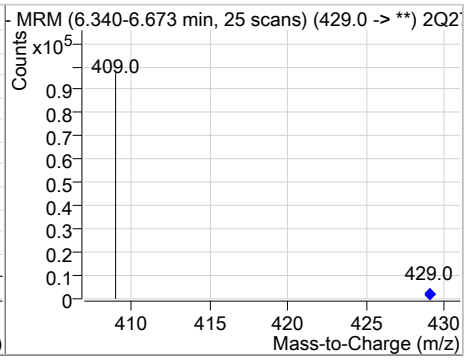




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	16.95	6.43	0.03	73866				

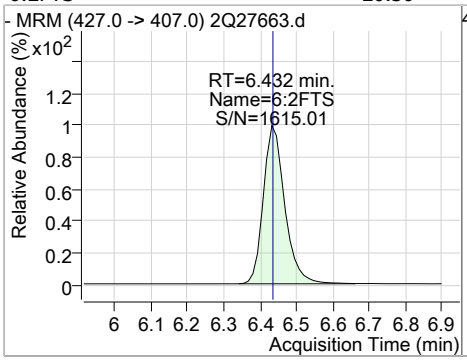


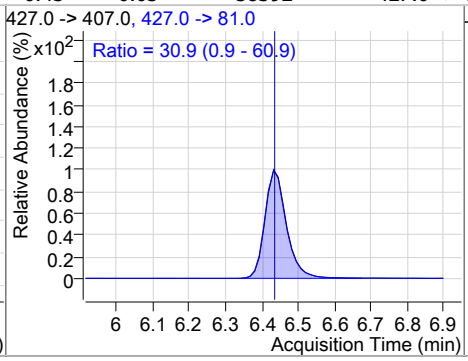


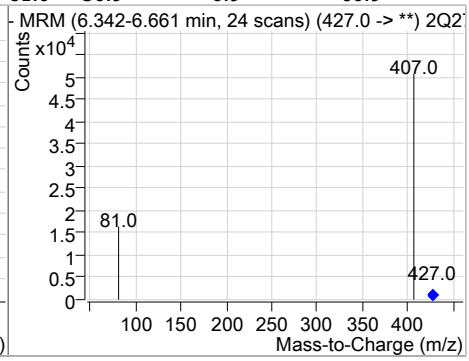


Perfluorinated Compounds by LC/MS/MS

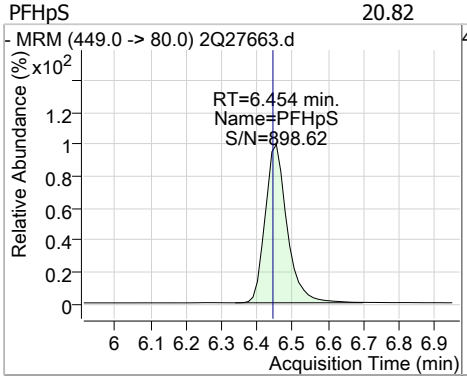
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.30	6.43	0.03	38392	427.0 -> 81.0	30.9	0.9	60.9

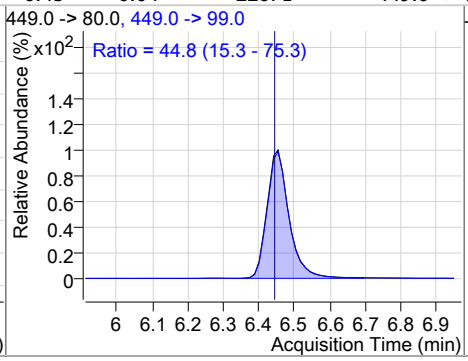


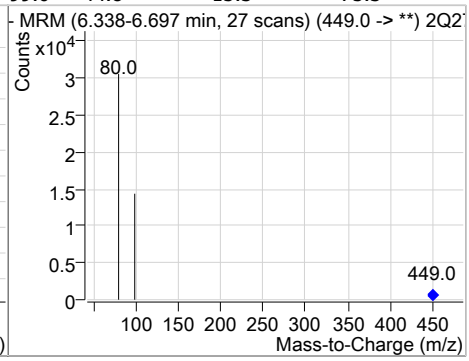




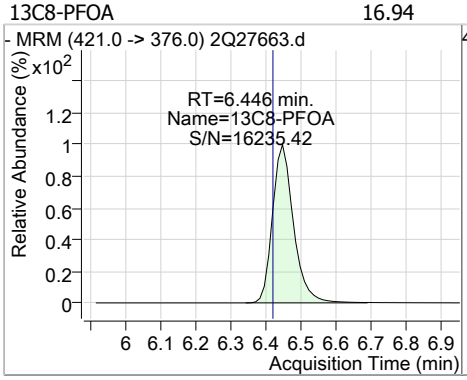
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.82	6.45	0.04	22671	449.0 -> 99.0	44.8	15.3	75.3

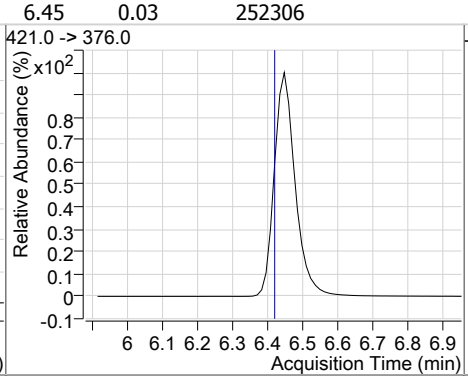


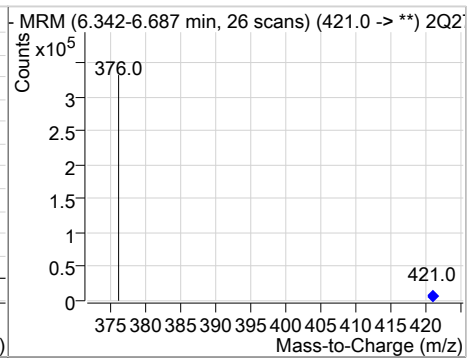




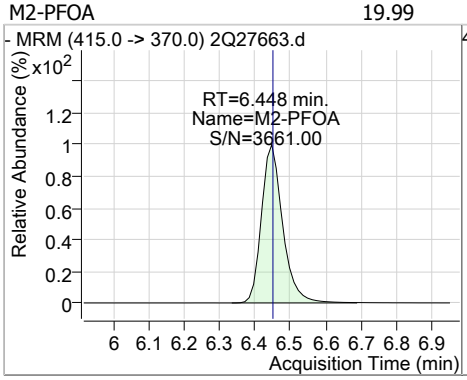
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	16.94	6.45	0.03	252306				

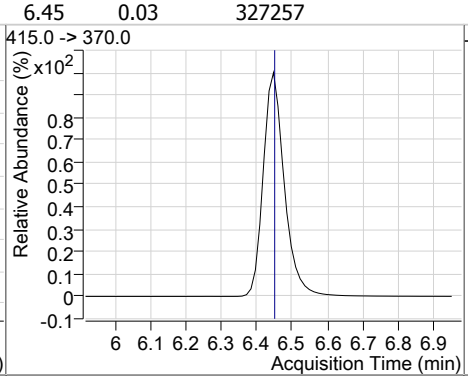


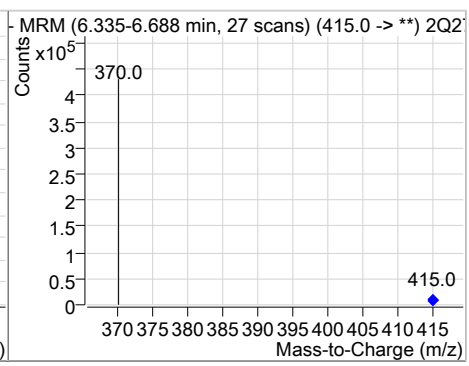




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.03	327257				

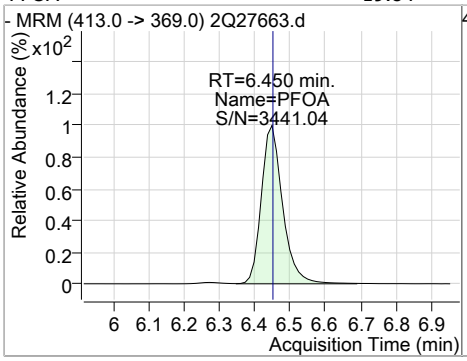


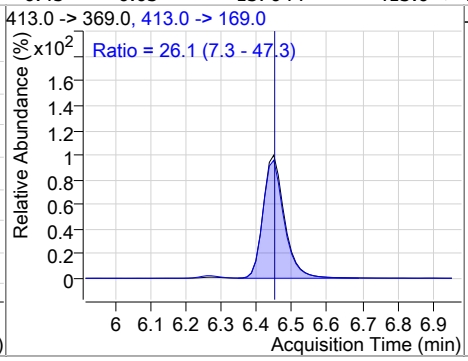


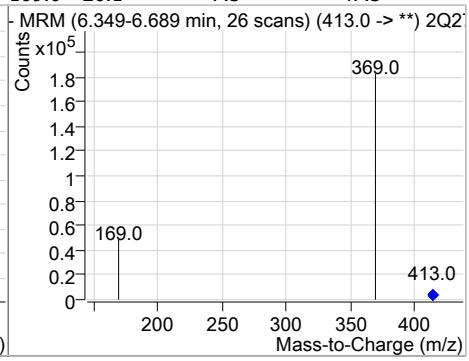


Perfluorinated Compounds by LC/MS/MS

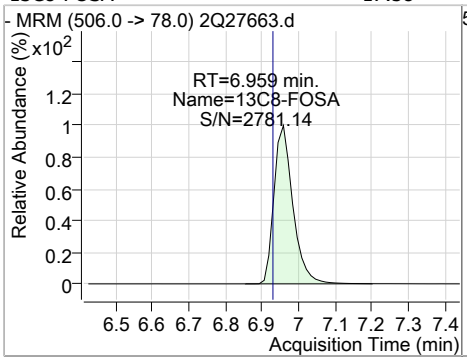
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.84	6.45	0.03	137044	413.0 -> 169.0	26.1	7.3	47.3

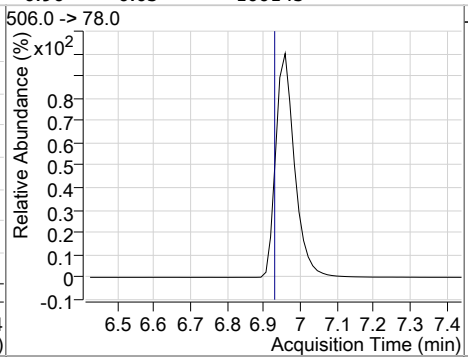


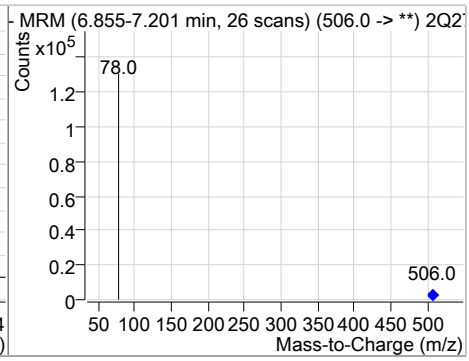




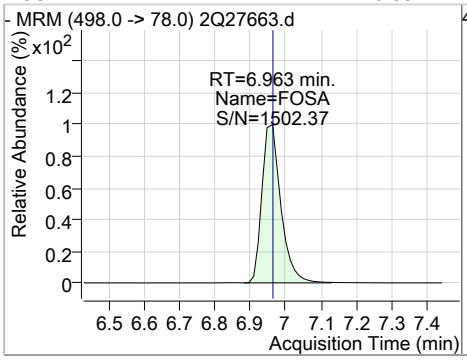
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.58	6.96	0.03	100145				

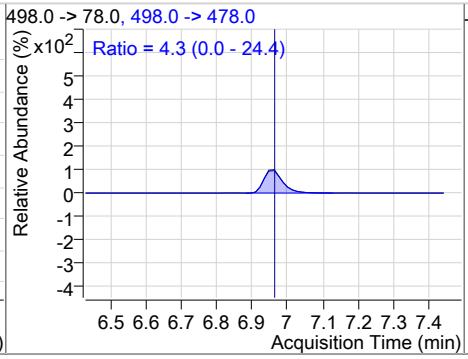


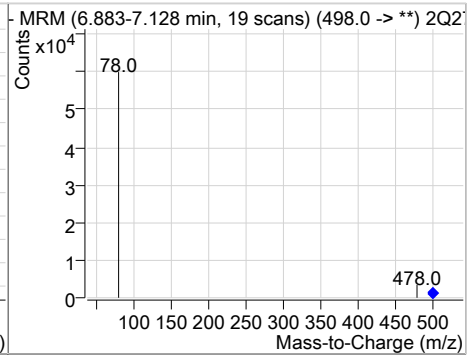




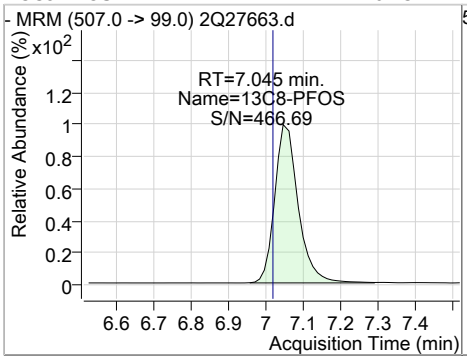
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.53	6.96	0.03	46862	498.0 -> 478.0	4.3	0.0	24.4

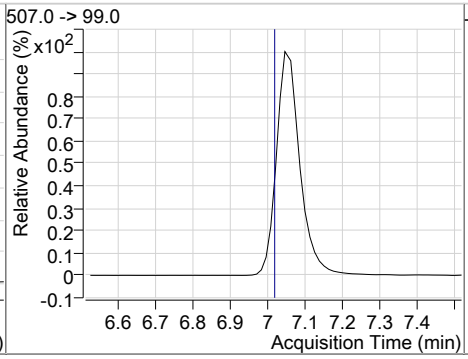


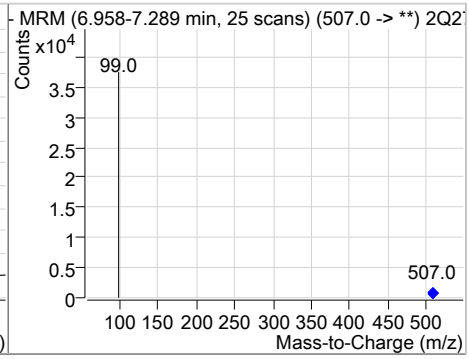




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	16.73	7.05	0.03	27671				

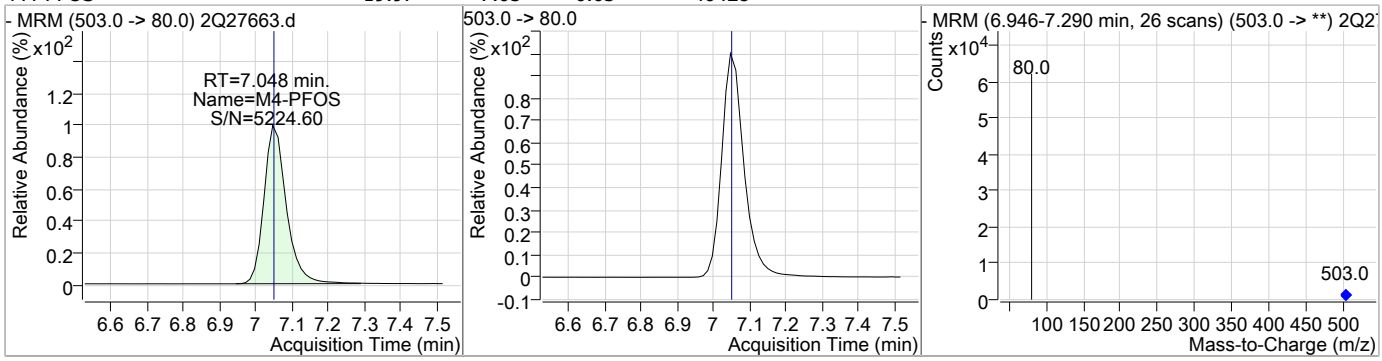




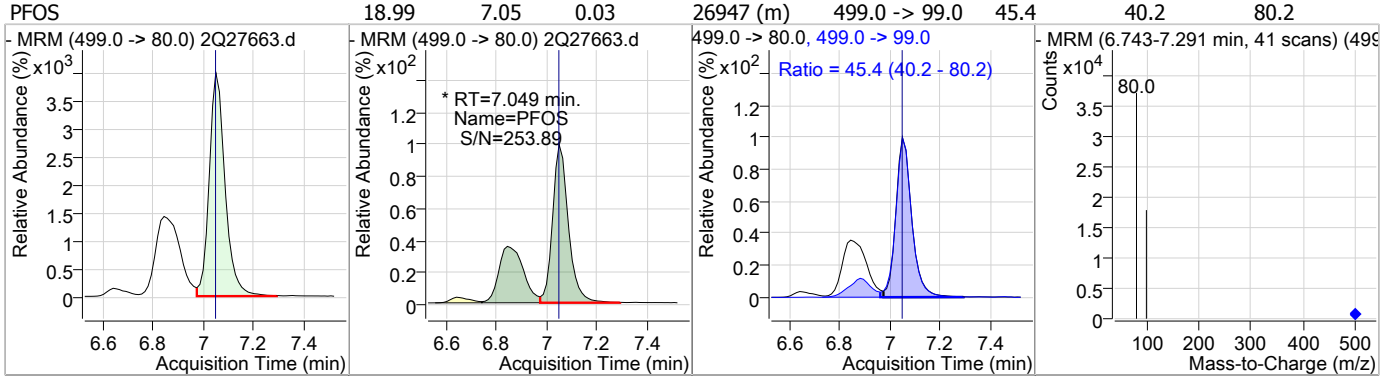


Perfluorinated Compounds by LC/MS/MS

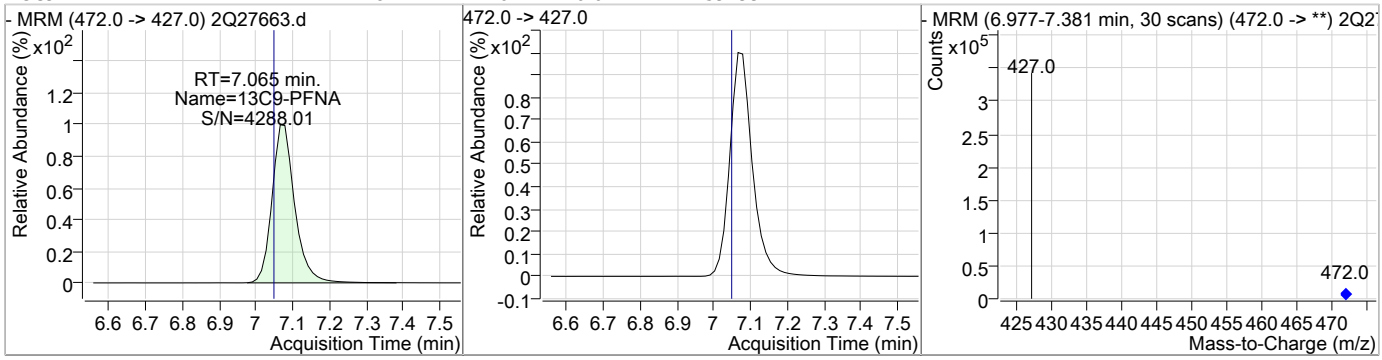
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.97	7.05	0.03	46428				



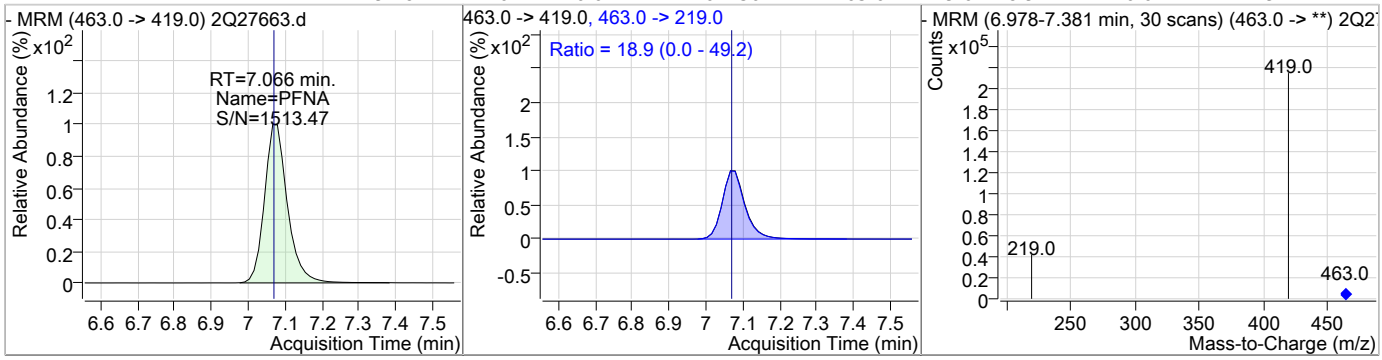
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.99	7.05	0.03	26947 (m)	499.0 -> 99.0	45.4	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.11	7.07	0.02	259499				

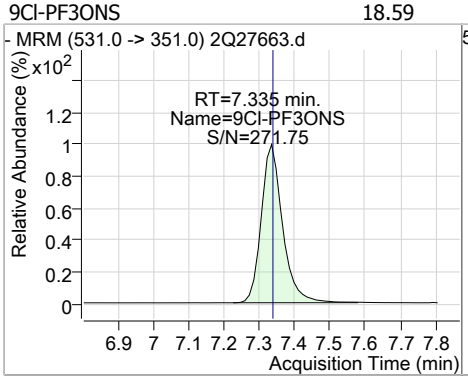


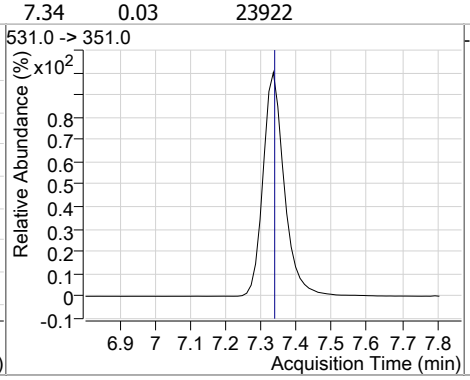
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.18	7.07	0.02	161230	463.0 -> 219.0	18.9	0.0	49.2

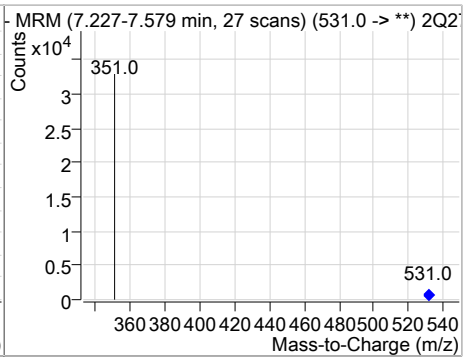


Perfluorinated Compounds by LC/MS/MS

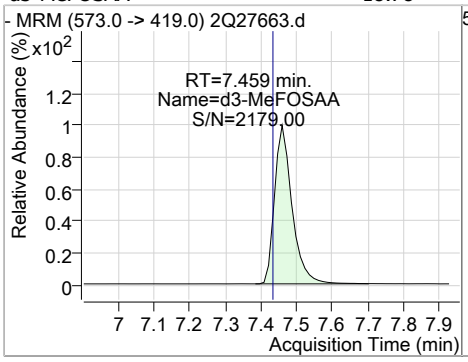
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.59	7.34	0.03	23922				

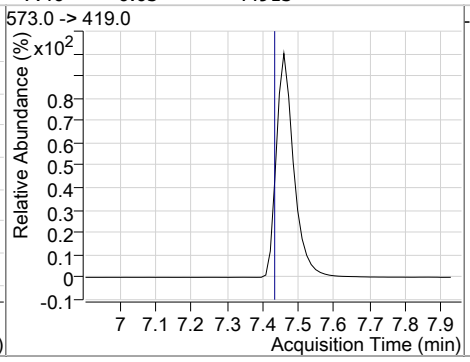


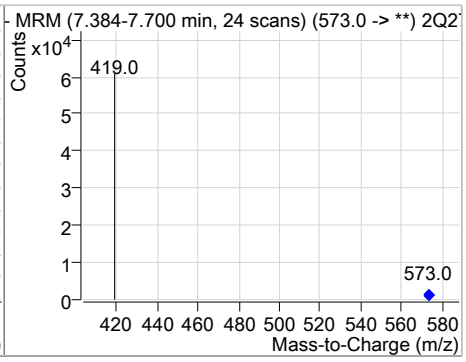




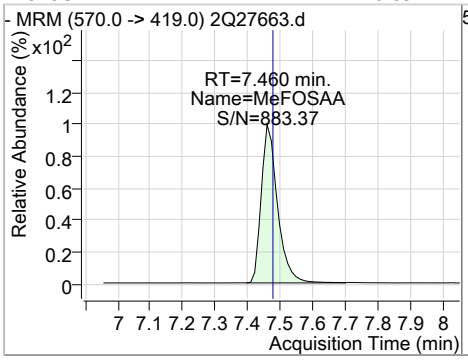
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.78	7.46	0.03	44913				

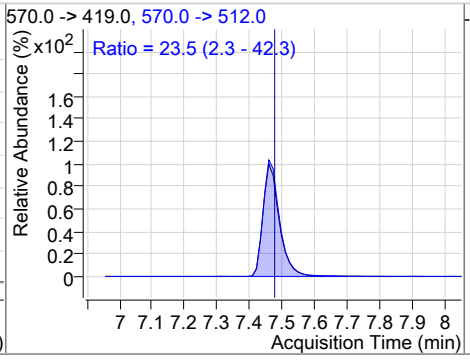


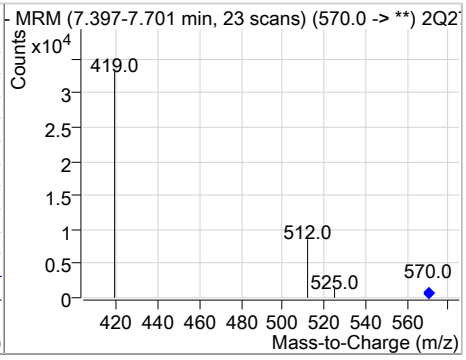




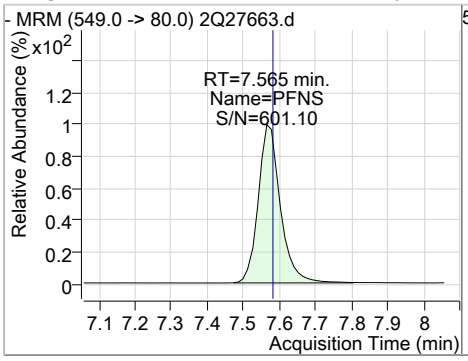
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.59	7.46	0.01	24559	570.0 -> 512.0	23.5	2.3	42.3

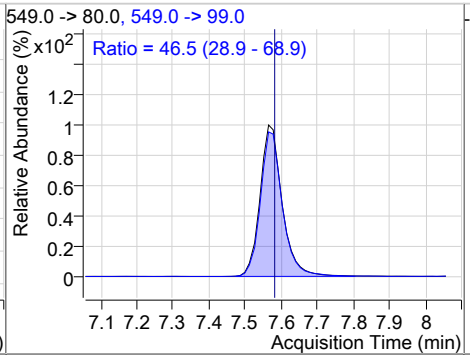


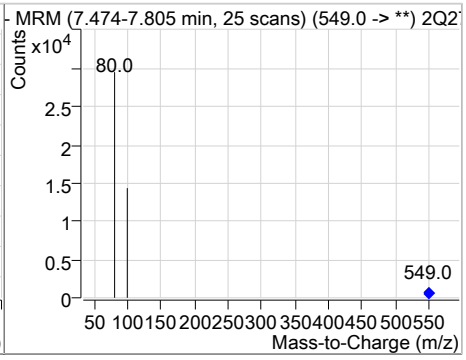




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	21.02	7.57	0.02	21783	549.0 -> 99.0	46.5	28.9	68.9

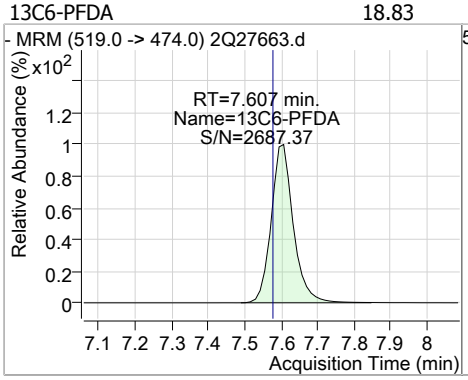


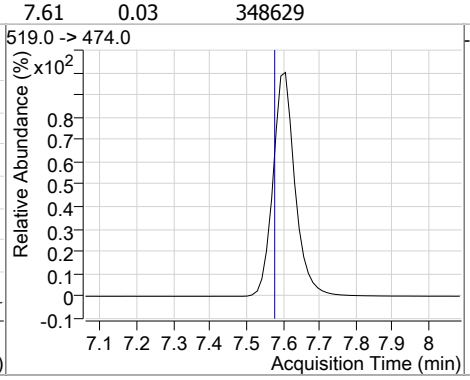


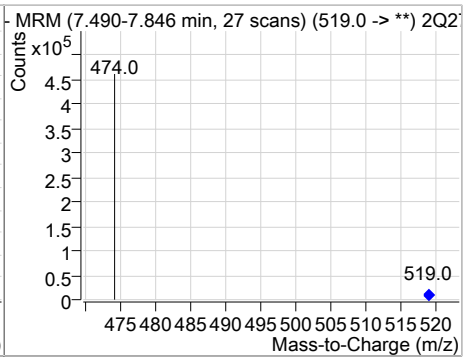


Perfluorinated Compounds by LC/MS/MS

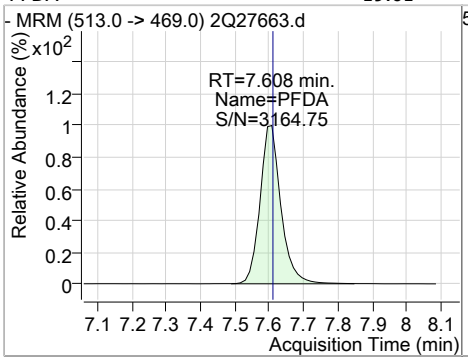
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.83	7.61	0.03	348629				

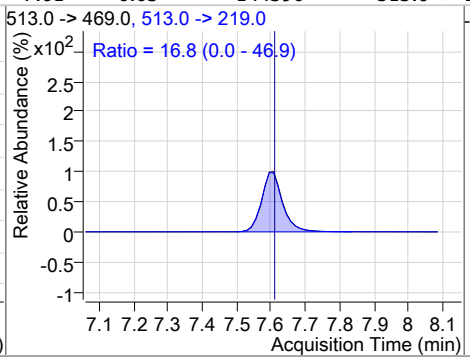


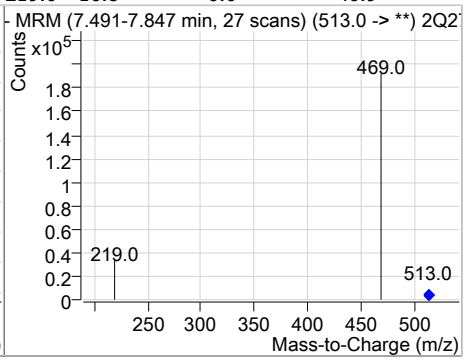




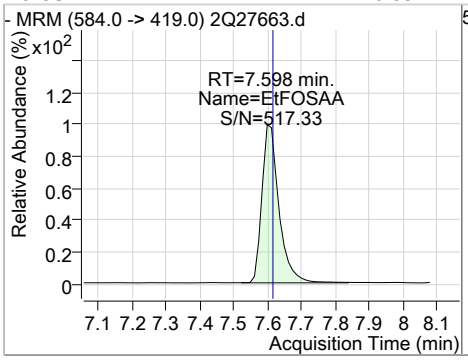
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.61	7.61	0.03	144390	513.0 -> 219.0	16.8	0.0	46.9

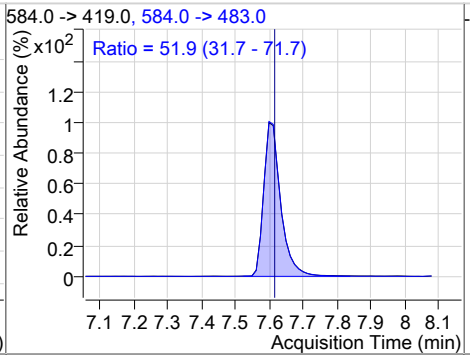


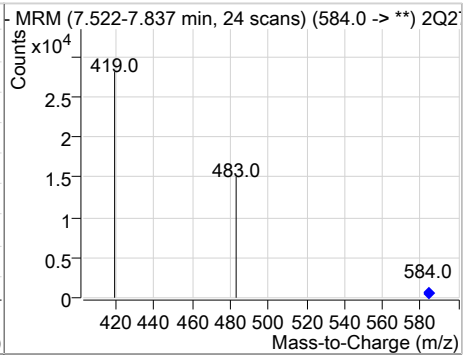




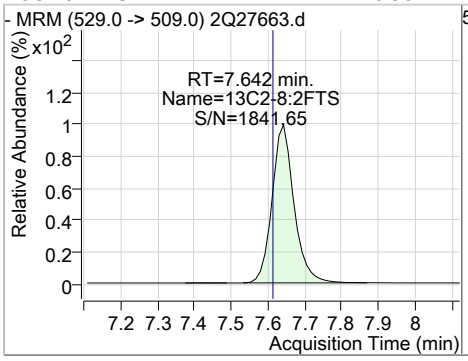
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.53	7.60	0.02	20268	584.0 -> 483.0	51.9	31.7	71.7

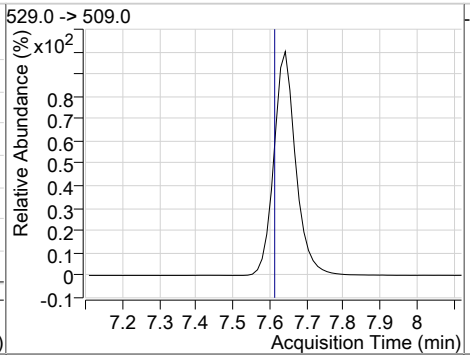


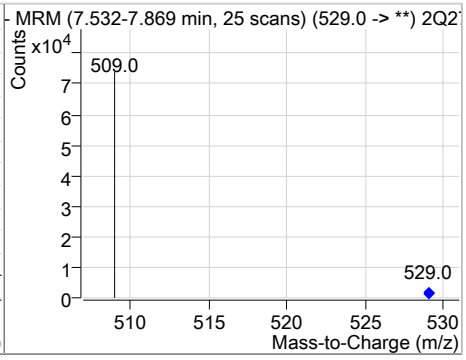




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.98	7.64	0.03	53877				

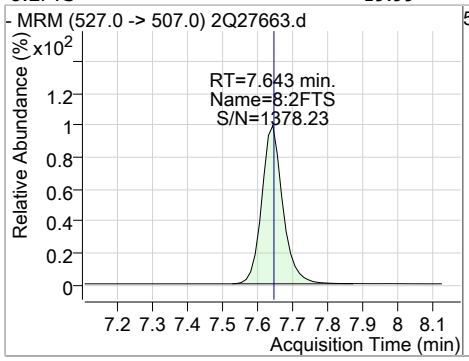


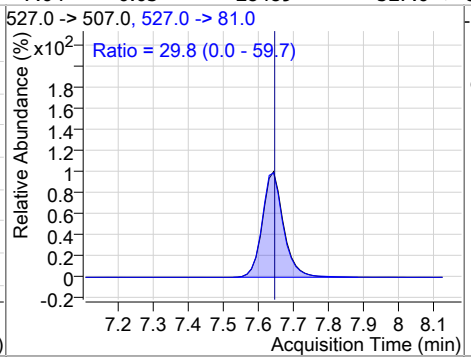


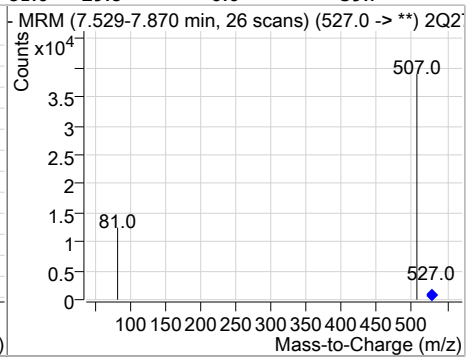


Perfluorinated Compounds by LC/MS/MS

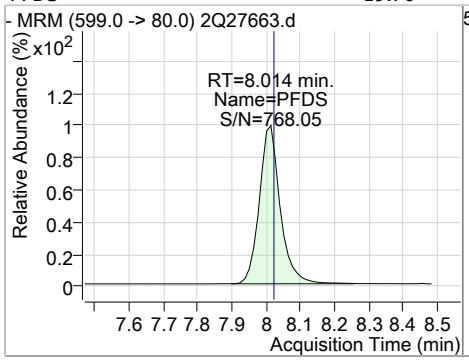
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.99	7.64	0.03	28489	527.0 -> 81.0	29.8	0.0	59.7

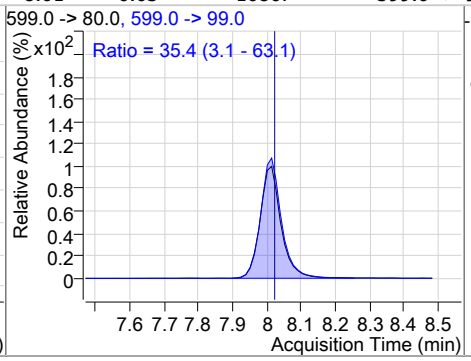


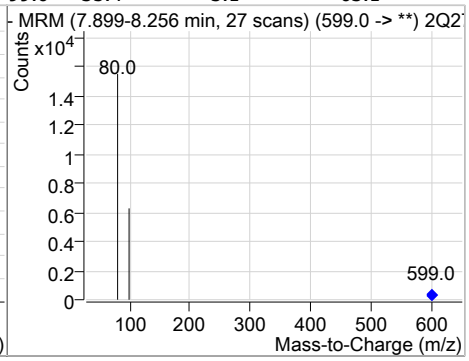




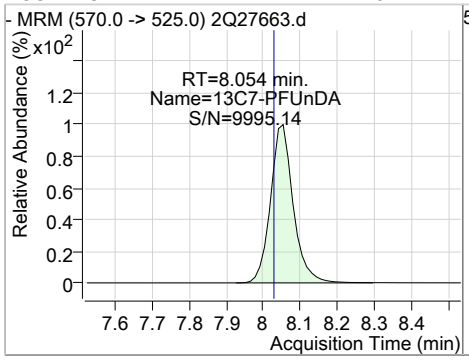
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.76	8.01	0.03	10807	599.0 -> 99.0	35.4	3.1	63.1

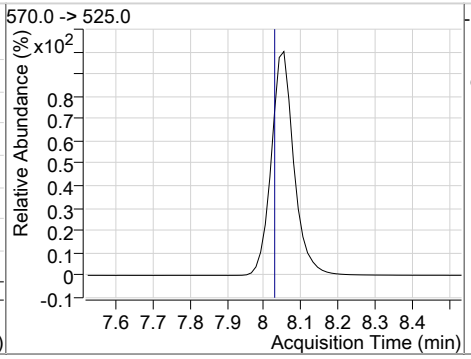


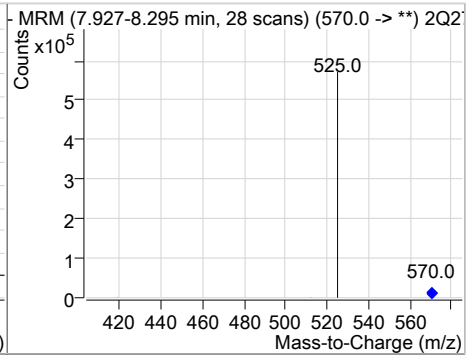




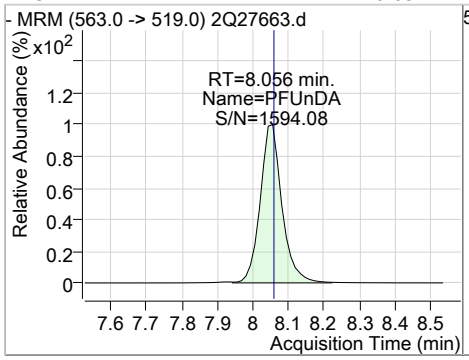
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.17	8.05	0.03	435222				

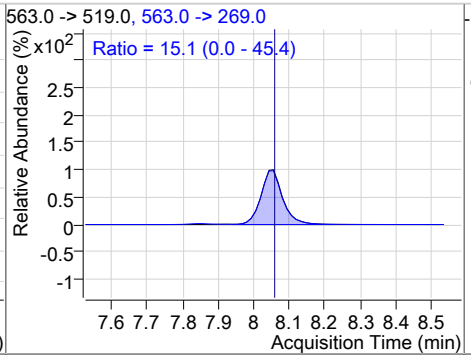


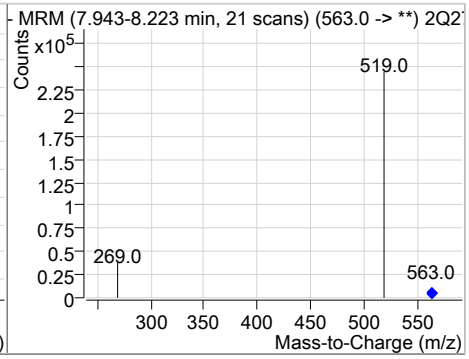




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.05	8.06	0.03	184761	563.0 -> 269.0	15.1	0.0	45.4

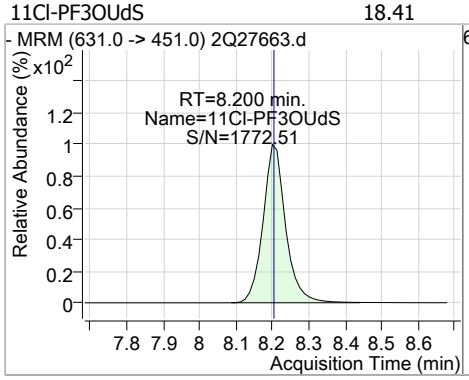


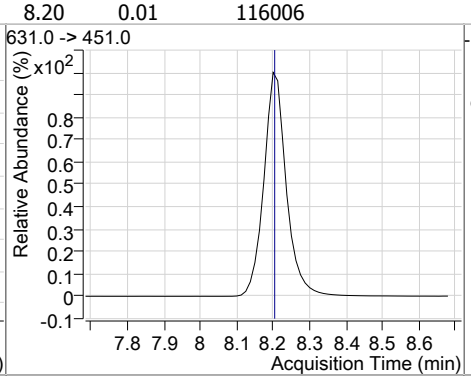


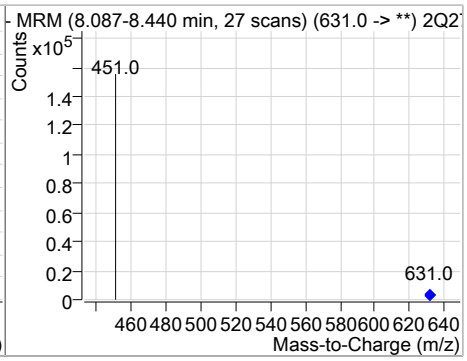


Perfluorinated Compounds by LC/MS/MS

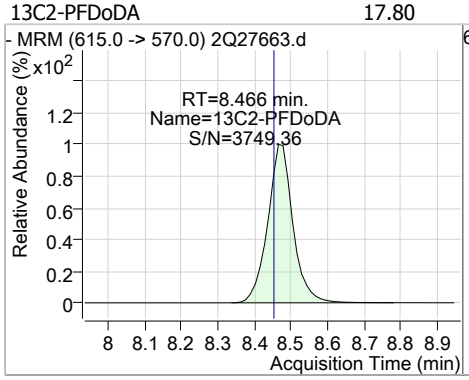
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.41	8.20	0.01	116006				

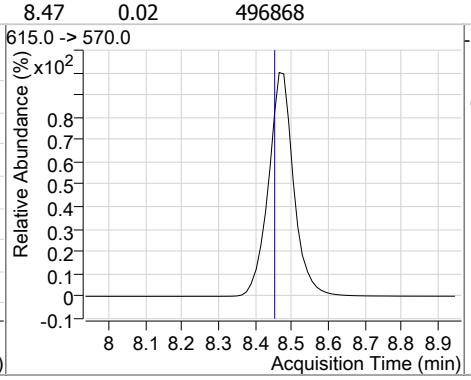


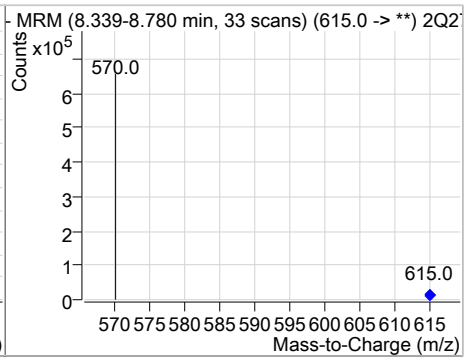




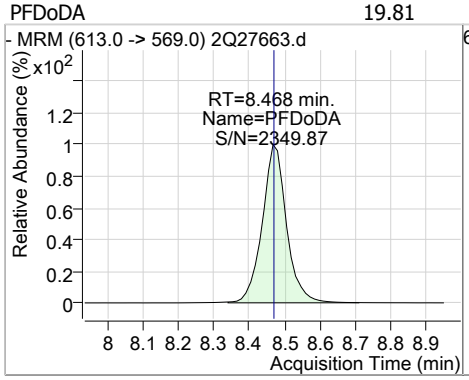
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	17.80	8.47	0.02	496868				

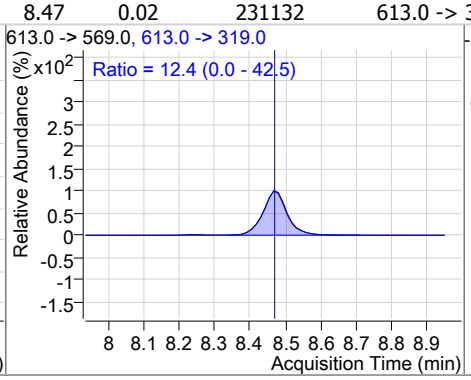


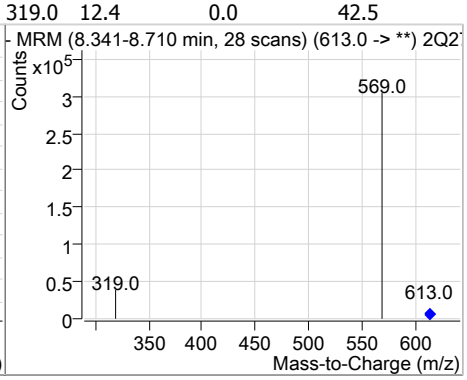




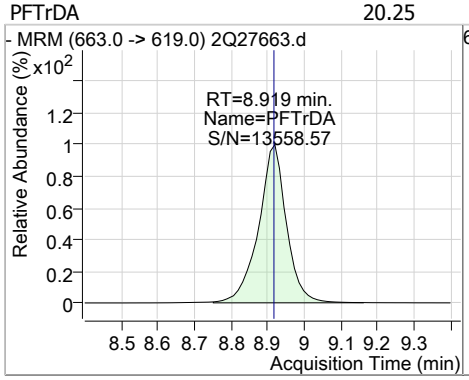
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.81	8.47	0.02	231132	613.0 -> 319.0	12.4	0.0	42.5

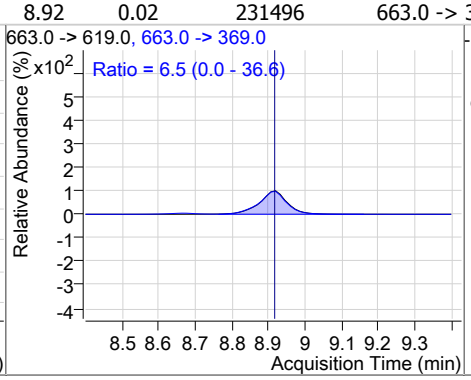


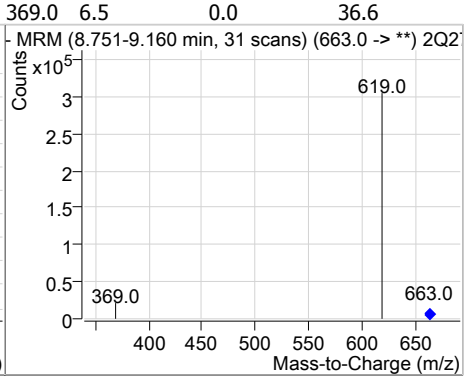




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.25	8.92	0.02	231496	663.0 -> 369.0	6.5	0.0	36.6

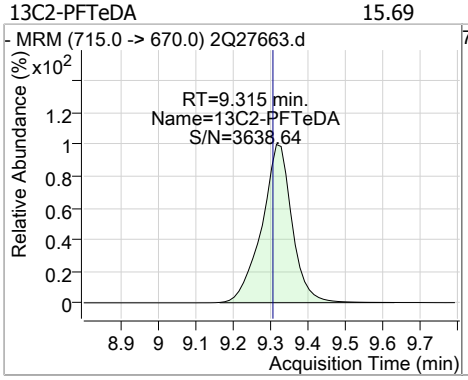


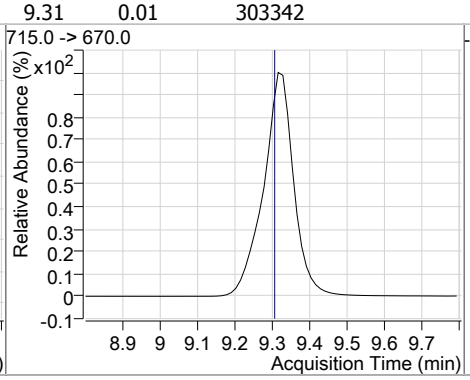


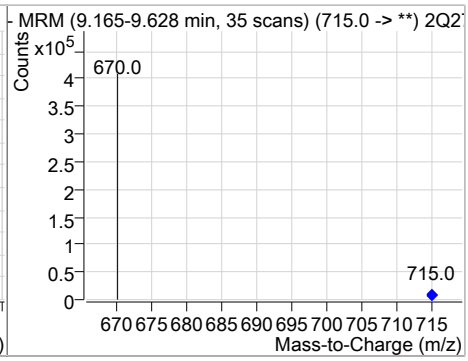


Perfluorinated Compounds by LC/MS/MS

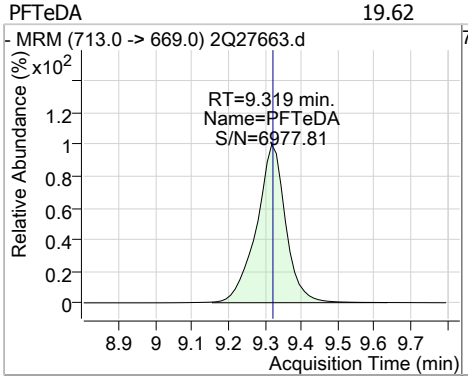
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	15.69	9.31	0.01	303342				

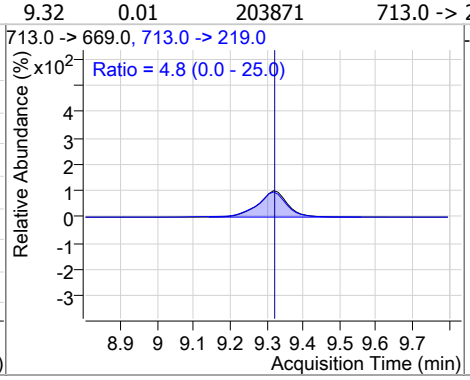


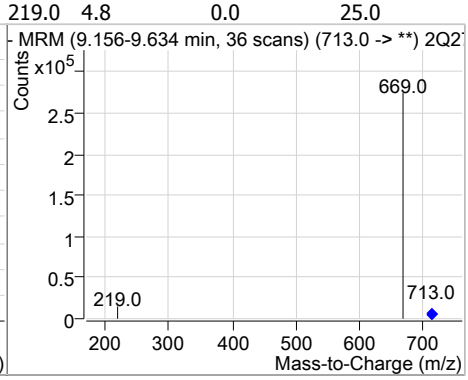




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.62	9.32	0.01	203871	713.0 -> 219.0	4.8	0.0	25.0







Manual Integration Approval Summary

Sample Number: S2Q441-ECC439
Lab FileID: 2Q27663.D
Injection Time: 03/15/19 18:43
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/18/19 08:53 Nancy Saunders
Supervisor approved: 03/18/19 13:59 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27667.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:18:31 AM
Sample Name : IC442-0.5
Vial : Vial 2
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

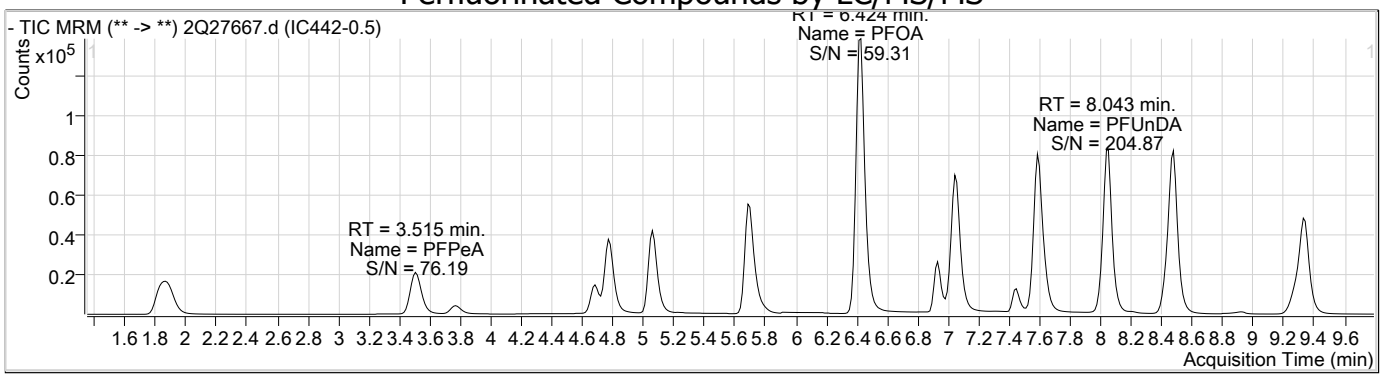
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	299448	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	48055	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	126091	20.00	µg/L	0.000
M5-PFPeA	3.511	268.0 -> 223.0	107090	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	153864	20.00	µg/L	-0.013
M4-PFHpA	5.693	367.0 -> 322.0	219389	20.00	µg/L	-0.013
M8-PFOA	6.434	421.0 -> 376.0	222345	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	222059	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	289682	20.00	µg/L	0.000
M7-PFUnDA	8.054	570.0 -> 525.0	350380	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	380854	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	261787	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	89064	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	19561	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21796	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	28319	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	59534	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	64438	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	43344	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	40197	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	168010	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	59520	20.02	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C2-6:2FTS	6.416	429.0 -> 409.0	64509	20.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C2-8:2FTS	7.630	529.0 -> 509.0	43348	19.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-PFDoDA	8.479	615.0 -> 570.0	381325	20.27	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C2-PFTeDA	9.327	715.0 -> 670.0	260655	20.30	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C3-PFBS	3.767	302.0 -> 99.0	19519	21.41	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.0%		
13C3-PFHxS	5.736	402.0 -> 99.0	21786	21.37	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.9%		
13C4-PFBA	1.865	217.0 -> 172.0	125531	20.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C4-PFHpA	5.693	367.0 -> 322.0	219198	21.19	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.0%		
13C5-PFHxA	4.776	318.0 -> 273.0	153709	21.15	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.8%		
13C5-PFPeA	3.511	268.0 -> 223.0	106481	20.95	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C6-PFDA	7.594	519.0 -> 474.0	289679	21.23	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

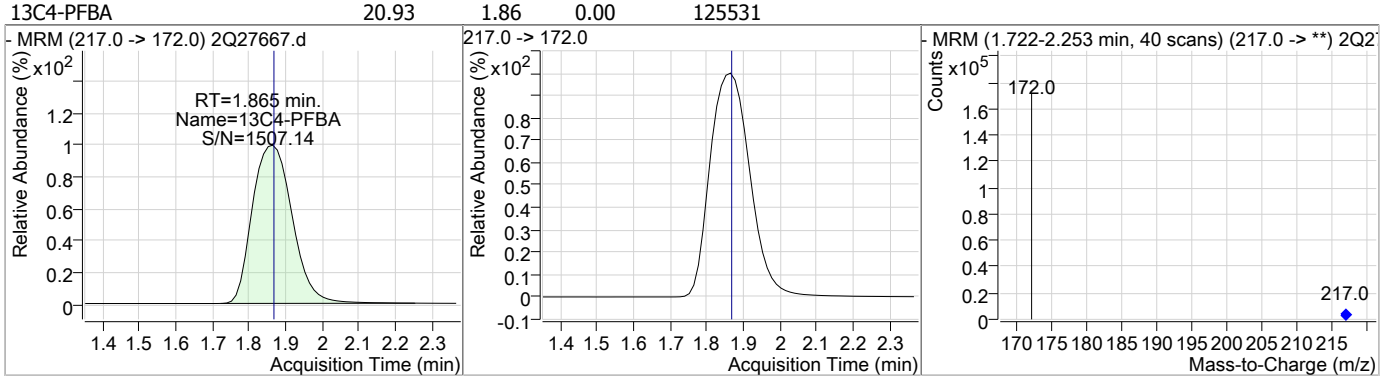
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.1%		
13C7-PFUnDA	8.054	570.0 -> 525.0	350546	20.71 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%		
13C8-FOSA	6.932	506.0 -> 78.0	89010	21.95 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.8%		
13C8-PFOA	6.434	421.0 -> 376.0	222515	21.33 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.7%		
13C8-PFOS	7.033	507.0 -> 99.0	28299	21.71 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.5%		
13C9-PFNA	7.065	472.0 -> 427.0	221802	20.95 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
d3-MeFOSAA	7.447	573.0 -> 419.0	40201	20.97 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
M2-PFOA	6.435	415.0 -> 370.0	299633	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	48005	19.97 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	168010	105.07 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 105.1%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	830	0.51 µg/L		89
6:2FTS	6.418	427.0 -> 407.0	852	0.54 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	581	0.54 µg/L		97
EtFOSAA	7.585	584.0 -> 419.0	425	0.49 µg/L		92
FOSA	6.935	498.0 -> 78.0	992	0.49 µg/L		99
MeFOSAA	7.447	570.0 -> 419.0	446	0.44 µg/L		98
PFBA	1.873	213.0 -> 169.0	595	0.48 µg/L		100
PFBS	3.771	299.0 -> 80.0	753	0.49 µg/L		93
PFDA	7.595	513.0 -> 469.0	2954	0.47 µg/L		98
PFDoDA	8.480	613.0 -> 569.0	3992	0.47 µg/L		98
PFDS	8.014	599.0 -> 80.0	262	0.50 µg/L		100
PFHpA	5.695	363.0 -> 319.0	4341	0.46 µg/L		99
PFHpS	6.429	449.0 -> 80.0	508	0.48 µg/L		97
PFHxA	4.778	313.0 -> 269.0	1263	0.48 µg/L		97
PFHxS	5.739	399.0 -> 80.0	587	0.49 µg/L	m	97
PFNA	7.053	463.0 -> 419.0	3416	0.46 µg/L		98
PFNS	7.565	549.0 -> 80.0	414	0.43 µg/L		79
PFOA	6.424	413.0 -> 369.0	2817	0.47 µg/L		99
PFOS	7.037	499.0 -> 80.0	649	0.47 µg/L	m	77
PFPeA	3.515	263.0 -> 219.0	2342	0.51 µg/L		100
PFPeS	4.895	349.0 -> 80.0	499	0.50 µg/L		95
PFTeDA	9.332	713.0 -> 669.0	4419	0.48 µg/L		98
PFTrDA	8.919	663.0 -> 619.0	4387	0.46 µg/L		99
PFUnDA	8.043	563.0 -> 519.0	3234	0.45 µg/L		96
11Cl-PF3OUdS	8.200	631.0 -> 451.0	2755	0.53 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	510	0.48 µg/L		100
ADONA	5.804	377.0 -> 251.0	5096	0.47 µg/L		100
HFPO-DA	5.060	329.0 -> 169.0	4827	2.42 µg/L		96

 # = Qualifier out of range, m = manually integrated, + = Area summed

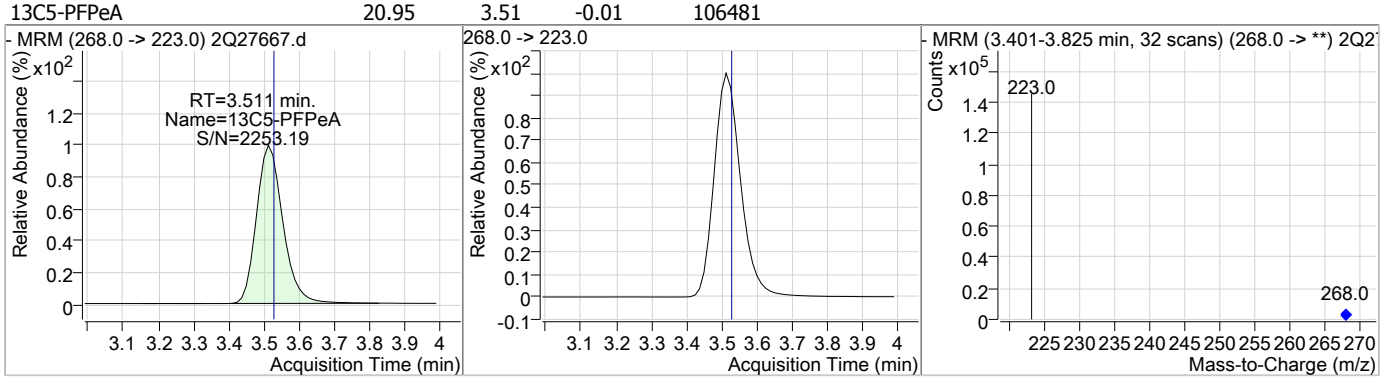
Perfluorinated Compounds by LC/MS/MS



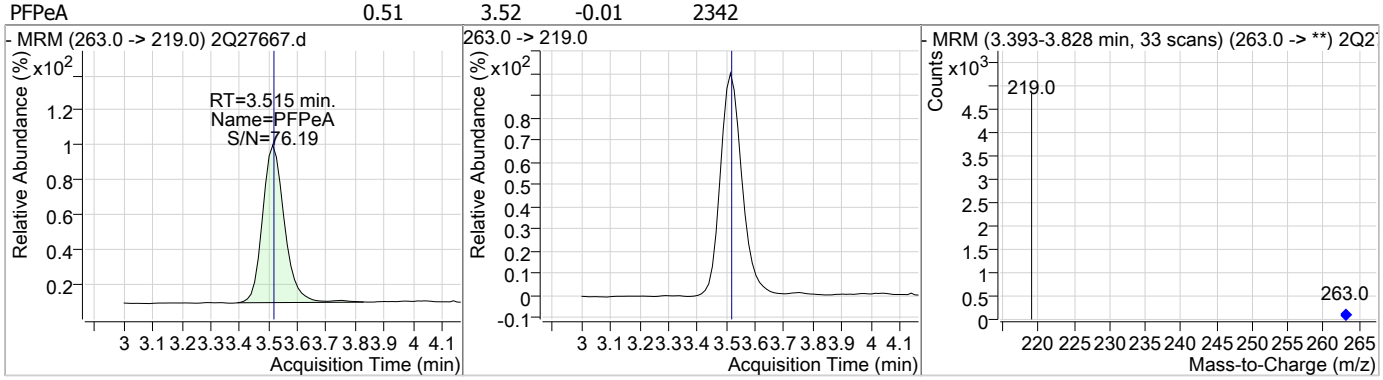
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.93	1.86	0.00	125531				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.95	3.51	-0.01	106481				

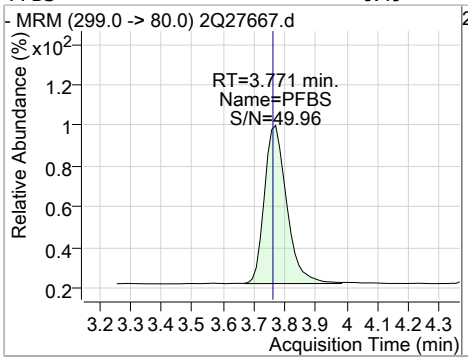


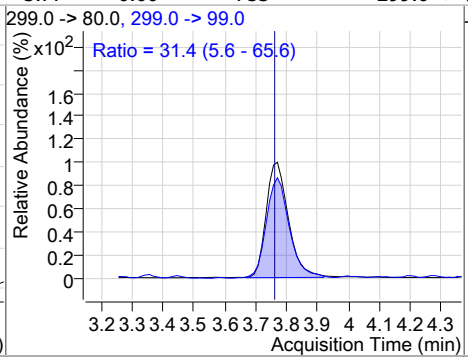
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.51	3.52	-0.01	2342				

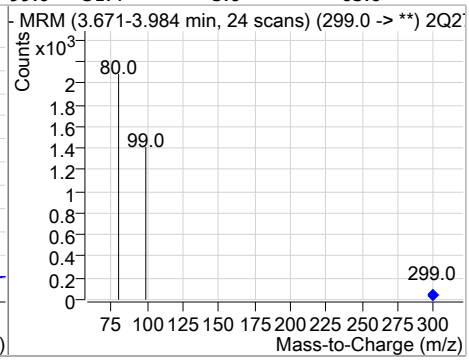


Perfluorinated Compounds by LC/MS/MS

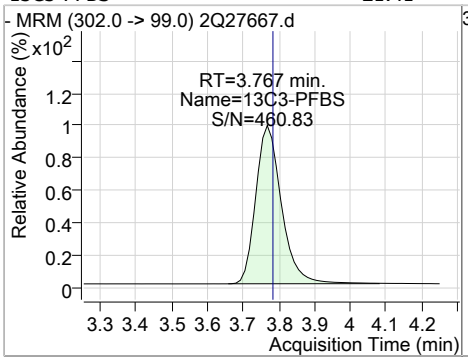
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.49	3.77	0.00	753	299.0 -> 99.0	31.4	5.6	65.6

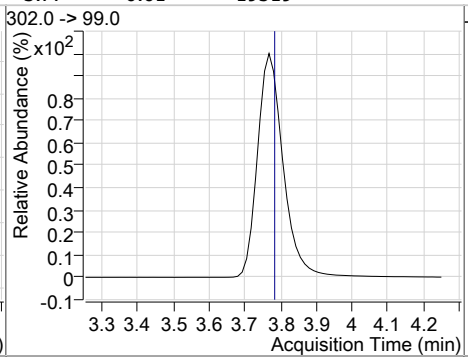


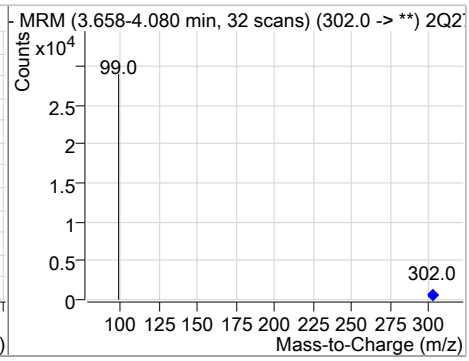




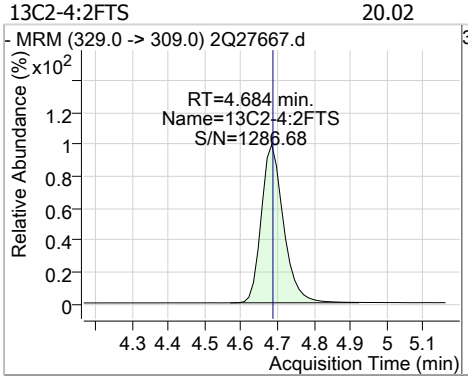
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.41	3.77	-0.01	19519				

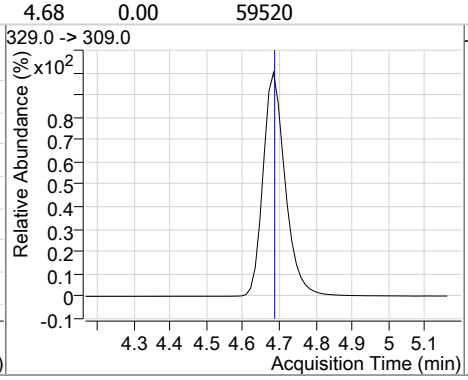


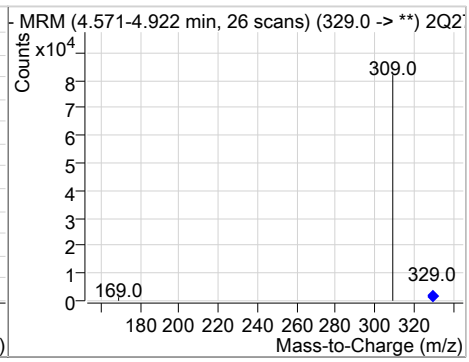




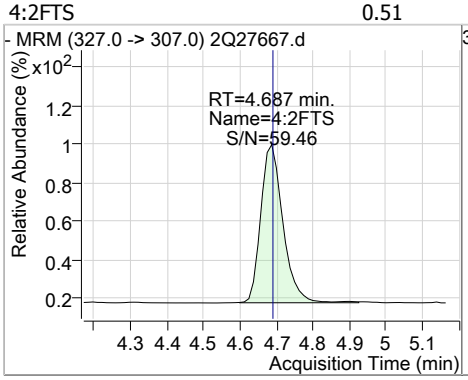
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.02	4.68	0.00	59520				

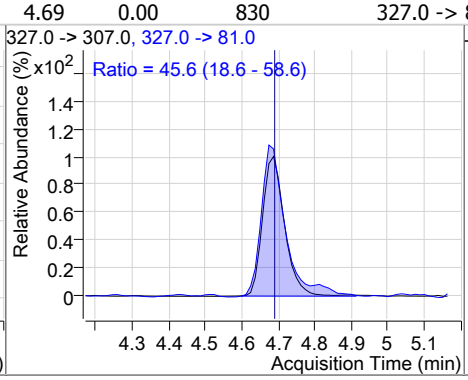


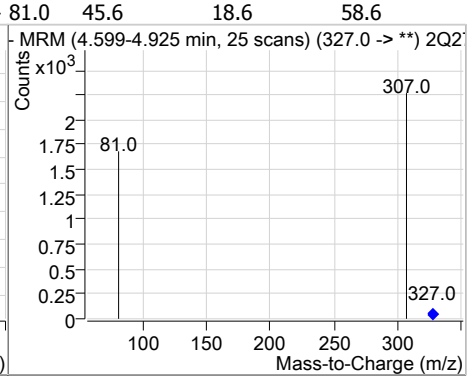




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.51	4.69	0.00	830	327.0 -> 81.0	45.6	18.6	58.6

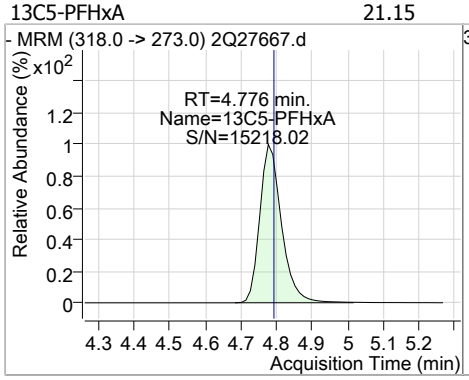


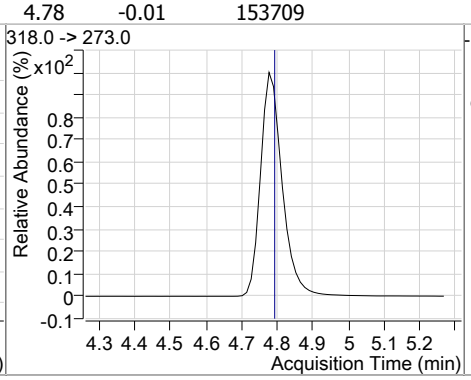


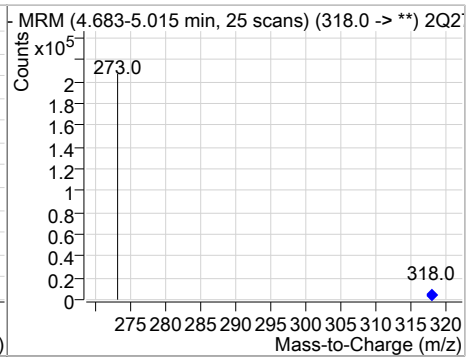


Perfluorinated Compounds by LC/MS/MS

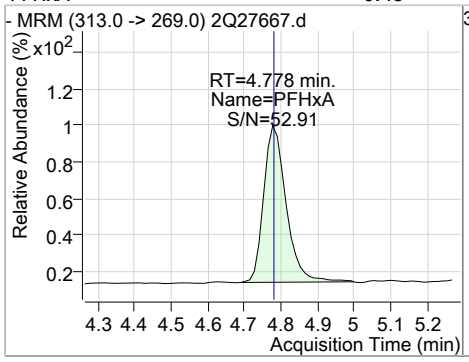
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.15	4.78	-0.01	153709				

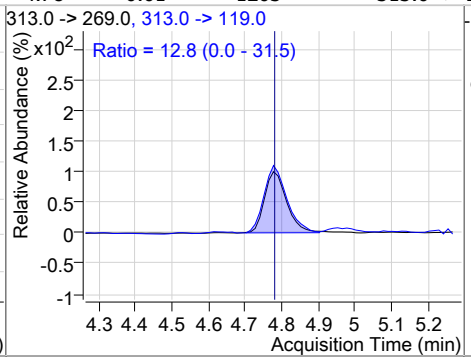


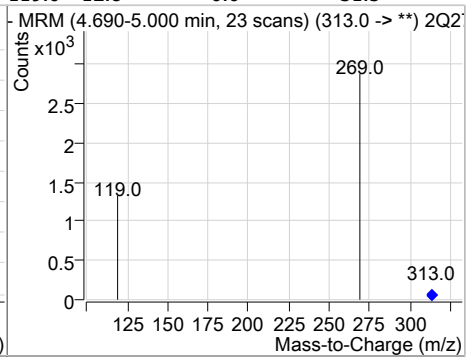




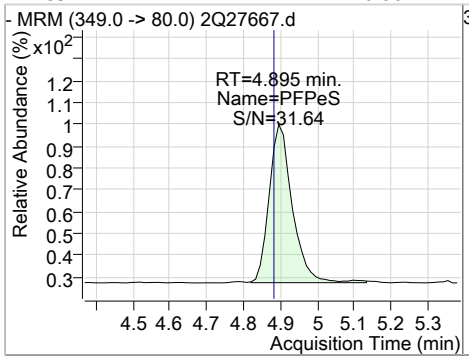
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.48	4.78	-0.01	1263	313.0 -> 119.0	12.8	0.0	31.5

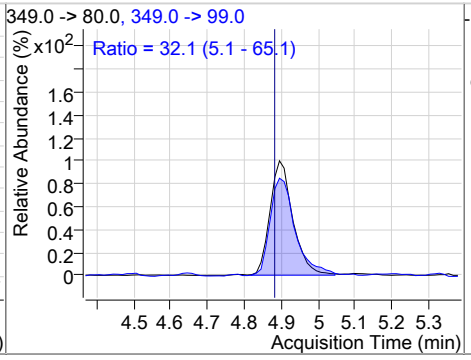


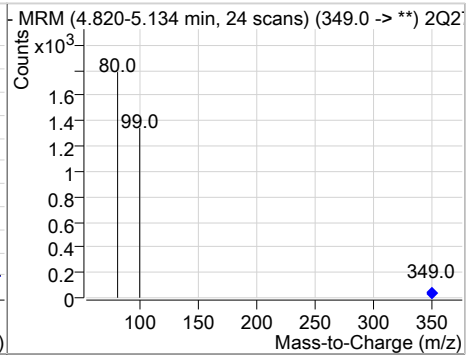




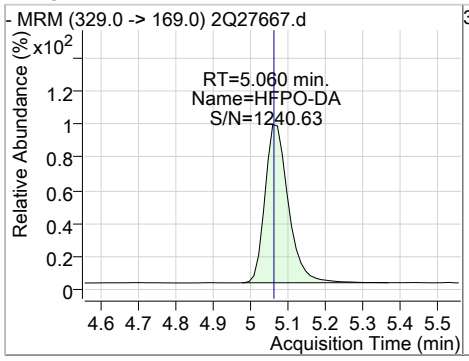
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.50	4.90	0.00	499	349.0 -> 99.0	32.1	5.1	65.1

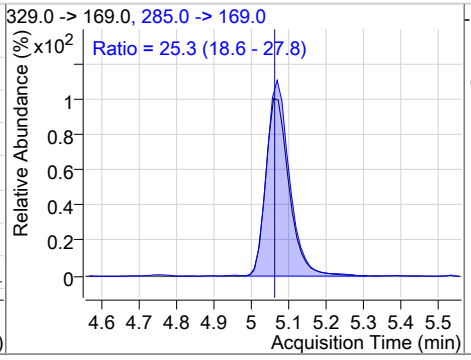


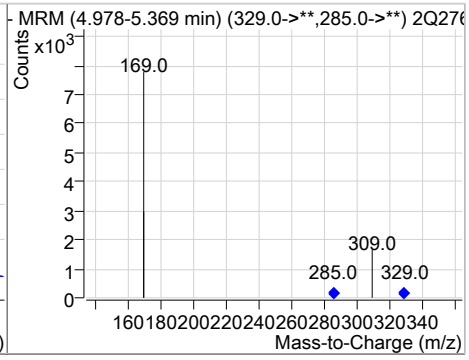




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	2.42	5.06	0.00	4827	285.0 -> 169.0	25.3	18.6	27.8

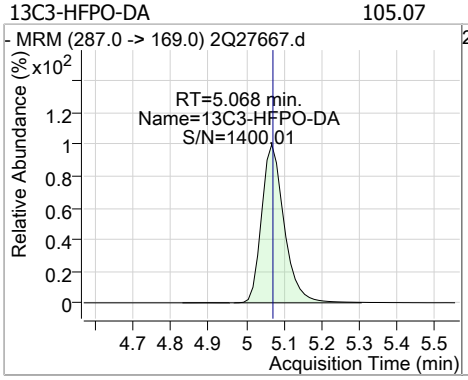


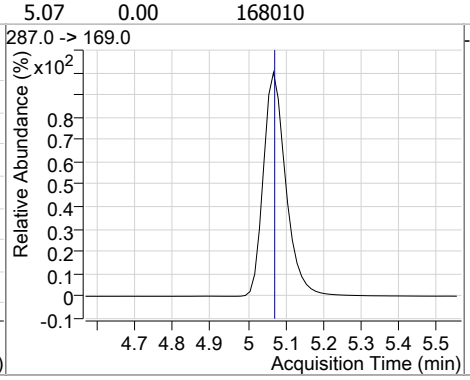


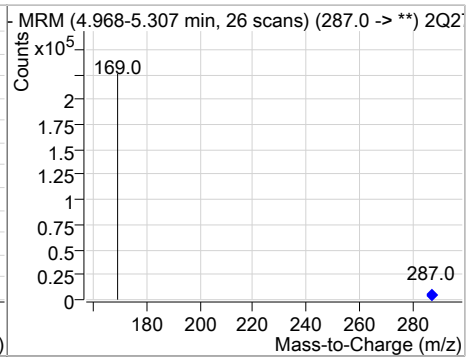


Perfluorinated Compounds by LC/MS/MS

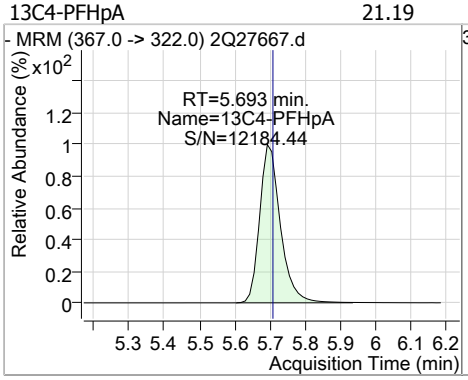
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	105.07	5.07	0.00	168010				

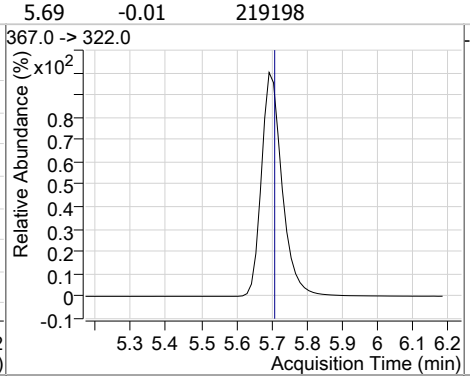


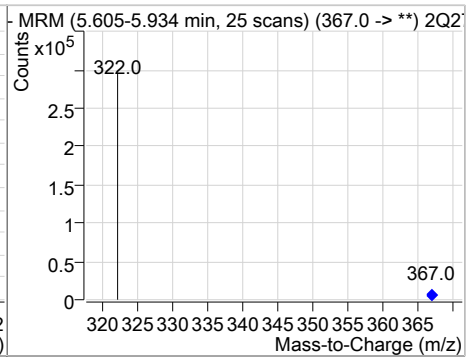




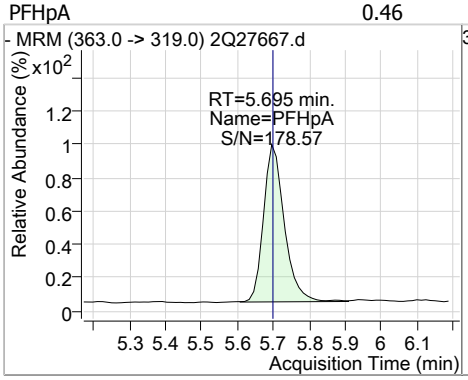
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.19	5.69	-0.01	219198				

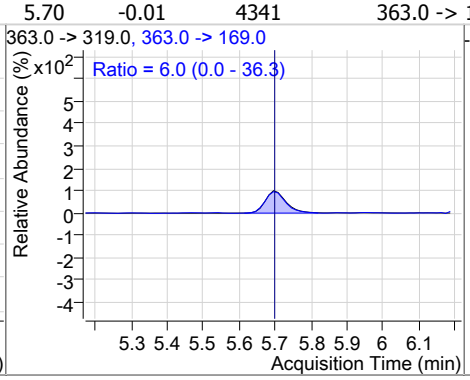


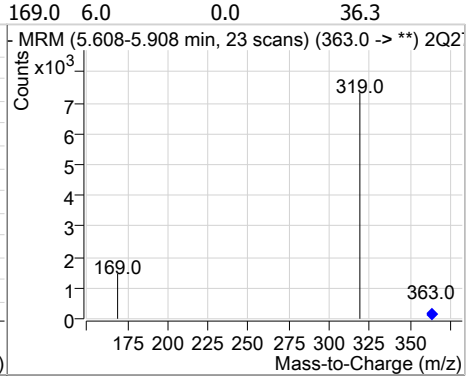




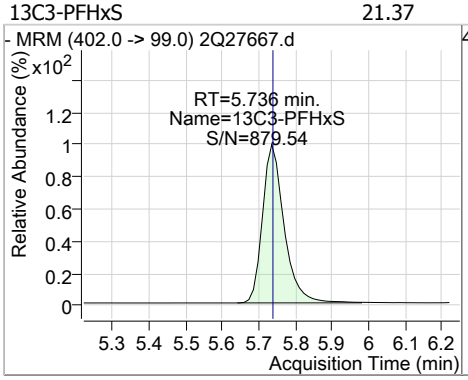
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.46	5.70	-0.01	4341	363.0 -> 169.0	6.0	0.0	36.3

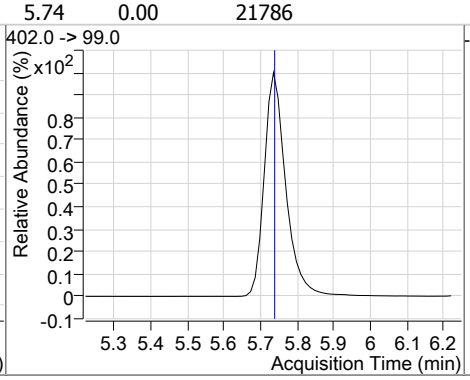


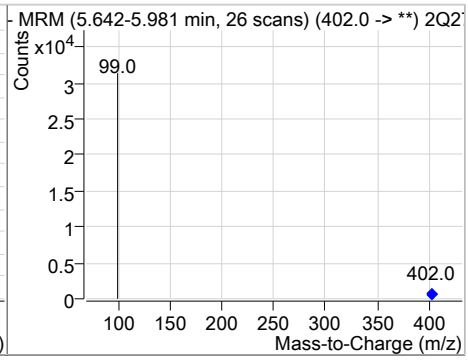




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.37	5.74	0.00	21786				

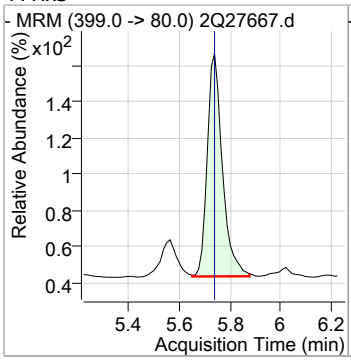


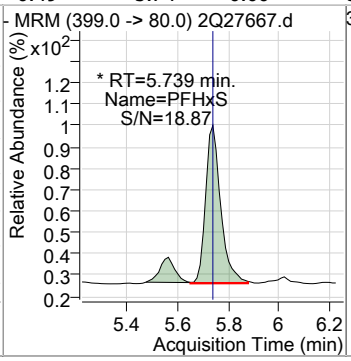


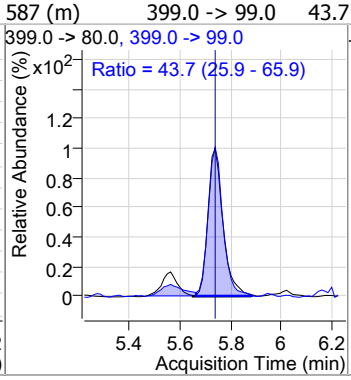


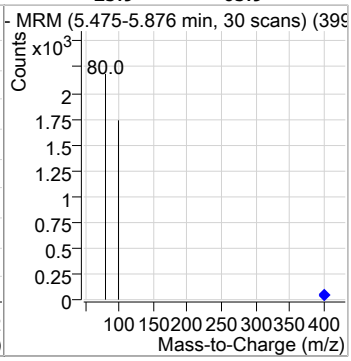
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.49	5.74	0.00	587 (m)	399.0 -> 99.0	43.7	25.9	65.9

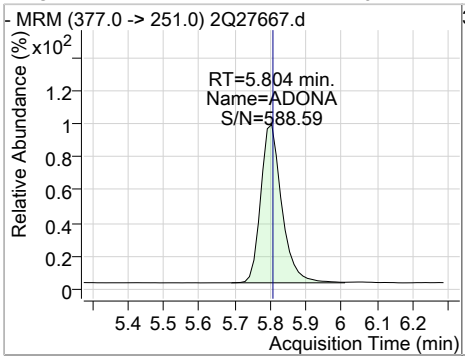


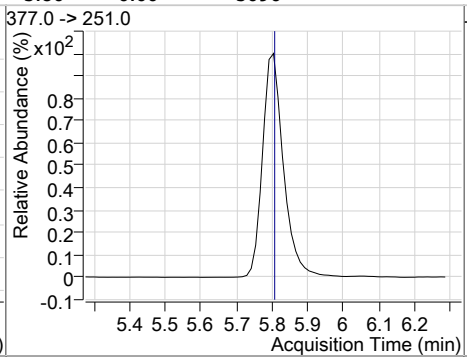


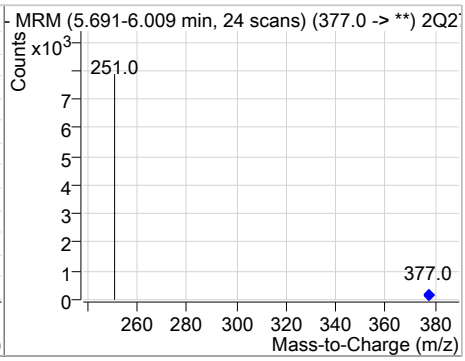




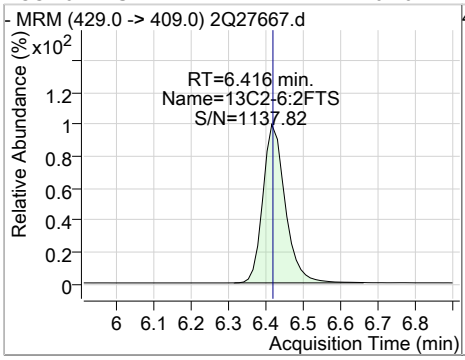
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.47	5.80	0.00	5096				

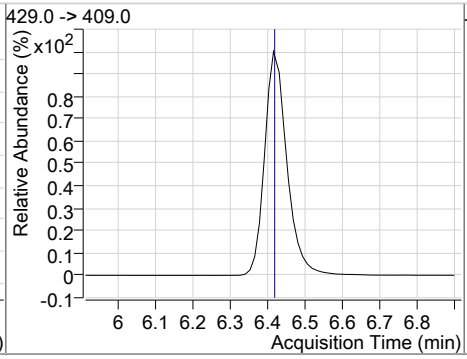


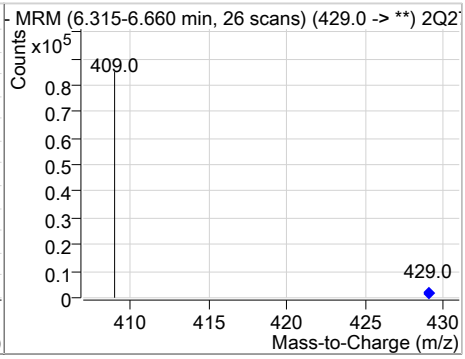




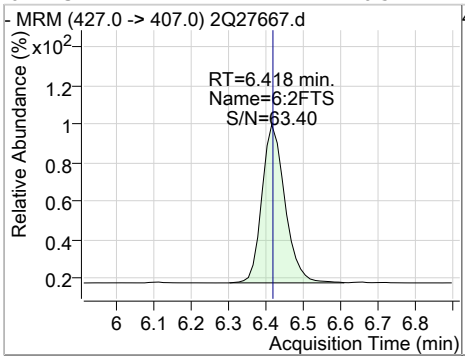
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.10	6.42	0.00	64509				

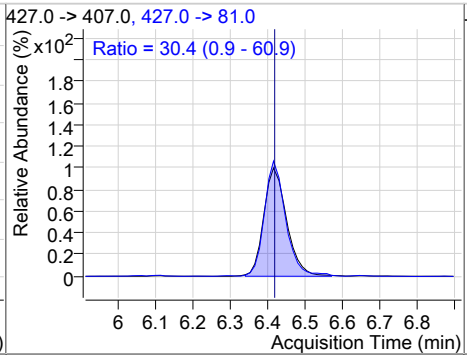


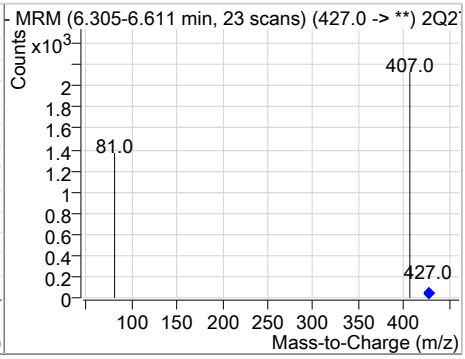




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.54	6.42	0.00	852	427.0 -> 81.0	30.4	0.9	60.9

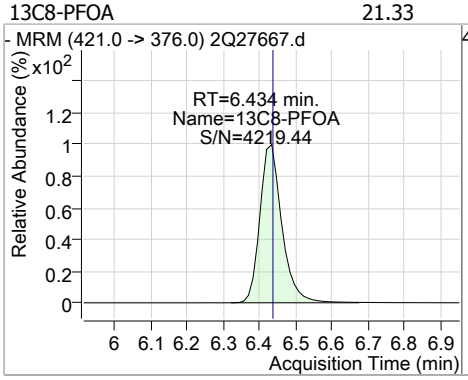


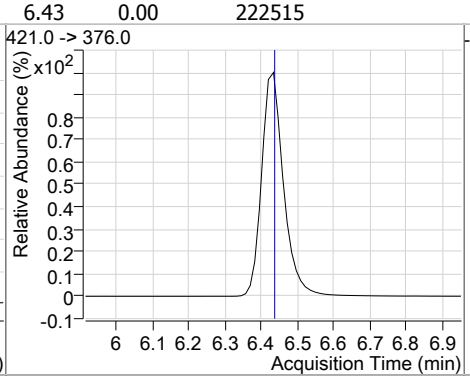


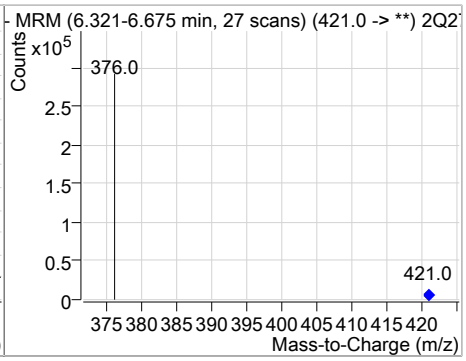


Perfluorinated Compounds by LC/MS/MS

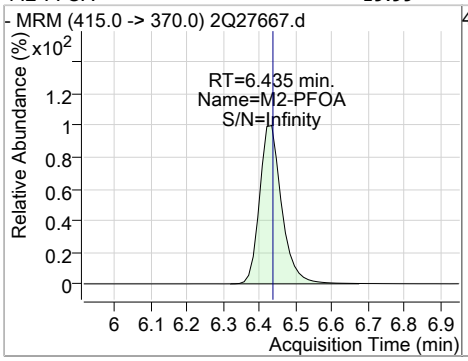
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.33	6.43	0.00	222515				

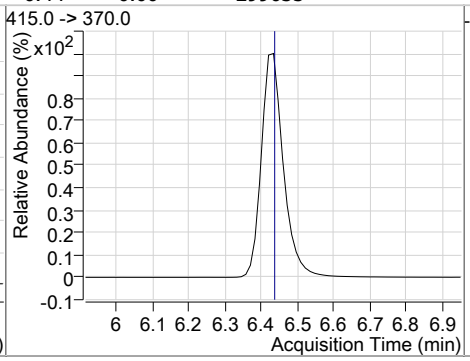


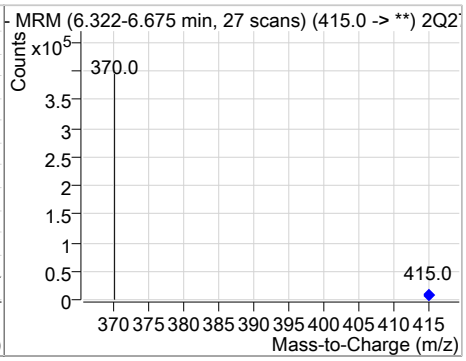




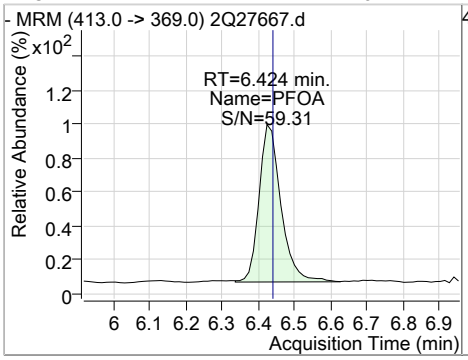
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	299633				

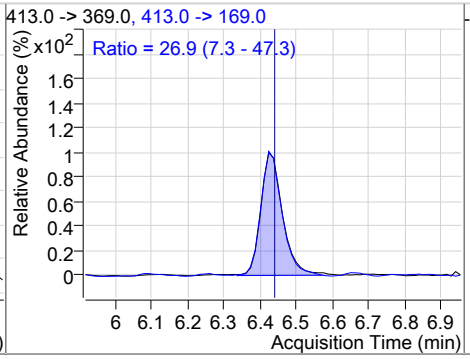


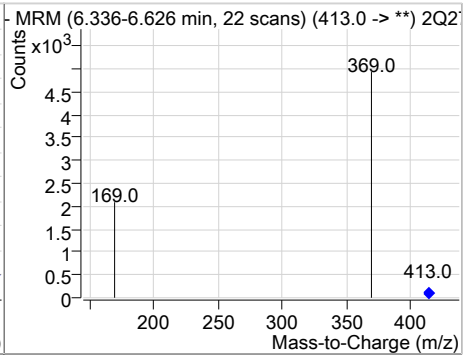




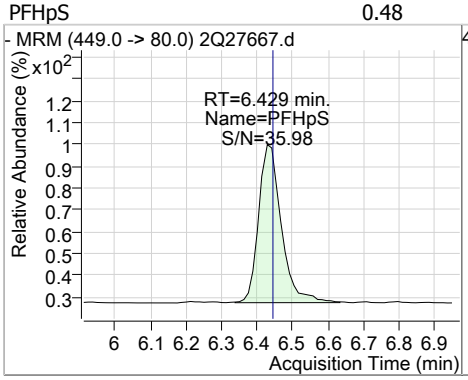
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.47	6.42	-0.01	2817	413.0 -> 169.0	26.9	7.3	47.3

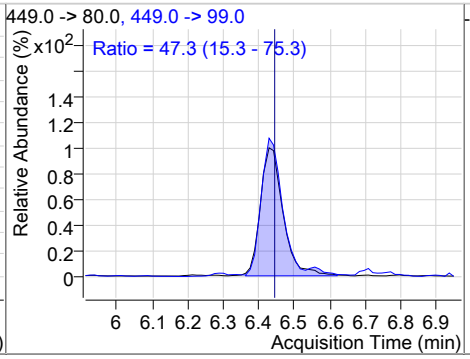


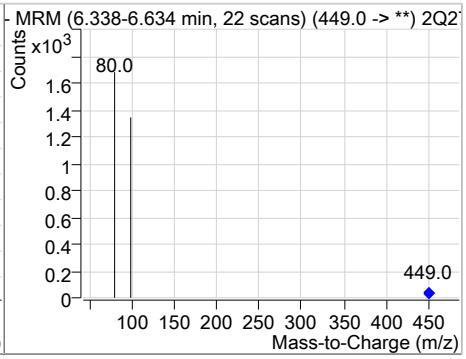




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.48	6.43	-0.01	508	449.0 -> 99.0	47.3	15.3	75.3

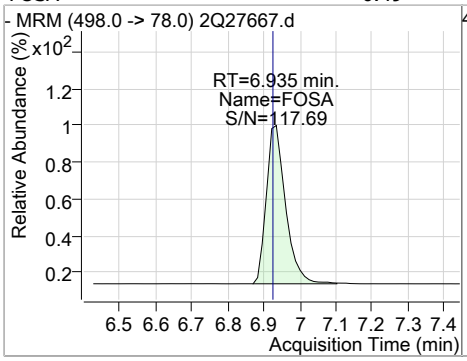


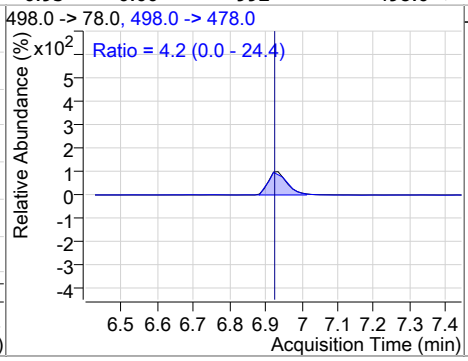


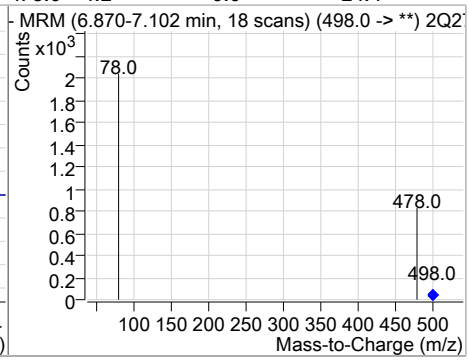


Perfluorinated Compounds by LC/MS/MS

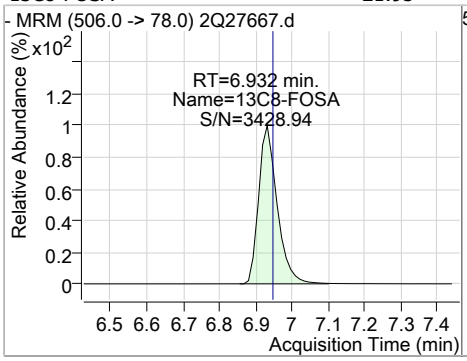
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.49	6.93	0.00	992	498.0 -> 478.0	4.2	0.0	24.4

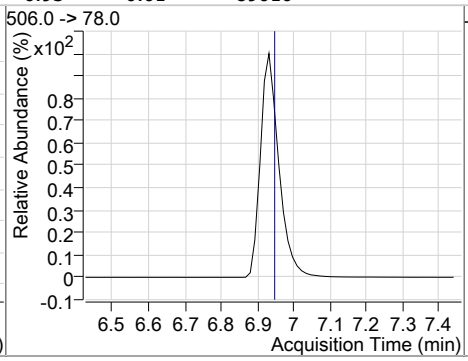


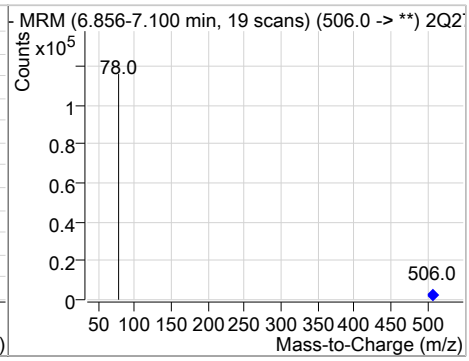




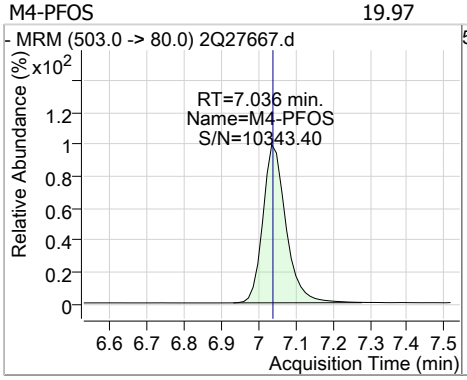
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.95	6.93	-0.01	89010				

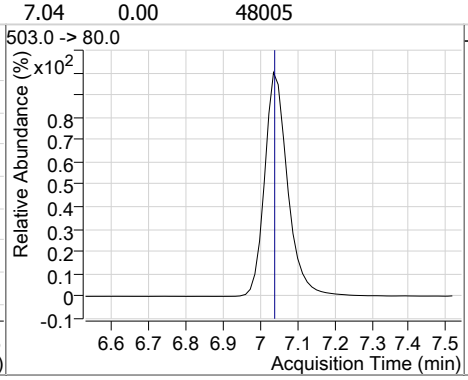


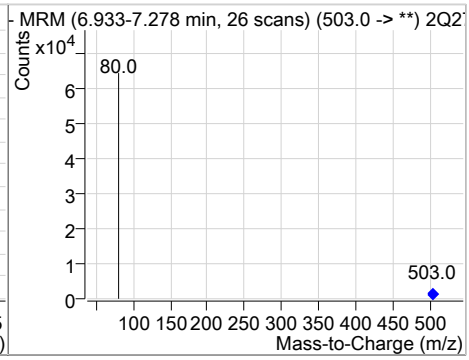




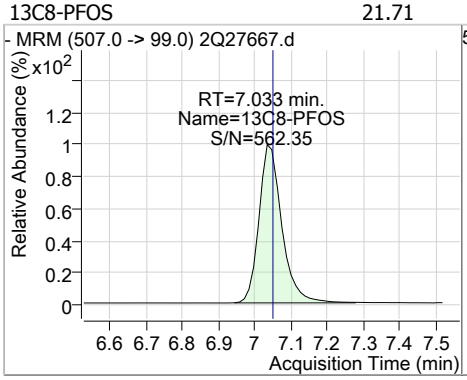
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.97	7.04	0.00	48005				

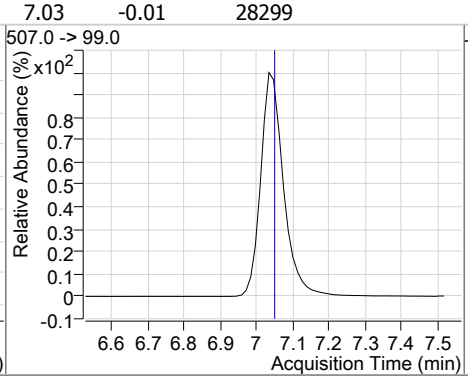


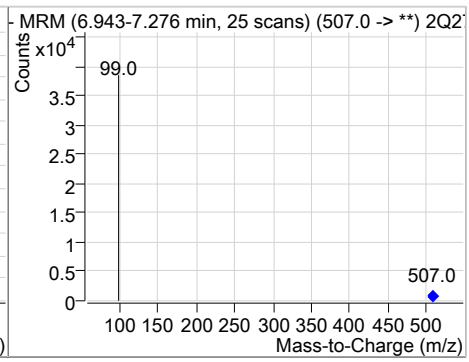




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.71	7.03	-0.01	28299				

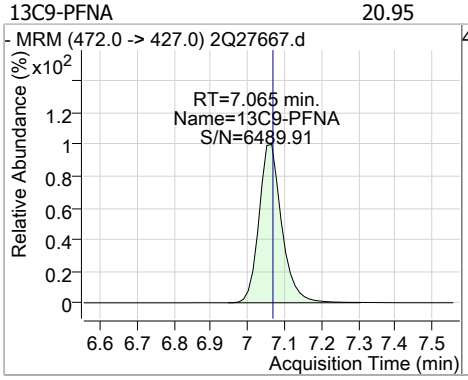


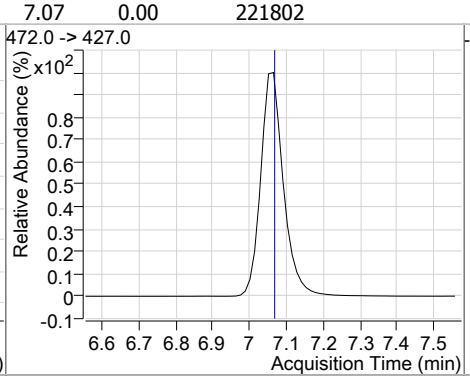


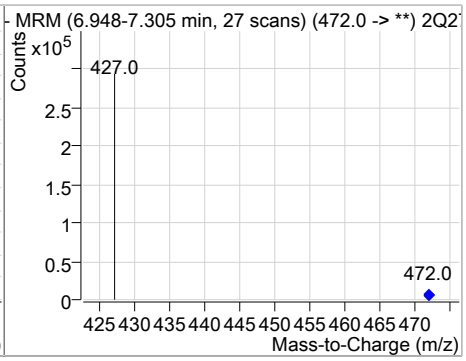


Perfluorinated Compounds by LC/MS/MS

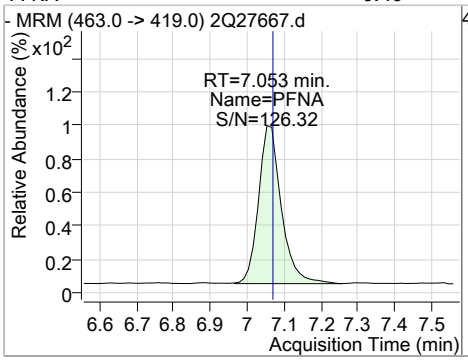
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.95	7.07	0.00	221802				

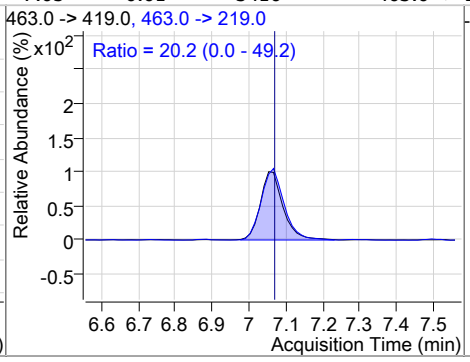


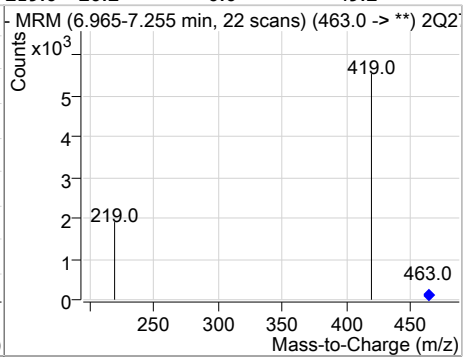




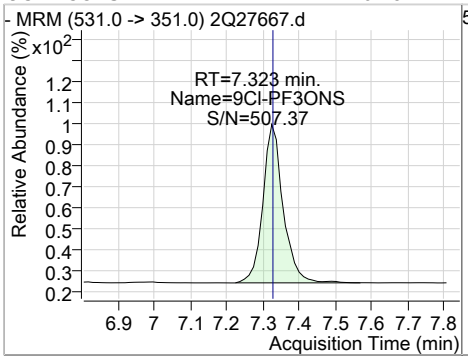
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.46	7.05	-0.01	3416	463.0 -> 219.0	20.2	0.0	49.2

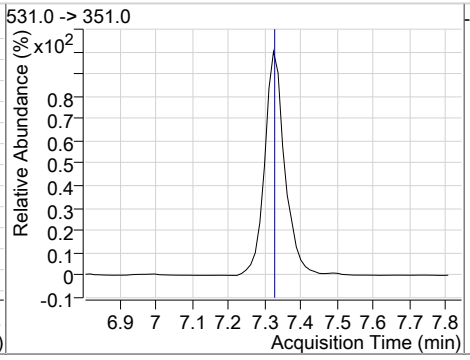


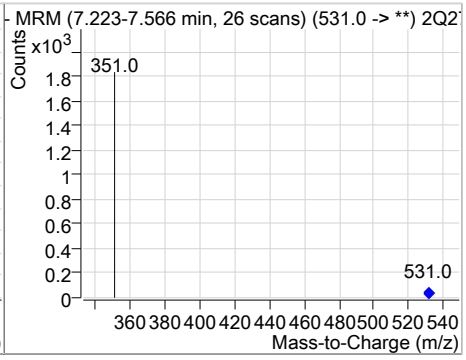




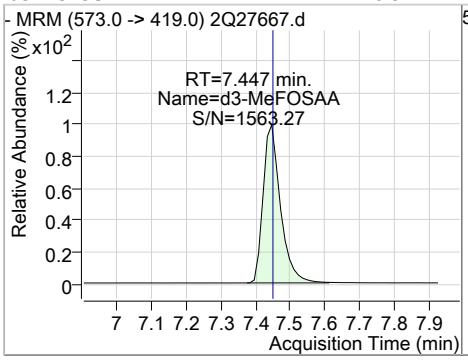
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.48	7.32	0.00	510				

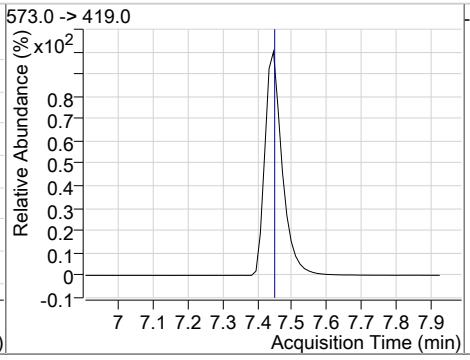


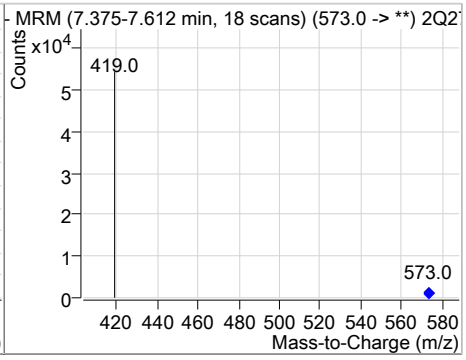




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.97	7.45	0.00	40201				

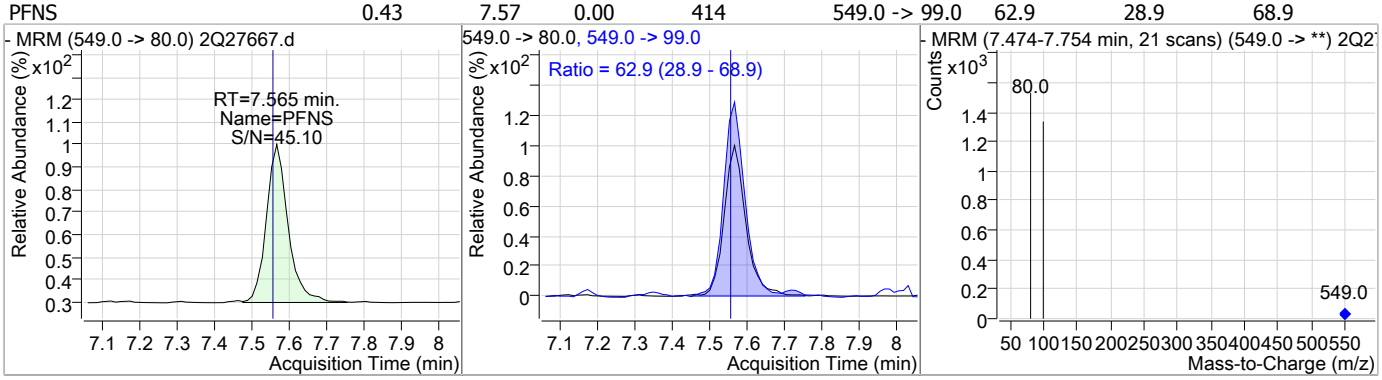




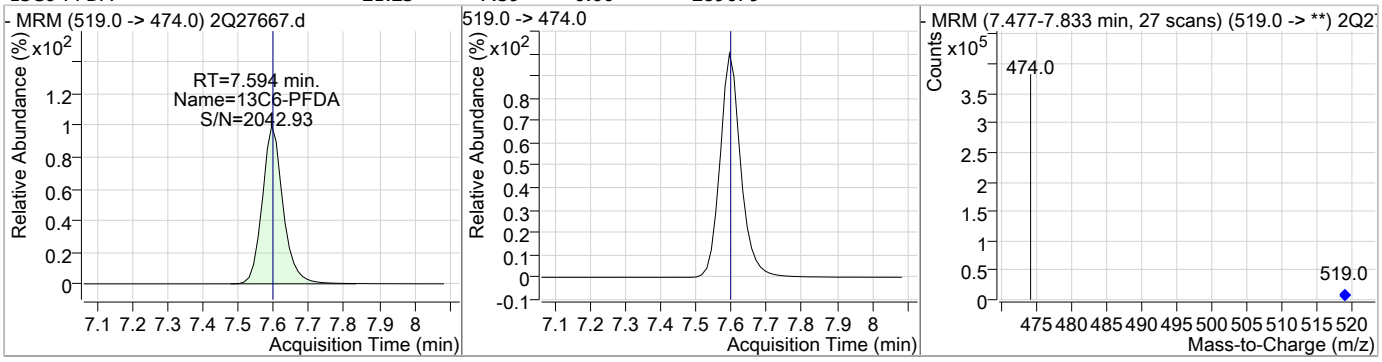


Perfluorinated Compounds by LC/MS/MS

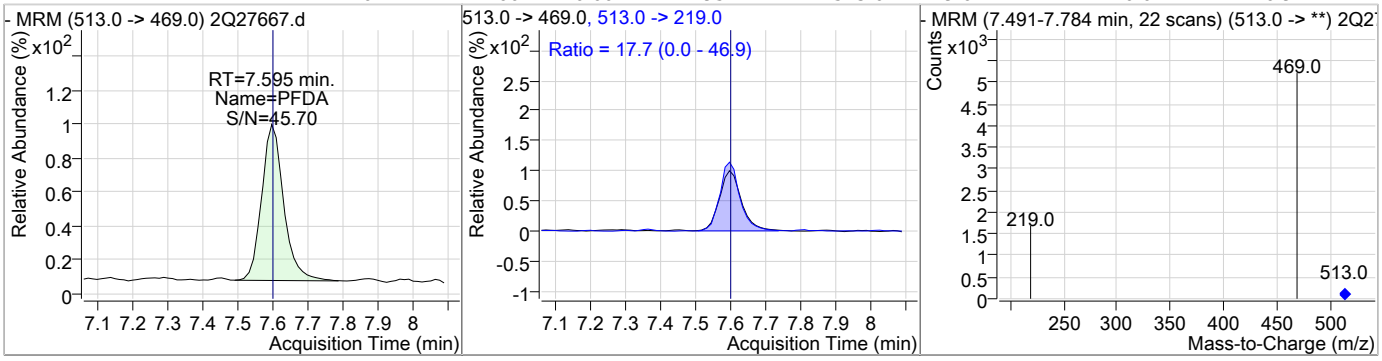
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.43	7.57	0.00	414	549.0 -> 99.0	62.9	28.9	68.9



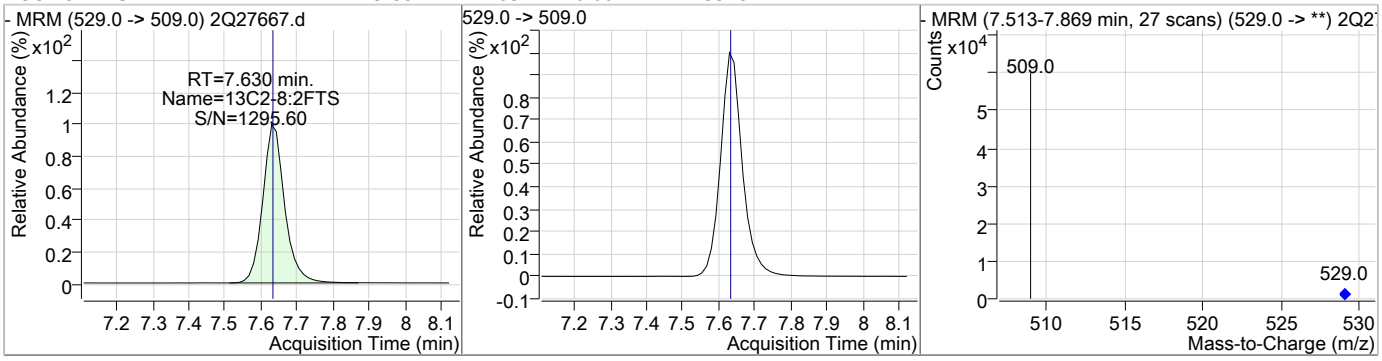
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.23	7.59	0.00	289679				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.47	7.60	0.00	2954	513.0 -> 219.0	17.7	0.0	46.9

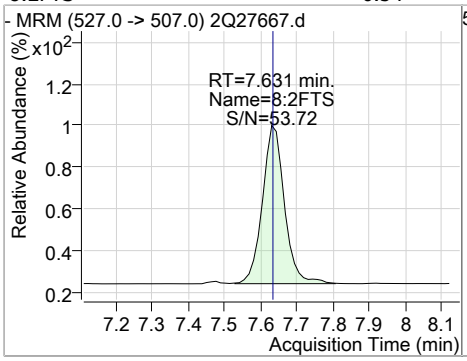


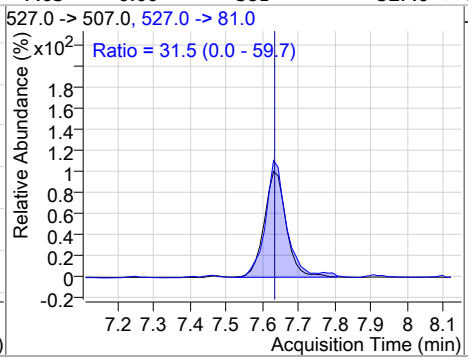
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.55	7.63	0.00	43348				

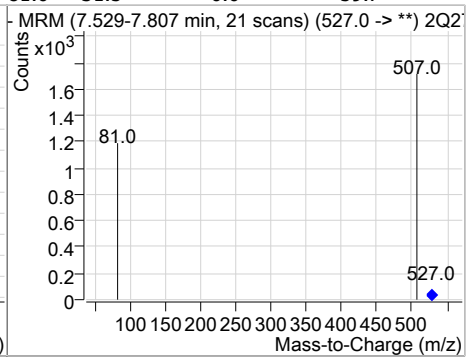


Perfluorinated Compounds by LC/MS/MS

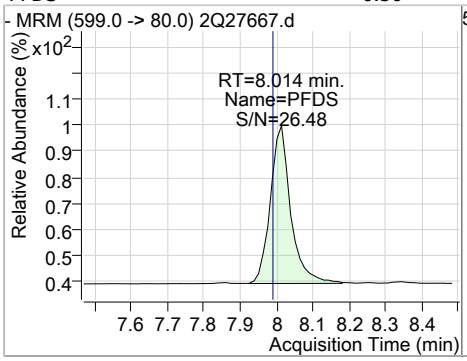
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.54	7.63	0.00	581	527.0 -> 81.0	31.5	0.0	59.7

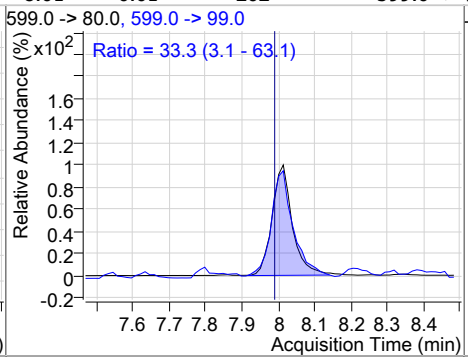


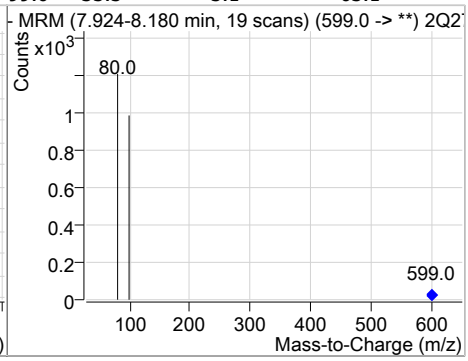




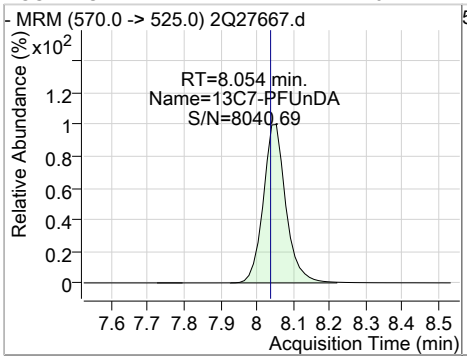
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.50	8.01	0.01	262	599.0 -> 99.0	33.3	3.1	63.1

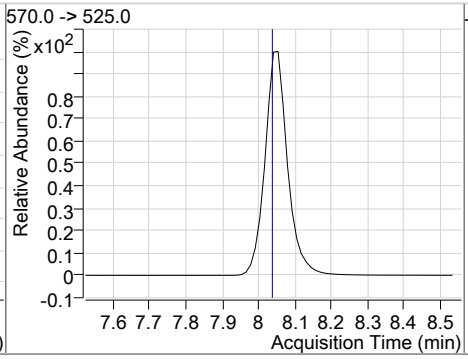


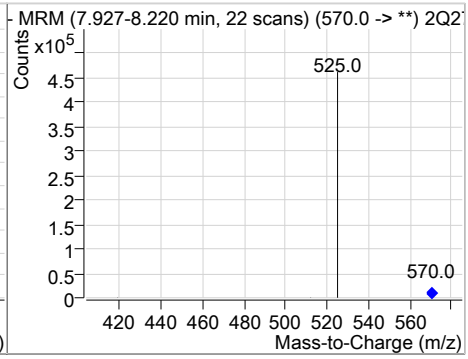




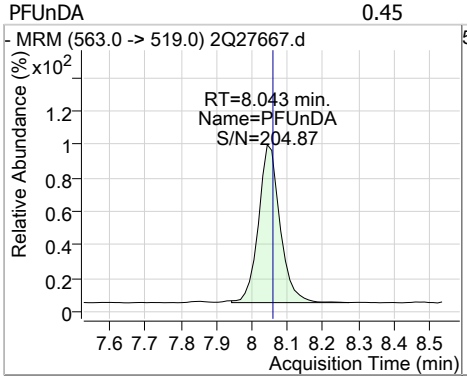
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.71	8.05	0.01	350546				

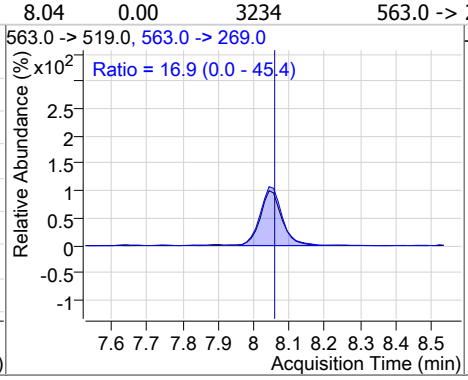


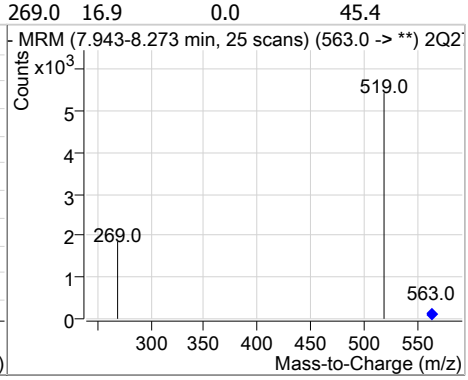




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.45	8.04	0.00	3234	563.0 -> 269.0	16.9	0.0	45.4

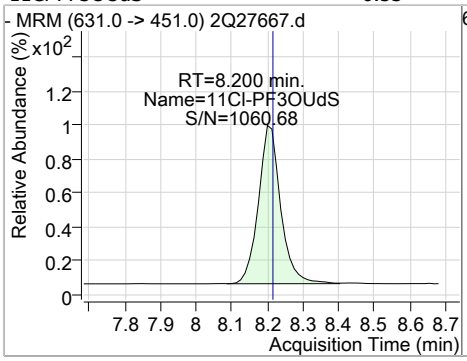


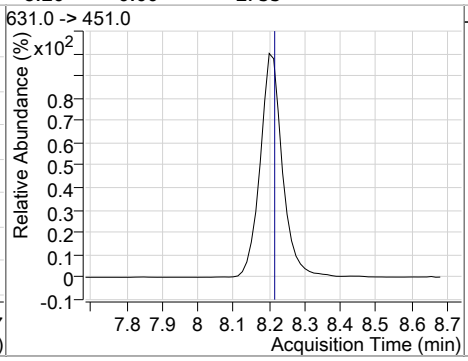


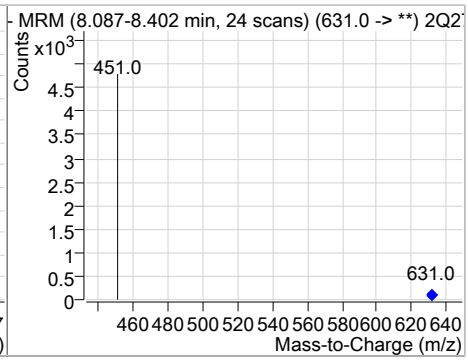


Perfluorinated Compounds by LC/MS/MS

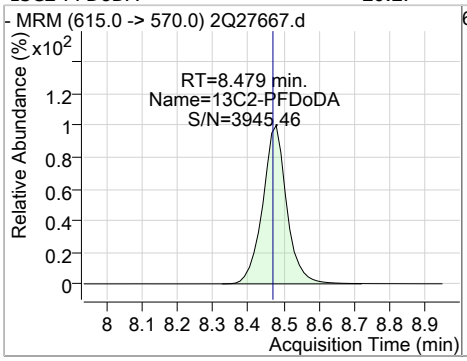
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.53	8.20	0.00	2755				

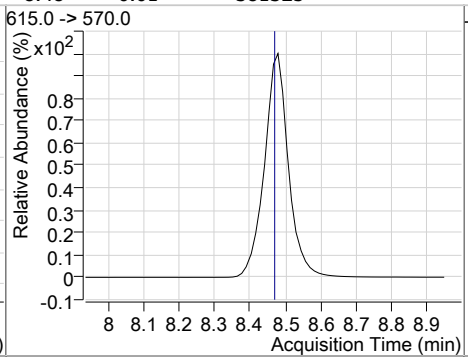


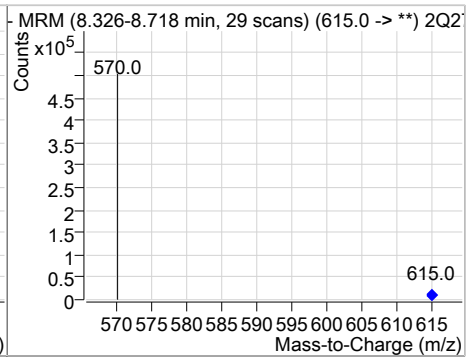




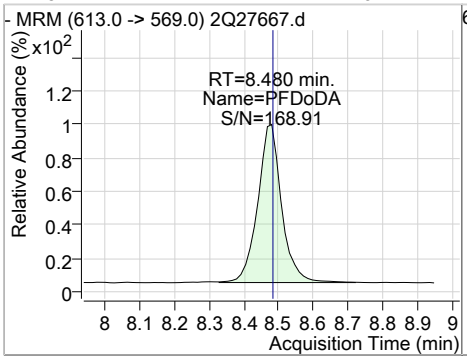
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.27	8.48	0.01	381325				

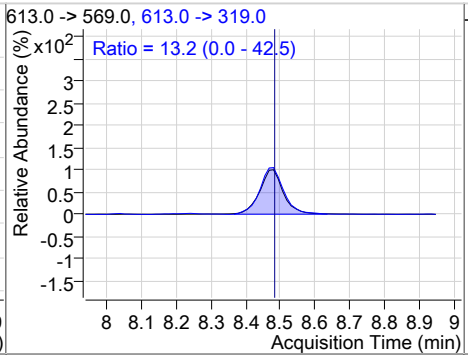


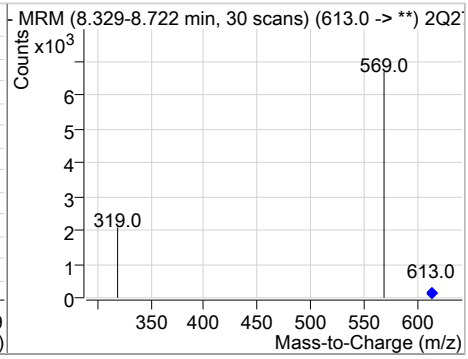




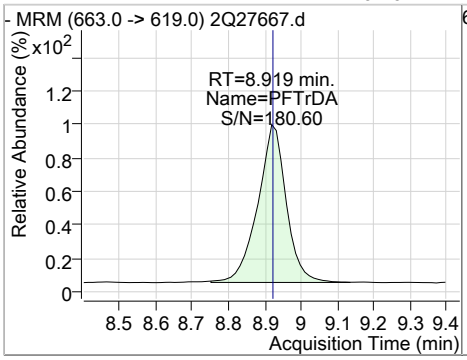
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.47	8.48	0.01	3992	613.0 -> 319.0	13.2	0.0	42.5

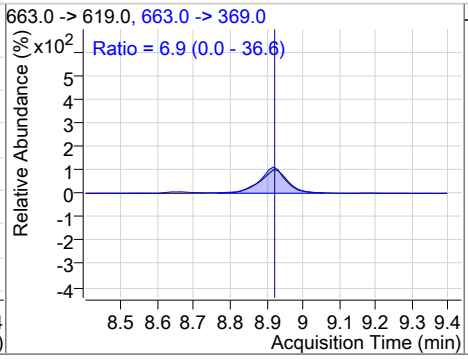


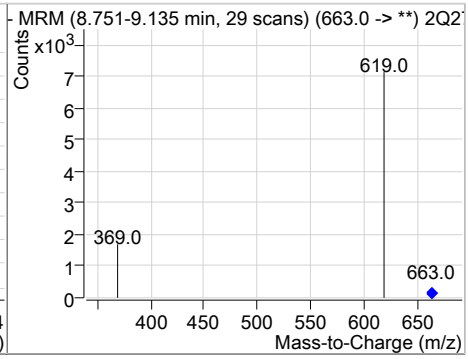




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.46	8.92	0.00	4387	663.0 -> 369.0	6.9	0.0	36.6

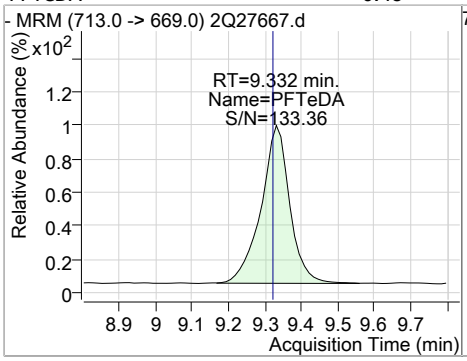


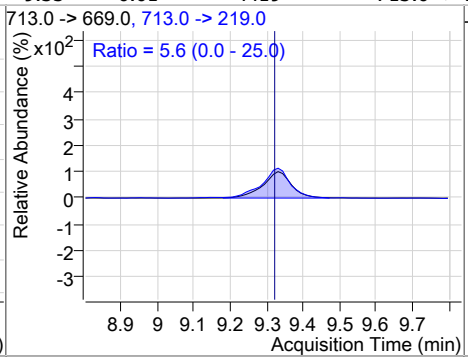


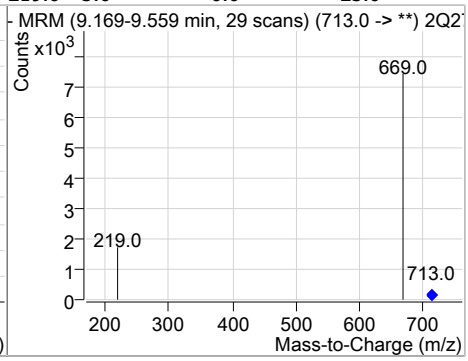


Perfluorinated Compounds by LC/MS/MS

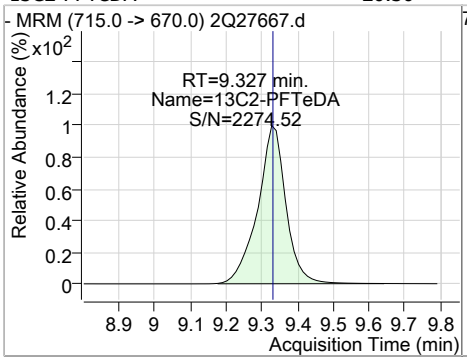
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.48	9.33	0.01	4419	713.0 -> 219.0	5.6	0.0	25.0

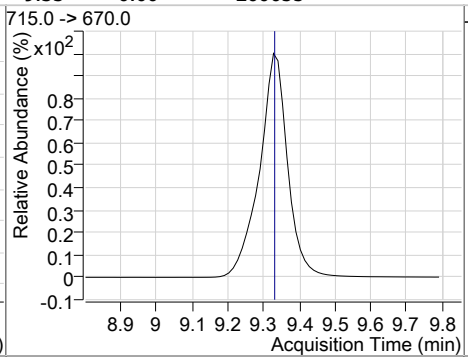


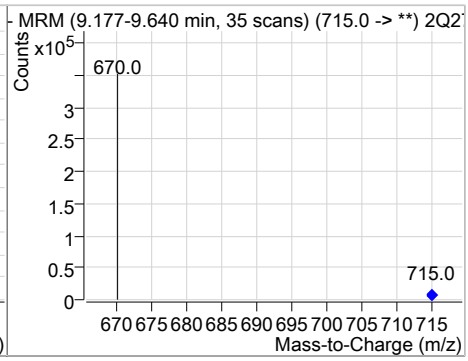




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.30	9.33	0.00	260655				







Manual Integration Approval Summary

Sample Number: S2Q442-IC442
Lab FileID: 2Q27667.D
Injection Time: 03/18/19 08:18
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27668.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:34:20 AM
Sample Name : IC442-1.0
Vial : Vial 3
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

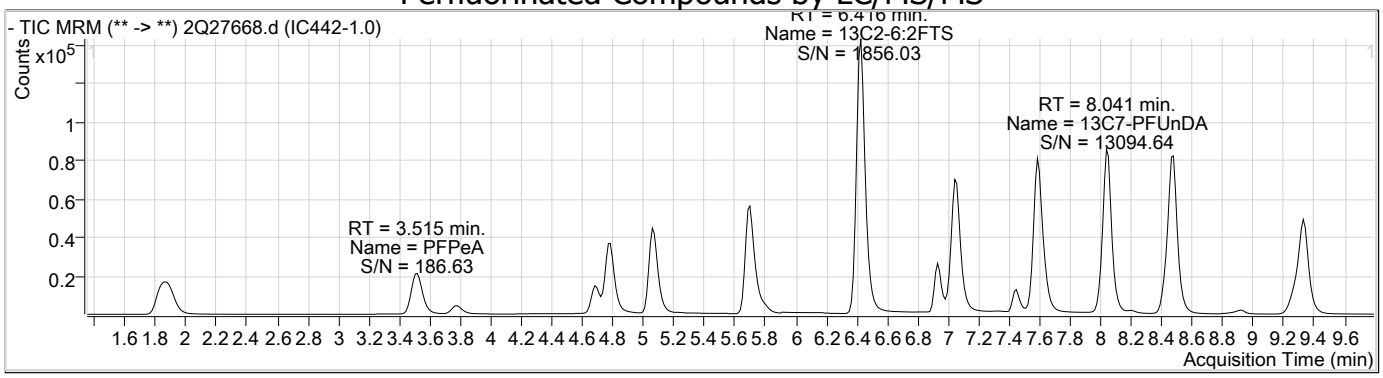
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	300424	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	47993	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	126023	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	105840	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	152335	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	216477	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	221022	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	220266	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	284714	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	351258	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	381204	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	258559	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	87684	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	19148	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21789	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	27340	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	58391	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	63327	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	42612	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	38838	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	173054	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	58212	19.58	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.9%		
13C2-6:2FTS	6.416	429.0 -> 409.0	63312	19.73	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C2-8:2FTS	7.630	529.0 -> 509.0	42601	19.21	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.1%		
13C2-PFDoDA	8.479	615.0 -> 570.0	380634	20.24	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C2-PFTeDA	9.327	715.0 -> 670.0	257683	20.07	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C3-PFBS	3.767	302.0 -> 99.0	19097	20.94	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C3-PFHxS	5.736	402.0 -> 99.0	21759	21.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.7%		
13C4-PFBA	1.865	217.0 -> 172.0	125482	20.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C4-PFHpA	5.705	367.0 -> 322.0	216418	20.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C5-PFHxA	4.789	318.0 -> 273.0	152076	20.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C5-PFPeA	3.524	268.0 -> 223.0	105846	20.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C6-PFDA	7.594	519.0 -> 474.0	283962	20.81	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

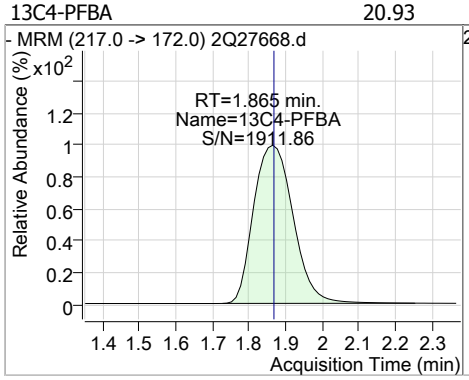
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C7-PFUnDA	8.041	570.0 -> 525.0	351164	20.75 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%		
13C8-FOSA	6.932	506.0 -> 78.0	87701	21.63 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.1%		
13C8-PFOA	6.434	421.0 -> 376.0	220862	21.17 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.9%		
13C8-PFOS	7.033	507.0 -> 99.0	27343	20.98 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C9-PFNA	7.065	472.0 -> 427.0	220168	20.79 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
d3-MeFOSAA	7.447	573.0 -> 419.0	38899	20.29 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
M2-PFOA	6.435	415.0 -> 370.0	300789	20.01 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	48057	20.02 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	173054	108.22 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 108.2%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	1722	1.07 µg/L		93
6:2FTS	6.418	427.0 -> 407.0	1700	1.09 µg/L		98
8:2FTS	7.631	527.0 -> 507.0	1027	0.96 µg/L		91
EtFOSAA	7.585	584.0 -> 419.0	960	1.15 µg/L		94
FOSA	6.935	498.0 -> 78.0	1873	0.93 µg/L		98
MeFOSAA	7.447	570.0 -> 419.0	1018	1.03 µg/L		98
PFBA	1.860	213.0 -> 169.0	1237	0.99 µg/L		100
PFBS	3.771	299.0 -> 80.0	1481	0.97 µg/L		99
PFDA	7.595	513.0 -> 469.0	5841	0.94 µg/L		97
PFDoDA	8.468	613.0 -> 569.0	8162	0.96 µg/L		98
PFDS	8.001	599.0 -> 80.0	520	1.03 µg/L		94
PFHpA	5.695	363.0 -> 319.0	9156	0.98 µg/L		99
PFHpS	6.442	449.0 -> 80.0	1090	1.03 µg/L		92
PFHxA	4.791	313.0 -> 269.0	2553	0.97 µg/L		100
PFHxS	5.739	399.0 -> 80.0	1090	0.90 µg/L	m	100
PFNA	7.066	463.0 -> 419.0	6786	0.93 µg/L		97
PFNS	7.565	549.0 -> 80.0	1047	1.12 µg/L		91
PFOA	6.437	413.0 -> 369.0	5758	0.96 µg/L		99
PFOS	7.037	499.0 -> 80.0	1263	0.95 µg/L	m	84
PFPeA	3.515	263.0 -> 219.0	4476	0.98 µg/L		100
PFPeS	4.895	349.0 -> 80.0	947	0.97 µg/L		96
PFTeDA	9.332	713.0 -> 669.0	8669	0.96 µg/L		99
PFTrDA	8.919	663.0 -> 619.0	8809	0.94 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	6706	0.93 µg/L		98
11Cl-PF3OUdS	8.200	631.0 -> 451.0	5392	1.03 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	1088	1.03 µg/L		100
ADONA	5.804	377.0 -> 251.0	10434	0.97 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	9674	4.71 µg/L		98

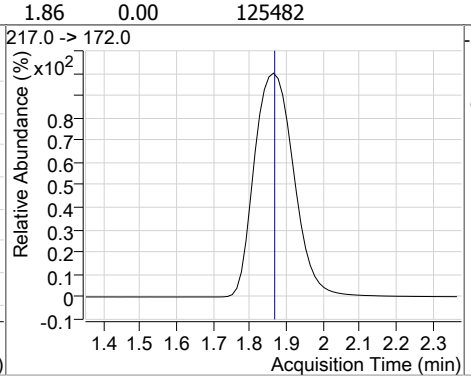
 # = Qualifier out of range, m = manually integrated, + = Area summed

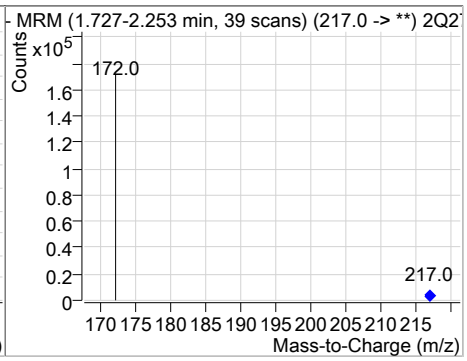
Perfluorinated Compounds by LC/MS/MS



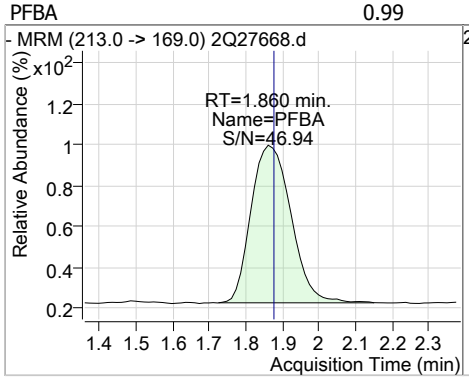
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.93	1.86	0.00	125482				

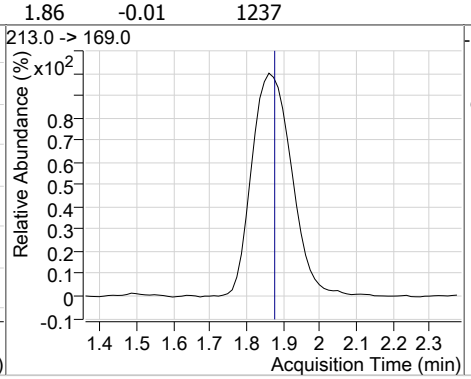


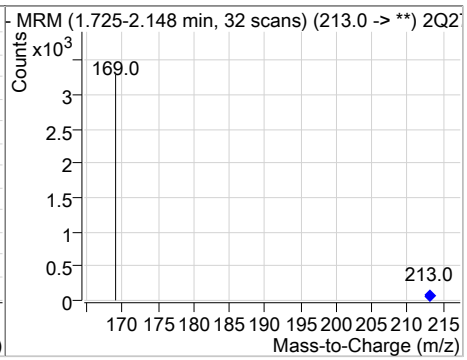




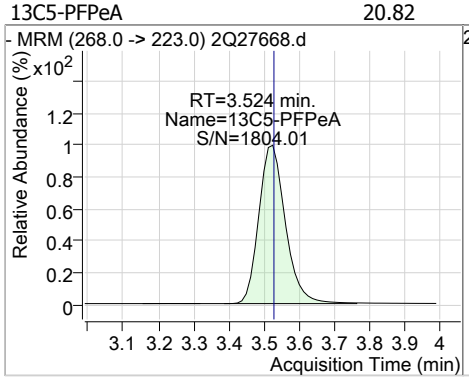
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.99	1.86	-0.01	1237				

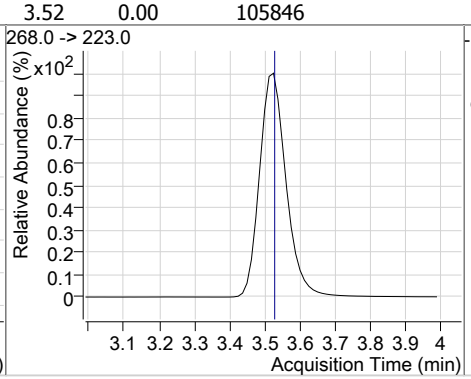


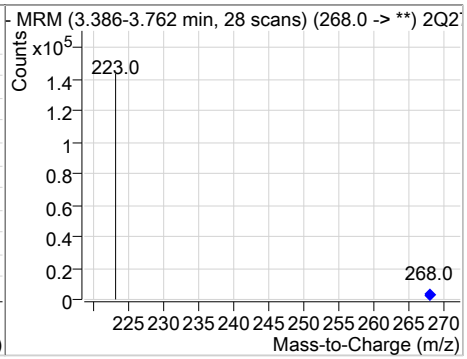




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.82	3.52	0.00	105846				

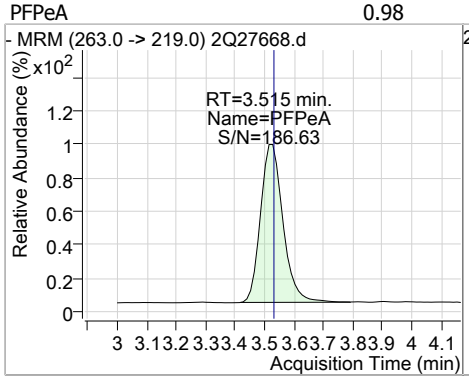


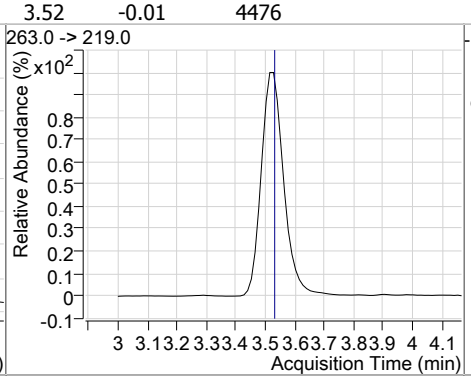


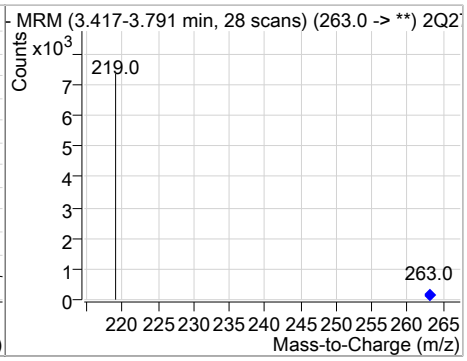


Perfluorinated Compounds by LC/MS/MS

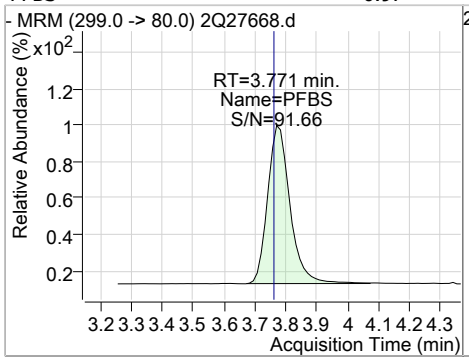
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.98	3.52	-0.01	4476				

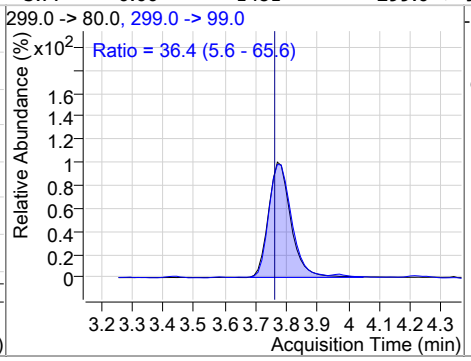


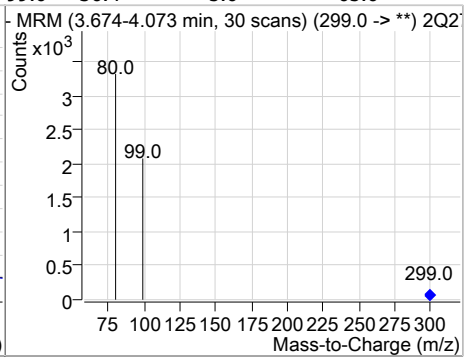




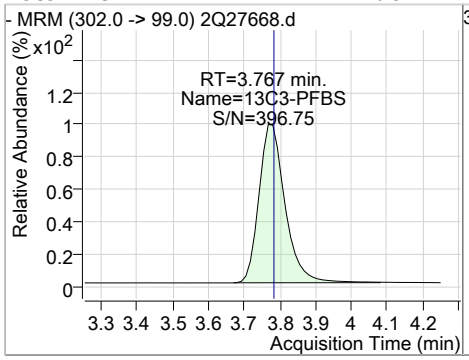
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.97	3.77	0.00	1481	299.0 -> 99.0	36.4	5.6	65.6

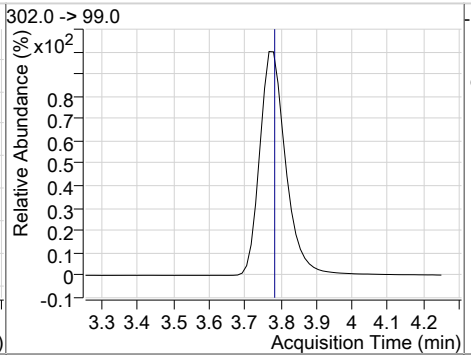


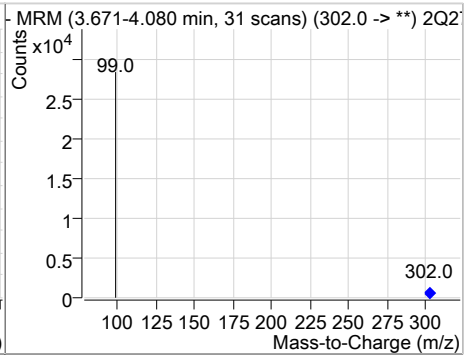




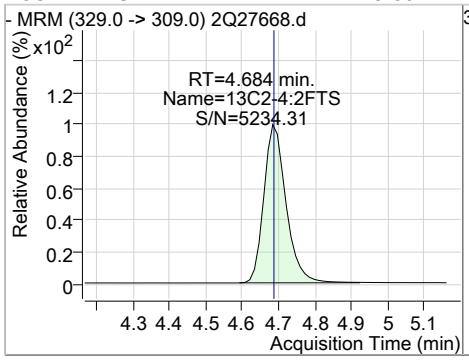
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.94	3.77	-0.01	19097				

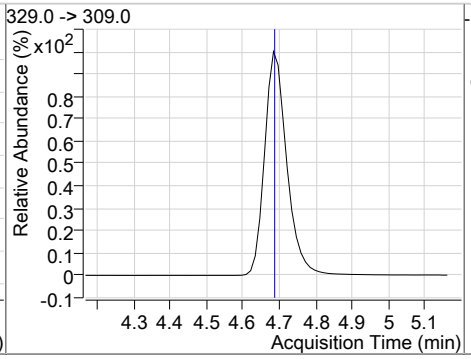


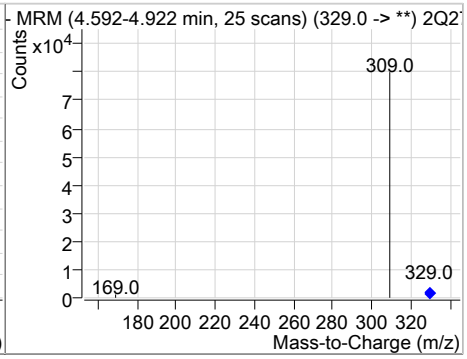




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.58	4.68	0.00	58212				

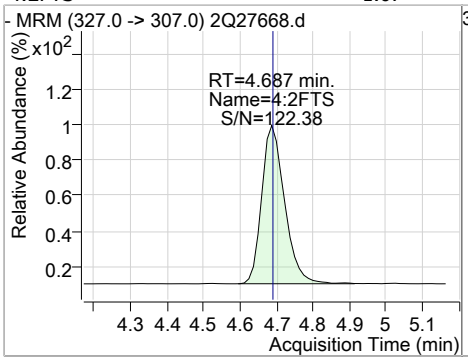


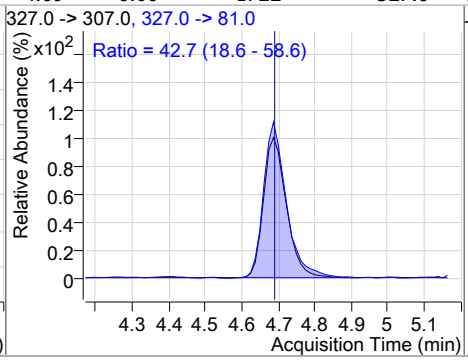


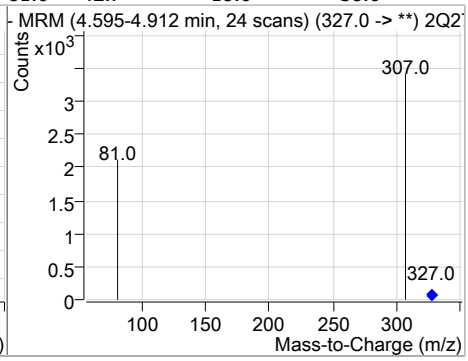


Perfluorinated Compounds by LC/MS/MS

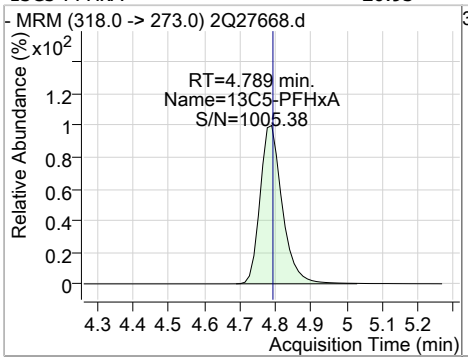
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.07	4.69	0.00	1722	327.0 -> 81.0	42.7	18.6	58.6

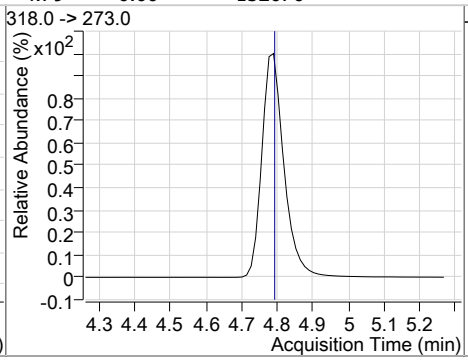


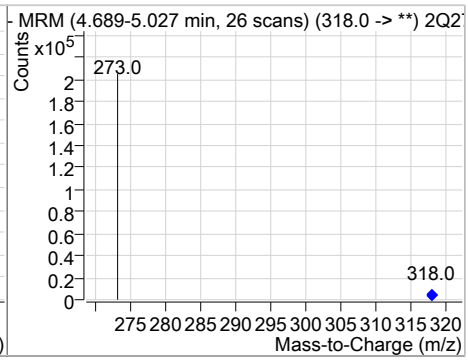




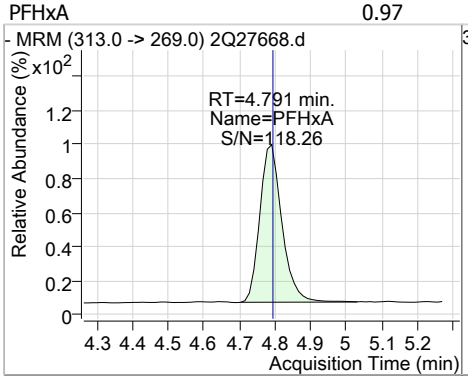
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.93	4.79	0.00	152076				

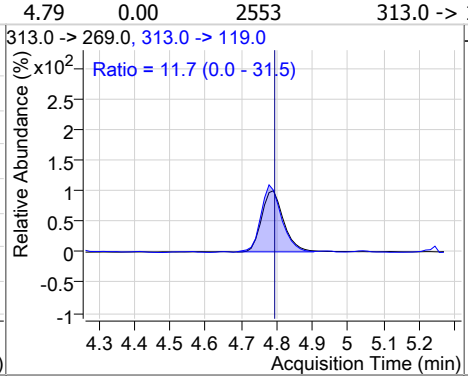


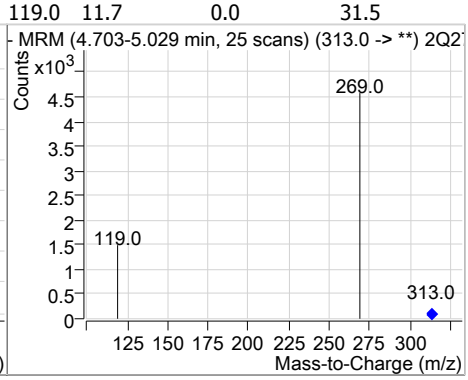




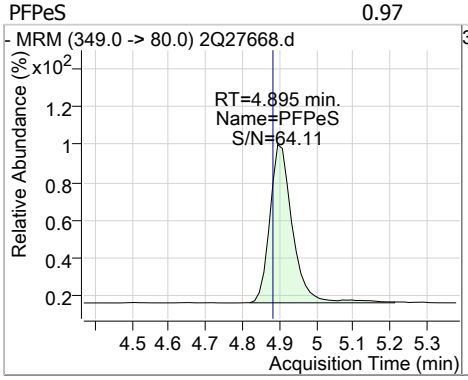
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.97	4.79	0.00	2553	313.0 -> 119.0	11.7	0.0	31.5

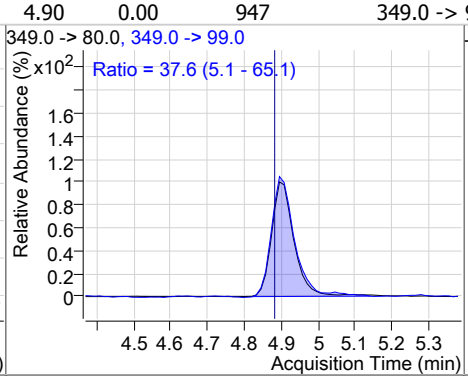


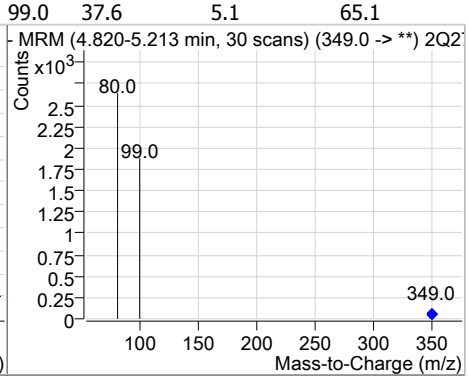




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.97	4.90	0.00	947	349.0 -> 99.0	37.6	5.1	65.1

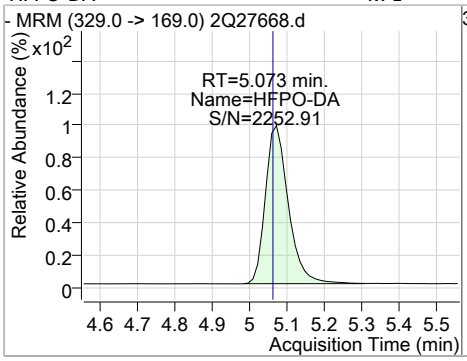


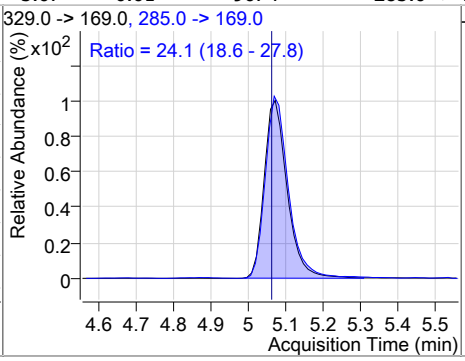


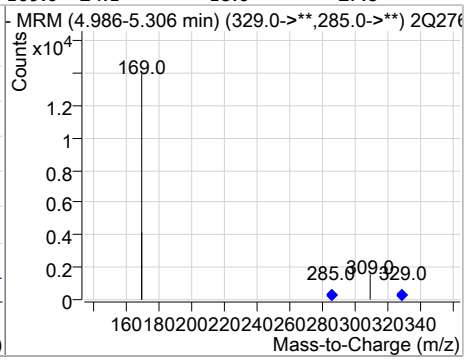


Perfluorinated Compounds by LC/MS/MS

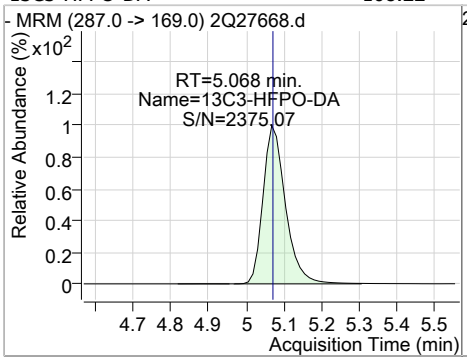
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.71	5.07	0.01	9674	285.0 -> 169.0	24.1	18.6	27.8

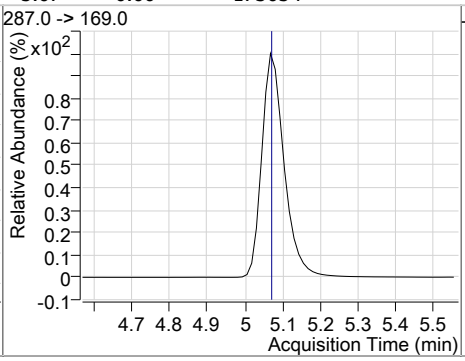


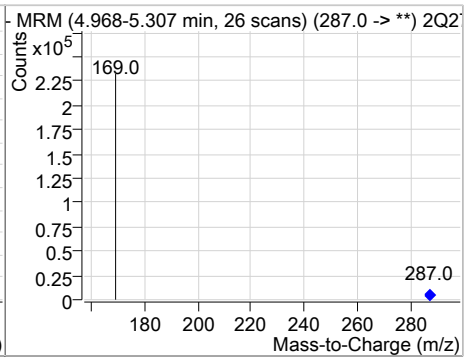




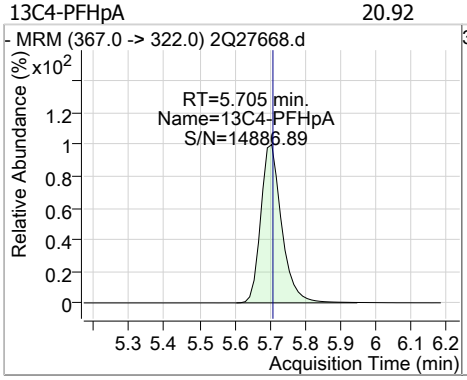
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	108.22	5.07	0.00	173054				

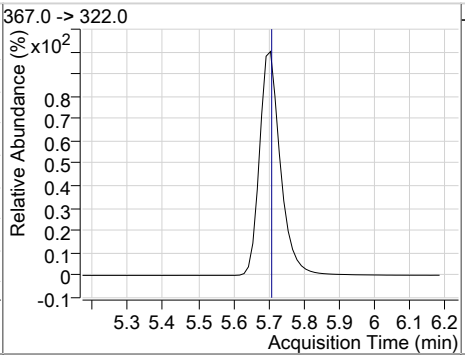


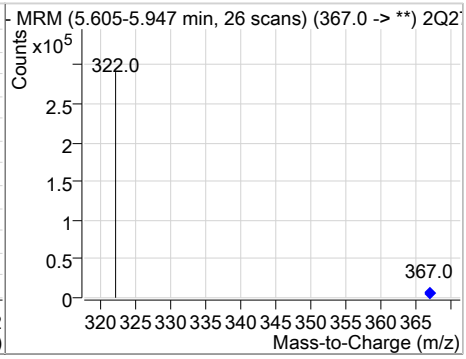




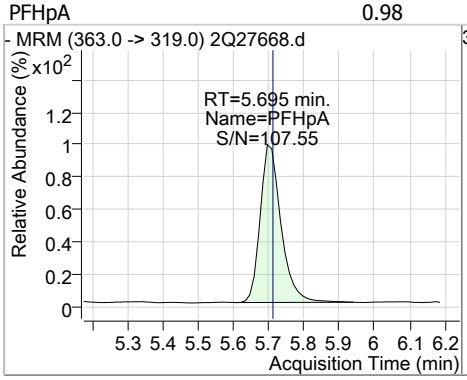
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.92	5.71	0.00	216418				

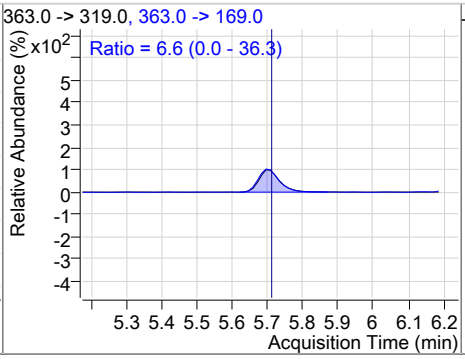


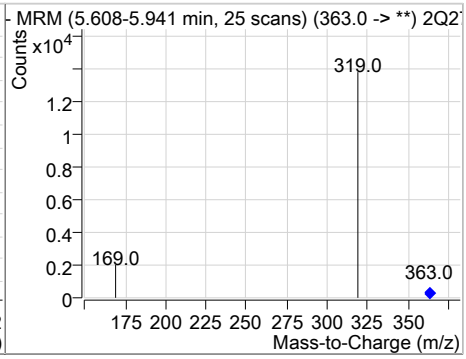




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.98	5.70	-0.01	9156	363.0 -> 169.0	6.6	0.0	36.3

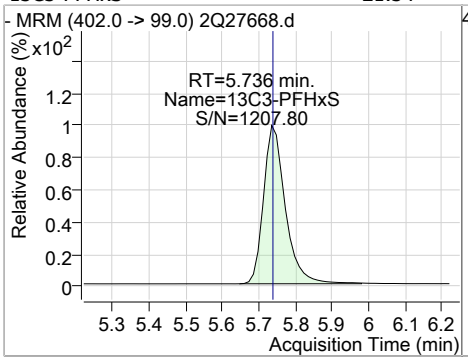


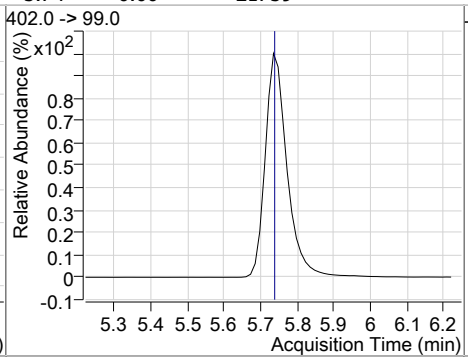


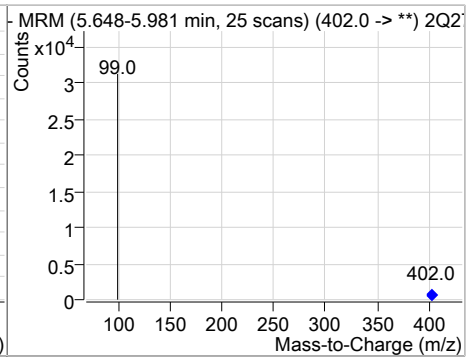


Perfluorinated Compounds by LC/MS/MS

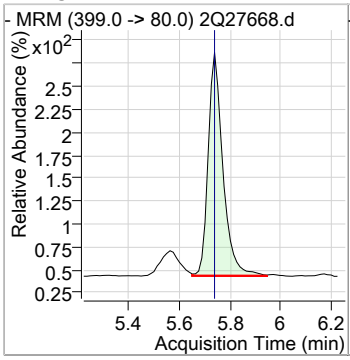
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.34	5.74	0.00	21759				

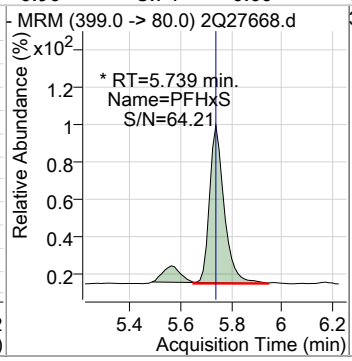


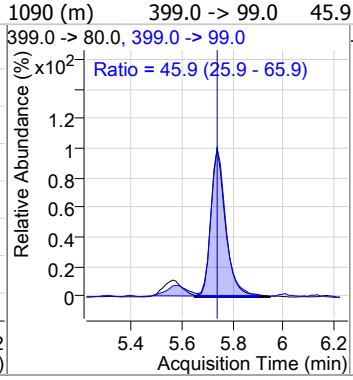


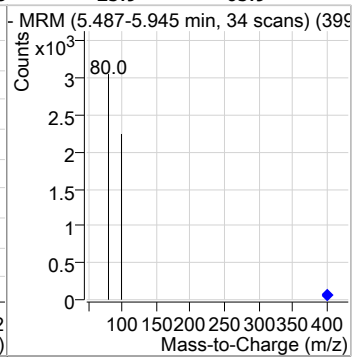


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.90	5.74	0.00	1090 (m)	399.0 -> 99.0	45.9	25.9	65.9

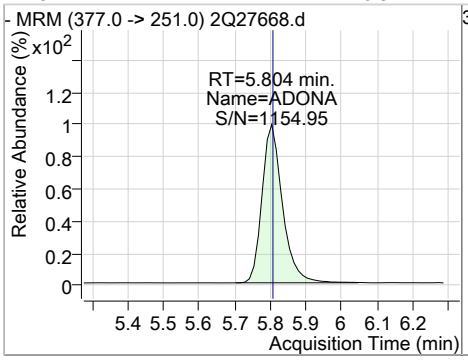


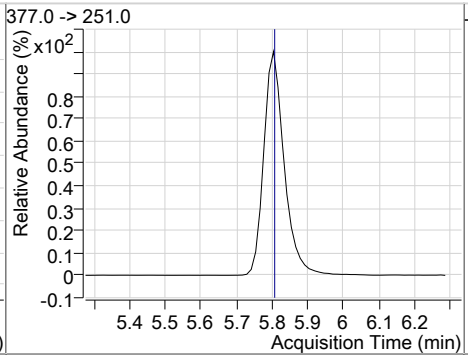


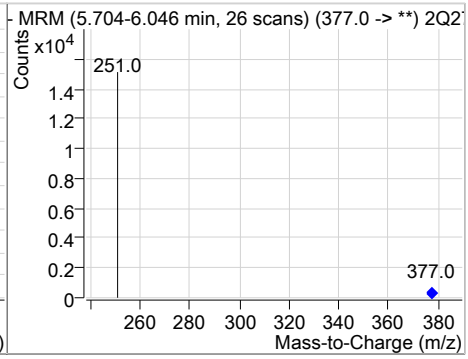




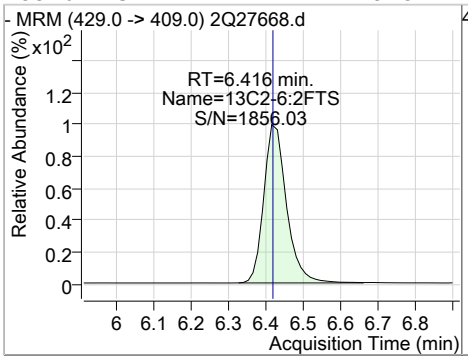
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.97	5.80	0.00	10434				

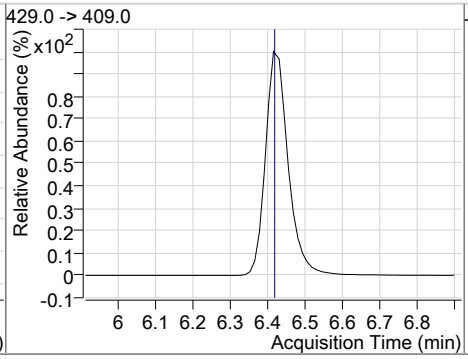


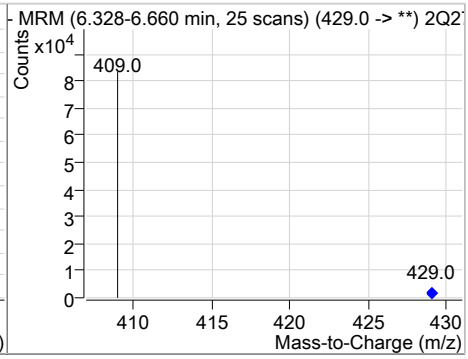




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.73	6.42	0.00	63312				

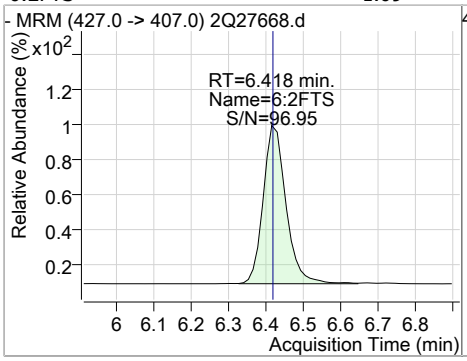


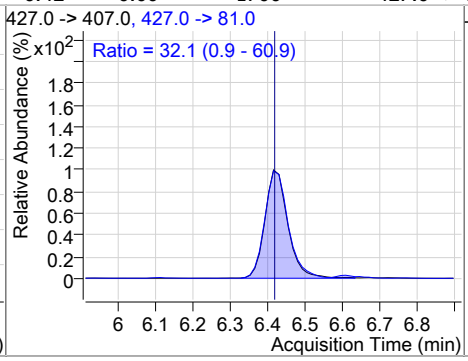


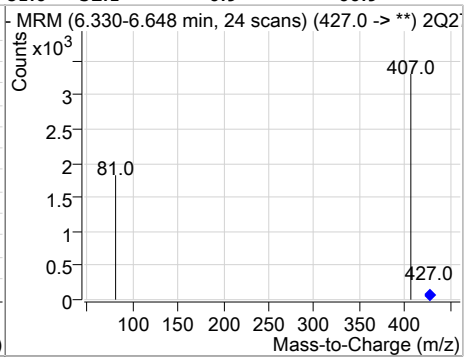


Perfluorinated Compounds by LC/MS/MS

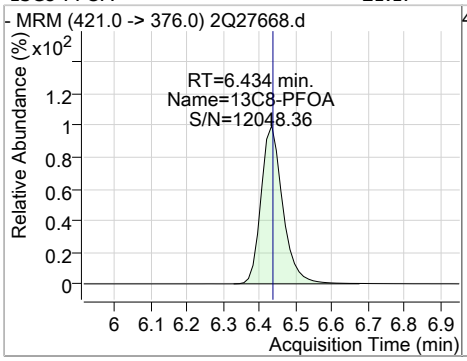
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.09	6.42	0.00	1700	427.0 -> 81.0	32.1	0.9	60.9

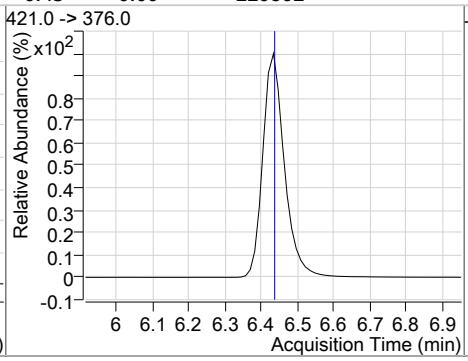


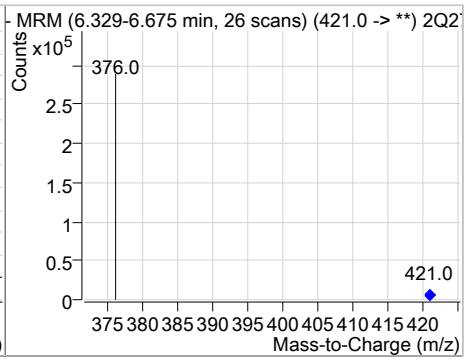




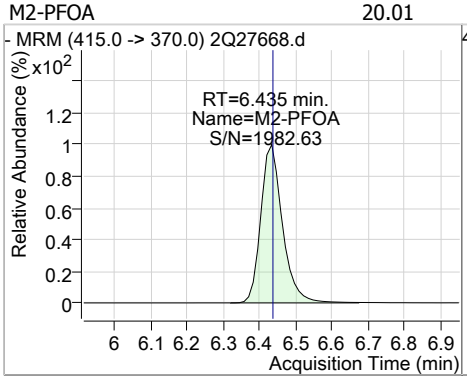
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.17	6.43	0.00	220862				

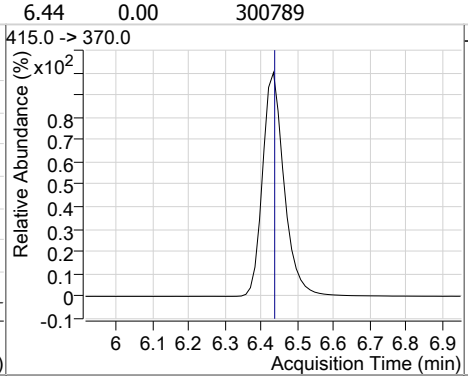


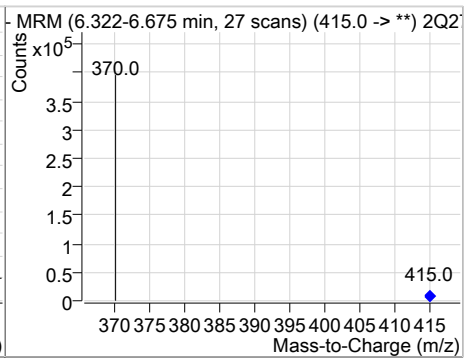




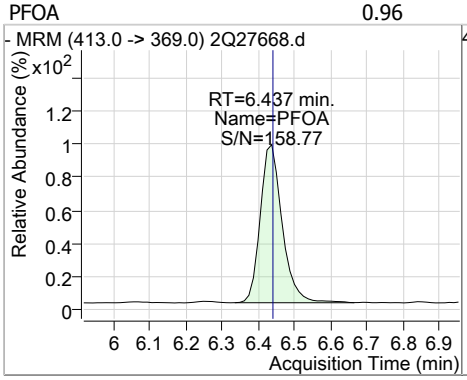
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.44	0.00	300789				

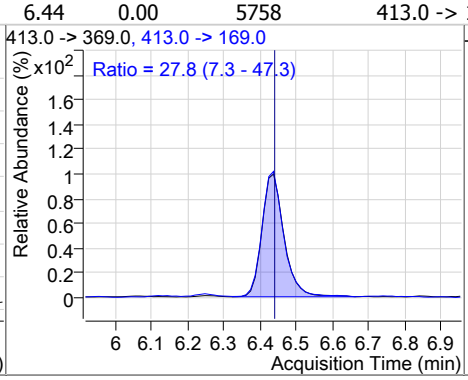


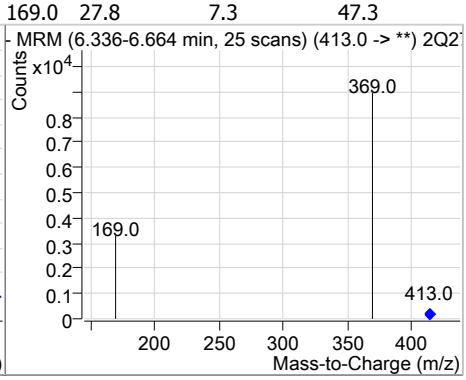




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.96	6.44	0.00	5758	413.0 -> 169.0	27.8	7.3	47.3

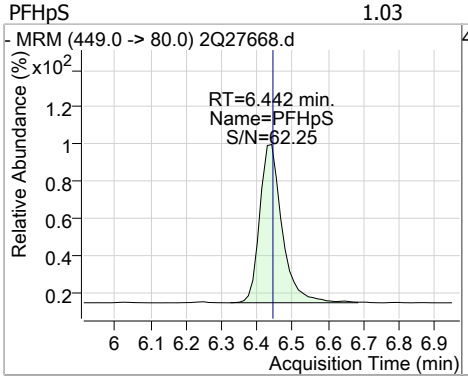


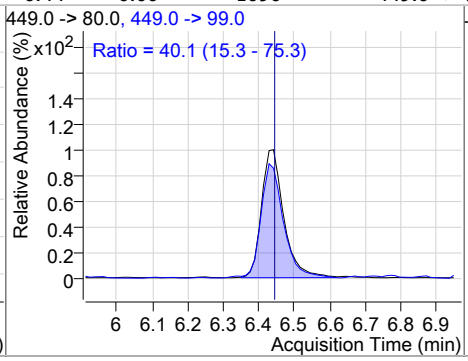


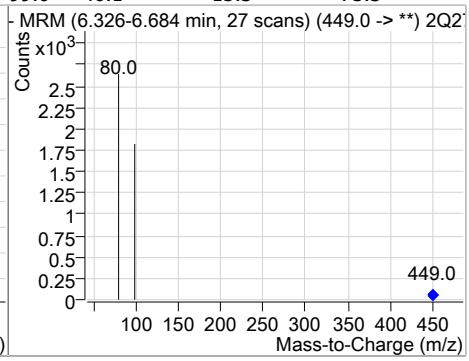


Perfluorinated Compounds by LC/MS/MS

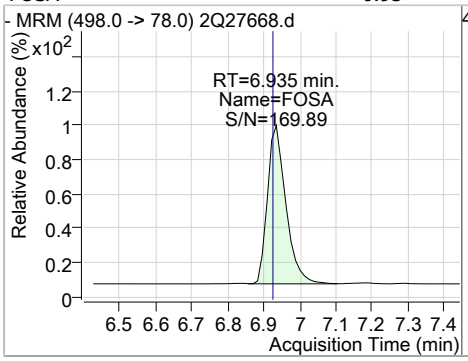
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.03	6.44	0.00	1090	449.0 -> 99.0	40.1	15.3	75.3

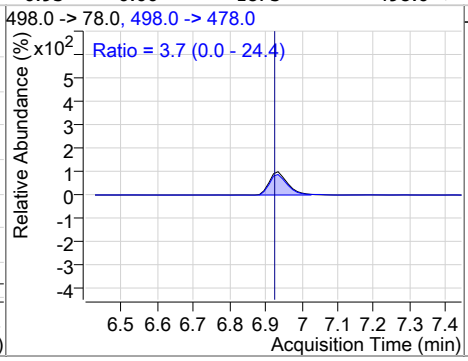


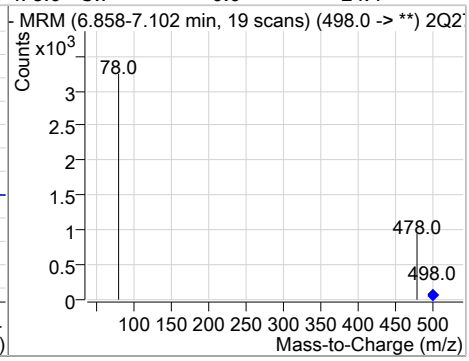




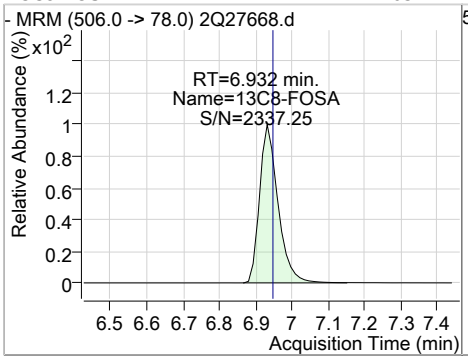
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.93	6.93	0.00	1873	498.0 -> 478.0	3.7	0.0	24.4

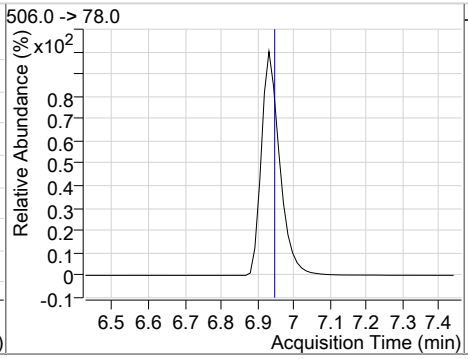


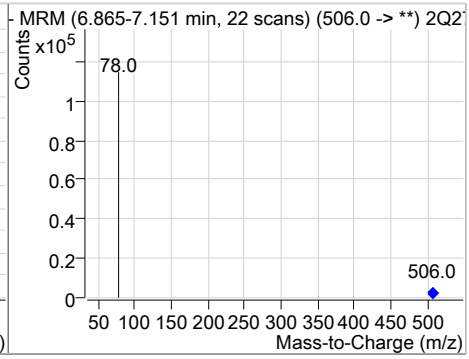




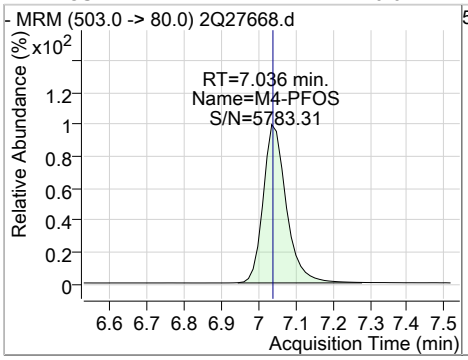
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.63	6.93	-0.01	87701				

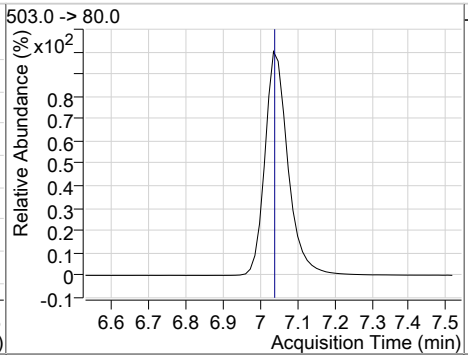


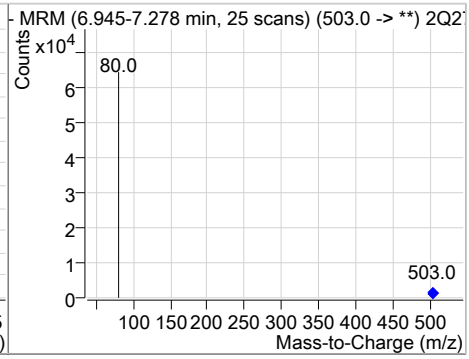




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.04	0.00	48057				

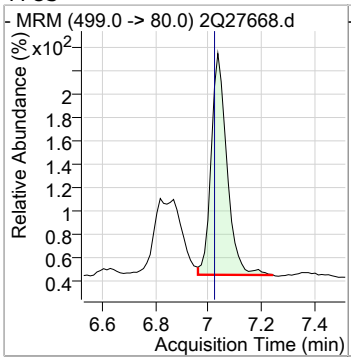


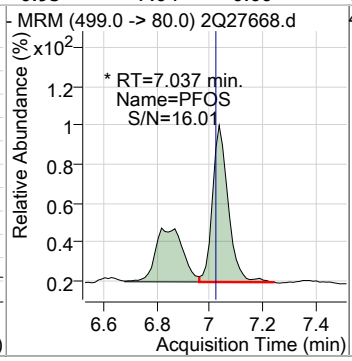


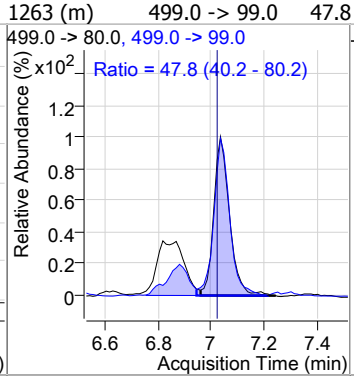


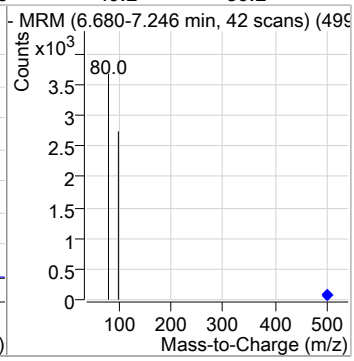
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.95	7.04	0.00	1263 (m)	499.0 -> 99.0	47.8	40.2	80.2

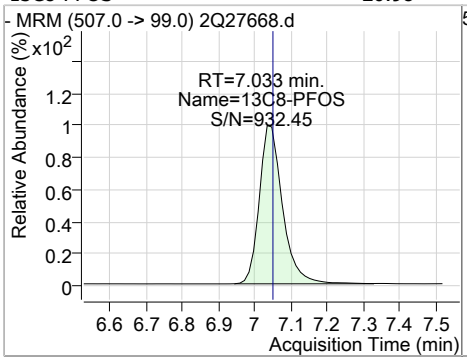


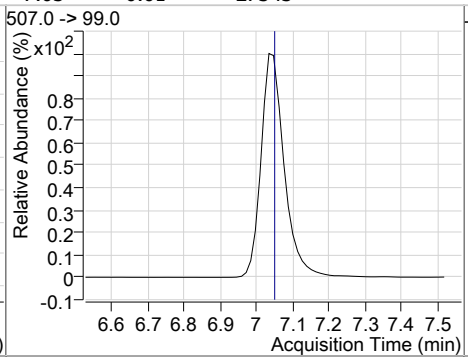


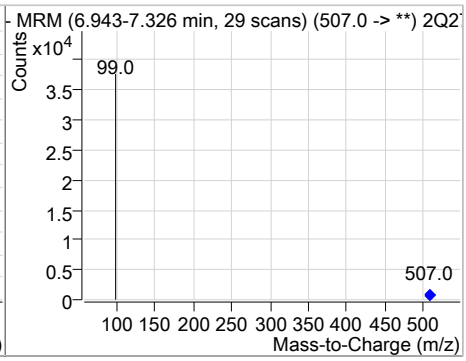




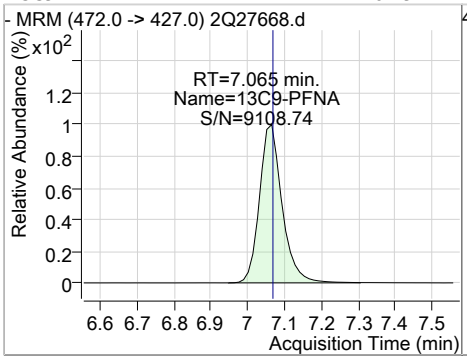
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.98	7.03	-0.01	27343				

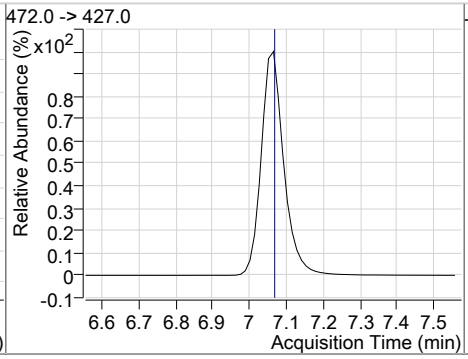


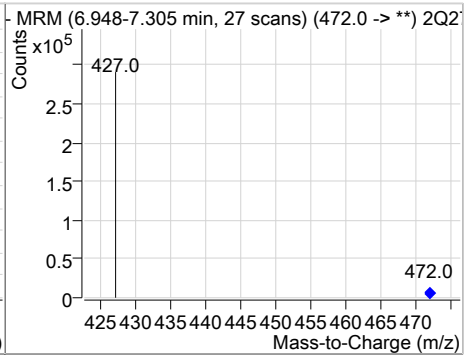




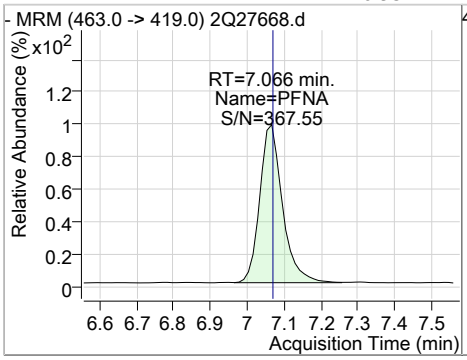
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.79	7.07	0.00	220168				

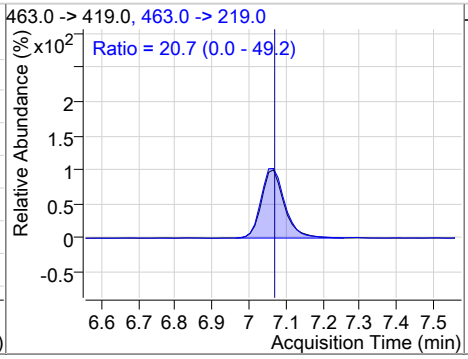


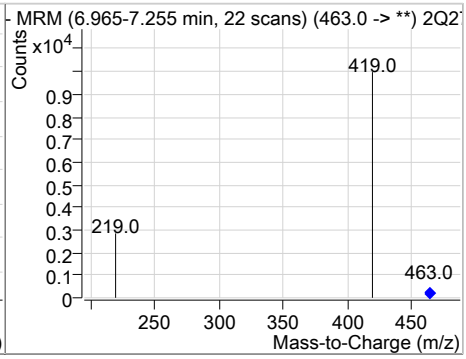




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.93	7.07	0.00	6786	463.0 -> 219.0	20.7	0.0	49.2

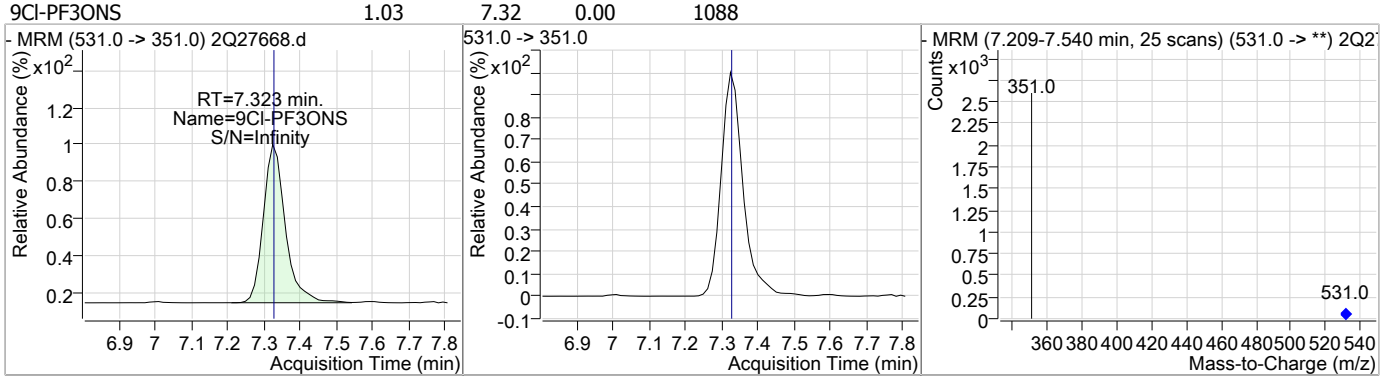




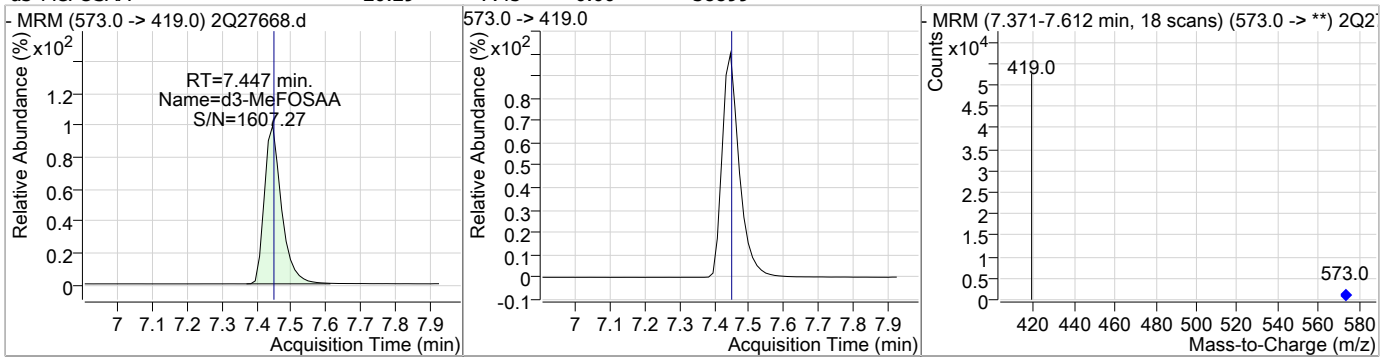


Perfluorinated Compounds by LC/MS/MS

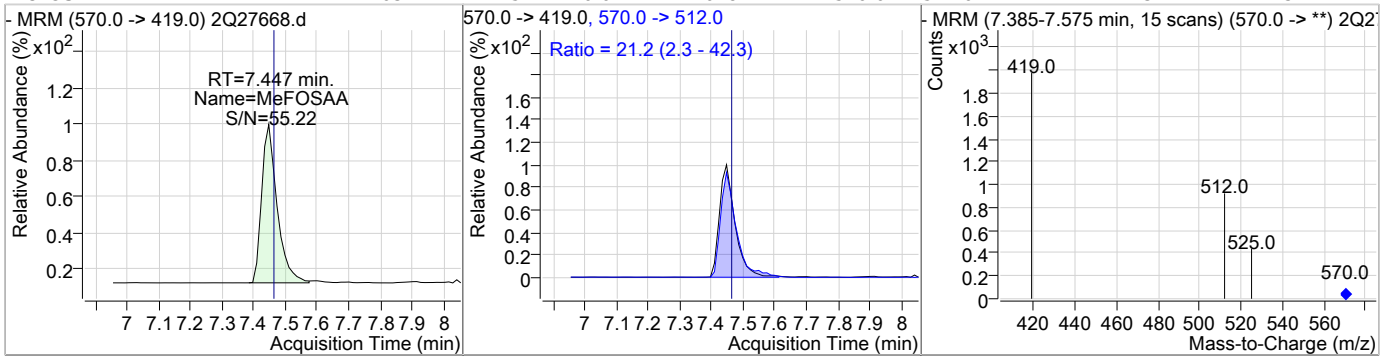
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.03	7.32	0.00	1088				



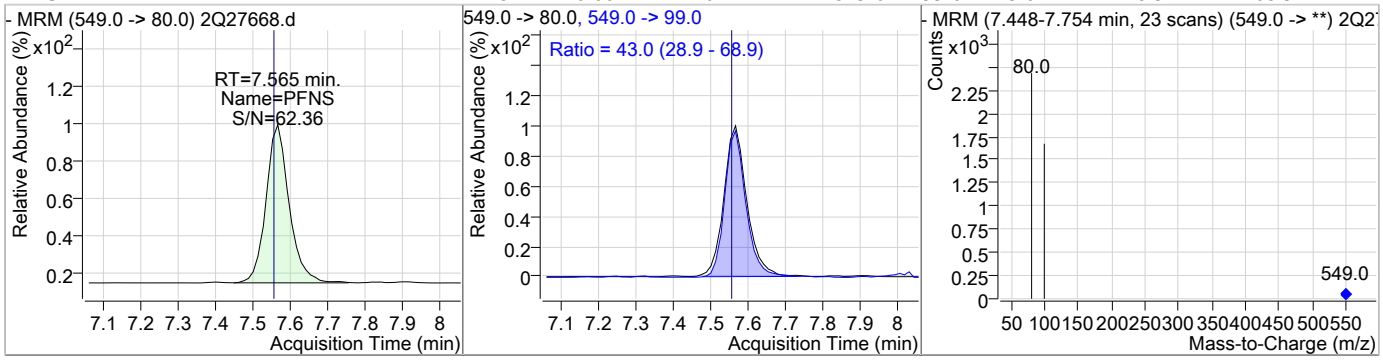
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.29	7.45	0.00	38899				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.03	7.45	-0.01	1018	570.0 -> 512.0	21.2	2.3	42.3

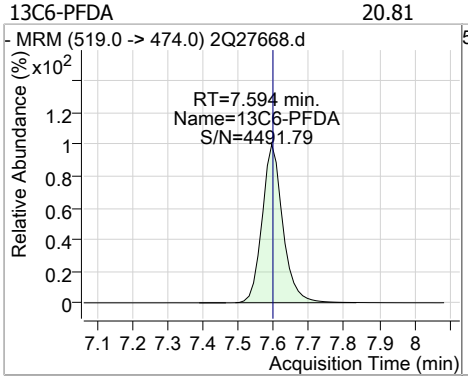


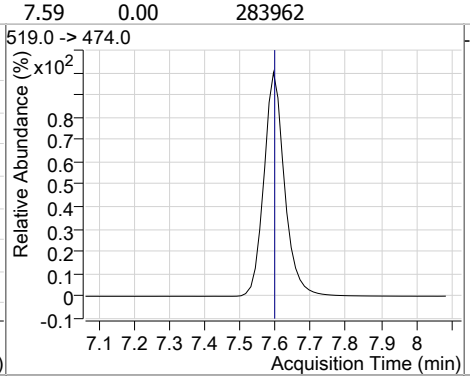
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.12	7.57	0.00	1047	549.0 -> 99.0	43.0	28.9	68.9

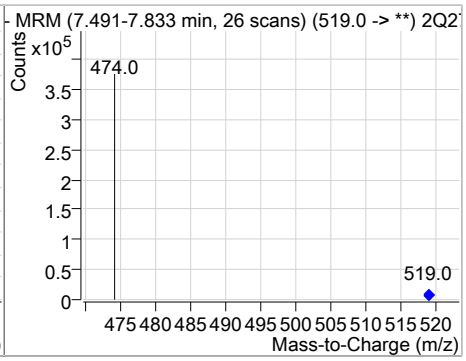


Perfluorinated Compounds by LC/MS/MS

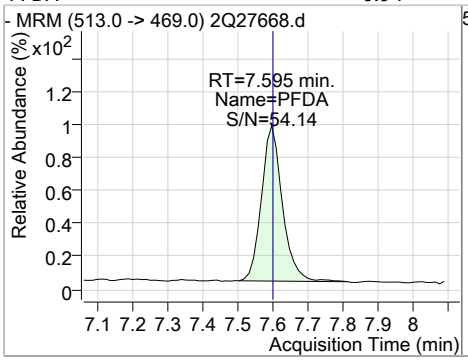
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.81	7.59	0.00	283962				

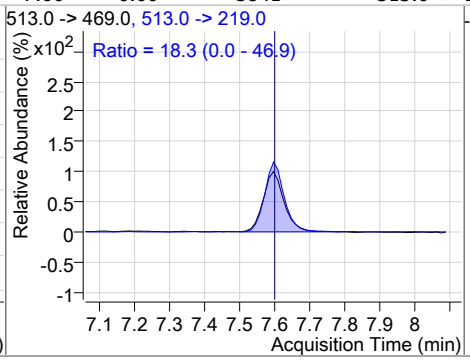


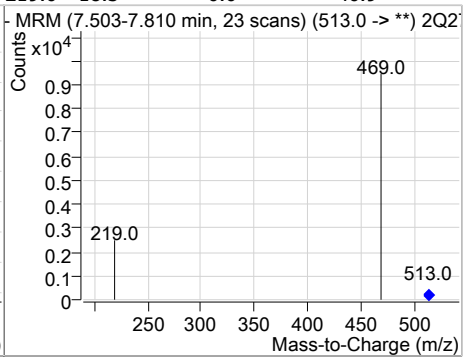




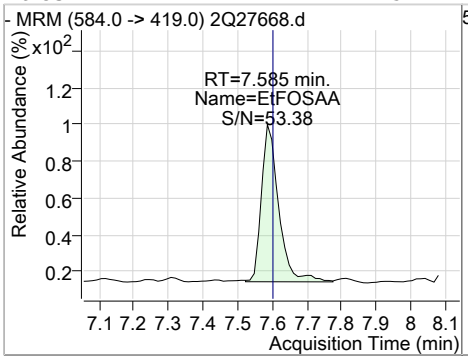
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.94	7.60	0.00	5841	513.0 -> 219.0	18.3	0.0	46.9

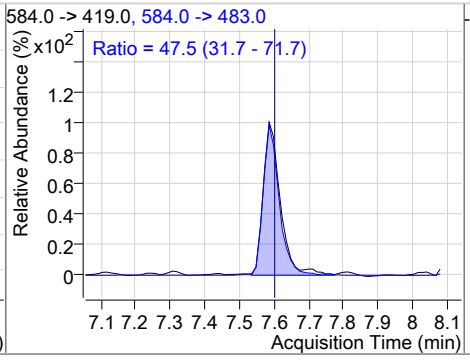


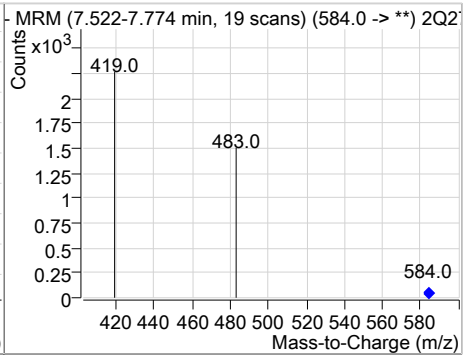




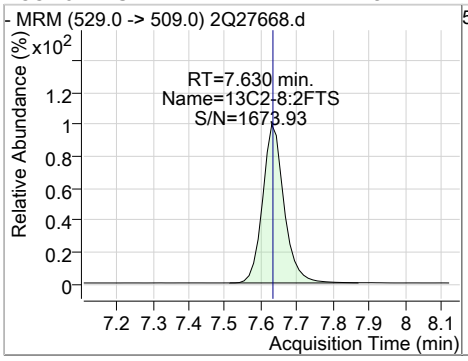
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.15	7.59	-0.01	960	584.0 -> 483.0	47.5	31.7	71.7

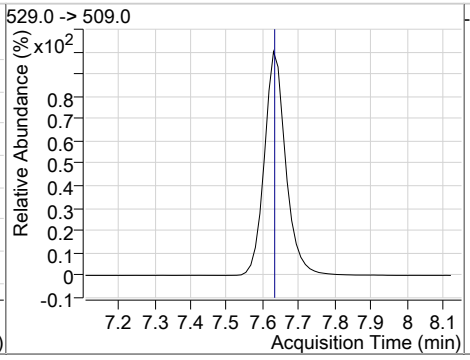


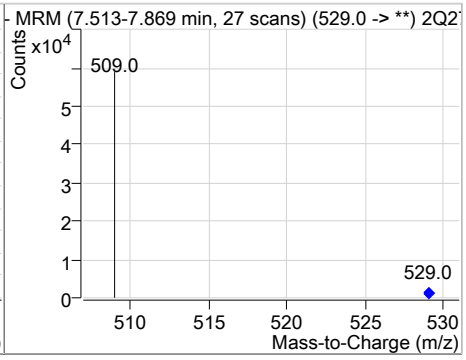




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.21	7.63	0.00	42601				

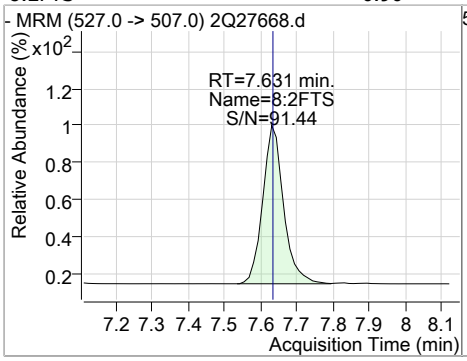


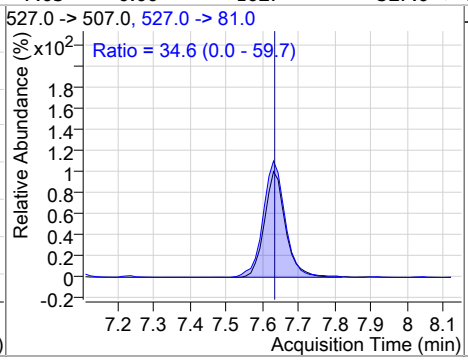


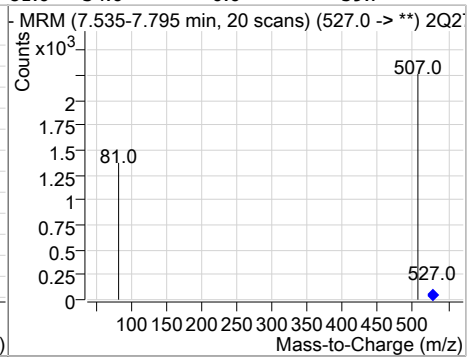


Perfluorinated Compounds by LC/MS/MS

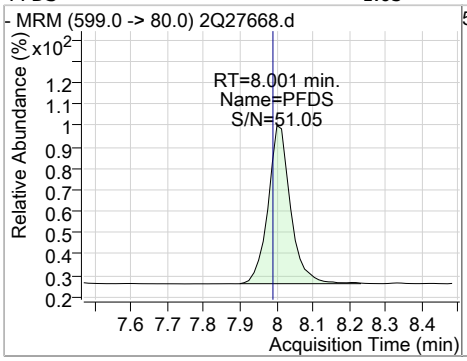
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.96	7.63	0.00	1027	527.0 -> 81.0	34.6	0.0	59.7

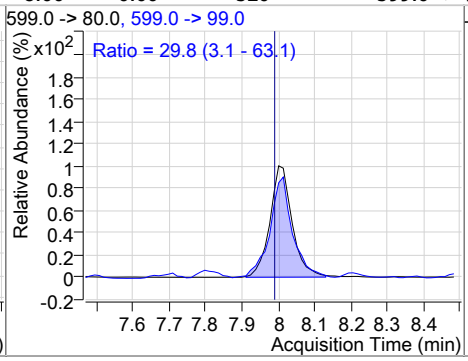


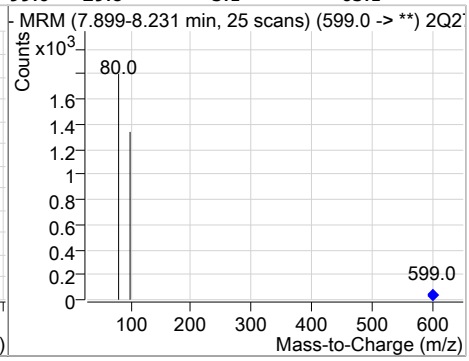




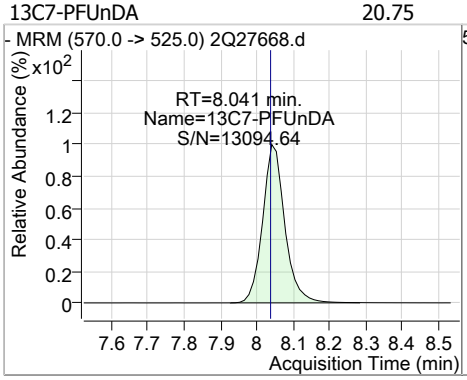
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.03	8.00	0.00	520	599.0 -> 99.0	29.8	3.1	63.1

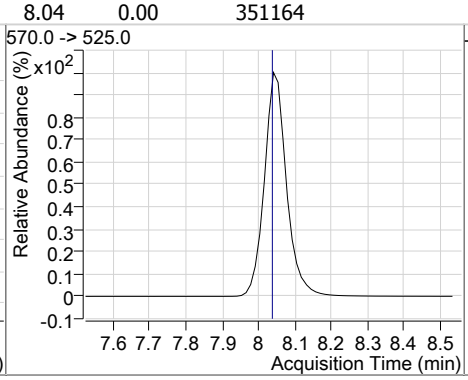


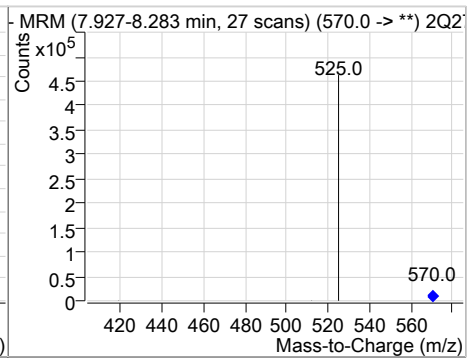




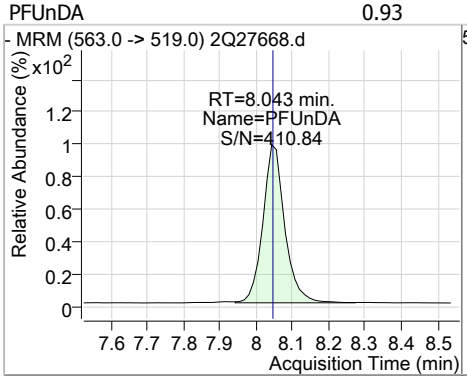
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.75	8.04	0.00	351164				

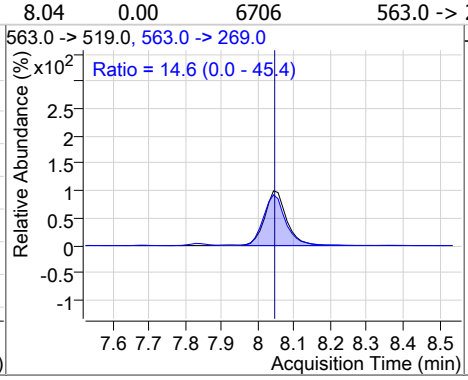


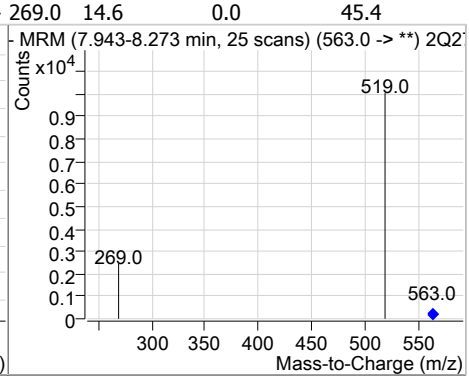




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.93	8.04	0.00	6706	563.0 -> 269.0	14.6	0.0	45.4

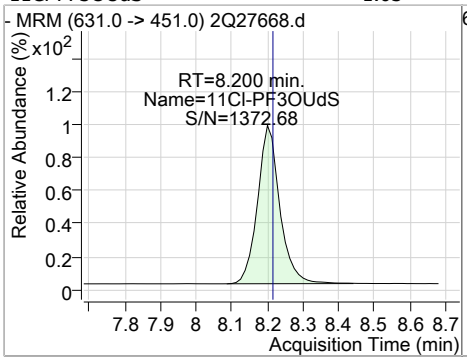


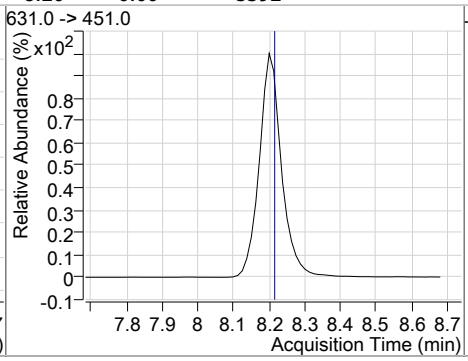


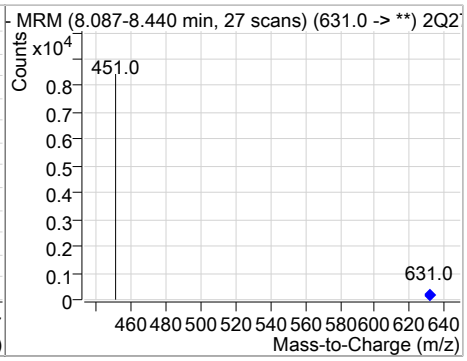


Perfluorinated Compounds by LC/MS/MS

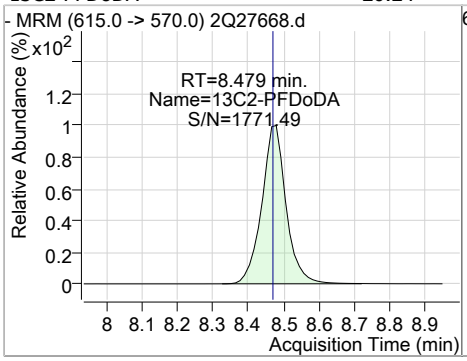
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.03	8.20	0.00	5392				

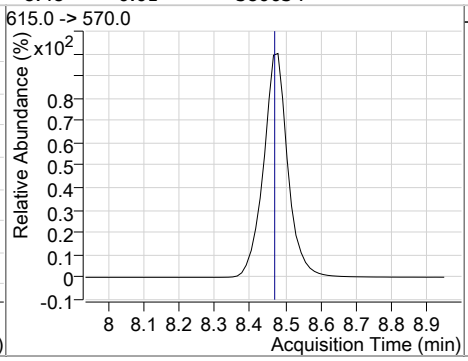


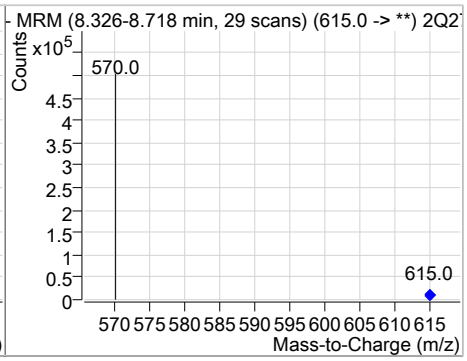




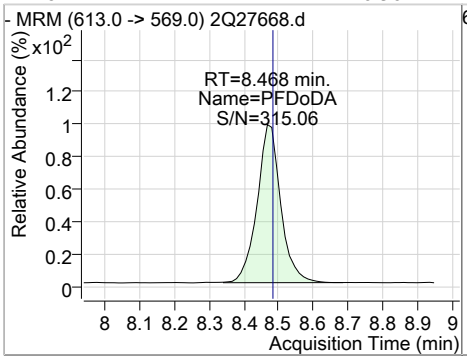
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.24	8.48	0.01	380634				

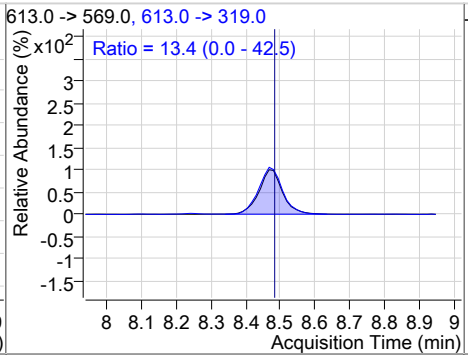


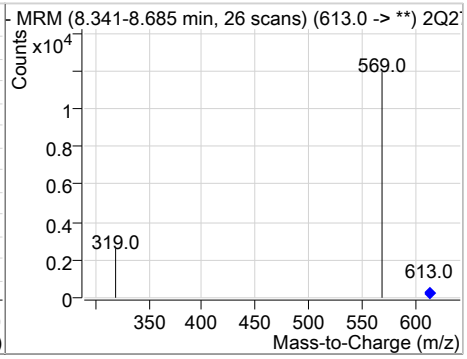




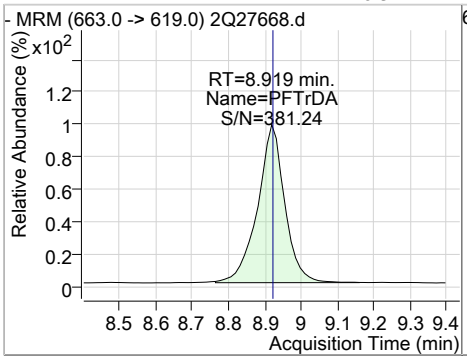
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.96	8.47	0.00	8162	613.0 -> 319.0	13.4	0.0	42.5

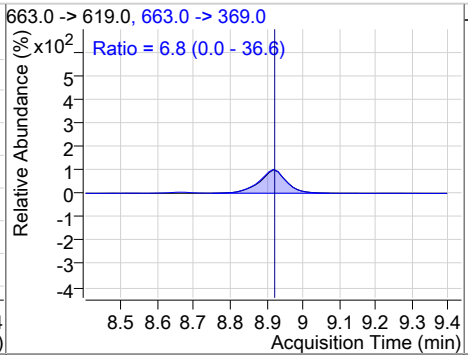


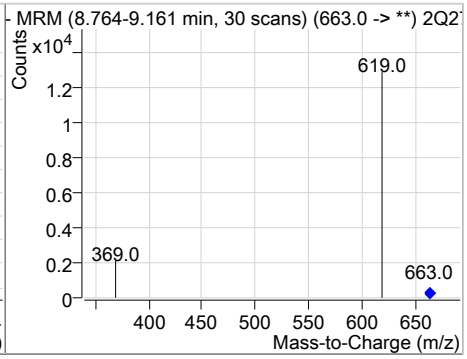




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.94	8.92	0.00	8809	663.0 -> 369.0	6.8	0.0	36.6

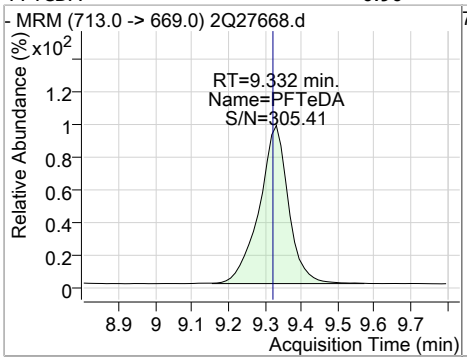


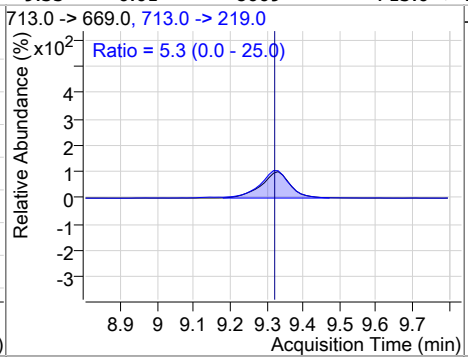


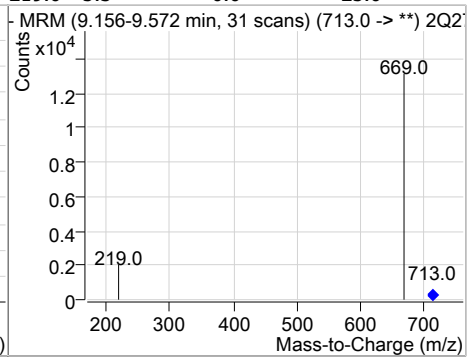


Perfluorinated Compounds by LC/MS/MS

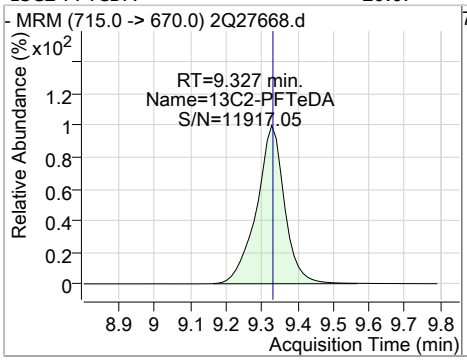
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.96	9.33	0.01	8669	713.0 -> 219.0	5.3	0.0	25.0

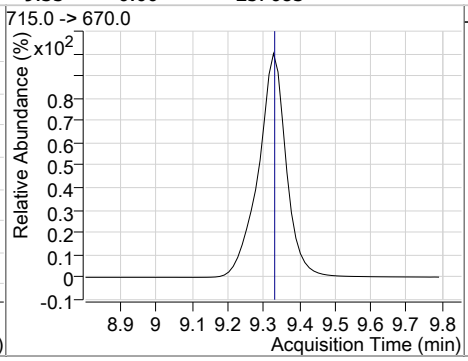


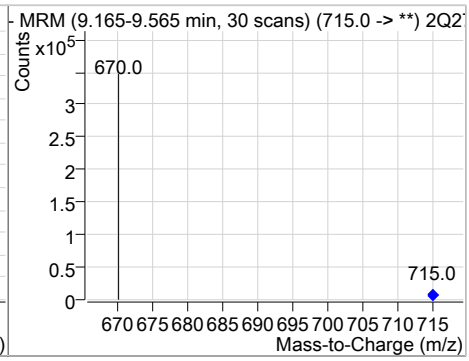




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.07	9.33	0.00	257683				







Manual Integration Approval Summary

Sample Number: S2Q442-IC442
Lab FileID: 2Q27668.D
Injection Time: 03/18/19 08:34
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27669.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 8:50:04 AM
Sample Name : IC442-2.0
Vial : Vial 4
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

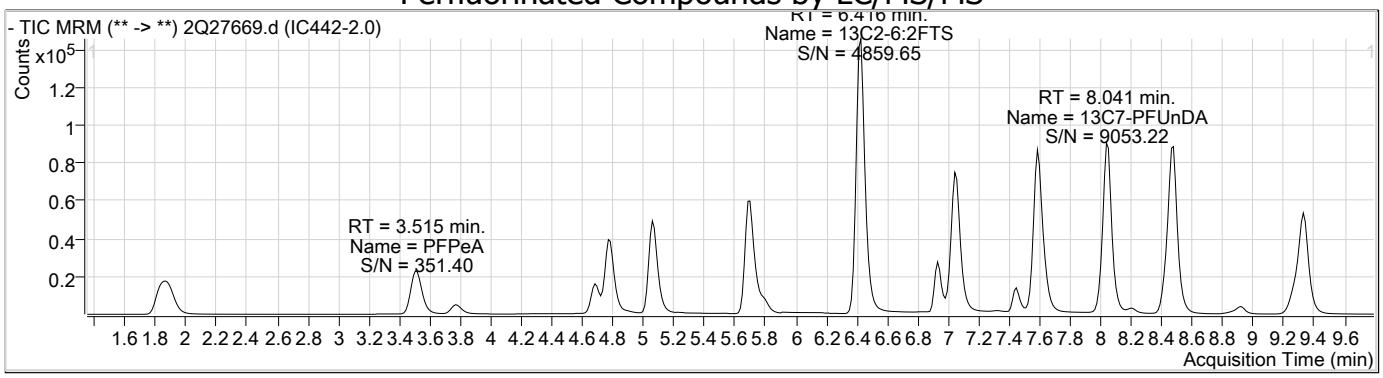
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	296487	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	46474	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	130519	20.00	µg/L	0.000
M5-PFPeA	3.511	268.0 -> 223.0	109977	20.00	µg/L	-0.013
M5-PFHxA	4.776	318.0 -> 273.0	158620	20.00	µg/L	-0.013
M4-PFHpA	5.693	367.0 -> 322.0	225349	20.00	µg/L	-0.013
M8-PFOA	6.434	421.0 -> 376.0	227282	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	229108	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	296639	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	365364	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	401133	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	272456	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	89406	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	19915	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	22211	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	28599	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	60920	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	65984	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	44903	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	40996	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	178710	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	60882	20.47	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.4%		
13C2-6:2FTS	6.416	429.0 -> 409.0	66713	20.79	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C2-8:2FTS	7.630	529.0 -> 509.0	44896	20.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C2-PFDoDA	8.479	615.0 -> 570.0	400775	21.31	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.5%		
13C2-PFTeDA	9.327	715.0 -> 670.0	272230	21.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.0%		
13C3-PFBS	3.767	302.0 -> 99.0	19886	21.81	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.1%		
13C3-PFHxS	5.736	402.0 -> 99.0	22180	21.76	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%		
13C4-PFBA	1.865	217.0 -> 172.0	129932	21.67	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.3%		
13C4-PFHpA	5.693	367.0 -> 322.0	225224	21.78	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.9%		
13C5-PFHxA	4.776	318.0 -> 273.0	158276	21.78	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.9%		
13C5-PFPeA	3.511	268.0 -> 223.0	109677	21.58	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.9%		
13C6-PFDA	7.594	519.0 -> 474.0	296591	21.73	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

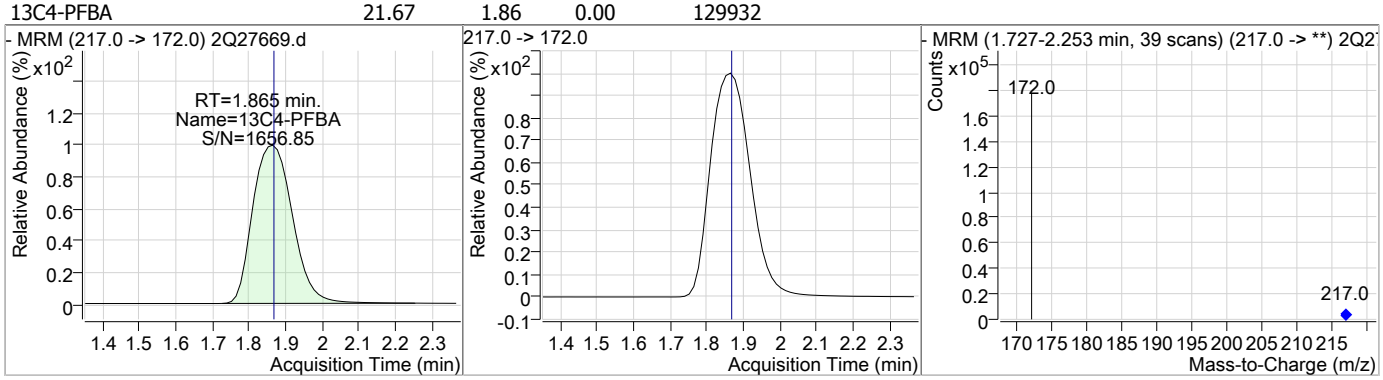
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.7%		
13C7-PFUnDA	8.041	570.0 -> 525.0	364997	21.57 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.8%		
13C8-FOSA	6.932	506.0 -> 78.0	89388	22.04 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%		
13C8-PFOA	6.434	421.0 -> 376.0	227037	21.76 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%		
13C8-PFOS	7.033	507.0 -> 99.0	28647	21.98 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.9%		
13C9-PFNA	7.065	472.0 -> 427.0	229052	21.63 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.2%		
d3-MeFOSAA	7.447	573.0 -> 419.0	40986	21.38 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.9%		
M2-PFOA	6.435	415.0 -> 370.0	296687	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	46424	19.97 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	178710	111.76 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 111.8%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	3350	2.00 µg/L		93
6:2FTS	6.418	427.0 -> 407.0	3359	2.07 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	2328	2.07 µg/L		98
EtFOSAA	7.585	584.0 -> 419.0	1670	1.90 µg/L		99
FOSA	6.935	498.0 -> 78.0	3838	1.87 µg/L		98
MeFOSAA	7.447	570.0 -> 419.0	1903	1.83 µg/L		97
PFBA	1.873	213.0 -> 169.0	2407	1.87 µg/L		100
PFBS	3.771	299.0 -> 80.0	2977	1.88 µg/L		99
PFDA	7.595	513.0 -> 469.0	12058	1.87 µg/L		99
PFDoDA	8.468	613.0 -> 569.0	16161	1.81 µg/L		100
PFDS	8.001	599.0 -> 80.0	1003	1.90 µg/L		97
PFHpA	5.695	363.0 -> 319.0	17634	1.82 µg/L		99
PFHpS	6.442	449.0 -> 80.0	1979	1.84 µg/L		94
PFHxA	4.778	313.0 -> 269.0	4997	1.83 µg/L		99
PFHxS	5.739	399.0 -> 80.0	2274	1.85 µg/L	m	95
PFNA	7.066	463.0 -> 419.0	13791	1.82 µg/L		99
PFNS	7.565	549.0 -> 80.0	1820	1.86 µg/L		98
PFOA	6.437	413.0 -> 369.0	11272	1.84 µg/L		99
PFOS	7.037	499.0 -> 80.0	2733	1.97 µg/L	m	76
PFPeA	3.515	263.0 -> 219.0	9085	1.91 µg/L		100
PFPeS	4.895	349.0 -> 80.0	1879	1.86 µg/L		92
PFTeDA	9.332	713.0 -> 669.0	17436	1.83 µg/L		99
PFTrDA	8.919	663.0 -> 619.0	18191	1.83 µg/L		98
PFUnDA	8.043	563.0 -> 519.0	13369	1.77 µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	10429	1.90 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	2035	1.85 µg/L		100
ADONA	5.804	377.0 -> 251.0	21002	1.89 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	19460	9.17 µg/L		98

 # = Qualifier out of range, m = manually integrated, + = Area summed

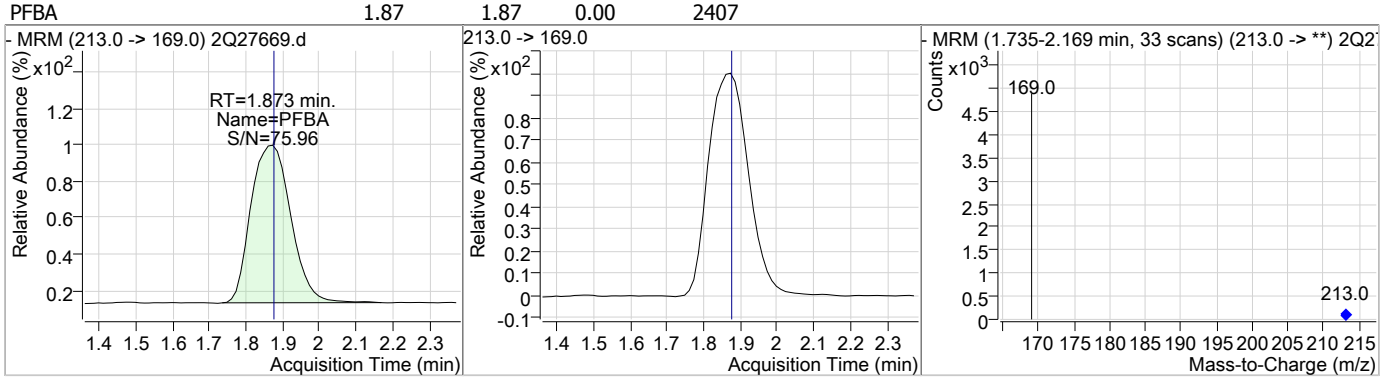
Perfluorinated Compounds by LC/MS/MS



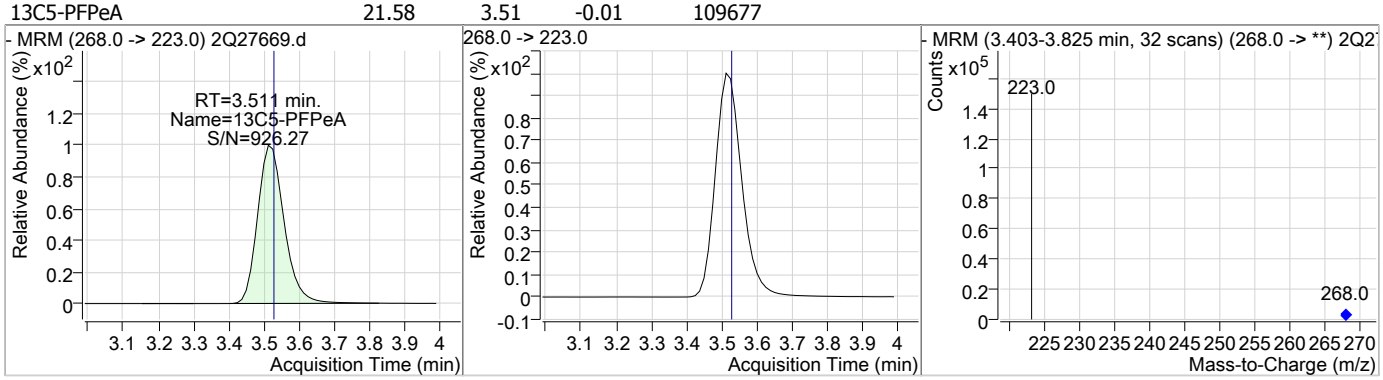
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.67	1.86	0.00	129932				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.87	1.87	0.00	2407				

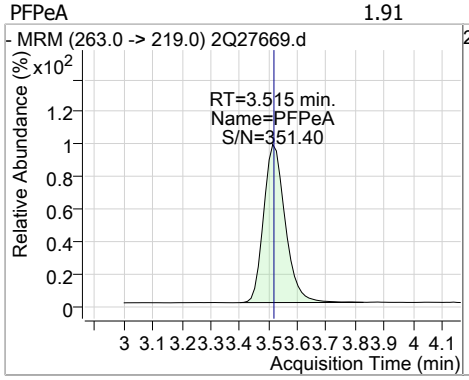


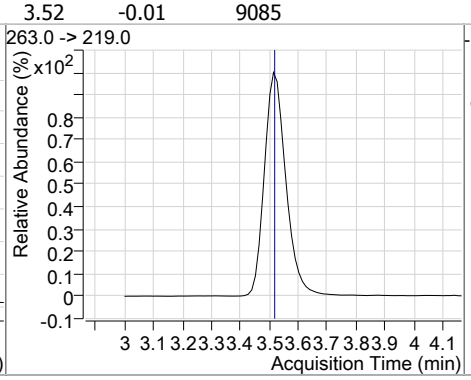
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.58	3.51	-0.01	109677				

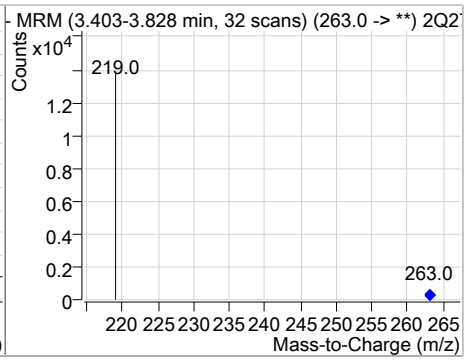


Perfluorinated Compounds by LC/MS/MS

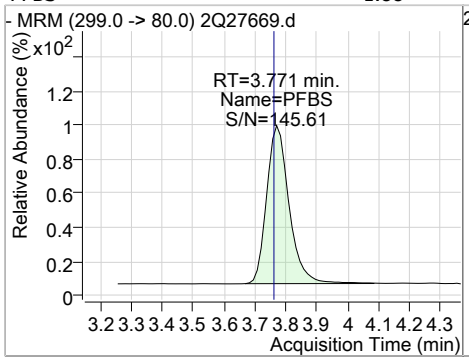
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.91	3.52	-0.01	9085				

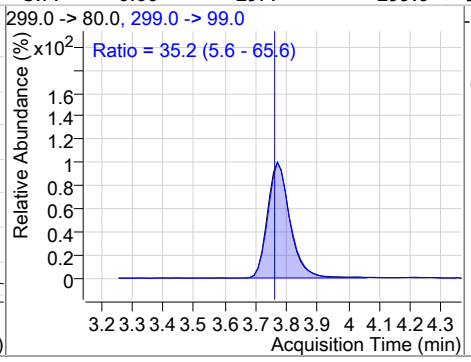


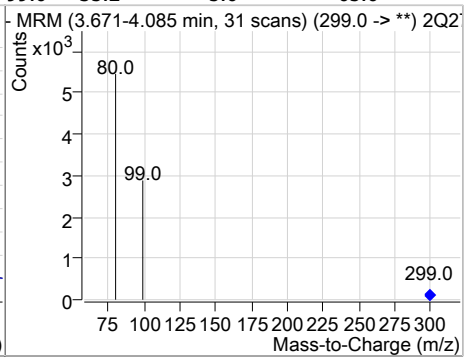




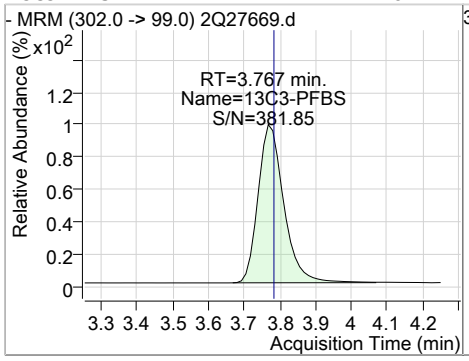
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.88	3.77	0.00	2977	299.0 -> 99.0	35.2	5.6	65.6

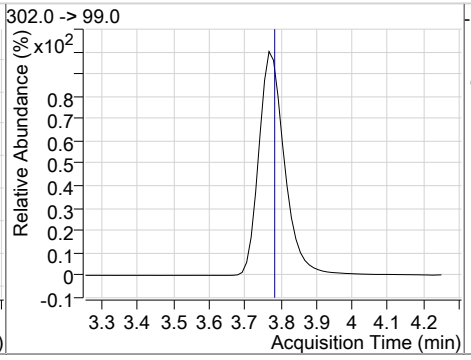


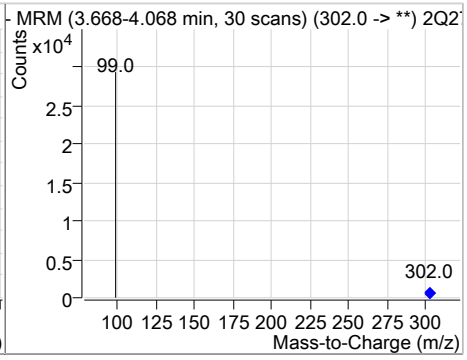




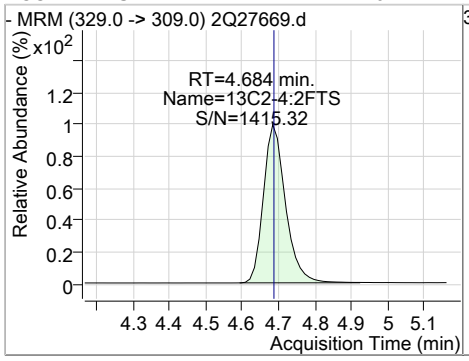
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.81	3.77	-0.01	19886				

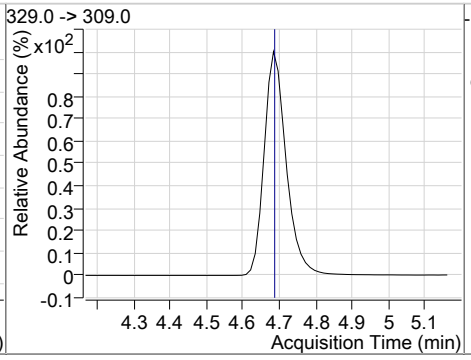


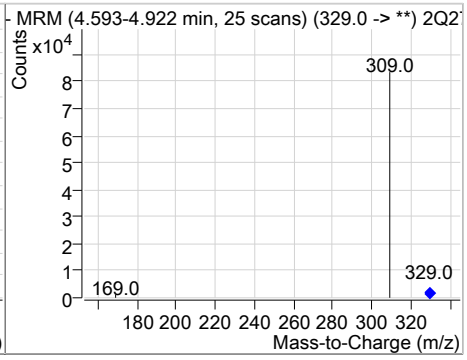




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.47	4.68	0.00	60882				

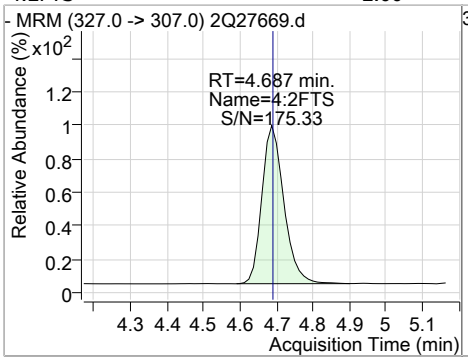


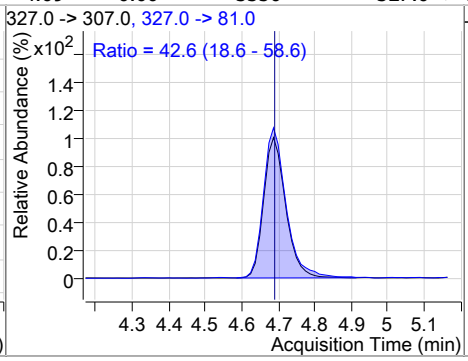


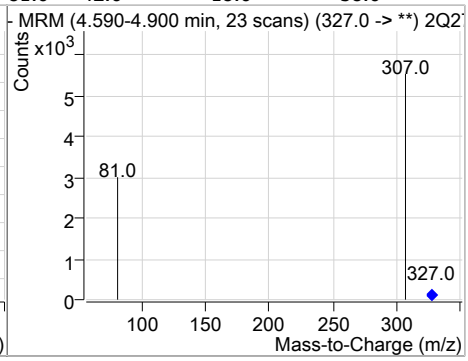


Perfluorinated Compounds by LC/MS/MS

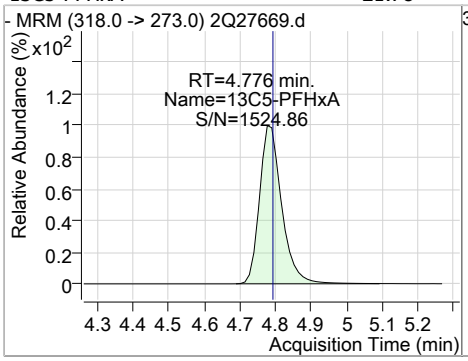
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	2.00	4.69	0.00	3350	327.0 -> 81.0	42.6	18.6	58.6

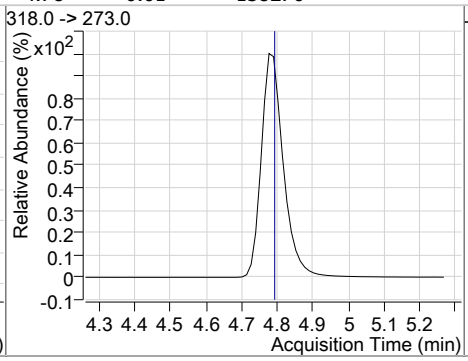


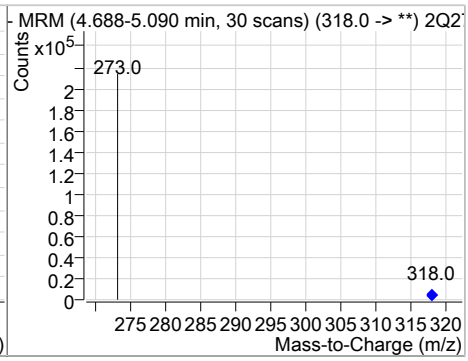




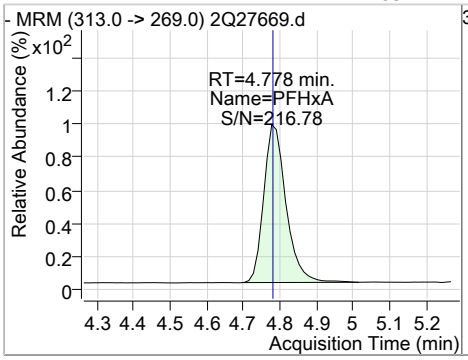
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.78	4.78	-0.01	158276				

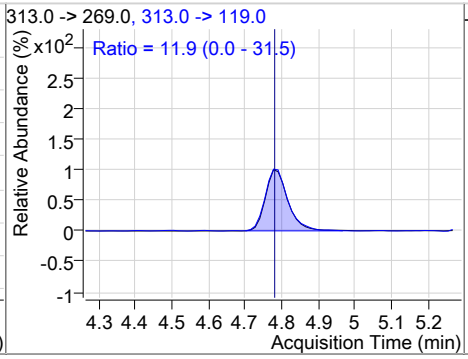


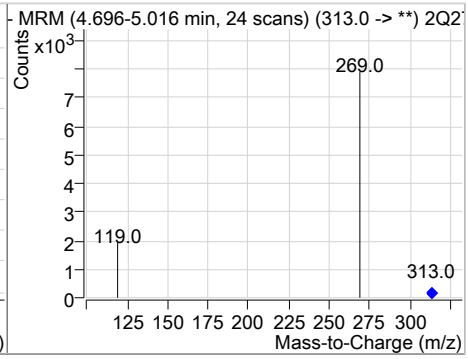




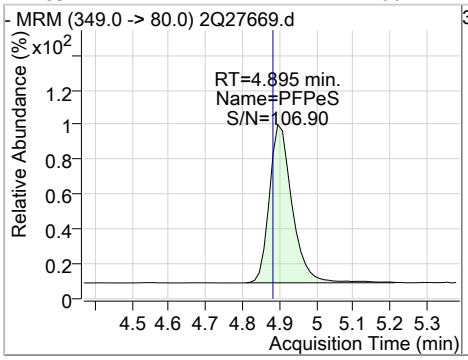
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.83	4.78	-0.01	4997	313.0 -> 119.0	11.9	0.0	31.5

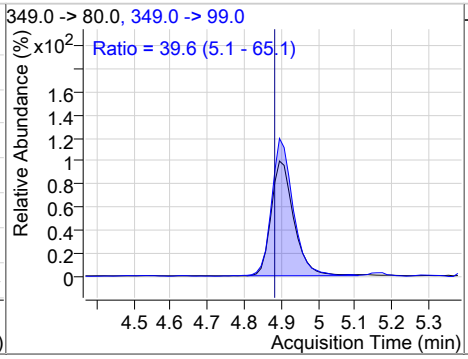


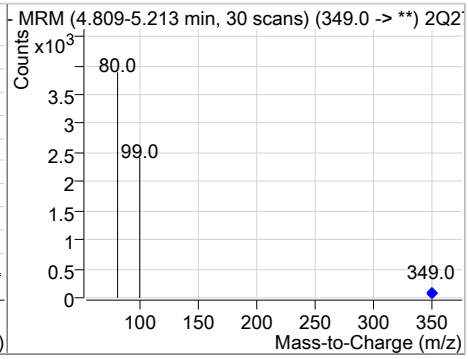




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.86	4.90	0.00	1879	349.0 -> 99.0	39.6	5.1	65.1

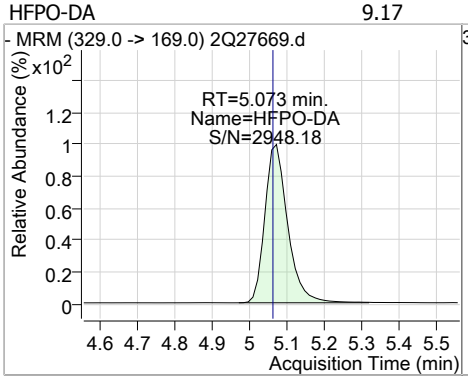


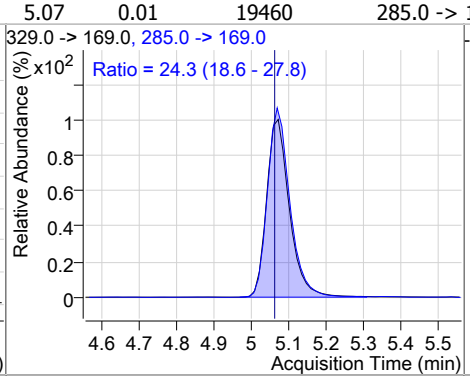


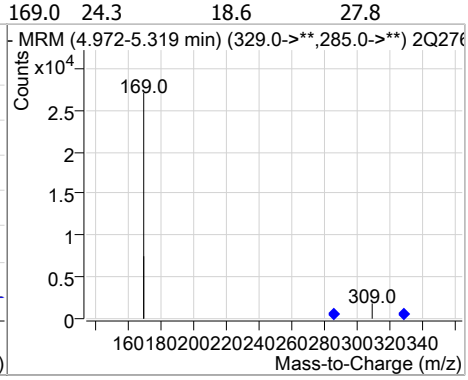


Perfluorinated Compounds by LC/MS/MS

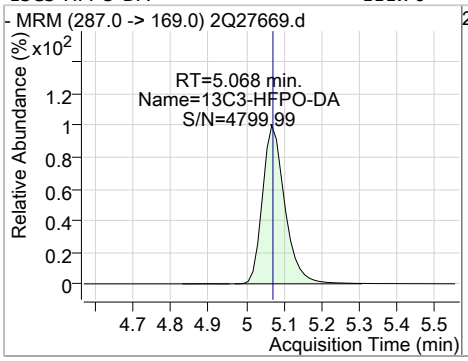
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.17	5.07	0.01	19460	285.0 -> 169.0	24.3	18.6	27.8

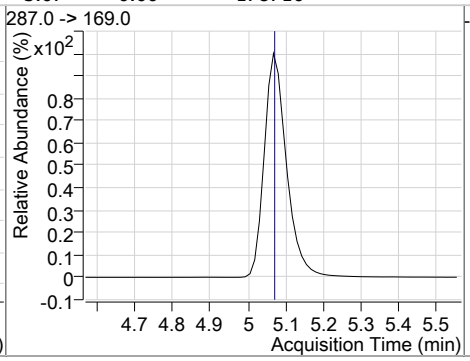


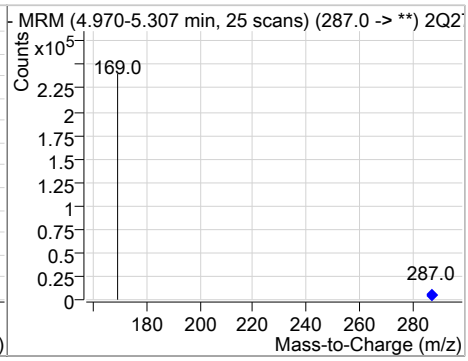




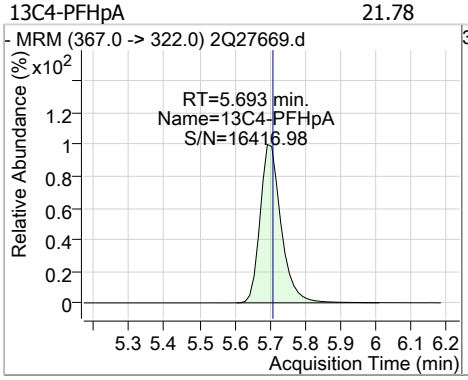
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	111.76	5.07	0.00	178710				

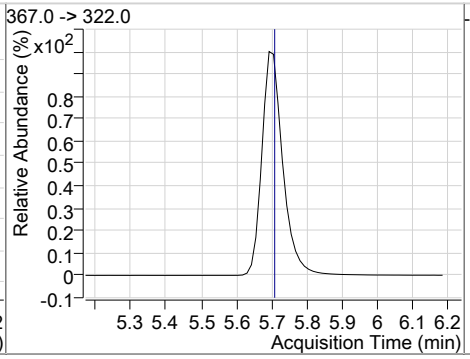


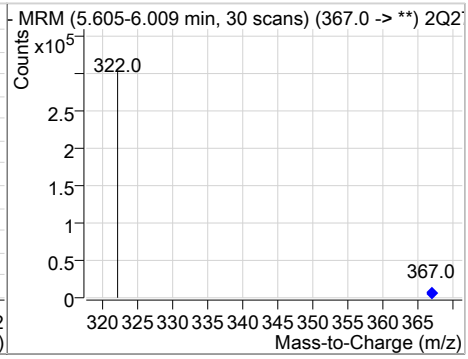




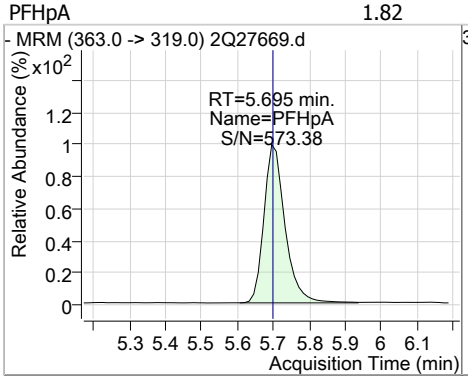
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.78	5.69	-0.01	225224				

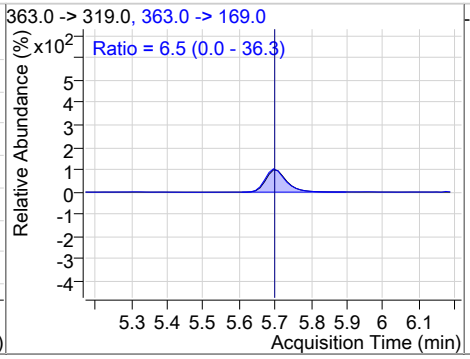


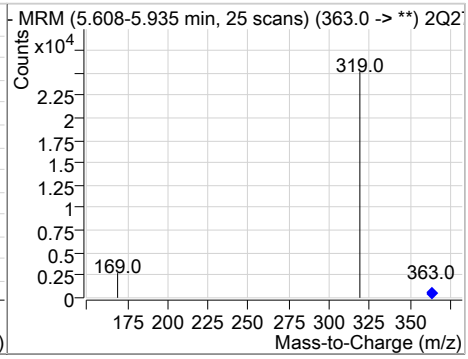




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.82	5.70	-0.01	17634	363.0 -> 169.0	6.5	0.0	36.3

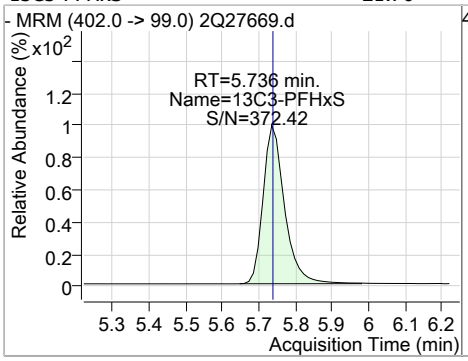


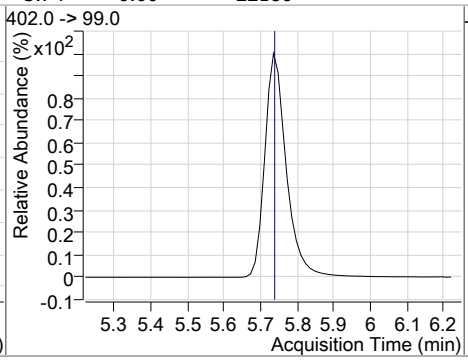


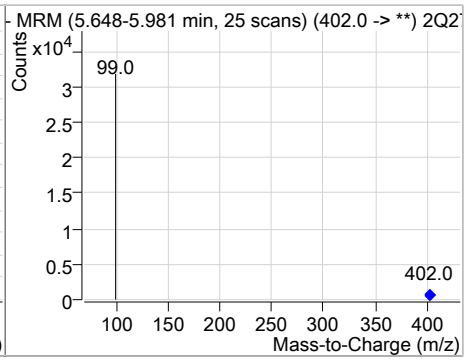


Perfluorinated Compounds by LC/MS/MS

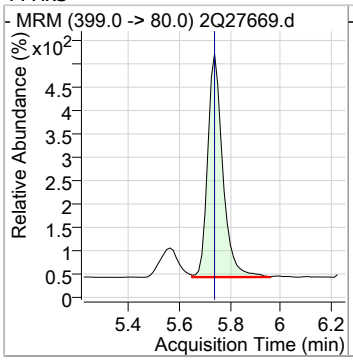
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.76	5.74	0.00	22180				

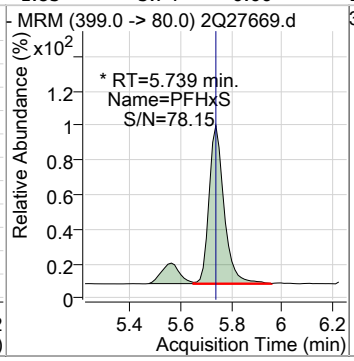


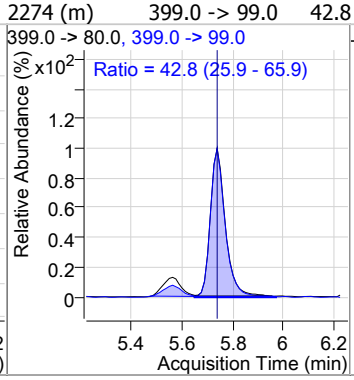


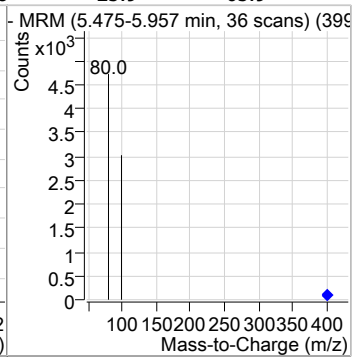


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.85	5.74	0.00	2274 (m)	399.0 -> 99.0	42.8	25.9	65.9

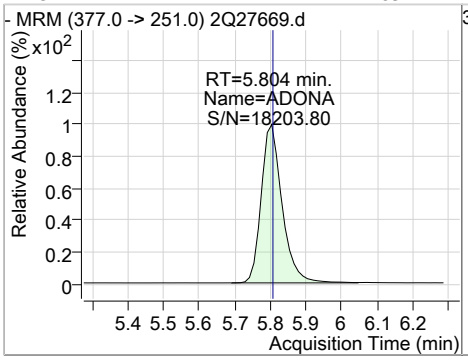


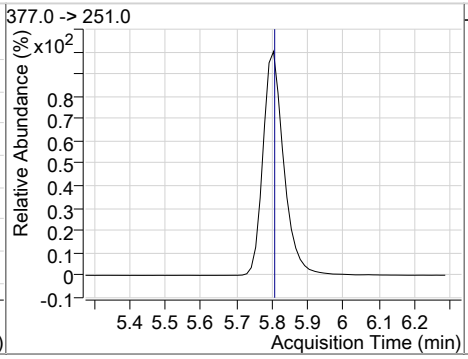


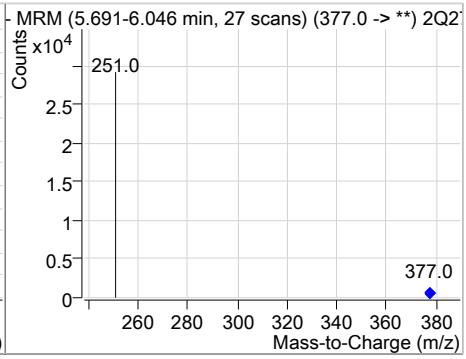




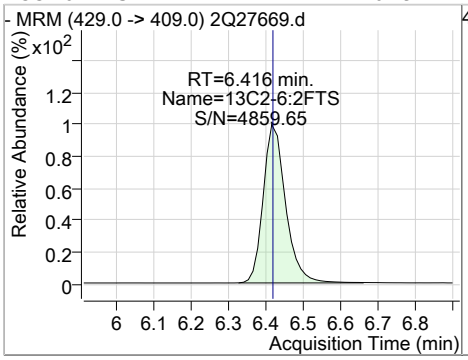
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	1.89	5.80	0.00	21002				

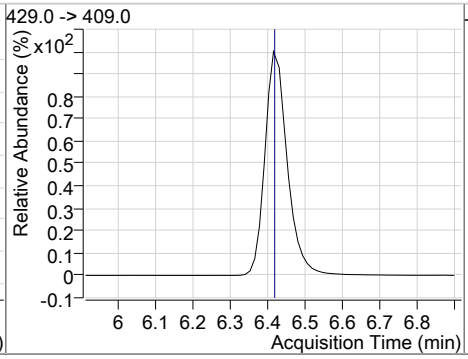


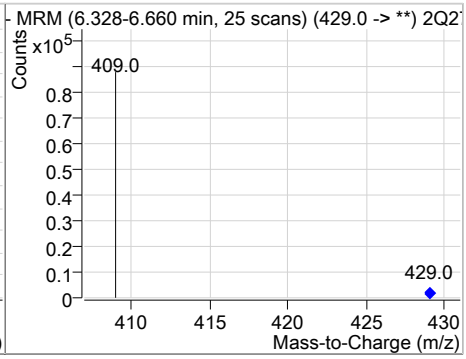




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.79	6.42	0.00	66713				

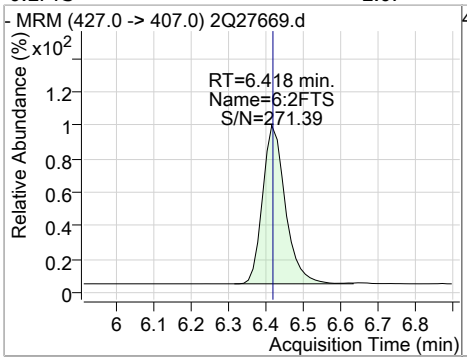


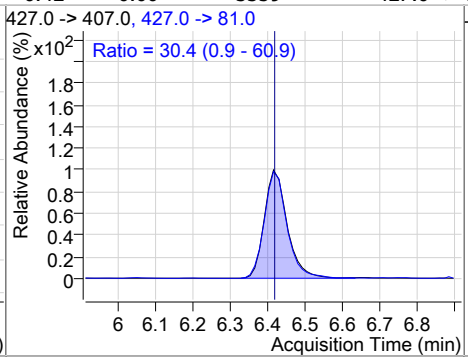


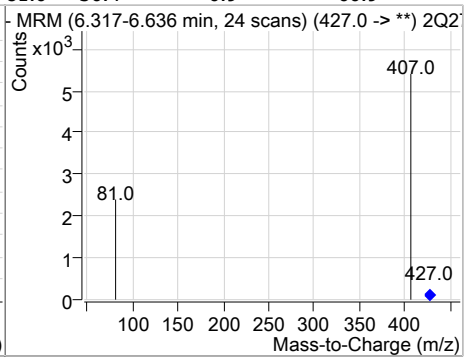


Perfluorinated Compounds by LC/MS/MS

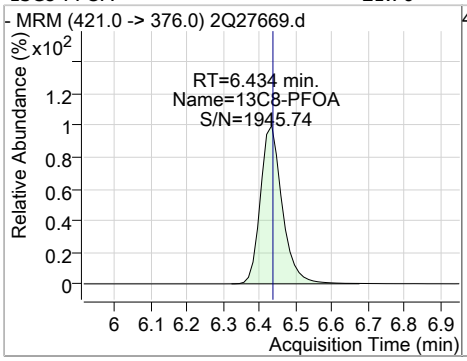
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	2.07	6.42	0.00	3359	427.0 -> 81.0	30.4	0.9	60.9

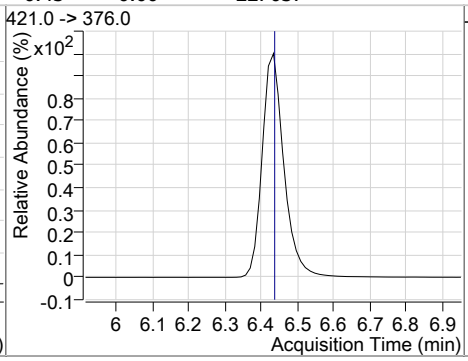


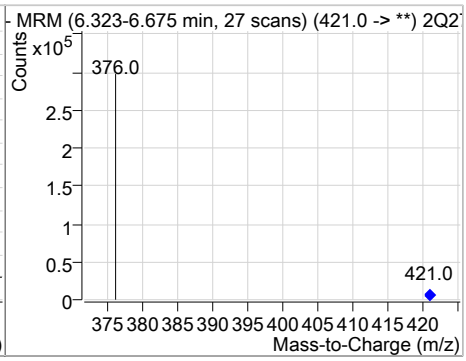




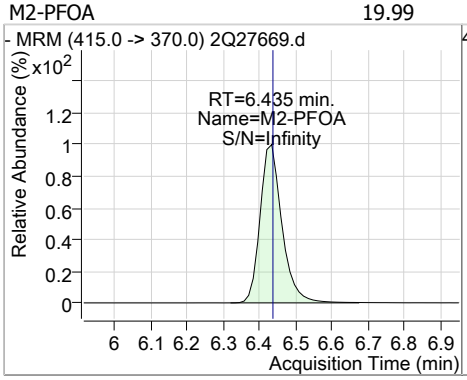
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.76	6.43	0.00	227037				

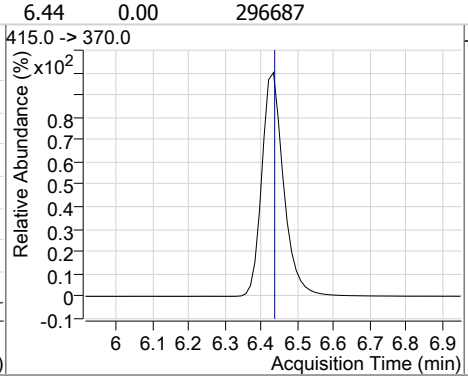


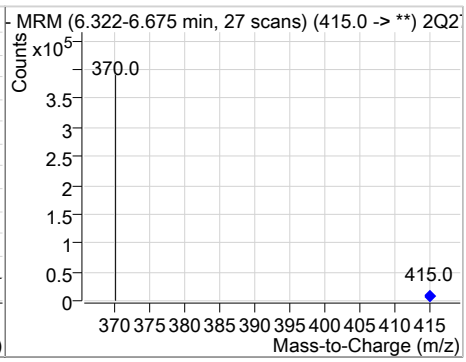




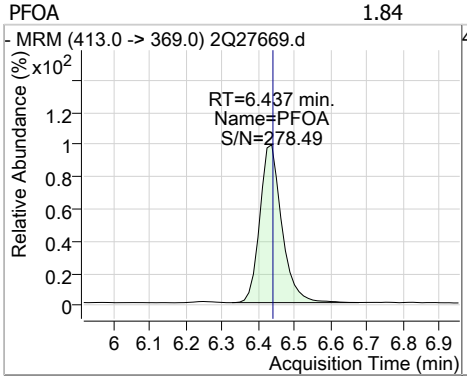
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	296687				

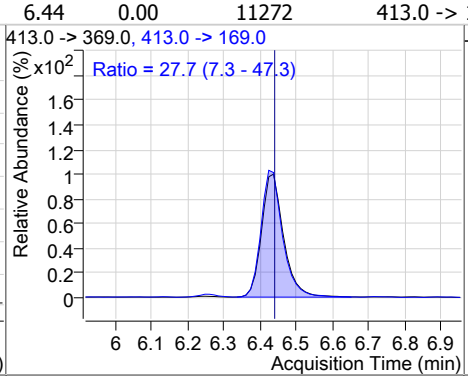


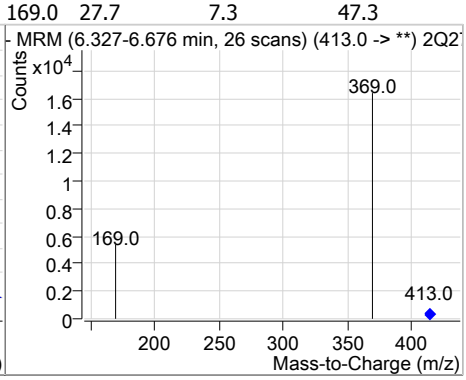




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.84	6.44	0.00	11272	413.0 -> 169.0	27.7	7.3	47.3

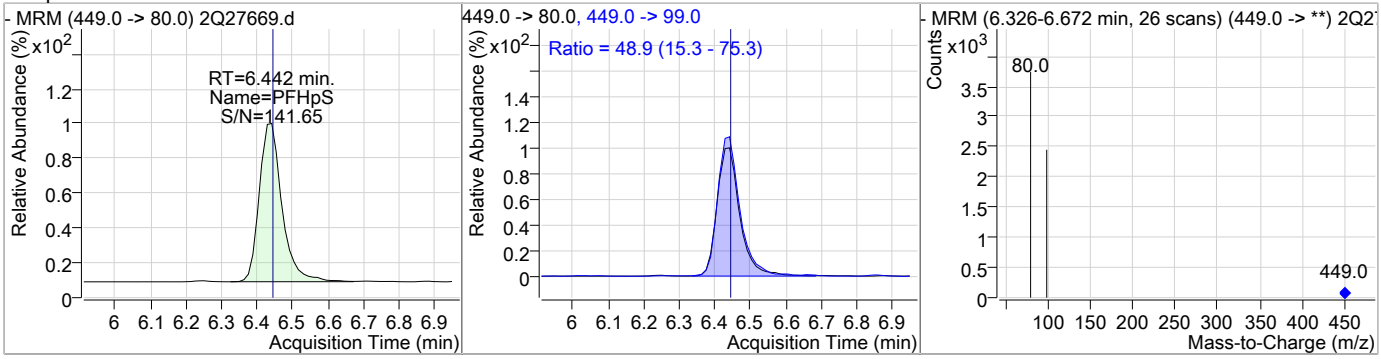




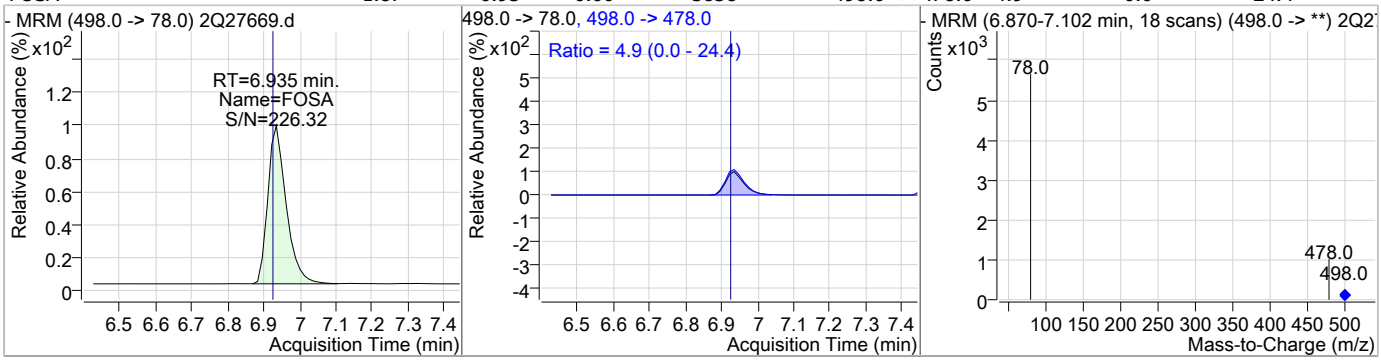


Perfluorinated Compounds by LC/MS/MS

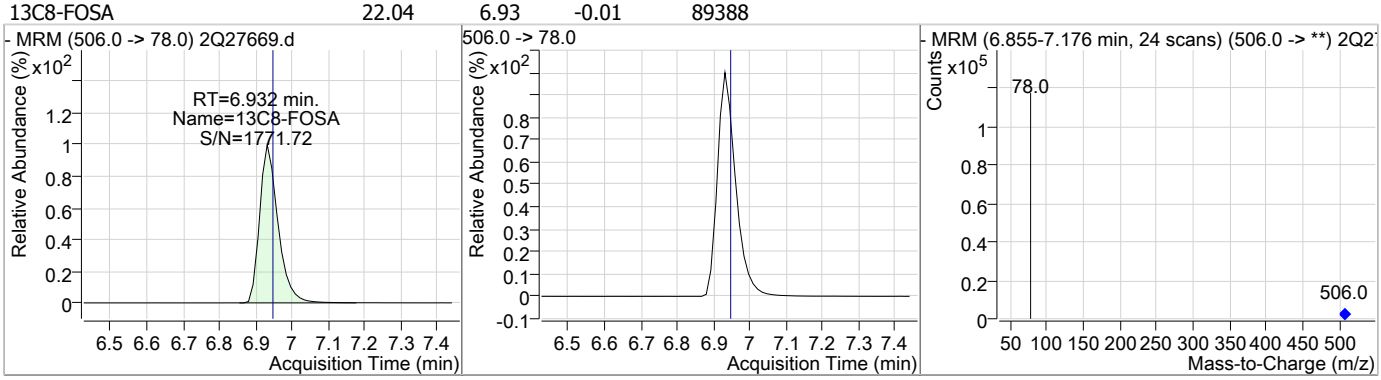
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.84	6.44	0.00	1979	449.0 -> 99.0	48.9	15.3	75.3



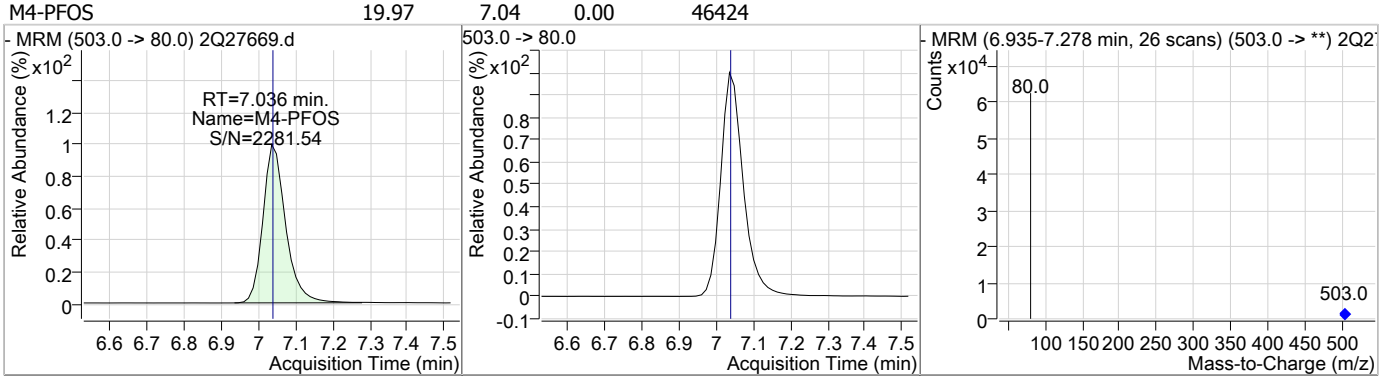
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.87	6.93	0.00	3838	498.0 -> 478.0	4.9	0.0	24.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.04	6.93	-0.01	89388				

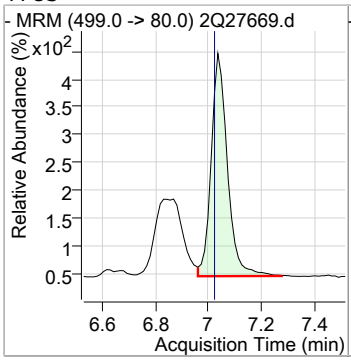


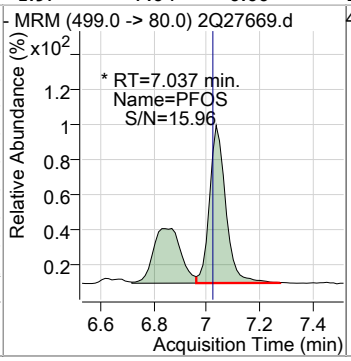
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.97	7.04	0.00	46424				

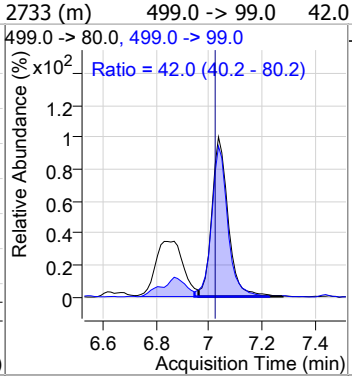


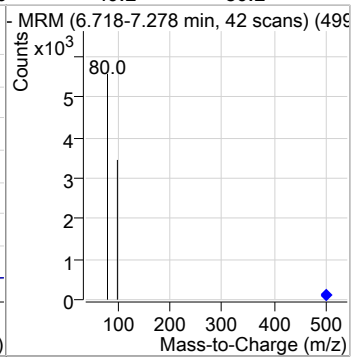
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.97	7.04	0.00	2733 (m)	499.0 -> 99.0	42.0	40.2	80.2

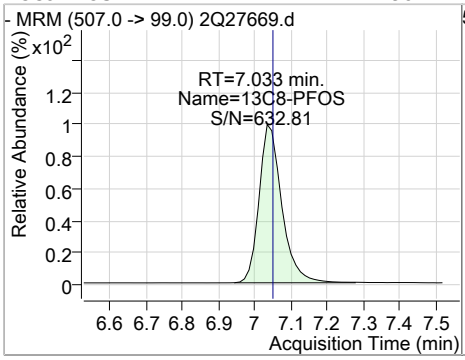


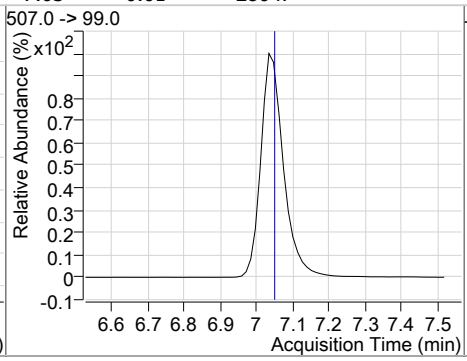


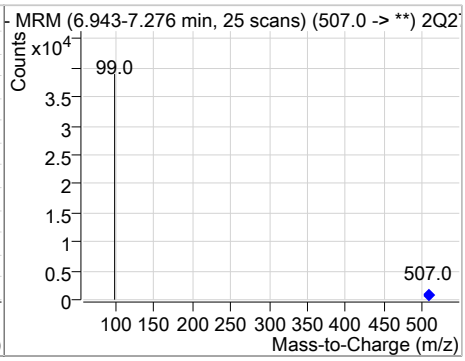




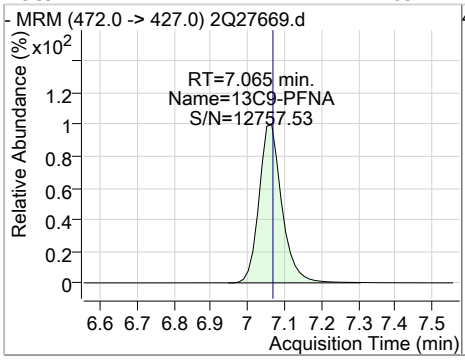
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.98	7.03	-0.01	28647				

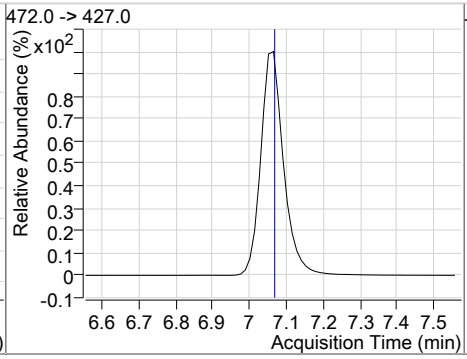


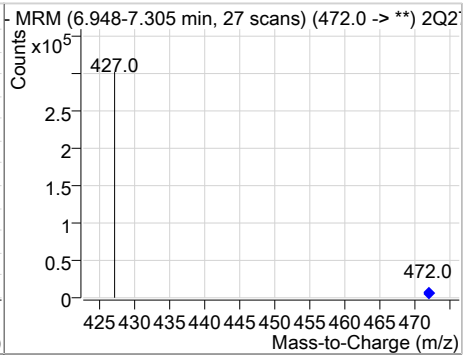




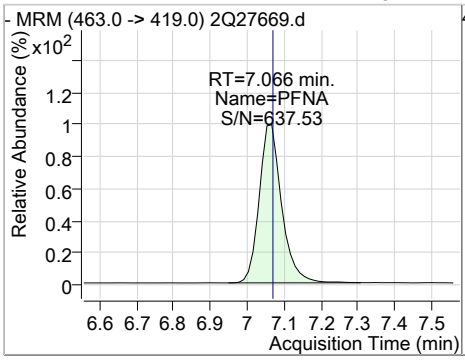
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.63	7.07	0.00	229052				

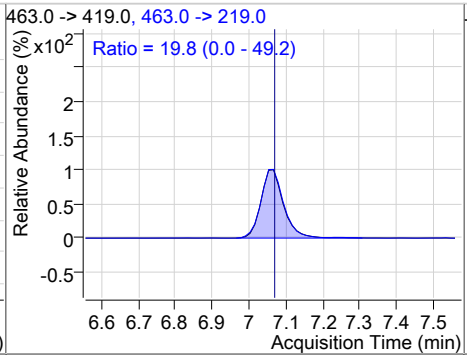


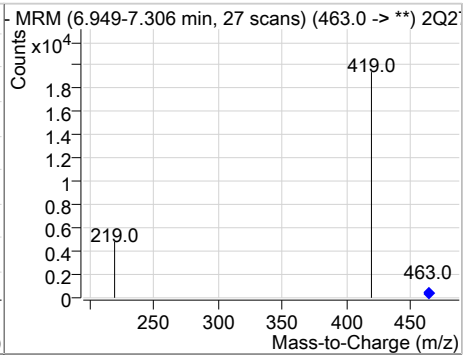




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.82	7.07	0.00	13791	463.0 -> 219.0	19.8	0.0	49.2

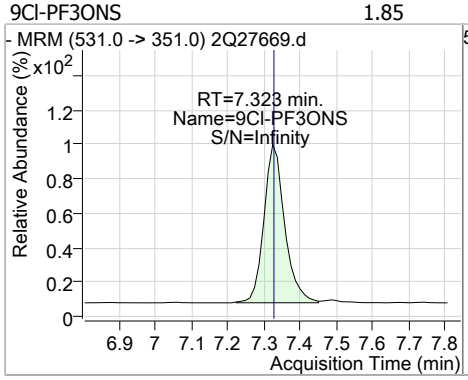


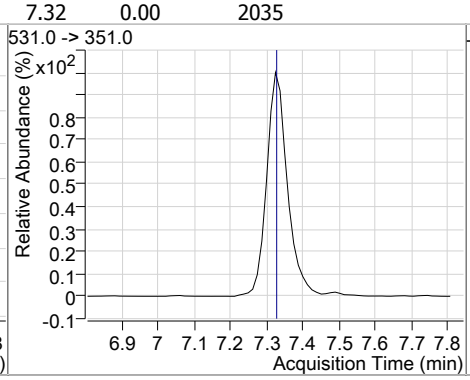


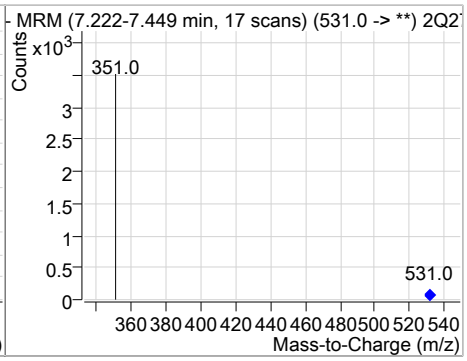


Perfluorinated Compounds by LC/MS/MS

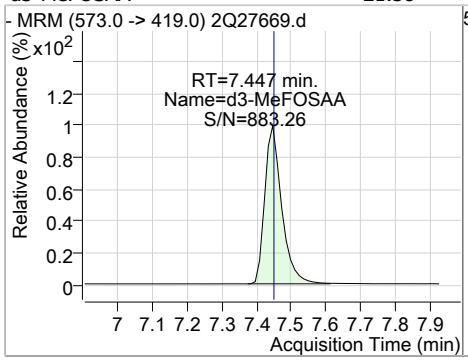
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.85	7.32	0.00	2035				

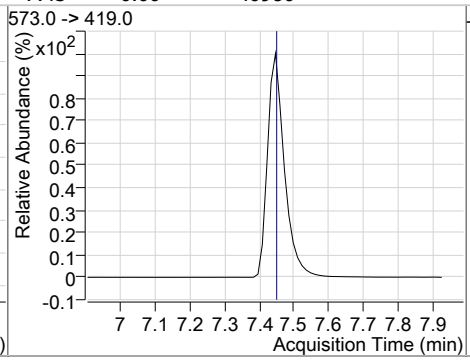


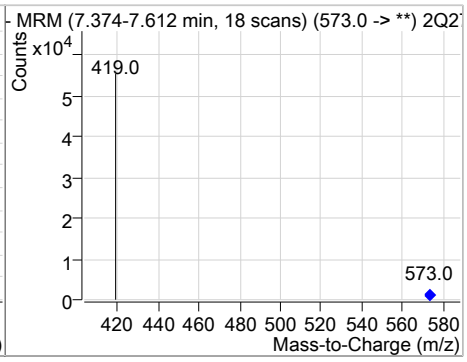




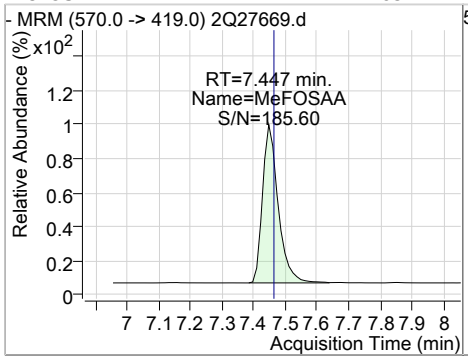
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.38	7.45	0.00	40986				

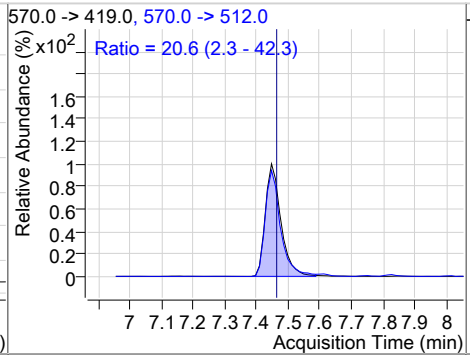


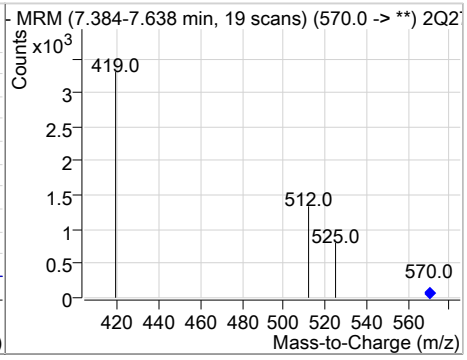




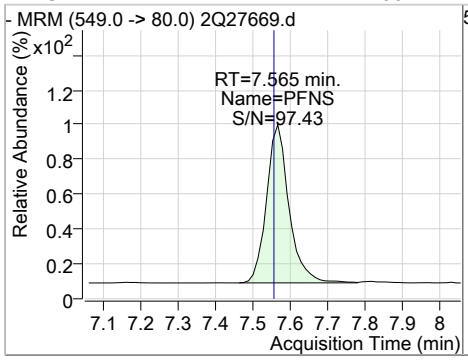
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.83	7.45	-0.01	1903	570.0 -> 512.0	20.6	2.3	42.3

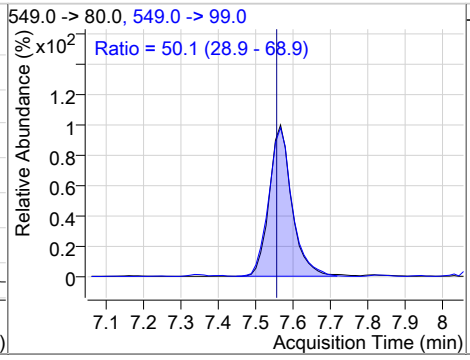


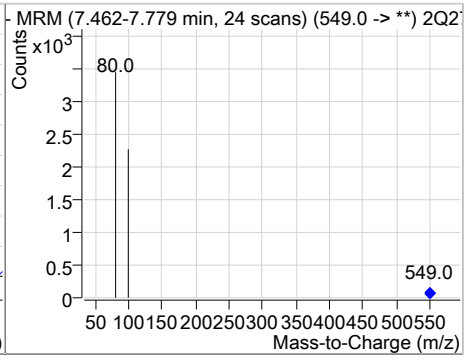




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.86	7.57	0.00	1820	549.0 -> 99.0	50.1	28.9	68.9

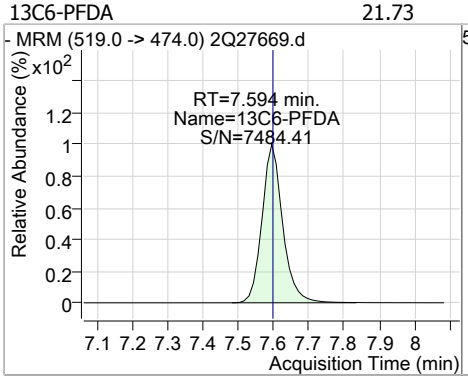


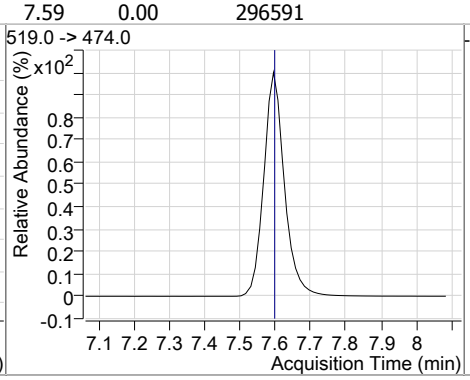


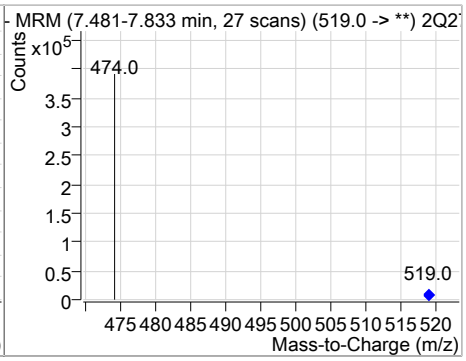


Perfluorinated Compounds by LC/MS/MS

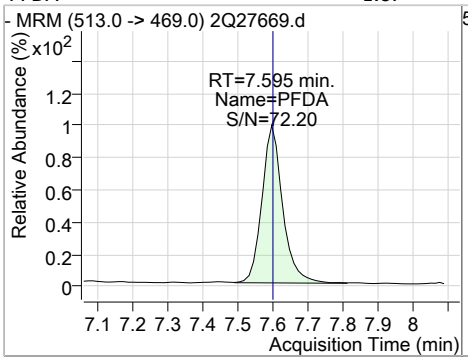
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.73	7.59	0.00	296591				

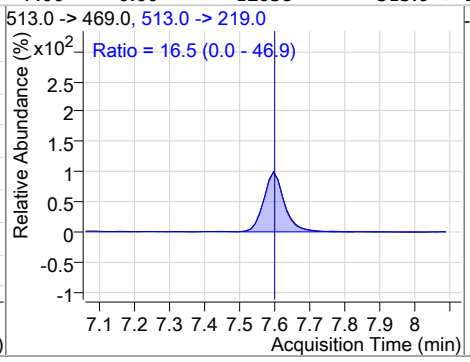


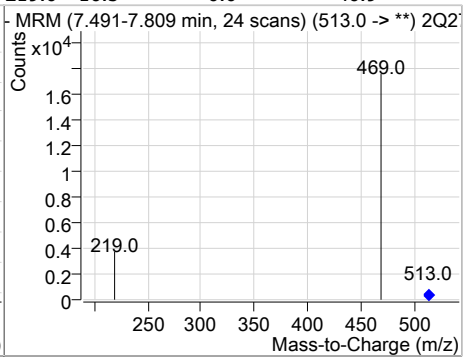




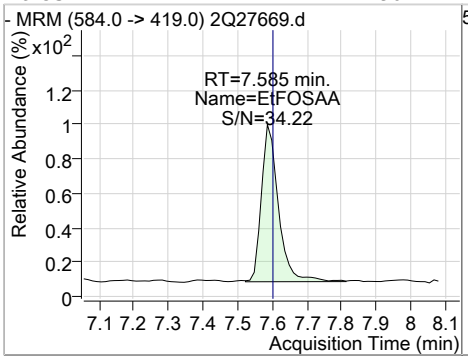
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.87	7.60	0.00	12058	513.0 -> 219.0	16.5	0.0	46.9

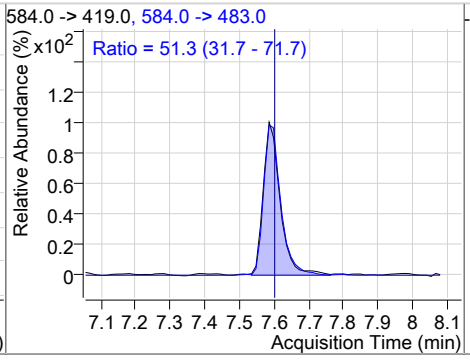


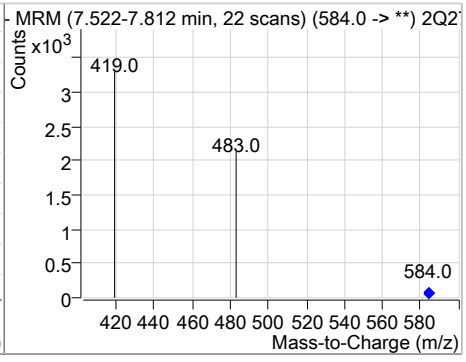




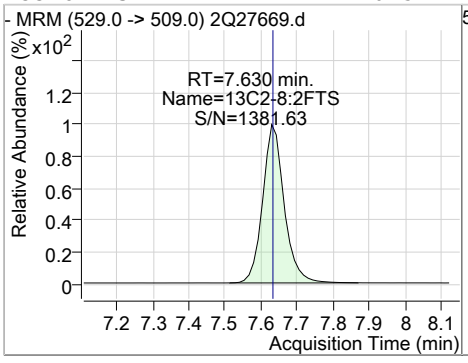
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.90	7.59	-0.01	1670	584.0 -> 483.0	51.3	31.7	71.7

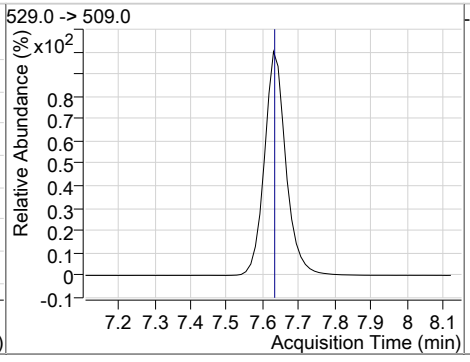


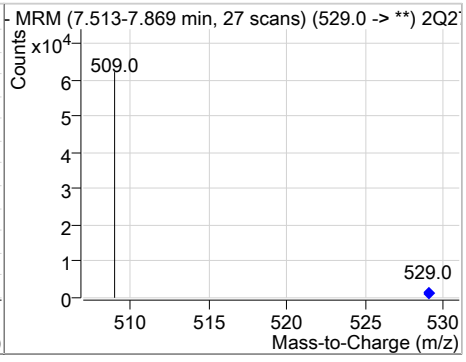




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.25	7.63	0.00	44896				

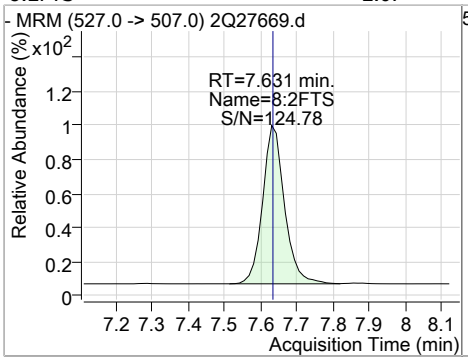


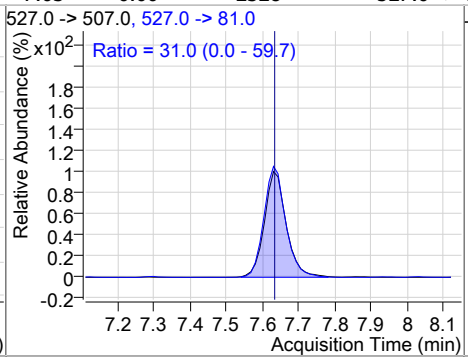


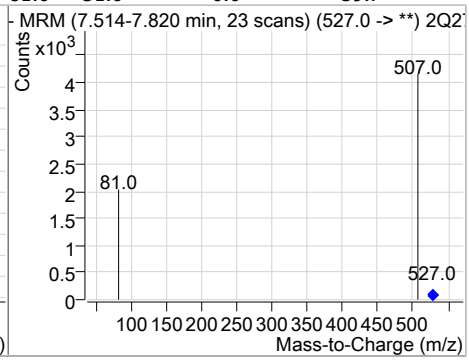


Perfluorinated Compounds by LC/MS/MS

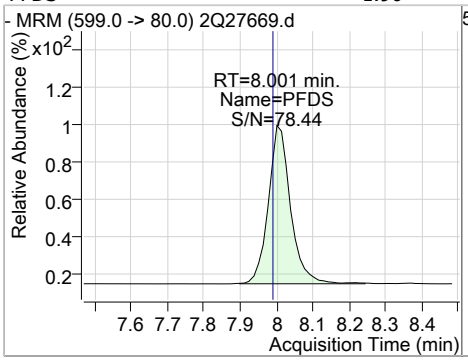
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	2.07	7.63	0.00	2328	527.0 -> 81.0	31.0	0.0	59.7

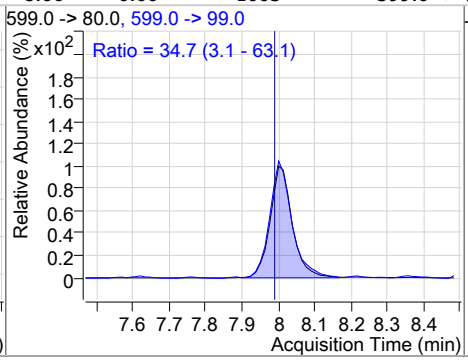


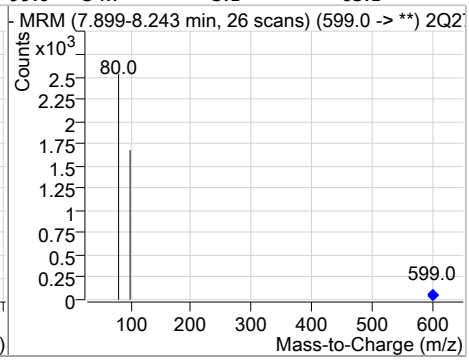




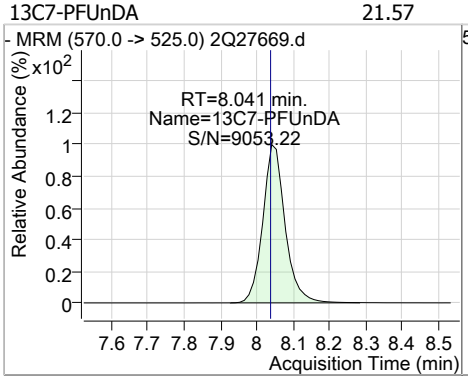
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.90	8.00	0.00	1003	599.0 -> 99.0	34.7	3.1	63.1

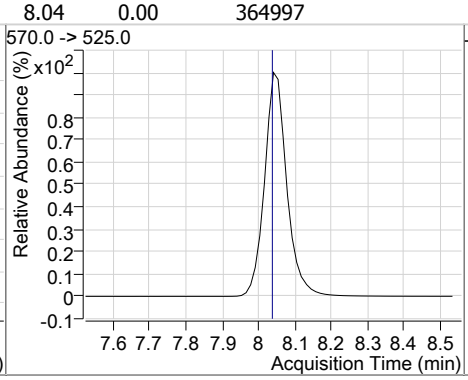


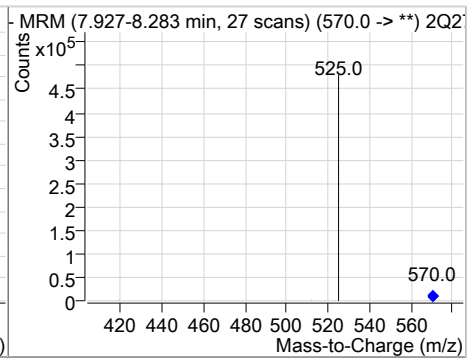




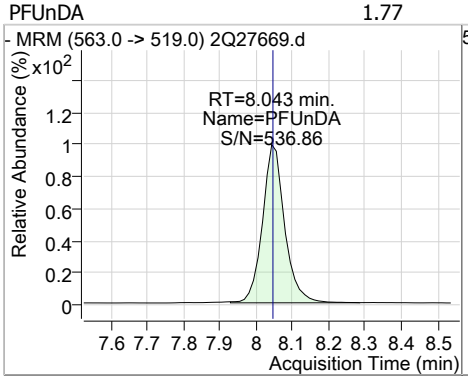
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.57	8.04	0.00	364997				

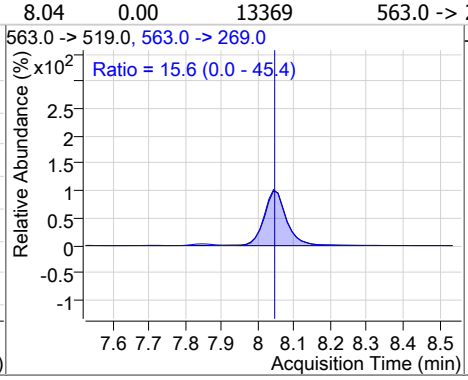


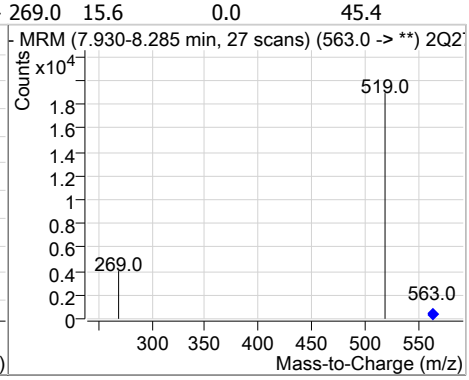




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	1.77	8.04	0.00	13369	563.0 -> 269.0	15.6	0.0	45.4

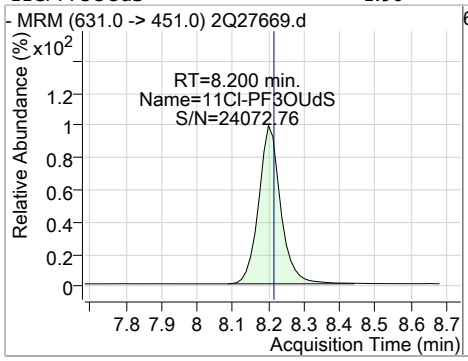


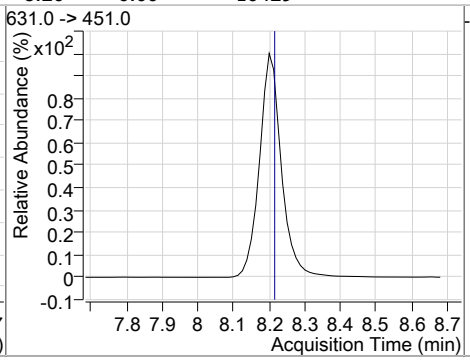


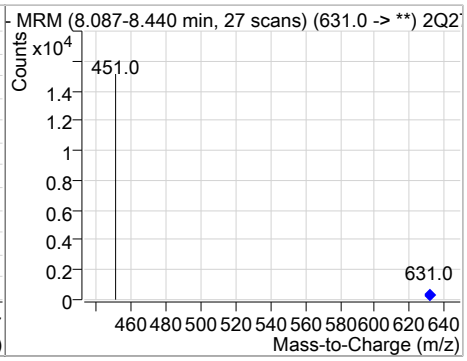


Perfluorinated Compounds by LC/MS/MS

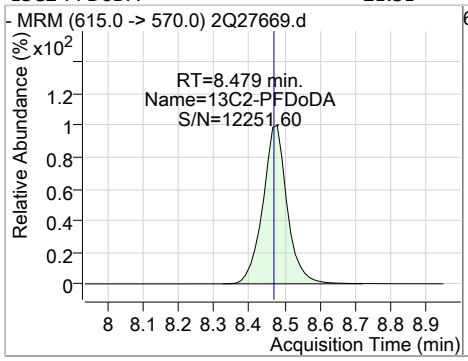
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.90	8.20	0.00	10429				

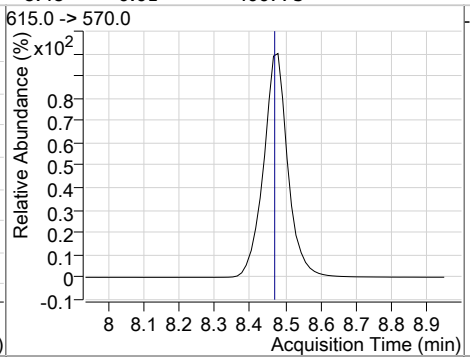


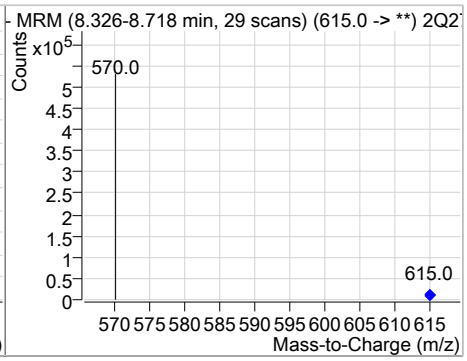




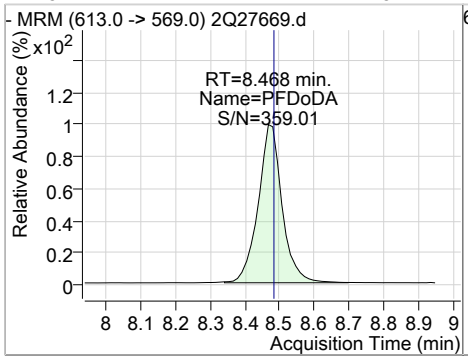
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.31	8.48	0.01	400775				

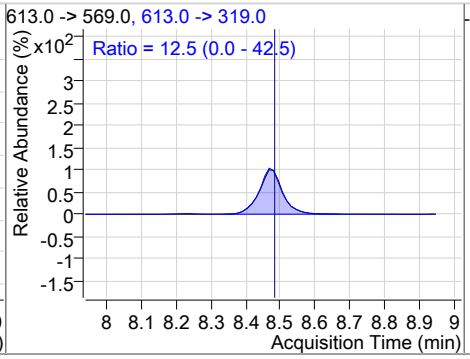


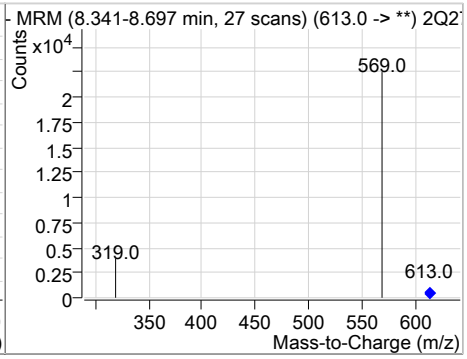




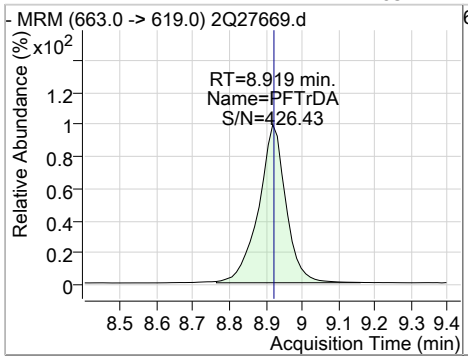
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.81	8.47	0.00	16161	613.0 -> 319.0	12.5	0.0	42.5

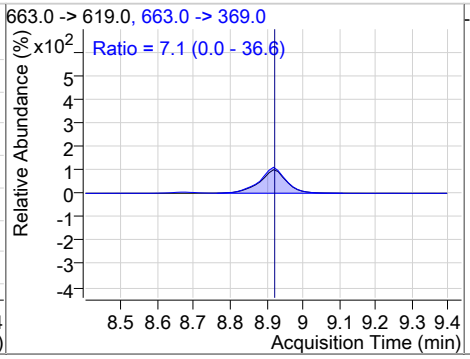


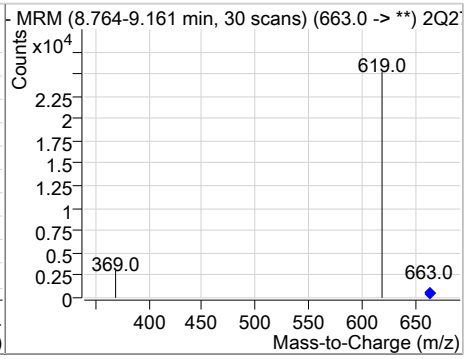




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.83	8.92	0.00	18191	663.0 -> 369.0	7.1	0.0	36.6

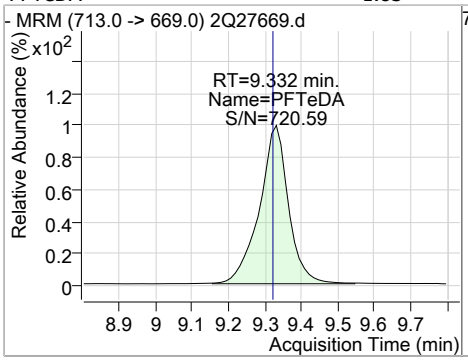


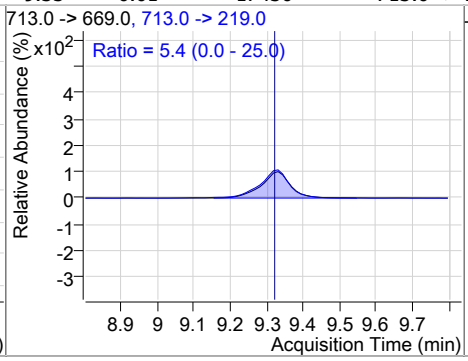


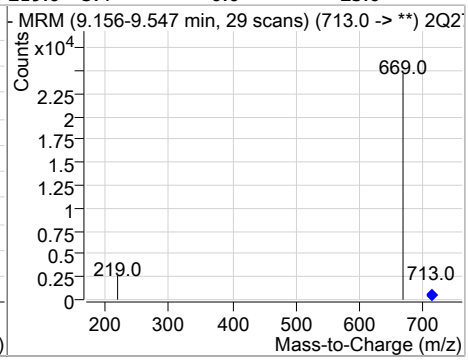


Perfluorinated Compounds by LC/MS/MS

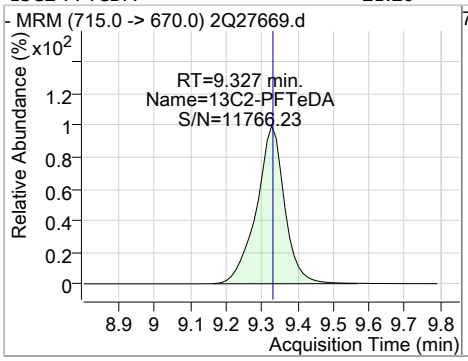
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.83	9.33	0.01	17436	713.0 -> 219.0	5.4	0.0	25.0

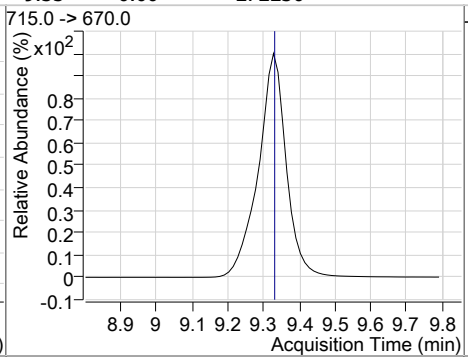


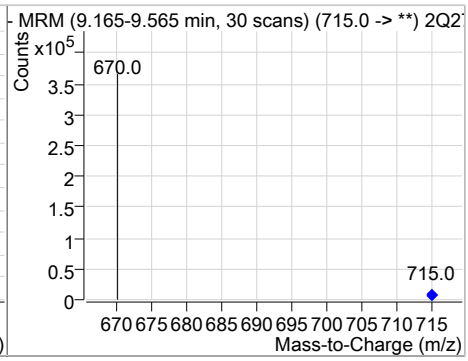




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.20	9.33	0.00	272230				







Manual Integration Approval Summary

Sample Number:	S2Q442-IC442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27669.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 08:50	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27670.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:05:48 AM
Sample Name : IC442-5.0
Vial : Vial 5
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

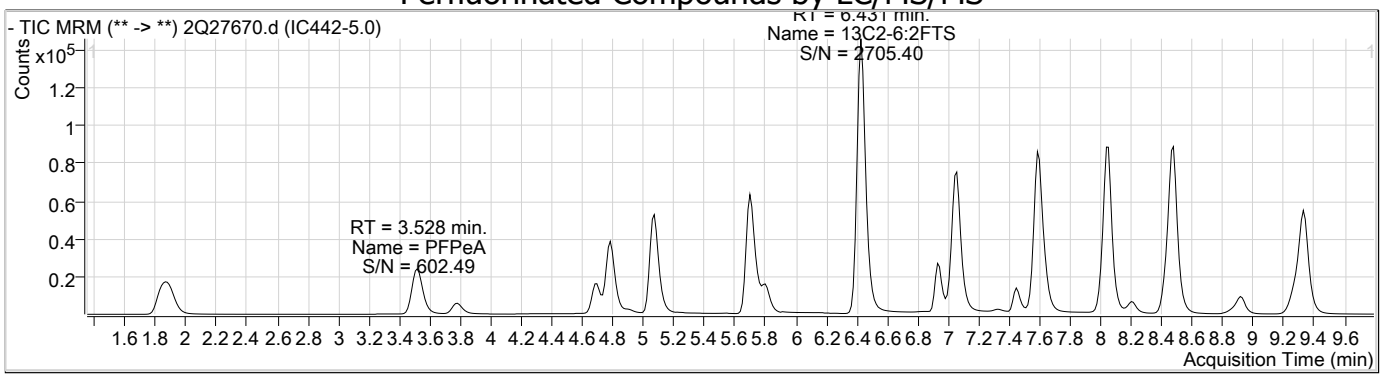
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	278765	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	44175	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	118756	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	100253	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	143772	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	204758	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	208189	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	210847	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	271790	20.00	µg/L	0.000
M7-PFUnDA	8.054	570.0 -> 525.0	337363	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	372836	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	253883	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	82894	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	18033	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	20096	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	25891	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	56481	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	61463	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	41420	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	37516	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	161737	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	56246	18.92	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.6%		
13C2-6:2FTS	6.431	429.0 -> 409.0	61459	19.15	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C2-8:2FTS	7.630	529.0 -> 509.0	41448	18.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.5%		
13C2-PFDoDA	8.479	615.0 -> 570.0	372217	19.79	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C2-PFTeDA	9.327	715.0 -> 670.0	253057	19.71	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C3-PFBS	3.780	302.0 -> 99.0	17967	19.71	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	20176	19.79	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C4-PFBA	1.865	217.0 -> 172.0	118229	19.72	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C4-PFHpA	5.705	367.0 -> 322.0	204538	19.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C5-PFHxA	4.789	318.0 -> 273.0	143561	19.76	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C5-PFPeA	3.524	268.0 -> 223.0	100494	19.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C6-PFDA	7.594	519.0 -> 474.0	271715	19.91	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

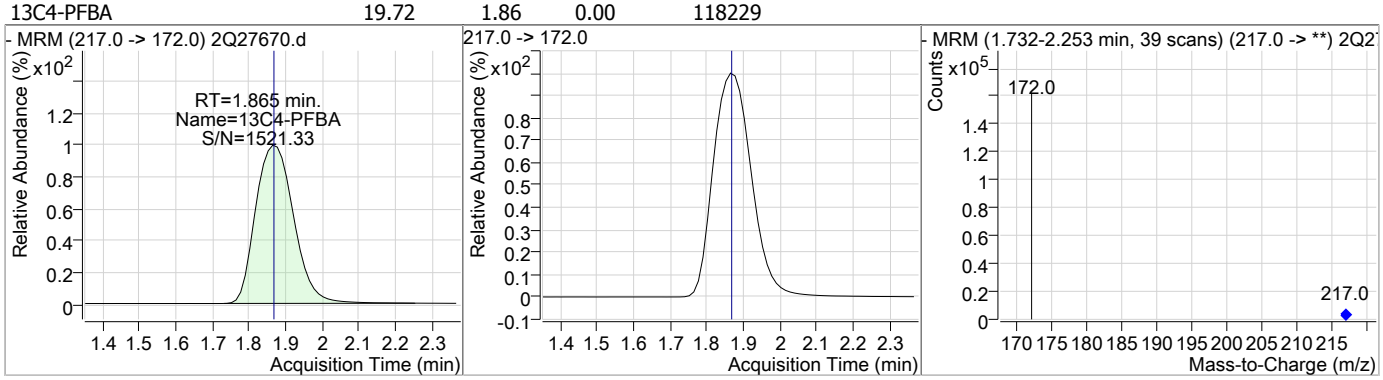
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
13C7-PFUnDA	8.054	570.0 -> 525.0	337295	19.93	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%			
13C8-FOSA	6.932	506.0 -> 78.0	82855	20.43	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%			
13C8-PFOA	6.434	421.0 -> 376.0	208115	19.95	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%			
13C8-PFOS	7.045	507.0 -> 99.0	25895	19.87	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%			
13C9-PFNA	7.066	472.0 -> 427.0	210750	19.91	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%			
d3-MeFOSAA	7.447	573.0 -> 419.0	37496	19.56	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%			
M2-PFOA	6.435	415.0 -> 370.0	279046	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	44307	20.05	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.3%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	161737	101.15	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 101.1%			
Target Compounds							QValue
4:2FTS	4.687	327.0 -> 307.0	8111	5.21	µg/L		97
6:2FTS	6.432	427.0 -> 407.0	7596	5.02	µg/L		98
8:2FTS	7.631	527.0 -> 507.0	5464	5.28	µg/L		100
EtFOSAA	7.598	584.0 -> 419.0	3796	4.72	µg/L		96
FOSA	6.935	498.0 -> 78.0	9180	4.82	µg/L		99
MeFOSAA	7.447	570.0 -> 419.0	4804	5.04	µg/L		100
PFBA	1.873	213.0 -> 169.0	5698	4.86	µg/L		100
PFBS	3.771	299.0 -> 80.0	6992	4.88	µg/L		100
PFDA	7.595	513.0 -> 469.0	28522	4.82	µg/L		97
PFDoDA	8.468	613.0 -> 569.0	40065	4.83	µg/L		100
PFDS	8.014	599.0 -> 80.0	2395	5.02	µg/L		100
PFHpA	5.708	363.0 -> 319.0	43067	4.88	µg/L		100
PFHpS	6.442	449.0 -> 80.0	4822	4.95	µg/L		99
PFHxA	4.791	313.0 -> 269.0	12169	4.91	µg/L		100
PFHxS	5.739	399.0 -> 80.0	5346	4.81	µg/L	m	98
PFNA	7.066	463.0 -> 419.0	33118	4.74	µg/L		99
PFNS	7.565	549.0 -> 80.0	4516	5.09	µg/L		98
PFOA	6.437	413.0 -> 369.0	27043	4.81	µg/L		99
PFOS	7.037	499.0 -> 80.0	6138	4.88	µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	21279	4.90	µg/L		100
PFPeS	4.908	349.0 -> 80.0	4429	4.83	µg/L		95
PFTeDA	9.332	713.0 -> 669.0	42796	4.82	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	44328	4.79	µg/L		99
PFUnDA	8.043	563.0 -> 519.0	32956	4.74	µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	25423	4.98	µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	5049	5.00	µg/L		100
ADONA	5.804	377.0 -> 251.0	50158	4.93	µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	47095	24.51	µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

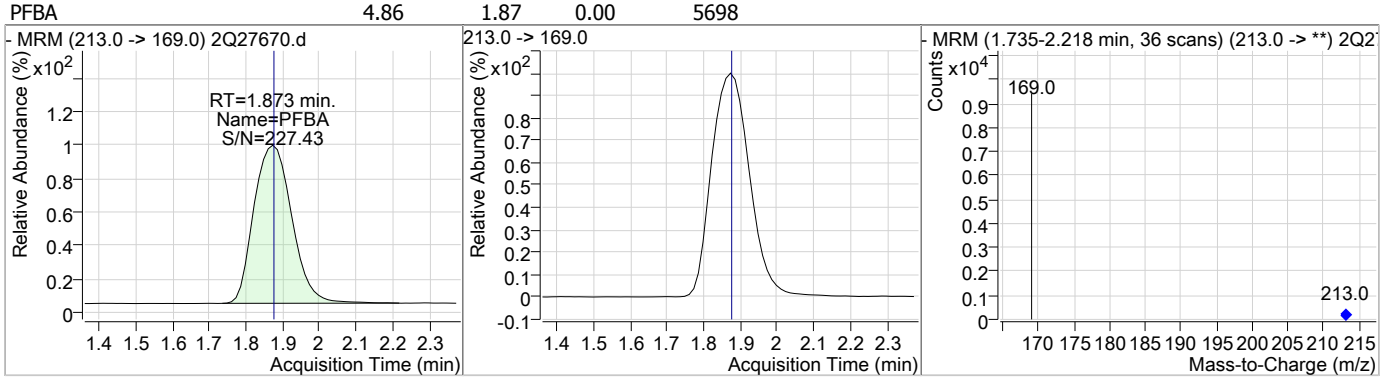
Perfluorinated Compounds by LC/MS/MS



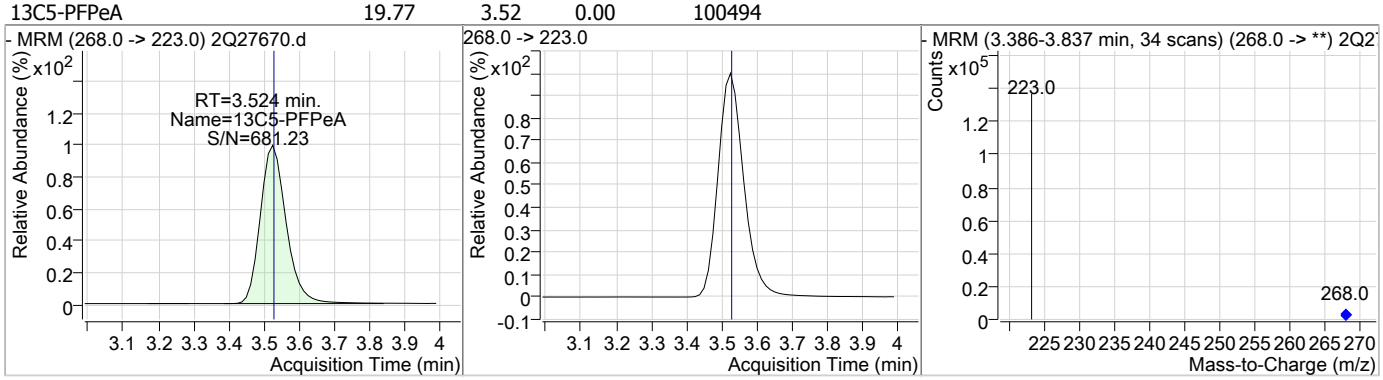
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.72	1.86	0.00	118229				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	4.86	1.87	0.00	5698				

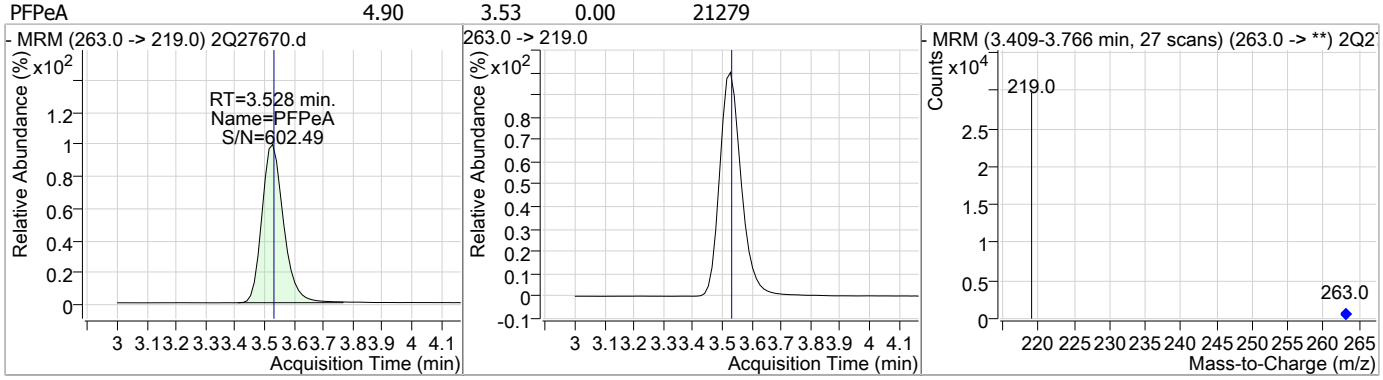


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.77	3.52	0.00	100494				

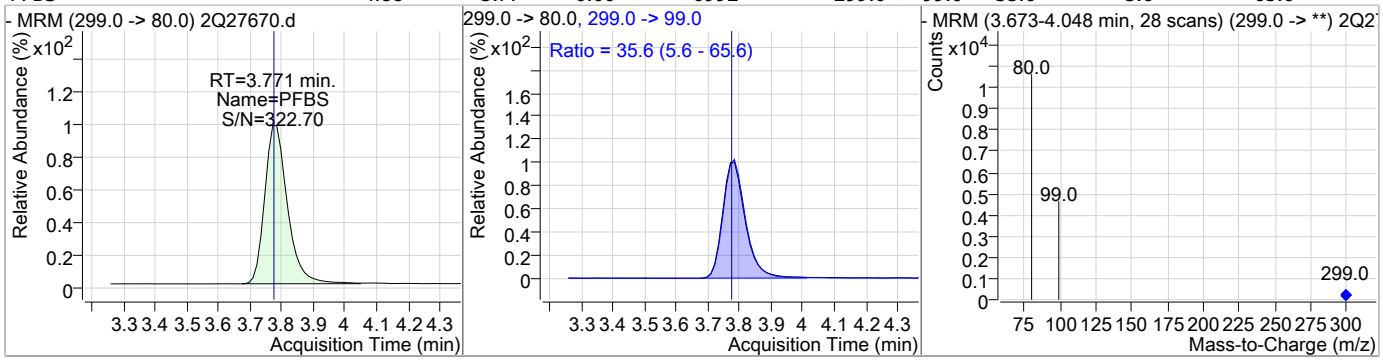


Perfluorinated Compounds by LC/MS/MS

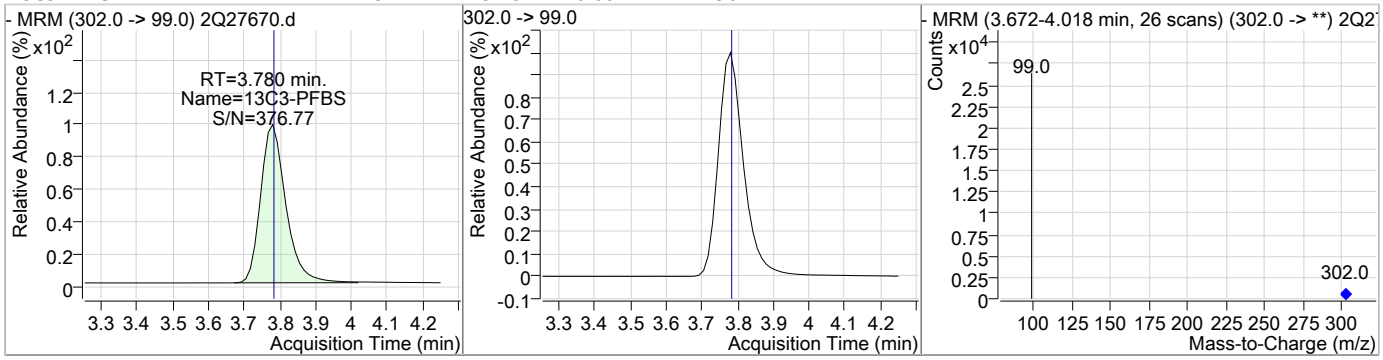
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.90	3.53	0.00	21279				



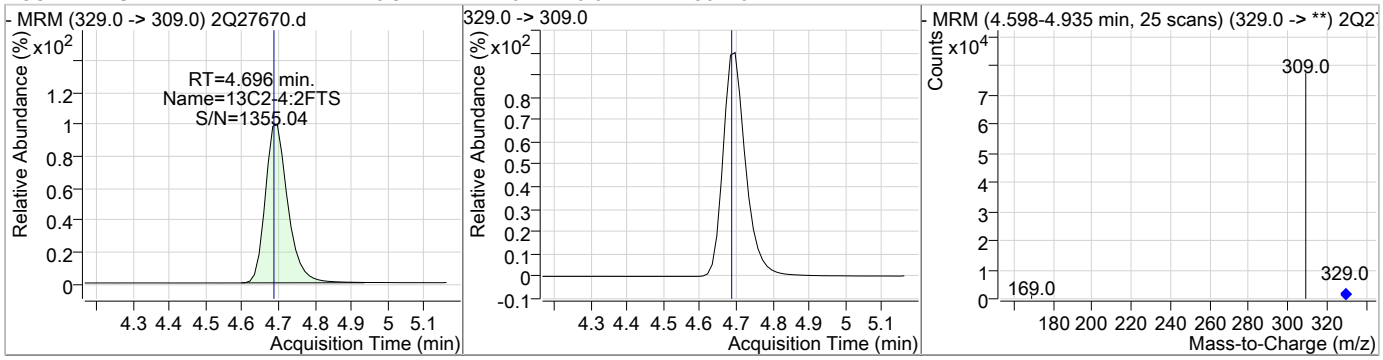
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.88	3.77	0.00	6992	299.0 -> 99.0	35.6	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.71	3.78	0.00	17967				

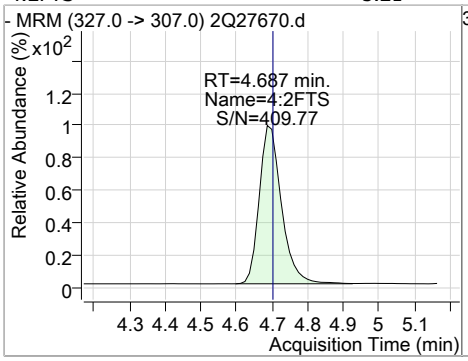


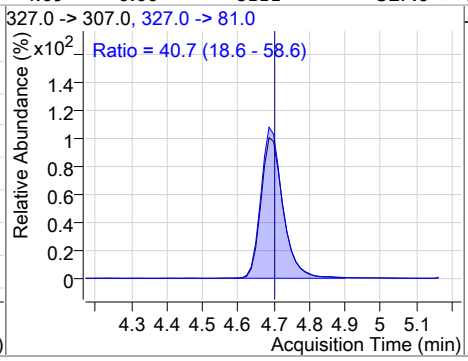
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.92	4.70	0.01	56246				

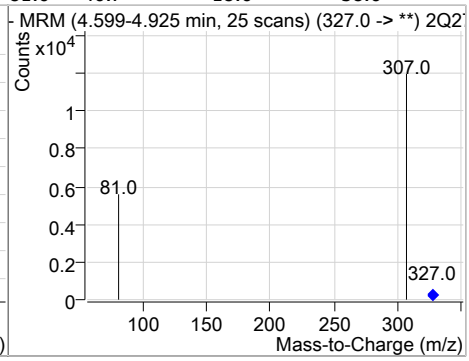


Perfluorinated Compounds by LC/MS/MS

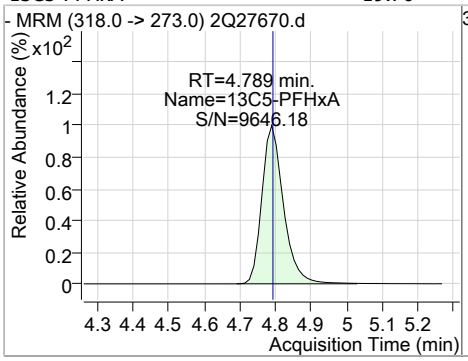
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	5.21	4.69	0.00	8111	327.0 -> 81.0	40.7	18.6	58.6

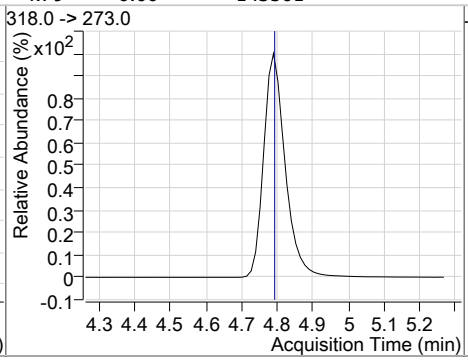


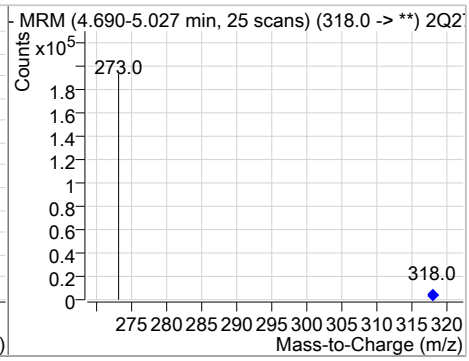




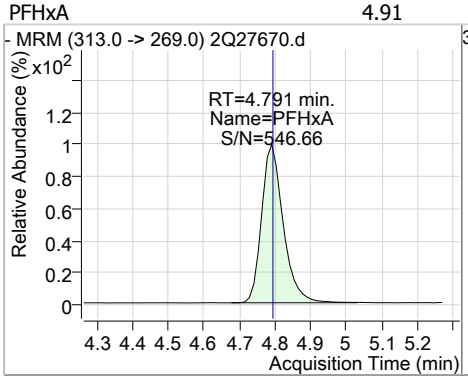
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.76	4.79	0.00	143561				

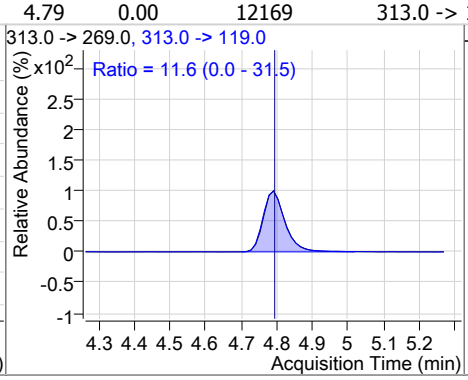


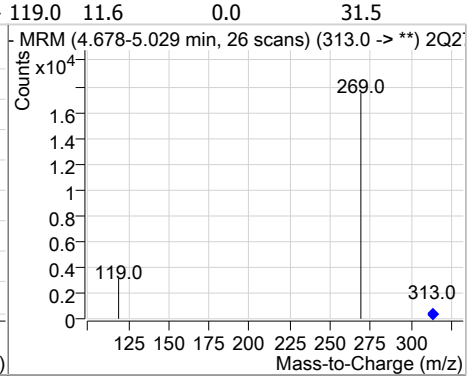




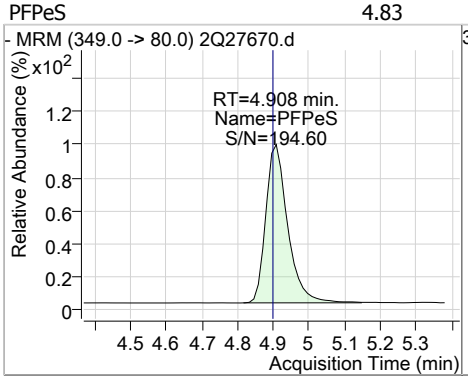
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.91	4.79	0.00	12169	313.0 -> 119.0	11.6	0.0	31.5

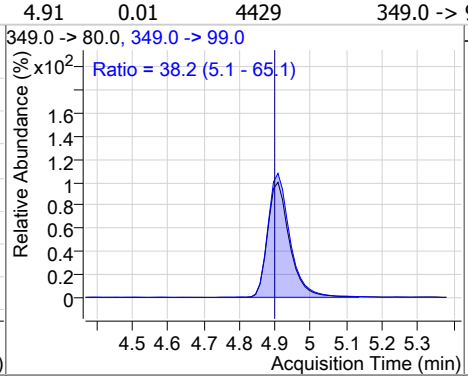


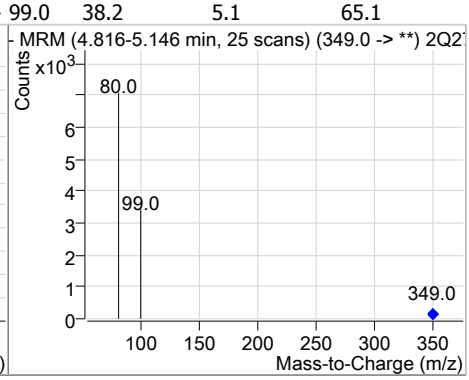




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	4.83	4.91	0.01	4429	349.0 -> 99.0	38.2	5.1	65.1

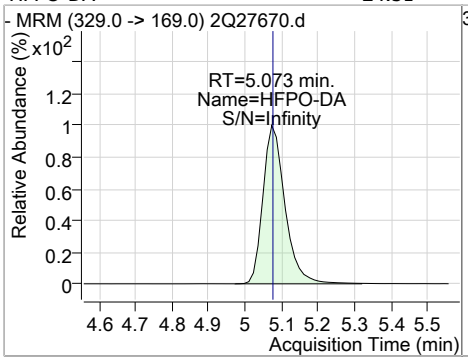


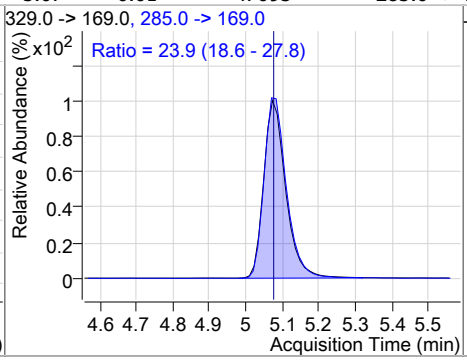


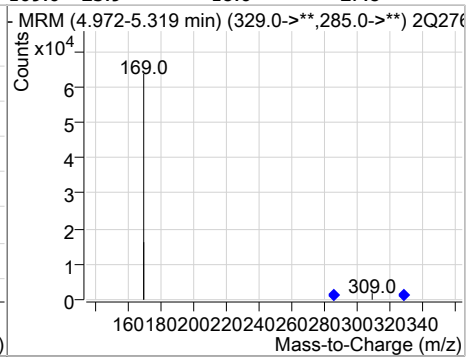


Perfluorinated Compounds by LC/MS/MS

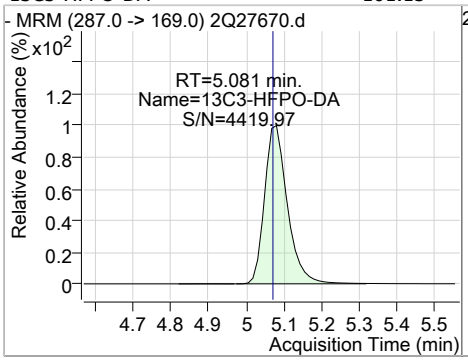
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.51	5.07	0.01	47095	285.0 -> 169.0	23.9	18.6	27.8

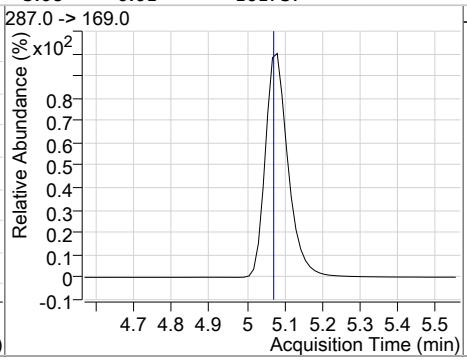


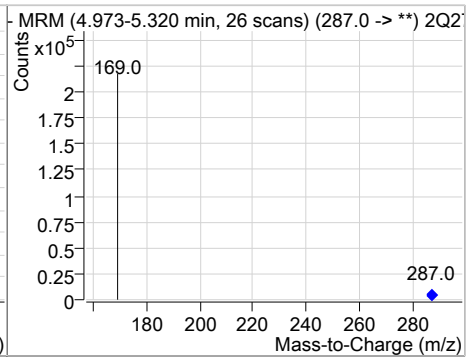




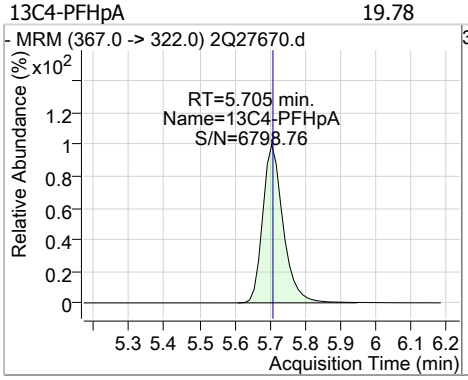
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	101.15	5.08	0.01	161737				

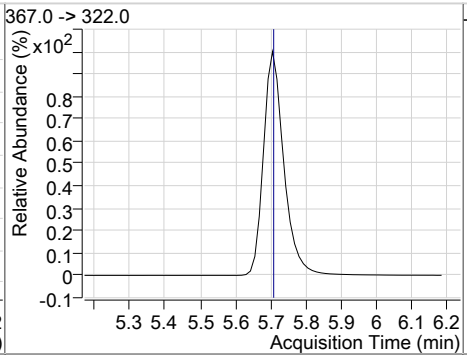


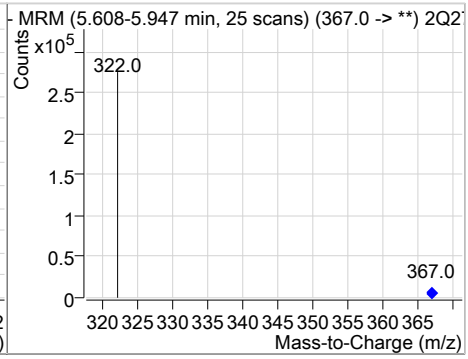




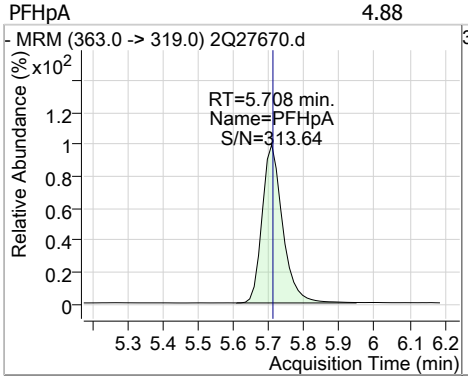
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.78	5.71	0.00	204538				

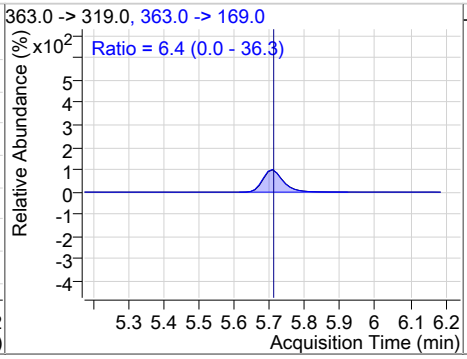


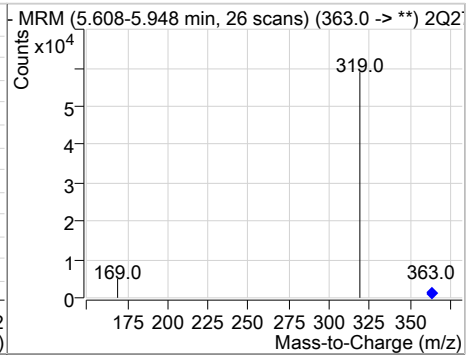




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	4.88	5.71	0.00	43067	363.0 -> 169.0	6.4	0.0	36.3

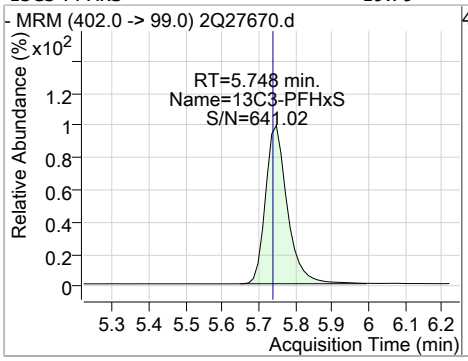


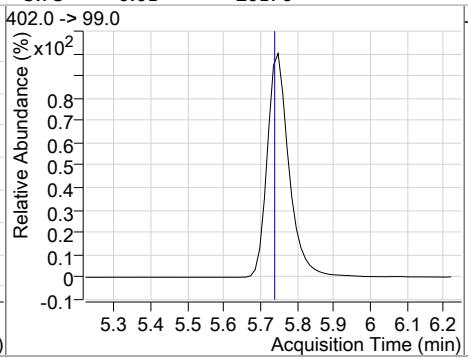


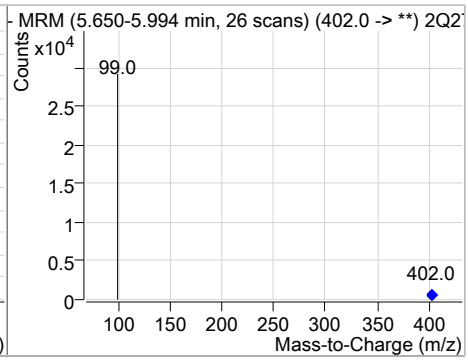


Perfluorinated Compounds by LC/MS/MS

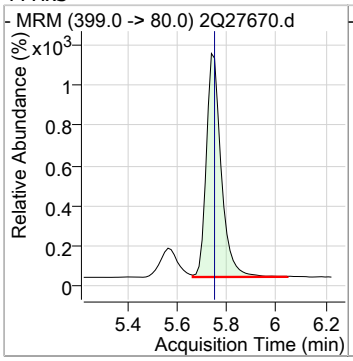
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.79	5.75	0.01	20176				

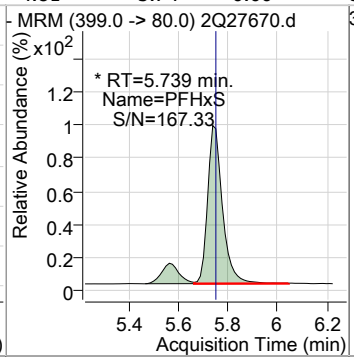


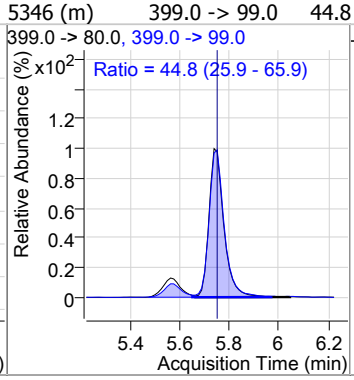


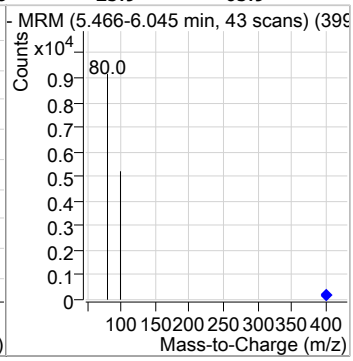


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.81	5.74	0.00	5346 (m)	399.0 -> 99.0	44.8	25.9	65.9

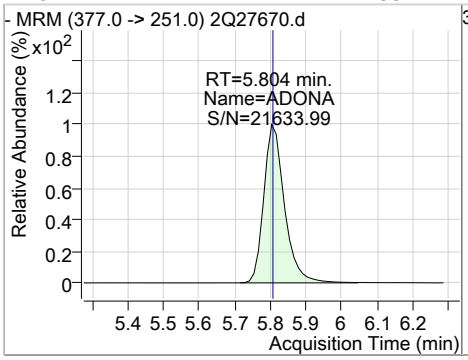


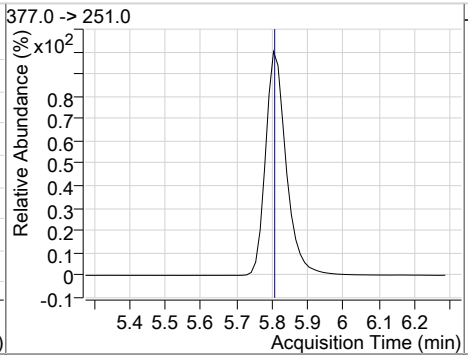


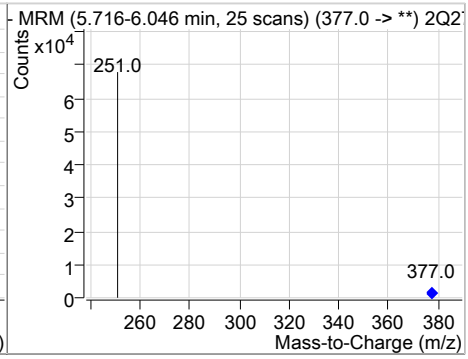




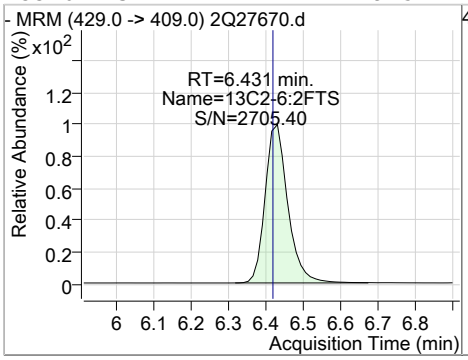
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.93	5.80	0.00	50158				

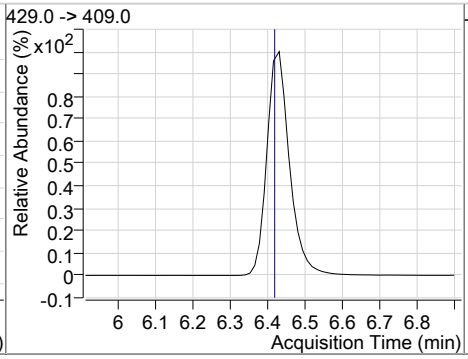


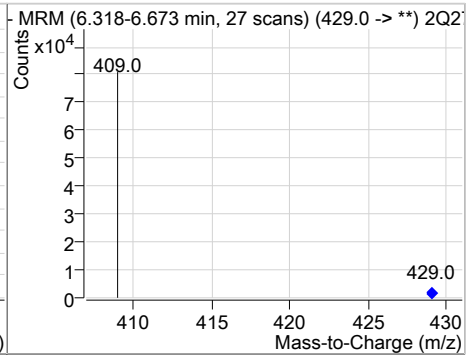




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.15	6.43	0.02	61459				

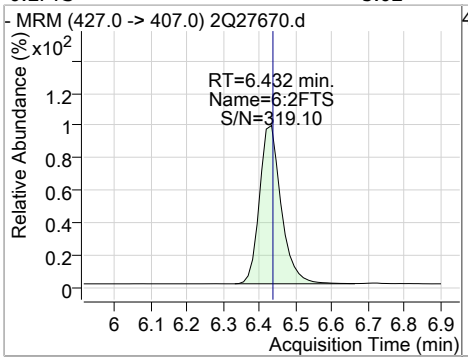


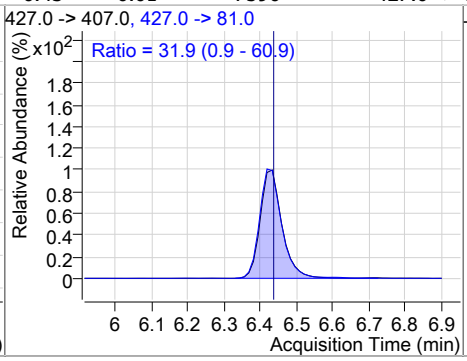


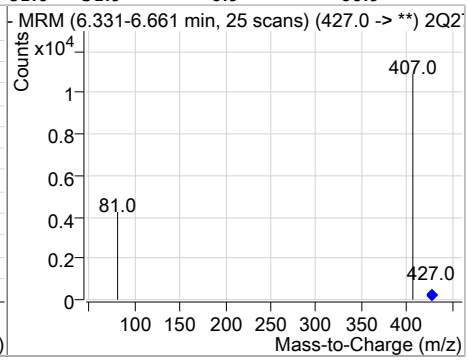


Perfluorinated Compounds by LC/MS/MS

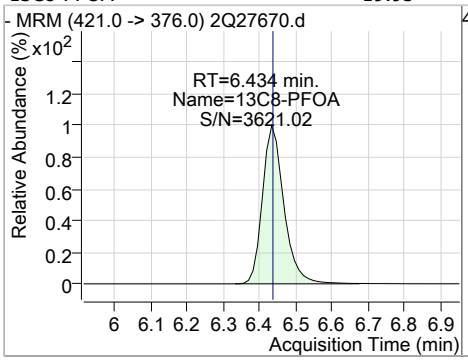
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	5.02	6.43	0.01	7596	427.0 -> 81.0	31.9	0.9	60.9

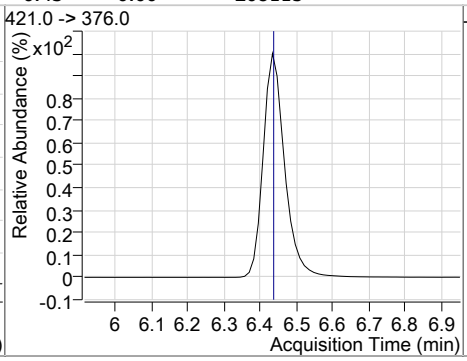


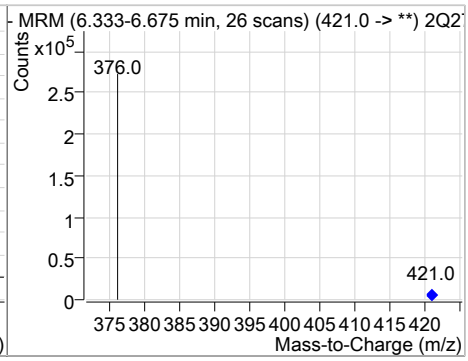




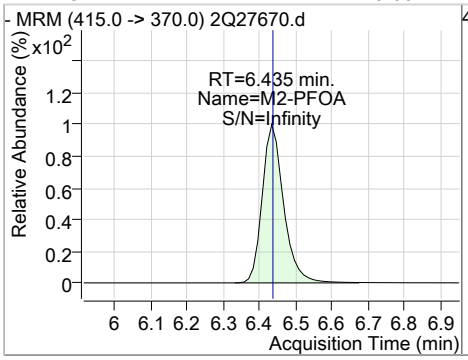
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.95	6.43	0.00	208115				

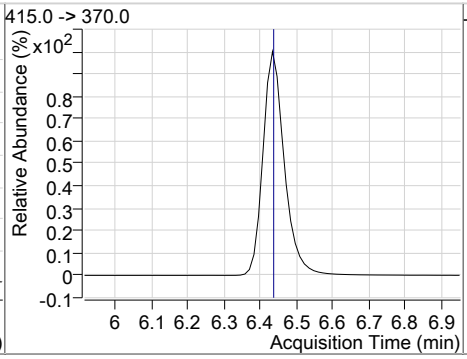


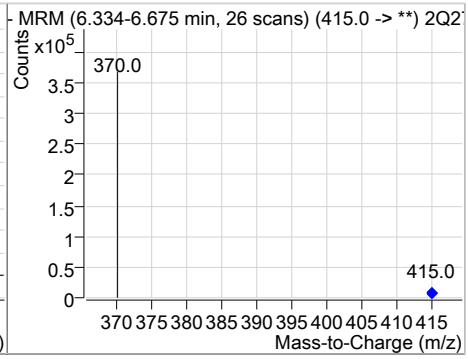




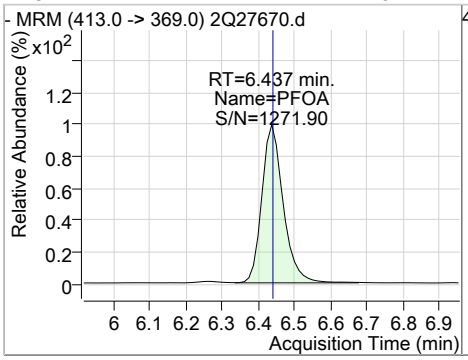
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	279046				

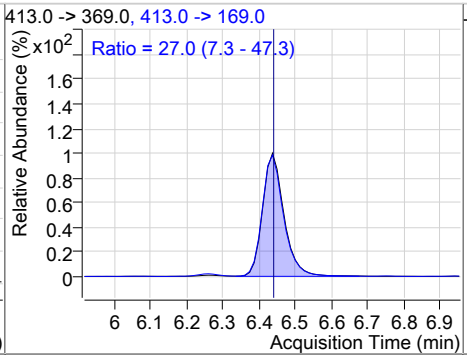


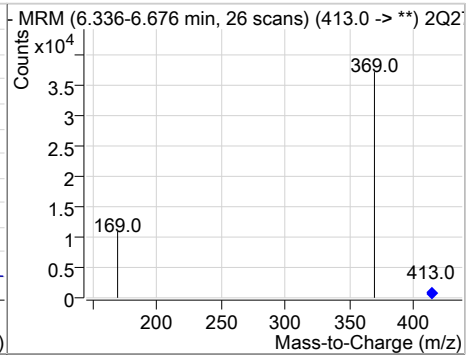




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	4.81	6.44	0.00	27043	413.0 -> 169.0	27.0	7.3	47.3

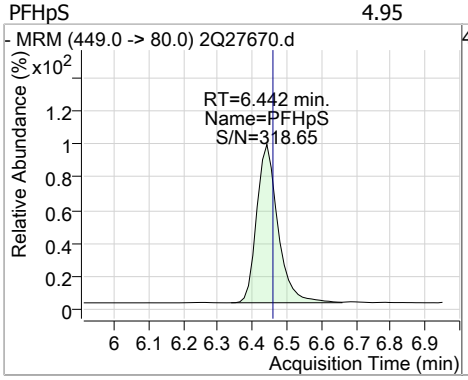


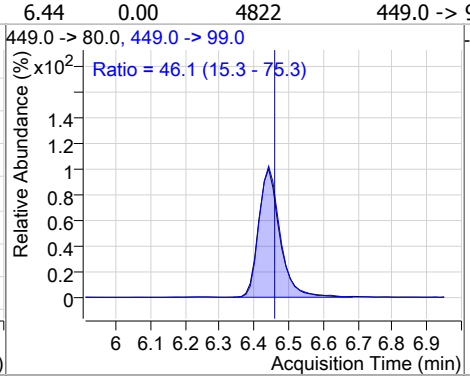


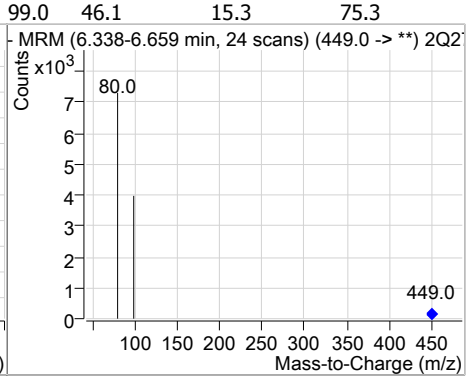


Perfluorinated Compounds by LC/MS/MS

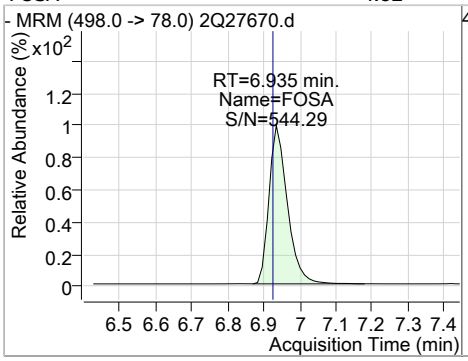
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	4.95	6.44	0.00	4822	449.0 -> 99.0	46.1	15.3	75.3

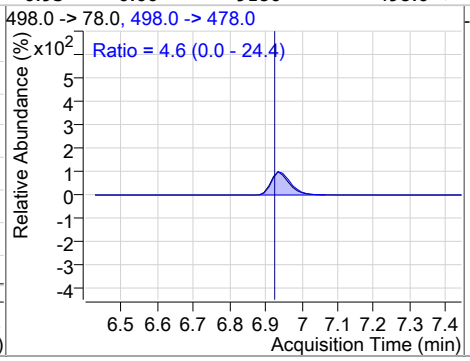


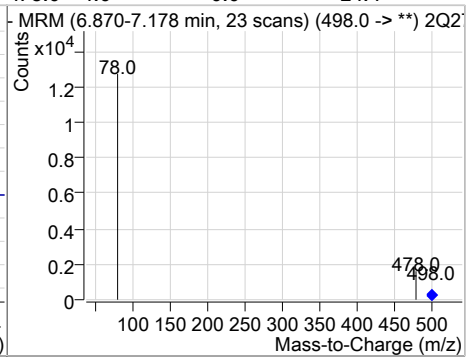




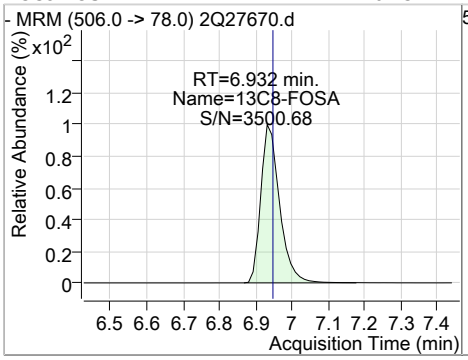
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	4.82	6.93	0.00	9180	498.0 -> 478.0	4.6	0.0	24.4

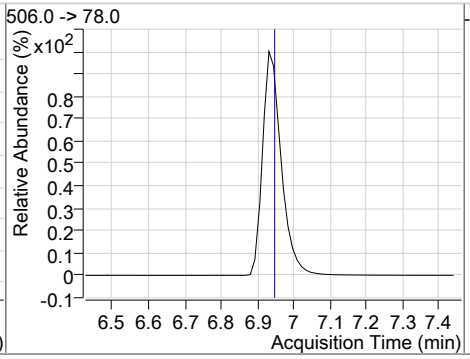


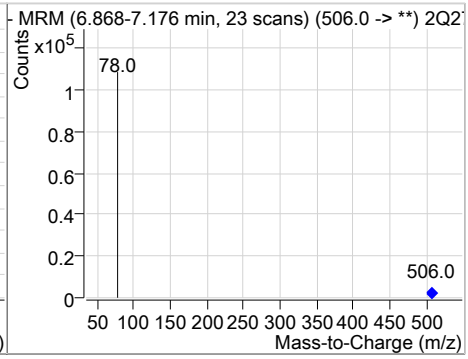




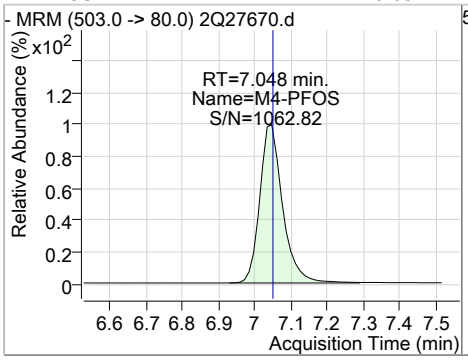
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.43	6.93	-0.01	82855				

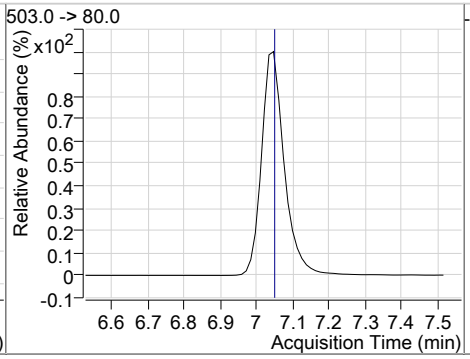


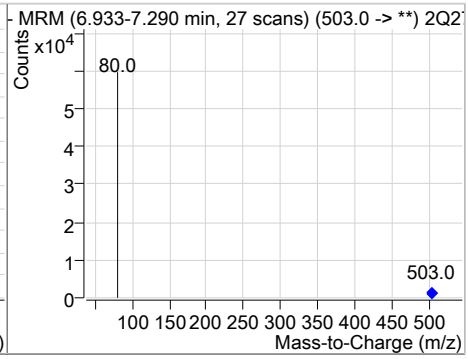




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.05	7.05	0.01	44307				

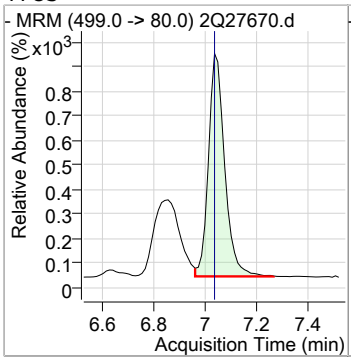


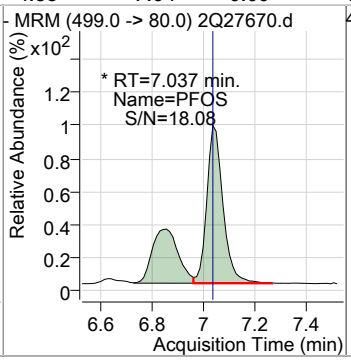


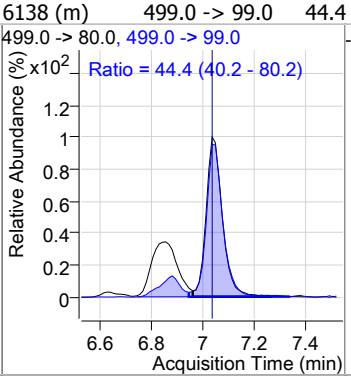


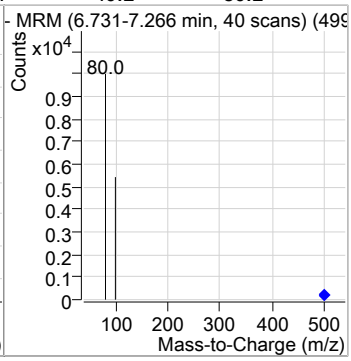
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.88	7.04	0.00	6138 (m)	499.0 -> 99.0	44.4	40.2	80.2

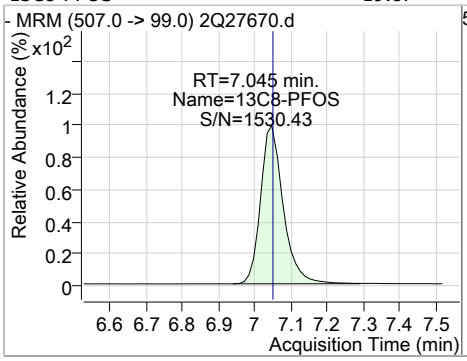


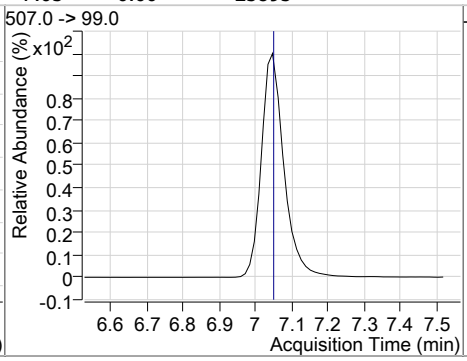


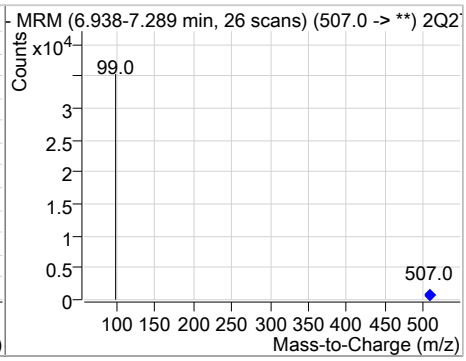




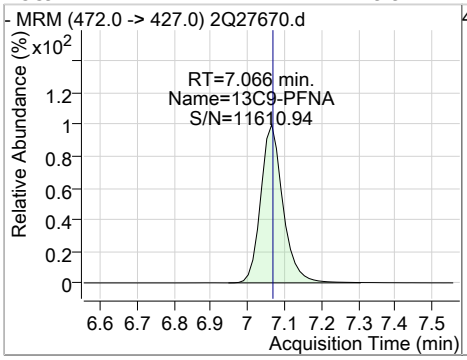
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.87	7.05	0.00	25895				

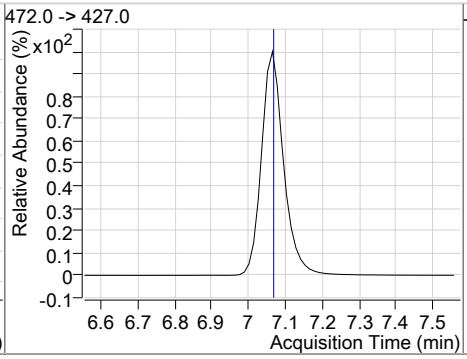


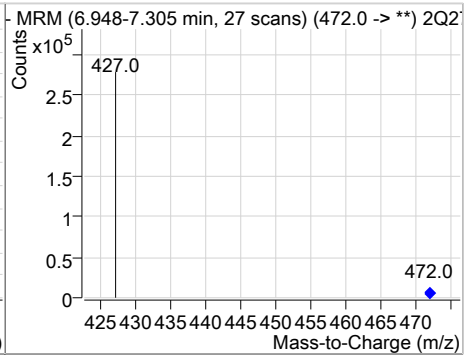




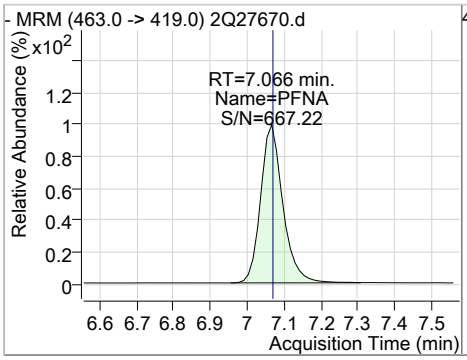
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.91	7.07	0.00	210750				

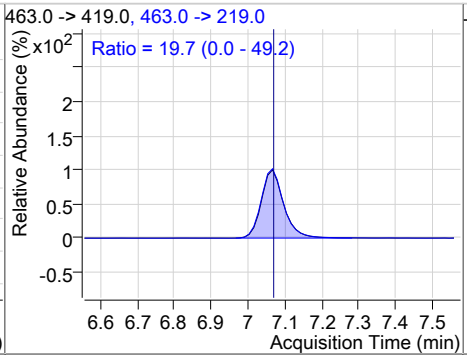


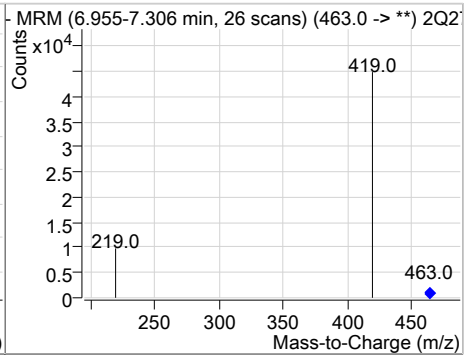




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.74	7.07	0.00	33118	463.0 -> 219.0	19.7	0.0	49.2

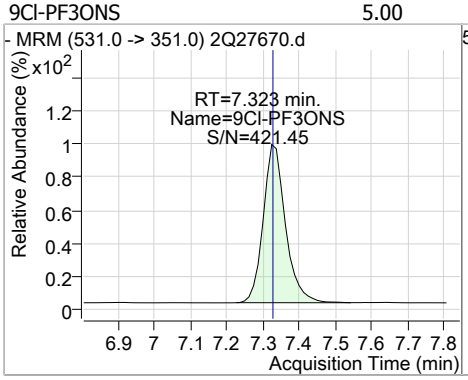


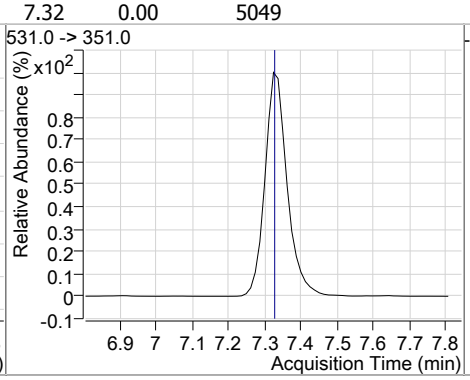


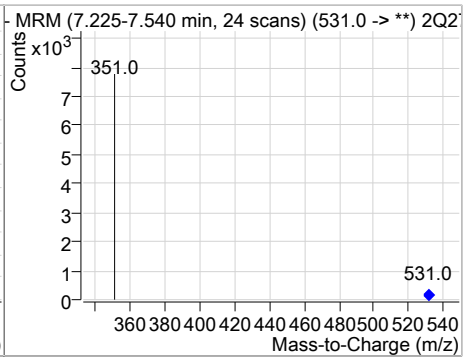


Perfluorinated Compounds by LC/MS/MS

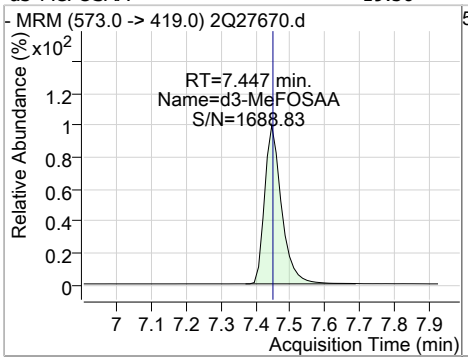
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	5.00	7.32	0.00	5049				

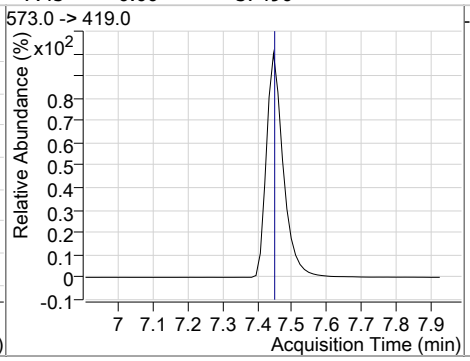


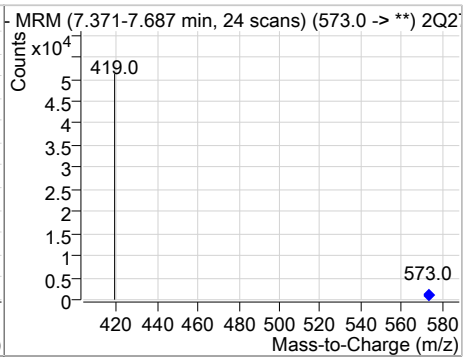




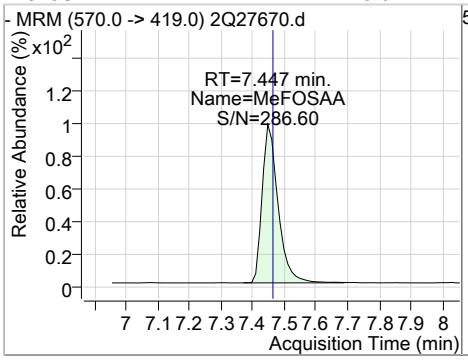
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.56	7.45	0.00	37496				

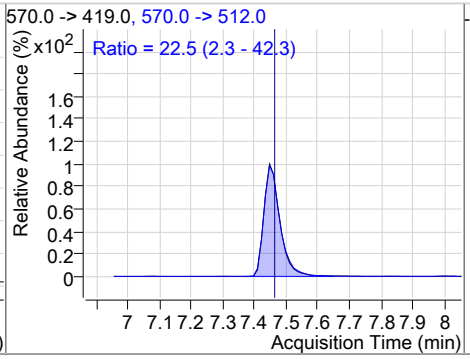


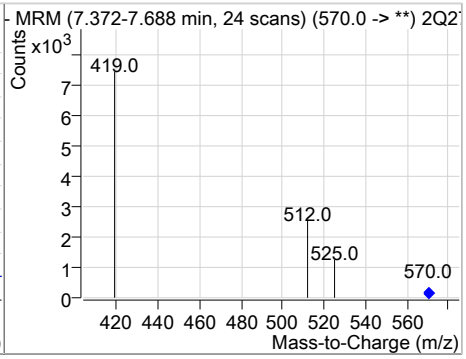




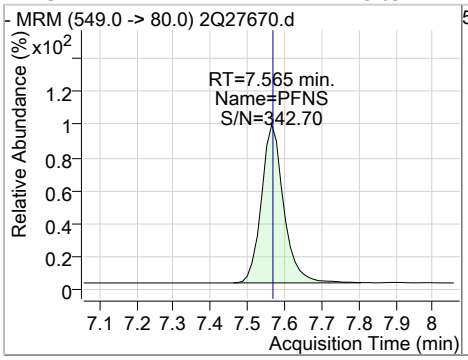
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	5.04	7.45	-0.01	4804	570.0 -> 512.0	22.5	2.3	42.3

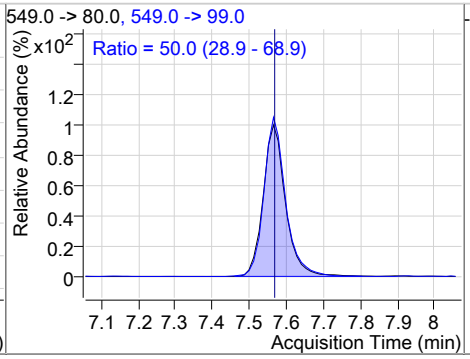


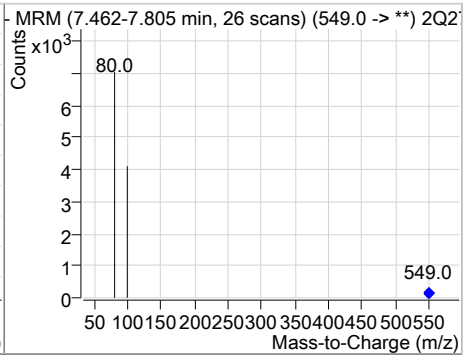




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	5.09	7.57	0.00	4516	549.0 -> 99.0	50.0	28.9	68.9

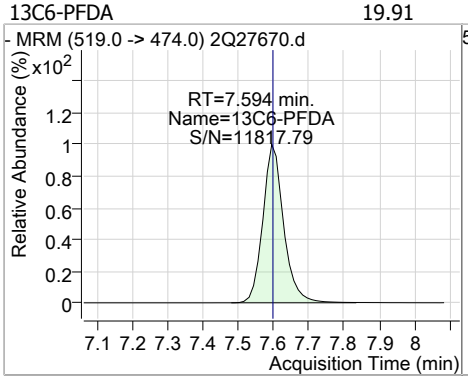


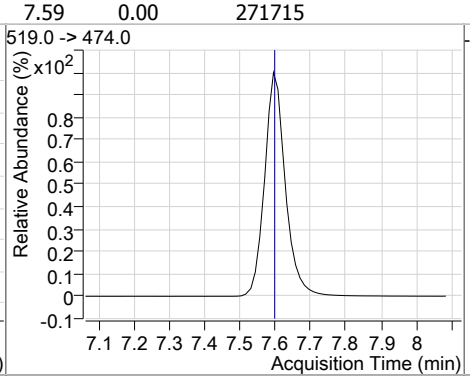


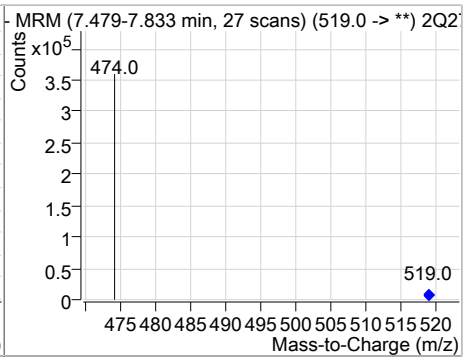


Perfluorinated Compounds by LC/MS/MS

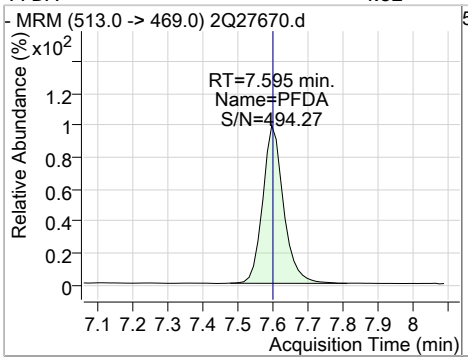
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.91	7.59	0.00	271715				

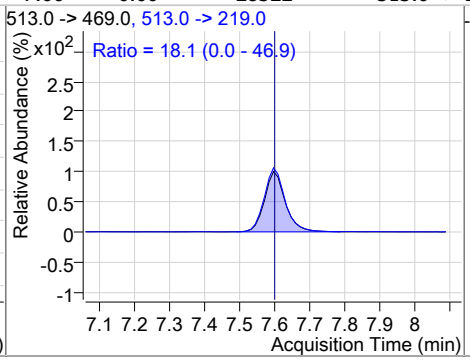


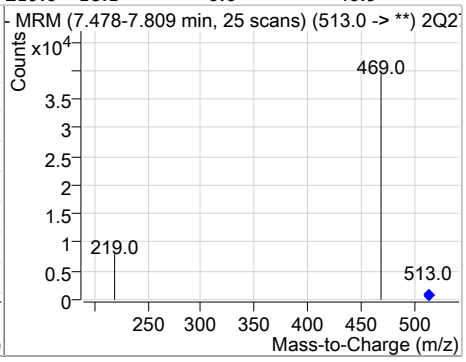




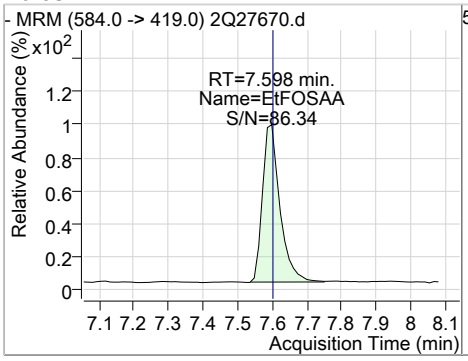
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	4.82	7.60	0.00	28522	513.0 -> 219.0	18.1	0.0	46.9

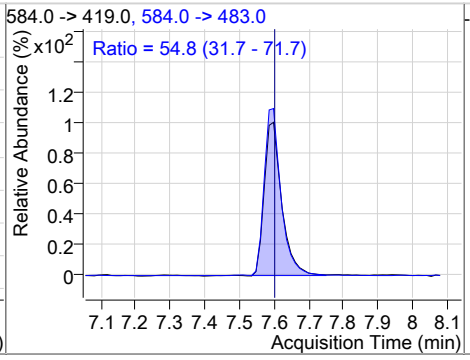


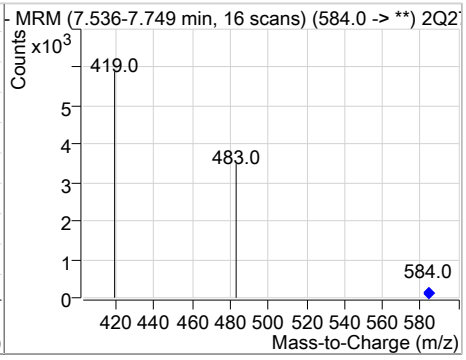




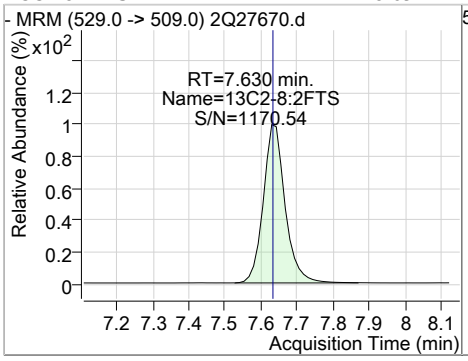
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.72	7.60	0.00	3796	584.0 -> 483.0	54.8	31.7	71.7

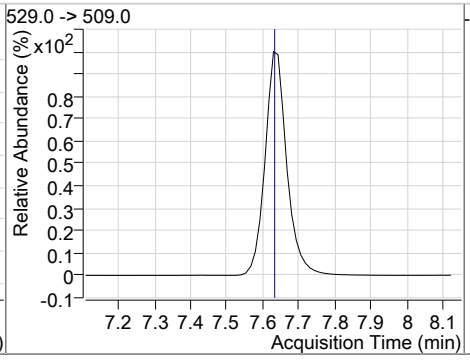


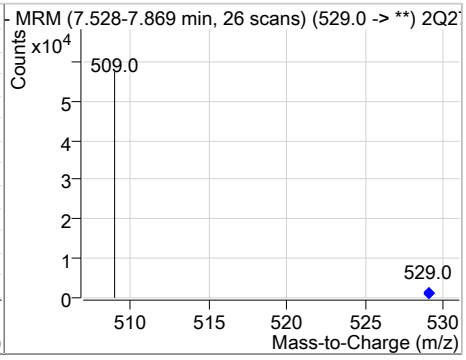




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.69	7.63	0.00	41448				

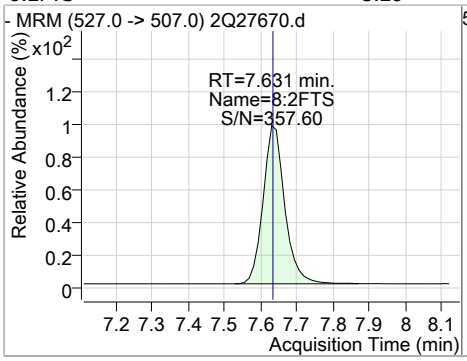


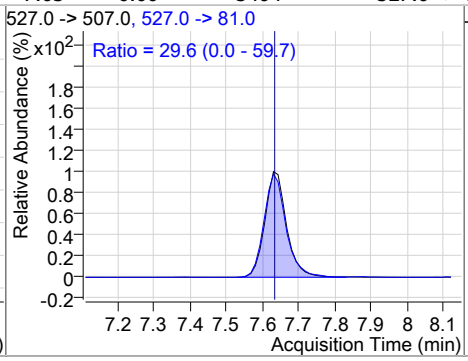


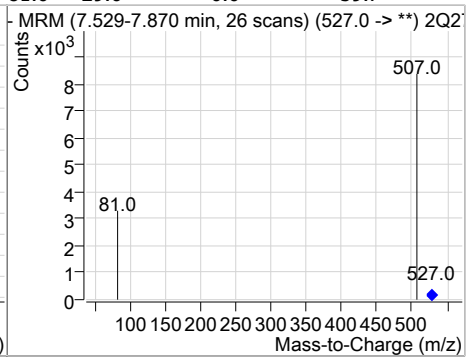


Perfluorinated Compounds by LC/MS/MS

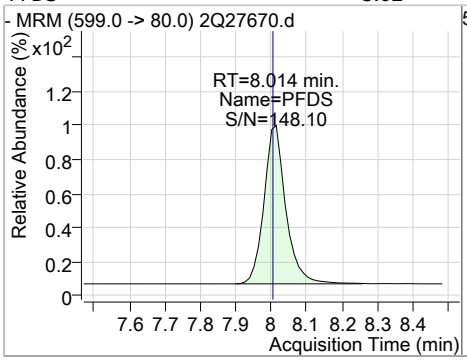
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	5.28	7.63	0.00	5464	527.0 -> 81.0	29.6	0.0	59.7

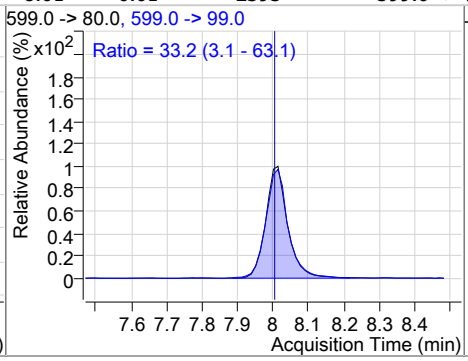


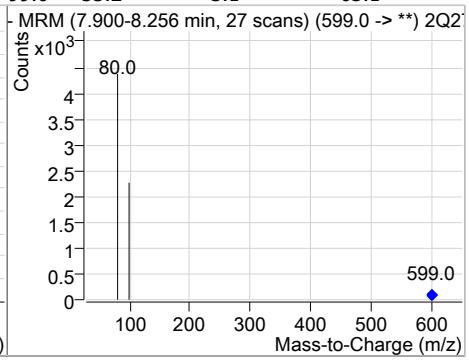




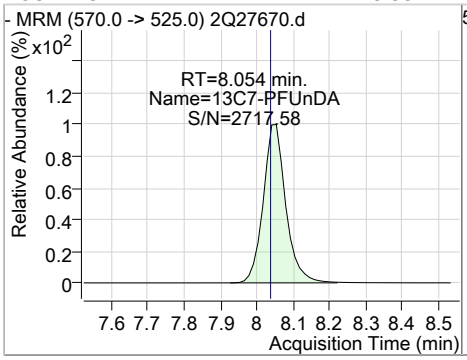
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	5.02	8.01	0.01	2395	599.0 -> 99.0	33.2	3.1	63.1

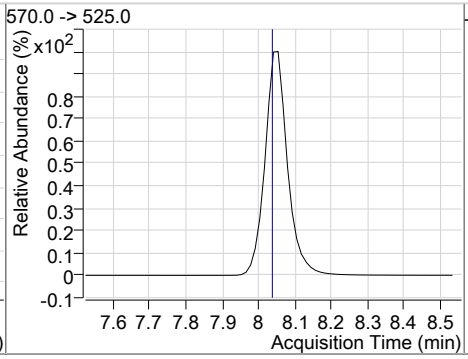


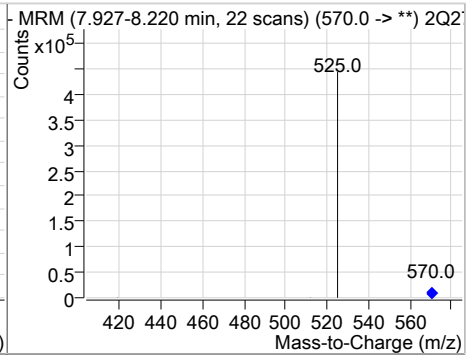




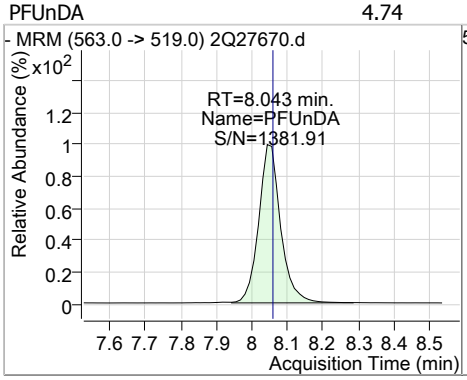
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.93	8.05	0.01	337295				

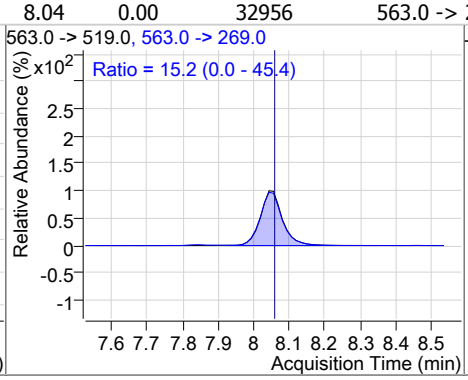


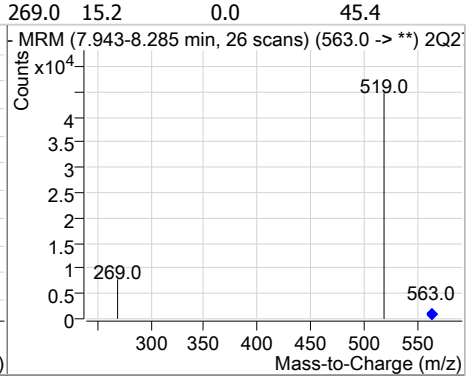




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	4.74	8.04	0.00	32956	563.0 -> 269.0	15.2	0.0	45.4

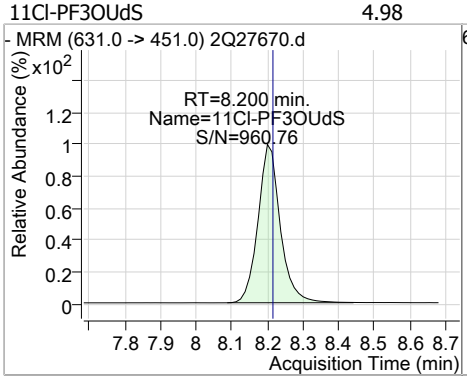


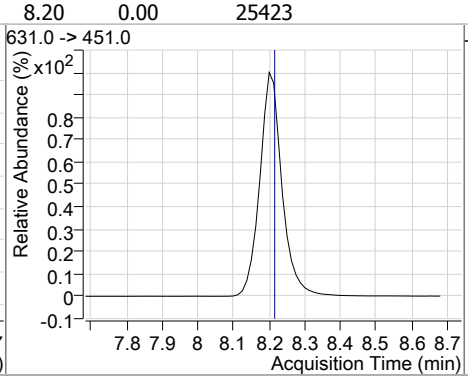


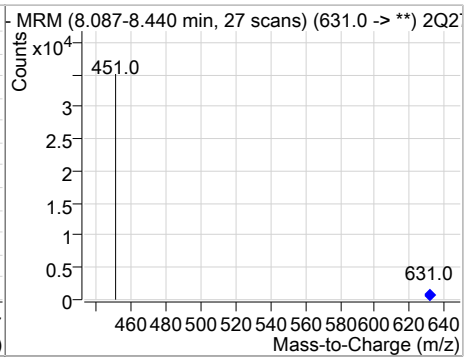


Perfluorinated Compounds by LC/MS/MS

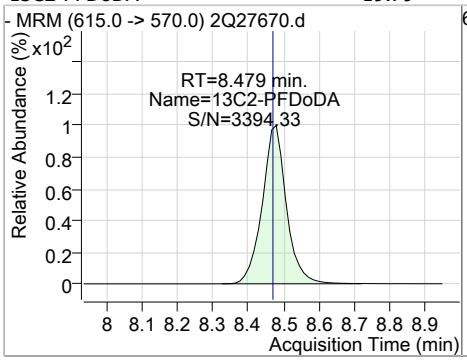
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.98	8.20	0.00	25423				

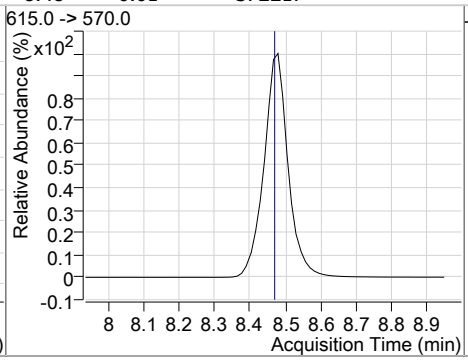


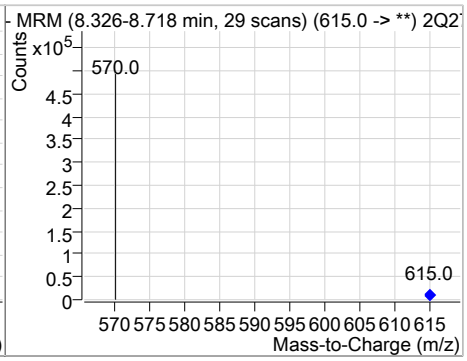




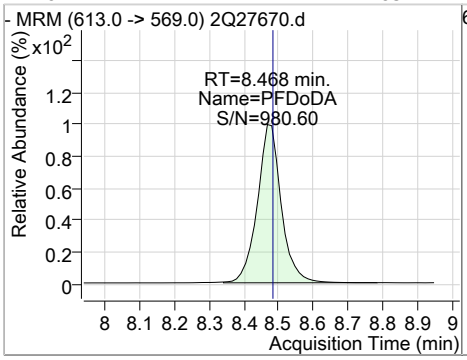
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.79	8.48	0.01	372217				

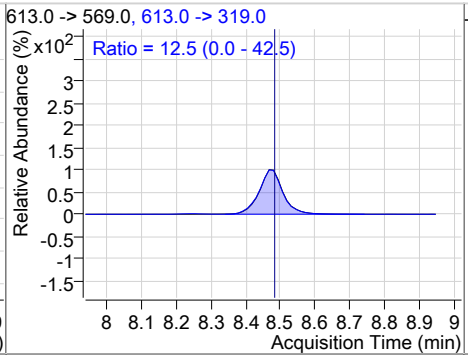


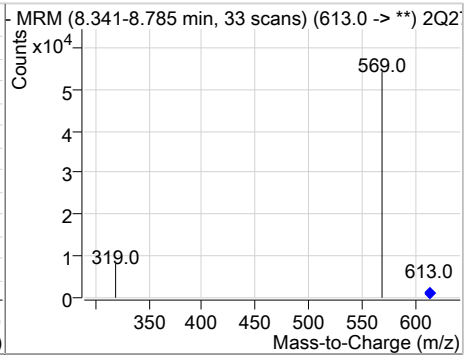




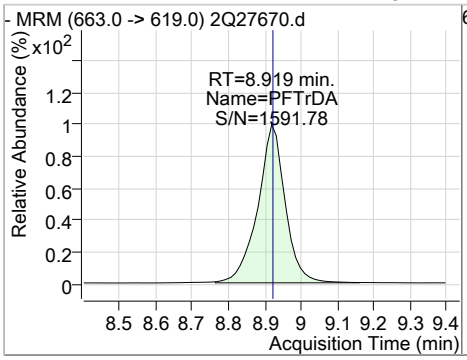
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	4.83	8.47	0.00	40065	613.0 -> 319.0	12.5	0.0	42.5

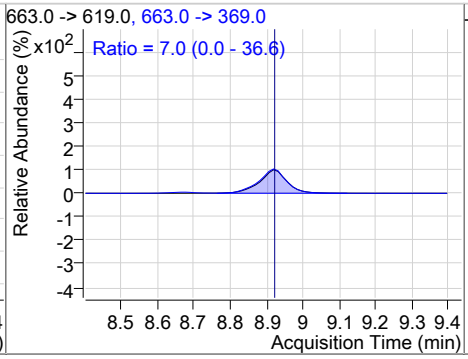


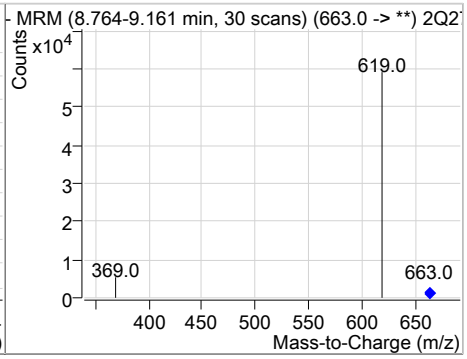




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	4.79	8.92	0.00	44328	663.0 -> 369.0	7.0	0.0	36.6

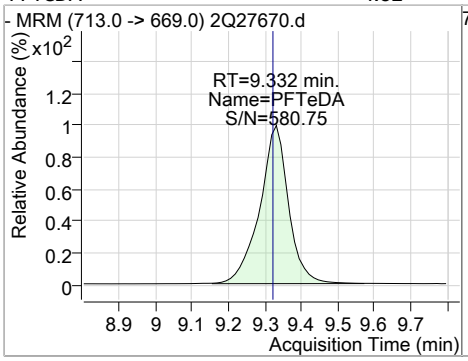


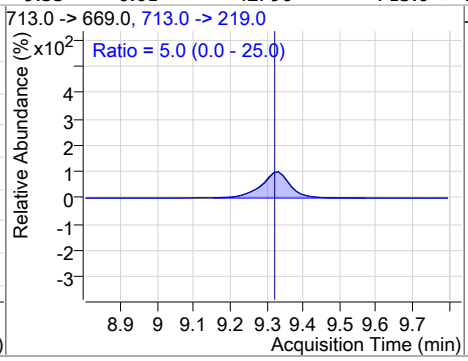


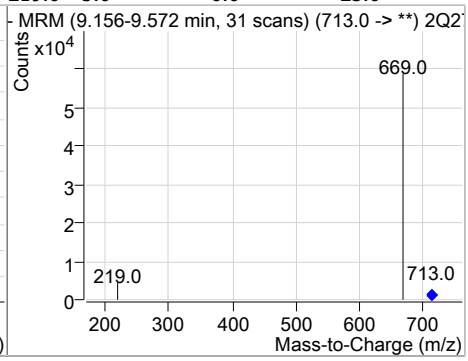


Perfluorinated Compounds by LC/MS/MS

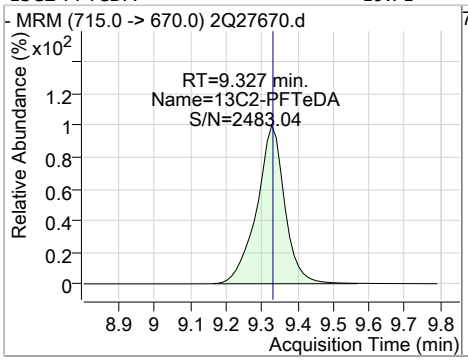
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	4.82	9.33	0.01	42796	713.0 -> 219.0	5.0	0.0	25.0

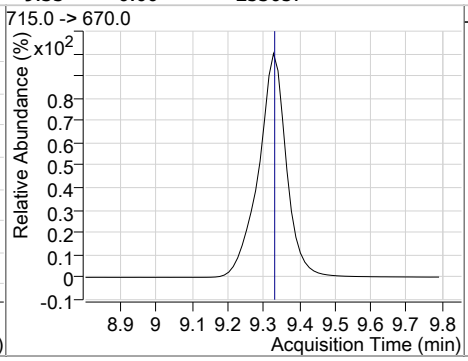


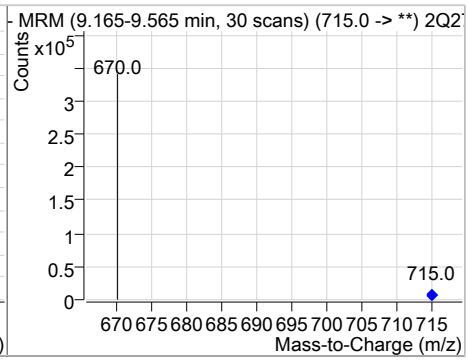




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.71	9.33	0.00	253057				







Manual Integration Approval Summary

Sample Number:	S2Q442-IC442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27670.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 09:05	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27671.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:21:31 AM
Sample Name : IC442-10
Vial : Vial 6
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

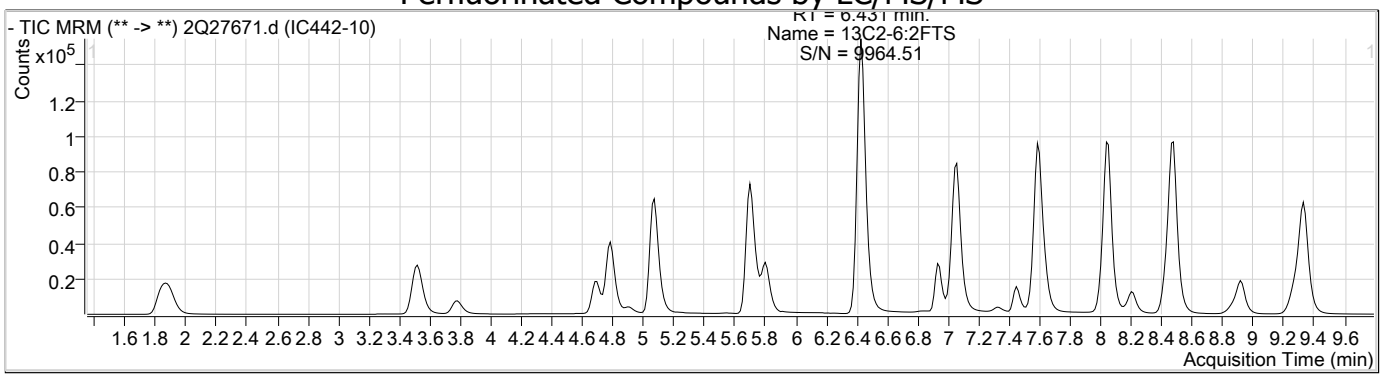
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	273845	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	43510	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	115439	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	97742	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	138736	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	199316	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	203690	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	205438	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	265502	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	330165	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	368800	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	251650	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	79198	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	17491	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	19553	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	24727	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	55336	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	60730	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	41260	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	37611	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	159331	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	55125	18.54	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	60653	18.90	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%		
13C2-8:2FTS	7.630	529.0 -> 509.0	41259	18.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C2-PFDoDA	8.479	615.0 -> 570.0	368816	19.61	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C2-PFTeDA	9.327	715.0 -> 670.0	250927	19.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C3-PFBS	3.780	302.0 -> 99.0	17433	19.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%		
13C3-PFHxS	5.748	402.0 -> 99.0	19521	19.15	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.7%		
13C4-PFBA	1.865	217.0 -> 172.0	114963	19.17	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C4-PFHpA	5.705	367.0 -> 322.0	199188	19.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.3%		
13C5-PFHxA	4.789	318.0 -> 273.0	138478	19.06	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	97995	19.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%		
13C6-PFDA	7.594	519.0 -> 474.0	265416	19.45	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

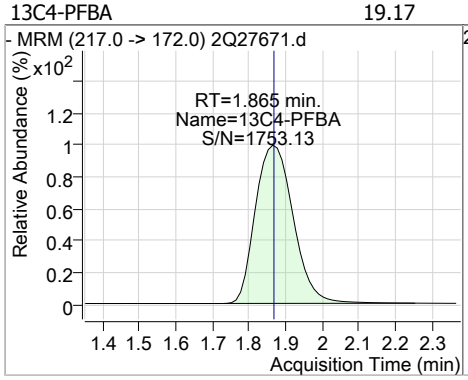
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.2%			
13C7-PFUnDA	8.041	570.0 -> 525.0	329815	19.49	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%			
13C8-FOSA	6.932	506.0 -> 78.0	79166	19.52	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%			
13C8-PFOA	6.434	421.0 -> 376.0	203450	19.50	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%			
13C8-PFOS	7.045	507.0 -> 99.0	24754	18.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.0%			
13C9-PFNA	7.066	472.0 -> 427.0	205369	19.40	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
d3-MeFOSAA	7.447	573.0 -> 419.0	37681	19.66	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.3%			
M2-PFOA	6.435	415.0 -> 370.0	274046	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	43555	20.01	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
13C3-HFPO-DA	5.068	287.0 -> 169.0	159331	99.64	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 99.6%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	15675	10.28	µg/L		96
6:2FTS	6.432	427.0 -> 407.0	15150	10.14	µg/L		98
8:2FTS	7.631	527.0 -> 507.0	10959	10.62	µg/L		98
EtFOSAA	7.585	584.0 -> 419.0	7881	9.80	µg/L		98
FOSA	6.935	498.0 -> 78.0	17899	9.83	µg/L		100
MeFOSAA	7.447	570.0 -> 419.0	9373	9.80	µg/L		96
PFBA	1.873	213.0 -> 169.0	11270	9.89	µg/L		100
PFBS	3.771	299.0 -> 80.0	13704	9.87	µg/L		99
PFDA	7.595	513.0 -> 469.0	57194	9.90	µg/L		100
PFDoDA	8.468	613.0 -> 569.0	80823	9.85	µg/L		100
PFDS	8.014	599.0 -> 80.0	4628	10.16	µg/L		98
PFHpA	5.708	363.0 -> 319.0	84384	9.82	µg/L		99
PFHpS	6.442	449.0 -> 80.0	9536	10.05	µg/L		100
PFHxA	4.791	313.0 -> 269.0	23822	9.97	µg/L		100
PFHxS	5.739	399.0 -> 80.0	10631	9.84	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	68218	10.01	µg/L		99
PFNS	7.565	549.0 -> 80.0	8932	10.54	µg/L		100
PFOA	6.437	413.0 -> 369.0	52958	9.63	µg/L		99
PFOS	7.037	499.0 -> 80.0	12220	10.18	µg/L	m	81
PFPeA	3.528	263.0 -> 219.0	41709	9.86	µg/L		100
PFPeS	4.908	349.0 -> 80.0	8833	9.94	µg/L		97
PFTeDA	9.332	713.0 -> 669.0	87410	9.93	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	90708	9.90	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	66712	9.79	µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	50832	10.06	µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	10324	10.42	µg/L		100
ADONA	5.804	377.0 -> 251.0	100336	10.03	µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	91283	48.23	µg/L		98

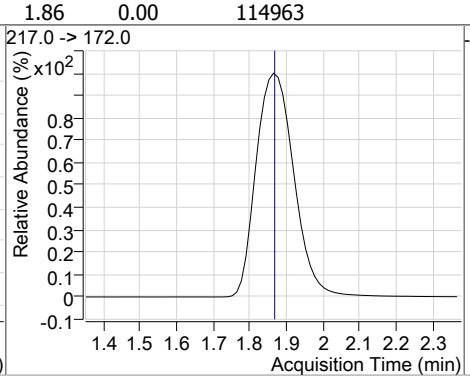
 # = Qualifier out of range, m = manually integrated, + = Area summed

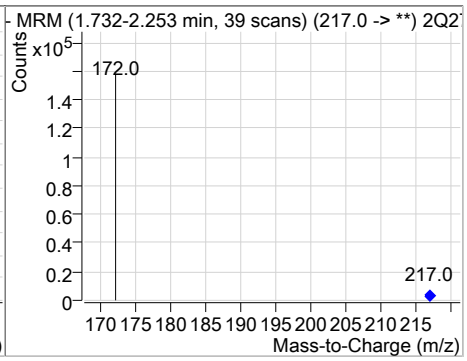
Perfluorinated Compounds by LC/MS/MS



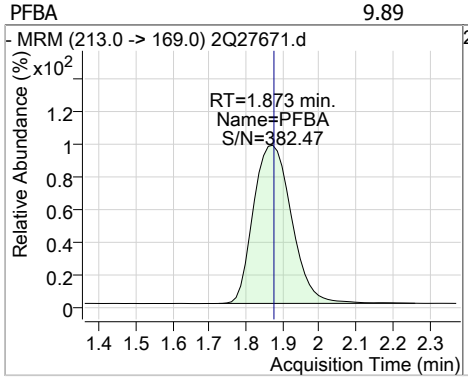
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.17	1.86	0.00	114963				

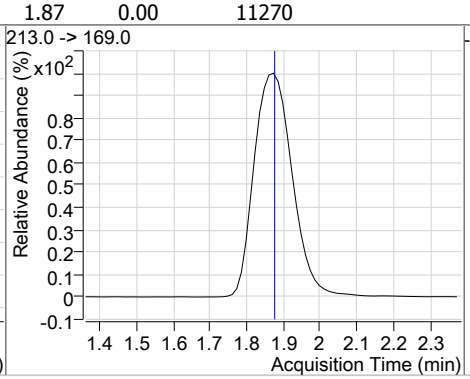


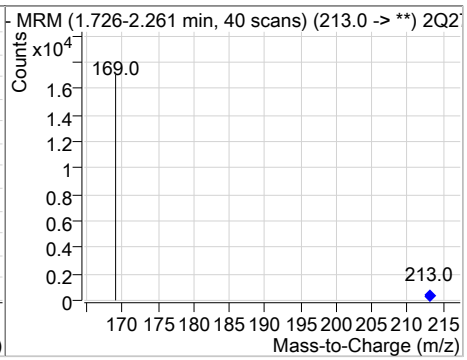




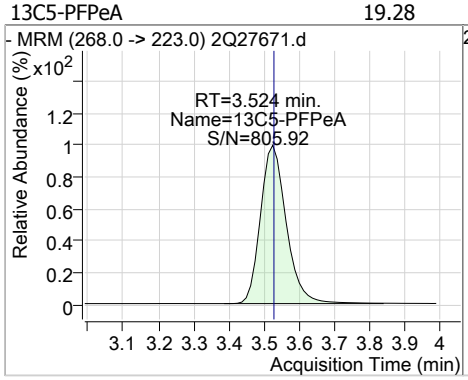
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	9.89	1.87	0.00	11270				

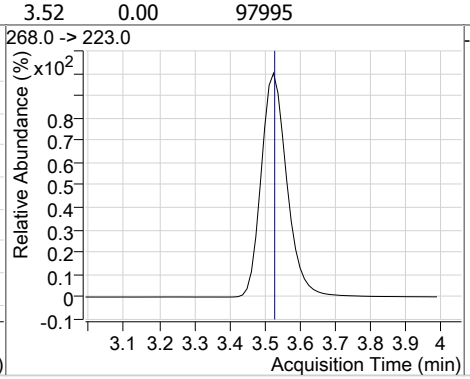


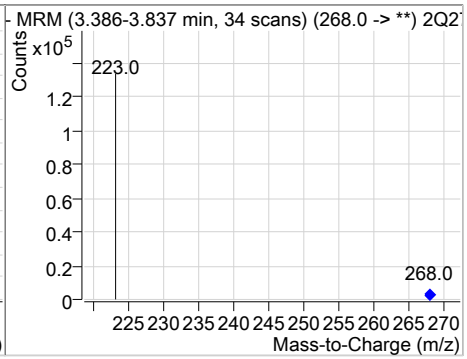




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.28	3.52	0.00	97995				

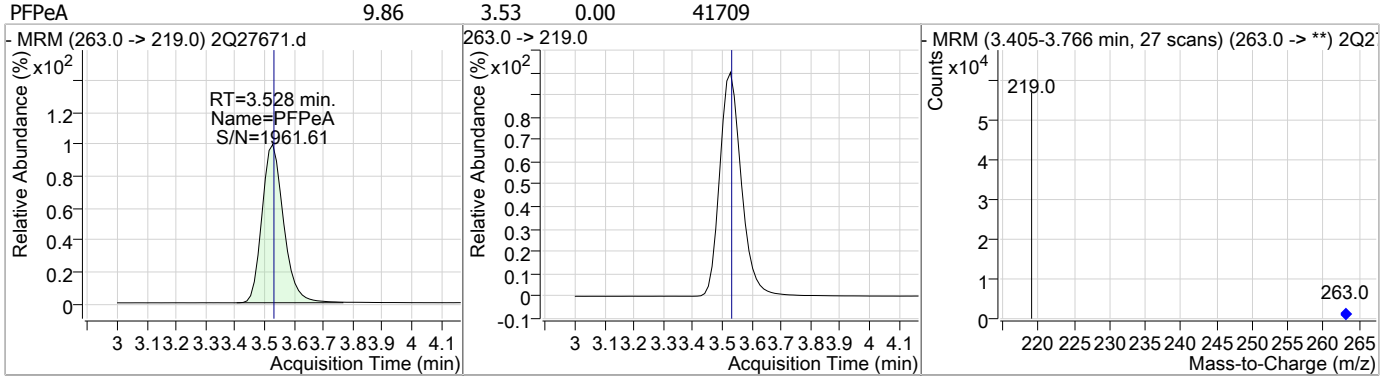




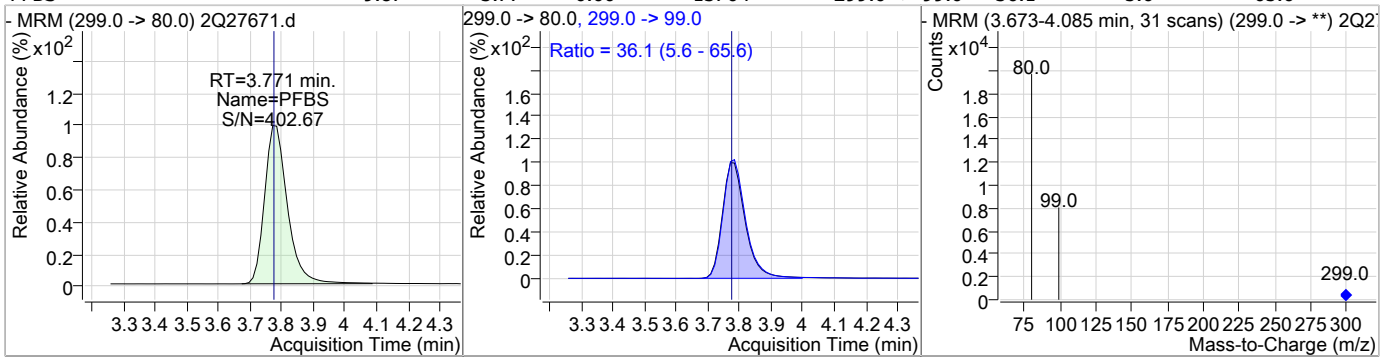


Perfluorinated Compounds by LC/MS/MS

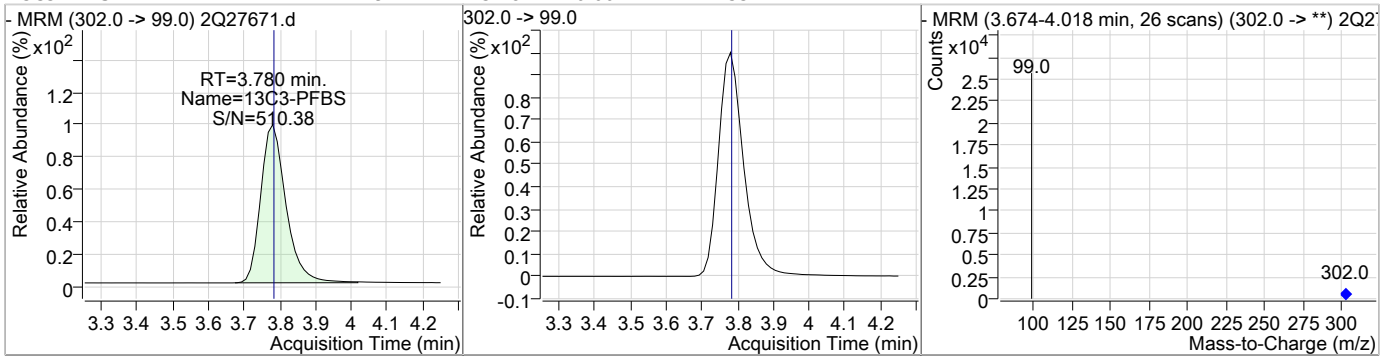
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.86	3.53	0.00	41709				



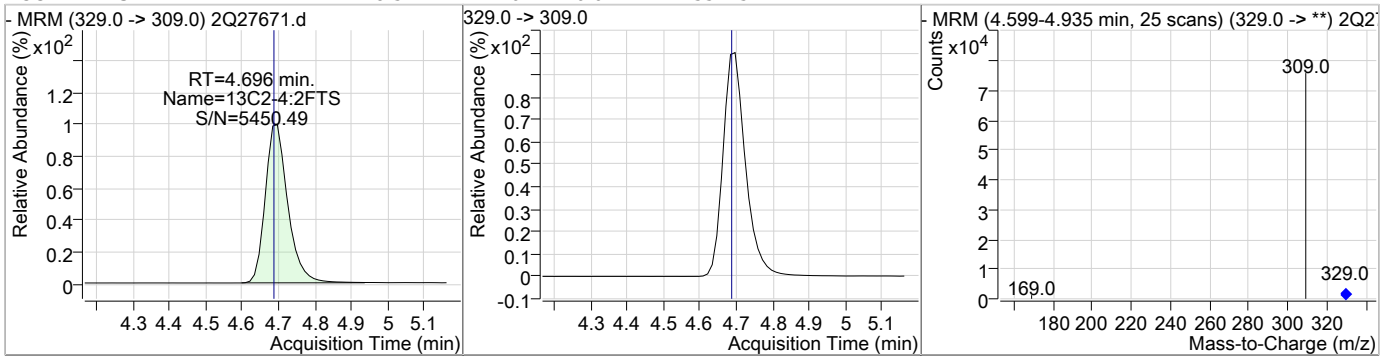
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	9.87	3.77	0.00	13704	299.0 -> 99.0	36.1	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.12	3.78	0.00	17433				

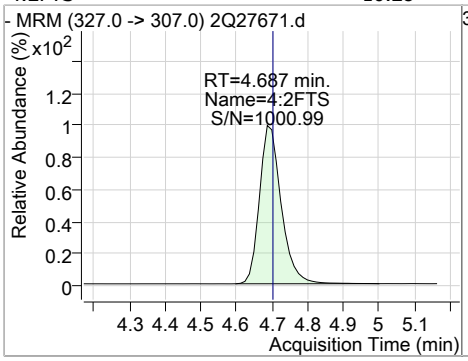


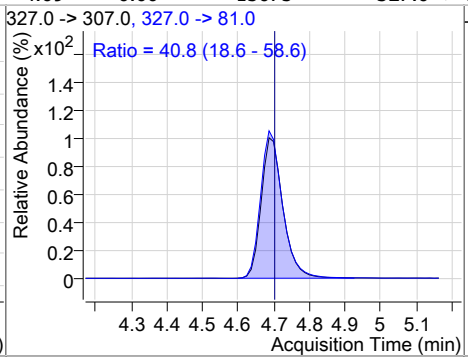
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.54	4.70	0.01	55125				

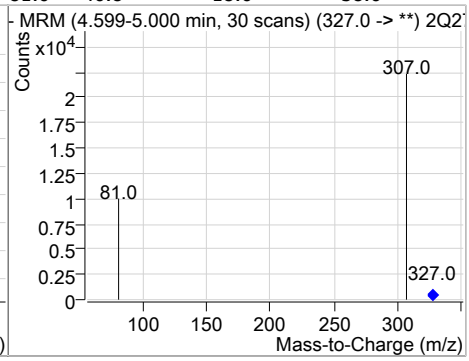


Perfluorinated Compounds by LC/MS/MS

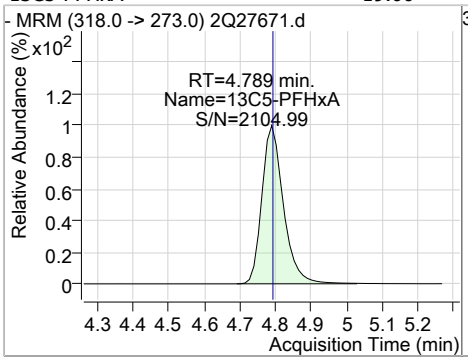
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	10.28	4.69	0.00	15675	327.0 -> 81.0	40.8	18.6	58.6

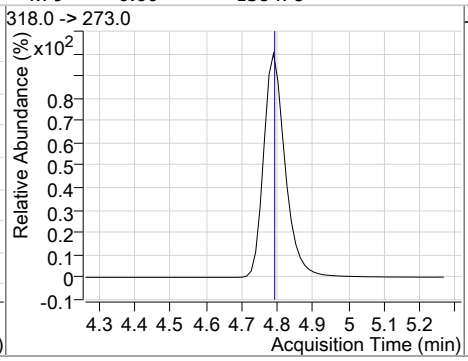


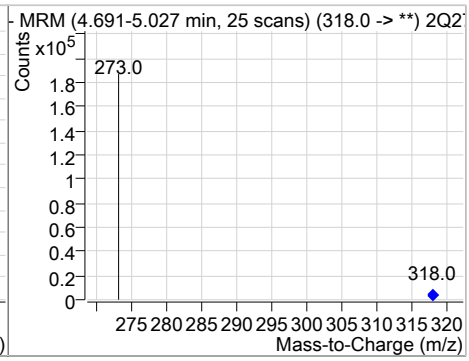




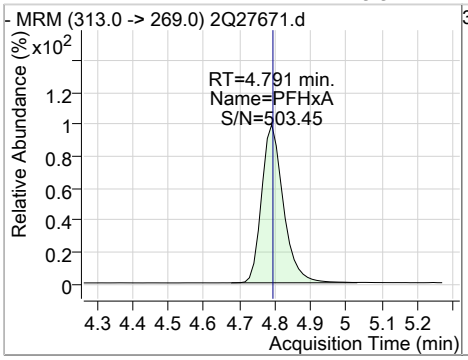
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.06	4.79	0.00	138478				

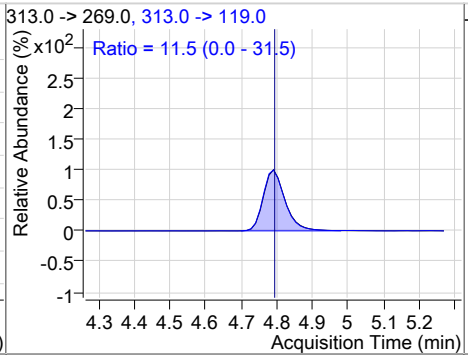


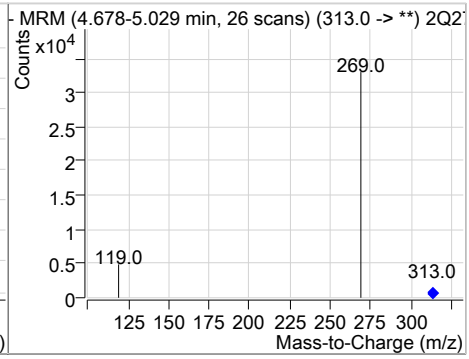




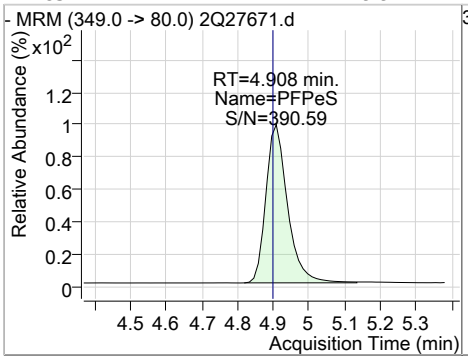
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	9.97	4.79	0.00	23822	313.0 -> 119.0	11.5	0.0	31.5

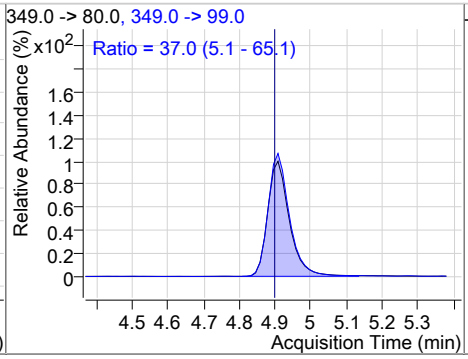


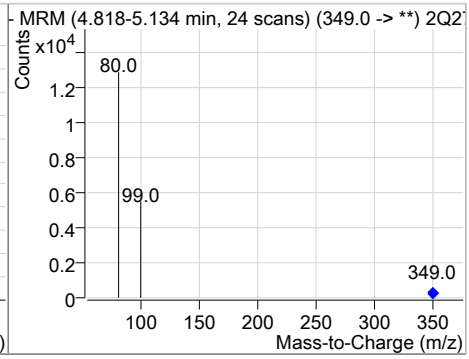




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	9.94	4.91	0.01	8833	349.0 -> 99.0	37.0	5.1	65.1

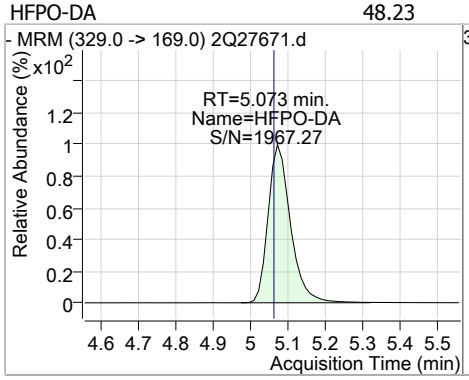


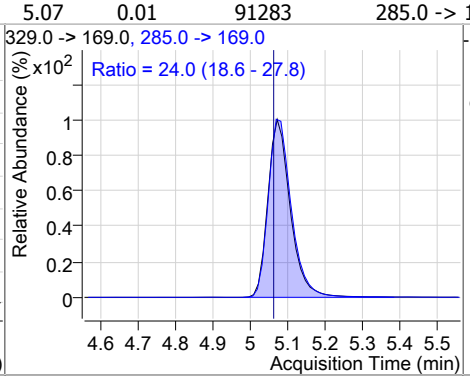


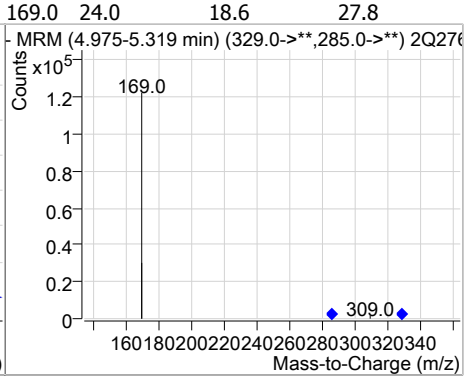


Perfluorinated Compounds by LC/MS/MS

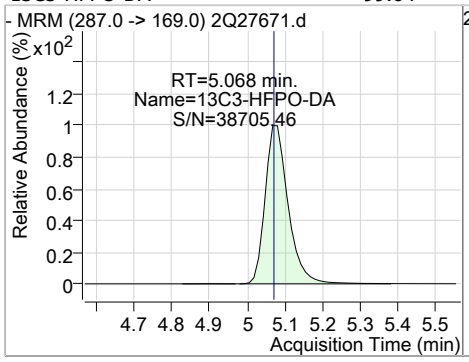
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	48.23	5.07	0.01	91283	285.0 -> 169.0	24.0	18.6	27.8

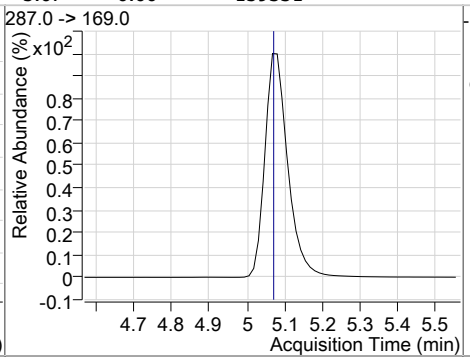


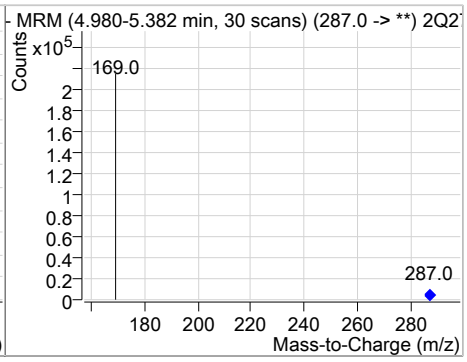




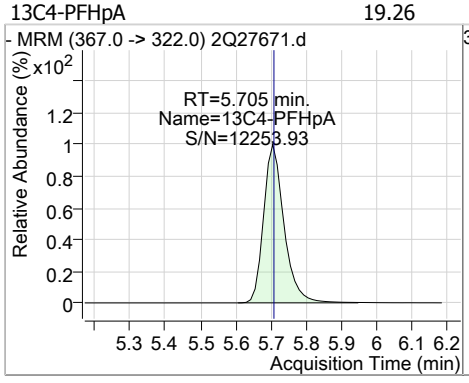
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	99.64	5.07	0.00	159331				

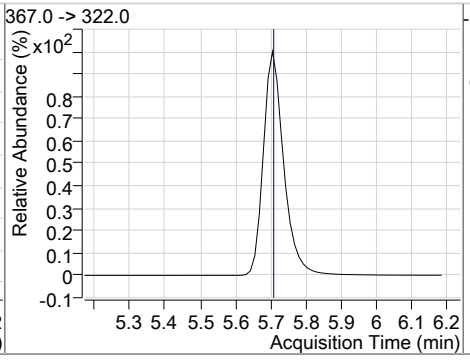


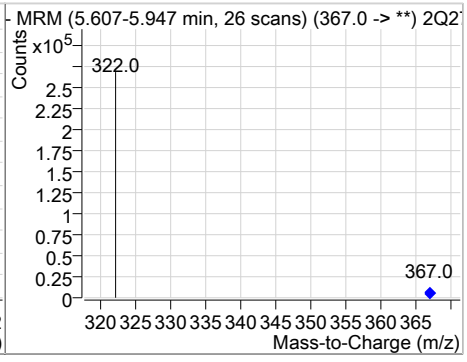




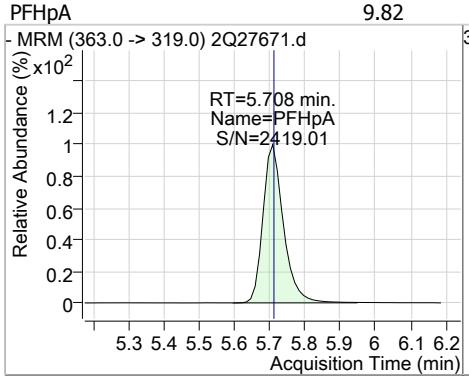
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.26	5.71	0.00	199188				

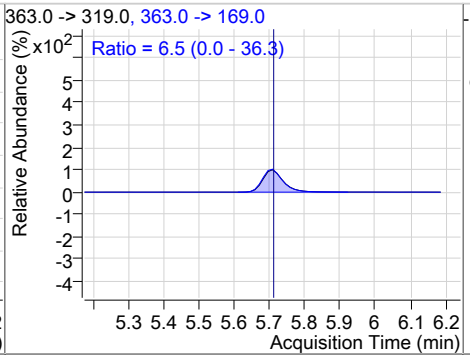


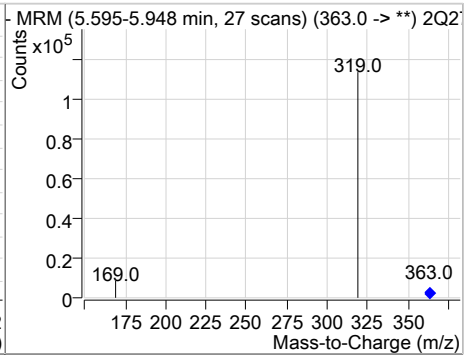




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	9.82	5.71	0.00	84384	363.0 -> 169.0	6.5	0.0	36.3

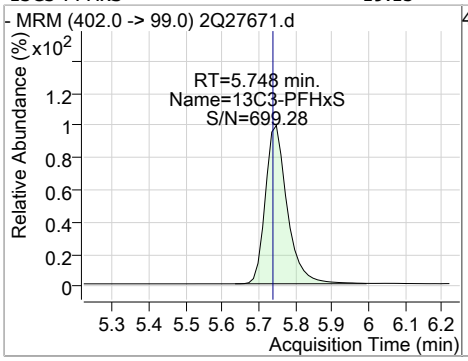


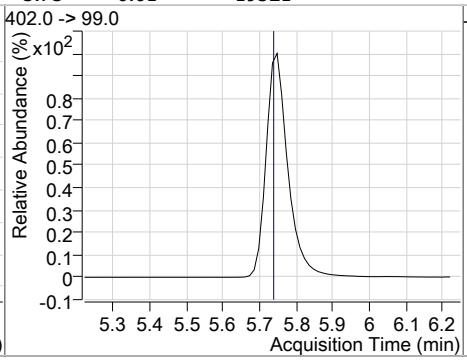


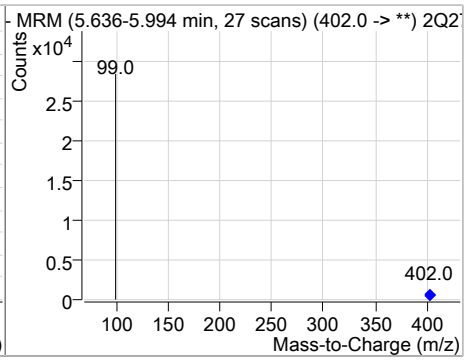


Perfluorinated Compounds by LC/MS/MS

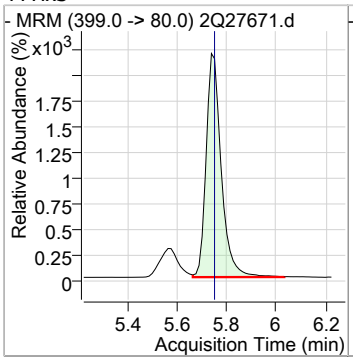
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.15	5.75	0.01	19521				

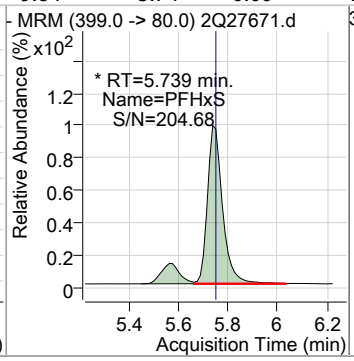


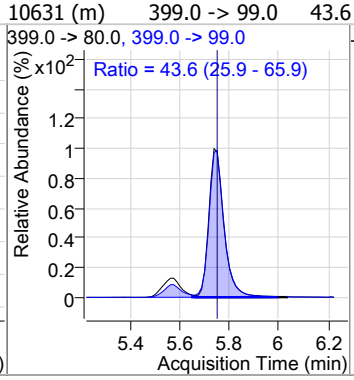


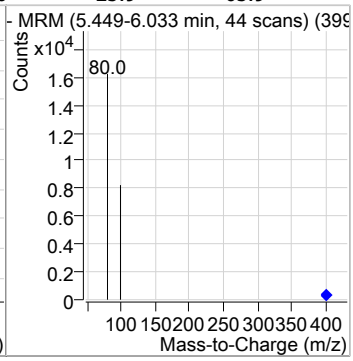


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	9.84	5.74	0.00	10631 (m)	399.0 -> 99.0	43.6	25.9	65.9

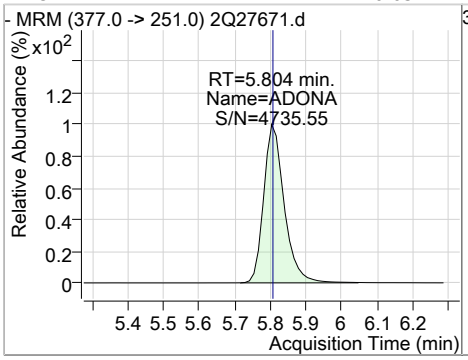


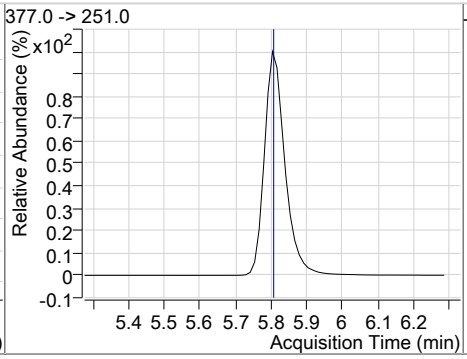


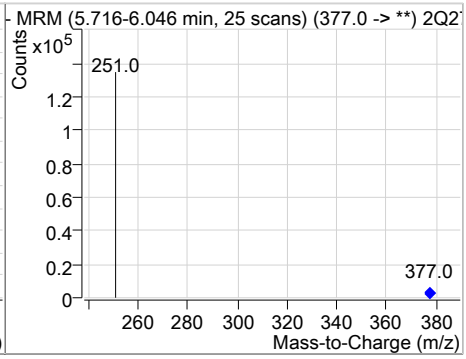




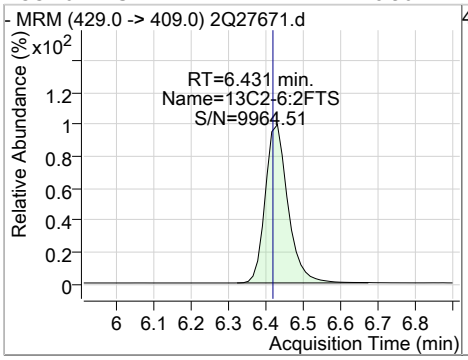
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	10.03	5.80	0.00	100336				

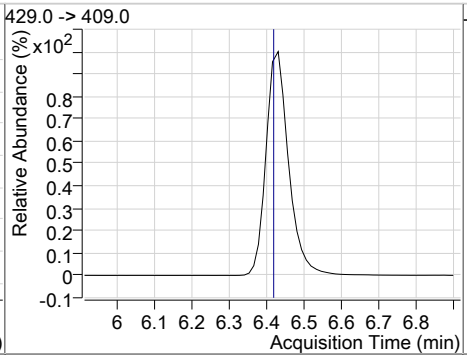


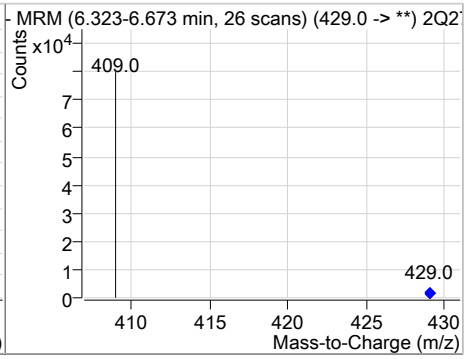




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	18.90	6.43	0.02	60653				

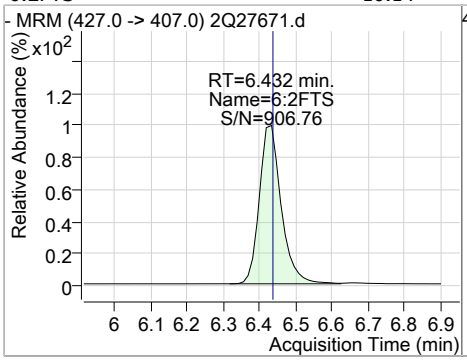


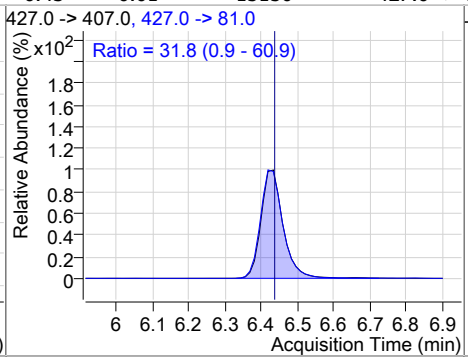


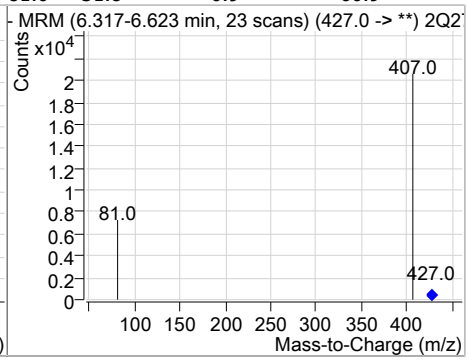


Perfluorinated Compounds by LC/MS/MS

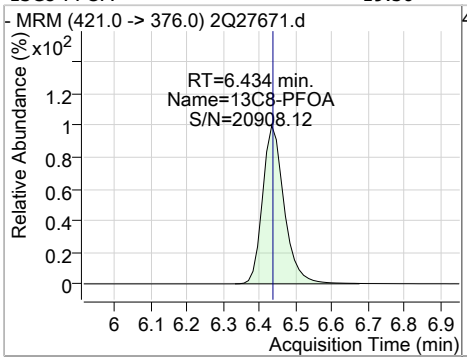
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	10.14	6.43	0.01	15150	427.0 -> 81.0	31.8	0.9	60.9

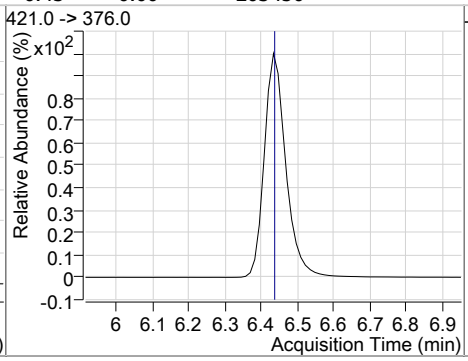


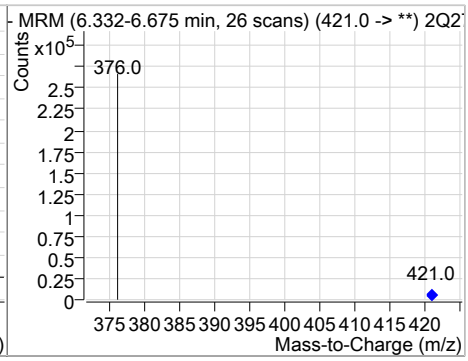




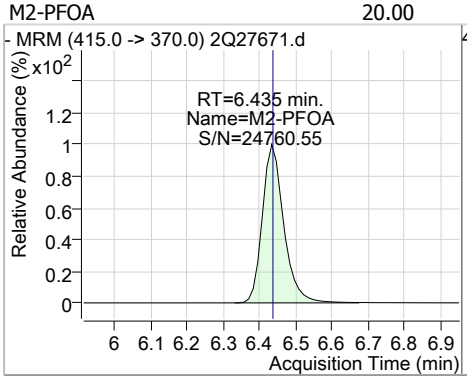
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.50	6.43	0.00	203450				

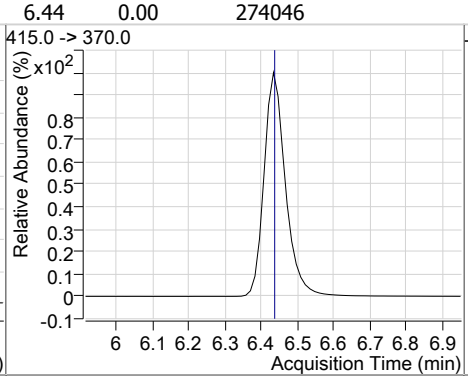


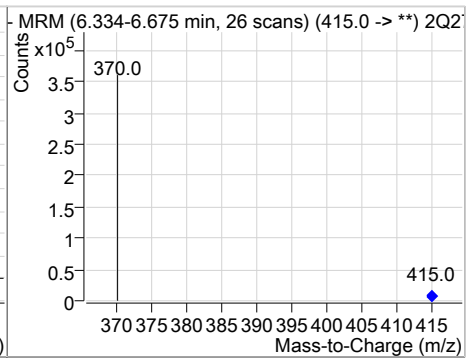




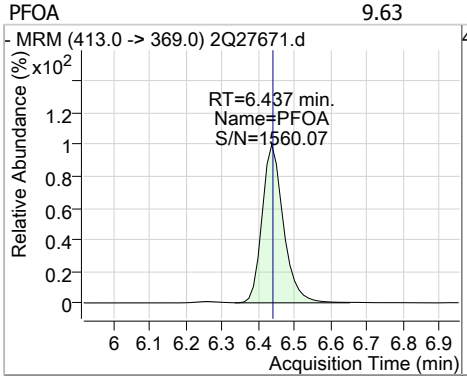
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	274046				

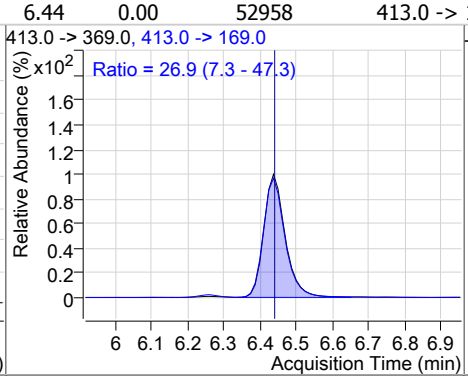


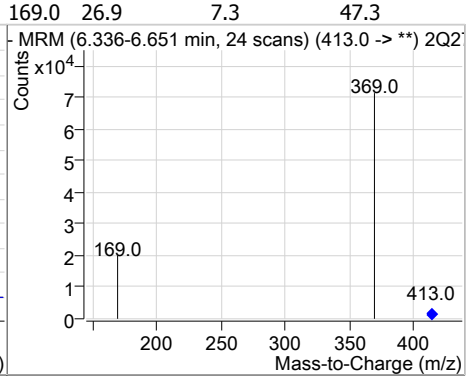




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	9.63	6.44	0.00	52958	413.0 -> 169.0	26.9	7.3	47.3

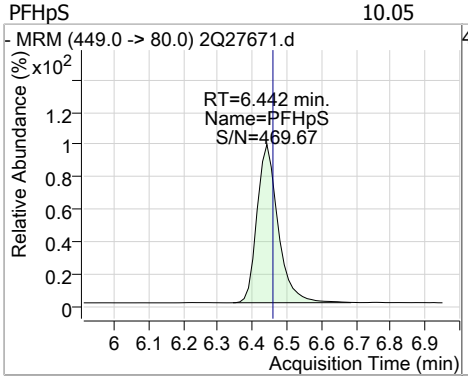


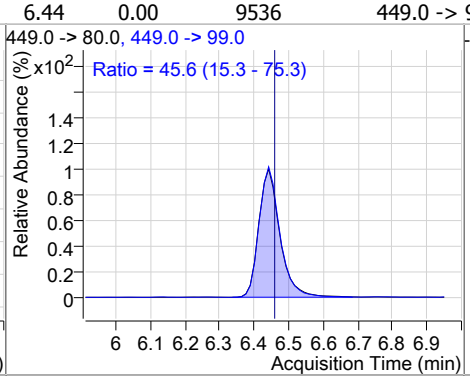


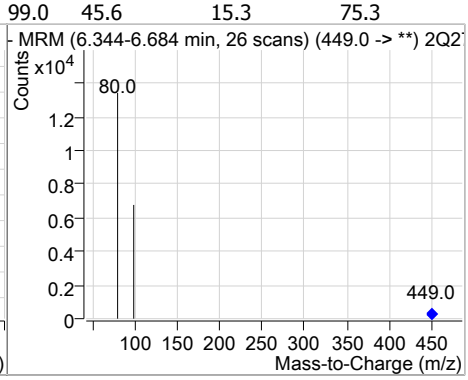


Perfluorinated Compounds by LC/MS/MS

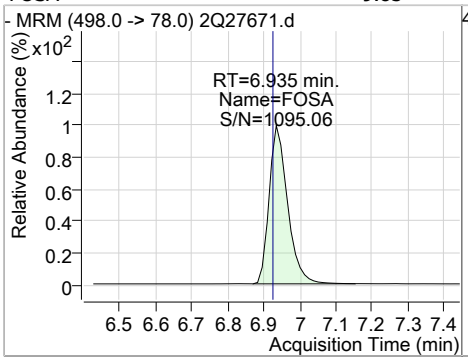
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	10.05	6.44	0.00	9536	449.0 -> 99.0	45.6	15.3	75.3

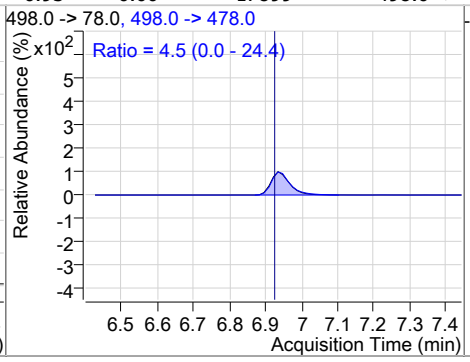


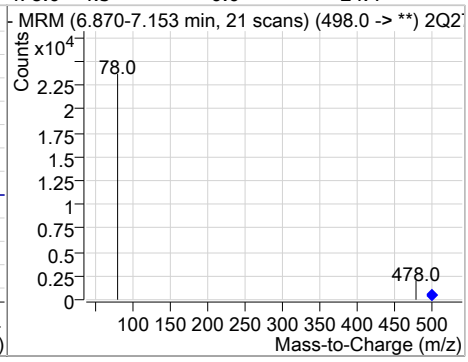




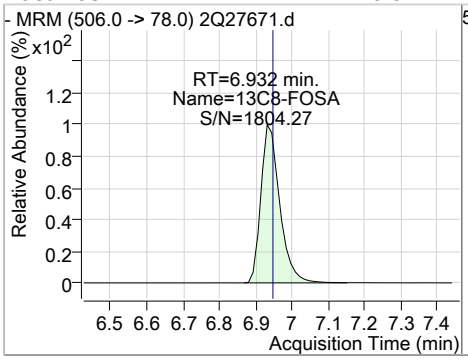
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	9.83	6.93	0.00	17899	498.0 -> 478.0	4.5	0.0	24.4

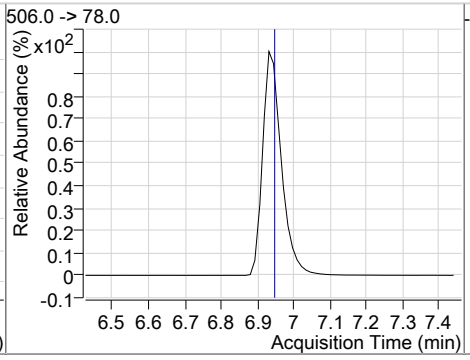


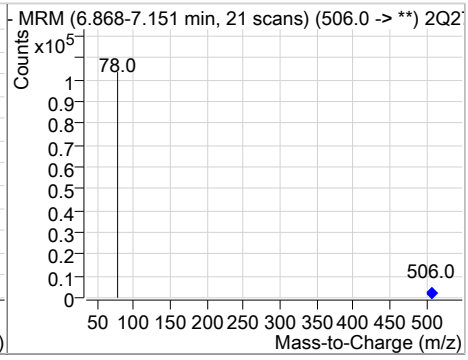




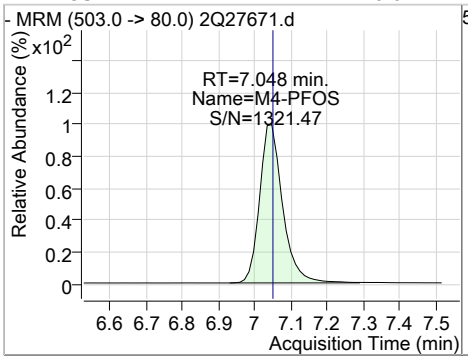
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.52	6.93	-0.01	79166				

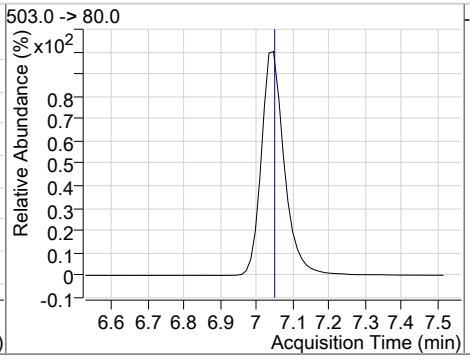


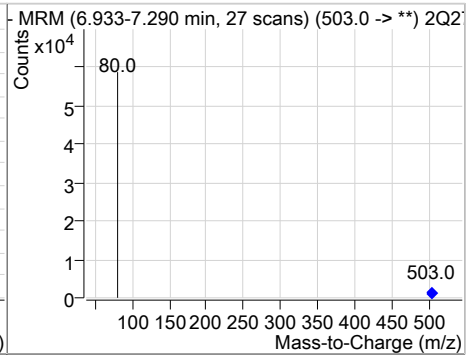




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.05	0.01	43555				

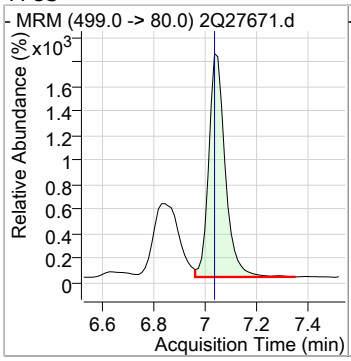


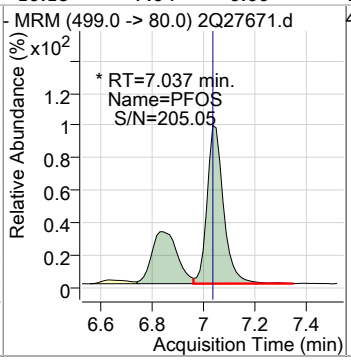


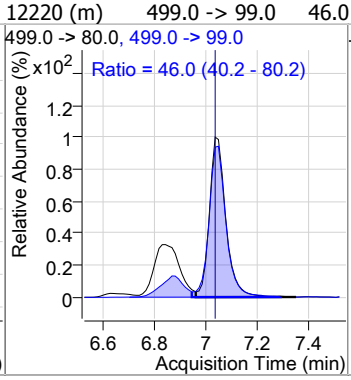


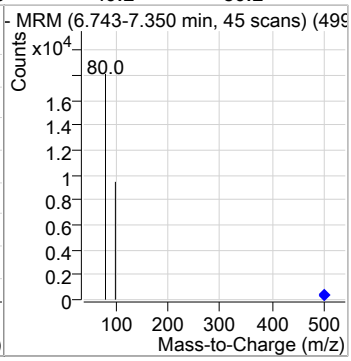
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	10.18	7.04	0.00	12220 (m)	499.0 -> 99.0	46.0	40.2	80.2

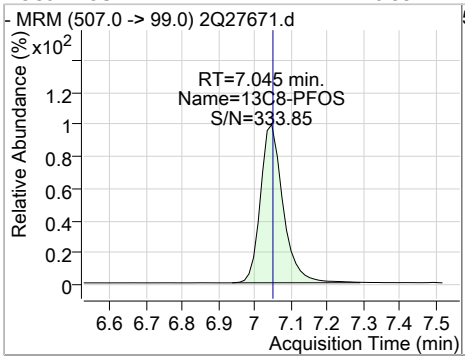


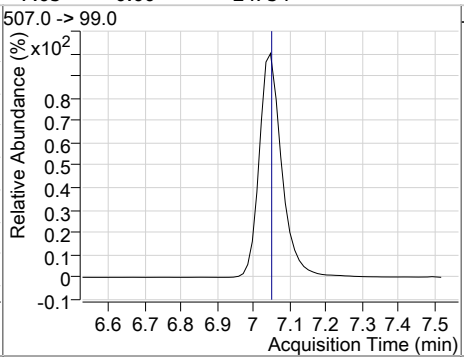


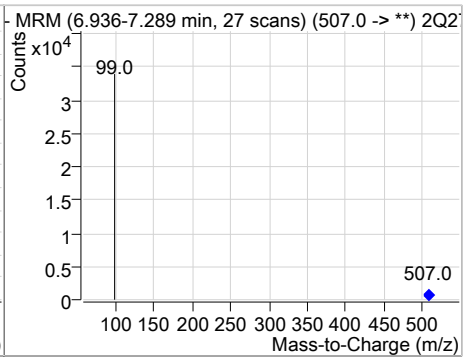




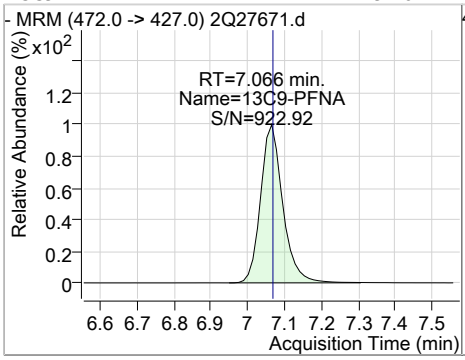
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.99	7.05	0.00	24754				

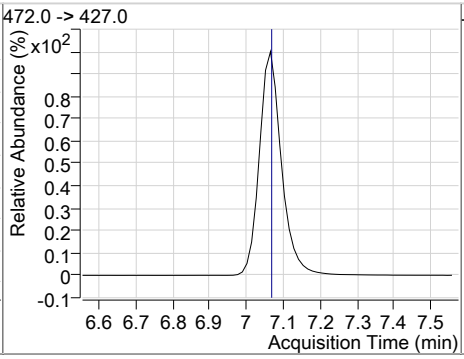


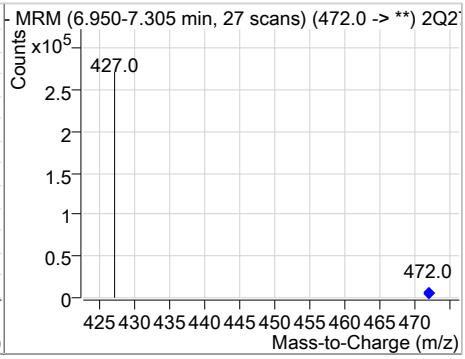




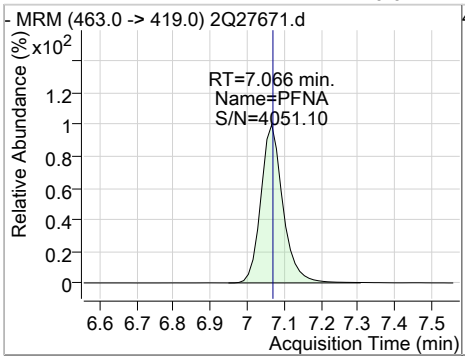
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.40	7.07	0.00	205369				

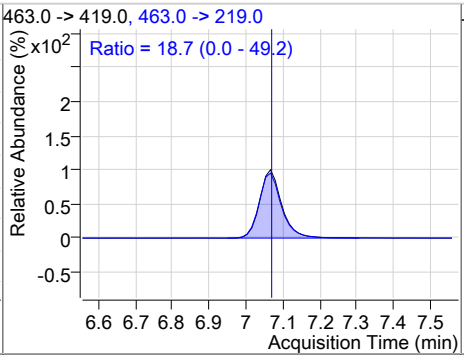


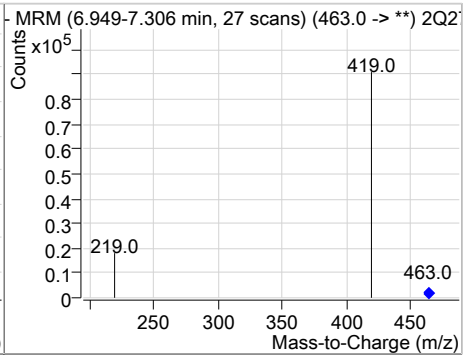




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	10.01	7.07	0.00	68218	463.0 -> 219.0	18.7	0.0	49.2

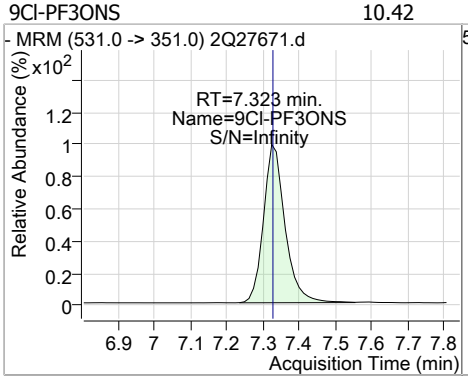


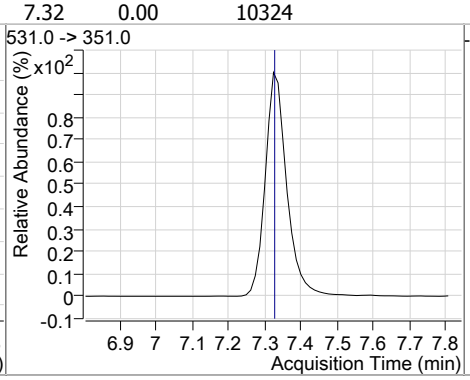


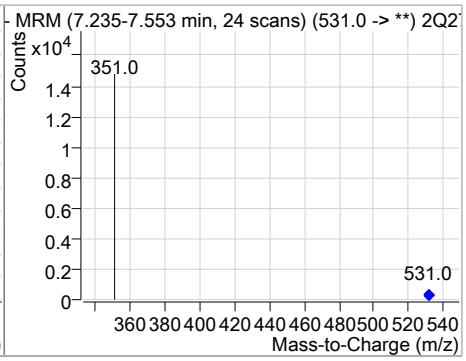


Perfluorinated Compounds by LC/MS/MS

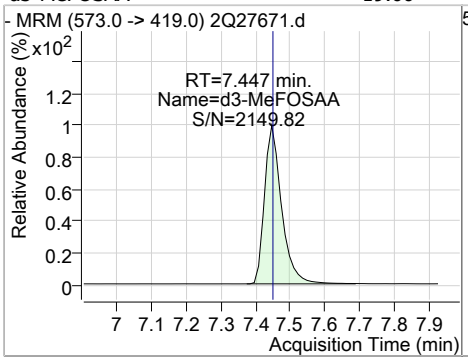
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	10.42	7.32	0.00	10324				

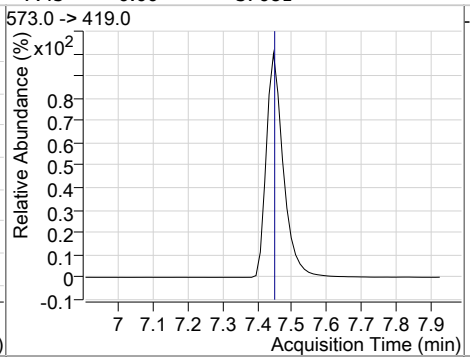


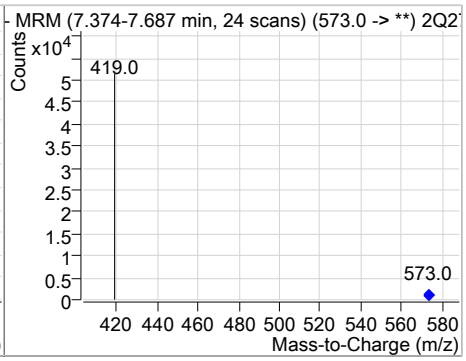




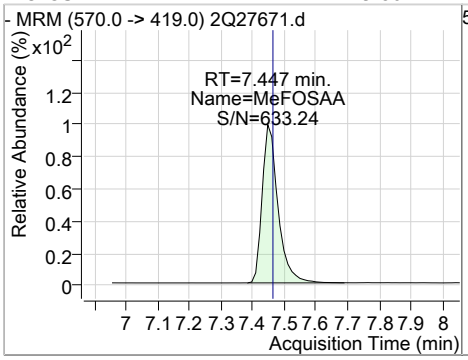
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.66	7.45	0.00	37681				

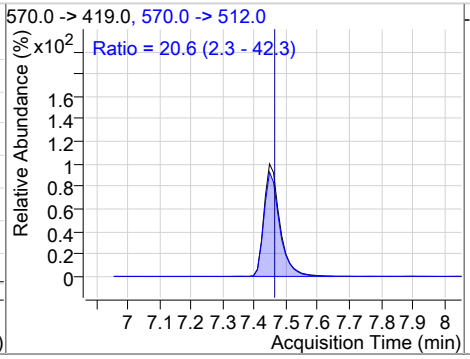


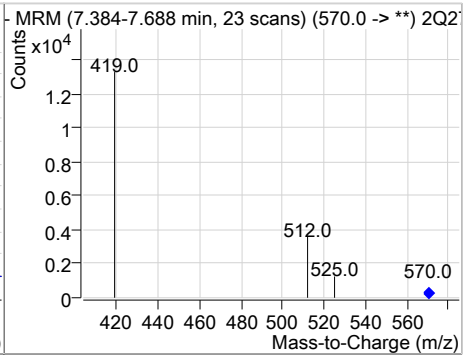




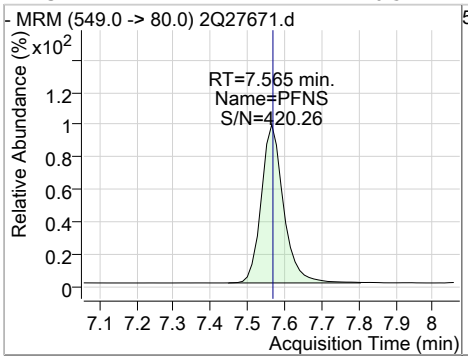
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	9.80	7.45	-0.01	9373	570.0 -> 512.0	20.6	2.3	42.3

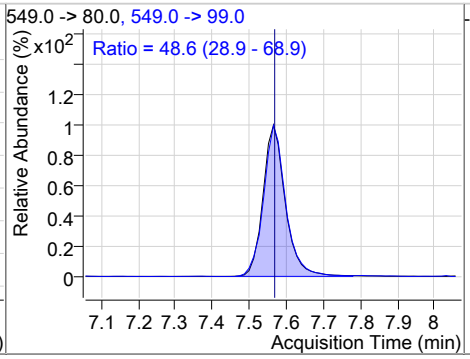


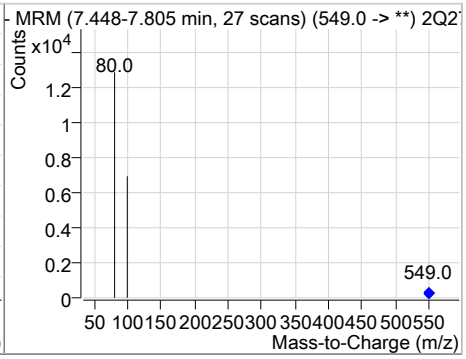




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	10.54	7.57	0.00	8932	549.0 -> 99.0	48.6	28.9	68.9

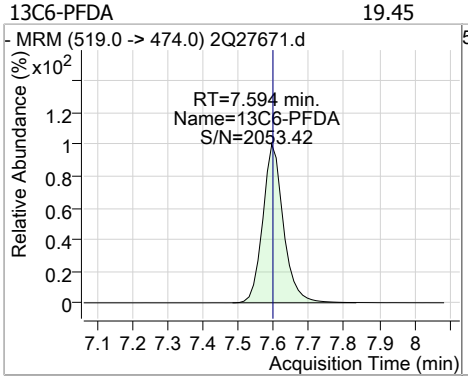


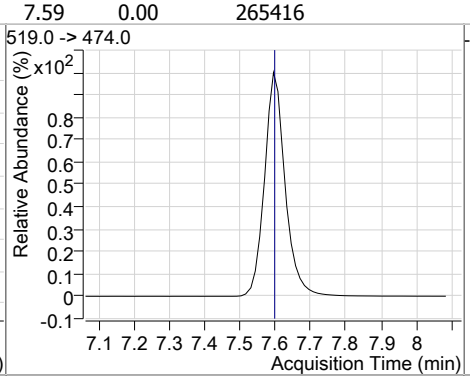


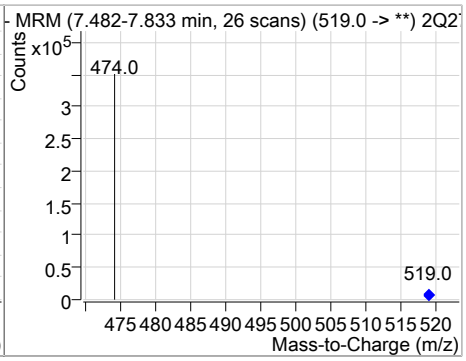


Perfluorinated Compounds by LC/MS/MS

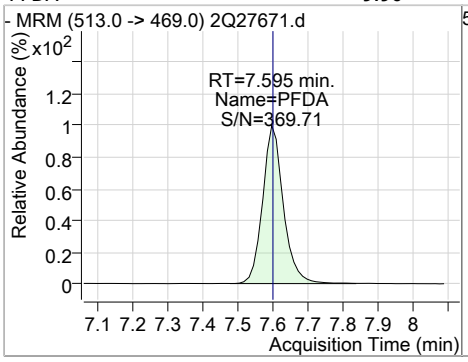
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.45	7.59	0.00	265416				

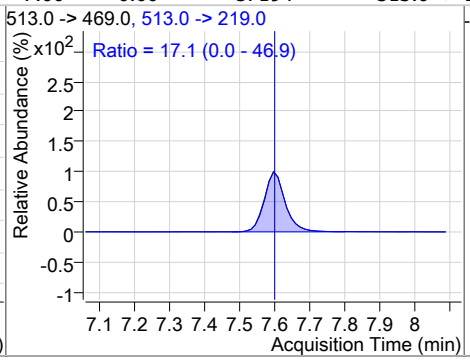


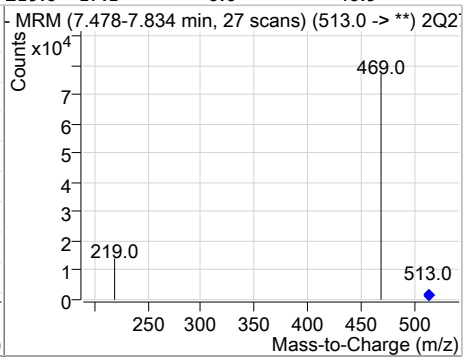




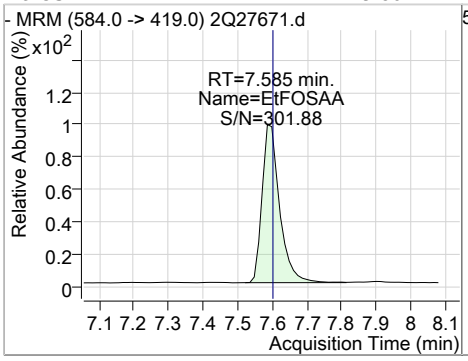
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	9.90	7.60	0.00	57194	513.0 -> 219.0	17.1	0.0	46.9

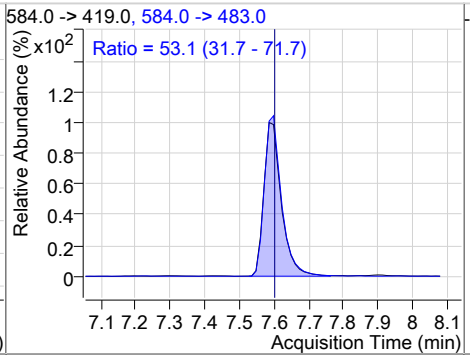


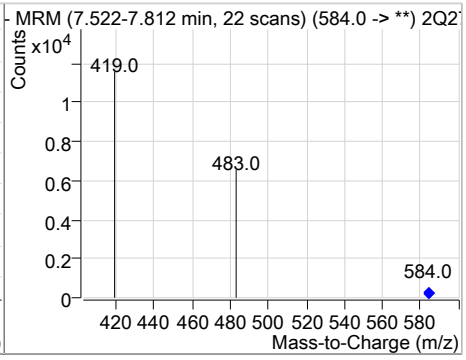




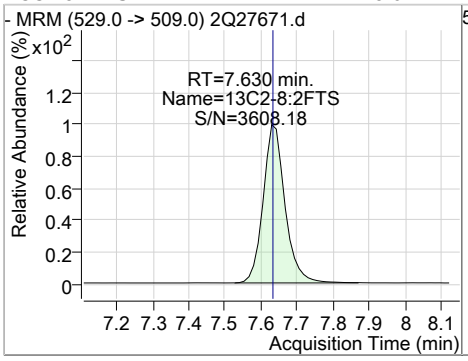
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	9.80	7.59	-0.01	7881	584.0 -> 483.0	53.1	31.7	71.7

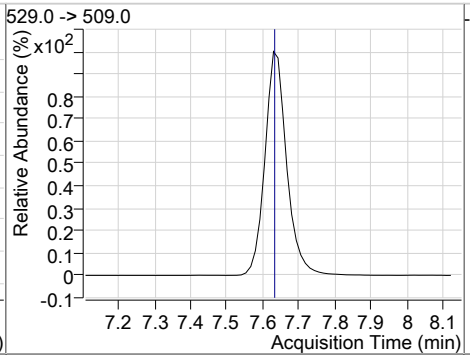


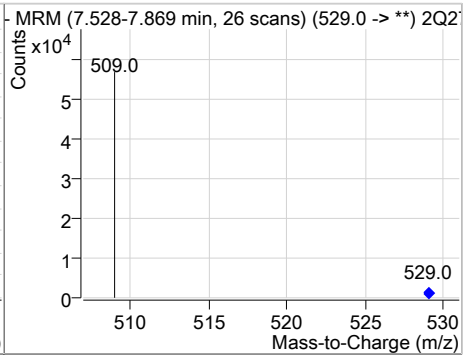




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.61	7.63	0.00	41259				

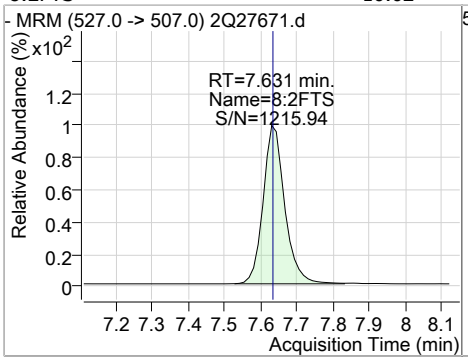


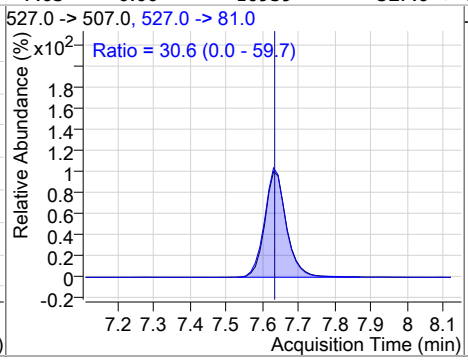


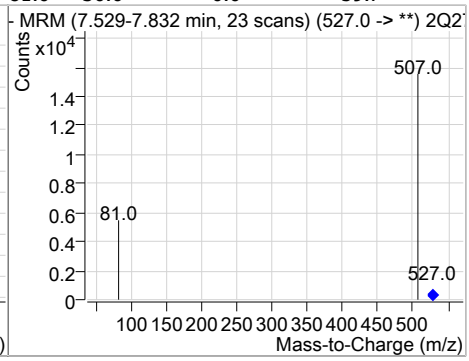


Perfluorinated Compounds by LC/MS/MS

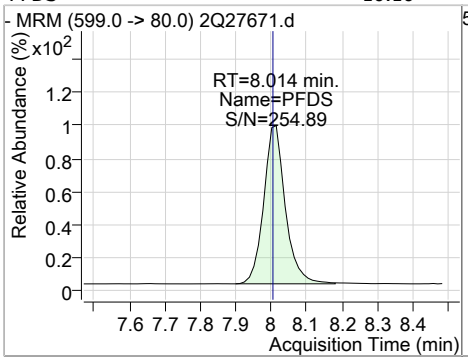
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	10.62	7.63	0.00	10959	527.0 -> 81.0	30.6	0.0	59.7

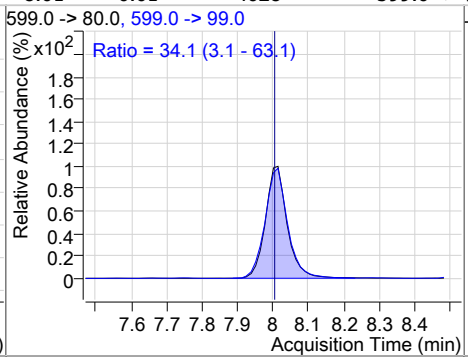


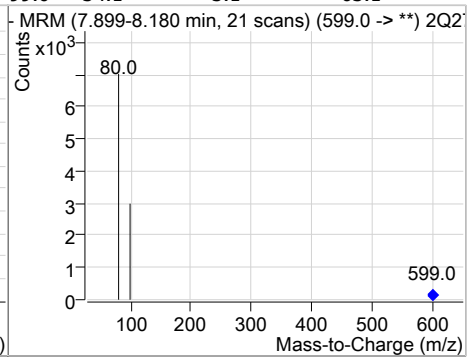




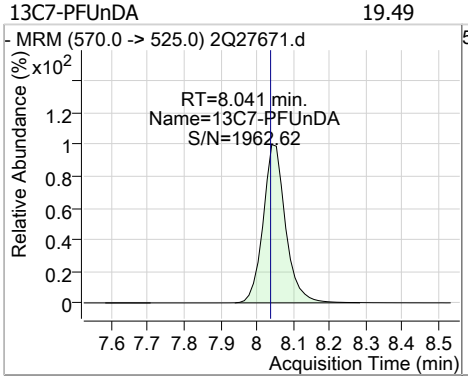
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	10.16	8.01	0.01	4628	599.0 -> 99.0	34.1	3.1	63.1

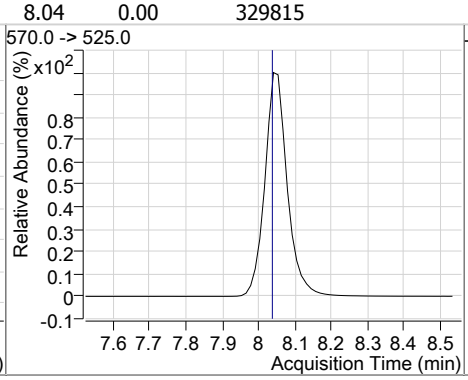


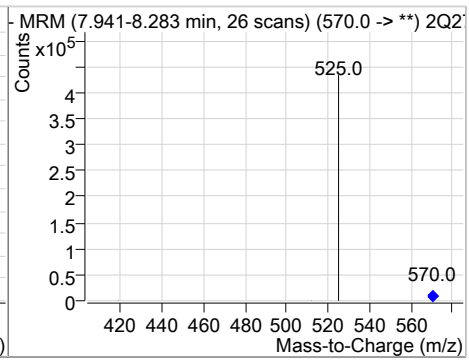




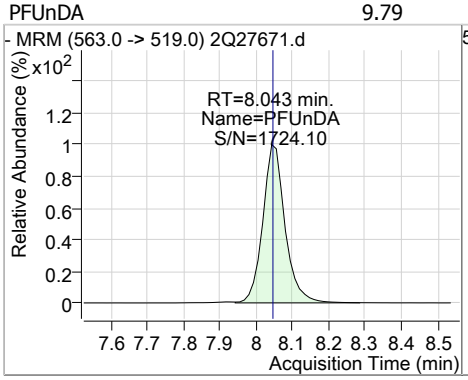
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.49	8.04	0.00	329815				

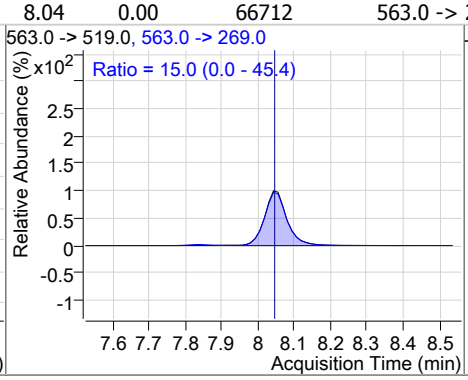


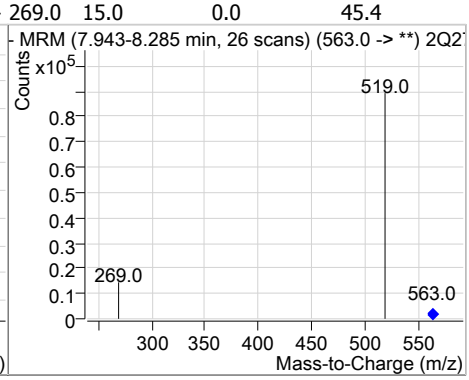




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	9.79	8.04	0.00	66712	563.0 -> 269.0	15.0	0.0	45.4

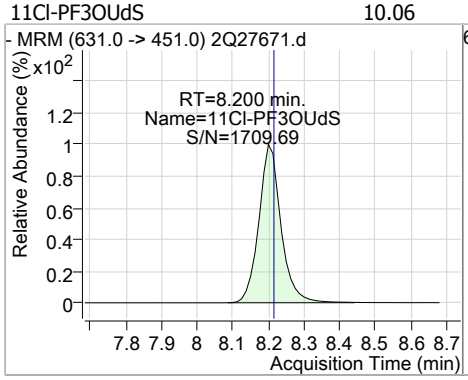


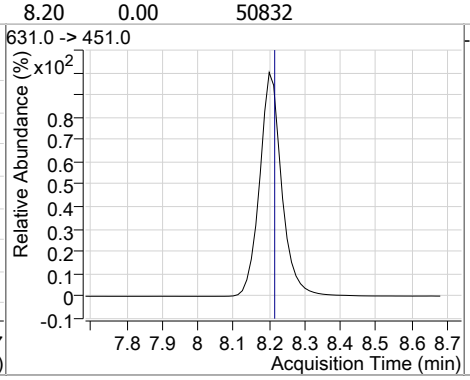


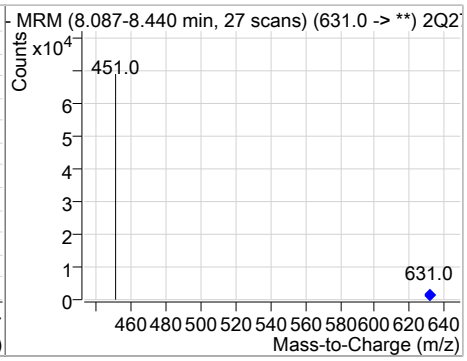


Perfluorinated Compounds by LC/MS/MS

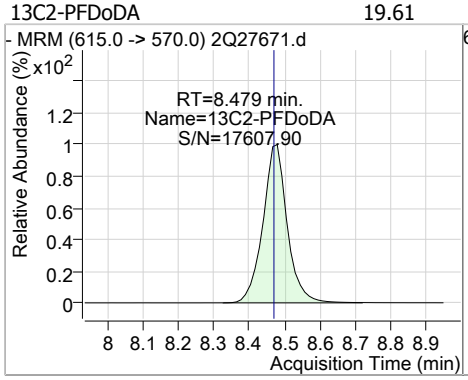
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	10.06	8.20	0.00	50832				

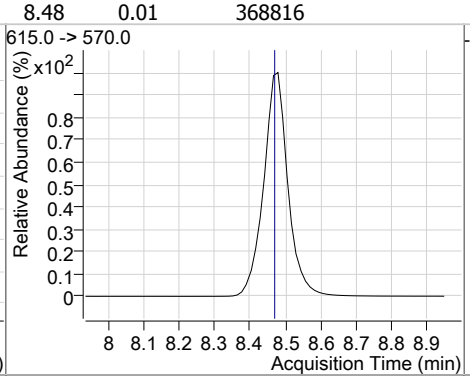


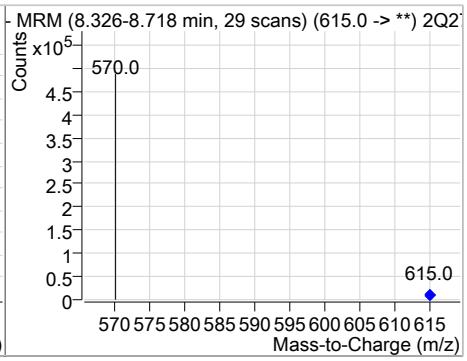




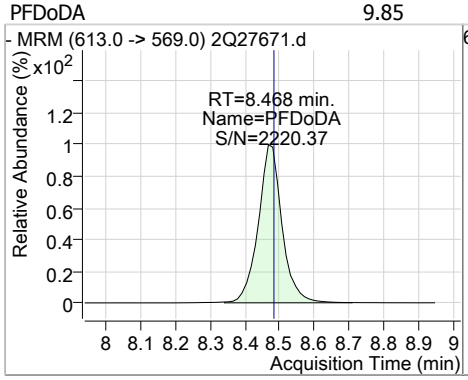
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.61	8.48	0.01	368816				

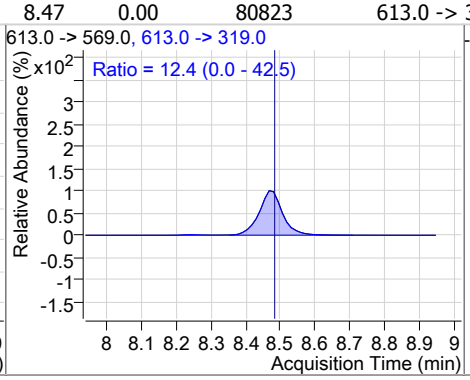


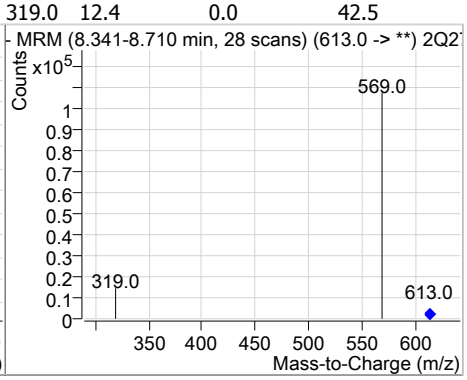




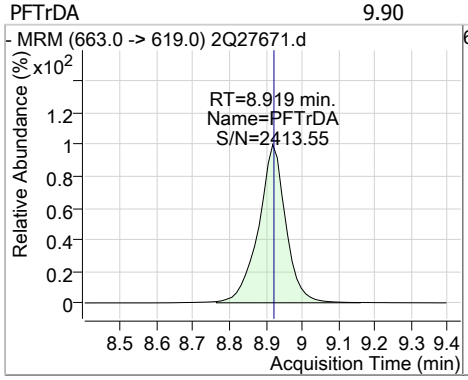
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	9.85	8.47	0.00	80823	613.0 -> 319.0	12.4	0.0	42.5

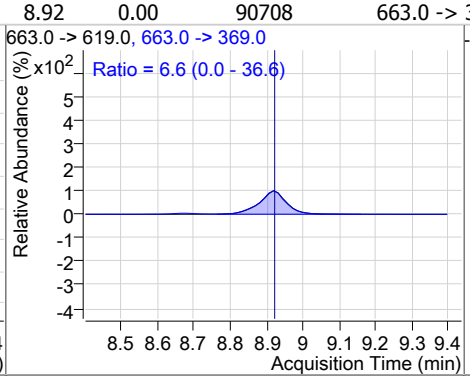


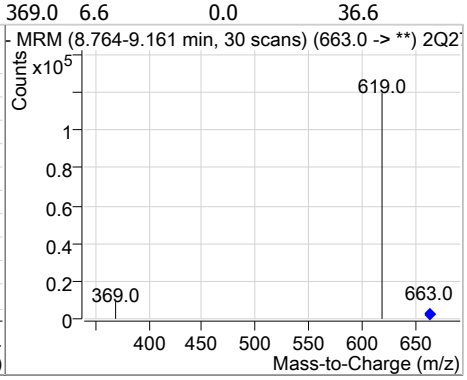




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	9.90	8.92	0.00	90708	663.0 -> 369.0	6.6	0.0	36.6

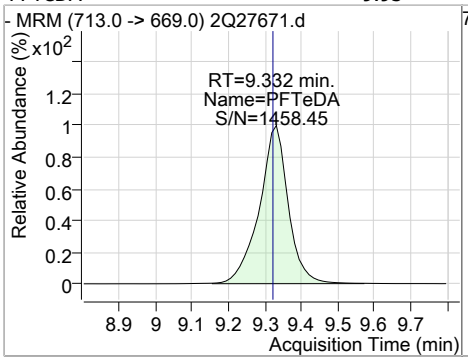


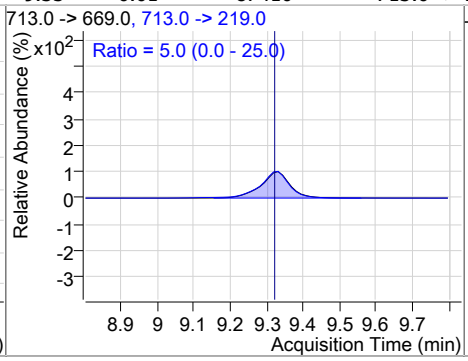


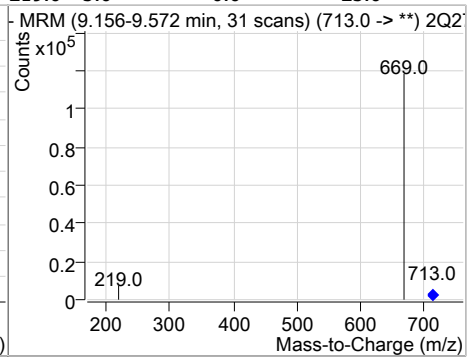


Perfluorinated Compounds by LC/MS/MS

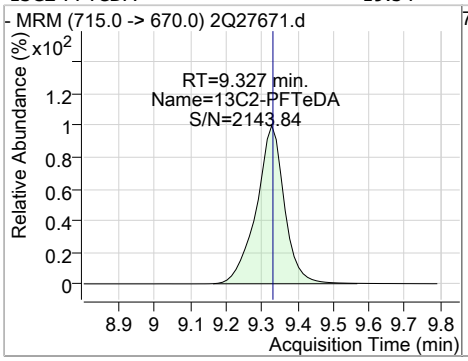
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	9.93	9.33	0.01	87410	713.0 -> 219.0	5.0	0.0	25.0

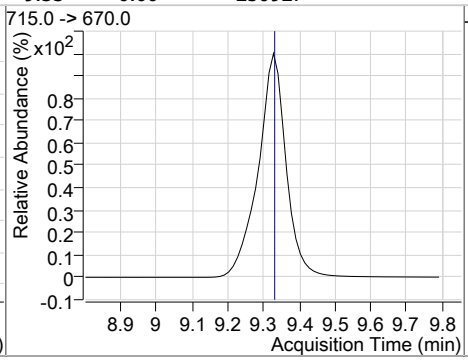


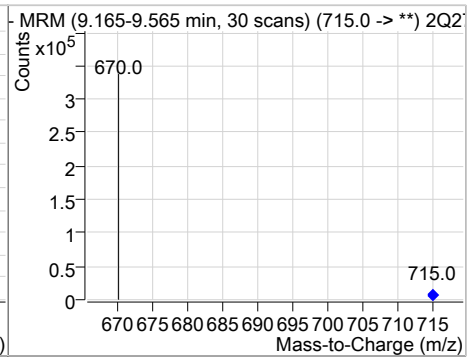




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.54	9.33	0.00	250927				







Manual Integration Approval Summary

Sample Number:	S2Q442-IC442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27671.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 09:21	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27672.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:37:15 AM
Sample Name : ICC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

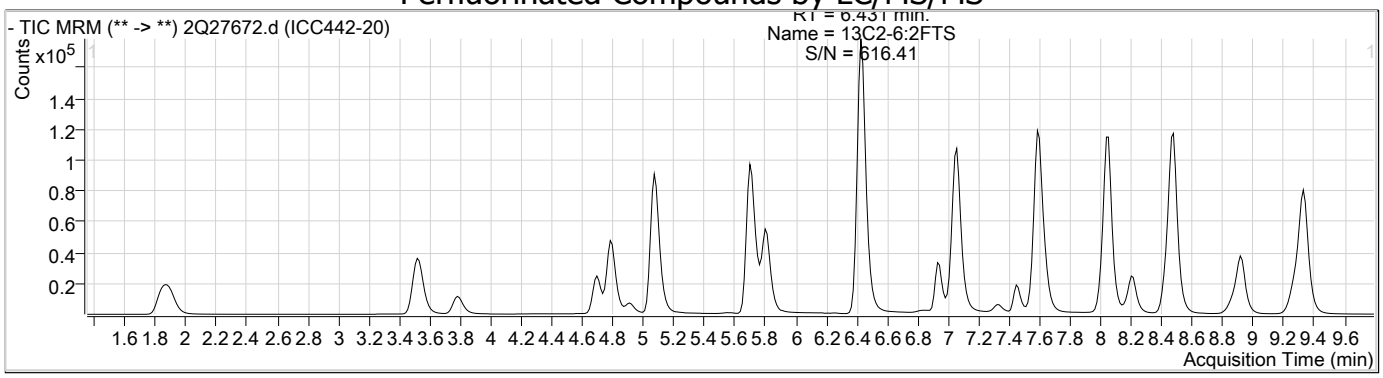
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	270918	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	43615	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	116579	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	98157	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	140936	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	200132	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	202524	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	207931	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	267901	20.00	µg/L	0.000
M7-PFUnDA	8.054	570.0 -> 525.0	331809	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	370581	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	254652	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	78533	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	17716	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	19796	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	24876	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	56802	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	62247	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	42771	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	37381	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	154565	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	56835	19.11	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%		
13C2-6:2FTS	6.431	429.0 -> 409.0	62181	19.37	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C2-8:2FTS	7.630	529.0 -> 509.0	42748	19.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%		
13C2-PFDoDA	8.479	615.0 -> 570.0	370400	19.69	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C2-PFTeDA	9.327	715.0 -> 670.0	253852	19.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C3-PFBS	3.780	302.0 -> 99.0	17615	19.32	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C3-PFHxS	5.748	402.0 -> 99.0	19744	19.37	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C4-PFBA	1.865	217.0 -> 172.0	116115	19.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C4-PFHpA	5.705	367.0 -> 322.0	200121	19.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%		
13C5-PFHxA	4.789	318.0 -> 273.0	140676	19.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C5-PFPeA	3.524	268.0 -> 223.0	98524	19.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C6-PFDA	7.594	519.0 -> 474.0	267846	19.63	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

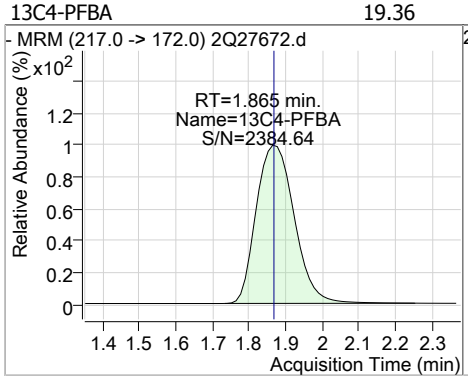
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
13C7-PFUnDA	8.054	570.0 -> 525.0	331909	19.61	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
13C8-FOSA	6.932	506.0 -> 78.0	78487	19.36	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%			
13C8-PFOA	6.434	421.0 -> 376.0	202362	19.40	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%			
13C8-PFOS	7.045	507.0 -> 99.0	24858	19.07	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.3%			
13C9-PFNA	7.065	472.0 -> 427.0	207826	19.63	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
d3-MeFOSAA	7.447	573.0 -> 419.0	37380	19.50	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%			
M2-PFOA	6.435	415.0 -> 370.0	271272	20.01	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	43617	19.99	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	154565	96.66	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 96.7%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	32151	20.55	µg/L		98
6:2FTS	6.432	427.0 -> 407.0	30897	20.18	µg/L		99
8:2FTS	7.631	527.0 -> 507.0	21942	20.52	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	15813	19.90	µg/L		99
FOSA	6.935	498.0 -> 78.0	36531	20.20	µg/L		100
MeFOSAA	7.447	570.0 -> 419.0	19229	20.16	µg/L		99
PFBA	1.873	213.0 -> 169.0	22831	19.83	µg/L		100
PFBS	3.783	299.0 -> 80.0	27657	19.66	µg/L		99
PFDA	7.595	513.0 -> 469.0	116158	19.92	µg/L		100
PFDoDA	8.480	613.0 -> 569.0	164848	19.99	µg/L		100
PFDS	8.014	599.0 -> 80.0	9604	20.96	µg/L		97
PFHpA	5.708	363.0 -> 319.0	171573	19.89	µg/L		100
PFHpS	6.442	449.0 -> 80.0	19371	20.17	µg/L		99
PFHxA	4.791	313.0 -> 269.0	47811	19.70	µg/L		98
PFHxS	5.751	399.0 -> 80.0	21300	19.46	µg/L	m	97
PFNA	7.066	463.0 -> 419.0	137233	19.90	µg/L		99
PFNS	7.565	549.0 -> 80.0	17561	20.60	µg/L		97
PFOA	6.437	413.0 -> 369.0	107547	19.66	µg/L		99
PFOS	7.037	499.0 -> 80.0	24125	19.97	µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	84710	19.94	µg/L		100
PFPeS	4.908	349.0 -> 80.0	17903	19.89	µg/L		97
PFTeDA	9.332	713.0 -> 669.0	176805	19.85	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	183474	19.78	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	133542	19.51	µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	102858	20.25	µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	20261	20.09	µg/L		100
ADONA	5.804	377.0 -> 251.0	201480	20.08	µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	182287	99.28	µg/L		99

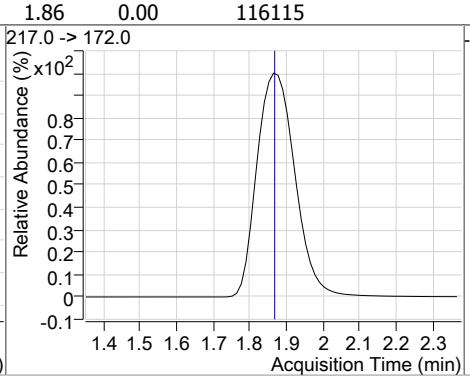
 # = Qualifier out of range, m = manually integrated, + = Area summed

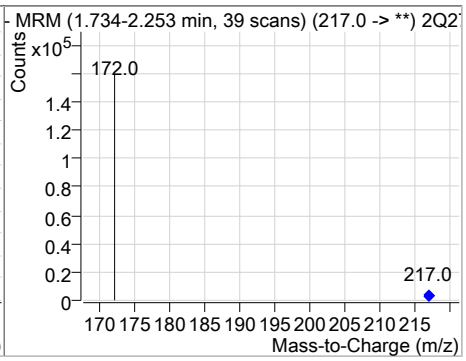
Perfluorinated Compounds by LC/MS/MS



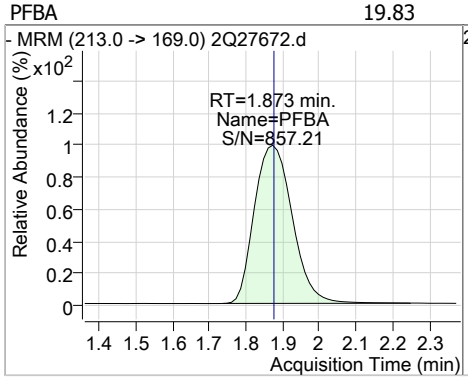
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.36	1.86	0.00	116115				

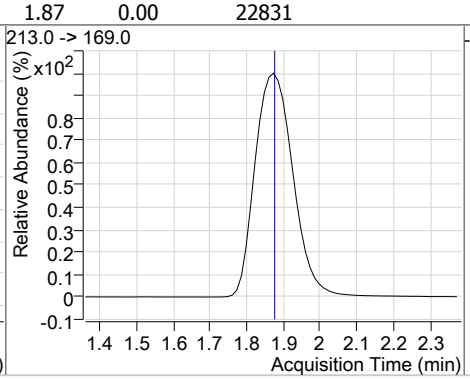


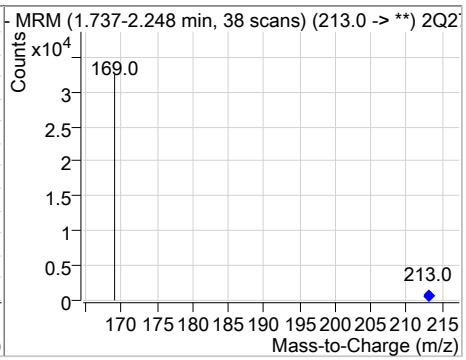




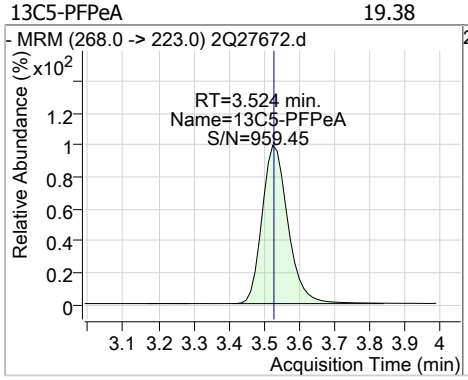
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.83	1.87	0.00	22831				

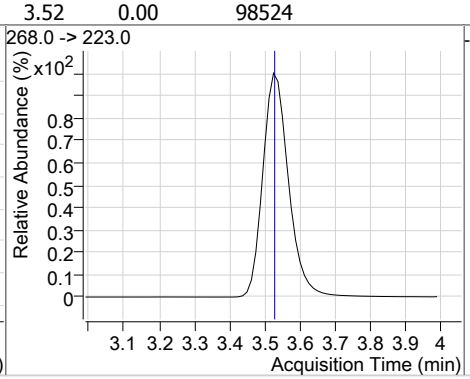


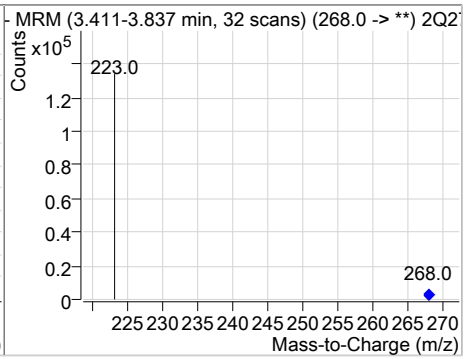




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.38	3.52	0.00	98524				

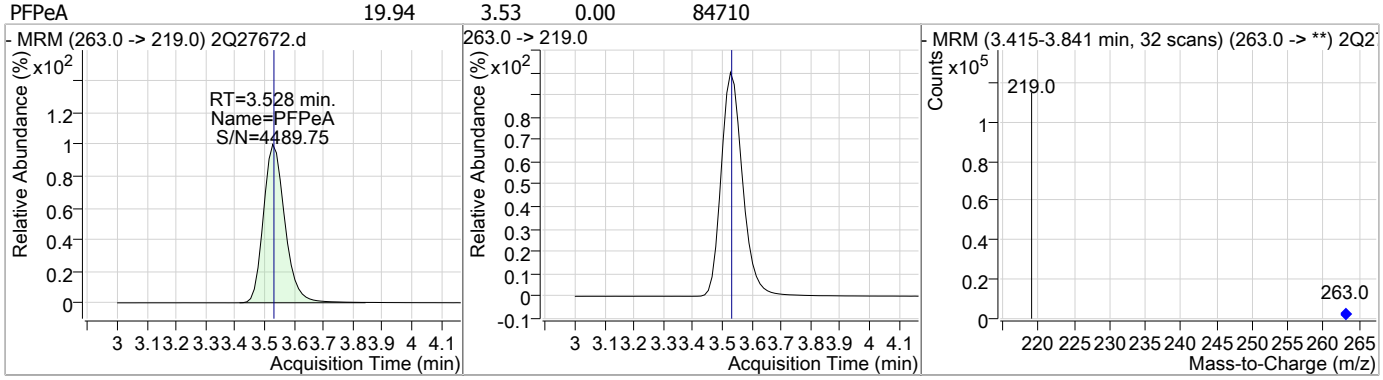




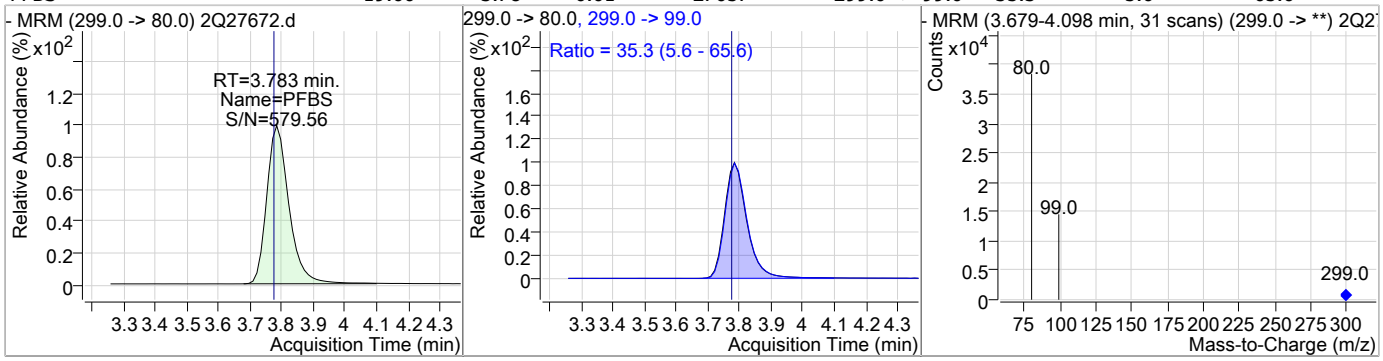


Perfluorinated Compounds by LC/MS/MS

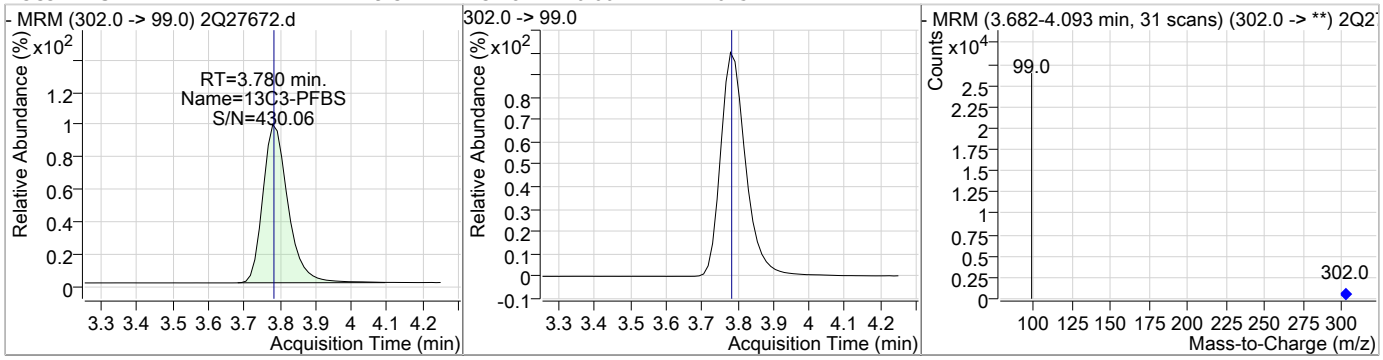
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.94	3.53	0.00	84710				



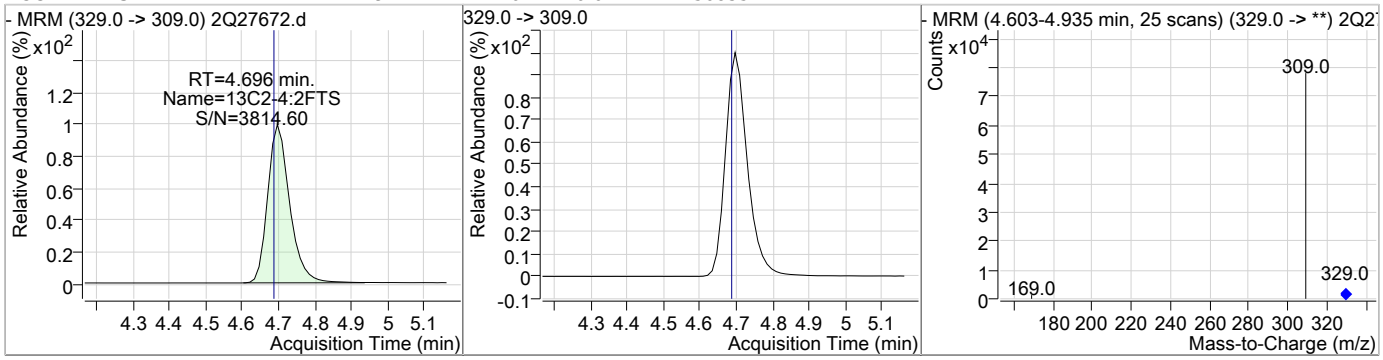
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.66	3.78	0.01	27657	299.0 -> 99.0	35.3	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.32	3.78	0.00	17615				

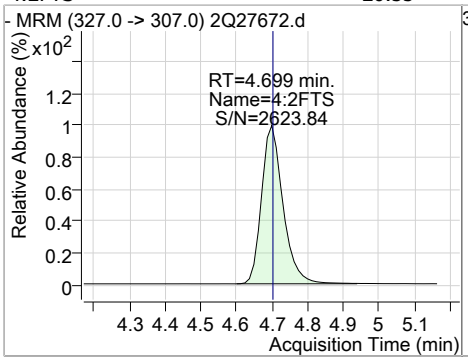


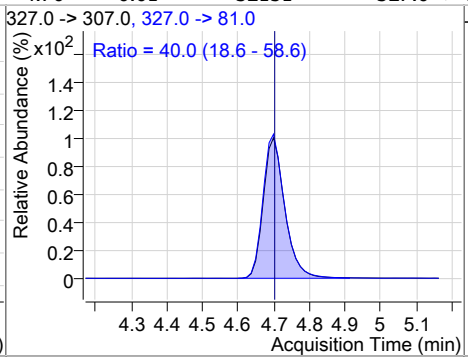
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.11	4.70	0.01	56835				

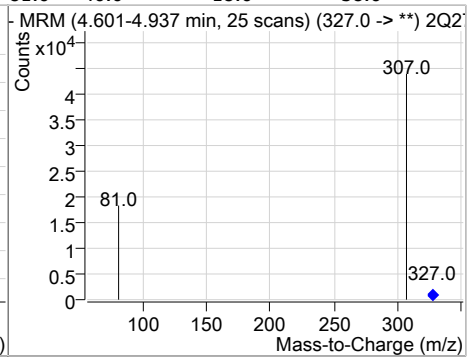


Perfluorinated Compounds by LC/MS/MS

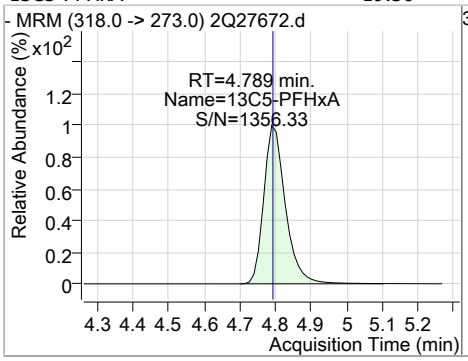
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.55	4.70	0.01	32151	327.0 -> 81.0	40.0	18.6	58.6

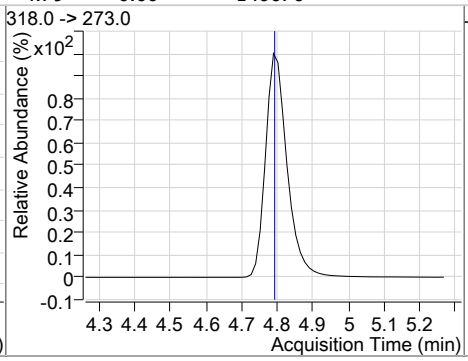


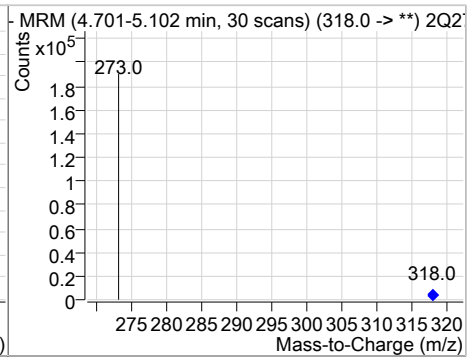




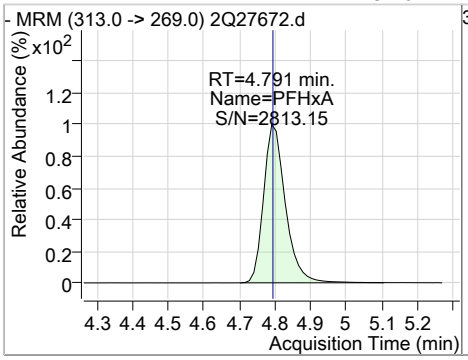
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.36	4.79	0.00	140676				

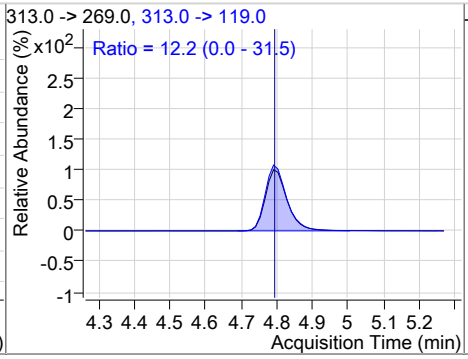


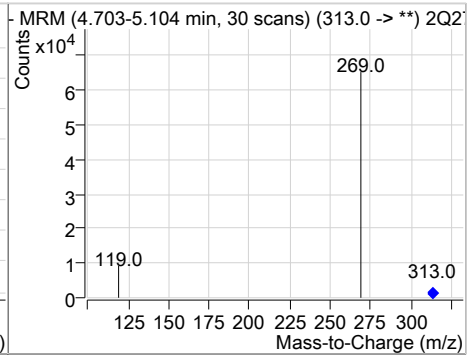




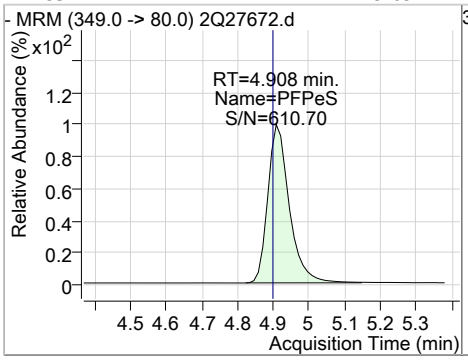
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.70	4.79	0.00	47811	313.0 -> 119.0	12.2	0.0	31.5

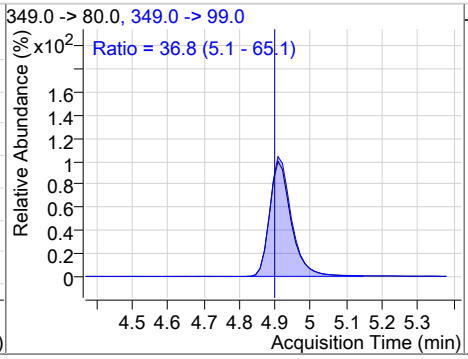


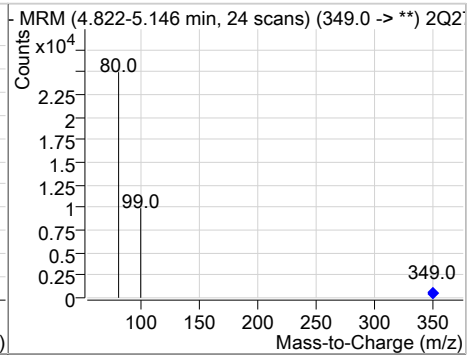




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.89	4.91	0.01	17903	349.0 -> 99.0	36.8	5.1	65.1

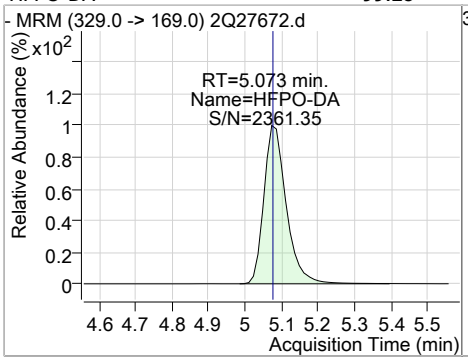


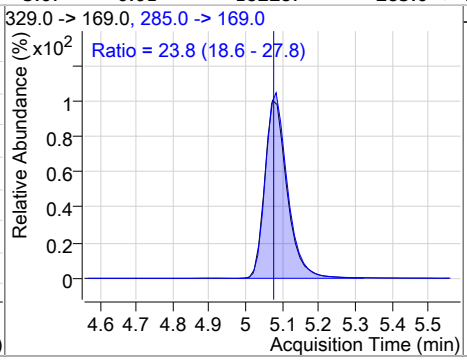


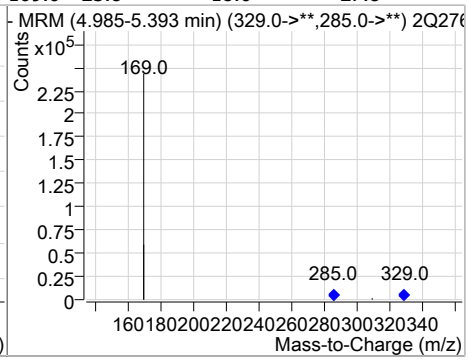


Perfluorinated Compounds by LC/MS/MS

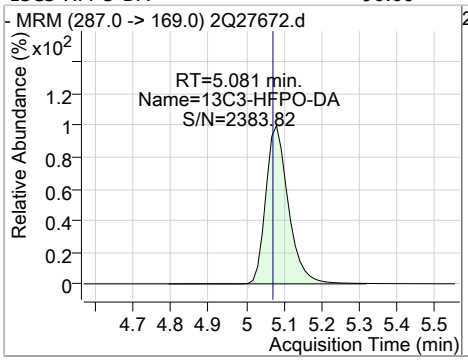
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	99.28	5.07	0.01	182287	285.0 -> 169.0	23.8	18.6	27.8

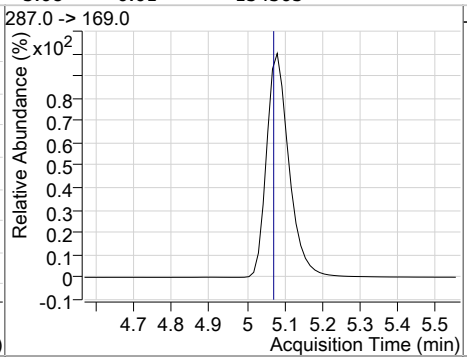


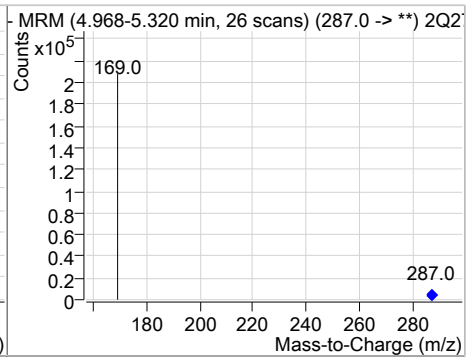




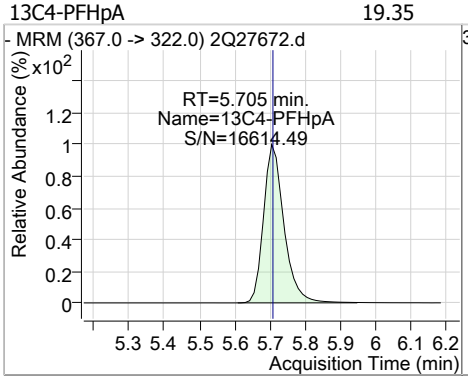
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	96.66	5.08	0.01	154565				

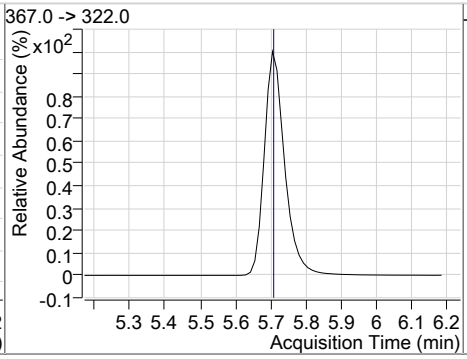


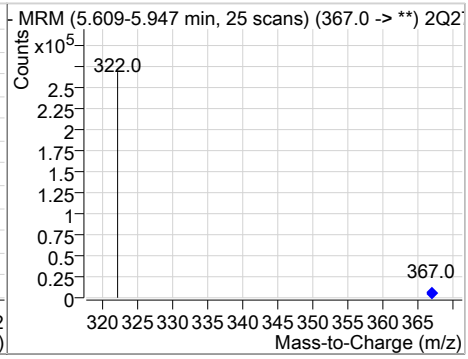




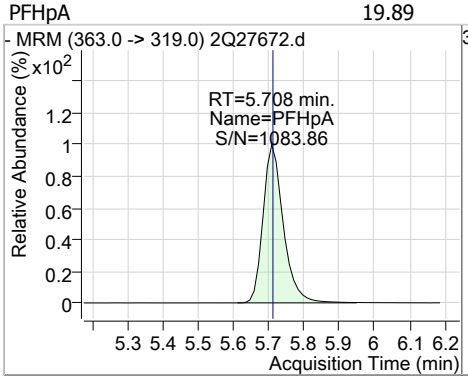
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.35	5.71	0.00	200121				

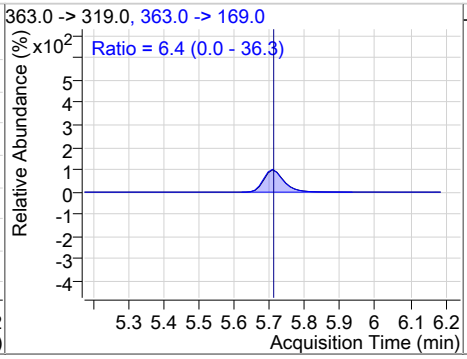


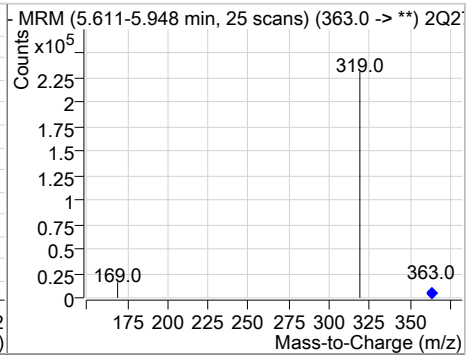




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.89	5.71	0.00	171573	363.0 -> 169.0	6.4	0.0	36.3

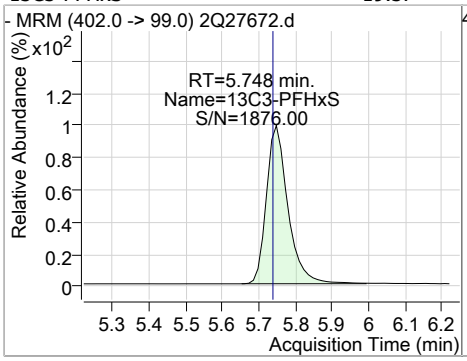


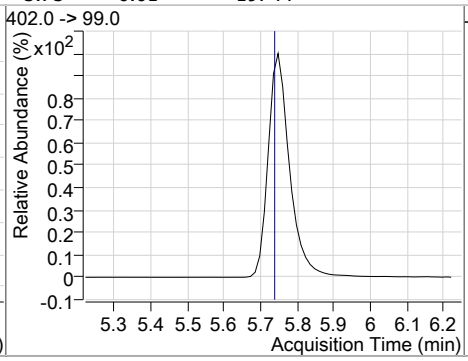


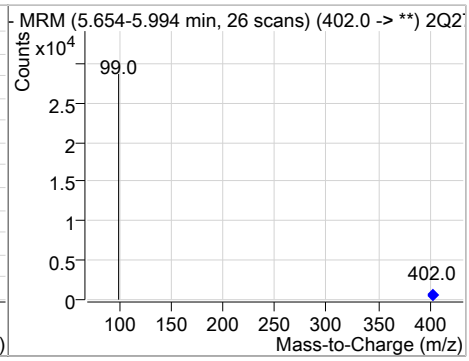


Perfluorinated Compounds by LC/MS/MS

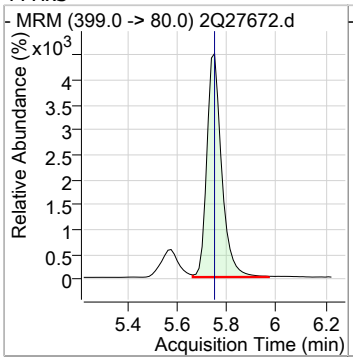
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.37	5.75	0.01	19744				

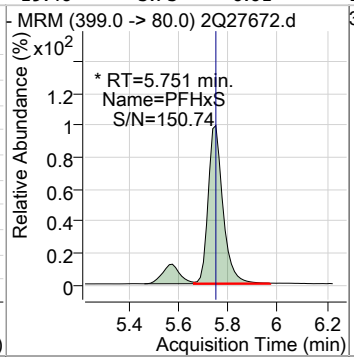


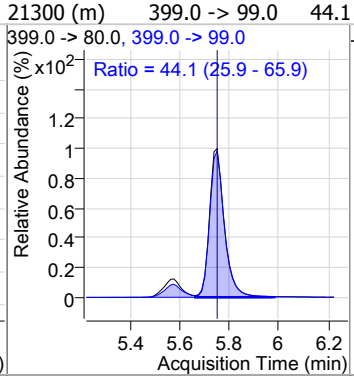


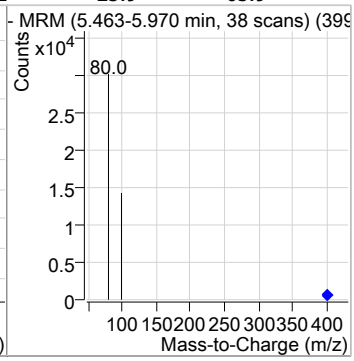


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.46	5.75	0.01	21300 (m)	399.0 -> 99.0	44.1	25.9	65.9

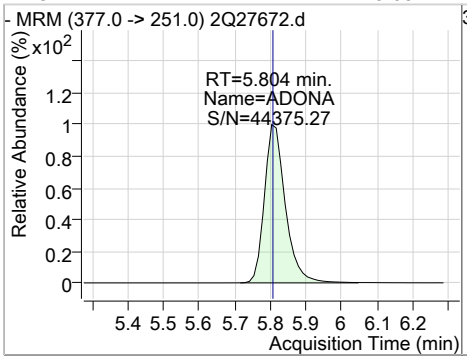


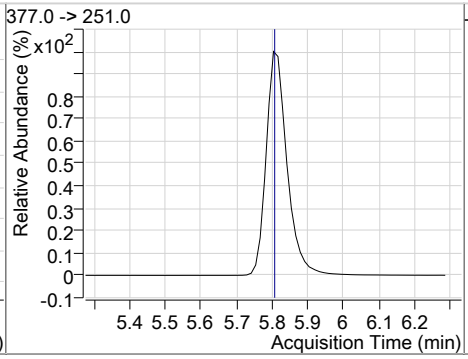


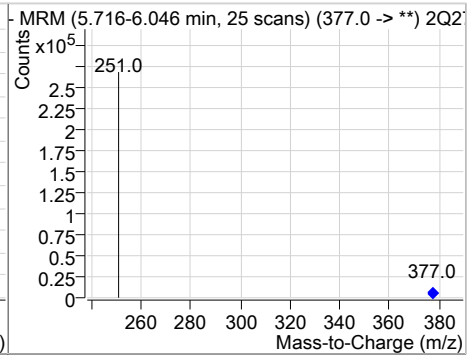




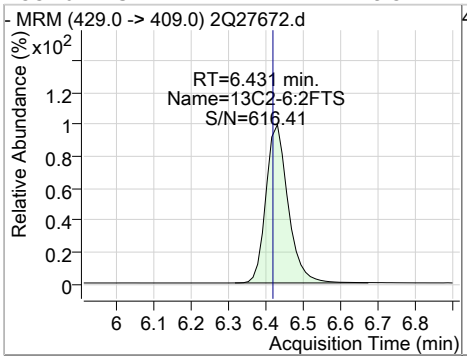
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	20.08	5.80	0.00	201480				

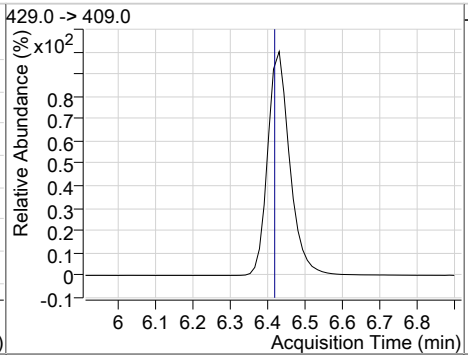


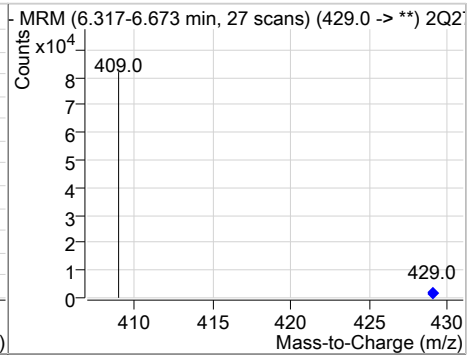




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.37	6.43	0.02	62181				

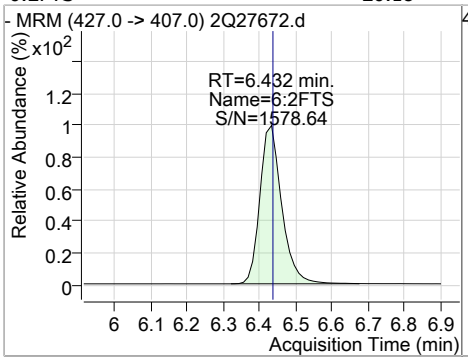


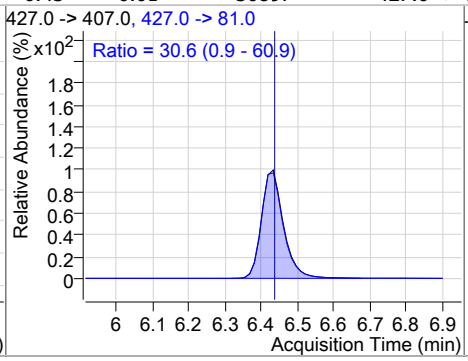


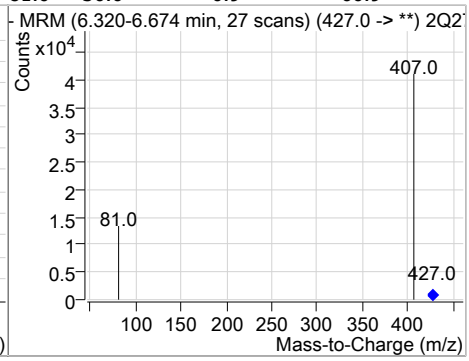


Perfluorinated Compounds by LC/MS/MS

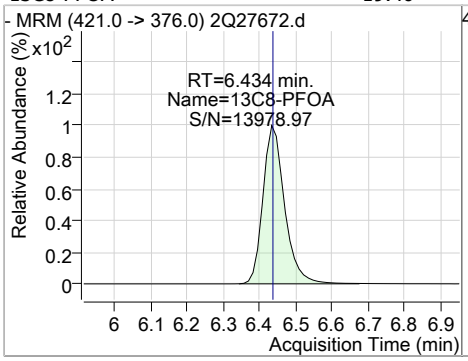
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.18	6.43	0.01	30897	427.0 -> 81.0	30.6	0.9	60.9

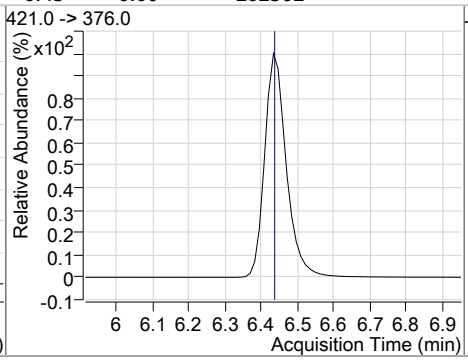


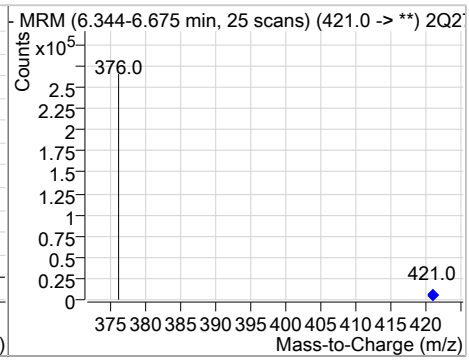




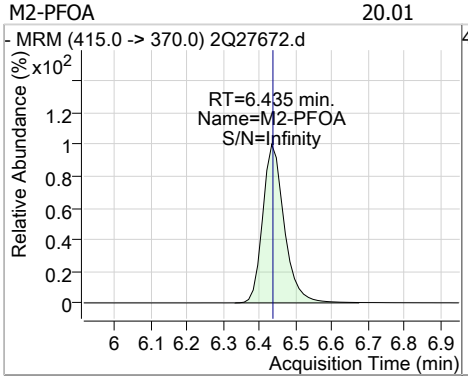
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.40	6.43	0.00	202362				

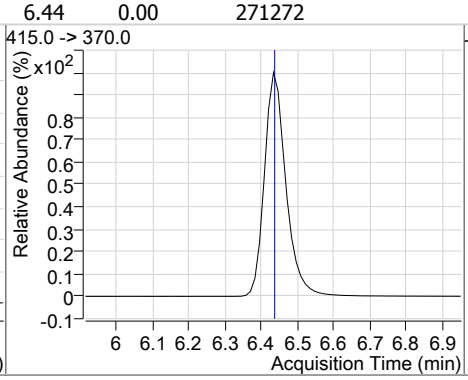


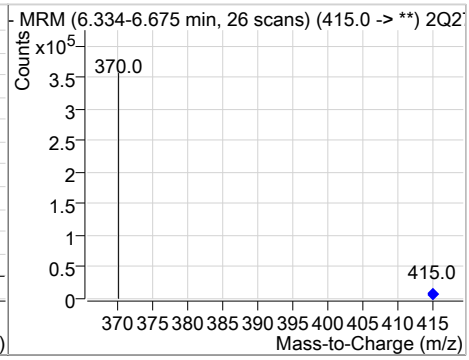




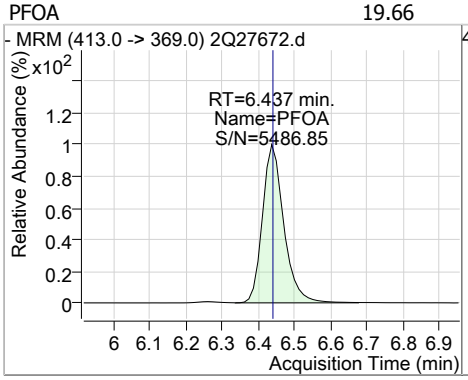
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.44	0.00	271272				

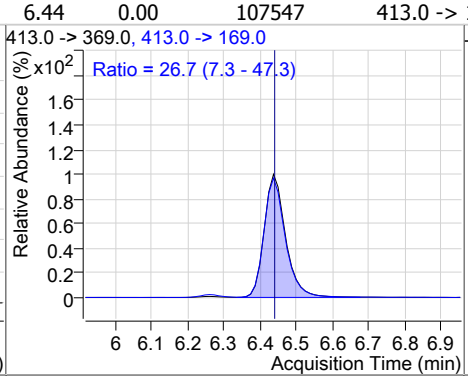


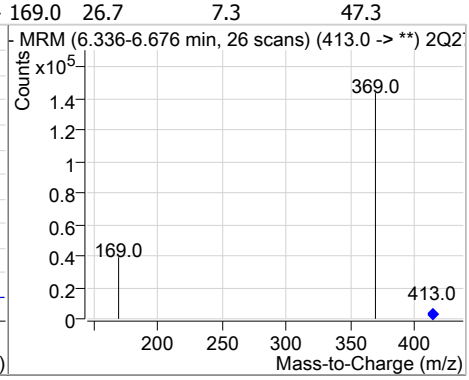




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.66	6.44	0.00	107547	413.0 -> 169.0	26.7	7.3	47.3

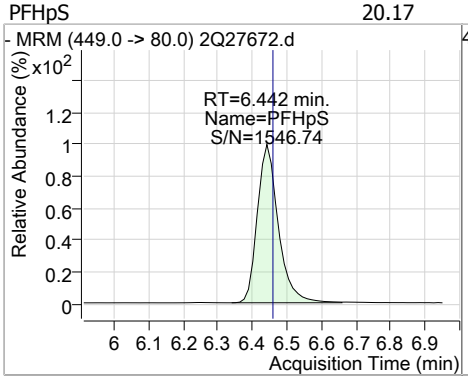


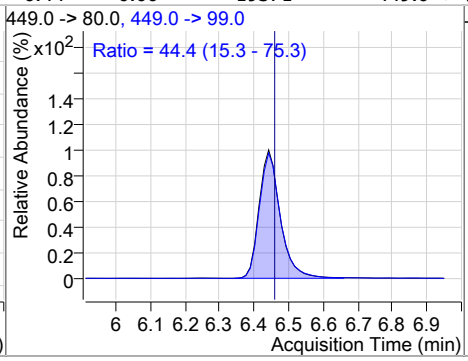


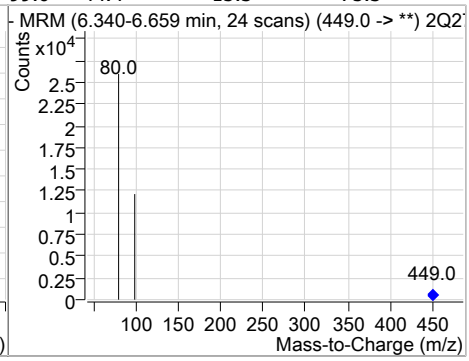


Perfluorinated Compounds by LC/MS/MS

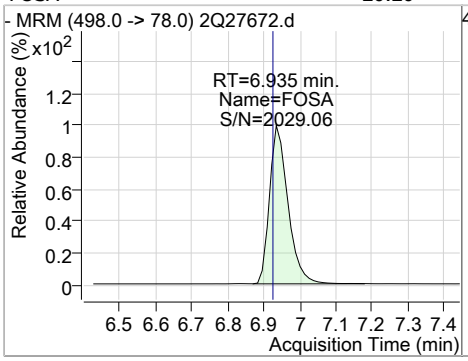
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.17	6.44	0.00	19371	449.0 -> 99.0	44.4	15.3	75.3

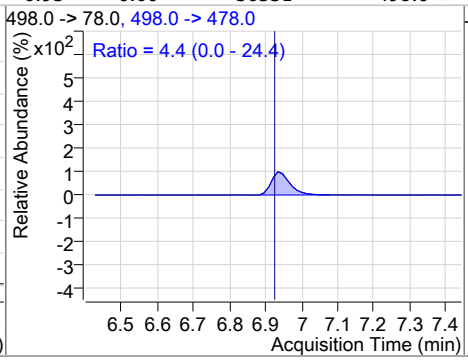


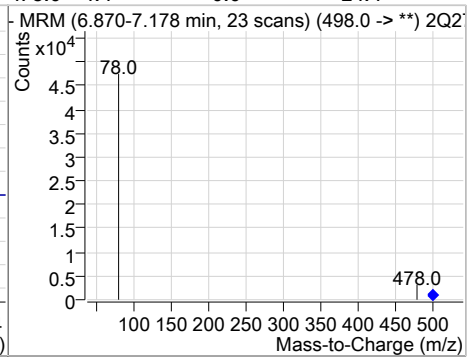




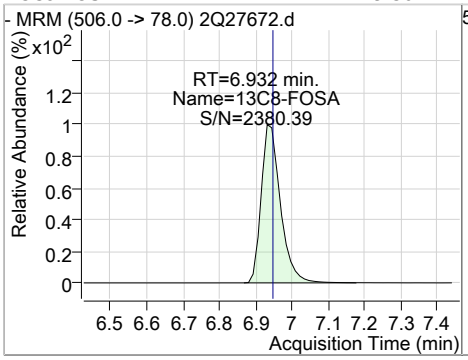
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.20	6.93	0.00	36531	498.0 -> 478.0	4.4	0.0	24.4

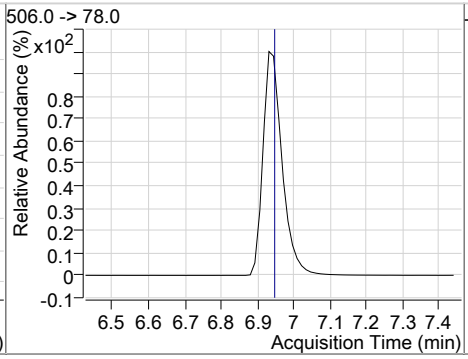


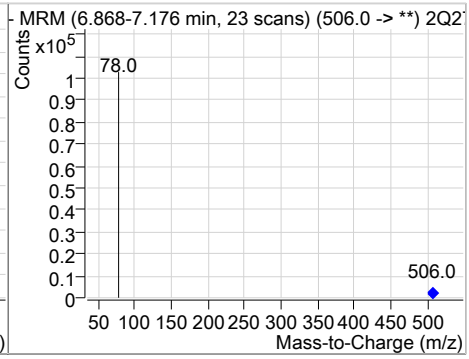




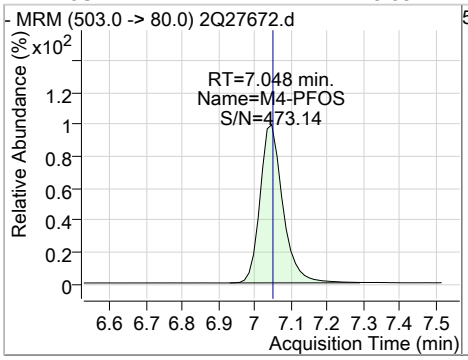
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.36	6.93	-0.01	78487				

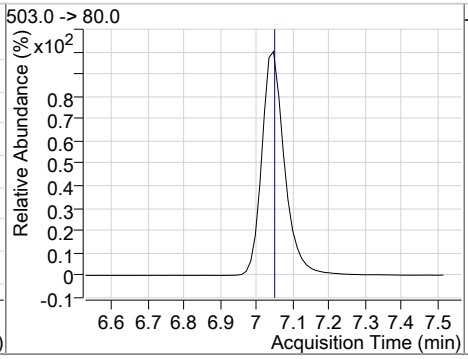


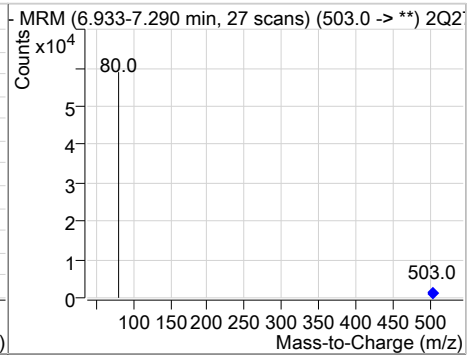




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.99	7.05	0.01	43617				

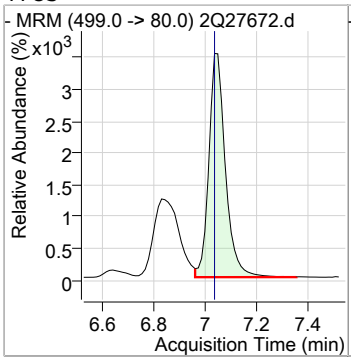


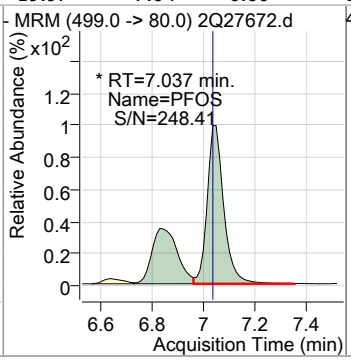


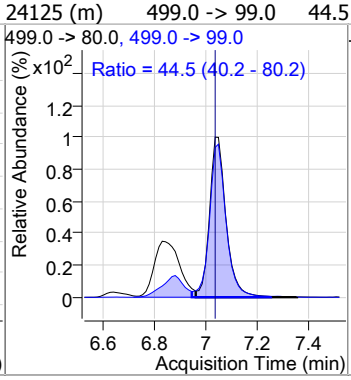


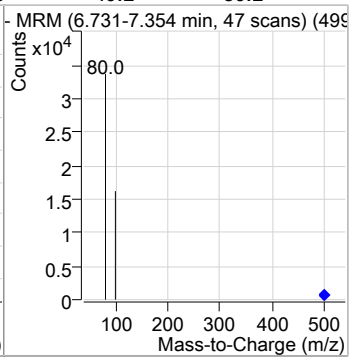
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.97	7.04	0.00	24125 (m)	499.0 -> 99.0	44.5	40.2	80.2

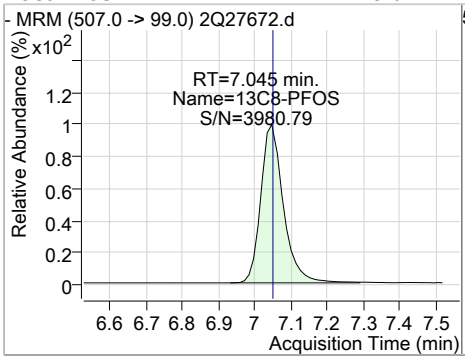


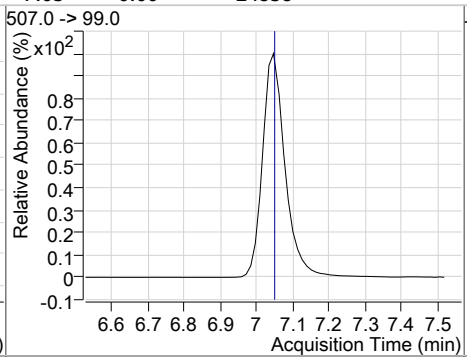


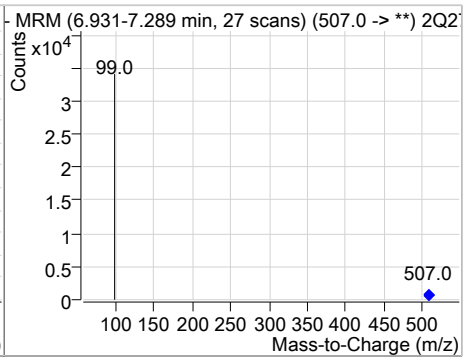




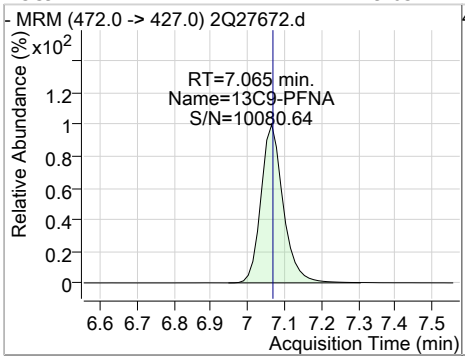
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.07	7.05	0.00	24858				

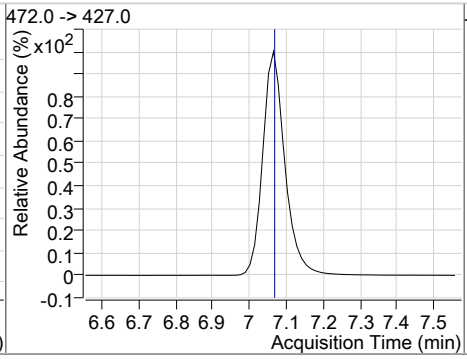


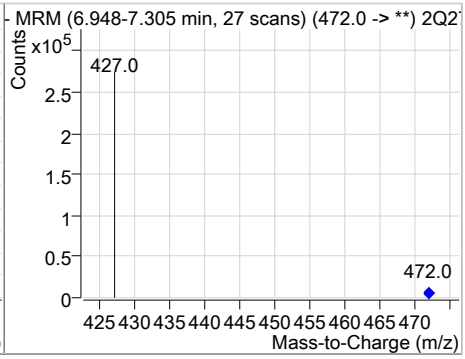




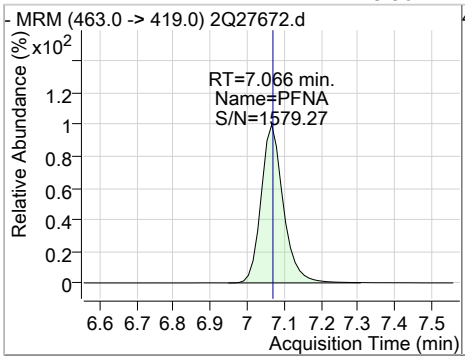
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.63	7.07	0.00	207826				

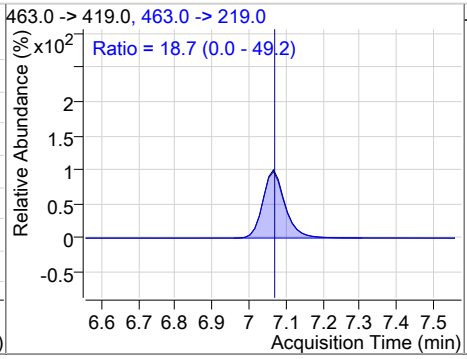


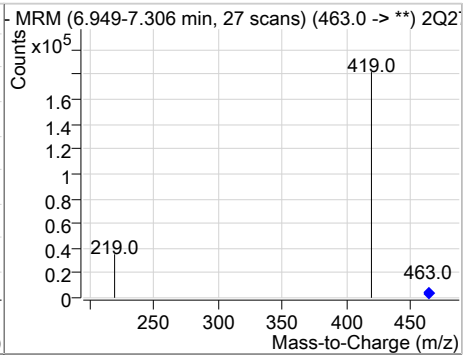




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.90	7.07	0.00	137233	463.0 -> 219.0	18.7	0.0	49.2

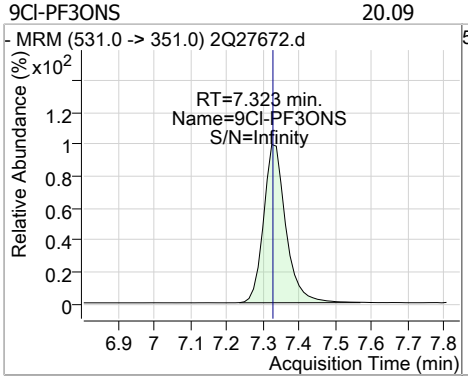


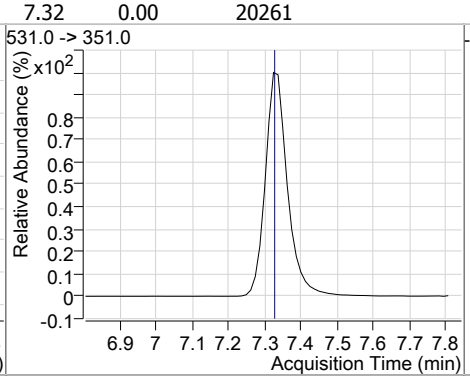


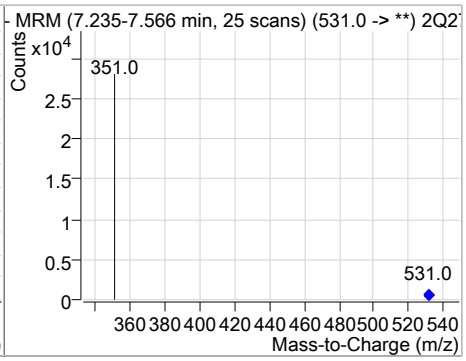


Perfluorinated Compounds by LC/MS/MS

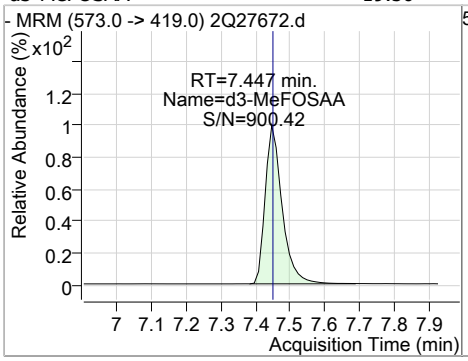
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	20.09	7.32	0.00	20261				

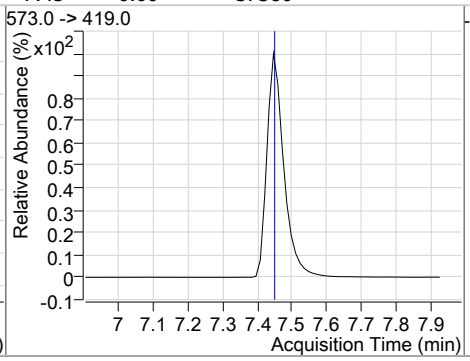


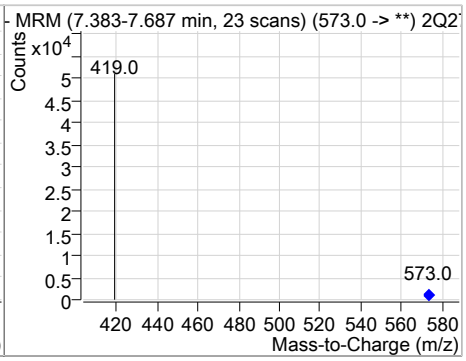




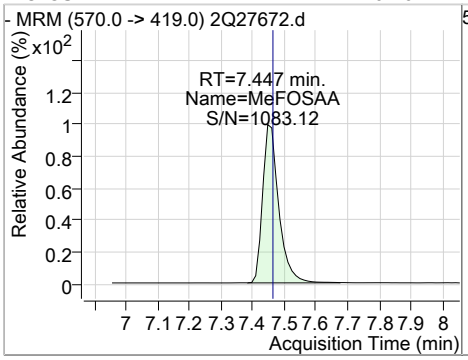
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.50	7.45	0.00	37380				

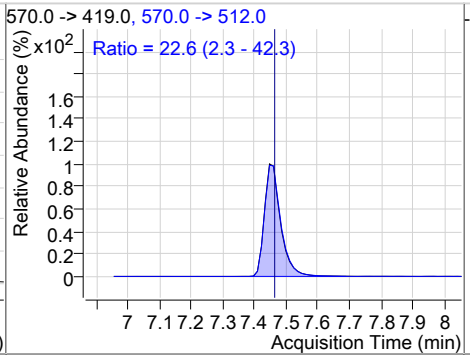


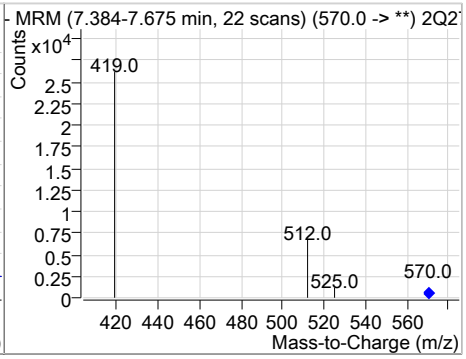




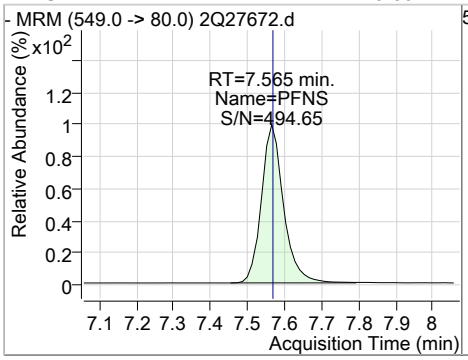
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.16	7.45	-0.01	19229	570.0 -> 512.0	22.6	2.3	42.3

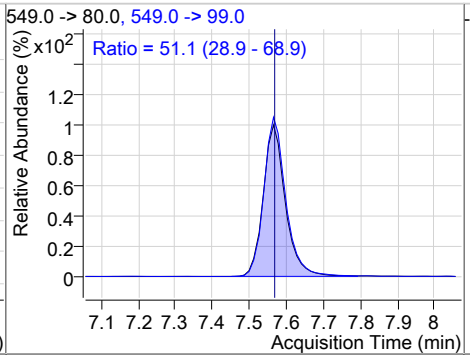


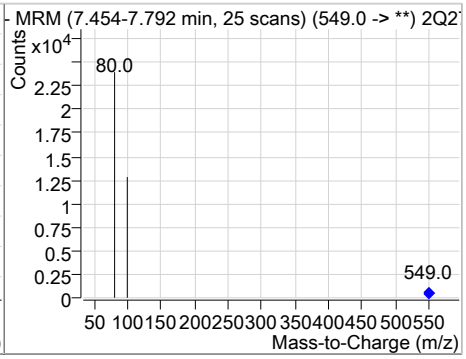




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.60	7.57	0.00	17561	549.0 -> 99.0	51.1	28.9	68.9

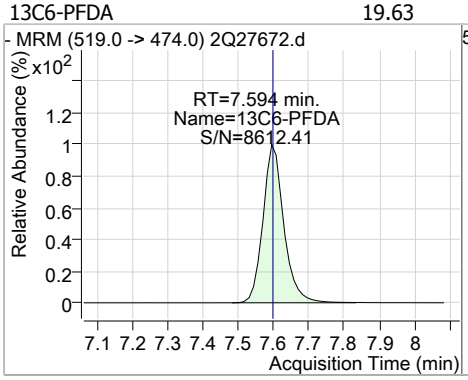


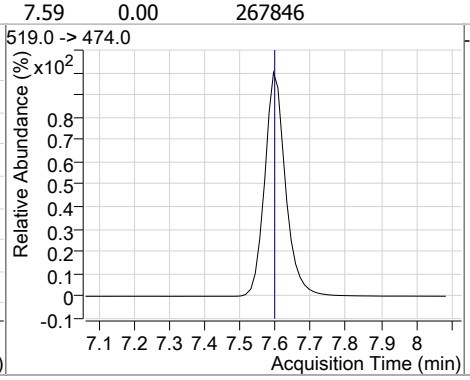


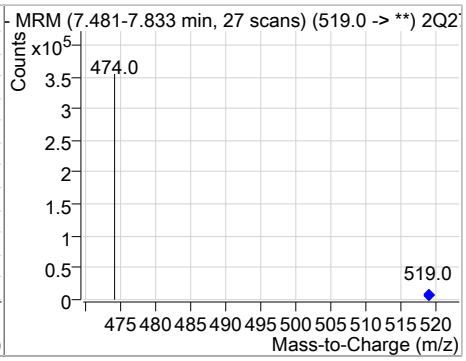


Perfluorinated Compounds by LC/MS/MS

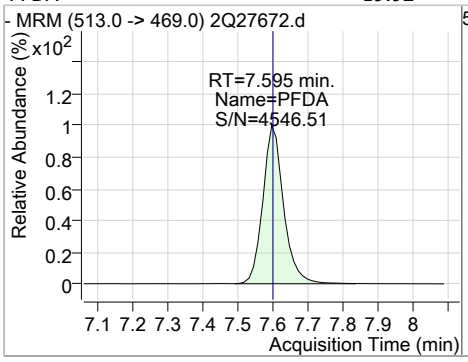
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.63	7.59	0.00	267846				

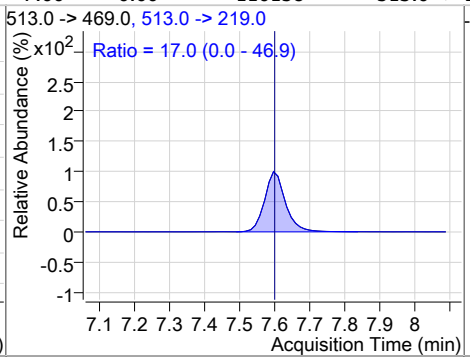


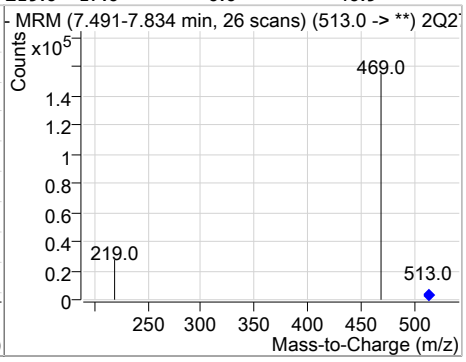




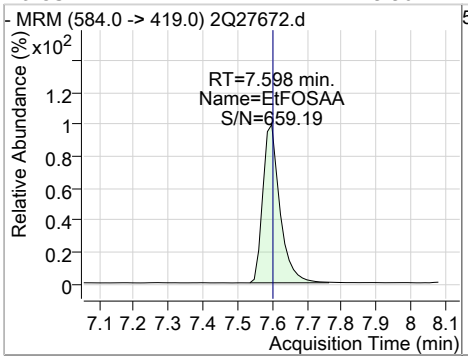
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.92	7.60	0.00	116158	513.0 -> 219.0	17.0	0.0	46.9

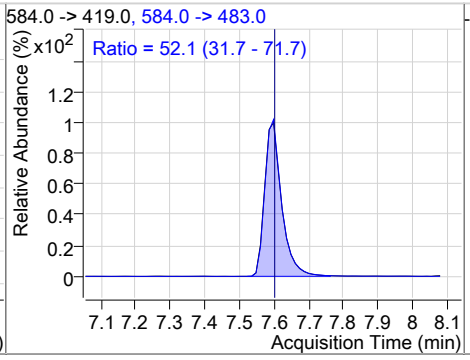


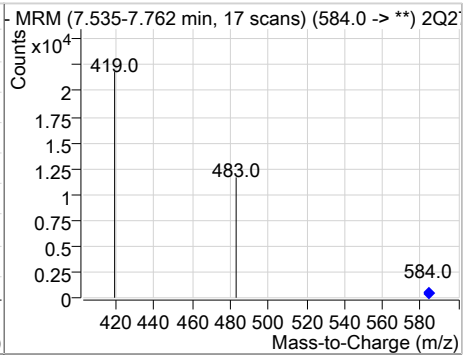




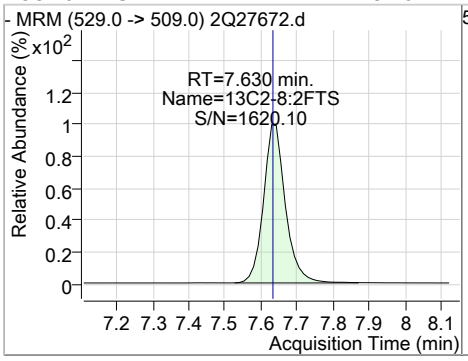
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.90	7.60	0.00	15813	584.0 -> 483.0	52.1	31.7	71.7

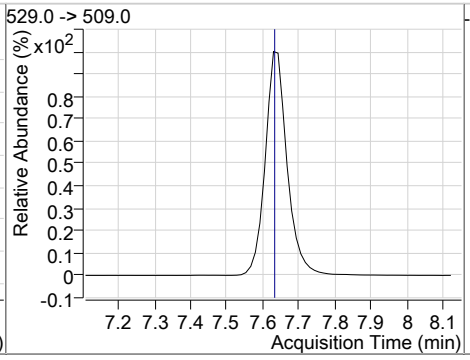


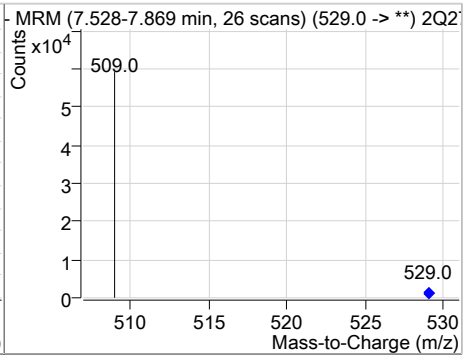




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.28	7.63	0.00	42748				

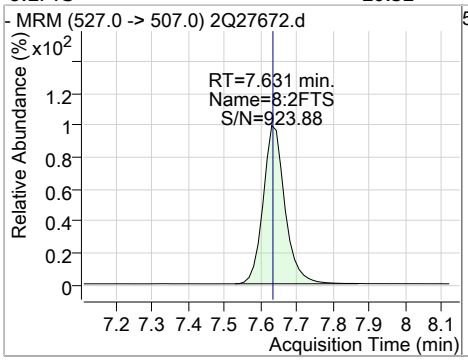


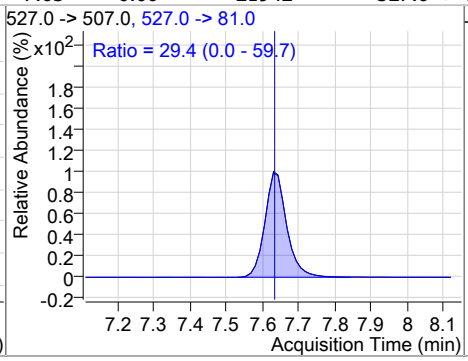


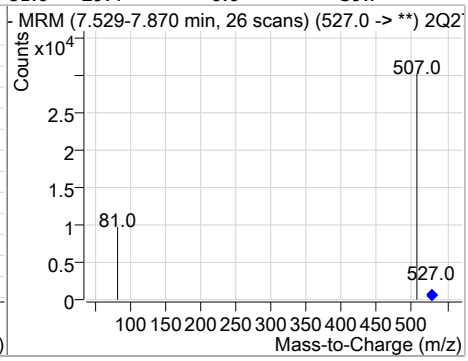


Perfluorinated Compounds by LC/MS/MS

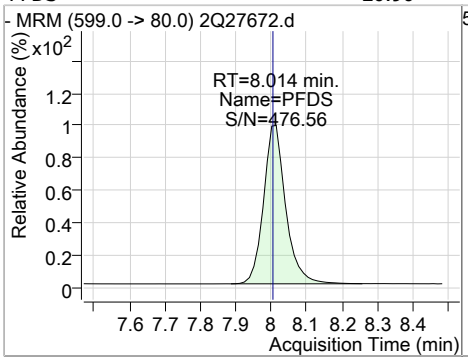
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.52	7.63	0.00	21942	527.0 -> 81.0	29.4	0.0	59.7

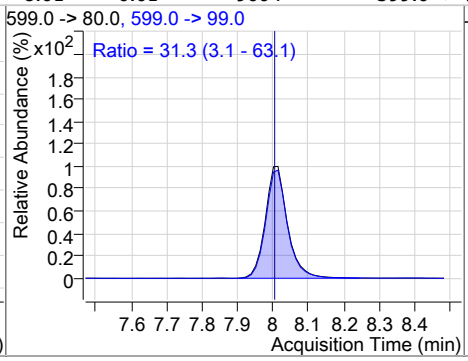


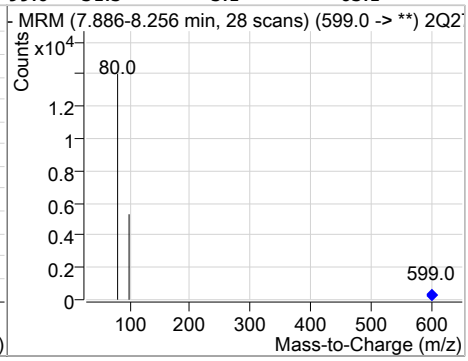




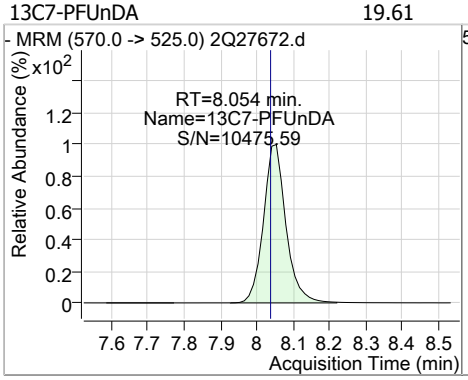
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.96	8.01	0.01	9604	599.0 -> 99.0	31.3	3.1	63.1

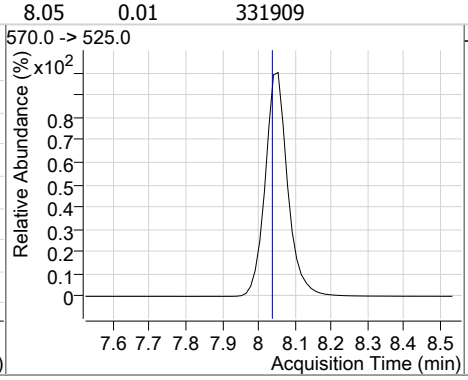


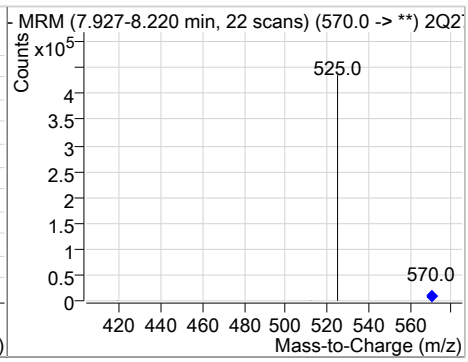




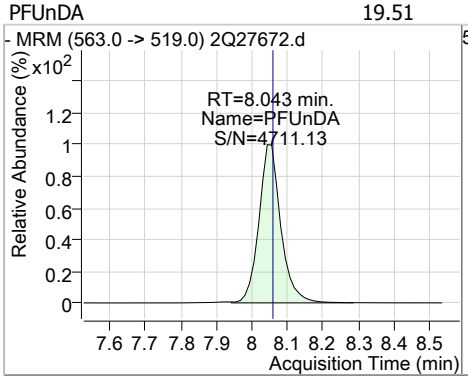
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.61	8.05	0.01	331909				

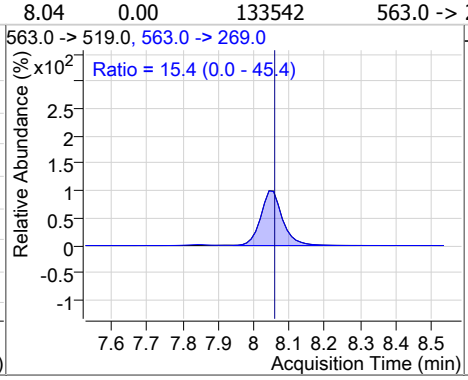


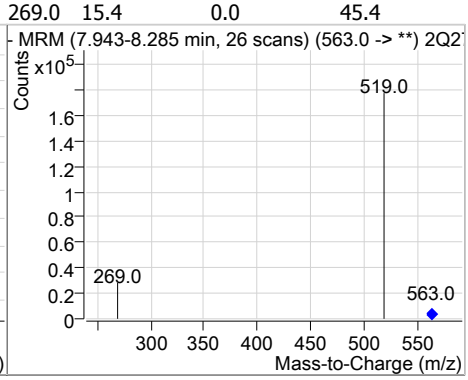




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.51	8.04	0.00	133542	563.0 -> 269.0	15.4	0.0	45.4

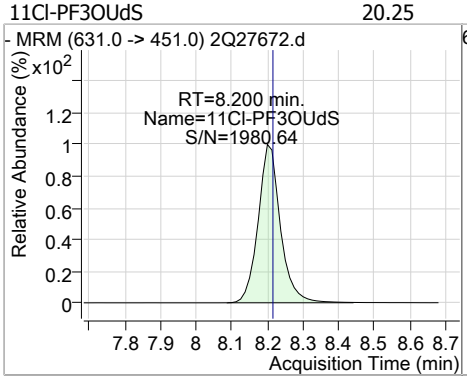


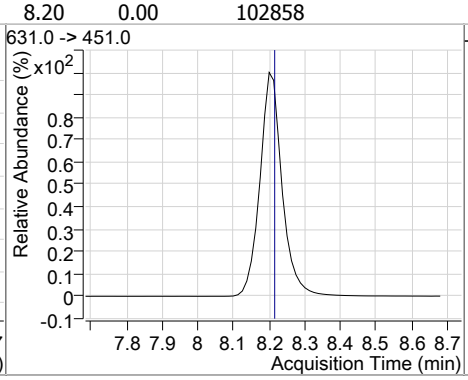


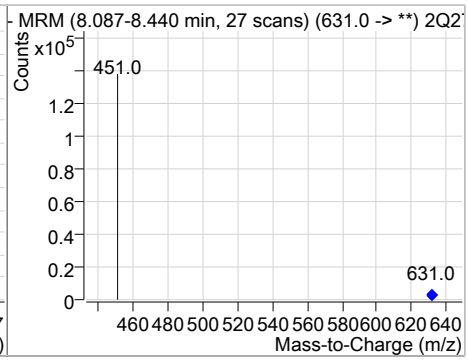


Perfluorinated Compounds by LC/MS/MS

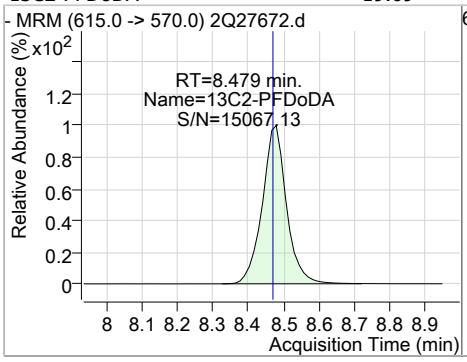
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	20.25	8.20	0.00	102858				

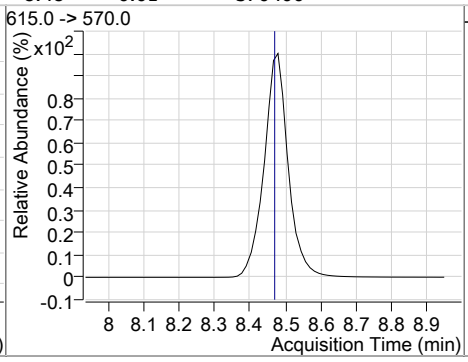


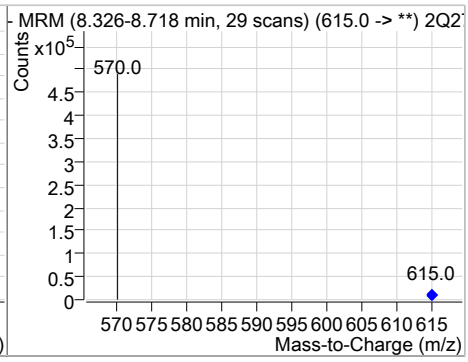




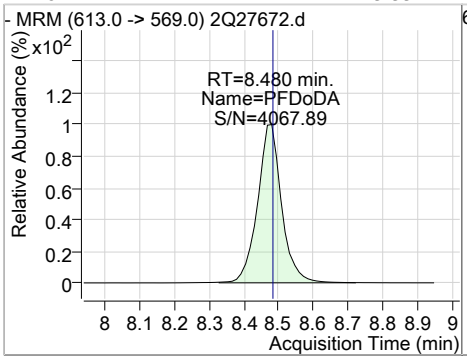
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.69	8.48	0.01	370400				

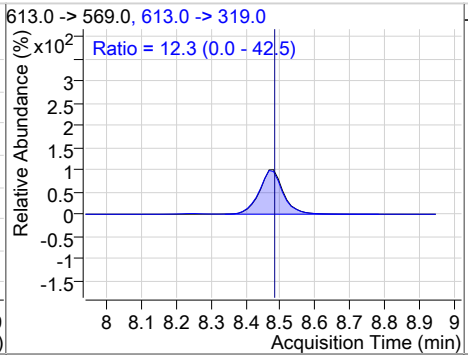


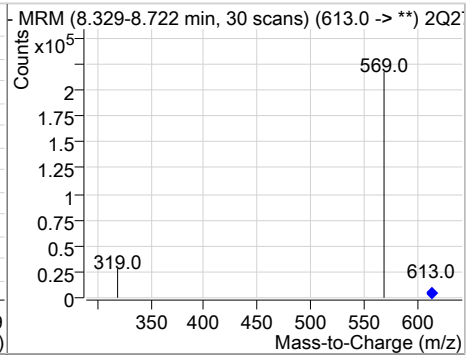




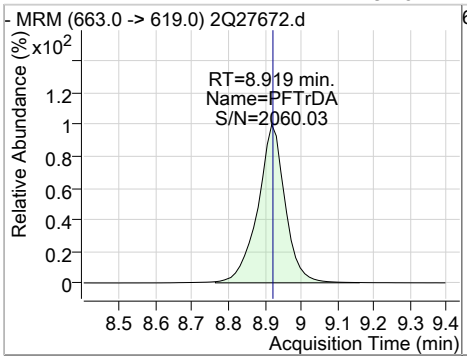
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.99	8.48	0.01	164848	613.0 -> 319.0	12.3	0.0	42.5

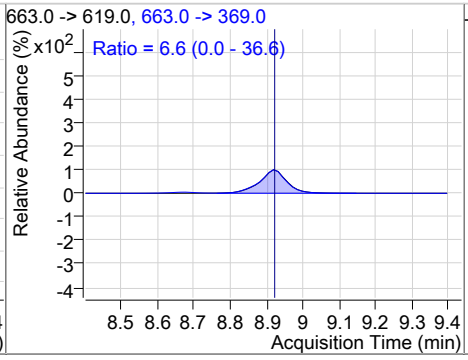


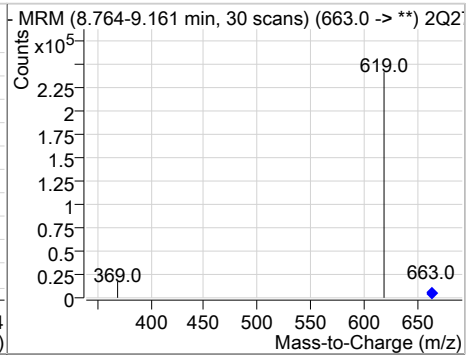




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.78	8.92	0.00	183474	663.0 -> 369.0	6.6	0.0	36.6

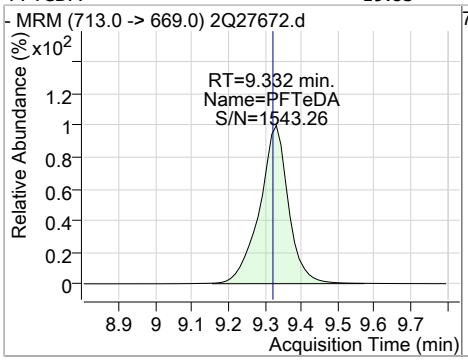


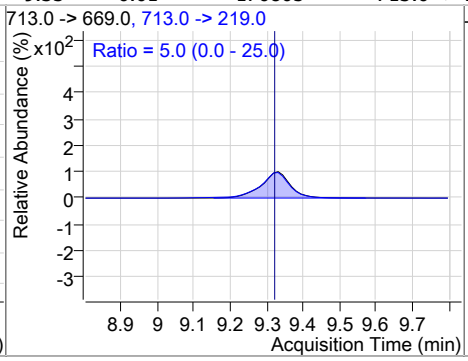


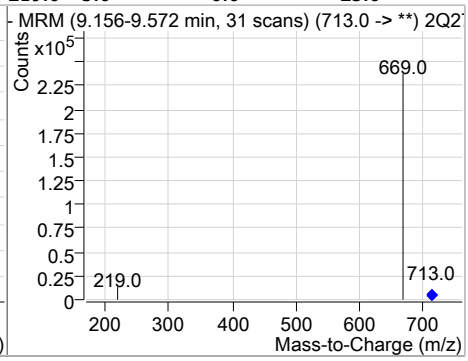


Perfluorinated Compounds by LC/MS/MS

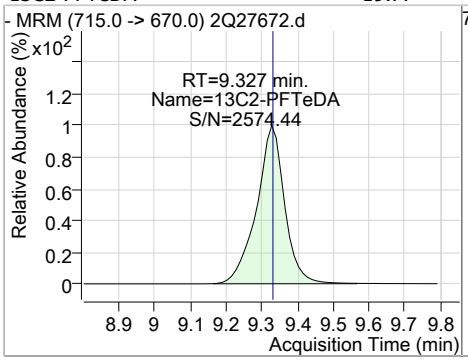
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.85	9.33	0.01	176805	713.0 -> 219.0	5.0	0.0	25.0

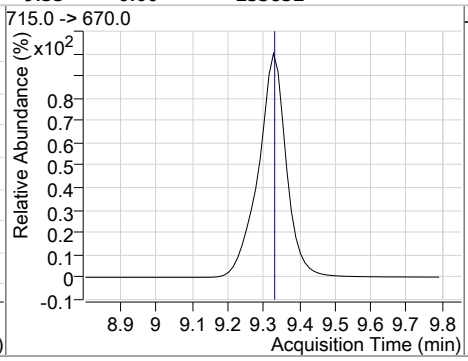


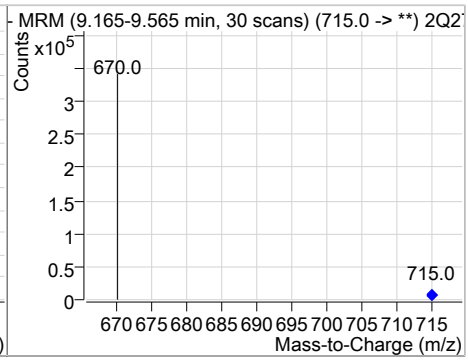




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.77	9.33	0.00	253852				







Manual Integration Approval Summary

Sample Number:	S2Q442-ICC442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27672.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 09:37	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

2Q27673.D

Manual Integrations APPROVED (compounds with "m" flag)

Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File	:	2Q27673.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/18/2019 9:52:58 AM
Sample Name	:	IC442-50
Vial	:	Vial 8
DA Method File	:	ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name	:	S2Q442.batch.bin
Sample Information	:	op74164,S2Q442,250,,,1.0,1,water

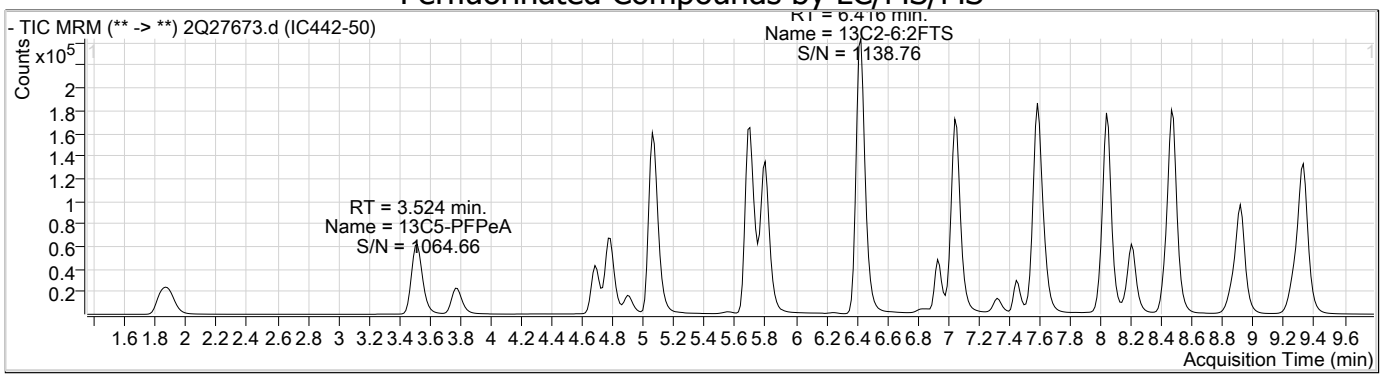
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	267807	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	42745	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	118190	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	100197	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	142950	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	201594	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	201495	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	207126	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	267787	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	335531	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	379021	20.00	µg/L	0.000
M2-PFTeDA	9.327	715.0 -> 670.0	260333	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	75823	20.00	µg/L	-0.013
M3-PFBS	3.780	302.0 -> 99.0	17706	20.00	µg/L	0.000
M3-PFHxS	5.736	402.0 -> 99.0	19386	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	25394	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	62433	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	66996	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	47709	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	38109	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	149996	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	62375	20.98	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%		
13C2-6:2FTS	6.416	429.0 -> 409.0	66911	20.85	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	47672	21.50	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%		
13C2-PFDoDA	8.466	615.0 -> 570.0	378583	20.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C2-PFTeDA	9.327	715.0 -> 670.0	259678	20.23	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.1%		
13C3-PFBS	3.780	302.0 -> 99.0	17692	19.40	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C3-PFHxS	5.736	402.0 -> 99.0	19572	19.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.0%		
13C4-PFBA	1.865	217.0 -> 172.0	118033	19.68	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C4-PFHpA	5.705	367.0 -> 322.0	201551	19.49	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C5-PFHxA	4.789	318.0 -> 273.0	142681	19.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.2%		
13C5-PFPeA	3.524	268.0 -> 223.0	99771	19.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C6-PFDA	7.594	519.0 -> 474.0	267664	19.61	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

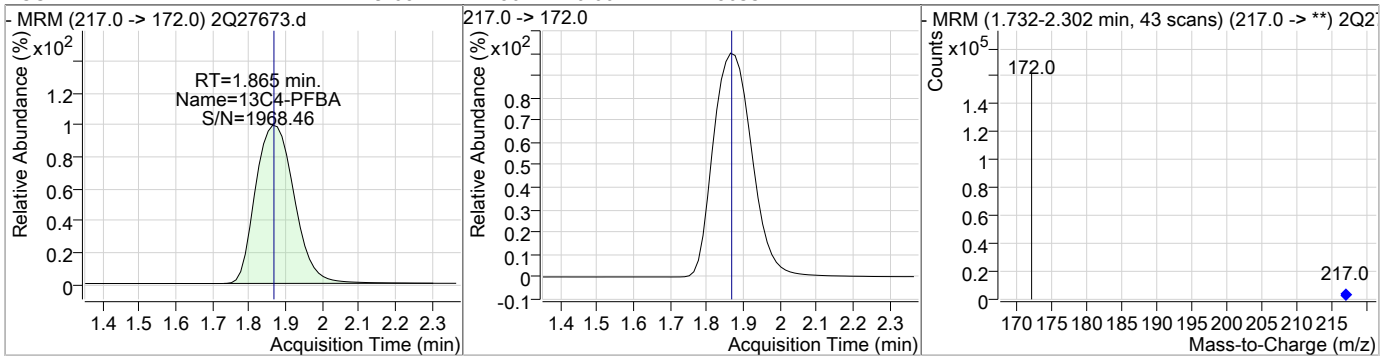
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
13C7-PFUnDA	8.041	570.0 -> 525.0	335476	19.82	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%			
13C8-FOSA	6.932	506.0 -> 78.0	75885	18.71	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%			
13C8-PFOA	6.434	421.0 -> 376.0	201354	19.30	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.5%			
13C8-PFOS	7.033	507.0 -> 99.0	25395	19.48	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%			
13C9-PFNA	7.052	472.0 -> 427.0	207015	19.55	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%			
d3-MeFOSAA	7.447	573.0 -> 419.0	38109	19.88	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%			
M2-PFOA	6.435	415.0 -> 370.0	268029	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.036	503.0 -> 80.0	42821	20.03	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
13C3-HFPO-DA	5.068	287.0 -> 169.0	149996	93.80	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 93.8%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	82682	48.07	µg/L		99
6:2FTS	6.418	427.0 -> 407.0	76451	46.39	µg/L		100
8:2FTS	7.631	527.0 -> 507.0	56952	47.75	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	39986	50.20	µg/L		98
FOSA	6.935	498.0 -> 78.0	87719	49.98	µg/L		99
MeFOSAA	7.447	570.0 -> 419.0	48995	49.97	µg/L		100
PFBA	1.873	213.0 -> 169.0	58011	49.70	µg/L		100
PFBS	3.771	299.0 -> 80.0	70446	50.11	µg/L		99
PFDA	7.595	513.0 -> 469.0	287890	49.39	µg/L		99
PFDoDA	8.468	613.0 -> 569.0	419926	49.78	µg/L		100
PFDS	8.001	599.0 -> 80.0	23451	50.14	µg/L		100
PFHpA	5.695	363.0 -> 319.0	435330	50.10	µg/L		100
PFHpS	6.442	449.0 -> 80.0	47897	50.92	µg/L		98
PFHxA	4.791	313.0 -> 269.0	122366	49.71	µg/L		100
PFHxS	5.739	399.0 -> 80.0	54243	50.62	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	343142	49.95	µg/L		100
PFNS	7.565	549.0 -> 80.0	43875	50.41	µg/L		99
PFOA	6.437	413.0 -> 369.0	267229	49.10	µg/L		98
PFOS	7.037	499.0 -> 80.0	61125	49.56	µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	216069	49.82	µg/L		100
PFPeS	4.895	349.0 -> 80.0	45369	50.42	µg/L		96
PFTeDA	9.332	713.0 -> 669.0	451162	49.56	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	473047	49.89	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	340357	49.17	µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	259686	50.00	µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	51529	49.82	µg/L		100
ADONA	5.804	377.0 -> 251.0	511194	49.96	µg/L		100
HFPO-DA	5.060	329.0 -> 169.0	442027	248.08	µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

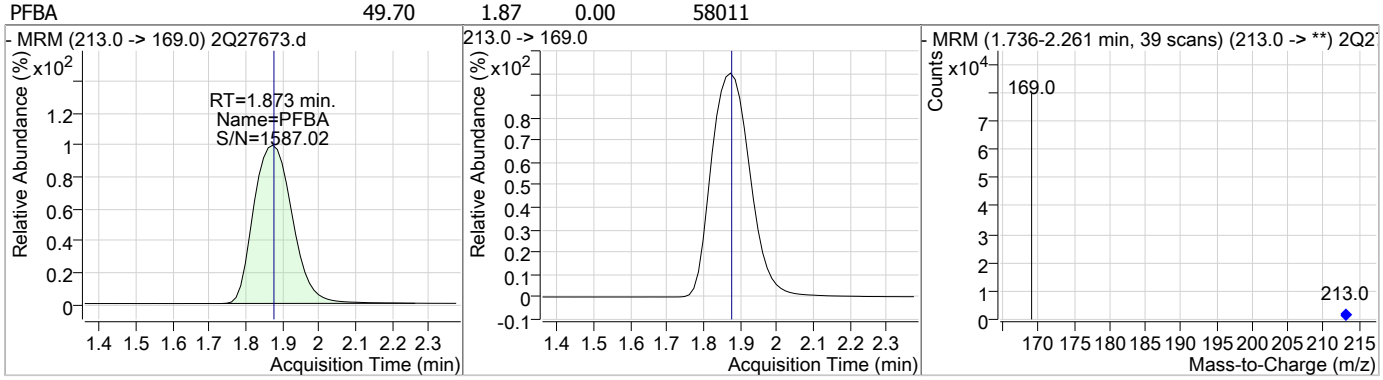
Perfluorinated Compounds by LC/MS/MS



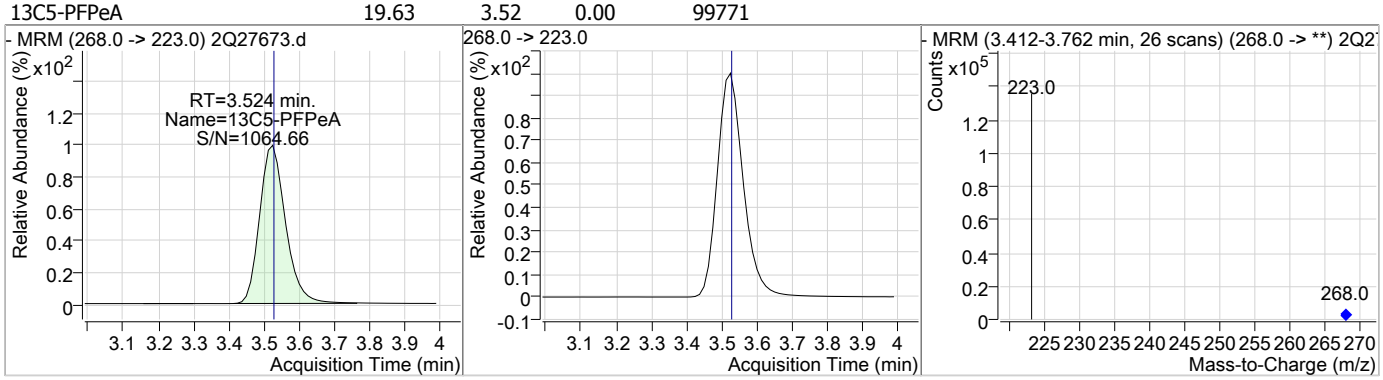
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.68	1.86	0.00	118033				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	49.70	1.87	0.00	58011				

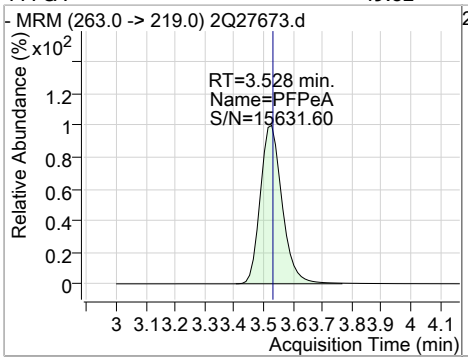


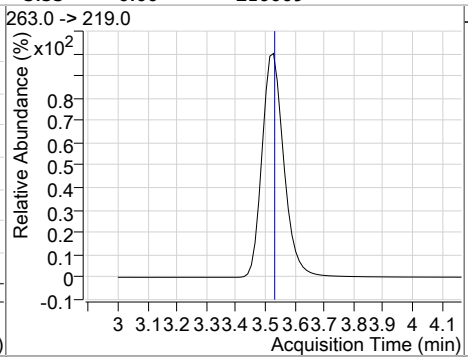
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.63	3.52	0.00	99771				

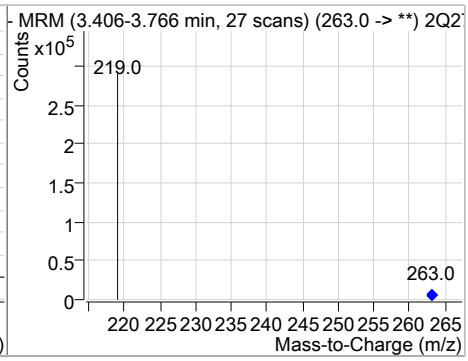


Perfluorinated Compounds by LC/MS/MS

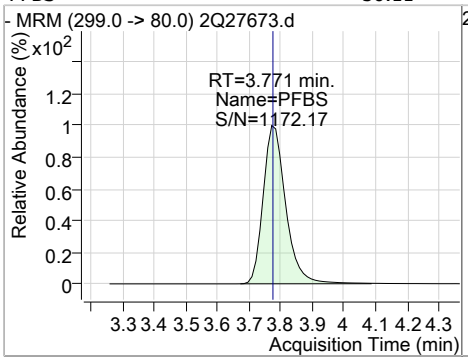
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	49.82	3.53	0.00	216069				

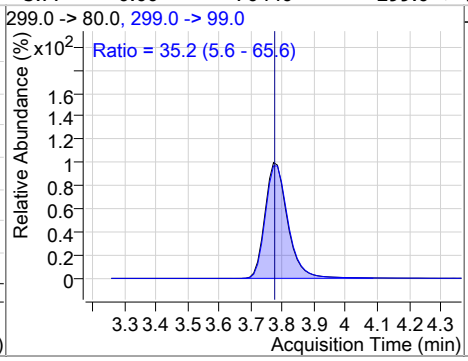


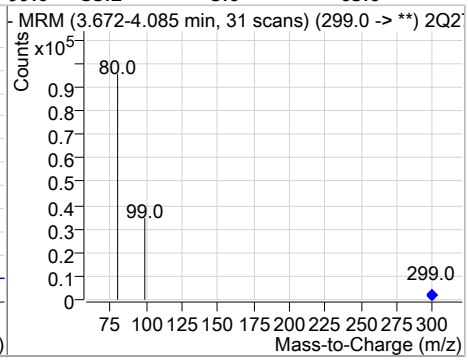




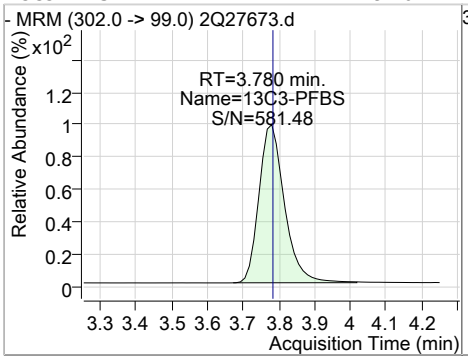
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	50.11	3.77	0.00	70446	299.0 -> 99.0	35.2	5.6	65.6

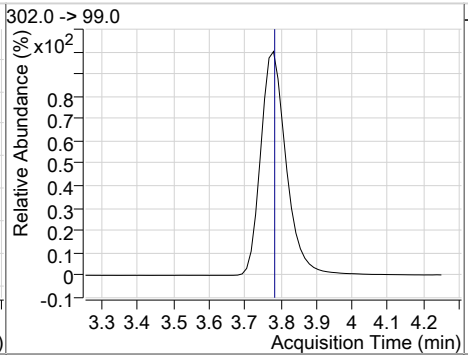


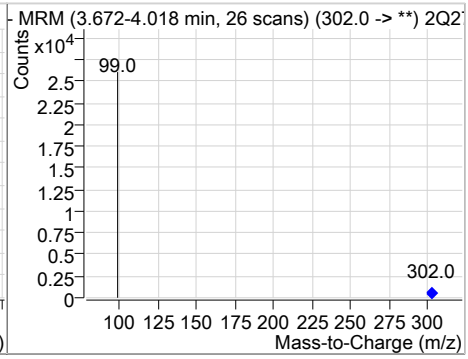




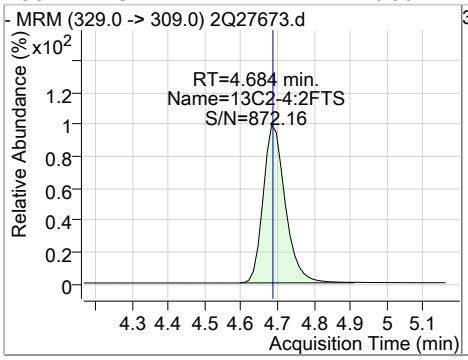
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.40	3.78	0.00	17692				

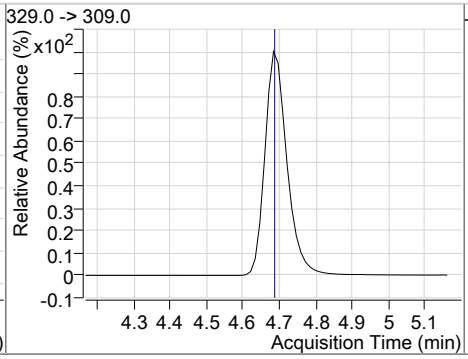


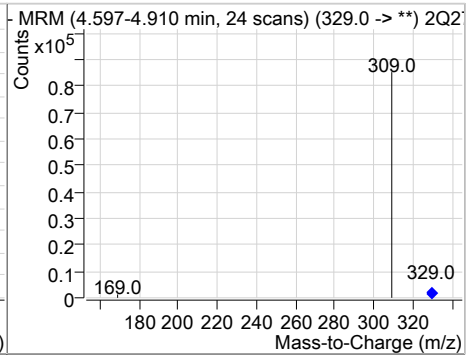




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.98	4.68	0.00	62375				

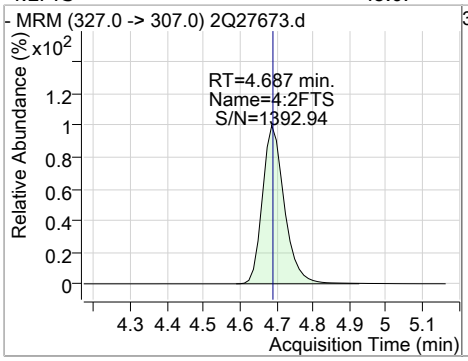


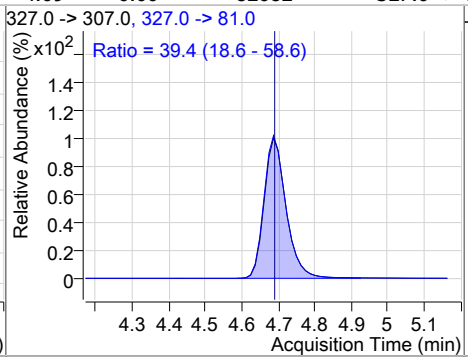


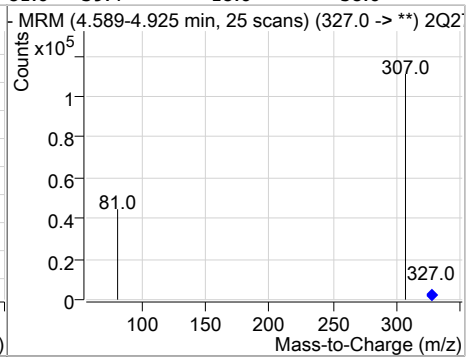


Perfluorinated Compounds by LC/MS/MS

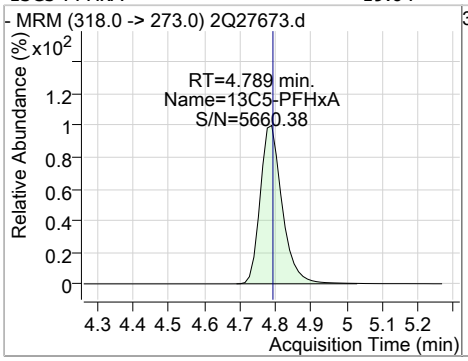
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	48.07	4.69	0.00	82682	327.0 -> 81.0	39.4	18.6	58.6

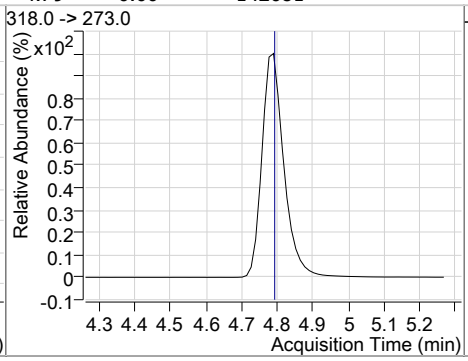


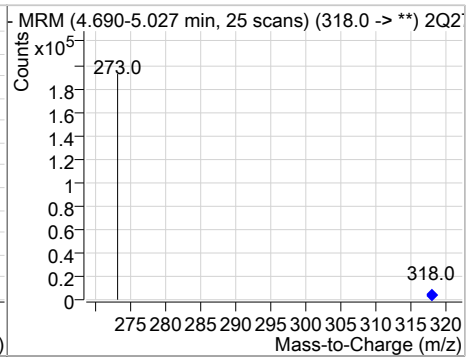




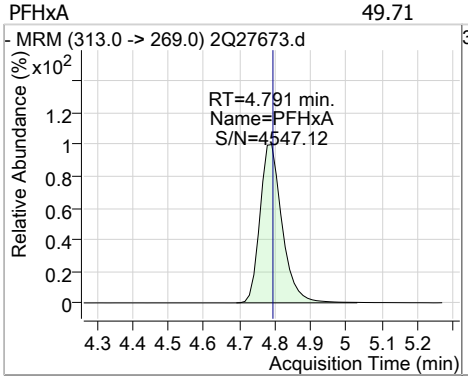
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.64	4.79	0.00	142681				

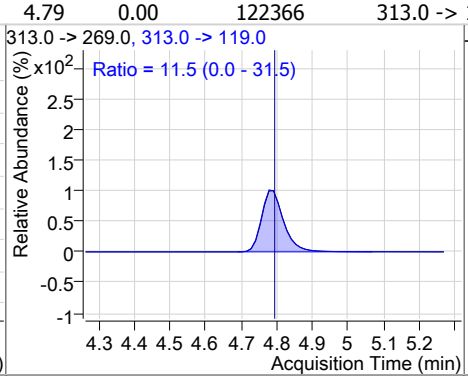


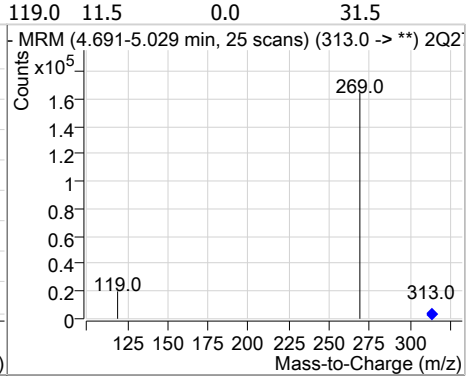




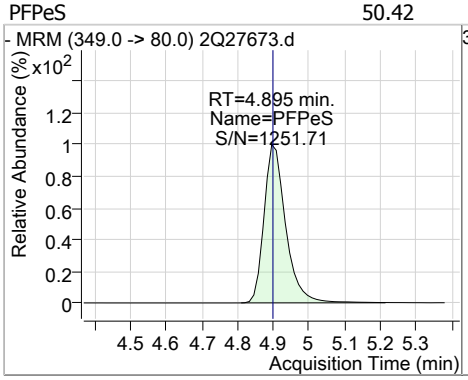
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	49.71	4.79	0.00	122366	313.0 -> 119.0	11.5	0.0	31.5

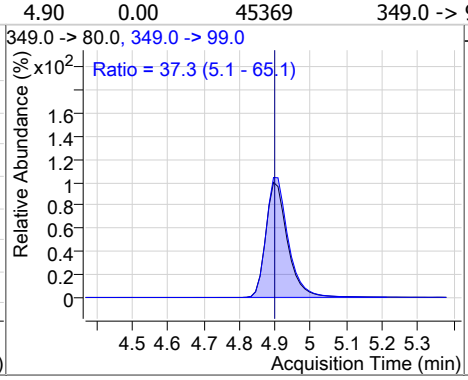


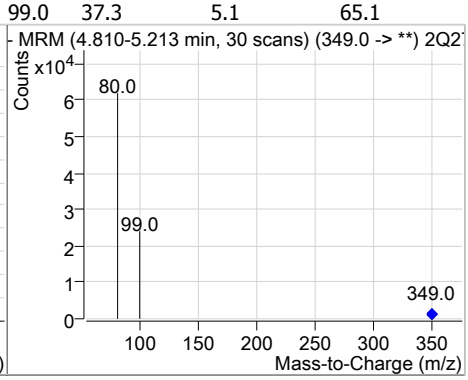




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	50.42	4.90	0.00	45369	349.0 -> 99.0	37.3	5.1	65.1

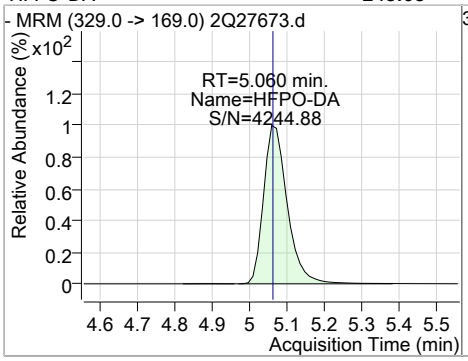


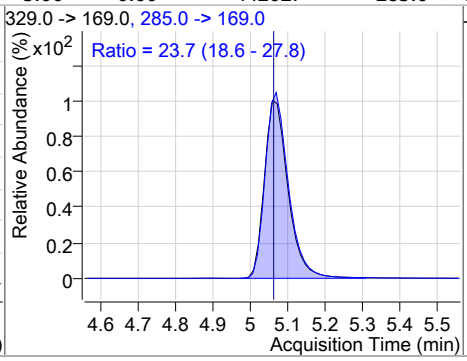


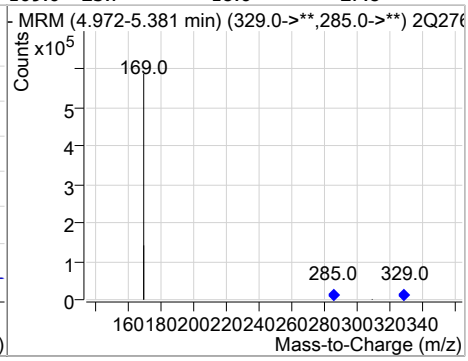


Perfluorinated Compounds by LC/MS/MS

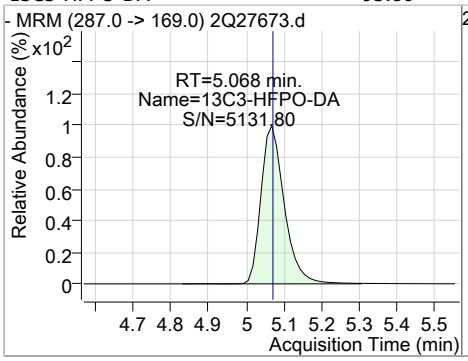
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	248.08	5.06	0.00	442027	285.0 -> 169.0	23.7	18.6	27.8

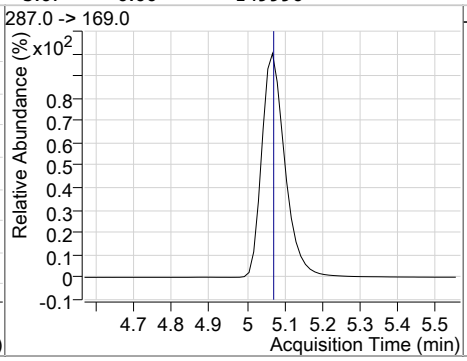


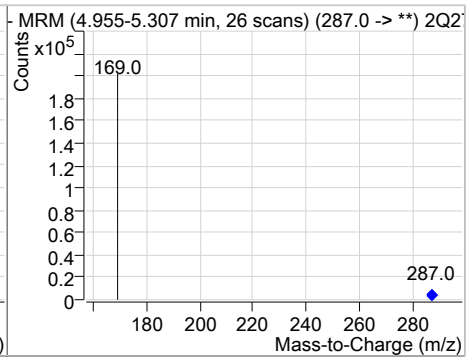




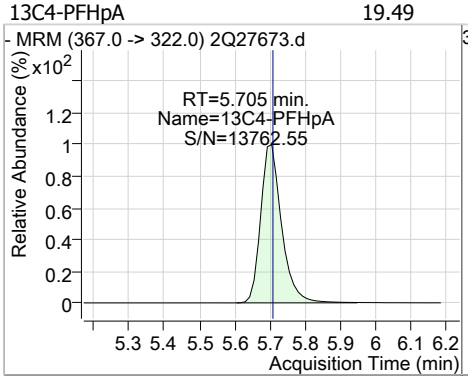
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	93.80	5.07	0.00	149996				

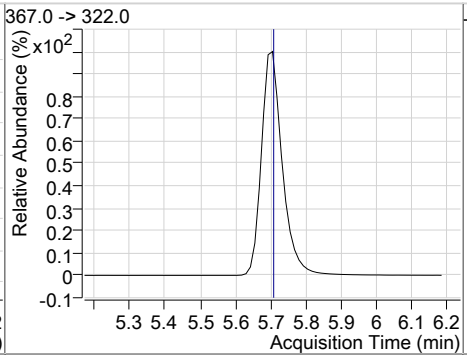


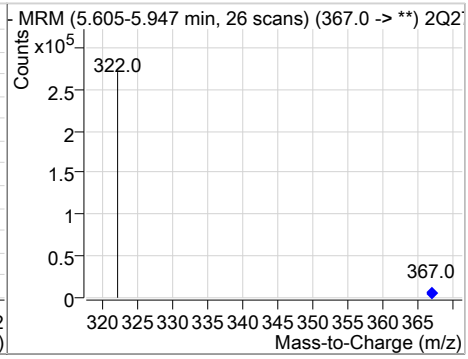




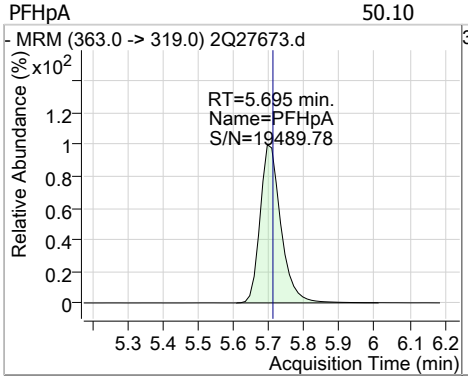
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.49	5.71	0.00	201551				

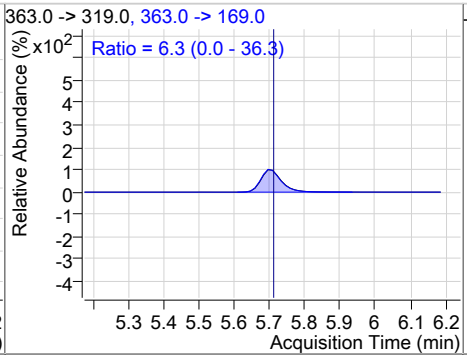


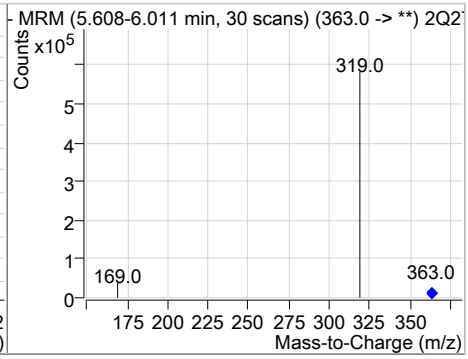




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	50.10	5.70	-0.01	435330	363.0 -> 169.0	6.3	0.0	36.3

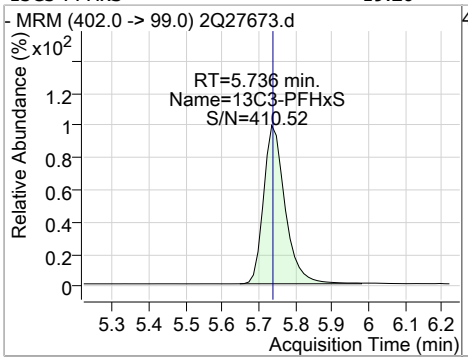


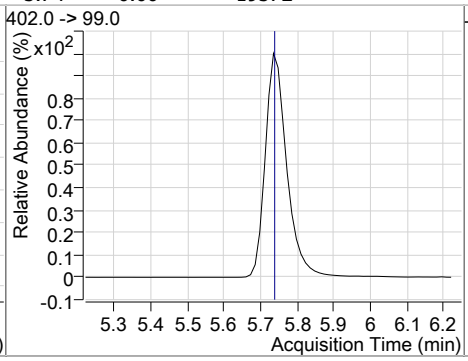


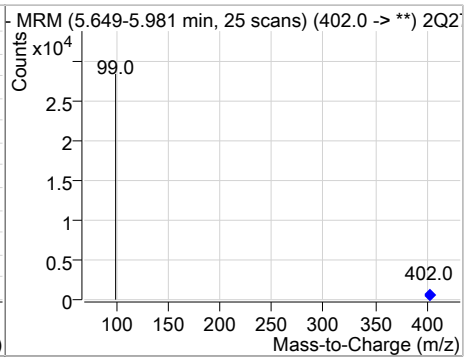


Perfluorinated Compounds by LC/MS/MS

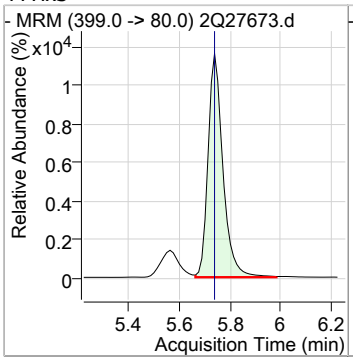
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.20	5.74	0.00	19572				

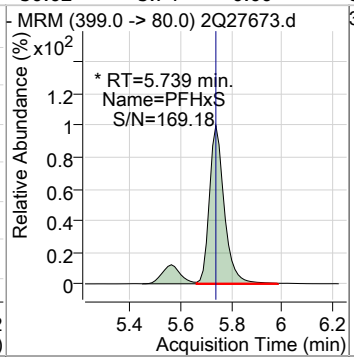


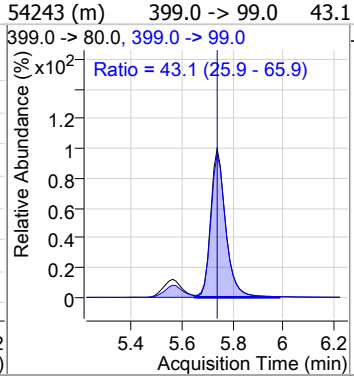


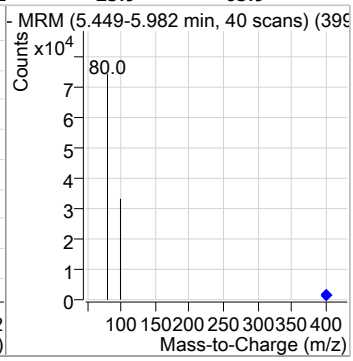


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	50.62	5.74	0.00	54243 (m)	399.0 -> 99.0	43.1	25.9	65.9

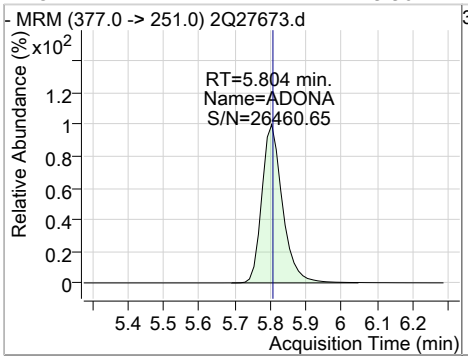


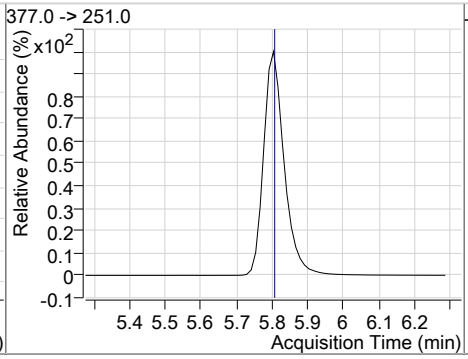


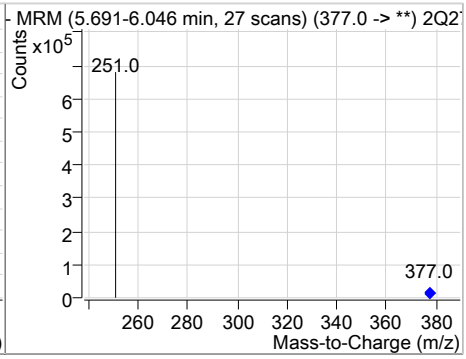




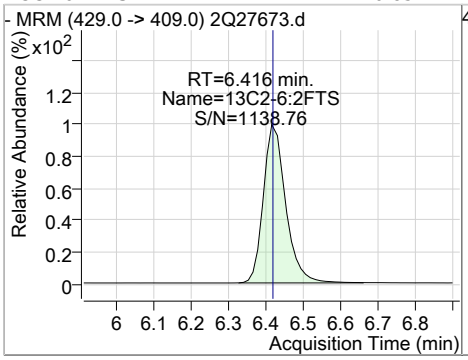
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	49.96	5.80	0.00	511194				

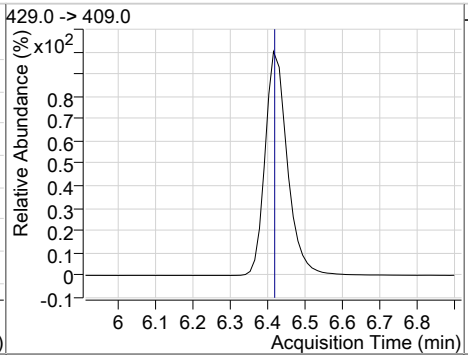


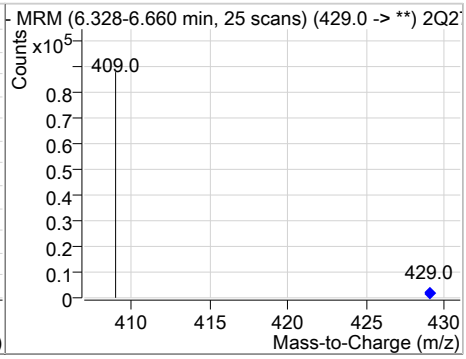




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.85	6.42	0.00	66911				

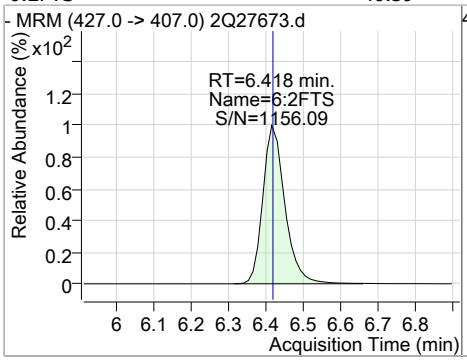


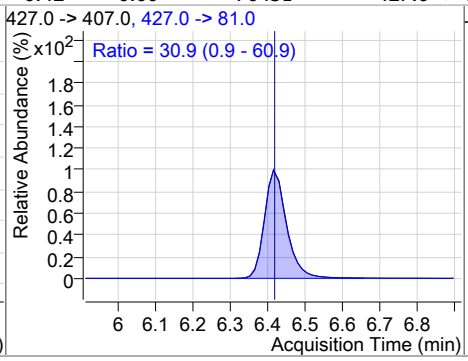


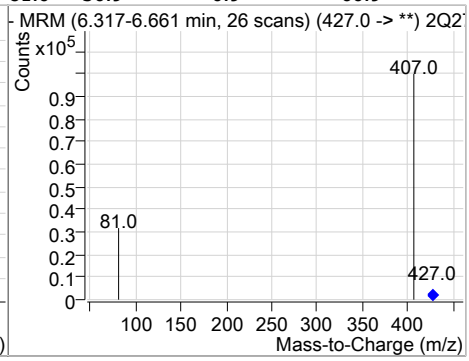


Perfluorinated Compounds by LC/MS/MS

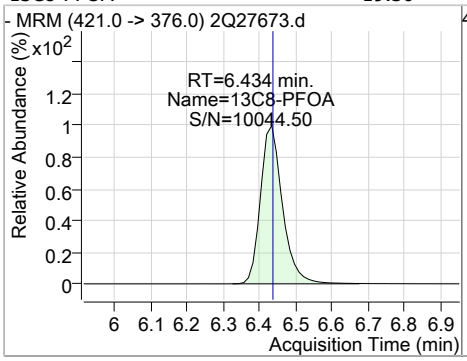
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	46.39	6.42	0.00	76451	427.0 -> 81.0	30.9	0.9	60.9

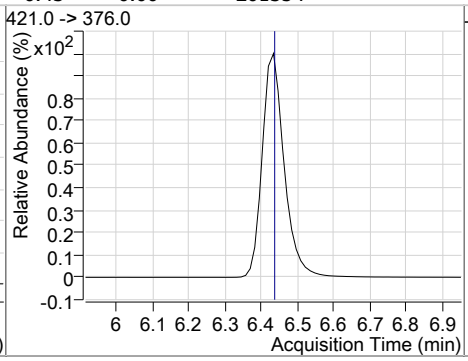


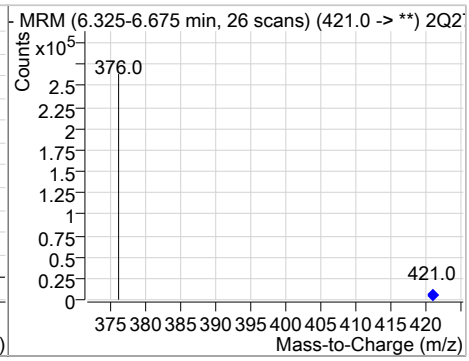




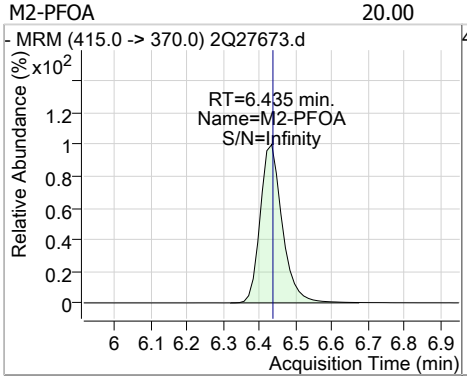
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.30	6.43	0.00	201354				

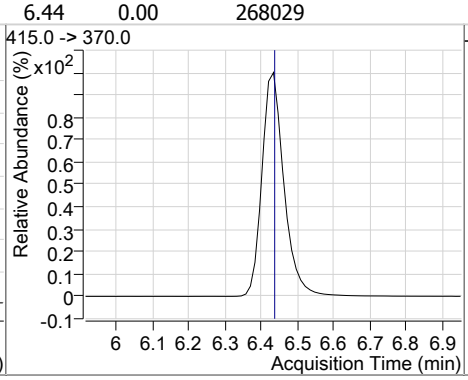


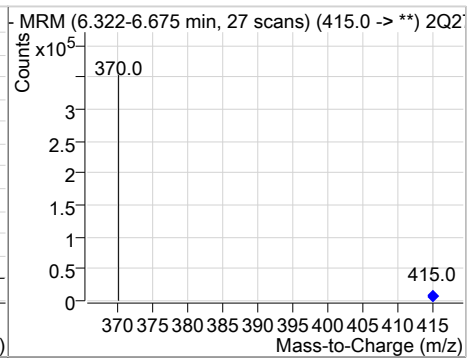




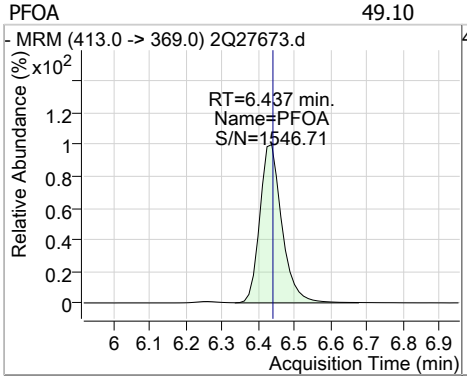
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	268029				

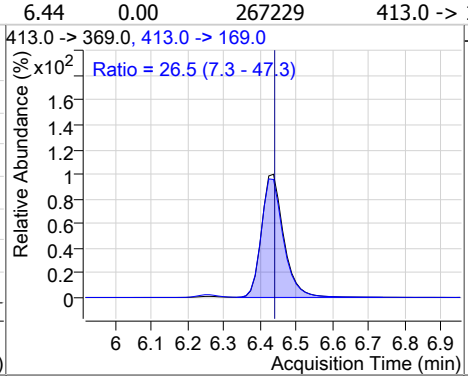


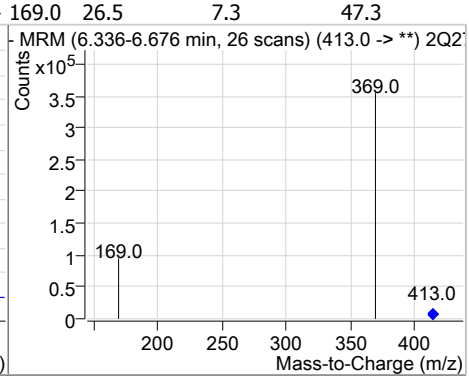




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	49.10	6.44	0.00	267229	413.0 -> 169.0	26.5	7.3	47.3

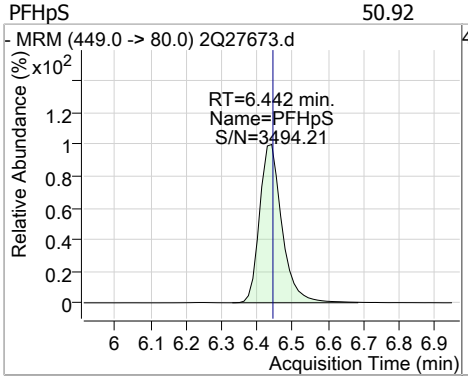


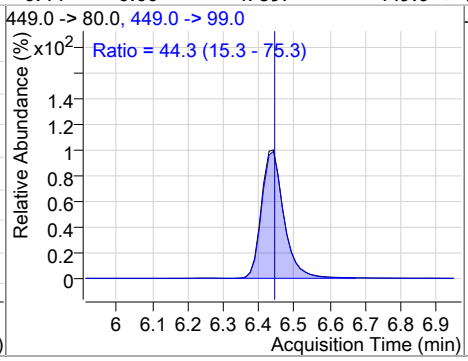


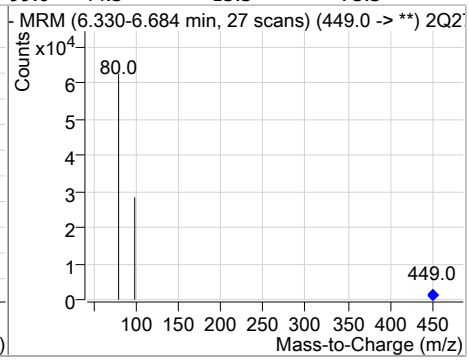


Perfluorinated Compounds by LC/MS/MS

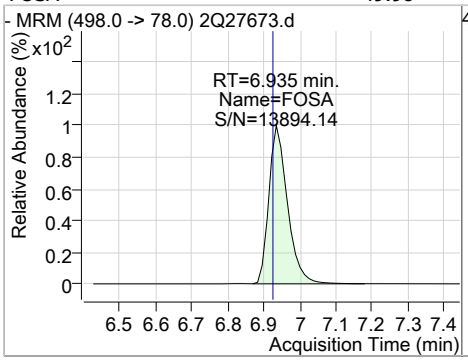
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	50.92	6.44	0.00	47897	449.0 -> 99.0	44.3	15.3	75.3

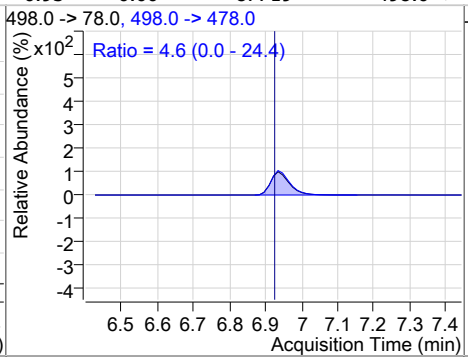


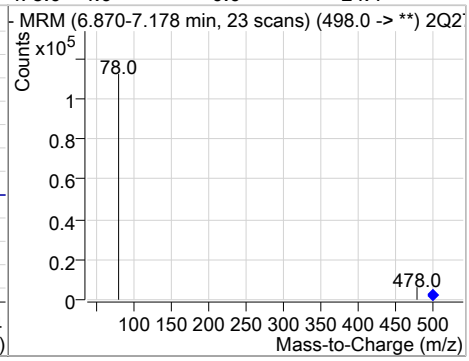




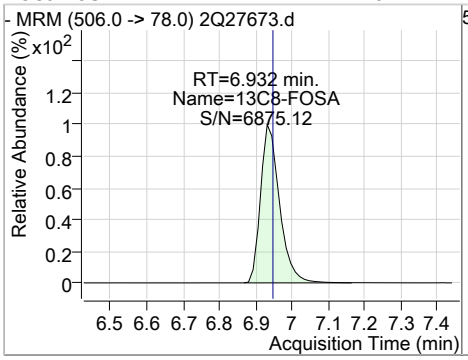
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	49.98	6.93	0.00	87719	498.0 -> 478.0	4.6	0.0	24.4

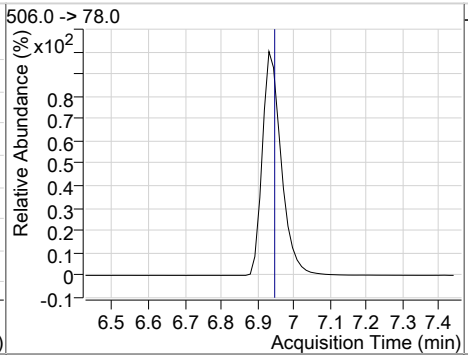


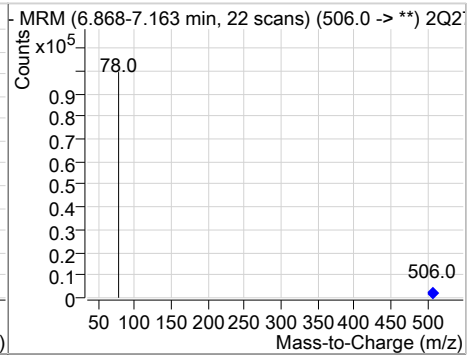




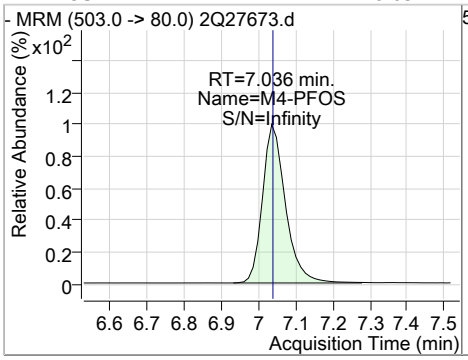
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.71	6.93	-0.01	75885				

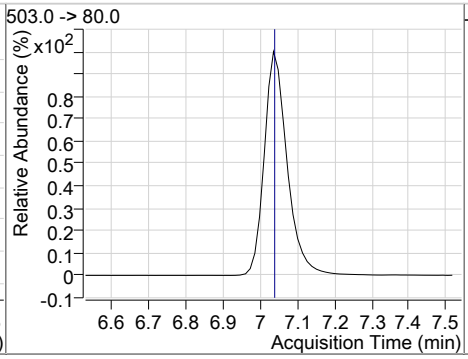


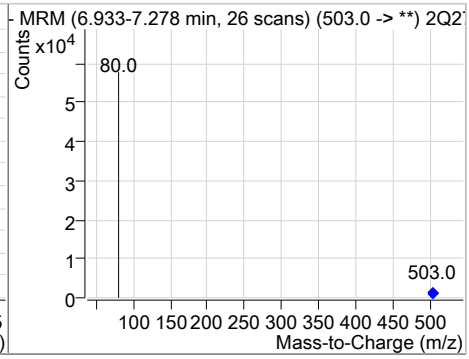




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.03	7.04	0.00	42821				

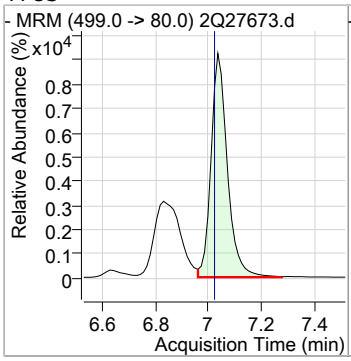


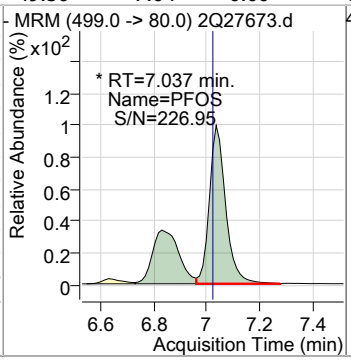


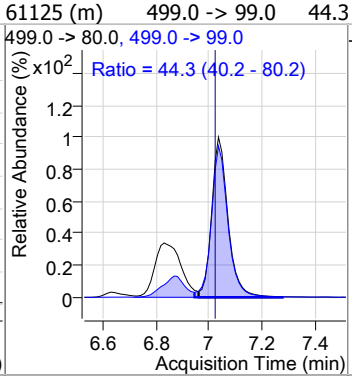


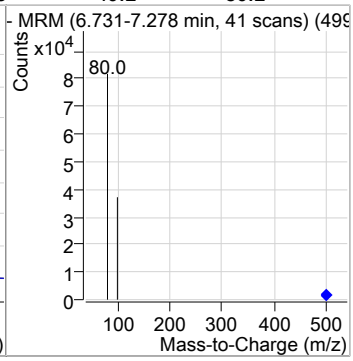
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	49.56	7.04	0.00	61125 (m)	499.0 -> 99.0	44.3	40.2	80.2

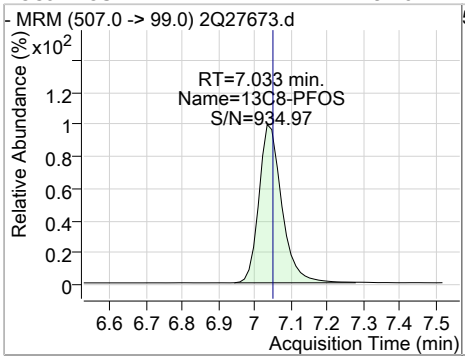


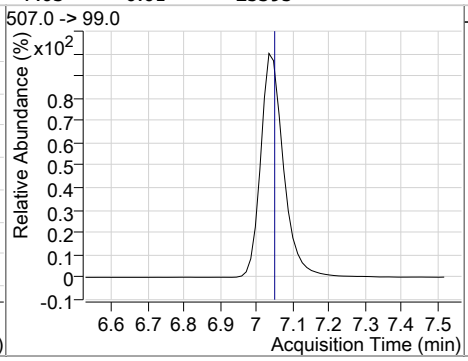


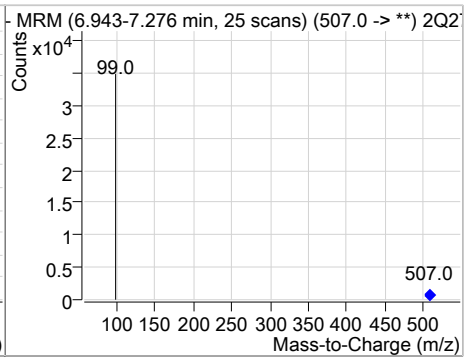




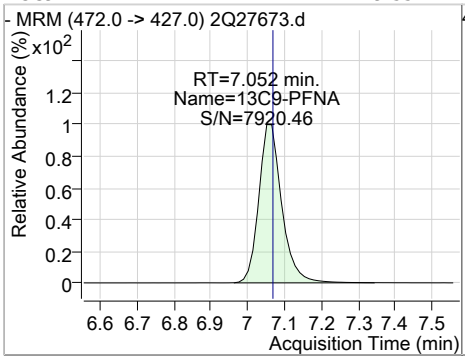
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.48	7.03	-0.01	25395				

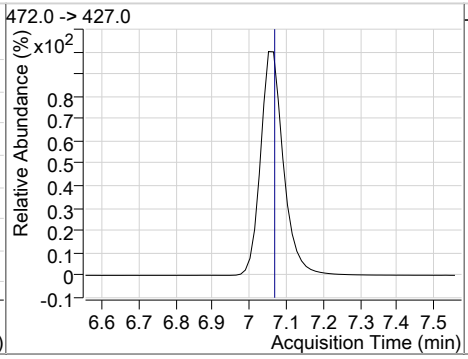


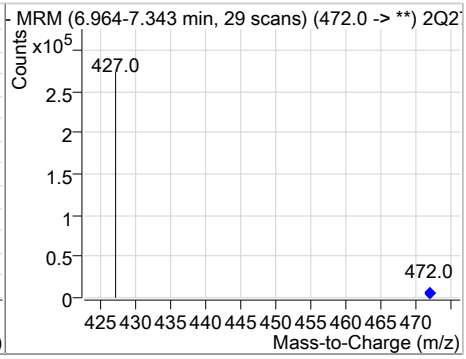




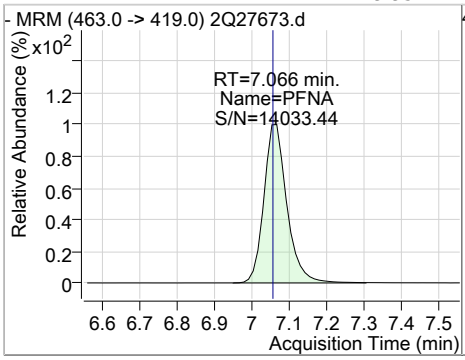
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.55	7.05	-0.01	207015				

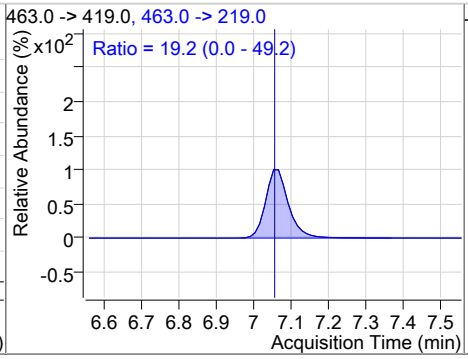


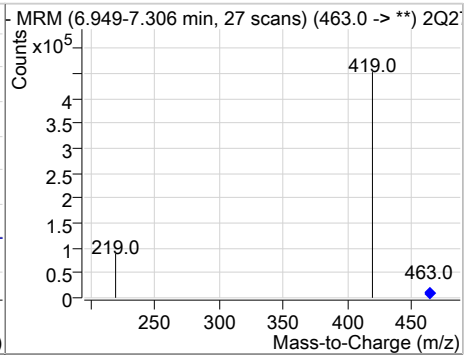




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	49.95	7.07	0.00	343142	463.0 -> 219.0	19.2	0.0	49.2

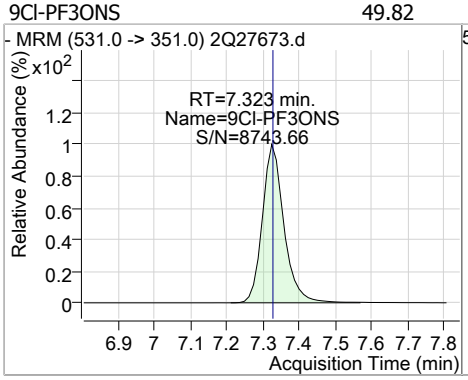


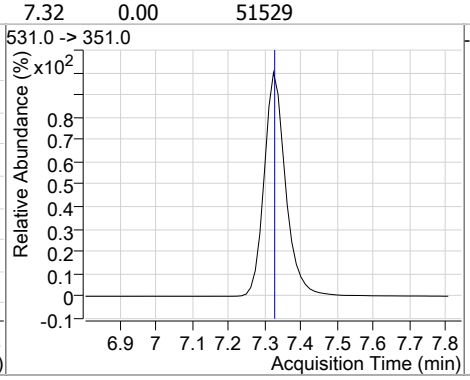


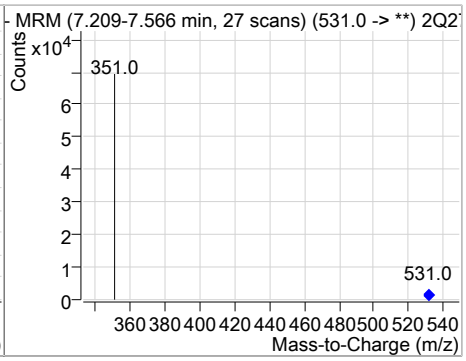


Perfluorinated Compounds by LC/MS/MS

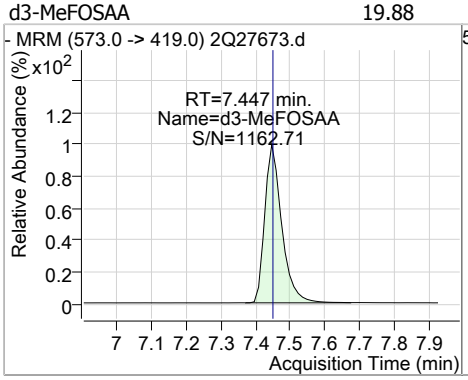
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	49.82	7.32	0.00	51529				

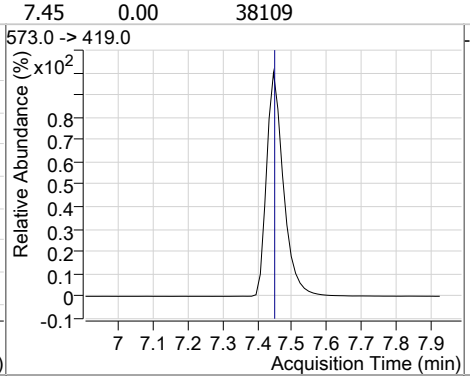


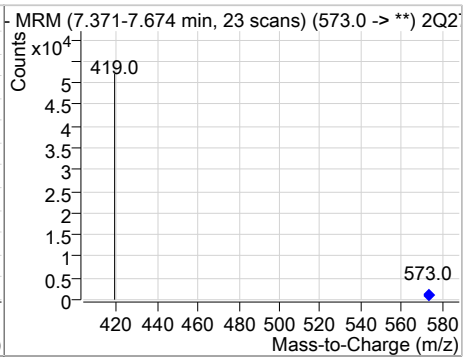




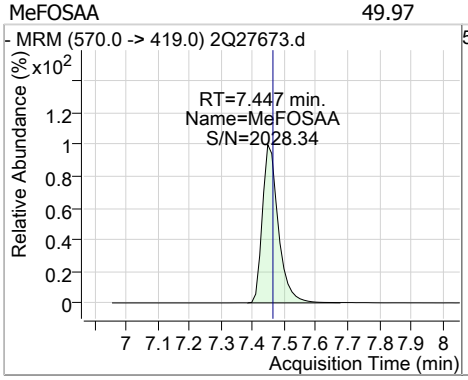
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.88	7.45	0.00	38109				

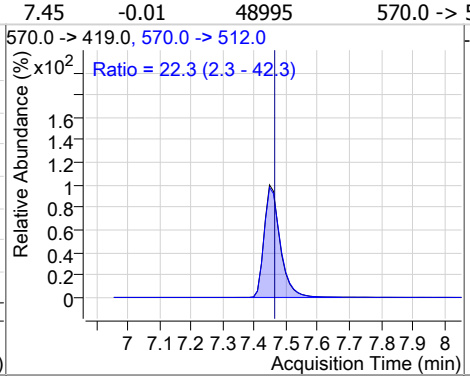


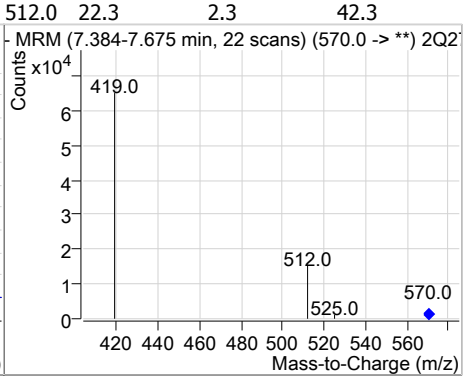




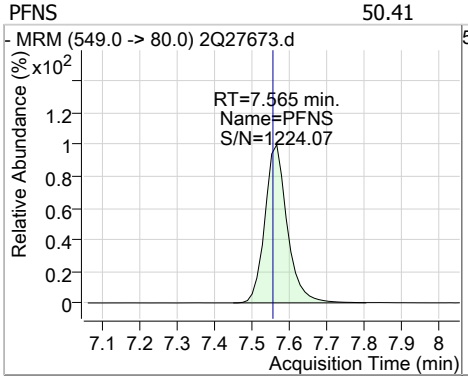
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	49.97	7.45	-0.01	48995	570.0 -> 512.0	22.3	2.3	42.3

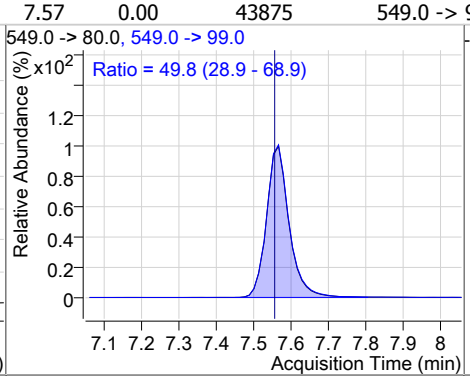


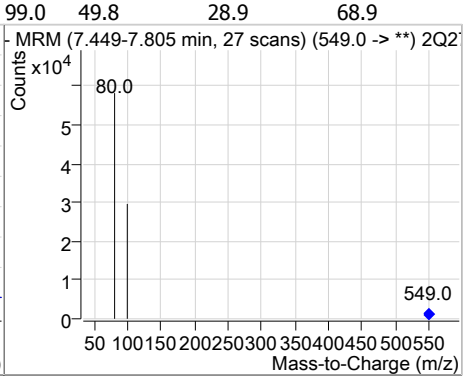




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	50.41	7.57	0.00	43875	549.0 -> 99.0	49.8	28.9	68.9

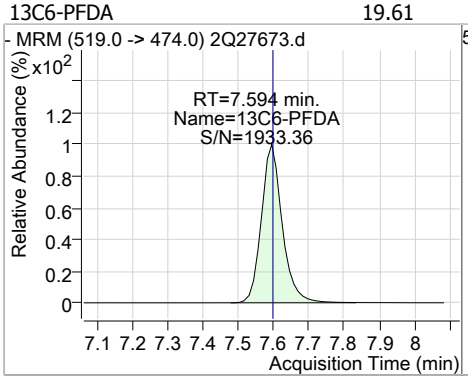


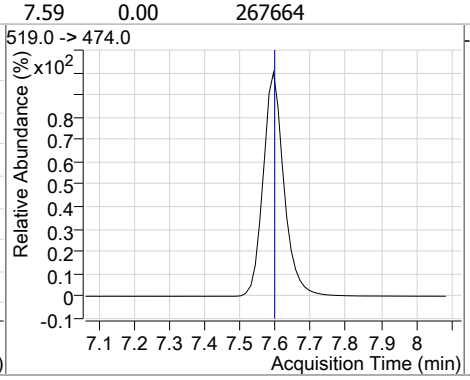


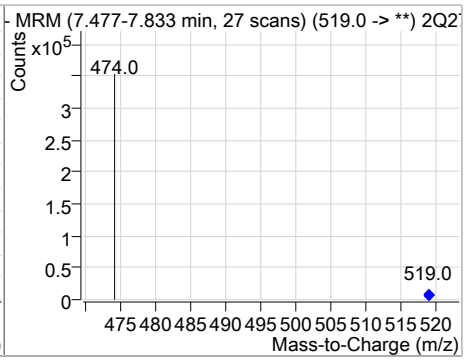


Perfluorinated Compounds by LC/MS/MS

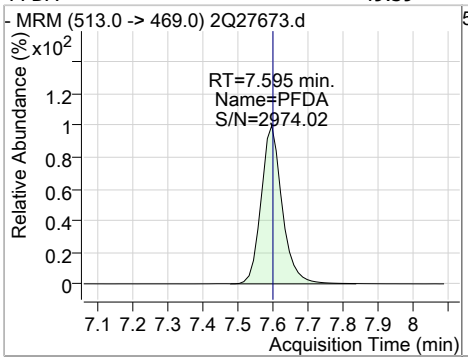
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.61	7.59	0.00	267664				

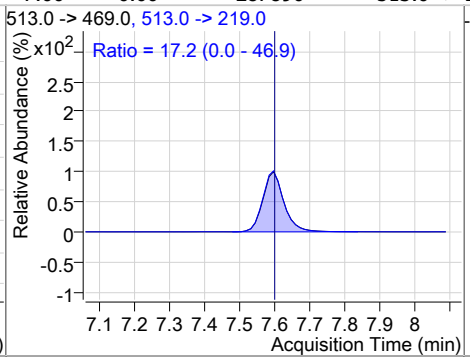


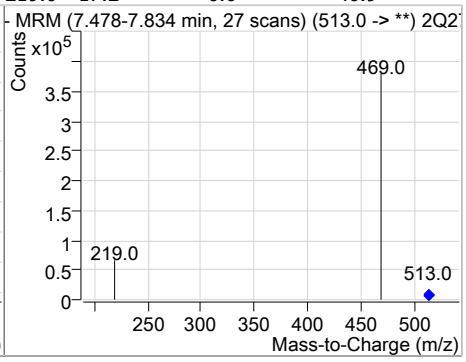




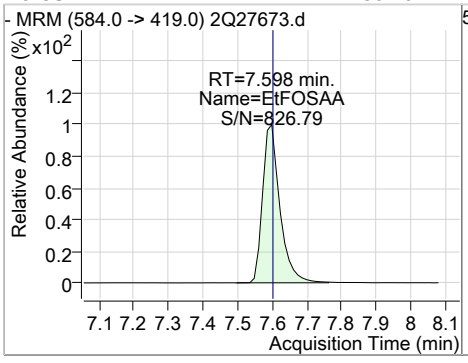
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	49.39	7.60	0.00	287890	513.0 -> 219.0	17.2	0.0	46.9

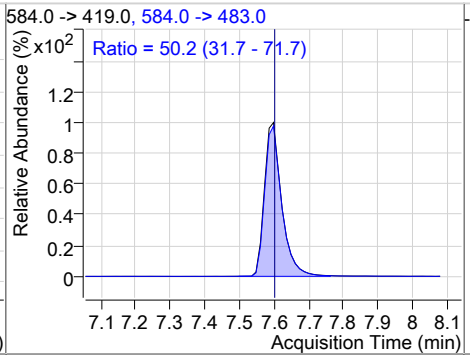


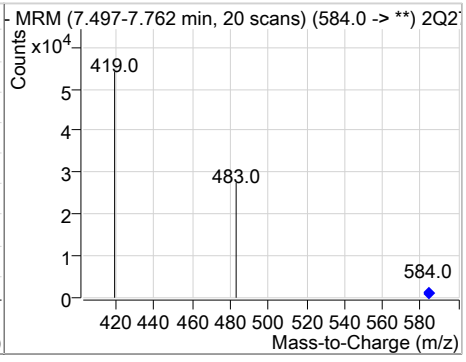




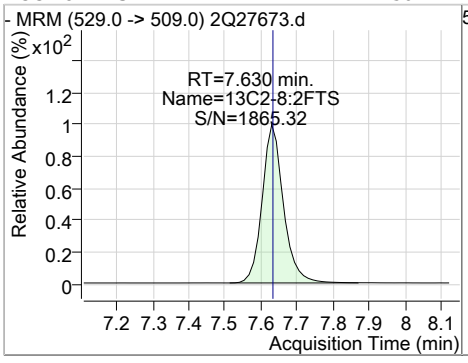
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	50.20	7.60	0.00	39986	584.0 -> 483.0	50.2	31.7	71.7

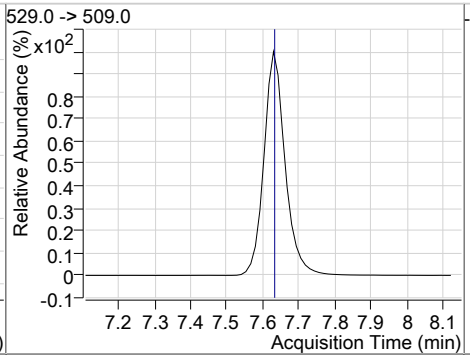


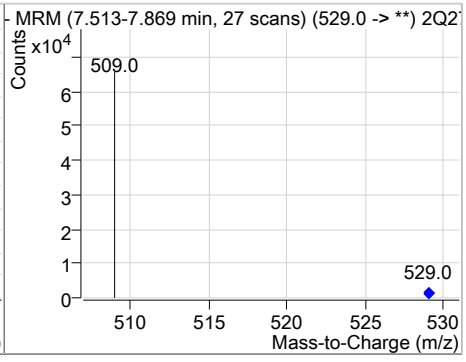




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	21.50	7.63	0.00	47672				

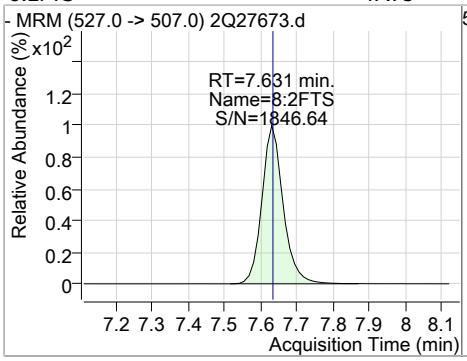


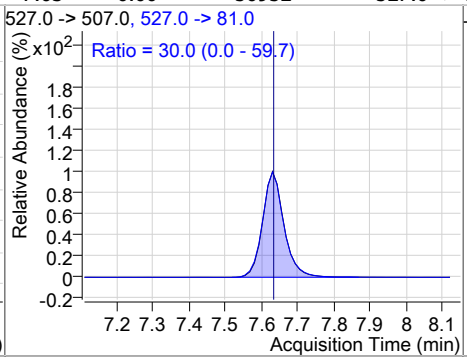


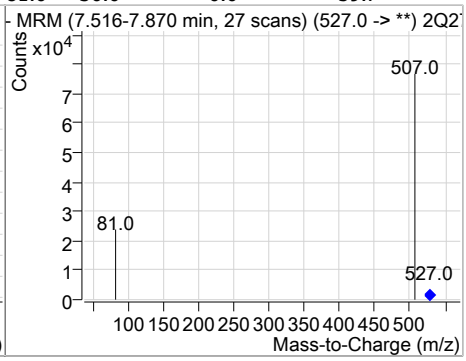


Perfluorinated Compounds by LC/MS/MS

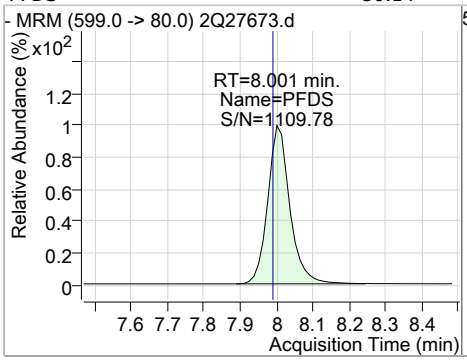
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	47.75	7.63	0.00	56952	527.0 -> 81.0	30.0	0.0	59.7

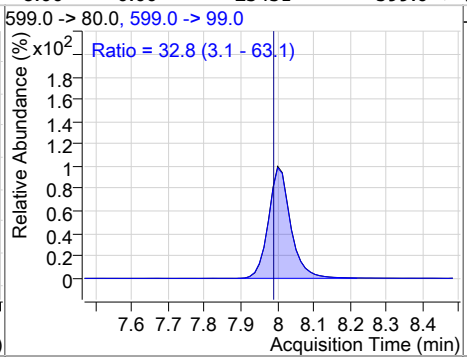


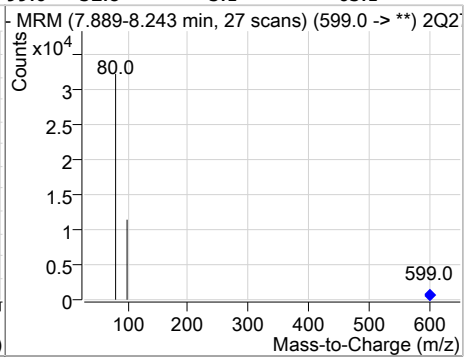




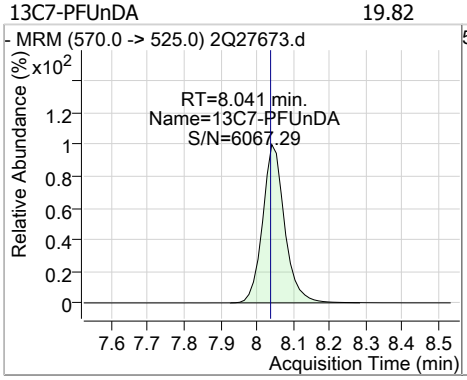
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	50.14	8.00	0.00	23451	599.0 -> 99.0	32.8	3.1	63.1

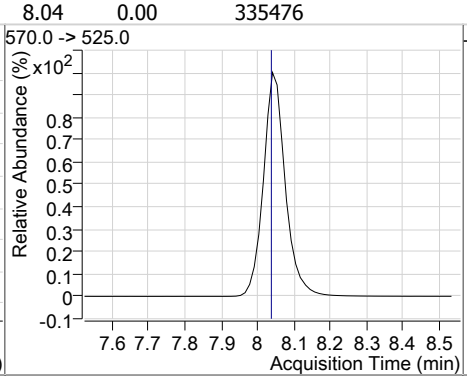


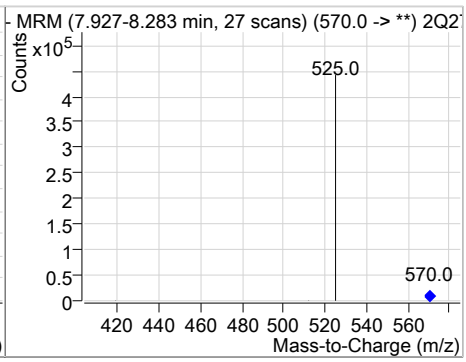




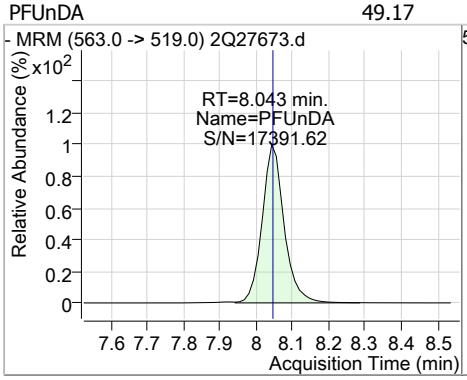
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.82	8.04	0.00	335476				

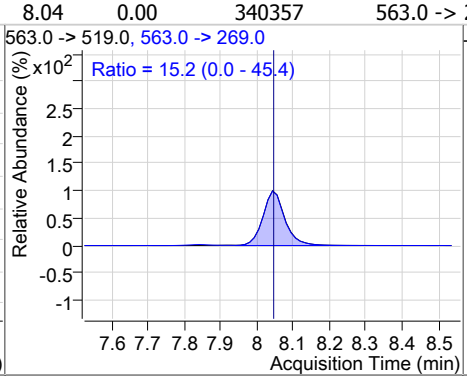


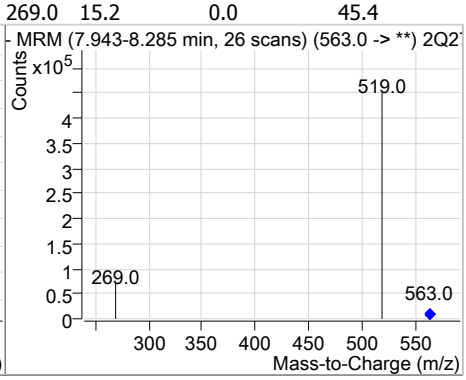




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	49.17	8.04	0.00	340357	563.0 -> 269.0	15.2	0.0	45.4

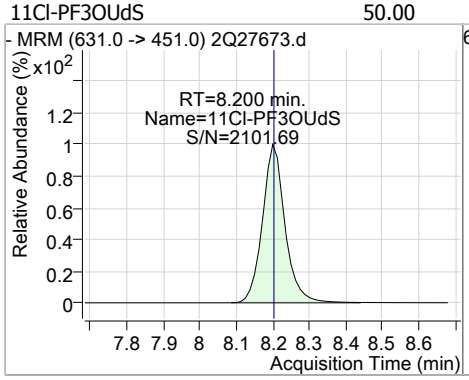


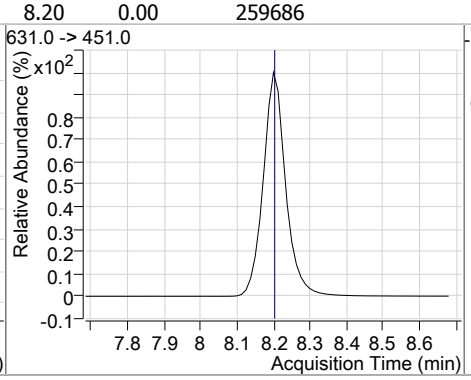


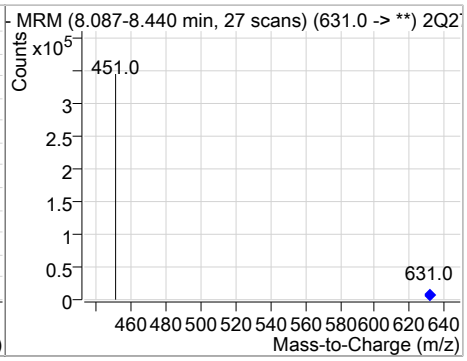


Perfluorinated Compounds by LC/MS/MS

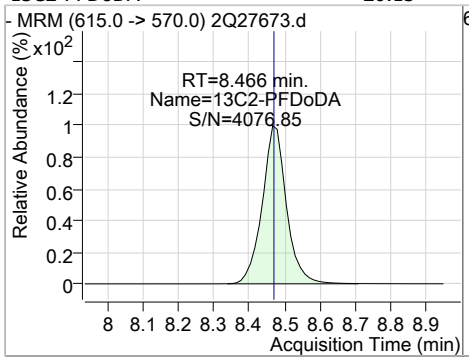
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	50.00	8.20	0.00	259686				

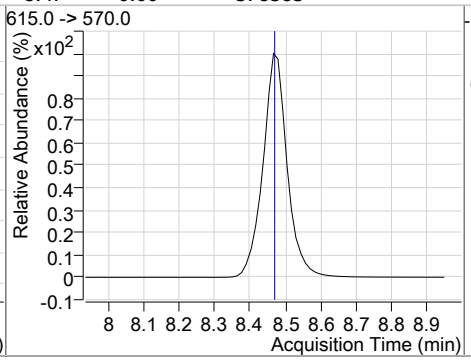


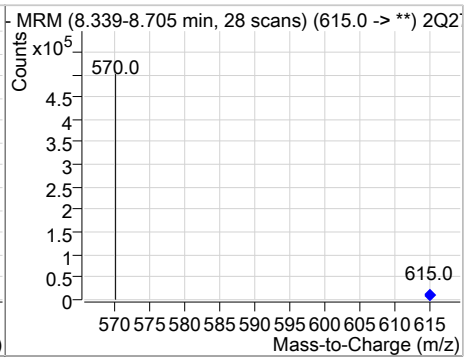




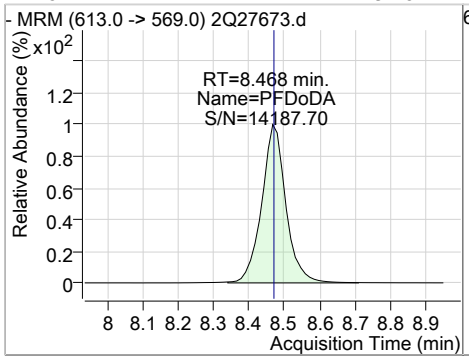
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.13	8.47	0.00	378583				

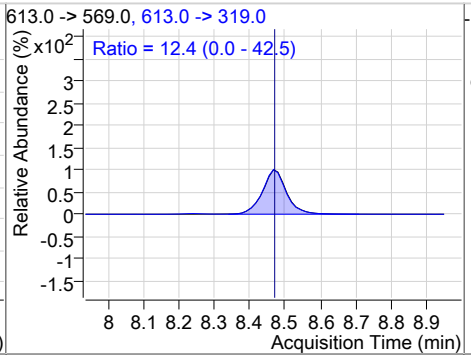


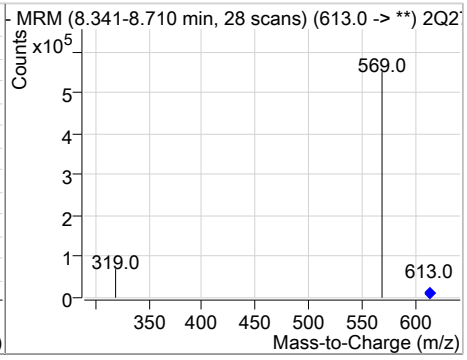




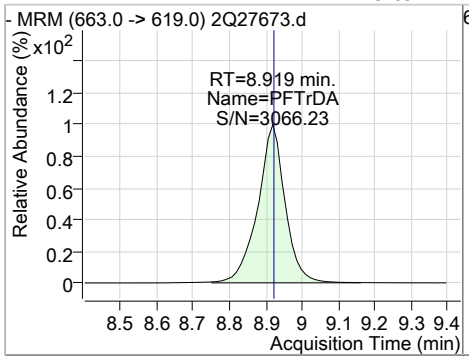
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	49.78	8.47	0.00	419926	613.0 -> 319.0	12.4	0.0	42.5

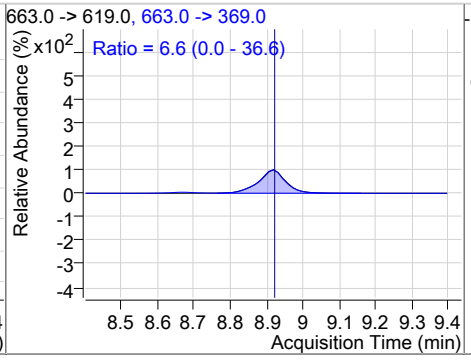


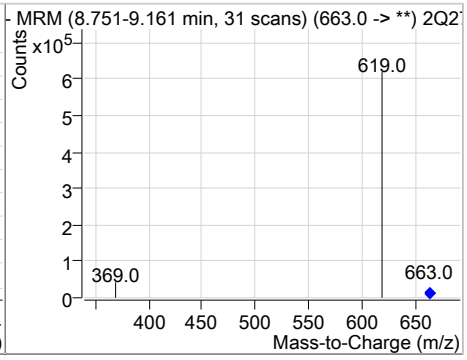




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	49.89	8.92	0.00	473047	663.0 -> 369.0	6.6	0.0	36.6

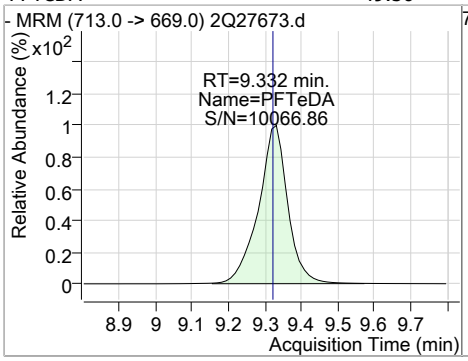


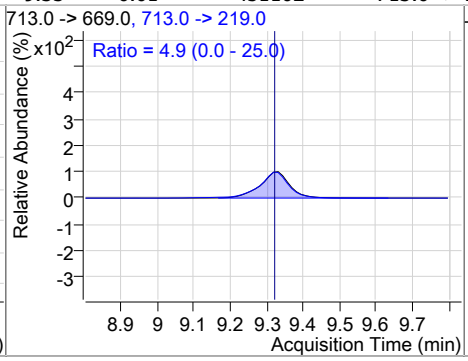


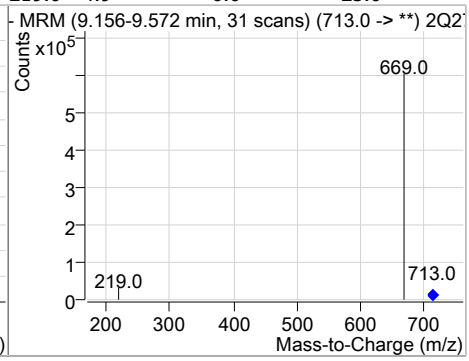


Perfluorinated Compounds by LC/MS/MS

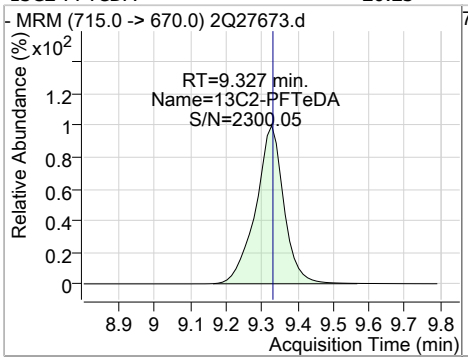
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	49.56	9.33	0.01	451162	713.0 -> 219.0	4.9	0.0	25.0

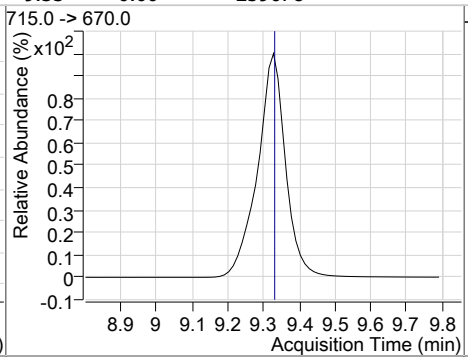


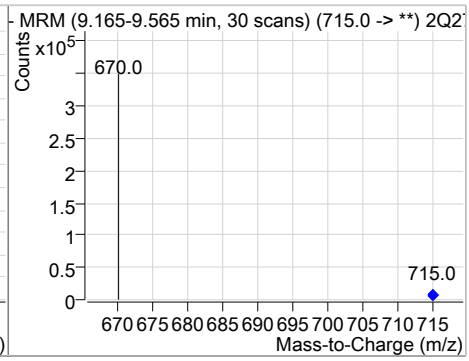




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.23	9.33	0.00	259678				







Manual Integration Approval Summary

Sample Number: S2Q442-IC442
Lab FileID: 2Q27673.D
Injection Time: 03/18/19 09:52
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27674.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 10:08:42 AM
Sample Name : IC442-100
Vial : Vial 9
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

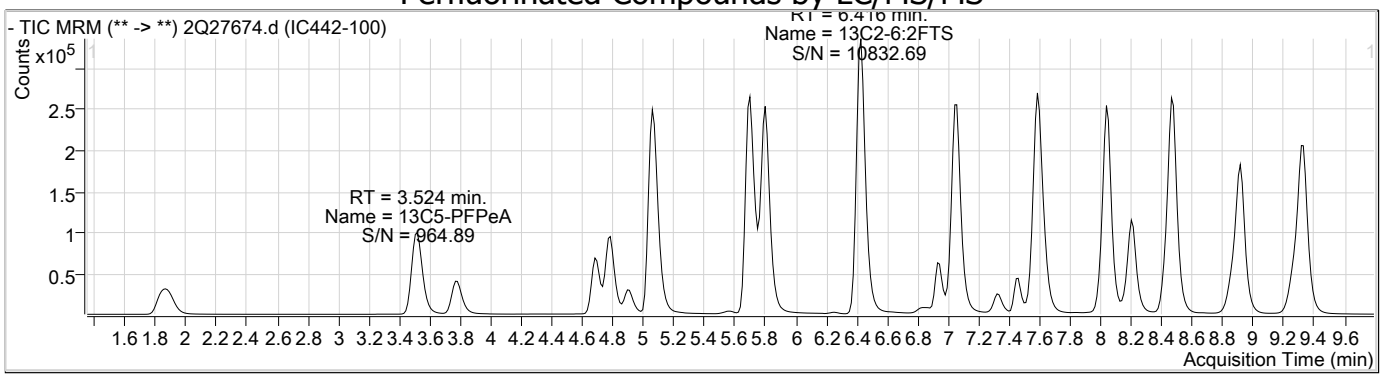
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	251965	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	40649	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	111650	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	94549	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	133388	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	188852	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	183541	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	192126	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	240413	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	306746	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	357119	20.00	µg/L	0.000
M2-PFTeDA	9.328	715.0 -> 670.0	246213	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	66335	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	16689	20.00	µg/L	0.000
M3-PFHxS	5.736	402.0 -> 99.0	18380	20.00	µg/L	0.000
M8-PFOS	7.045	507.0 -> 99.0	23384	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	66537	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	67886	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	50842	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	35948	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	133816	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	66577	22.39	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.9%		
13C2-6:2FTS	6.416	429.0 -> 409.0	67796	21.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C2-8:2FTS	7.630	529.0 -> 509.0	50795	22.91	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.5%		
13C2-PFDoDA	8.466	615.0 -> 570.0	356622	18.96	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%		
13C2-PFTeDA	9.328	715.0 -> 670.0	246090	19.17	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%		
13C3-PFBS	3.780	302.0 -> 99.0	16675	18.29	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.4%		
13C3-PFHxS	5.736	402.0 -> 99.0	18370	18.02	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.1%		
13C4-PFBA	1.865	217.0 -> 172.0	111158	18.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 92.7%		
13C4-PFHpA	5.705	367.0 -> 322.0	188604	18.24	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C5-PFHxA	4.789	318.0 -> 273.0	133134	18.32	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.6%		
13C5-PFPeA	3.524	268.0 -> 223.0	94548	18.60	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.0%		
13C6-PFDA	7.594	519.0 -> 474.0	240531	17.63	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

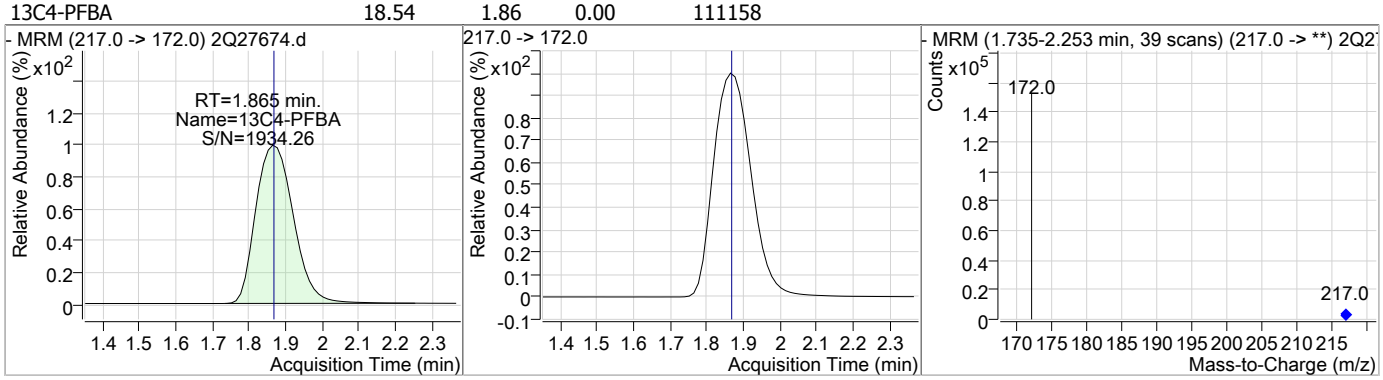
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 88.1%			
13C7-PFUnDA	8.041	570.0 -> 525.0	306593	18.12	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.6%			
13C8-FOSA	6.944	506.0 -> 78.0	66301	16.35	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 81.8%			
13C8-PFOA	6.434	421.0 -> 376.0	183371	17.58	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 87.9%			
13C8-PFOS	7.045	507.0 -> 99.0	23372	17.93	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.7%			
13C9-PFNA	7.066	472.0 -> 427.0	192051	18.14	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 90.7%			
d3-MeFOSAA	7.447	573.0 -> 419.0	35954	18.76	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.8%			
M2-PFOA	6.435	415.0 -> 370.0	252297	20.01	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.036	503.0 -> 80.0	40594	19.96	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%			
13C3-HFPO-DA	5.068	287.0 -> 169.0	133816	83.69	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 83.7%			
Target Compounds							**QValue**
4:2FTS	4.687	327.0 -> 307.0	157738	86.05	µg/L		99
6:2FTS	6.418	427.0 -> 407.0	140947	84.40	µg/L		100
8:2FTS	7.631	527.0 -> 507.0	105261	82.81	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	72994	99.95	µg/L		100
FOSA	6.935	498.0 -> 78.0	154801	100.00	µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	93766	100.00	µg/L		100
PFBA	1.873	213.0 -> 169.0	110493	100.21	µg/L		100
PFBS	3.771	299.0 -> 80.0	132547	100.03	µg/L		99
PFDA	7.595	513.0 -> 469.0	525118	100.34	µg/L		99
PFDoDA	8.468	613.0 -> 569.0	795946	100.14	µg/L		99
PFDS	8.001	599.0 -> 80.0	42947	99.72	µg/L		99
PFHpA	5.708	363.0 -> 319.0	814006	100.00	µg/L		100
PFHpS	6.442	449.0 -> 80.0	88742	99.51	µg/L		98
PFHxA	4.791	313.0 -> 269.0	230208	100.22	µg/L		100
PFHxS	5.739	399.0 -> 80.0	101428	99.83	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	637554	100.06	µg/L		100
PFNS	7.565	549.0 -> 80.0	79836	99.62	µg/L		97
PFOA	6.437	413.0 -> 369.0	498604	100.57	µg/L		98
PFOS	7.037	499.0 -> 80.0	113808	100.21	µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	409738	100.12	µg/L		100
PFPeS	4.895	349.0 -> 80.0	84663	99.83	µg/L		97
PFTeDA	9.319	713.0 -> 669.0	863382	100.27	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	897897	100.12	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	636291	100.55	µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	488215	99.76	µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	96854	100.04	µg/L		100
ADONA	5.804	377.0 -> 251.0	970224	100.01	µg/L		100
HFPO-DA	5.060	329.0 -> 169.0	796923	501.33	µg/L		99

 # = Qualifier out of range, m = manually integrated, + = Area summed

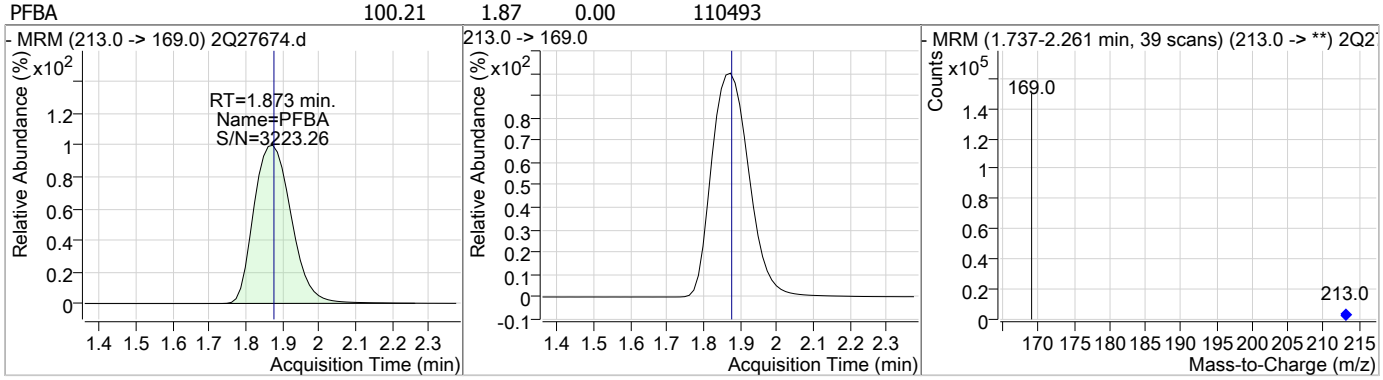
Perfluorinated Compounds by LC/MS/MS



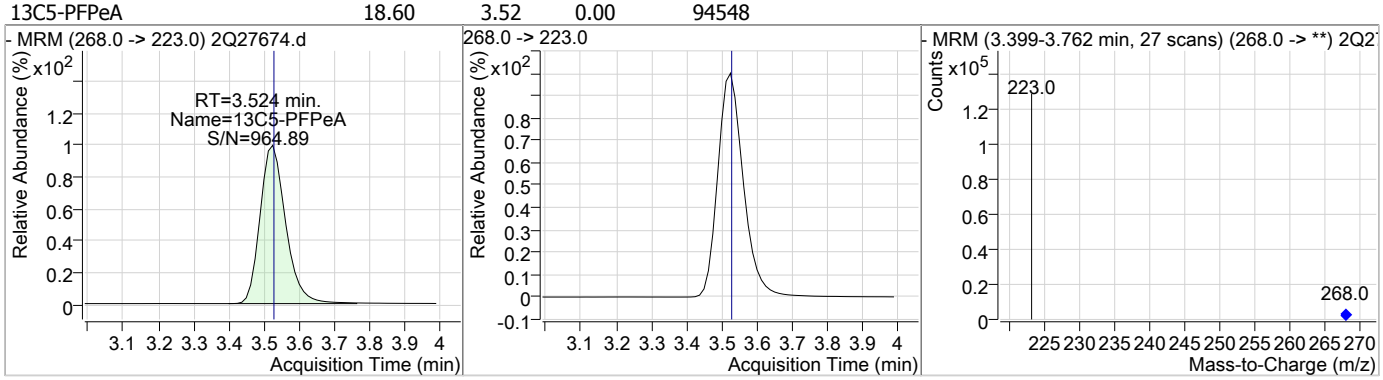
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	18.54	1.86	0.00	111158				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	100.21	1.87	0.00	110493				

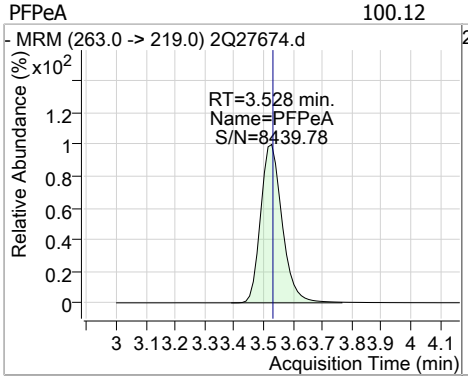


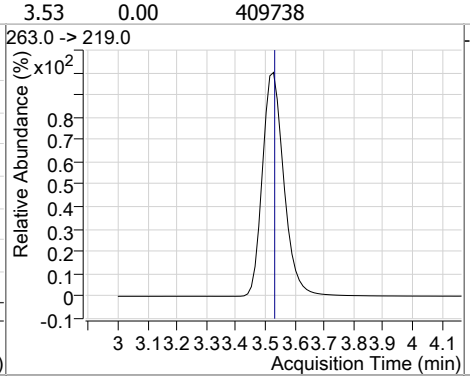
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	18.60	3.52	0.00	94548				

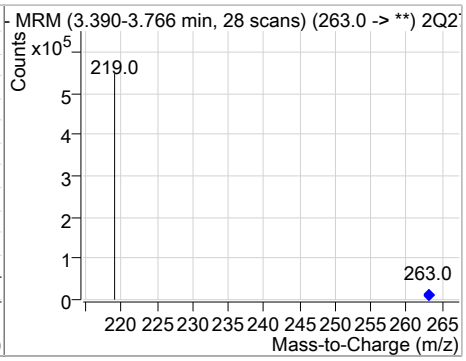


Perfluorinated Compounds by LC/MS/MS

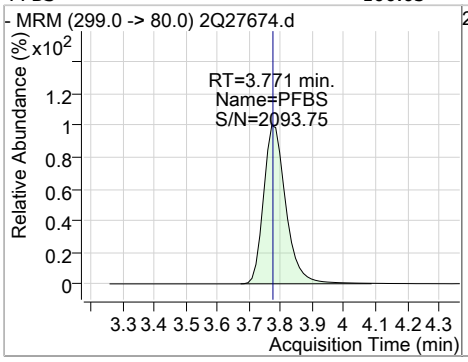
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	100.12	3.53	0.00	409738				

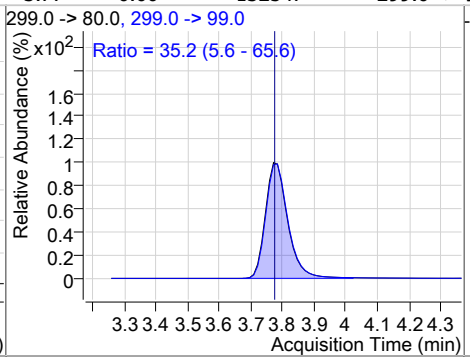


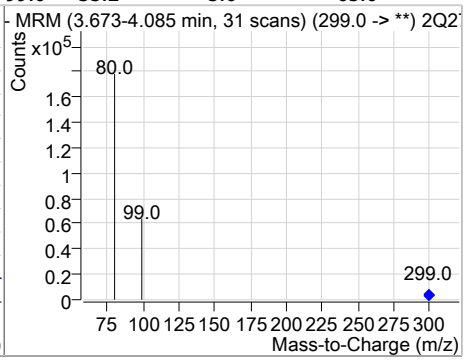




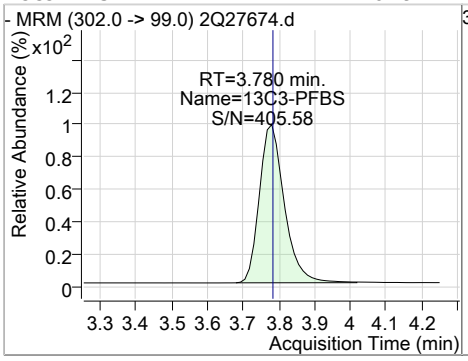
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	100.03	3.77	0.00	132547	299.0 -> 99.0	35.2	5.6	65.6

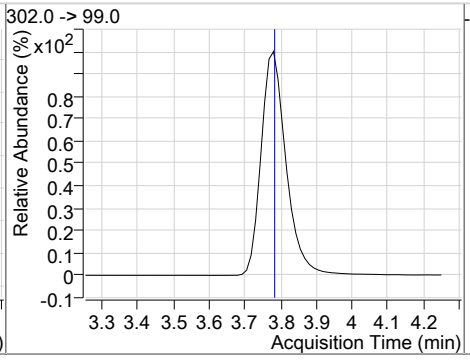


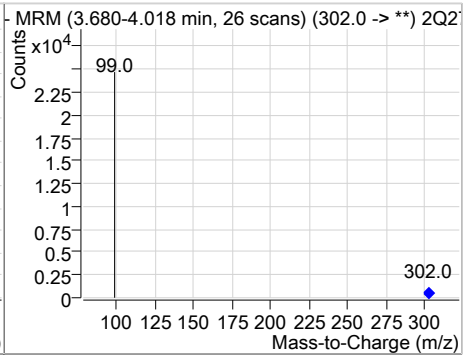




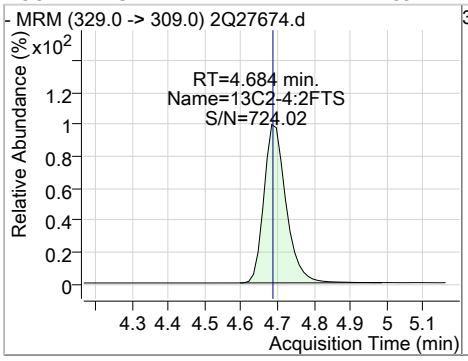
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	18.29	3.78	0.00	16675				

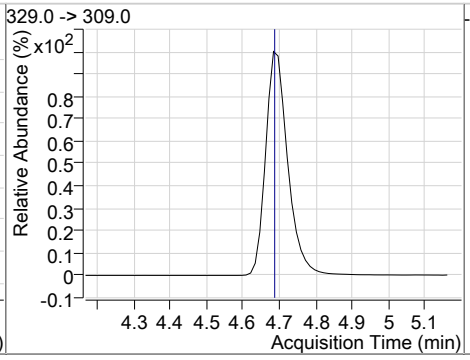


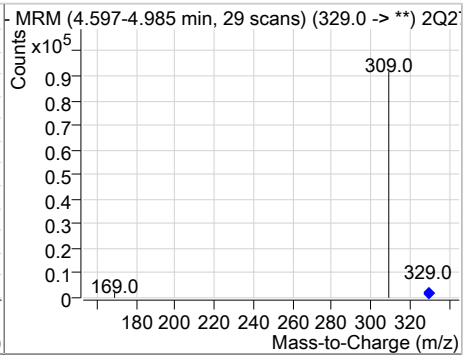




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	22.39	4.68	0.00	66577				

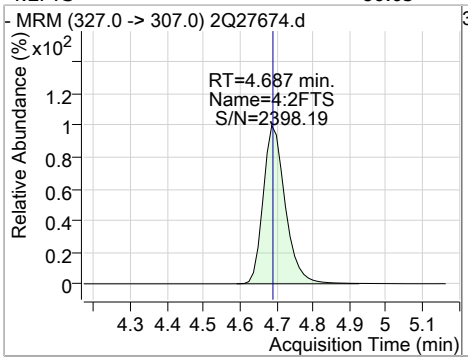


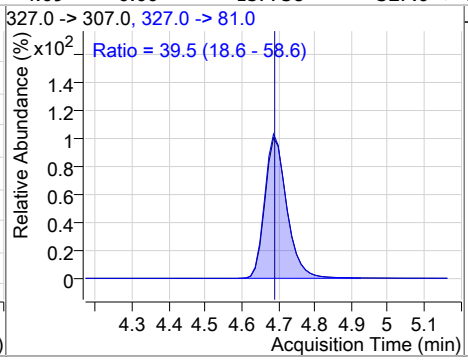


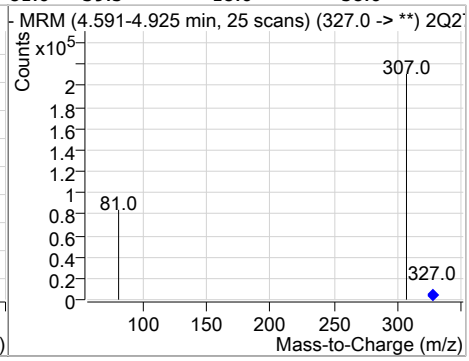


Perfluorinated Compounds by LC/MS/MS

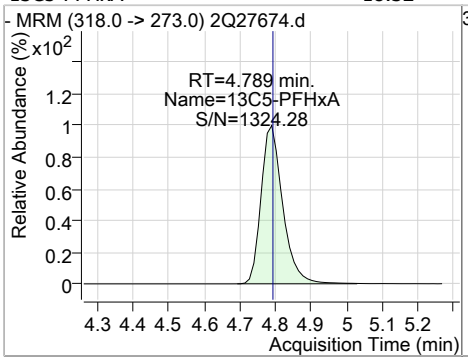
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	86.05	4.69	0.00	157738	327.0 -> 81.0	39.5	18.6	58.6

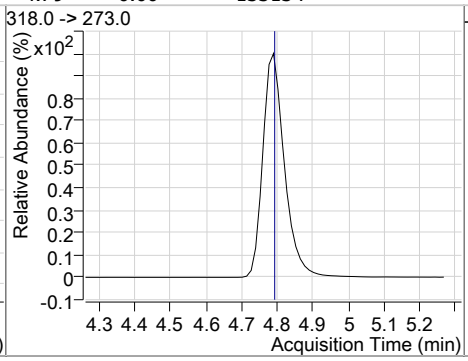


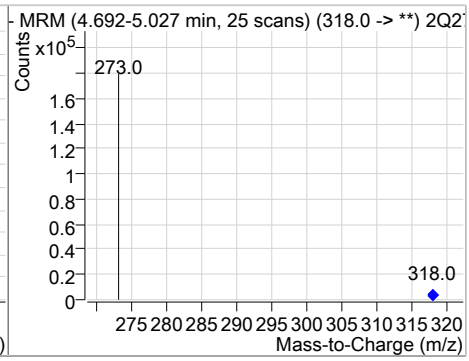




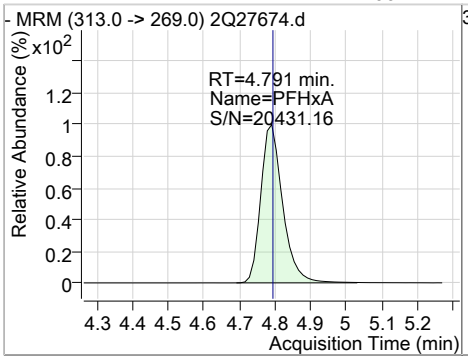
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	18.32	4.79	0.00	133134				

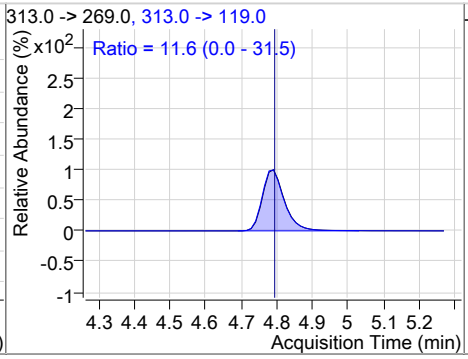


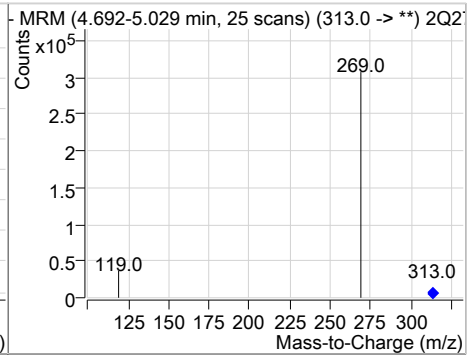




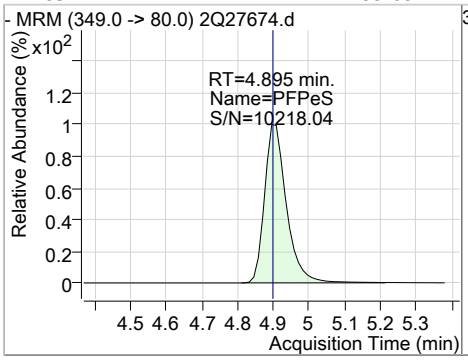
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	100.22	4.79	0.00	230208	313.0 -> 119.0	11.6	0.0	31.5

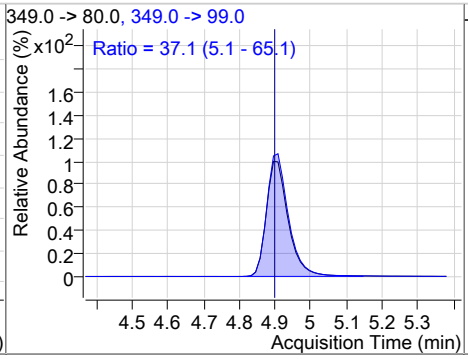


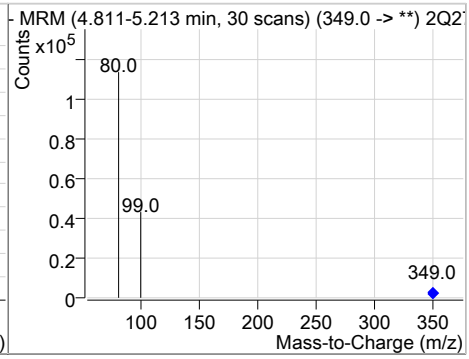




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	99.83	4.90	0.00	84663	349.0 -> 99.0	37.1	5.1	65.1

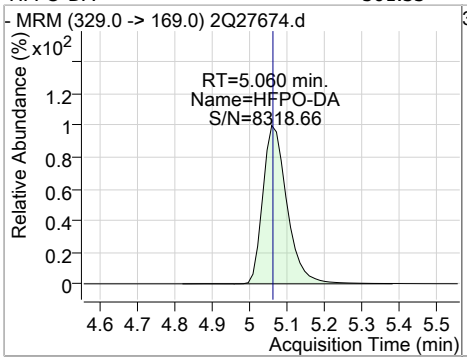


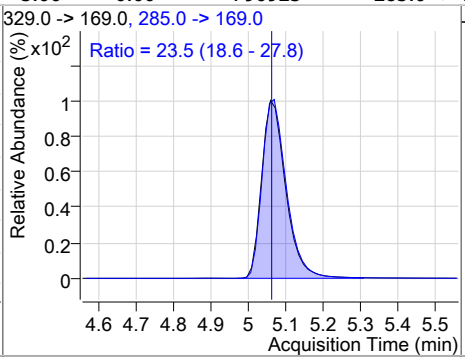


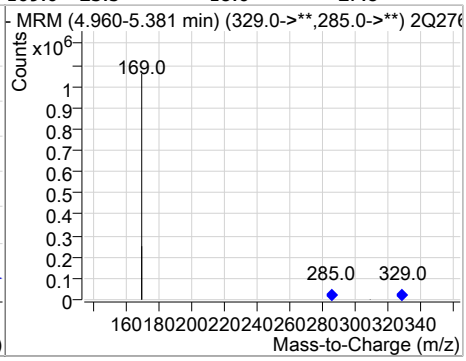


Perfluorinated Compounds by LC/MS/MS

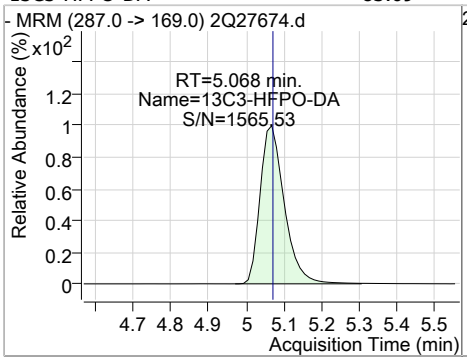
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	501.33	5.06	0.00	796923	285.0 -> 169.0	23.5	18.6	27.8

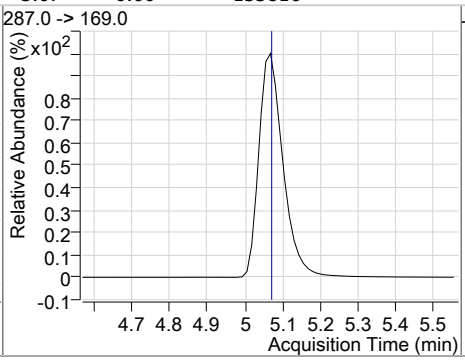


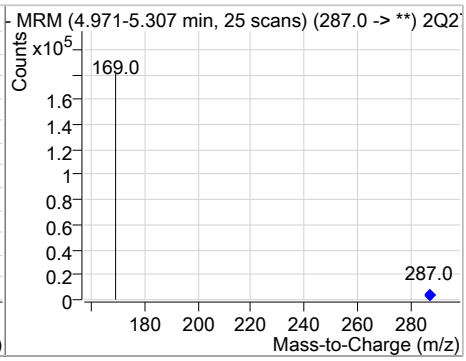




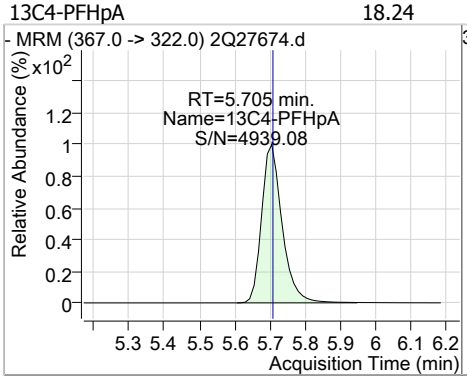
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	83.69	5.07	0.00	133816				

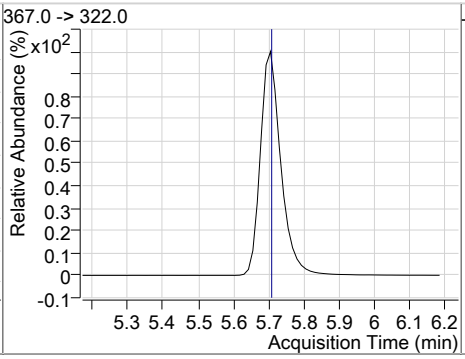


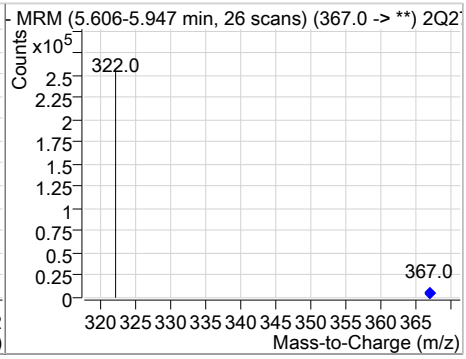




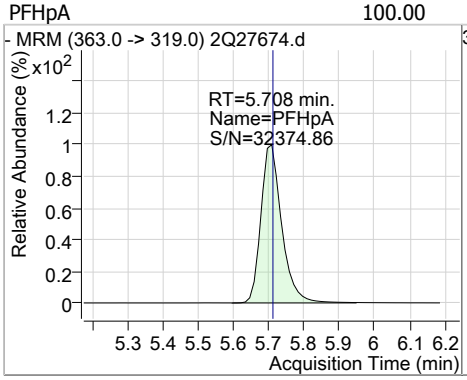
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	18.24	5.71	0.00	188604				

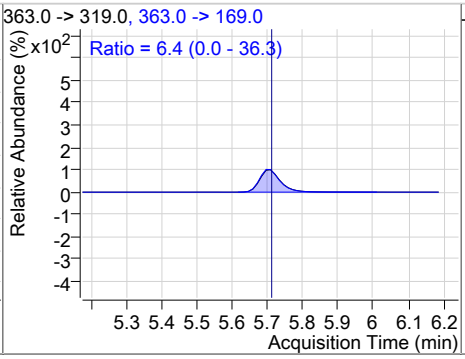


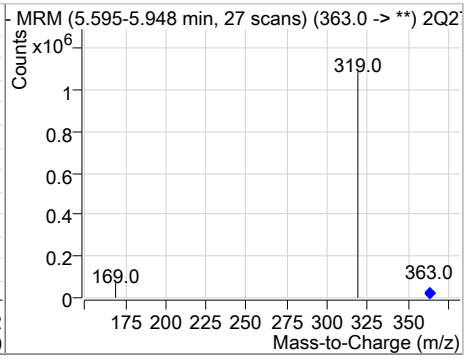




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	100.00	5.71	0.00	814006	363.0 -> 169.0	6.4	0.0	36.3

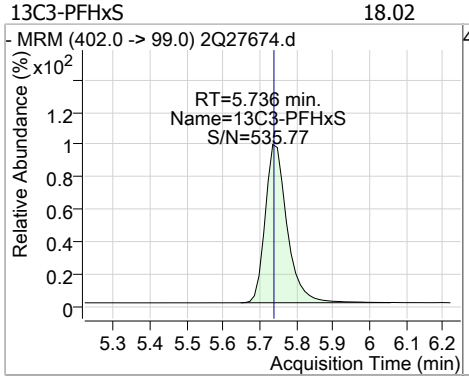


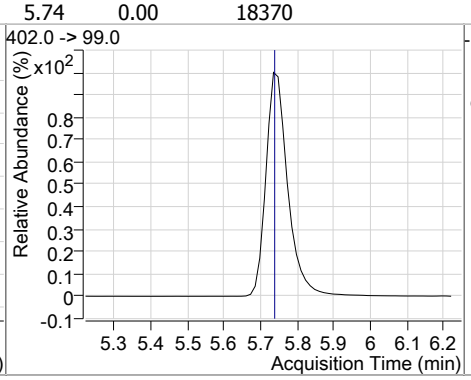


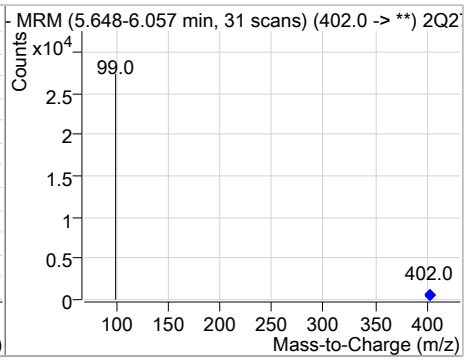


Perfluorinated Compounds by LC/MS/MS

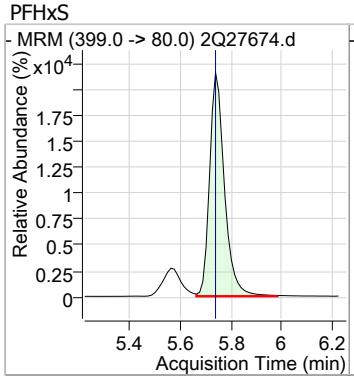
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	18.02	5.74	0.00	18370				

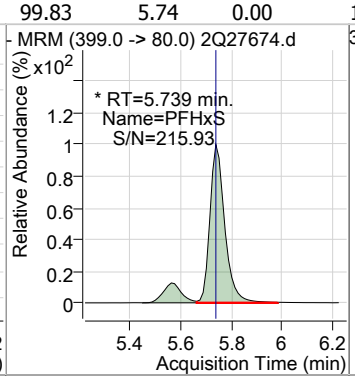


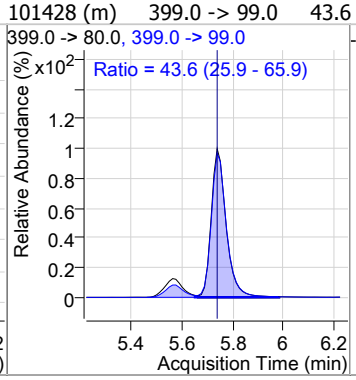


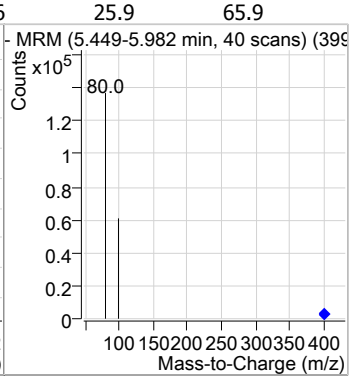


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	99.83	5.74	0.00	101428 (m)	399.0 -> 99.0	43.6	25.9	65.9

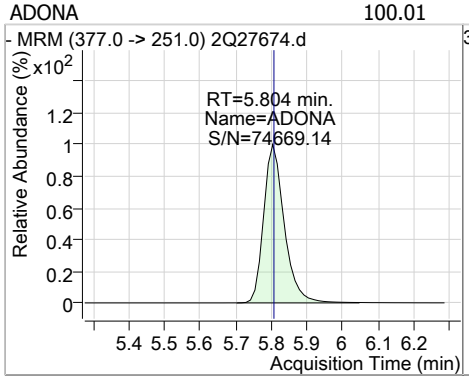


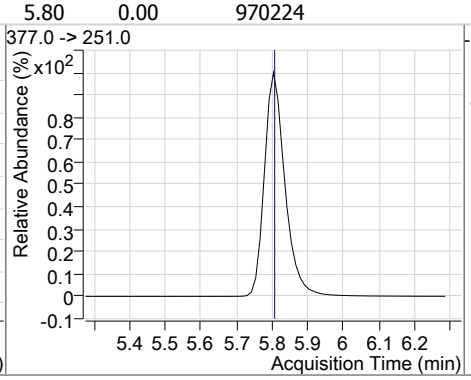


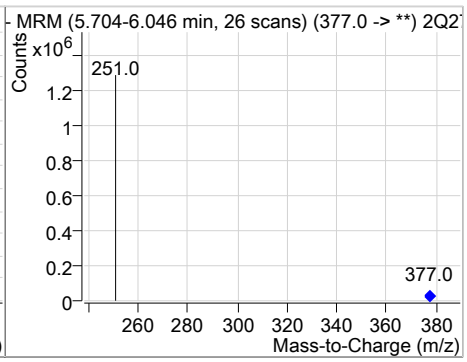




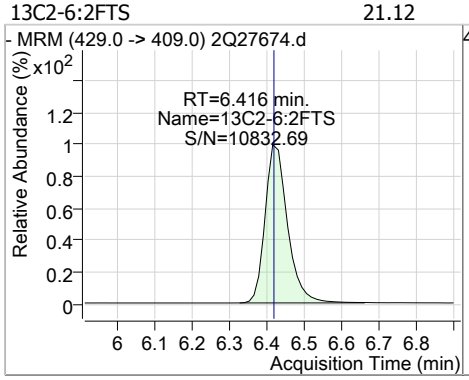
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	100.01	5.80	0.00	970224				

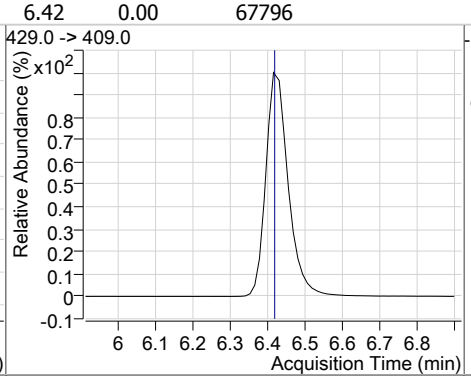


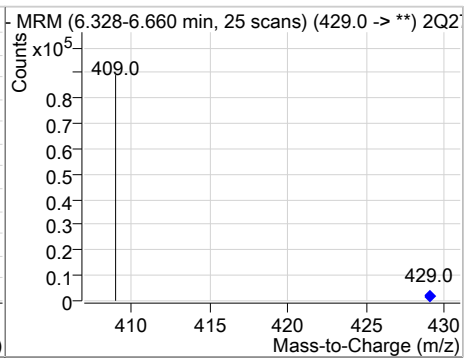




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.12	6.42	0.00	67796				

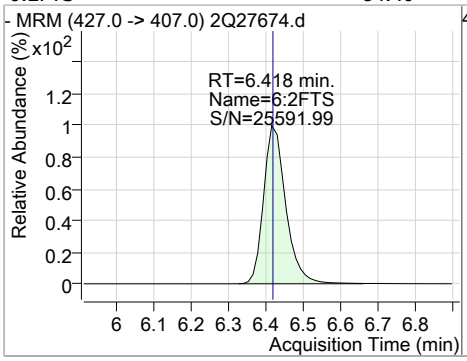


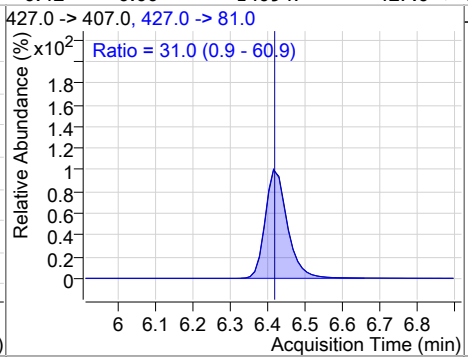


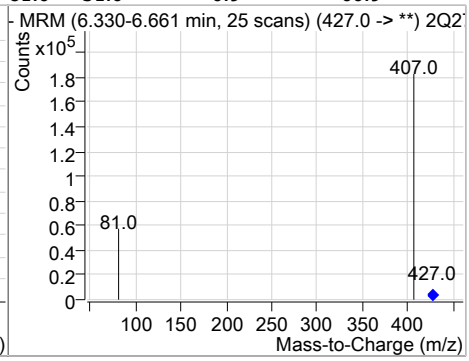


Perfluorinated Compounds by LC/MS/MS

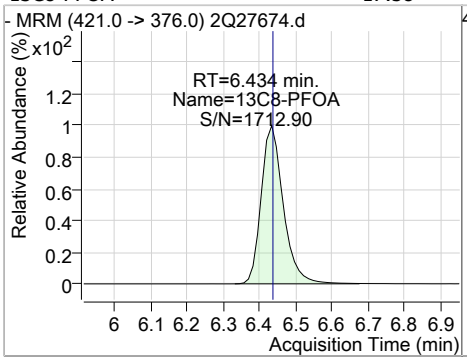
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	84.40	6.42	0.00	140947	427.0 -> 81.0	31.0	0.9	60.9

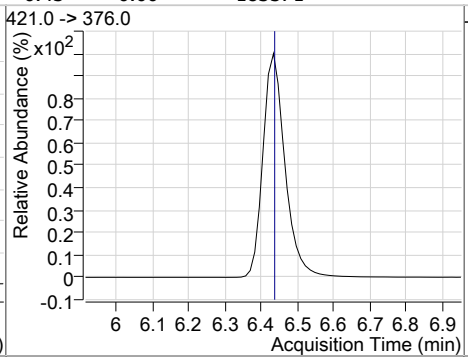


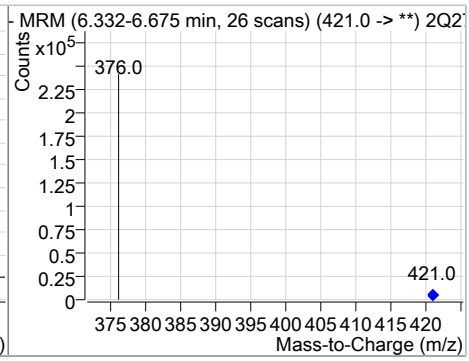




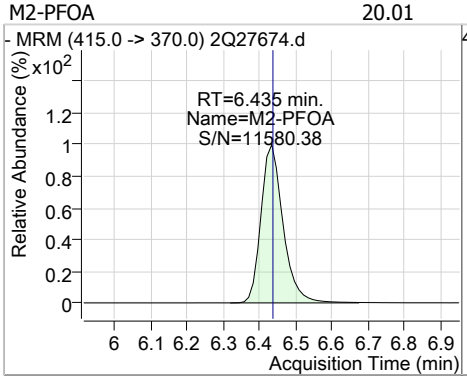
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	17.58	6.43	0.00	183371				

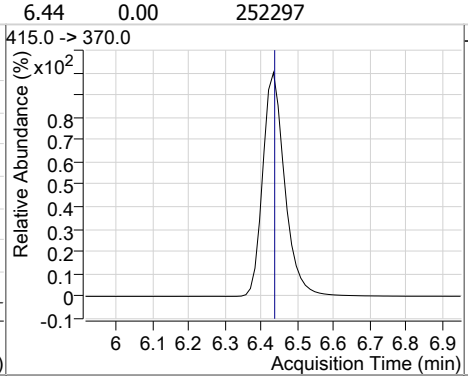


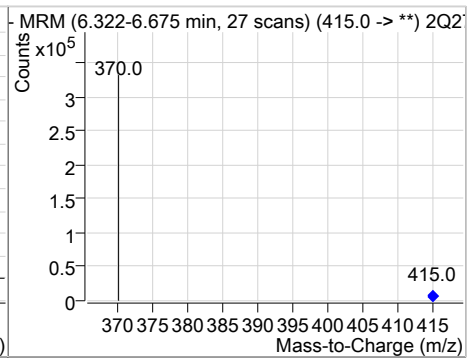




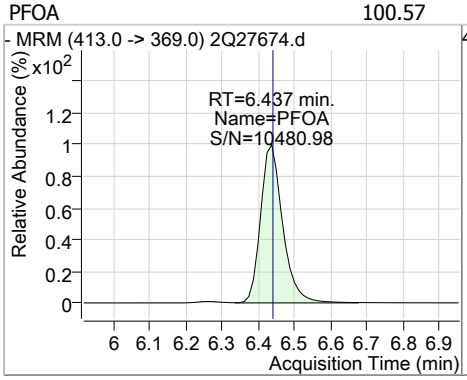
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.01	6.44	0.00	252297				

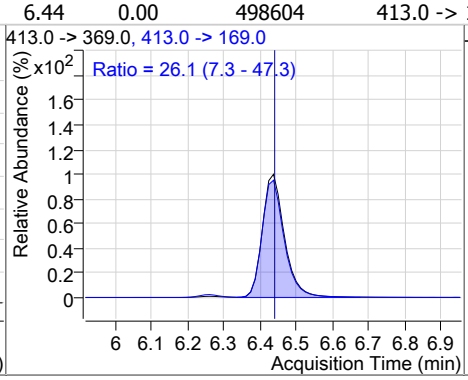


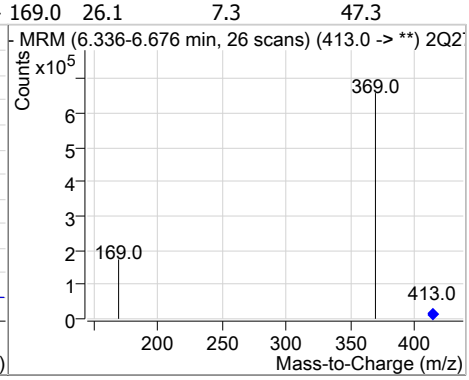




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	100.57	6.44	0.00	498604	413.0 -> 169.0	26.1	7.3	47.3

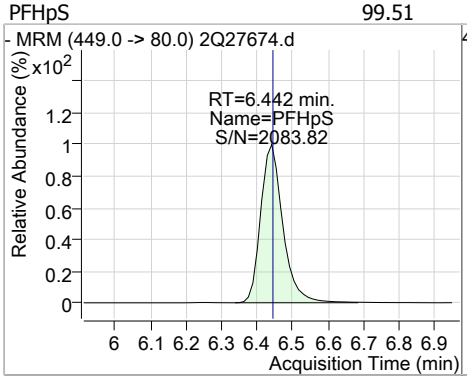


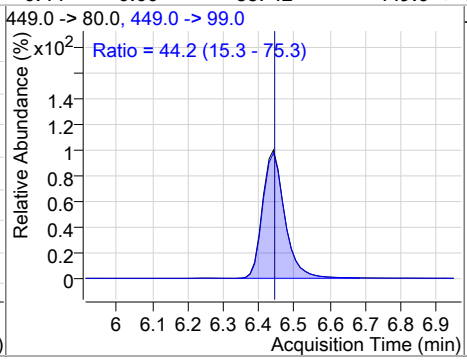


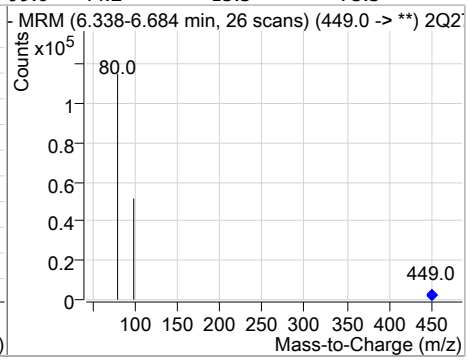


Perfluorinated Compounds by LC/MS/MS

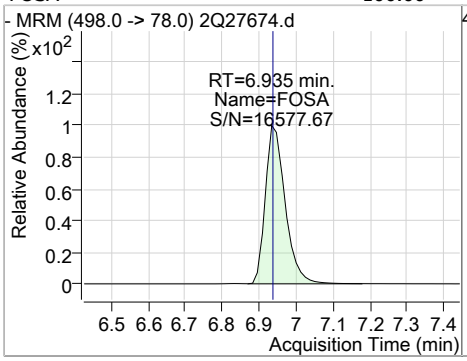
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	99.51	6.44	0.00	88742	449.0 -> 99.0	44.2	15.3	75.3

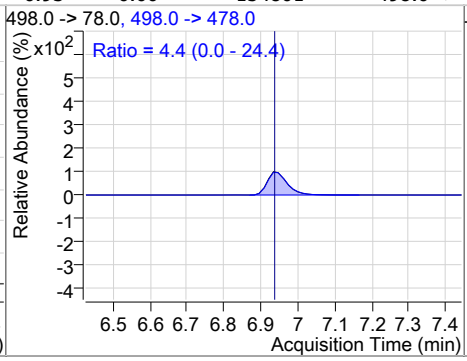


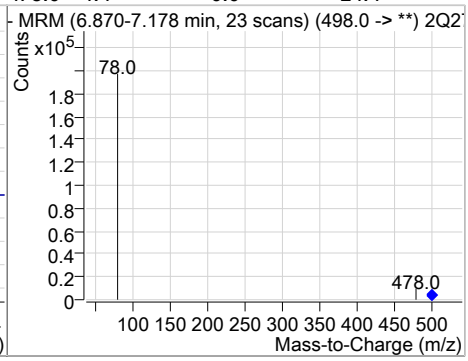




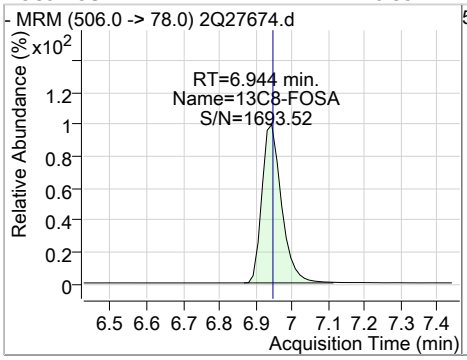
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	100.00	6.93	0.00	154801	498.0 -> 478.0	4.4	0.0	24.4

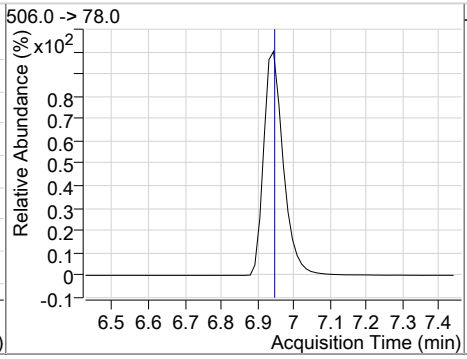


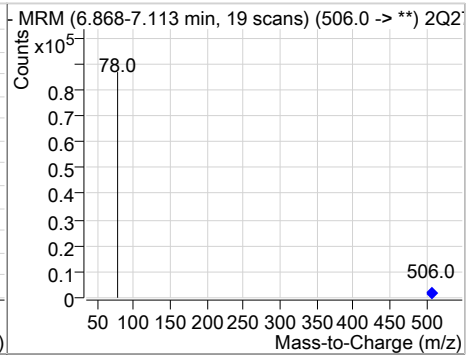




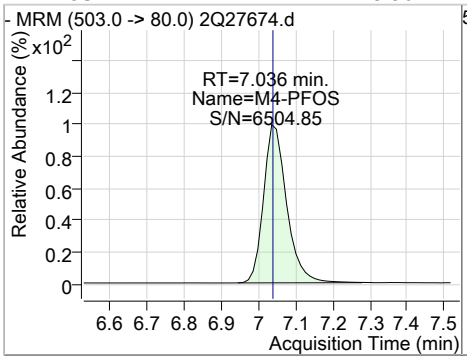
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	16.35	6.94	0.00	66301				

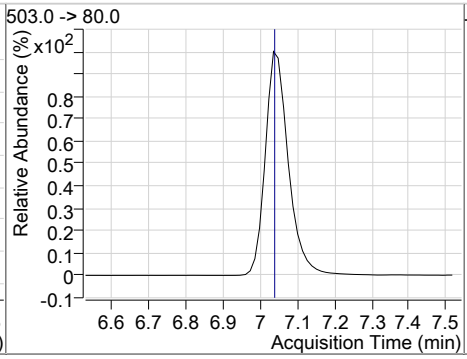


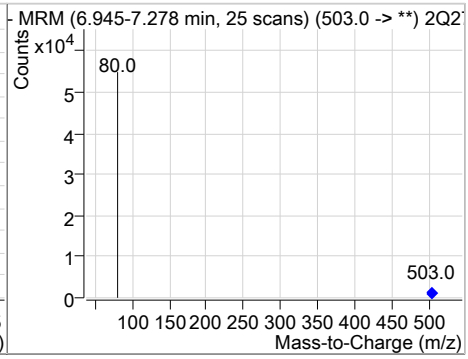




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.96	7.04	0.00	40594				

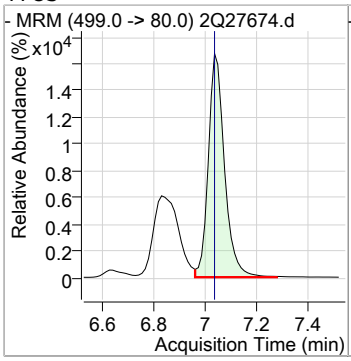


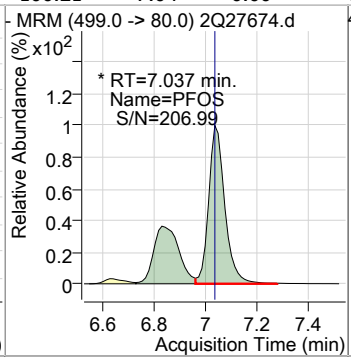


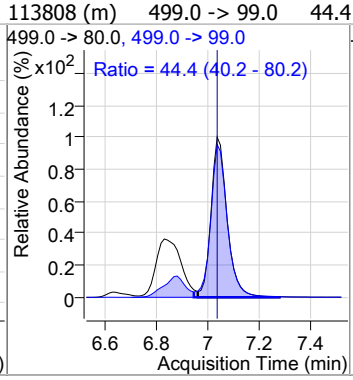


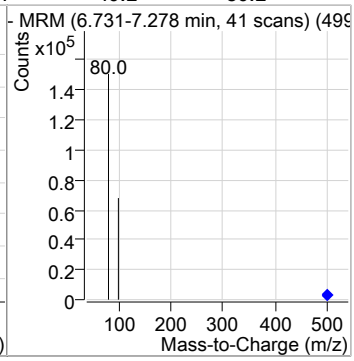
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	100.21	7.04	0.00	113808 (m)	499.0 -> 99.0	44.4	40.2	80.2

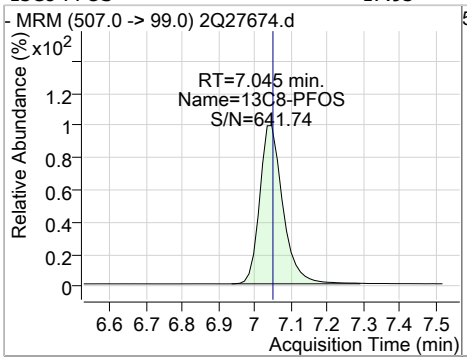


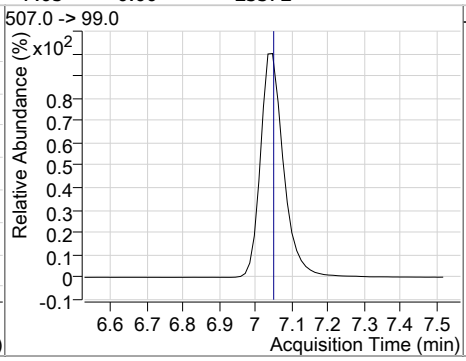


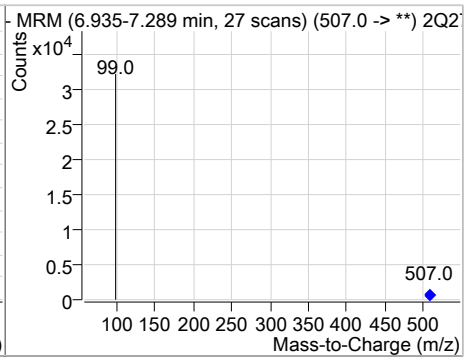




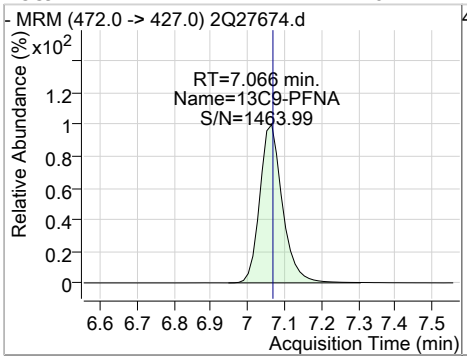
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	17.93	7.05	0.00	23372				

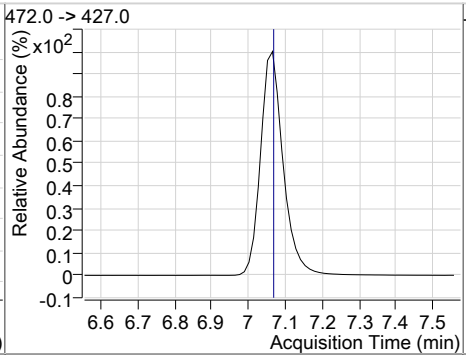


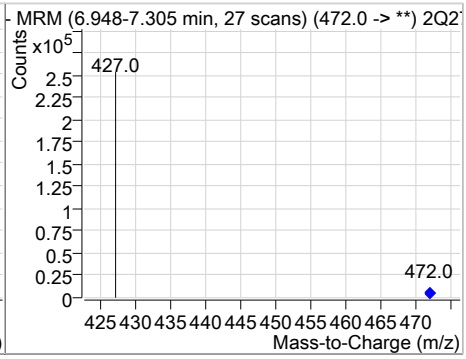




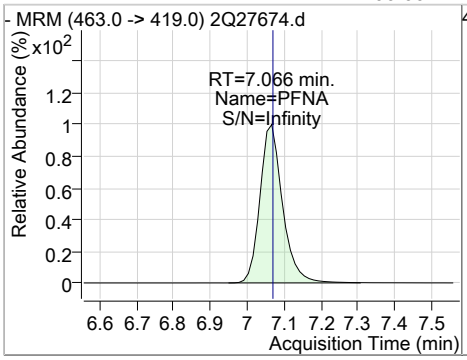
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	18.14	7.07	0.00	192051				

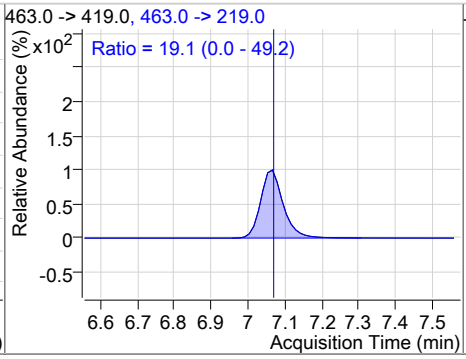


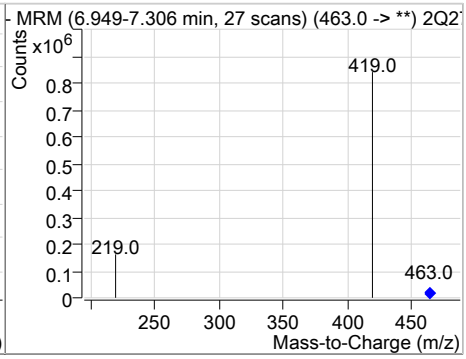




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	100.06	7.07	0.00	637554	463.0 -> 219.0	19.1	0.0	49.2

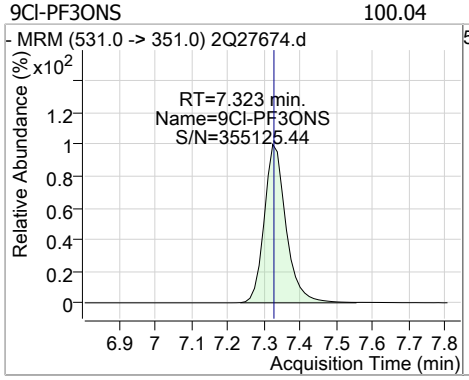


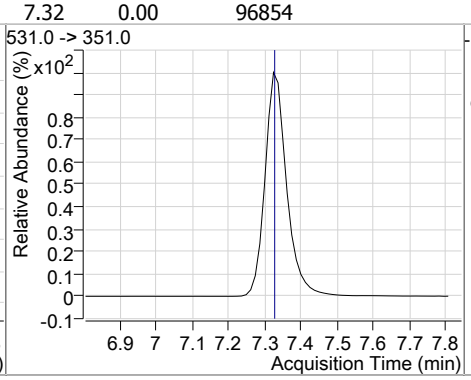


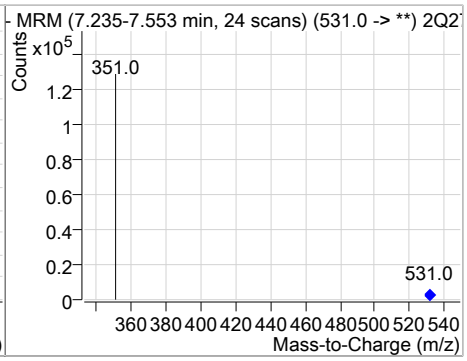


Perfluorinated Compounds by LC/MS/MS

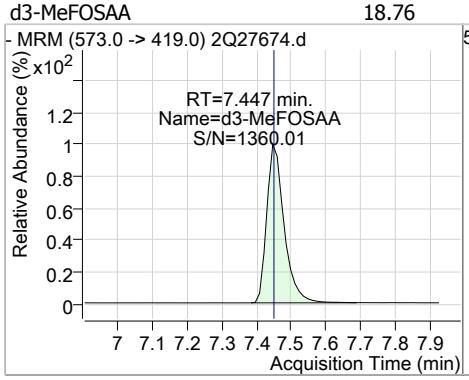
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	100.04	7.32	0.00	96854				

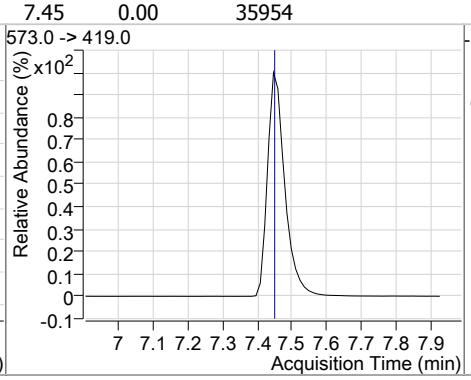


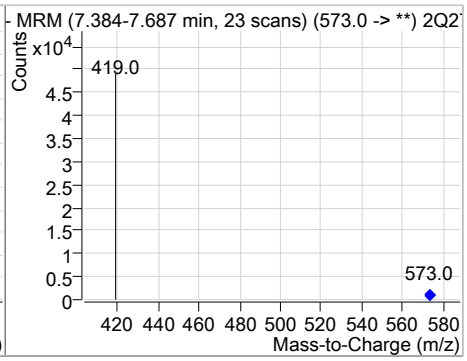




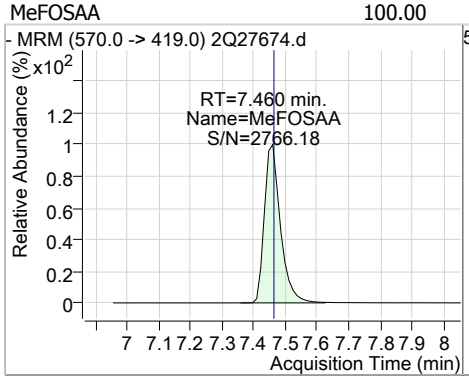
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	18.76	7.45	0.00	35954				

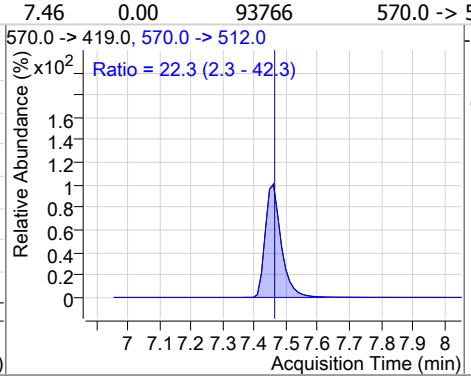


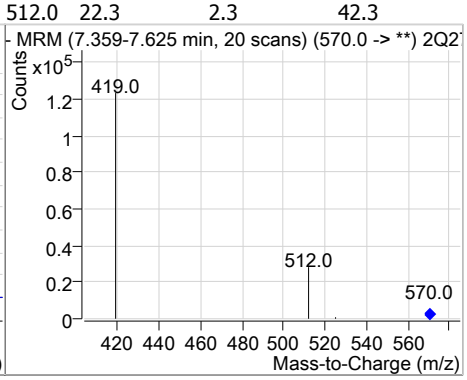




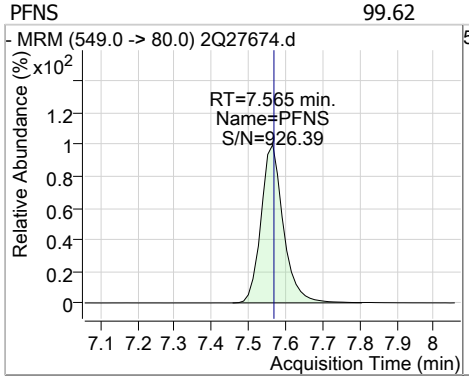
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	100.00	7.46	0.00	93766	570.0 -> 512.0	22.3	2.3	42.3

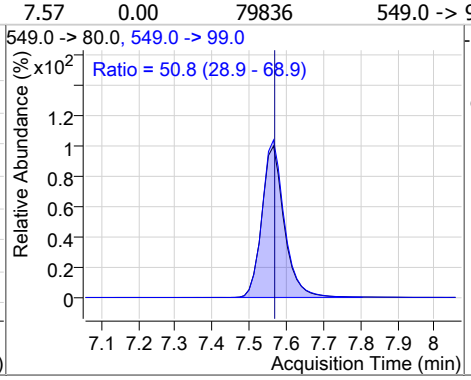


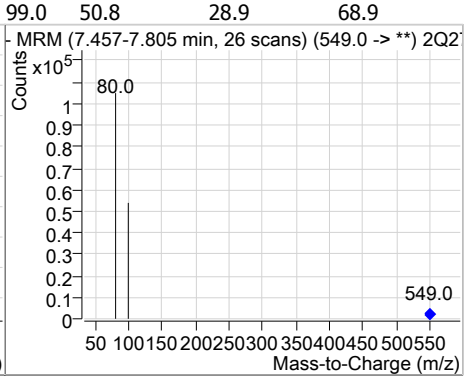




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	99.62	7.57	0.00	79836	549.0 -> 99.0	50.8	28.9	68.9

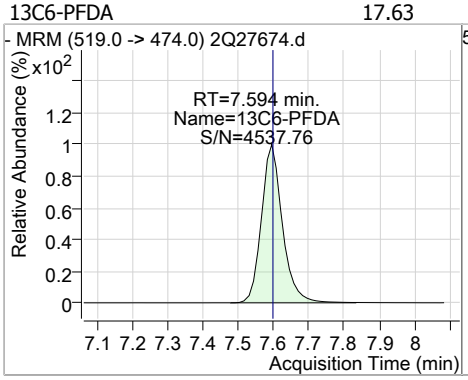


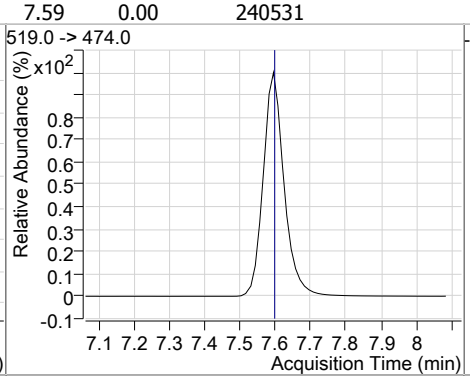


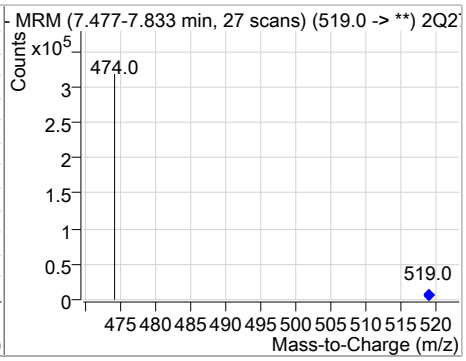


Perfluorinated Compounds by LC/MS/MS

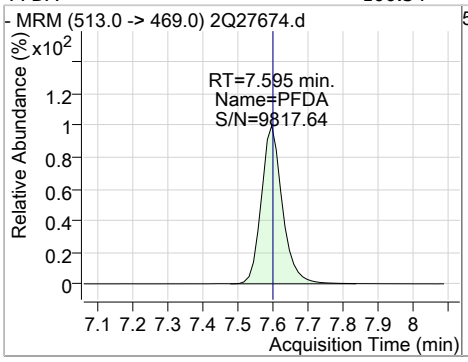
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	17.63	7.59	0.00	240531				

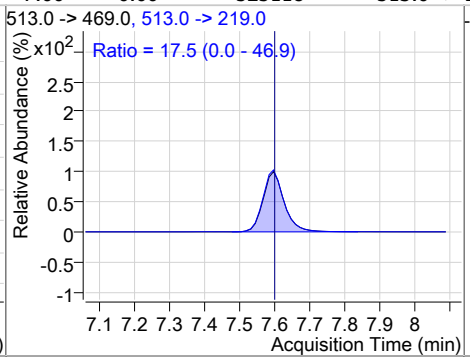


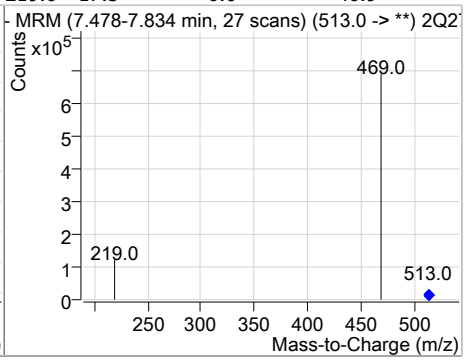




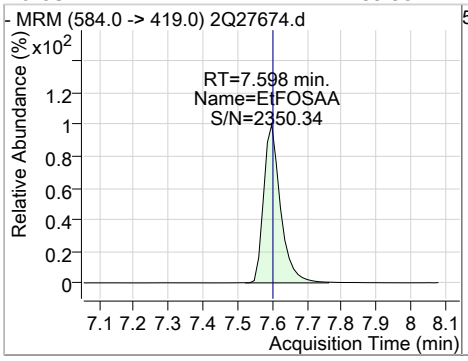
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	100.34	7.60	0.00	525118	513.0 -> 219.0	17.5	0.0	46.9

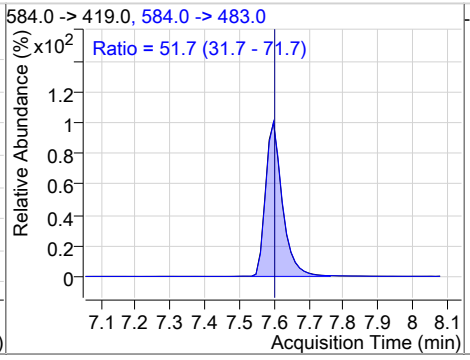


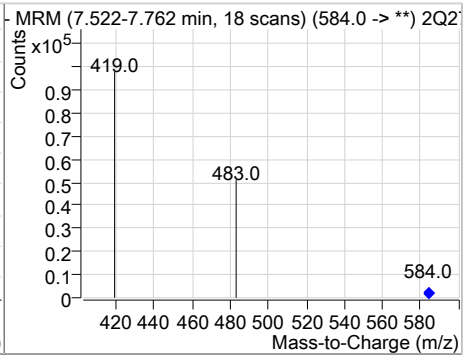




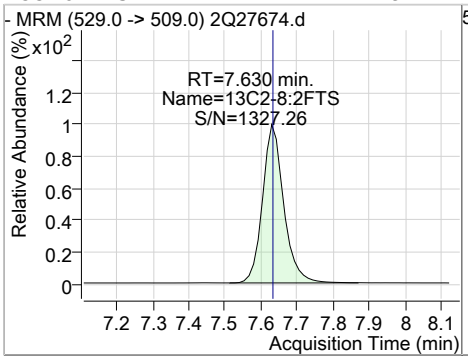
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	99.95	7.60	0.00	72994	584.0 -> 483.0	51.7	31.7	71.7

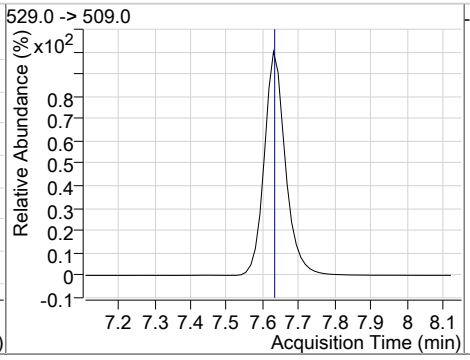


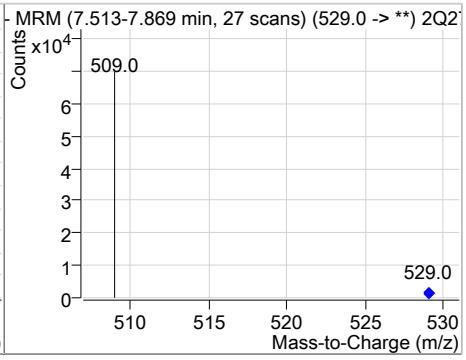




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	22.91	7.63	0.00	50795				

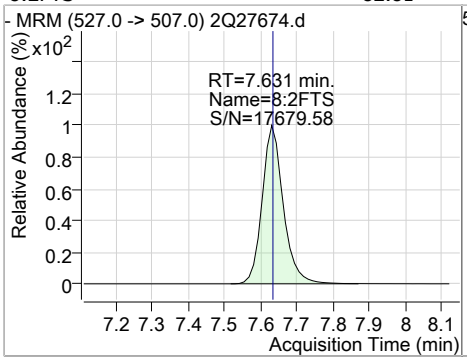


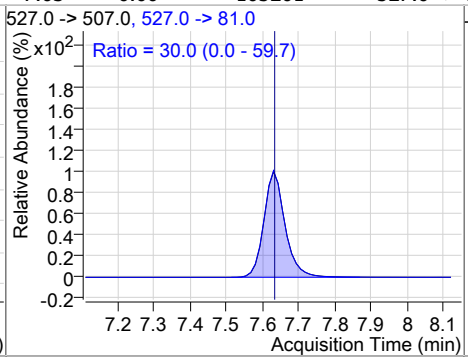


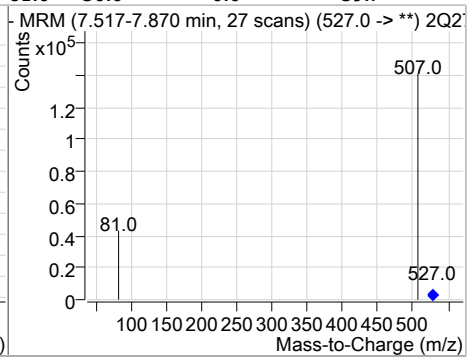


Perfluorinated Compounds by LC/MS/MS

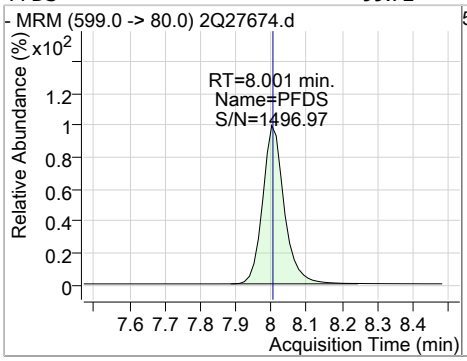
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	82.81	7.63	0.00	105261	527.0 -> 81.0	30.0	0.0	59.7

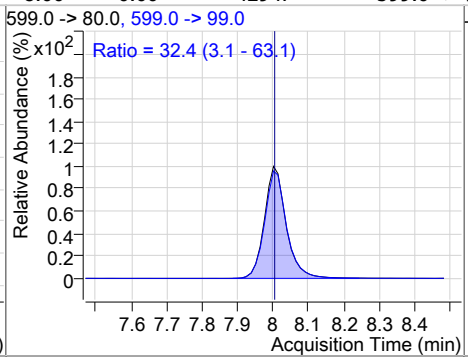


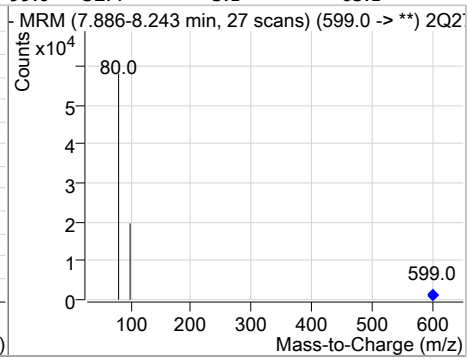




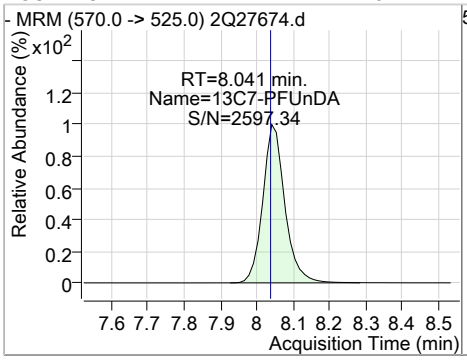
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	99.72	8.00	0.00	42947	599.0 -> 99.0	32.4	3.1	63.1

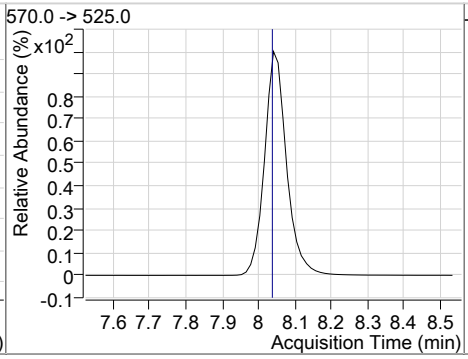


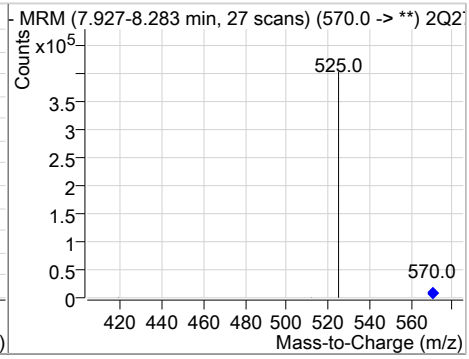




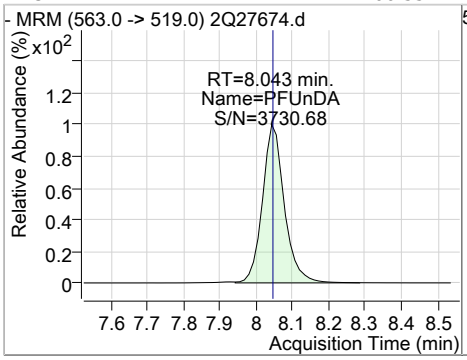
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.12	8.04	0.00	306593				

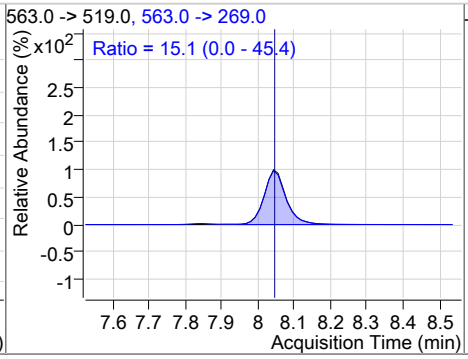


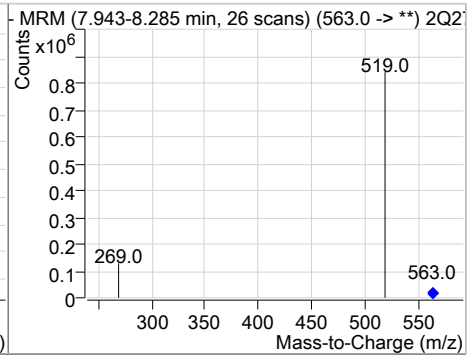




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	100.55	8.04	0.00	636291	563.0 -> 269.0	15.1	0.0	45.4

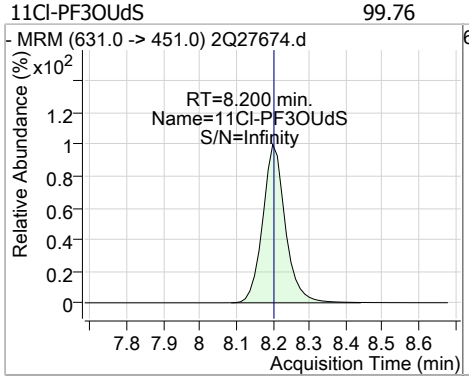


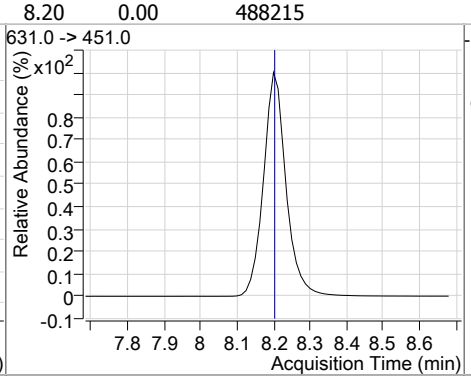


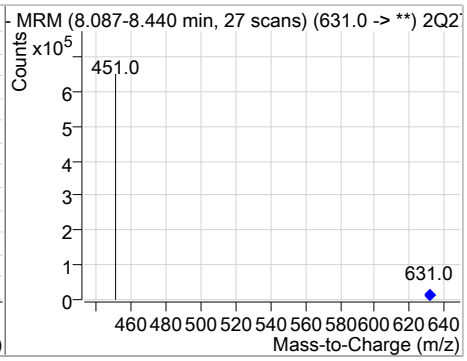


Perfluorinated Compounds by LC/MS/MS

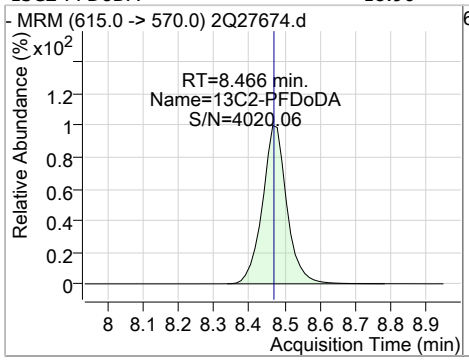
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	99.76	8.20	0.00	488215				

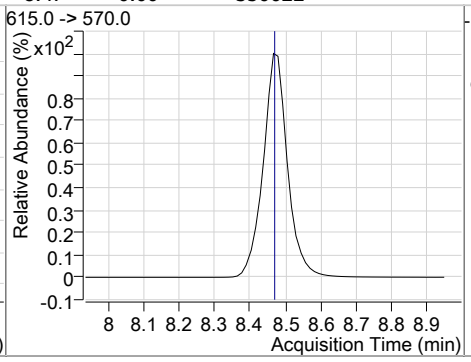


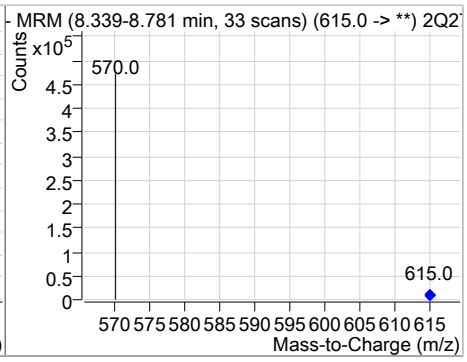




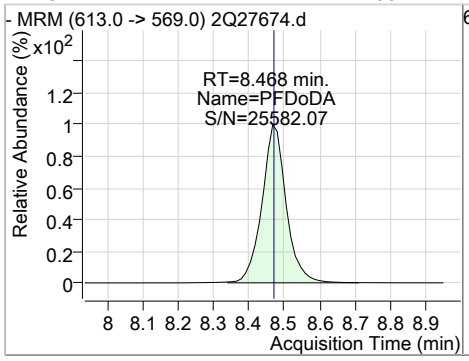
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	18.96	8.47	0.00	356622				

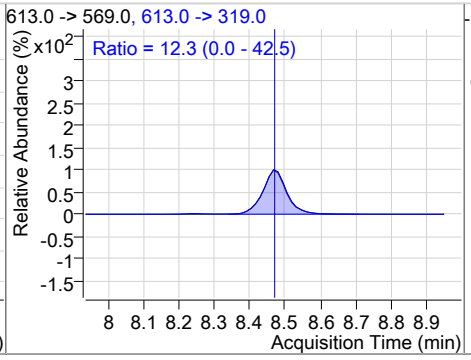


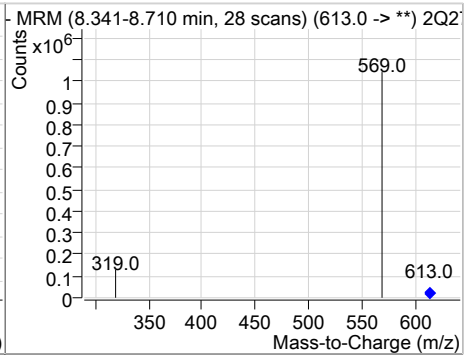




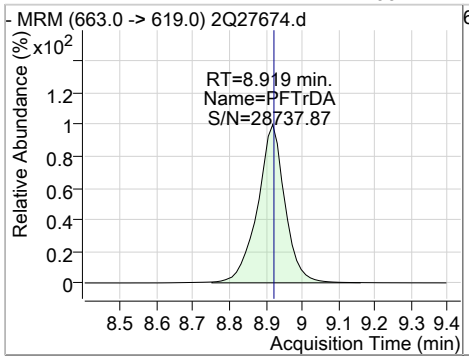
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	100.14	8.47	0.00	795946	613.0 -> 319.0	12.3	0.0	42.5

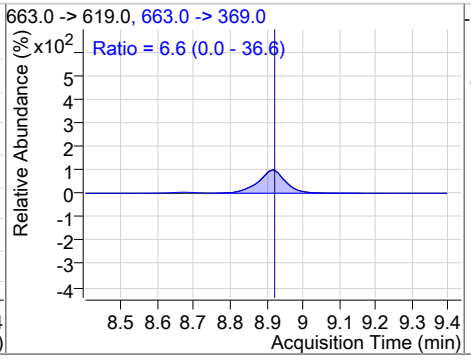


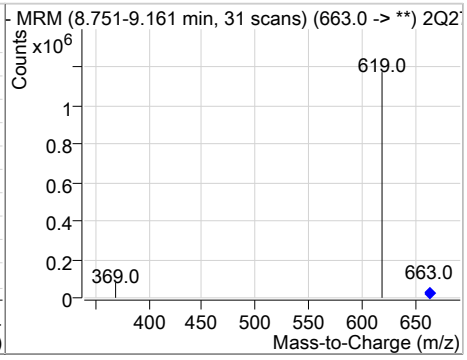




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	100.12	8.92	0.00	897897	663.0 -> 369.0	6.6	0.0	36.6

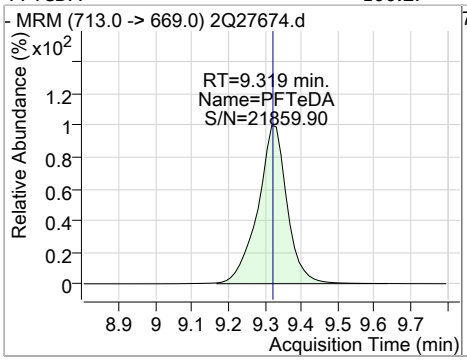


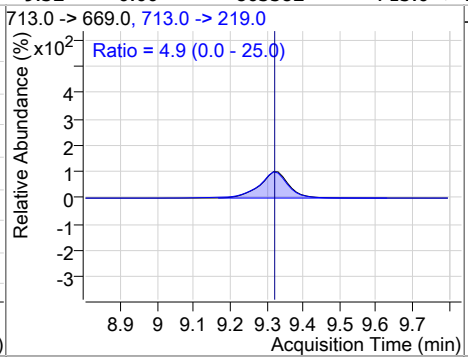


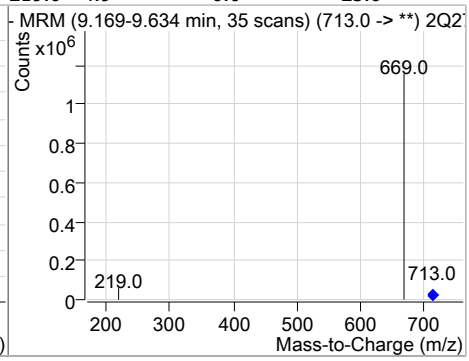


Perfluorinated Compounds by LC/MS/MS

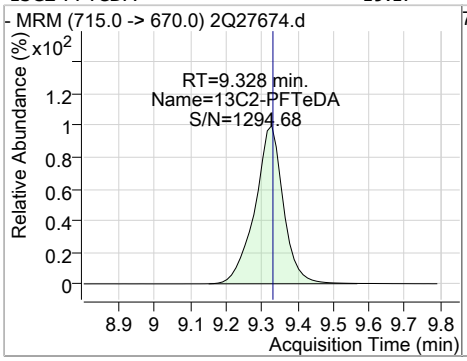
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	100.27	9.32	0.00	863382	713.0 -> 219.0	4.9	0.0	25.0

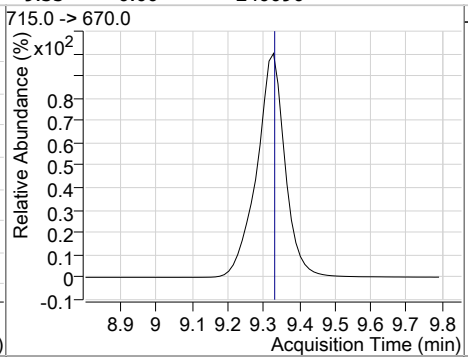


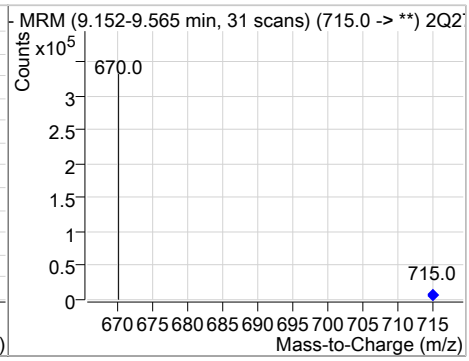




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.17	9.33	0.00	246090				







Manual Integration Approval Summary

Sample Number: S2Q442-IC442
Lab FileID: 2Q27674.D
Injection Time: 03/18/19 10:08
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27676.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 11:06:47 AM
Sample Name : ICV442-20
Vial : Vial 10
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

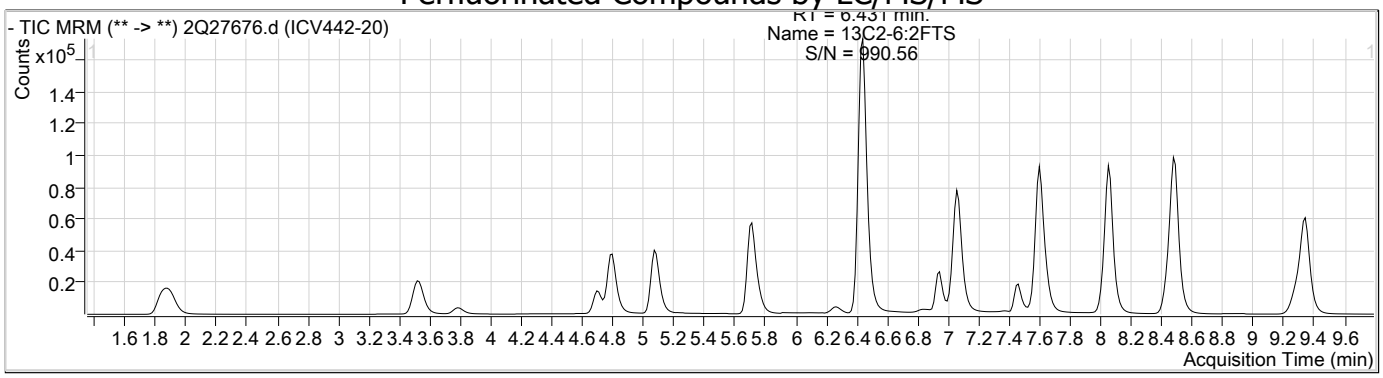
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.448	415.0 -> 370.0	311207	20.00	µg/L	0.013
13C4-PFOS	7.048	503.0 -> 80.0	48553	20.00	µg/L	0.013
M4-PFBA	1.877	217.0 -> 172.0	123490	20.00	µg/L	0.013
M5-PFPeA	3.524	268.0 -> 223.0	108385	20.00	µg/L	0.000
M5-PFHxA	4.801	318.0 -> 273.0	157631	20.00	µg/L	0.013
M4-PFHpA	5.718	367.0 -> 322.0	229138	20.00	µg/L	0.013
M8-PFOA	6.446	421.0 -> 376.0	230235	20.00	µg/L	0.013
M9-PFNA	7.066	472.0 -> 427.0	235528	20.00	µg/L	0.000
M6-PFDA	7.607	519.0 -> 474.0	315116	20.00	µg/L	0.013
M7-PFUnDA	8.054	570.0 -> 525.0	388543	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	461670	20.00	µg/L	0.013
M2-PFTeDA	9.340	715.0 -> 670.0	331727	20.00	µg/L	0.013
M8-FOSA	6.944	506.0 -> 78.0	91681	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	19213	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	21581	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	27982	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	60195	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	67128	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	48208	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	41651	20.00	µg/L	0.013
M3-HFPO-DA	5.081	287.0 -> 169.0	164905	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	60220	20.25	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C2-6:2FTS	6.431	429.0 -> 409.0	67046	20.89	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C2-8:2FTS	7.642	529.0 -> 509.0	48247	21.76	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%		
13C2-PFDoDA	8.479	615.0 -> 570.0	461944	24.56	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 122.8%		
13C2-PFTeDA	9.340	715.0 -> 670.0	330870	25.77	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 128.9%		
13C3-PFBS	3.780	302.0 -> 99.0	19084	20.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%		
13C3-PFHxS	5.748	402.0 -> 99.0	21543	21.13	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.7%		
13C4-PFBA	1.877	217.0 -> 172.0	122919	20.50	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%		
13C4-PFHpA	5.718	367.0 -> 322.0	229007	22.14	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.7%		
13C5-PFHxA	4.801	318.0 -> 273.0	157267	21.64	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.2%		
13C5-PFPeA	3.524	268.0 -> 223.0	108370	21.32	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.6%		
13C6-PFDA	7.607	519.0 -> 474.0	315481	23.12	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

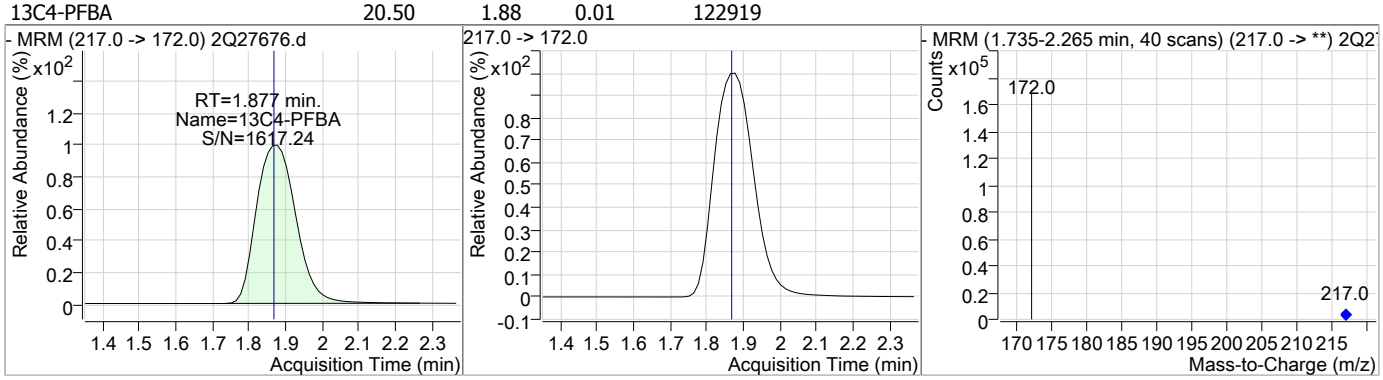
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.6%		
13C7-PFUnDA	8.054	570.0 -> 525.0	388238	22.94 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.7%		
13C8-FOSA	6.944	506.0 -> 78.0	91630	22.60 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.0%		
13C8-PFOA	6.446	421.0 -> 376.0	230187	22.07 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.3%		
13C8-PFOS	7.045	507.0 -> 99.0	27934	21.43 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.2%		
13C9-PFNA	7.066	472.0 -> 427.0	235100	22.21 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.0%		
d3-MeFOSAA	7.459	573.0 -> 419.0	41630	21.72 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.6%		
M2-PFOA	6.448	415.0 -> 370.0	311318	19.99 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
M4-PFOS	7.048	503.0 -> 80.0	48587	20.00 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.081	287.0 -> 169.0	164905	103.13 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	7.598	584.0 -> 419.0	14125	15.92 µg/L	m	96
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	7.460	570.0 -> 419.0	18787	17.69 µg/L	m	94
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	-	299.0 -> 80.0	-	N.D.		
PFDA	-	513.0 -> 469.0	-	N.D.		
PFDoDA	-	613.0 -> 569.0	-	N.D.		
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	-	363.0 -> 319.0	-	N.D.		
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	-	313.0 -> 269.0	-	N.D.		
PFHxS	5.751	399.0 -> 80.0	0	0.00 µg/L	m	1
PFNA	-	463.0 -> 419.0	-	N.D.		
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.450	413.0 -> 369.0	105783	17.01 µg/L	m	96
PFOS	7.049	499.0 -> 80.0	27023	19.89 µg/L	m	74
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	-	713.0 -> 669.0	-	N.D.		
PFTrDA	-	663.0 -> 619.0	-	N.D.		
PFUnDA	-	563.0 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

 # = Qualifier out of range, m = manually integrated, + = Area summed

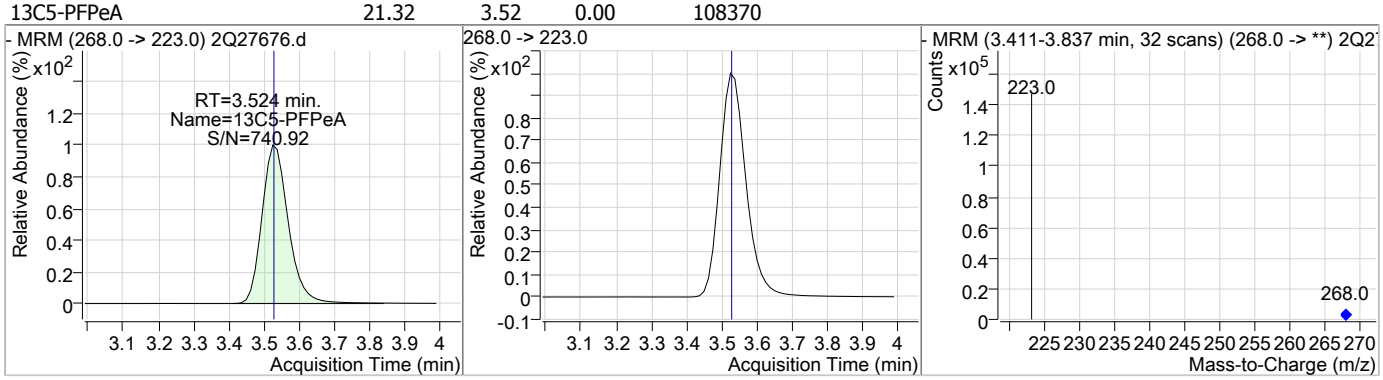
Perfluorinated Compounds by LC/MS/MS



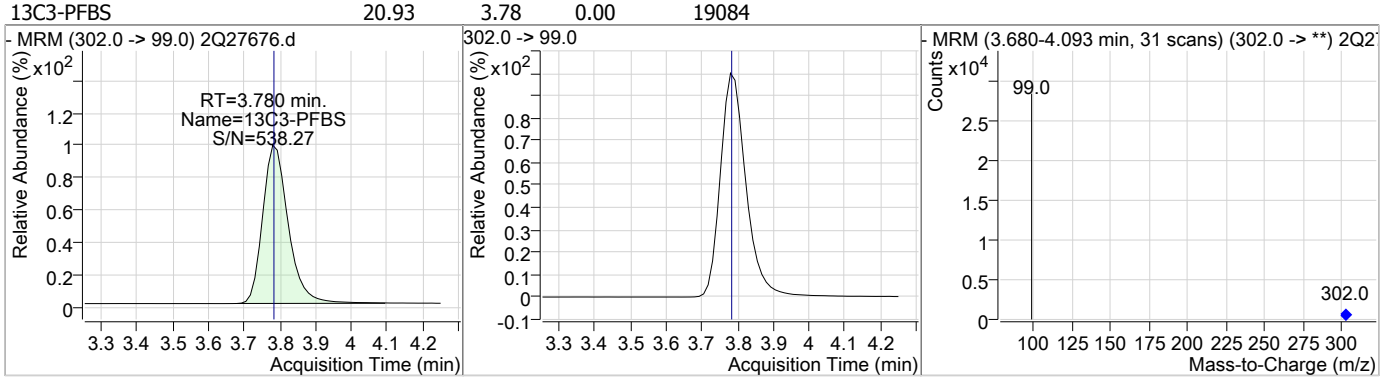
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.50	1.88	0.01	122919				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.32	3.52	0.00	108370				

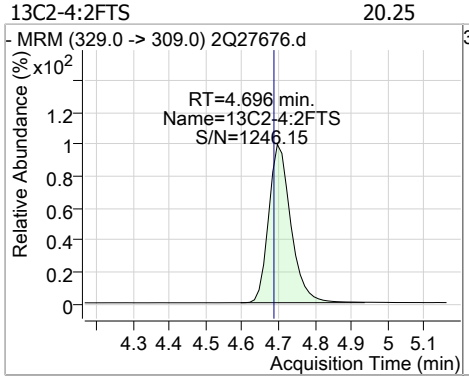


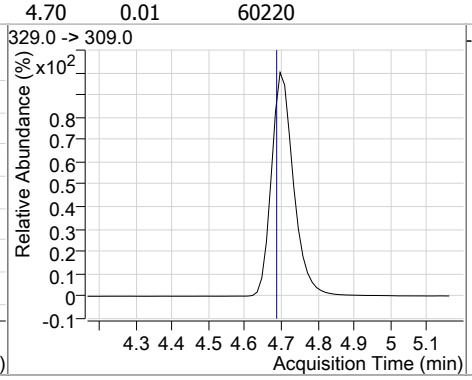
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.93	3.78	0.00	19084				

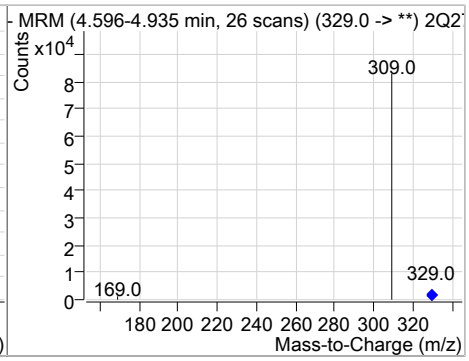


Perfluorinated Compounds by LC/MS/MS

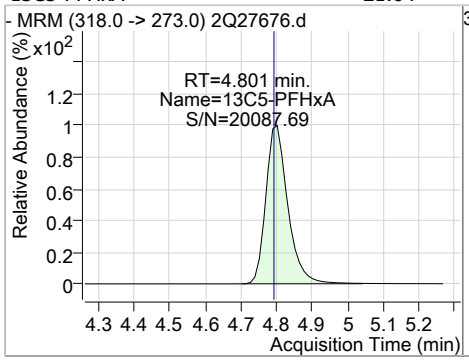
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.25	4.70	0.01	60220				

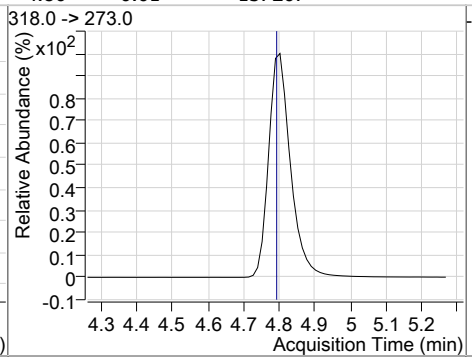


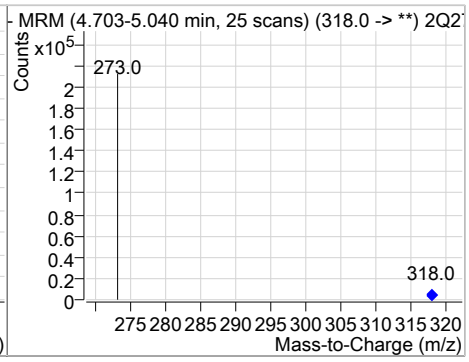




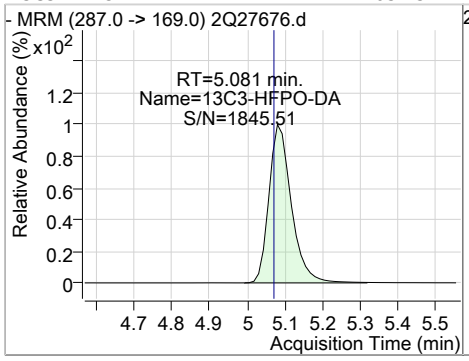
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.64	4.80	0.01	157267				

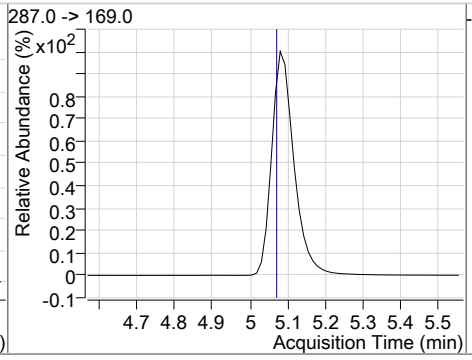


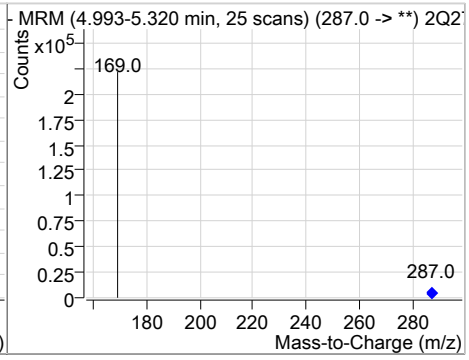




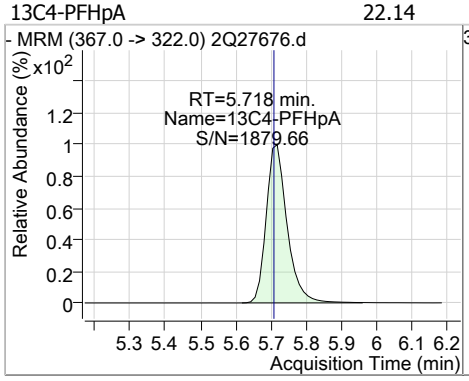
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.13	5.08	0.01	164905				

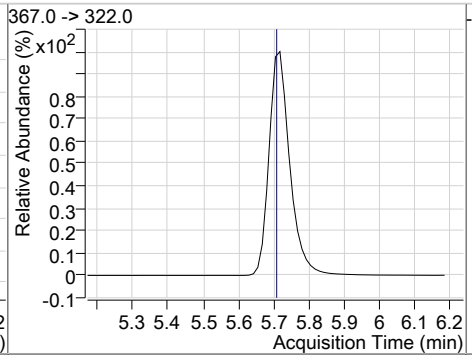


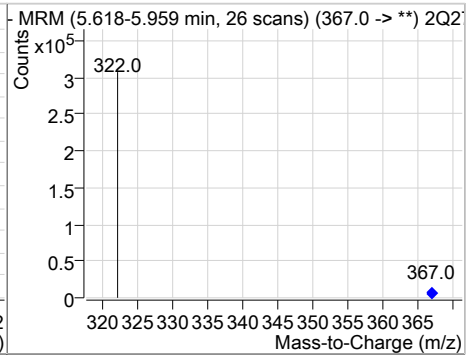




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	22.14	5.72	0.01	229007				

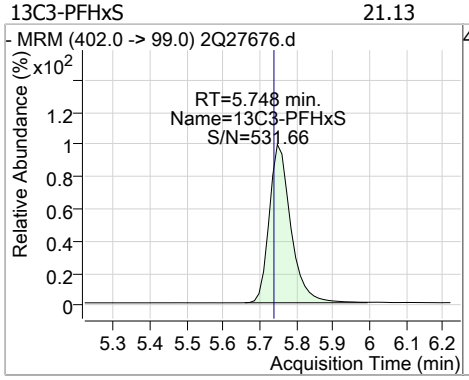


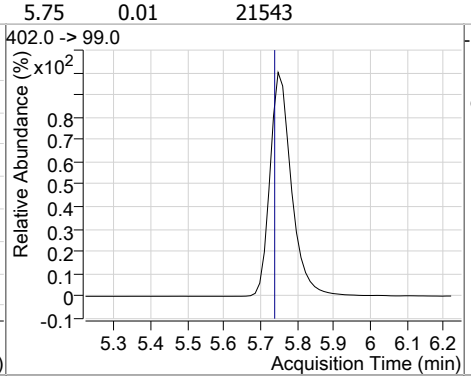


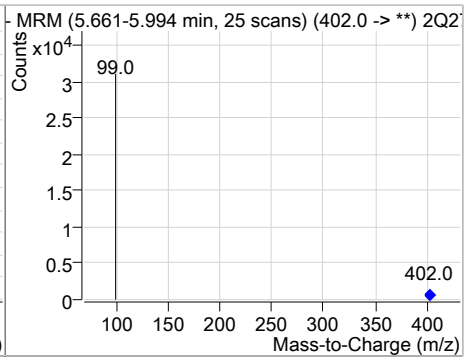


Perfluorinated Compounds by LC/MS/MS

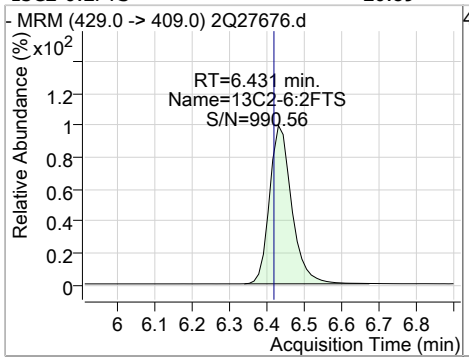
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.13	5.75	0.01	21543				

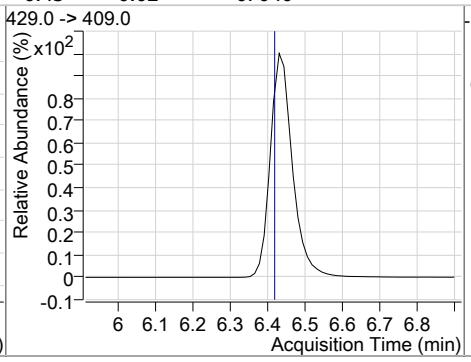


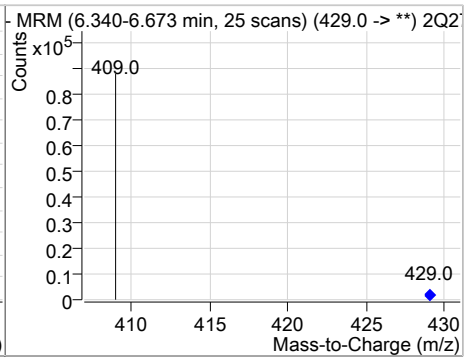




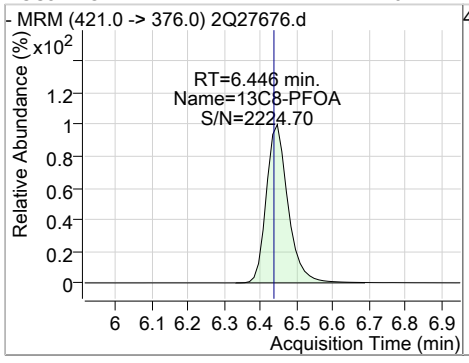
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.89	6.43	0.02	67046				

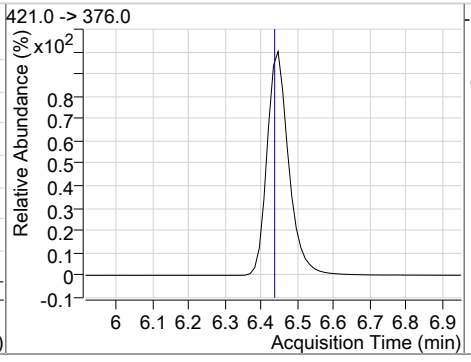


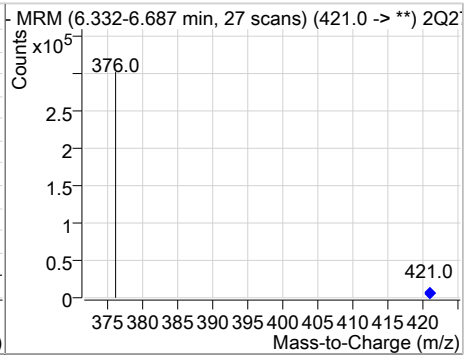




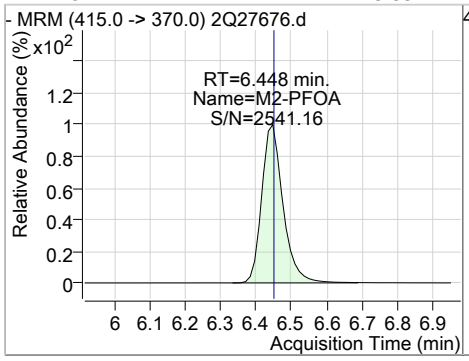
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	22.07	6.45	0.01	230187				

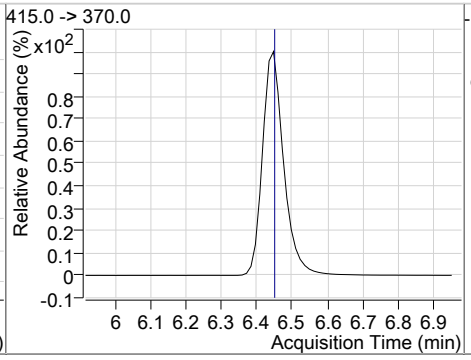


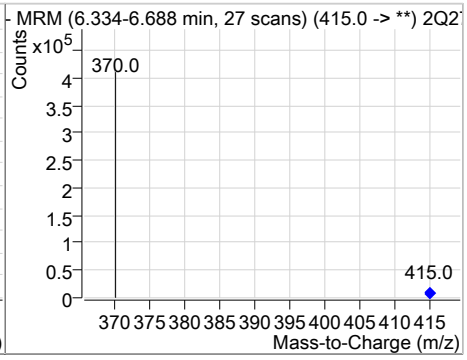




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.45	0.01	311318				

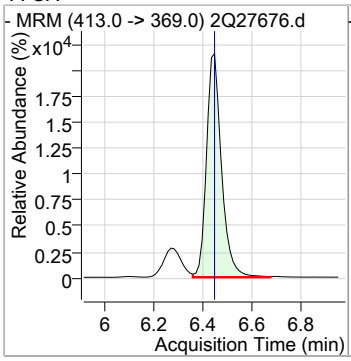


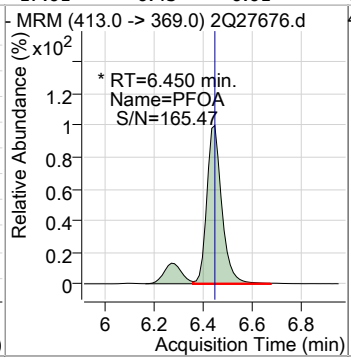


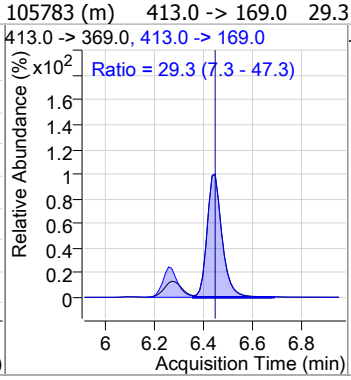


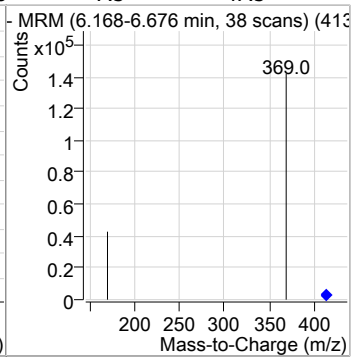
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.01	6.45	0.01	105783 (m)	413.0 -> 169.0	29.3	7.3	47.3

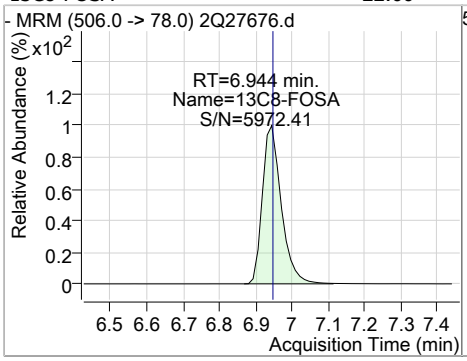


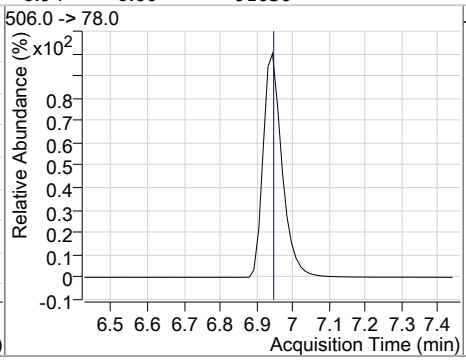


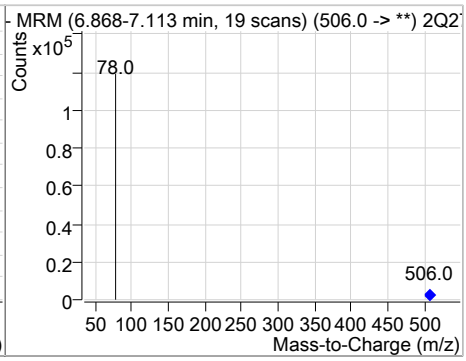




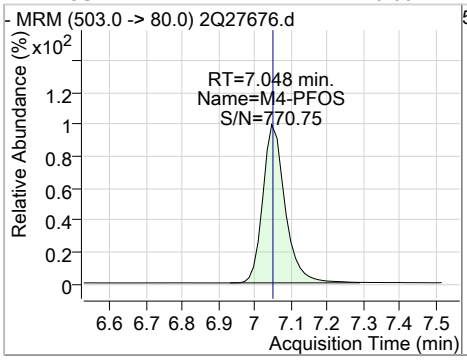
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.60	6.94	0.00	91630				

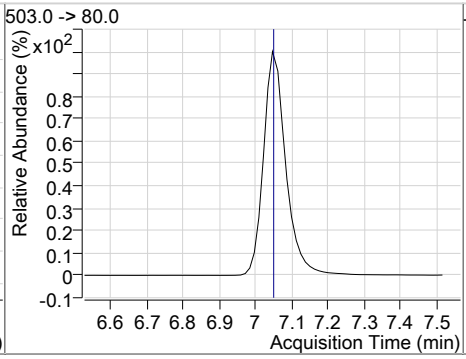


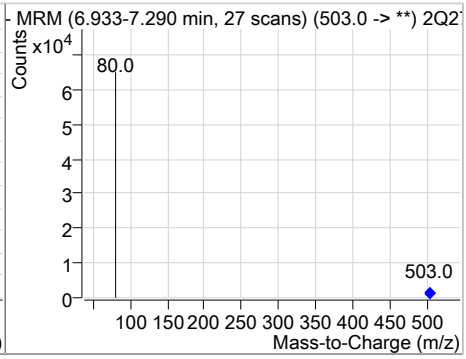




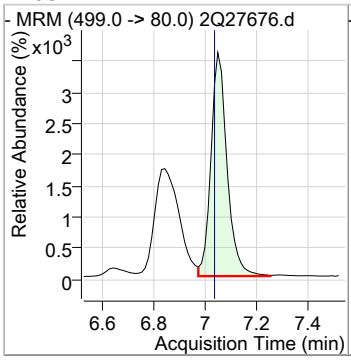
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.01	48587				

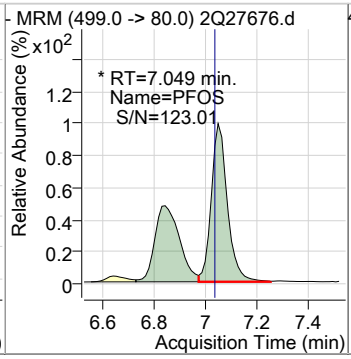


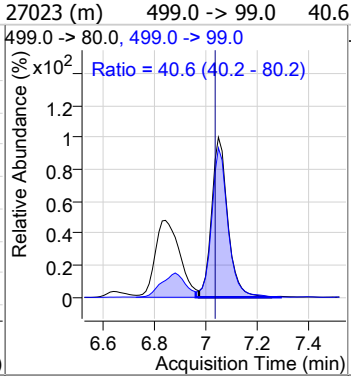


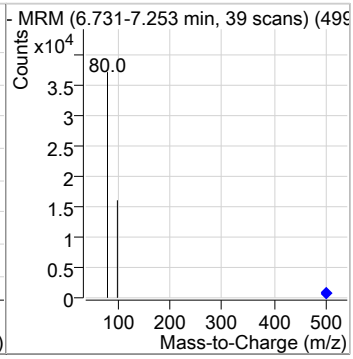


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.89	7.05	0.01	27023 (m)	499.0 -> 99.0	40.6	40.2	80.2



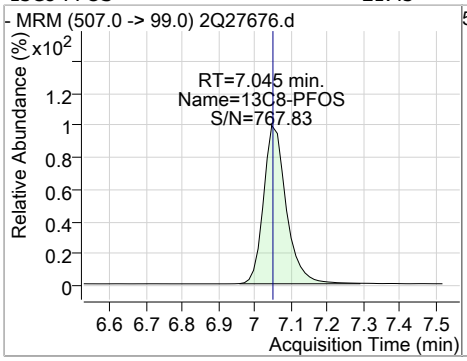


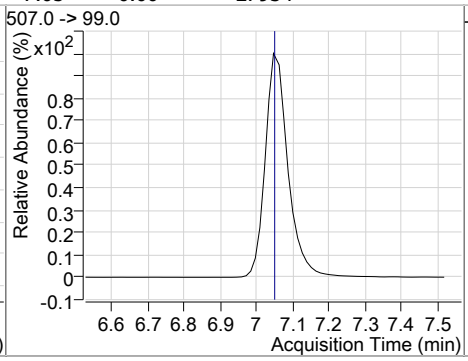


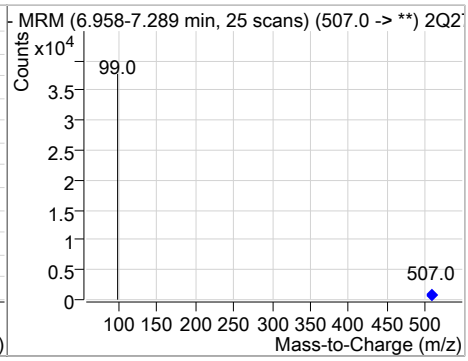


Perfluorinated Compounds by LC/MS/MS

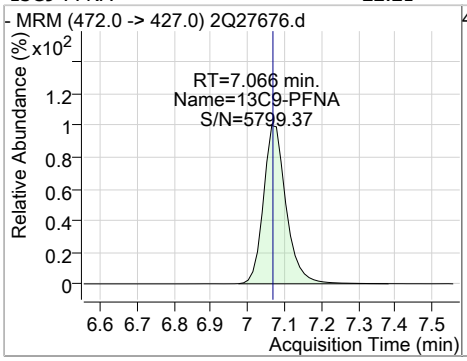
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.43	7.05	0.00	27934				

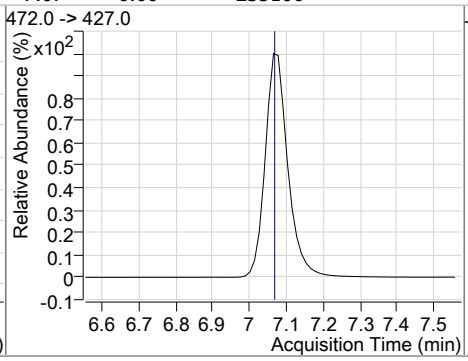


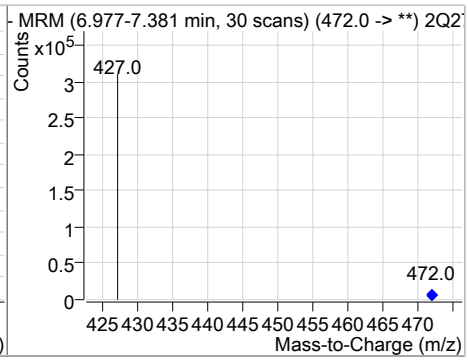




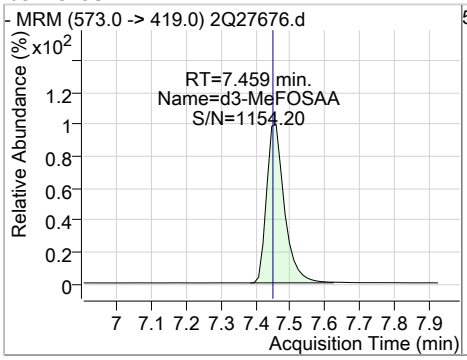
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	22.21	7.07	0.00	235100				

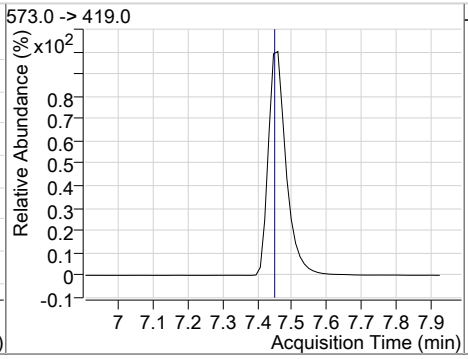


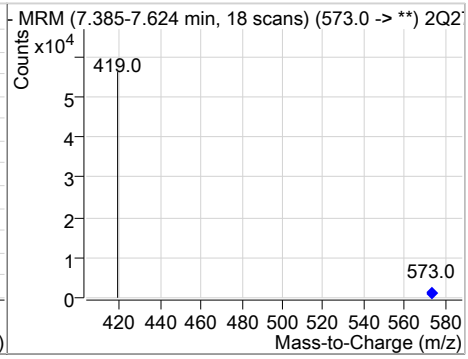




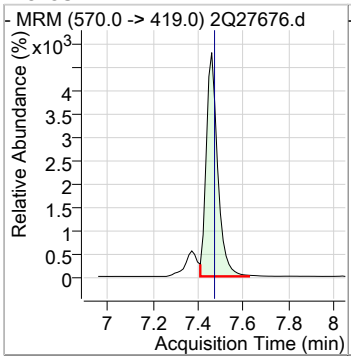
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.72	7.46	0.01	41630				

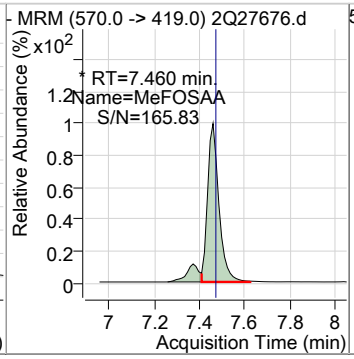


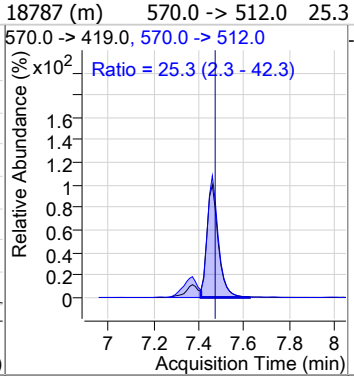


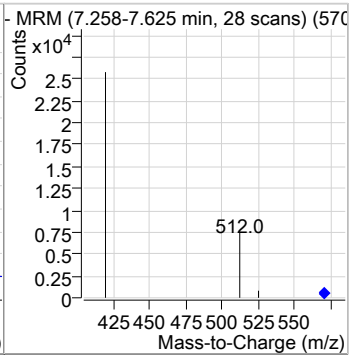


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.69	7.46	0.00	18787 (m)	570.0 -> 512.0	25.3	2.3	42.3



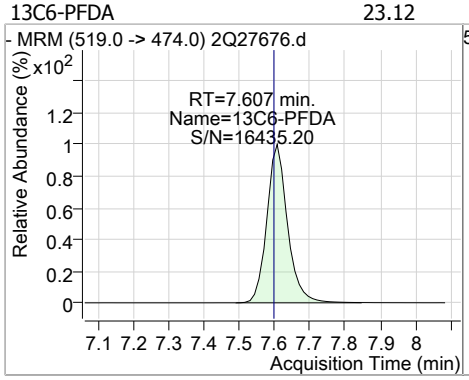


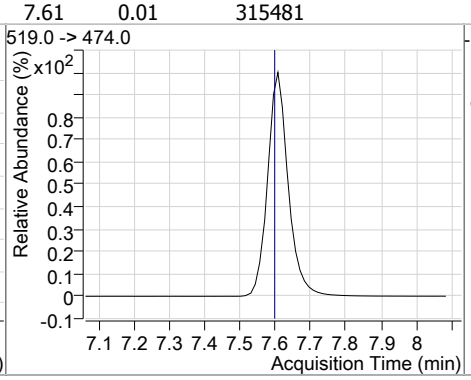


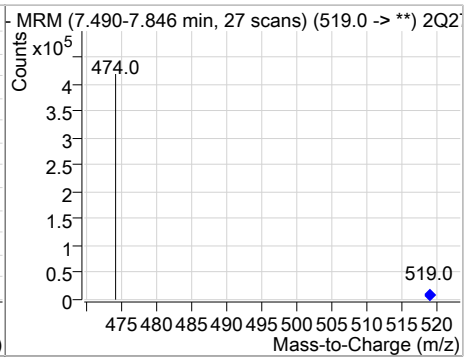


Perfluorinated Compounds by LC/MS/MS

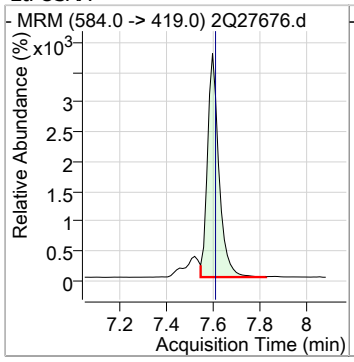
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	23.12	7.61	0.01	315481				

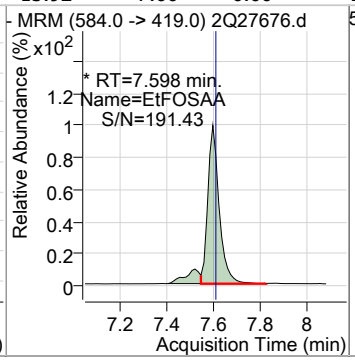


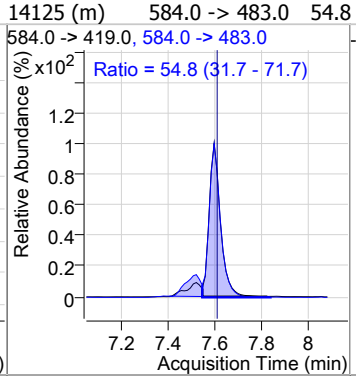


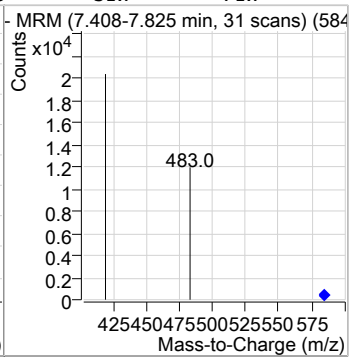


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	15.92	7.60	0.00	14125 (m)	584.0 -> 483.0	54.8	31.7	71.7

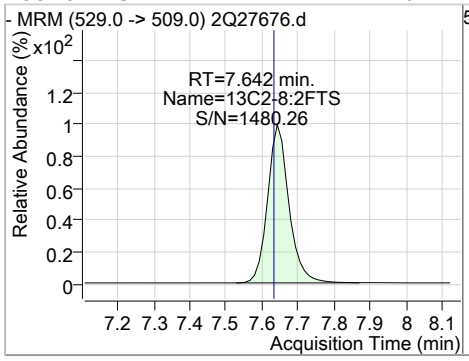


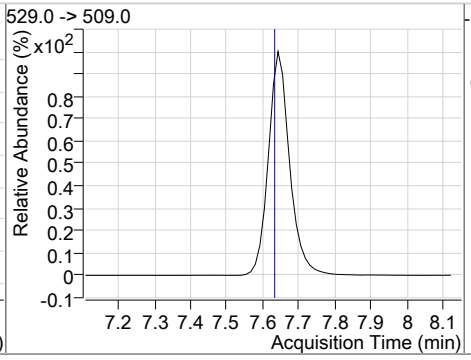


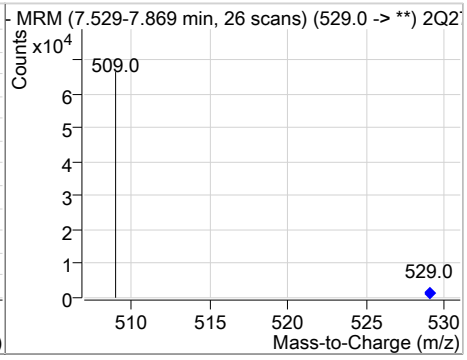




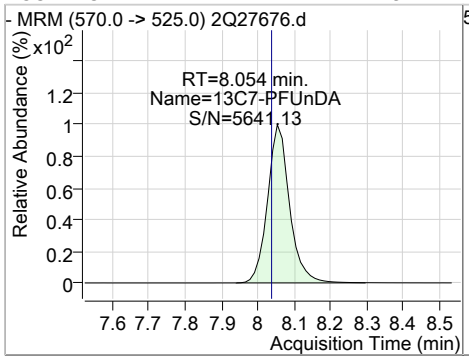
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	21.76	7.64	0.01	48247				

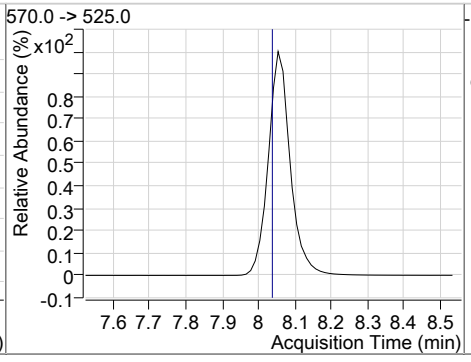


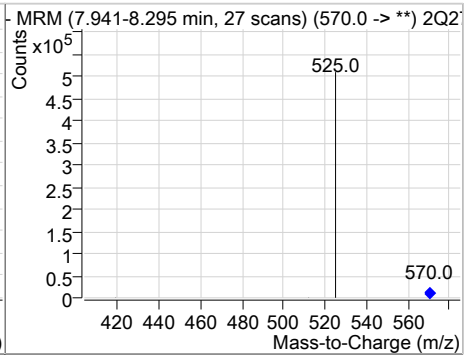




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	22.94	8.05	0.01	388238				

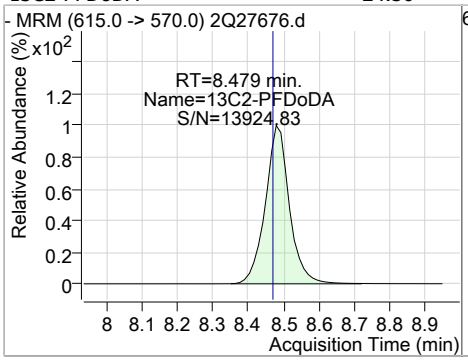


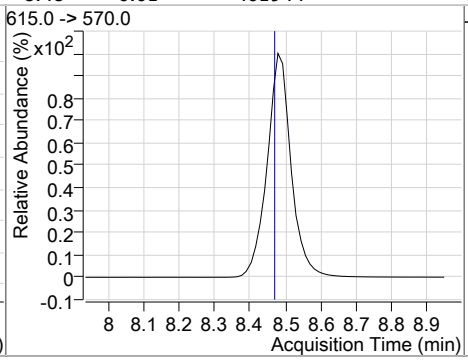


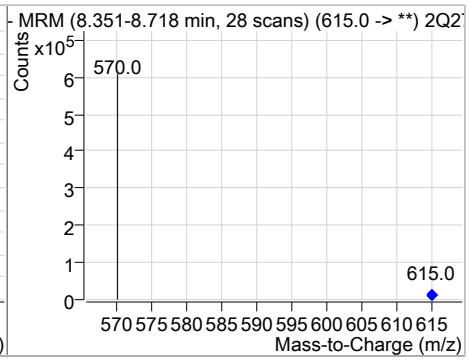


Perfluorinated Compounds by LC/MS/MS

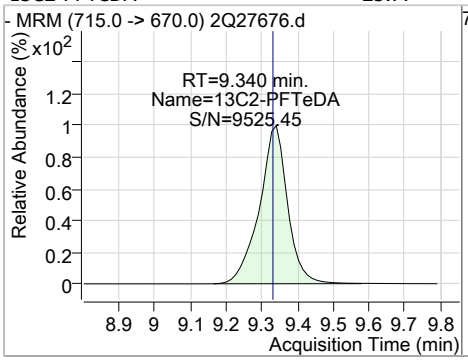
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	24.56	8.48	0.01	461944				

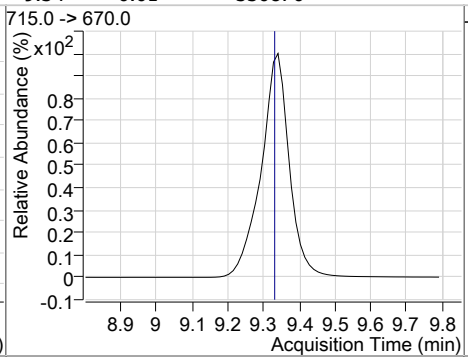


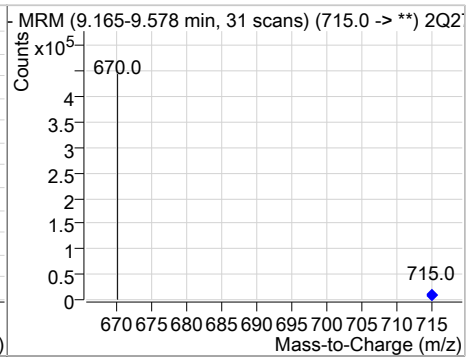




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	25.77	9.34	0.01	330870				







Manual Integration Approval Summary

Sample Number: S2Q442-ICV442
Lab FileID: 2Q27676.D
Injection Time: 03/18/19 11:06
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 07:47 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.45	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak
MeFOSAA	2355-31-9		7.46	Split peak
EtFOSAA	2991-50-6		7.60	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27677.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 11:22:29 AM
Sample Name : ICV442-20
Vial : Vial 11
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

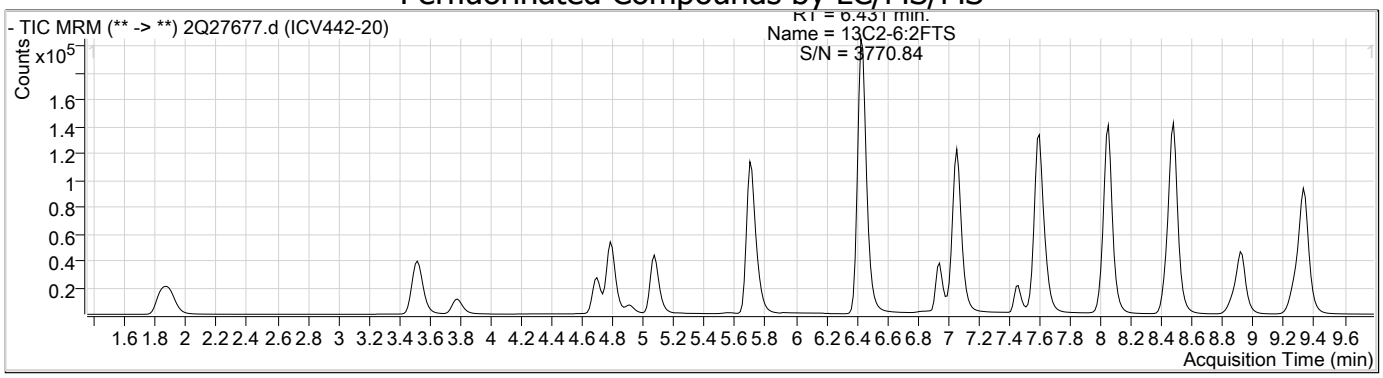
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	322303	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	50879	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	135367	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	115582	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	166827	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	239018	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	239526	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	245855	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	318355	20.00	µg/L	0.000
M7-PFUnDA	8.054	570.0 -> 525.0	400831	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	446777	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	313655	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	91330	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	20473	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	22654	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	29067	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	67318	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	73289	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	51108	20.00	µg/L	0.013
M3-MeFOSAA	7.447	573.0 -> 419.0	44701	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	179633	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	67315	22.64	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.2%		
13C2-6:2FTS	6.431	429.0 -> 409.0	73233	22.82	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.1%		
13C2-8:2FTS	7.642	529.0 -> 509.0	51075	23.03	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.2%		
13C2-PFDoDA	8.479	615.0 -> 570.0	446552	23.74	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.7%		
13C2-PFTeDA	9.327	715.0 -> 670.0	312474	24.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 121.7%		
13C3-PFBS	3.780	302.0 -> 99.0	20391	22.36	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.8%		
13C3-PFHxS	5.748	402.0 -> 99.0	22692	22.26	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.3%		
13C4-PFBA	1.865	217.0 -> 172.0	134660	22.46	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.3%		
13C4-PFHpA	5.705	367.0 -> 322.0	238651	23.07	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.4%		
13C5-PFHxA	4.789	318.0 -> 273.0	166509	22.92	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.6%		
13C5-PFPeA	3.524	268.0 -> 223.0	115590	22.74	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.7%		
13C6-PFDA	7.594	519.0 -> 474.0	318208	23.32	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

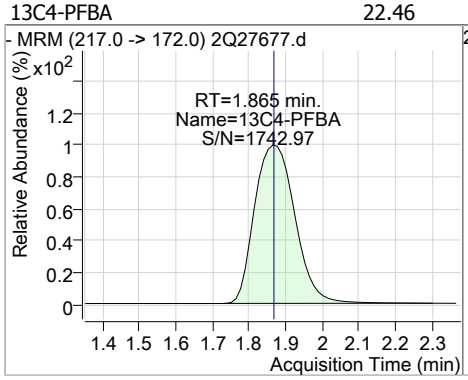
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.6%		
13C7-PFUnDA	8.054	570.0 -> 525.0	401054	23.70 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.5%		
13C8-FOSA	6.944	506.0 -> 78.0	91366	22.53 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.7%		
13C8-PFOA	6.434	421.0 -> 376.0	242186	23.22 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.1%		
13C8-PFOS	7.045	507.0 -> 99.0	29006	22.25 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.3%		
13C9-PFNA	7.065	472.0 -> 427.0	245497	23.19 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.9%		
d3-MeFOSAA	7.447	573.0 -> 419.0	44737	23.34 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.7%		
M2-PFOA	6.435	415.0 -> 370.0	322686	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.048	503.0 -> 80.0	50954	20.02 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	5.081	287.0 -> 169.0	179633	112.34 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 112.3%		
Target Compounds						**QValue**
4:2FTS	4.699	327.0 -> 307.0	32810	17.69 µg/L		98
6:2FTS	6.432	427.0 -> 407.0	32718	18.15 µg/L		99
8:2FTS	7.643	527.0 -> 507.0	23784	18.61 µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	17470	18.37 µg/L		97
FOSA	6.947	498.0 -> 78.0	40441	19.23 µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	21751	19.08 µg/L		100
PFBA	1.873	213.0 -> 169.0	24878	18.61 µg/L		100
PFBS	3.783	299.0 -> 80.0	25818	15.88 µg/L		99
PFDA	7.595	513.0 -> 469.0	121190	17.49 µg/L		100
PFDoDA	8.480	613.0 -> 569.0	195012	19.61 µg/L		100
PFDS	8.014	599.0 -> 80.0	9657	18.04 µg/L		98
PFHpA	5.708	363.0 -> 319.0	201146	19.52 µg/L		100
PFHpS	6.442	449.0 -> 80.0	20329	18.49 µg/L		99
PFHxA	4.791	313.0 -> 269.0	48079	16.74 µg/L		99
PFHxS	5.751	399.0 -> 80.0	20467	16.34 µg/L	m	99
PFNA	7.066	463.0 -> 419.0	142209	17.44 µg/L		99
PFNS	7.565	549.0 -> 80.0	18460	18.53 µg/L		98
PFOA	6.437	413.0 -> 369.0	121734	18.82 µg/L		98
PFOS	7.049	499.0 -> 80.0	26453	18.74 µg/L	m	85
PFPeA	3.528	263.0 -> 219.0	89783	17.95 µg/L		100
PFPeS	4.908	349.0 -> 80.0	16405	15.77 µg/L		95
PFTeDA	9.332	713.0 -> 669.0	187840	17.12 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	228315	19.99 µg/L		100
PFUnDA	8.056	563.0 -> 519.0	158333	19.15 µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.		
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.		
ADONA	-	377.0 -> 251.0	-	N.D.		
HFPO-DA	-	329.0 -> 169.0	-	N.D.		

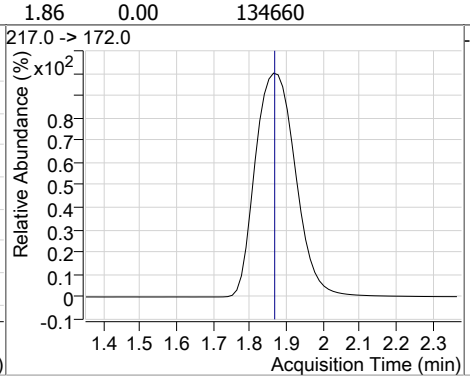
 # = Qualifier out of range, m = manually integrated, + = Area summed

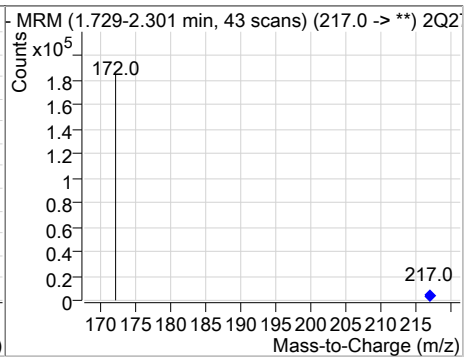
Perfluorinated Compounds by LC/MS/MS



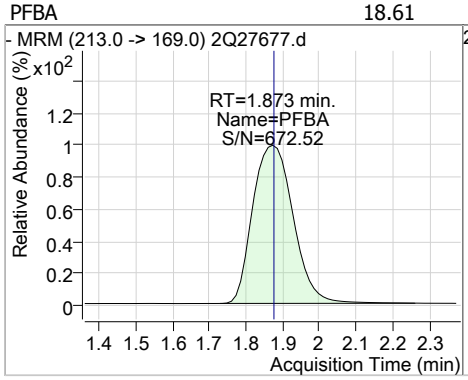
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	22.46	1.86	0.00	134660				

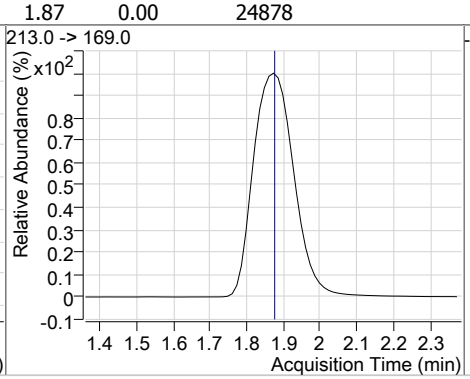


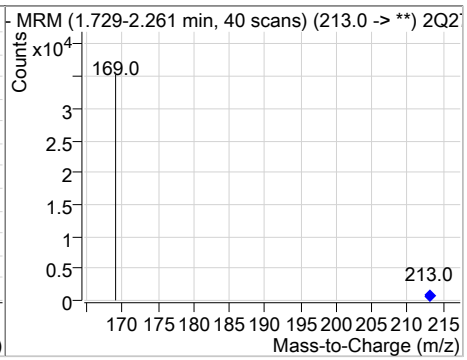




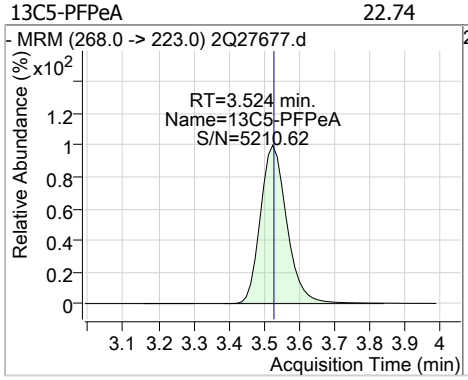
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	18.61	1.87	0.00	24878				

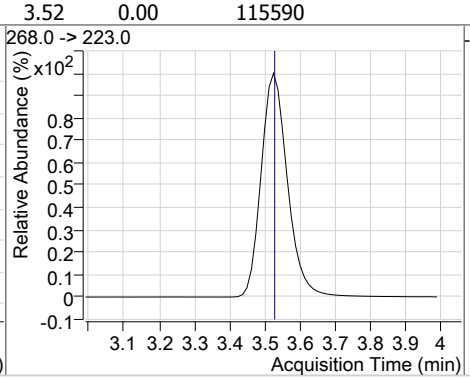


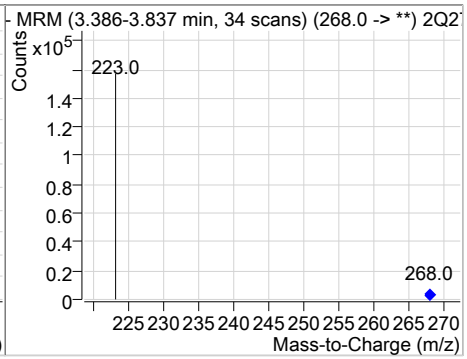




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	22.74	3.52	0.00	115590				

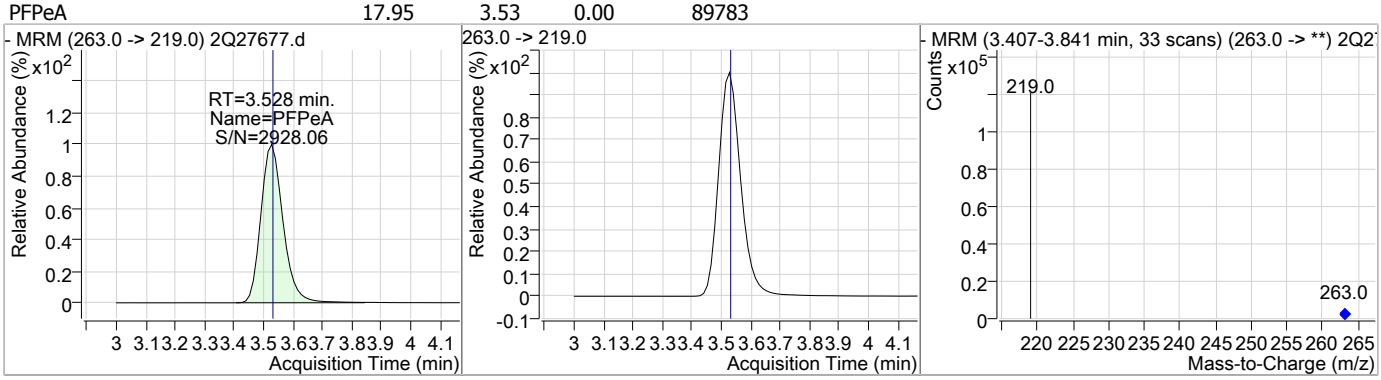




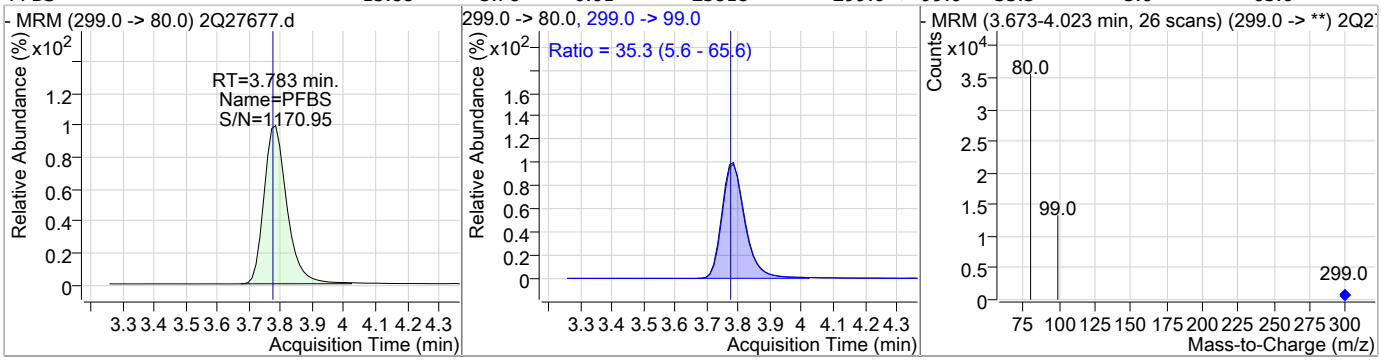


Perfluorinated Compounds by LC/MS/MS

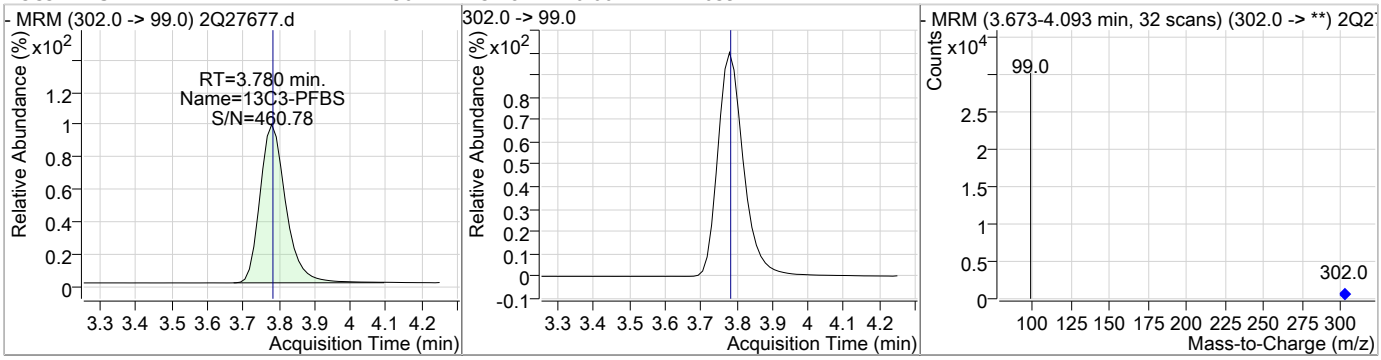
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.95	3.53	0.00	89783				



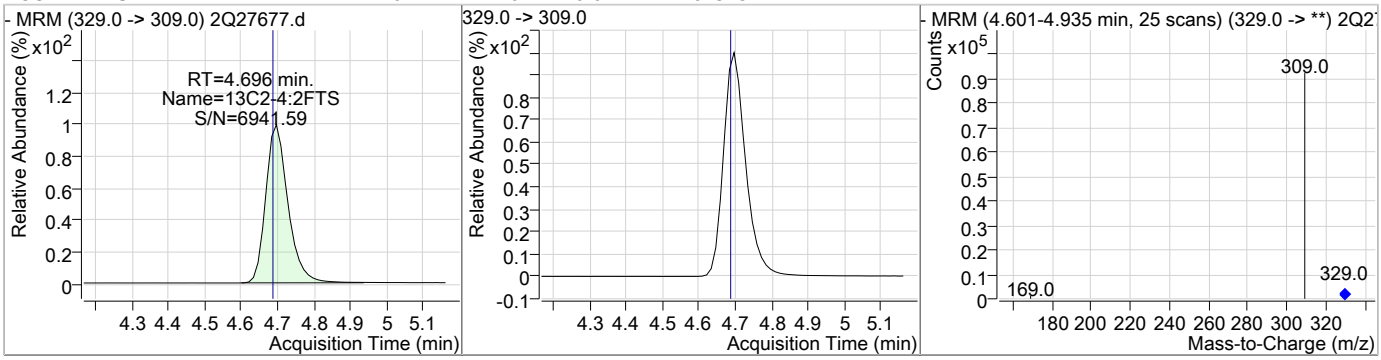
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	15.88	3.78	0.01	25818	299.0 -> 99.0	35.3	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	22.36	3.78	0.00	20391				

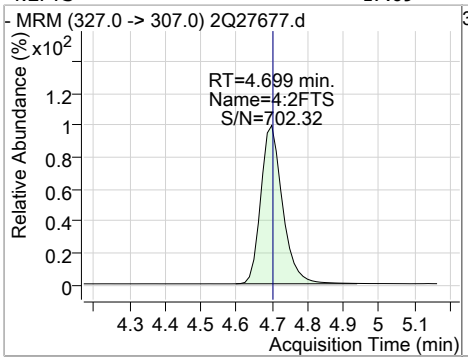


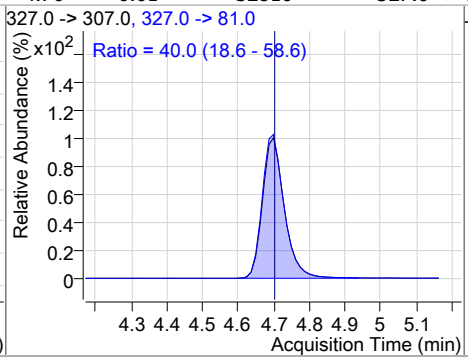
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	22.64	4.70	0.01	67315				

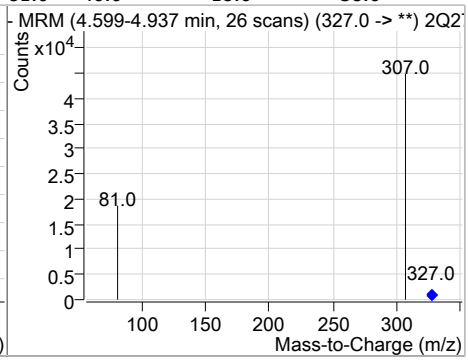


Perfluorinated Compounds by LC/MS/MS

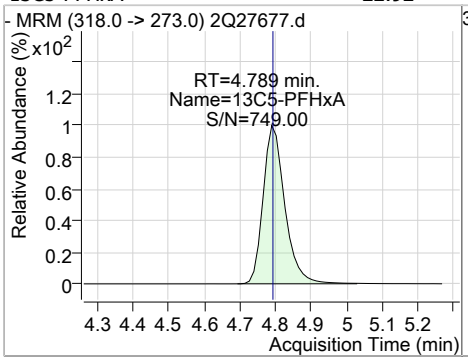
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	17.69	4.70	0.01	32810	327.0 -> 81.0	40.0	18.6	58.6

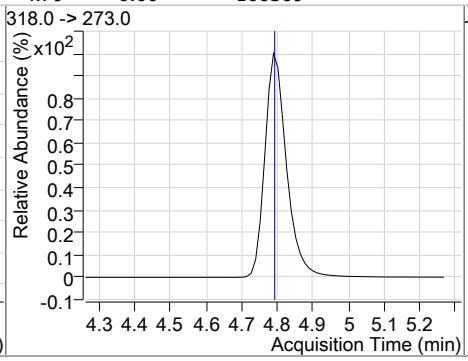


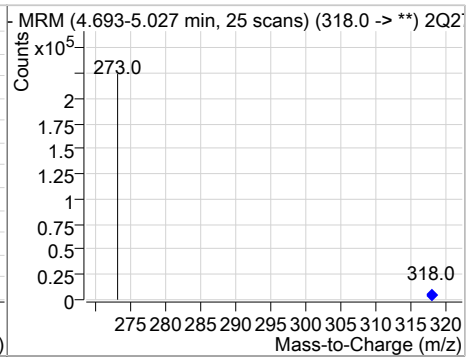




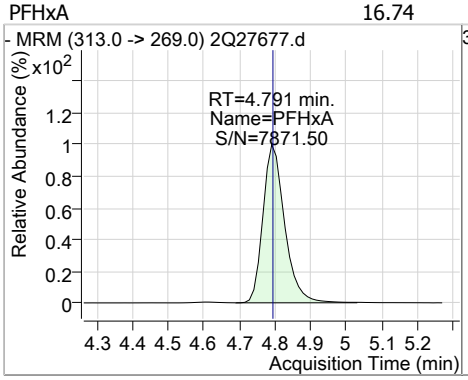
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	22.92	4.79	0.00	166509				

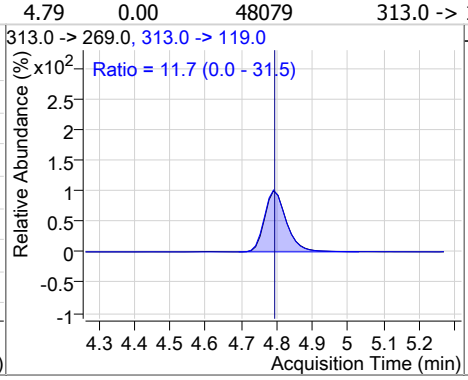


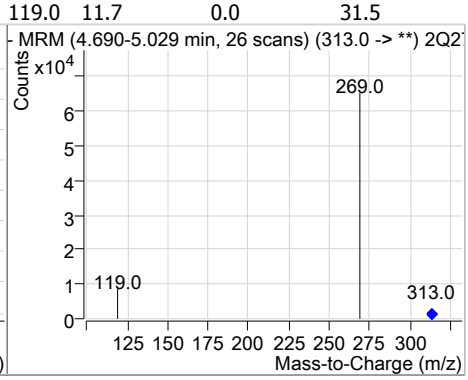




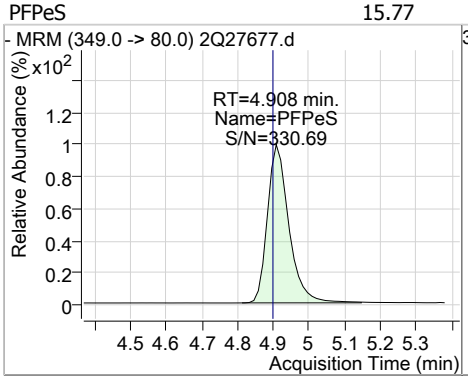
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	16.74	4.79	0.00	48079	313.0 -> 119.0	11.7	0.0	31.5

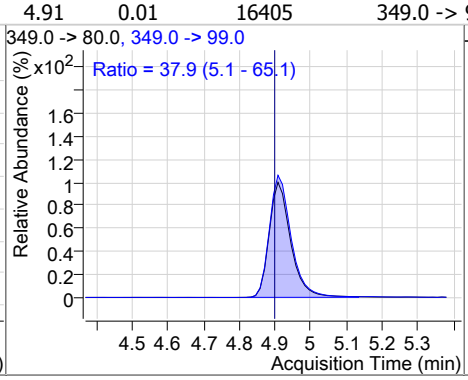


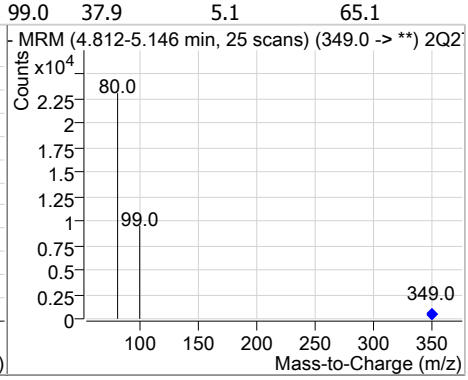




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	15.77	4.91	0.01	16405	349.0 -> 99.0	37.9	5.1	65.1

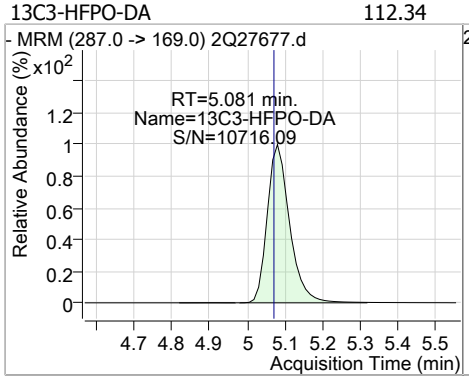


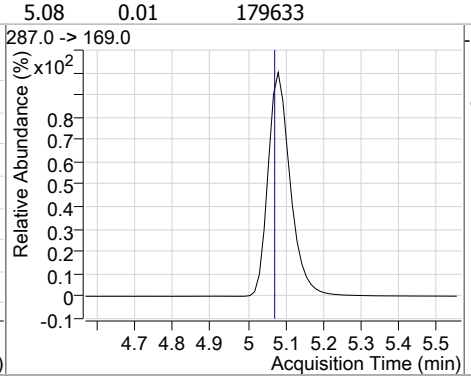


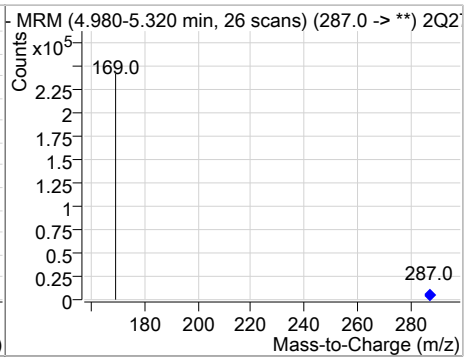


Perfluorinated Compounds by LC/MS/MS

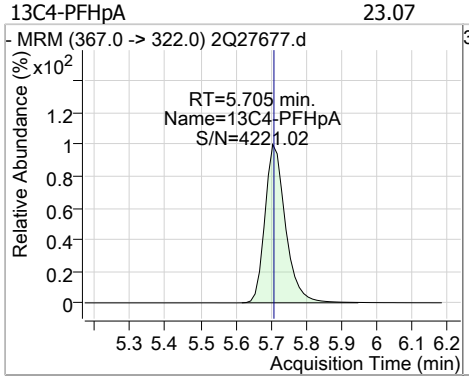
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	112.34	5.08	0.01	179633				

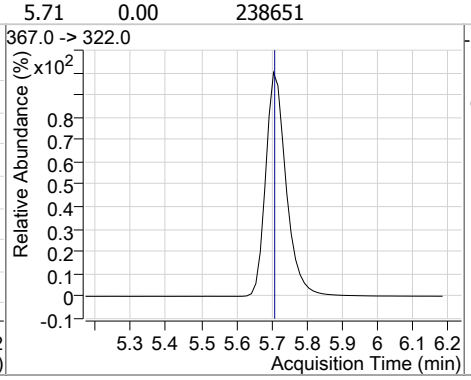


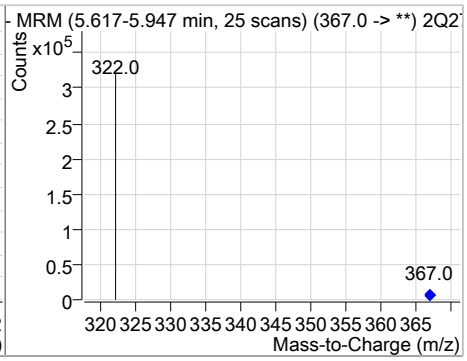




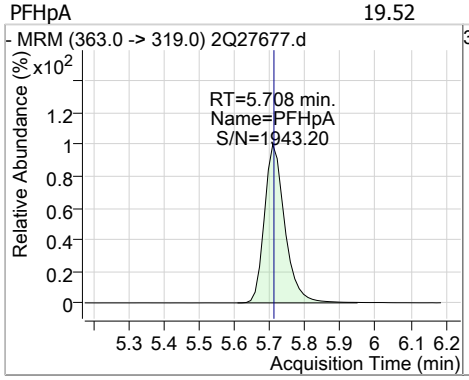
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	23.07	5.71	0.00	238651				

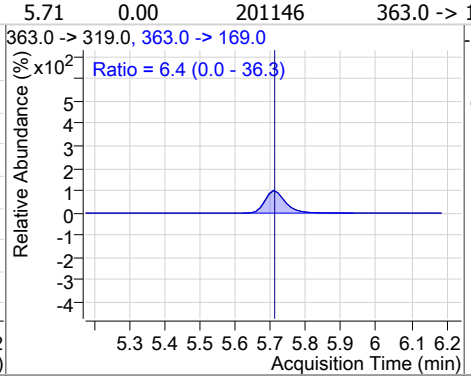


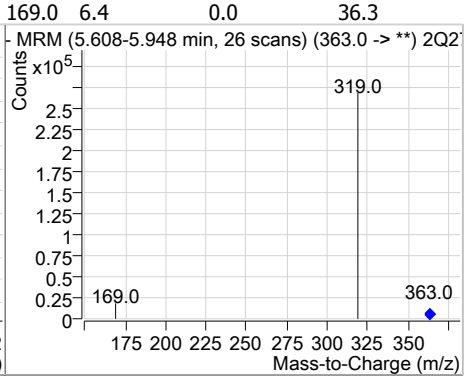




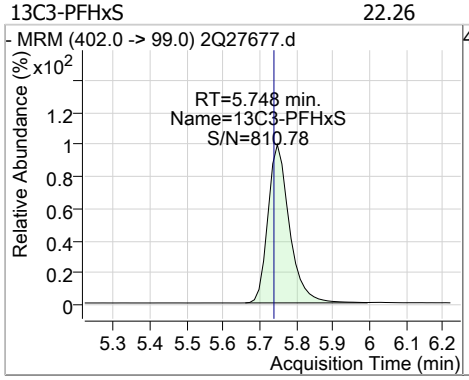
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.52	5.71	0.00	201146	363.0 -> 169.0	6.4	0.0	36.3

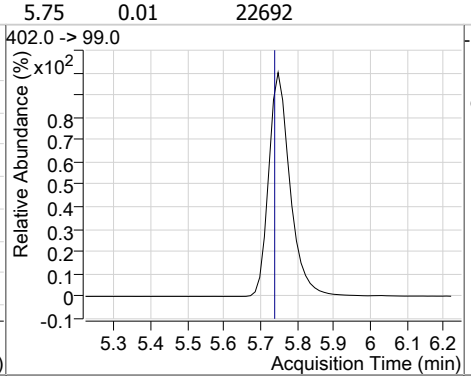


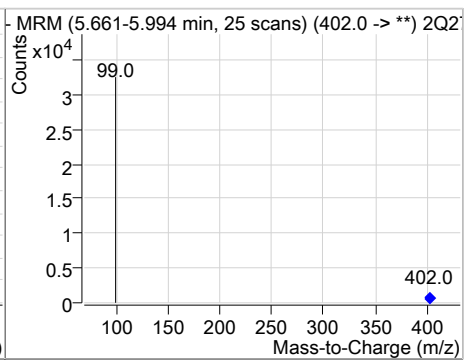




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	22.26	5.75	0.01	22692				

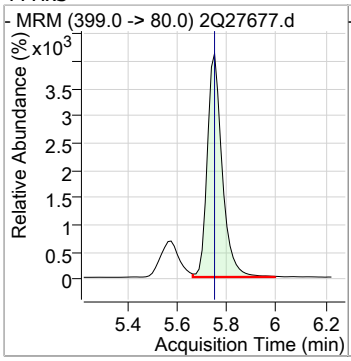


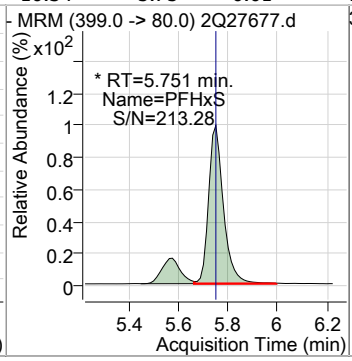


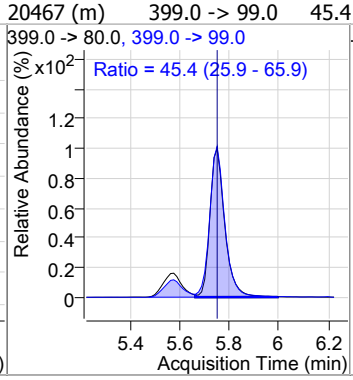


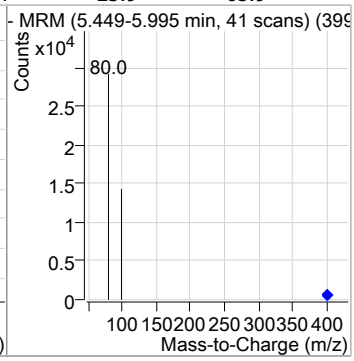
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	16.34	5.75	0.01	20467 (m)	399.0 -> 99.0	45.4	25.9	65.9

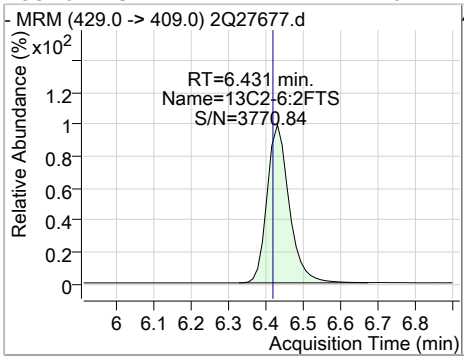


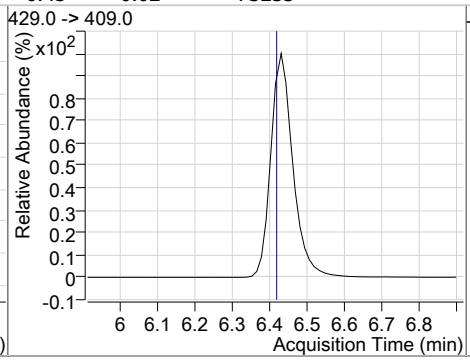


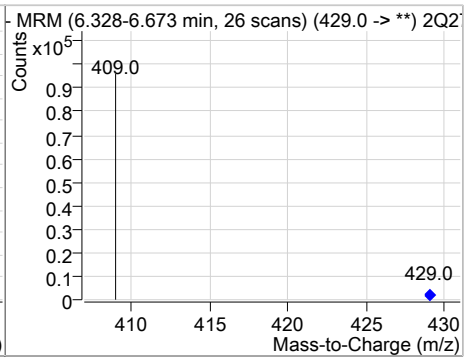




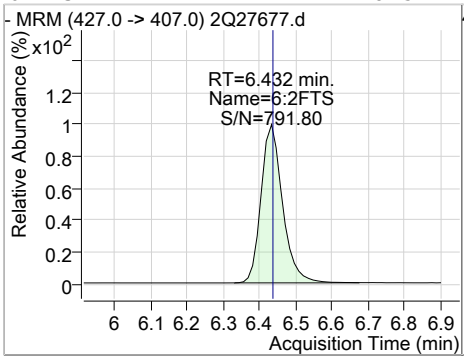
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	22.82	6.43	0.02	73233				

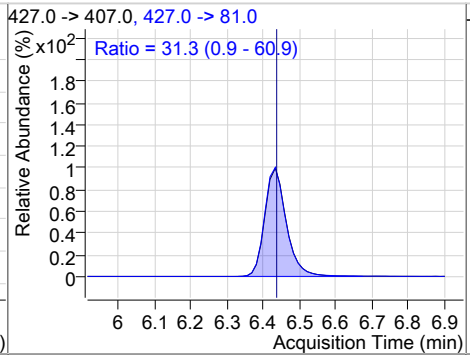


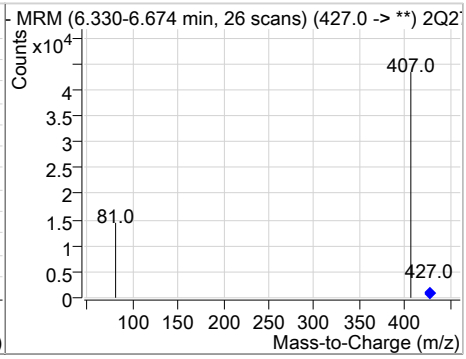




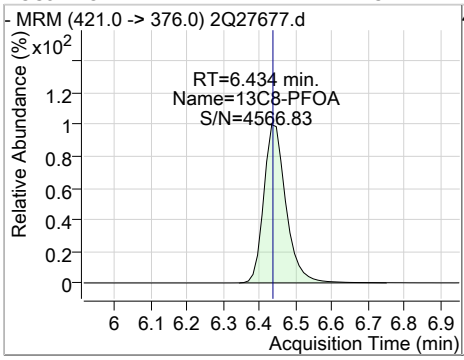
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	18.15	6.43	0.01	32718	427.0 -> 81.0	31.3	0.9	60.9

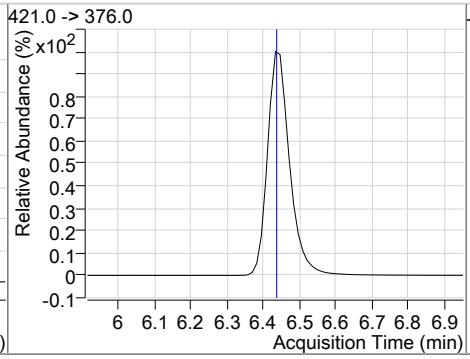


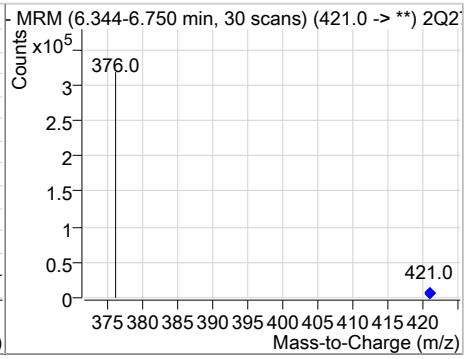




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	23.22	6.43	0.00	242186				

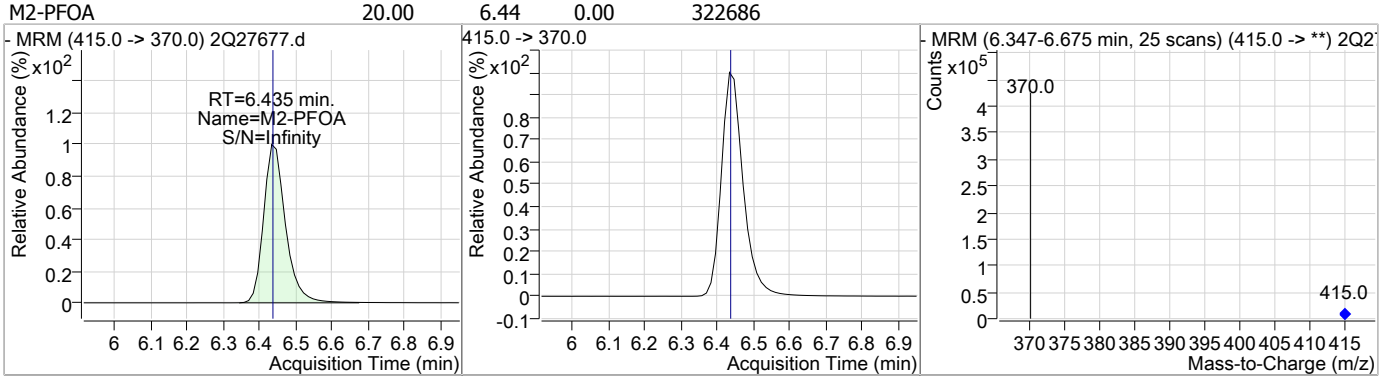




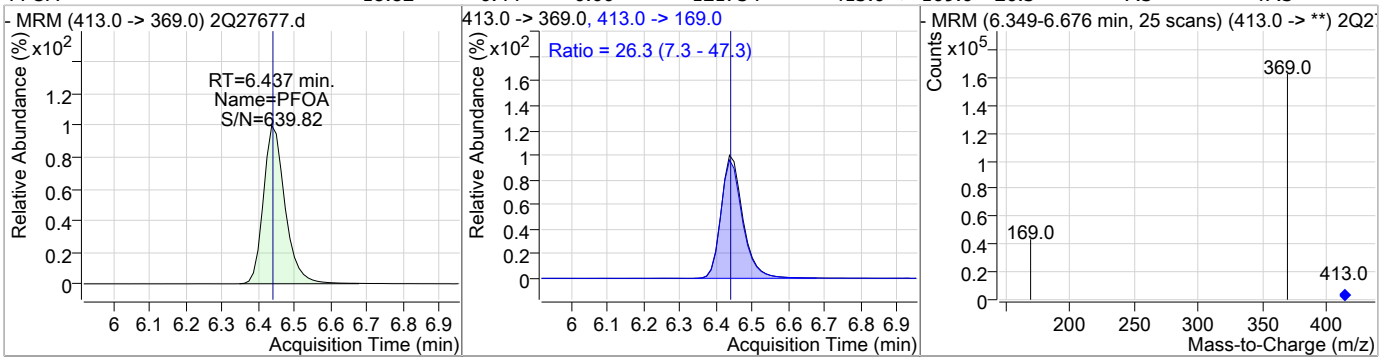


Perfluorinated Compounds by LC/MS/MS

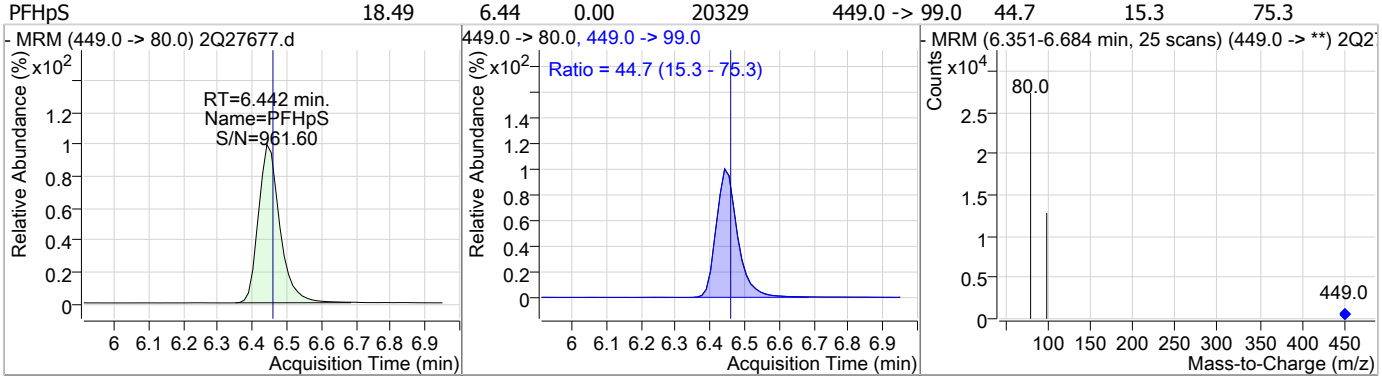
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	322686				



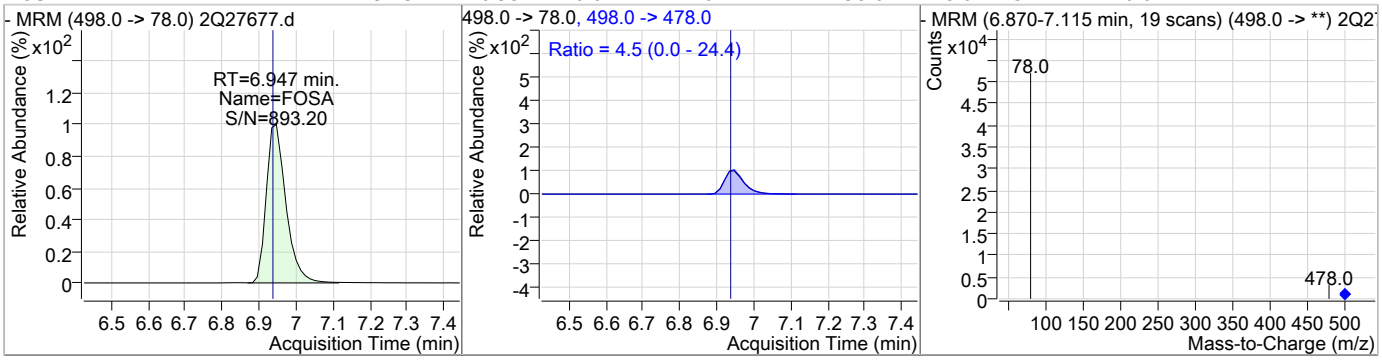
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	18.82	6.44	0.00	121734	413.0 -> 169.0	26.3	7.3	47.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	18.49	6.44	0.00	20329	449.0 -> 99.0	44.7	15.3	75.3

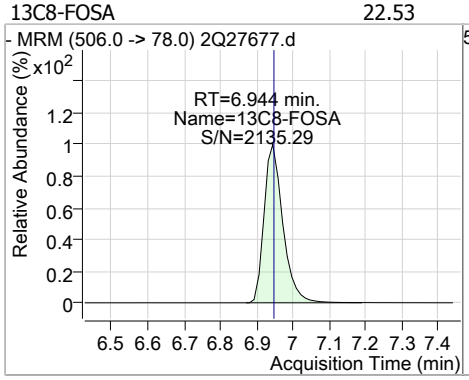


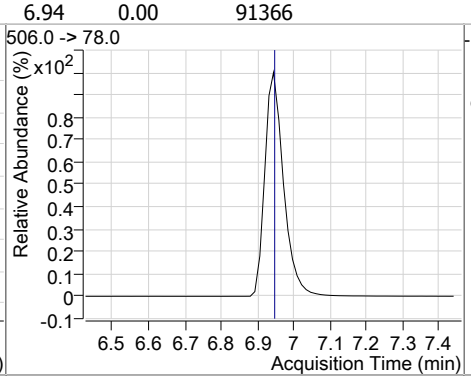
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.23	6.95	0.01	40441	498.0 -> 478.0	4.5	0.0	24.4

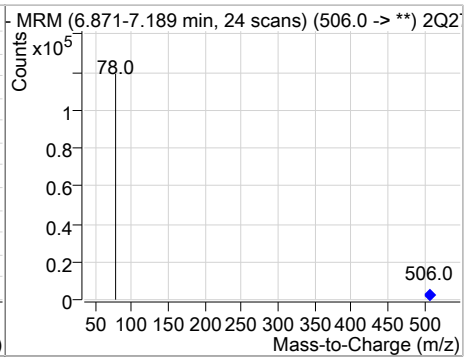


Perfluorinated Compounds by LC/MS/MS

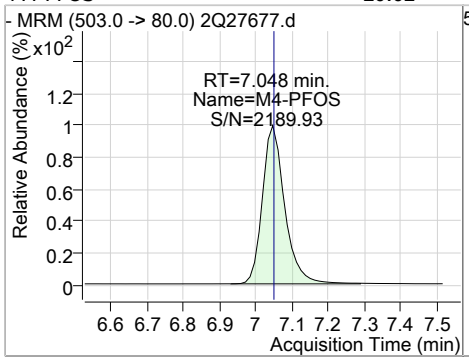
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.53	6.94	0.00	91366				

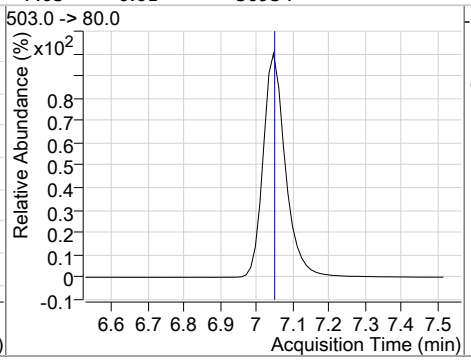


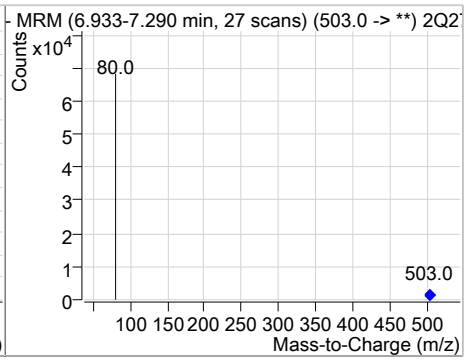




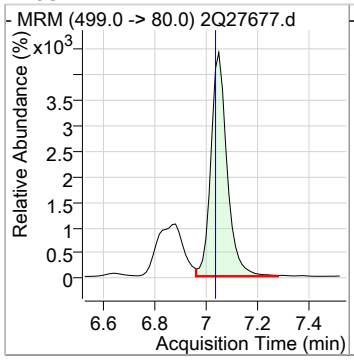
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.05	0.01	50954				

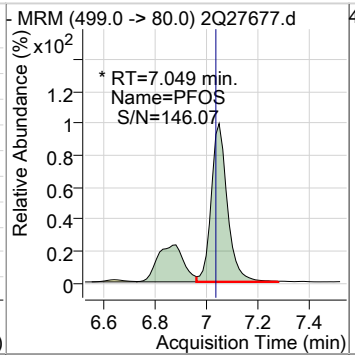


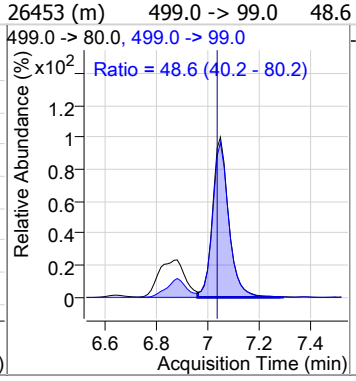


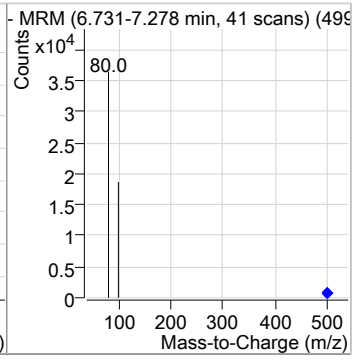


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.74	7.05	0.01	26453 (m)	499.0 -> 99.0	48.6	40.2	80.2

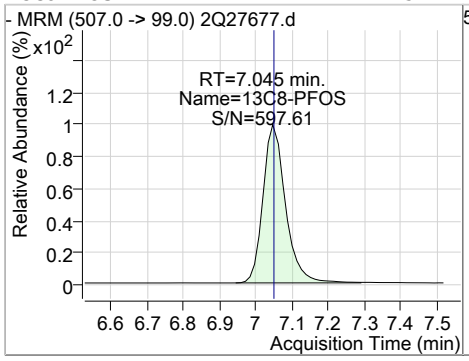


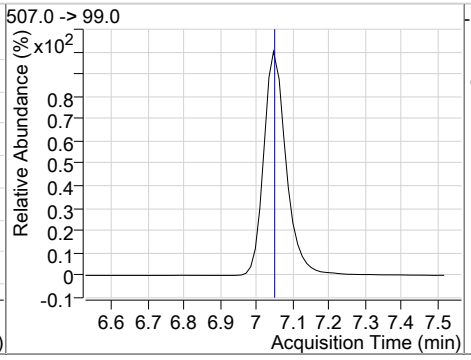


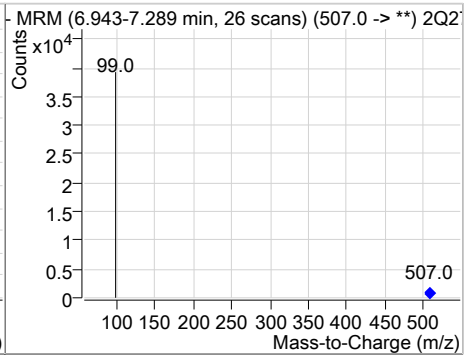




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	22.25	7.05	0.00	29006				

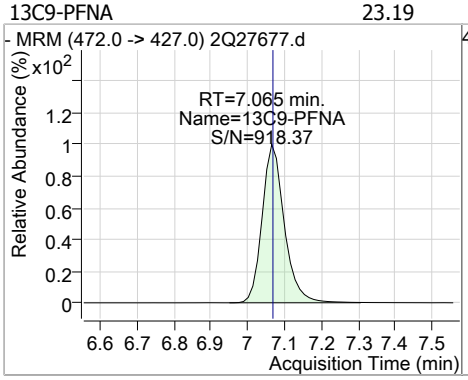


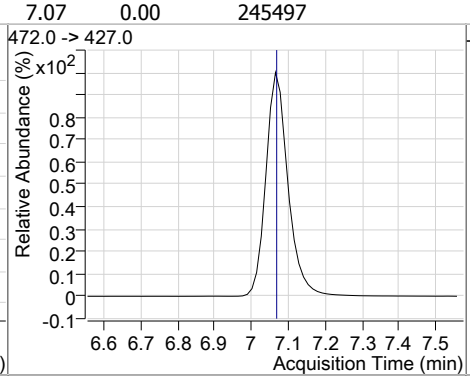


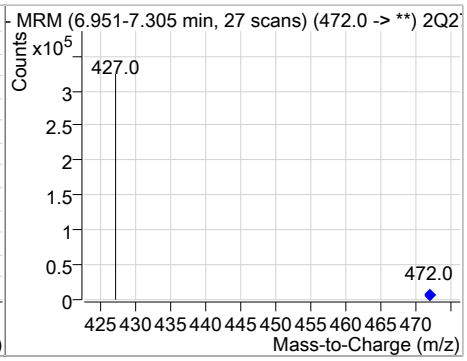


Perfluorinated Compounds by LC/MS/MS

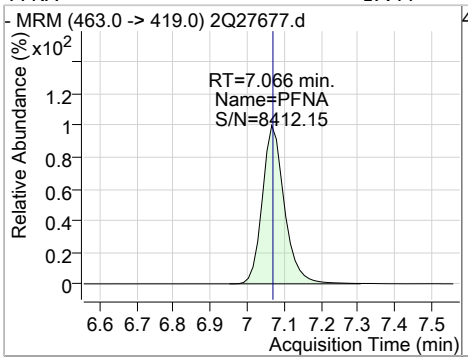
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	23.19	7.07	0.00	245497				

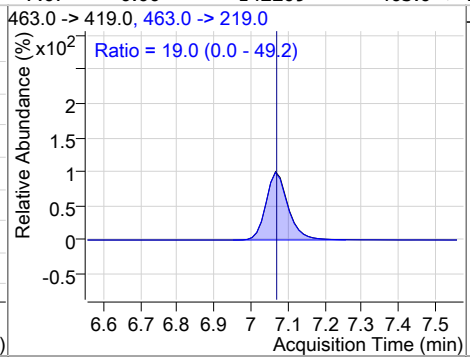


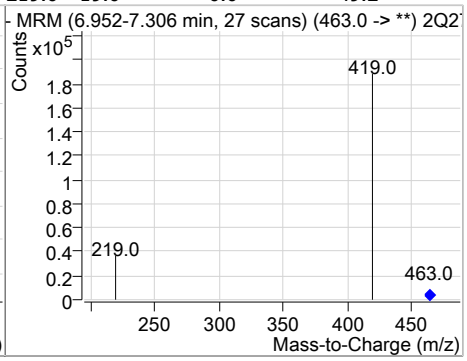




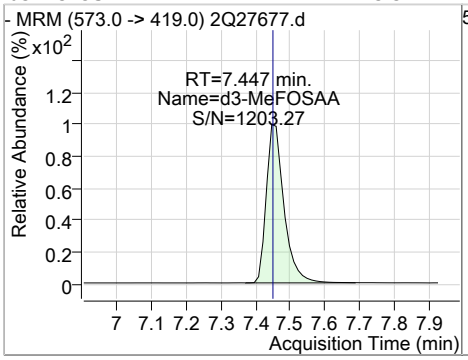
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.44	7.07	0.00	142209	463.0 -> 219.0	19.0	0.0	49.2

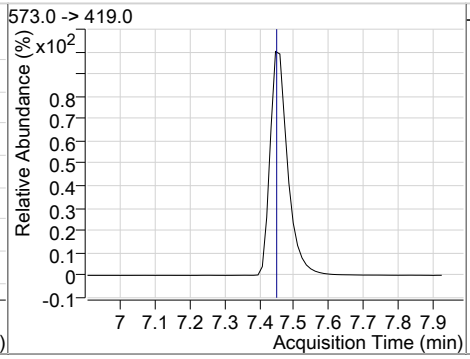


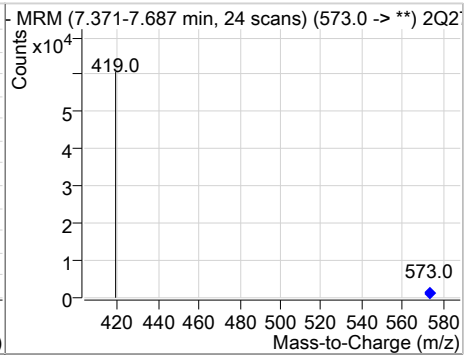




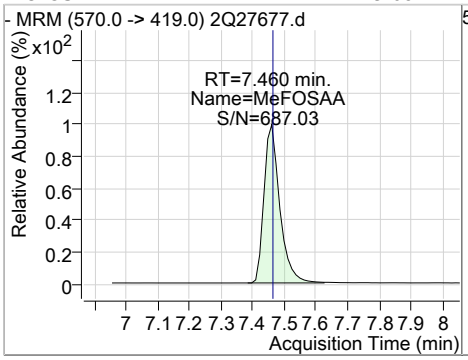
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	23.34	7.45	0.00	44737				

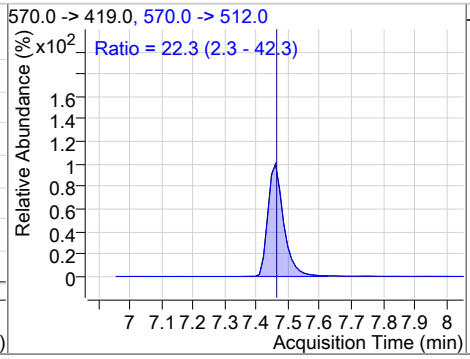


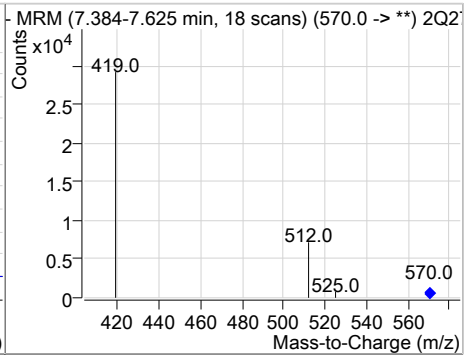




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.08	7.46	0.00	21751	570.0 -> 512.0	22.3	2.3	42.3

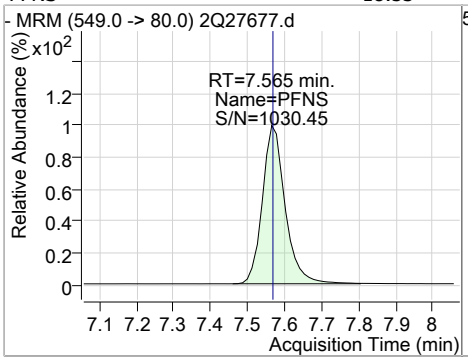


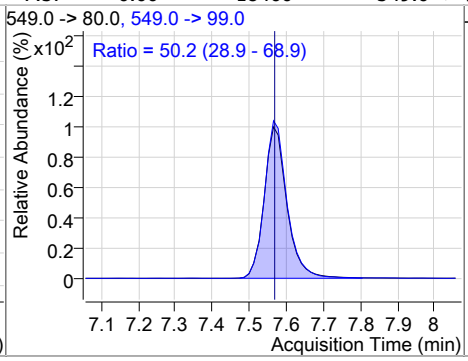


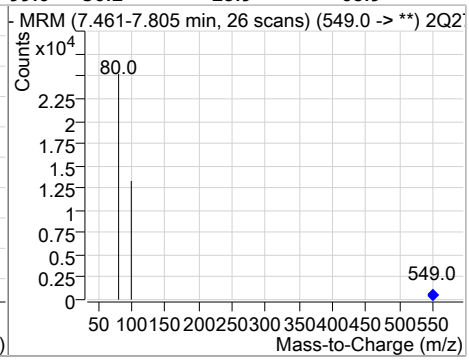


Perfluorinated Compounds by LC/MS/MS

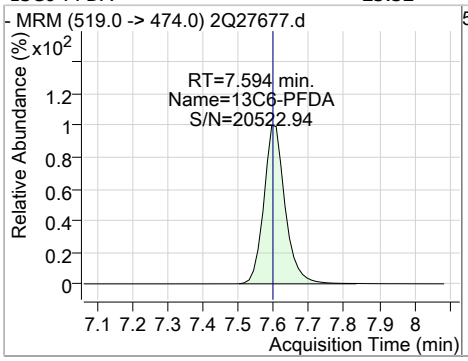
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.53	7.57	0.00	18460	549.0 -> 99.0	50.2	28.9	68.9

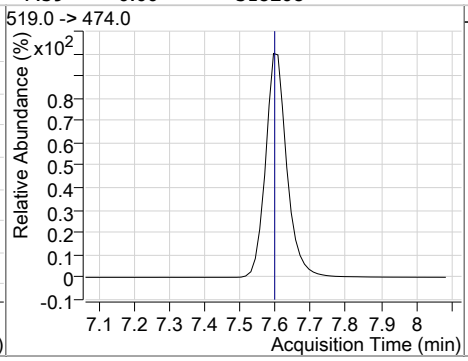


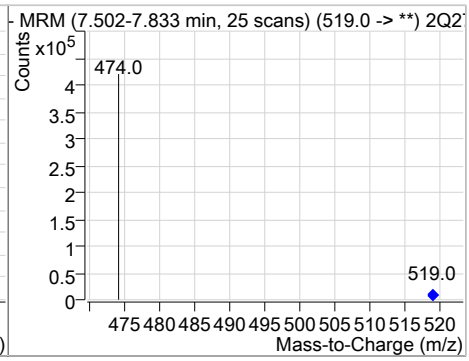




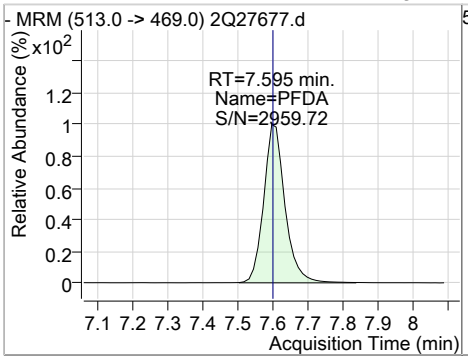
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	23.32	7.59	0.00	318208				

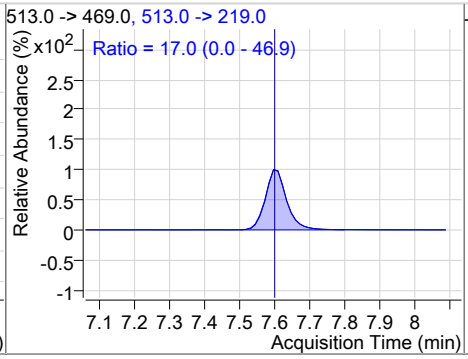


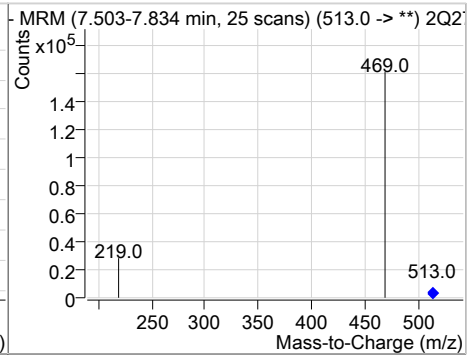




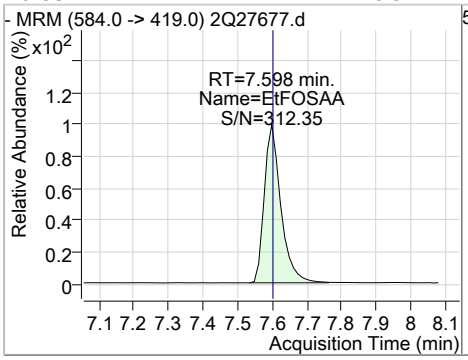
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.49	7.60	0.00	121190	513.0 -> 219.0	17.0	0.0	46.9

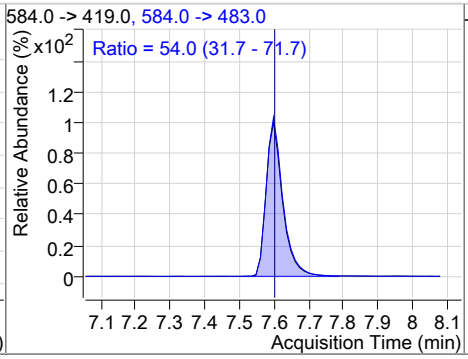


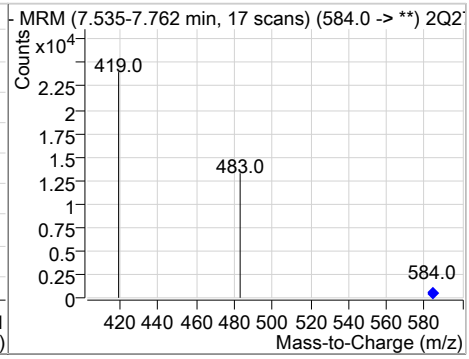




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.37	7.60	0.00	17470	584.0 -> 483.0	54.0	31.7	71.7

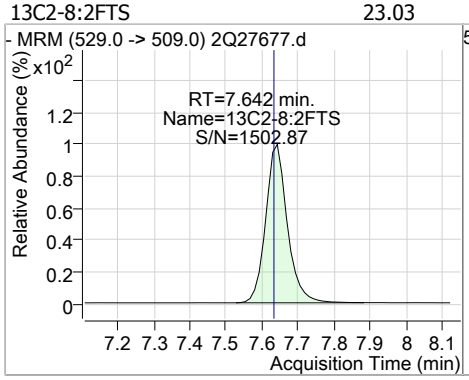


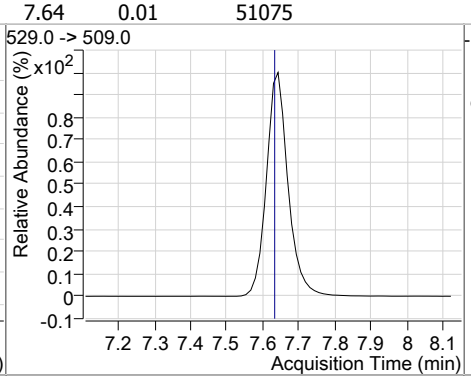


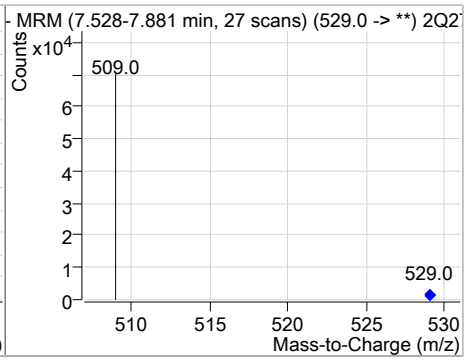


Perfluorinated Compounds by LC/MS/MS

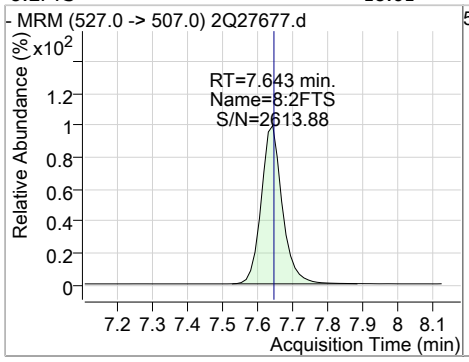
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.03	7.64	0.01	51075				

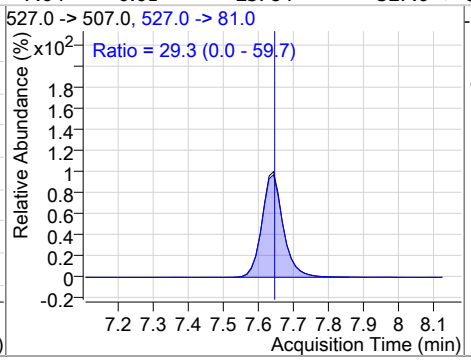


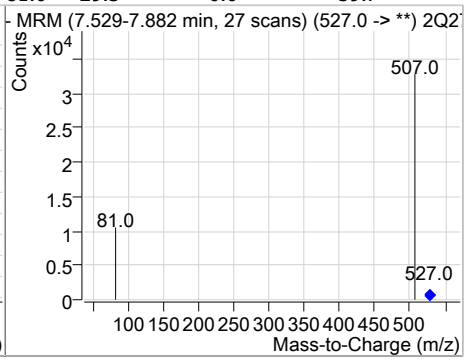




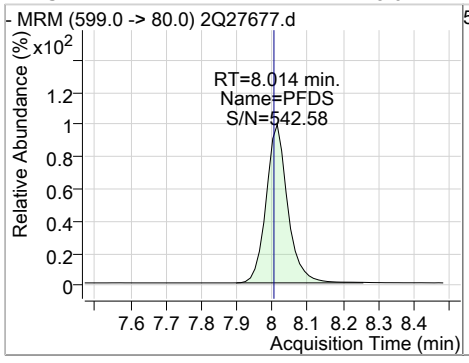
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	18.61	7.64	0.01	23784	527.0 -> 81.0	29.3	0.0	59.7

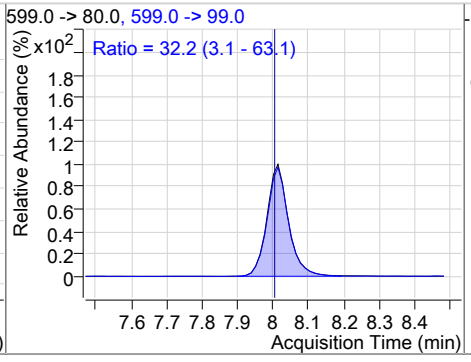


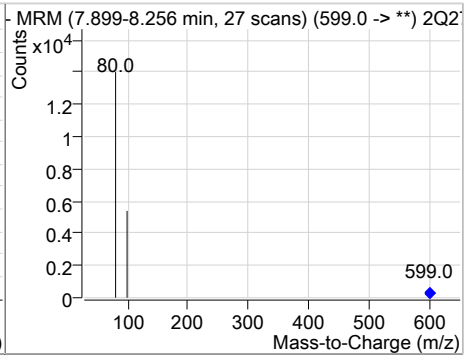




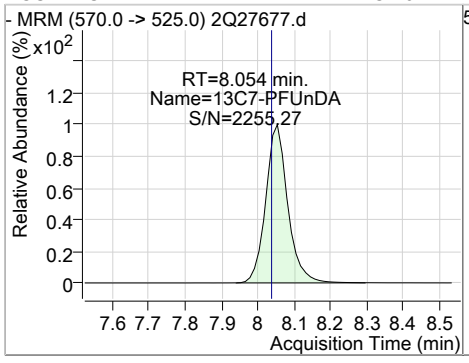
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	18.04	8.01	0.01	9657	599.0 -> 99.0	32.2	3.1	63.1

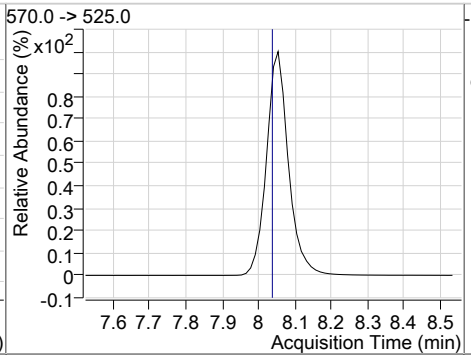


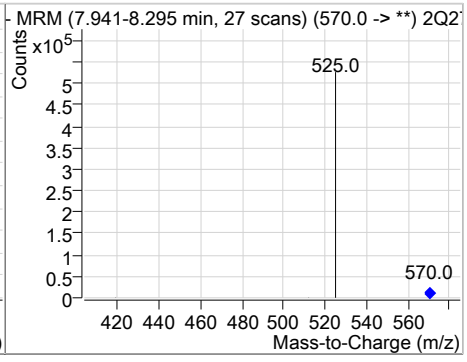




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	23.70	8.05	0.01	401054				

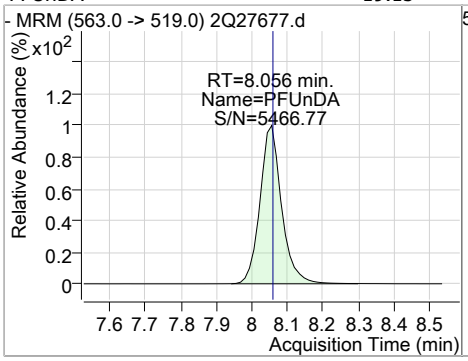


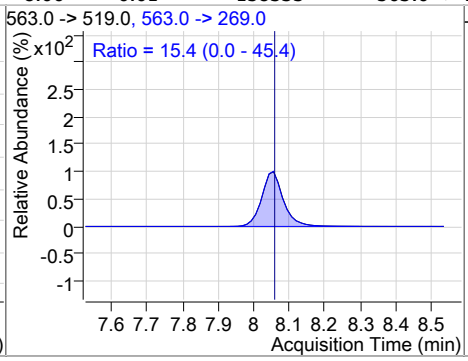


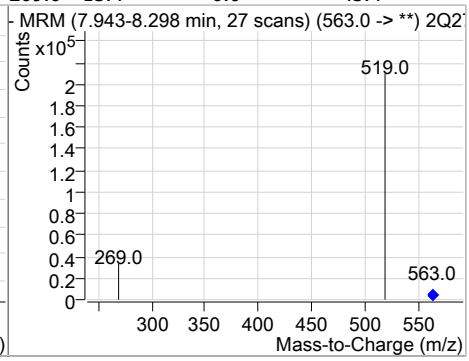


Perfluorinated Compounds by LC/MS/MS

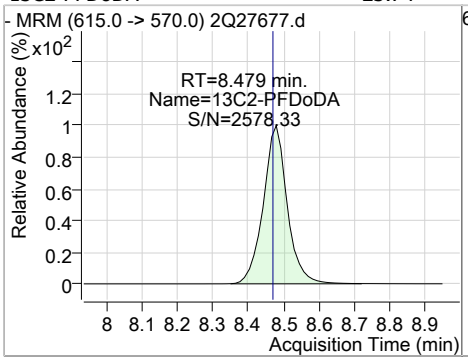
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.15	8.06	0.01	158333	563.0 -> 269.0	15.4	0.0	45.4

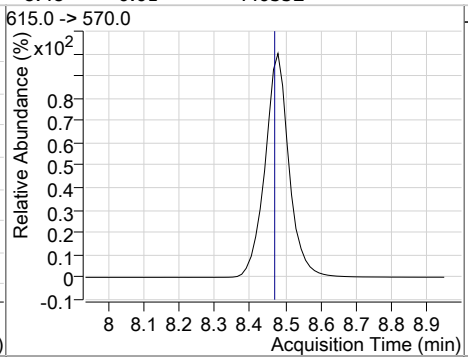


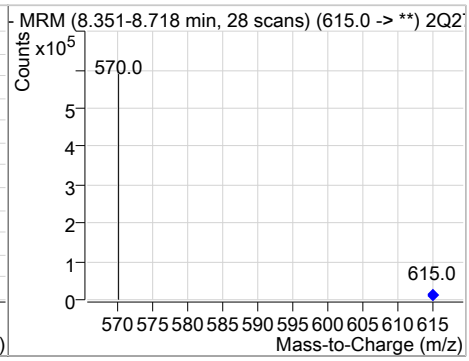




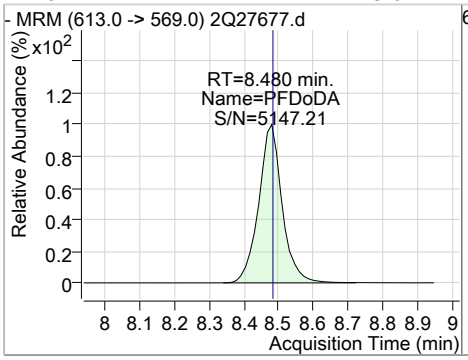
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	23.74	8.48	0.01	446552				

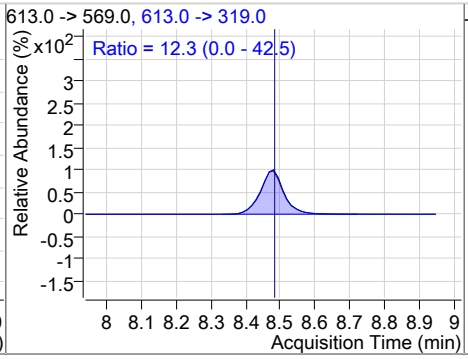


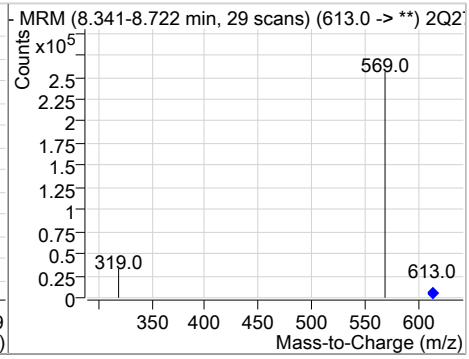




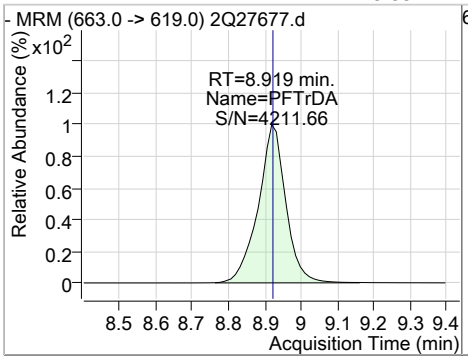
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.61	8.48	0.01	195012	613.0 -> 319.0	12.3	0.0	42.5

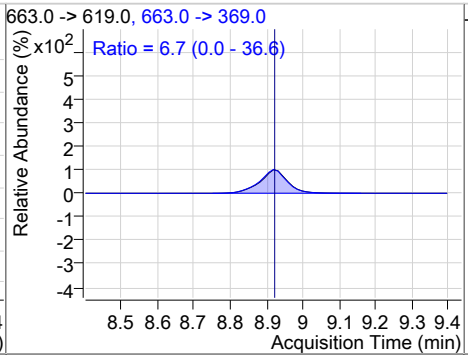


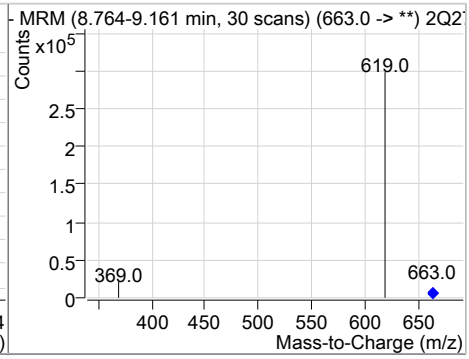




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.99	8.92	0.00	228315	663.0 -> 369.0	6.7	0.0	36.6

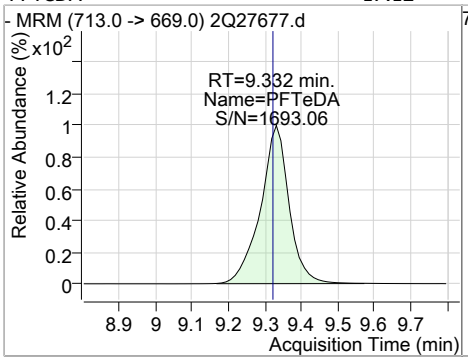


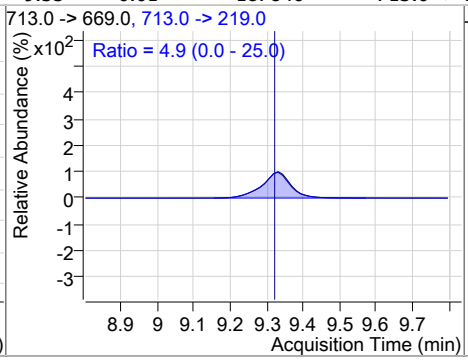


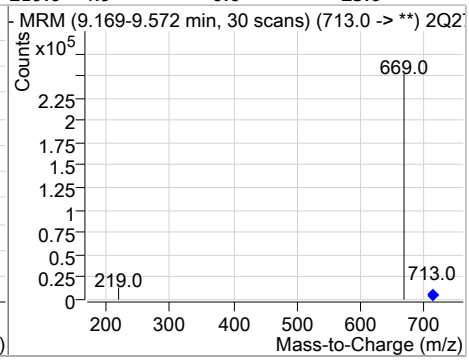


Perfluorinated Compounds by LC/MS/MS

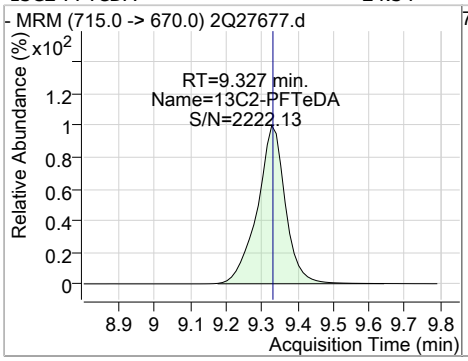
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.12	9.33	0.01	187840	713.0 -> 219.0	4.9	0.0	25.0

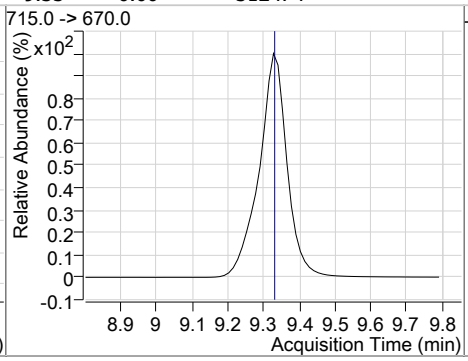


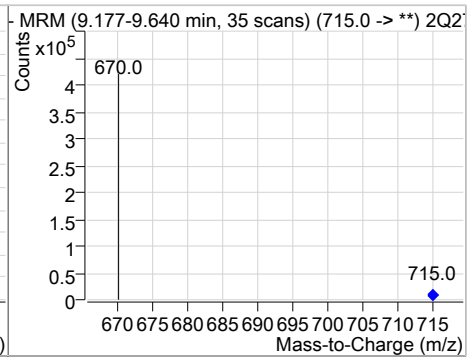




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	24.34	9.33	0.00	312474				







7.6.23

7

Manual Integration Approval Summary

Sample Number:	S2Q442-ICV442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27677.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 11:22	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27678.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 11:38:13 AM
Sample Name : ICV442-20
Vial : Vial 12
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

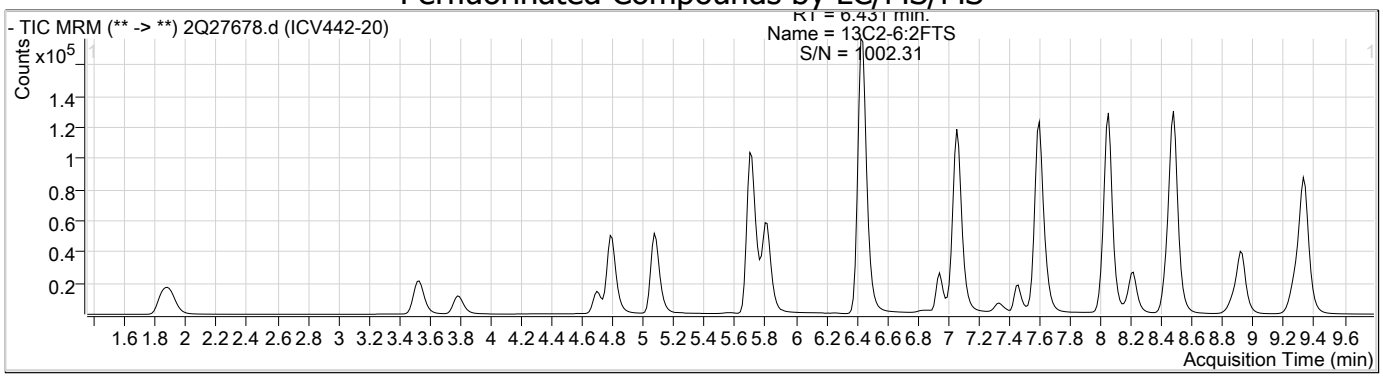
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	304518	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	46084	20.00	µg/L	0.013
M4-PFBA	1.877	217.0 -> 172.0	125794	20.00	µg/L	0.013
M5-PFPeA	3.537	268.0 -> 223.0	108189	20.00	µg/L	0.013
M5-PFHxA	4.789	318.0 -> 273.0	153924	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	223093	20.00	µg/L	0.000
M8-PFOA	6.446	421.0 -> 376.0	228128	20.00	µg/L	0.013
M9-PFNA	7.065	472.0 -> 427.0	230745	20.00	µg/L	0.000
M6-PFDA	7.607	519.0 -> 474.0	302980	20.00	µg/L	0.013
M7-PFUnDA	8.054	570.0 -> 525.0	371710	20.00	µg/L	0.013
M2-PFDoDA	8.479	615.0 -> 570.0	414098	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	284058	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	89366	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	18978	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	21149	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	27483	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	59546	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	65535	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	44967	20.00	µg/L	0.013
M3-MeFOSAA	7.447	573.0 -> 419.0	41018	20.00	µg/L	0.000
M3-HFPO-DA	5.081	287.0 -> 169.0	165189	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	59320	19.95	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C2-6:2FTS	6.431	429.0 -> 409.0	65468	20.40	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C2-8:2FTS	7.642	529.0 -> 509.0	44965	20.28	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C2-PFDoDA	8.479	615.0 -> 570.0	413878	22.00	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.0%		
13C2-PFTeDA	9.327	715.0 -> 670.0	283027	22.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%		
13C3-PFBS	3.780	302.0 -> 99.0	18881	20.71	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	21064	20.66	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C4-PFBA	1.877	217.0 -> 172.0	125238	20.89	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C4-PFHpA	5.705	367.0 -> 322.0	222914	21.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.8%		
13C5-PFHxA	4.789	318.0 -> 273.0	153540	21.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.7%		
13C5-PFPeA	3.537	268.0 -> 223.0	107689	21.18	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.9%		
13C6-PFDA	7.607	519.0 -> 474.0	302765	22.19	µg/L	0.013

Perfluorinated Compounds by LC/MS/MS

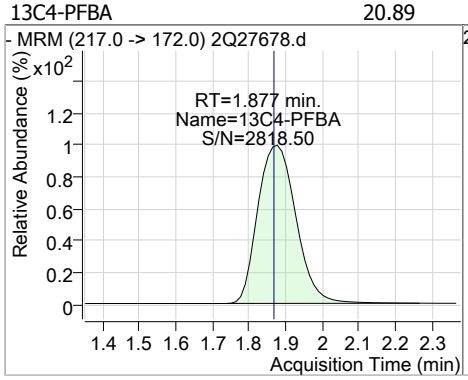
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.9%		
13C7-PFUnDA	8.054	570.0 -> 525.0	371395	21.95 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.7%		
13C8-FOSA	6.944	506.0 -> 78.0	89351	22.04 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%		
13C8-PFOA	6.446	421.0 -> 376.0	228072	21.86 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.3%		
13C8-PFOS	7.045	507.0 -> 99.0	27415	21.03 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C9-PFNA	7.065	472.0 -> 427.0	230591	21.78 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.9%		
d3-MeFOSAA	7.447	573.0 -> 419.0	41031	21.40 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.0%		
M2-PFOA	6.435	415.0 -> 370.0	304563	19.98 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
M4-PFOS	7.048	503.0 -> 80.0	46122	20.01 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.081	287.0 -> 169.0	165189	103.31 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.3%		
Target Compounds						QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.		
6:2FTS	-	427.0 -> 407.0	-	N.D.		
8:2FTS	-	527.0 -> 507.0	-	N.D.		
EtFOSAA	7.598	584.0 -> 419.0	15500	17.75 µg/L	m	94
FOSA	-	498.0 -> 78.0	-	N.D.		
MeFOSAA	7.460	570.0 -> 419.0	18529	17.72 µg/L	m	96
PFBA	-	213.0 -> 169.0	-	N.D.		
PFBS	3.783	299.0 -> 80.0	27998	18.58 µg/L		100
PFDA	7.608	513.0 -> 469.0	125078	18.97 µg/L		100
PFDoDA	8.480	613.0 -> 569.0	173345	18.81 µg/L		100
PFDS	-	599.0 -> 80.0	-	N.D.		
PFHpA	5.708	363.0 -> 319.0	181435	18.87 µg/L		100
PFHpS	-	449.0 -> 80.0	-	N.D.		
PFHxA	4.791	313.0 -> 269.0	49730	18.76 µg/L		99
PFHxS	5.751	399.0 -> 80.0	22370	19.13 µg/L	m	96
PFNA	7.066	463.0 -> 419.0	149654	19.56 µg/L		99
PFNS	-	549.0 -> 80.0	-	N.D.		
PFOA	6.437	413.0 -> 369.0	117997	19.15 µg/L		97
PFOS	7.049	499.0 -> 80.0	24372	18.26 µg/L	m	81
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.0 -> 80.0	-	N.D.		
PFTeDA	9.332	713.0 -> 669.0	187748	18.90 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	197588	19.10 µg/L		100
PFUnDA	8.056	563.0 -> 519.0	146984	19.17 µg/L		99
11Cl-PF3OUdS	8.212	631.0 -> 451.0	112967	19.91 µg/L		100
9Cl-PF3ONS	7.335	531.0 -> 351.0	22440	19.68 µg/L		100
ADONA	5.817	377.0 -> 251.0	219218	19.41 µg/L		100
HFPO-DA	5.085	329.0 -> 169.0	39194	19.97 µg/L		100

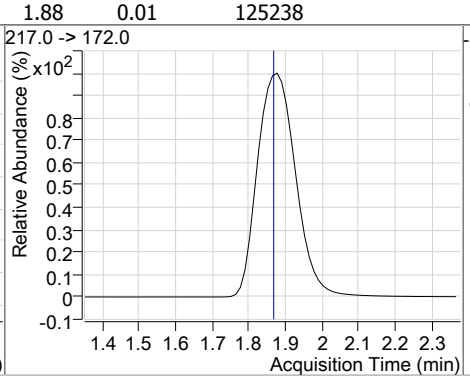
 # = Qualifier out of range, m = manually integrated, + = Area summed

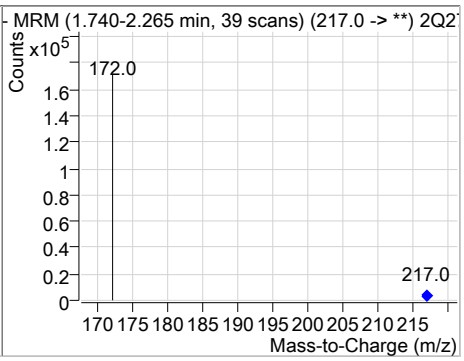
Perfluorinated Compounds by LC/MS/MS



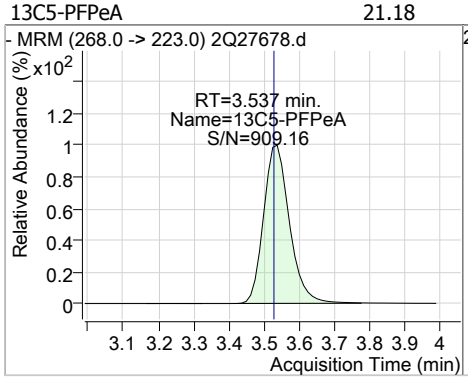
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.89	1.88	0.01	125238				

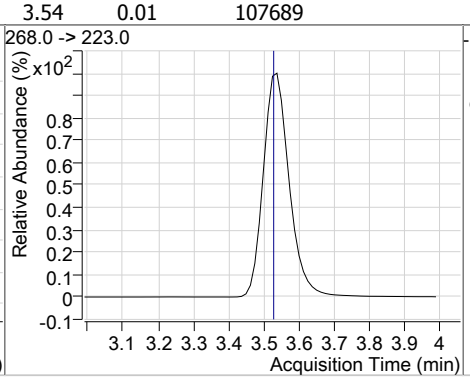


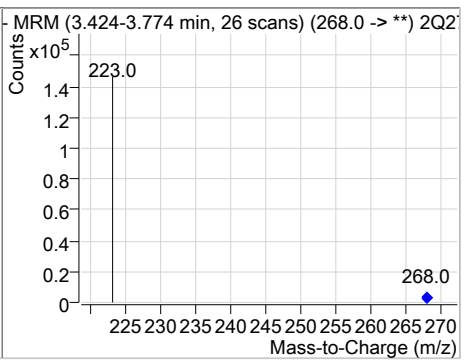




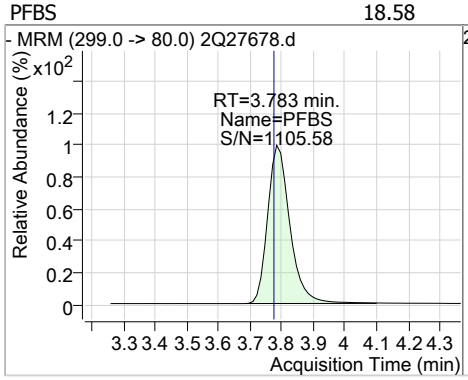
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.18	3.54	0.01	107689				

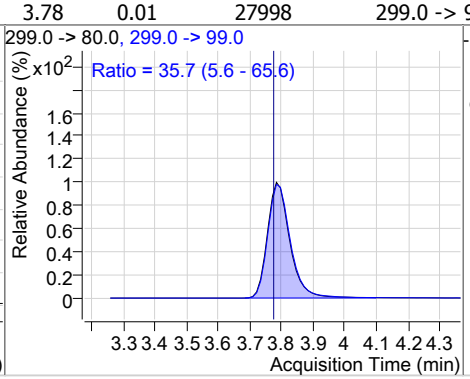


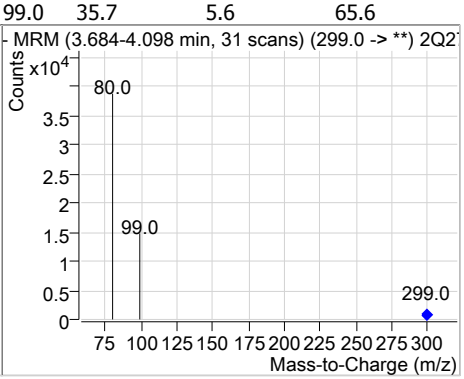




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	18.58	3.78	0.01	27998	299.0 -> 99.0	35.7	5.6	65.6

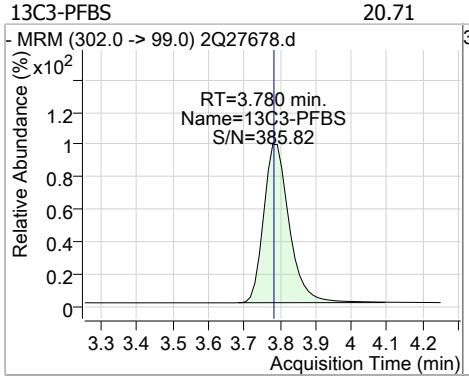


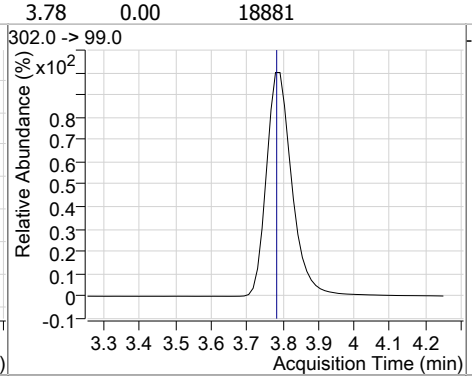


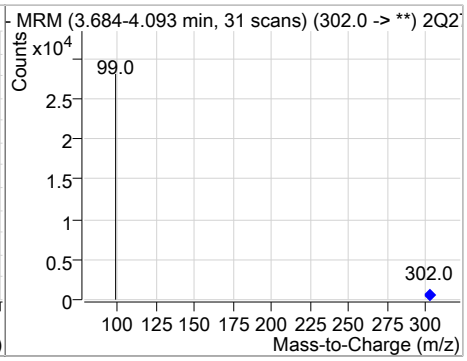


Perfluorinated Compounds by LC/MS/MS

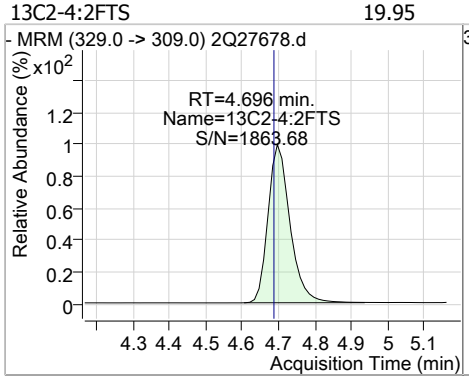
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.71	3.78	0.00	18881				

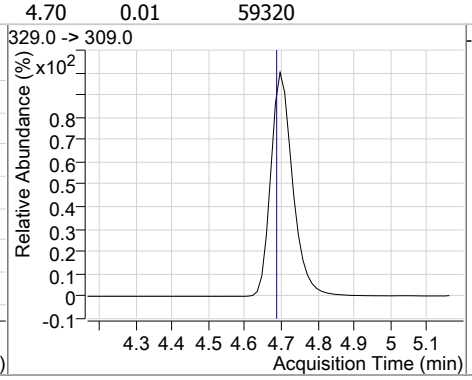


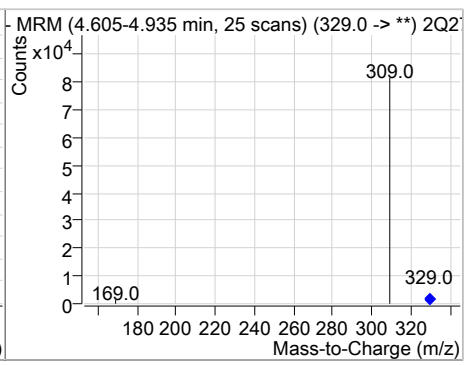




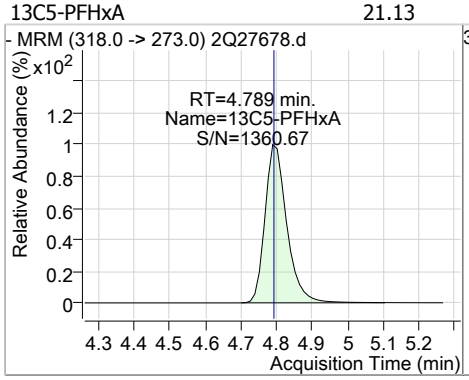
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.95	4.70	0.01	59320				

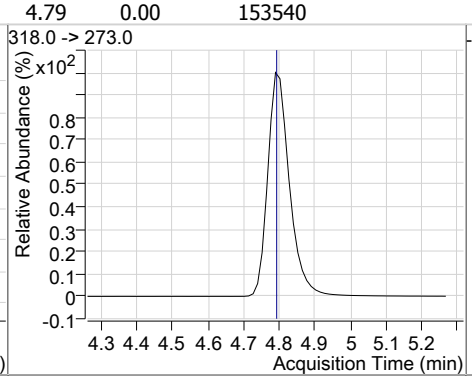


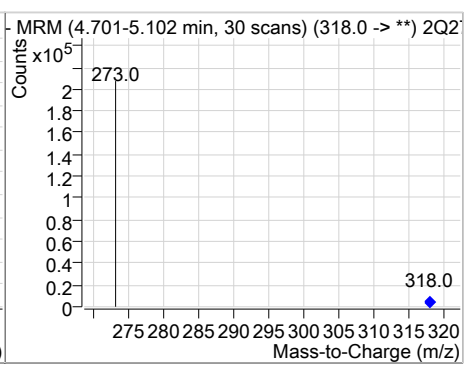




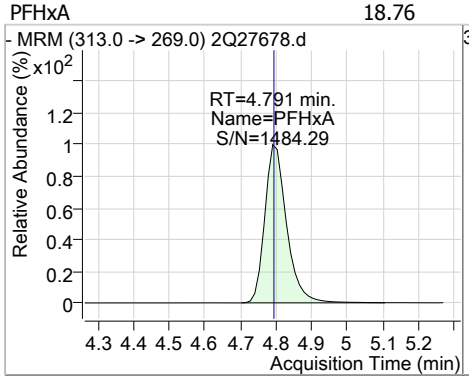
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.13	4.79	0.00	153540				

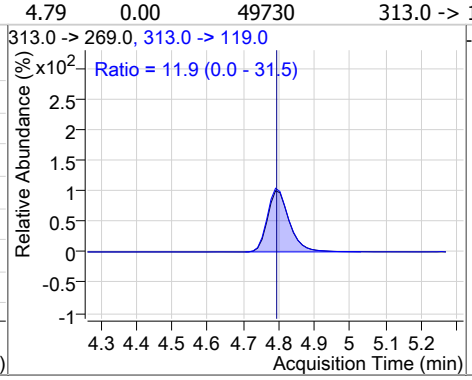


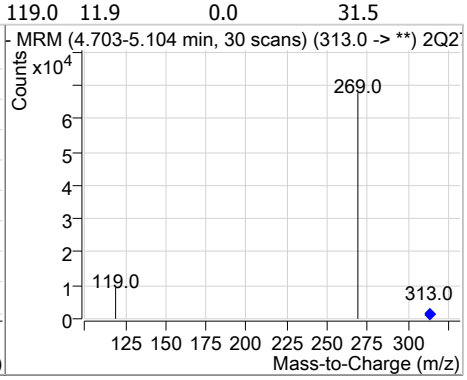




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.76	4.79	0.00	49730	313.0 -> 119.0	11.9	0.0	31.5

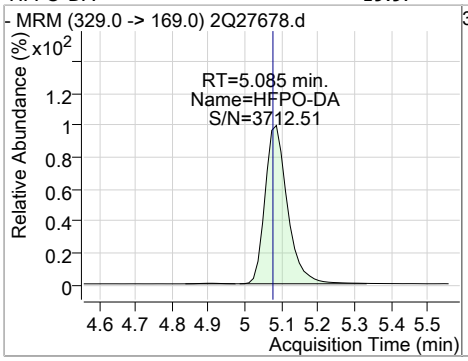


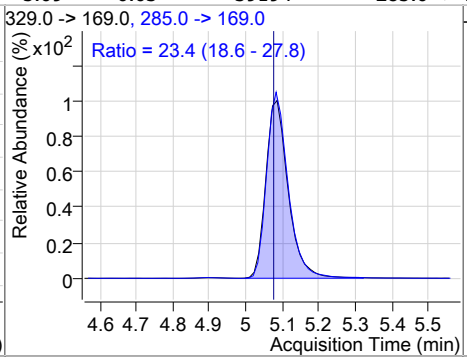


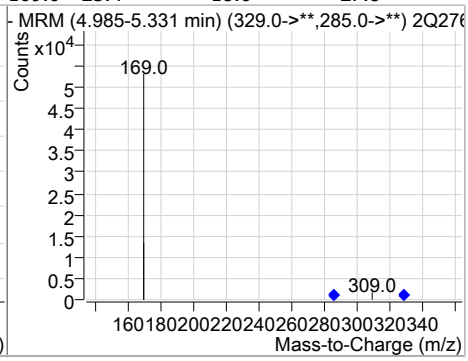


Perfluorinated Compounds by LC/MS/MS

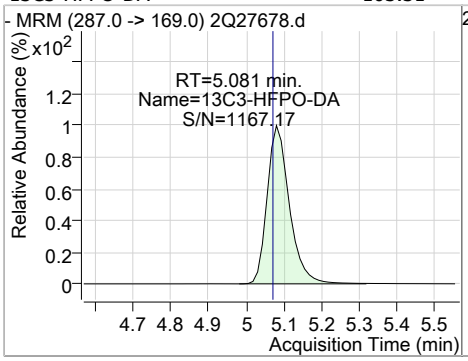
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.97	5.09	0.03	39194	285.0 -> 169.0	23.4	18.6	27.8

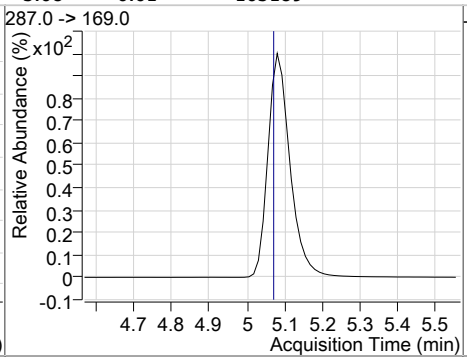


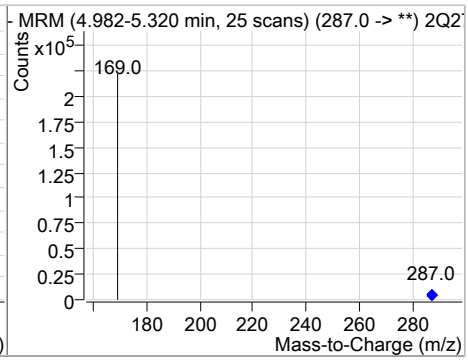




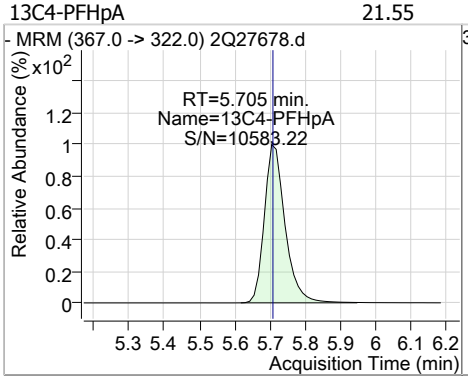
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.31	5.08	0.01	165189				

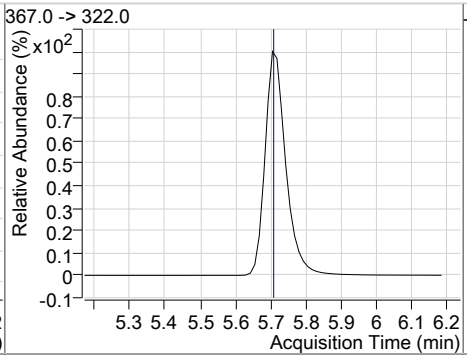


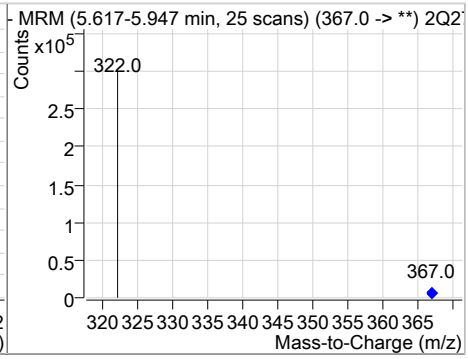




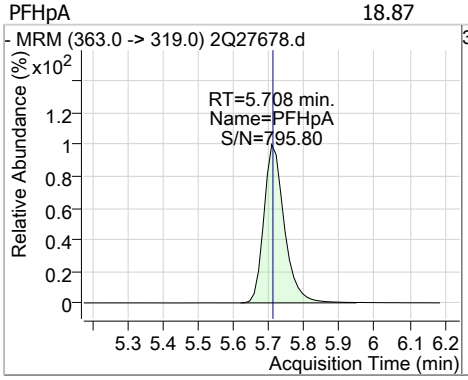
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.55	5.71	0.00	222914				

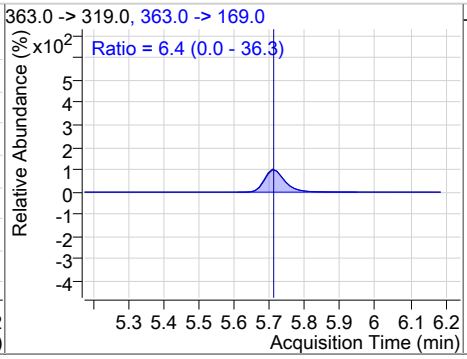


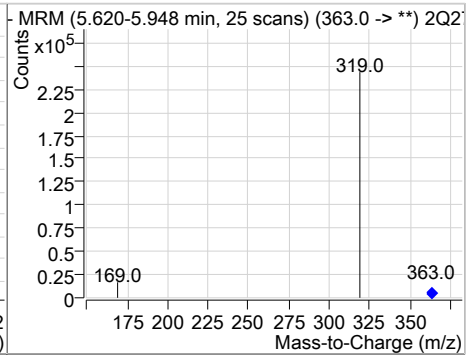




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	18.87	5.71	0.00	181435	363.0 -> 169.0	6.4	0.0	36.3

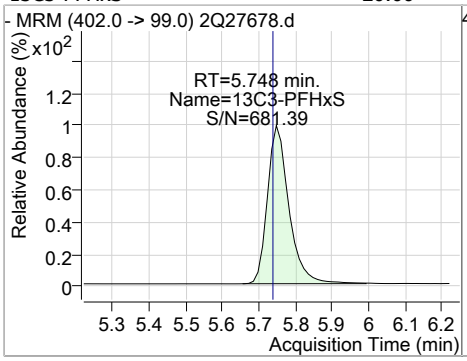


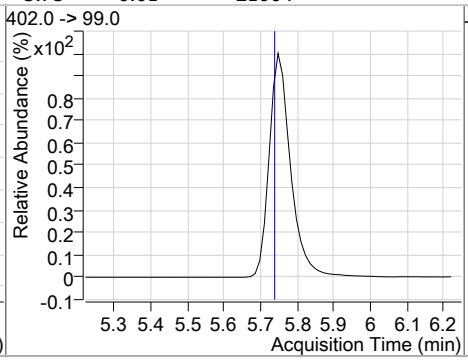


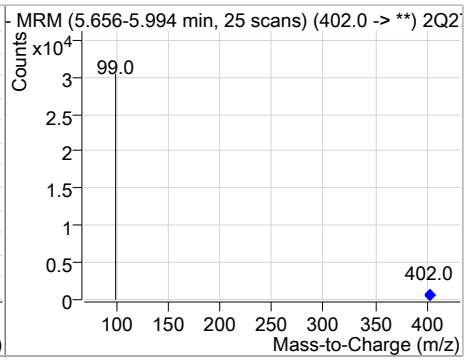


Perfluorinated Compounds by LC/MS/MS

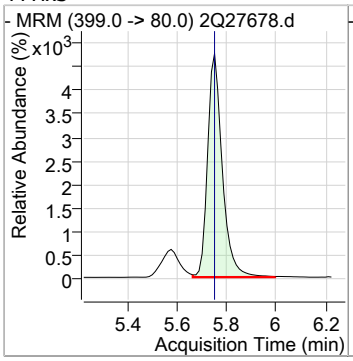
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.66	5.75	0.01	21064				

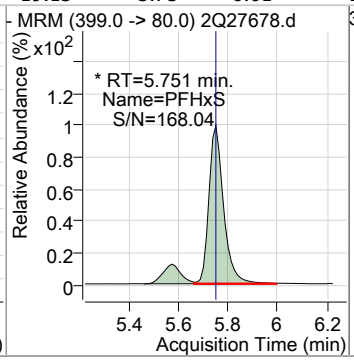


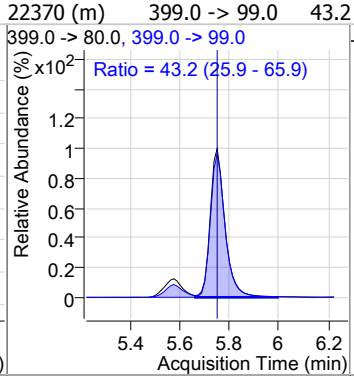


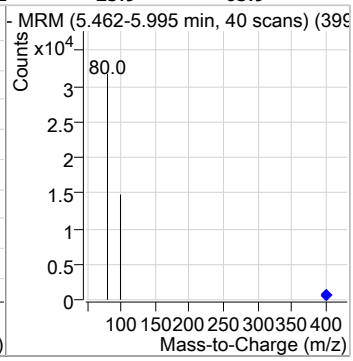


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.13	5.75	0.01	22370 (m)	399.0 -> 99.0	43.2	25.9	65.9

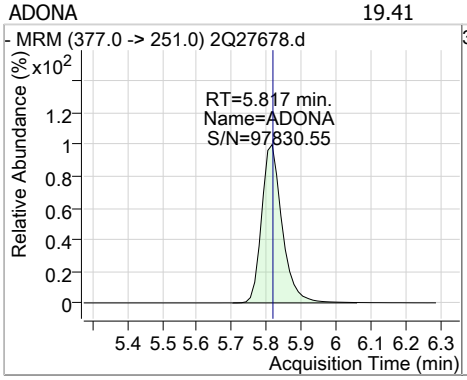


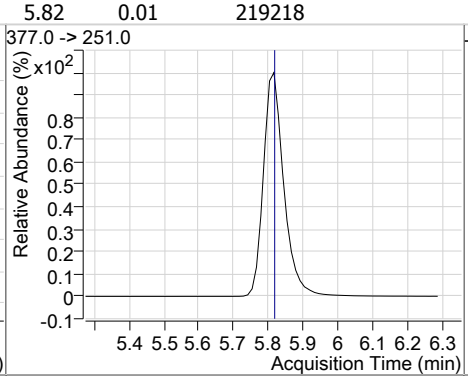


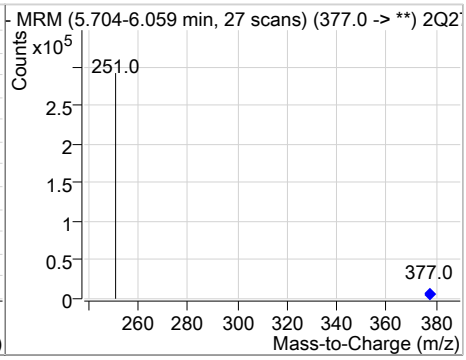




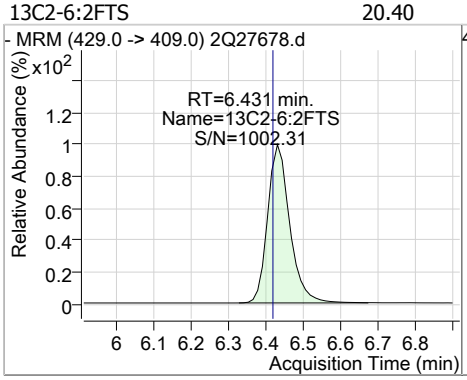
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.41	5.82	0.01	219218				

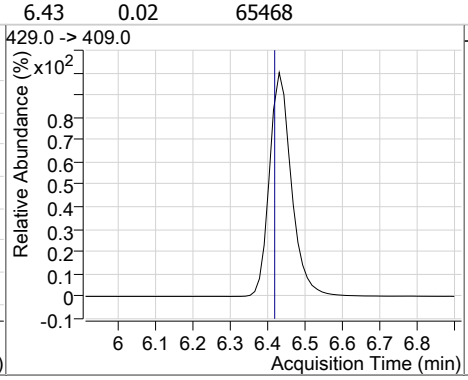


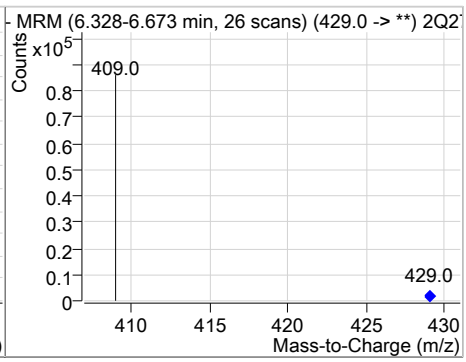




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.40	6.43	0.02	65468				

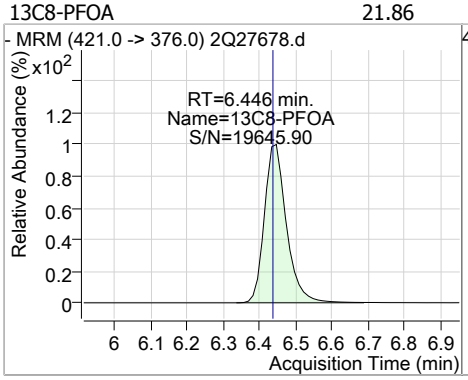


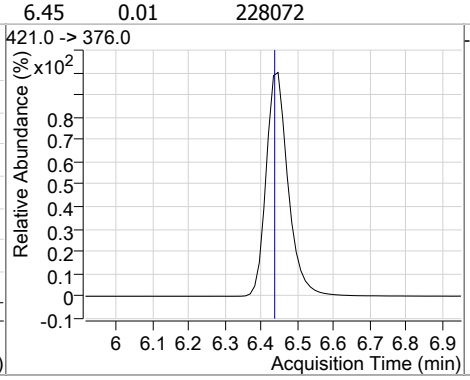


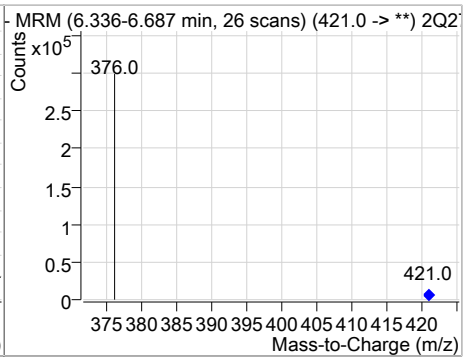


Perfluorinated Compounds by LC/MS/MS

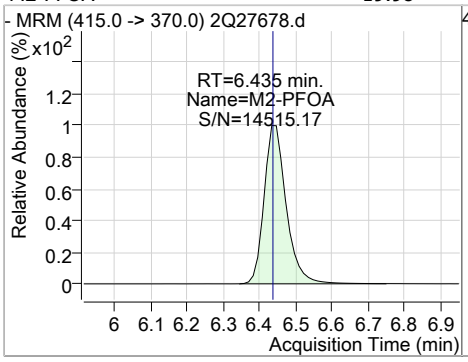
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.86	6.45	0.01	228072				

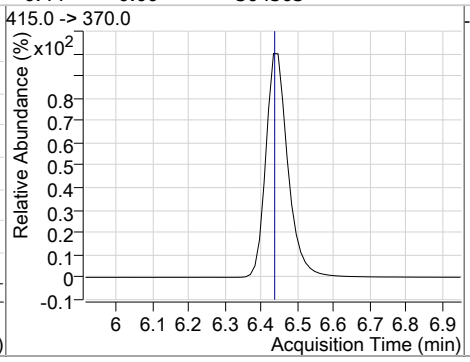


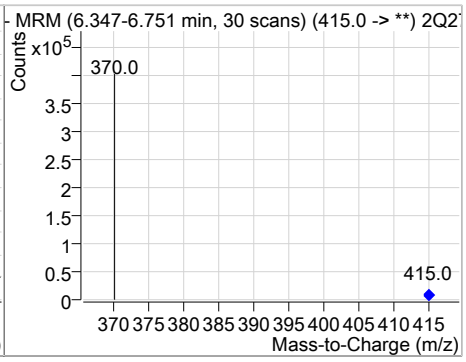




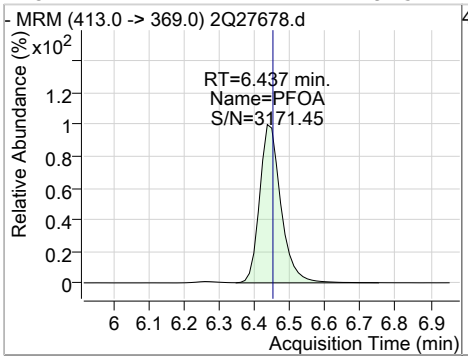
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.98	6.44	0.00	304563				

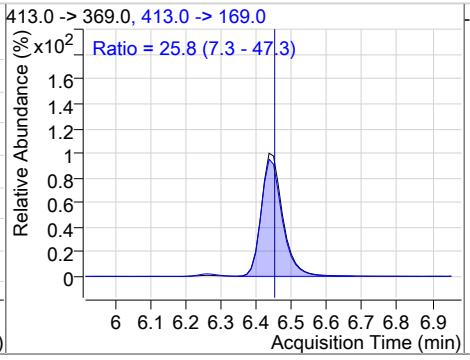


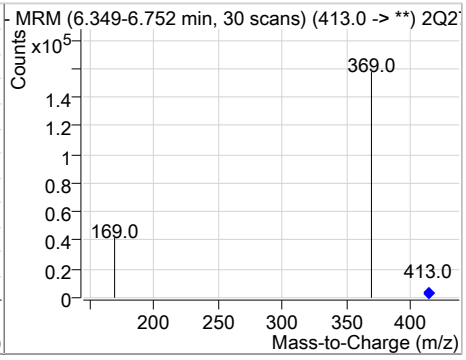




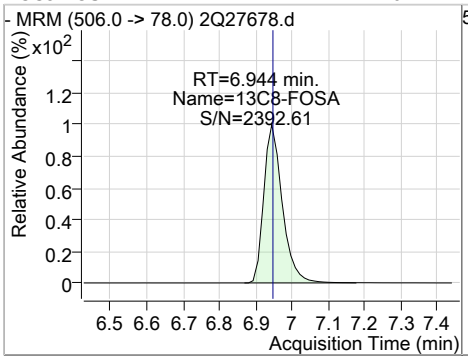
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.15	6.44	0.00	117997	413.0 -> 169.0	25.8	7.3	47.3

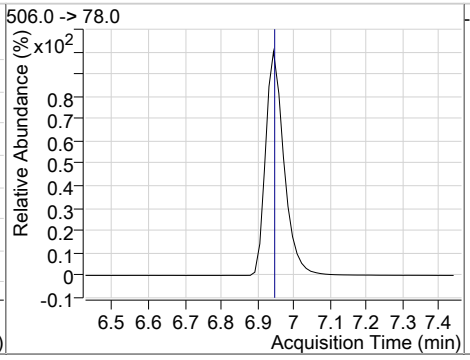


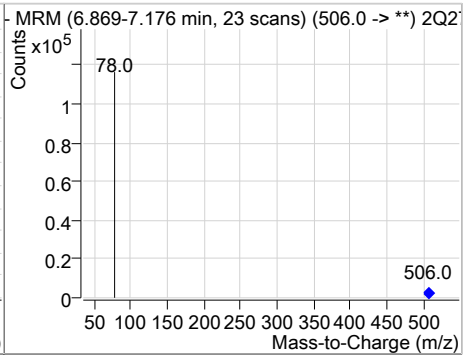




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.04	6.94	0.00	89351				

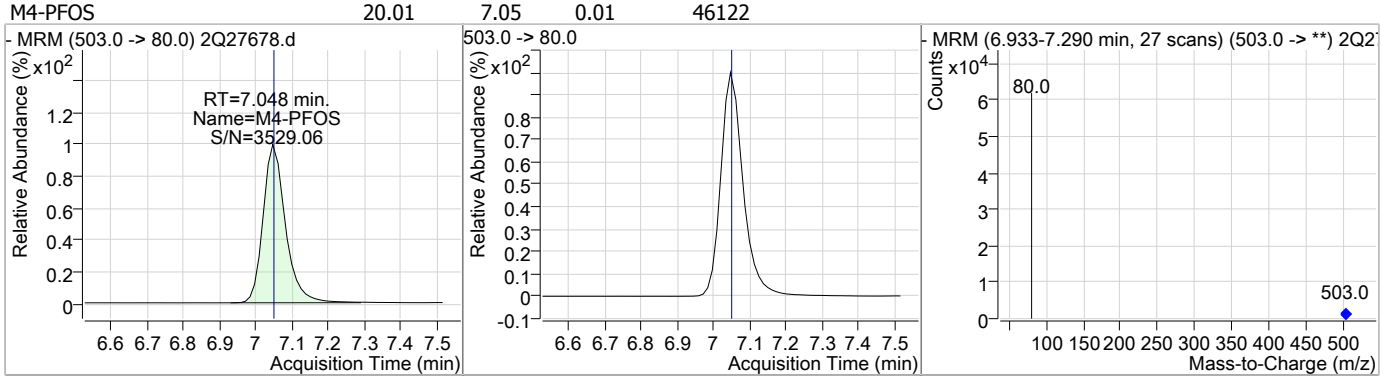




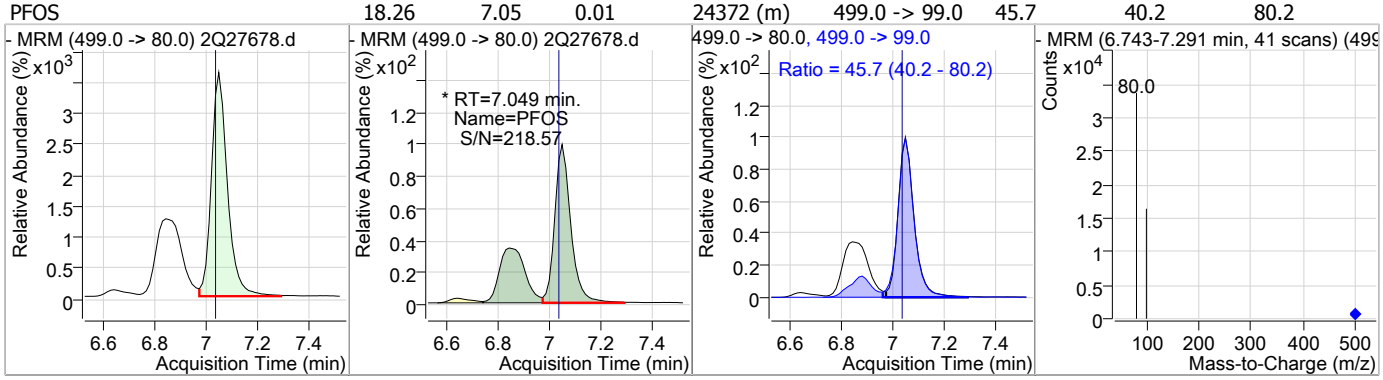


Perfluorinated Compounds by LC/MS/MS

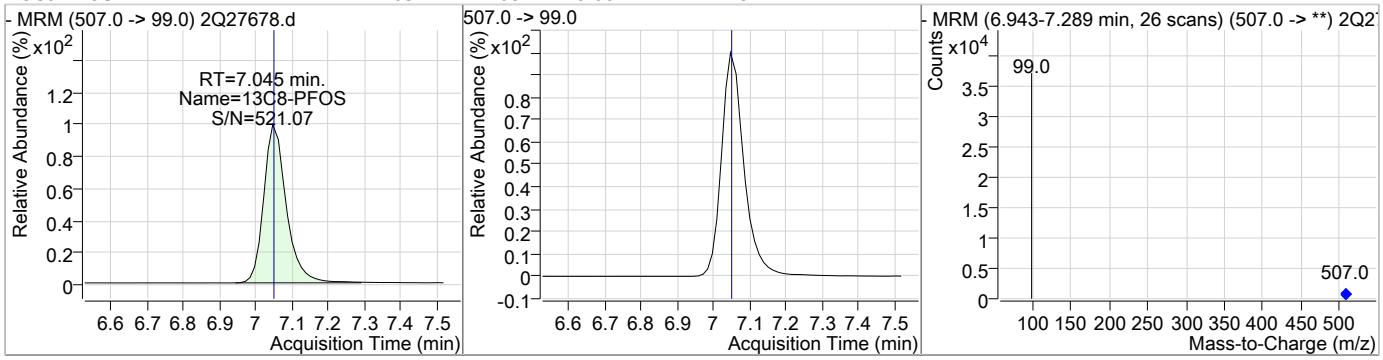
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.01	7.05	0.01	46122				



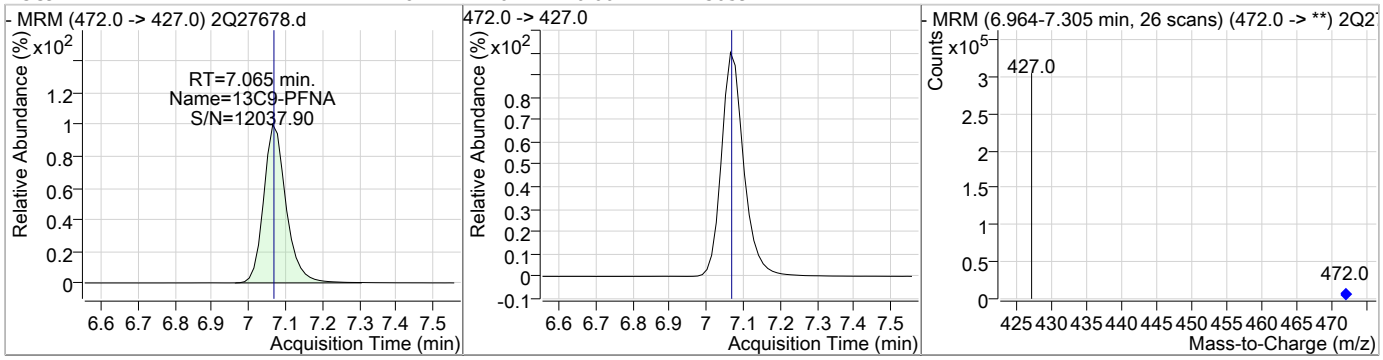
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.26	7.05	0.01	24372 (m)	499.0 -> 99.0	45.7	40.2	80.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.03	7.05	0.00	27415				

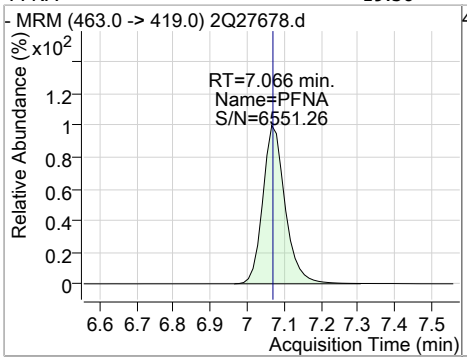


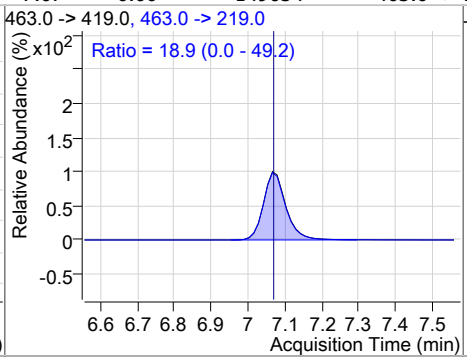
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	21.78	7.07	0.00	230591				

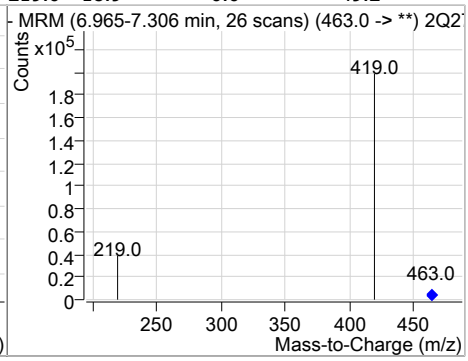


Perfluorinated Compounds by LC/MS/MS

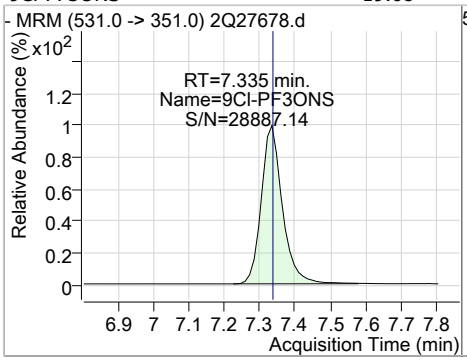
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.56	7.07	0.00	149654	463.0 -> 219.0	18.9	0.0	49.2

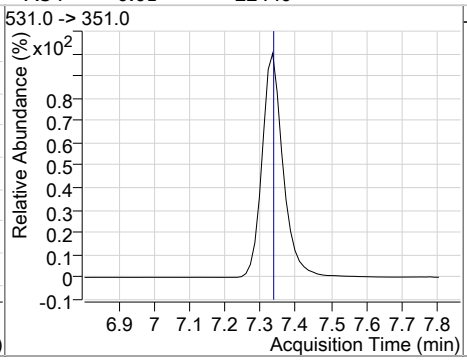


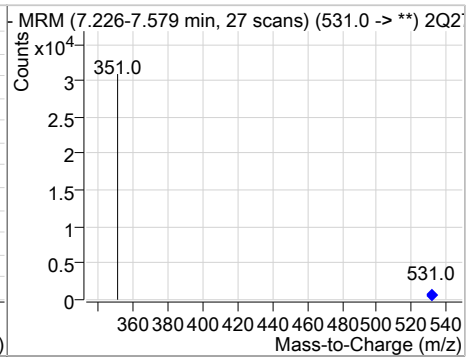




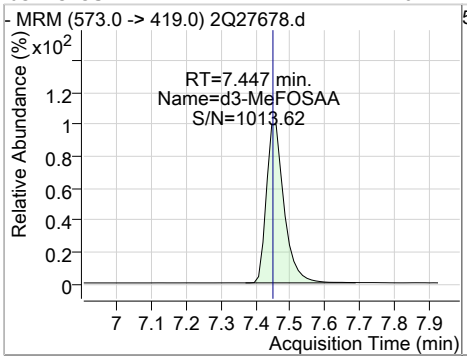
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	19.68	7.34	0.01	22440				

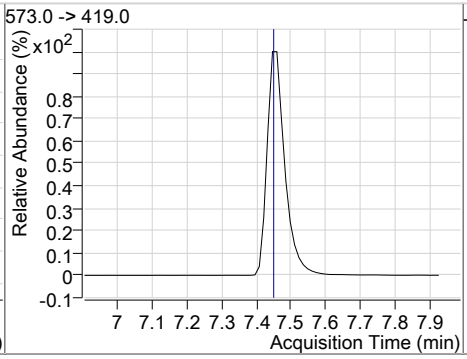


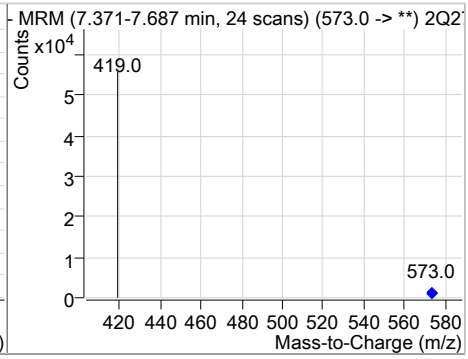




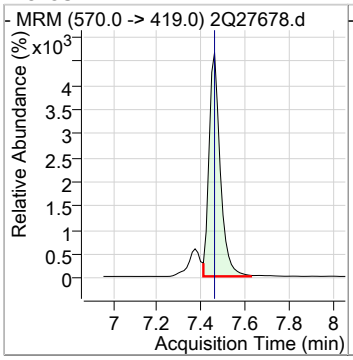
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.40	7.45	0.00	41031				

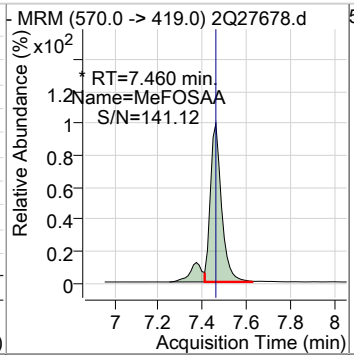


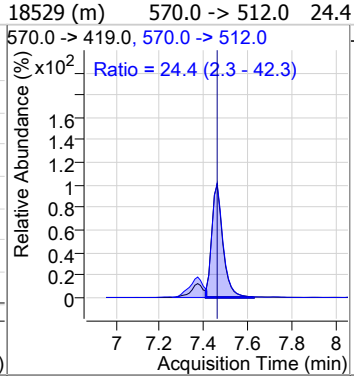


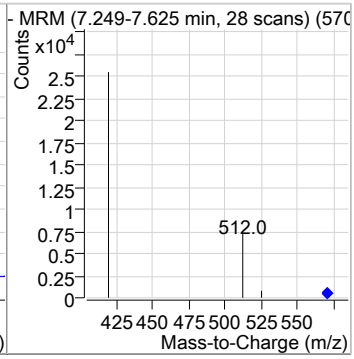


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.72	7.46	0.00	18529 (m)	570.0 -> 512.0	24.4	2.3	42.3



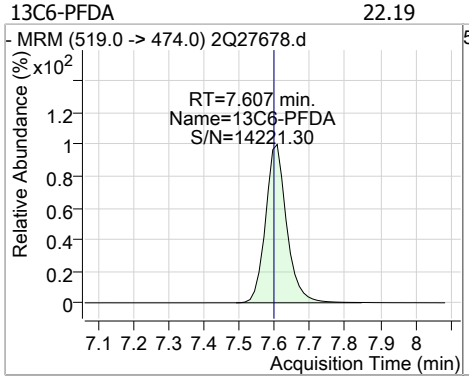


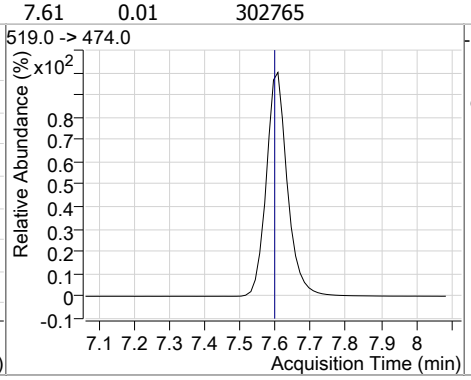


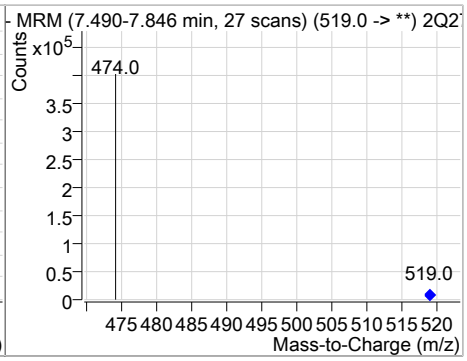


Perfluorinated Compounds by LC/MS/MS

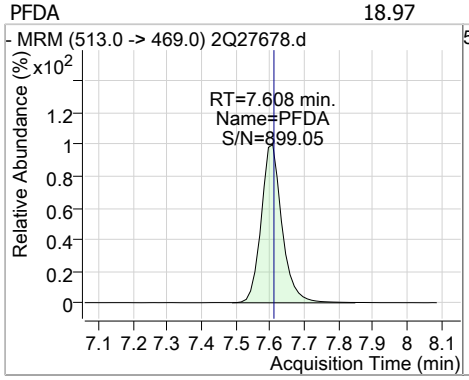
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	22.19	7.61	0.01	302765				

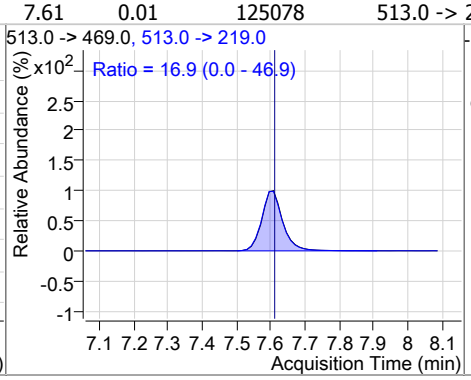


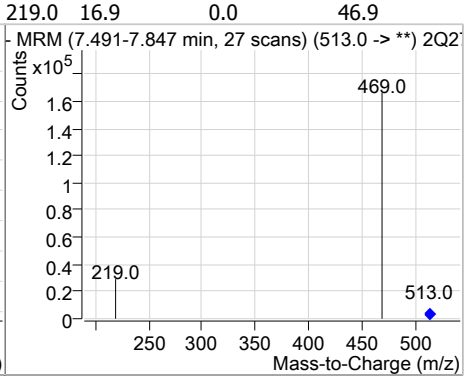




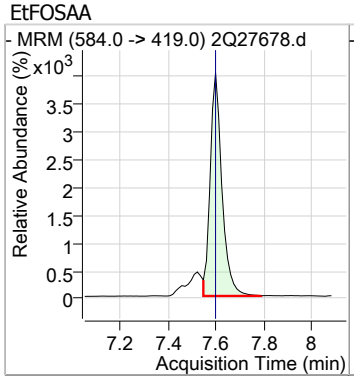
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	18.97	7.61	0.01	125078	513.0 -> 219.0	16.9	0.0	46.9

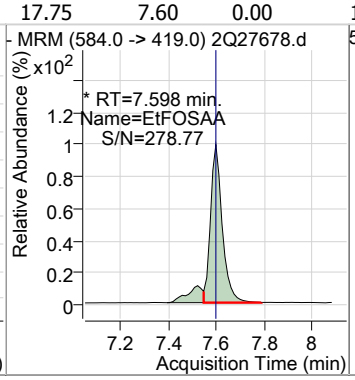


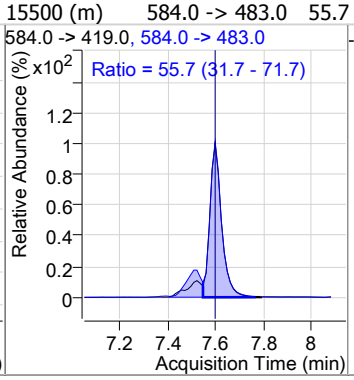


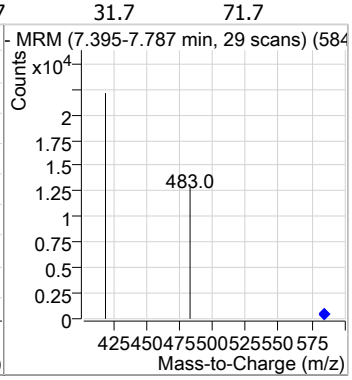


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.75	7.60	0.00	15500 (m)	584.0 -> 483.0	55.7	31.7	71.7

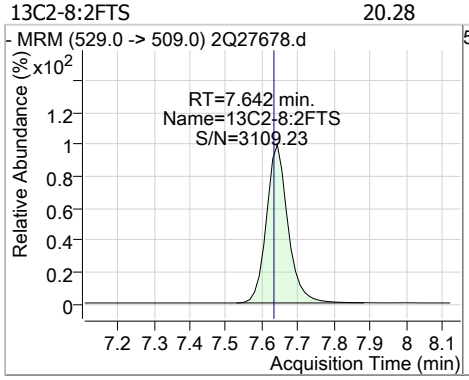


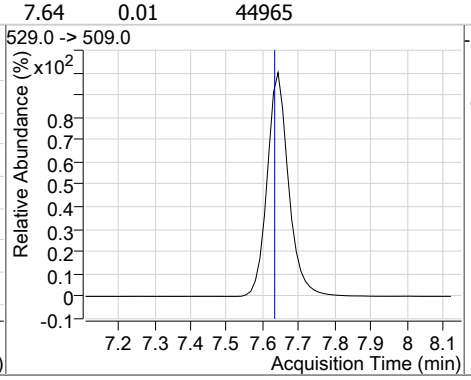


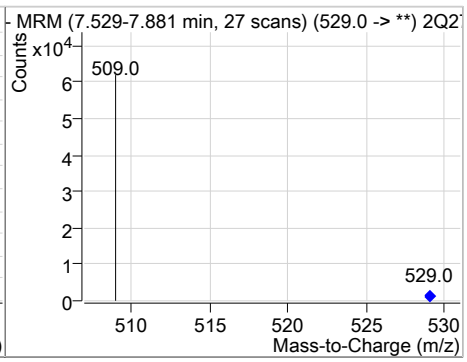




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.28	7.64	0.01	44965				

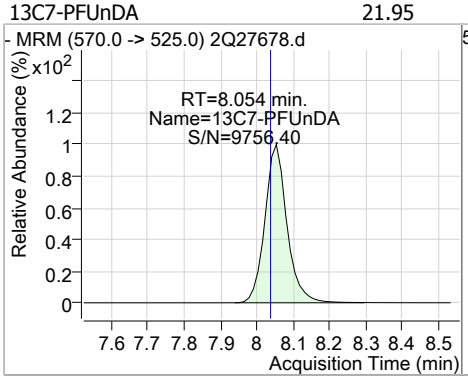


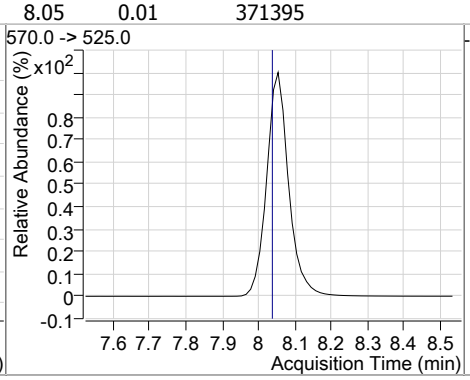


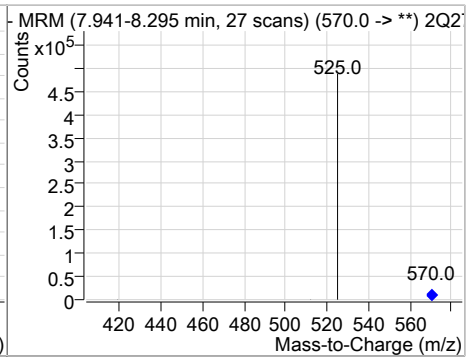


Perfluorinated Compounds by LC/MS/MS

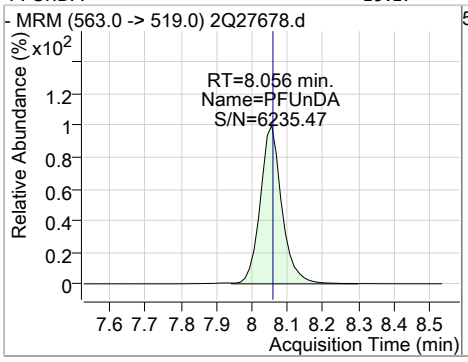
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.95	8.05	0.01	371395				

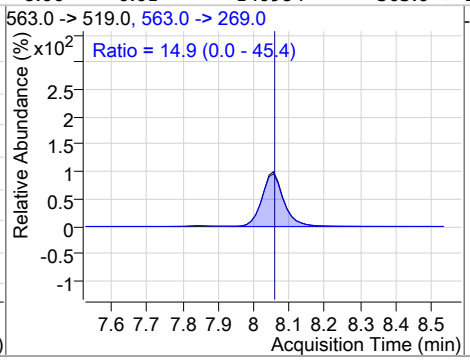


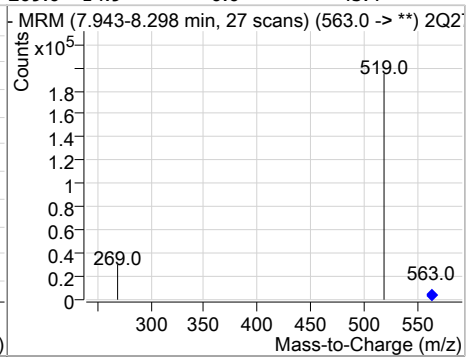




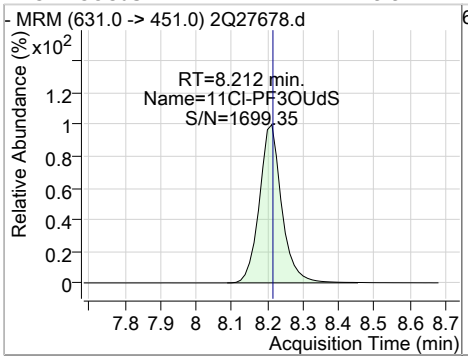
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.17	8.06	0.01	146984	563.0 -> 269.0	14.9	0.0	45.4

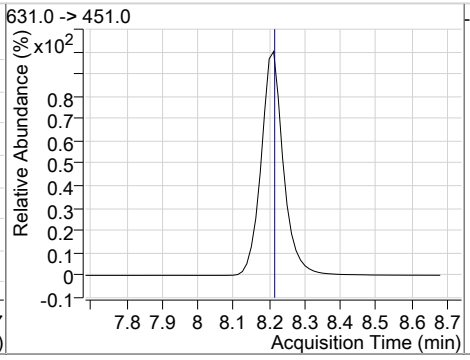


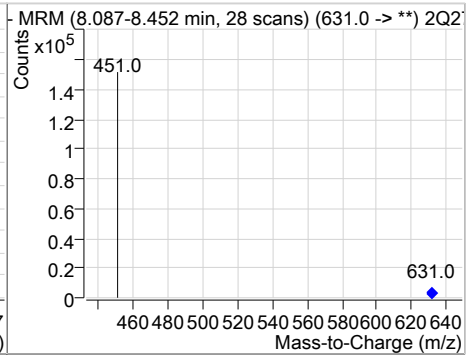




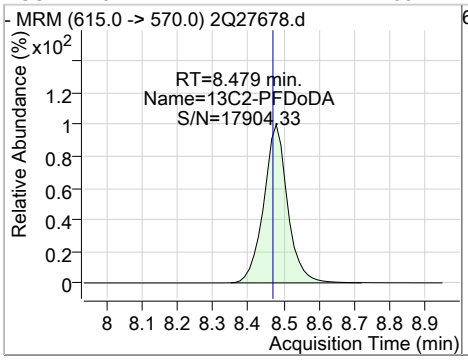
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	19.91	8.21	0.01	112967				

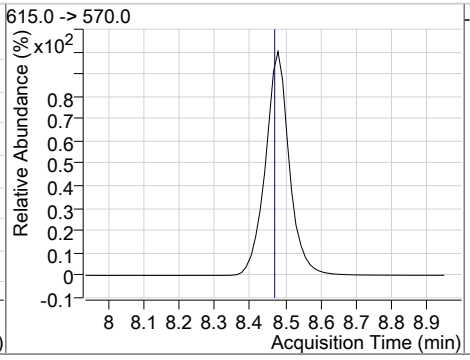


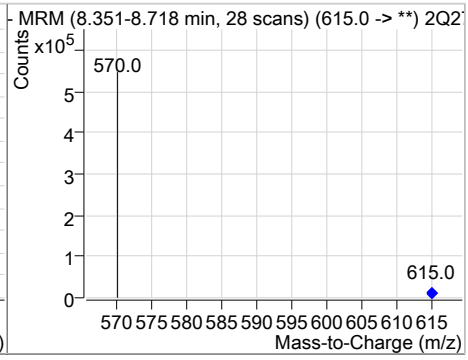




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	22.00	8.48	0.01	413878				

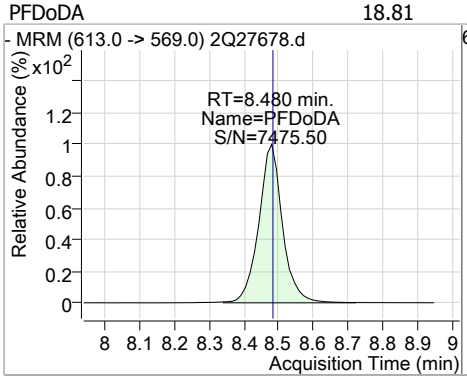


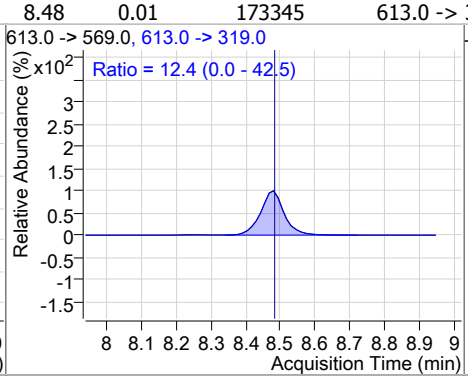


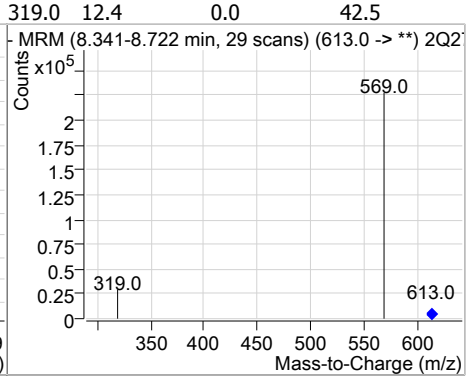


Perfluorinated Compounds by LC/MS/MS

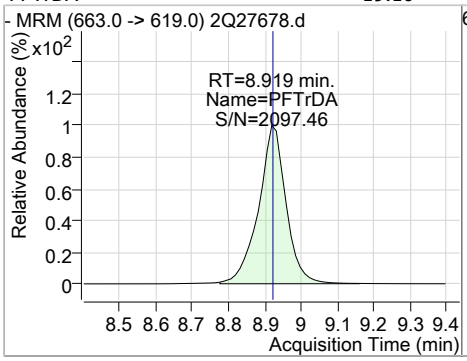
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	18.81	8.48	0.01	173345	613.0 -> 319.0	12.4	0.0	42.5

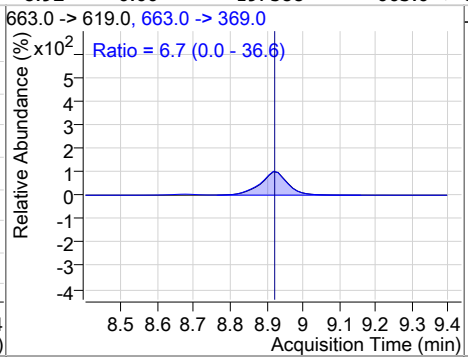


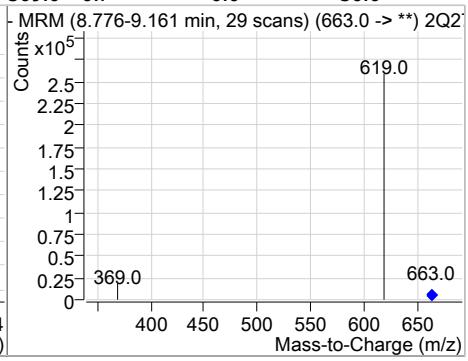




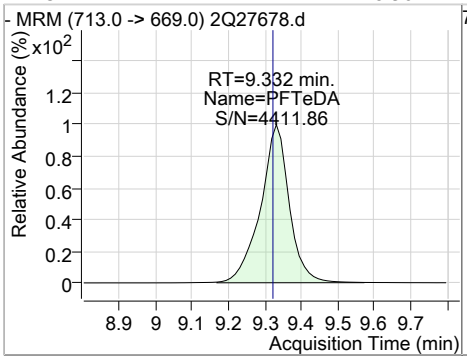
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.10	8.92	0.00	197588	663.0 -> 369.0	6.7	0.0	36.6

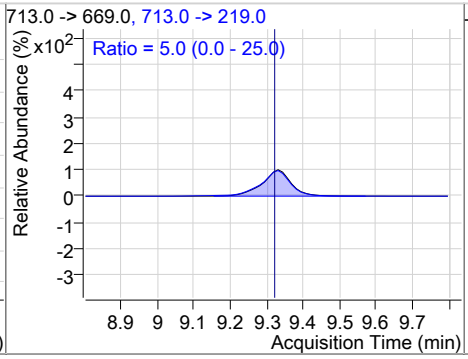


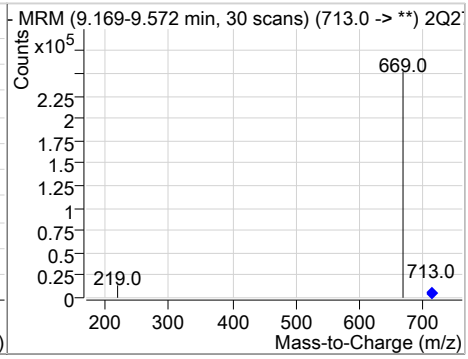




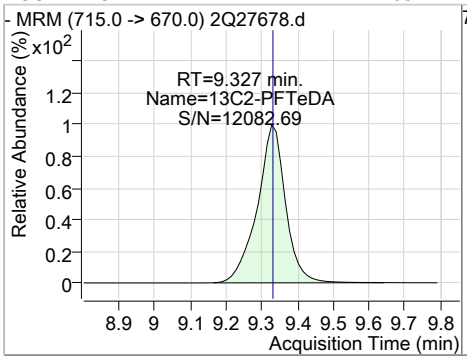
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	18.90	9.33	0.01	187748	713.0 -> 219.0	5.0	0.0	25.0

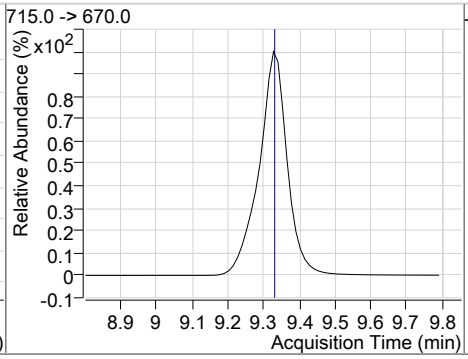


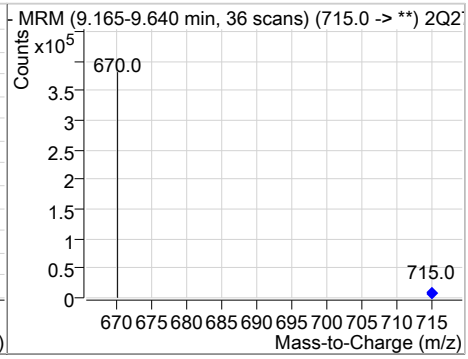




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	22.05	9.33	0.00	283027				







Manual Integration Approval Summary

Sample Number: S2Q442-ICV442
Lab FileID: 2Q27678.D
Injection Time: 03/18/19 11:38
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak
MeFOSAA	2355-31-9		7.46	Split peak
EtFOSAA	2991-50-6		7.60	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27688.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 2:57:15 PM
Sample Name : CC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

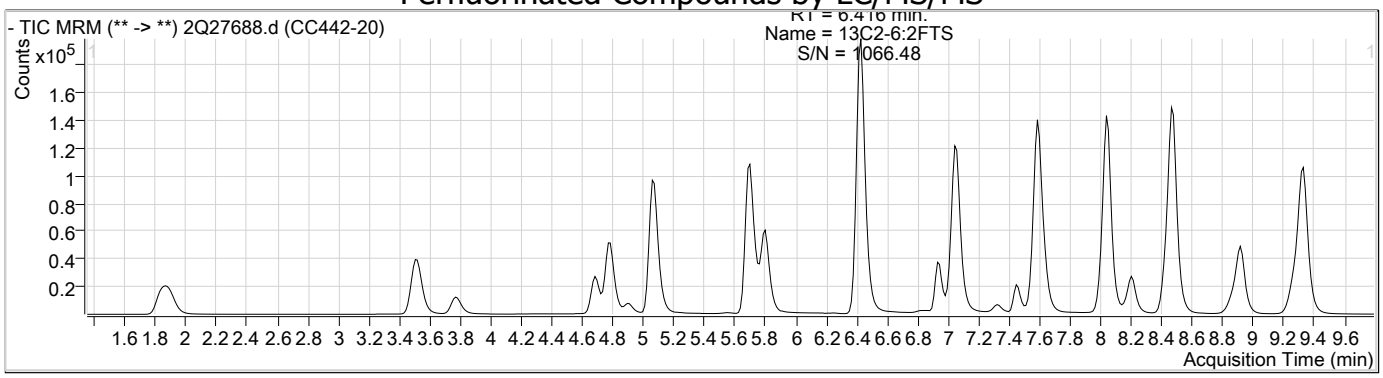
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	303819	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	46779	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	127122	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	108658	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	154708	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	227210	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	230270	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	239153	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	313315	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	400747	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	468278	20.00	µg/L	0.000
M2-PFTeDA	9.327	715.0 -> 670.0	335310	20.00	µg/L	0.000
M8-FOSA	6.932	506.0 -> 78.0	88914	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	18688	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21252	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	27715	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	62381	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	70324	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	52048	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	42267	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	164271	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	62311	20.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.8%		
13C2-6:2FTS	6.416	429.0 -> 409.0	70271	21.89	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.5%		
13C2-8:2FTS	7.630	529.0 -> 509.0	52036	23.47	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.3%		
13C2-PFDoDA	8.466	615.0 -> 570.0	467670	24.86	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 124.3%		
13C2-PFTeDA	9.327	715.0 -> 670.0	334823	26.08	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 130.4%		
13C3-PFBS	3.767	302.0 -> 99.0	18597	20.40	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C3-PFHxS	5.736	402.0 -> 99.0	21201	20.80	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C4-PFBA	1.865	217.0 -> 172.0	126571	21.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	226873	21.94	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.7%		
13C5-PFHxA	4.789	318.0 -> 273.0	154430	21.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.3%		
13C5-PFPeA	3.524	268.0 -> 223.0	108670	21.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.9%		
13C6-PFDA	7.594	519.0 -> 474.0	313289	22.96	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

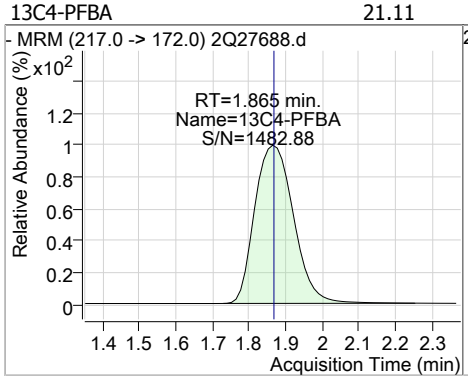
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.8%		
13C7-PFUnDA	8.041	570.0 -> 525.0	400632	23.67 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.4%		
13C8-FOSA	6.932	506.0 -> 78.0	89076	21.97 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.8%		
13C8-PFOA	6.434	421.0 -> 376.0	230243	22.07 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.4%		
13C8-PFOS	7.033	507.0 -> 99.0	27709	21.26 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.3%		
13C9-PFNA	7.065	472.0 -> 427.0	239150	22.59 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.9%		
d3-MeFOSAA	7.447	573.0 -> 419.0	42263	22.05 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%		
M2-PFOA	6.435	415.0 -> 370.0	304135	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	46848	20.02 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	164271	102.73 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	35293	20.54 µg/L		99
6:2FTS	6.418	427.0 -> 407.0	34359	19.86 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	26442	20.32 µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	18199	20.26 µg/L		98
FOSA	6.935	498.0 -> 78.0	40466	19.76 µg/L		99
MeFOSAA	7.447	570.0 -> 419.0	21404	19.85 µg/L		97
PFBA	1.873	213.0 -> 169.0	24716	19.69 µg/L		100
PFBS	3.771	299.0 -> 80.0	29612	19.96 µg/L		100
PFDA	7.595	513.0 -> 469.0	136979	20.08 µg/L		99
PFDoDA	8.468	613.0 -> 569.0	207505	19.91 µg/L		100
PFDS	8.001	599.0 -> 80.0	10318	20.21 µg/L		97
PFHpA	5.695	363.0 -> 319.0	193120	19.72 µg/L		100
PFHpS	6.442	449.0 -> 80.0	20983	20.35 µg/L		99
PFHxA	4.791	313.0 -> 269.0	53213	19.97 µg/L		100
PFHxS	5.739	399.0 -> 80.0	23122	19.68 µg/L	m	96
PFNA	7.066	463.0 -> 419.0	157212	19.82 µg/L		99
PFNS	7.565	549.0 -> 80.0	19811	20.86 µg/L		100
PFOA	6.437	413.0 -> 369.0	120588	19.39 µg/L		98
PFOS	7.037	499.0 -> 80.0	25890	19.23 µg/L	m	80
PFPeA	3.515	263.0 -> 219.0	93237	19.82 µg/L		100
PFPeS	4.895	349.0 -> 80.0	19713	20.76 µg/L		98
PFTeDA	9.332	713.0 -> 669.0	231126	19.71 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	237021	19.41 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	163998	19.84 µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	111371	17.35 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	22382	18.99 µg/L		100
ADONA	5.804	377.0 -> 251.0	222410	19.51 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	200110	102.55 µg/L		100

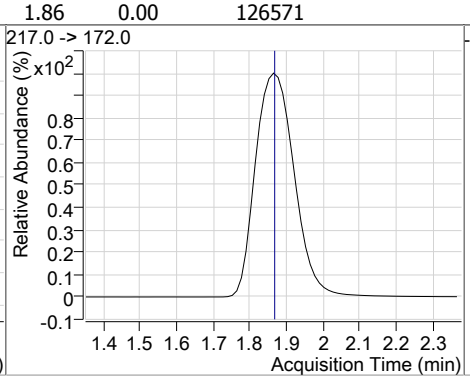
 # = Qualifier out of range, m = manually integrated, + = Area summed

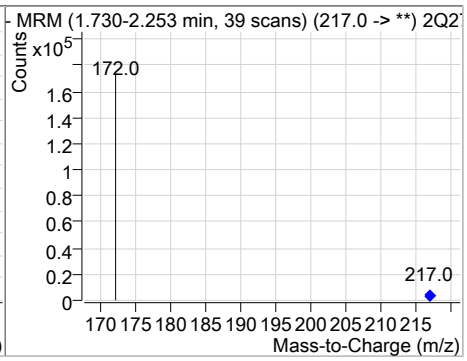
Perfluorinated Compounds by LC/MS/MS



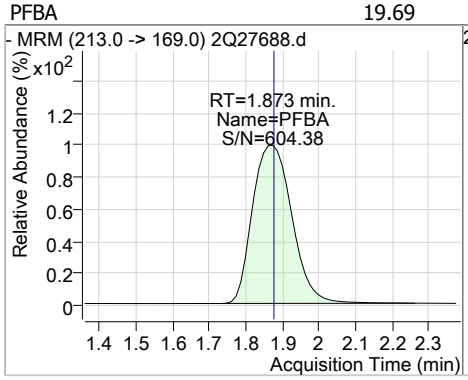
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.11	1.86	0.00	126571				

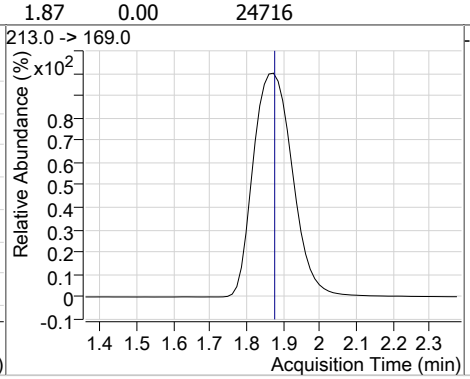


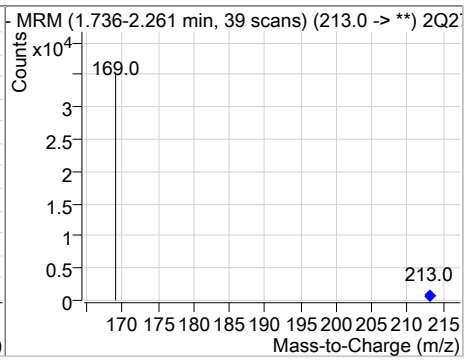




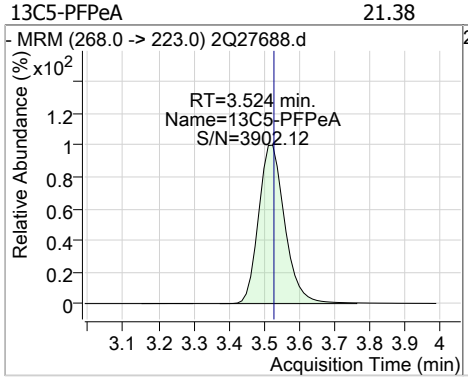
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.69	1.87	0.00	24716				

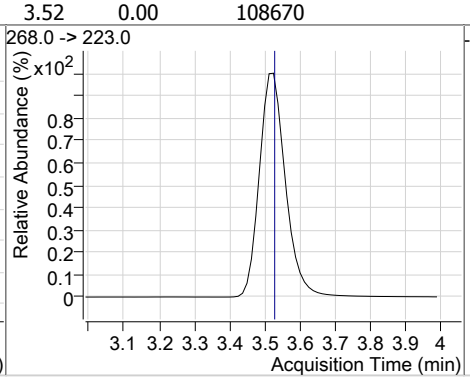


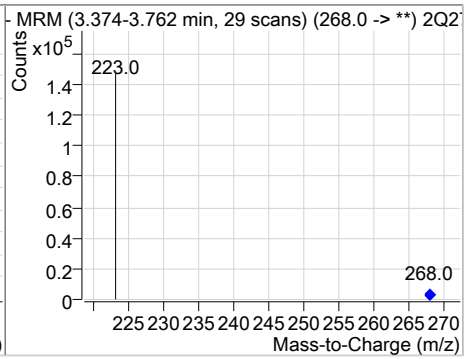




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.38	3.52	0.00	108670				

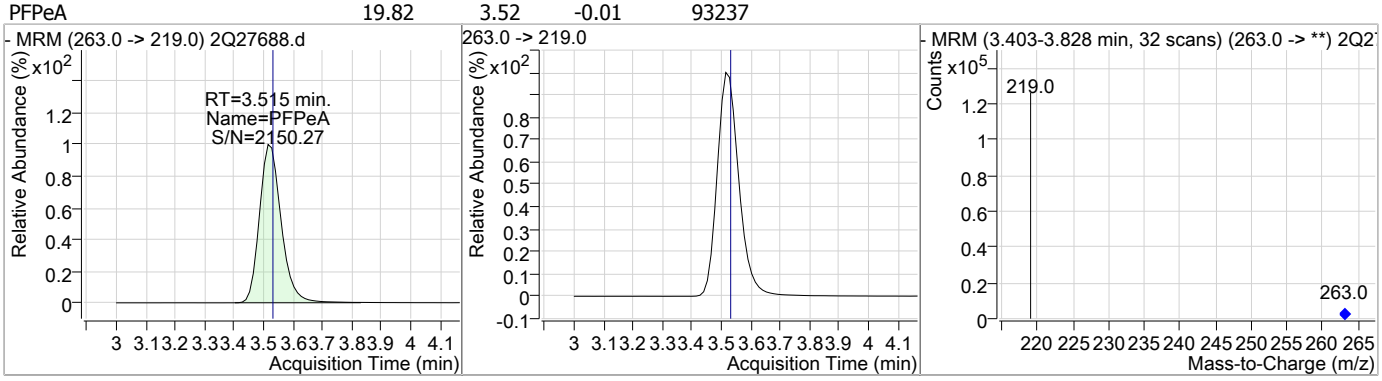




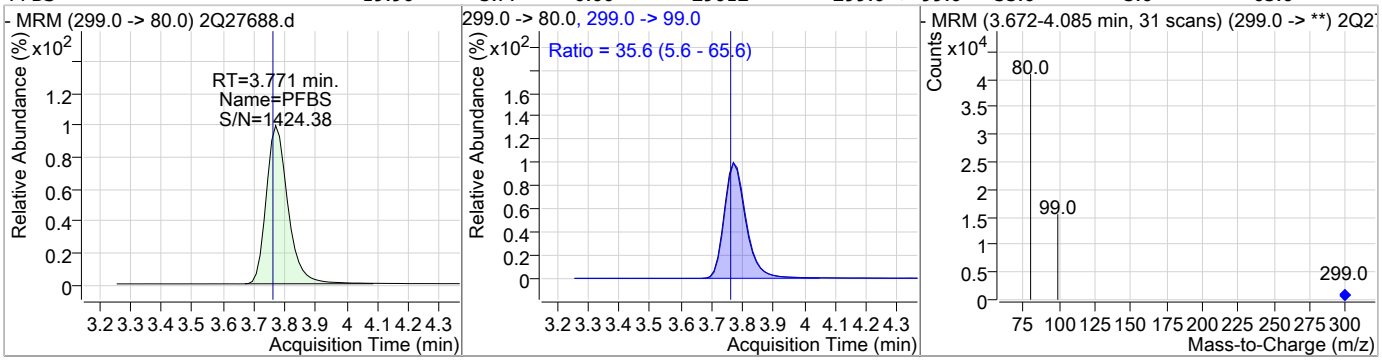


Perfluorinated Compounds by LC/MS/MS

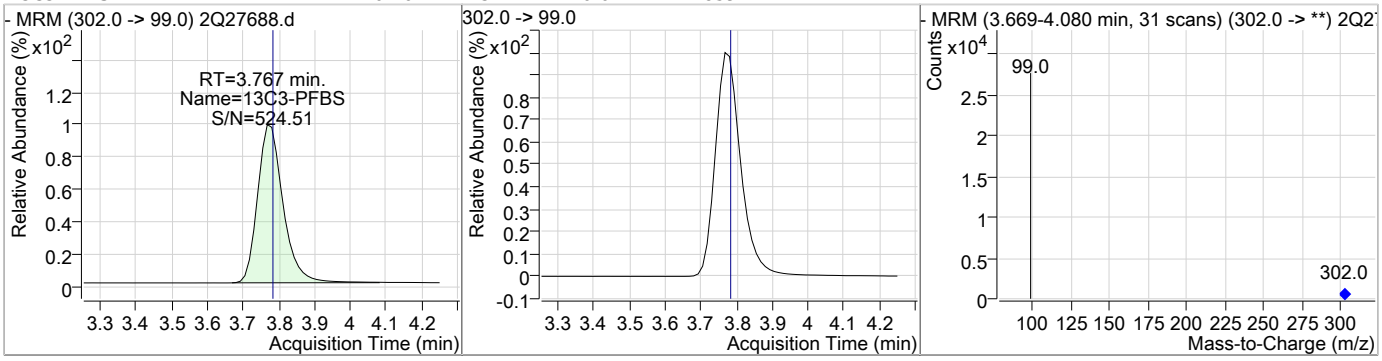
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.82	3.52	-0.01	93237				



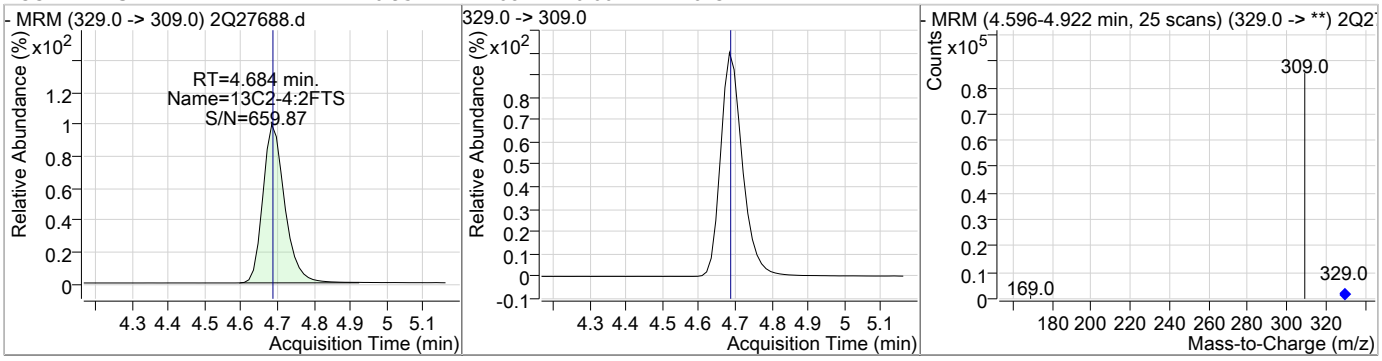
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.96	3.77	0.00	29612	299.0 -> 99.0	35.6	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.40	3.77	-0.01	18597				

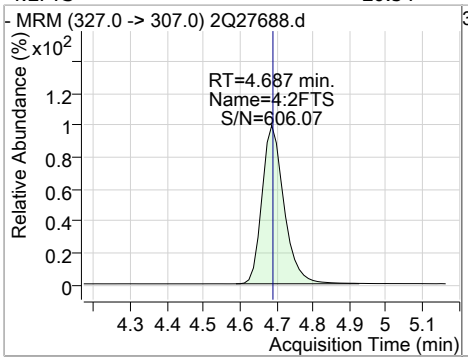


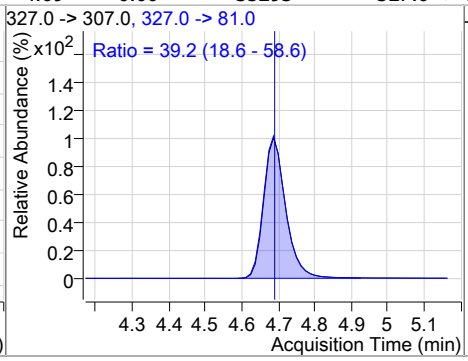
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.95	4.68	0.00	62311				

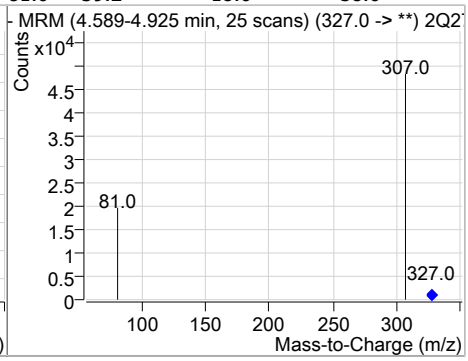


Perfluorinated Compounds by LC/MS/MS

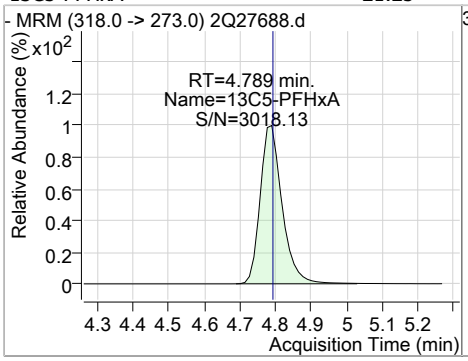
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.54	4.69	0.00	35293	327.0 -> 81.0	39.2	18.6	58.6

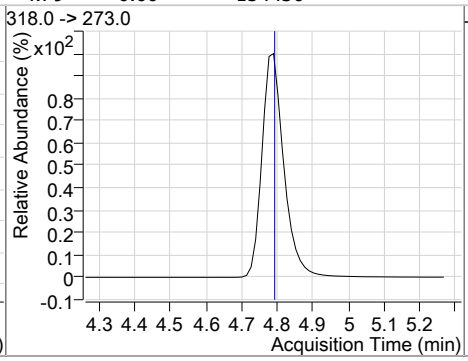


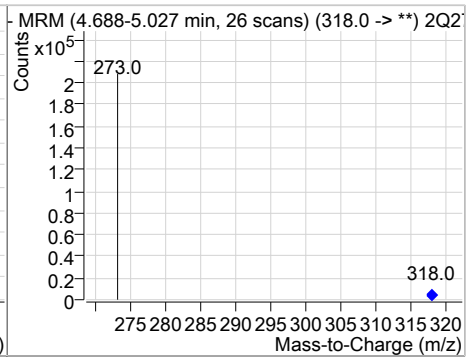




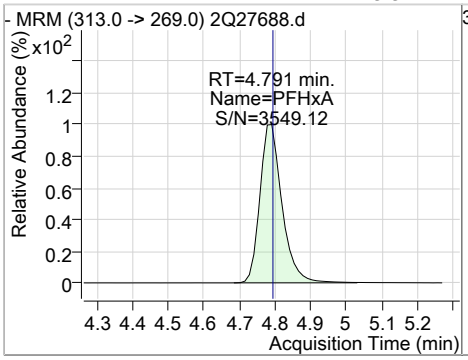
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.25	4.79	0.00	154430				

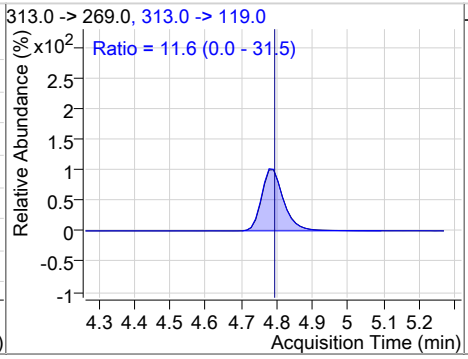


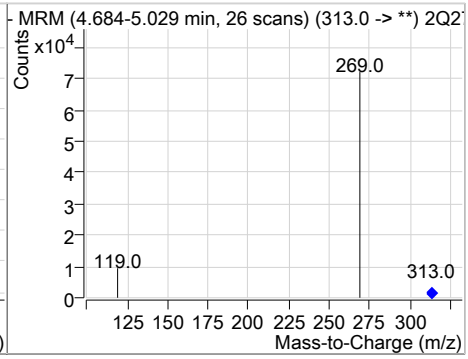




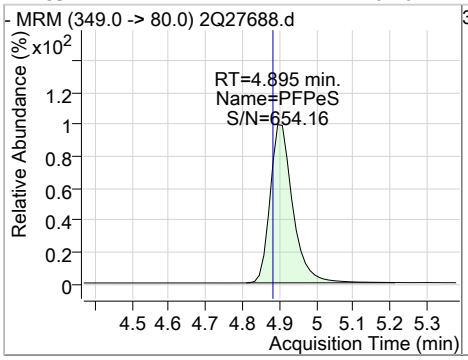
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.97	4.79	0.00	53213	313.0 -> 119.0	11.6	0.0	31.5

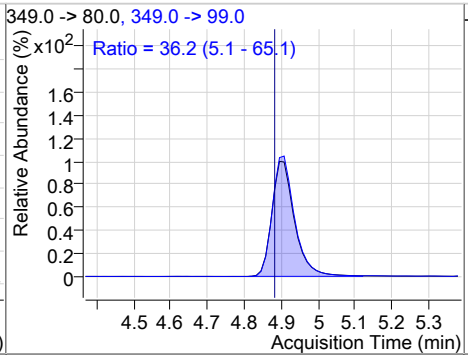


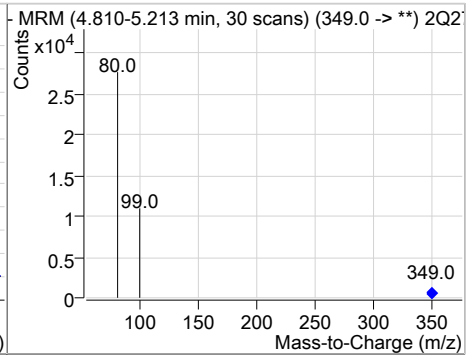




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.76	4.90	0.00	19713	349.0 -> 99.0	36.2	5.1	65.1

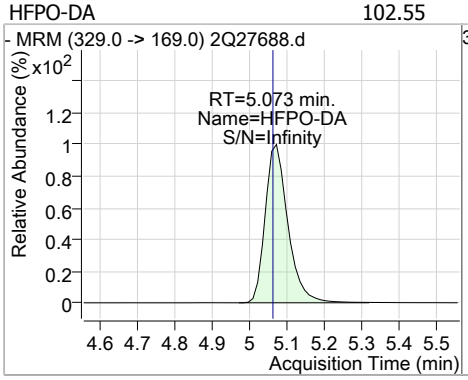


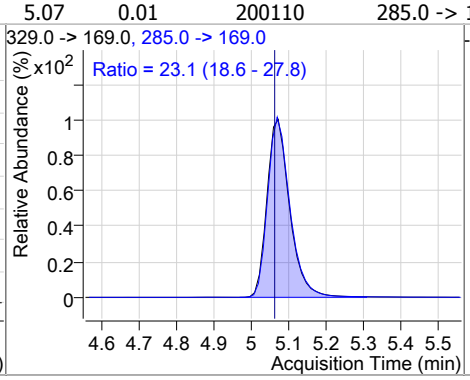


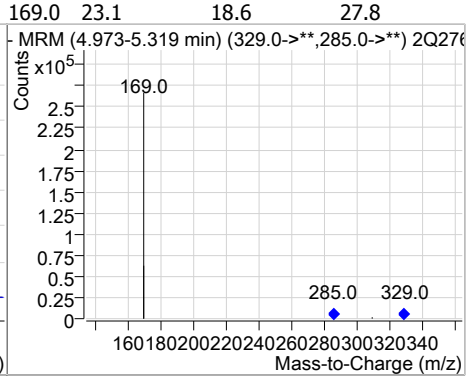


Perfluorinated Compounds by LC/MS/MS

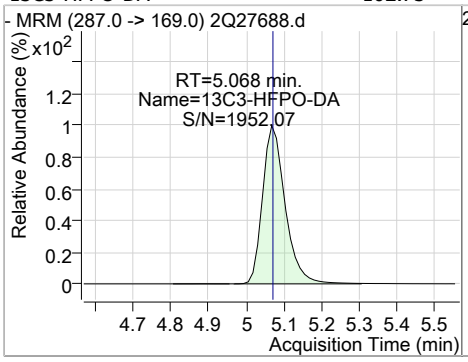
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	102.55	5.07	0.01	200110	285.0 -> 169.0	23.1	18.6	27.8

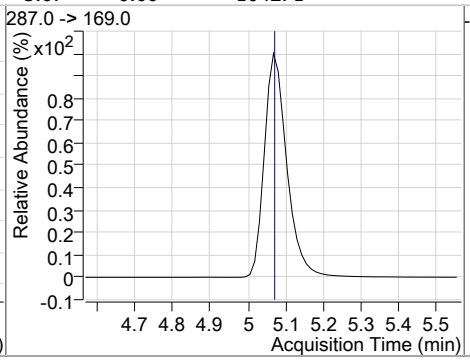


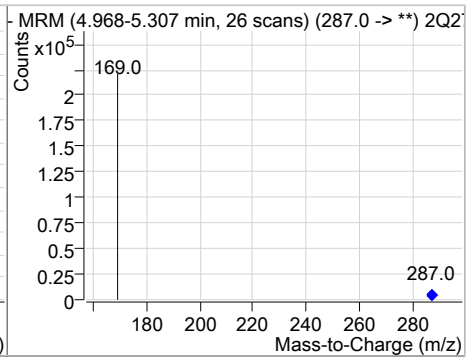




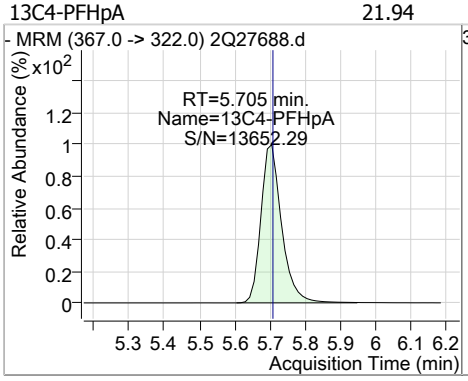
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	102.73	5.07	0.00	164271				

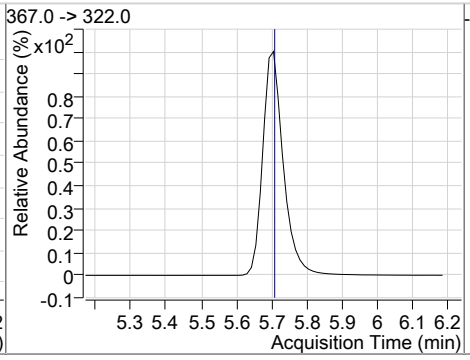


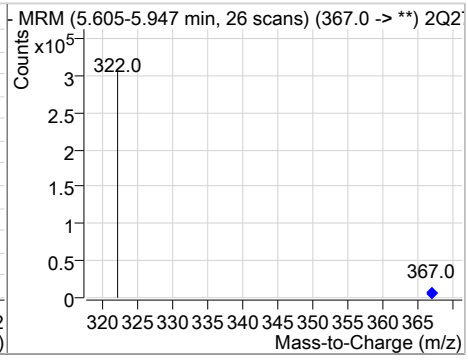




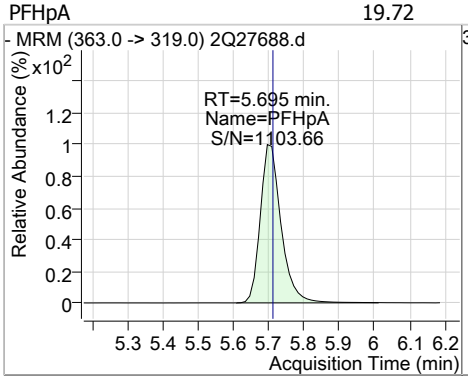
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.94	5.71	0.00	226873				

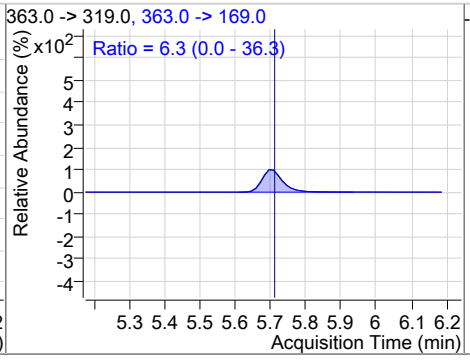


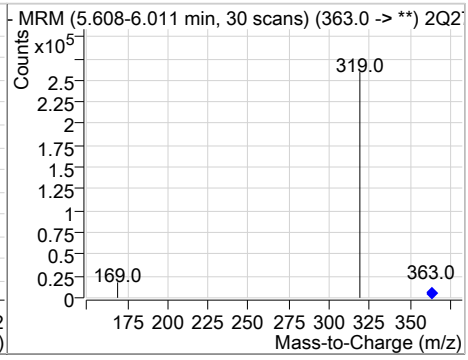




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.72	5.70	-0.01	193120	363.0 -> 169.0	6.3	0.0	36.3

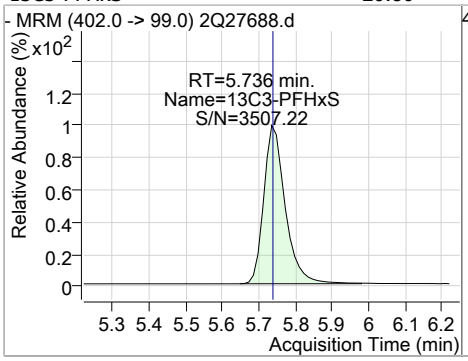


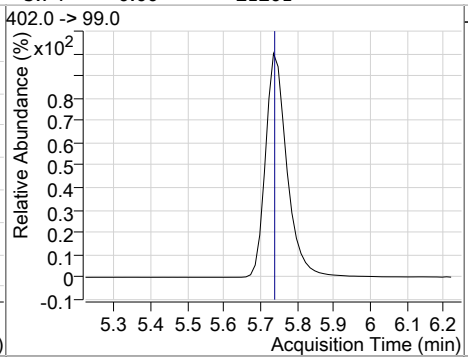


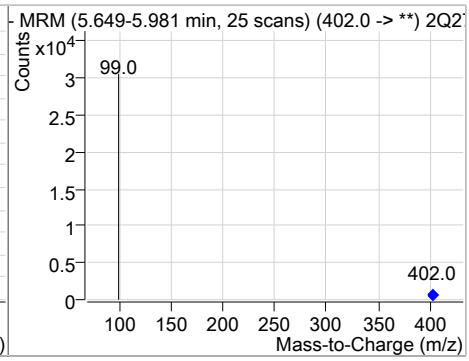


Perfluorinated Compounds by LC/MS/MS

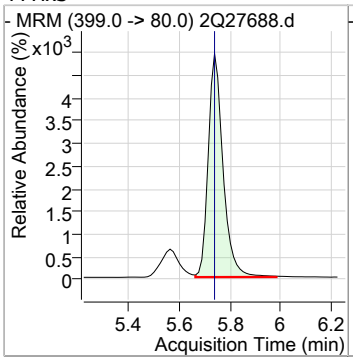
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.80	5.74	0.00	21201				

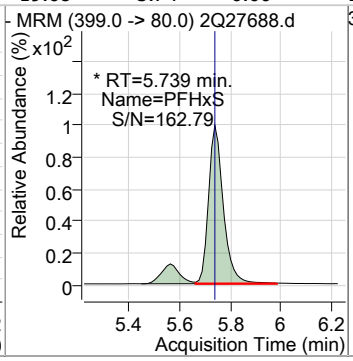


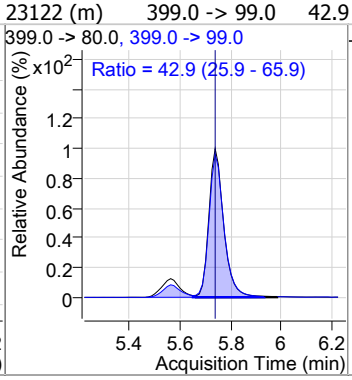


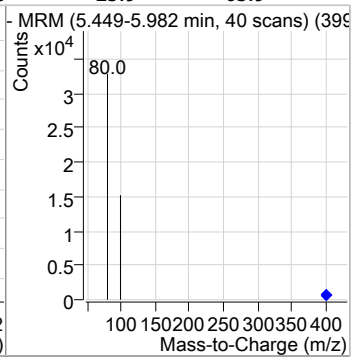


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.68	5.74	0.00	23122 (m)	399.0 -> 99.0	42.9	25.9	65.9

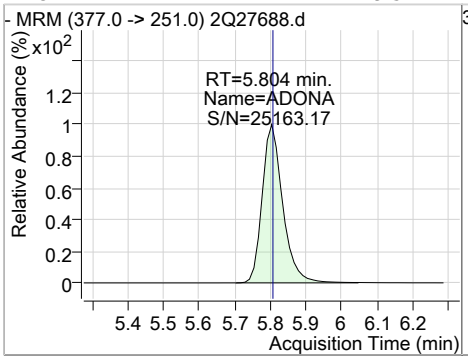


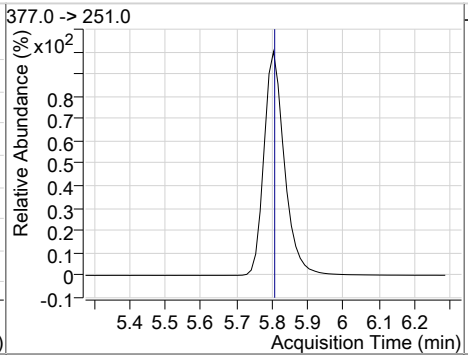


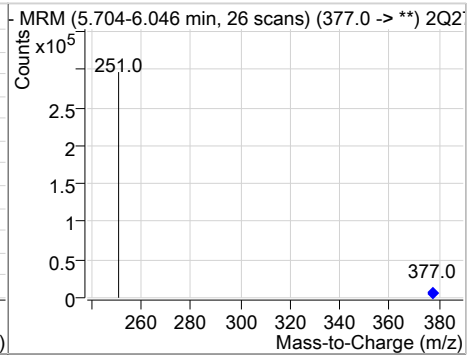




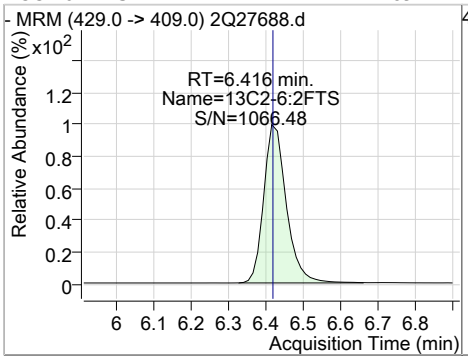
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.51	5.80	0.00	222410				

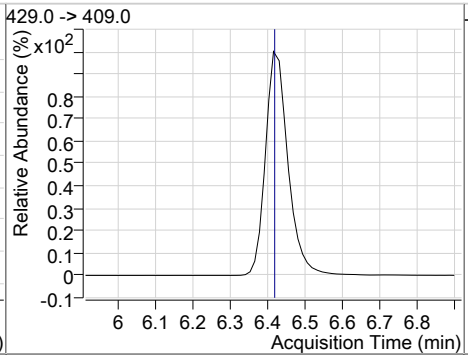


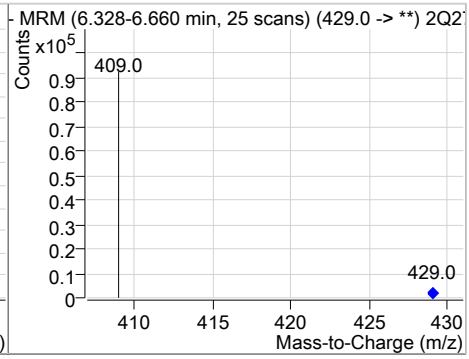




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.89	6.42	0.00	70271				

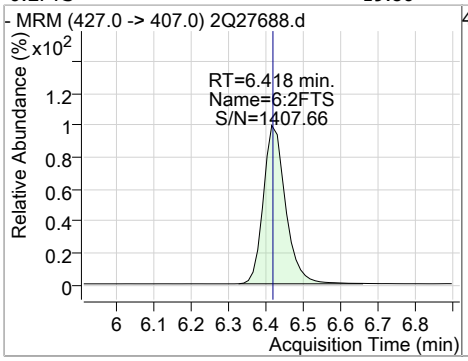


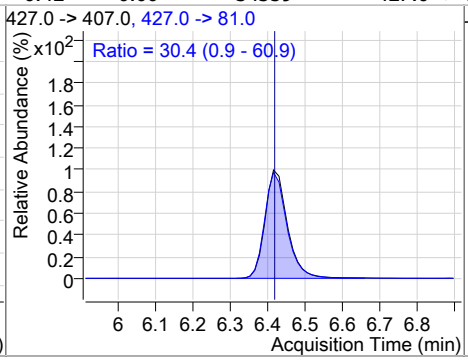


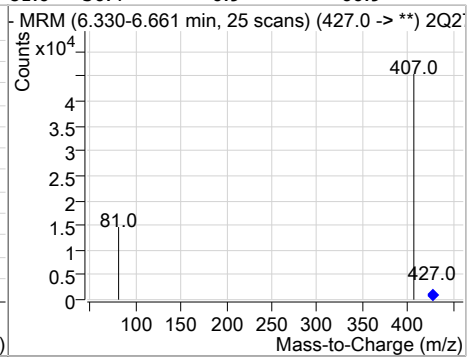


Perfluorinated Compounds by LC/MS/MS

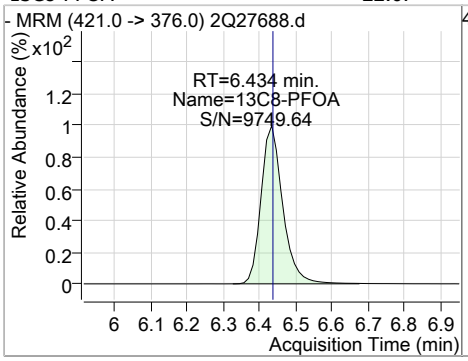
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.86	6.42	0.00	34359	427.0 -> 81.0	30.4	0.9	60.9

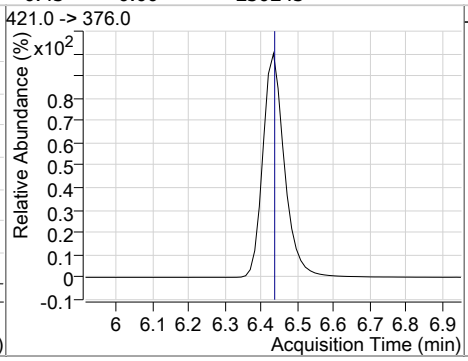


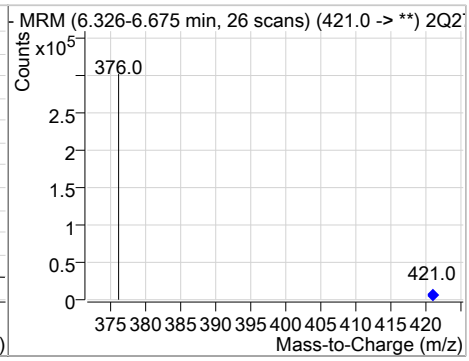




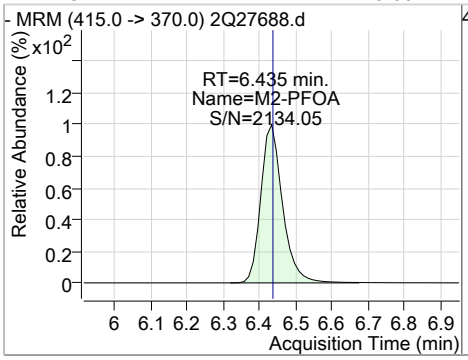
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	22.07	6.43	0.00	230243				

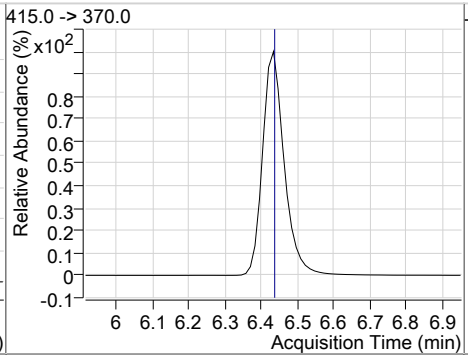


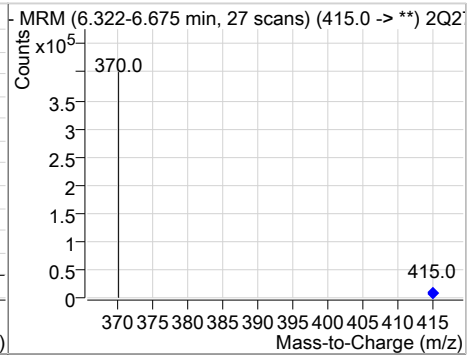




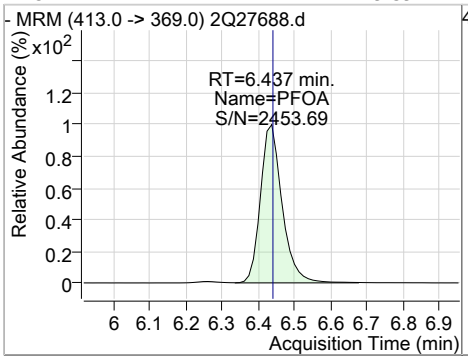
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	304135				

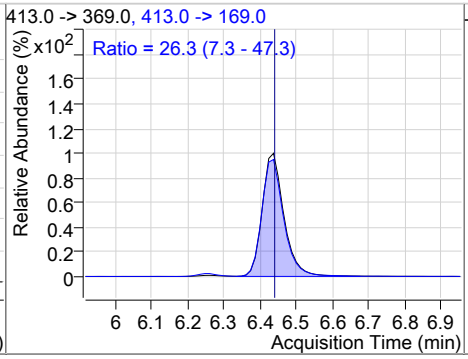


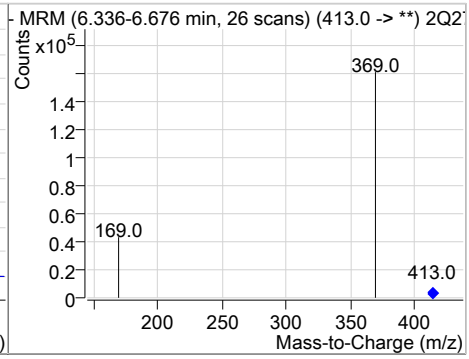




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.39	6.44	0.00	120588	413.0 -> 169.0	26.3	7.3	47.3

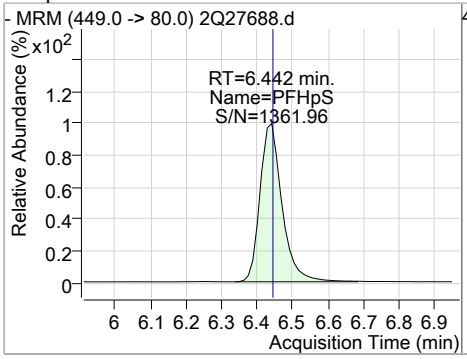


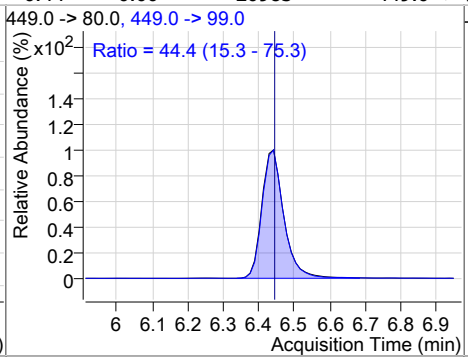


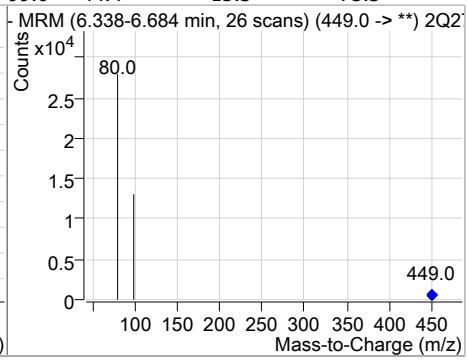


Perfluorinated Compounds by LC/MS/MS

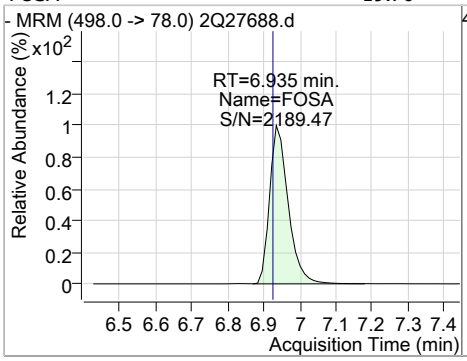
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.35	6.44	0.00	20983	449.0 -> 99.0	44.4	15.3	75.3

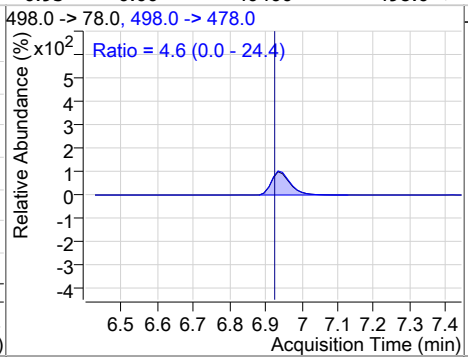


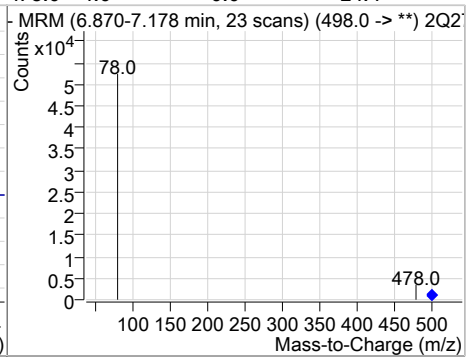




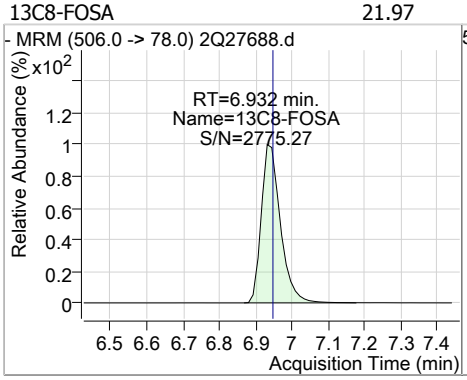
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.76	6.93	0.00	40466	498.0 -> 478.0	4.6	0.0	24.4

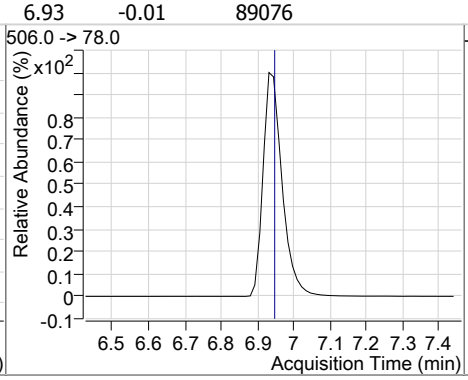


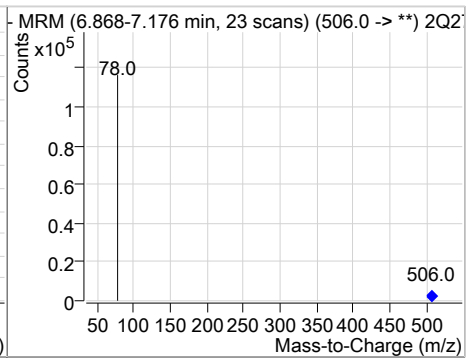




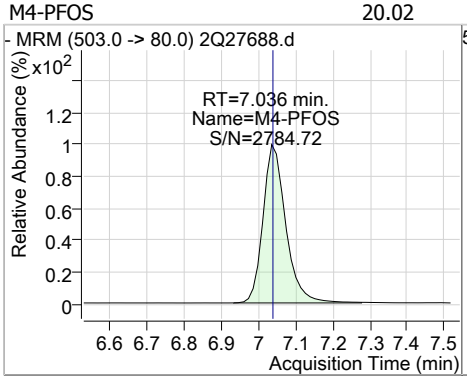
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.97	6.93	-0.01	89076				

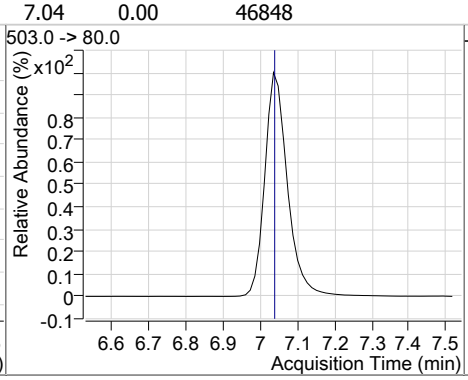


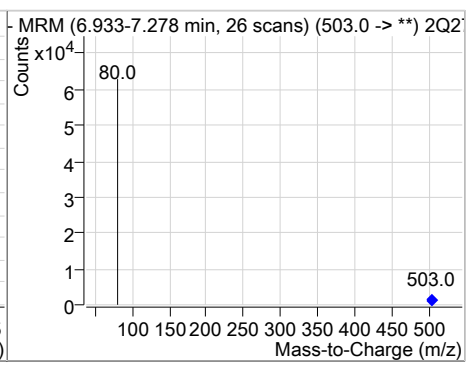




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.04	0.00	46848				

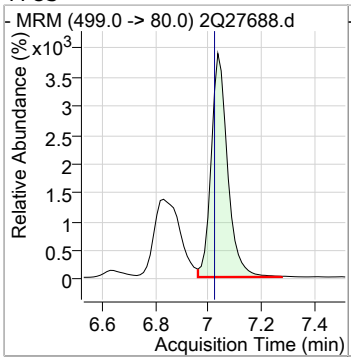


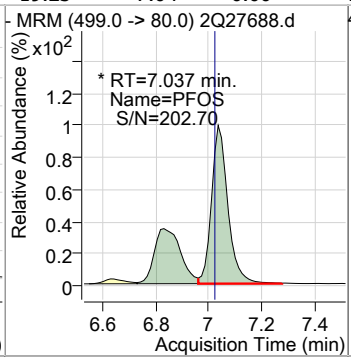


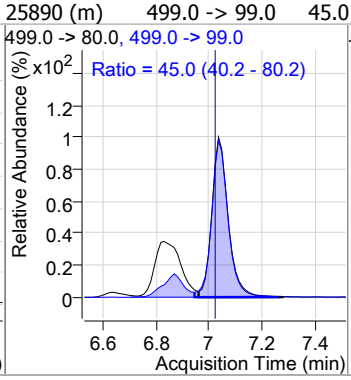


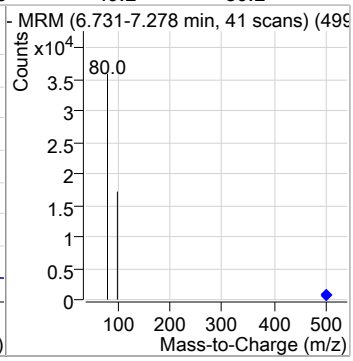
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.23	7.04	0.00	25890 (m)	499.0 -> 99.0	45.0	40.2	80.2

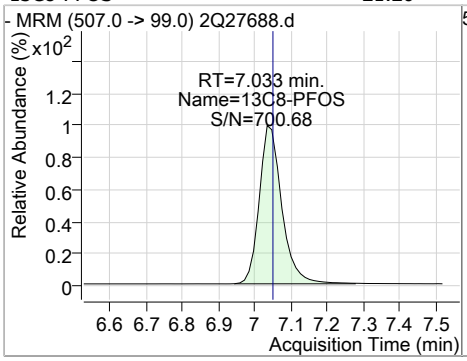


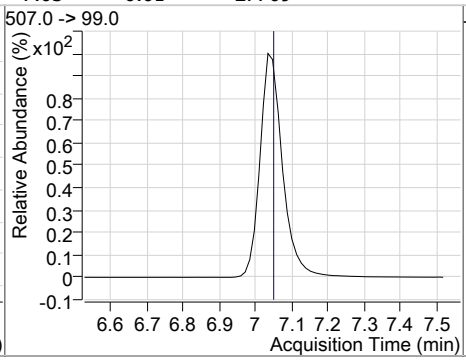


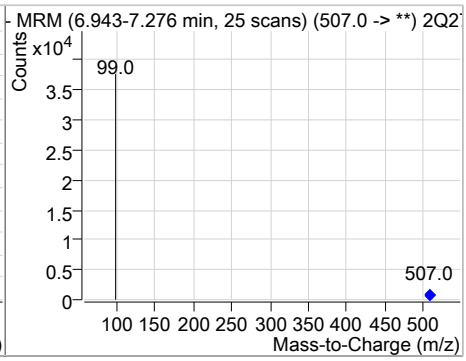




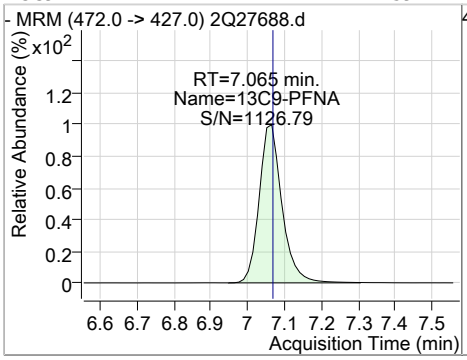
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.26	7.03	-0.01	27709				

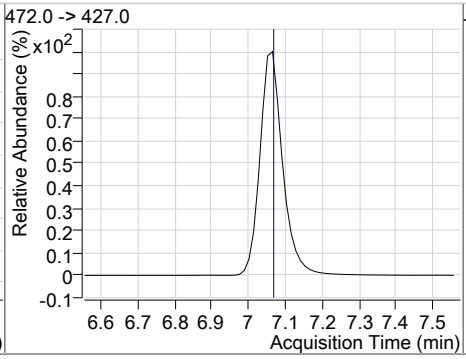


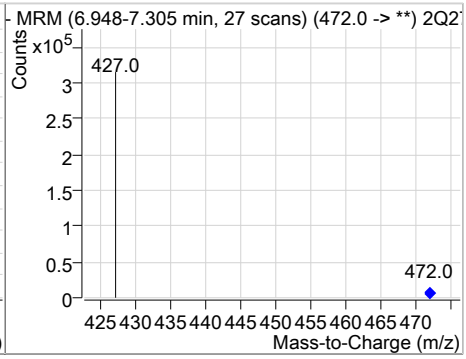




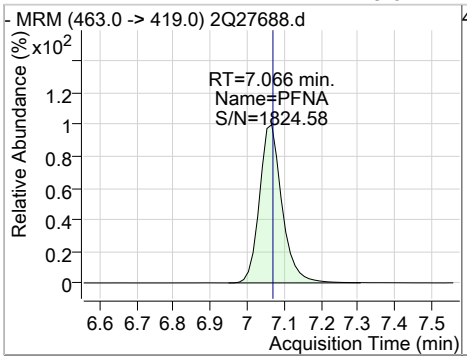
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	22.59	7.07	0.00	239150				

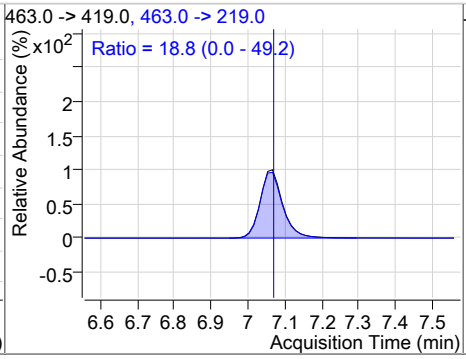


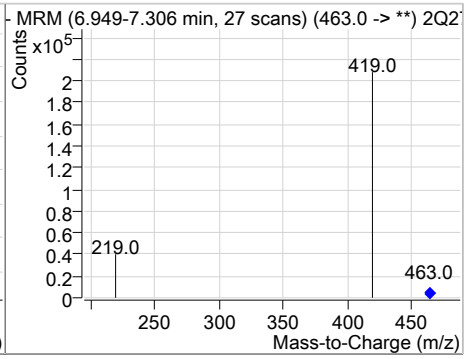




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.82	7.07	0.00	157212	463.0 -> 219.0	18.8	0.0	49.2

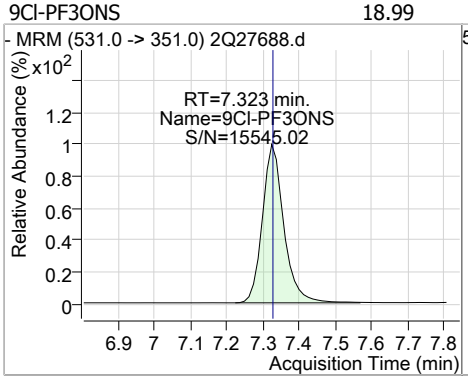


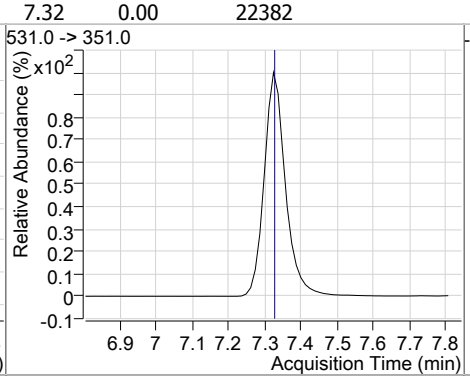


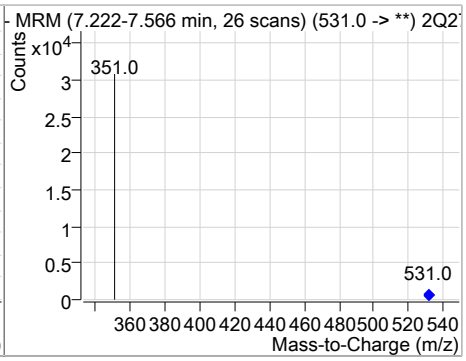


Perfluorinated Compounds by LC/MS/MS

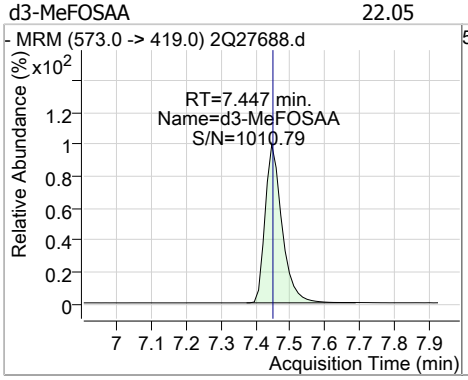
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.99	7.32	0.00	22382				

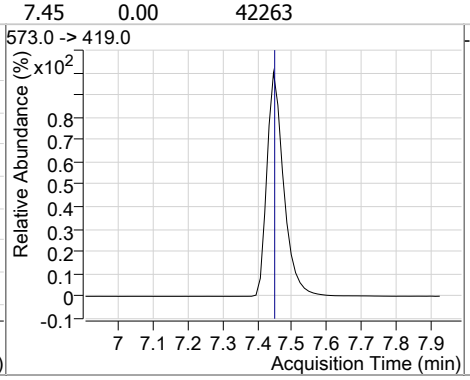


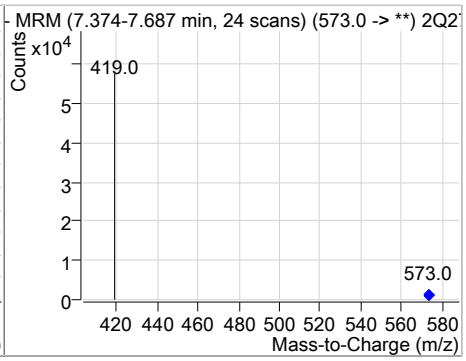




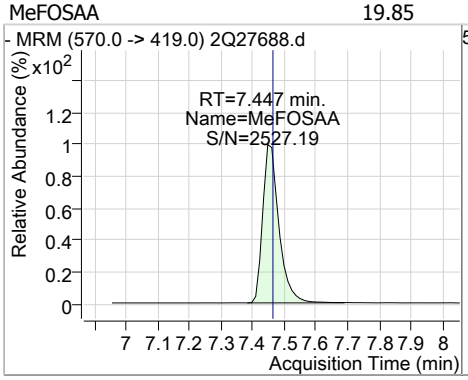
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	22.05	7.45	0.00	42263				

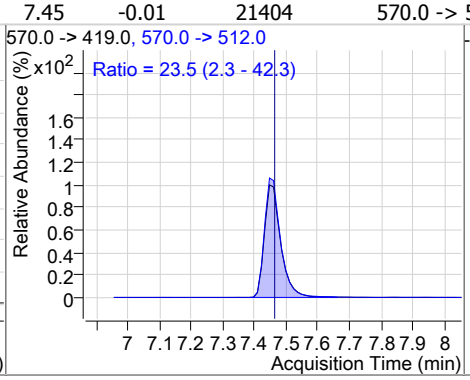


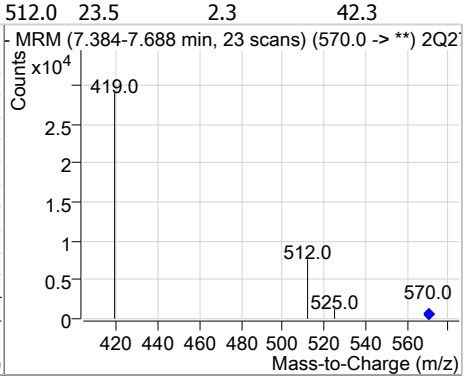




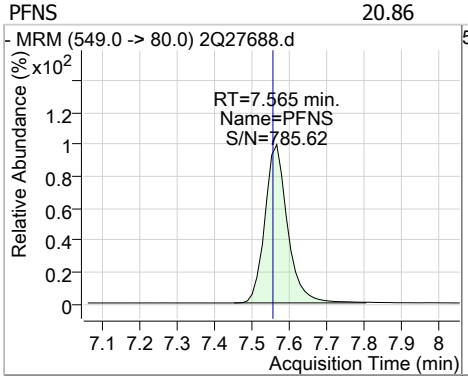
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.85	7.45	-0.01	21404	570.0 -> 512.0	23.5	2.3	42.3

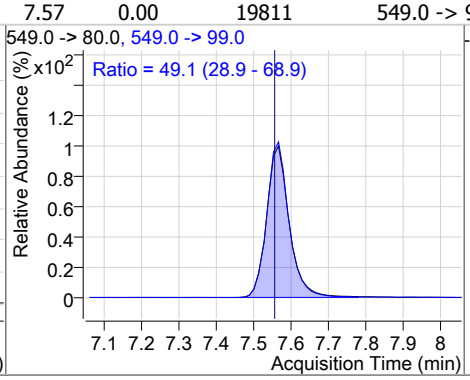


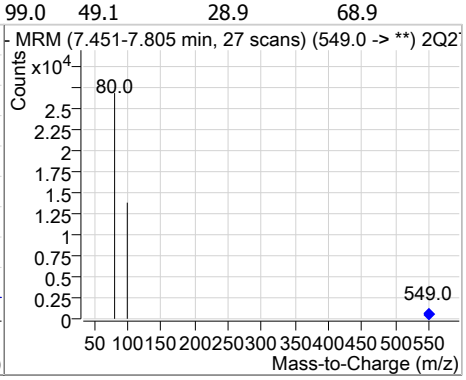




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.86	7.57	0.00	19811	549.0 -> 99.0	49.1	28.9	68.9

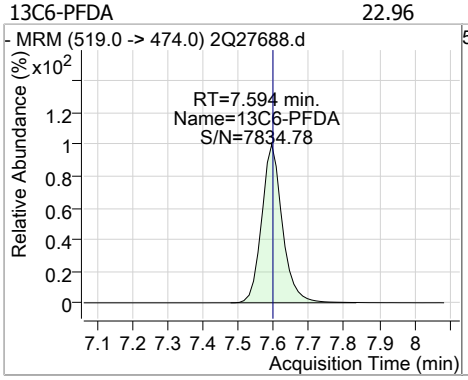


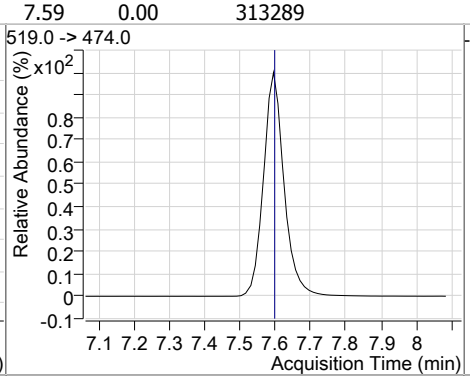


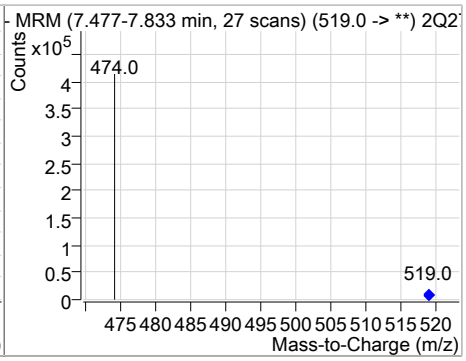


Perfluorinated Compounds by LC/MS/MS

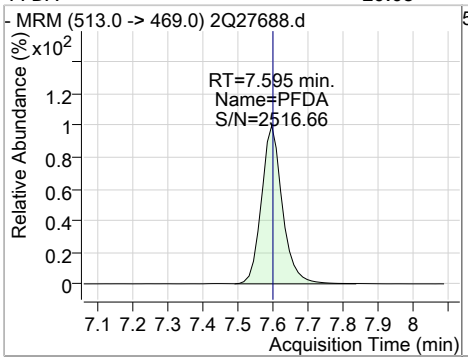
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	22.96	7.59	0.00	313289				

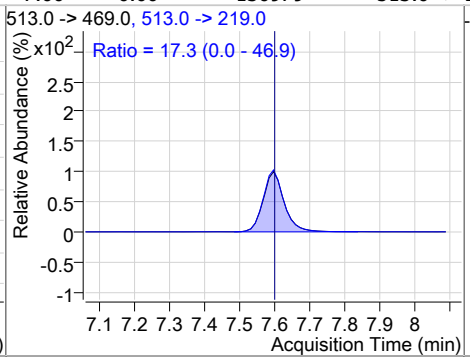


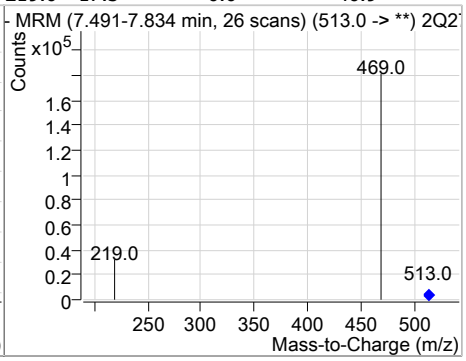




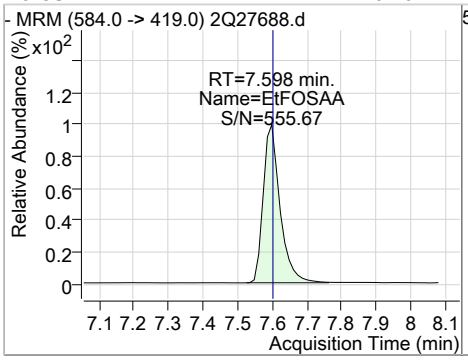
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.08	7.60	0.00	136979	513.0 -> 219.0	17.3	0.0	46.9

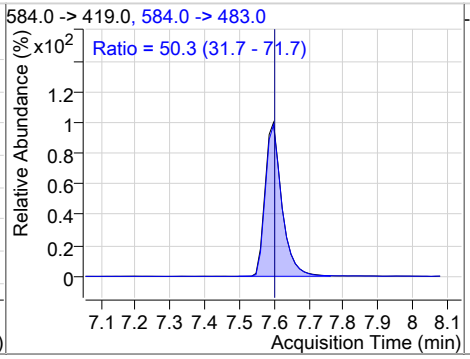


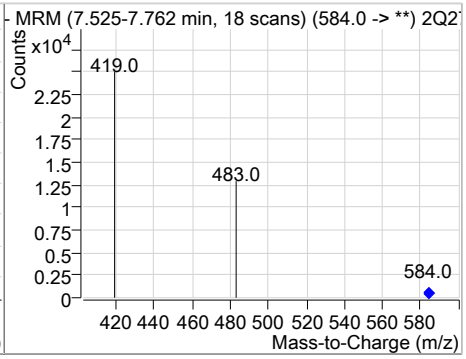




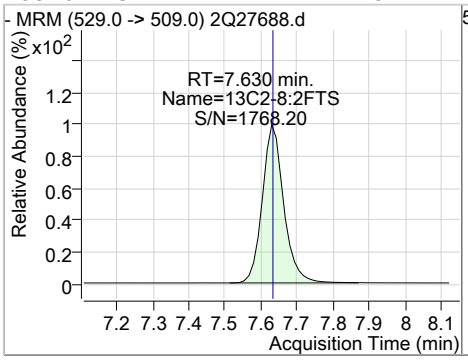
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.26	7.60	0.00	18199	584.0 -> 483.0	50.3	31.7	71.7

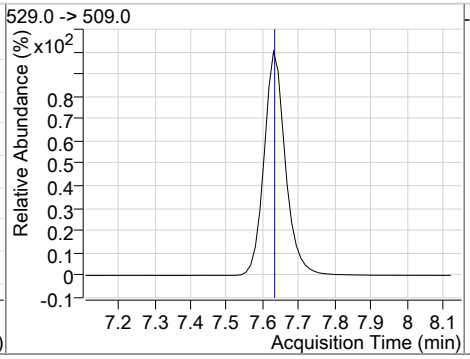


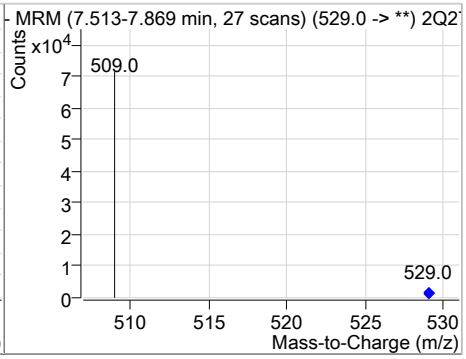




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.47	7.63	0.00	52036				

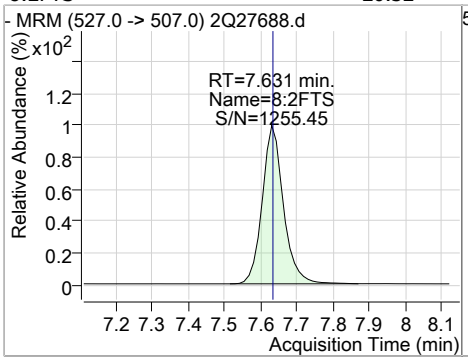


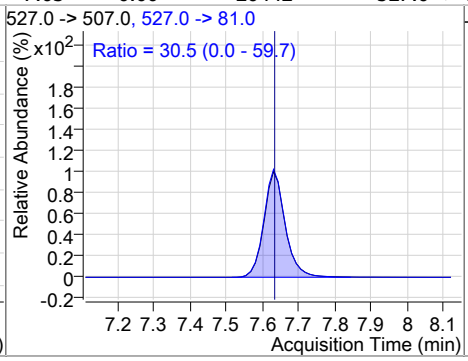


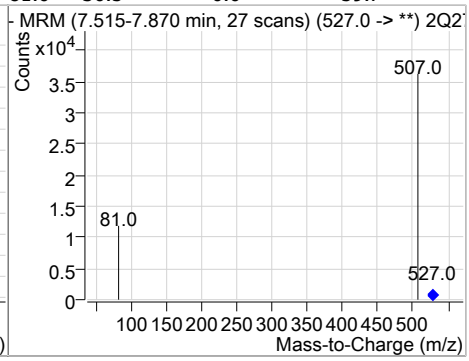


Perfluorinated Compounds by LC/MS/MS

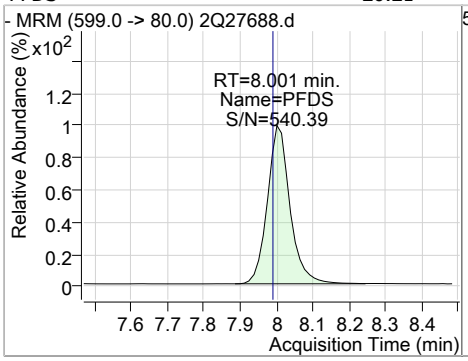
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.32	7.63	0.00	26442	527.0 -> 81.0	30.5	0.0	59.7

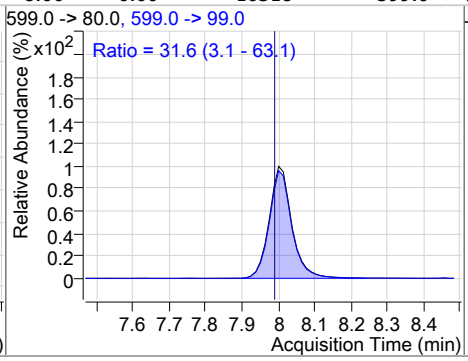


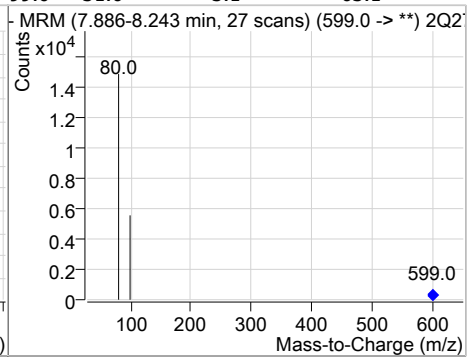




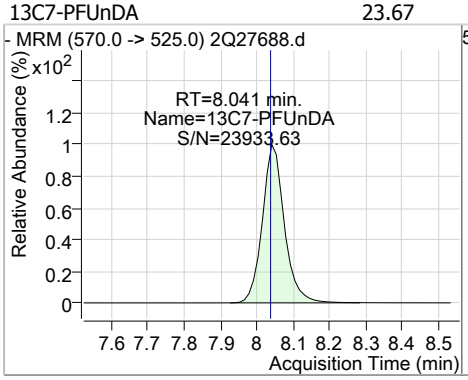
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.21	8.00	0.00	10318	599.0 -> 99.0	31.6	3.1	63.1

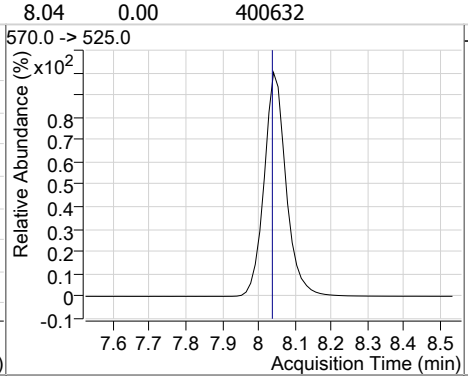


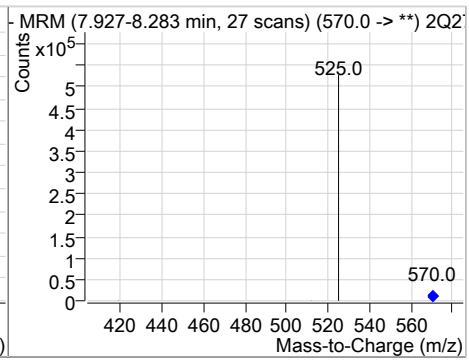




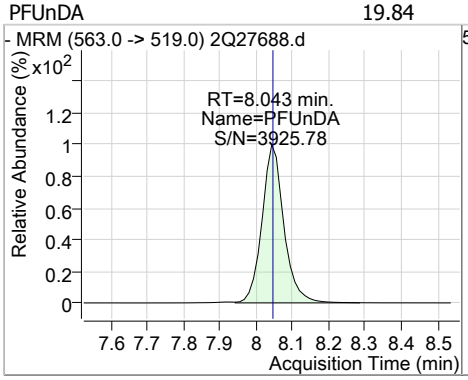
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	23.67	8.04	0.00	400632				

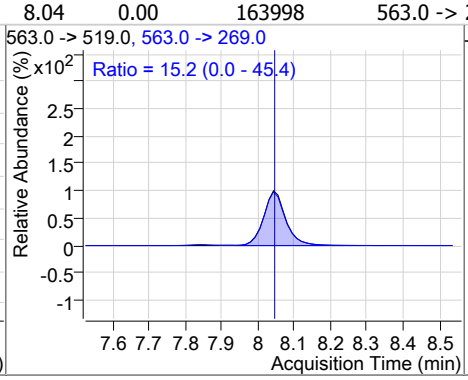


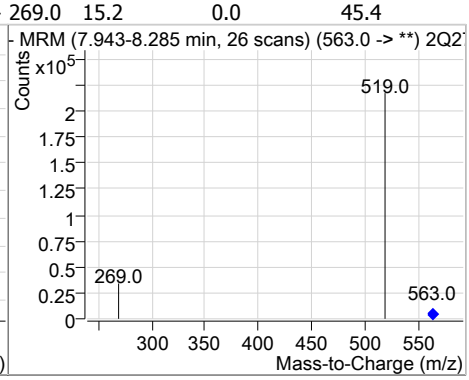




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.84	8.04	0.00	163998	563.0 -> 269.0	15.2	0.0	45.4

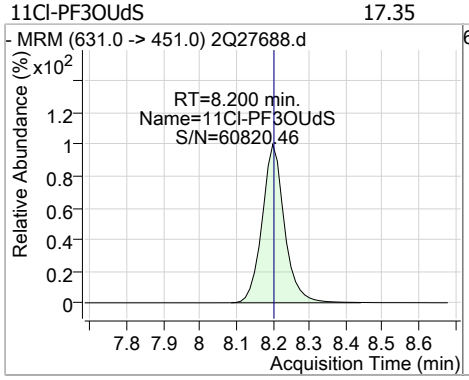


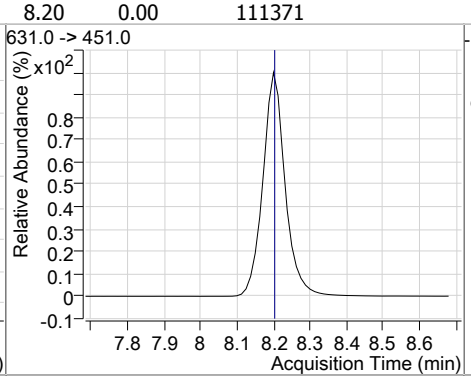


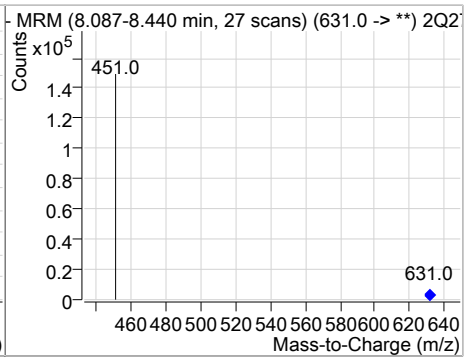


Perfluorinated Compounds by LC/MS/MS

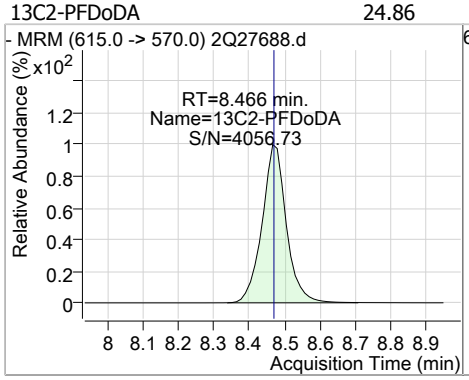
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.35	8.20	0.00	111371				

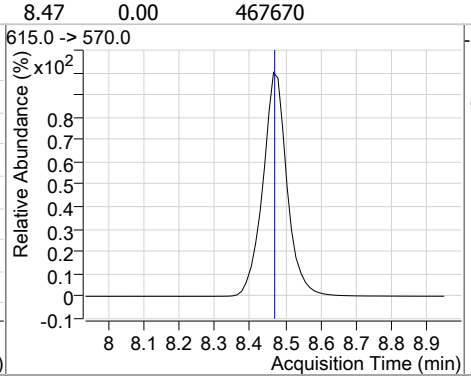


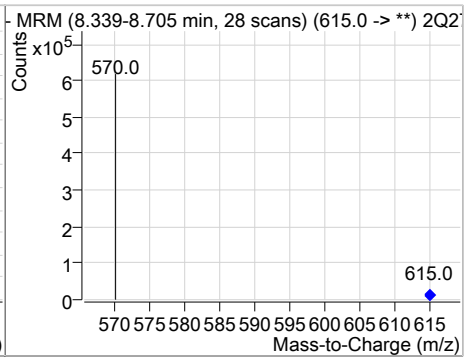




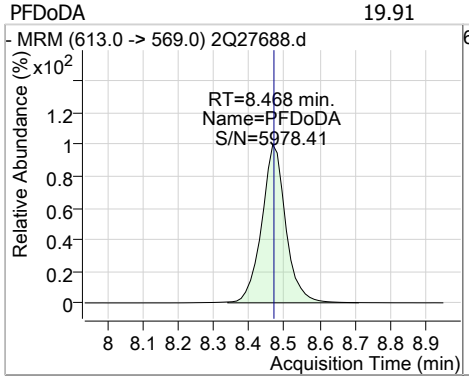
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	24.86	8.47	0.00	467670				

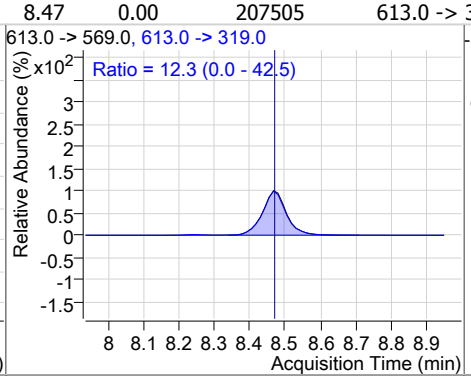


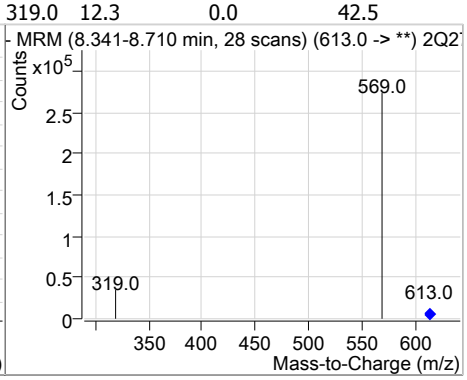




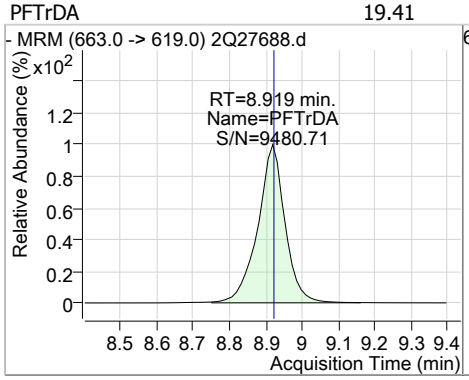
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.91	8.47	0.00	207505	613.0 -> 319.0	12.3	0.0	42.5

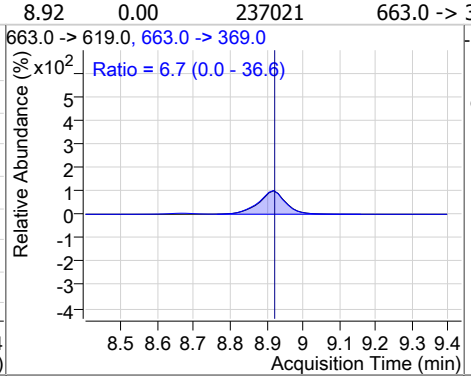


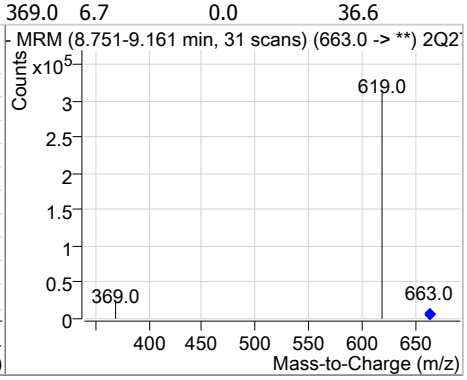




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.41	8.92	0.00	237021	663.0 -> 369.0	6.7	0.0	36.6

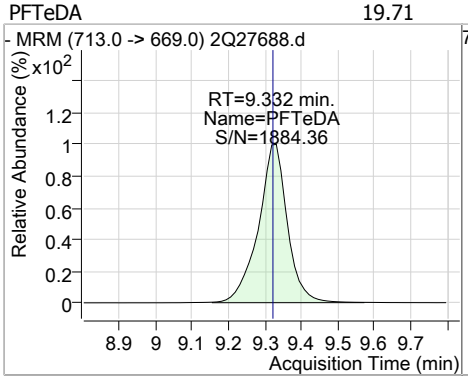


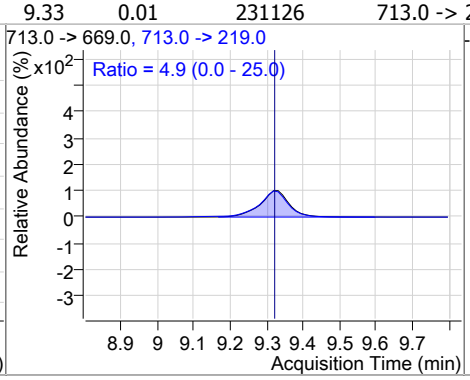


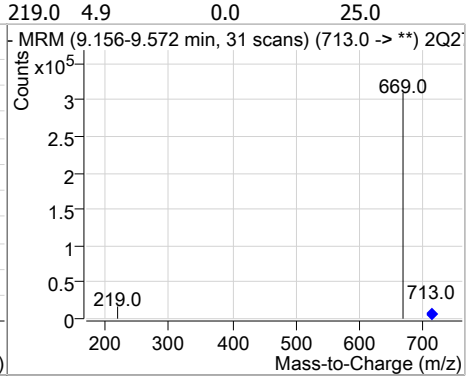


Perfluorinated Compounds by LC/MS/MS

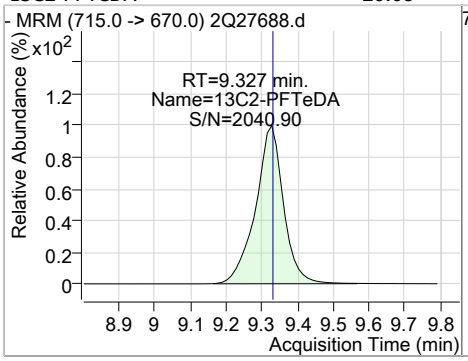
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.71	9.33	0.01	231126	713.0 -> 219.0	4.9	0.0	25.0

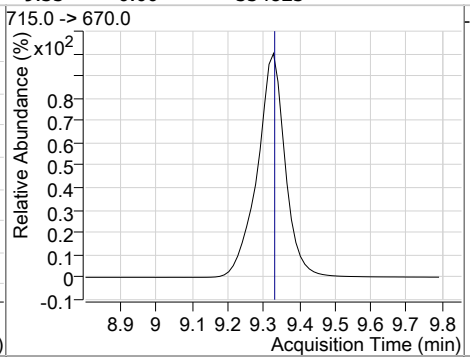


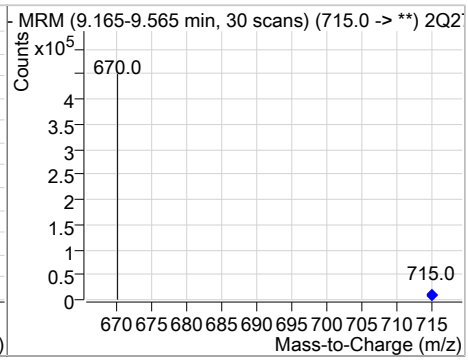




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	26.08	9.33	0.00	334823				







Manual Integration Approval Summary

Sample Number: S2Q442-CC442
Lab FileID: 2Q27688.D
Injection Time: 03/18/19 14:57
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27690.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 3:29:45 PM
Sample Name : CC442-1.0
Vial : Vial 3
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

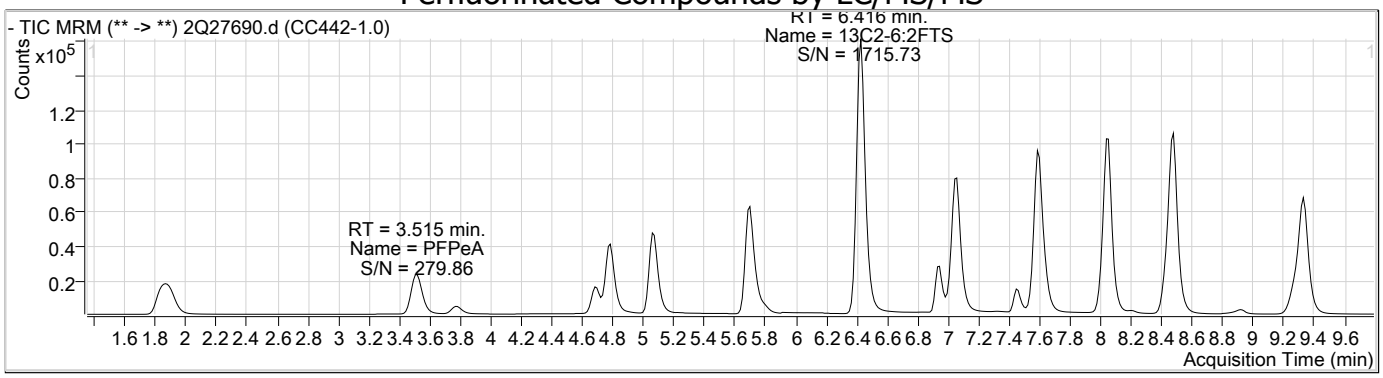
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	335415	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	50410	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	135580	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	116096	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	167087	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	243500	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	251546	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	261149	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	342862	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	432657	20.00	µg/L	0.000
M2-PFDoDA	8.479	615.0 -> 570.0	489323	20.00	µg/L	0.013
M2-PFTeDA	9.327	715.0 -> 670.0	357691	20.00	µg/L	0.000
M8-FOSA	6.944	506.0 -> 78.0	97132	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	19954	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	22502	20.00	µg/L	0.000
M8-PFOS	7.045	507.0 -> 99.0	28652	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	63743	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	72469	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	51378	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	45706	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	185159	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	63718	21.43	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.1%		
13C2-6:2FTS	6.416	429.0 -> 409.0	72419	22.56	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.8%		
13C2-8:2FTS	7.630	529.0 -> 509.0	51419	23.19	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.9%		
13C2-PFDoDA	8.479	615.0 -> 570.0	488909	25.99	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 130.0%		
13C2-PFTeDA	9.327	715.0 -> 670.0	356595	27.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 138.9%		
13C3-PFBS	3.767	302.0 -> 99.0	19919	21.85	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.2%		
13C3-PFHxS	5.736	402.0 -> 99.0	22481	22.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.3%		
13C4-PFBA	1.865	217.0 -> 172.0	134839	22.49	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.4%		
13C4-PFHpA	5.705	367.0 -> 322.0	243384	23.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.7%		
13C5-PFHxA	4.789	318.0 -> 273.0	166795	22.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.8%		
13C5-PFPeA	3.524	268.0 -> 223.0	116327	22.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.4%		
13C6-PFDA	7.594	519.0 -> 474.0	342714	25.11	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

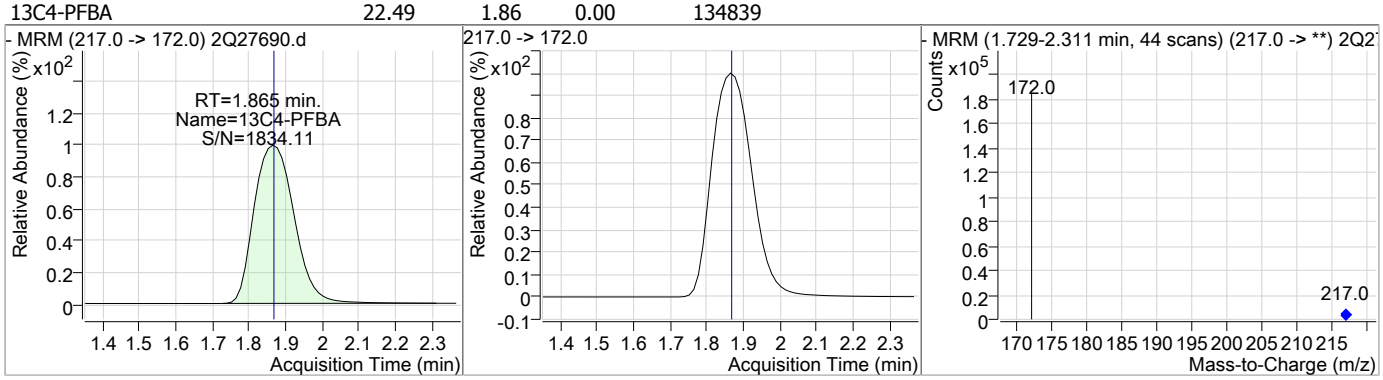
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 125.6%		
13C7-PFUnDA	8.041	570.0 -> 525.0	432513	25.56 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 127.8%		
13C8-FOSA	6.944	506.0 -> 78.0	97131	23.95 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 119.8%		
13C8-PFOA	6.434	421.0 -> 376.0	251411	24.10 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.5%		
13C8-PFOS	7.045	507.0 -> 99.0	28624	21.96 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.8%		
13C9-PFNA	7.065	472.0 -> 427.0	261055	24.66 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 123.3%		
d3-MeFOSAA	7.447	573.0 -> 419.0	45686	23.83 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 119.2%		
M2-PFOA	6.435	415.0 -> 370.0	335615	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	50554	20.05 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	185159	115.79 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 115.8%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	1737	0.99 µg/L		97
6:2FTS	6.418	427.0 -> 407.0	1772	0.99 µg/L		98
8:2FTS	7.631	527.0 -> 507.0	1268	0.99 µg/L		95
EtFOSAA	7.598	584.0 -> 419.0	943	0.96 µg/L		99
FOSA	6.935	498.0 -> 78.0	2263	1.01 µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	1174	1.01 µg/L		86
PFBA	1.860	213.0 -> 169.0	1322	0.99 µg/L		100
PFBS	3.771	299.0 -> 80.0	1537	0.97 µg/L		98
PFDA	7.595	513.0 -> 469.0	7365	0.99 µg/L		98
PFDoDA	8.468	613.0 -> 569.0	10644	0.98 µg/L		99
PFDS	8.014	599.0 -> 80.0	467	0.89 µg/L		84
PFHpA	5.695	363.0 -> 319.0	9813	0.93 µg/L		99
PFHpS	6.442	449.0 -> 80.0	1067	0.98 µg/L		93
PFHxA	4.791	313.0 -> 269.0	2789	0.97 µg/L		97
PFHxS	5.739	399.0 -> 80.0	1194	0.96 µg/L	m	96
PFNA	7.066	463.0 -> 419.0	8087	0.93 µg/L		99
PFNS	7.565	549.0 -> 80.0	1063	1.08 µg/L		100
PFOA	6.437	413.0 -> 369.0	6334	0.93 µg/L		98
PFOS	7.037	499.0 -> 80.0	1447	1.04 µg/L	m	79
PFPeA	3.515	263.0 -> 219.0	4893	0.97 µg/L		100
PFPeS	4.908	349.0 -> 80.0	1055	1.04 µg/L		98
PFTeDA	9.332	713.0 -> 669.0	11798	0.94 µg/L		99
PFTrDA	8.919	663.0 -> 619.0	11692	0.90 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	8360	0.94 µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	5749	0.86 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	1252	0.99 µg/L		100
ADONA	5.804	377.0 -> 251.0	11131	0.91 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	10513	4.78 µg/L		97

 # = Qualifier out of range, m = manually integrated, + = Area summed

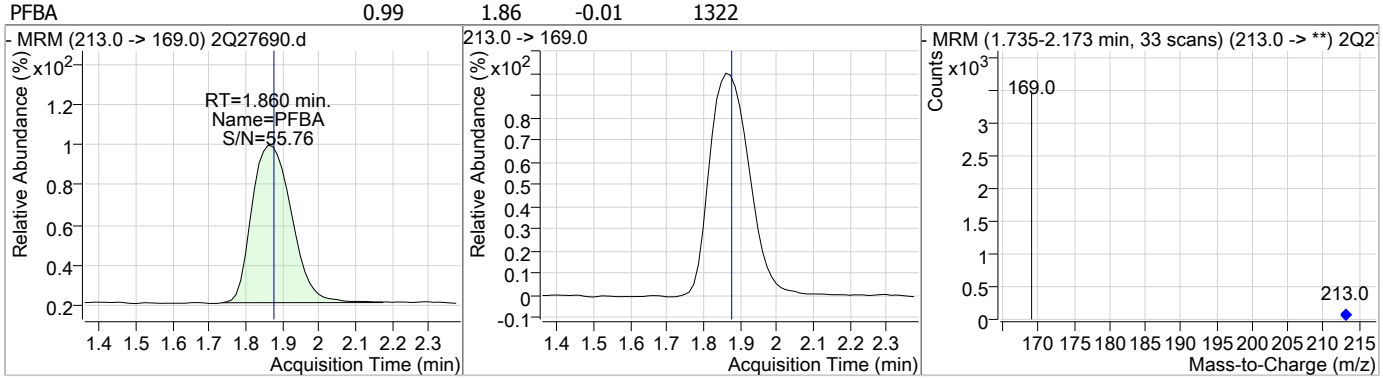
Perfluorinated Compounds by LC/MS/MS



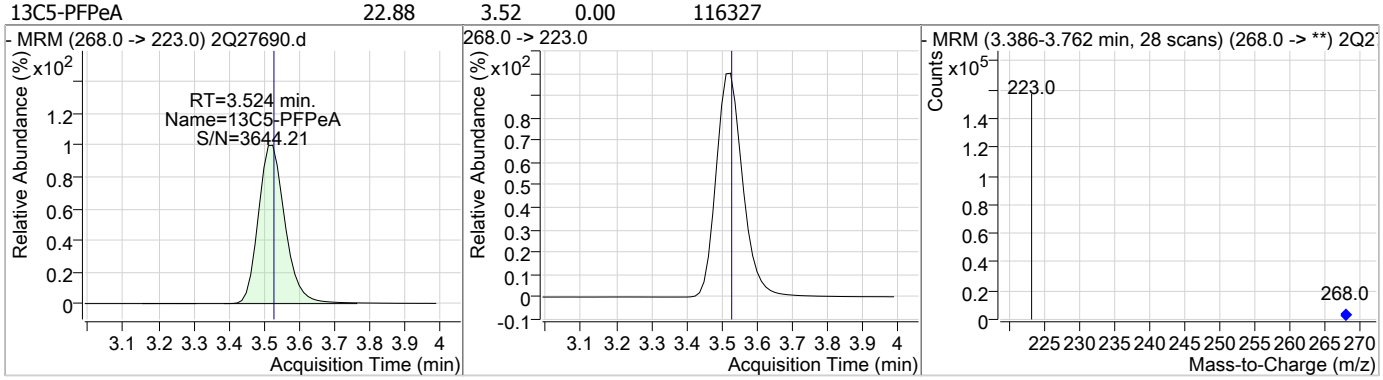
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	22.49	1.86	0.00	134839				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.99	1.86	-0.01	1322				

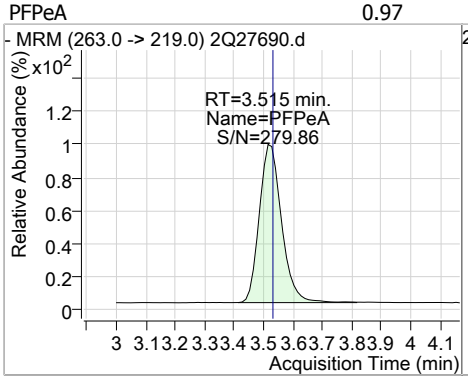


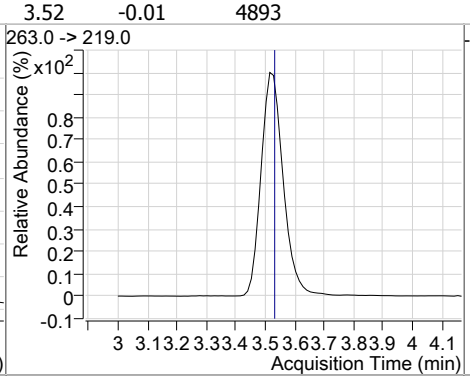
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	22.88	3.52	0.00	116327				

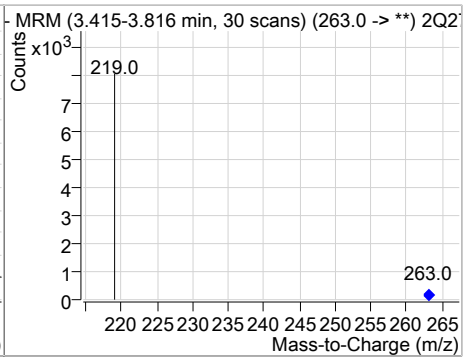


Perfluorinated Compounds by LC/MS/MS

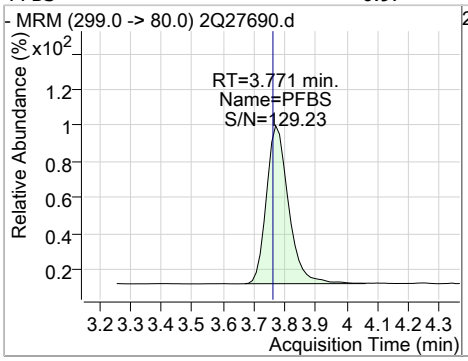
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.97	3.52	-0.01	4893				

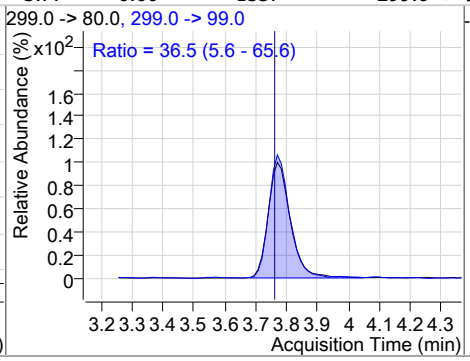


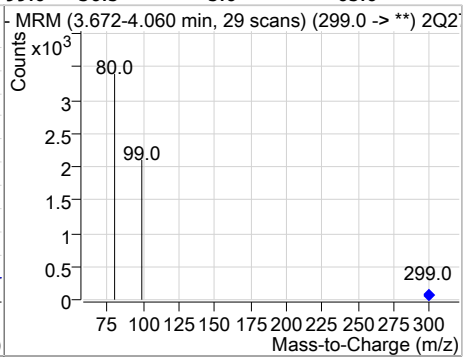




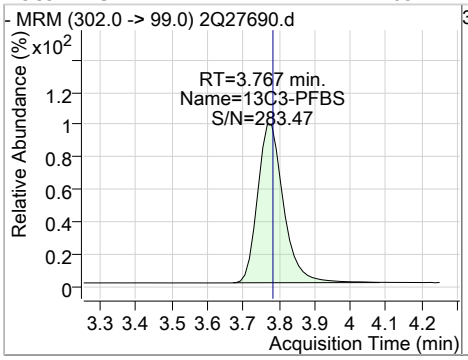
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.97	3.77	0.00	1537	299.0 -> 99.0	36.5	5.6	65.6

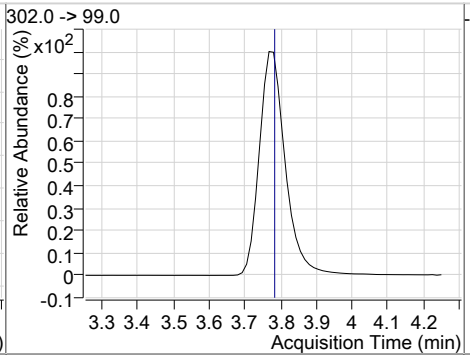


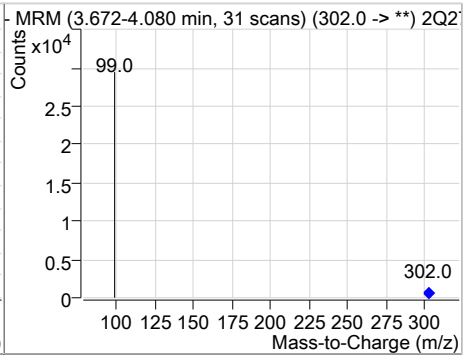




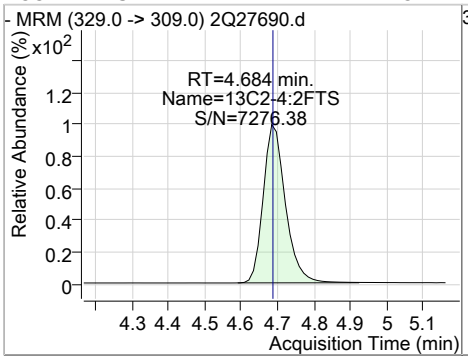
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.85	3.77	-0.01	19919				

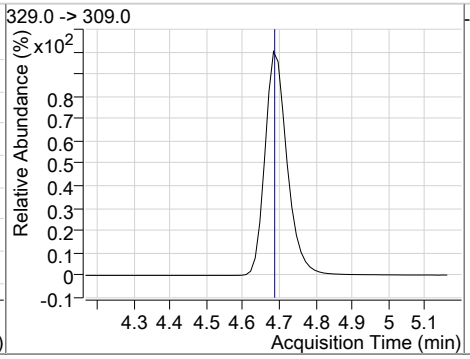


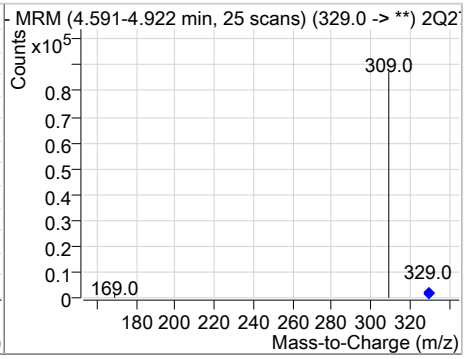




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	21.43	4.68	0.00	63718				

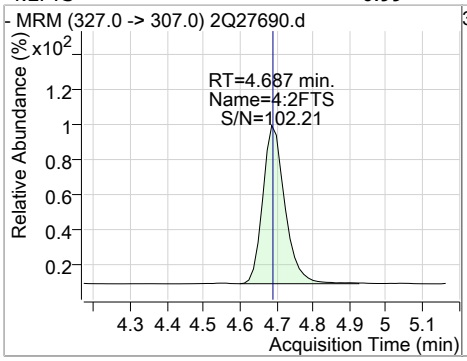


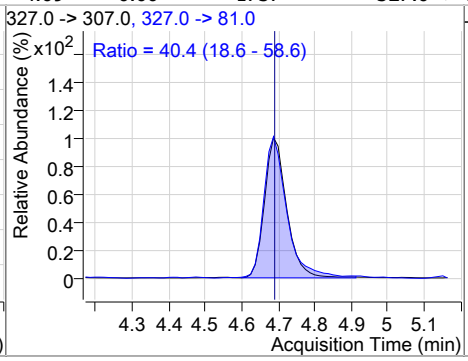


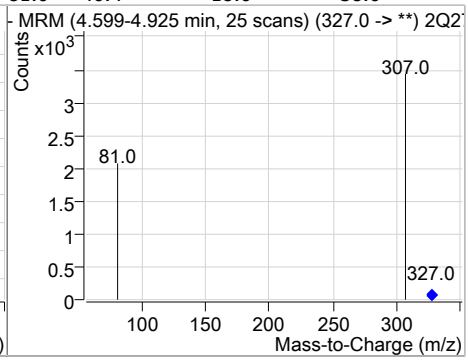


Perfluorinated Compounds by LC/MS/MS

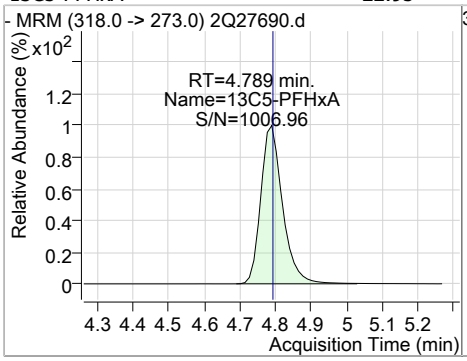
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	0.99	4.69	0.00	1737	327.0 -> 81.0	40.4	18.6	58.6

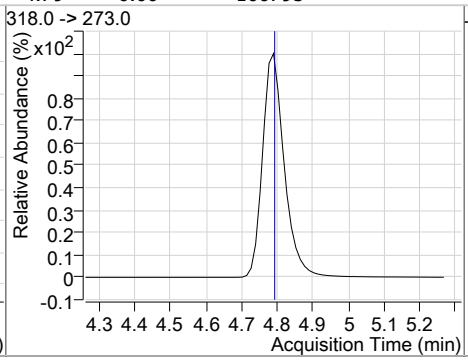


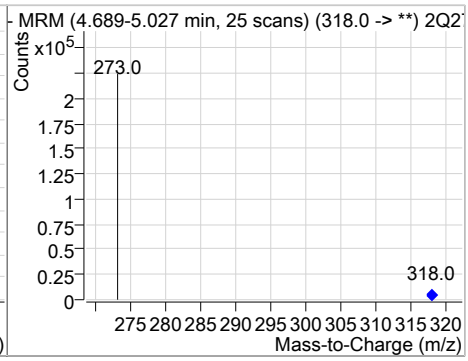




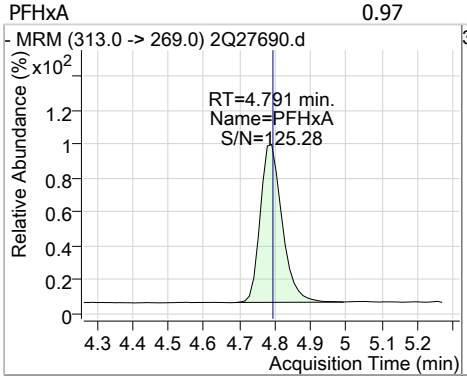
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	22.95	4.79	0.00	166795				

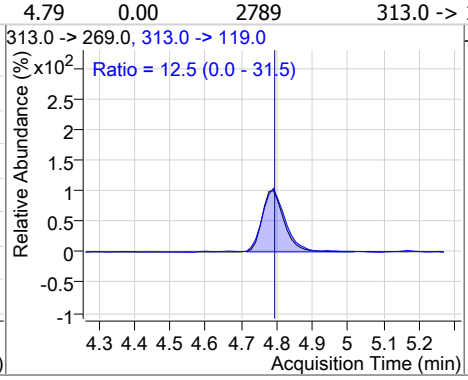


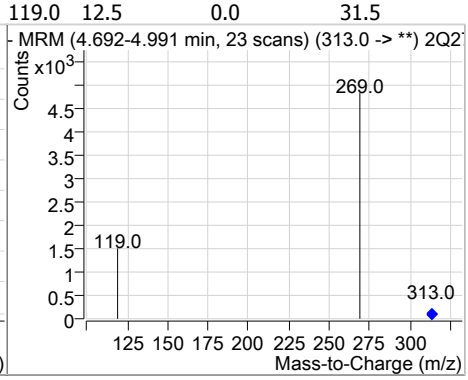




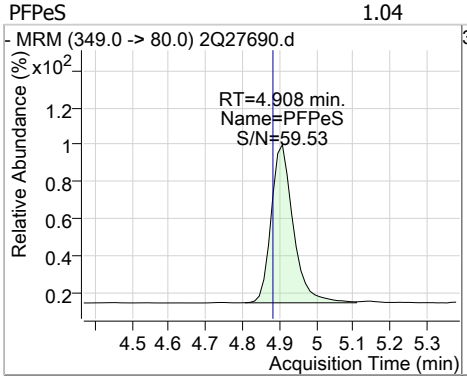
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.97	4.79	0.00	2789	313.0 -> 119.0	12.5	0.0	31.5

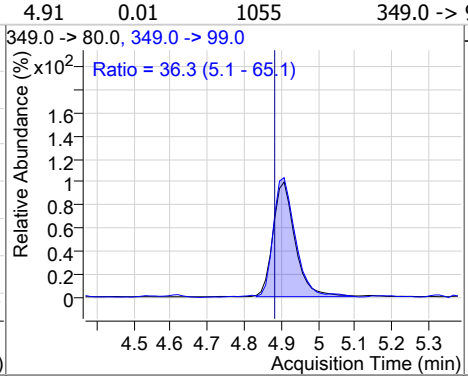


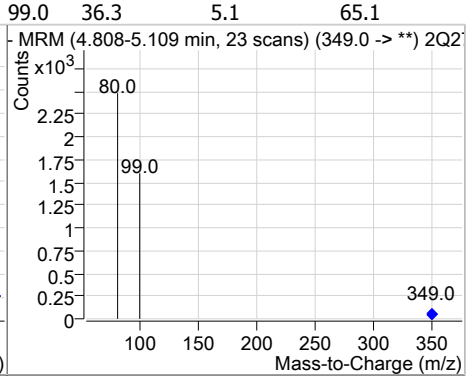




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.04	4.91	0.01	1055	349.0 -> 99.0	36.3	5.1	65.1

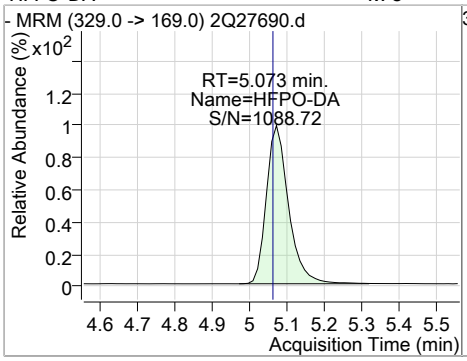


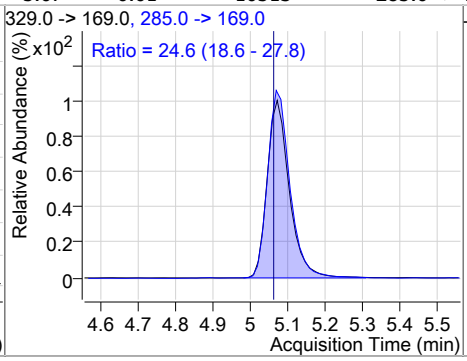


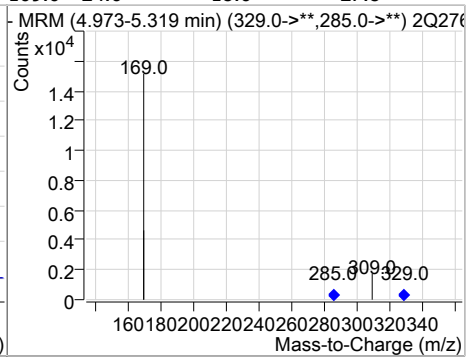


Perfluorinated Compounds by LC/MS/MS

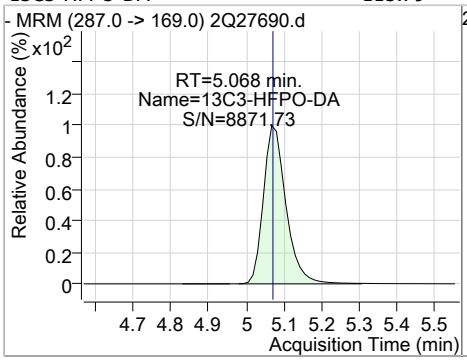
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.78	5.07	0.01	10513	285.0 -> 169.0	24.6	18.6	27.8

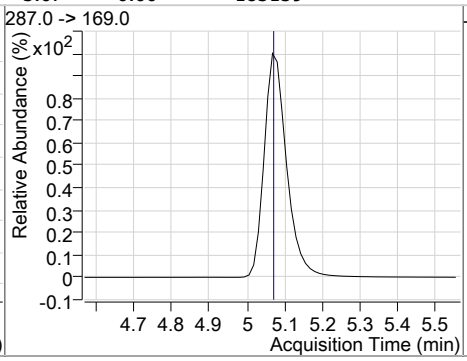


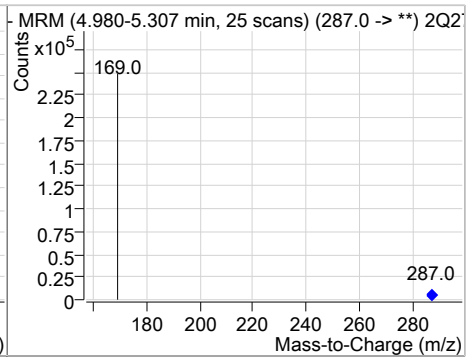




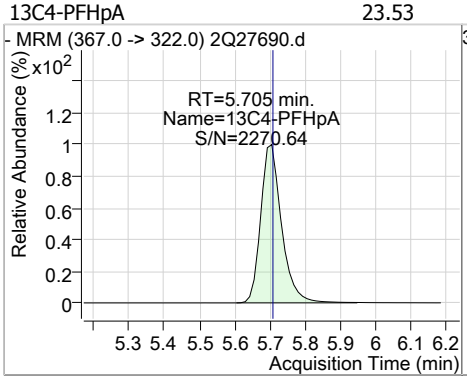
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	115.79	5.07	0.00	185159				

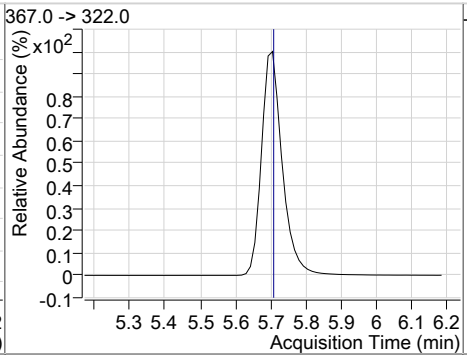


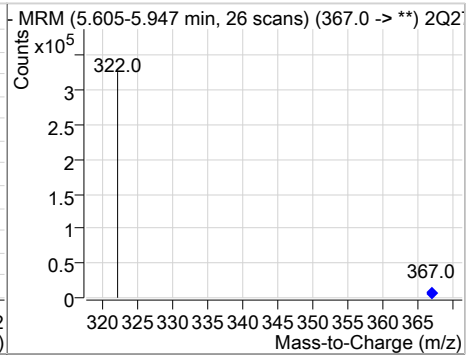




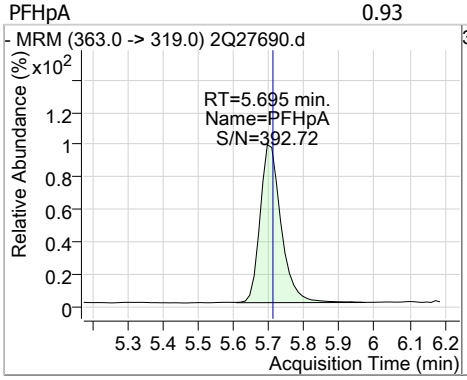
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	23.53	5.71	0.00	243384				

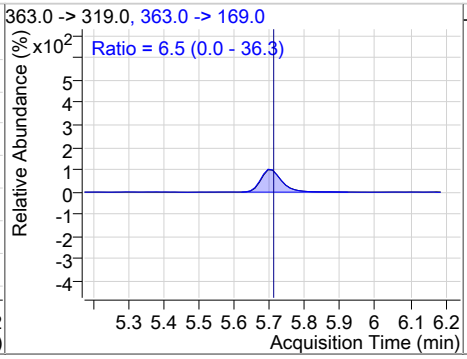


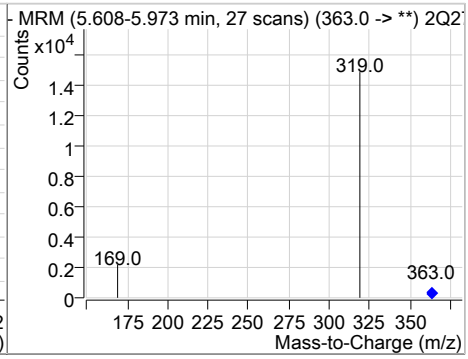




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.93	5.70	-0.01	9813	363.0 -> 169.0	6.5	0.0	36.3

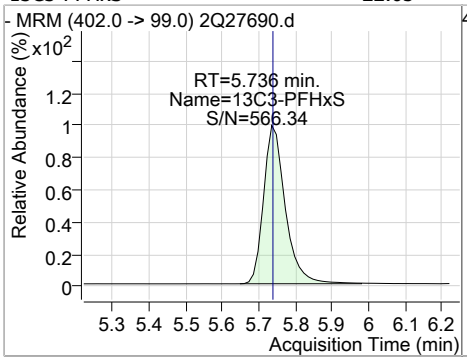


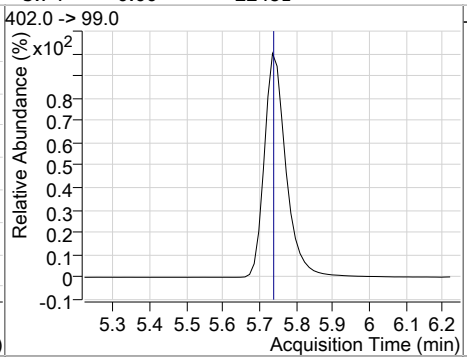


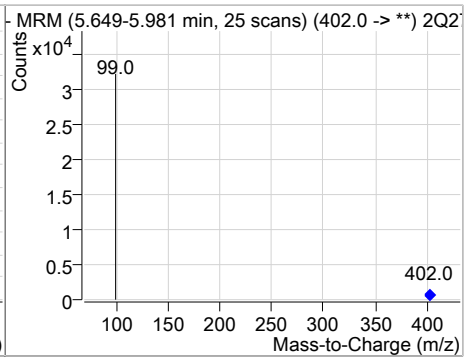


Perfluorinated Compounds by LC/MS/MS

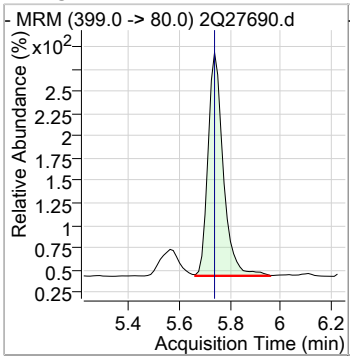
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	22.05	5.74	0.00	22481				

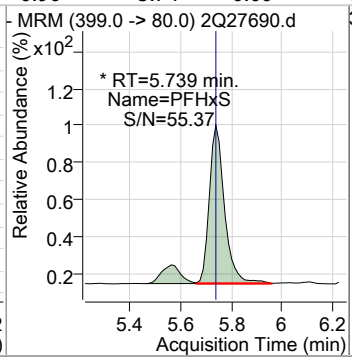


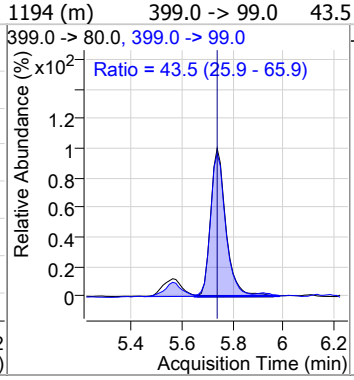


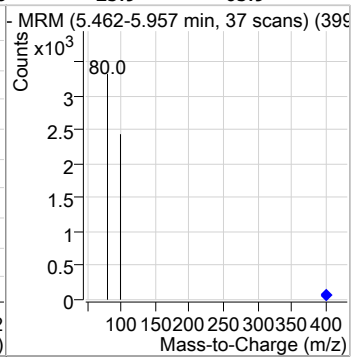


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.96	5.74	0.00	1194 (m)	399.0 -> 99.0	43.5	25.9	65.9

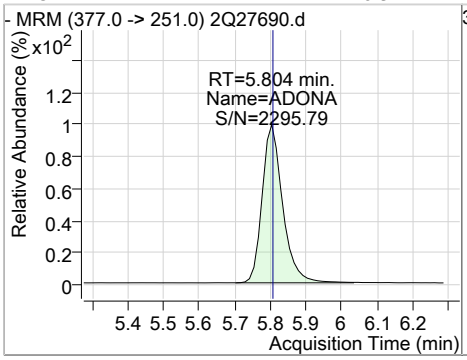


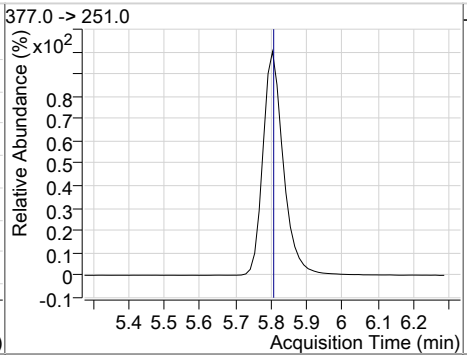


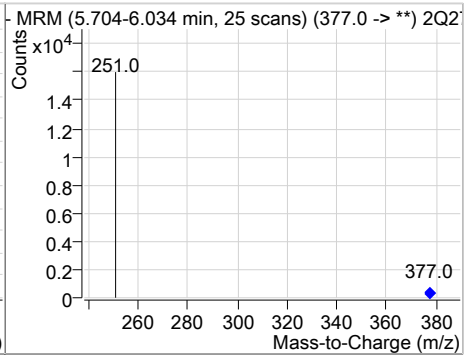




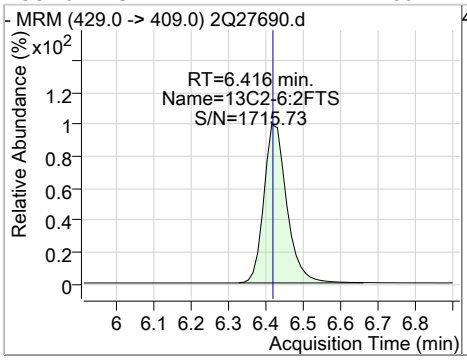
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.91	5.80	0.00	11131				

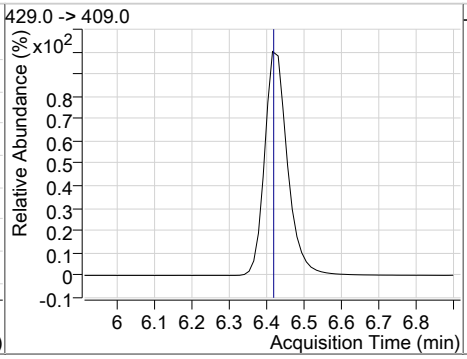


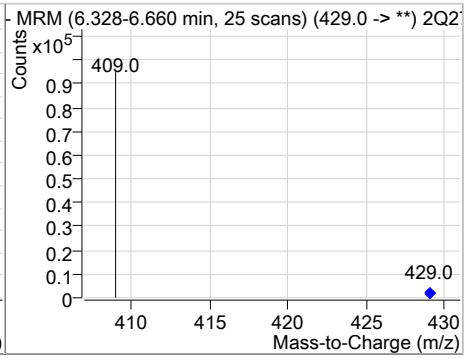




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	22.56	6.42	0.00	72419				

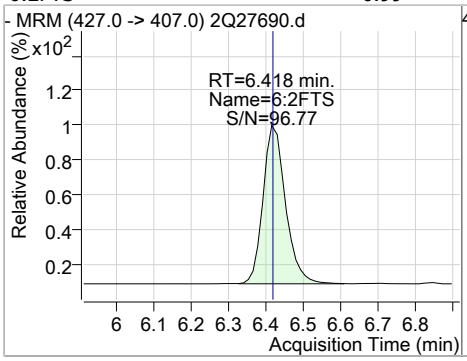


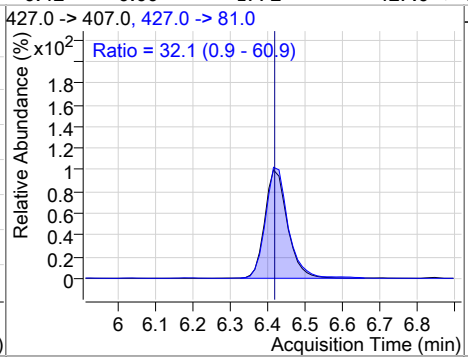


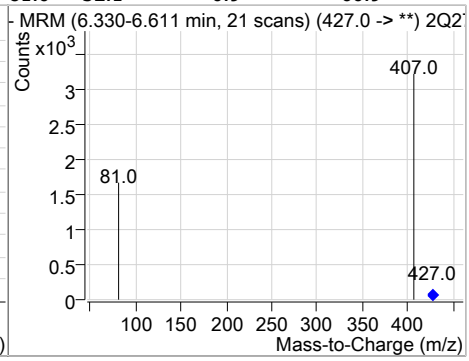


Perfluorinated Compounds by LC/MS/MS

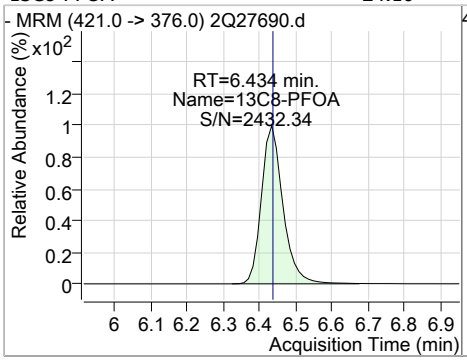
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.99	6.42	0.00	1772	427.0 -> 81.0	32.1	0.9	60.9

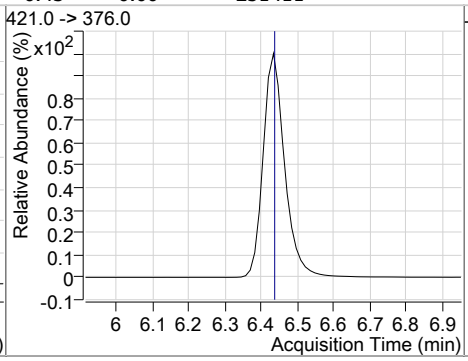


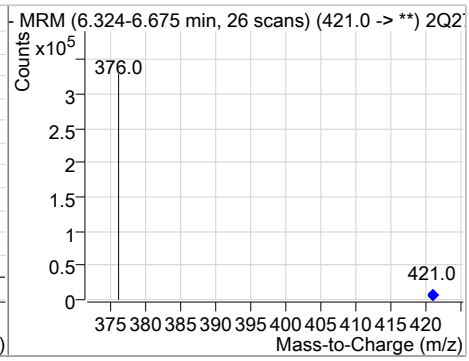




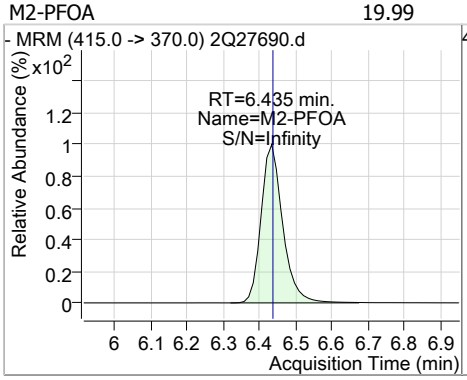
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	24.10	6.43	0.00	251411				

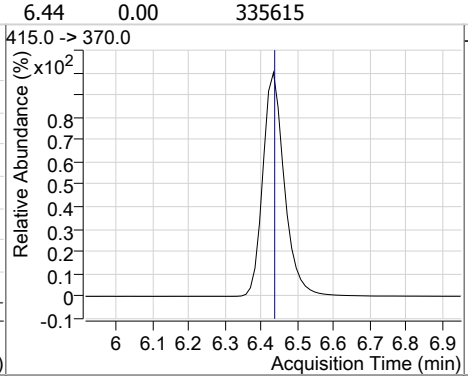


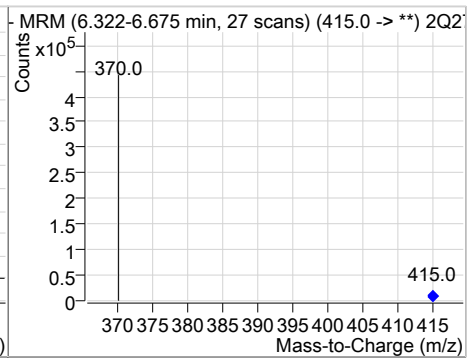




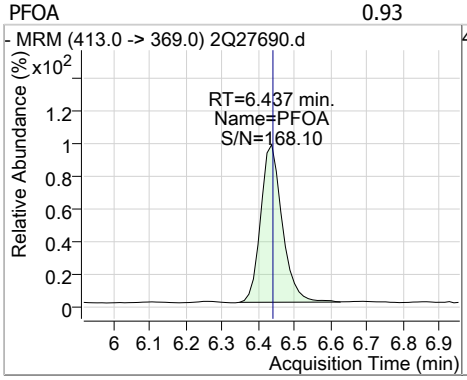
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	335615				

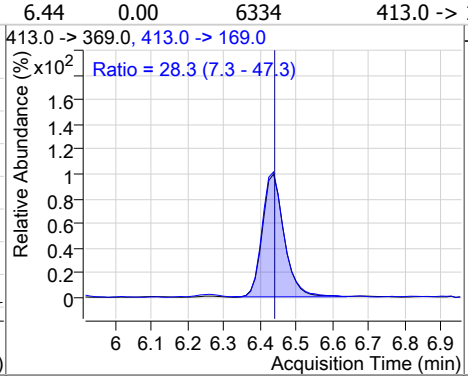


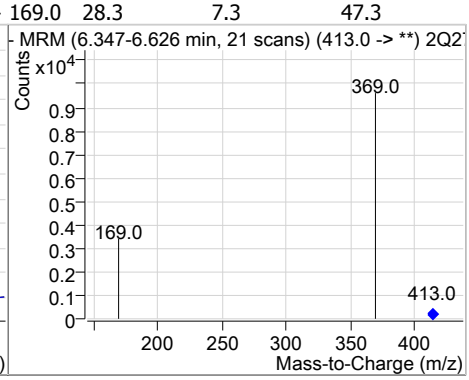




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.93	6.44	0.00	6334	413.0 -> 169.0	28.3	7.3	47.3

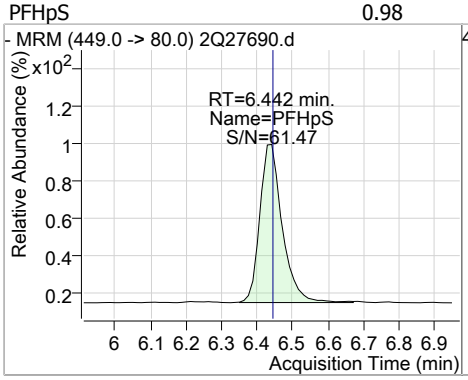


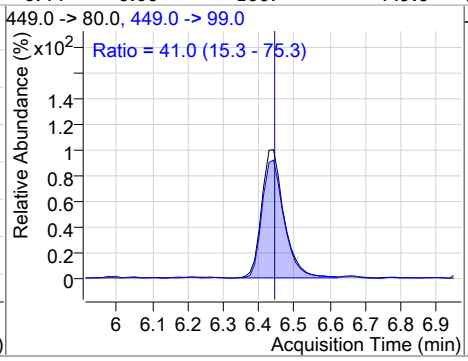


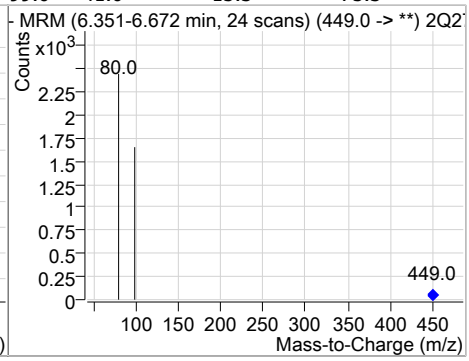


Perfluorinated Compounds by LC/MS/MS

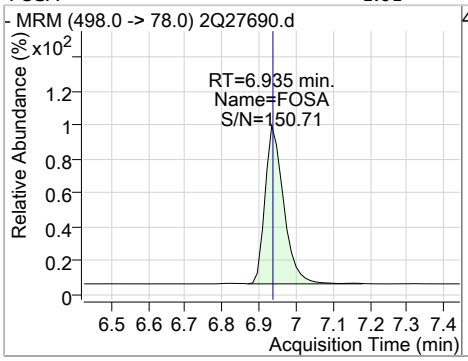
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.98	6.44	0.00	1067	449.0 -> 99.0	41.0	15.3	75.3

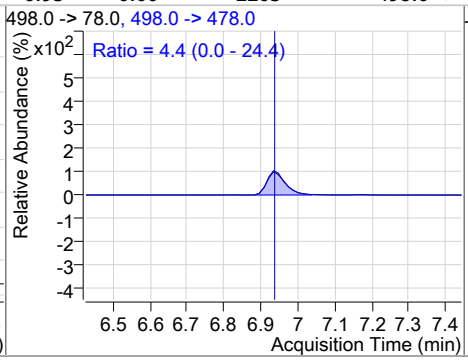


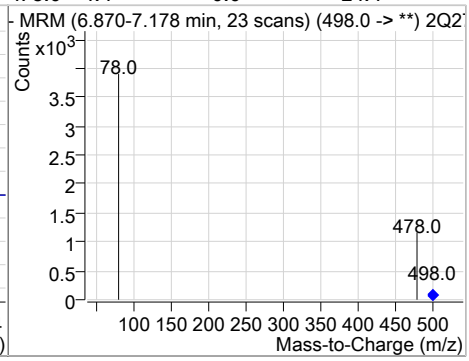




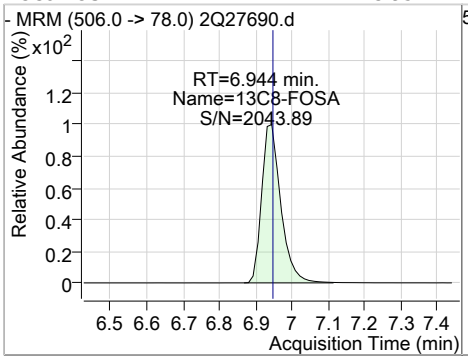
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.01	6.93	0.00	2263	498.0 -> 478.0	4.4	0.0	24.4

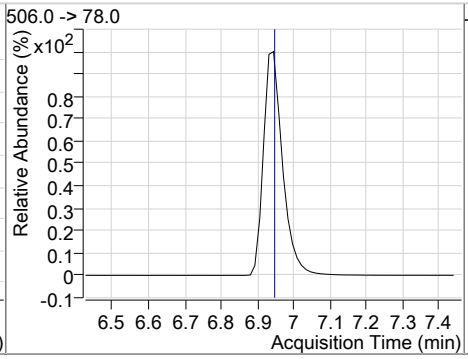


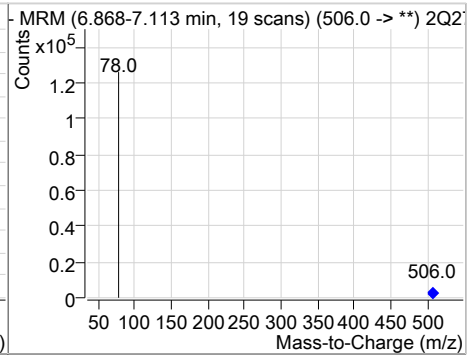




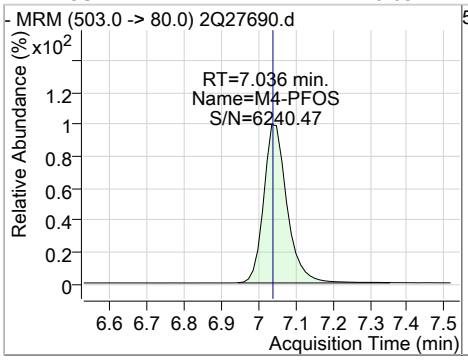
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	23.95	6.94	0.00	97131				

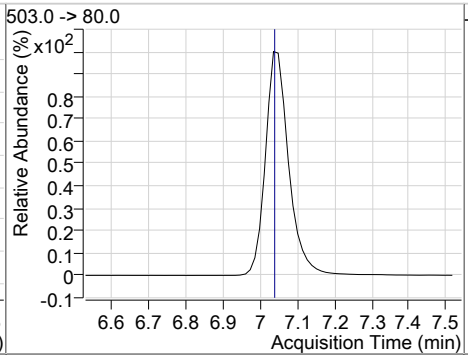


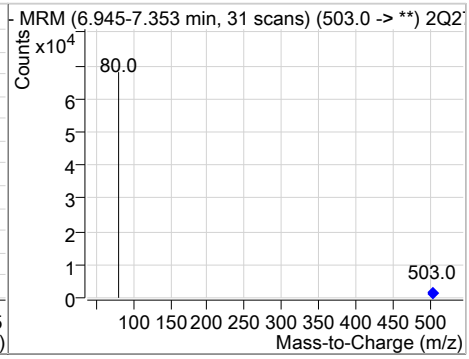




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.05	7.04	0.00	50554				

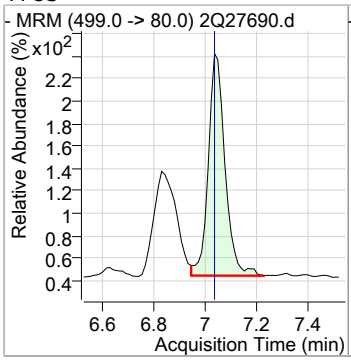


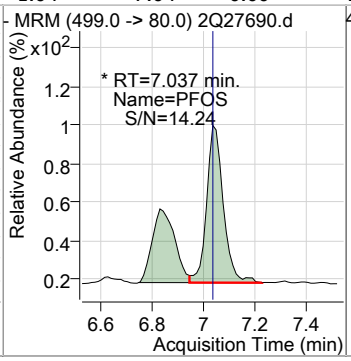


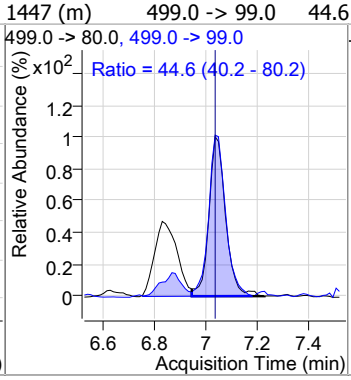


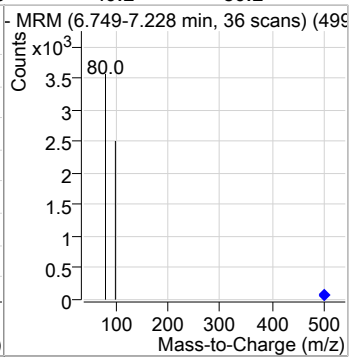
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.04	7.04	0.00	1447 (m)	499.0 -> 99.0	44.6	40.2	80.2

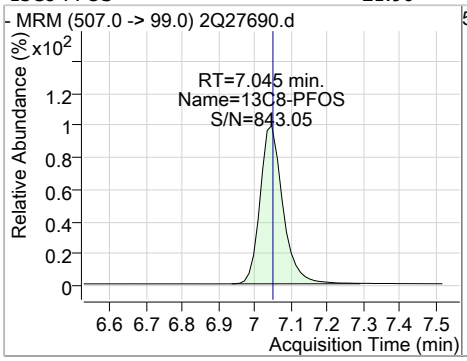


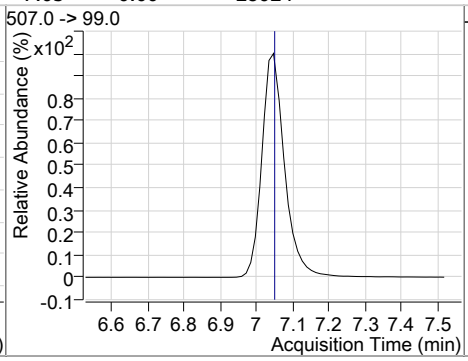


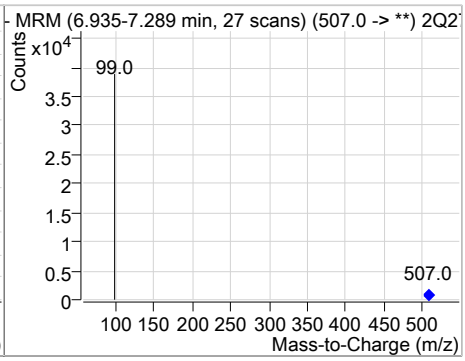




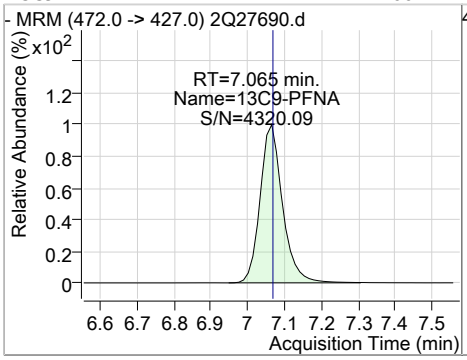
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.96	7.05	0.00	28624				

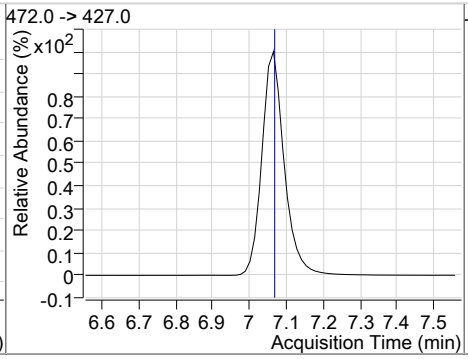


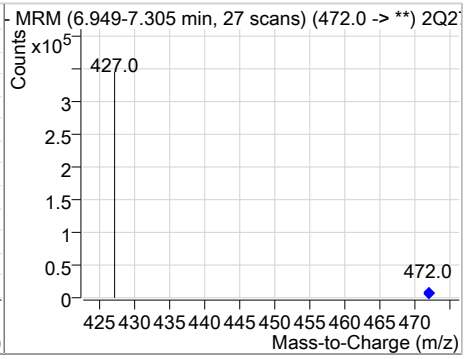




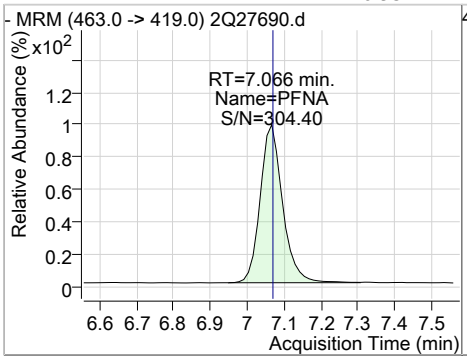
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	24.66	7.07	0.00	261055				

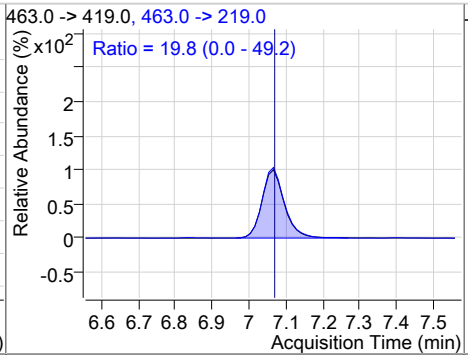


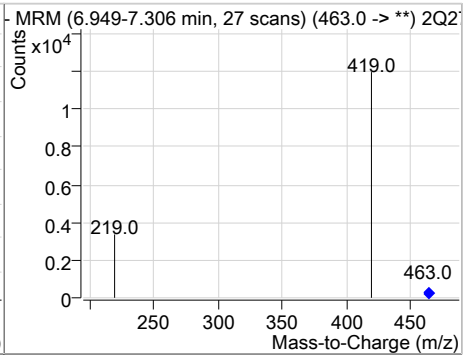




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.93	7.07	0.00	8087	463.0 -> 219.0	19.8	0.0	49.2

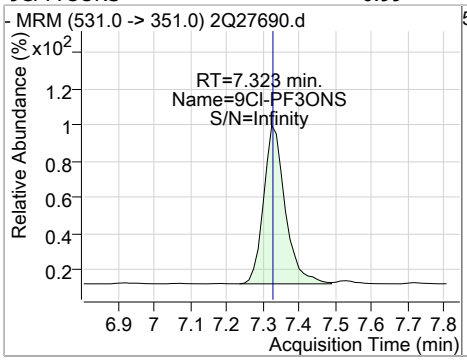


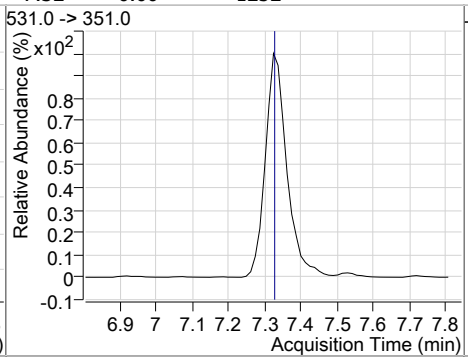


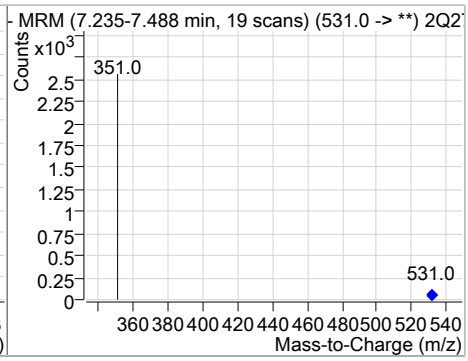


Perfluorinated Compounds by LC/MS/MS

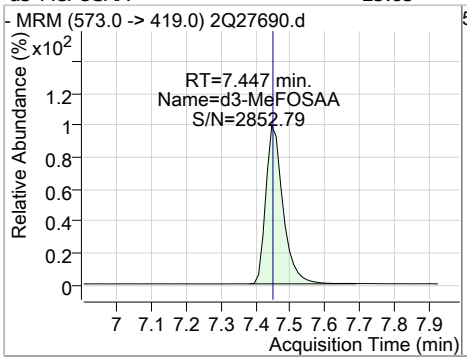
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.99	7.32	0.00	1252				

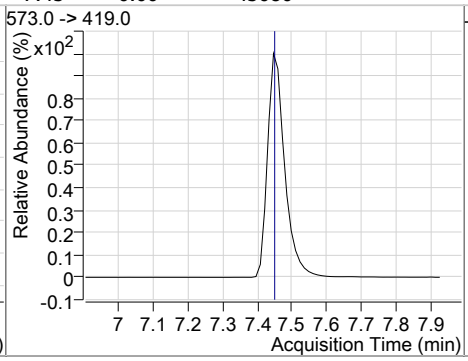


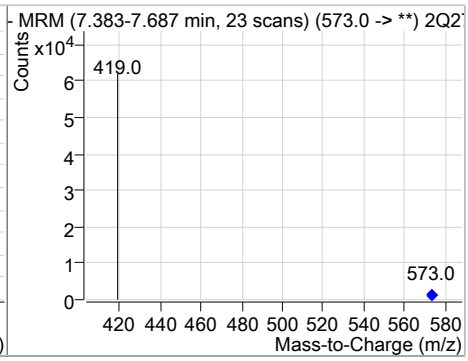




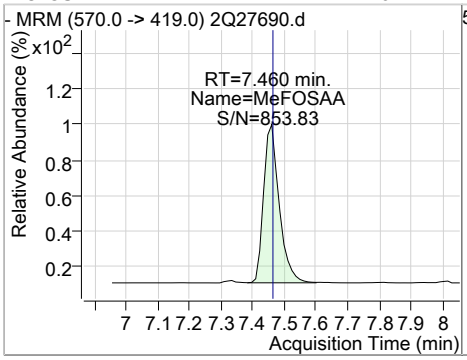
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	23.83	7.45	0.00	45686				

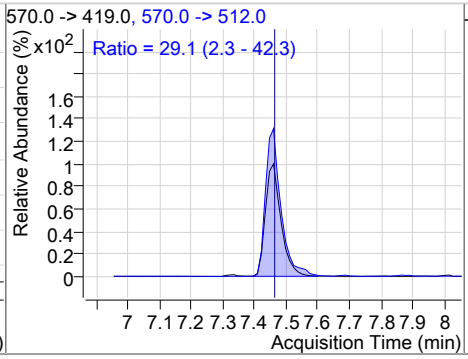


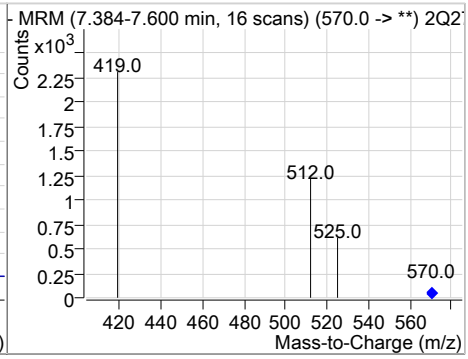




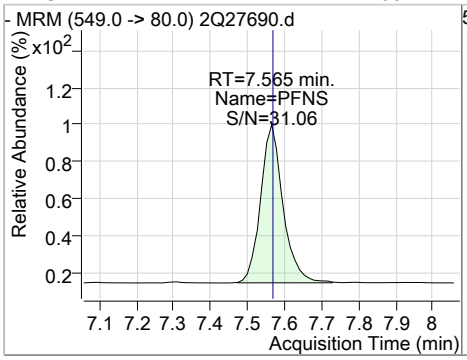
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.01	7.46	0.00	1174	570.0 -> 512.0	29.1	2.3	42.3

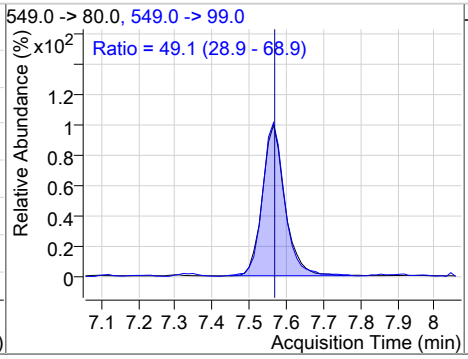


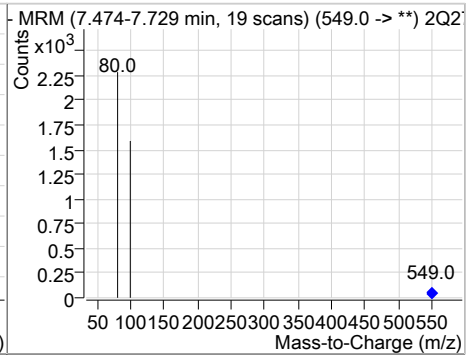




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.08	7.57	0.00	1063	549.0 -> 99.0	49.1	28.9	68.9

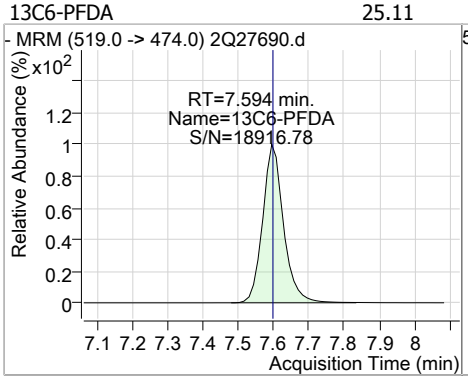


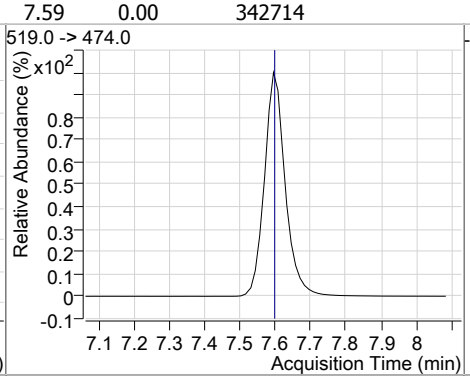


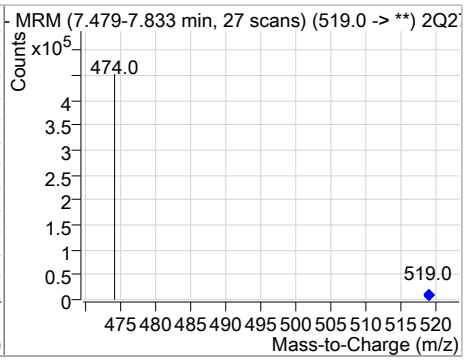


Perfluorinated Compounds by LC/MS/MS

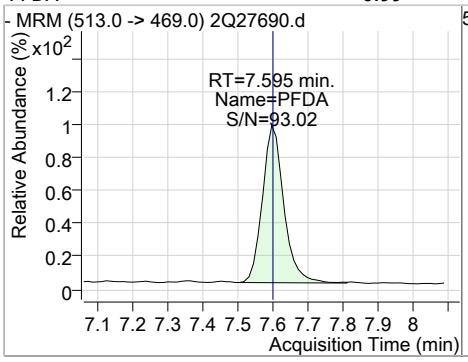
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	25.11	7.59	0.00	342714				

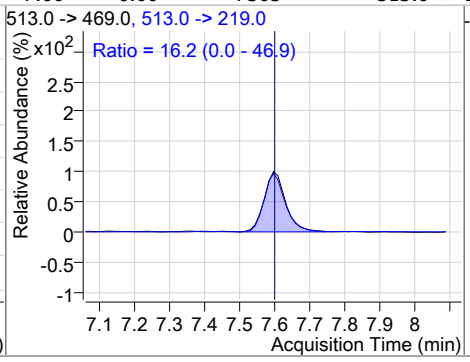


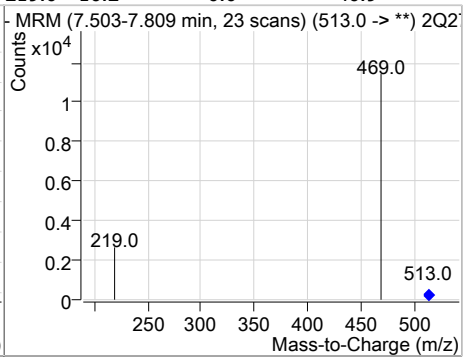




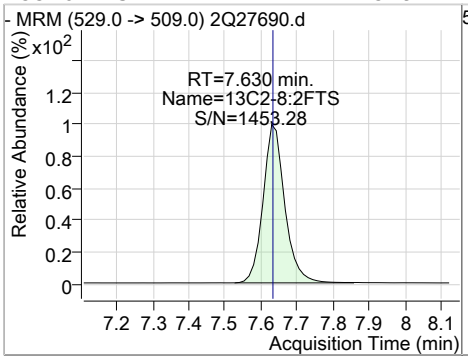
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.99	7.60	0.00	7365	513.0 -> 219.0	16.2	0.0	46.9

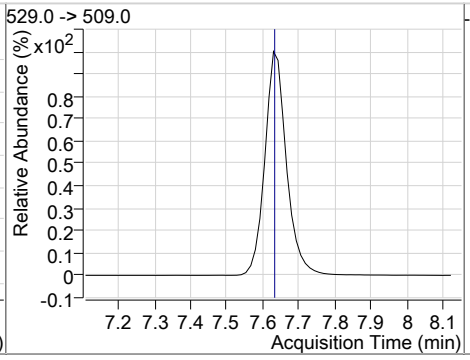


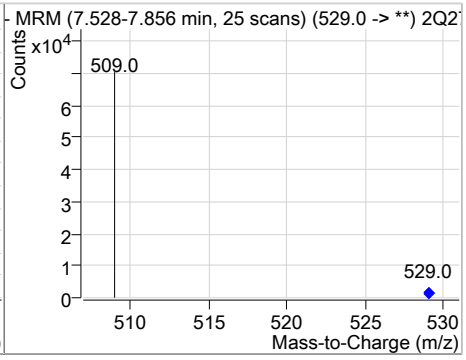




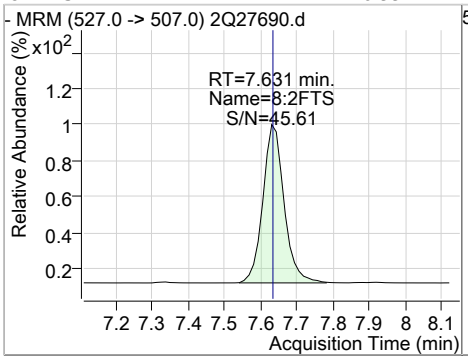
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.19	7.63	0.00	51419				

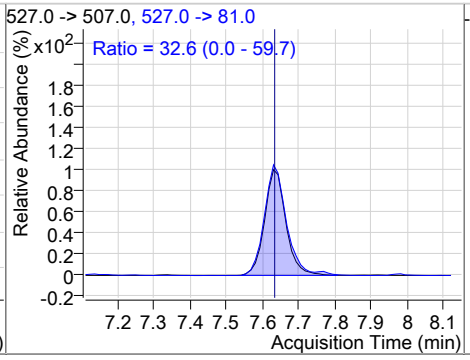


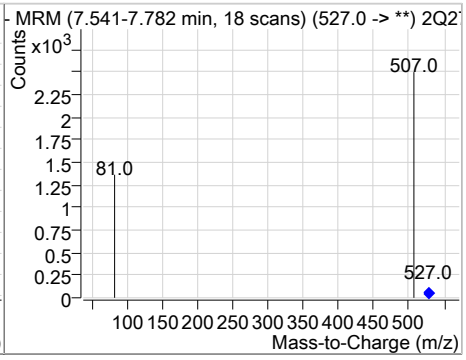




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.99	7.63	0.00	1268	527.0 -> 81.0	32.6	0.0	59.7

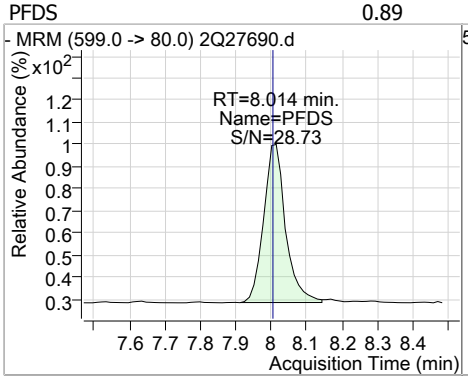


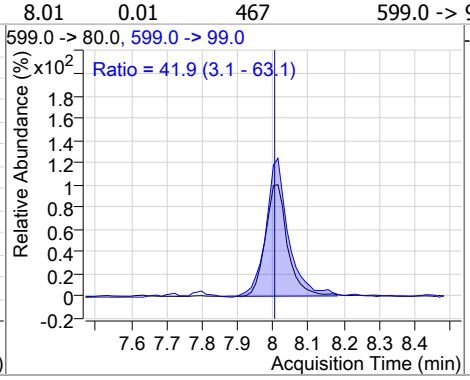


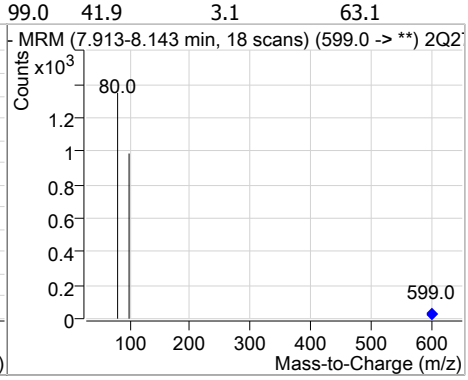


Perfluorinated Compounds by LC/MS/MS

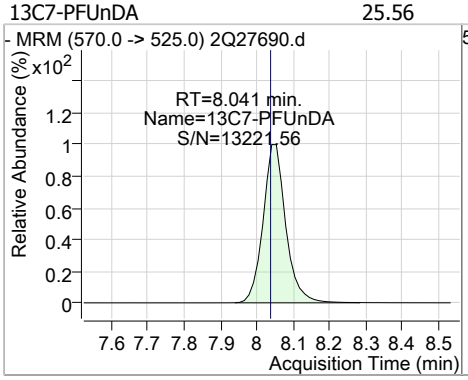
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.89	8.01	0.01	467	599.0 -> 99.0	41.9	3.1	63.1

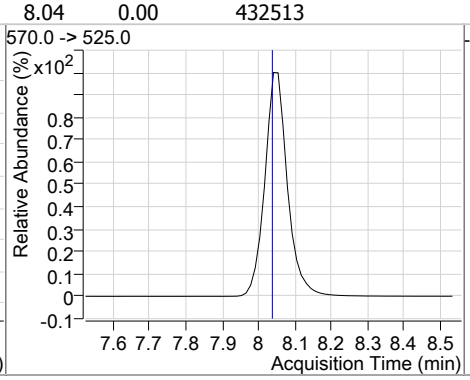


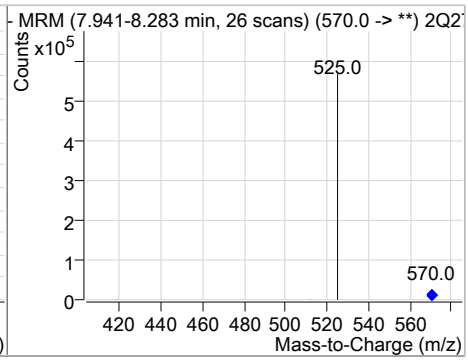




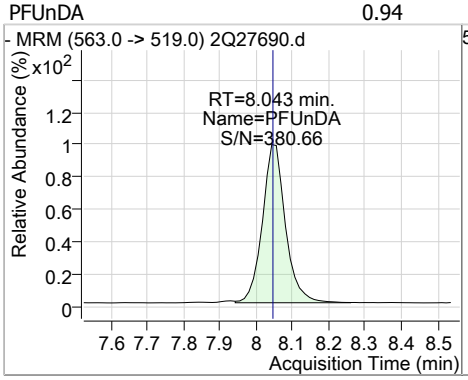
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	25.56	8.04	0.00	432513				

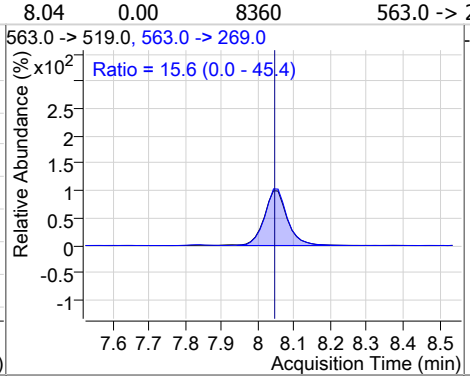


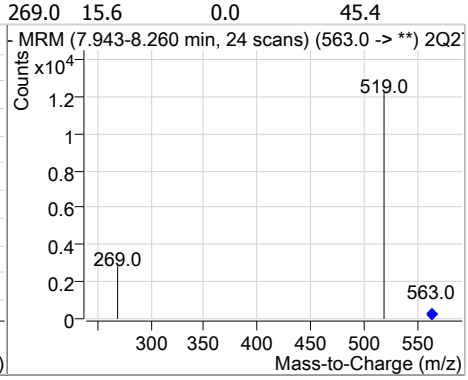




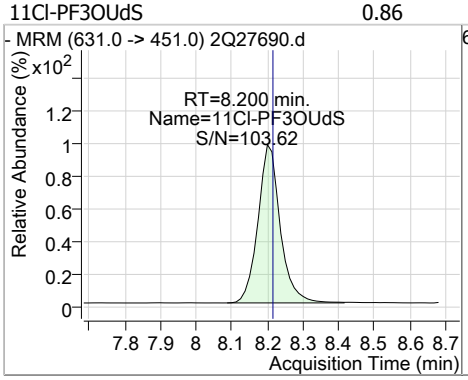
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.94	8.04	0.00	8360	563.0 -> 269.0	15.6	0.0	45.4

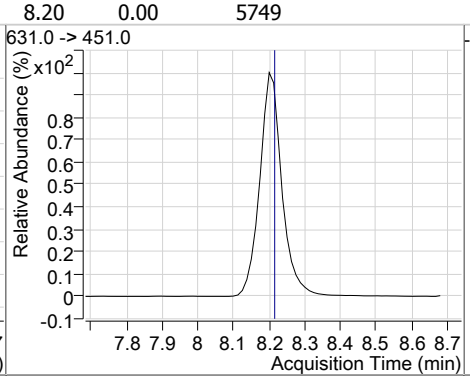


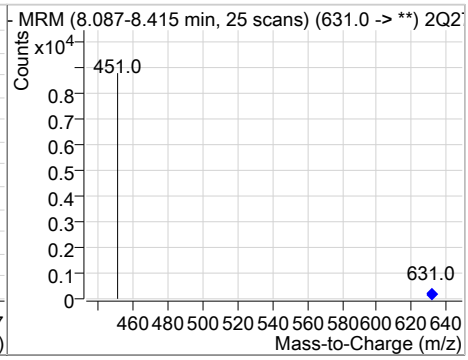




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.86	8.20	0.00	5749				

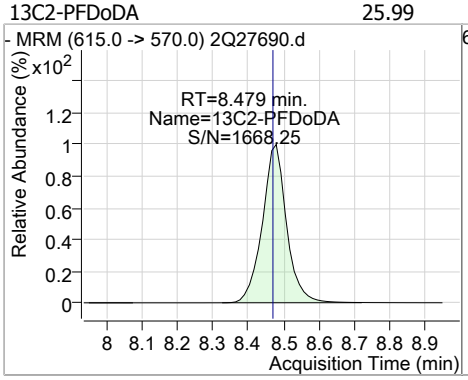


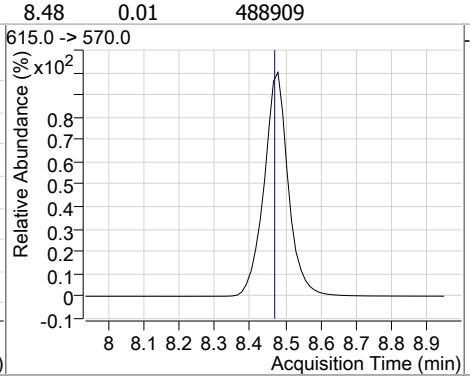


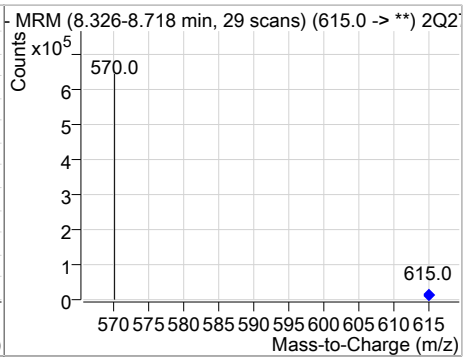


Perfluorinated Compounds by LC/MS/MS

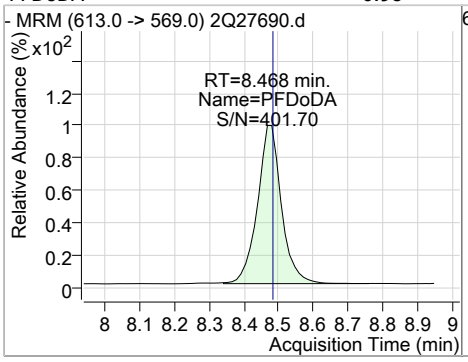
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	25.99	8.48	0.01	488909				

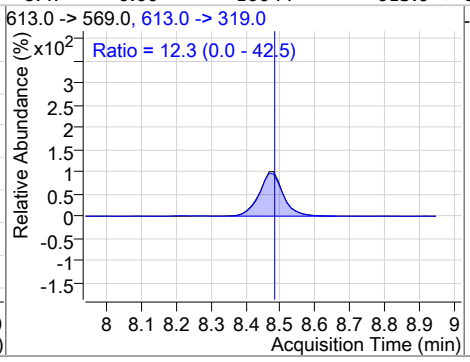


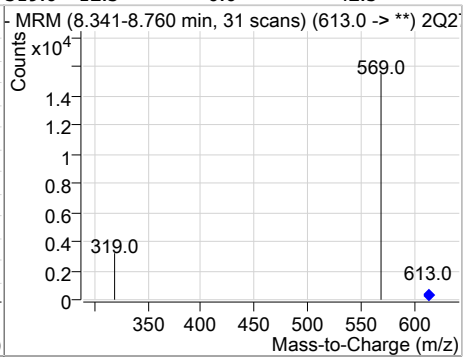




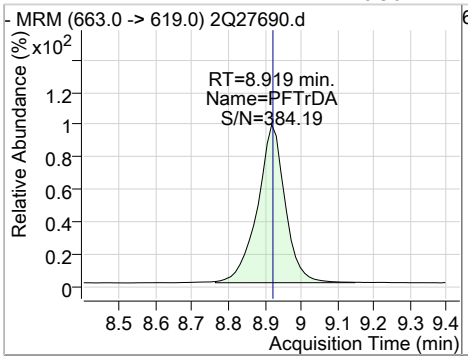
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.98	8.47	0.00	10644	613.0 -> 319.0	12.3	0.0	42.5

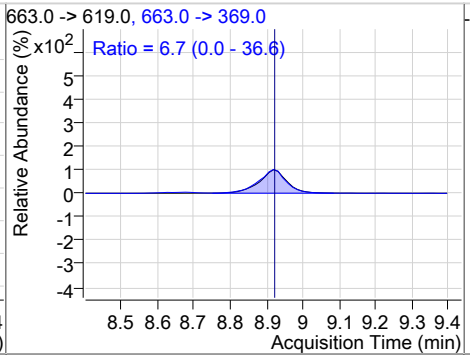


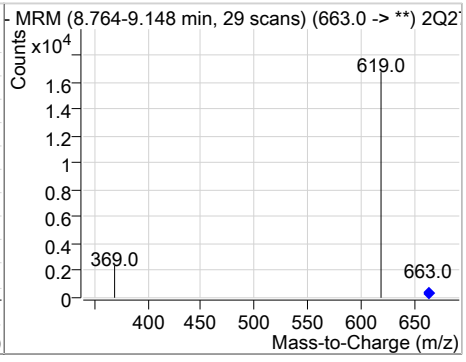




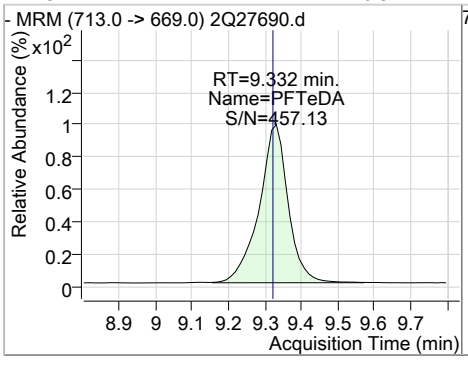
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.90	8.92	0.00	11692	663.0 -> 369.0	6.7	0.0	36.6

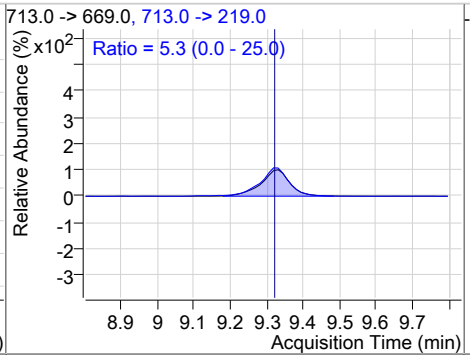


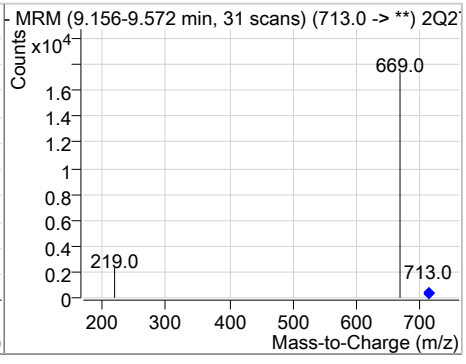




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.94	9.33	0.01	11798	713.0 -> 219.0	5.3	0.0	25.0

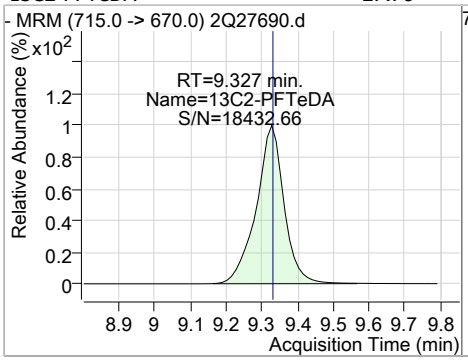


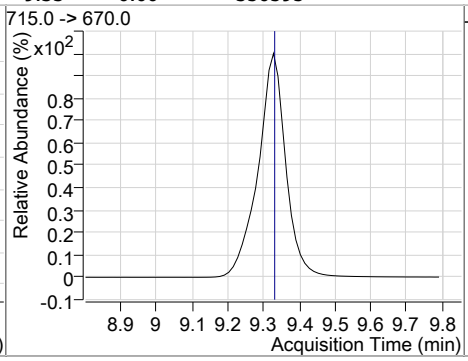


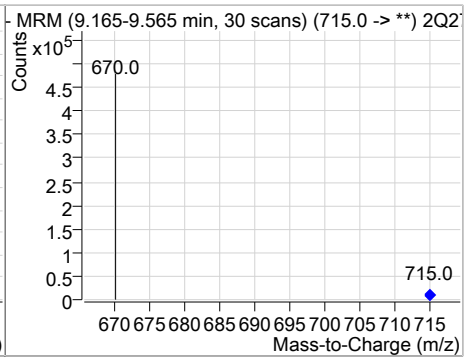


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	27.78	9.33	0.00	356595				







7.6.26

7

Manual Integration Approval Summary

Sample Number: S2Q442-CC442
Lab FileID: 2Q27690.D
Injection Time: 03/18/19 15:29
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27701.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 6:22:45 PM
Sample Name : CC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

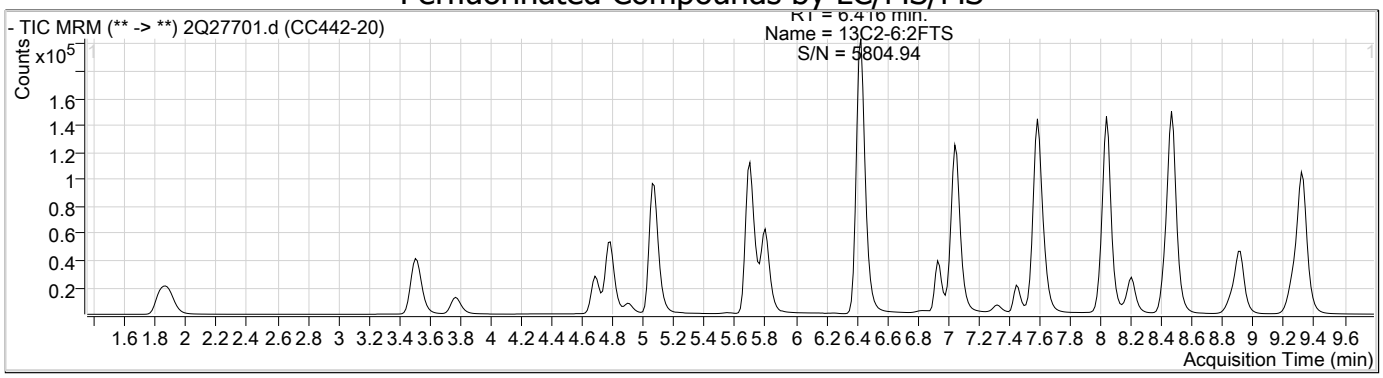
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	315380	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	47865	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	132200	20.00	µg/L	0.000
M5-PFPeA	3.511	268.0 -> 223.0	114555	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	162450	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	235875	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	239280	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	247899	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	329924	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	412050	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	470910	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	336611	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	92288	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	19225	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21699	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	27938	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	65857	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	71603	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	52105	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	43296	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	169718	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	65693	22.09	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.5%		
13C2-6:2FTS	6.416	429.0 -> 409.0	71724	22.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.7%		
13C2-8:2FTS	7.630	529.0 -> 509.0	52115	23.50	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.5%		
13C2-PFDoDA	8.466	615.0 -> 570.0	470283	25.00	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 125.0%		
13C2-PFTeDA	9.315	715.0 -> 670.0	335385	26.12	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 130.6%		
13C3-PFBS	3.767	302.0 -> 99.0	19251	21.11	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.6%		
13C3-PFHxS	5.736	402.0 -> 99.0	21643	21.23	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.2%		
13C4-PFBA	1.865	217.0 -> 172.0	131650	21.95	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.8%		
13C4-PFHpA	5.705	367.0 -> 322.0	235479	22.77	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.8%		
13C5-PFHxA	4.789	318.0 -> 273.0	162301	22.34	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.7%		
13C5-PFPeA	3.511	268.0 -> 223.0	114550	22.53	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.7%		
13C6-PFDA	7.594	519.0 -> 474.0	329721	24.16	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

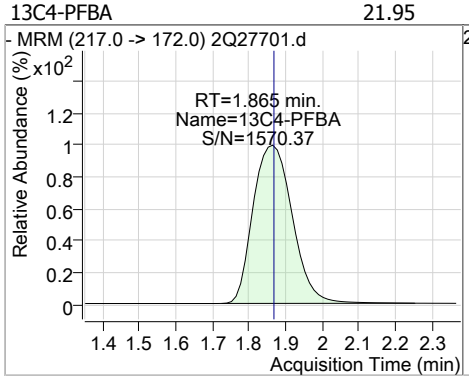
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.8%		
13C7-PFUnDA	8.041	570.0 -> 525.0	411639	24.32 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 121.6%		
13C8-FOSA	6.932	506.0 -> 78.0	92202	22.74 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.7%		
13C8-PFOA	6.434	421.0 -> 376.0	239204	22.93 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.7%		
13C8-PFOS	7.033	507.0 -> 99.0	27924	21.42 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.1%		
13C9-PFNA	7.052	472.0 -> 427.0	247899	23.41 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.1%		
d3-MeFOSAA	7.447	573.0 -> 419.0	43289	22.58 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.9%		
M2-PFOA	6.435	415.0 -> 370.0	315586	19.99 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	47974	20.04 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.2%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	169718	106.14 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 106.1%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	36693	20.22 µg/L		99
6:2FTS	6.418	427.0 -> 407.0	35807	20.33 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	26619	20.43 µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	18927	20.57 µg/L		97
FOSA	6.935	498.0 -> 78.0	42653	20.07 µg/L		100
MeFOSAA	7.447	570.0 -> 419.0	21984	19.90 µg/L		98
PFBA	1.860	213.0 -> 169.0	25308	19.38 µg/L		100
PFBS	3.771	299.0 -> 80.0	30591	20.04 µg/L		99
PFDA	7.595	513.0 -> 469.0	141738	19.74 µg/L		100
PFDoDA	8.468	613.0 -> 569.0	209544	19.99 µg/L		99
PFDS	8.001	599.0 -> 80.0	10193	19.81 µg/L		97
PFHpA	5.708	363.0 -> 319.0	200296	19.70 µg/L		100
PFHpS	6.442	449.0 -> 80.0	21721	20.63 µg/L		97
PFHxA	4.791	313.0 -> 269.0	54998	19.66 µg/L		99
PFHxS	5.739	399.0 -> 80.0	23723	19.78 µg/L	m	96
PFNA	7.053	463.0 -> 419.0	161666	19.66 µg/L		99
PFNS	7.565	549.0 -> 80.0	20278	21.18 µg/L		100
PFOA	6.437	413.0 -> 369.0	125394	19.40 µg/L		98
PFOS	7.037	499.0 -> 80.0	26330	19.41 µg/L	m	80
PFPeA	3.515	263.0 -> 219.0	97815	19.73 µg/L		100
PFPeS	4.908	349.0 -> 80.0	20305	20.78 µg/L		96
PFTeDA	9.319	713.0 -> 669.0	228501	19.41 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	235558	19.21 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	167399	19.69 µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	112723	17.47 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	22591	18.22 µg/L		100
ADONA	5.804	377.0 -> 251.0	231118	19.51 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	200690	99.54 µg/L		99

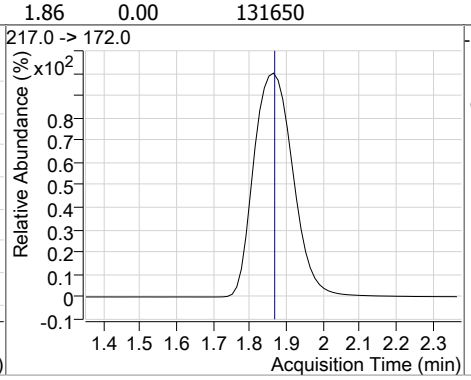
 # = Qualifier out of range, m = manually integrated, + = Area summed

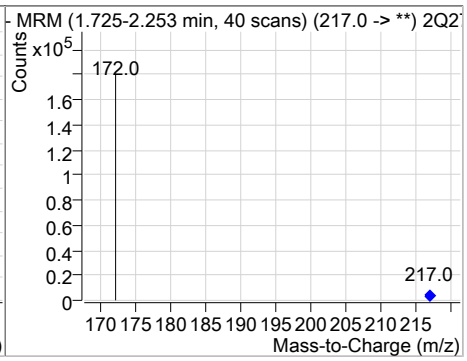
Perfluorinated Compounds by LC/MS/MS



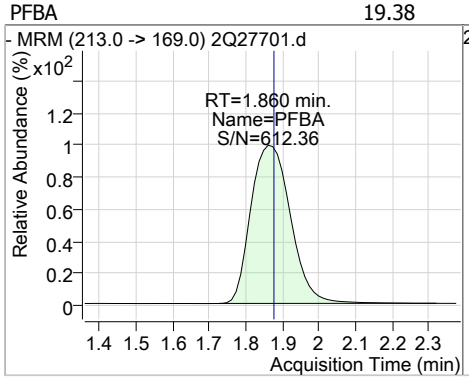
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.95	1.86	0.00	131650				

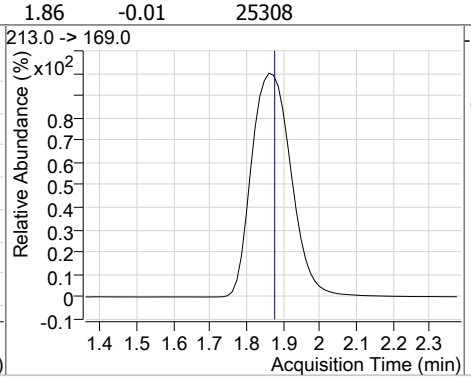


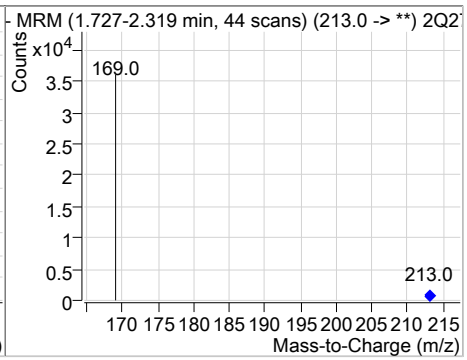




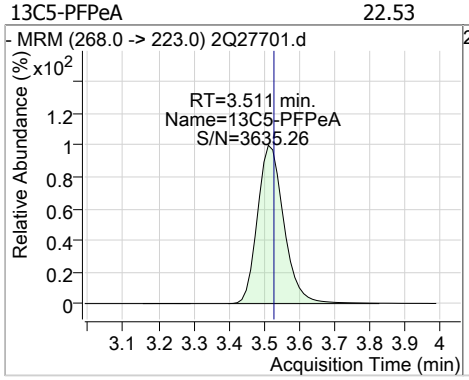
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.38	1.86	-0.01	25308				

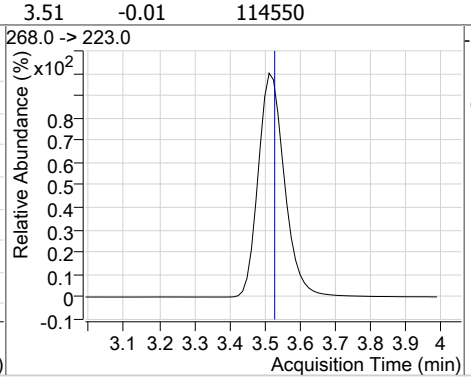


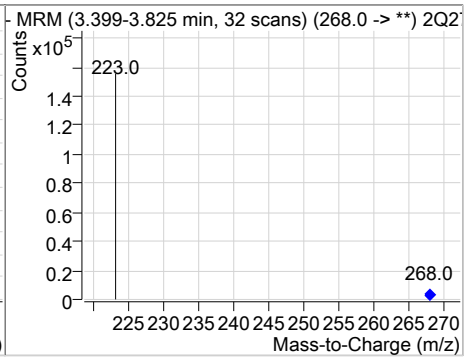




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	22.53	3.51	-0.01	114550				

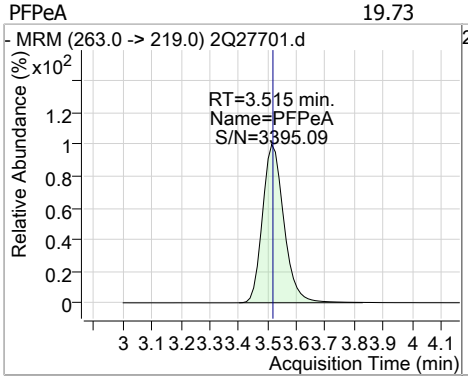


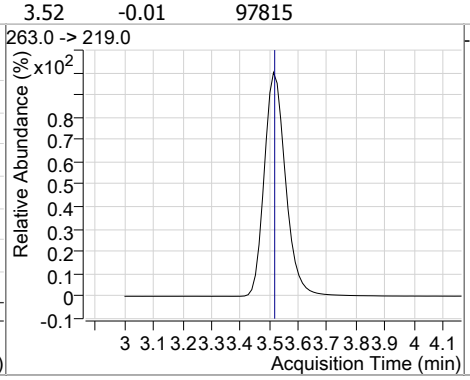


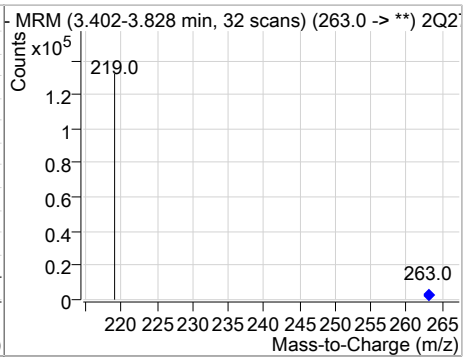


Perfluorinated Compounds by LC/MS/MS

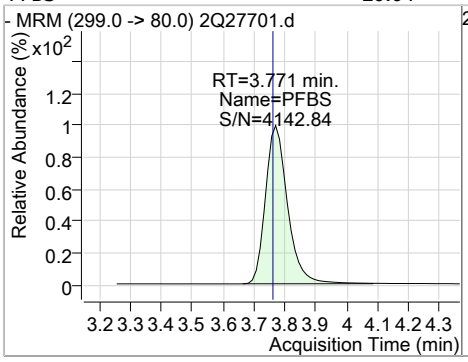
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.73	3.52	-0.01	97815				

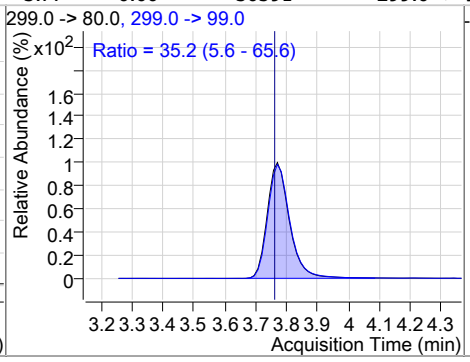


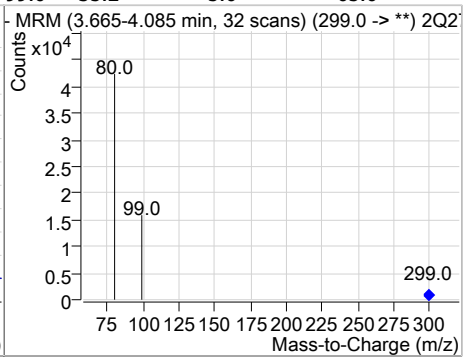




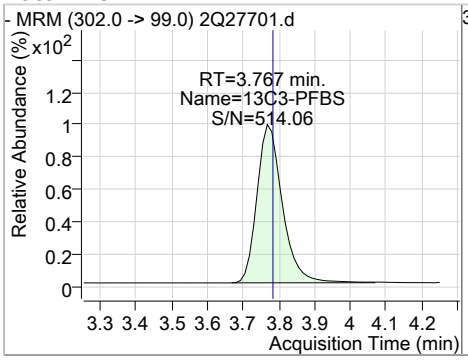
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	20.04	3.77	0.00	30591	299.0 -> 99.0	35.2	5.6	65.6

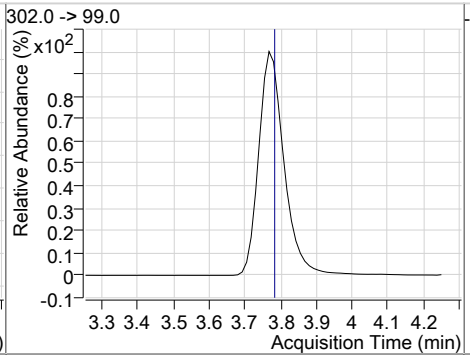


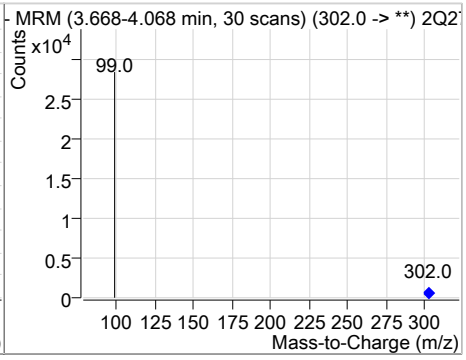




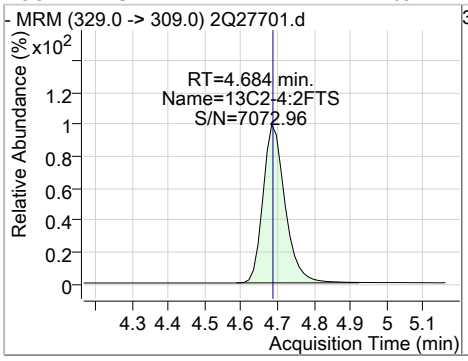
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	21.11	3.77	-0.01	19251				

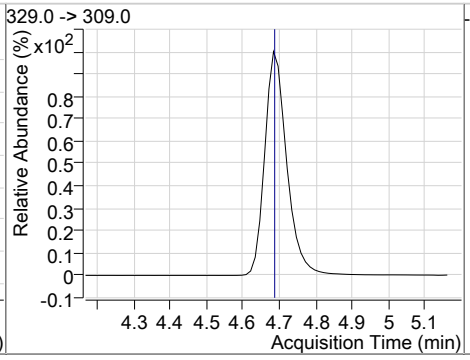


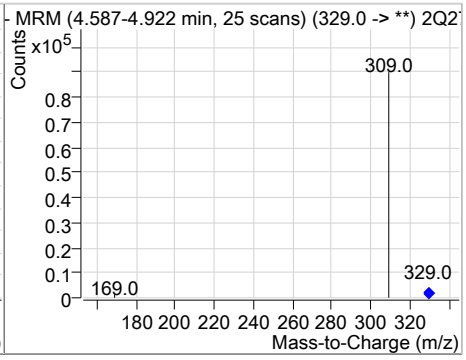




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	22.09	4.68	0.00	65693				

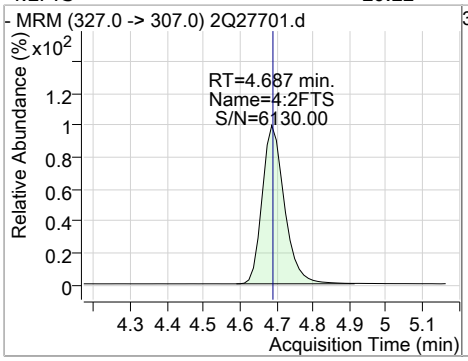


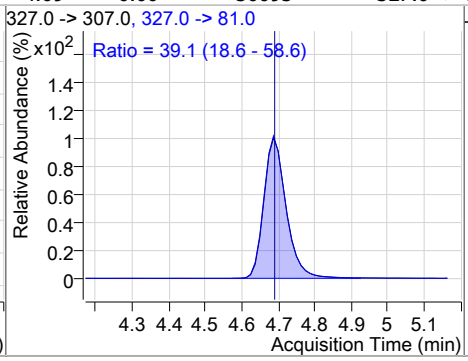


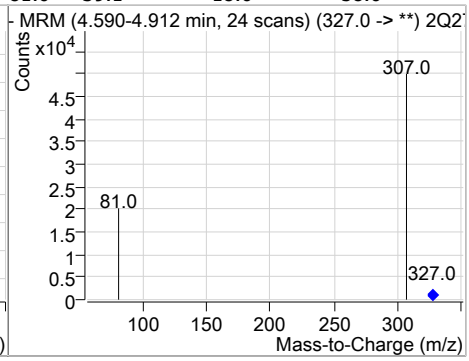


Perfluorinated Compounds by LC/MS/MS

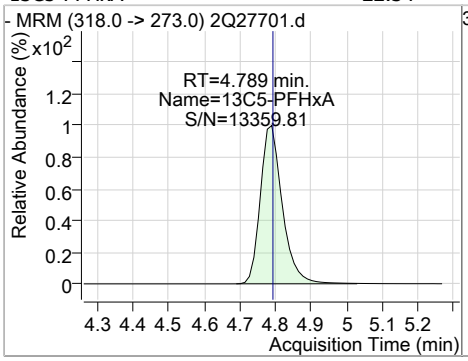
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.22	4.69	0.00	36693	327.0 -> 81.0	39.1	18.6	58.6

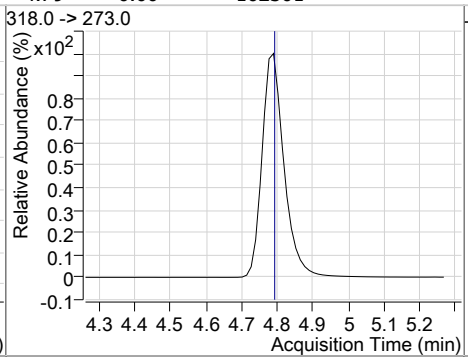


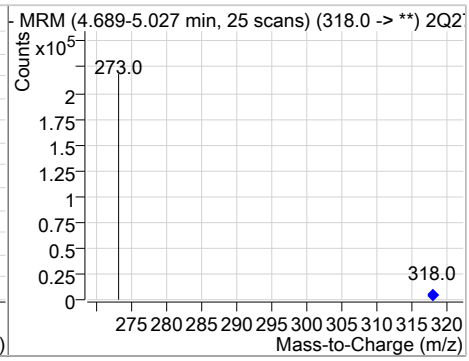




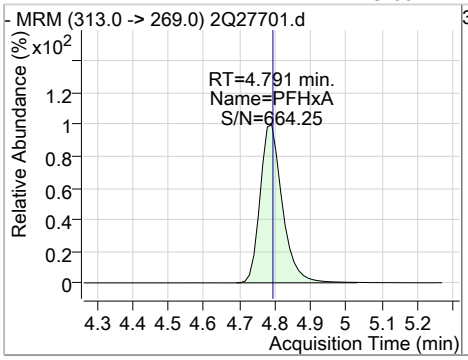
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	22.34	4.79	0.00	162301				

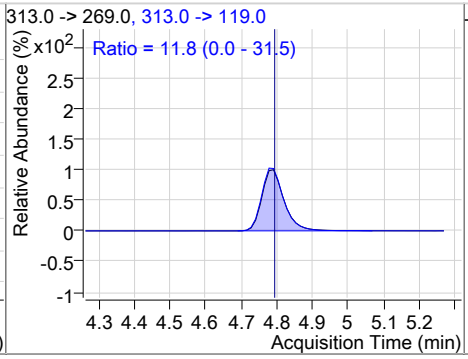


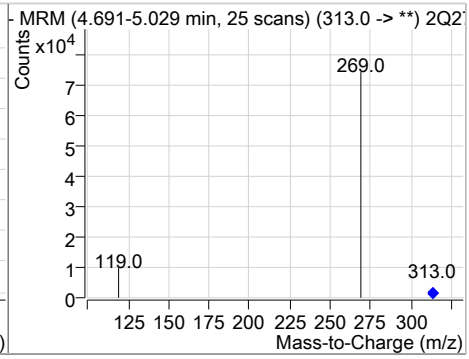




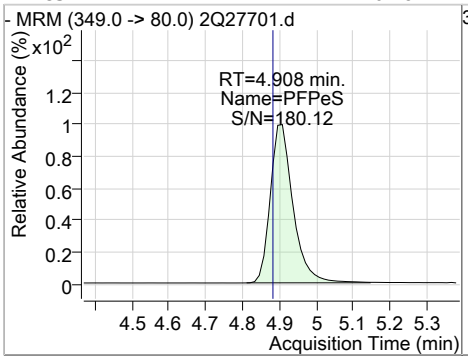
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.66	4.79	0.00	54998	313.0 -> 119.0	11.8	0.0	31.5

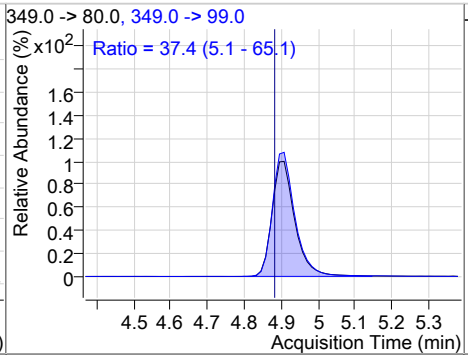


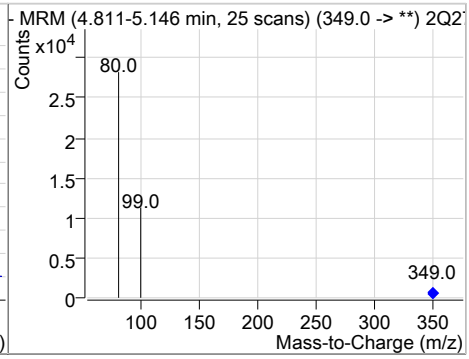




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.78	4.91	0.01	20305	349.0 -> 99.0	37.4	5.1	65.1

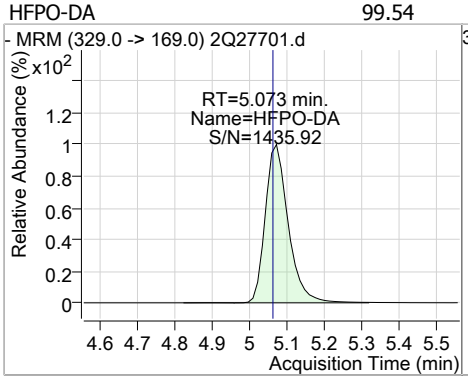


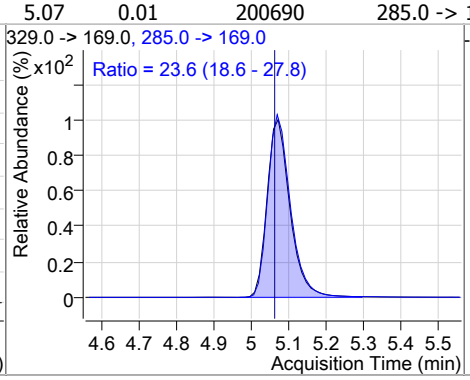


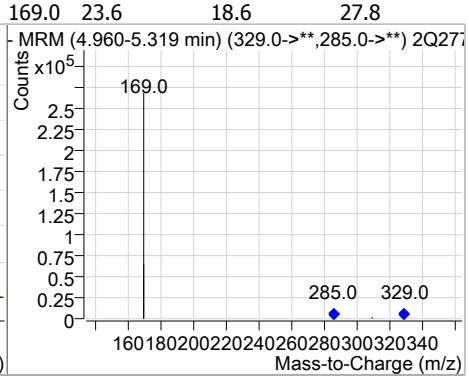


Perfluorinated Compounds by LC/MS/MS

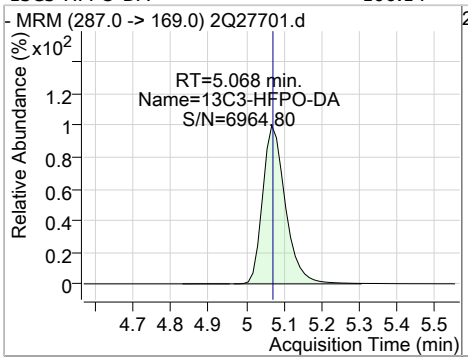
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	99.54	5.07	0.01	200690	285.0 -> 169.0	23.6	18.6	27.8

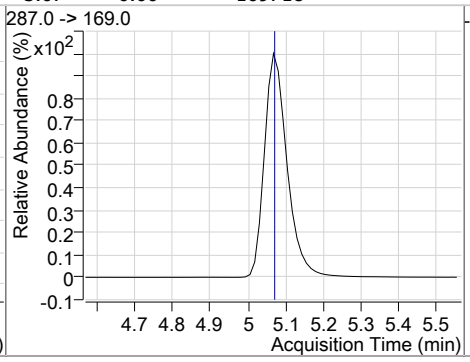


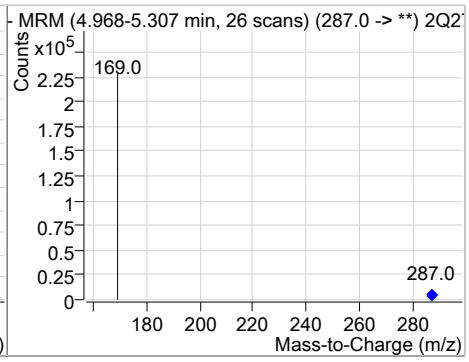




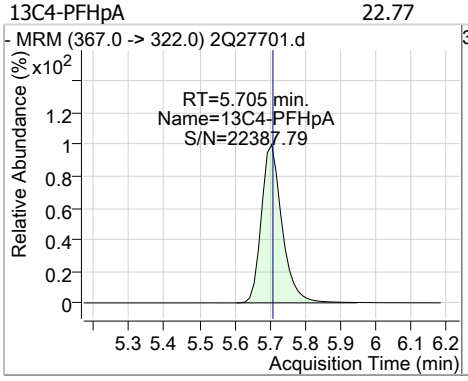
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	106.14	5.07	0.00	169718				

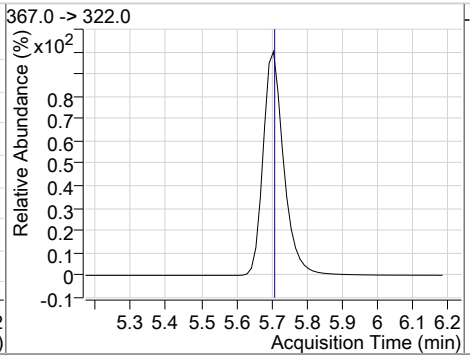


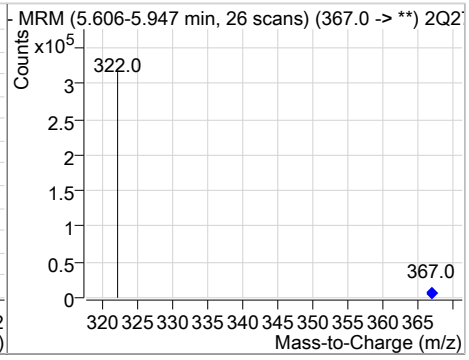




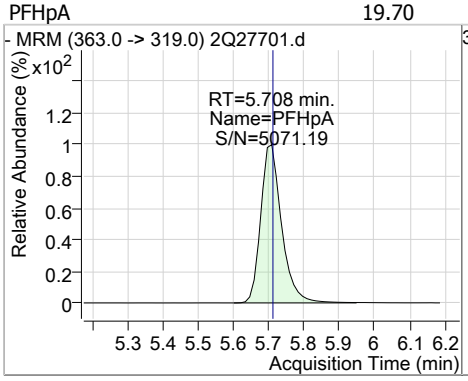
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	22.77	5.71	0.00	235479				

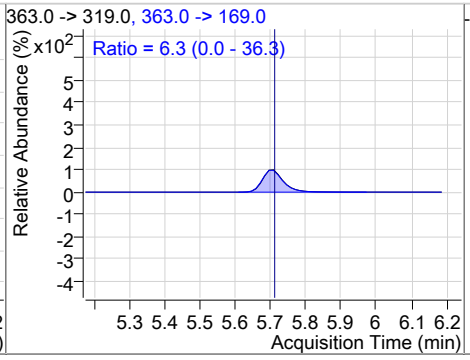


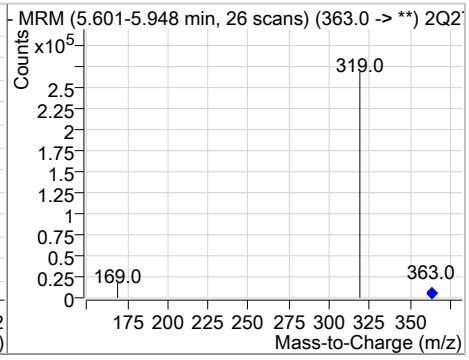




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.70	5.71	0.00	200296	363.0 -> 169.0	6.3	0.0	36.3

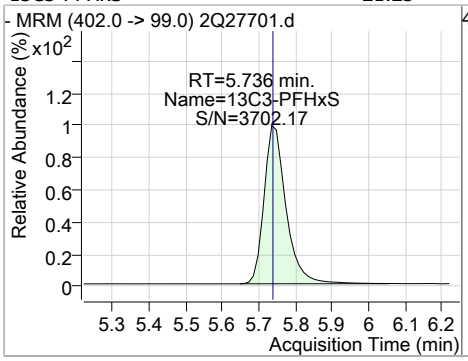


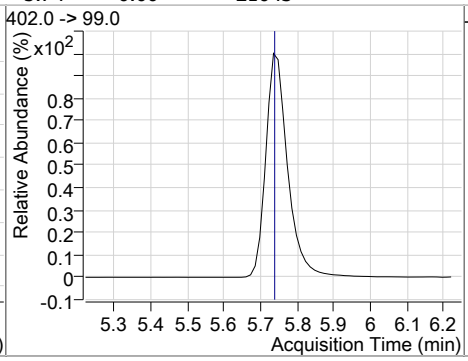


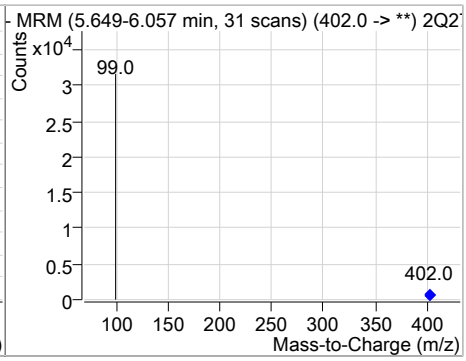


Perfluorinated Compounds by LC/MS/MS

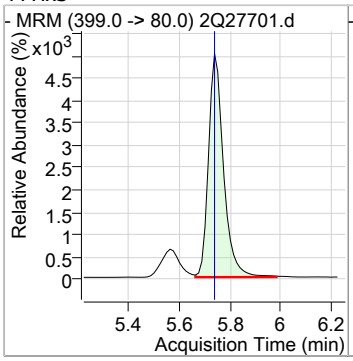
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	21.23	5.74	0.00	21643				

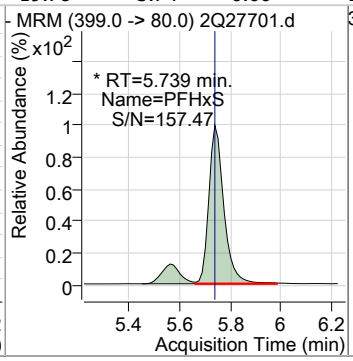


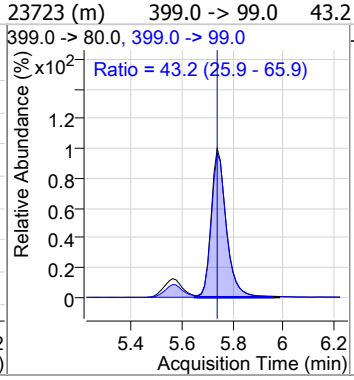


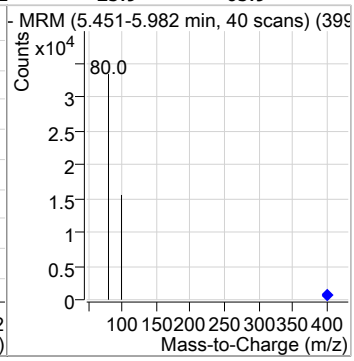


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.78	5.74	0.00	23723 (m)	399.0 -> 99.0	43.2	25.9	65.9

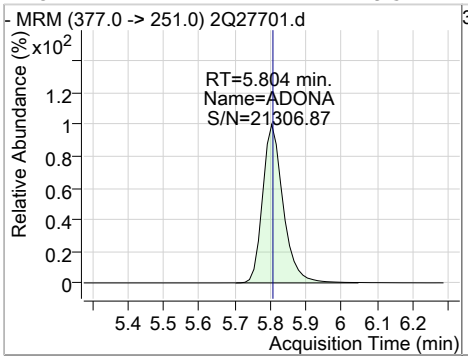


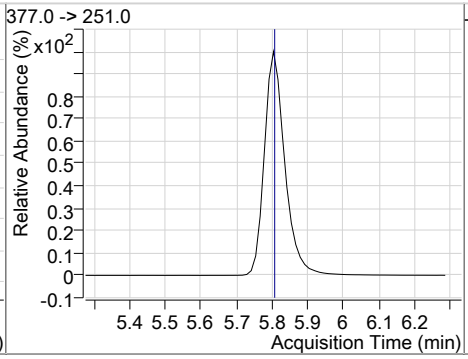


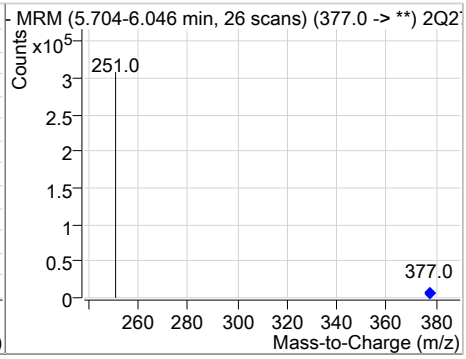




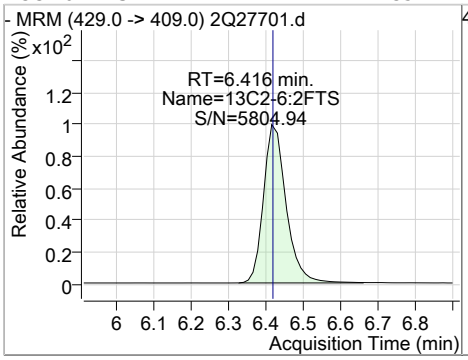
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.51	5.80	0.00	231118				

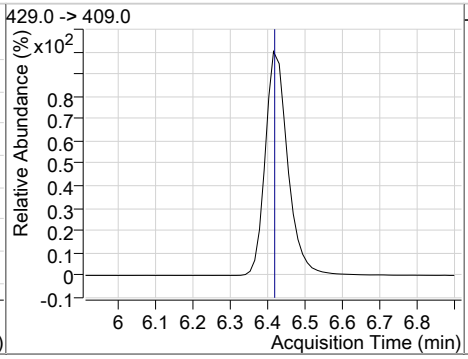


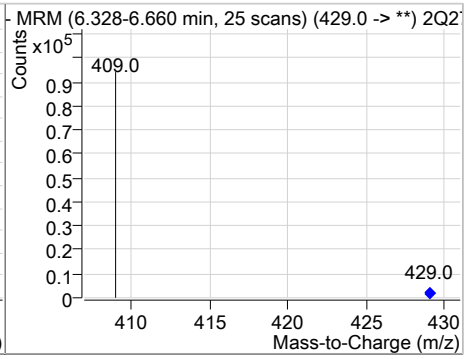




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	22.35	6.42	0.00	71724				

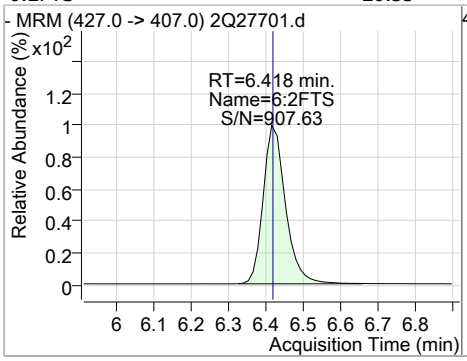


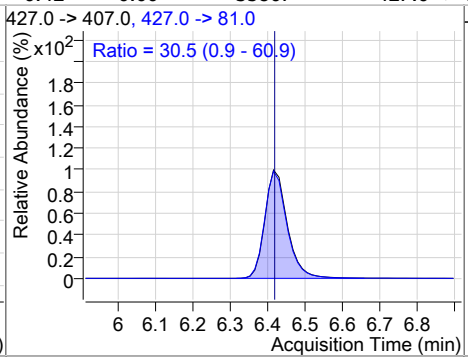


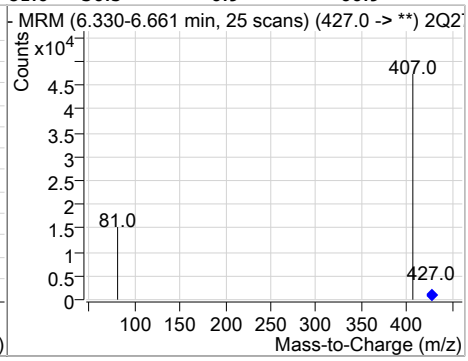


Perfluorinated Compounds by LC/MS/MS

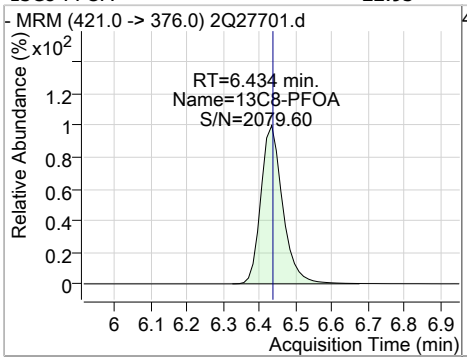
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.33	6.42	0.00	35807	427.0 -> 81.0	30.5	0.9	60.9

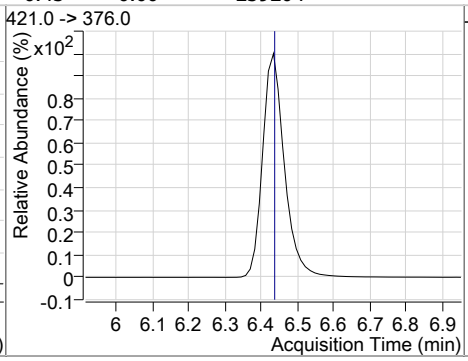


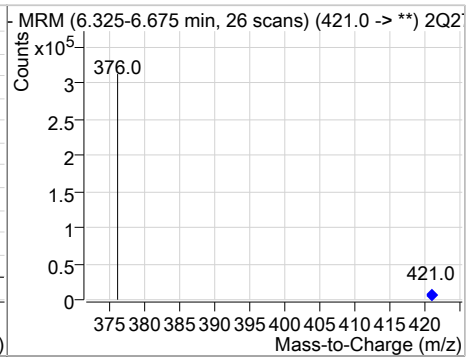




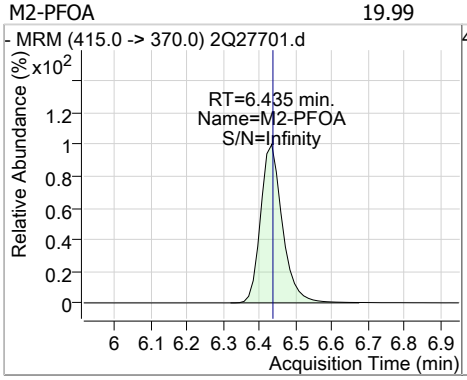
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	22.93	6.43	0.00	239204				

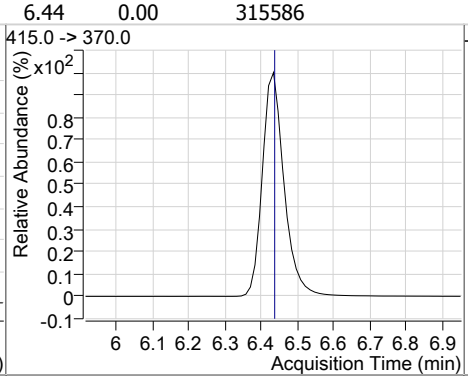


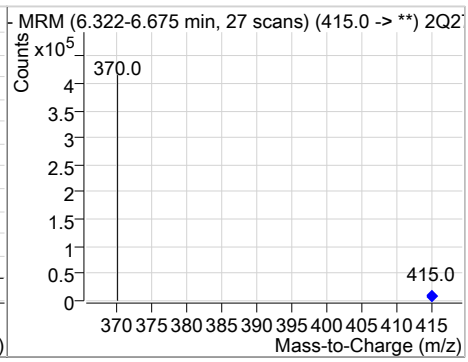




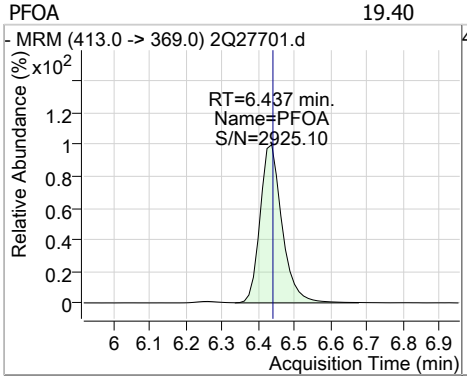
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	19.99	6.44	0.00	315586				

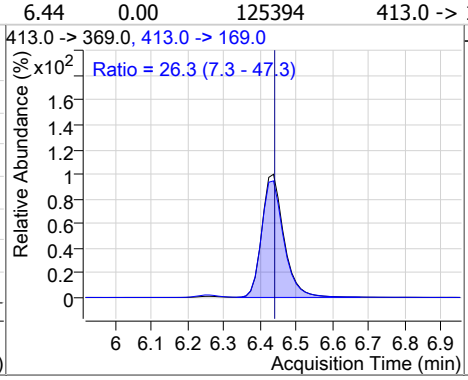


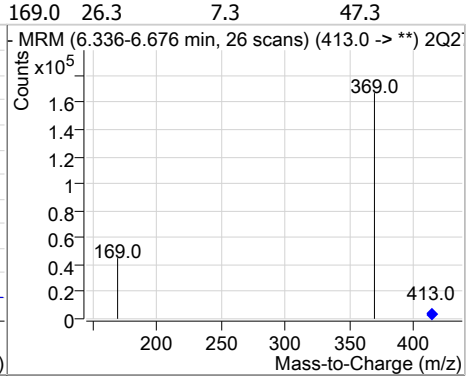




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.40	6.44	0.00	125394	413.0 -> 169.0	26.3	7.3	47.3

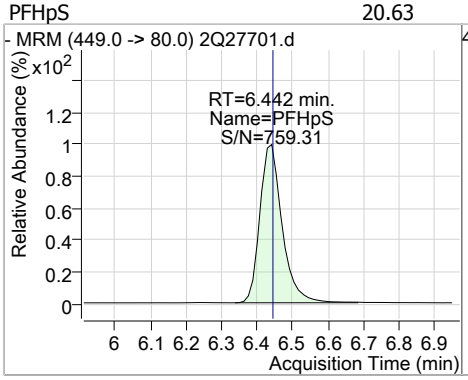


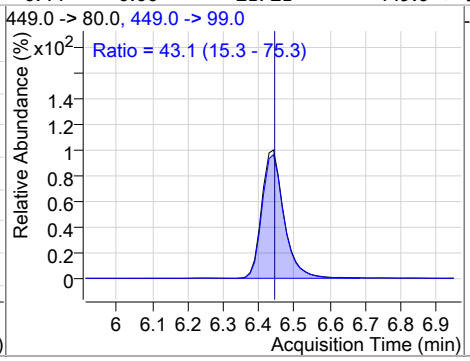


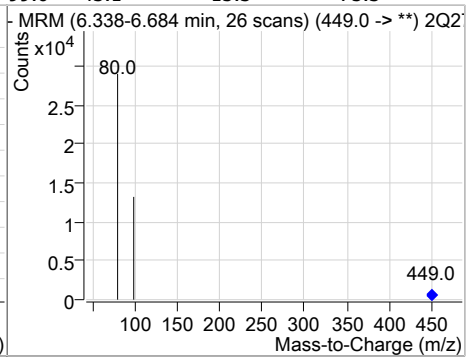


Perfluorinated Compounds by LC/MS/MS

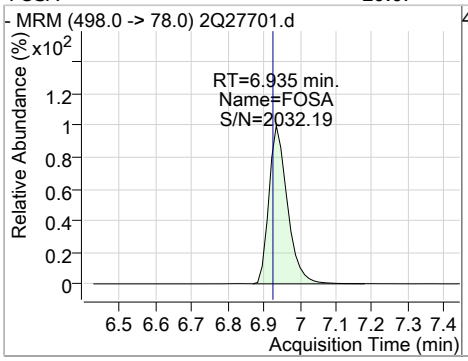
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.63	6.44	0.00	21721	449.0 -> 99.0	43.1	15.3	75.3

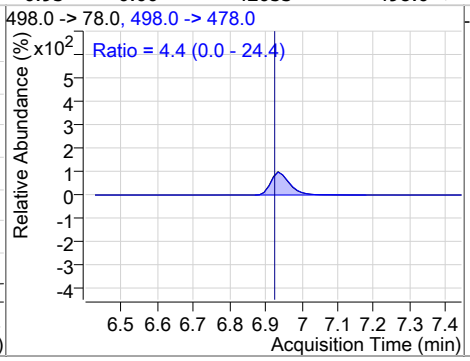


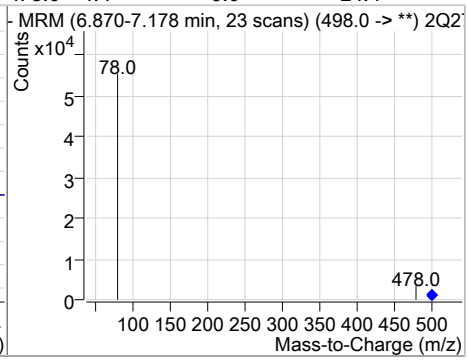




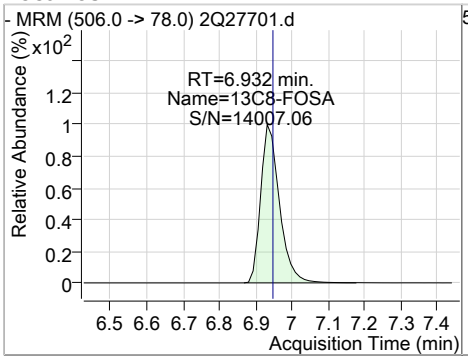
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.07	6.93	0.00	42653	498.0 -> 478.0	4.4	0.0	24.4

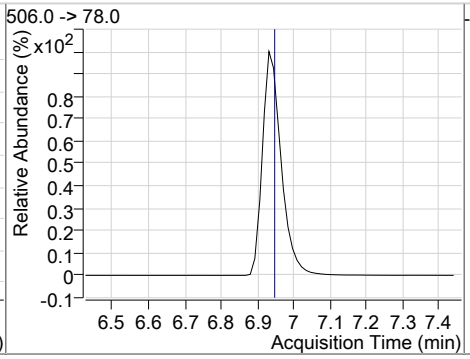


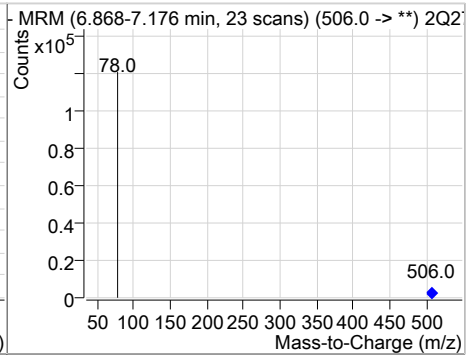




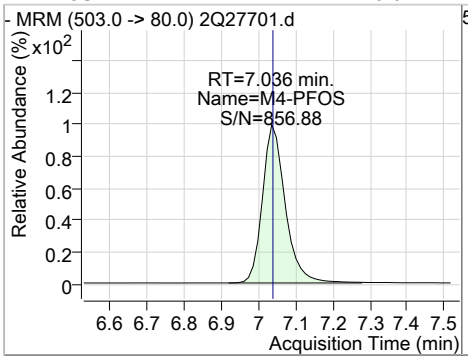
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.74	6.93	-0.01	92202				

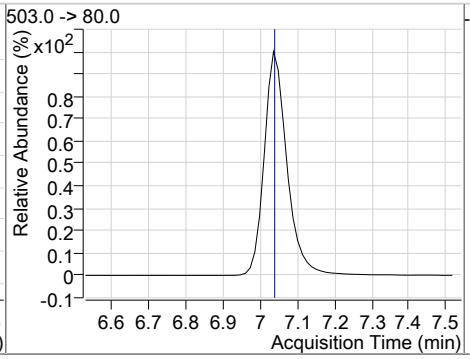


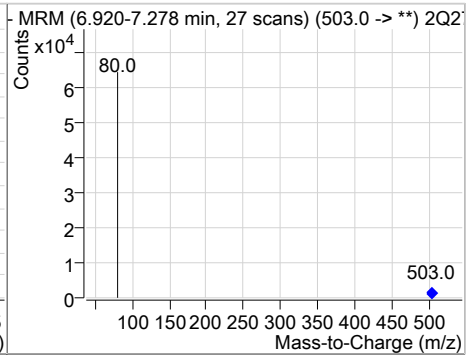




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.04	7.04	0.00	47974				

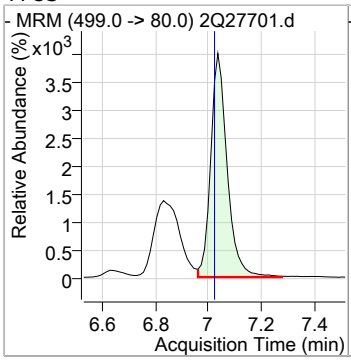


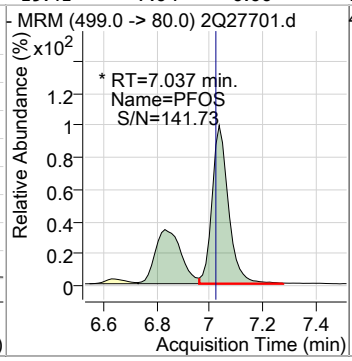


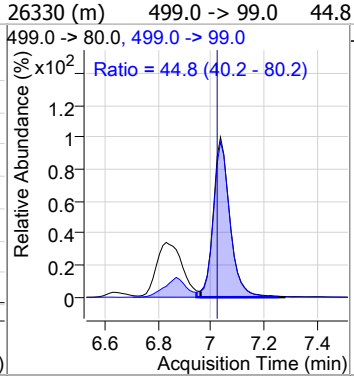


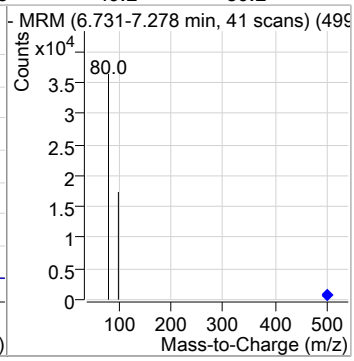
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.41	7.04	0.00	26330 (m)	499.0 -> 99.0	44.8	40.2	80.2

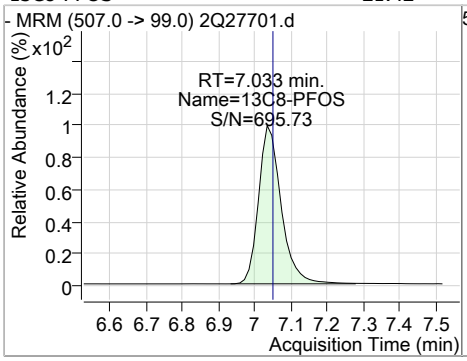


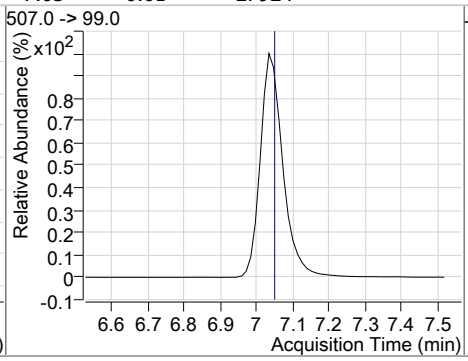


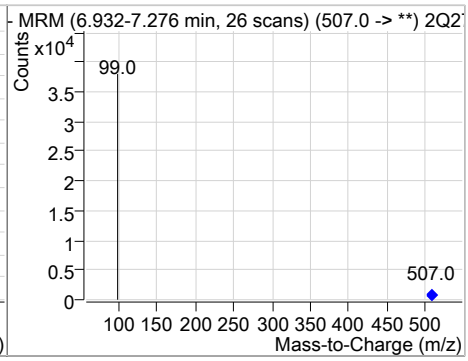




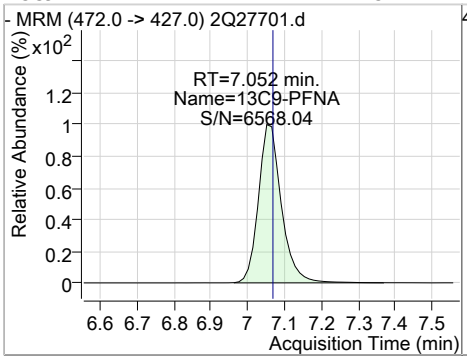
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.42	7.03	-0.01	27924				

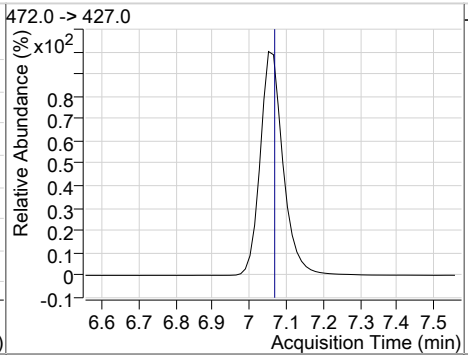


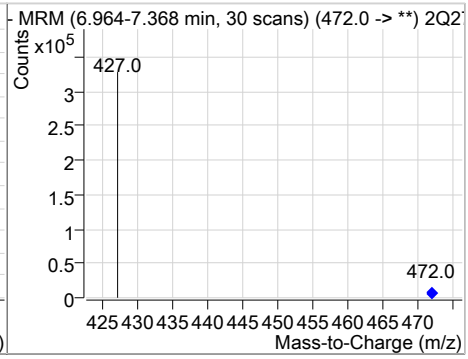




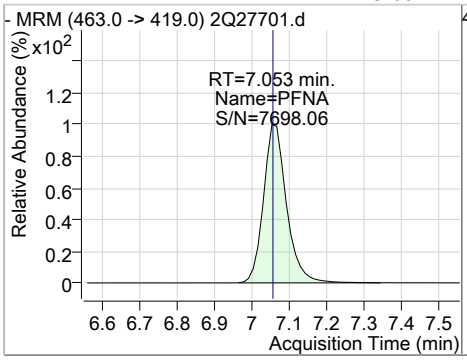
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	23.41	7.05	-0.01	247899				

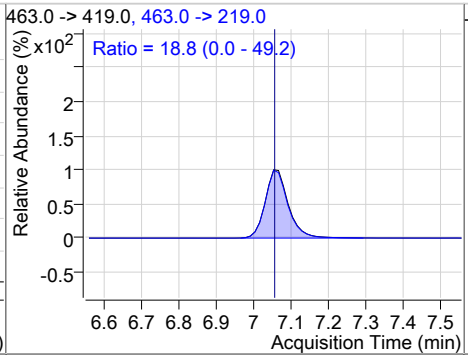


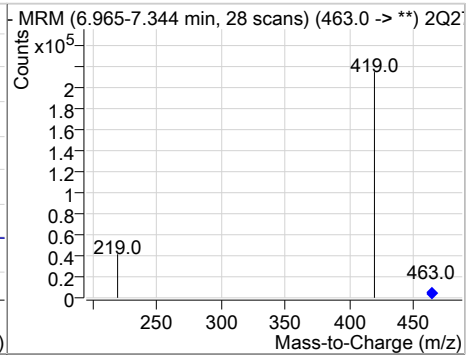




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.66	7.05	-0.01	161666	463.0 -> 219.0	18.8	0.0	49.2

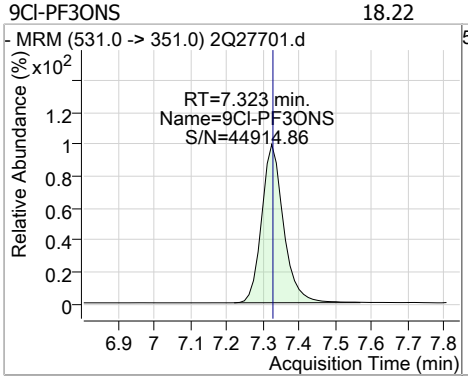


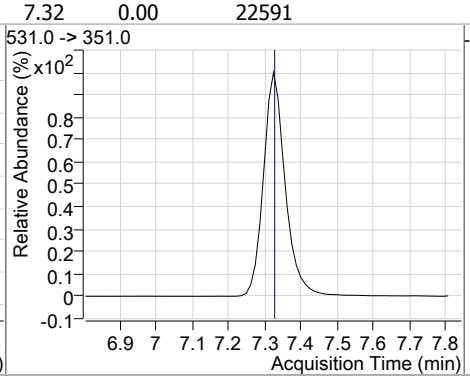


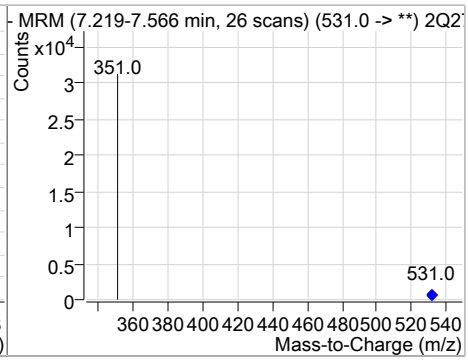


Perfluorinated Compounds by LC/MS/MS

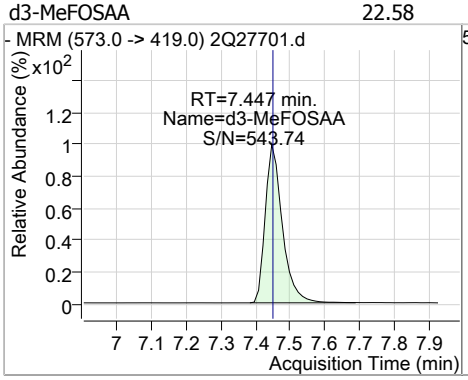
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.22	7.32	0.00	22591				

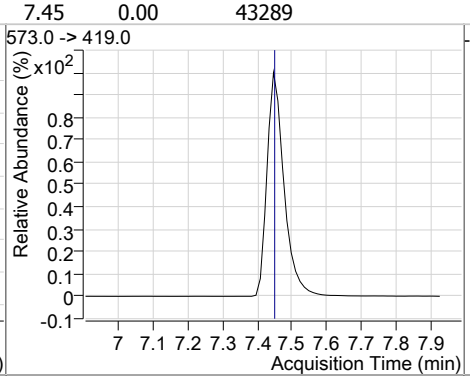


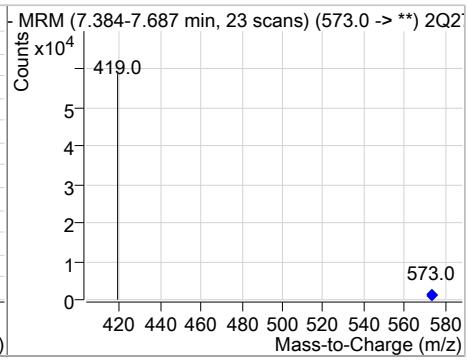




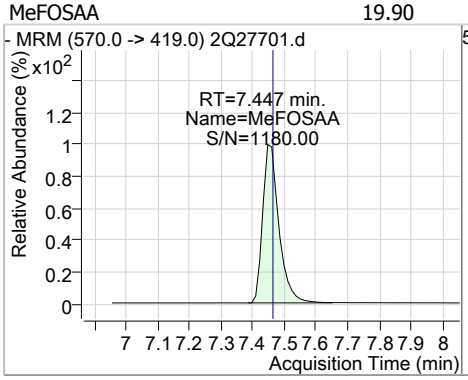
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	22.58	7.45	0.00	43289				

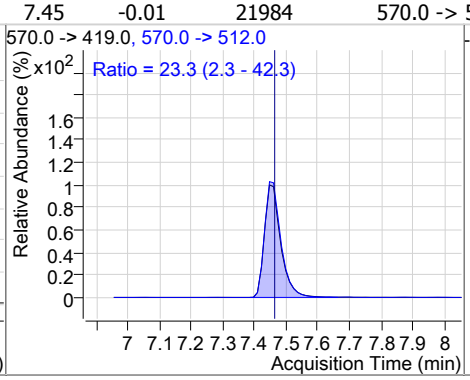


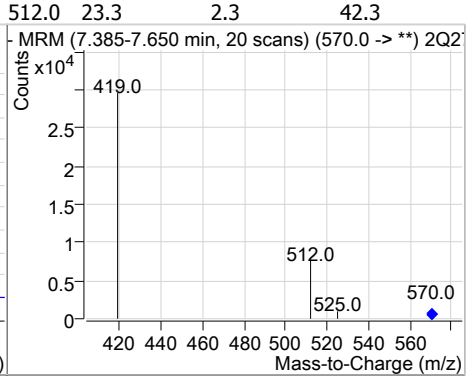




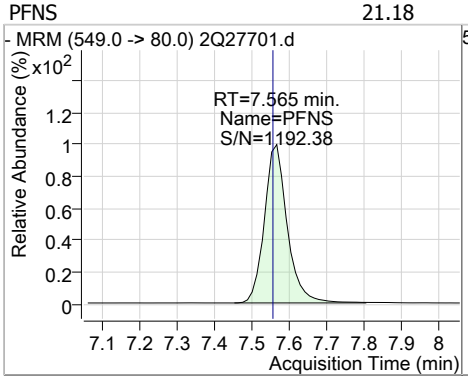
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.90	7.45	-0.01	21984	570.0 -> 512.0	23.3	2.3	42.3

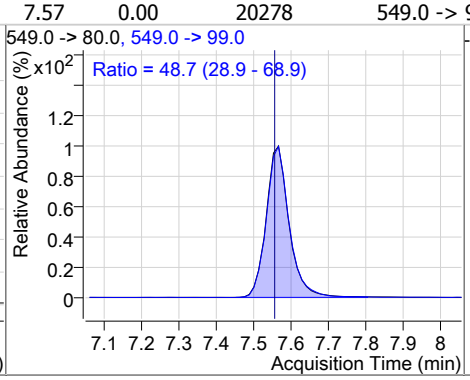


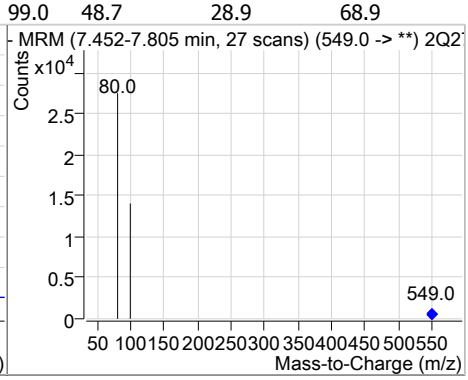




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	21.18	7.57	0.00	20278	549.0 -> 99.0	48.7	28.9	68.9

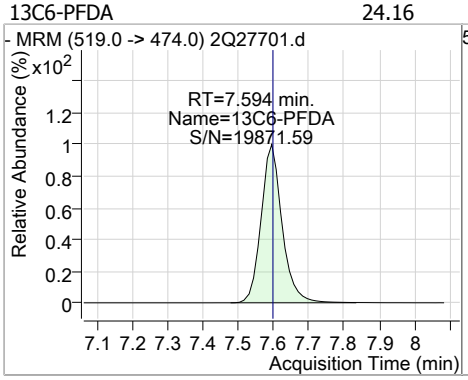


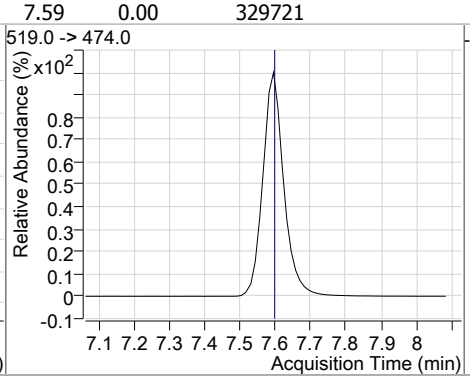


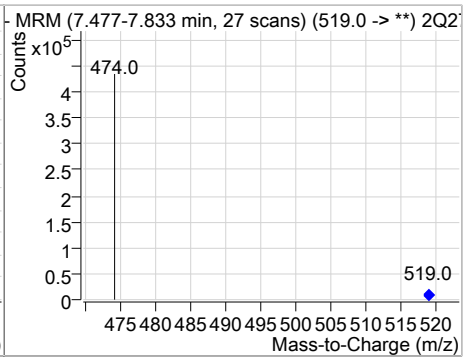


Perfluorinated Compounds by LC/MS/MS

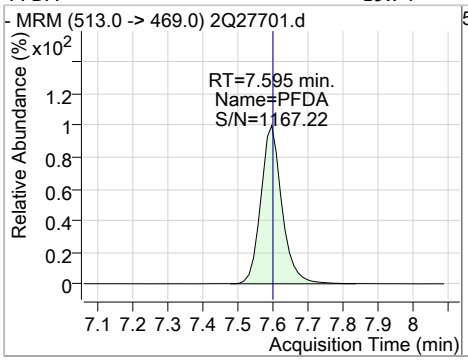
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	24.16	7.59	0.00	329721				

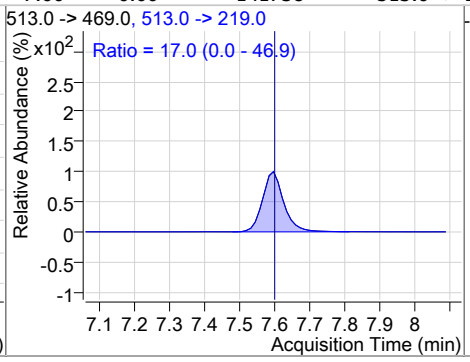


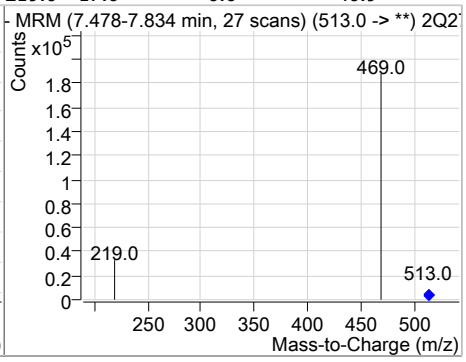




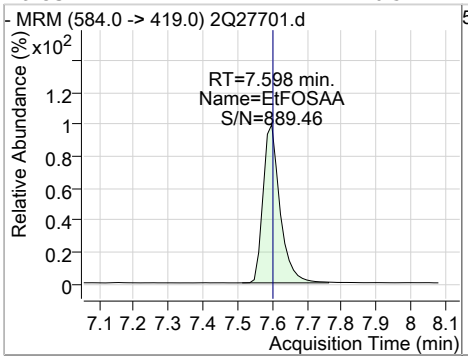
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.74	7.60	0.00	141738	513.0 -> 219.0	17.0	0.0	46.9

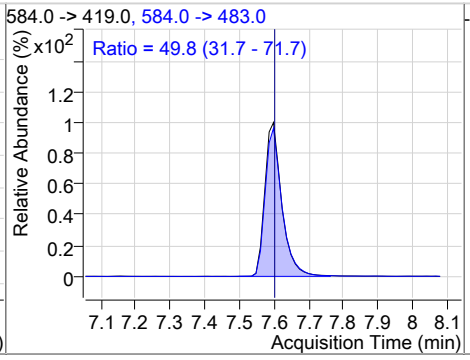


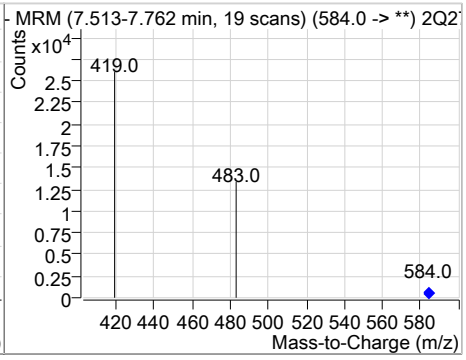




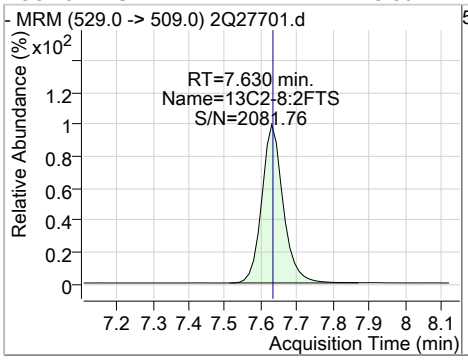
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.57	7.60	0.00	18927	584.0 -> 483.0	49.8	31.7	71.7

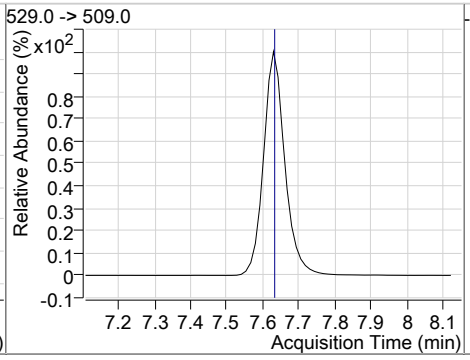


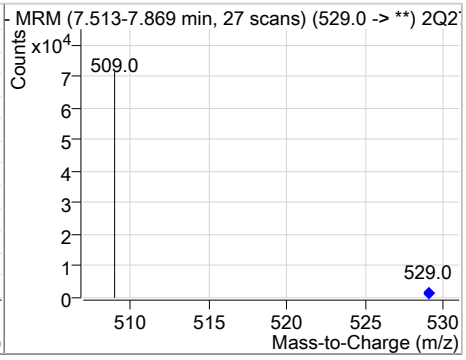




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.50	7.63	0.00	52115				

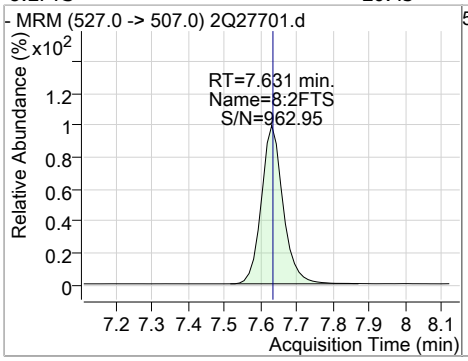


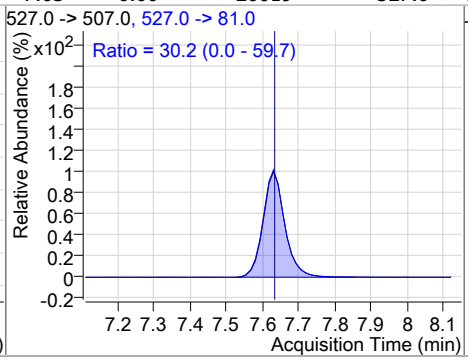


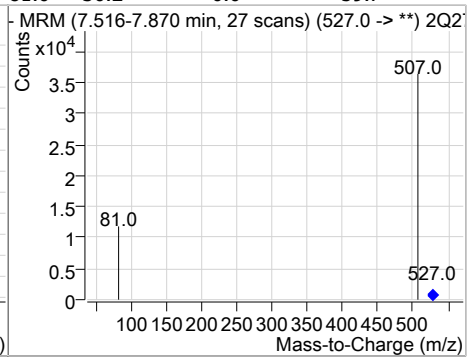


Perfluorinated Compounds by LC/MS/MS

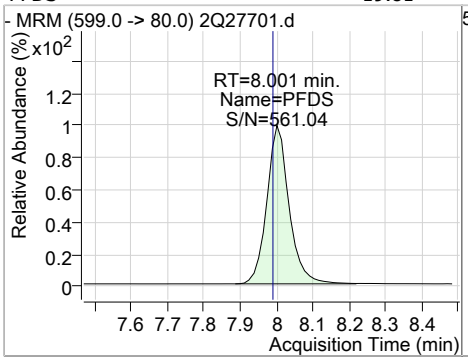
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.43	7.63	0.00	26619	527.0 -> 81.0	30.2	0.0	59.7

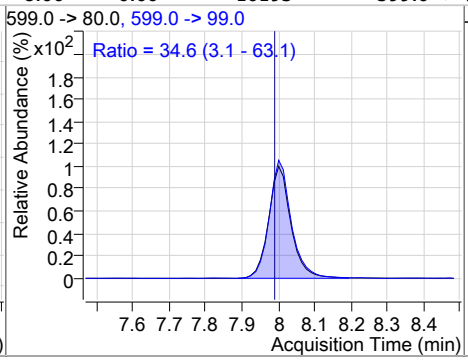


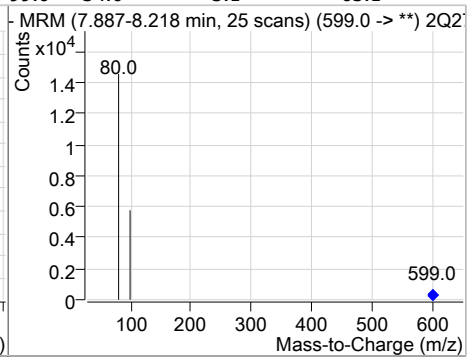




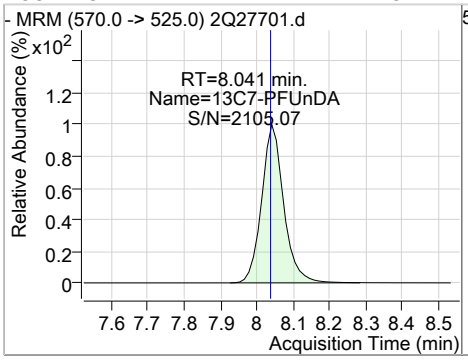
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.81	8.00	0.00	10193	599.0 -> 99.0	34.6	3.1	63.1

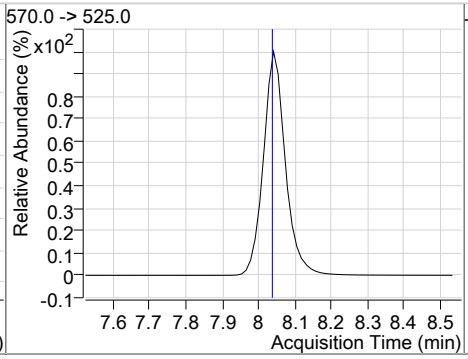


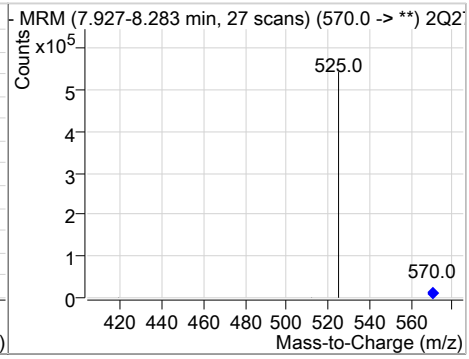




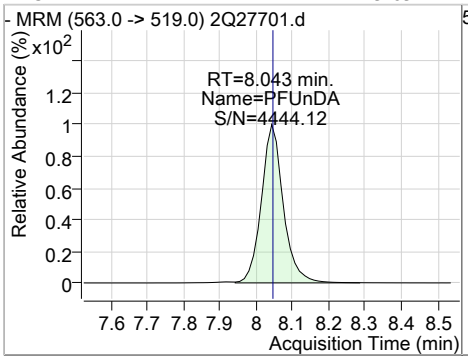
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	24.32	8.04	0.00	411639				

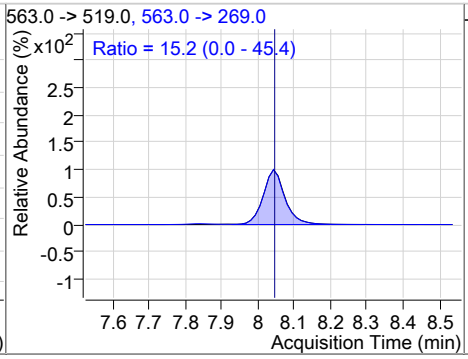


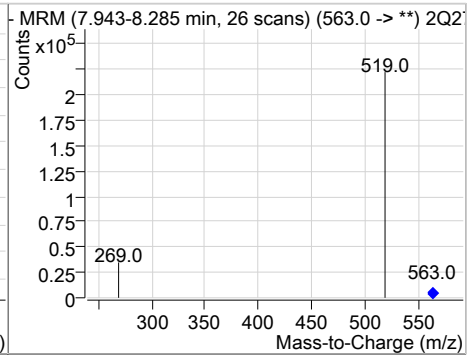




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.69	8.04	0.00	167399	563.0 -> 269.0	15.2	0.0	45.4

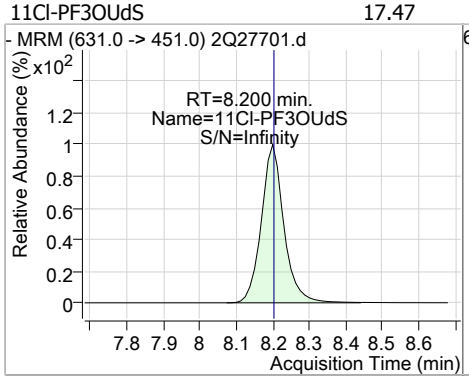


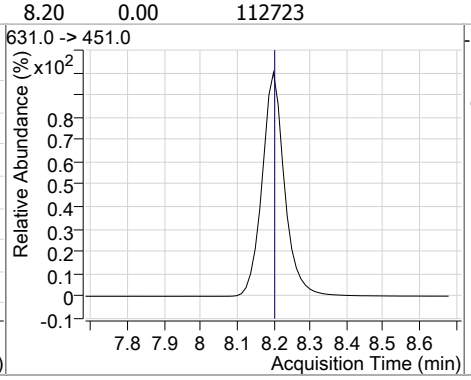


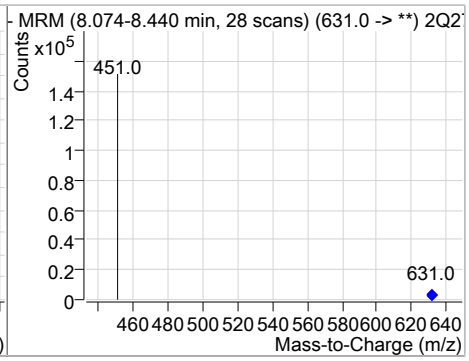


Perfluorinated Compounds by LC/MS/MS

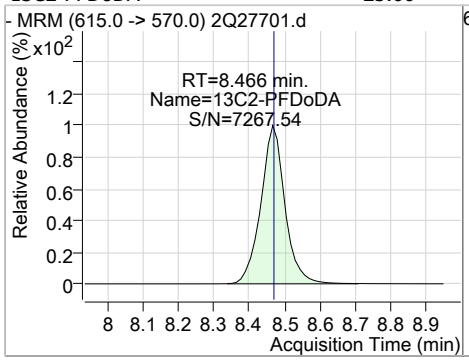
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.47	8.20	0.00	112723				

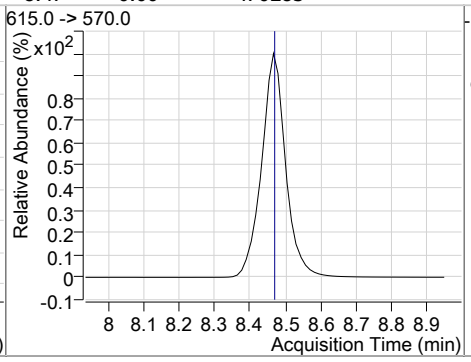


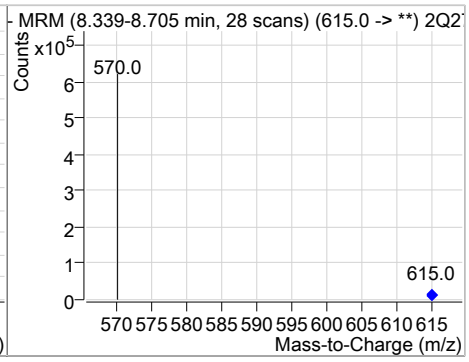




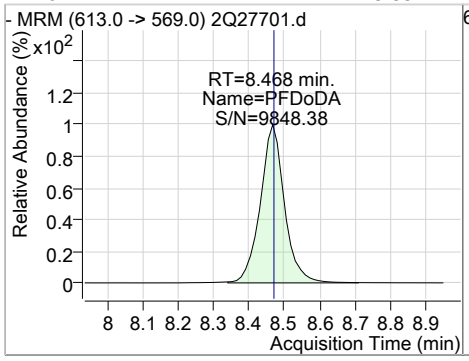
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	25.00	8.47	0.00	470283				

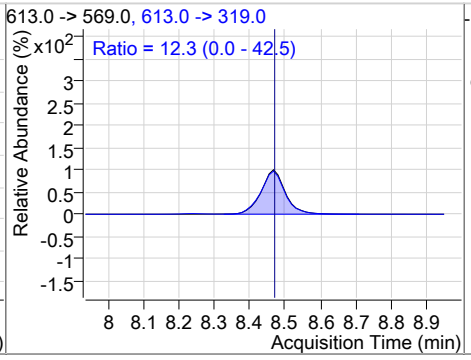


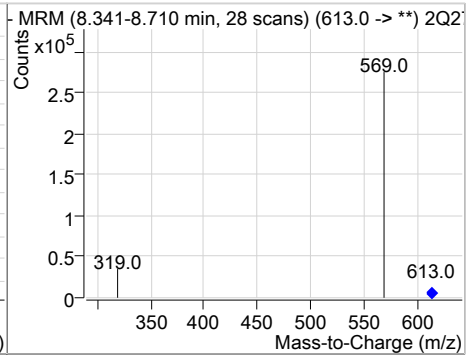




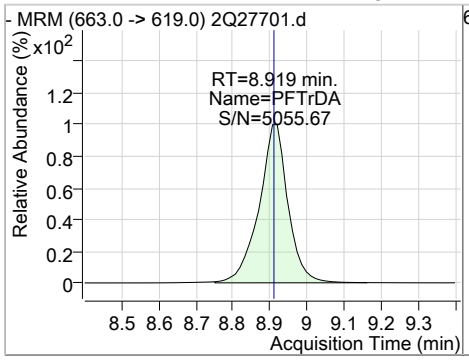
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.99	8.47	0.00	209544	613.0 -> 319.0	12.3	0.0	42.5

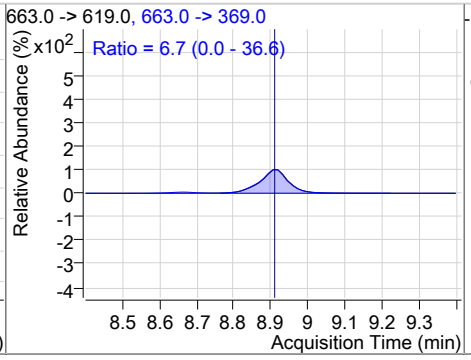


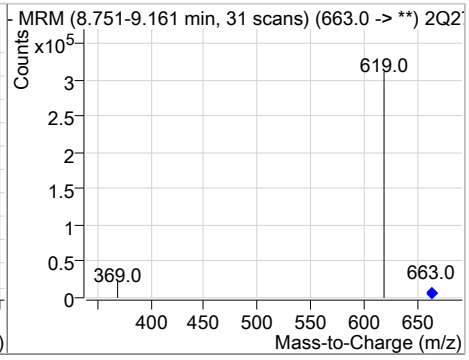




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.21	8.92	0.00	235558	663.0 -> 369.0	6.7	0.0	36.6

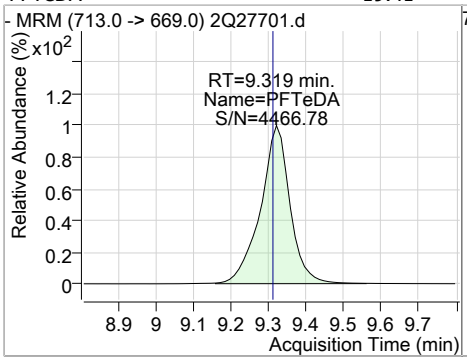


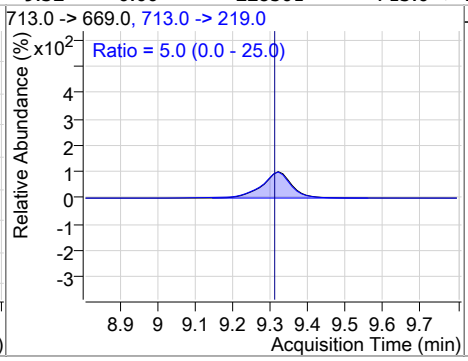


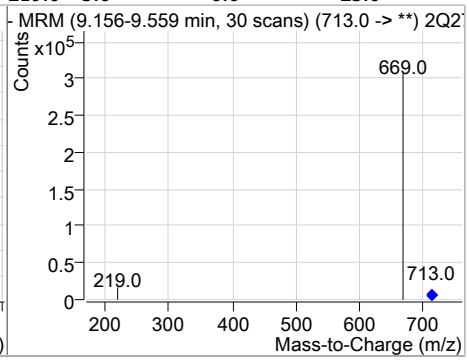


Perfluorinated Compounds by LC/MS/MS

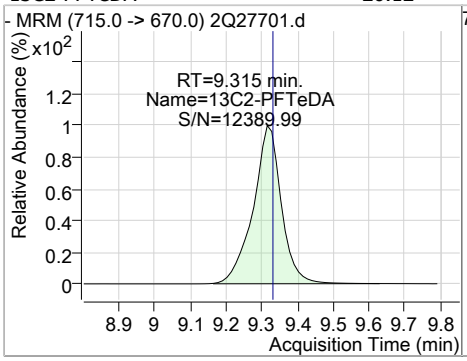
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.41	9.32	0.00	228501	713.0 -> 219.0	5.0	0.0	25.0

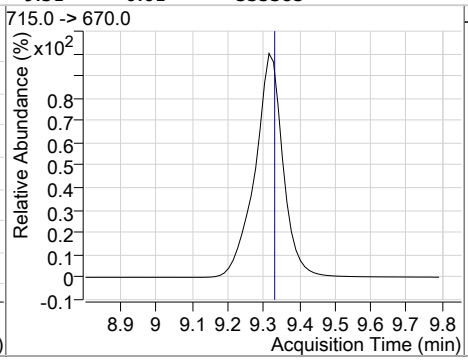


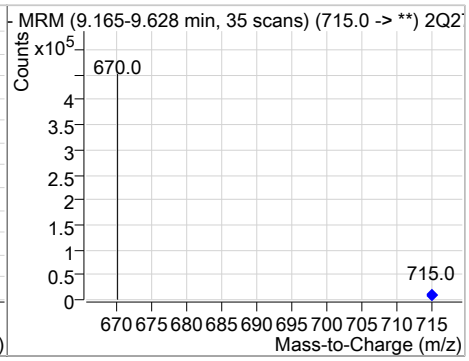




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	26.12	9.31	-0.01	335385				







Manual Integration Approval Summary

Sample Number:	S2Q442-CC442	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	2Q27701.D	**Analyst approved:**	03/19/19 09:45 Nancy Saunders
Injection Time:	03/18/19 18:22	**Supervisor approved:**	03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:24

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27713.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 9:31:34 PM
Sample Name : CC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

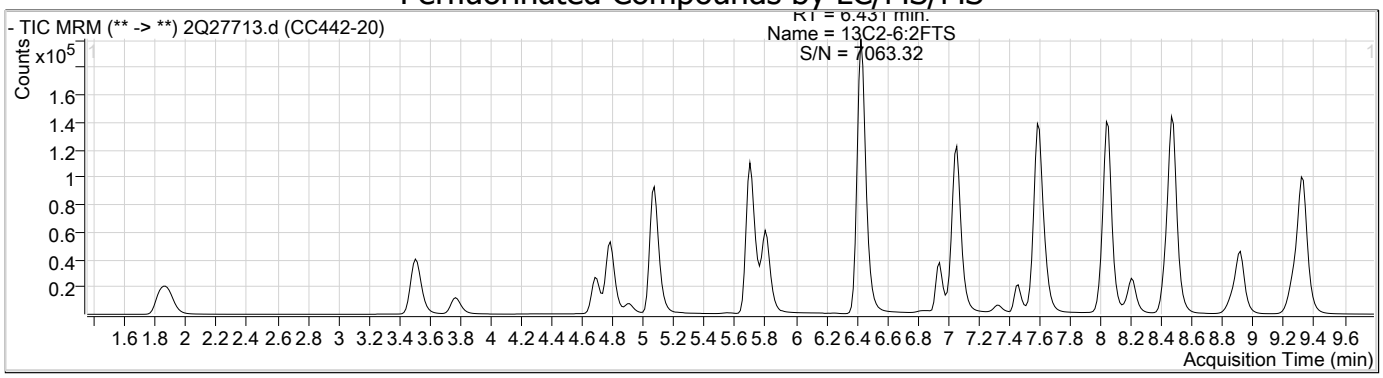
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	304907	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	45909	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	126702	20.00	µg/L	0.000
M5-PFPeA	3.511	268.0 -> 223.0	109429	20.00	µg/L	-0.013
M5-PFHxA	4.789	318.0 -> 273.0	156466	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	228857	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	231593	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	245077	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	319409	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	401550	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	453880	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	324043	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	88242	20.00	µg/L	0.000
M3-PFBS	3.767	302.0 -> 99.0	18585	20.00	µg/L	-0.013
M3-PFHxS	5.748	402.0 -> 99.0	20507	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	26152	20.00	µg/L	0.000
M2-4:2FTS	4.684	329.0 -> 309.0	63073	20.00	µg/L	0.000
M2-6:2FTS	6.431	429.0 -> 409.0	70235	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	51099	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	43321	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	159261	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	62910	21.16	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.8%		
13C2-6:2FTS	6.431	429.0 -> 409.0	70234	21.88	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.4%		
13C2-8:2FTS	7.630	529.0 -> 509.0	51101	23.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.2%		
13C2-PFDoDA	8.466	615.0 -> 570.0	453730	24.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.6%		
13C2-PFTeDA	9.315	715.0 -> 670.0	322875	25.15	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 125.7%		
13C3-PFBS	3.767	302.0 -> 99.0	18470	20.26	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C3-PFHxS	5.748	402.0 -> 99.0	20687	20.29	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C4-PFBA	1.865	217.0 -> 172.0	126193	21.04	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C4-PFHpA	5.705	367.0 -> 322.0	228552	22.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.5%		
13C5-PFHxA	4.789	318.0 -> 273.0	156169	21.49	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%		
13C5-PFPeA	3.511	268.0 -> 223.0	109641	21.57	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.8%		
13C6-PFDA	7.594	519.0 -> 474.0	319409	23.41	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

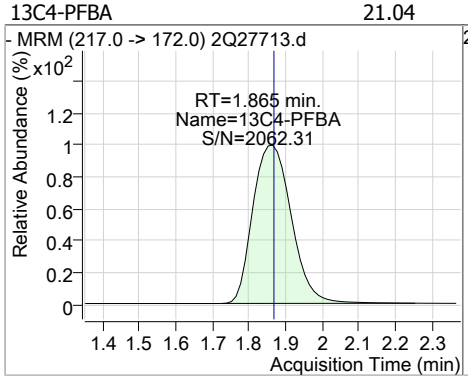
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.0%		
13C7-PFUnDA	8.041	570.0 -> 525.0	401349	23.72 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.6%		
13C8-FOSA	6.944	506.0 -> 78.0	88251	21.76 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.8%		
13C8-PFOA	6.434	421.0 -> 376.0	231367	22.18 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.9%		
13C8-PFOS	7.045	507.0 -> 99.0	26077	20.01 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C9-PFNA	7.065	472.0 -> 427.0	244839	23.12 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.6%		
d3-MeFOSAA	7.447	573.0 -> 419.0	43338	22.61 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.0%		
M2-PFOA	6.435	415.0 -> 370.0	305226	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.048	503.0 -> 80.0	45938	20.00 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	159261	99.60 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	35321	20.33 µg/L		99
6:2FTS	6.432	427.0 -> 407.0	34784	20.13 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	26049	20.39 µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	18503	20.09 µg/L		99
FOSA	6.947	498.0 -> 78.0	40632	19.99 µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	22375	20.24 µg/L		98
PFBA	1.860	213.0 -> 169.0	24082	19.25 µg/L		100
PFBS	3.771	299.0 -> 80.0	28953	19.62 µg/L		100
PFDA	7.595	513.0 -> 469.0	138596	19.93 µg/L		100
PFDoDA	8.468	613.0 -> 569.0	203214	20.12 µg/L		99
PFDS	8.001	599.0 -> 80.0	10108	20.99 µg/L		97
PFHpA	5.708	363.0 -> 319.0	194843	19.75 µg/L		100
PFHpS	6.442	449.0 -> 80.0	20534	20.64 µg/L		99
PFHxA	4.791	313.0 -> 269.0	52992	19.67 µg/L		99
PFHxS	5.739	399.0 -> 80.0	22728	20.05 µg/L	m	95
PFNA	7.066	463.0 -> 419.0	156407	19.24 µg/L		99
PFNS	7.565	549.0 -> 80.0	19504	21.76 µg/L		99
PFOA	6.437	413.0 -> 369.0	120926	19.33 µg/L		98
PFOS	7.037	499.0 -> 80.0	25307	19.92 µg/L	m	79
PFPeA	3.515	263.0 -> 219.0	93909	19.83 µg/L		100
PFPeS	4.908	349.0 -> 80.0	19666	20.82 µg/L		98
PFTeDA	9.319	713.0 -> 669.0	220004	19.41 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	226171	19.16 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	162726	19.64 µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	107337	17.26 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	21713	18.09 µg/L		100
ADONA	5.804	377.0 -> 251.0	222026	19.36 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	188935	99.87 µg/L		98

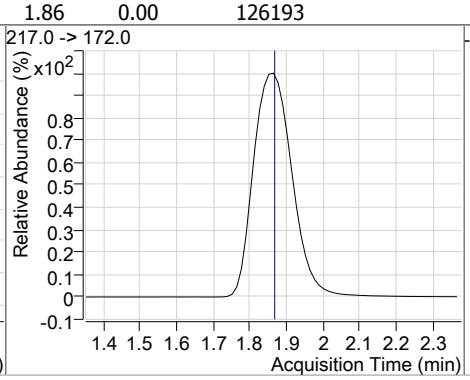
 # = Qualifier out of range, m = manually integrated, + = Area summed

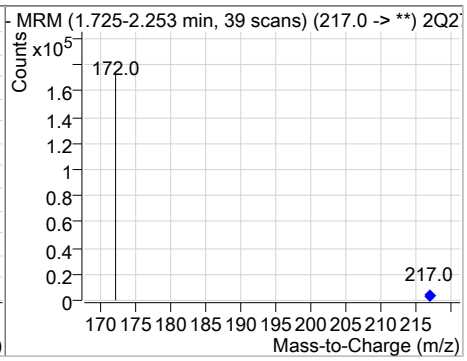
Perfluorinated Compounds by LC/MS/MS



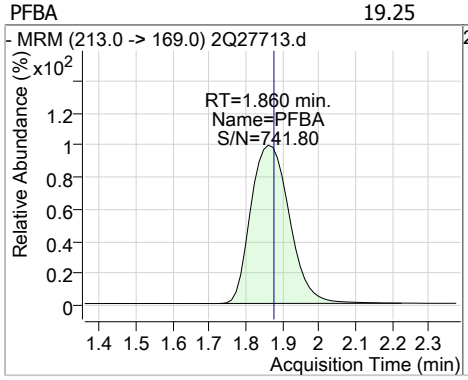
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.04	1.86	0.00	126193				

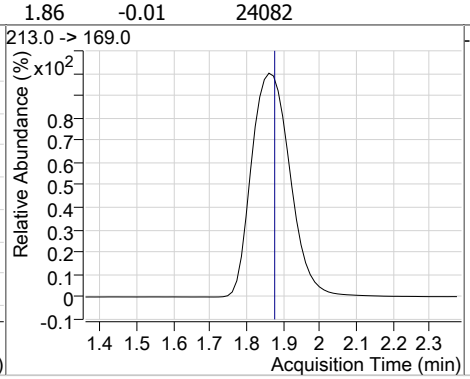


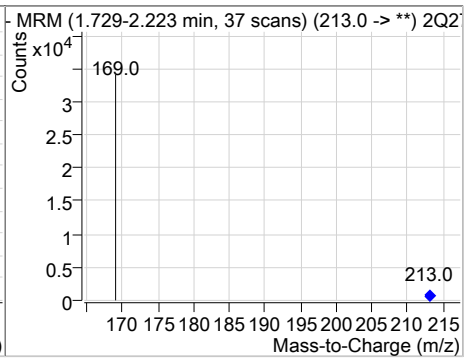




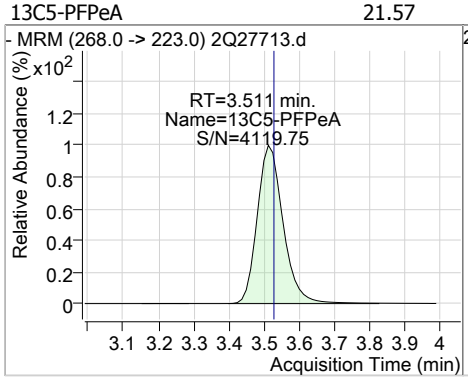
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.25	1.86	-0.01	24082				

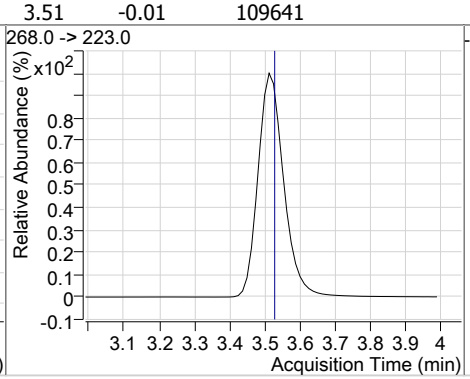


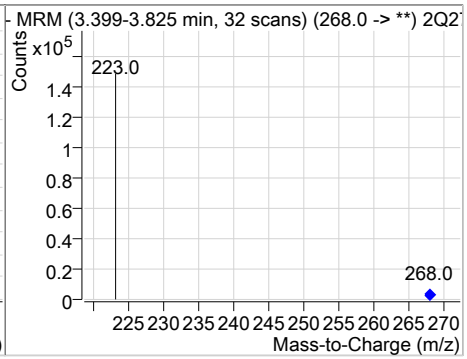




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.57	3.51	-0.01	109641				

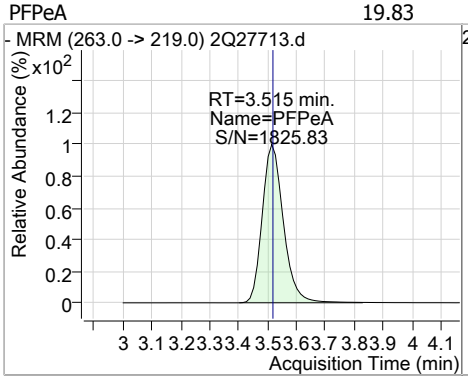


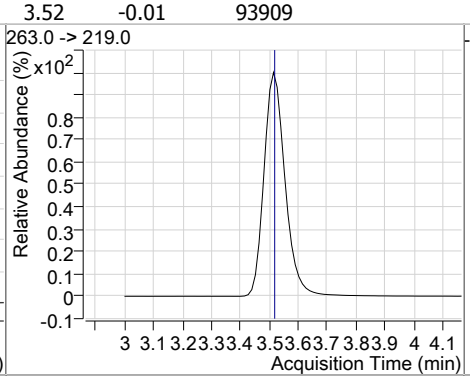


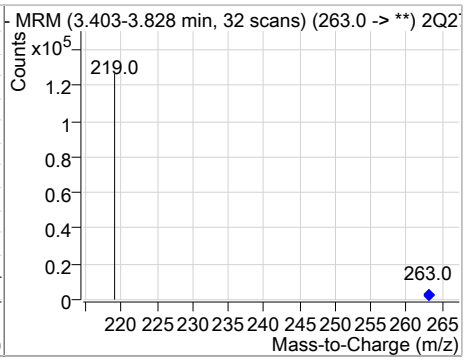


Perfluorinated Compounds by LC/MS/MS

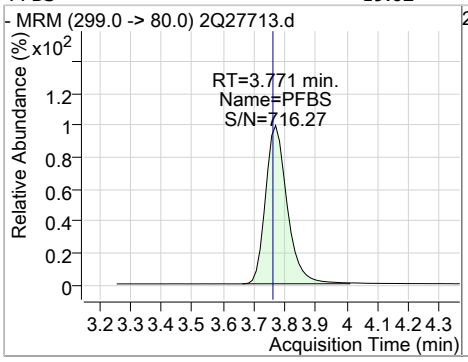
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.83	3.52	-0.01	93909				

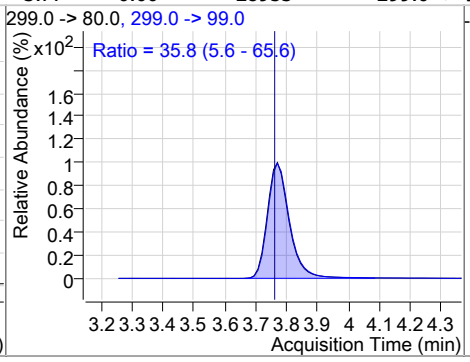


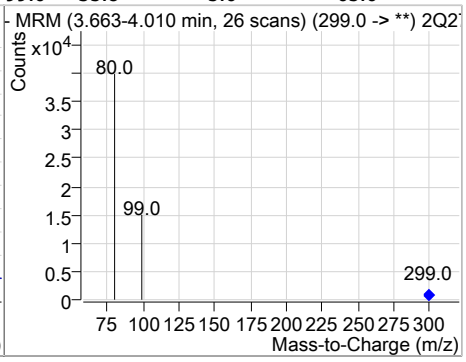




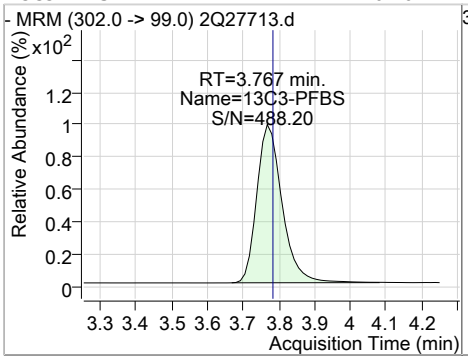
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.62	3.77	0.00	28953	299.0 -> 99.0	35.8	5.6	65.6

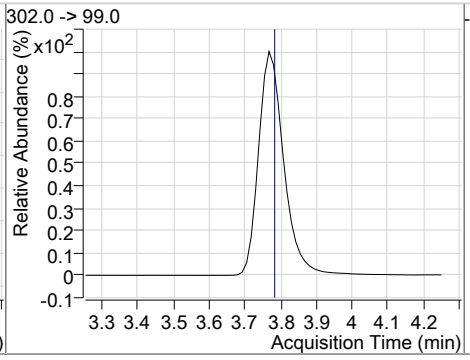


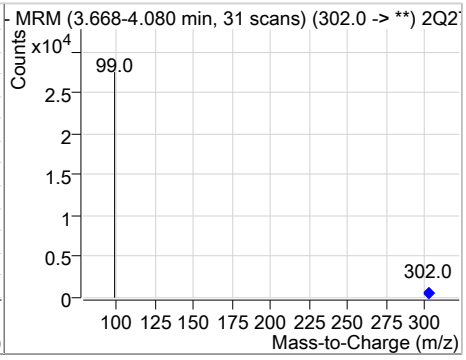




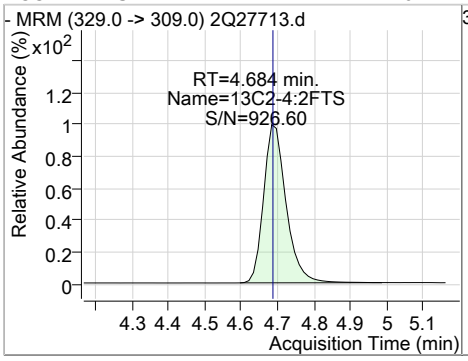
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.26	3.77	-0.01	18470				

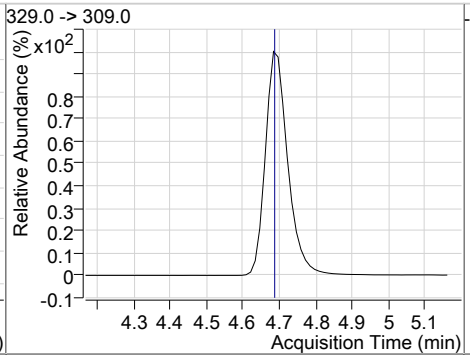


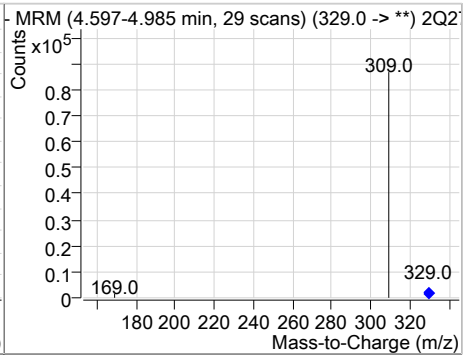




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	21.16	4.68	0.00	62910				

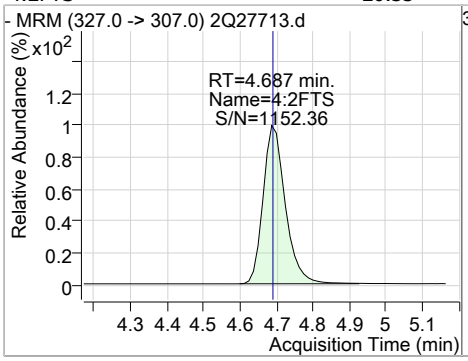


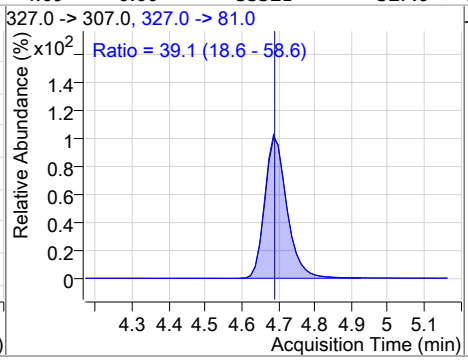


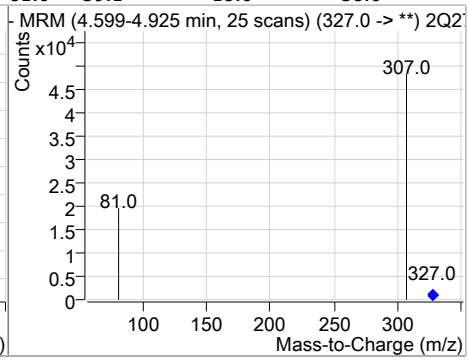


Perfluorinated Compounds by LC/MS/MS

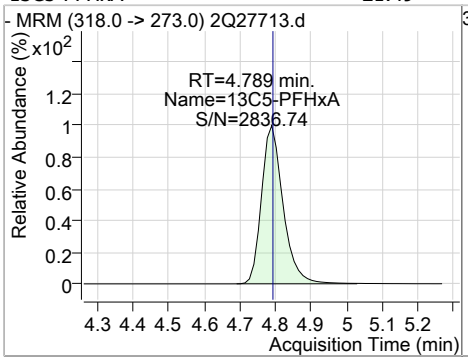
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.33	4.69	0.00	35321	327.0 -> 81.0	39.1	18.6	58.6

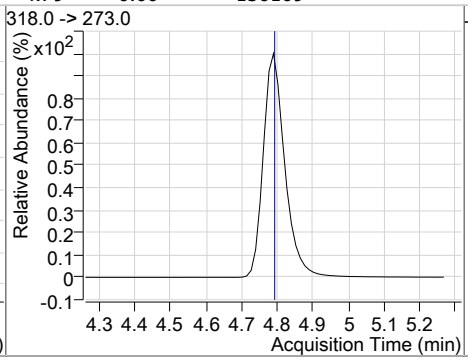


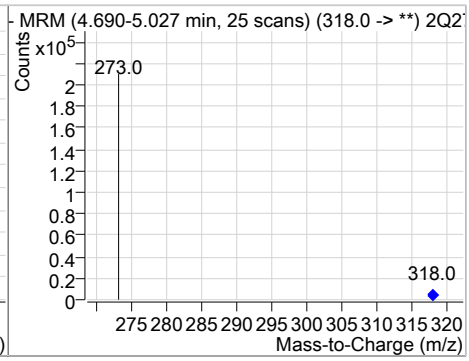




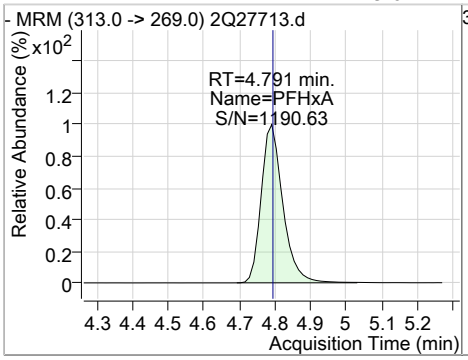
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.49	4.79	0.00	156169				

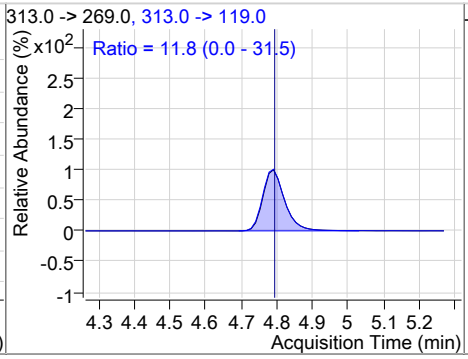


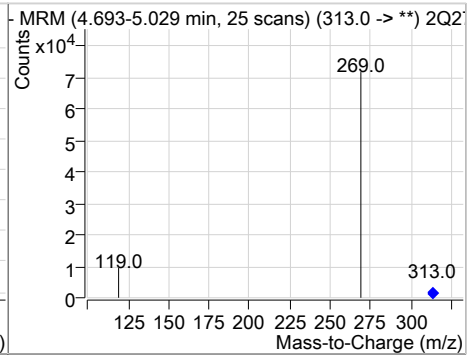




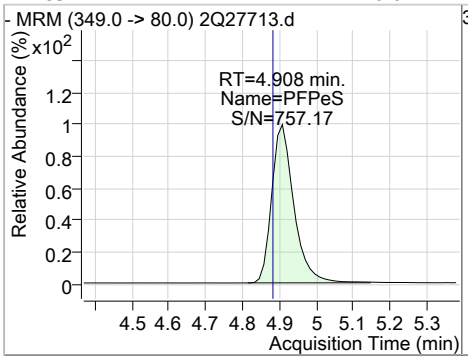
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.67	4.79	0.00	52992	313.0 -> 119.0	11.8	0.0	31.5

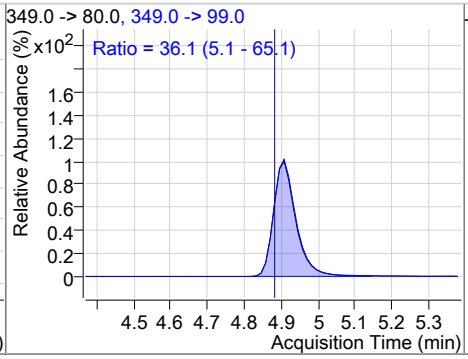


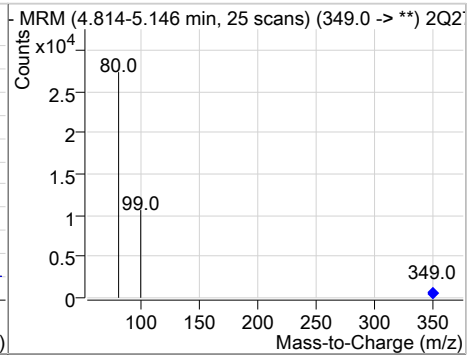




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.82	4.91	0.01	19666	349.0 -> 99.0	36.1	5.1	65.1

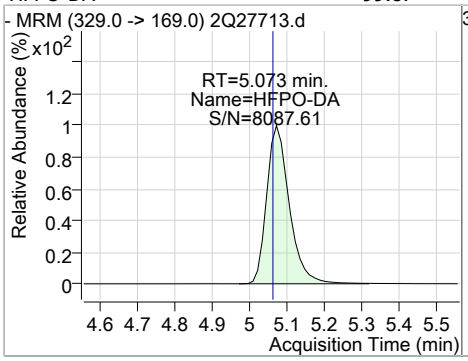


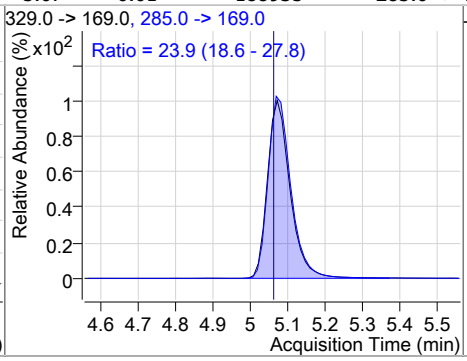


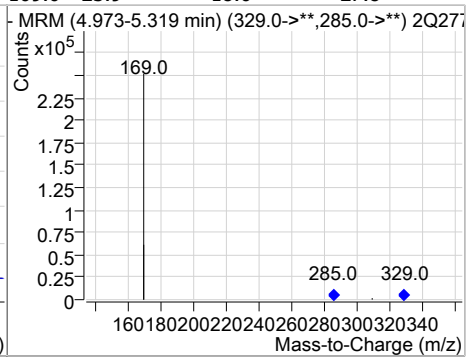


Perfluorinated Compounds by LC/MS/MS

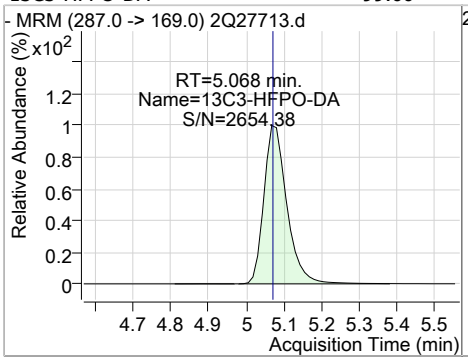
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	99.87	5.07	0.01	188935	285.0 -> 169.0	23.9	18.6	27.8

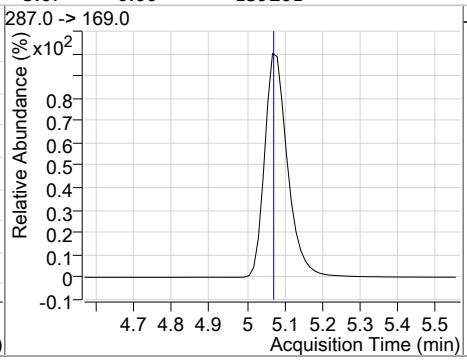


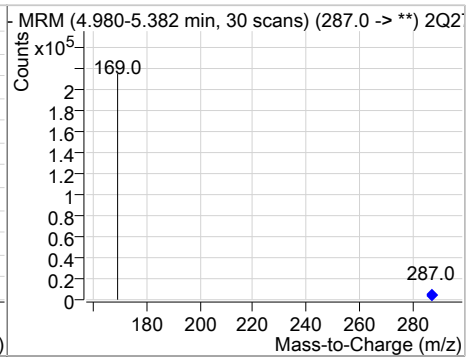




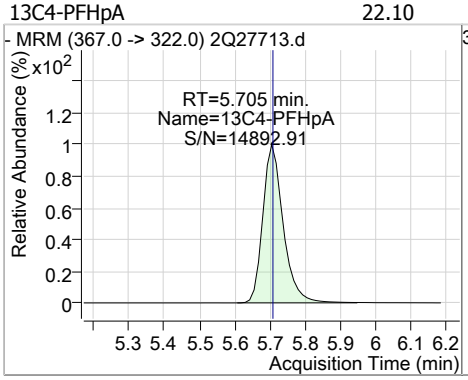
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	99.60	5.07	0.00	159261				

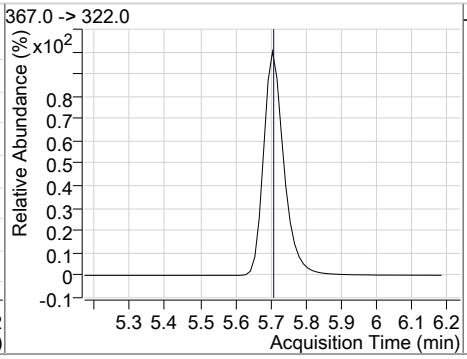


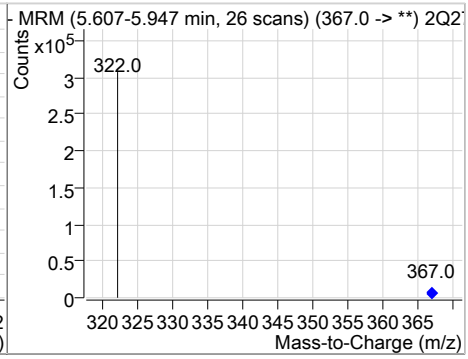




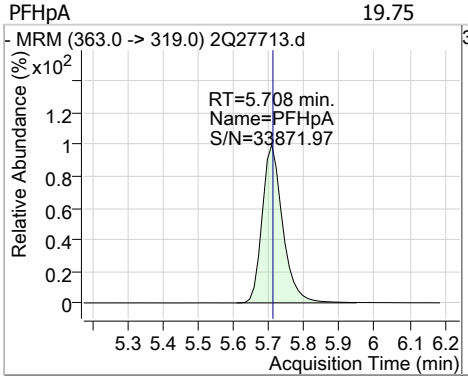
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	22.10	5.71	0.00	228552				

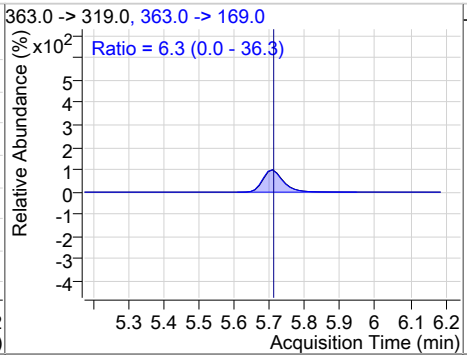


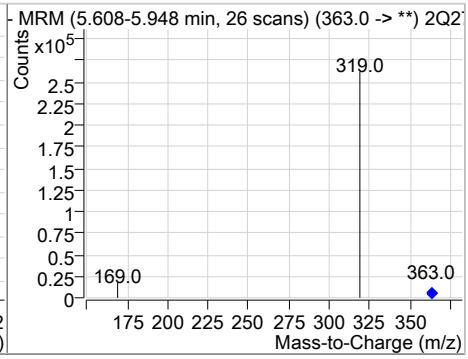




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.75	5.71	0.00	194843	363.0 -> 169.0	6.3	0.0	36.3

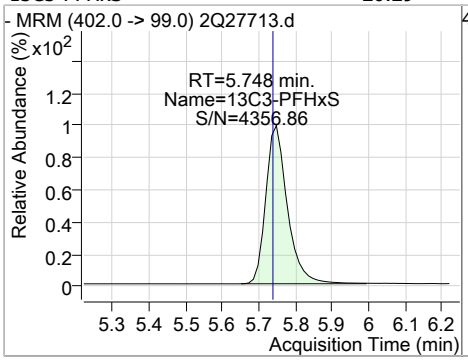


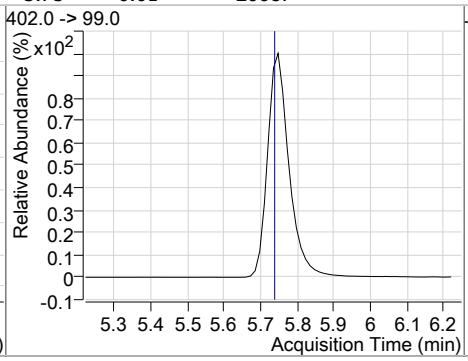


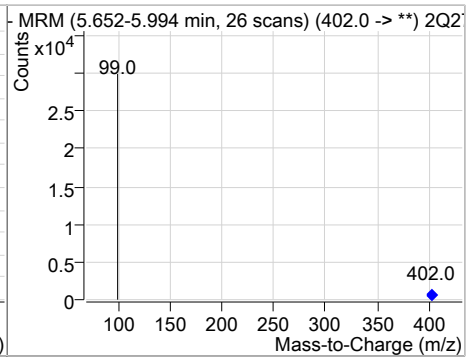


Perfluorinated Compounds by LC/MS/MS

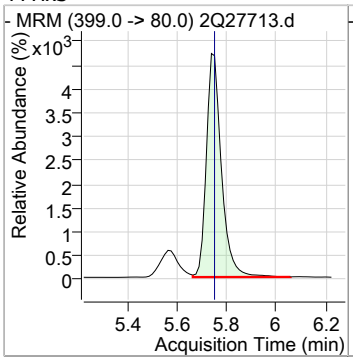
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.29	5.75	0.01	20687				

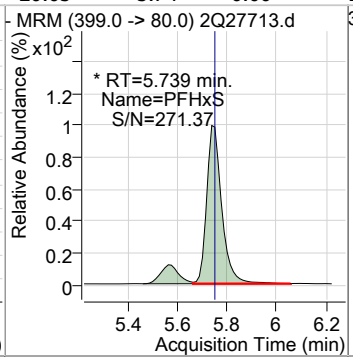


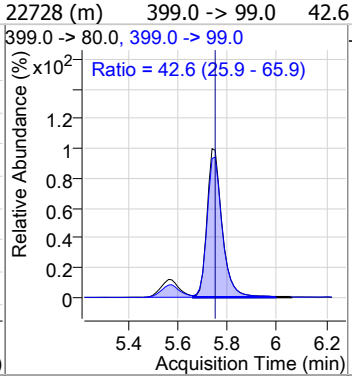


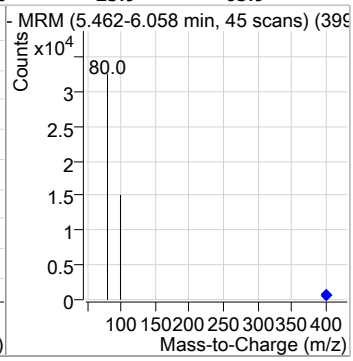


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.05	5.74	0.00	22728 (m)	399.0 -> 99.0	42.6	25.9	65.9

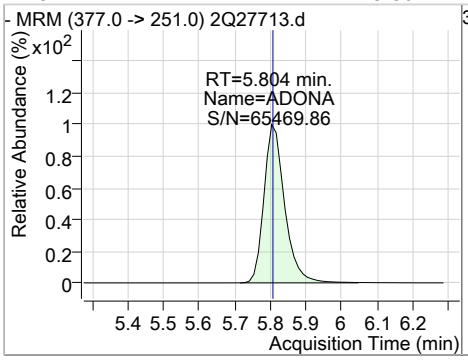


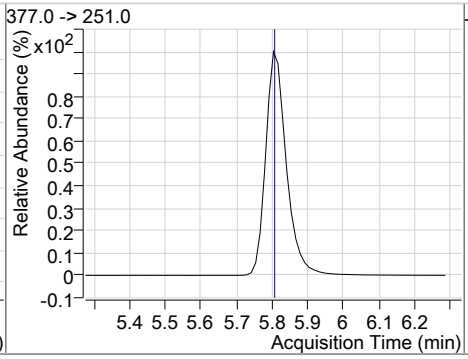


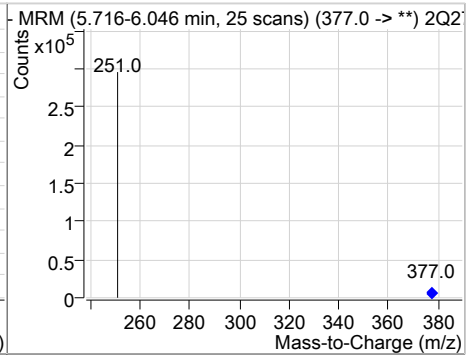




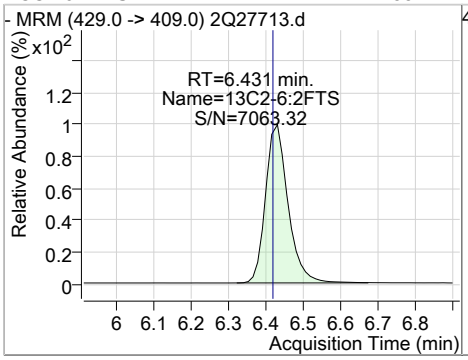
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.36	5.80	0.00	222026				

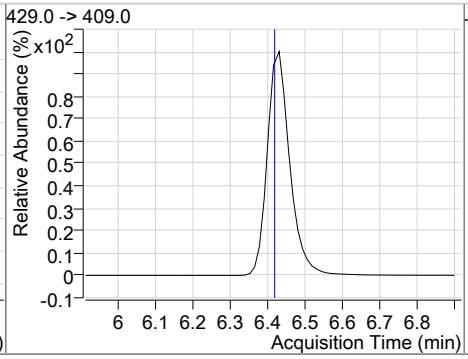


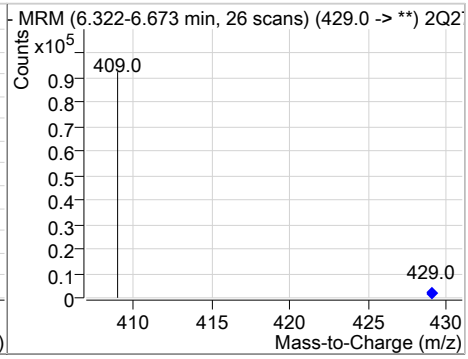




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.88	6.43	0.02	70234				

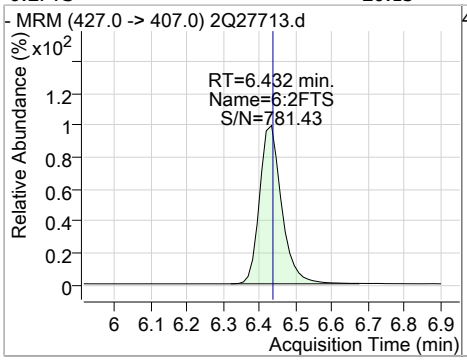


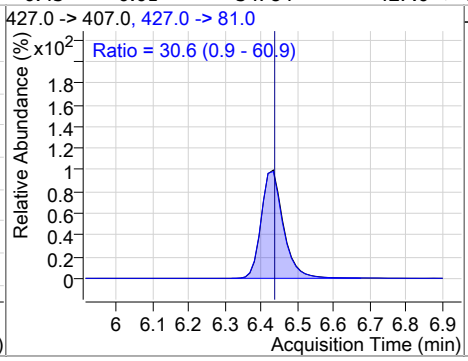


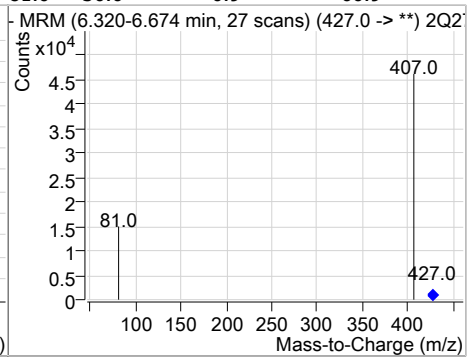


Perfluorinated Compounds by LC/MS/MS

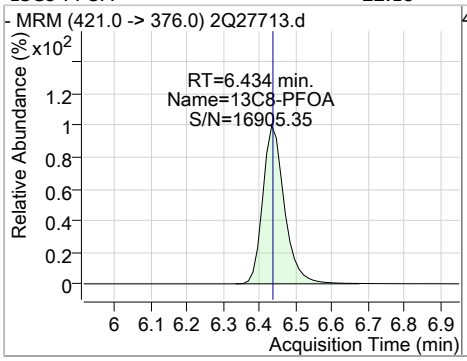
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.13	6.43	0.01	34784	427.0 -> 81.0	30.6	0.9	60.9

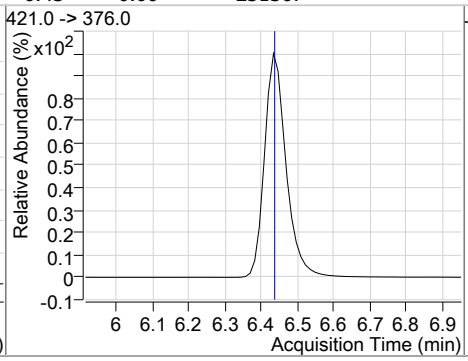


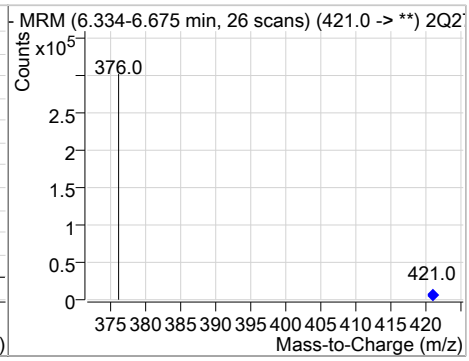




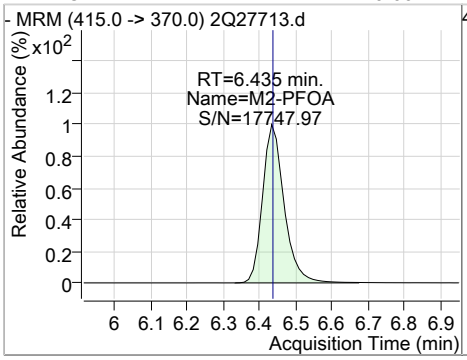
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	22.18	6.43	0.00	231367				

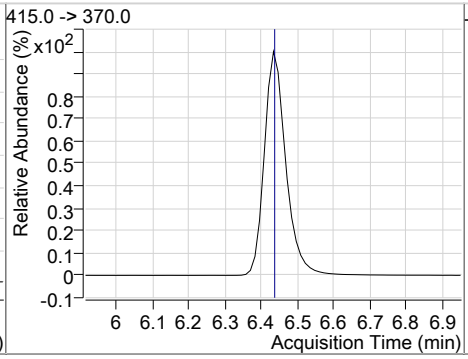


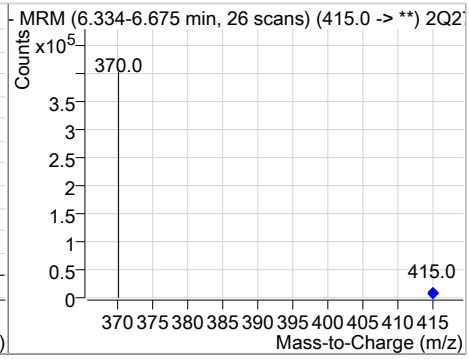




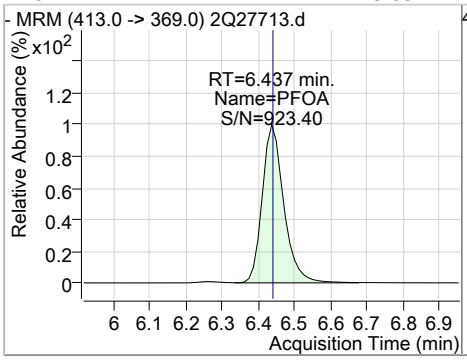
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	305226				

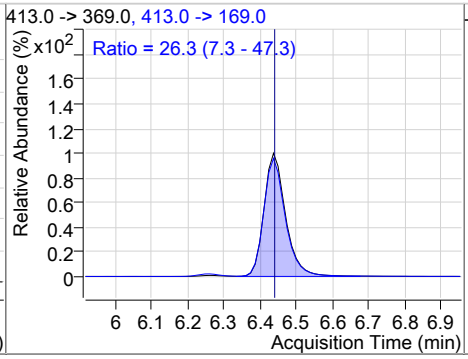


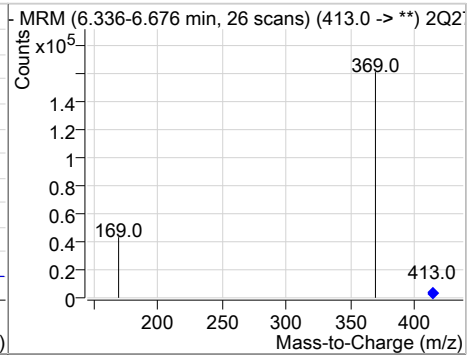




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.33	6.44	0.00	120926	413.0 -> 169.0	26.3	7.3	47.3

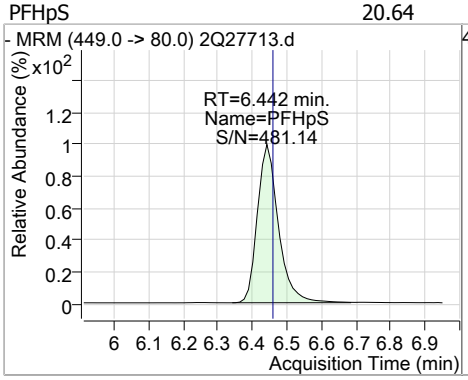


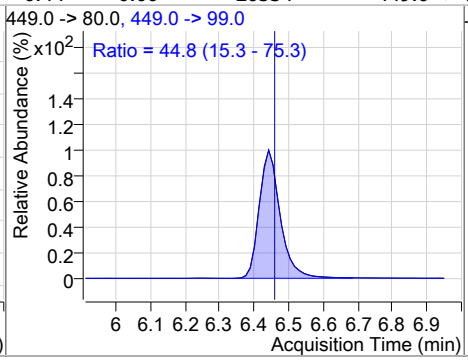


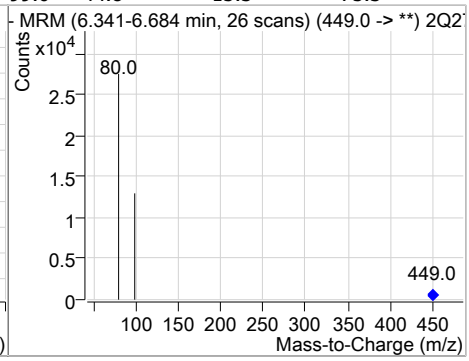


Perfluorinated Compounds by LC/MS/MS

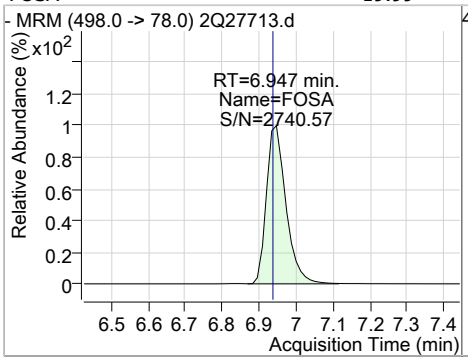
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.64	6.44	0.00	20534	449.0 -> 99.0	44.8	15.3	75.3

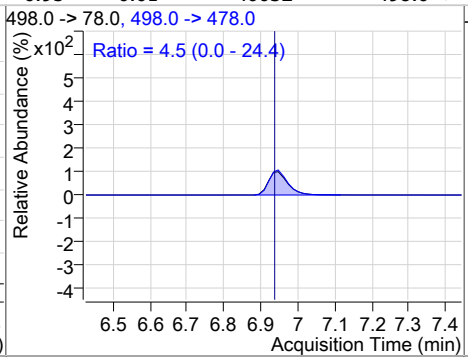


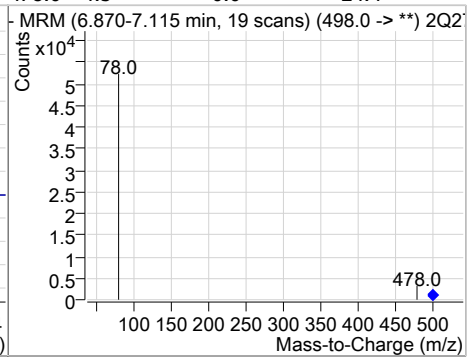




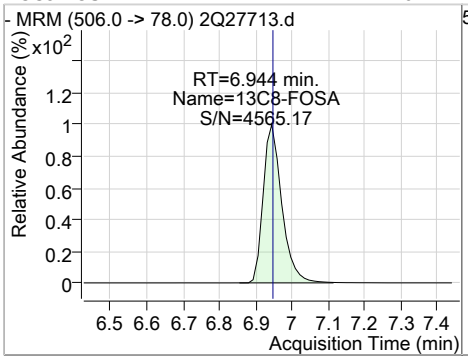
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.99	6.95	0.01	40632	498.0 -> 478.0	4.5	0.0	24.4

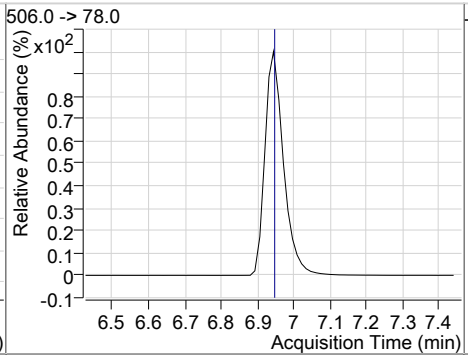


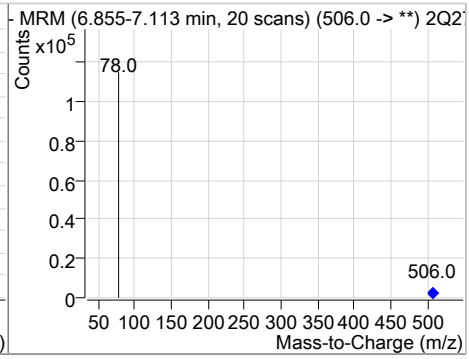




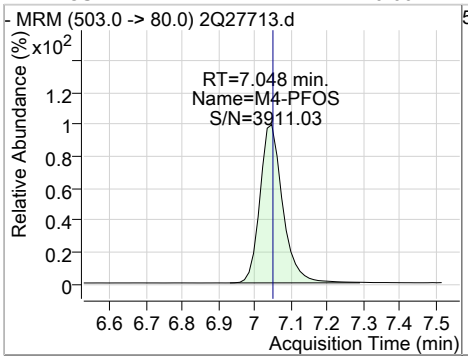
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.76	6.94	0.00	88251				

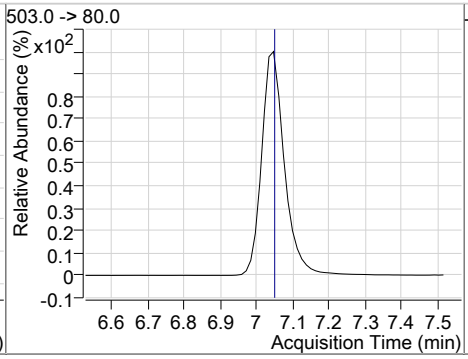


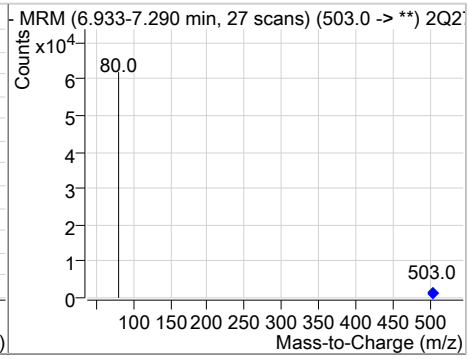




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.05	0.01	45938				

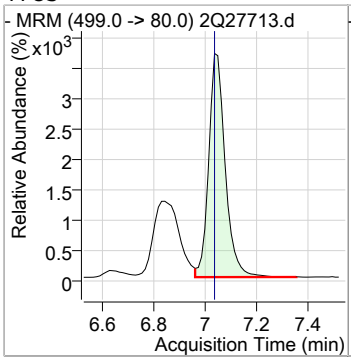


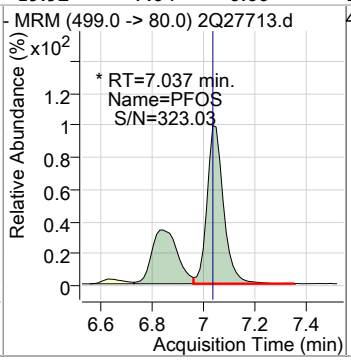


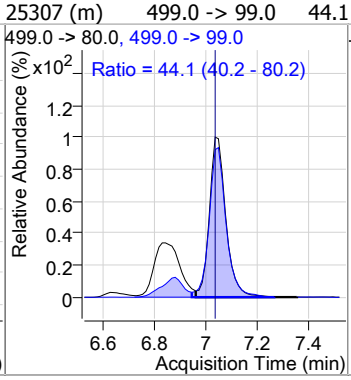


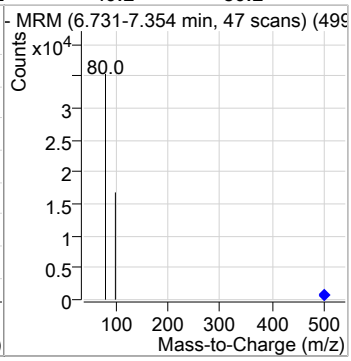
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.92	7.04	0.00	25307 (m)	499.0 -> 99.0	44.1	40.2	80.2

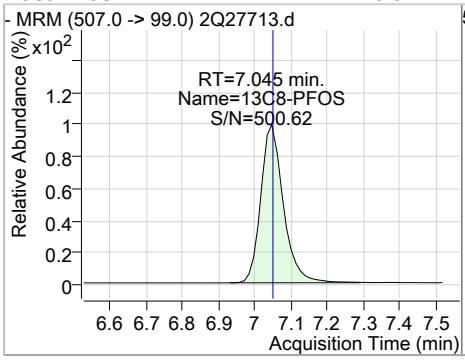


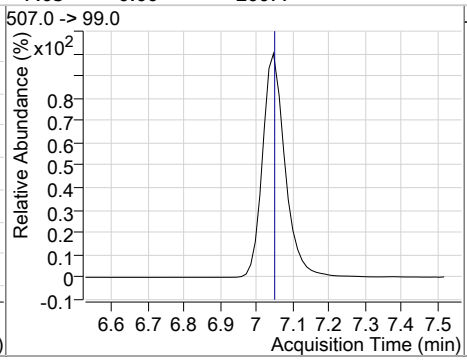


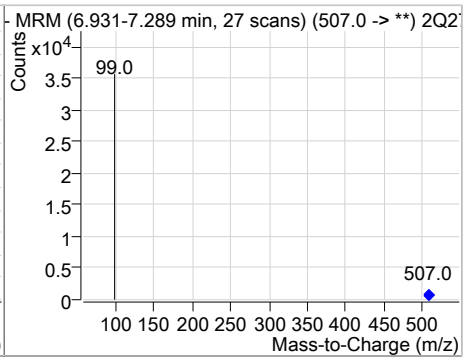




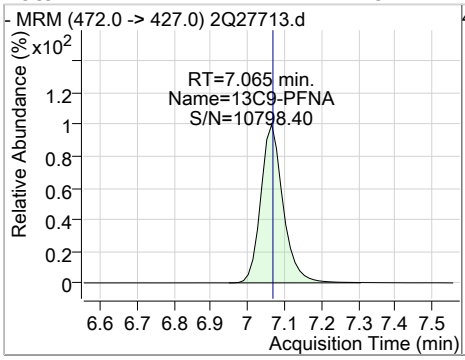
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.01	7.05	0.00	26077				

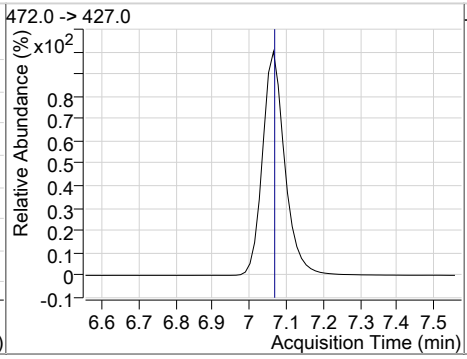


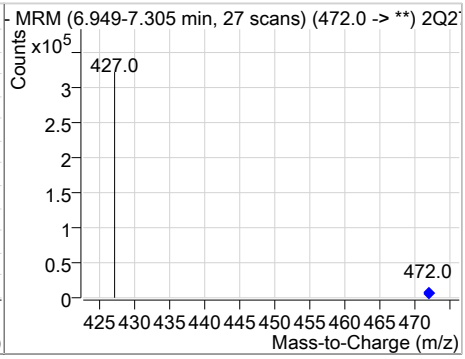




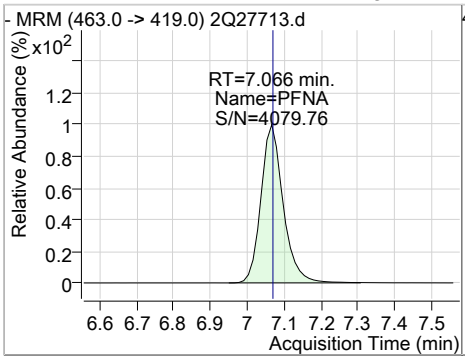
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	23.12	7.07	0.00	244839				

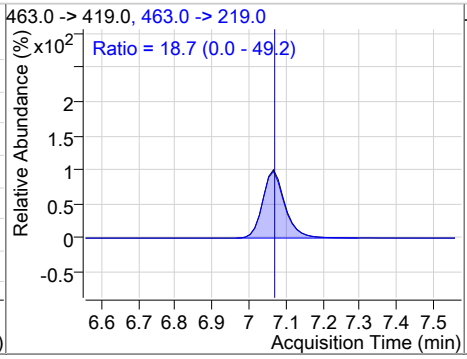


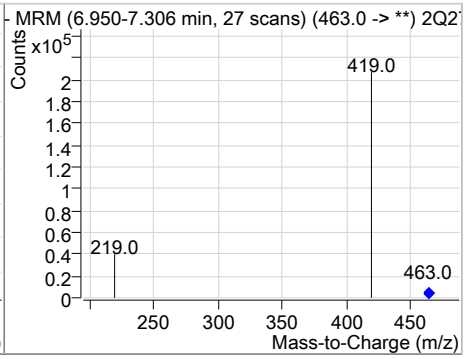




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.24	7.07	0.00	156407	463.0 -> 219.0	18.7	0.0	49.2

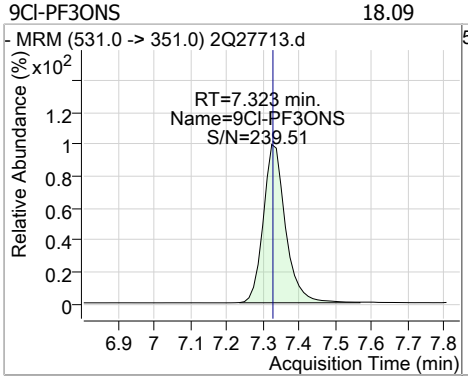


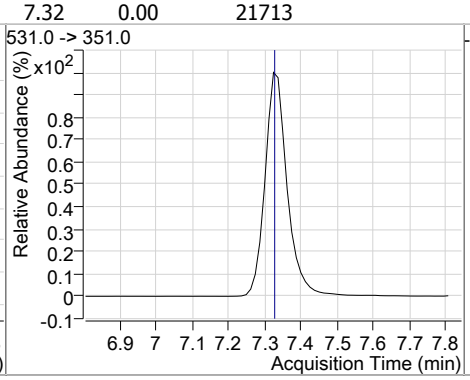


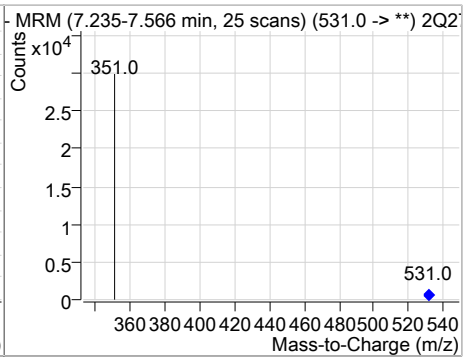


Perfluorinated Compounds by LC/MS/MS

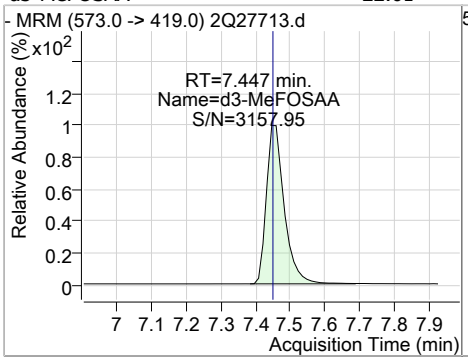
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.09	7.32	0.00	21713				

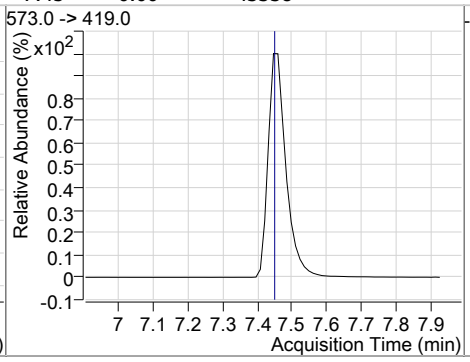


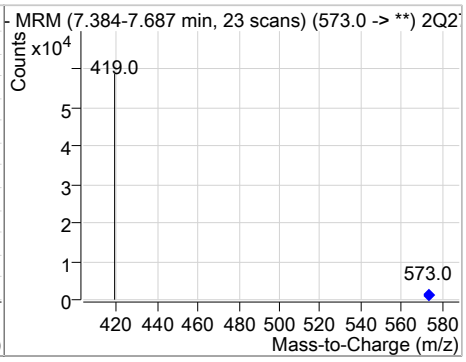




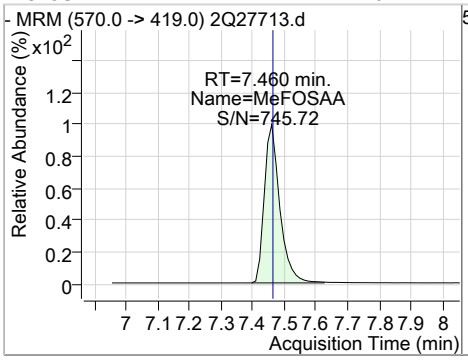
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	22.61	7.45	0.00	43338				

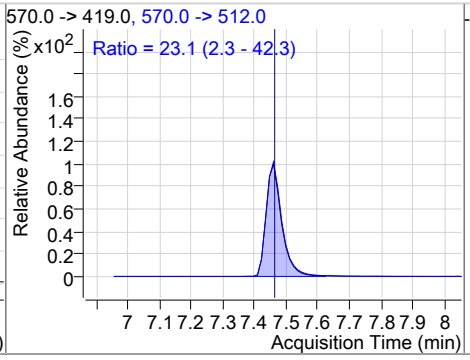


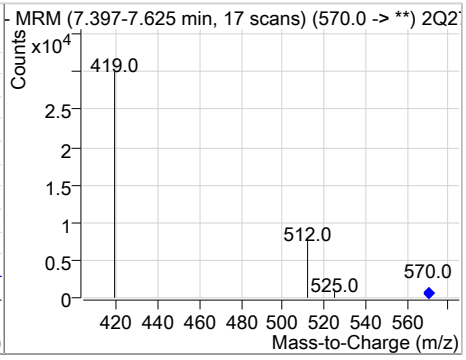




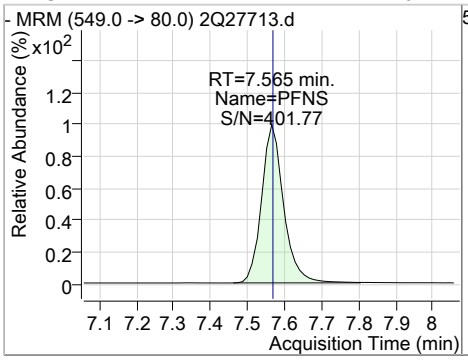
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.24	7.46	0.00	22375	570.0 -> 512.0	23.1	2.3	42.3

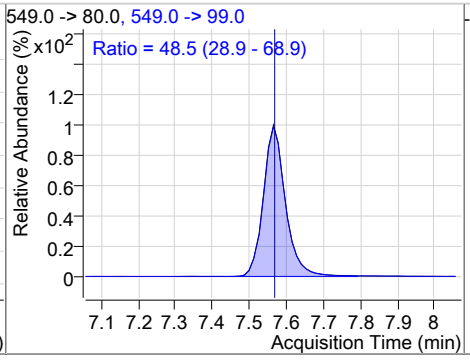


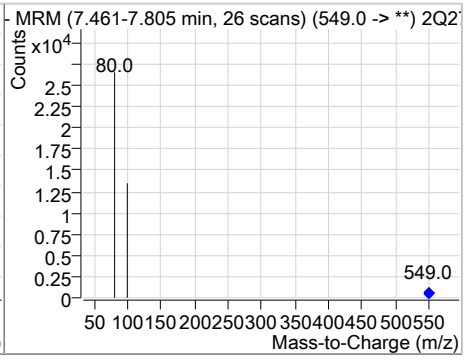




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	21.76	7.57	0.00	19504	549.0 -> 99.0	48.5	28.9	68.9

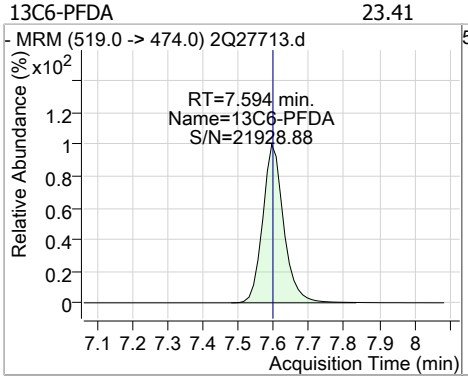


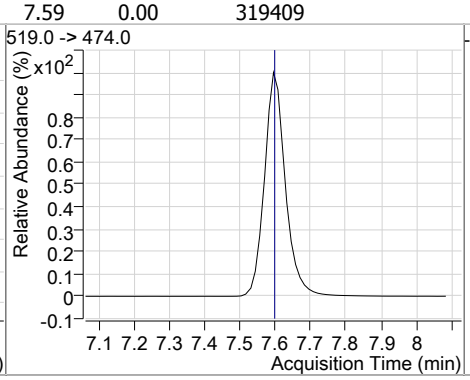


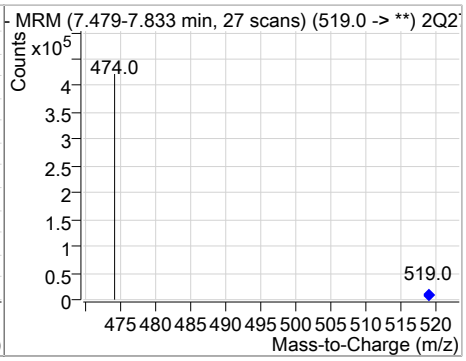


Perfluorinated Compounds by LC/MS/MS

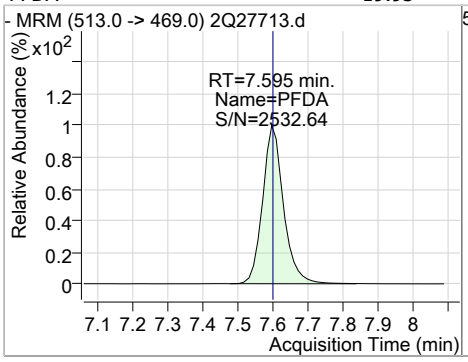
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	23.41	7.59	0.00	319409				

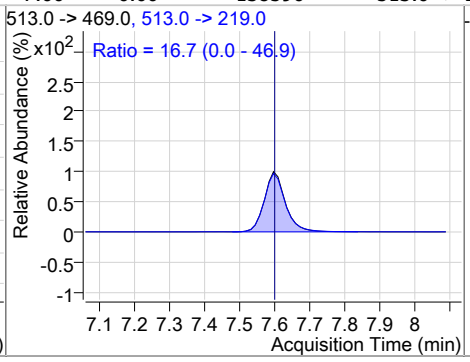


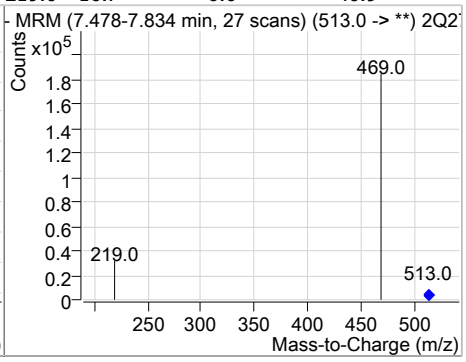




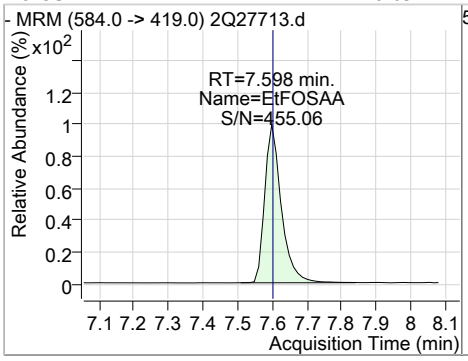
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.93	7.60	0.00	138596	513.0 -> 219.0	16.7	0.0	46.9

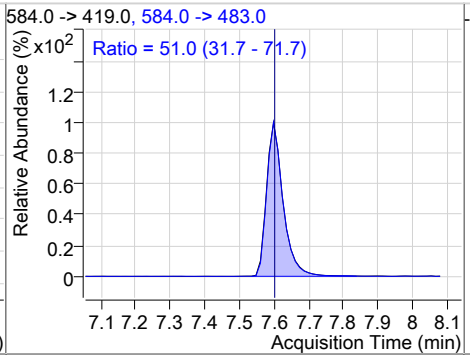


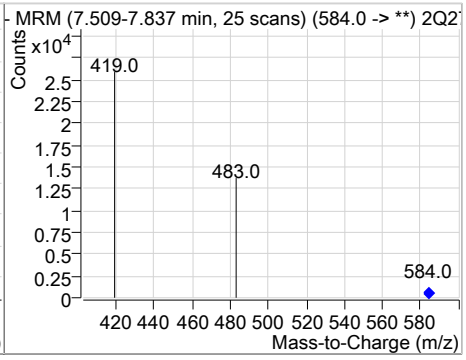




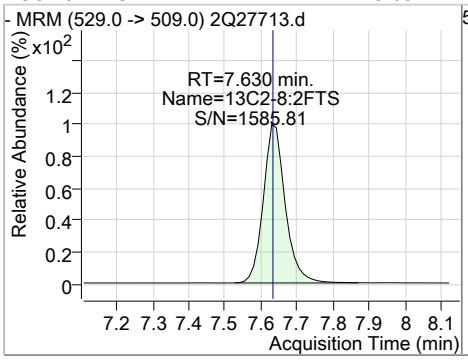
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.09	7.60	0.00	18503	584.0 -> 483.0	51.0	31.7	71.7

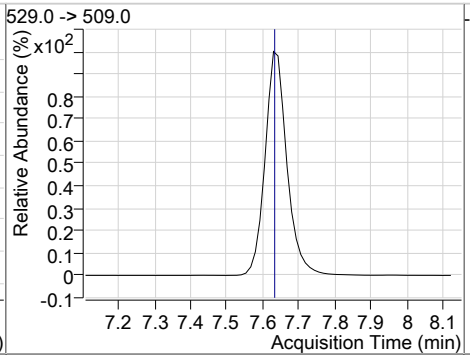


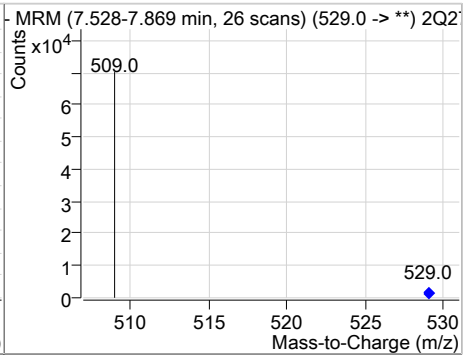




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.05	7.63	0.00	51101				

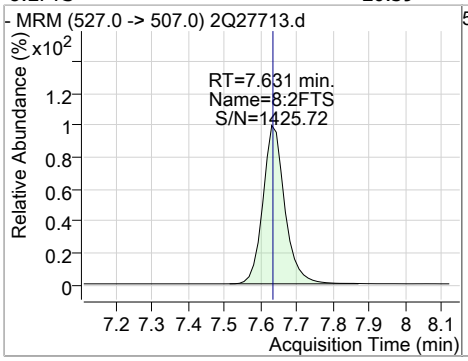


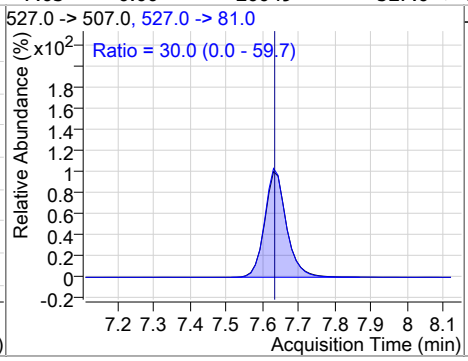


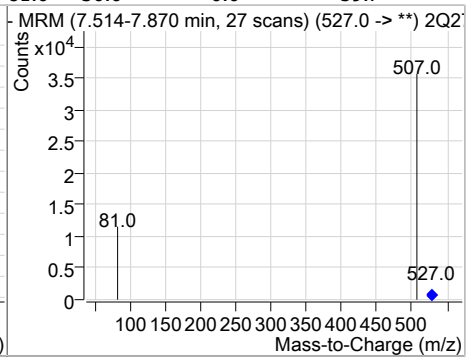


Perfluorinated Compounds by LC/MS/MS

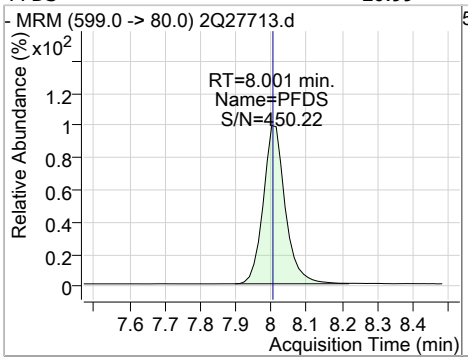
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.39	7.63	0.00	26049	527.0 -> 81.0	30.0	0.0	59.7

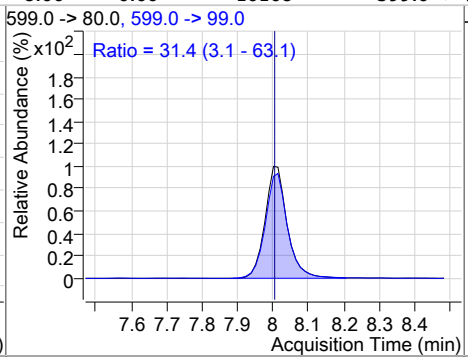


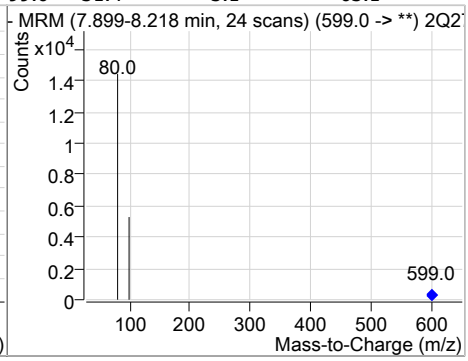




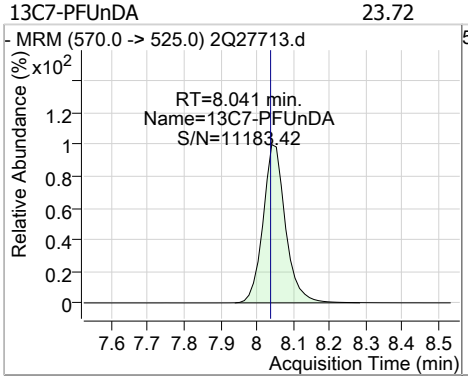
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.99	8.00	0.00	10108	599.0 -> 99.0	31.4	3.1	63.1

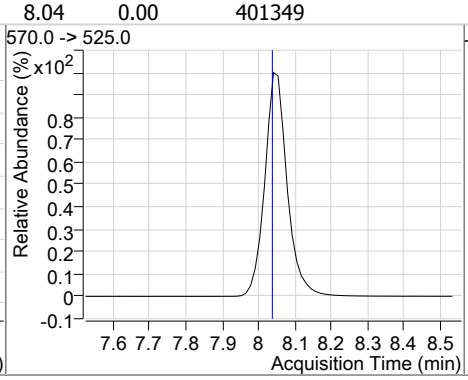


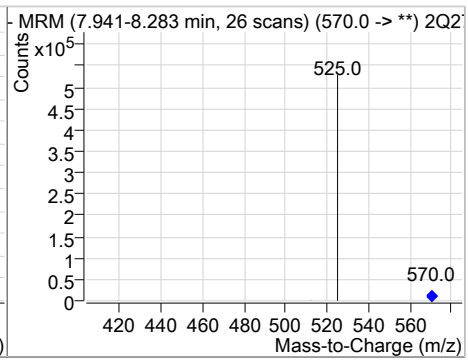




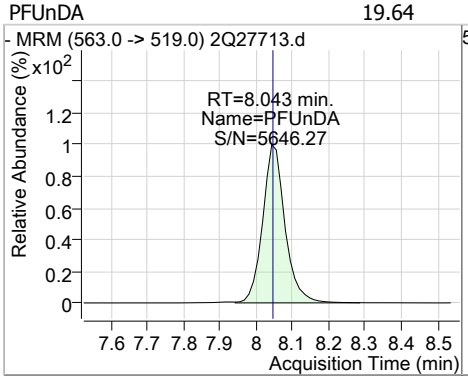
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	23.72	8.04	0.00	401349				

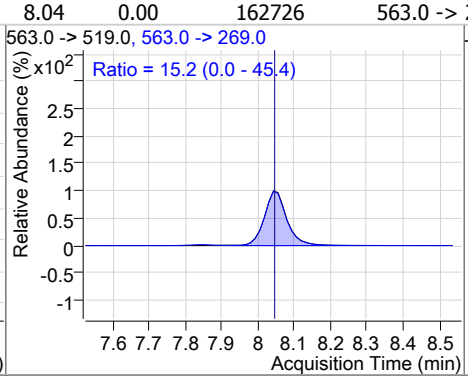


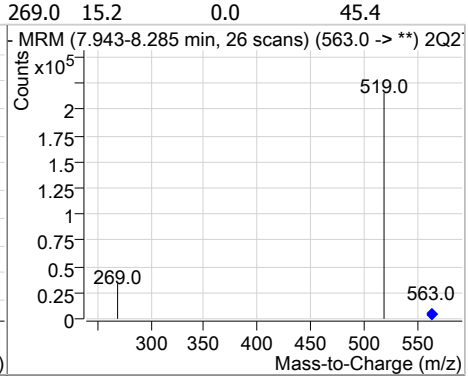




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.64	8.04	0.00	162726	563.0 -> 269.0	15.2	0.0	45.4

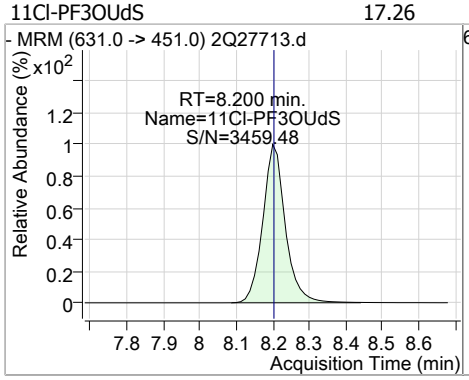


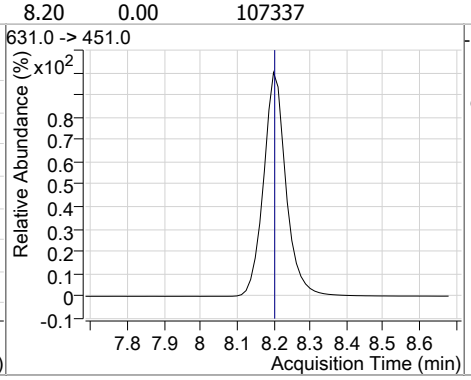


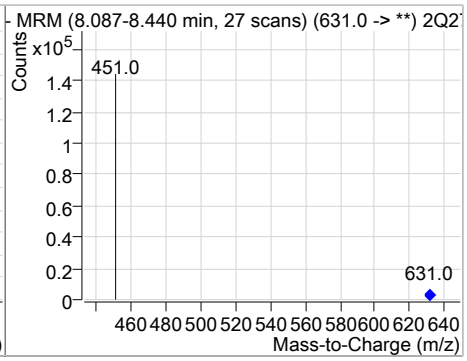


Perfluorinated Compounds by LC/MS/MS

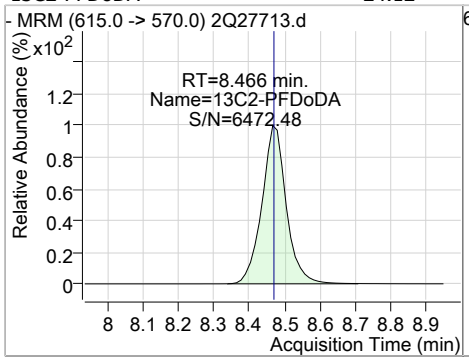
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.26	8.20	0.00	107337				

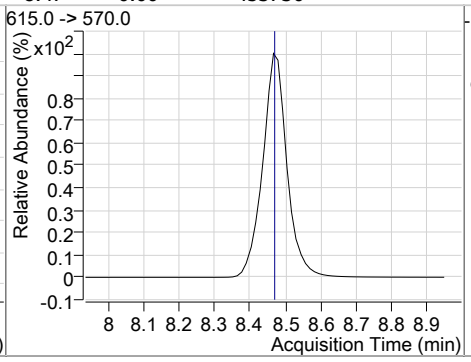


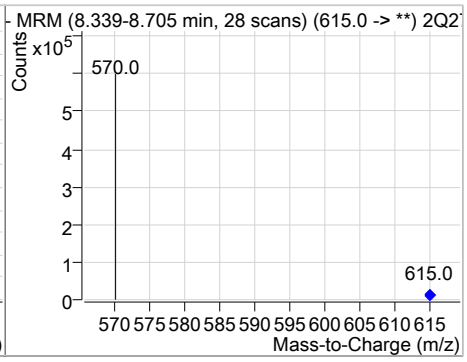




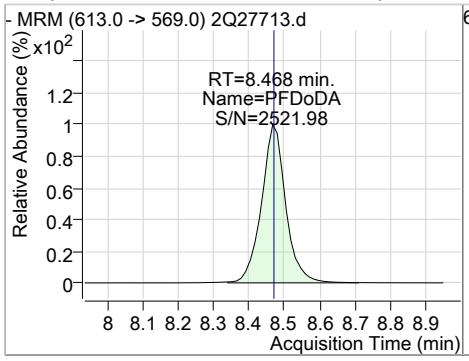
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	24.12	8.47	0.00	453730				

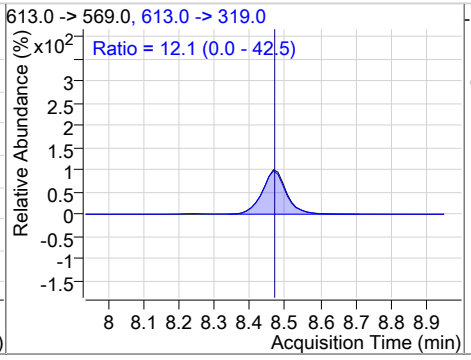


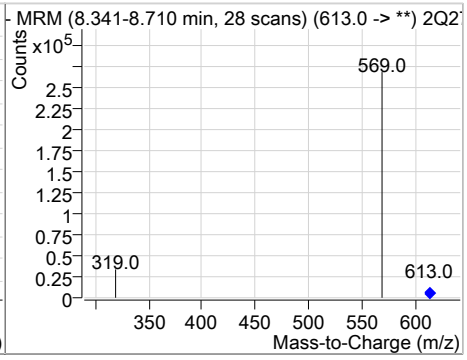




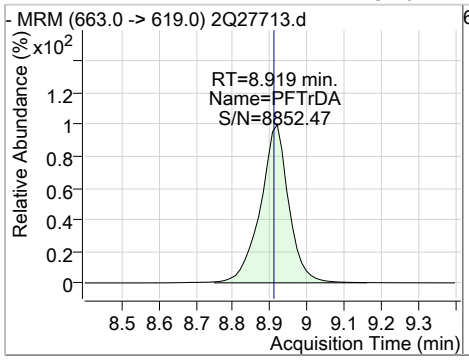
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	20.12	8.47	0.00	203214	613.0 -> 319.0	12.1	0.0	42.5

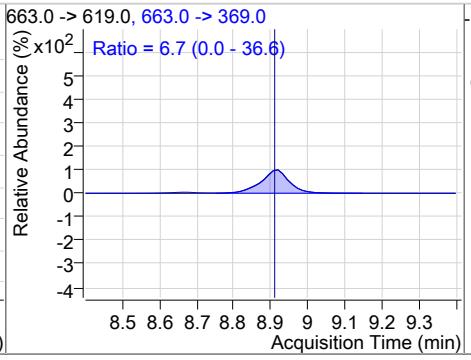


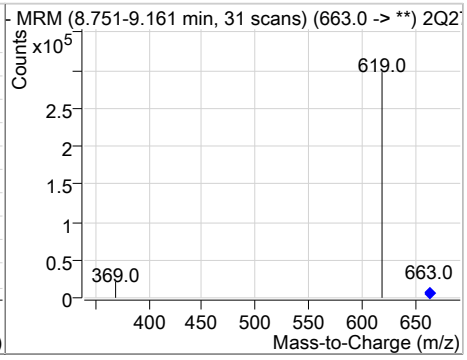




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.16	8.92	0.00	226171	663.0 -> 369.0	6.7	0.0	36.6

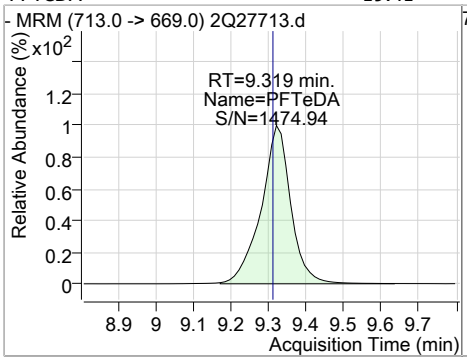


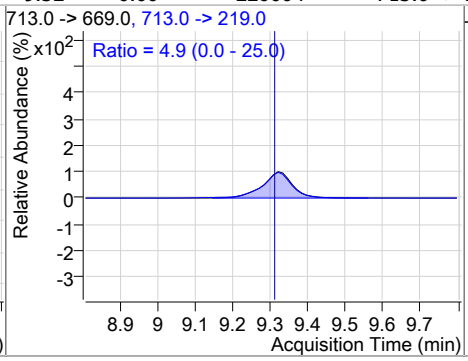


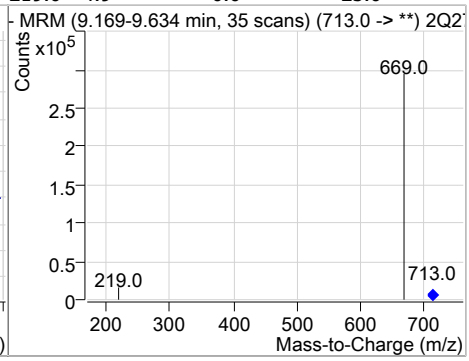


Perfluorinated Compounds by LC/MS/MS

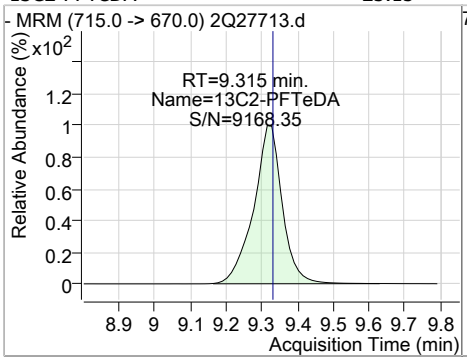
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.41	9.32	0.00	220004	713.0 -> 219.0	4.9	0.0	25.0

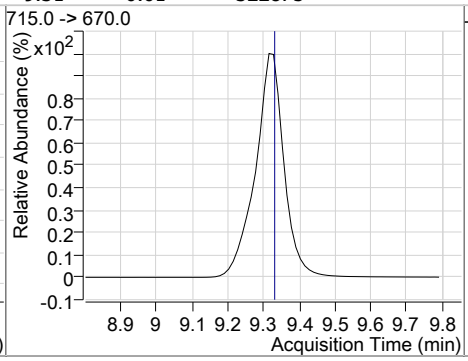


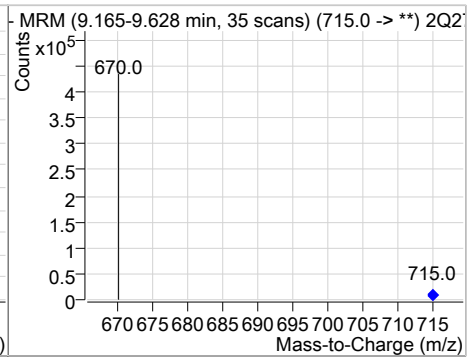




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	25.15	9.31	-0.01	322875				







Manual Integration Approval Summary

Sample Number: S2Q442-CC442
Lab FileID: 2Q27713.D
Injection Time: 03/18/19 21:31
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 07:47 Nancy Saunders
Supervisor approved: 03/20/19 09:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/19/19 16:30

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27719.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/18/2019 11:05:56 PM
Sample Name : ECC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q442.batch.bin
Sample Information : op74164,S2Q442,250,,,1.0,1,water

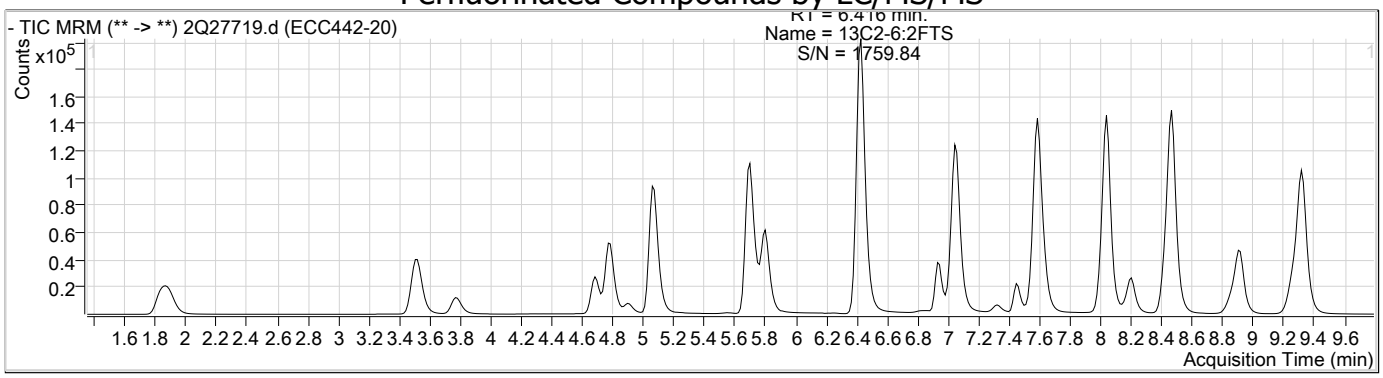
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	310379	20.00	µg/L	0.000
13C4-PFOS	7.036	503.0 -> 80.0	46264	20.00	µg/L	0.000
M4-PFBA	1.865	217.0 -> 172.0	129823	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	111844	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	157331	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	232163	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	235648	20.00	µg/L	0.000
M9-PFNA	7.052	472.0 -> 427.0	247997	20.00	µg/L	-0.013
M6-PFDA	7.594	519.0 -> 474.0	327409	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	409858	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	470197	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	337973	20.00	µg/L	-0.013
M8-FOSA	6.932	506.0 -> 78.0	89822	20.00	µg/L	-0.013
M3-PFBS	3.767	302.0 -> 99.0	18746	20.00	µg/L	-0.013
M3-PFHxS	5.736	402.0 -> 99.0	21284	20.00	µg/L	0.000
M8-PFOS	7.033	507.0 -> 99.0	27177	20.00	µg/L	-0.013
M2-4:2FTS	4.684	329.0 -> 309.0	63887	20.00	µg/L	0.000
M2-6:2FTS	6.416	429.0 -> 409.0	71445	20.00	µg/L	0.000
M2-8:2FTS	7.630	529.0 -> 509.0	52415	20.00	µg/L	0.000
M3-MeFOSAA	7.447	573.0 -> 419.0	45176	20.00	µg/L	0.000
M3-HFPO-DA	5.068	287.0 -> 169.0	162556	100.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.684	329.0 -> 309.0	63708	21.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.1%		
13C2-6:2FTS	6.416	429.0 -> 409.0	71382	22.24	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.2%		
13C2-8:2FTS	7.630	529.0 -> 509.0	52435	23.65	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.2%		
13C2-PFDoDA	8.466	615.0 -> 570.0	469649	24.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 124.8%		
13C2-PFTeDA	9.315	715.0 -> 670.0	336992	26.25	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 131.2%		
13C3-PFBS	3.767	302.0 -> 99.0	18667	20.47	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.4%		
13C3-PFHxS	5.736	402.0 -> 99.0	21226	20.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%		
13C4-PFBA	1.865	217.0 -> 172.0	129251	21.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.8%		
13C4-PFHpA	5.705	367.0 -> 322.0	231872	22.42	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.1%		
13C5-PFHxA	4.789	318.0 -> 273.0	157006	21.61	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.0%		
13C5-PFPeA	3.524	268.0 -> 223.0	112075	22.05	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.2%		
13C6-PFDA	7.594	519.0 -> 474.0	327209	23.98	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

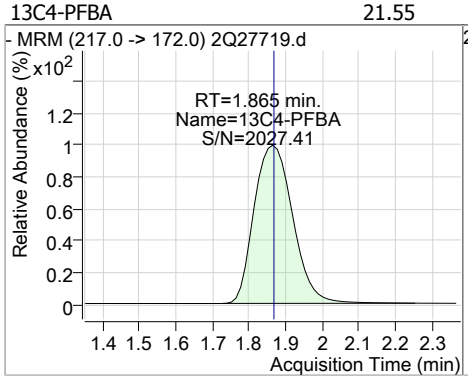
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 119.9%		
13C7-PFUnDA	8.041	570.0 -> 525.0	409476	24.20 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 121.0%		
13C8-FOSA	6.932	506.0 -> 78.0	89814	22.15 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.7%		
13C8-PFOA	6.434	421.0 -> 376.0	235586	22.58 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.9%		
13C8-PFOS	7.033	507.0 -> 99.0	27120	20.81 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C9-PFNA	7.052	472.0 -> 427.0	247893	23.41 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.1%		
d3-MeFOSAA	7.447	573.0 -> 419.0	45170	23.56 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.8%		
M2-PFOA	6.435	415.0 -> 370.0	310709	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.036	503.0 -> 80.0	46345	20.03 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	5.068	287.0 -> 169.0	162556	101.66 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
Target Compounds						**QValue**
4:2FTS	4.687	327.0 -> 307.0	35801	20.34 µg/L		98
6:2FTS	6.418	427.0 -> 407.0	35260	20.06 µg/L		99
8:2FTS	7.631	527.0 -> 507.0	26602	20.30 µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	18805	19.58 µg/L		100
FOSA	6.935	498.0 -> 78.0	41461	20.04 µg/L		100
MeFOSAA	7.447	570.0 -> 419.0	22452	19.48 µg/L		98
PFBA	1.860	213.0 -> 169.0	24764	19.31 µg/L		100
PFBS	3.771	299.0 -> 80.0	29663	19.93 µg/L		100
PFDA	7.595	513.0 -> 469.0	141466	19.85 µg/L		100
PFDoDA	8.468	613.0 -> 569.0	208729	19.95 µg/L		100
PFDS	8.001	599.0 -> 80.0	10114	20.21 µg/L		100
PFHpA	5.708	363.0 -> 319.0	197565	19.74 µg/L		100
PFHpS	6.442	449.0 -> 80.0	20809	20.15 µg/L		98
PFHxA	4.778	313.0 -> 269.0	53391	19.71 µg/L		100
PFHxS	5.739	399.0 -> 80.0	23119	19.65 µg/L	m	97
PFNA	7.066	463.0 -> 419.0	160003	19.45 µg/L		99
PFNS	7.565	549.0 -> 80.0	19938	21.41 µg/L		99
PFOA	6.437	413.0 -> 369.0	123279	19.37 µg/L		98
PFOS	7.037	499.0 -> 80.0	25409	19.25 µg/L	m	82
PFPeA	3.515	263.0 -> 219.0	95630	19.75 µg/L		100
PFPeS	4.895	349.0 -> 80.0	19942	20.93 µg/L		97
PFTeDA	9.319	713.0 -> 669.0	229749	19.44 µg/L		100
PFTrDA	8.907	663.0 -> 619.0	237342	19.28 µg/L		100
PFUnDA	8.043	563.0 -> 519.0	166967	19.75 µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	110908	17.21 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	22067	17.93 µg/L		100
ADONA	5.804	377.0 -> 251.0	226205	19.39 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	191258	99.04 µg/L		99

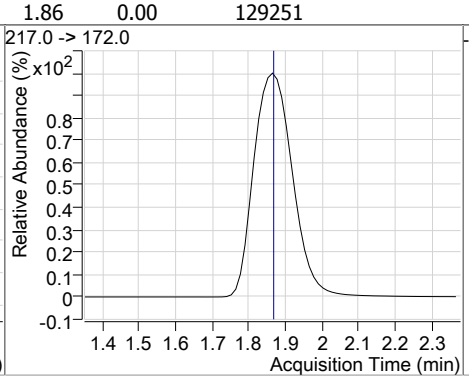
 # = Qualifier out of range, m = manually integrated, + = Area summed

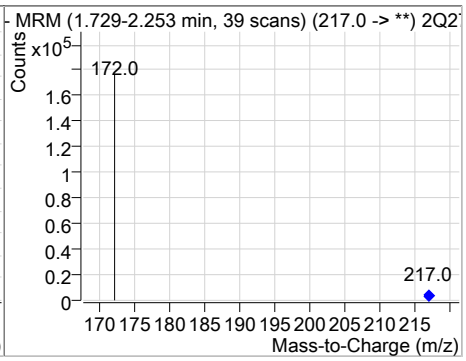
Perfluorinated Compounds by LC/MS/MS



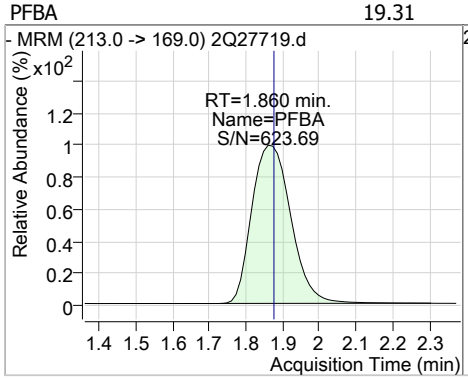
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.55	1.86	0.00	129251				

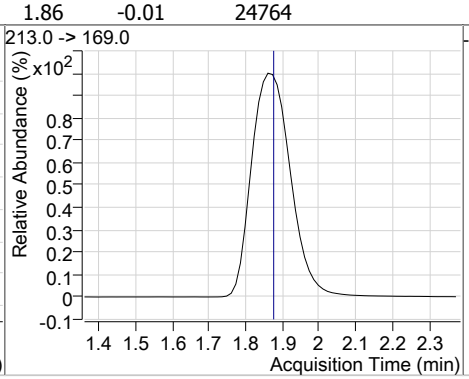


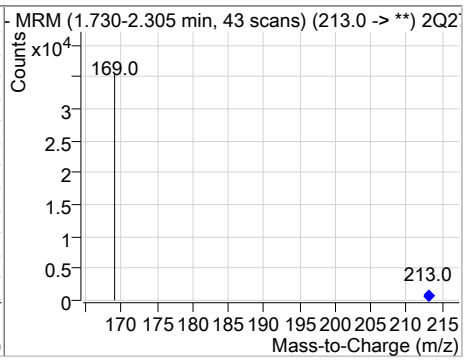




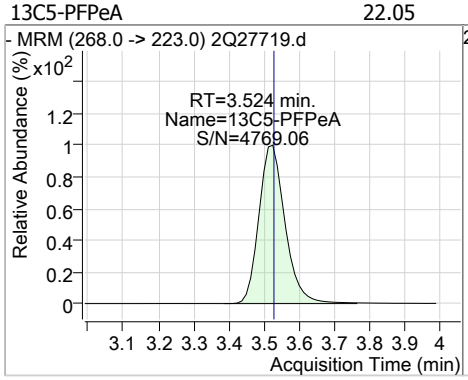
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.31	1.86	-0.01	24764				

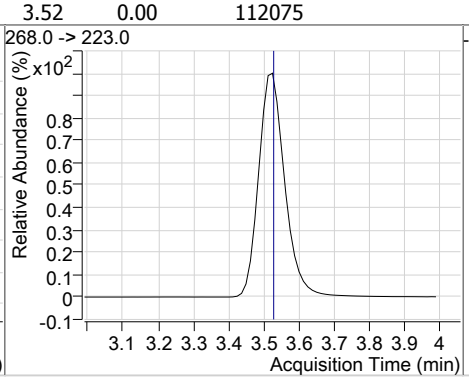


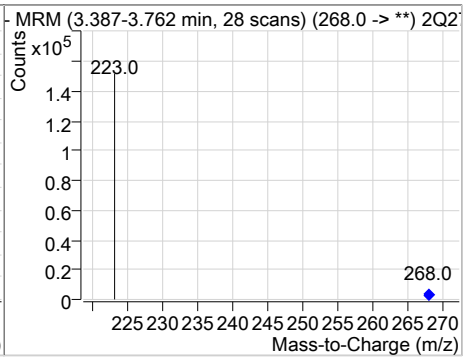




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	22.05	3.52	0.00	112075				

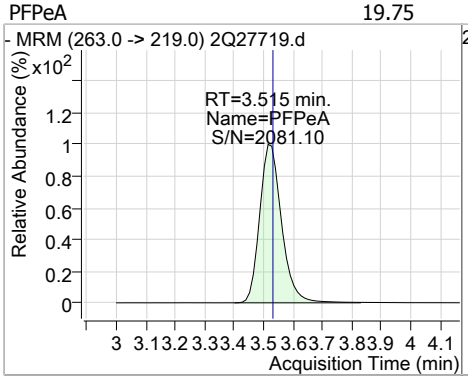


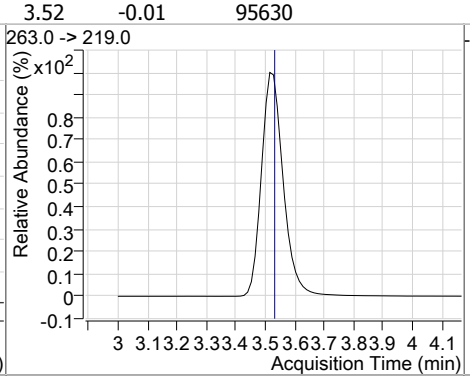


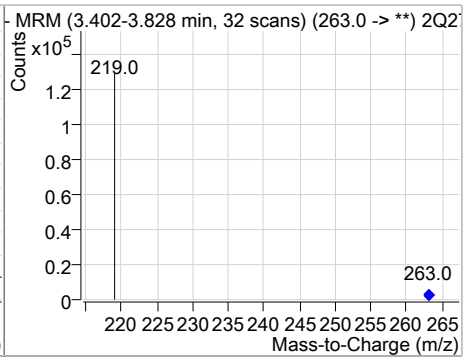


Perfluorinated Compounds by LC/MS/MS

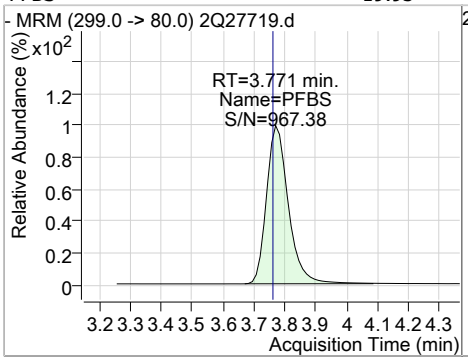
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.75	3.52	-0.01	95630				

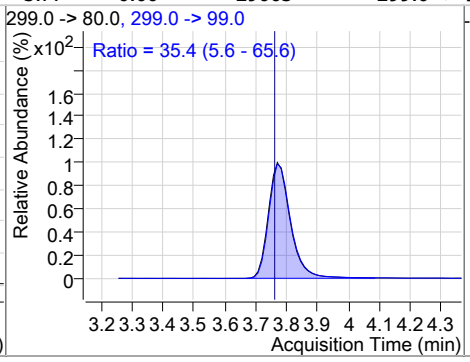


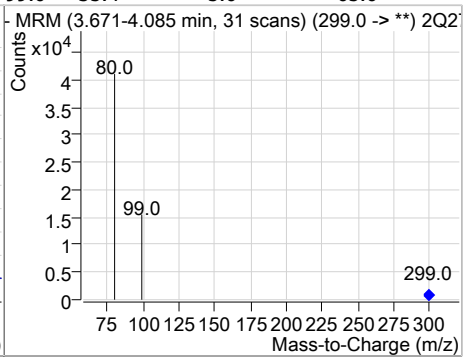




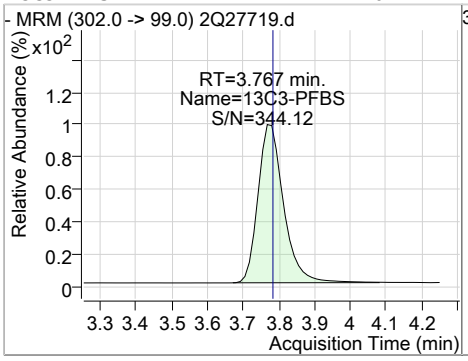
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.93	3.77	0.00	29663	299.0 -> 99.0	35.4	5.6	65.6

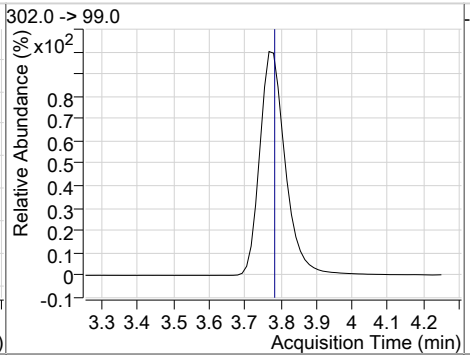


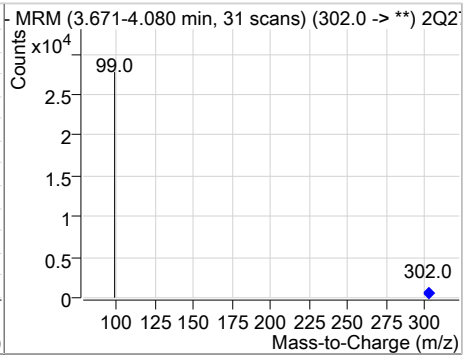




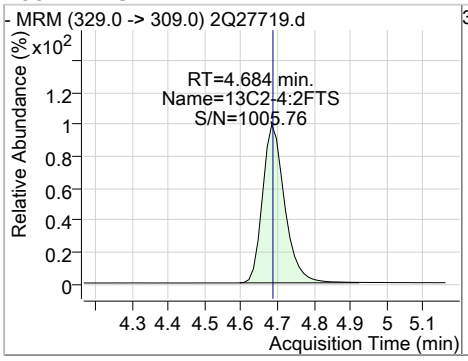
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.47	3.77	-0.01	18667				

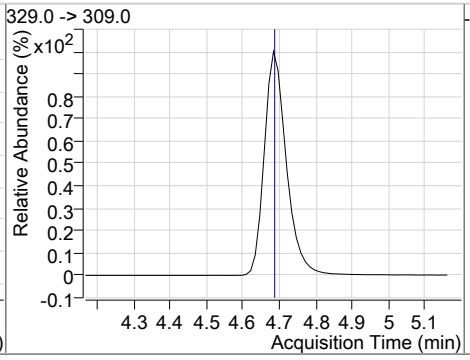


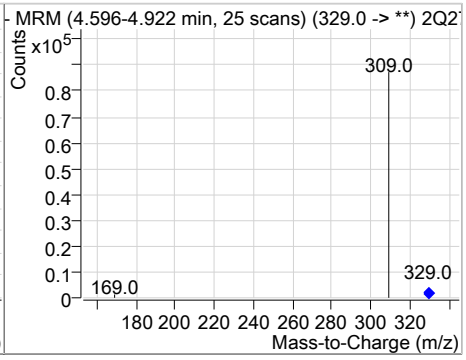




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	21.42	4.68	0.00	63708				

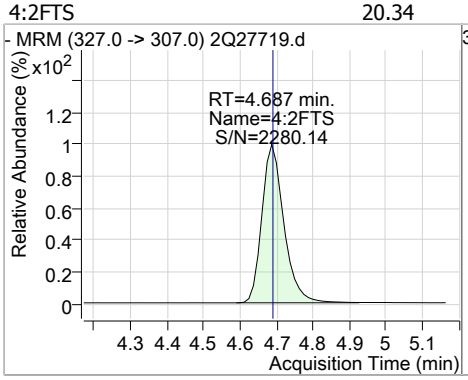


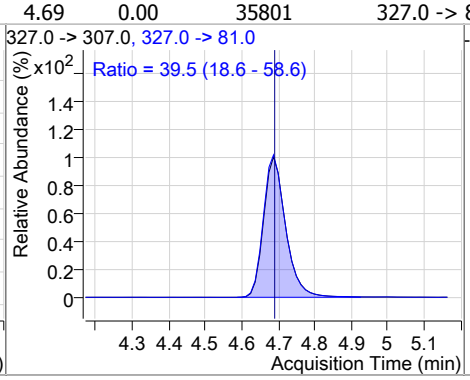


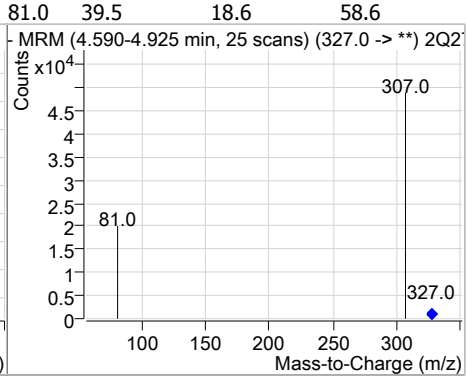


Perfluorinated Compounds by LC/MS/MS

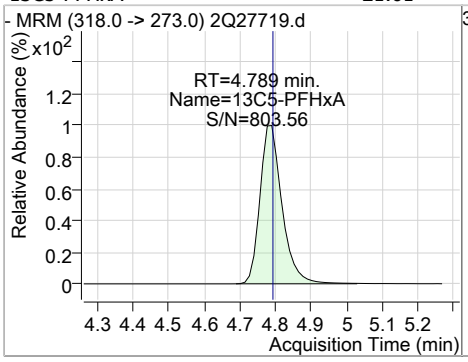
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.34	4.69	0.00	35801	327.0 -> 81.0	39.5	18.6	58.6

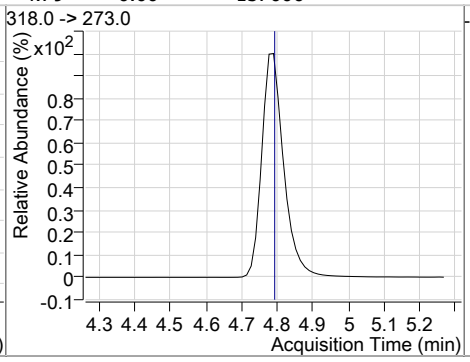


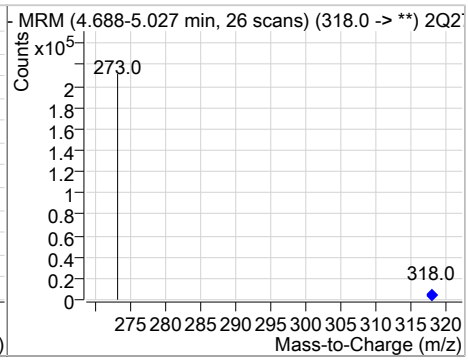




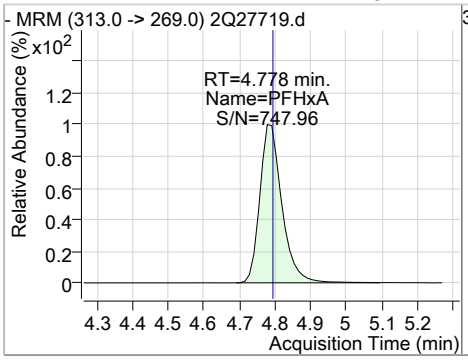
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.61	4.79	0.00	157006				

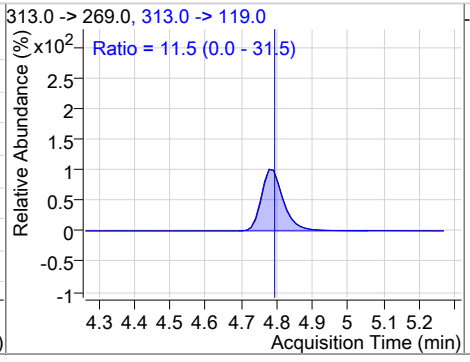


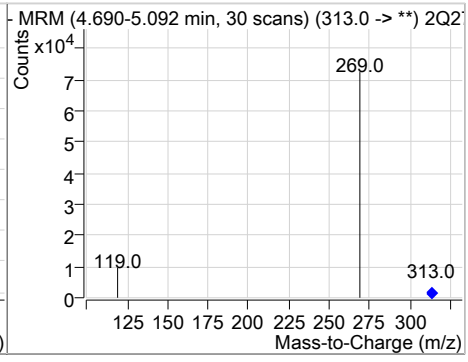




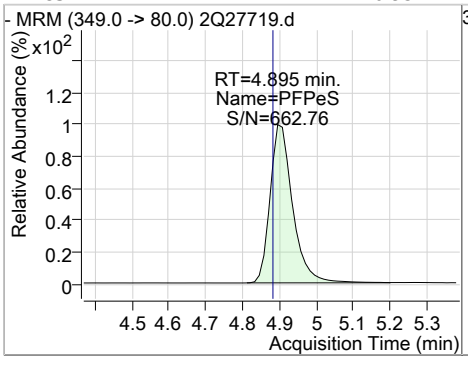
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.71	4.78	-0.01	53391	313.0 -> 119.0	11.5	0.0	31.5

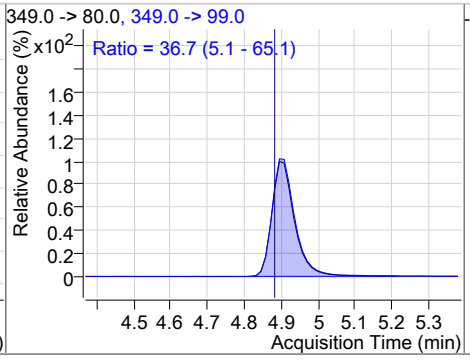


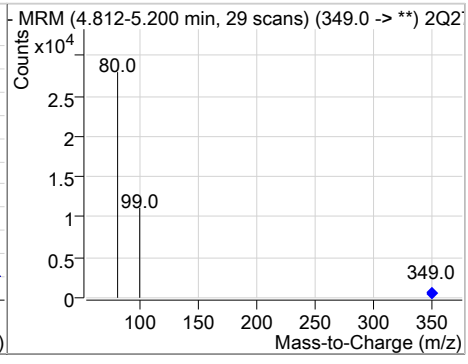




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.93	4.90	0.00	19942	349.0 -> 99.0	36.7	5.1	65.1

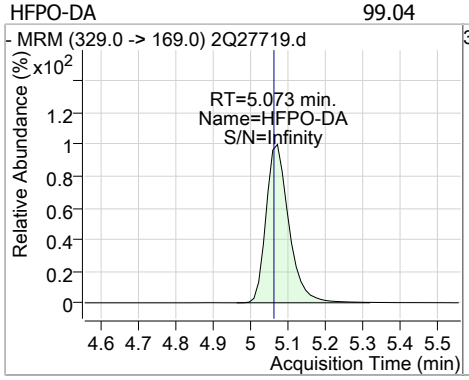


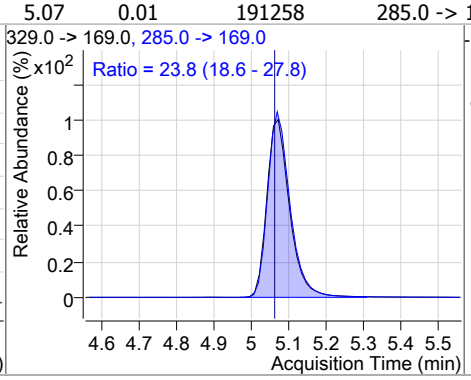


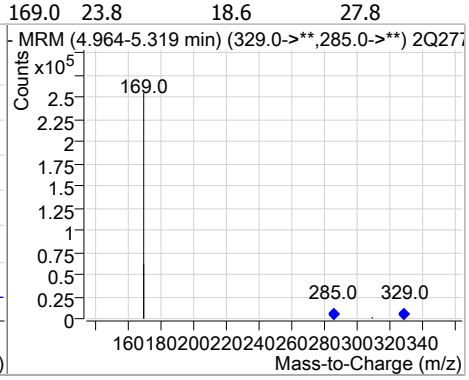


Perfluorinated Compounds by LC/MS/MS

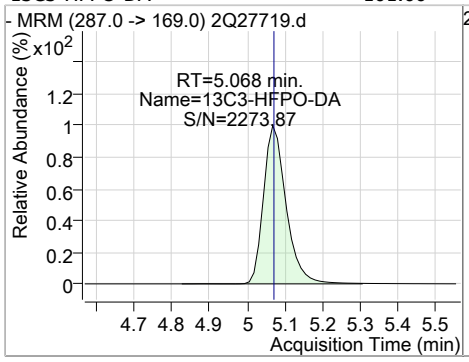
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	99.04	5.07	0.01	191258	285.0 -> 169.0	23.8	18.6	27.8

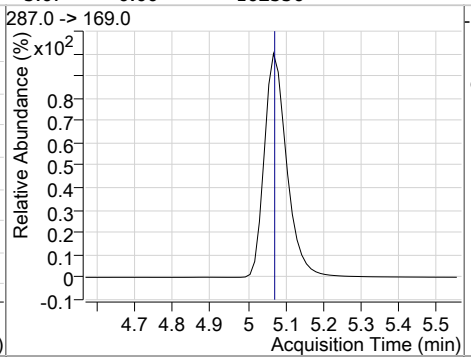


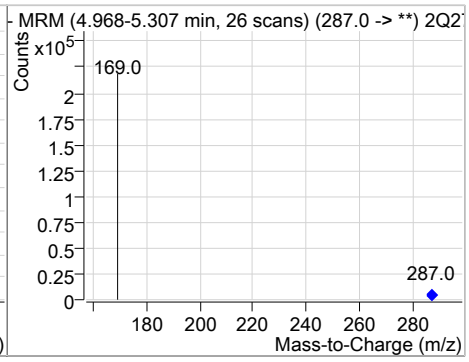




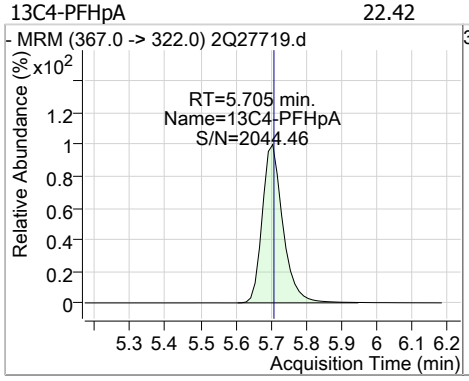
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	101.66	5.07	0.00	162556				

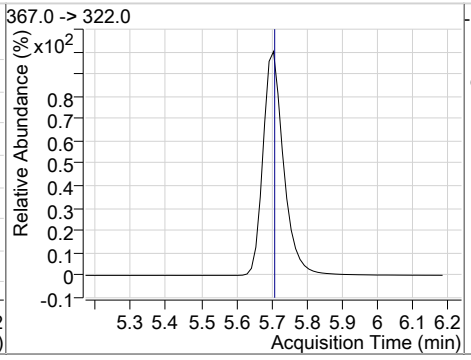


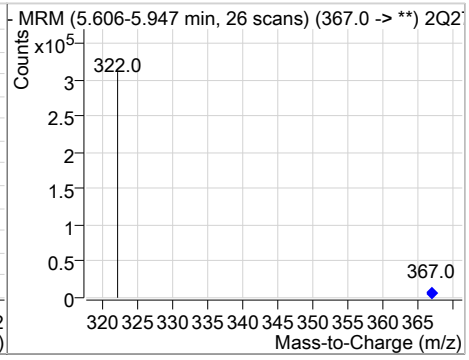




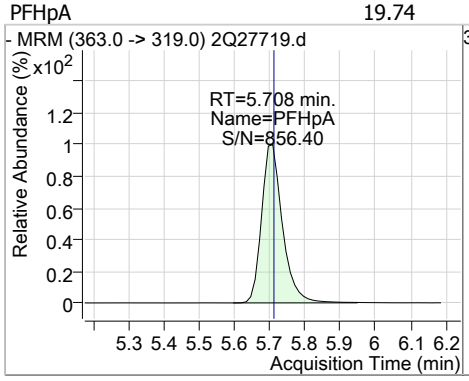
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	22.42	5.71	0.00	231872				

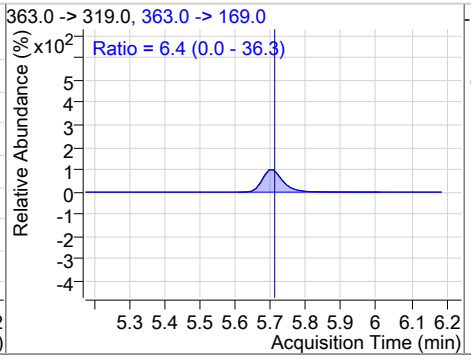


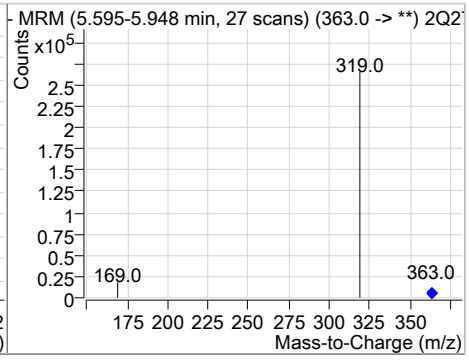




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.74	5.71	0.00	197565	363.0 -> 169.0	6.4	0.0	36.3

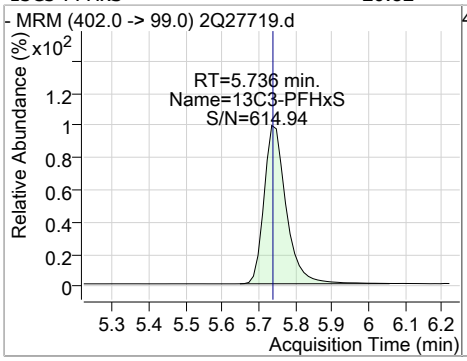


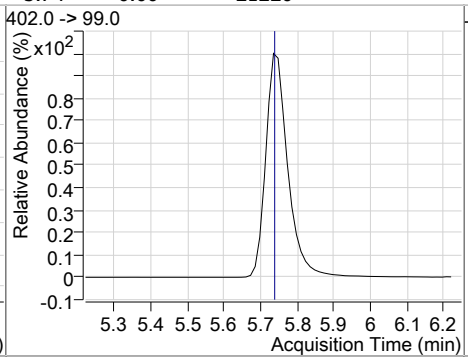


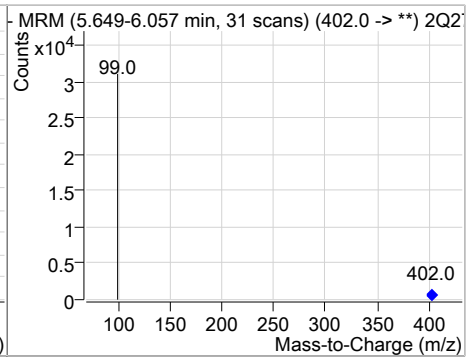


Perfluorinated Compounds by LC/MS/MS

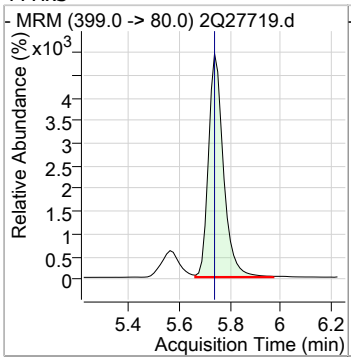
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.82	5.74	0.00	21226				

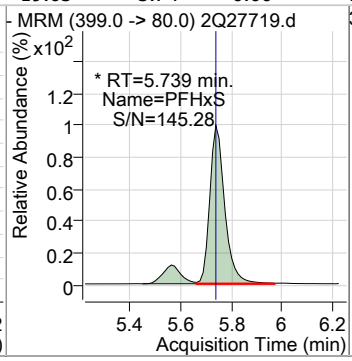


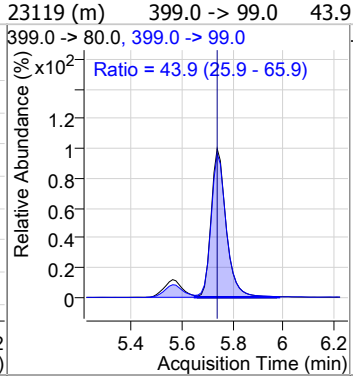


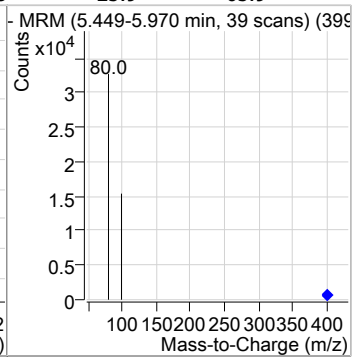


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.65	5.74	0.00	23119 (m)	399.0 -> 99.0	43.9	25.9	65.9

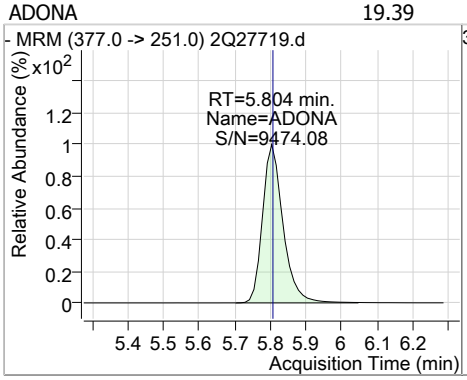


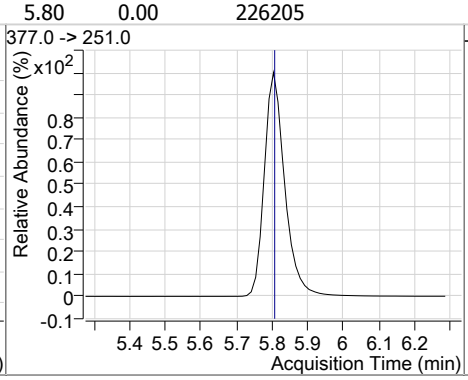


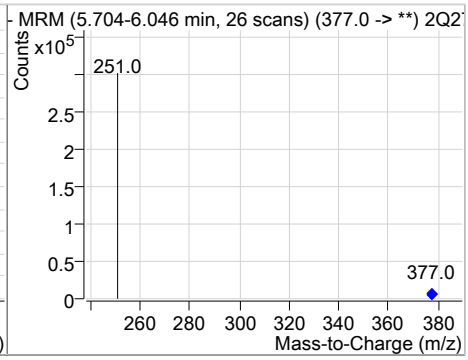




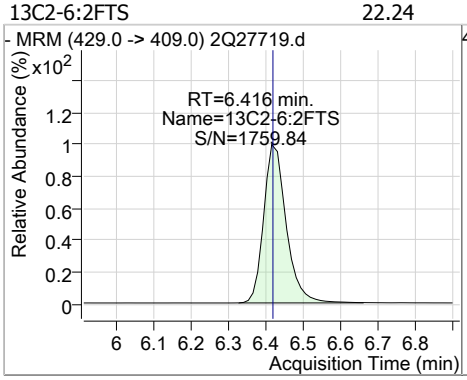
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.39	5.80	0.00	226205				

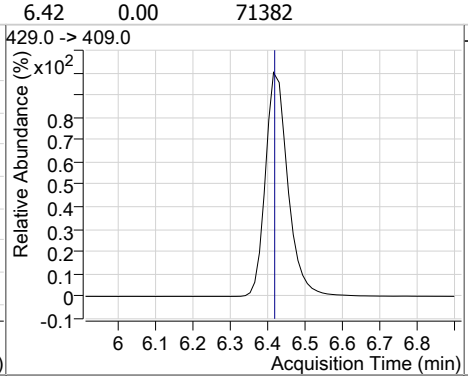


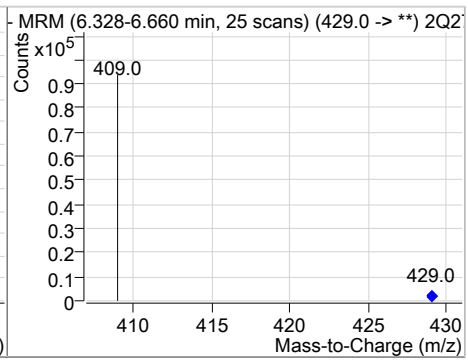




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	22.24	6.42	0.00	71382				

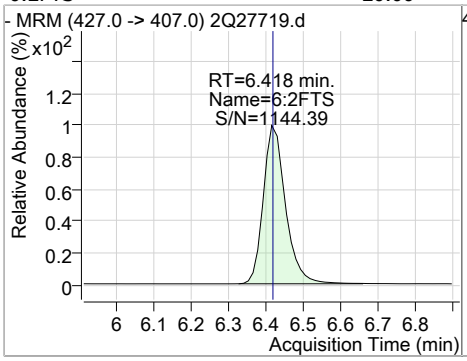


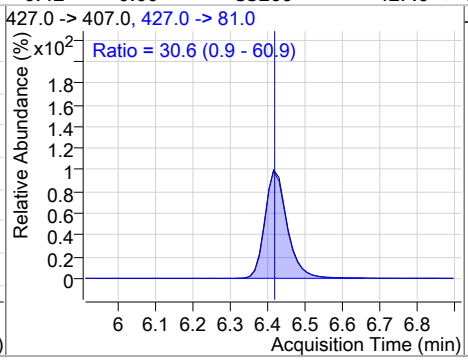


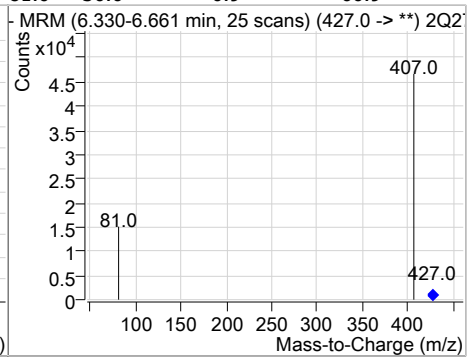


Perfluorinated Compounds by LC/MS/MS

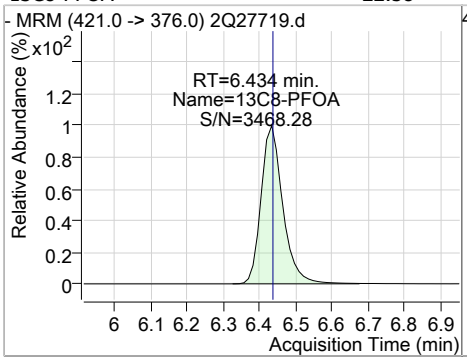
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.06	6.42	0.00	35260	427.0 -> 81.0	30.6	0.9	60.9

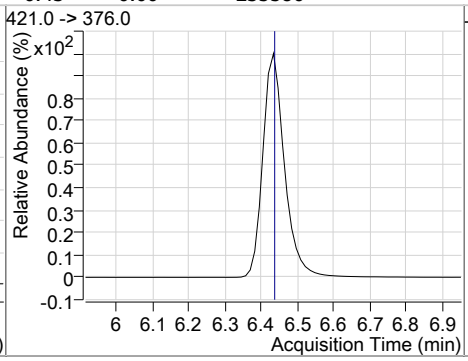


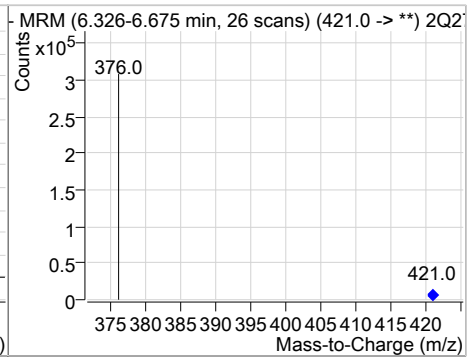




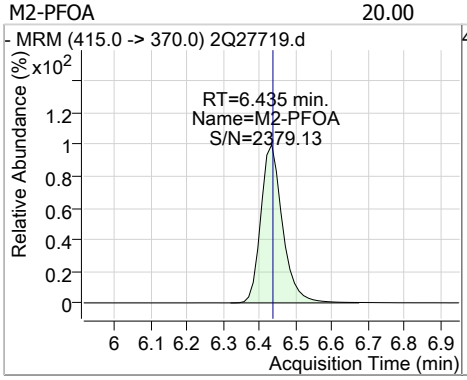
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	22.58	6.43	0.00	235586				

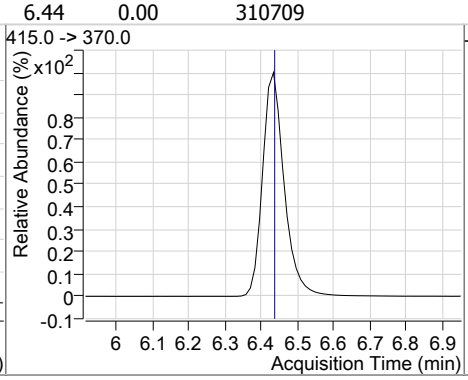


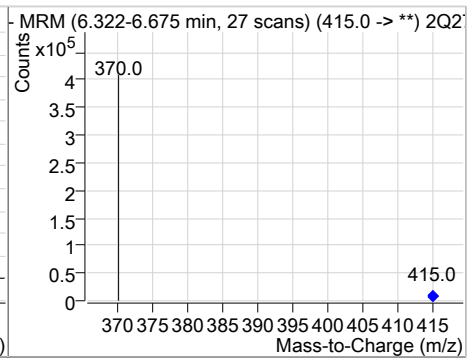




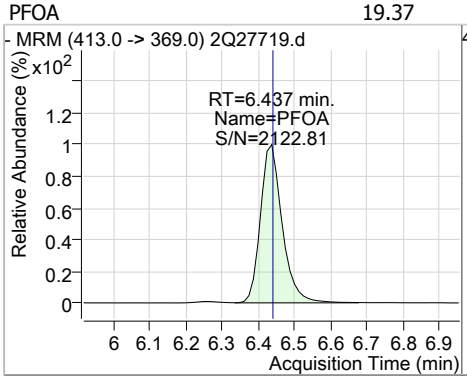
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	310709				

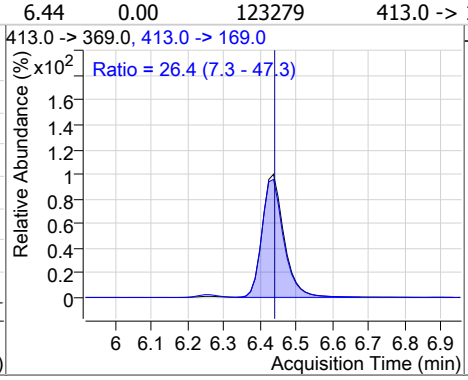


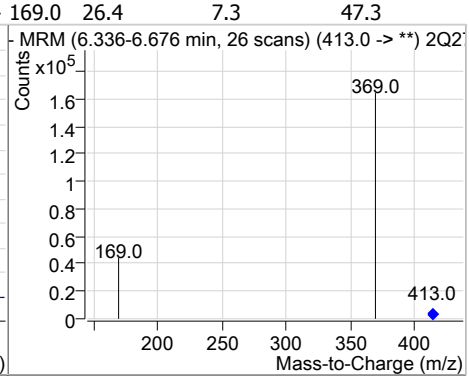




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.37	6.44	0.00	123279	413.0 -> 169.0	26.4	7.3	47.3

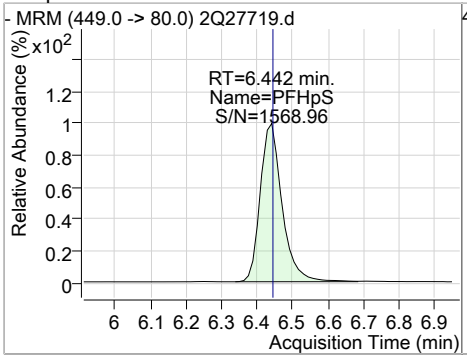


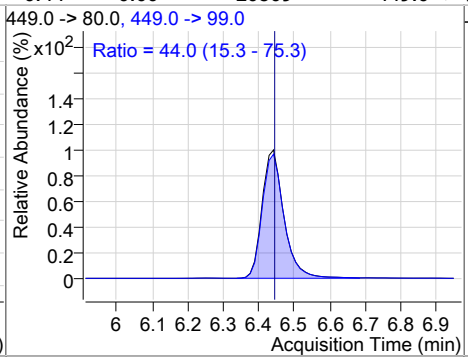


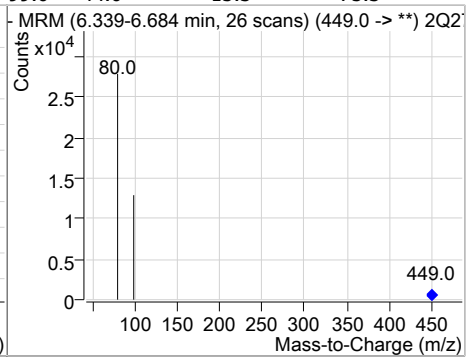


Perfluorinated Compounds by LC/MS/MS

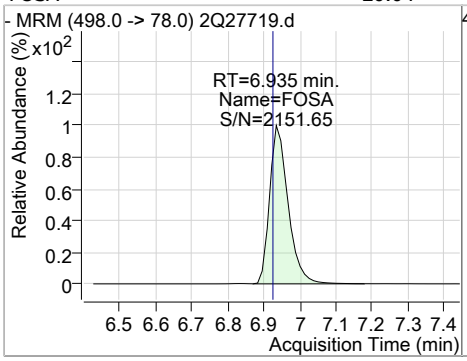
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.15	6.44	0.00	20809	449.0 -> 99.0	44.0	15.3	75.3

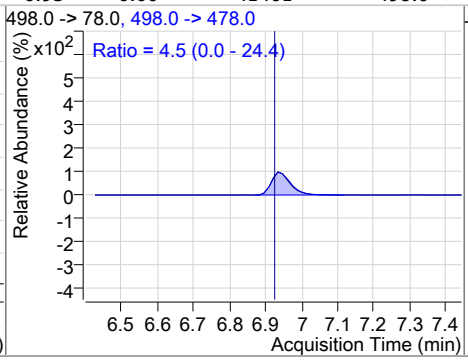


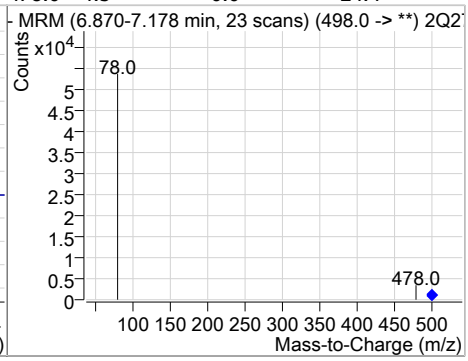




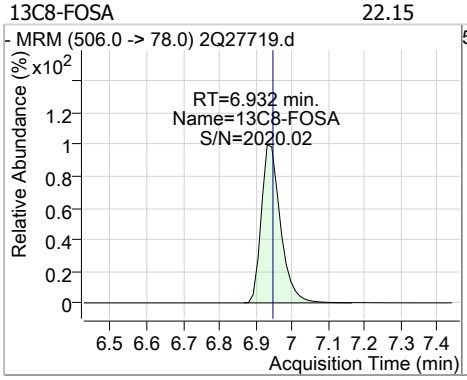
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.04	6.93	0.00	41461	498.0 -> 478.0	4.5	0.0	24.4

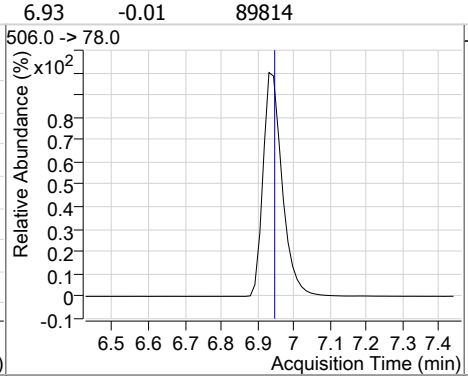


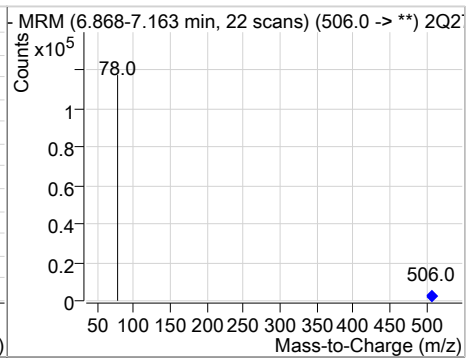




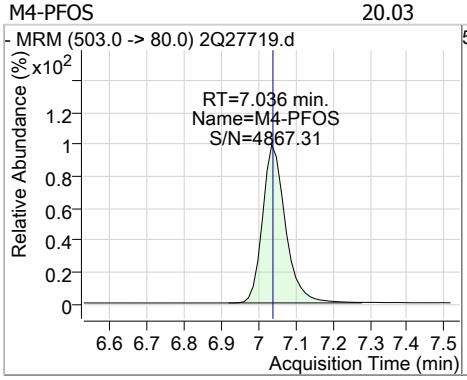
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	22.15	6.93	-0.01	89814				

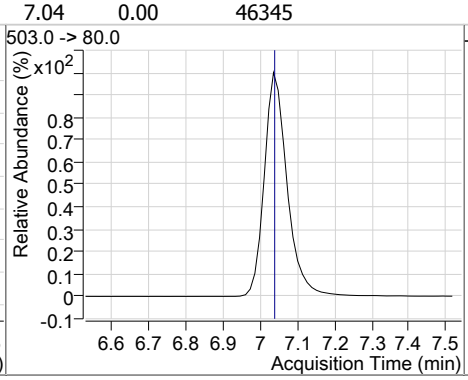


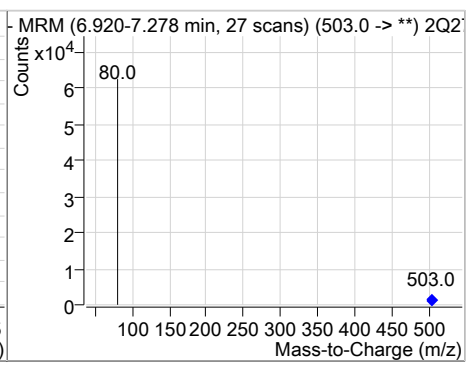




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.03	7.04	0.00	46345				

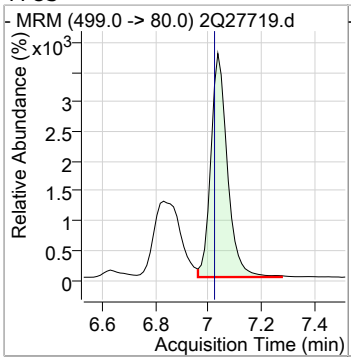


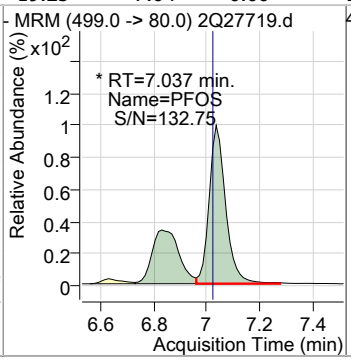


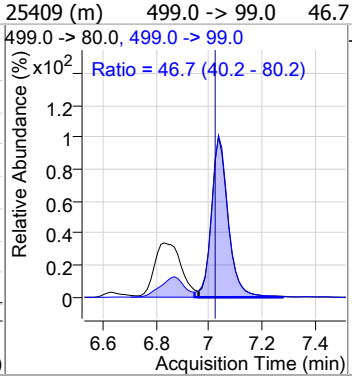


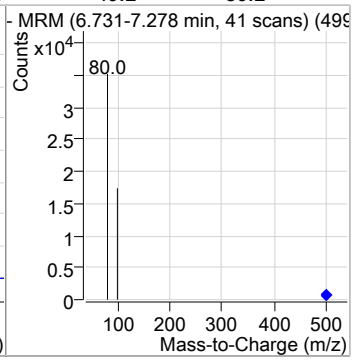
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.25	7.04	0.00	25409 (m)	499.0 -> 99.0	46.7	40.2	80.2

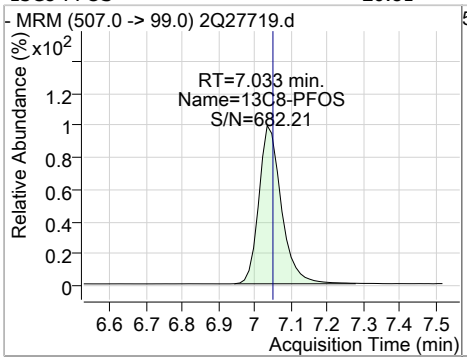


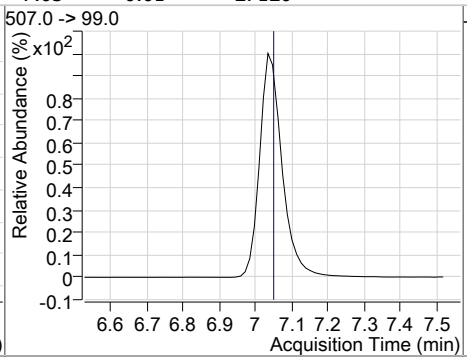


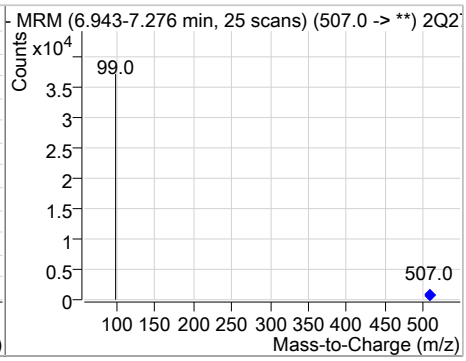




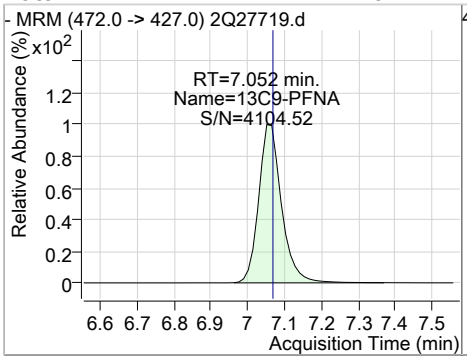
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.81	7.03	-0.01	27120				

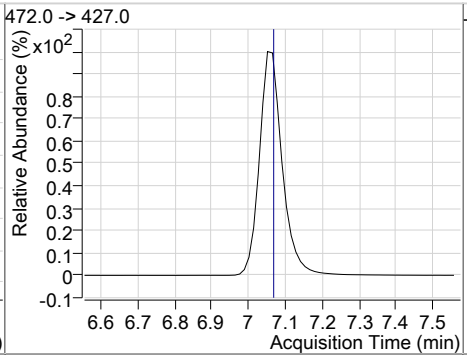


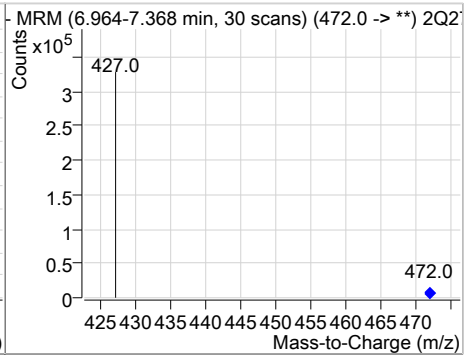




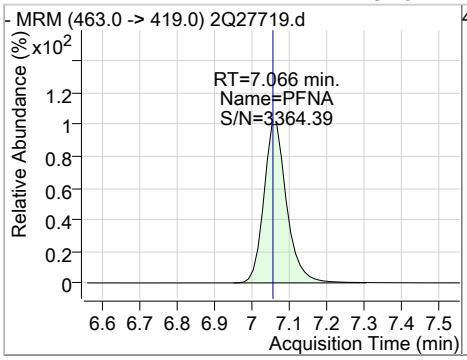
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	23.41	7.05	-0.01	247893				

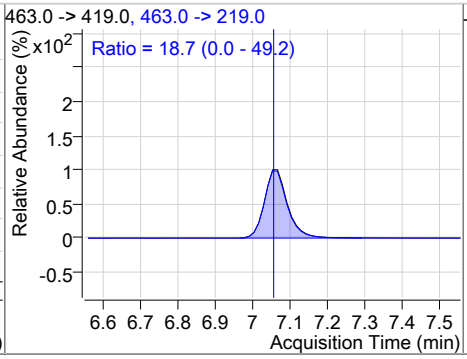


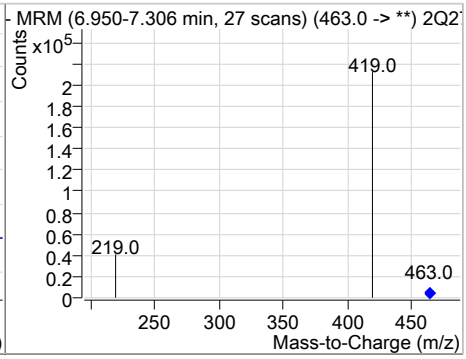




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.45	7.07	0.00	160003	463.0 -> 219.0	18.7	0.0	49.2

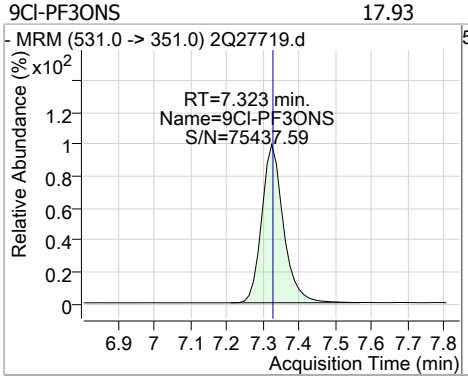


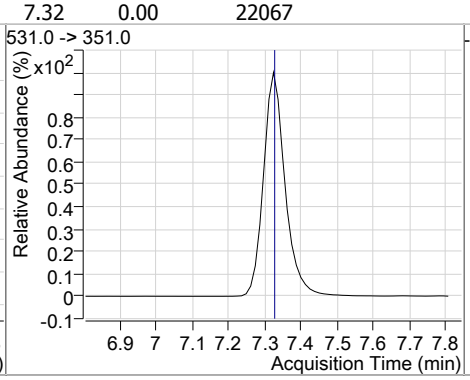


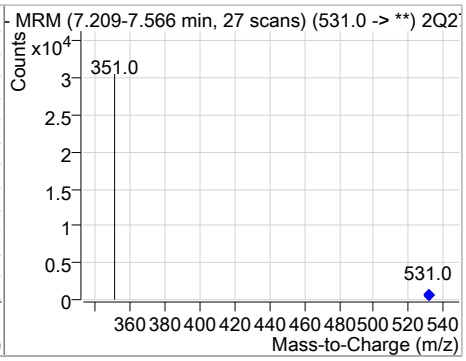


Perfluorinated Compounds by LC/MS/MS

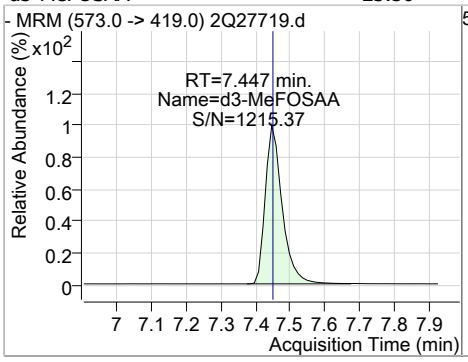
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	17.93	7.32	0.00	22067				

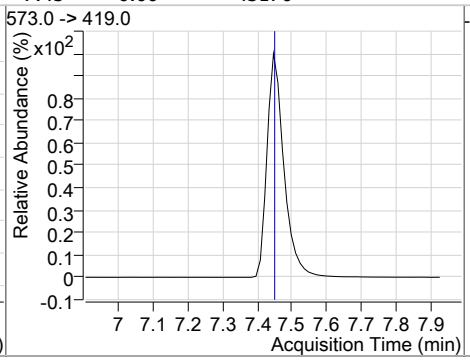


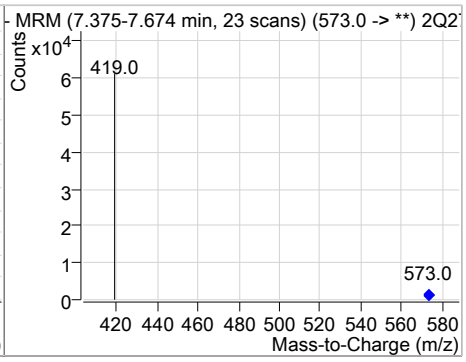




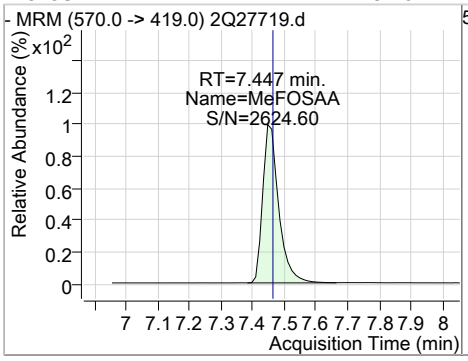
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	23.56	7.45	0.00	45170				

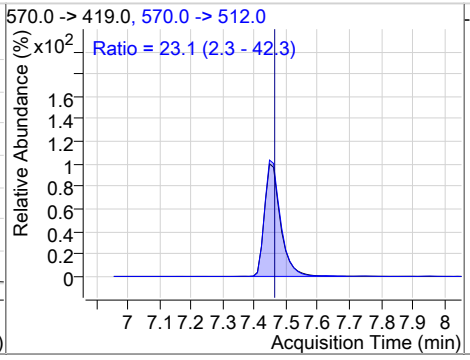


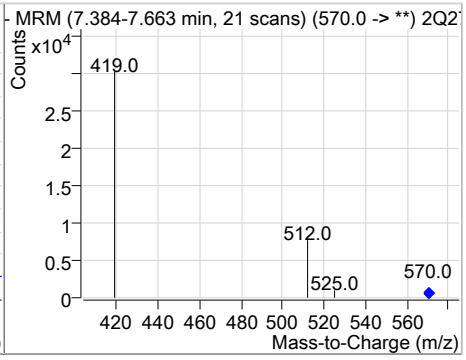




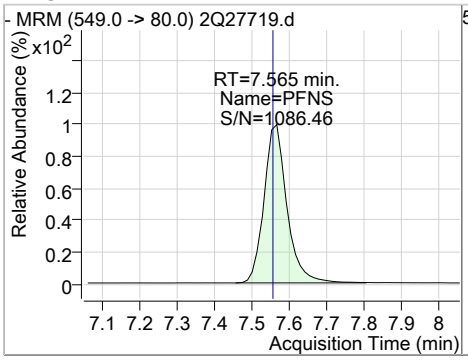
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.48	7.45	-0.01	22452	570.0 -> 512.0	23.1	2.3	42.3

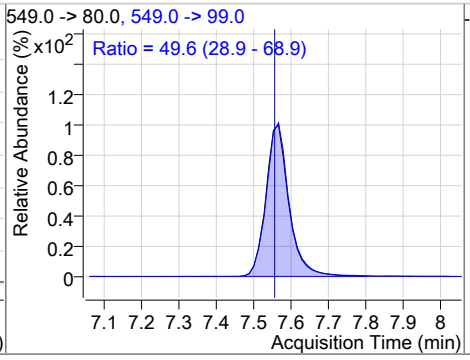


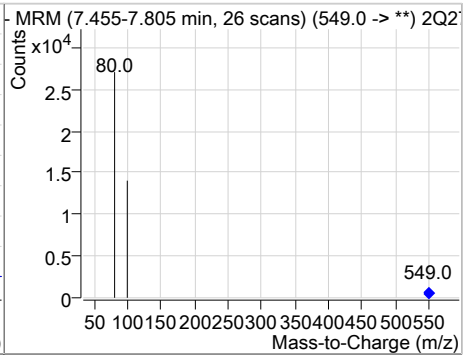




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	21.41	7.57	0.00	19938	549.0 -> 99.0	49.6	28.9	68.9

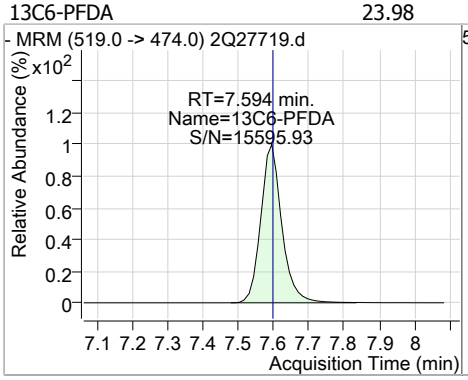


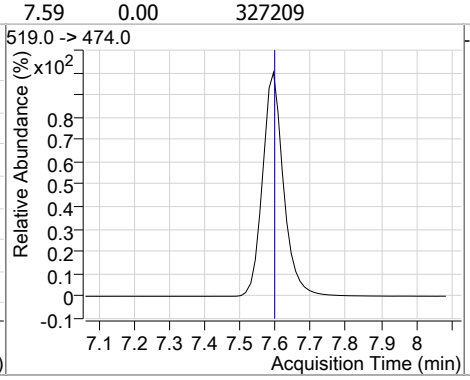


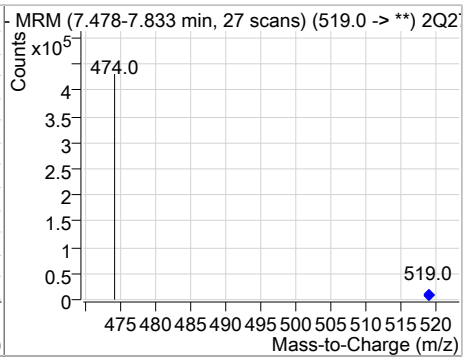


Perfluorinated Compounds by LC/MS/MS

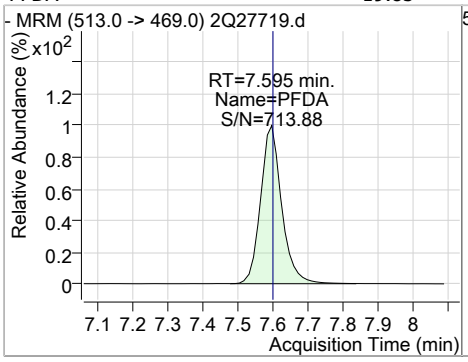
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	23.98	7.59	0.00	327209				

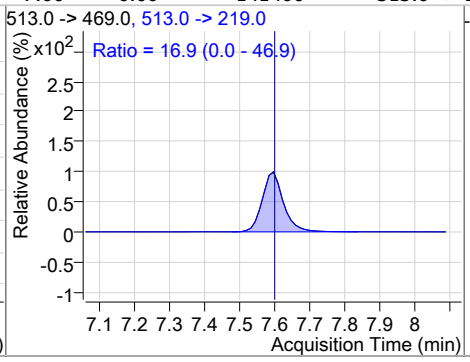


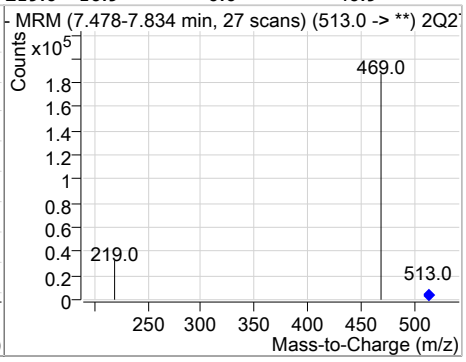




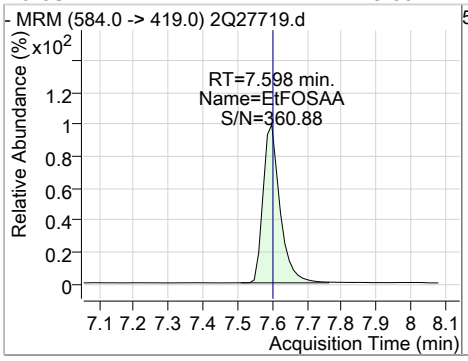
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.85	7.60	0.00	141466	513.0 -> 219.0	16.9	0.0	46.9

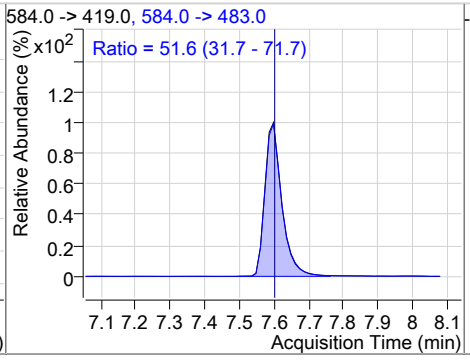


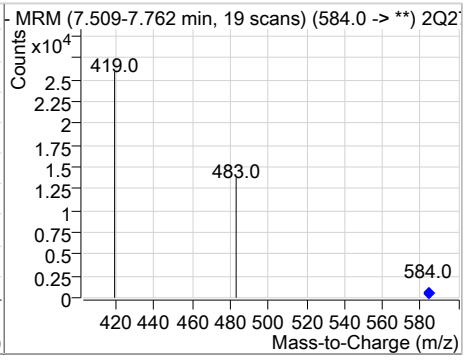




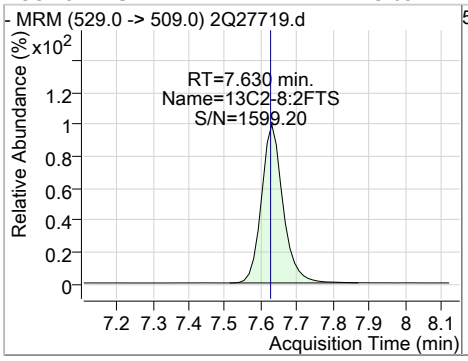
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.58	7.60	0.00	18805	584.0 -> 483.0	51.6	31.7	71.7

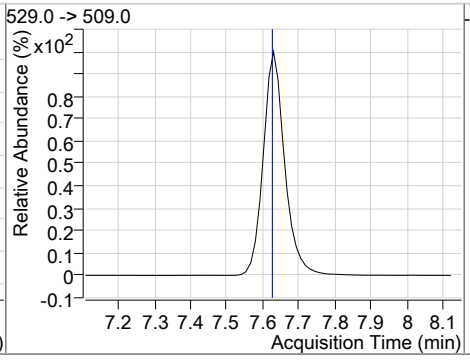


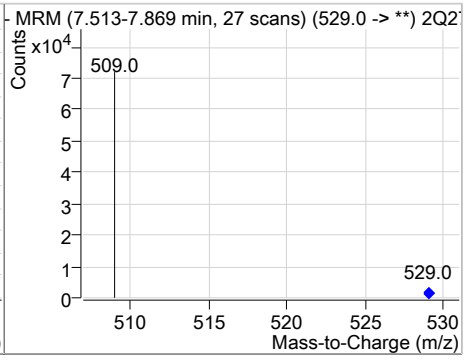




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.65	7.63	0.00	52435				

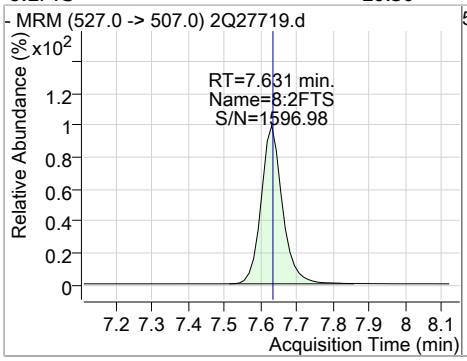


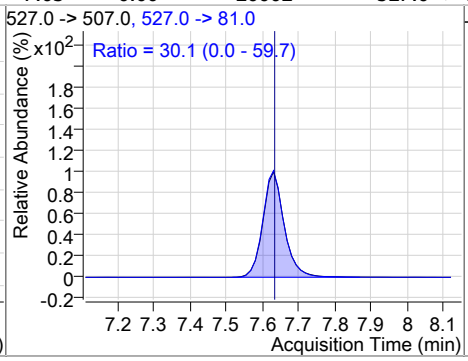


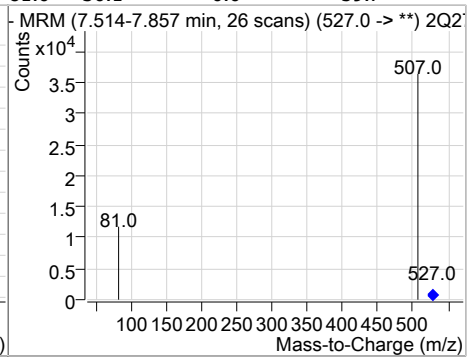


Perfluorinated Compounds by LC/MS/MS

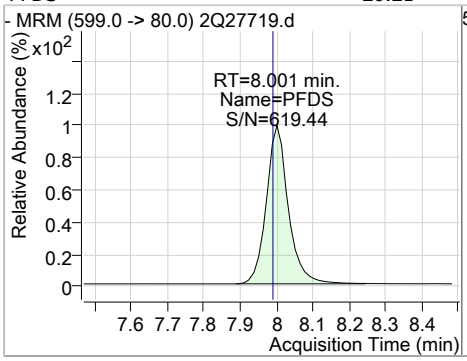
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.30	7.63	0.00	26602	527.0 -> 81.0	30.1	0.0	59.7

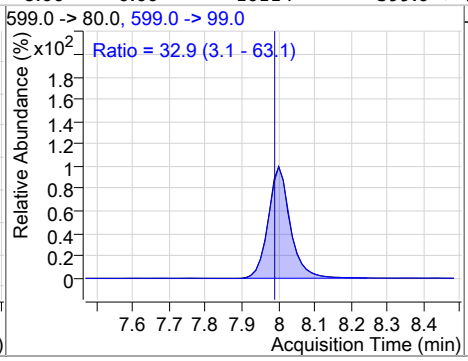


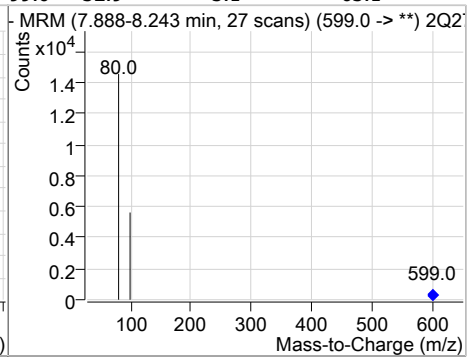




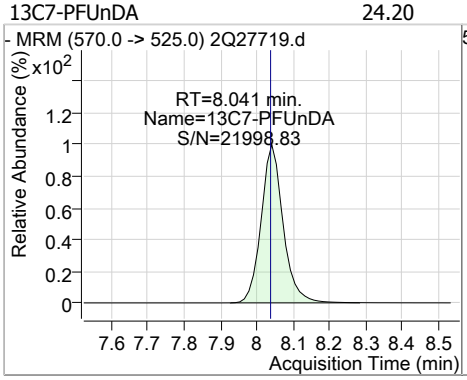
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.21	8.00	0.00	10114	599.0 -> 99.0	32.9	3.1	63.1

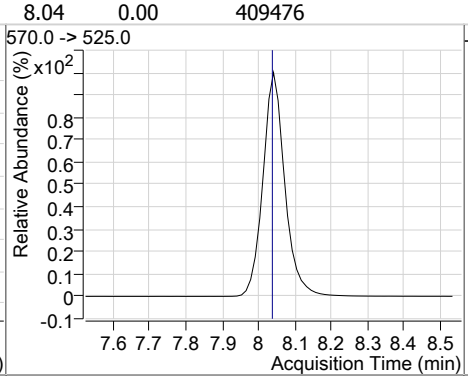


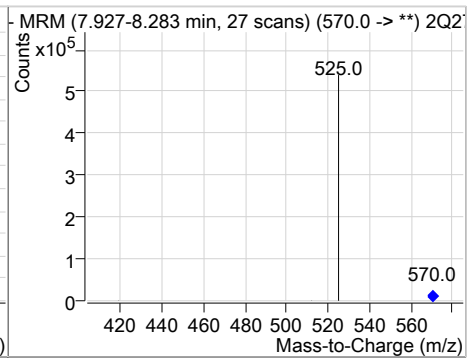




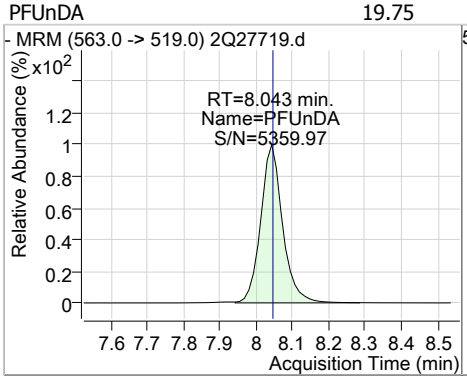
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	24.20	8.04	0.00	409476				

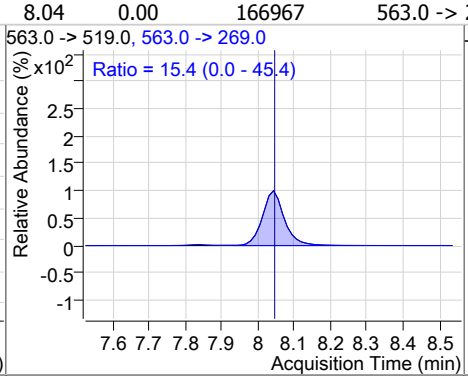


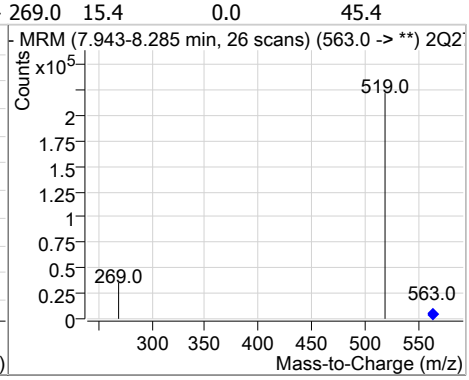




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.75	8.04	0.00	166967	563.0 -> 269.0	15.4	0.0	45.4

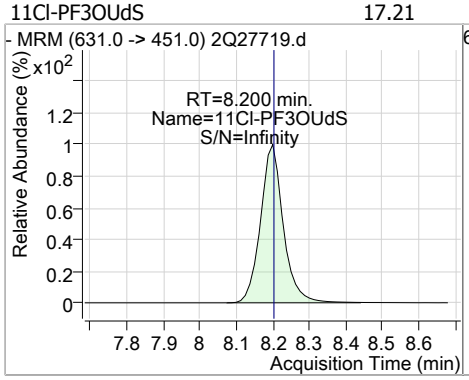


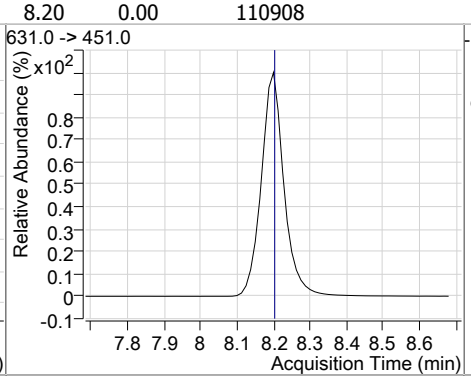


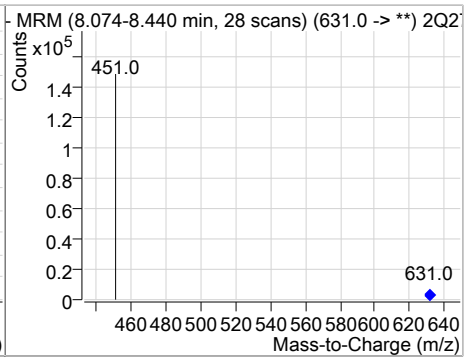


Perfluorinated Compounds by LC/MS/MS

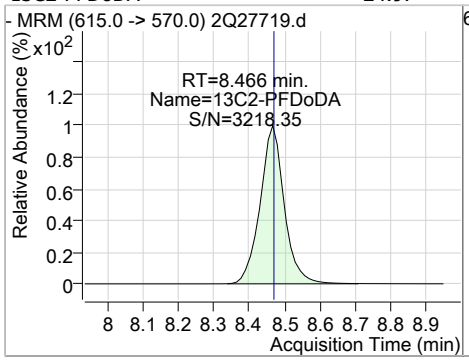
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	17.21	8.20	0.00	110908				

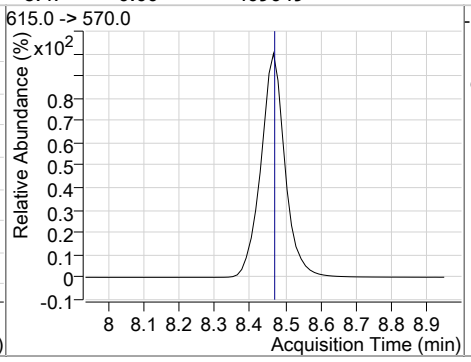


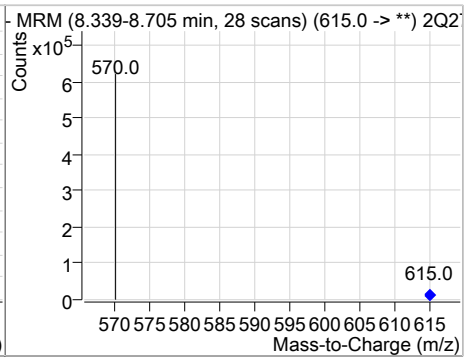




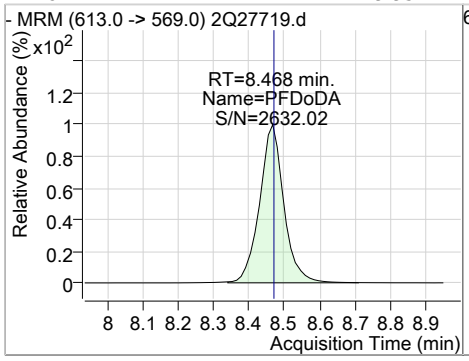
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	24.97	8.47	0.00	469649				

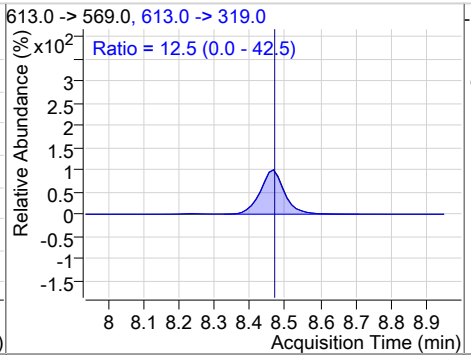


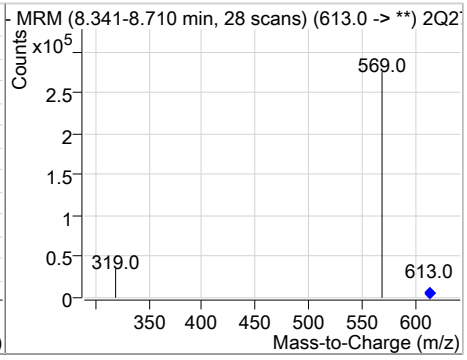




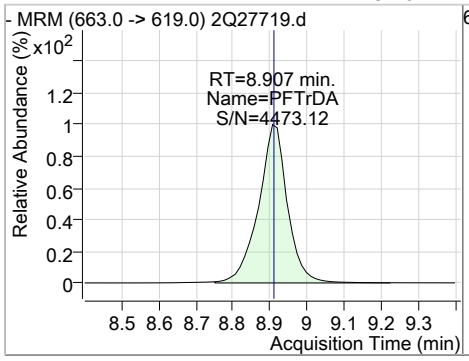
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.95	8.47	0.00	208729	613.0 -> 319.0	12.5	0.0	42.5

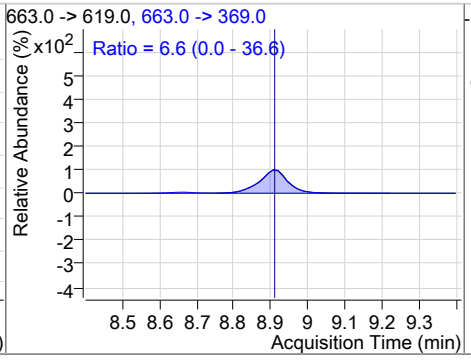


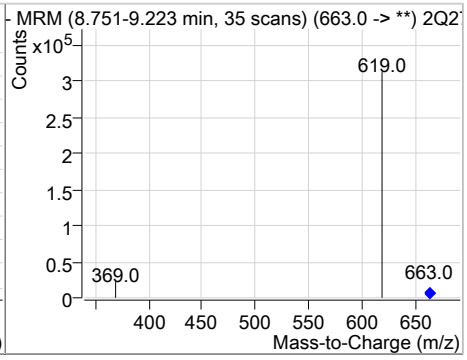




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.28	8.91	-0.01	237342	663.0 -> 369.0	6.6	0.0	36.6

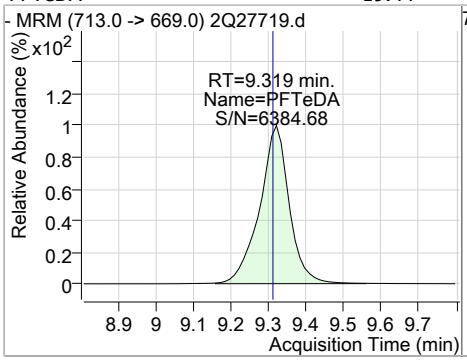


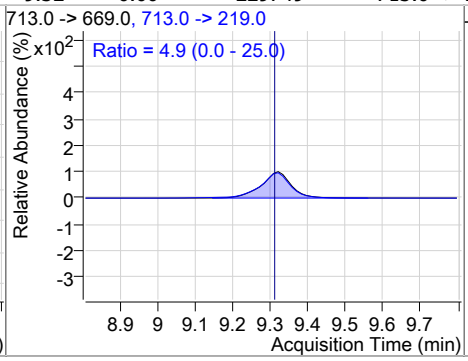


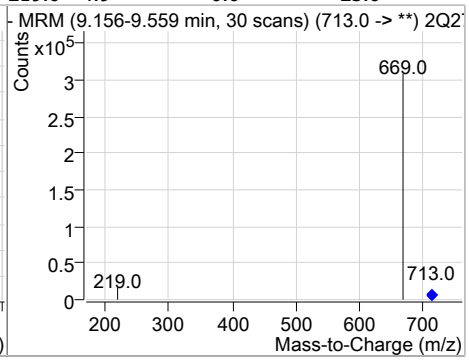


Perfluorinated Compounds by LC/MS/MS

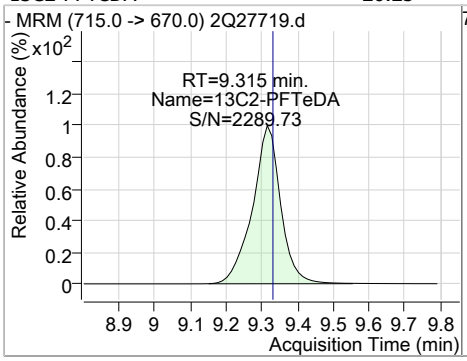
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.44	9.32	0.00	229749	713.0 -> 219.0	4.9	0.0	25.0

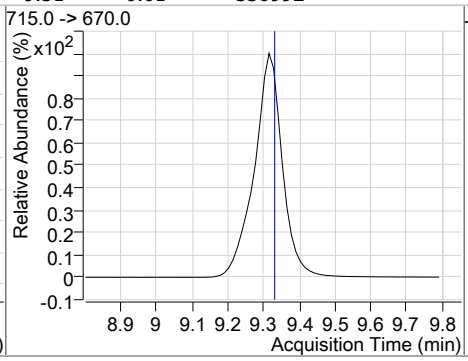


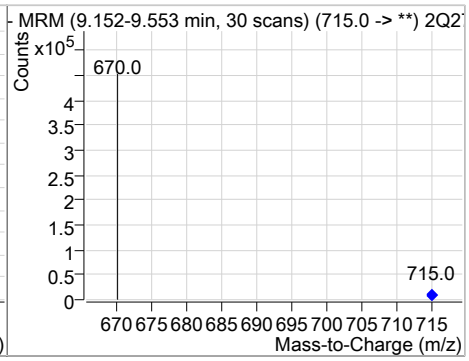




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	26.25	9.31	-0.01	336992				







Manual Integration Approval Summary

Sample Number: S2Q442-ECC442
Lab FileID: 2Q27719.D
Injection Time: 03/18/19 23:05
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/19/19 09:45 Nancy Saunders
Supervisor approved: 03/19/19 16:30 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27742.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 3:15:35 PM
Sample Name : CC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74164,S2Q443,250,,,1.0,1,water

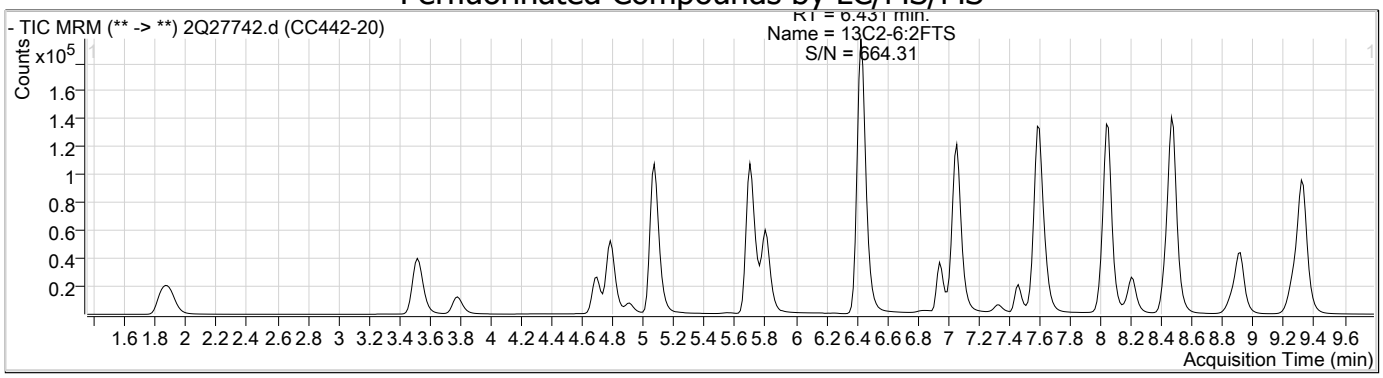
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	302137	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	46798	20.00	µg/L	0.013
M4-PFBA	1.865	217.0 -> 172.0	125914	20.00	µg/L	0.000
M5-PFPeA	3.524	268.0 -> 223.0	108927	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	154263	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	223528	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	226090	20.00	µg/L	0.000
M9-PFNA	7.066	472.0 -> 427.0	235209	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	308903	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	391385	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	441521	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	309583	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	87177	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	18846	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	20972	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	27686	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	62522	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	69370	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	50358	20.00	µg/L	0.000
M3-MeFOSAA	7.459	573.0 -> 419.0	41640	20.00	µg/L	0.013
M3-HFPO-DA	5.081	287.0 -> 169.0	183792	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	62210	20.92	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%		
13C2-6:2FTS	6.431	429.0 -> 409.0	69333	21.60	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.0%		
13C2-8:2FTS	7.630	529.0 -> 509.0	50305	22.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.4%		
13C2-PFDoDA	8.466	615.0 -> 570.0	441559	23.48	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	308463	24.03	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.1%		
13C3-PFBS	3.780	302.0 -> 99.0	18818	20.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C3-PFHxS	5.748	402.0 -> 99.0	21038	20.64	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
13C4-PFBA	1.865	217.0 -> 172.0	125279	20.89	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	223340	21.59	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.0%		
13C5-PFHxA	4.789	318.0 -> 273.0	154202	21.22	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.1%		
13C5-PFPeA	3.524	268.0 -> 223.0	108946	21.43	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.2%		
13C6-PFDA	7.594	519.0 -> 474.0	308831	22.63	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

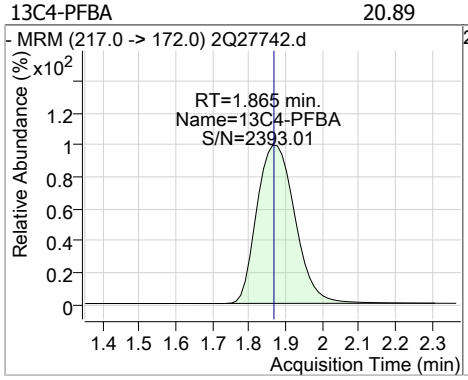
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.2%			
13C7-PFUnDA	8.041	570.0 -> 525.0	391007	23.10	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.5%			
13C8-FOSA	6.944	506.0 -> 78.0	87182	21.50	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%			
13C8-PFOA	6.434	421.0 -> 376.0	225967	21.66	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.3%			
13C8-PFOS	7.045	507.0 -> 99.0	27619	21.19	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.9%			
13C9-PFNA	7.066	472.0 -> 427.0	235077	22.20	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.0%			
d3-MeFOSAA	7.459	573.0 -> 419.0	41656	21.73	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.7%			
M2-PFOA	6.435	415.0 -> 370.0	302389	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.048	503.0 -> 80.0	46890	20.03	µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%			
13C3-HFPO-DA	5.081	287.0 -> 169.0	183792	114.94	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 114.9%			
Target Compounds							**QValue**
4:2FTS	4.699	327.0 -> 307.0	35212	20.44	µg/L		100
6:2FTS	6.432	427.0 -> 407.0	33953	19.90	µg/L		100
8:2FTS	7.631	527.0 -> 507.0	25931	20.60	µg/L		99
EtFOSAA	7.598	584.0 -> 419.0	18346	20.74	µg/L		99
FOSA	6.947	498.0 -> 78.0	39587	19.72	µg/L		99
MeFOSAA	7.460	570.0 -> 419.0	21951	20.66	µg/L		99
PFBA	1.873	213.0 -> 169.0	24393	19.62	µg/L		100
PFBS	3.783	299.0 -> 80.0	29786	19.91	µg/L		100
PFDA	7.595	513.0 -> 469.0	136305	20.27	µg/L		100
PFDoDA	8.468	613.0 -> 569.0	196982	20.05	µg/L		99
PFDS	8.014	599.0 -> 80.0	10033	19.68	µg/L		100
PFHpA	5.708	363.0 -> 319.0	189721	19.69	µg/L		100
PFHpS	6.442	449.0 -> 80.0	20590	20.23	µg/L		99
PFHxA	4.791	313.0 -> 269.0	53524	20.15	µg/L		100
PFHxS	5.739	399.0 -> 80.0	23114	19.94	µg/L	m	96
PFNA	7.066	463.0 -> 419.0	155991	20.00	µg/L		100
PFNS	7.565	549.0 -> 80.0	19213	20.25	µg/L		95
PFOA	6.437	413.0 -> 369.0	119762	19.61	µg/L		98
PFOS	7.049	499.0 -> 80.0	25857	19.23	µg/L	m	81
PFPeA	3.528	263.0 -> 219.0	92300	19.58	µg/L		100
PFPeS	4.908	349.0 -> 80.0	19779	20.65	µg/L		96
PFTeDA	9.319	713.0 -> 669.0	211996	19.58	µg/L		100
PFTrDA	8.919	663.0 -> 619.0	221716	19.66	µg/L		100
PFUnDA	8.043	563.0 -> 519.0	158511	19.63	µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	109106	18.03	µg/L		100
9Cl-PF3ONS	7.335	531.0 -> 351.0	22090	19.01	µg/L		100
ADONA	5.804	377.0 -> 251.0	219330	19.59	µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	217272	99.52	µg/L		99

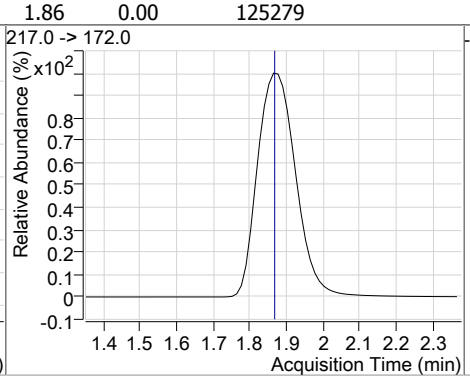
 # = Qualifier out of range, m = manually integrated, + = Area summed

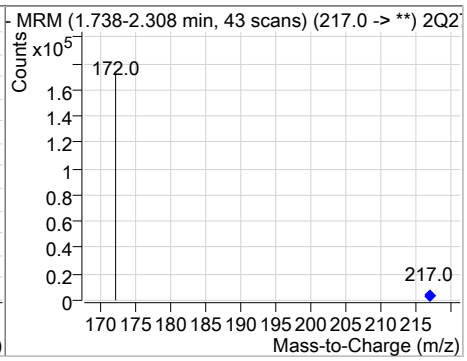
Perfluorinated Compounds by LC/MS/MS



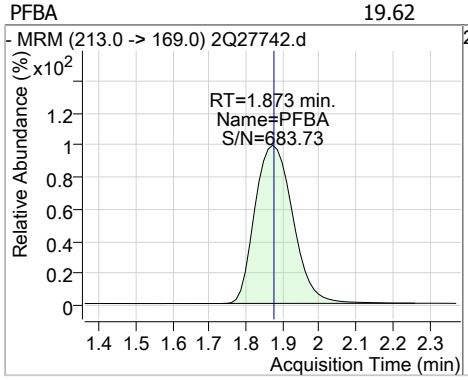
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.89	1.86	0.00	125279				

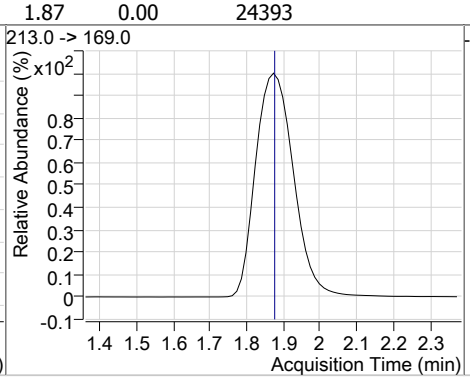


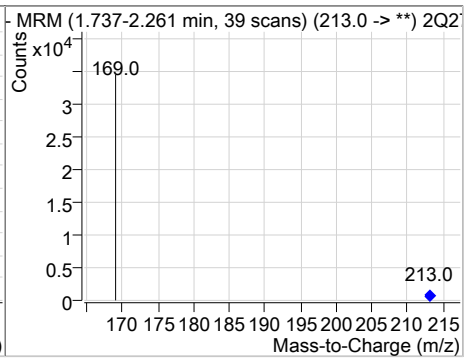




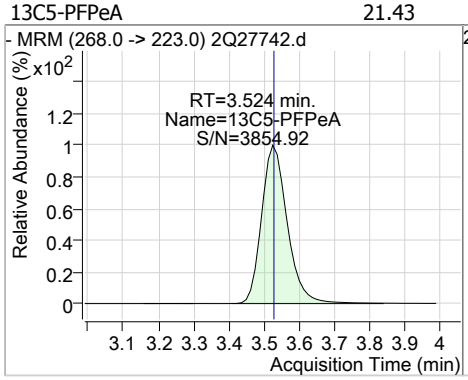
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.62	1.87	0.00	24393				

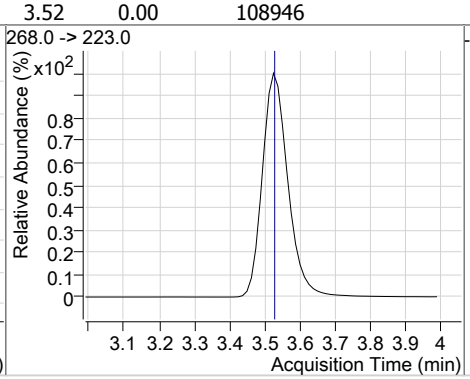


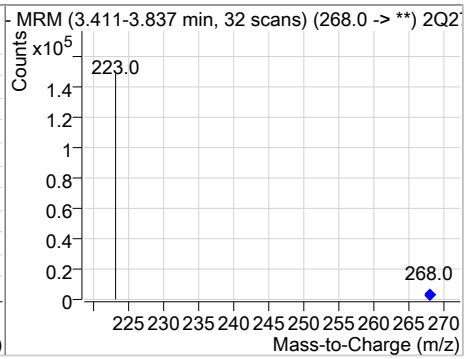




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.43	3.52	0.00	108946				

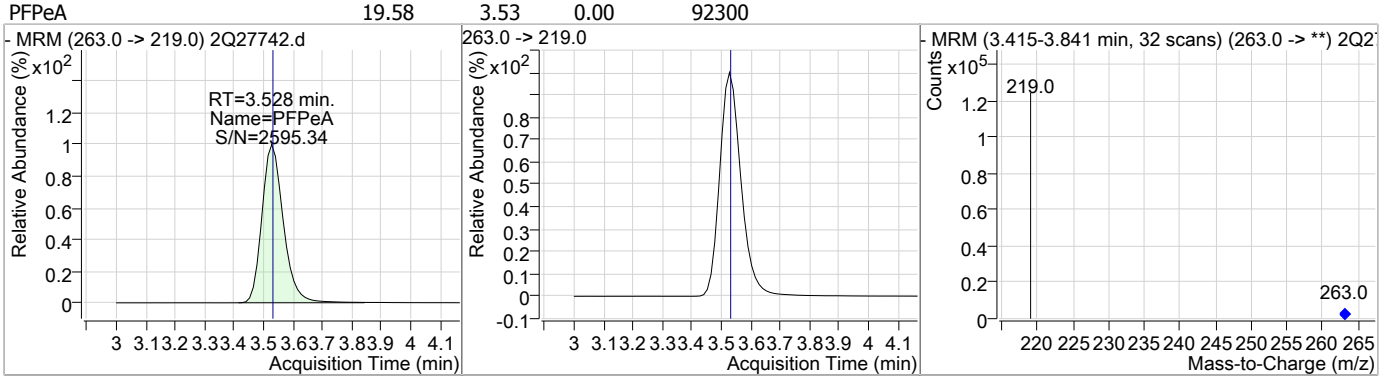




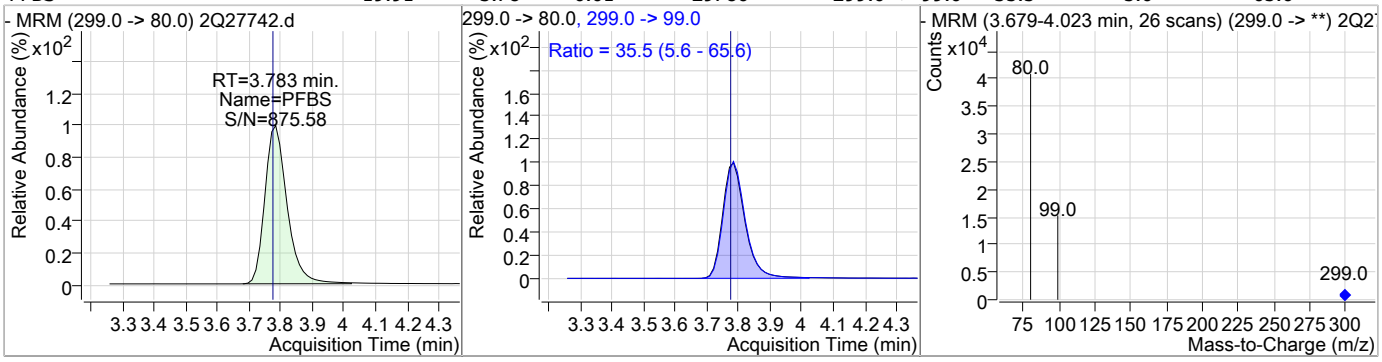


Perfluorinated Compounds by LC/MS/MS

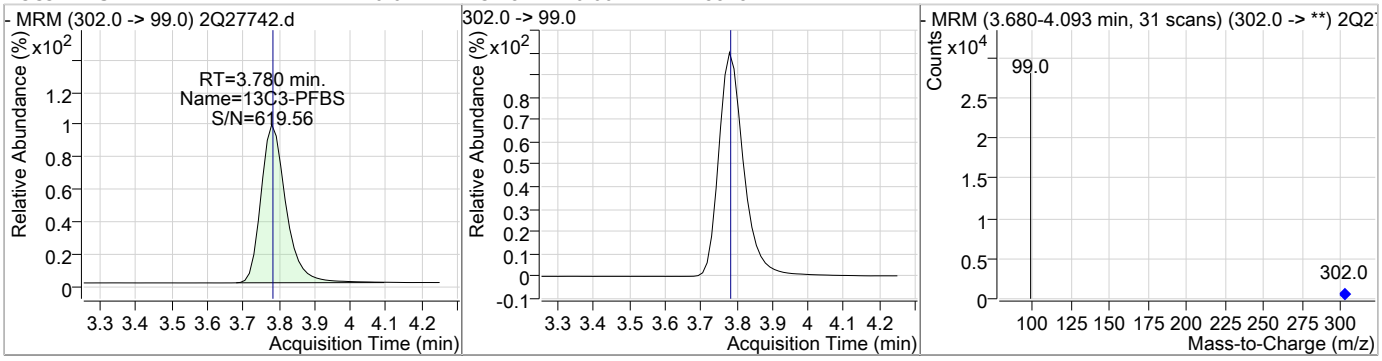
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.58	3.53	0.00	92300				



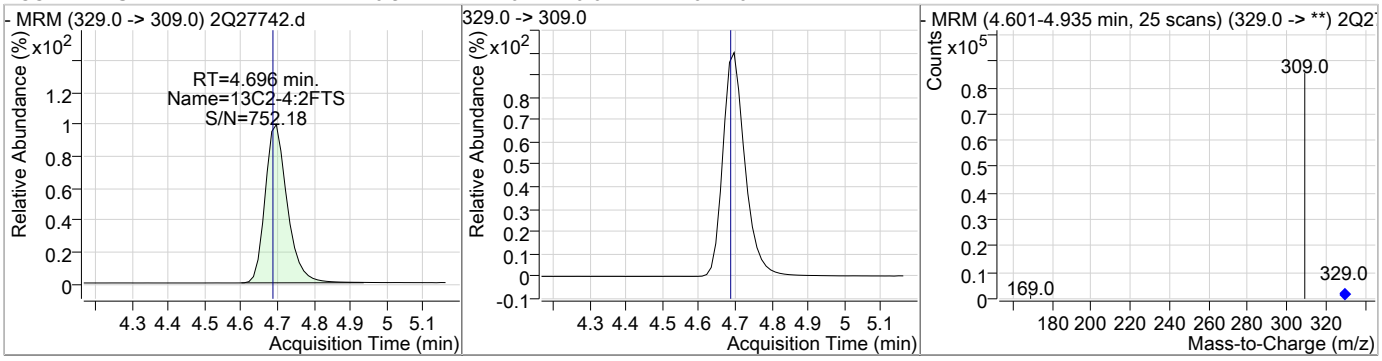
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.91	3.78	0.01	29786	299.0 -> 99.0	35.5	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.64	3.78	0.00	18818				

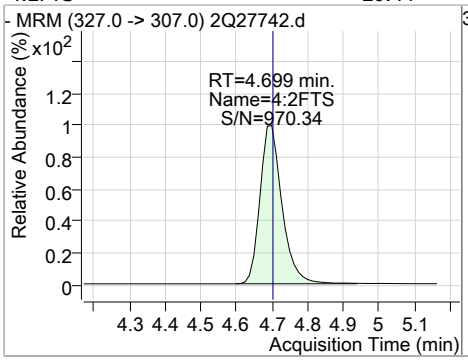


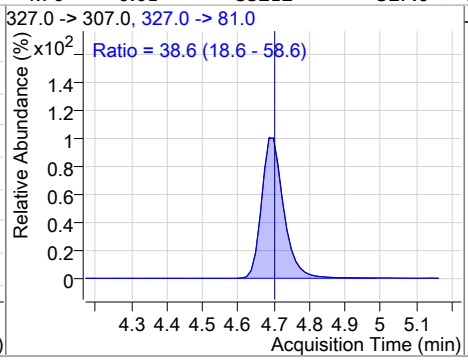
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.92	4.70	0.01	62210				

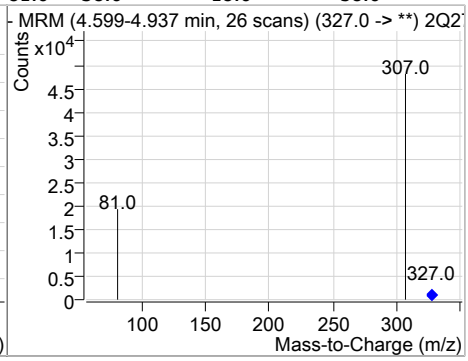


Perfluorinated Compounds by LC/MS/MS

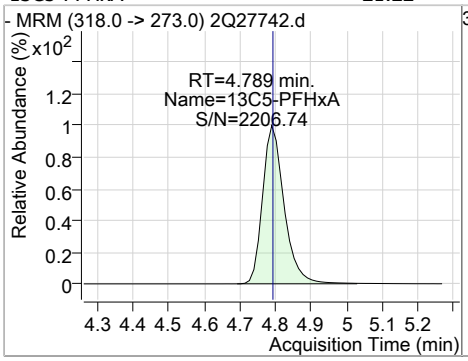
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.44	4.70	0.01	35212	327.0 -> 81.0	38.6	18.6	58.6

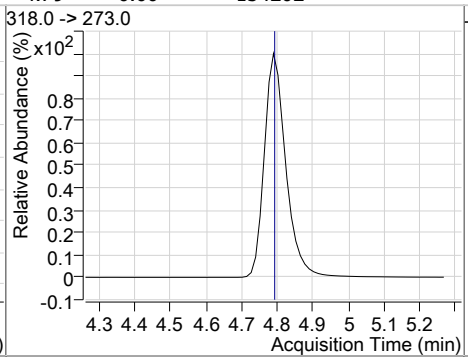


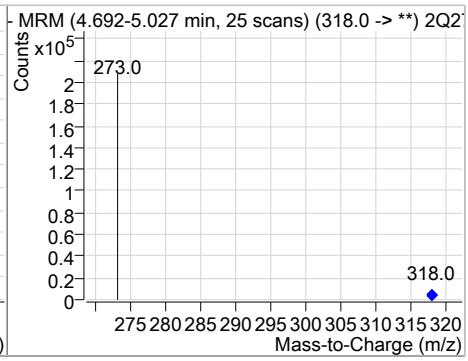




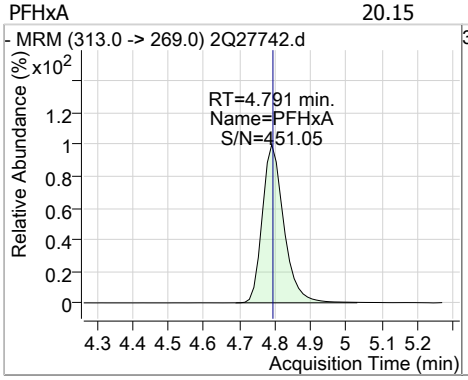
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.22	4.79	0.00	154202				

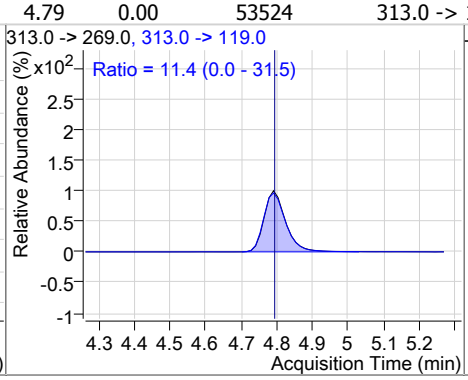


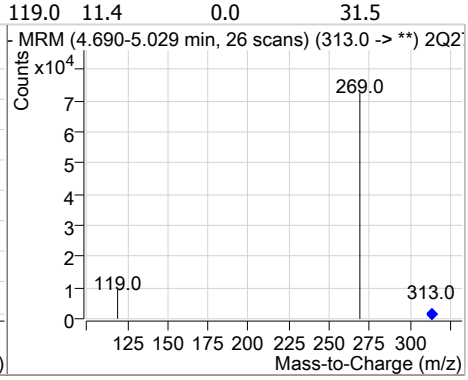




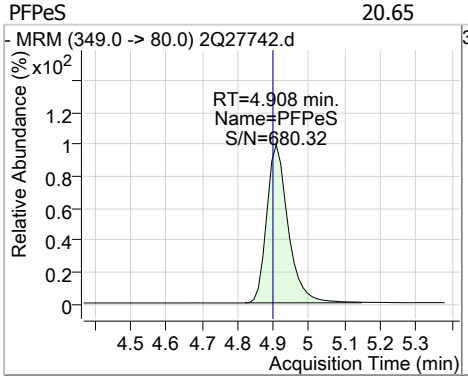
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	20.15	4.79	0.00	53524	313.0 -> 119.0	11.4	0.0	31.5

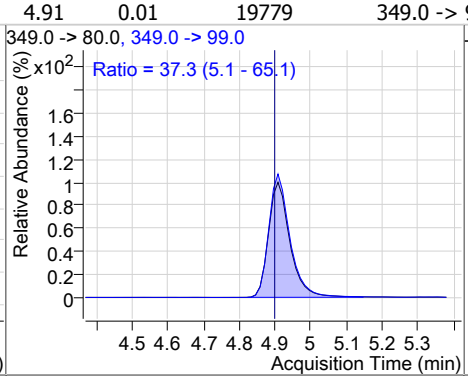


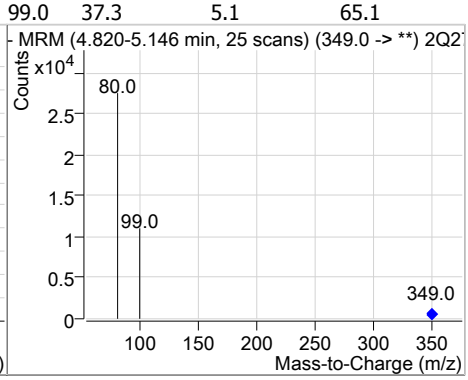




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.65	4.91	0.01	19779	349.0 -> 99.0	37.3	5.1	65.1

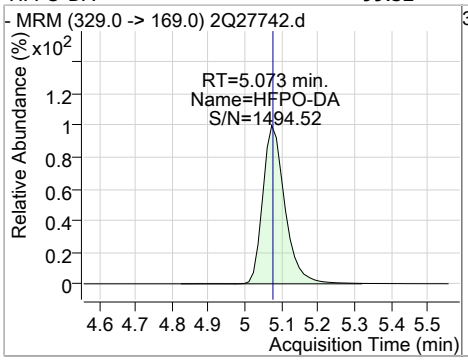


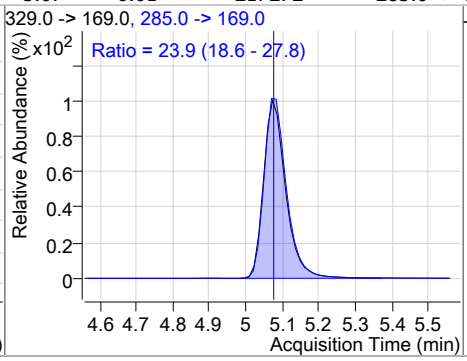


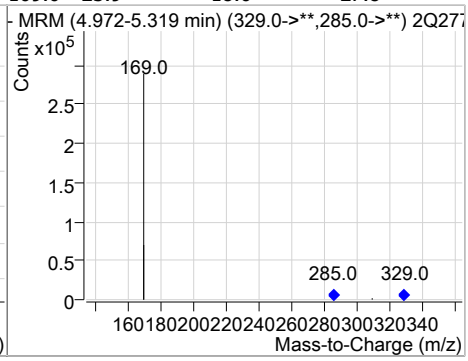


Perfluorinated Compounds by LC/MS/MS

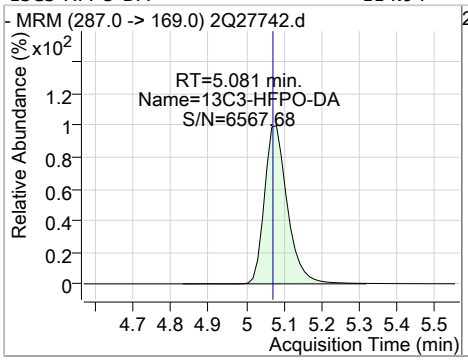
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	99.52	5.07	0.01	217272	285.0 -> 169.0	23.9	18.6	27.8

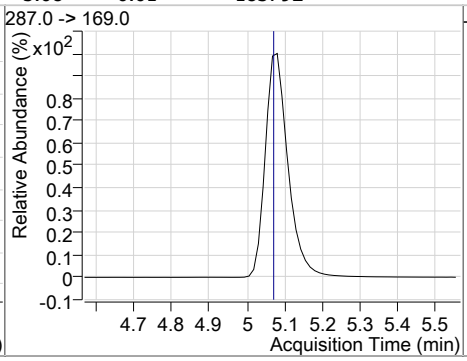


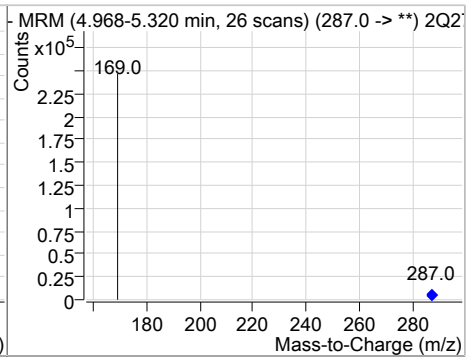




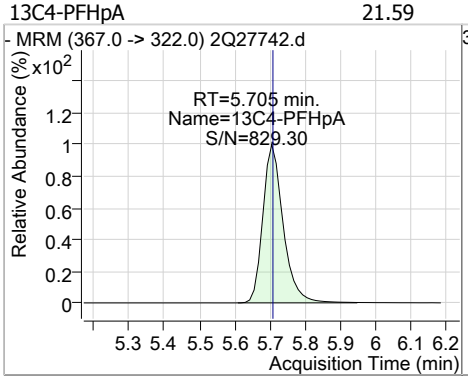
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	114.94	5.08	0.01	183792				

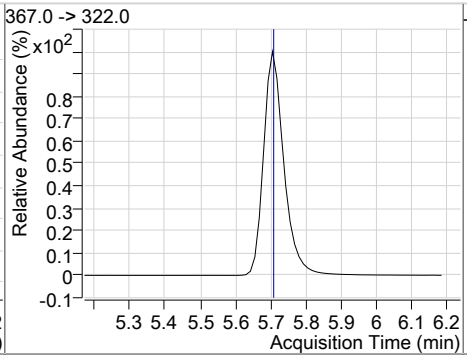


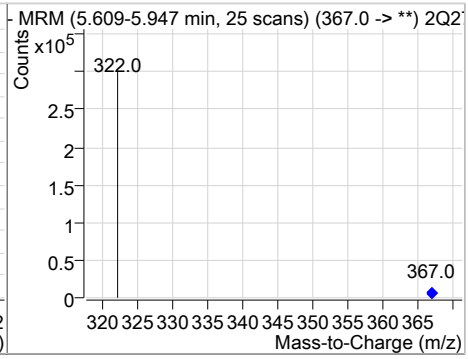




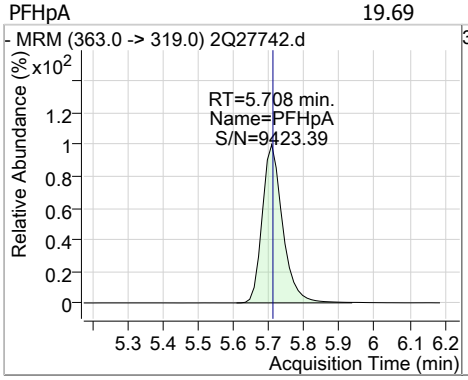
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.59	5.71	0.00	223340				

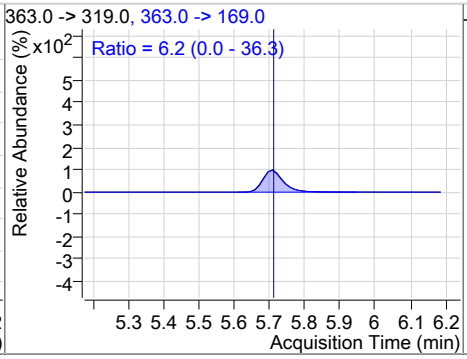


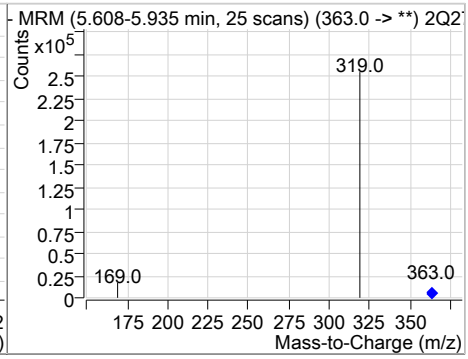




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.69	5.71	0.00	189721	363.0 -> 169.0	6.2	0.0	36.3

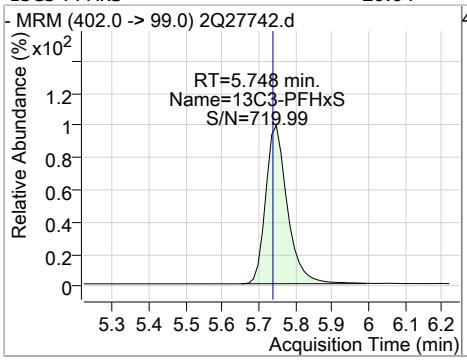


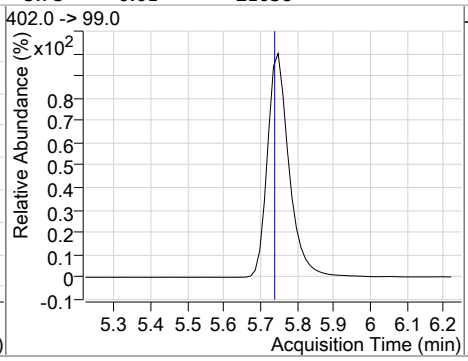


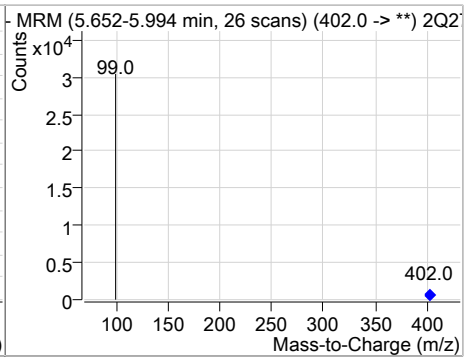


Perfluorinated Compounds by LC/MS/MS

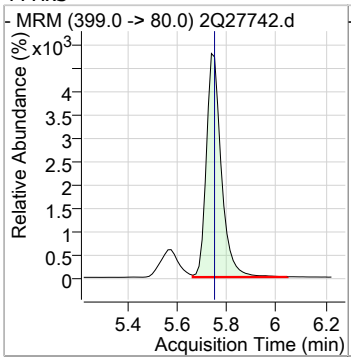
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.64	5.75	0.01	21038				

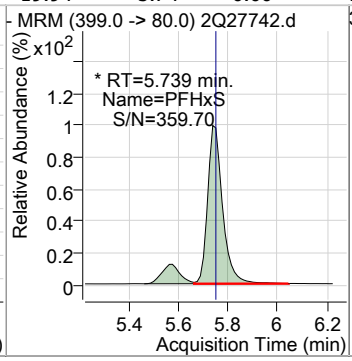


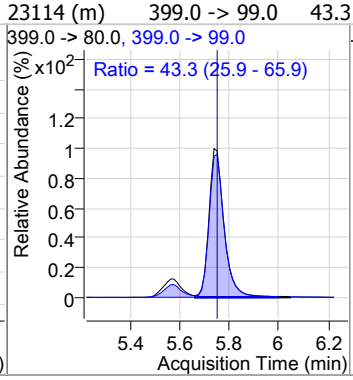


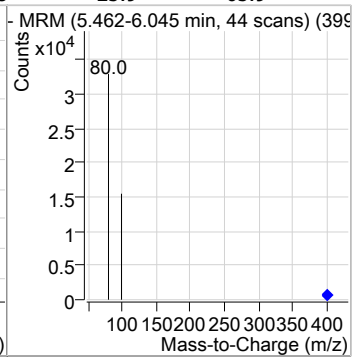


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.94	5.74	0.00	23114 (m)	399.0 -> 99.0	43.3	25.9	65.9

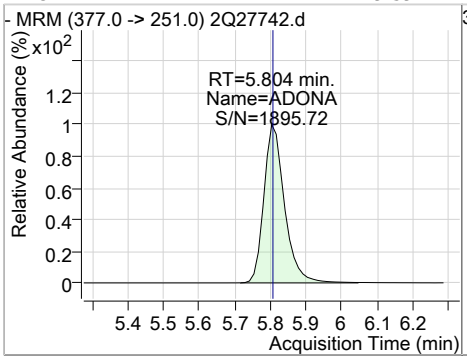


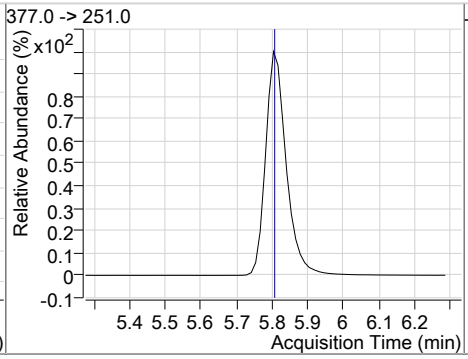


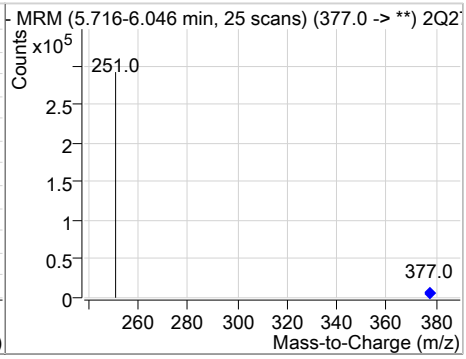




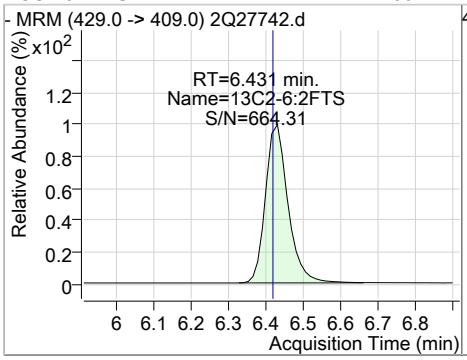
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.59	5.80	0.00	219330				

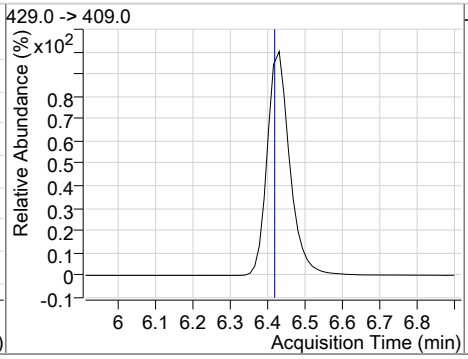


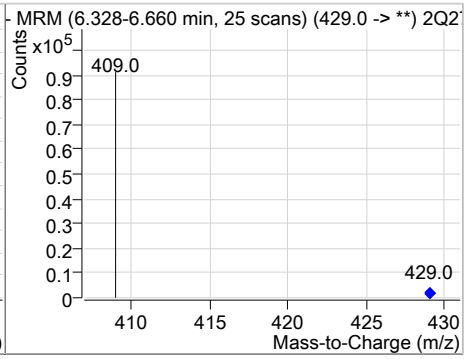




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.60	6.43	0.02	69333				

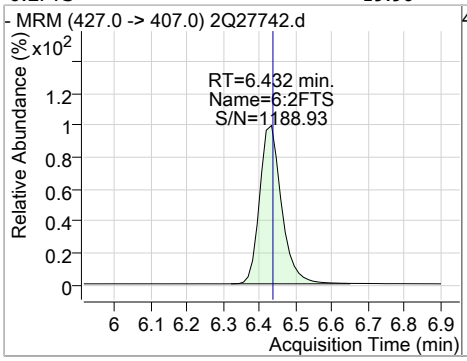


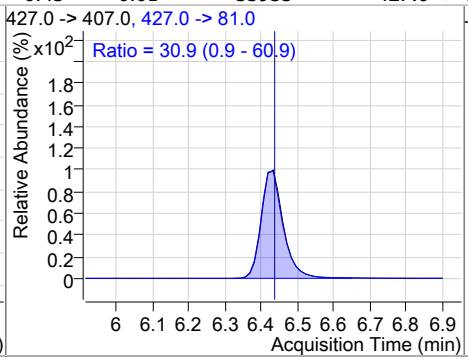


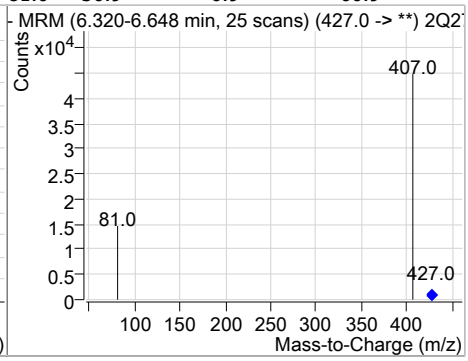


Perfluorinated Compounds by LC/MS/MS

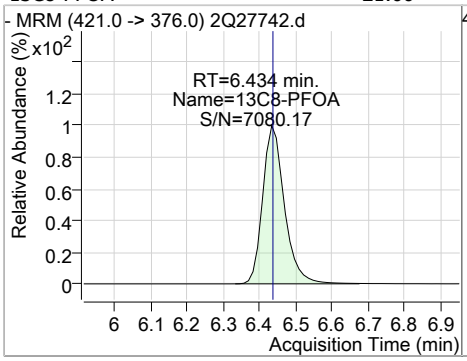
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.90	6.43	0.01	33953	427.0 -> 81.0	30.9	0.9	60.9

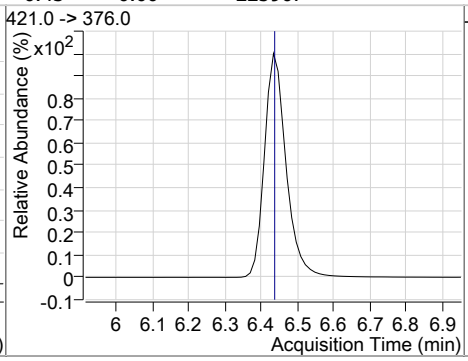


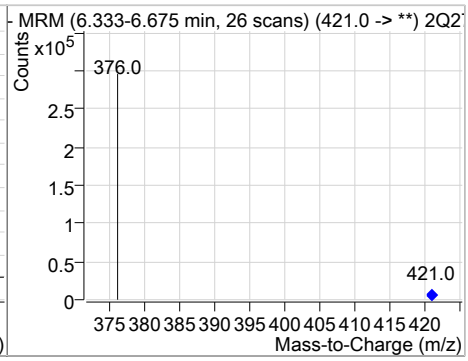




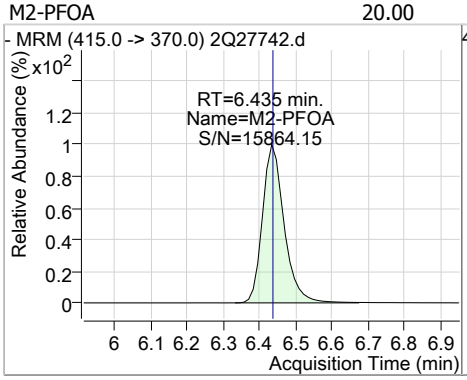
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.66	6.43	0.00	225967				

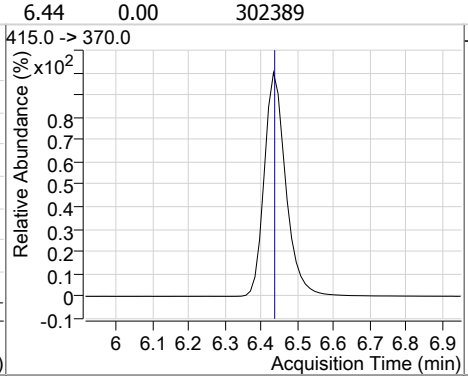


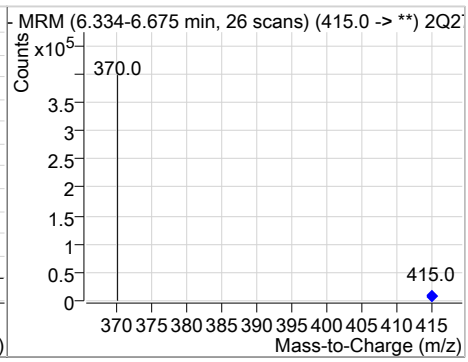




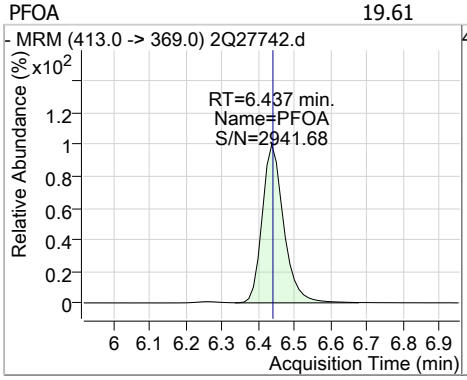
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	302389				

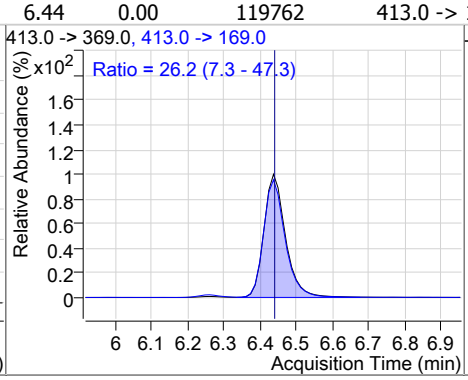


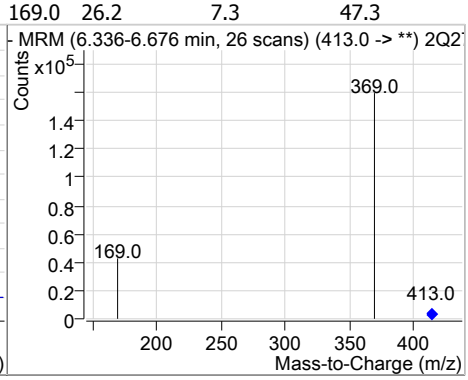




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.61	6.44	0.00	119762	413.0 -> 169.0	26.2	7.3	47.3

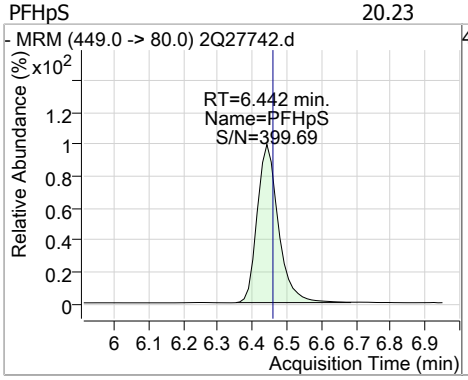


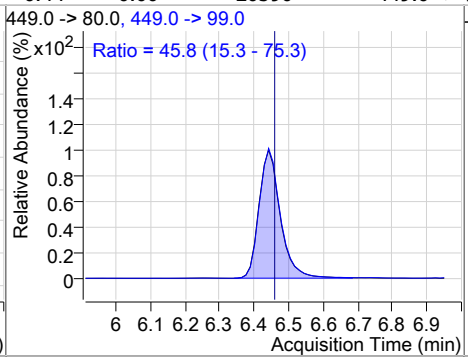


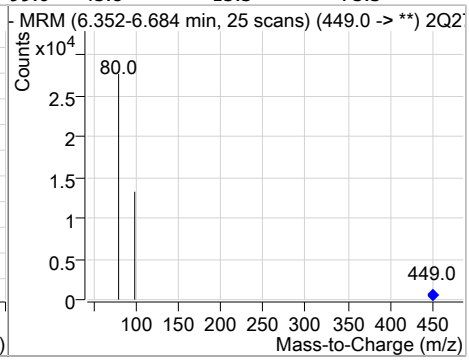


Perfluorinated Compounds by LC/MS/MS

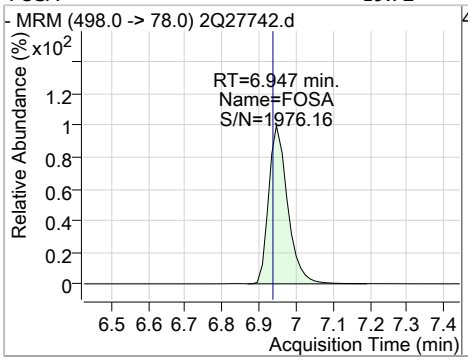
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.23	6.44	0.00	20590	449.0 -> 99.0	45.8	15.3	75.3

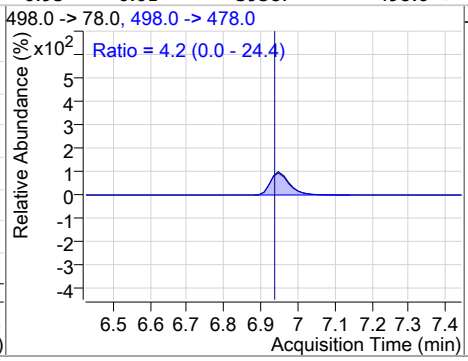


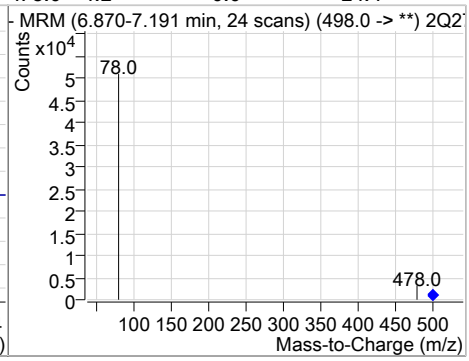




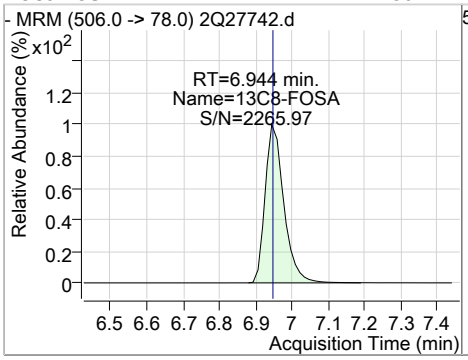
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.72	6.95	0.01	39587	498.0 -> 478.0	4.2	0.0	24.4

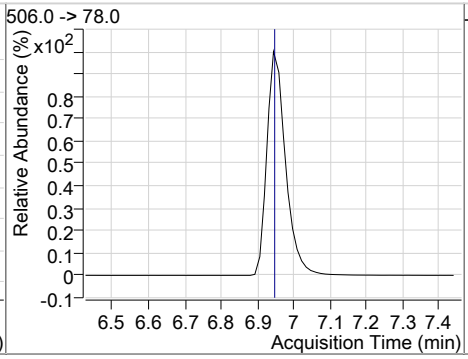


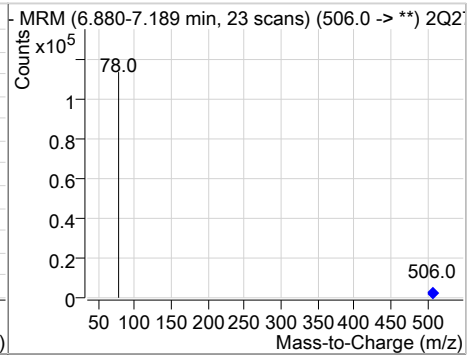




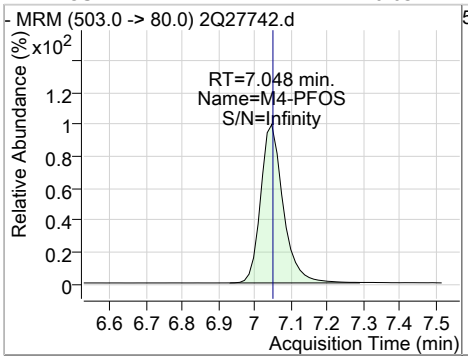
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.50	6.94	0.00	87182				

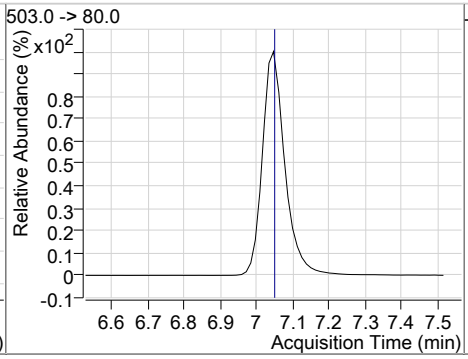


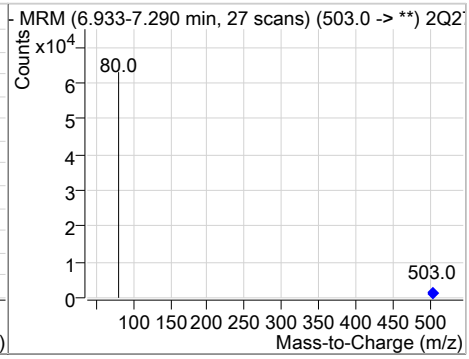




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.03	7.05	0.01	46890				

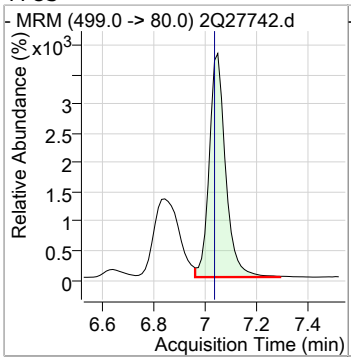


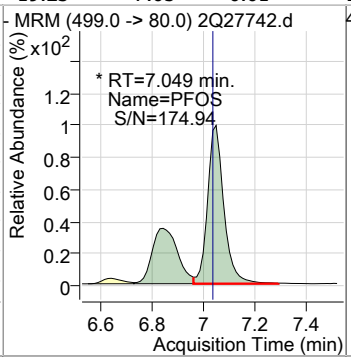


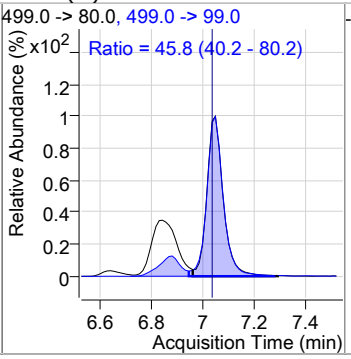


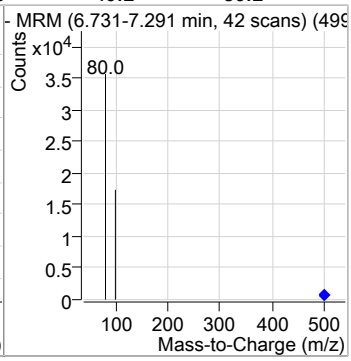
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.23	7.05	0.01	25857 (m)	499.0 -> 99.0	45.8	40.2	80.2

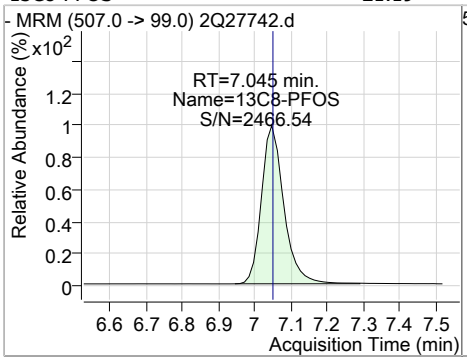


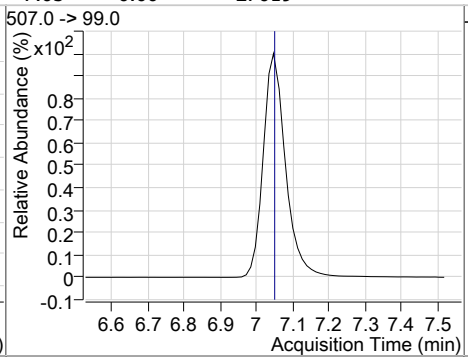


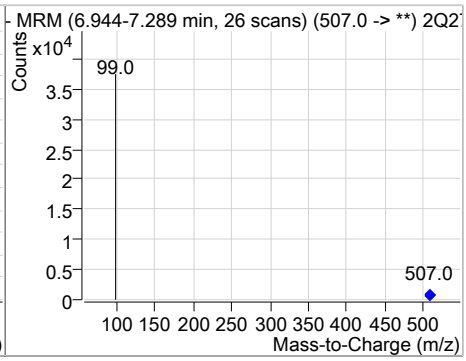




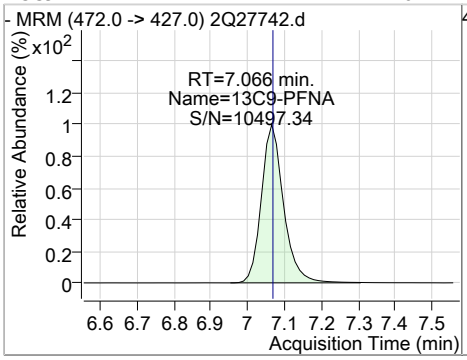
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	21.19	7.05	0.00	27619				

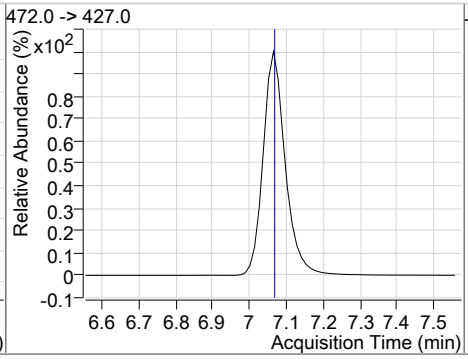


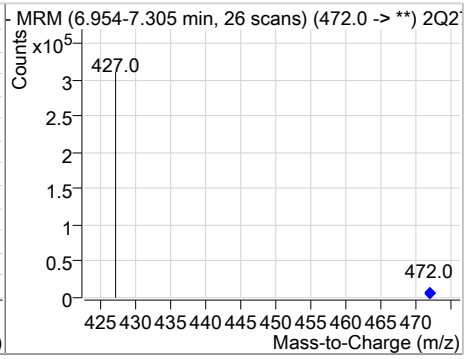




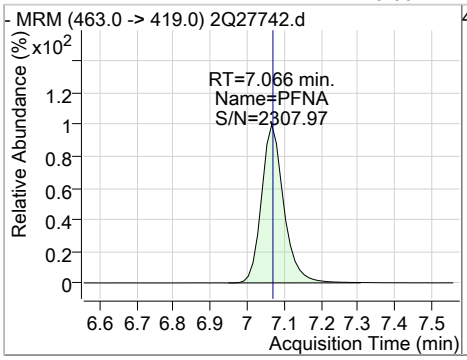
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	22.20	7.07	0.00	235077				

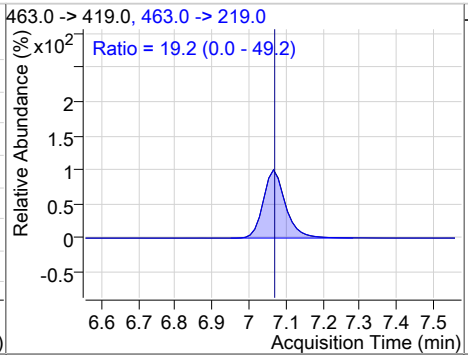


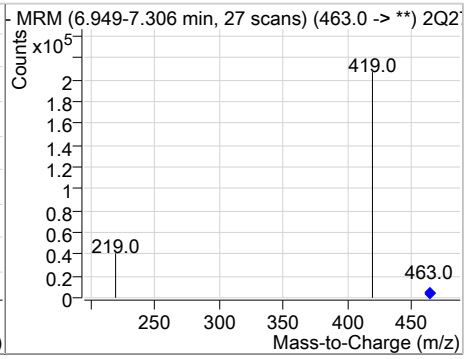




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.00	7.07	0.00	155991	463.0 -> 219.0	19.2	0.0	49.2

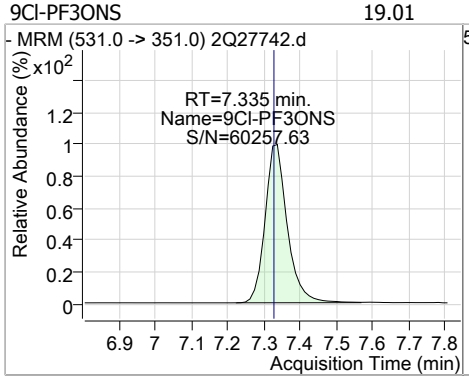


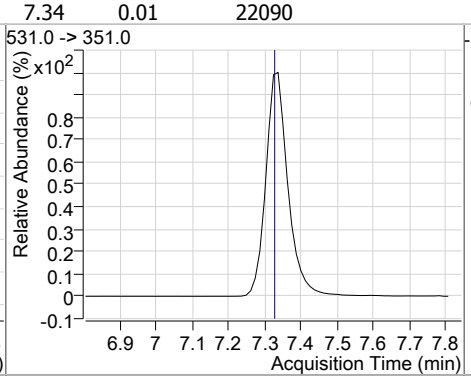


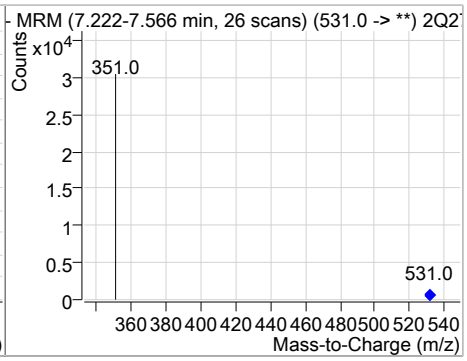


Perfluorinated Compounds by LC/MS/MS

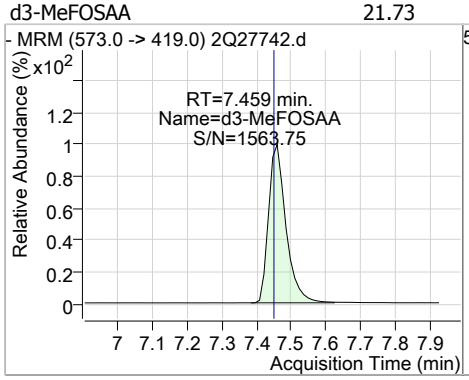
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	19.01	7.34	0.01	22090				

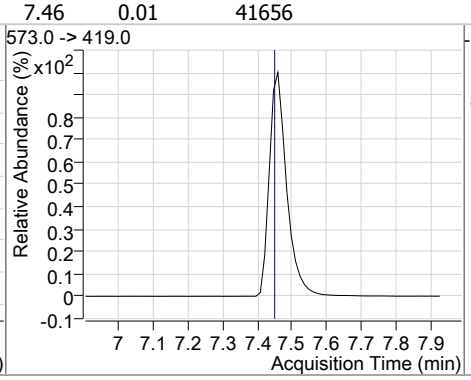


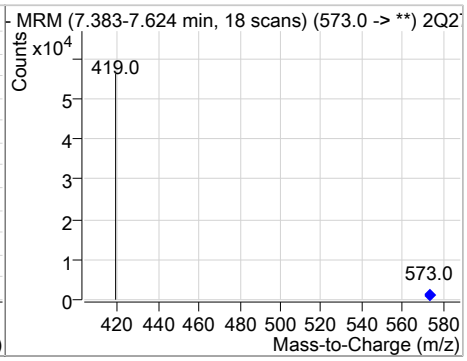




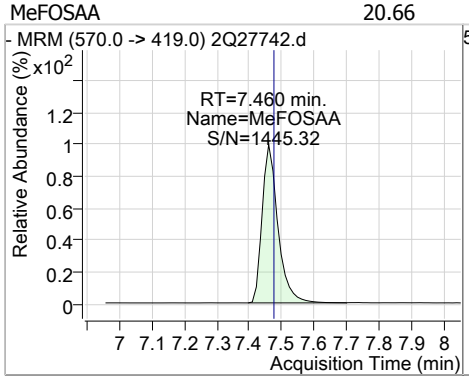
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.73	7.46	0.01	41656				

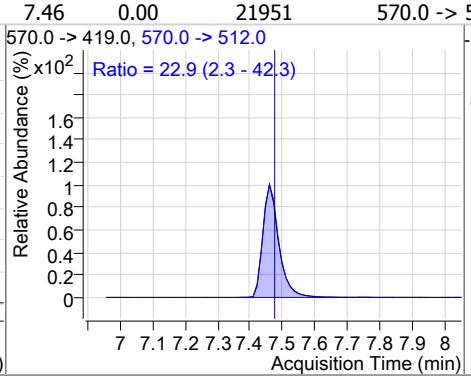


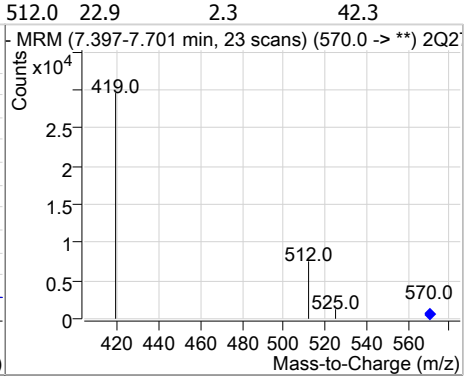




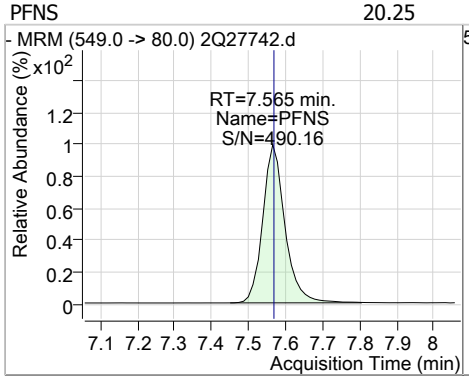
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	20.66	7.46	0.00	21951	570.0 -> 512.0	22.9	2.3	42.3

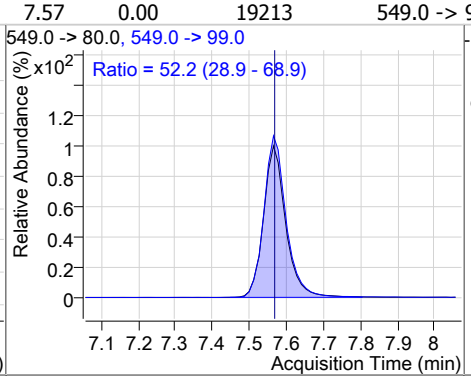


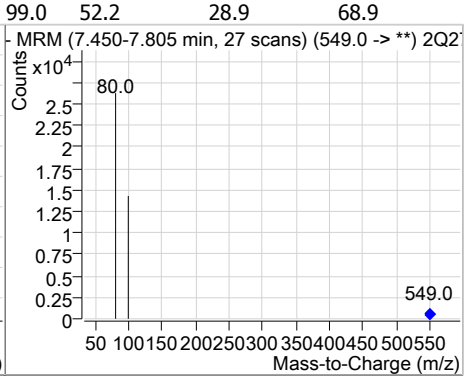




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.25	7.57	0.00	19213	549.0 -> 99.0	52.2	28.9	68.9

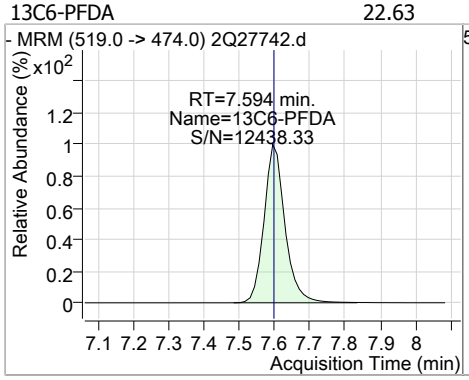


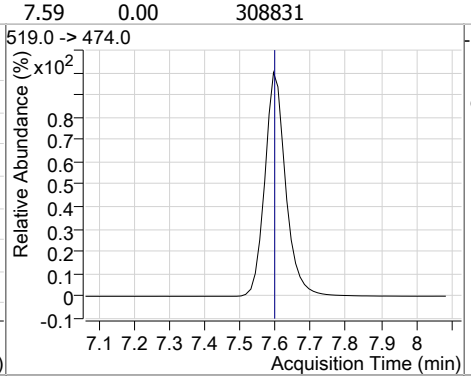


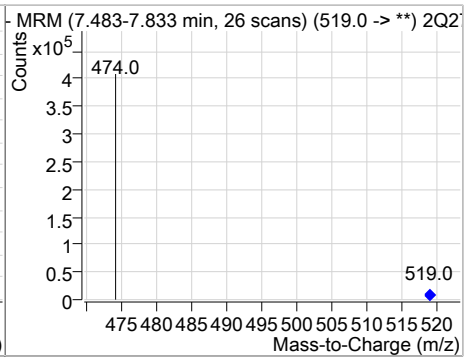


Perfluorinated Compounds by LC/MS/MS

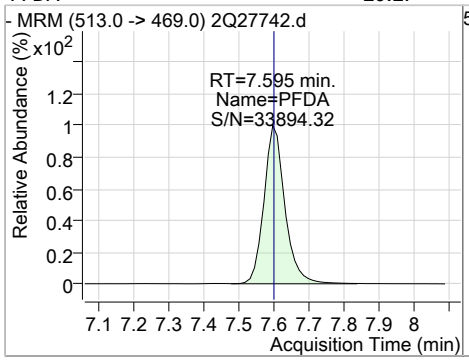
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	22.63	7.59	0.00	308831				

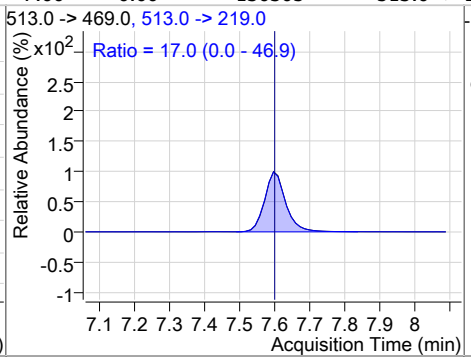


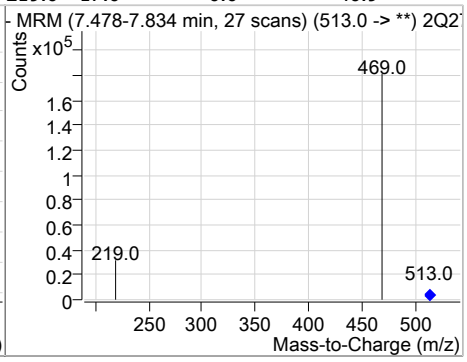




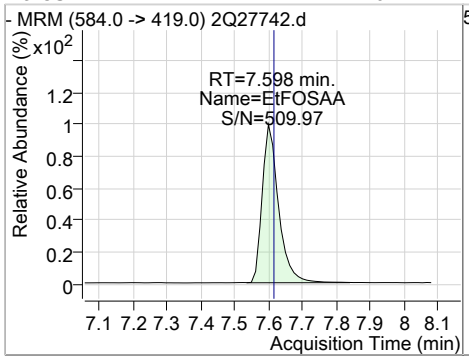
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.27	7.60	0.00	136305	513.0 -> 219.0	17.0	0.0	46.9

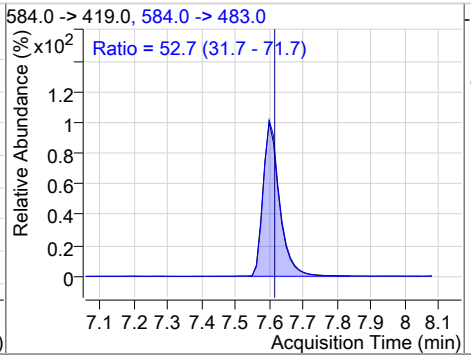


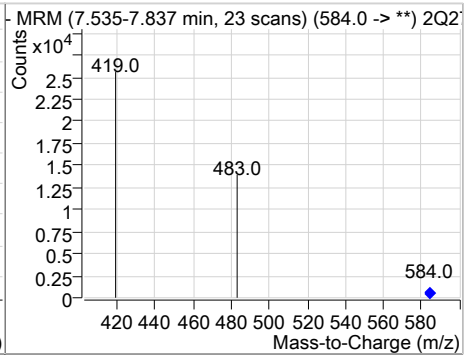




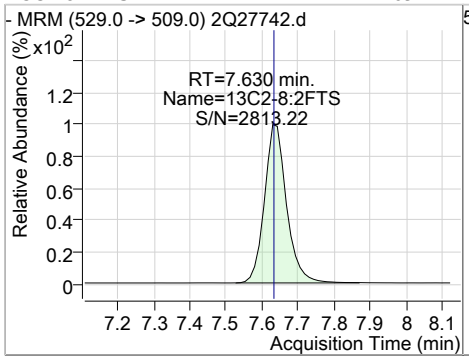
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.74	7.60	0.00	18346	584.0 -> 483.0	52.7	31.7	71.7

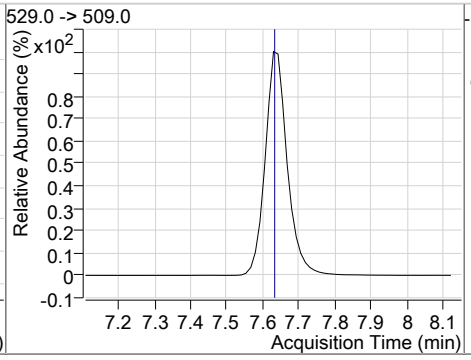


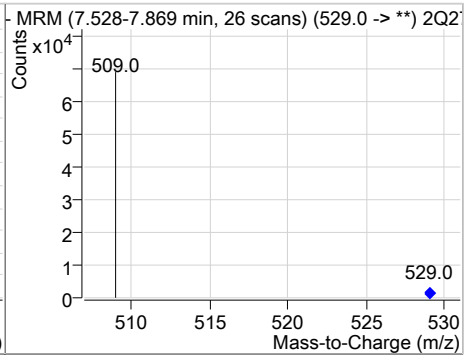




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	22.69	7.63	0.00	50305				

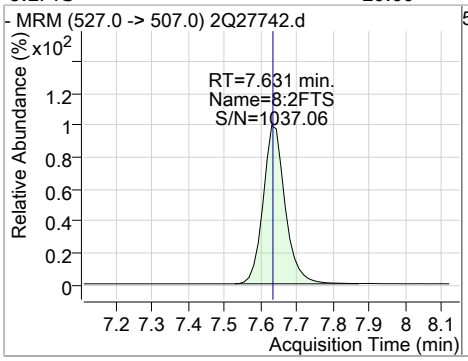


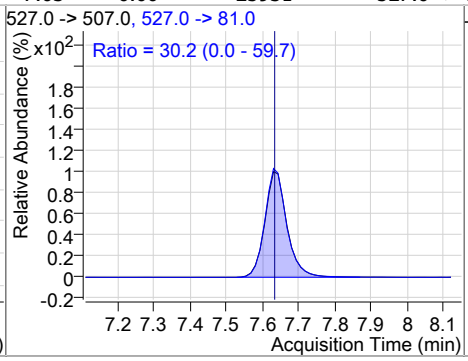


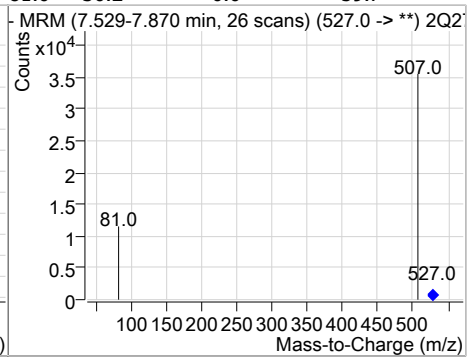


Perfluorinated Compounds by LC/MS/MS

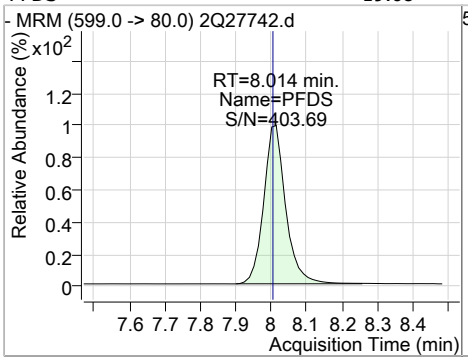
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.60	7.63	0.00	25931	527.0 -> 81.0	30.2	0.0	59.7

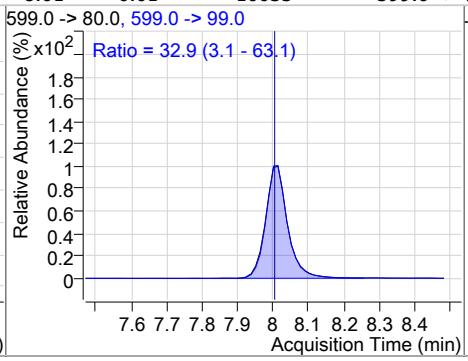


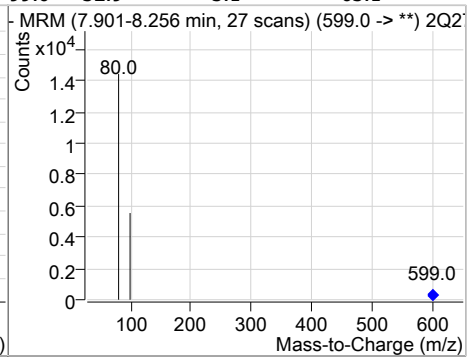




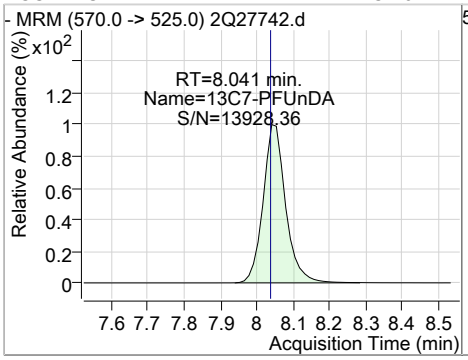
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.68	8.01	0.01	10033	599.0 -> 99.0	32.9	3.1	63.1

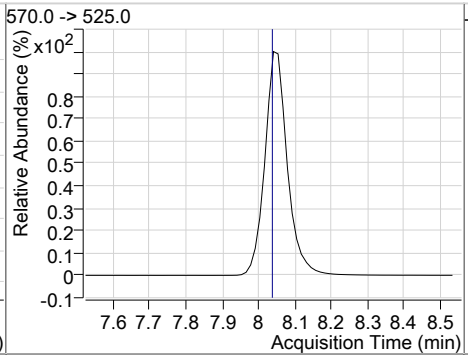


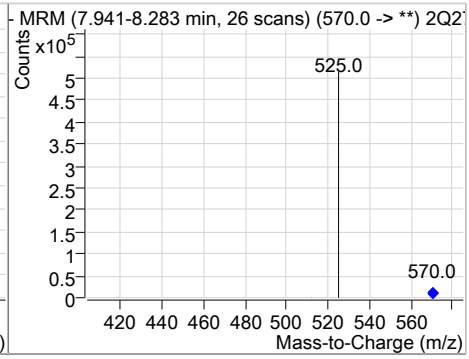




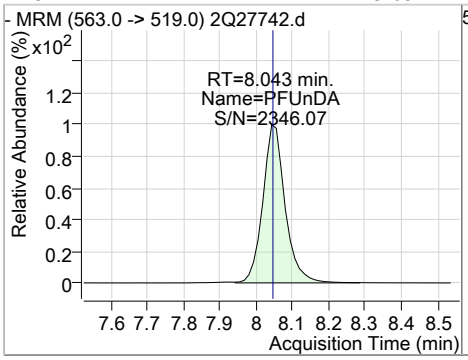
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	23.10	8.04	0.00	391007				

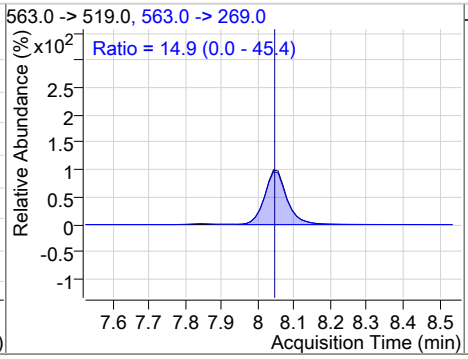


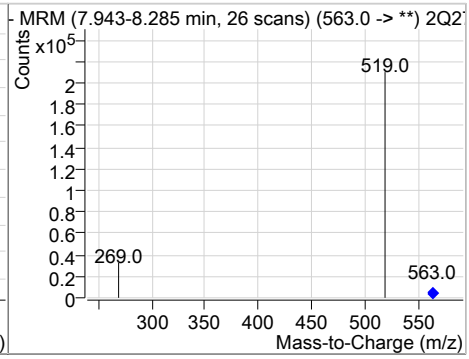




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.63	8.04	0.00	158511	563.0 -> 269.0	14.9	0.0	45.4

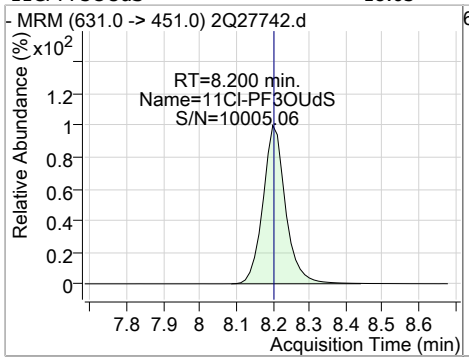


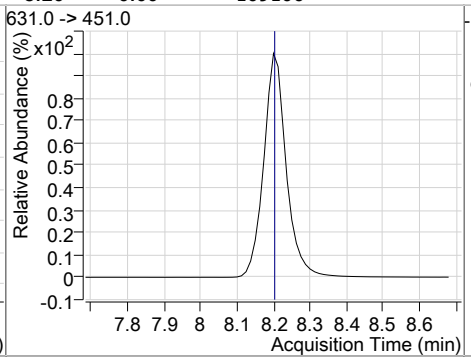


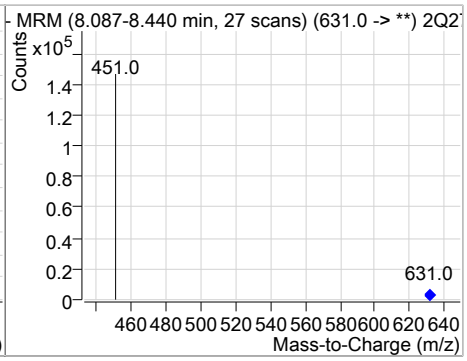


Perfluorinated Compounds by LC/MS/MS

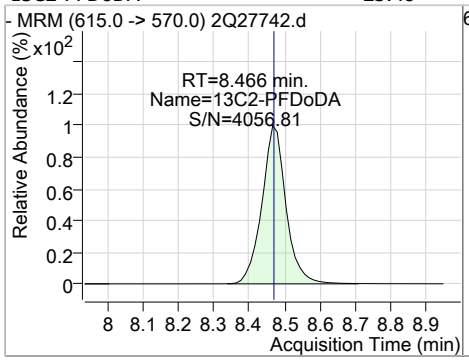
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.03	8.20	0.00	109106				

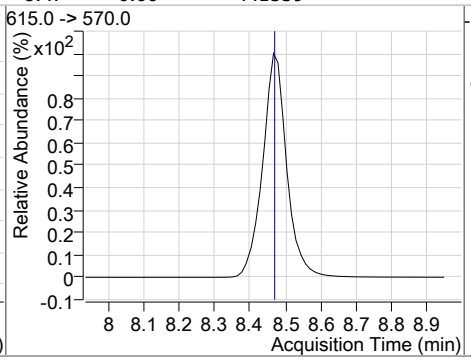


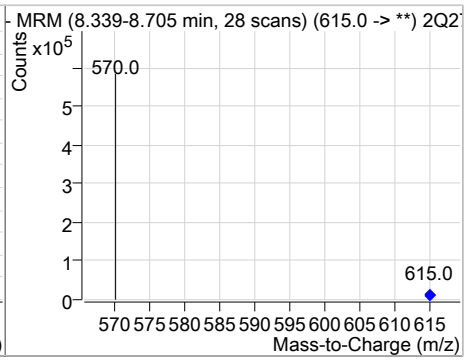




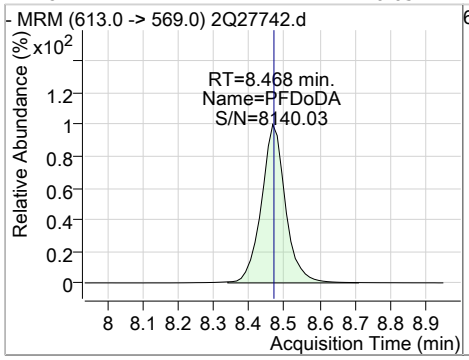
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	23.48	8.47	0.00	441559				

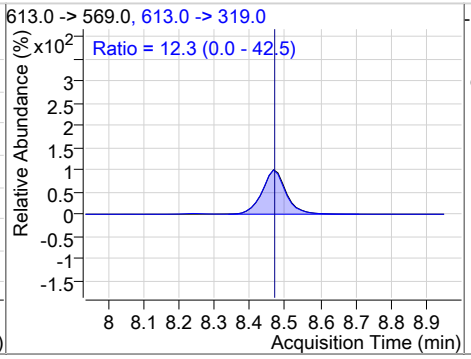


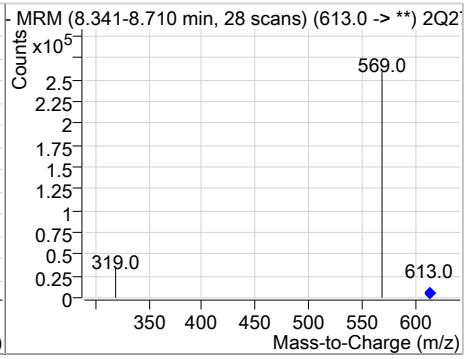




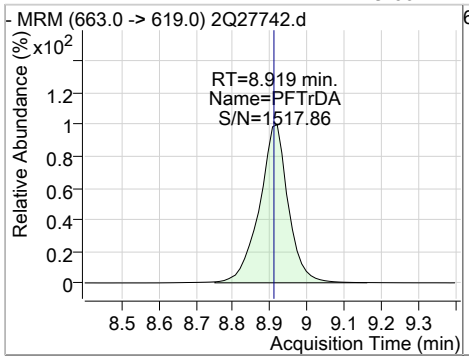
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	20.05	8.47	0.00	196982	613.0 -> 319.0	12.3	0.0	42.5

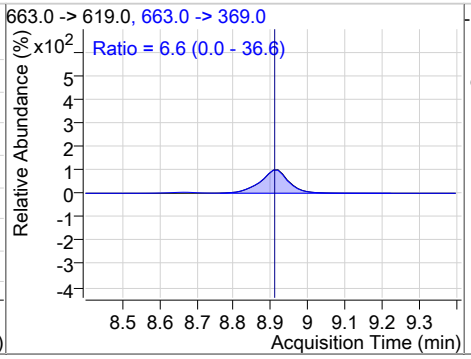


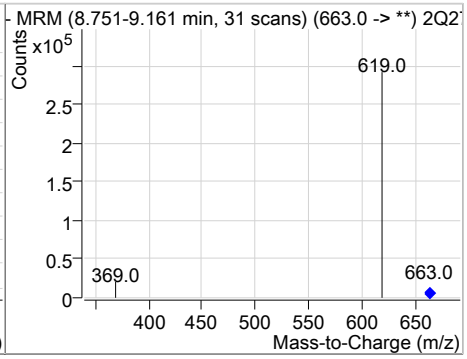




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.66	8.92	0.00	221716	663.0 -> 369.0	6.6	0.0	36.6

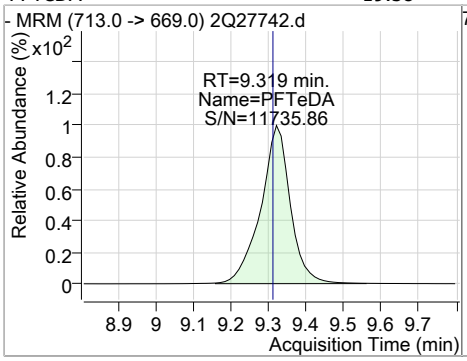


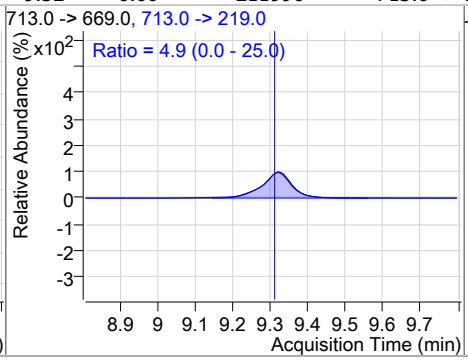


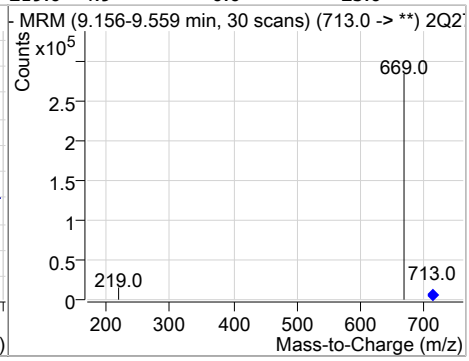


Perfluorinated Compounds by LC/MS/MS

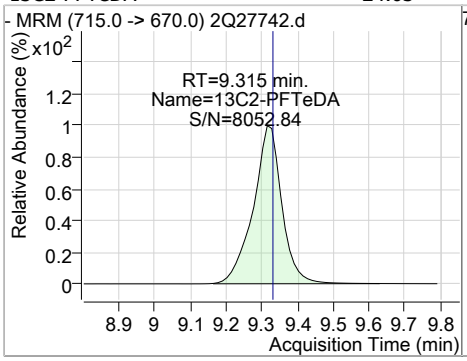
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.58	9.32	0.00	211996	713.0 -> 219.0	4.9	0.0	25.0

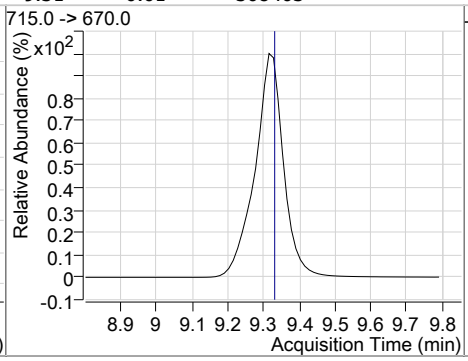


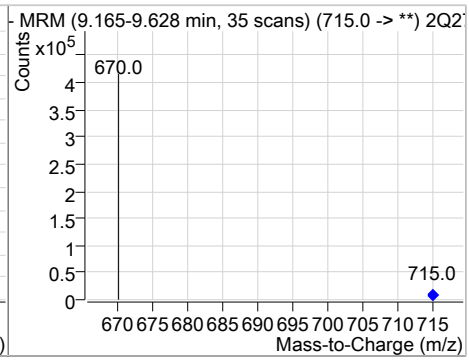




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	24.03	9.31	-0.01	308463				







Manual Integration Approval Summary

Sample Number: S2Q443-CC442
Lab FileID: 2Q27742.D
Injection Time: 03/19/19 15:15
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:53 Nancy Saunders
Supervisor approved: 03/20/19 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27744.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 3:47:02 PM
Sample Name : CC442-1.0
Vial : Vial 3
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74164,S2Q443,250,,,1.0,1,water

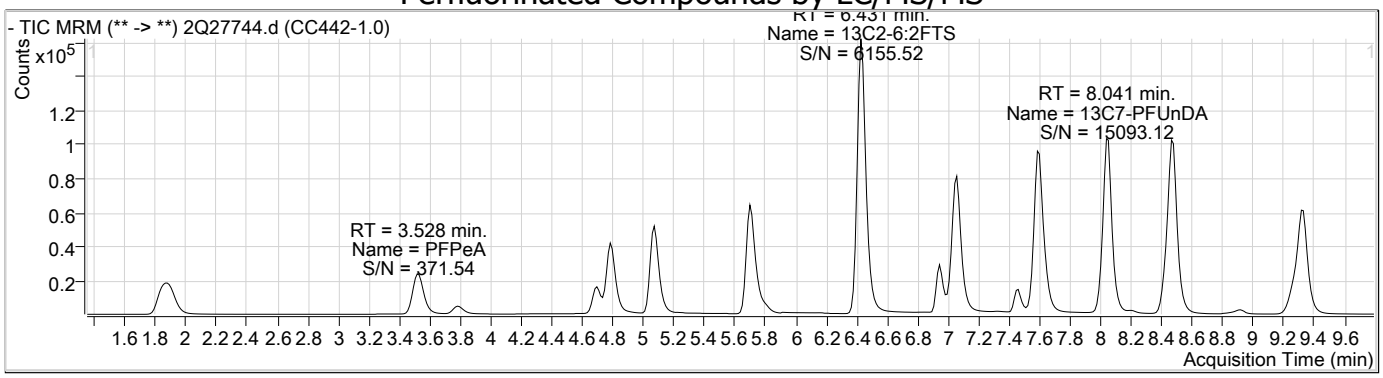
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	333126	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	50766	20.00	µg/L	0.013
M4-PFBA	1.877	217.0 -> 172.0	135594	20.00	µg/L	0.013
M5-PFPeA	3.524	268.0 -> 223.0	116997	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	167153	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	244655	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	250799	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	261152	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	347351	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	431578	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	475896	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	331850	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	97059	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	20373	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	22490	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	29492	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	63429	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	72261	20.00	µg/L	0.015
M2-8:2FTS	7.630	529.0 -> 509.0	51599	20.00	µg/L	0.000
M3-MeFOSAA	7.459	573.0 -> 419.0	45534	20.00	µg/L	0.013
M3-HFPO-DA	5.081	287.0 -> 169.0	199286	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	63233	21.27	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.3%		
13C2-6:2FTS	6.431	429.0 -> 409.0	72266	22.52	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.6%		
13C2-8:2FTS	7.630	529.0 -> 509.0	51526	23.24	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.2%		
13C2-PFDoDA	8.466	615.0 -> 570.0	475665	25.29	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 126.4%		
13C2-PFTeDA	9.315	715.0 -> 670.0	332078	25.87	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 129.3%		
13C3-PFBS	3.780	302.0 -> 99.0	20337	22.30	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.5%		
13C3-PFHxS	5.748	402.0 -> 99.0	22497	22.07	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 110.3%		
13C4-PFBA	1.877	217.0 -> 172.0	134959	22.51	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 112.5%		
13C4-PFHpA	5.705	367.0 -> 322.0	244380	23.63	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.1%		
13C5-PFHxA	4.789	318.0 -> 273.0	166910	22.97	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 114.9%		
13C5-PFPeA	3.524	268.0 -> 223.0	116992	23.01	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.1%		
13C6-PFDA	7.594	519.0 -> 474.0	347099	25.44	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

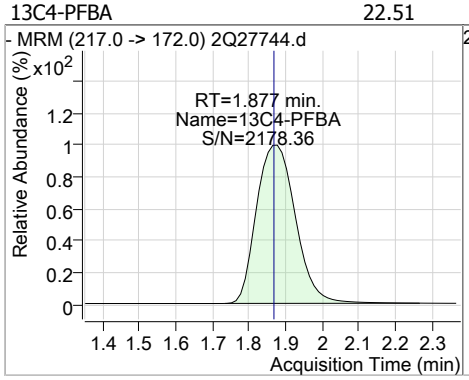
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 127.2%		
13C7-PFUnDA	8.041	570.0 -> 525.0	431189	25.48 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 127.4%		
13C8-FOSA	6.944	506.0 -> 78.0	97025	23.93 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 119.6%		
13C8-PFOA	6.434	421.0 -> 376.0	250761	24.04 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.2%		
13C8-PFOS	7.045	507.0 -> 99.0	29504	22.63 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.2%		
13C9-PFNA	7.065	472.0 -> 427.0	261059	24.66 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 123.3%		
d3-MeFOSAA	7.459	573.0 -> 419.0	45495	23.73 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 118.7%		
M2-PFOA	6.435	415.0 -> 370.0	333473	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.048	503.0 -> 80.0	50847	20.02 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C3-HFPO-DA	5.081	287.0 -> 169.0	199286	124.63 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 124.6%		
Target Compounds						**QValue**
4:2FTS	4.699	327.0 -> 307.0	1807	1.03 µg/L		94
6:2FTS	6.432	427.0 -> 407.0	1966	1.11 µg/L		98
8:2FTS	7.631	527.0 -> 507.0	1375	1.07 µg/L		96
EtFOSAA	7.598	584.0 -> 419.0	1044	1.07 µg/L		92
FOSA	6.947	498.0 -> 78.0	2098	0.94 µg/L		97
MeFOSAA	7.460	570.0 -> 419.0	1114	0.96 µg/L		96
PFBA	1.873	213.0 -> 169.0	1295	0.97 µg/L		100
PFBS	3.783	299.0 -> 80.0	1561	0.96 µg/L		100
PFDA	7.595	513.0 -> 469.0	7328	0.97 µg/L		100
PFDoDA	8.468	613.0 -> 569.0	10239	0.97 µg/L		100
PFDS	8.001	599.0 -> 80.0	562	1.04 µg/L		95
PFHpA	5.708	363.0 -> 319.0	9824	0.93 µg/L		99
PFHpS	6.442	449.0 -> 80.0	1068	0.98 µg/L		97
PFHxA	4.791	313.0 -> 269.0	2893	1.00 µg/L		99
PFHxS	5.751	399.0 -> 80.0	1214	0.98 µg/L	m	99
PFNA	7.066	463.0 -> 419.0	7805	0.90 µg/L		94
PFNS	7.565	549.0 -> 80.0	1036	1.02 µg/L		93
PFOA	6.437	413.0 -> 369.0	6619	0.98 µg/L		98
PFOS	7.037	499.0 -> 80.0	1425	0.99 µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	4951	0.98 µg/L		100
PFPeS	4.908	349.0 -> 80.0	1016	0.98 µg/L		95
PFTeDA	9.319	713.0 -> 669.0	11093	0.96 µg/L		99
PFTrDA	8.919	663.0 -> 619.0	11319	0.94 µg/L		99
PFUnDA	8.043	563.0 -> 519.0	8382	0.94 µg/L		99
11Cl-PF3OUdS	8.200	631.0 -> 451.0	5733	0.88 µg/L		100
9Cl-PF3ONS	7.323	531.0 -> 351.0	1351	1.05 µg/L		100
ADONA	5.804	377.0 -> 251.0	11332	0.93 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	11348	4.79 µg/L		99

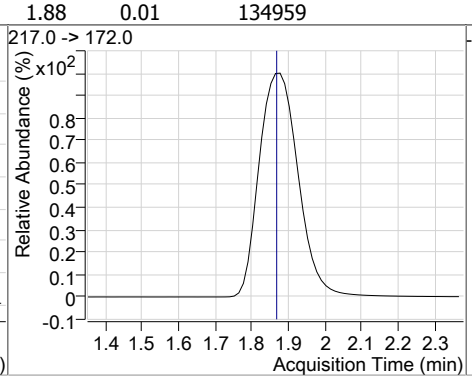
 # = Qualifier out of range, m = manually integrated, + = Area summed

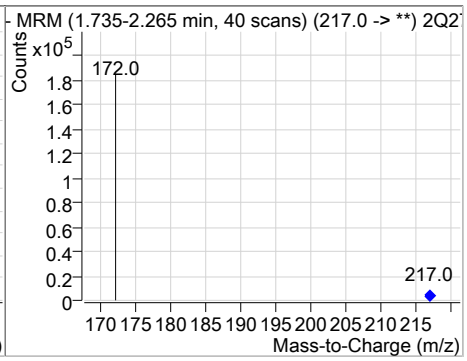
Perfluorinated Compounds by LC/MS/MS



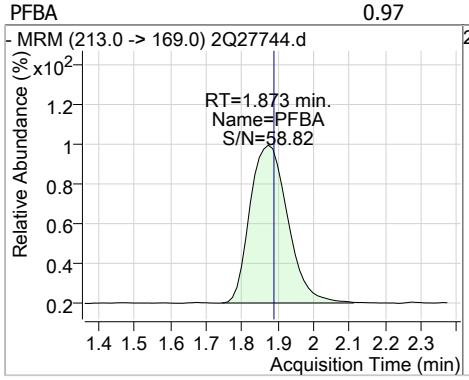
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	22.51	1.88	0.01	134959				

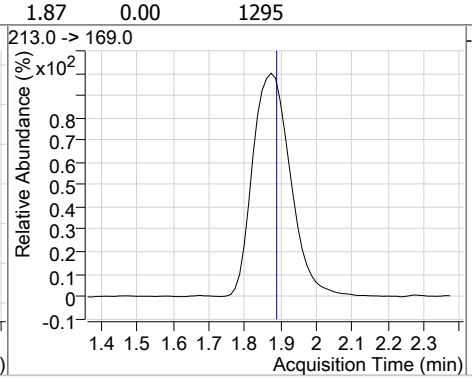


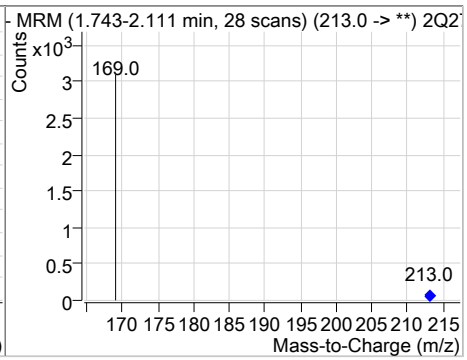




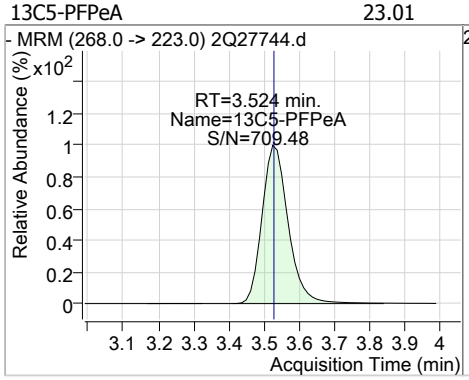
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.97	1.87	0.00	1295				

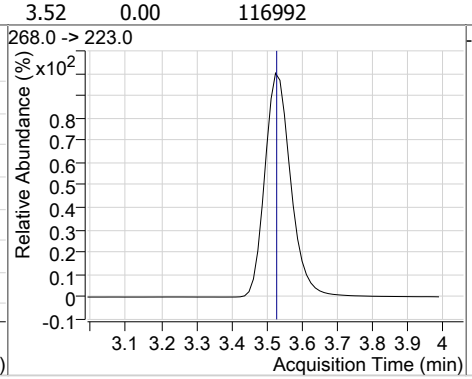


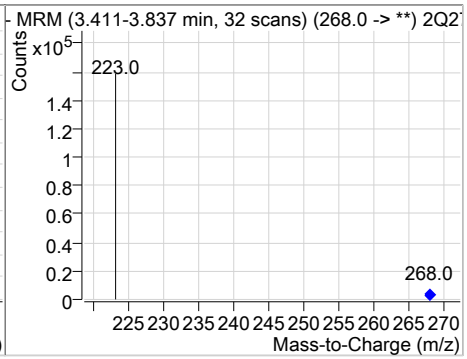




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	23.01	3.52	0.00	116992				

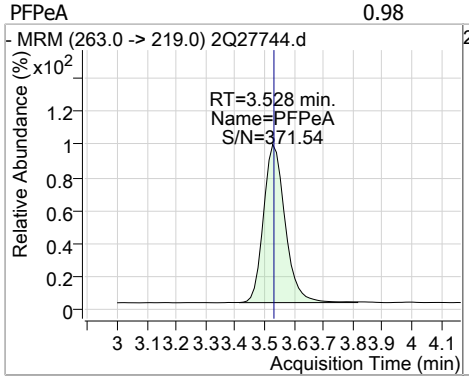


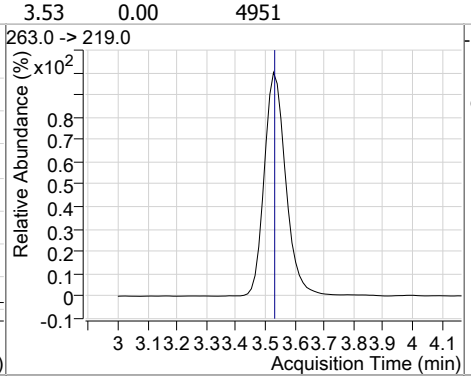


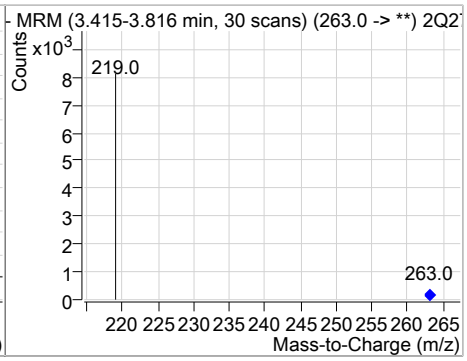


Perfluorinated Compounds by LC/MS/MS

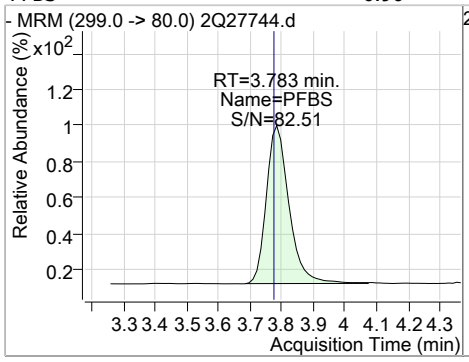
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.98	3.53	0.00	4951				

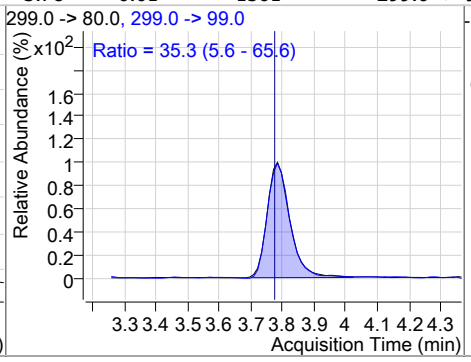


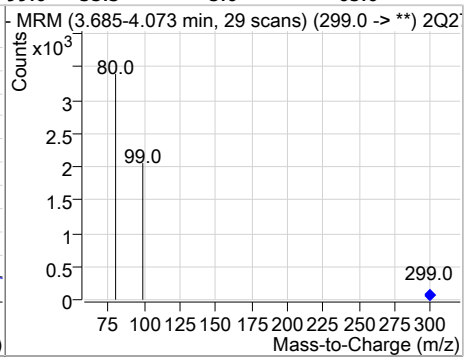




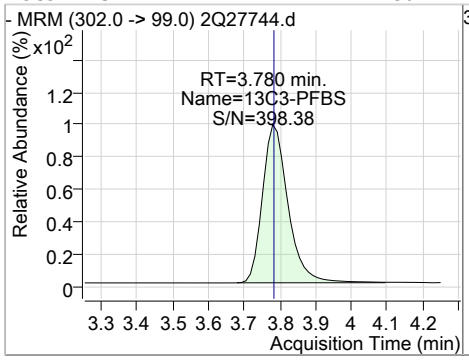
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.96	3.78	0.01	1561	299.0 -> 99.0	35.3	5.6	65.6

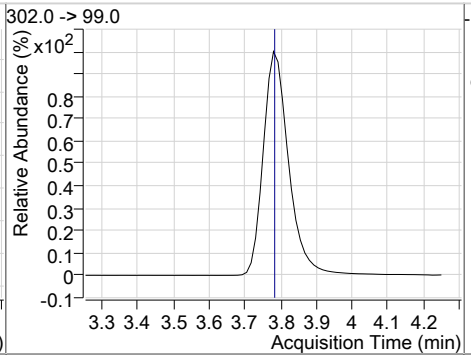


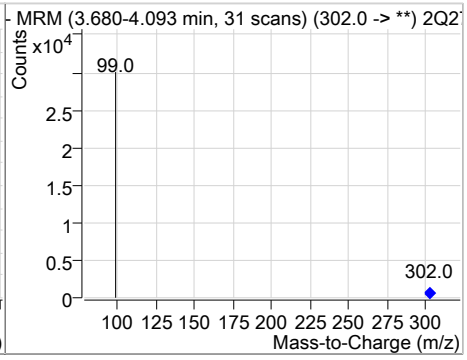




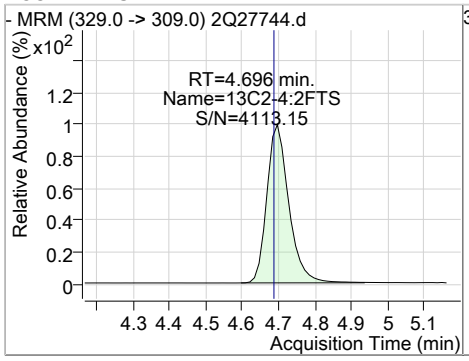
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	22.30	3.78	0.00	20337				

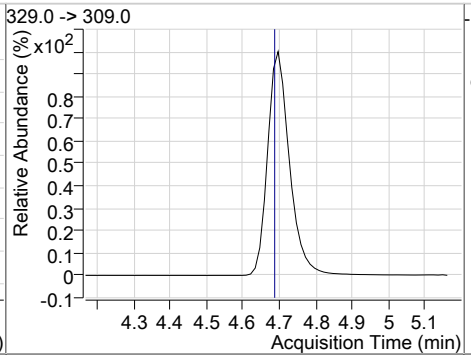


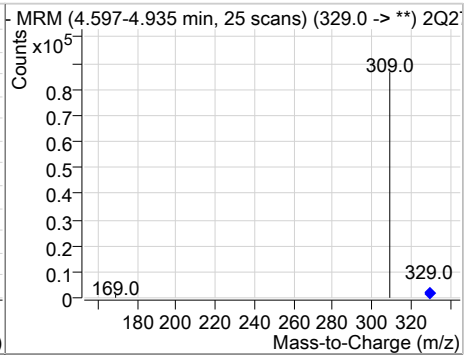




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	21.27	4.70	0.01	63233				

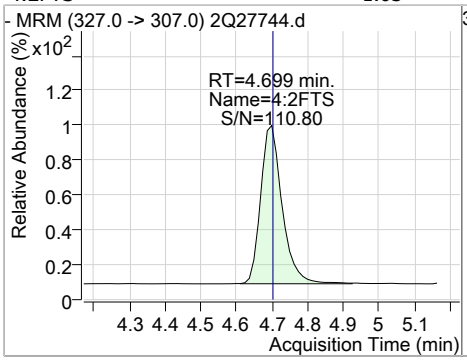


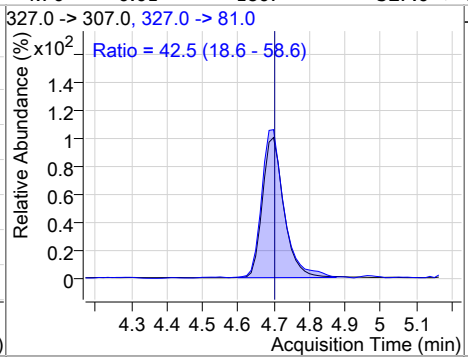


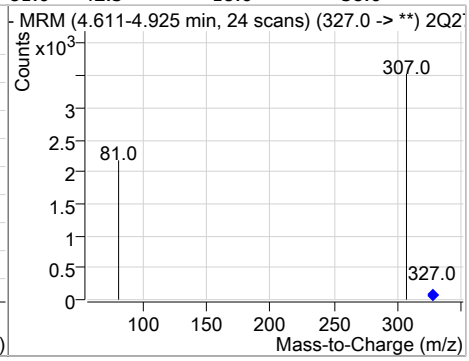


Perfluorinated Compounds by LC/MS/MS

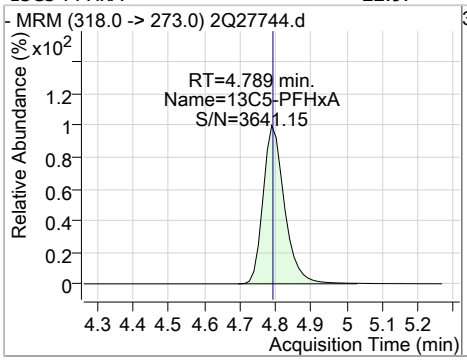
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.03	4.70	0.01	1807	327.0 -> 81.0	42.5	18.6	58.6

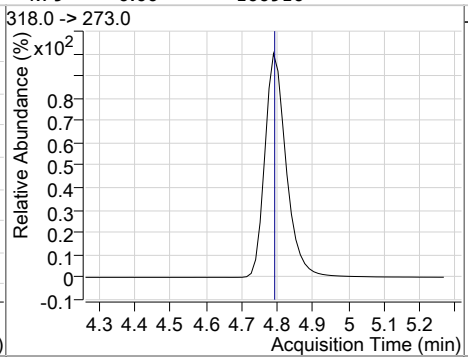


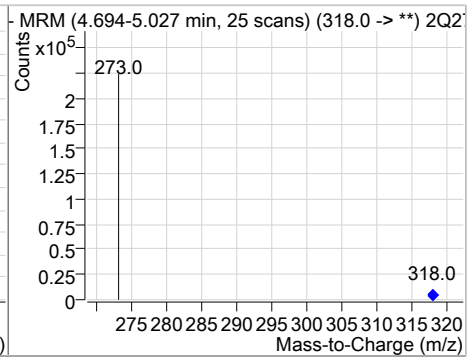




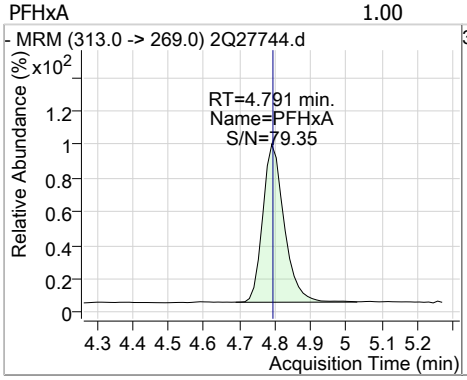
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	22.97	4.79	0.00	166910				

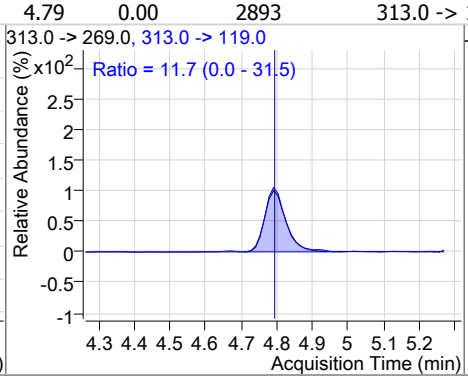


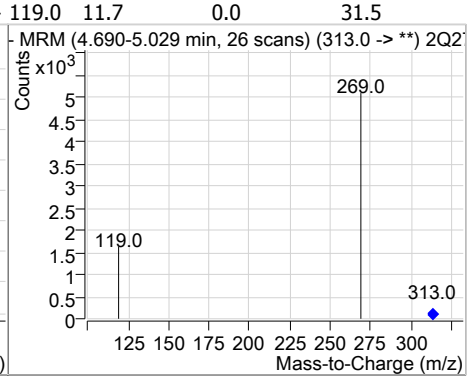




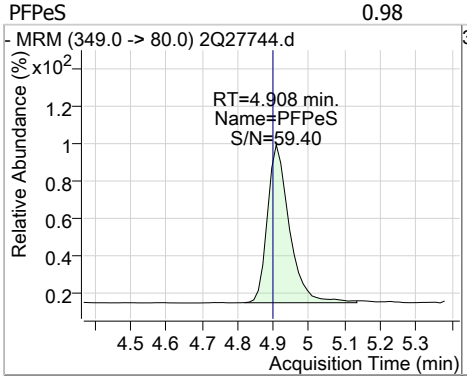
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.00	4.79	0.00	2893	313.0 -> 119.0	11.7	0.0	31.5

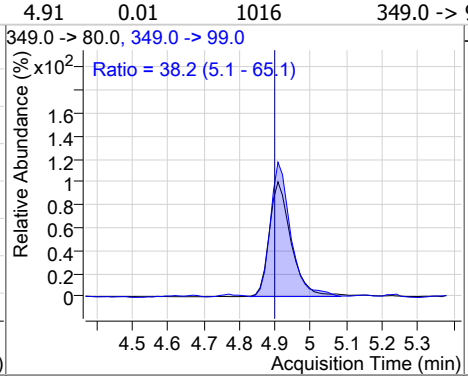


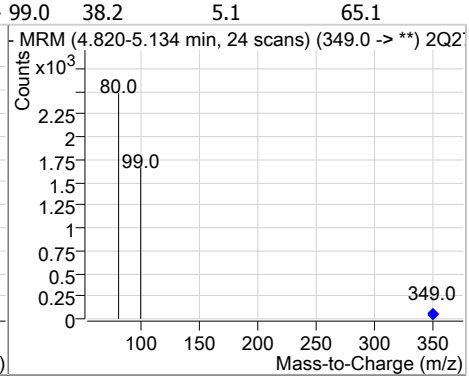




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.98	4.91	0.01	1016	349.0 -> 99.0	38.2	5.1	65.1

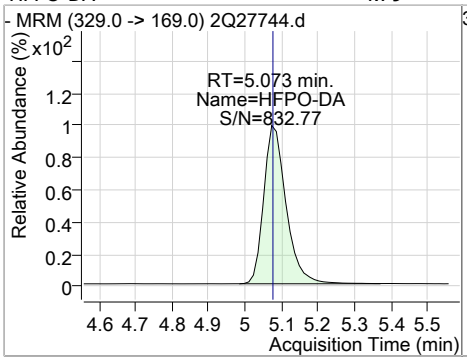


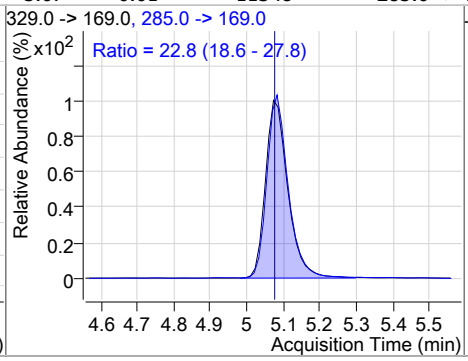


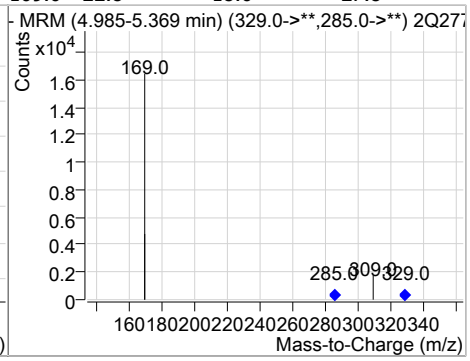


Perfluorinated Compounds by LC/MS/MS

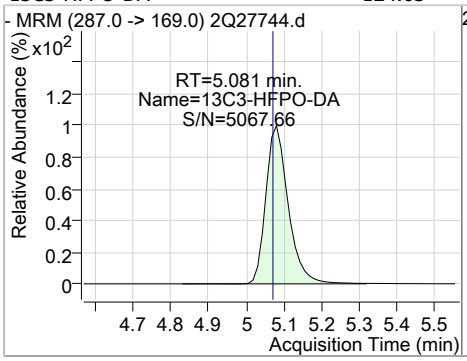
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.79	5.07	0.01	11348	285.0 -> 169.0	22.8	18.6	27.8

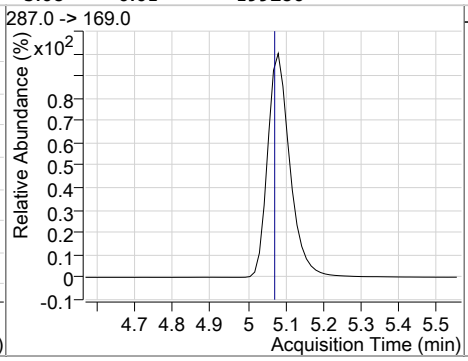


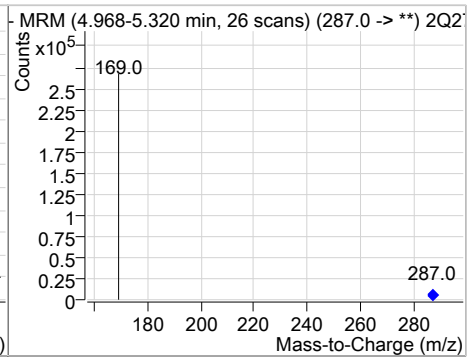




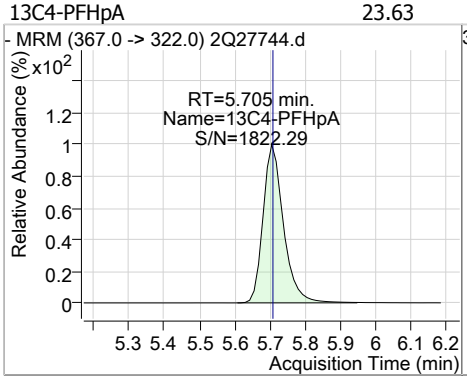
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	124.63	5.08	0.01	199286				

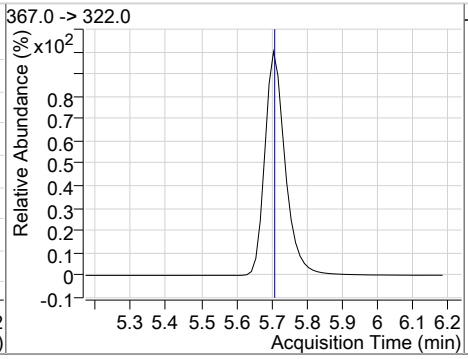


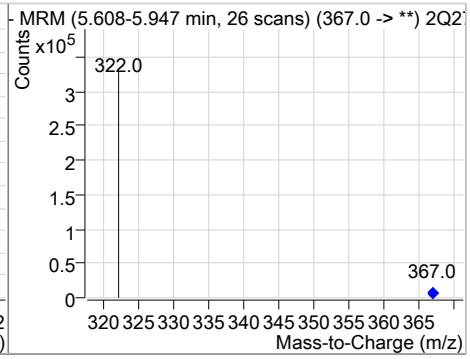




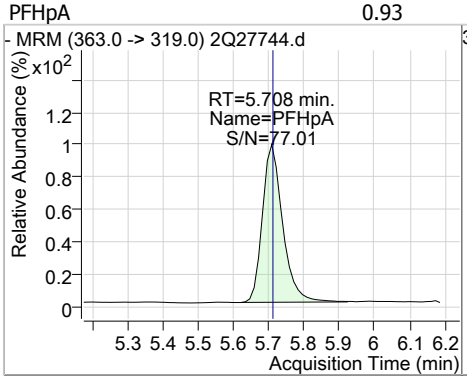
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	23.63	5.71	0.00	244380				

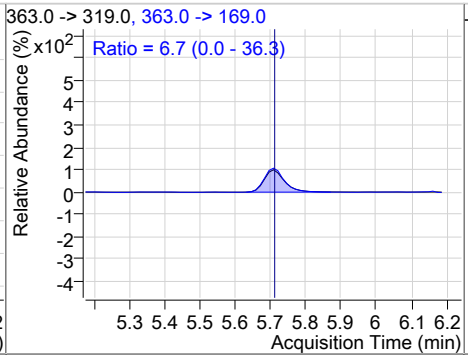


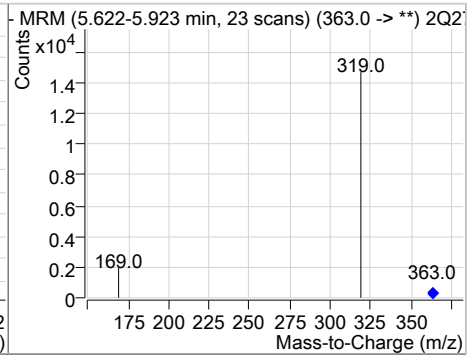




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.93	5.71	0.00	9824	363.0 -> 169.0	6.7	0.0	36.3

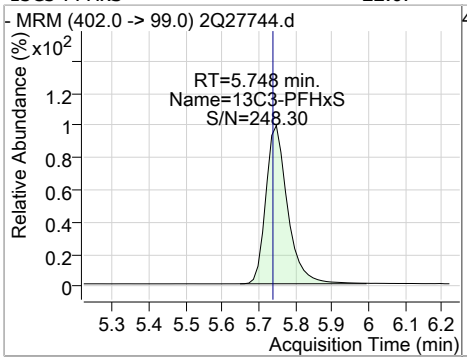


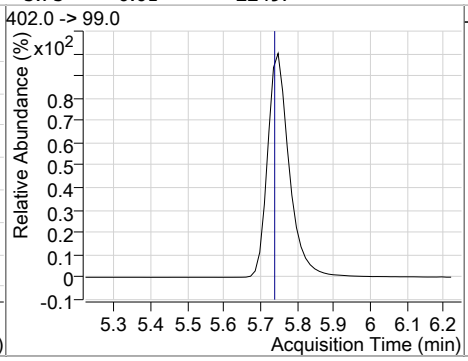


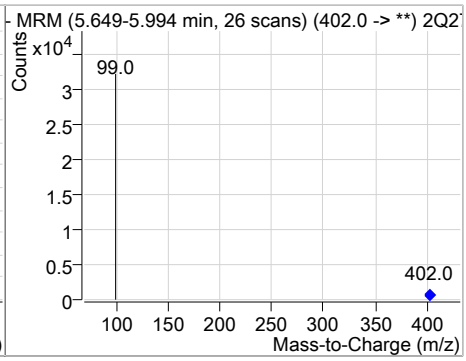


Perfluorinated Compounds by LC/MS/MS

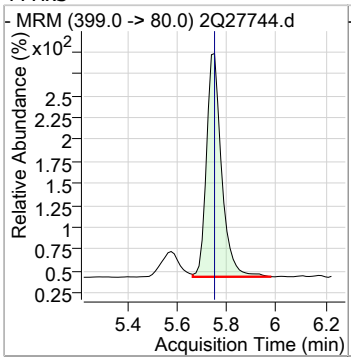
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	22.07	5.75	0.01	22497				

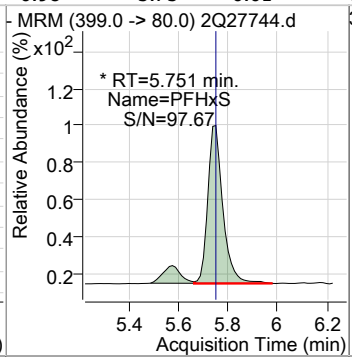


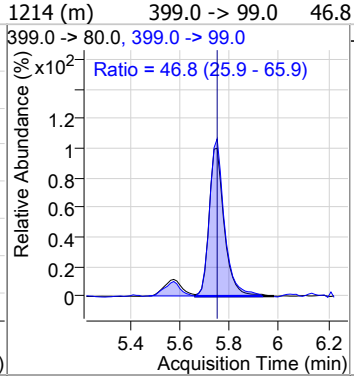


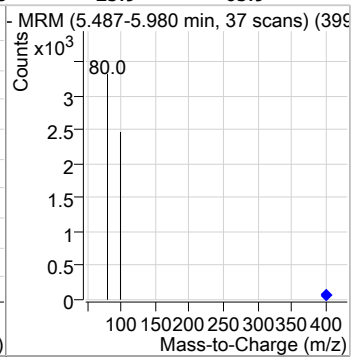


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.98	5.75	0.01	1214 (m)	399.0 -> 99.0	46.8	25.9	65.9

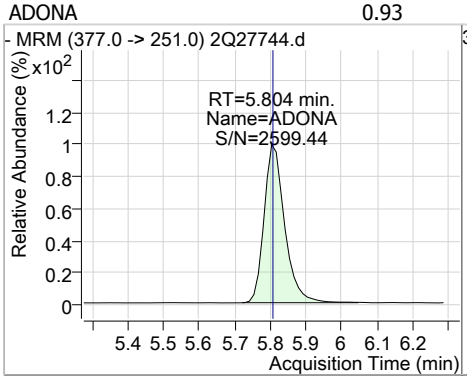


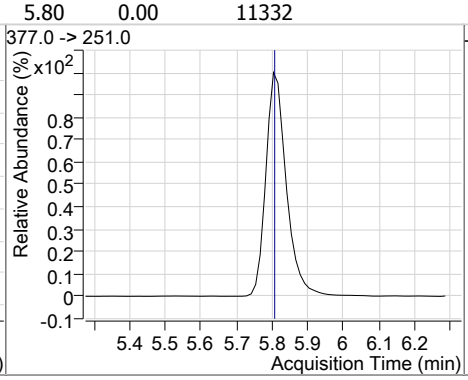


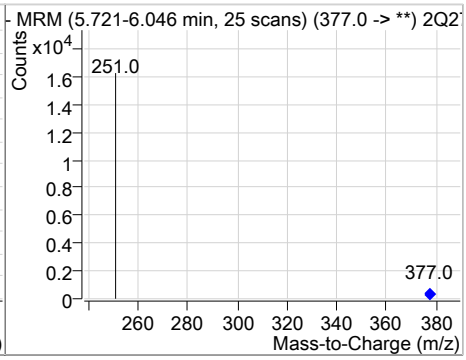




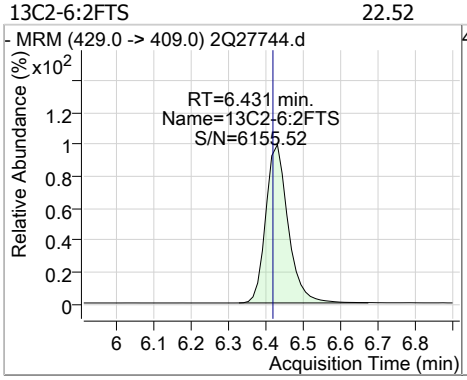
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.93	5.80	0.00	11332				

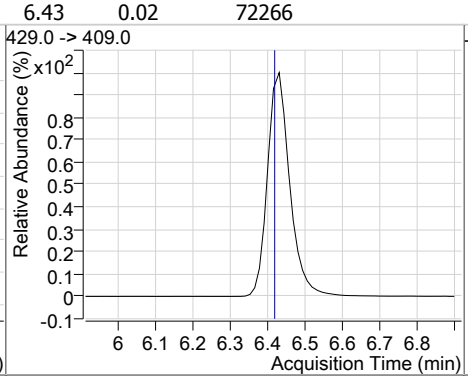


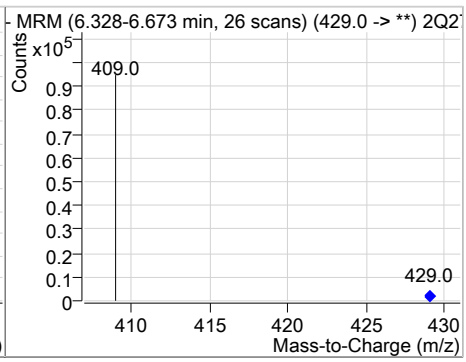




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	22.52	6.43	0.02	72266				

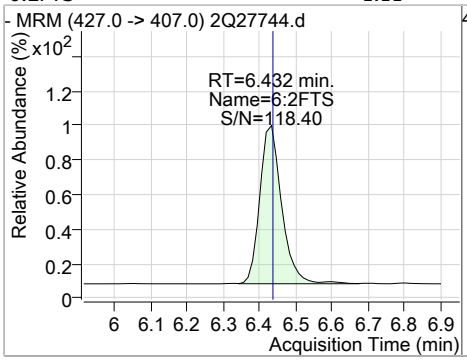


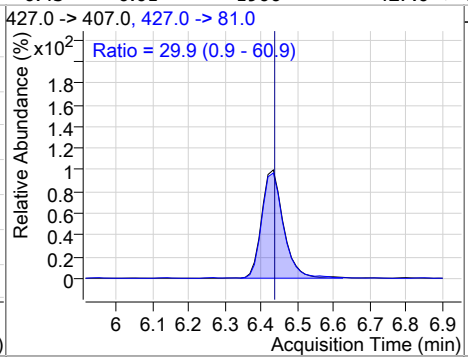


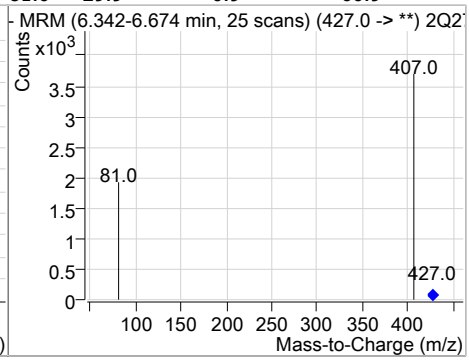


Perfluorinated Compounds by LC/MS/MS

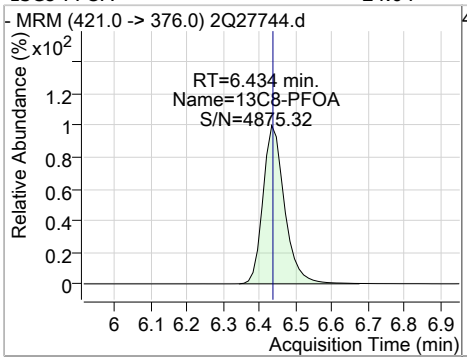
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.11	6.43	0.01	1966	427.0 -> 81.0	29.9	0.9	60.9

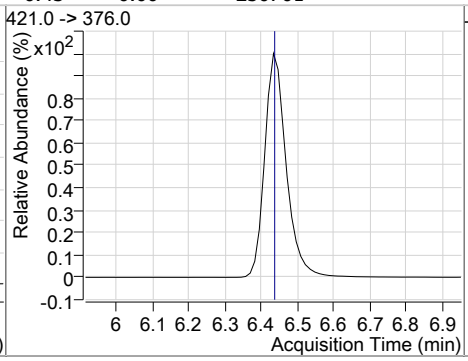


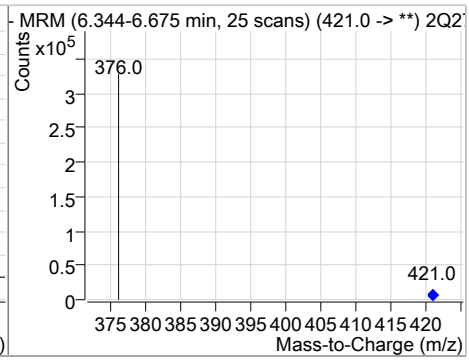




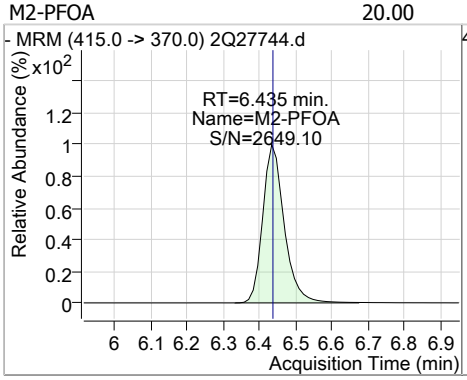
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	24.04	6.43	0.00	250761				

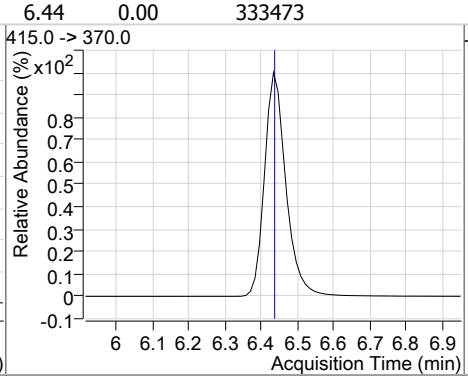


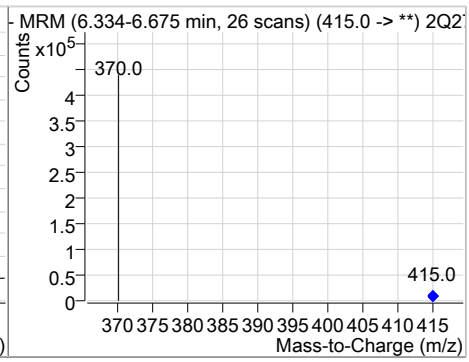




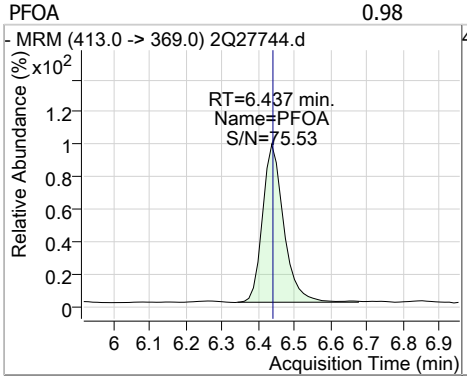
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	333473				

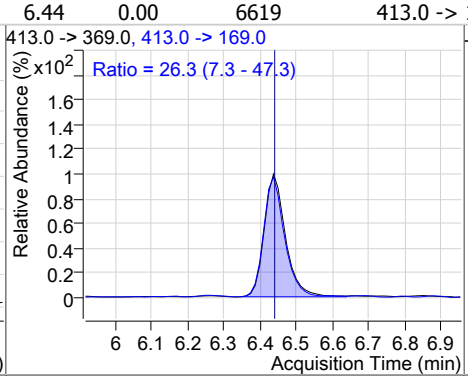


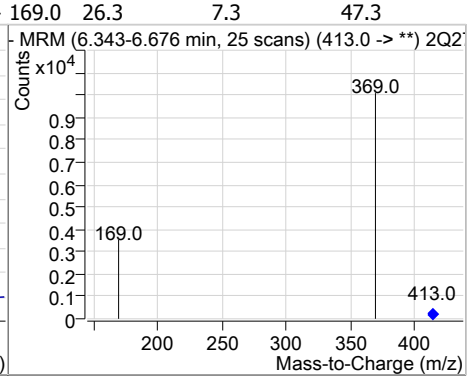




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.98	6.44	0.00	6619	413.0 -> 169.0	26.3	7.3	47.3

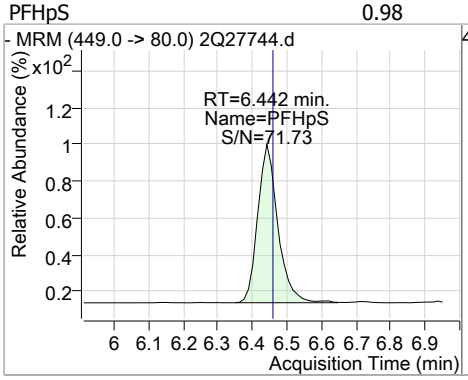


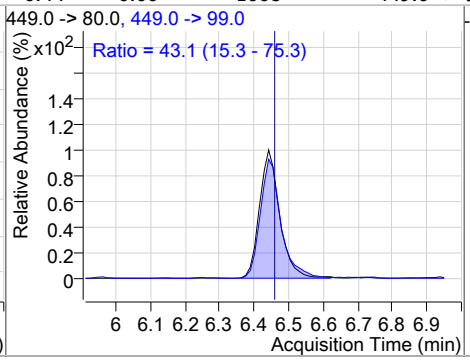


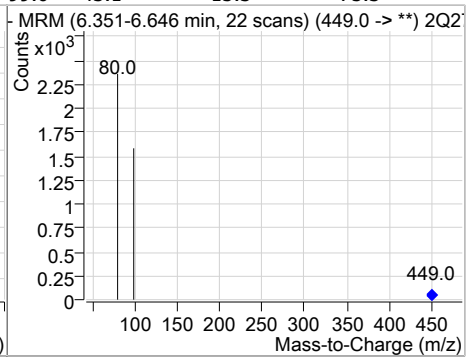


Perfluorinated Compounds by LC/MS/MS

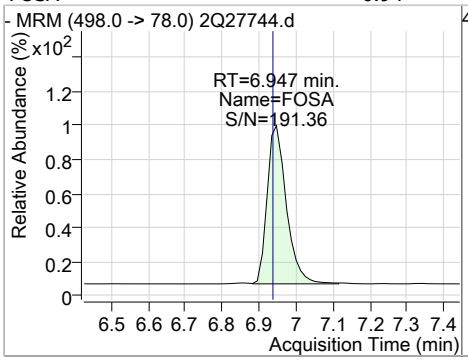
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.98	6.44	0.00	1068	449.0 -> 99.0	43.1	15.3	75.3

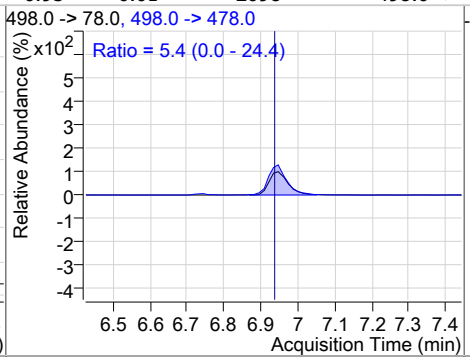


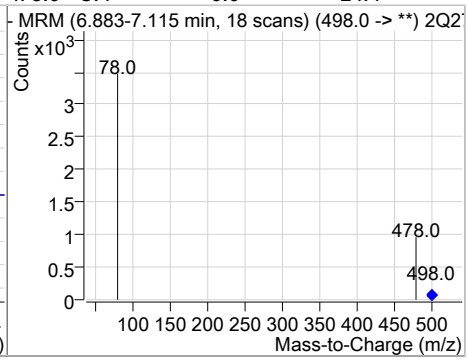




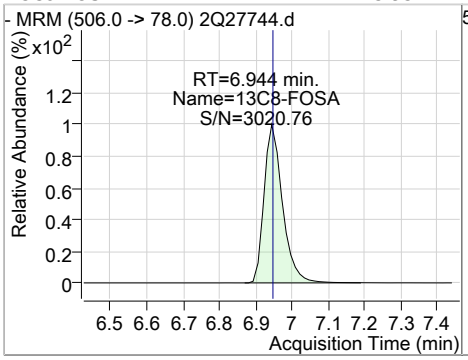
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.94	6.95	0.01	2098	498.0 -> 478.0	5.4	0.0	24.4

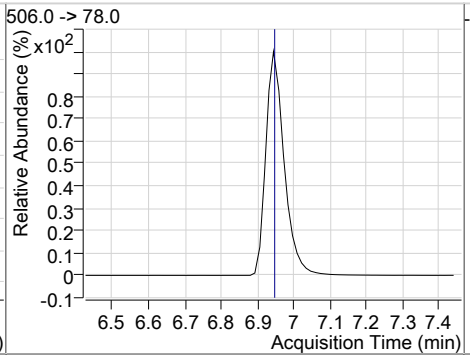


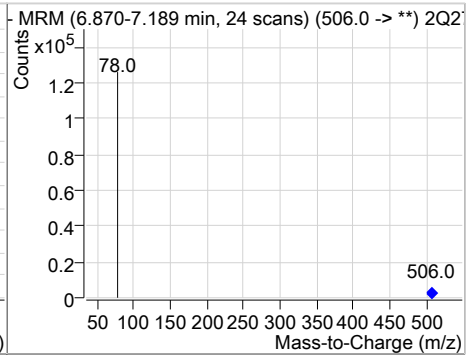




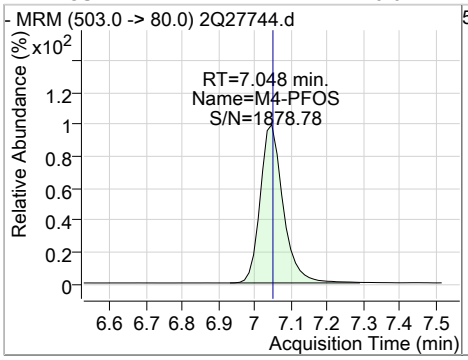
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	23.93	6.94	0.00	97025				

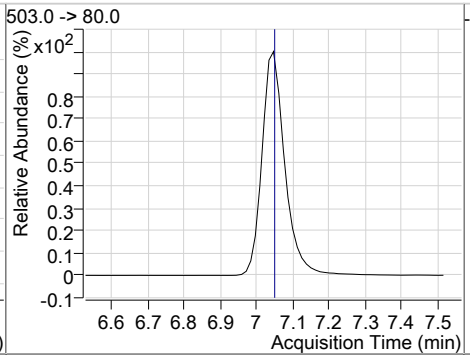


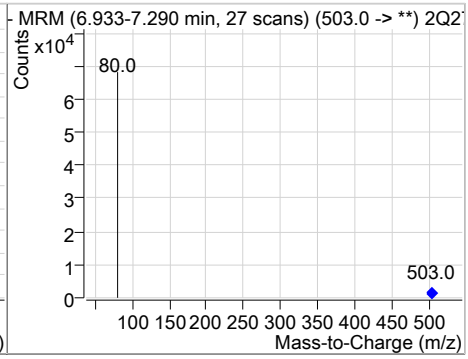




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.02	7.05	0.01	50847				

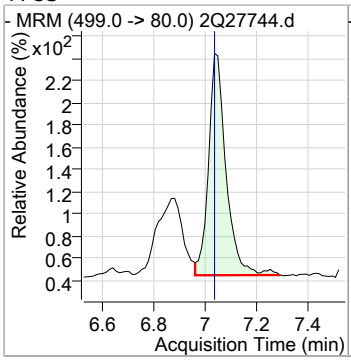


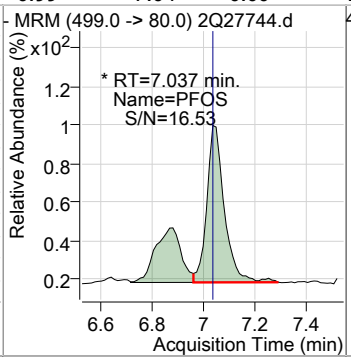


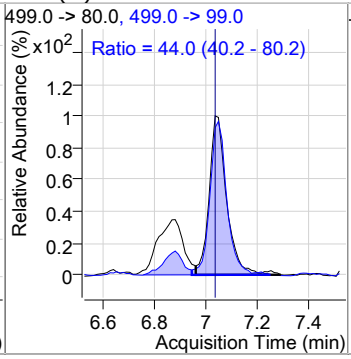


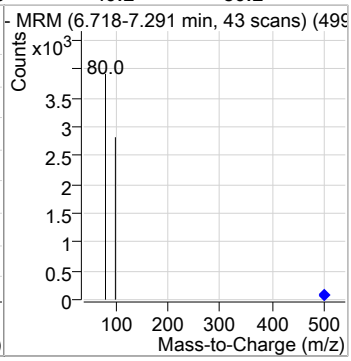
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.99	7.04	0.00	1425 (m)	499.0 -> 99.0	44.0	40.2	80.2

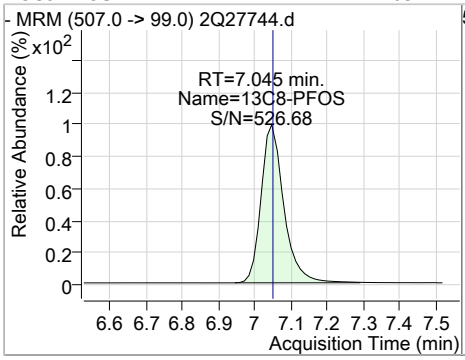


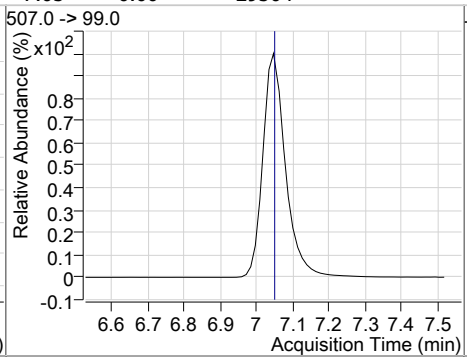


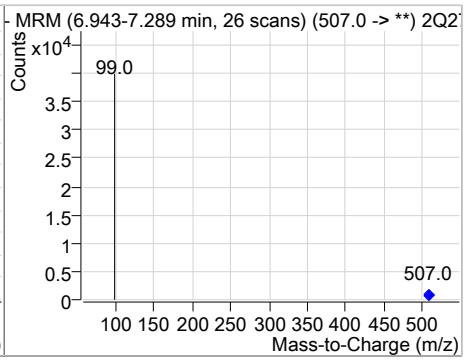




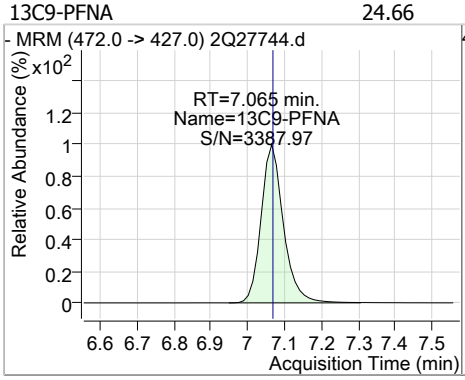
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	22.63	7.05	0.00	29504				

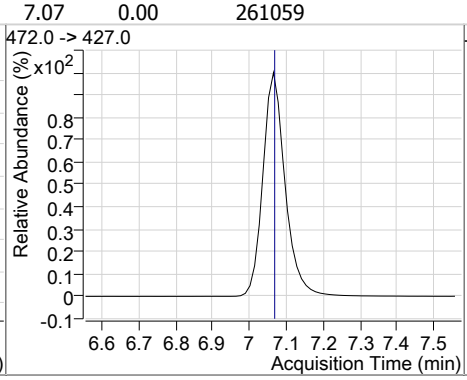


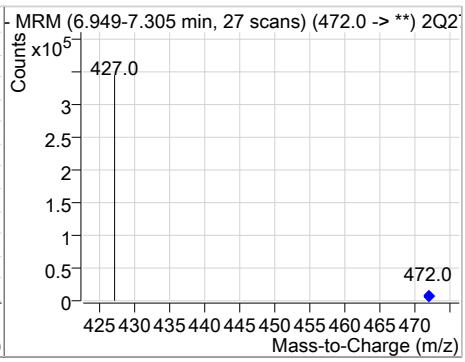




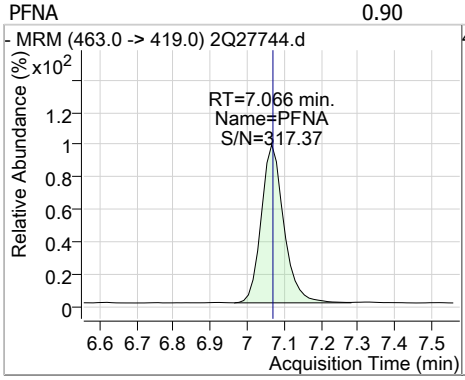
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	24.66	7.07	0.00	261059				

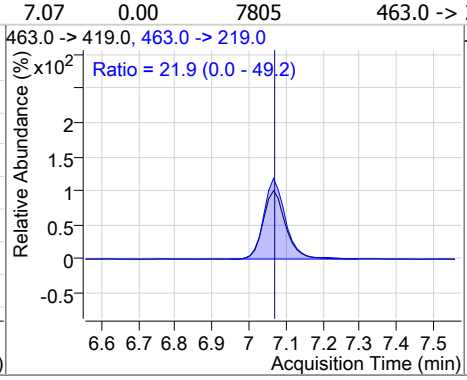


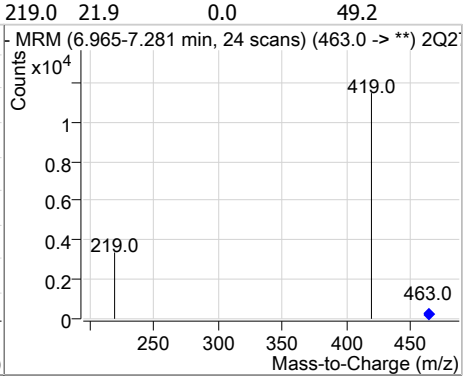




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.90	7.07	0.00	7805	463.0 -> 219.0	21.9	0.0	49.2

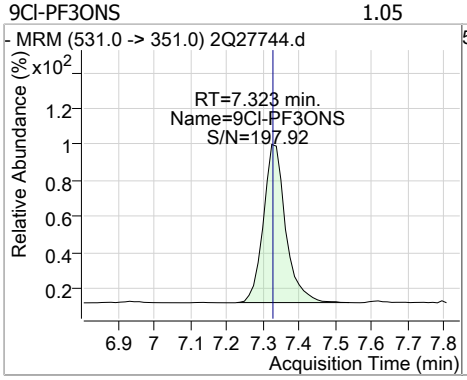


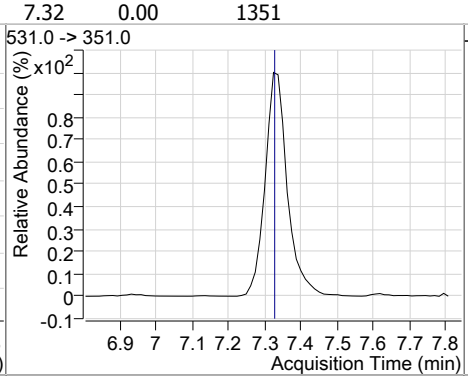


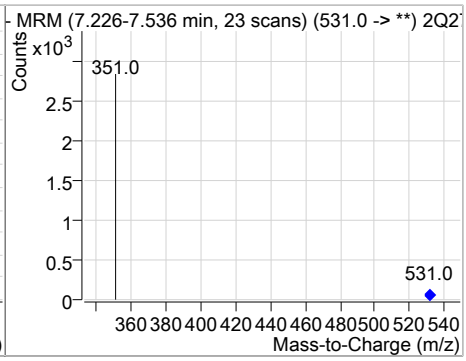


Perfluorinated Compounds by LC/MS/MS

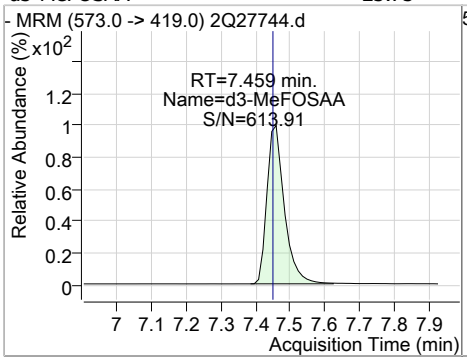
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.05	7.32	0.00	1351				

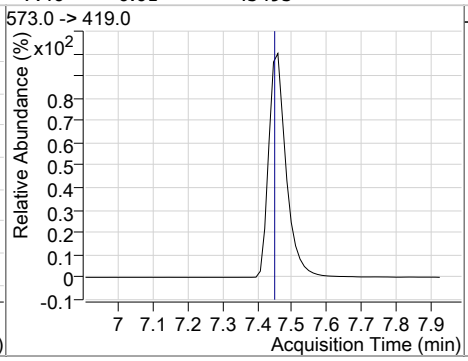


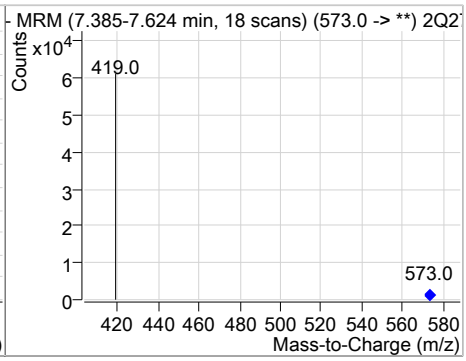




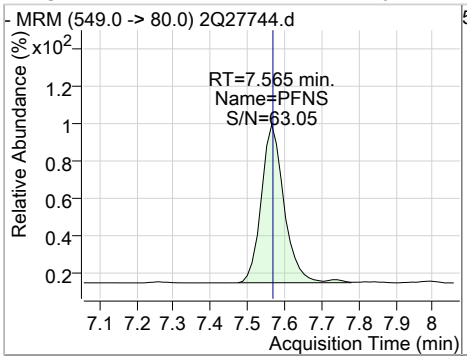
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	23.73	7.46	0.01	45495				

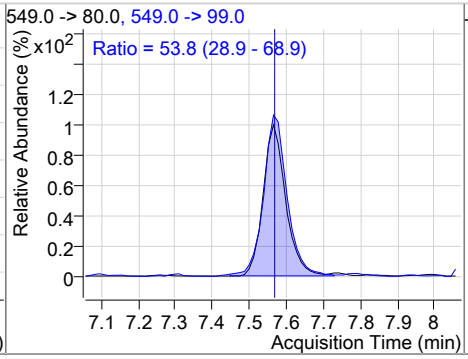


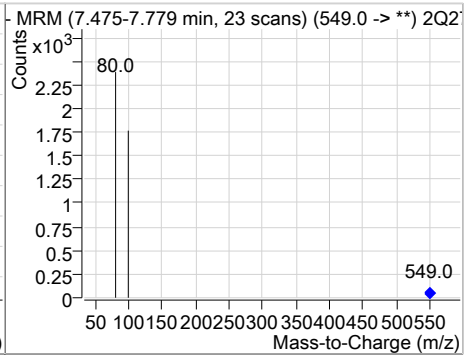




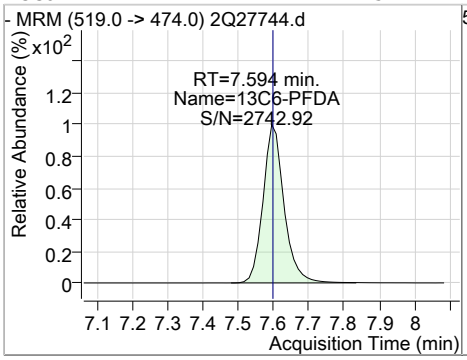
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.02	7.57	0.00	1036	549.0 -> 99.0	53.8	28.9	68.9

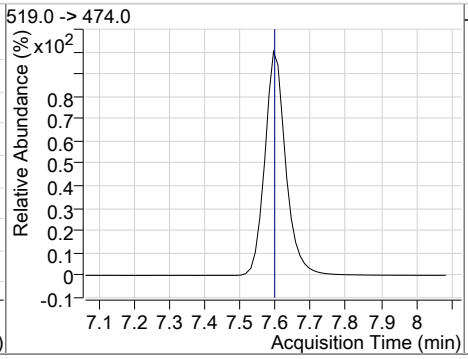


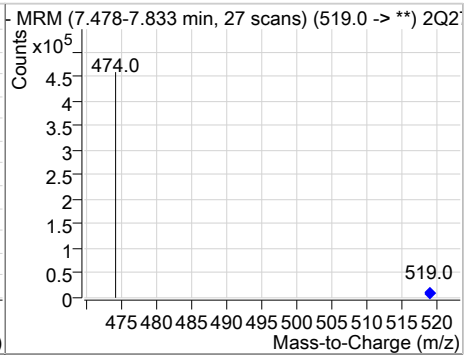




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	25.44	7.59	0.00	347099				

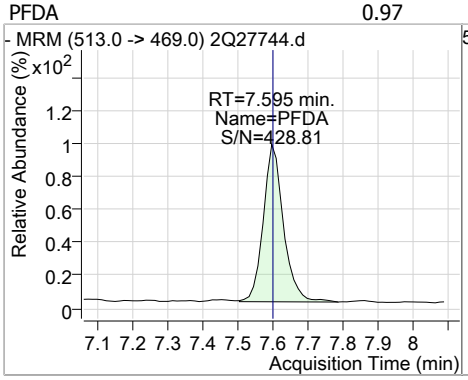


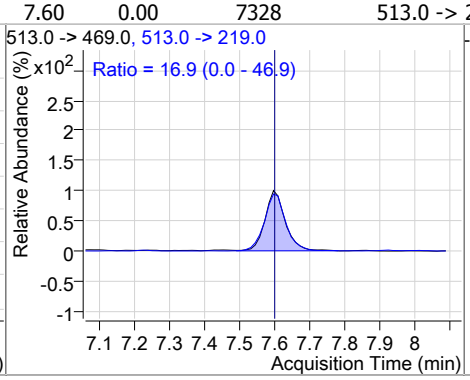


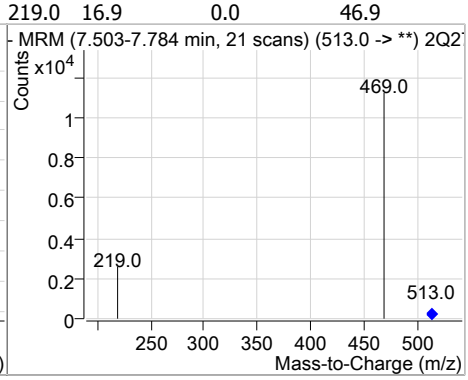


Perfluorinated Compounds by LC/MS/MS

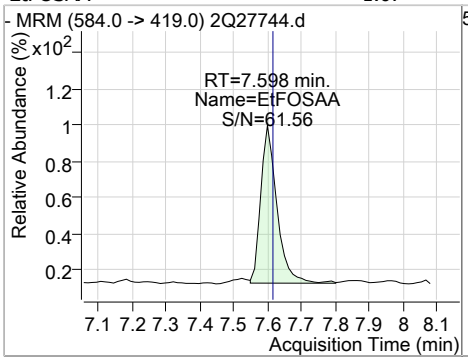
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.97	7.60	0.00	7328	513.0 -> 219.0	16.9	0.0	46.9

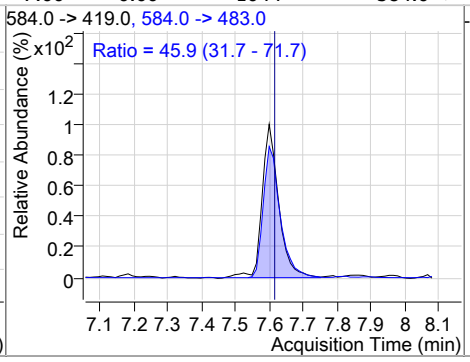


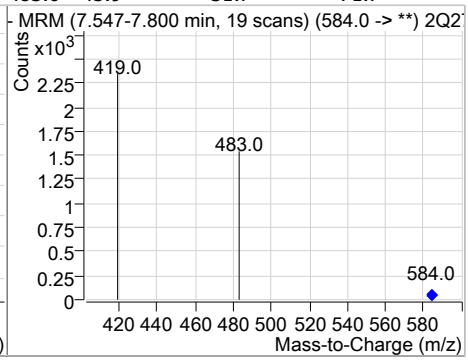




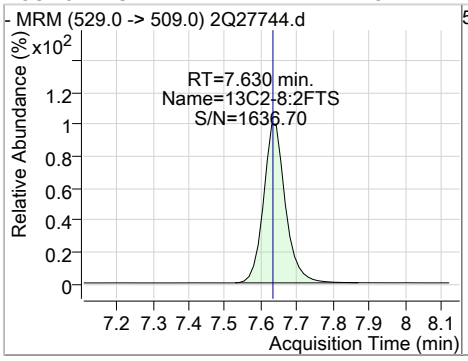
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.07	7.60	0.00	1044	584.0 -> 483.0	45.9	31.7	71.7

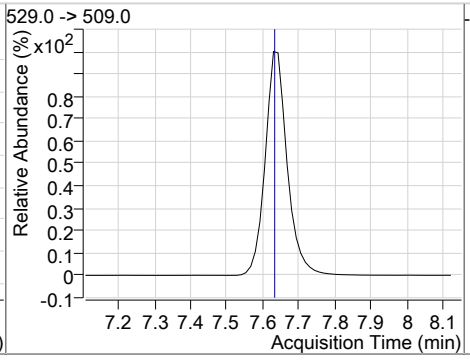


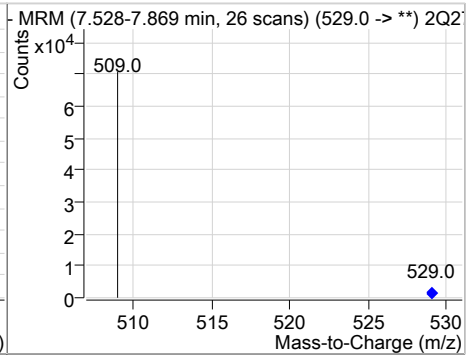




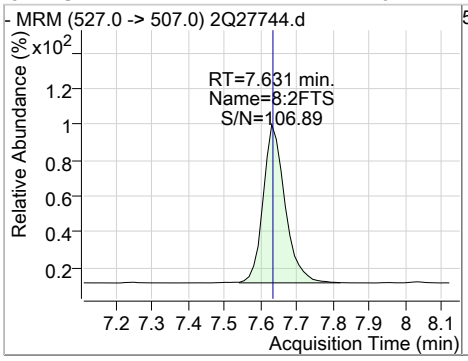
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.24	7.63	0.00	51526				

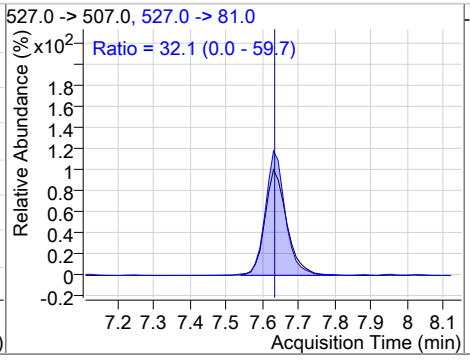


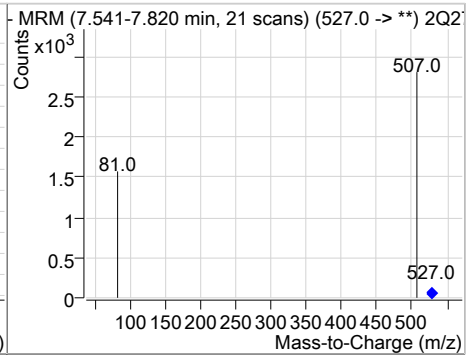




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	1.07	7.63	0.00	1375	527.0 -> 81.0	32.1	0.0	59.7

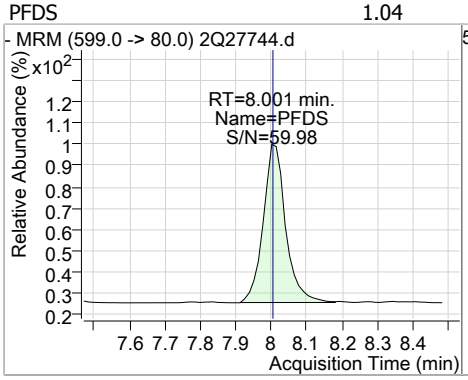


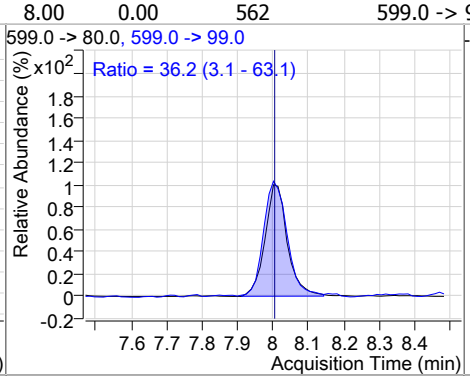


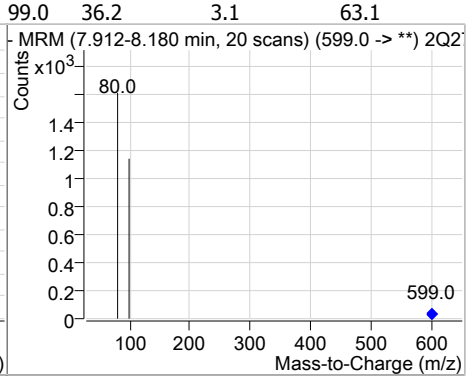


Perfluorinated Compounds by LC/MS/MS

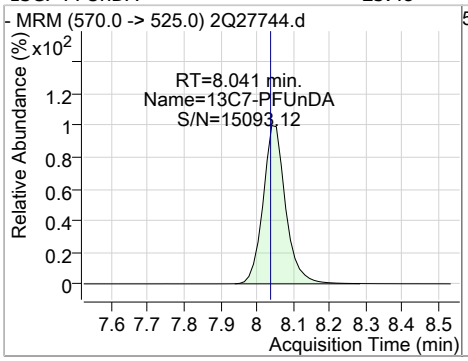
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.04	8.00	0.00	562	599.0 -> 99.0	36.2	3.1	63.1

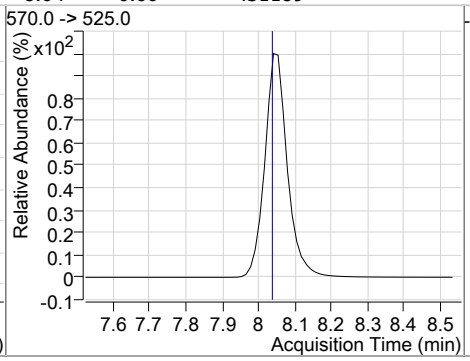


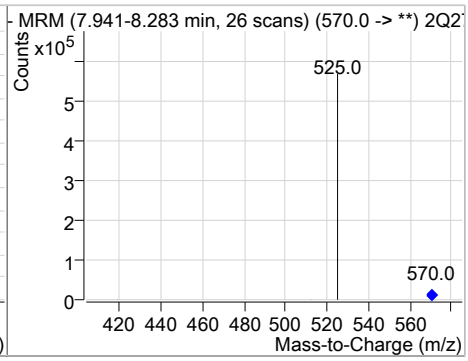




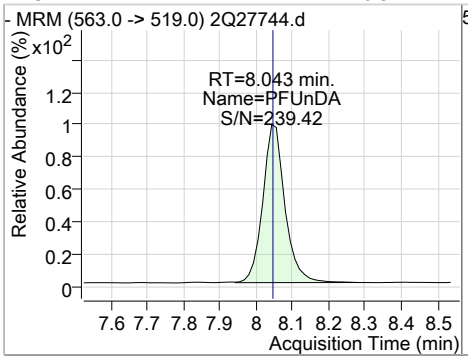
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	25.48	8.04	0.00	431189				

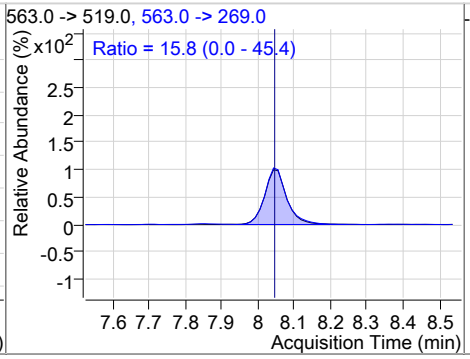


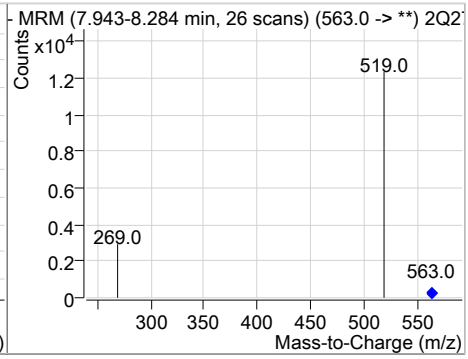




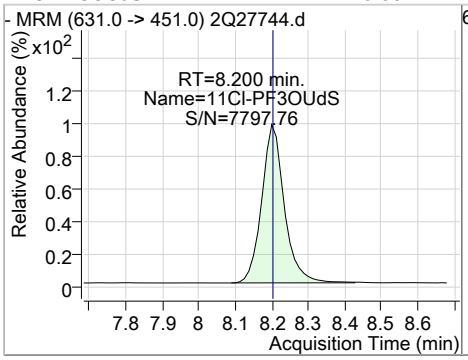
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.94	8.04	0.00	8382	563.0 -> 269.0	15.8	0.0	45.4

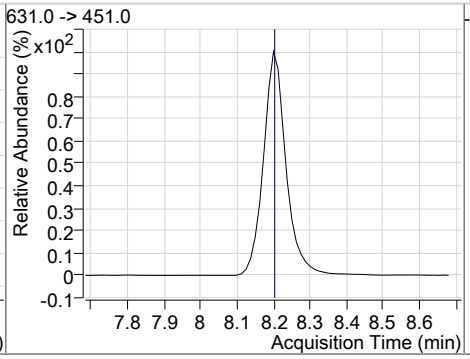


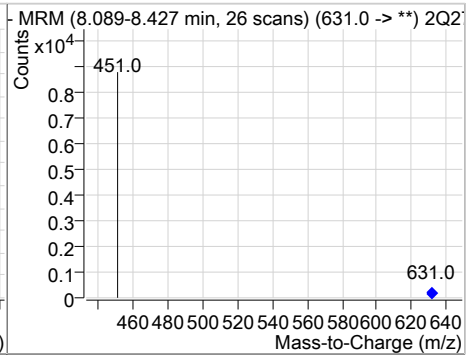




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.88	8.20	0.00	5733				

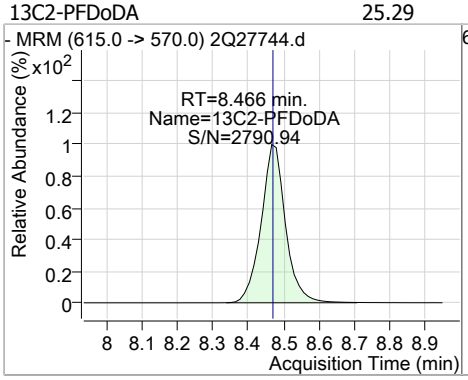


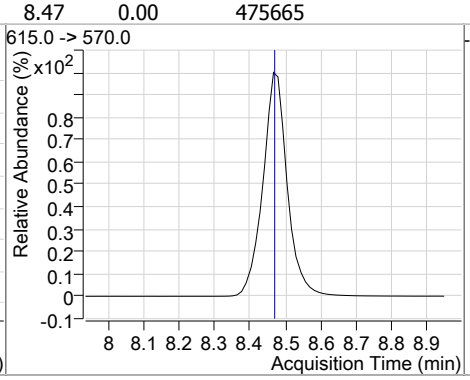


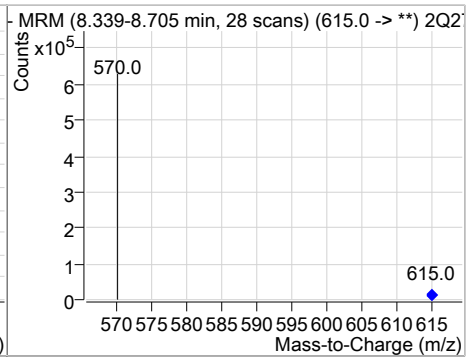


Perfluorinated Compounds by LC/MS/MS

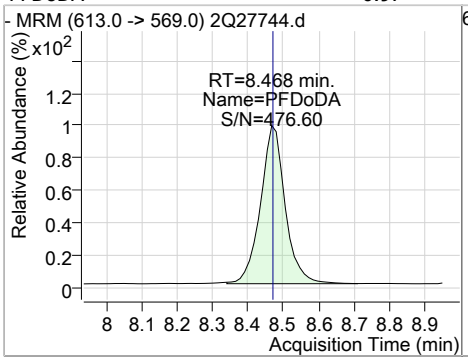
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	25.29	8.47	0.00	475665				

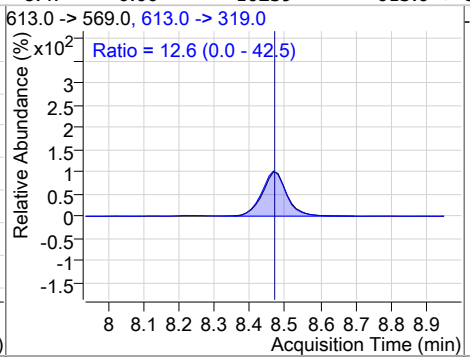


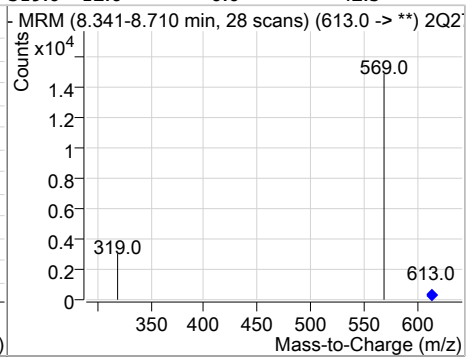




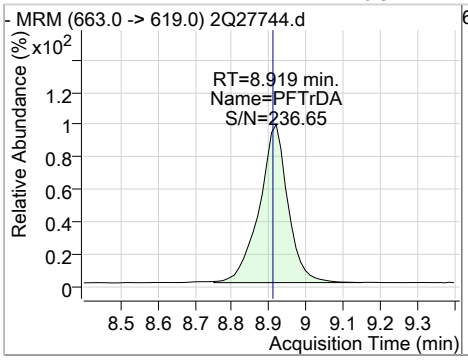
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.97	8.47	0.00	10239	613.0 -> 319.0	12.6	0.0	42.5

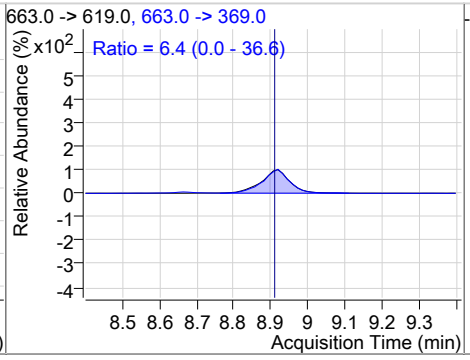


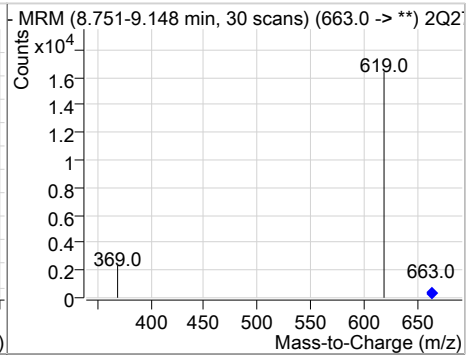




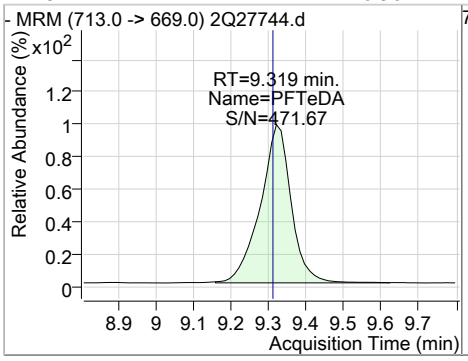
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.94	8.92	0.00	11319	663.0 -> 369.0	6.4	0.0	36.6

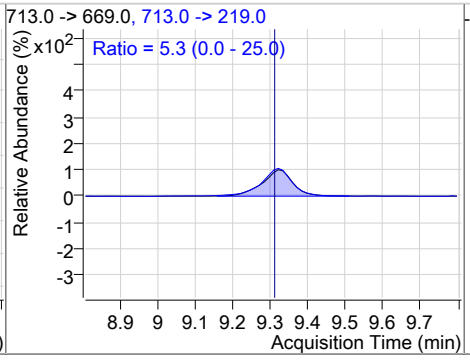


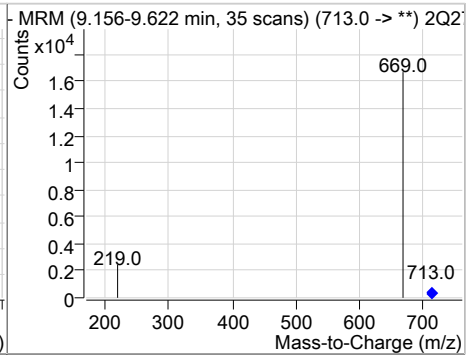




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.96	9.32	0.00	11093	713.0 -> 219.0	5.3	0.0	25.0

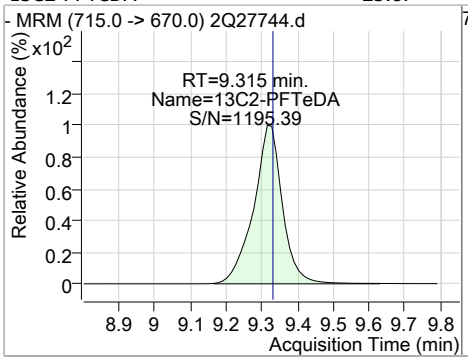


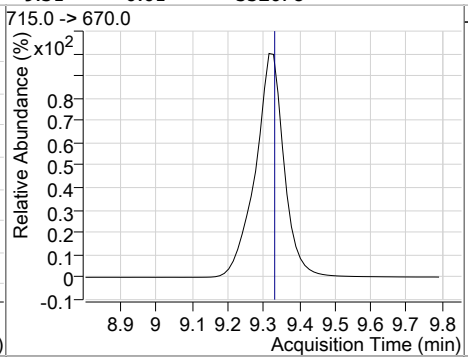


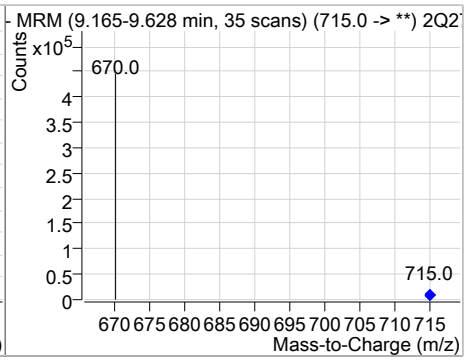


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	25.87	9.31	-0.01	332078				







Manual Integration Approval Summary

Sample Number: S2Q443-CC442
Lab FileID: 2Q27744.D
Injection Time: 03/19/19 15:47
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:53 Nancy Saunders
Supervisor approved: 03/20/19 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.04	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Norman Farmer 03/20/19 09:31

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27753.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/19/2019 6:08:38 PM
Sample Name : ECC442-20
Vial : Vial 7
DA Method File : ID_GENX_031819_S2Q442.quantmethod.xml
Batch Name : S2Q443.batch.bin
Sample Information : op74164,S2Q443,250,,,1.0,1,water

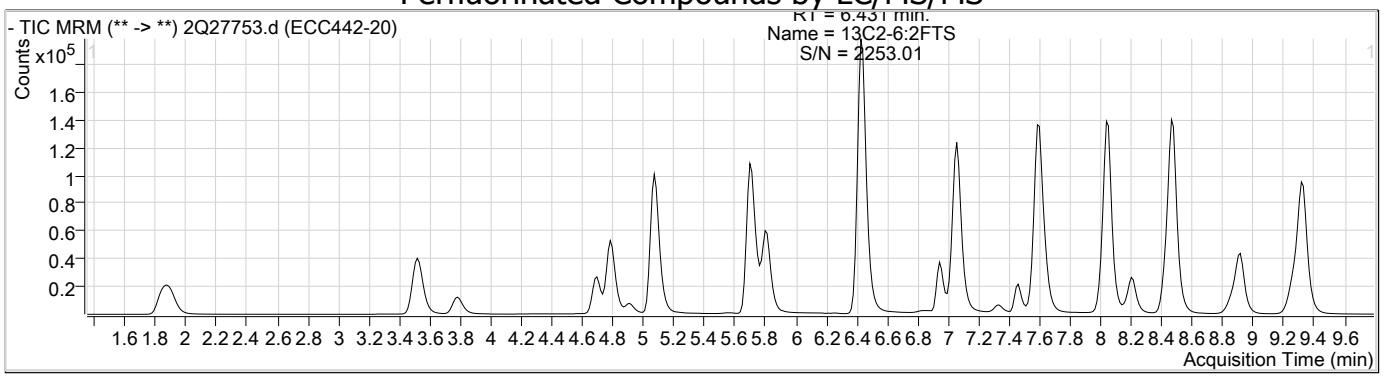
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
13C2-PFOA	6.435	415.0 -> 370.0	303791	20.00	µg/L	0.000
13C4-PFOS	7.048	503.0 -> 80.0	46509	20.00	µg/L	0.013
M4-PFBA	1.877	217.0 -> 172.0	126666	20.00	µg/L	0.013
M5-PFPeA	3.524	268.0 -> 223.0	109999	20.00	µg/L	0.000
M5-PFHxA	4.789	318.0 -> 273.0	155368	20.00	µg/L	0.000
M4-PFHpA	5.705	367.0 -> 322.0	226399	20.00	µg/L	0.000
M8-PFOA	6.434	421.0 -> 376.0	228711	20.00	µg/L	0.000
M9-PFNA	7.065	472.0 -> 427.0	236540	20.00	µg/L	0.000
M6-PFDA	7.594	519.0 -> 474.0	315256	20.00	µg/L	0.000
M7-PFUnDA	8.041	570.0 -> 525.0	395690	20.00	µg/L	0.000
M2-PFDoDA	8.466	615.0 -> 570.0	440339	20.00	µg/L	0.000
M2-PFTeDA	9.315	715.0 -> 670.0	307626	20.00	µg/L	-0.013
M8-FOSA	6.944	506.0 -> 78.0	87997	20.00	µg/L	0.000
M3-PFBS	3.780	302.0 -> 99.0	18653	20.00	µg/L	0.000
M3-PFHxS	5.748	402.0 -> 99.0	20631	20.00	µg/L	0.013
M8-PFOS	7.045	507.0 -> 99.0	27152	20.00	µg/L	0.000
M2-4:2FTS	4.696	329.0 -> 309.0	62020	20.00	µg/L	0.013
M2-6:2FTS	6.431	429.0 -> 409.0	70063	20.00	µg/L	0.015
M2-8:2FTS	7.642	529.0 -> 509.0	51458	20.00	µg/L	0.013
M3-MeFOSAA	7.459	573.0 -> 419.0	43391	20.00	µg/L	0.013
M3-HFPO-DA	5.081	287.0 -> 169.0	171054	100.00	µg/L	0.013
System Monitoring Compounds						
13C2-4:2FTS	4.696	329.0 -> 309.0	61941	20.83	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%		
13C2-6:2FTS	6.431	429.0 -> 409.0	70160	21.86	µg/L	0.015
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.3%		
13C2-8:2FTS	7.642	529.0 -> 509.0	51449	23.20	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.0%		
13C2-PFDoDA	8.466	615.0 -> 570.0	440249	23.41	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 117.0%		
13C2-PFTeDA	9.315	715.0 -> 670.0	306579	23.88	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 119.4%		
13C3-PFBS	3.780	302.0 -> 99.0	18654	20.46	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
13C3-PFHxS	5.748	402.0 -> 99.0	20714	20.32	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C4-PFBA	1.877	217.0 -> 172.0	126126	21.03	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.2%		
13C4-PFHpA	5.705	367.0 -> 322.0	226331	21.88	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.4%		
13C5-PFHxA	4.789	318.0 -> 273.0	155150	21.35	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.8%		
13C5-PFPeA	3.524	268.0 -> 223.0	109994	21.64	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.2%		
13C6-PFDA	7.594	519.0 -> 474.0	315198	23.10	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

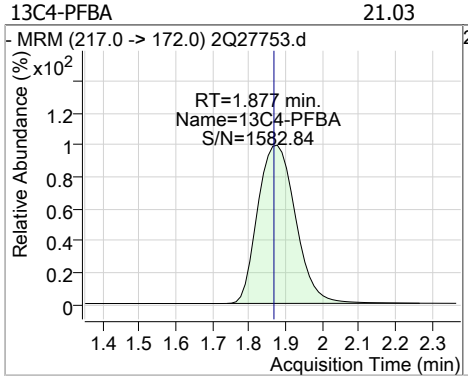
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.5%		
13C7-PFUnDA	8.041	570.0 -> 525.0	395325	23.36 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 116.8%		
13C8-FOSA	6.944	506.0 -> 78.0	87888	21.67 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 108.4%		
13C8-PFOA	6.434	421.0 -> 376.0	228643	21.92 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 109.6%		
13C8-PFOS	7.045	507.0 -> 99.0	27178	20.85 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
13C9-PFNA	7.065	472.0 -> 427.0	236515	22.34 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 111.7%		
d3-MeFOSAA	7.459	573.0 -> 419.0	43337	22.61 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 113.0%		
M2-PFOA	6.435	415.0 -> 370.0	304032	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.048	503.0 -> 80.0	46481	19.98 µg/L		0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
13C3-HFPO-DA	5.081	287.0 -> 169.0	171054	106.97 µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 107.0%		
Target Compounds						**QValue**
4:2FTS	4.699	327.0 -> 307.0	35358	20.69 µg/L		100
6:2FTS	6.432	427.0 -> 407.0	34788	20.18 µg/L		100
8:2FTS	7.631	527.0 -> 507.0	25818	20.07 µg/L		97
EtFOSAA	7.598	584.0 -> 419.0	18210	19.74 µg/L		99
FOSA	6.947	498.0 -> 78.0	39741	19.61 µg/L		100
MeFOSAA	7.460	570.0 -> 419.0	21599	19.51 µg/L		97
PFBA	1.873	213.0 -> 169.0	24593	19.66 µg/L		100
PFBS	3.783	299.0 -> 80.0	29514	19.93 µg/L		100
PFDA	7.595	513.0 -> 469.0	136621	19.91 µg/L		100
PFDoDA	8.468	613.0 -> 569.0	195553	19.95 µg/L		99
PFDS	8.001	599.0 -> 80.0	9548	19.09 µg/L		99
PFHpA	5.708	363.0 -> 319.0	191099	19.58 µg/L		100
PFHpS	6.442	449.0 -> 80.0	20911	20.89 µg/L		100
PFHxA	4.791	313.0 -> 269.0	53321	19.93 µg/L		100
PFHxS	5.751	399.0 -> 80.0	22734	19.94 µg/L	m	96
PFNA	7.066	463.0 -> 419.0	157466	20.07 µg/L		99
PFNS	7.565	549.0 -> 80.0	19465	20.92 µg/L		99
PFOA	6.437	413.0 -> 369.0	120459	19.50 µg/L		98
PFOS	7.049	499.0 -> 80.0	25788	19.56 µg/L	m	79
PFPeA	3.528	263.0 -> 219.0	92643	19.46 µg/L		100
PFPeS	4.908	349.0 -> 80.0	19467	20.54 µg/L		97
PFTeDA	9.319	713.0 -> 669.0	210167	19.54 µg/L		100
PFTrDA	8.919	663.0 -> 619.0	218426	19.49 µg/L		99
PFUnDA	8.043	563.0 -> 519.0	160444	19.66 µg/L		100
11Cl-PF3OUdS	8.200	631.0 -> 451.0	108924	18.05 µg/L		100
9Cl-PF3ONS	7.335	531.0 -> 351.0	21615	18.24 µg/L		100
ADONA	5.817	377.0 -> 251.0	220468	19.47 µg/L		100
HFPO-DA	5.073	329.0 -> 169.0	203631	100.21 µg/L		99

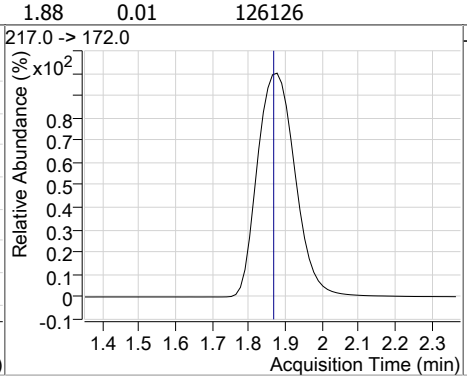
 # = Qualifier out of range, m = manually integrated, + = Area summed

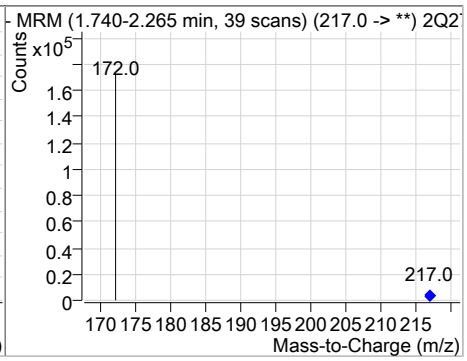
Perfluorinated Compounds by LC/MS/MS



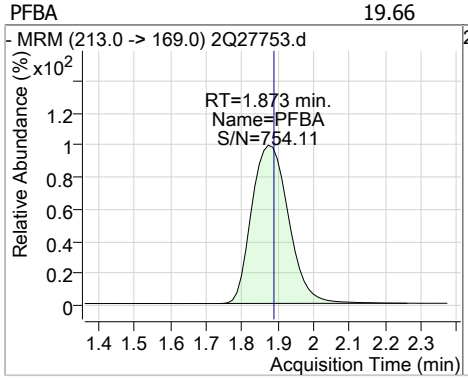
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	21.03	1.88	0.01	126126				

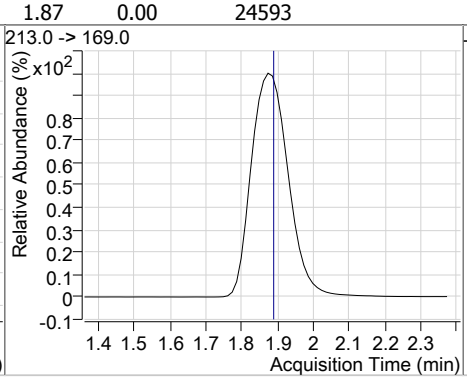


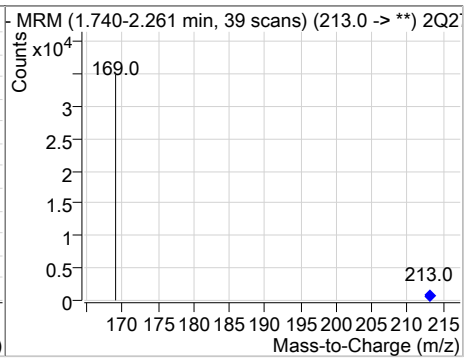




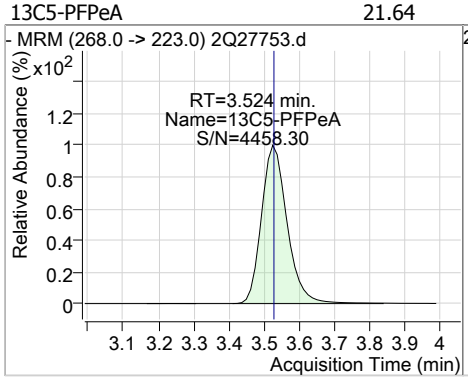
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.66	1.87	0.00	24593				

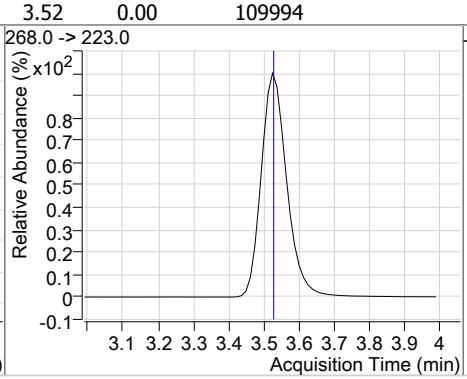


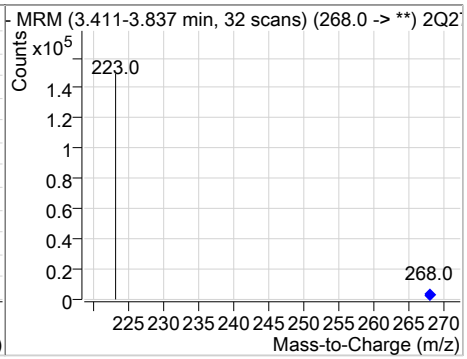




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	21.64	3.52	0.00	109994				

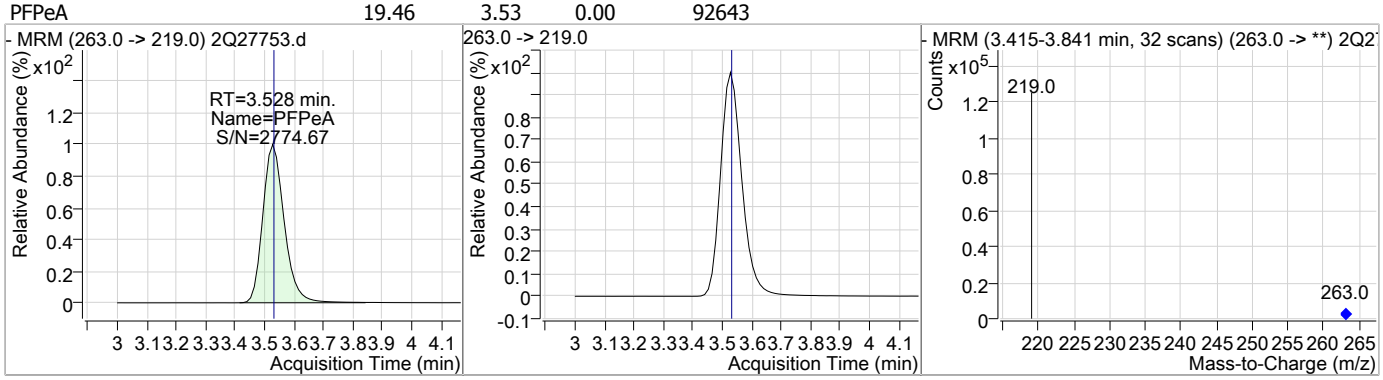




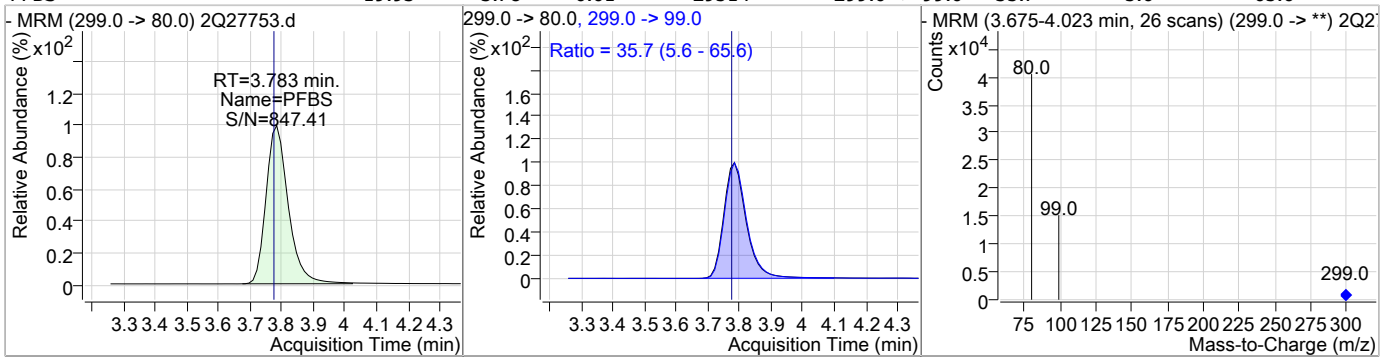


Perfluorinated Compounds by LC/MS/MS

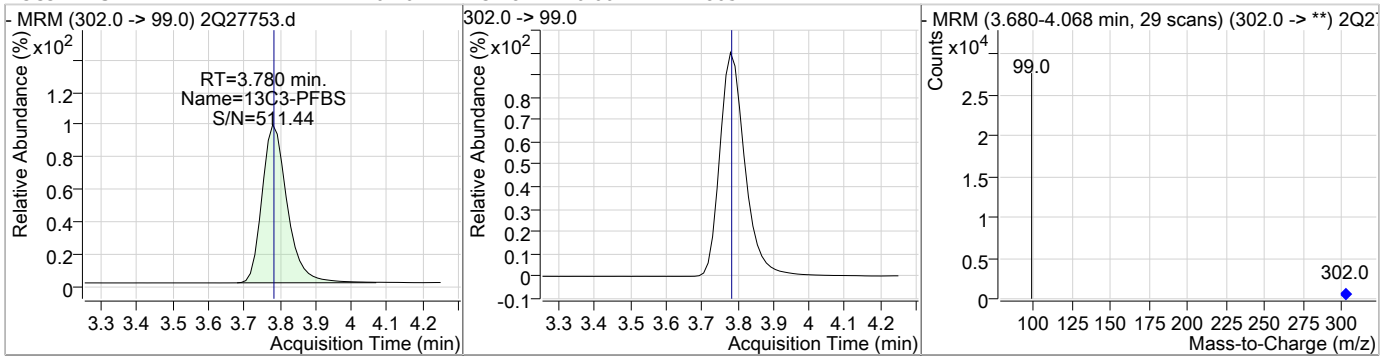
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.46	3.53	0.00	92643				



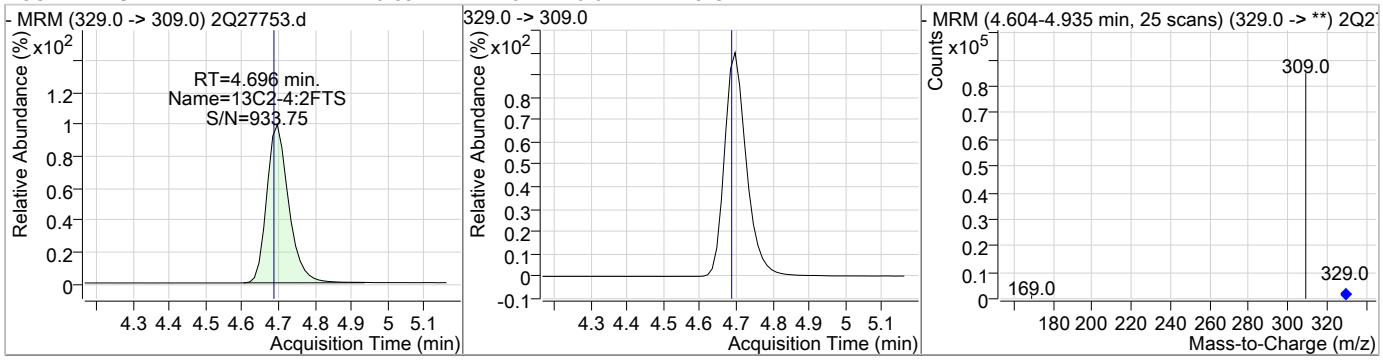
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.93	3.78	0.01	29514	299.0 -> 99.0	35.7	5.6	65.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.46	3.78	0.00	18654				

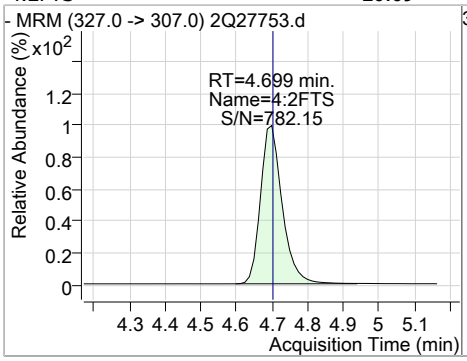


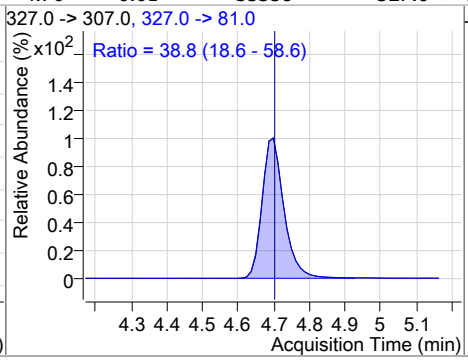
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.83	4.70	0.01	61941				

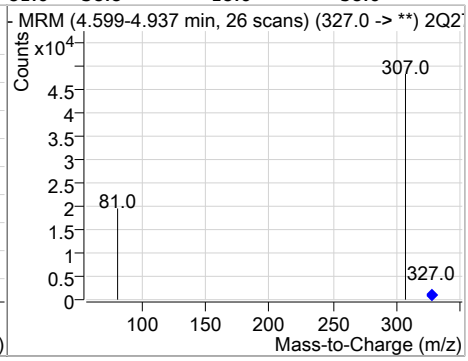


Perfluorinated Compounds by LC/MS/MS

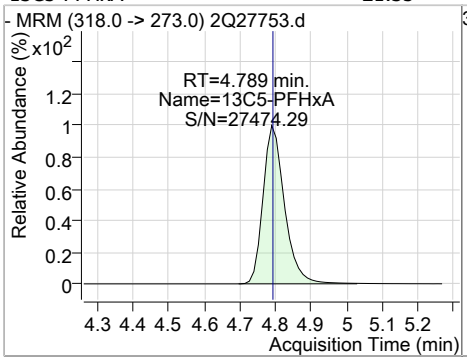
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.69	4.70	0.01	35358	327.0 -> 81.0	38.8	18.6	58.6

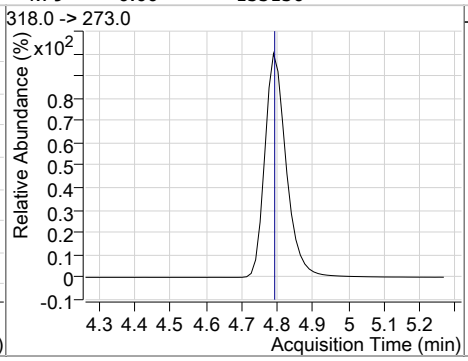


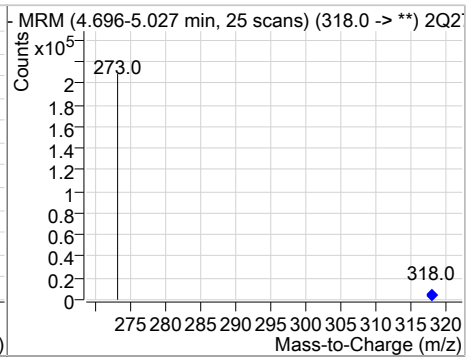




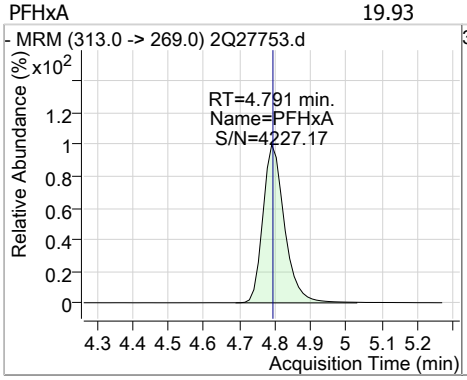
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	21.35	4.79	0.00	155150				

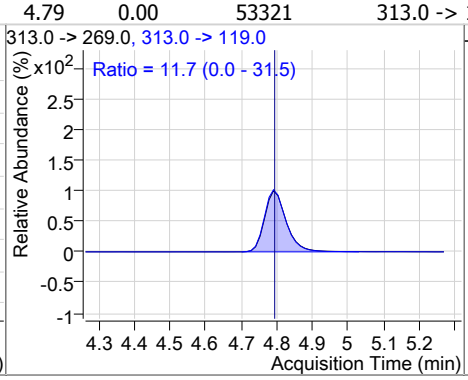


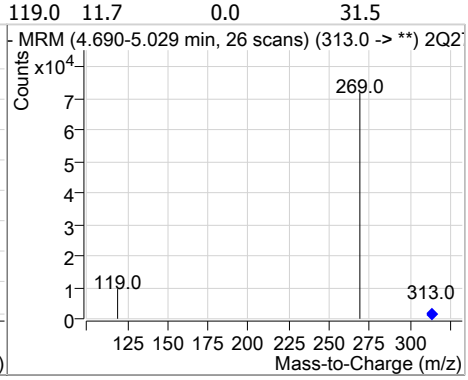




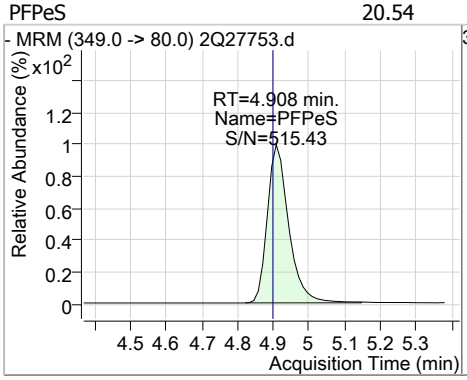
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.93	4.79	0.00	53321	313.0 -> 119.0	11.7	0.0	31.5

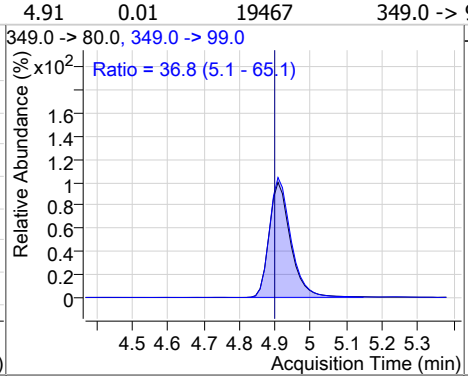


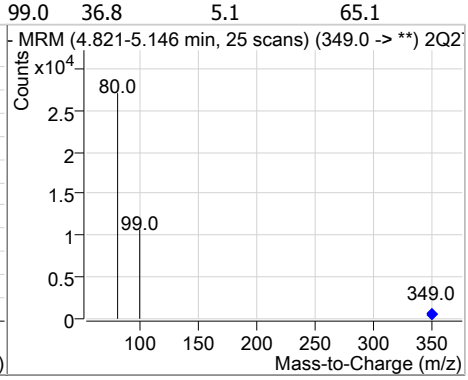




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.54	4.91	0.01	19467	349.0 -> 99.0	36.8	5.1	65.1

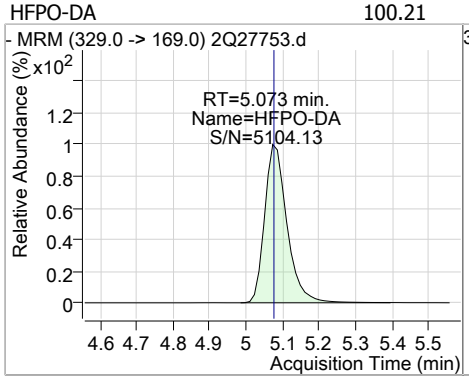


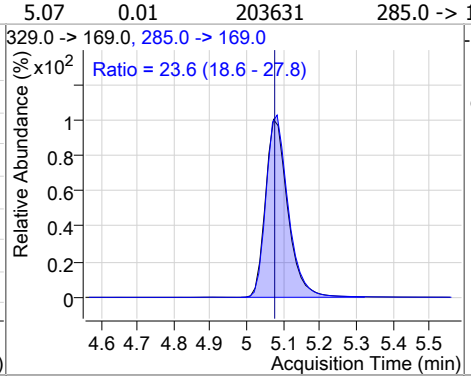


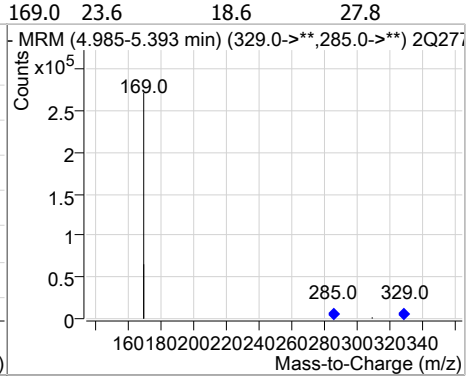


Perfluorinated Compounds by LC/MS/MS

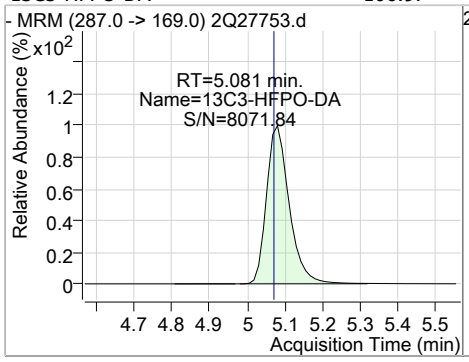
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	100.21	5.07	0.01	203631	285.0 -> 169.0	23.6	18.6	27.8

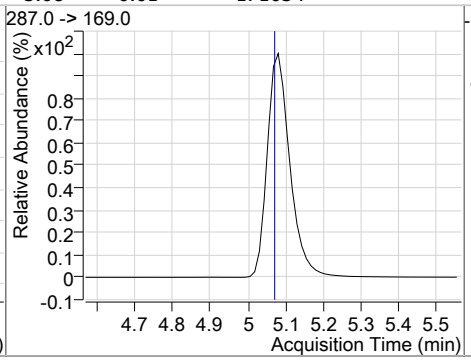


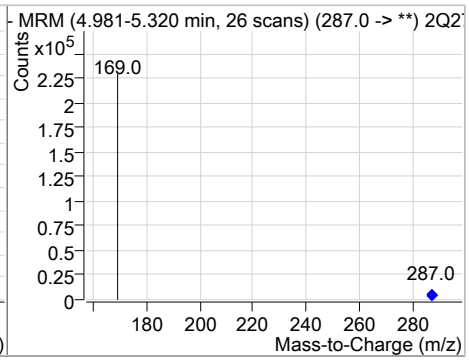




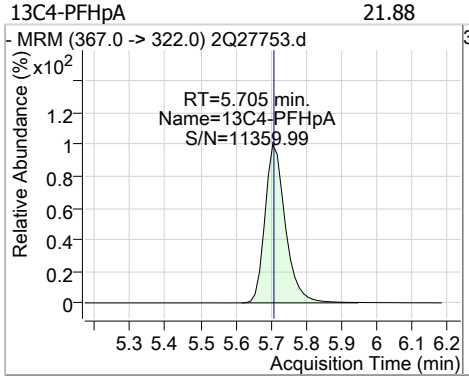
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	106.97	5.08	0.01	171054				

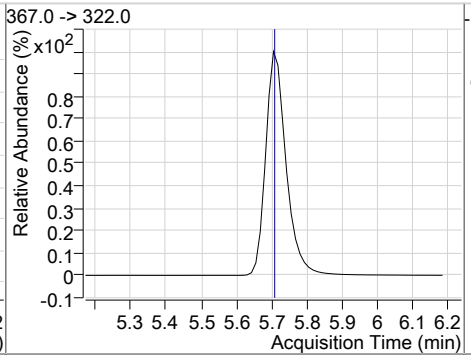


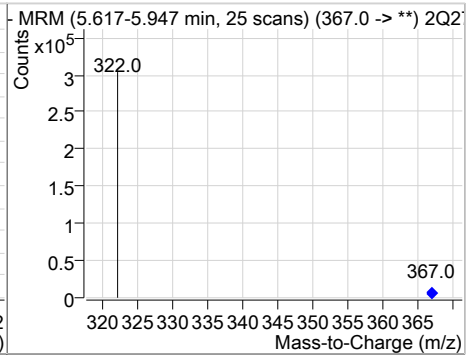




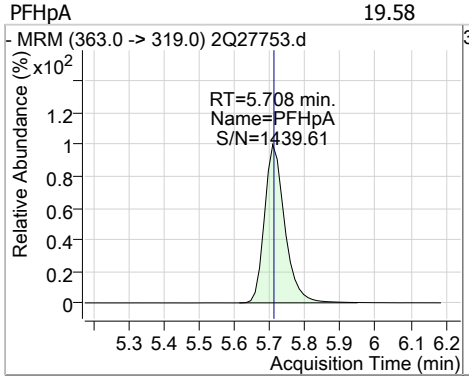
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	21.88	5.71	0.00	226331				

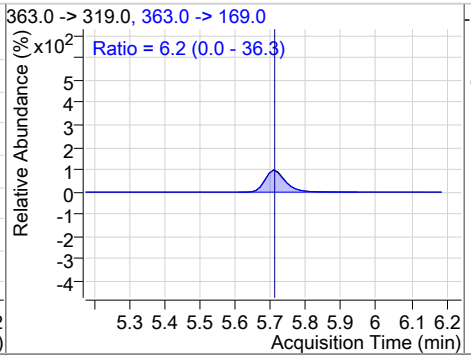


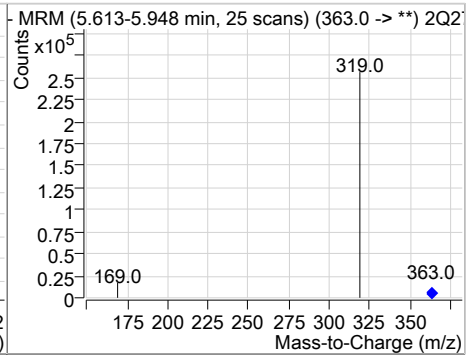




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.58	5.71	0.00	191099	363.0 -> 169.0	6.2	0.0	36.3

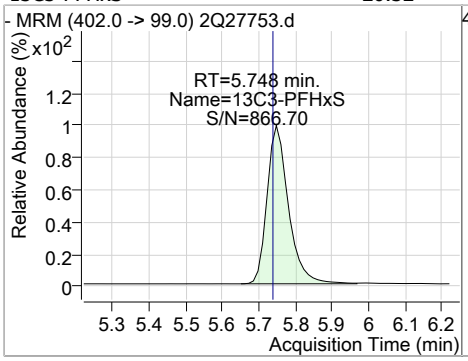


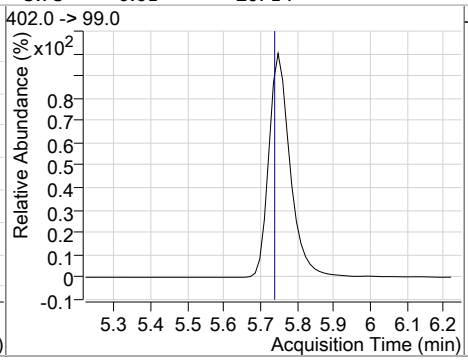


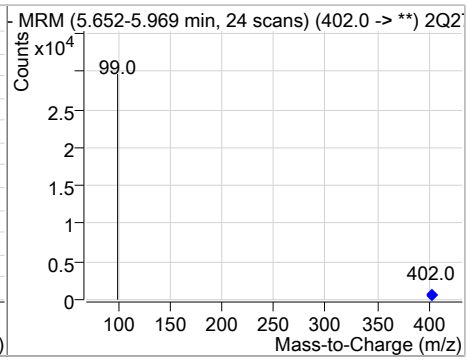


Perfluorinated Compounds by LC/MS/MS

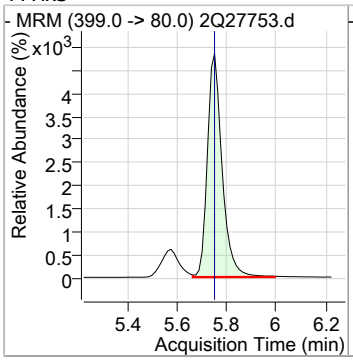
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.32	5.75	0.01	20714				

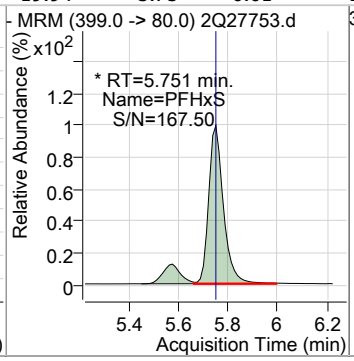


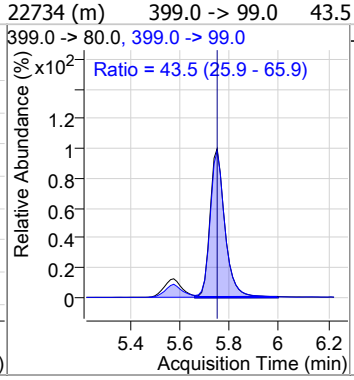


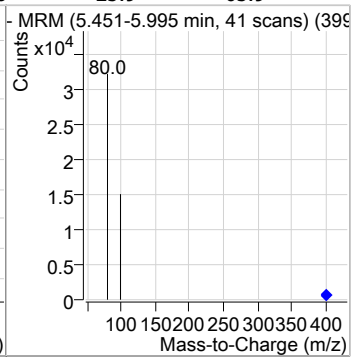


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.94	5.75	0.01	22734 (m)	399.0 -> 99.0	43.5	25.9	65.9

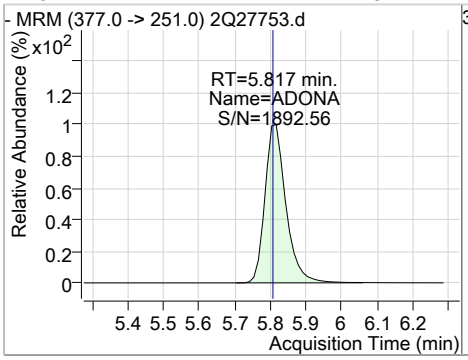


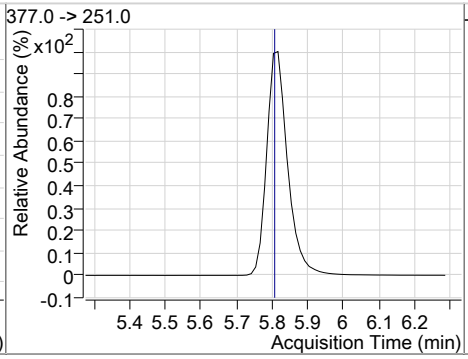


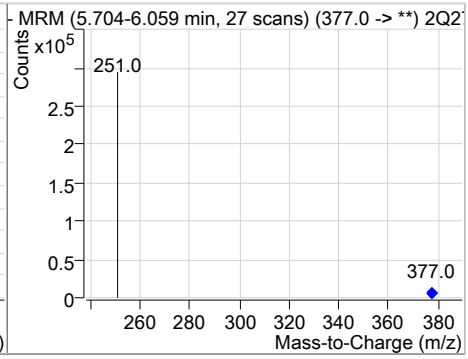




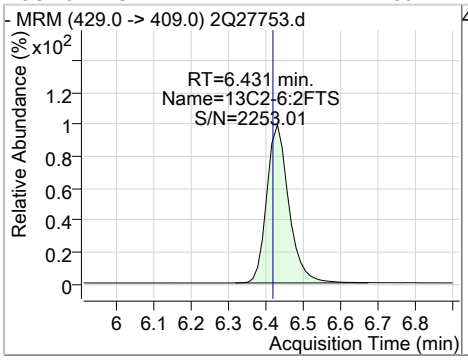
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.47	5.82	0.01	220468				

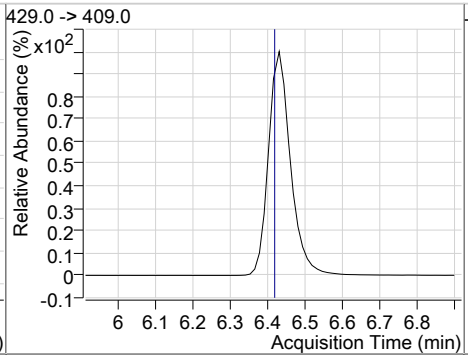


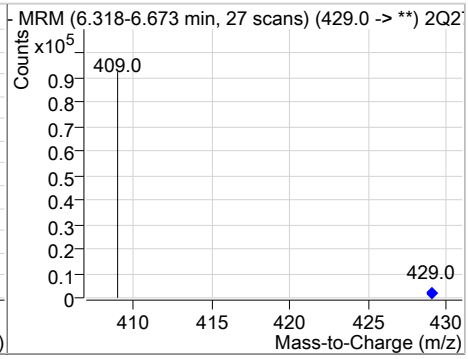




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	21.86	6.43	0.02	70160				

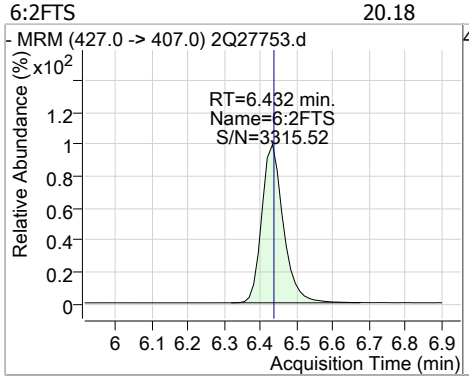


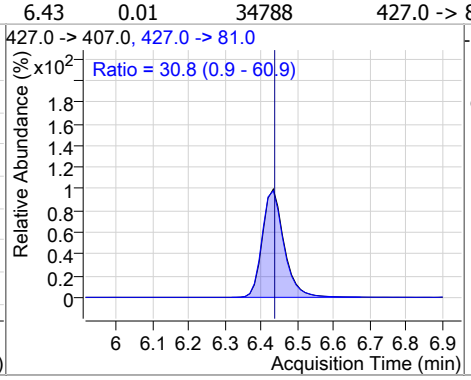


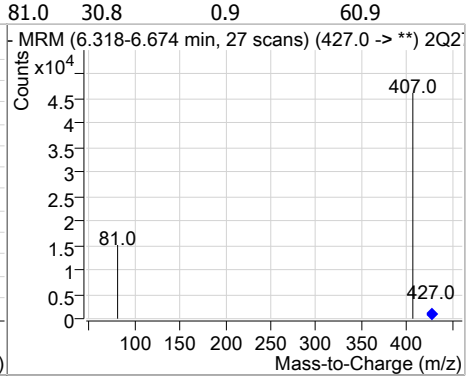


Perfluorinated Compounds by LC/MS/MS

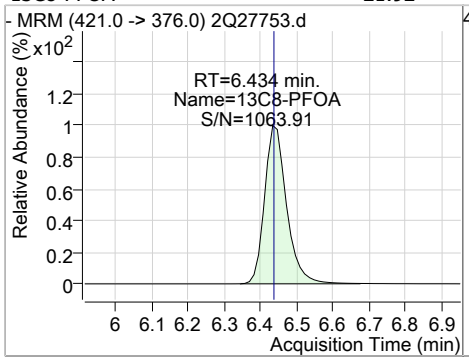
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	20.18	6.43	0.01	34788	427.0 -> 81.0	30.8	0.9	60.9

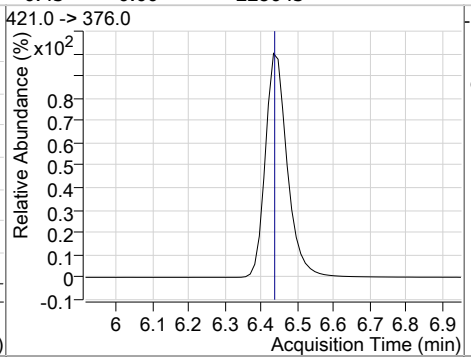


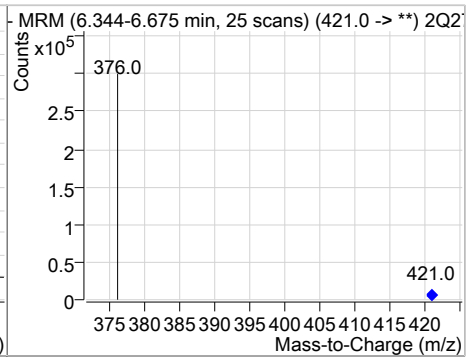




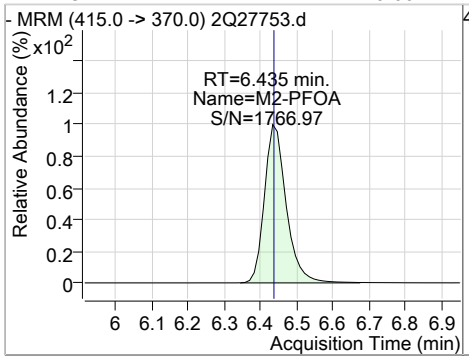
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	21.92	6.43	0.00	228643				

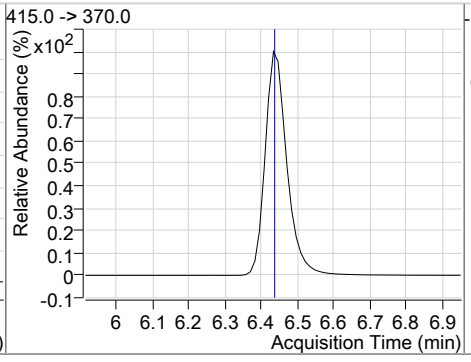


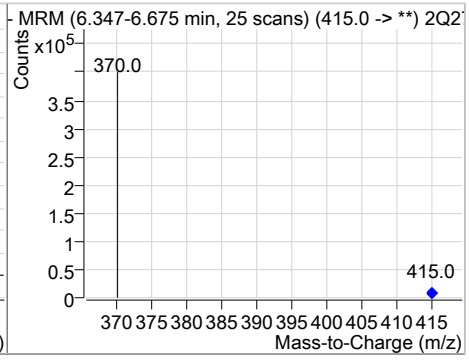




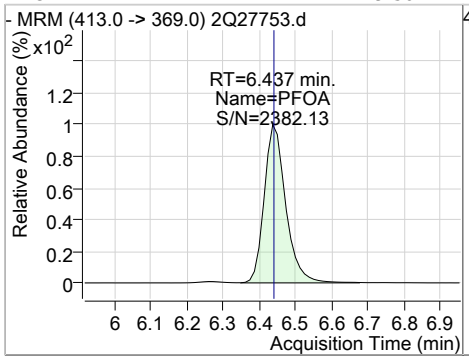
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.44	0.00	304032				

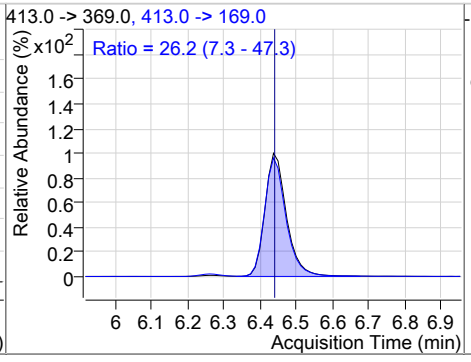


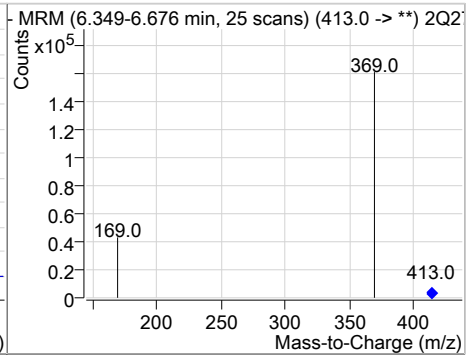




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.50	6.44	0.00	120459	413.0 -> 169.0	26.2	7.3	47.3

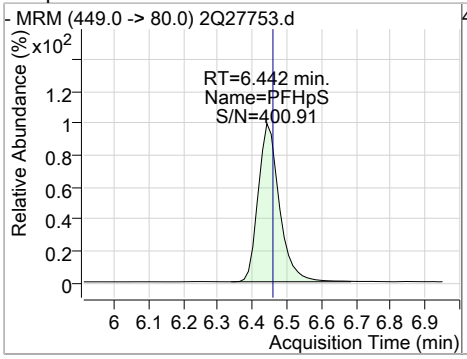


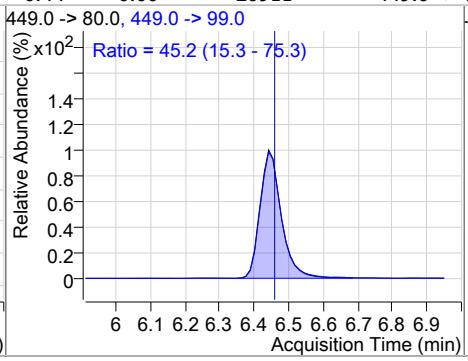


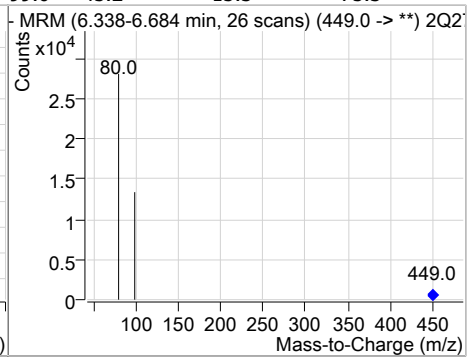


Perfluorinated Compounds by LC/MS/MS

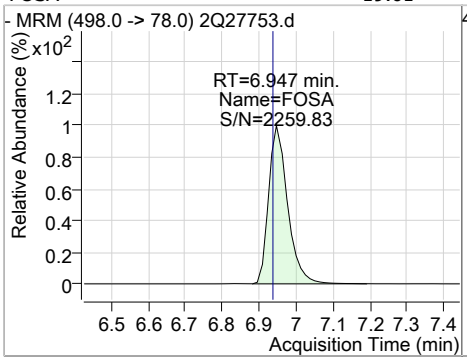
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	20.89	6.44	0.00	20911	449.0 -> 99.0	45.2	15.3	75.3

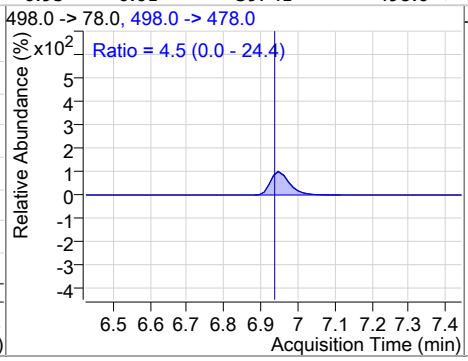


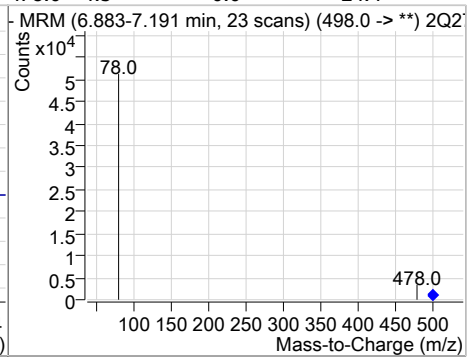




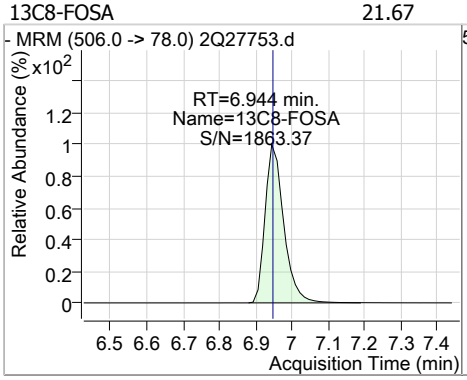
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.61	6.95	0.01	39741	498.0 -> 478.0	4.5	0.0	24.4

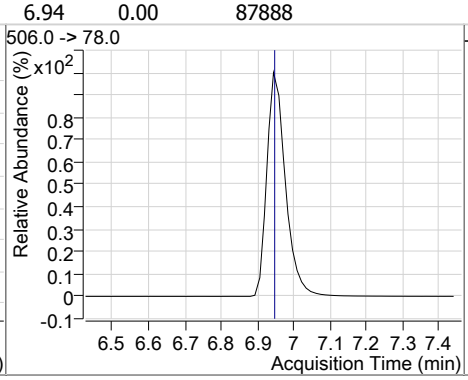


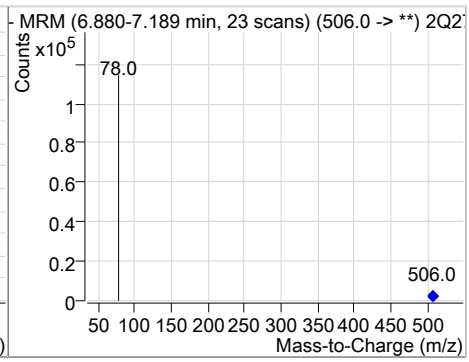




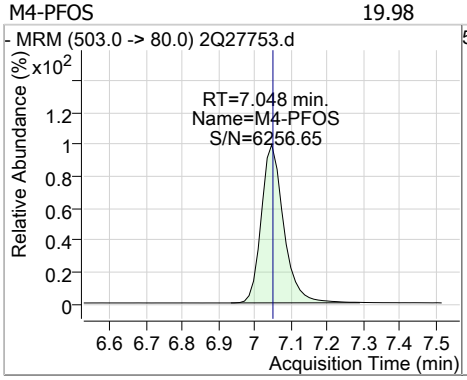
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.67	6.94	0.00	87888				

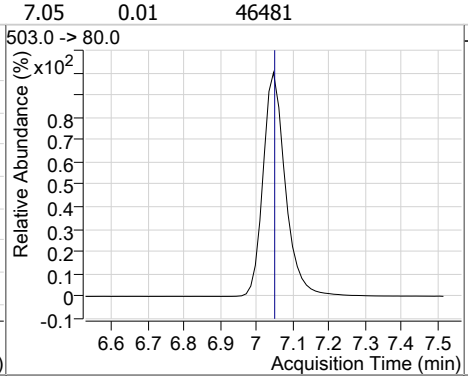


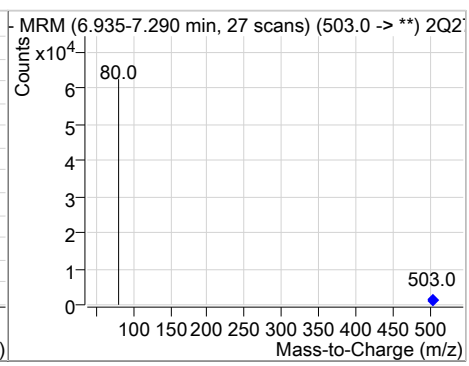




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	19.98	7.05	0.01	46481				

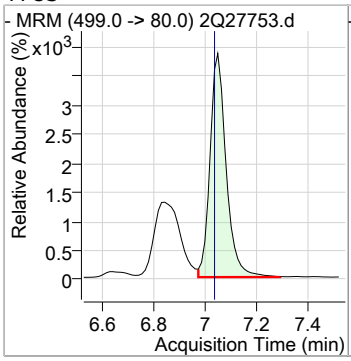


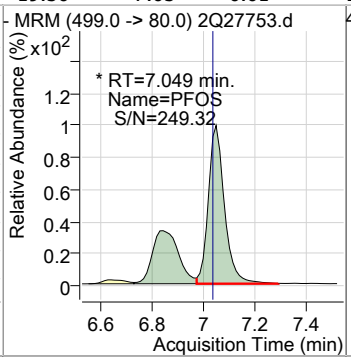


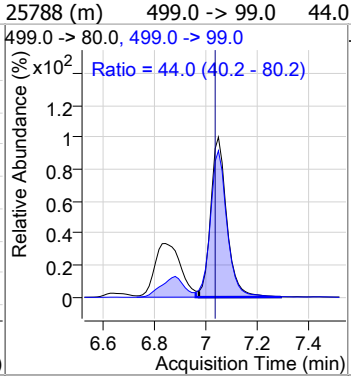


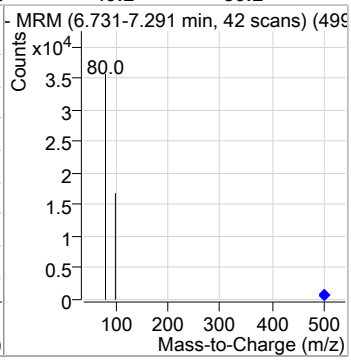
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.56	7.05	0.01	25788 (m)	499.0 -> 99.0	44.0	40.2	80.2

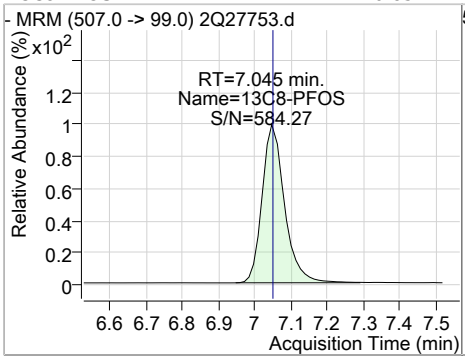


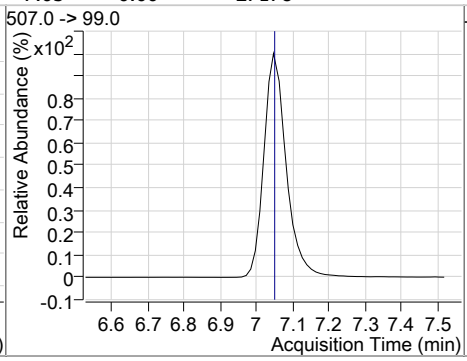


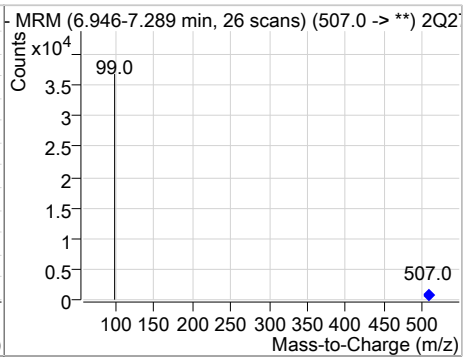




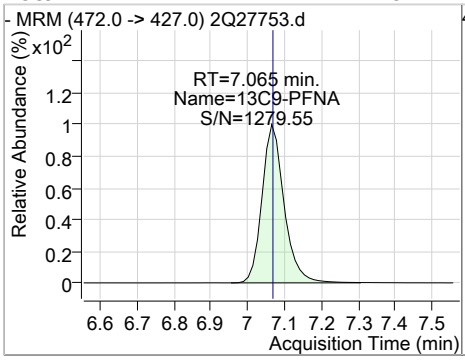
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.85	7.05	0.00	27178				

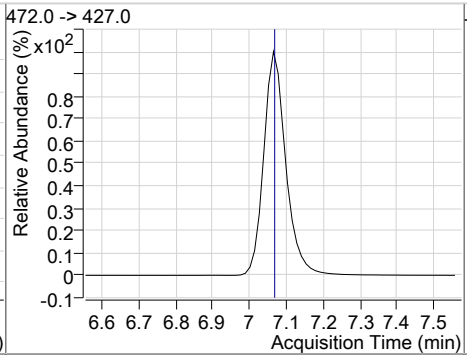


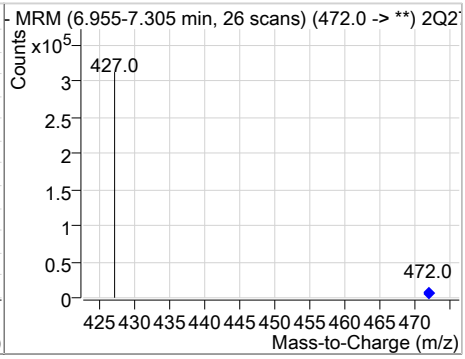




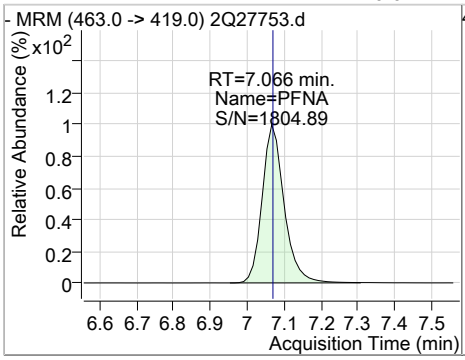
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	22.34	7.07	0.00	236515				

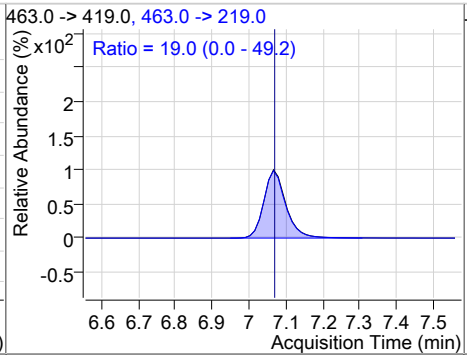


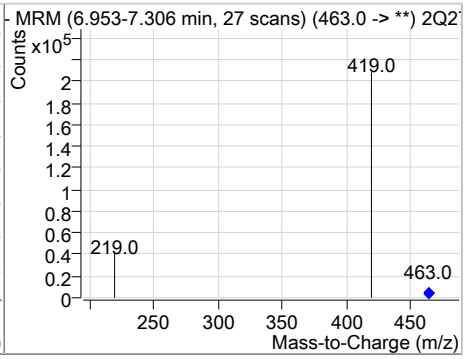




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	20.07	7.07	0.00	157466	463.0 -> 219.0	19.0	0.0	49.2

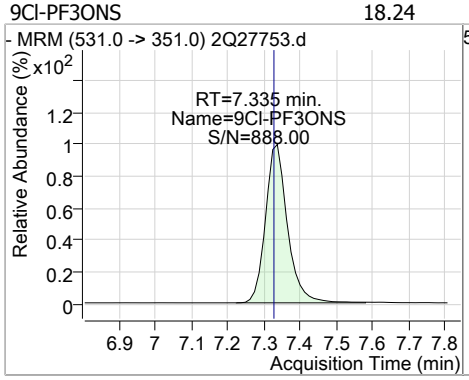


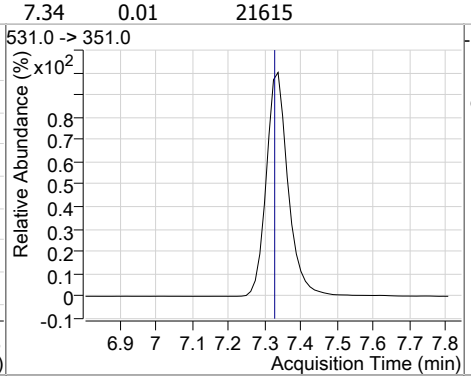


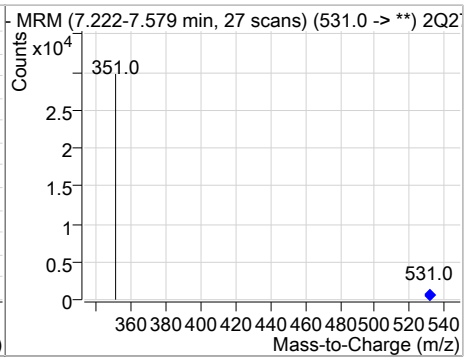


Perfluorinated Compounds by LC/MS/MS

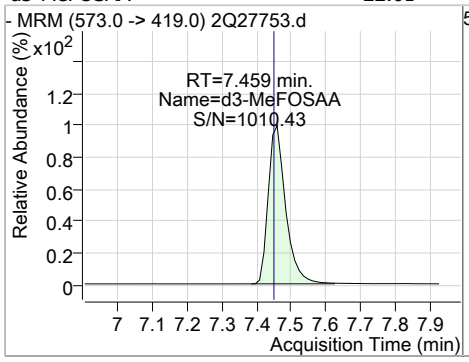
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.24	7.34	0.01	21615				

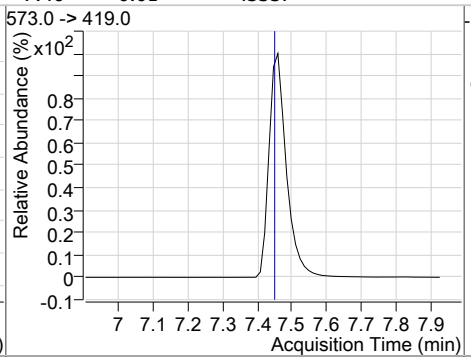


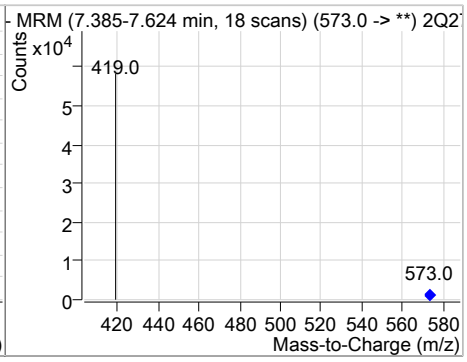




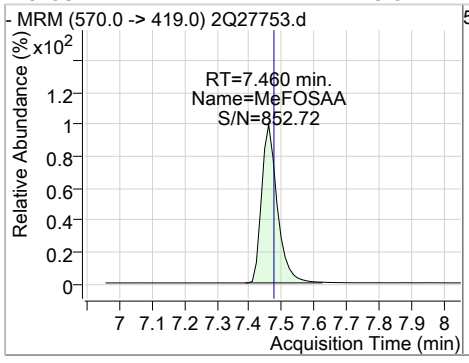
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	22.61	7.46	0.01	43337				

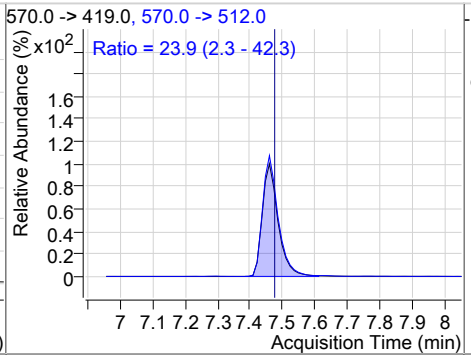


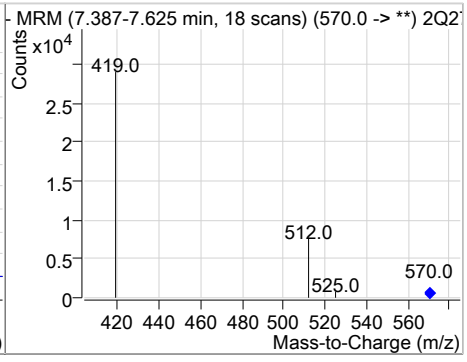




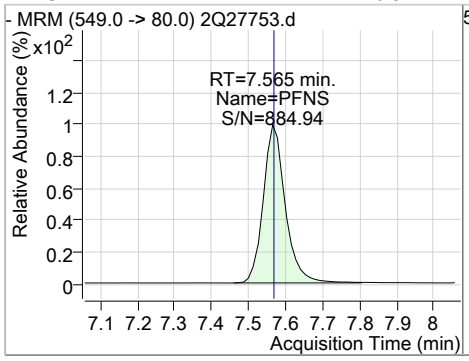
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.51	7.46	0.00	21599	570.0 -> 512.0	23.9	2.3	42.3

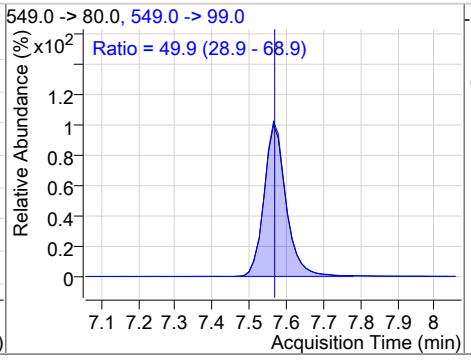


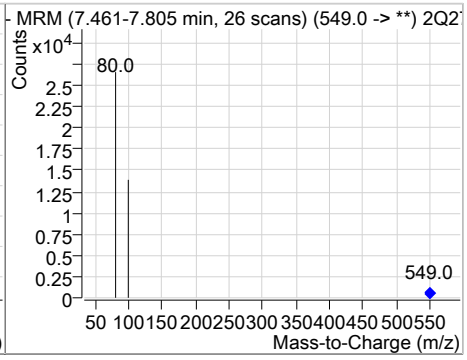




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.92	7.57	0.00	19465	549.0 -> 99.0	49.9	28.9	68.9

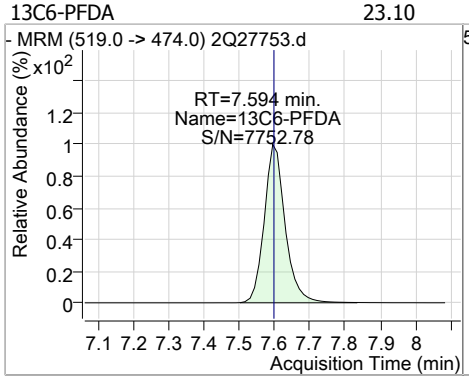


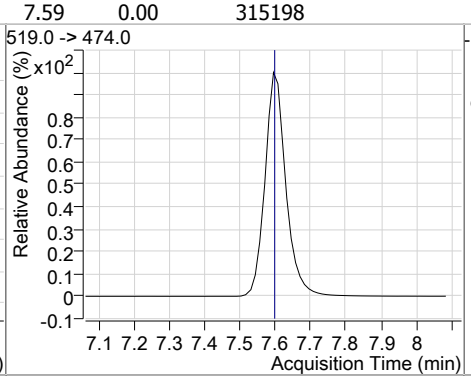


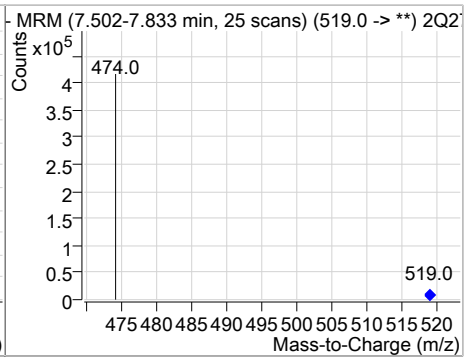


Perfluorinated Compounds by LC/MS/MS

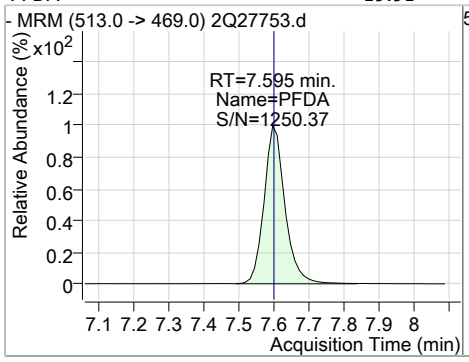
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	23.10	7.59	0.00	315198				

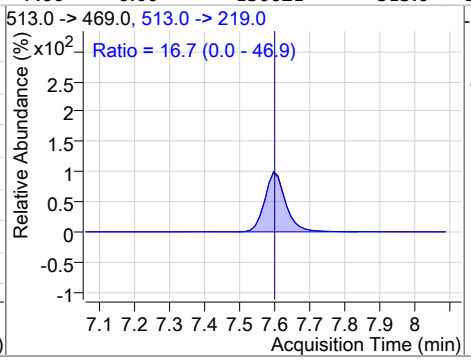


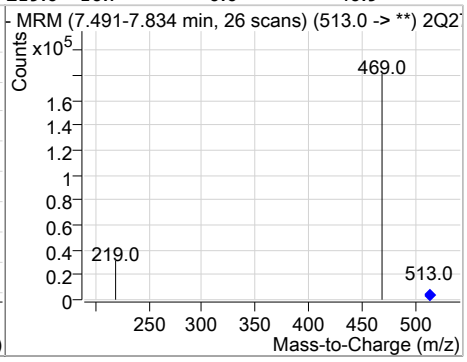




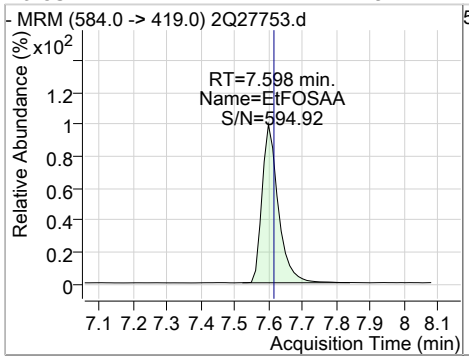
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.91	7.60	0.00	136621	513.0 -> 219.0	16.7	0.0	46.9

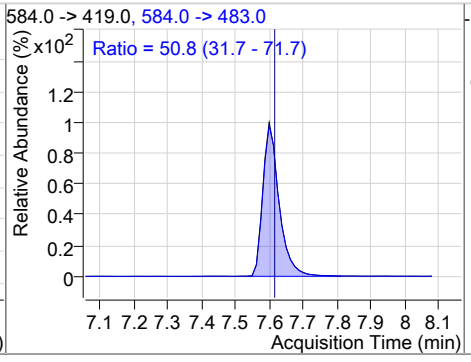


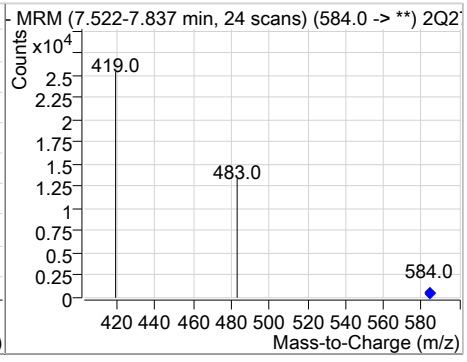




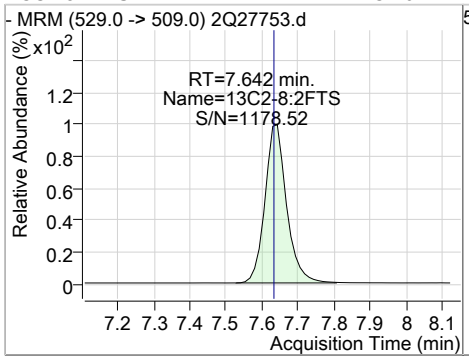
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.74	7.60	0.00	18210	584.0 -> 483.0	50.8	31.7	71.7

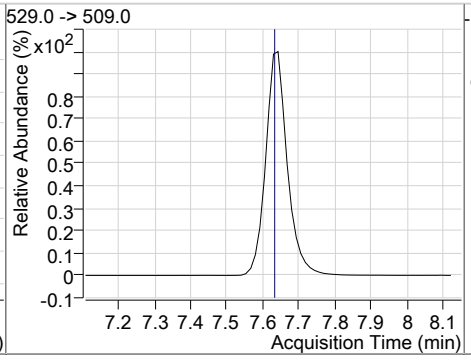


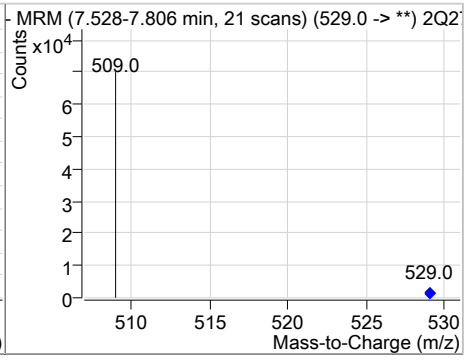




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	23.20	7.64	0.01	51449				

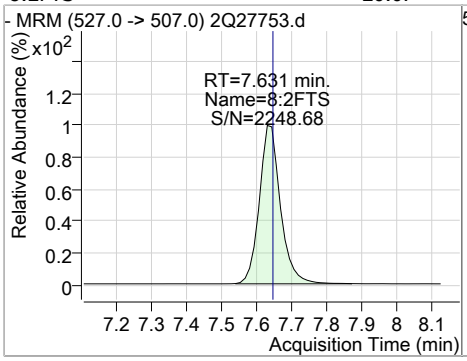


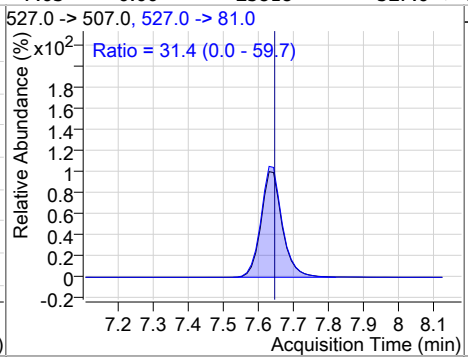


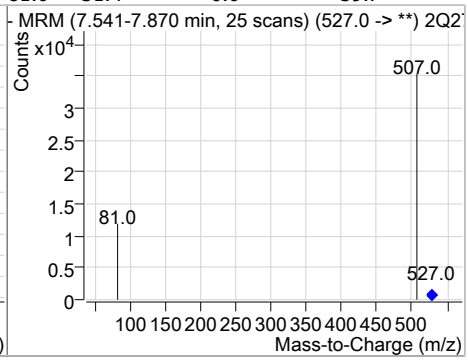


Perfluorinated Compounds by LC/MS/MS

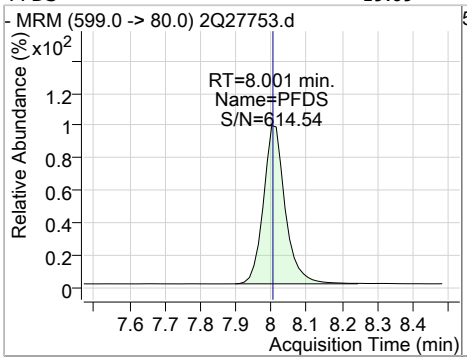
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.07	7.63	0.00	25818	527.0 -> 81.0	31.4	0.0	59.7

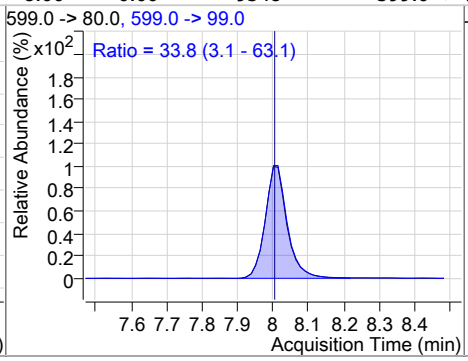


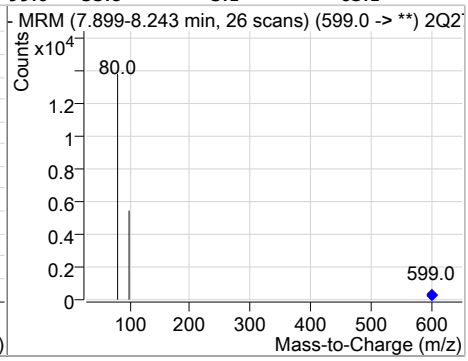




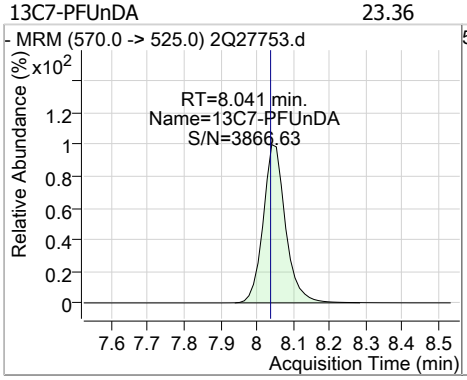
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	19.09	8.00	0.00	9548	599.0 -> 99.0	33.8	3.1	63.1

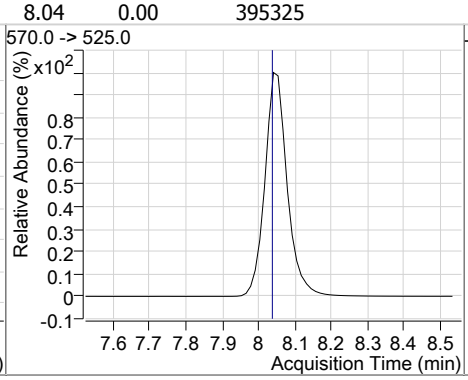


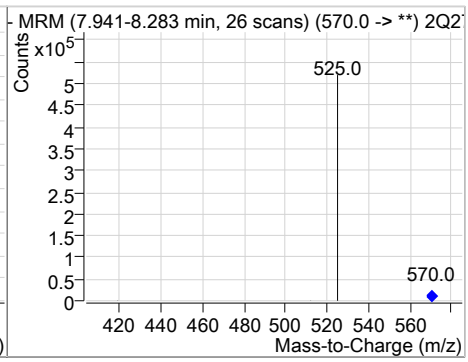




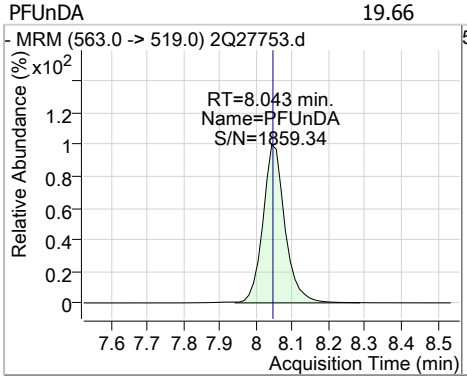
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	23.36	8.04	0.00	395325				

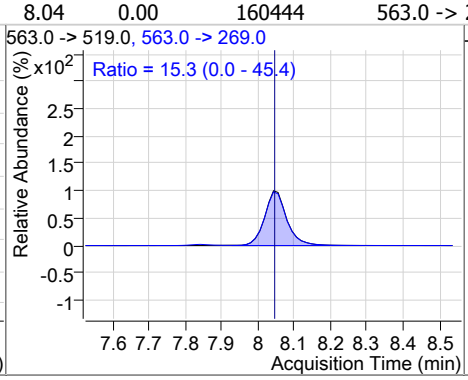


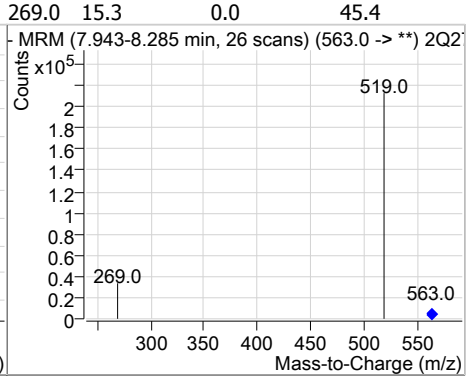




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.66	8.04	0.00	160444	563.0 -> 269.0	15.3	0.0	45.4

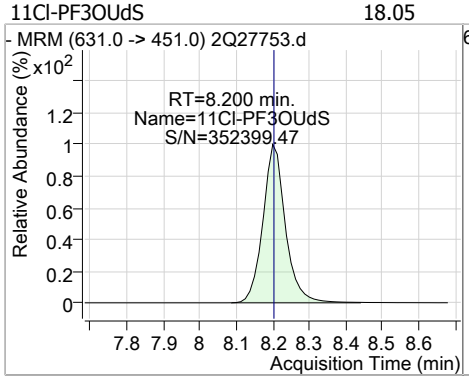


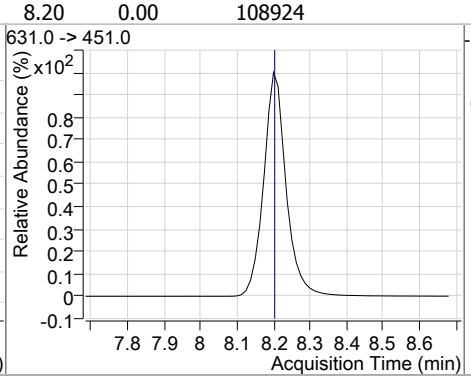


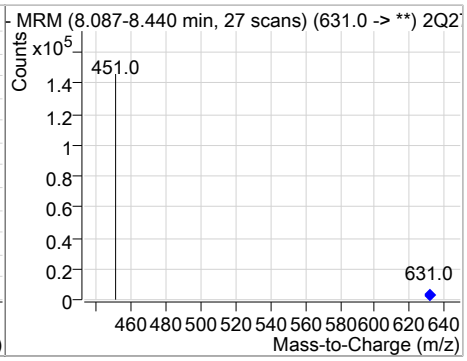


Perfluorinated Compounds by LC/MS/MS

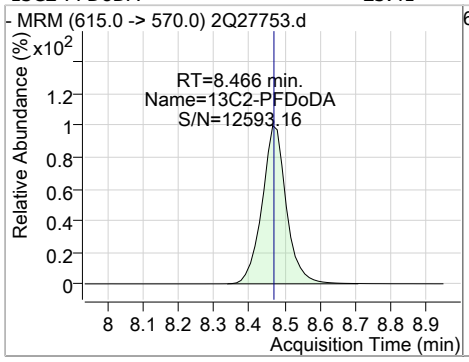
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.05	8.20	0.00	108924				

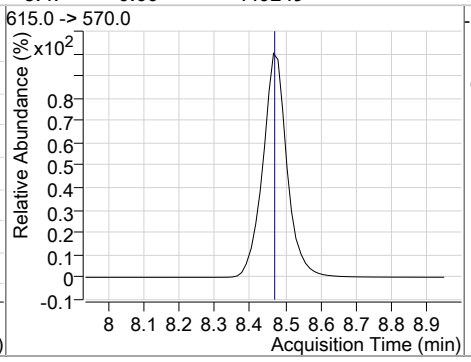


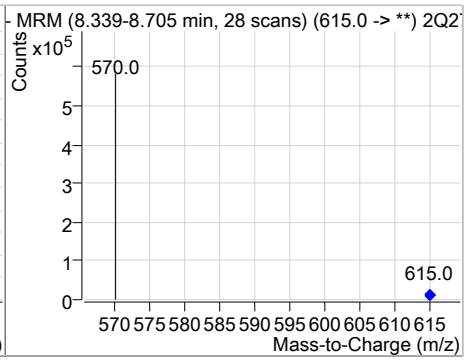




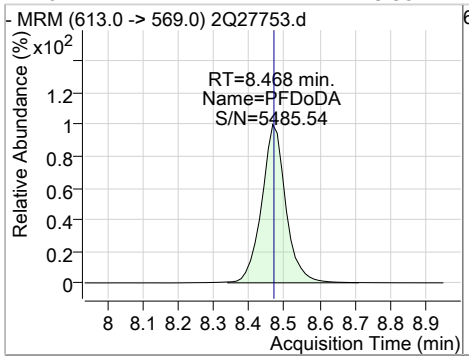
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	23.41	8.47	0.00	440249				

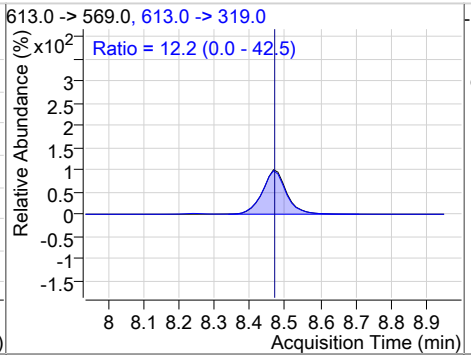


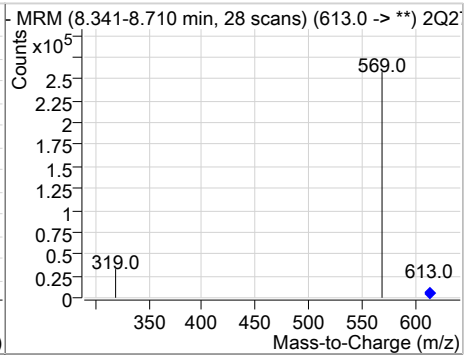




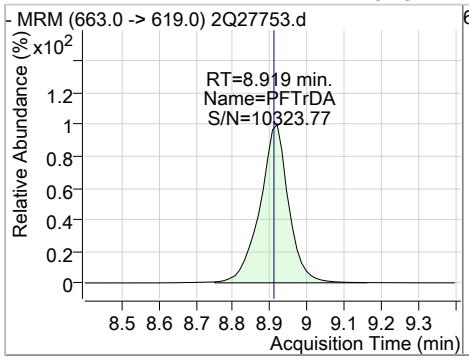
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.95	8.47	0.00	195553	613.0 -> 319.0	12.2	0.0	42.5

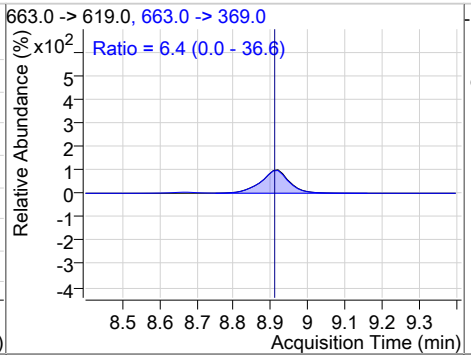


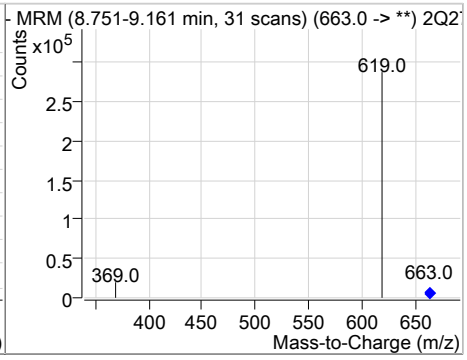




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.49	8.92	0.00	218426	663.0 -> 369.0	6.4	0.0	36.6

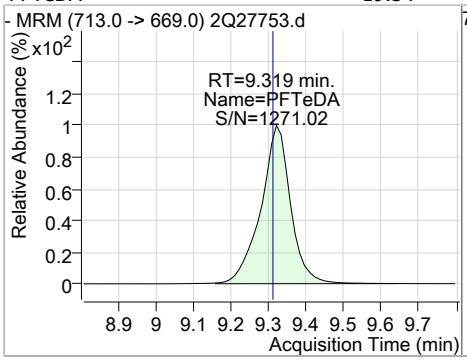


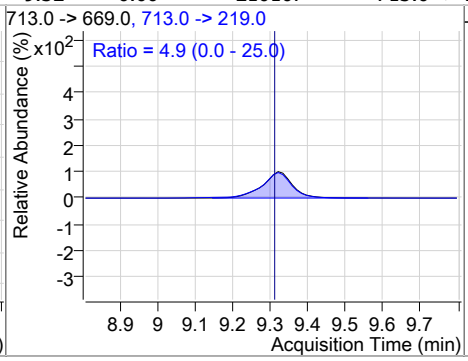


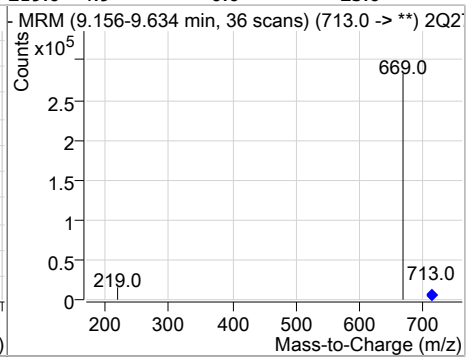


Perfluorinated Compounds by LC/MS/MS

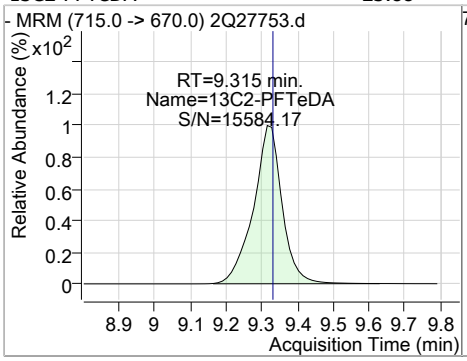
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.54	9.32	0.00	210167	713.0 -> 219.0	4.9	0.0	25.0

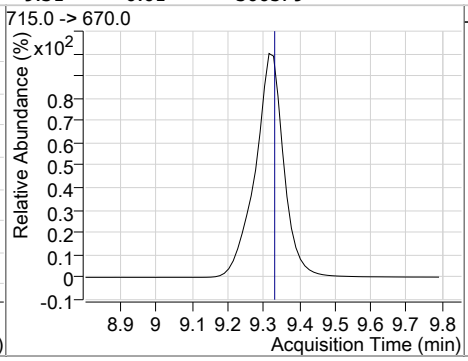


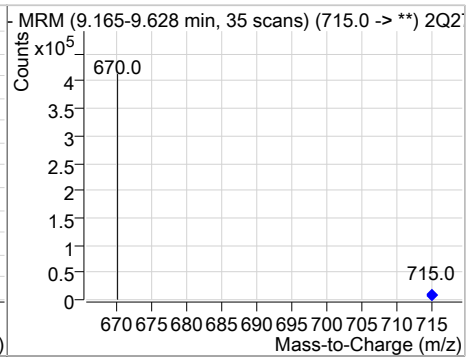




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	23.88	9.31	-0.01	306579				







Manual Integration Approval Summary

Sample Number: S2Q443-ECC442
Lab FileID: 2Q27753.D
Injection Time: 03/19/19 18:08
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/20/19 08:53 Nancy Saunders
Supervisor approved: 03/20/19 09:31 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.75	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.05	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1972.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 9:54:57 AM
Sample Name : ic54-0.5
Vial : P3-A2
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

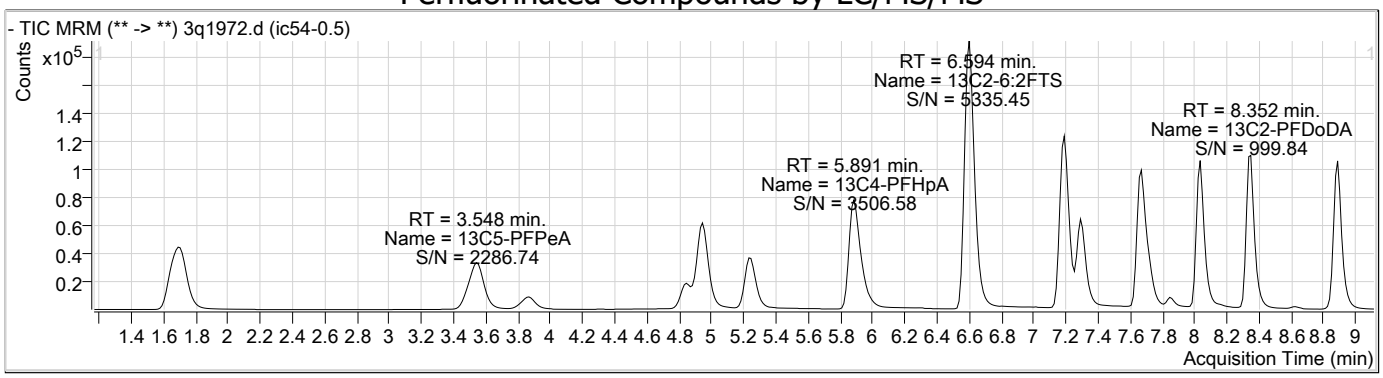
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.689	217.0 -> 172.0	327967	20.00 µg/L	-0.013
M5-PFPeA	3.548	268.0 -> 223.0	222460	20.00 µg/L	-0.013
M5-PFHxA	4.950	318.0 -> 273.0	302147	20.00 µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	341733	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	328273	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	309255	20.00 µg/L	-0.013
M6-PFDA	7.678	519.0 -> 474.0	342624	20.00 µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	380696	20.00 µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	398988	20.00 µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	378936	20.00 µg/L	0.000
M8-FOSA	7.298	506.0 -> 78.0	221259	20.00 µg/L	-0.013
M3-PFBS	3.867	302.0 -> 99.0	51456	20.00 µg/L	-0.013
M3-PFHxS	5.934	402.0 -> 99.0	51897	20.00 µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	79090	20.00 µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	91143	20.00 µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	87313	20.00 µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	52733	20.00 µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	48734	20.00 µg/L	-0.013
M3-HFPO-DA	5.242	287.0 -> 169.0	170823	100.00 µg/L	-0.013
13C2-PFOA	6.610	415.0 -> 370.0	423192	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	127860	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.845	329.0 -> 309.0	90659	19.10 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C2-6:2FTS	6.594	429.0 -> 409.0	87305	19.10 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C2-8:2FTS	7.689	529.0 -> 509.0	52832	18.90 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C2-PFDoDA	8.352	615.0 -> 570.0	398979	20.40 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C2-PFTeDA	8.886	715.0 -> 670.0	379015	20.72 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C3-PFBS	3.867	302.0 -> 99.0	51011	20.22 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C3-PFHxS	5.934	402.0 -> 99.0	51828	20.51 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C4-PFBA	1.689	217.0 -> 172.0	325185	19.94 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	5.891	367.0 -> 322.0	340355	20.39 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	4.950	318.0 -> 273.0	301659	20.50 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFPeA	3.548	268.0 -> 223.0	222426	20.09 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C6-PFDA	7.678	519.0 -> 474.0	343195	20.60 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

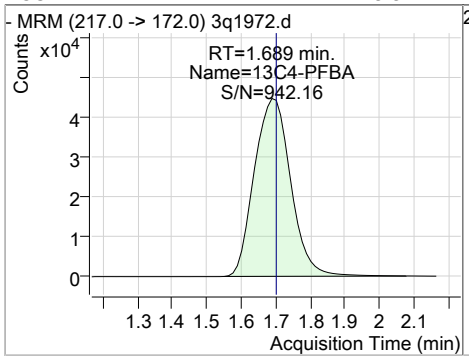
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C7-PFUnDA	8.039	570.0 -> 525.0	380899	20.55 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.7%		
13C8-FOSA	7.298	506.0 -> 78.0	221139	21.01 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.1%		
13C8-PFOA	6.609	421.0 -> 376.0	328269	20.75 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%		
13C8-PFOS	7.183	507.0 -> 99.0	79045	20.52 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C9-PFNA	7.201	472.0 -> 427.0	308566	20.65 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%		
d3-MeFOSAA	7.722	573.0 -> 419.0	48726	20.52 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C3-HFPO-DA	5.242	287.0 -> 169.0	170823	102.30 µg/L		-0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 102.3%		
M2-PFOA	6.610	415.0 -> 370.0	423192	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.185	503.0 -> 80.0	127860	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						**QValue**
4:2FTS	4.836	327.0 -> 307.0	1240	0.50 µg/L		91
6:2FTS	6.595	427.0 -> 407.0	1407	0.65 µg/L		95
8:2FTS	7.702	527.0 -> 507.0	666	0.51 µg/L		86
EtFOSAA	7.861	584.0 -> 419.0	642	0.59 µg/L		88
FOSA	7.301	498.0 -> 78.0	2218	0.45 µg/L		96
MeFOSAA	7.723	570.0 -> 419.0	575	0.44 µg/L		90
PFBA	1.698	213.0 -> 169.0	1458	0.47 µg/L		100
PFBS	3.870	299.0 -> 80.0	1681	0.47 µg/L		99
PFDA	7.678	513.0 -> 469.0	3497	0.43 µg/L		95
PFDoDA	8.341	613.0 -> 569.0	4113	0.45 µg/L		97
PFDS	8.011	599.0 -> 80.0	636	0.54 µg/L		87
PFHpA	5.894	363.0 -> 319.0	6908	0.46 µg/L		99
PFHpS	6.618	449.0 -> 80.0	1086	0.44 µg/L		93
PFHxA	4.952	313.0 -> 269.0	2660	0.49 µg/L		99
PFHxS	5.937	399.0 -> 80.0	1336	0.47 µg/L	m	94
PFNA	7.201	463.0 -> 419.0	4284	0.45 µg/L		96
PFNS	7.648	549.0 -> 80.0	1007	0.47 µg/L		87
PFOA	6.611	413.0 -> 369.0	4254	0.48 µg/L		96
PFOS	7.186	499.0 -> 80.0	2401	0.66 µg/L	m	74
PFPeA	3.552	263.0 -> 219.0	5552	0.49 µg/L		100
PFPeS	5.082	349.0 -> 80.0	989	0.44 µg/L		84
PFTeDA	8.890	713.0 -> 669.0	5379	0.46 µg/L		98
PFTrDA	8.628	663.0 -> 619.0	4432	0.44 µg/L		99
PFUnDA	8.041	563.0 -> 519.0	3770	0.46 µg/L		98
11Cl-PF3OUdS	8.162	631.0 -> 451.0	3688	0.48 µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	862	0.45 µg/L		100
ADONA	5.994	377.0 -> 251.0	9054	0.45 µg/L		100
HFPO-DA	5.247	329.0 -> 169.0	6553	2.26 µg/L		98

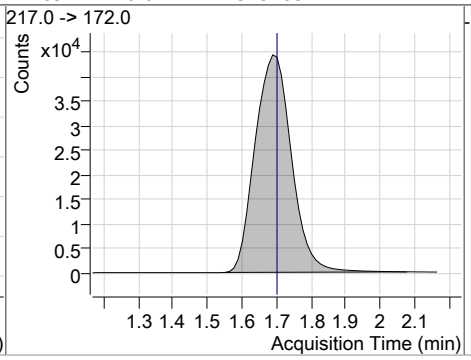
 # = Qualifier out of range, m = manually integrated, + = Area summed

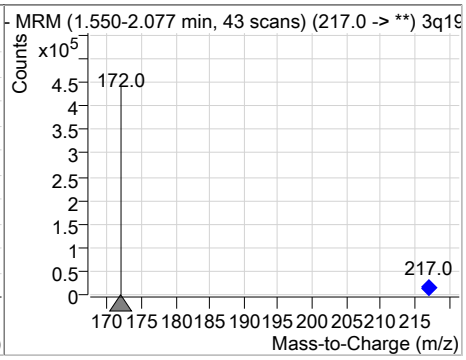
Perfluorinated Compounds by LC/MS/MS



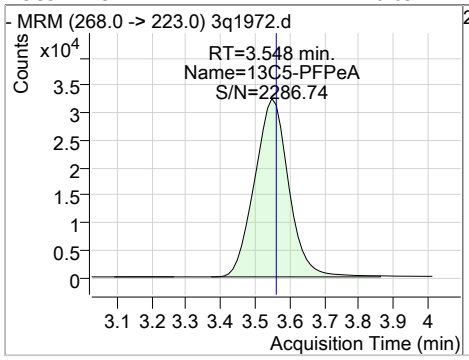
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.94	1.69	-0.01	325185				

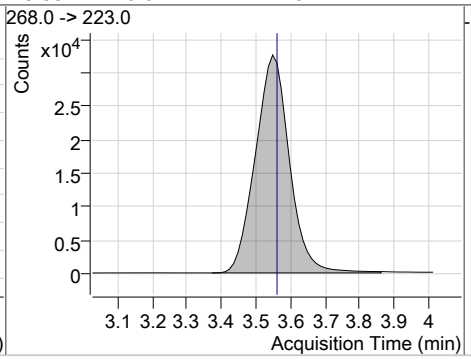


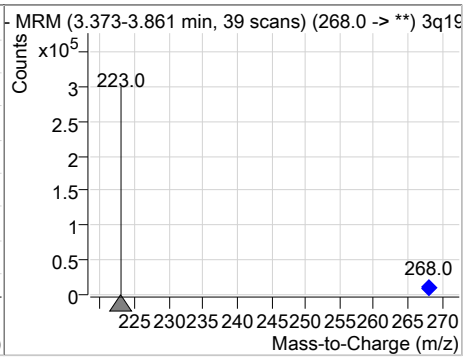




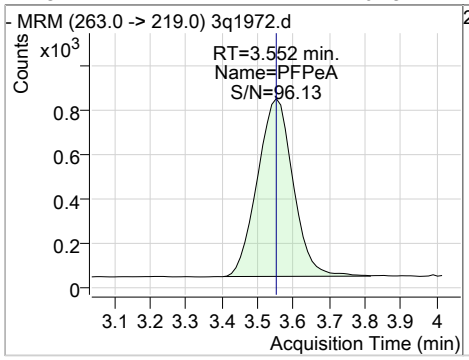
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.09	3.55	-0.01	222426				

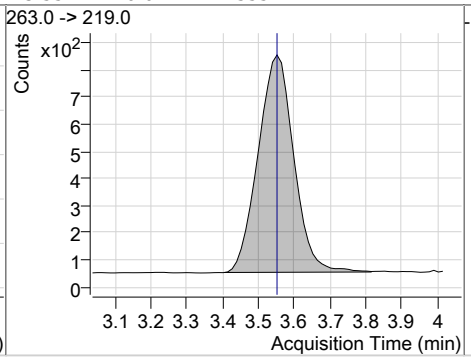


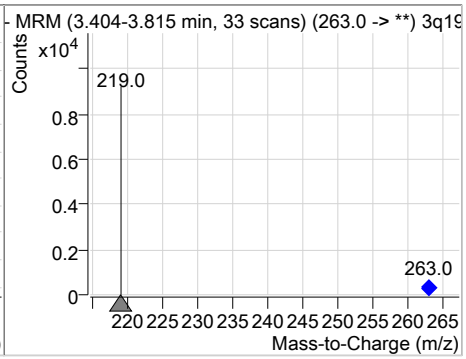




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.49	3.55	-0.01	5552				

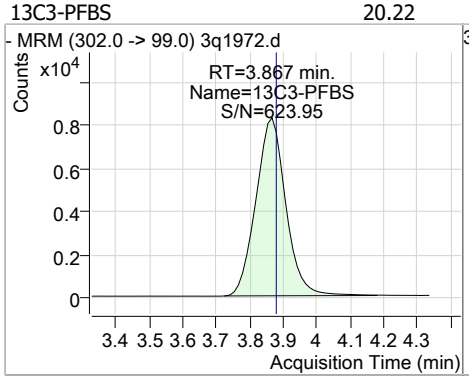


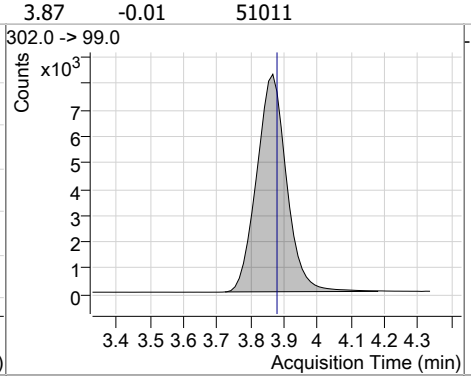


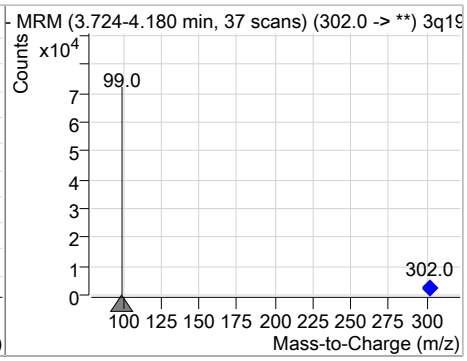


Perfluorinated Compounds by LC/MS/MS

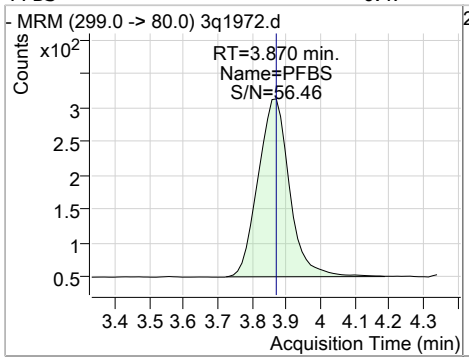
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.22	3.87	-0.01	51011				

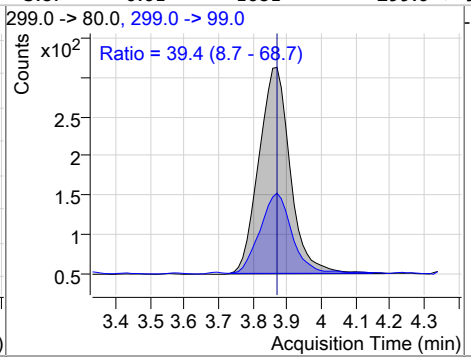


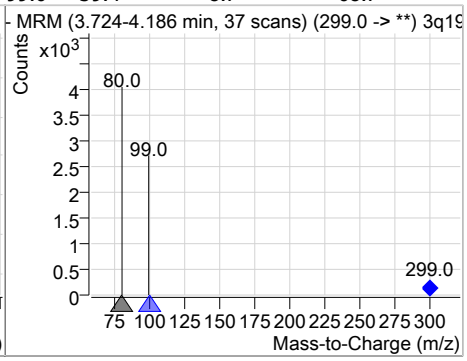




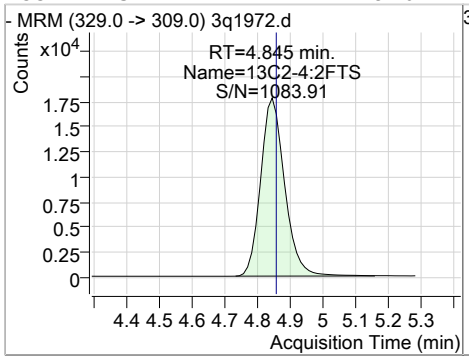
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.47	3.87	-0.01	1681	299.0 -> 99.0	39.4	8.7	68.7

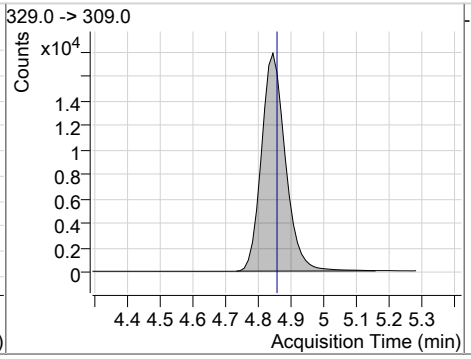


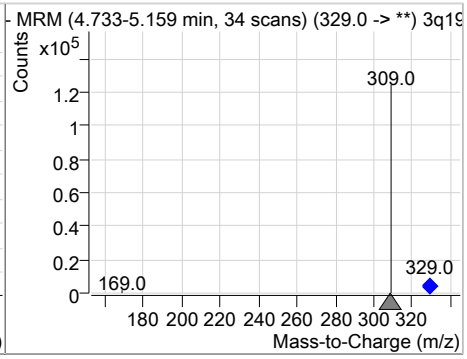




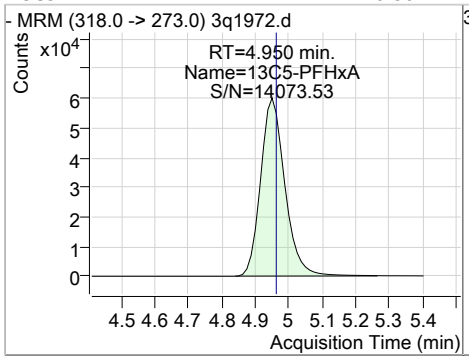
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.10	4.85	-0.01	90659				

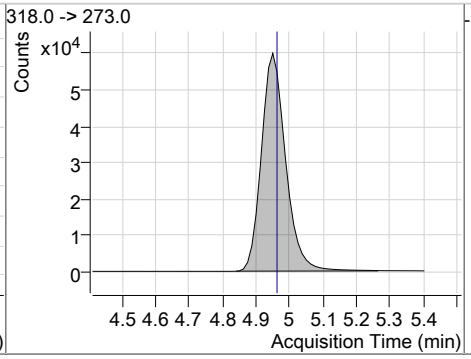


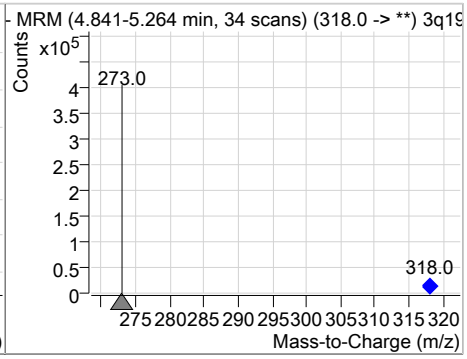




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.50	4.95	-0.01	301659				

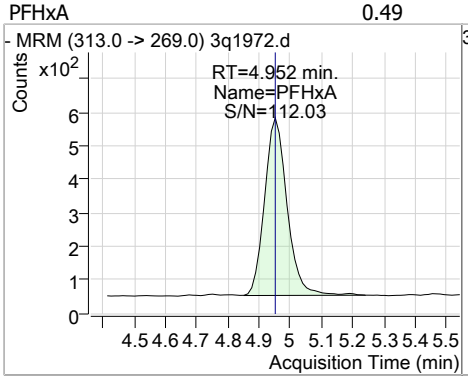


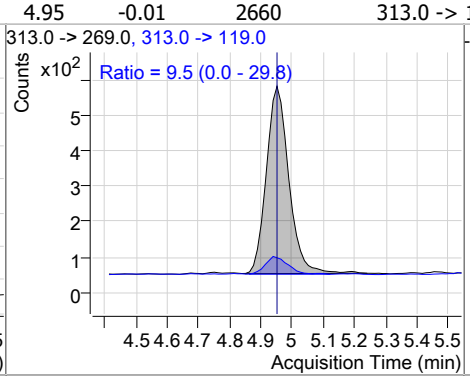


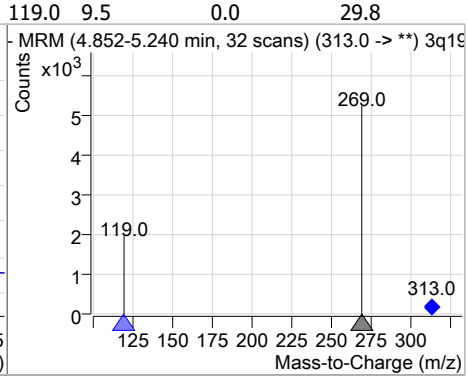


Perfluorinated Compounds by LC/MS/MS

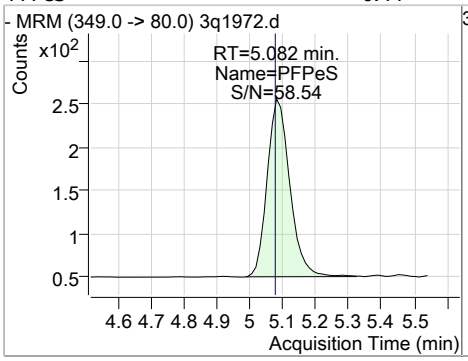
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.49	4.95	-0.01	2660	313.0 -> 119.0	9.5	0.0	29.8

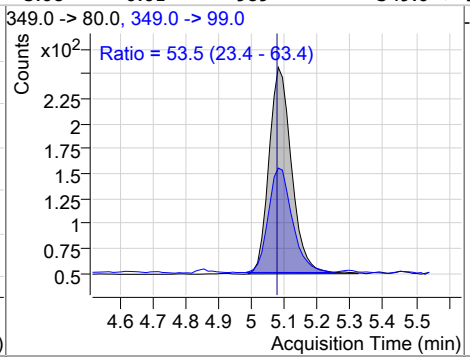


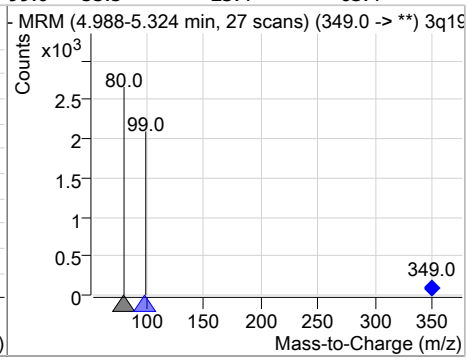




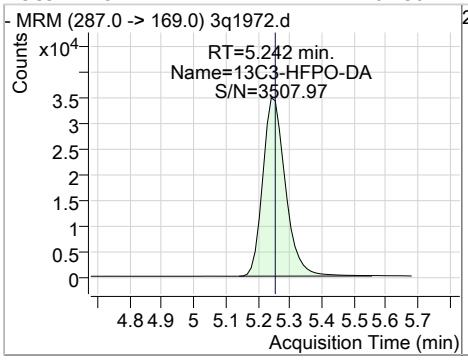
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.44	5.08	-0.01	989	349.0 -> 99.0	53.5	23.4	63.4

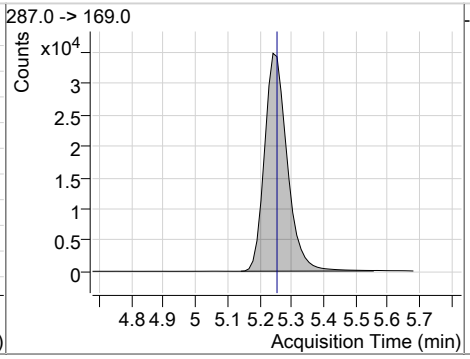


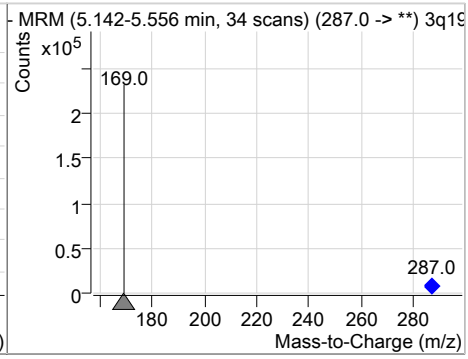




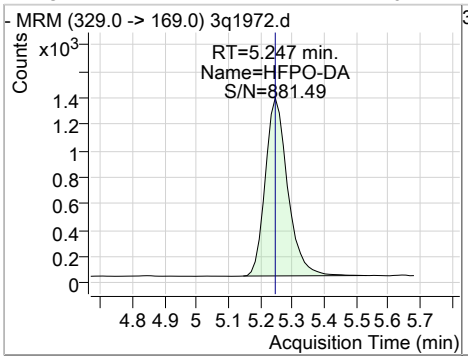
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	102.30	5.24	-0.01	170823				

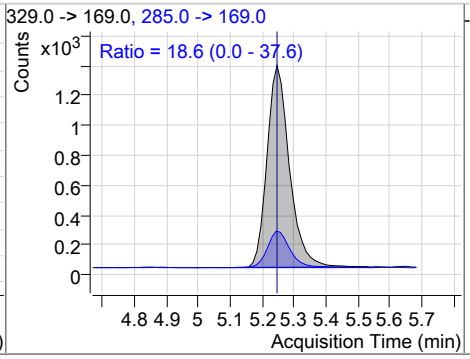


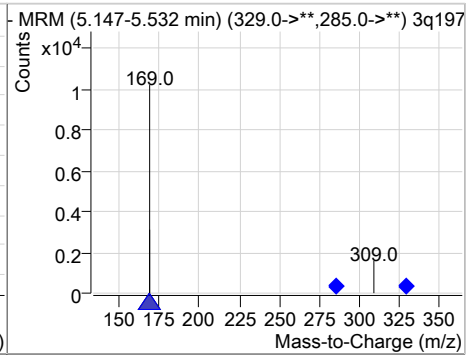




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	2.26	5.25	-0.01	6553	285.0 -> 169.0	18.6	0.0	37.6

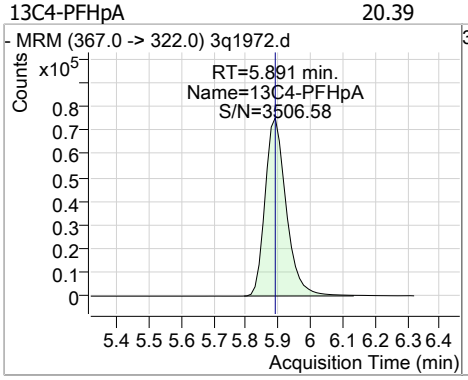


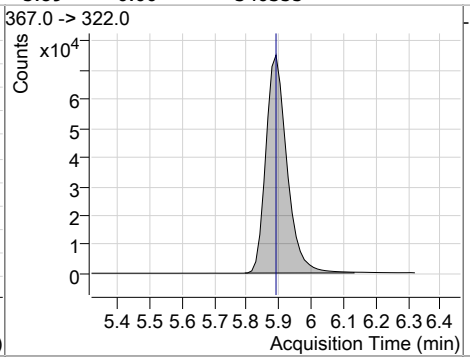


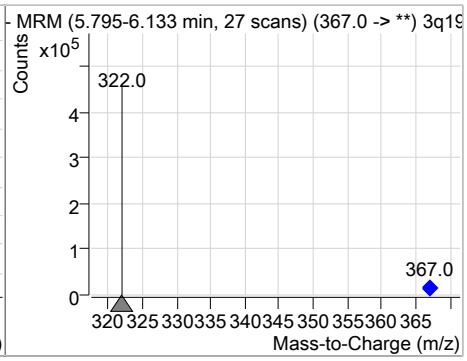


Perfluorinated Compounds by LC/MS/MS

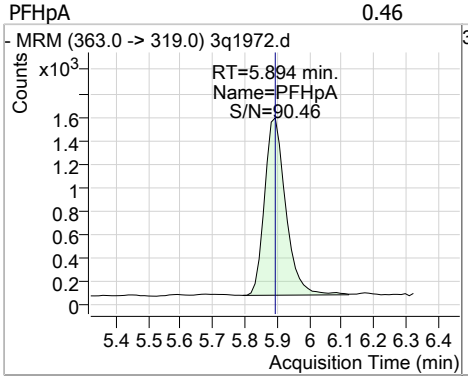
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.39	5.89	0.00	340355				

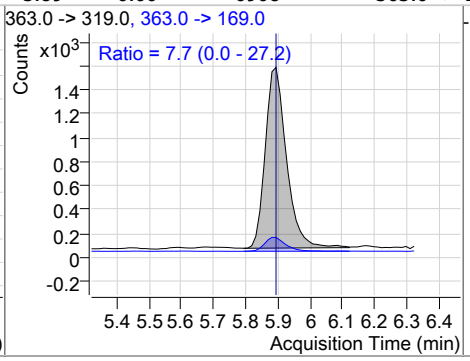


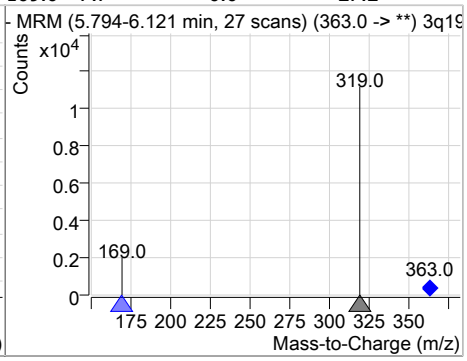




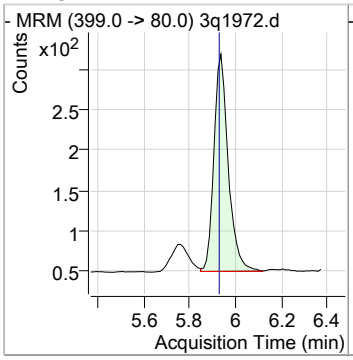
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.46	5.89	0.00	6908	363.0 -> 169.0	7.7	0.0	27.2

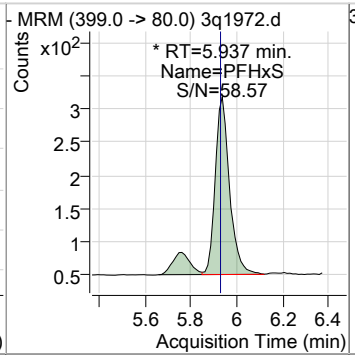


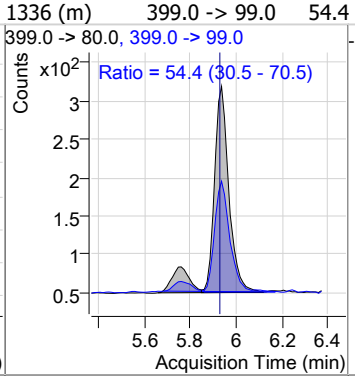


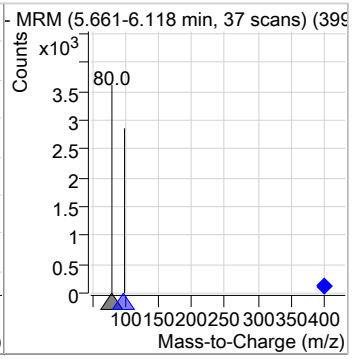


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.47	5.94	0.00	1336 (m)	399.0 -> 99.0	54.4	30.5	70.5

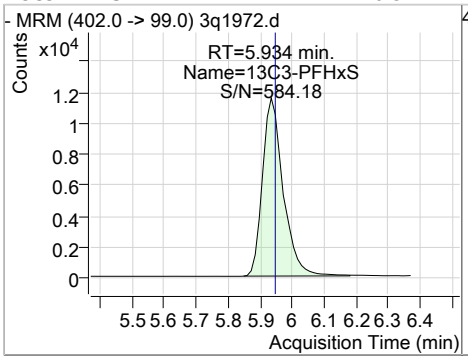


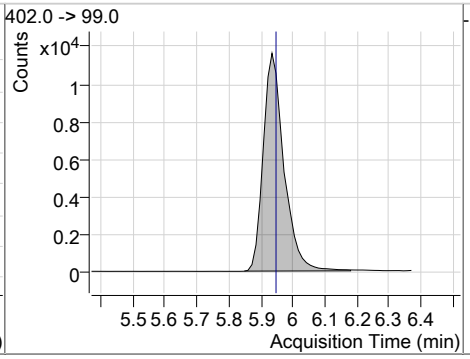


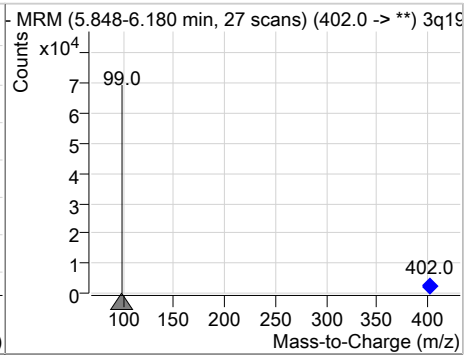




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.51	5.93	-0.01	51828				

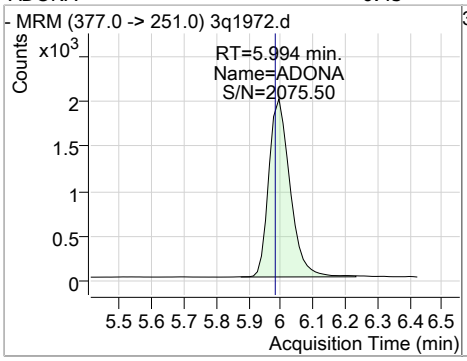


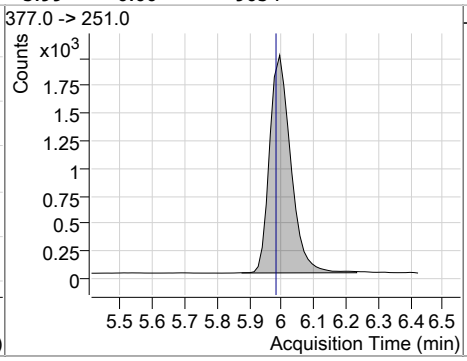


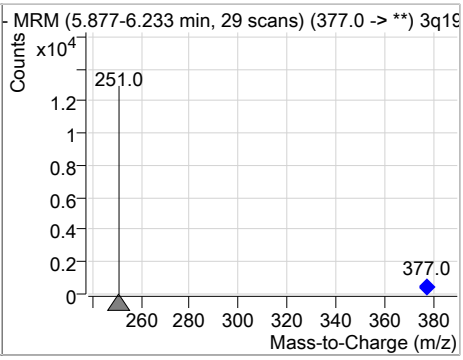


Perfluorinated Compounds by LC/MS/MS

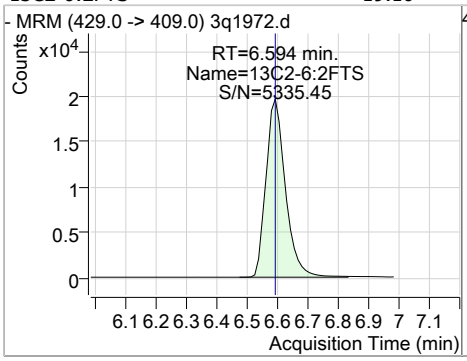
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.45	5.99	0.00	9054				

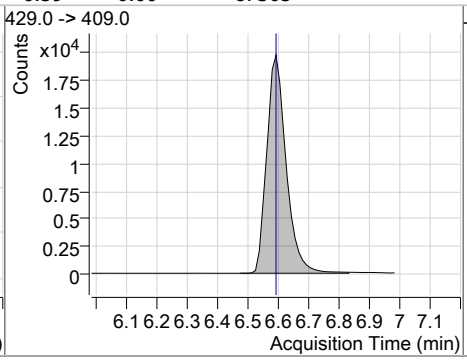


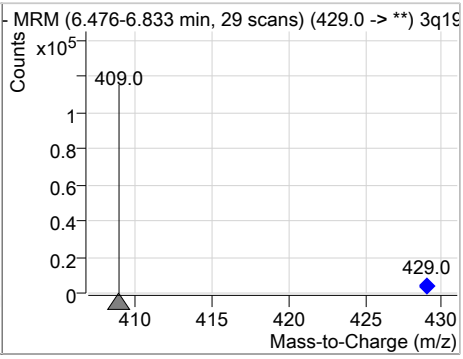




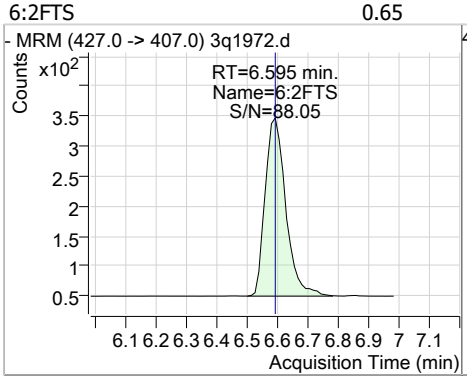
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.10	6.59	0.00	87305				

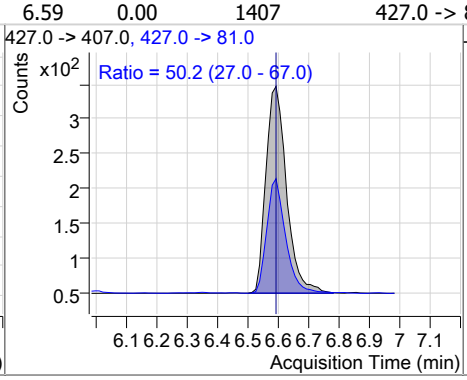


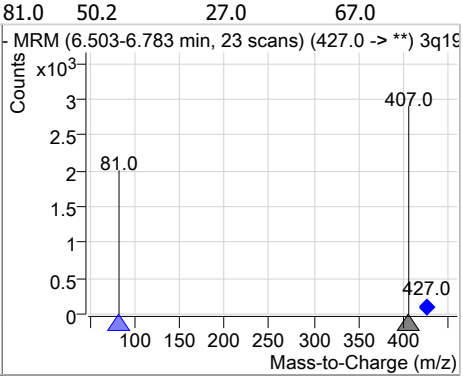




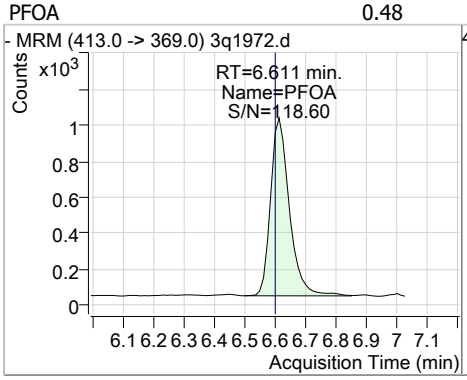
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.65	6.59	0.00	1407	427.0 -> 81.0	50.2	27.0	67.0

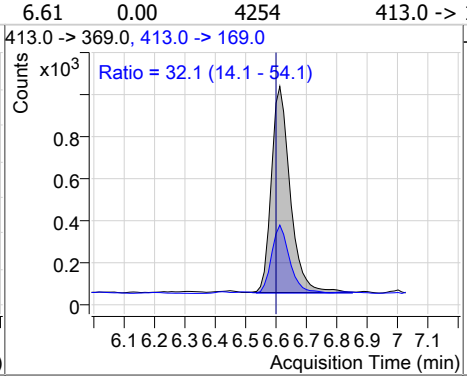


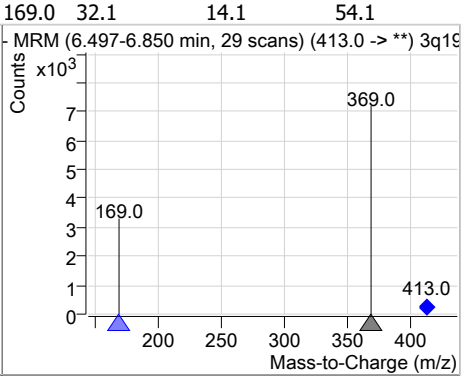




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.48	6.61	0.00	4254	413.0 -> 169.0	32.1	14.1	54.1

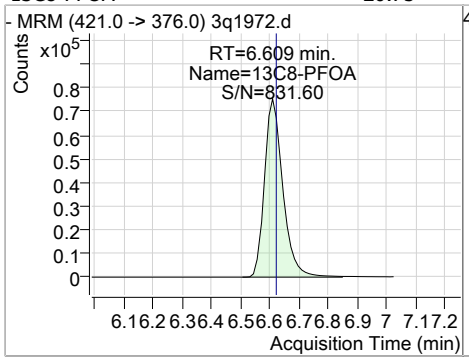


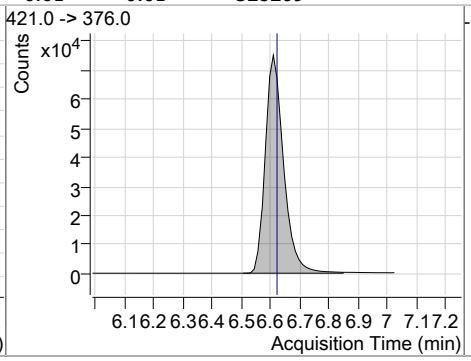


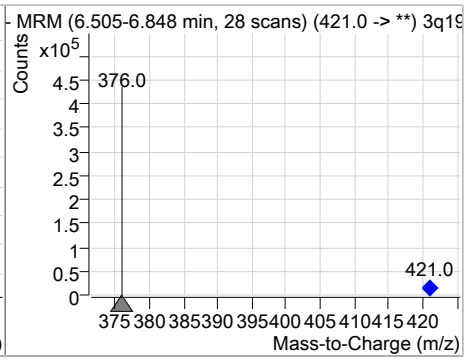


Perfluorinated Compounds by LC/MS/MS

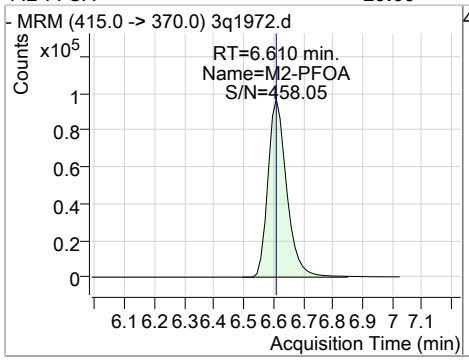
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.75	6.61	-0.01	328269				

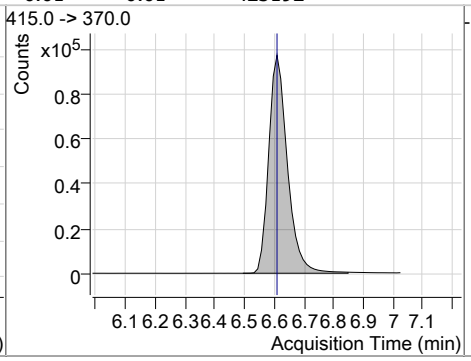


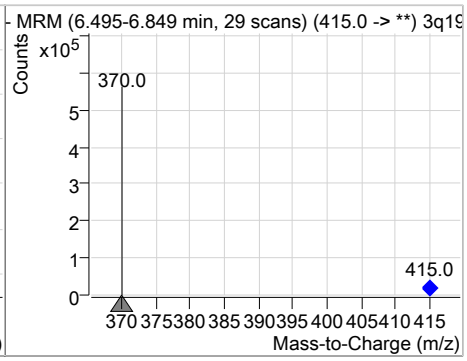




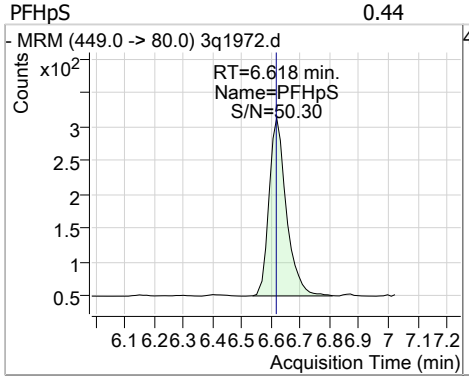
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	423192				

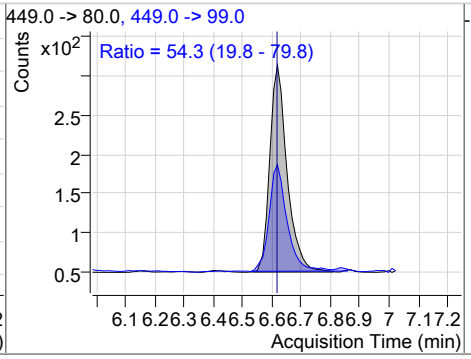


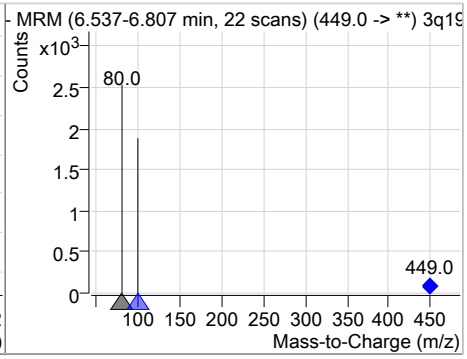




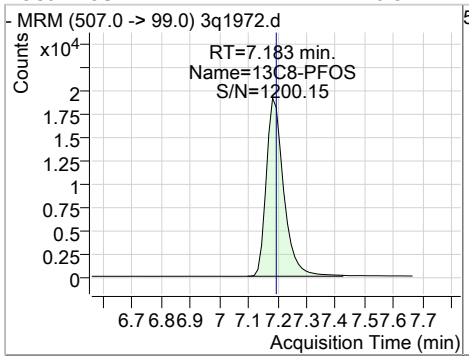
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.44	6.62	-0.01	1086	449.0 -> 99.0	54.3	19.8	79.8

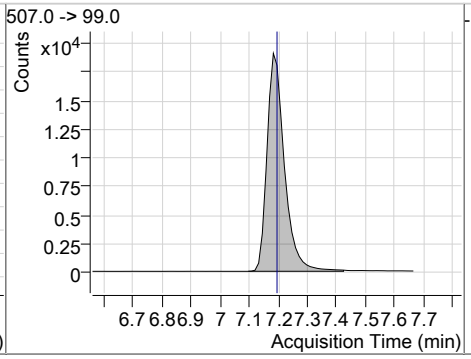


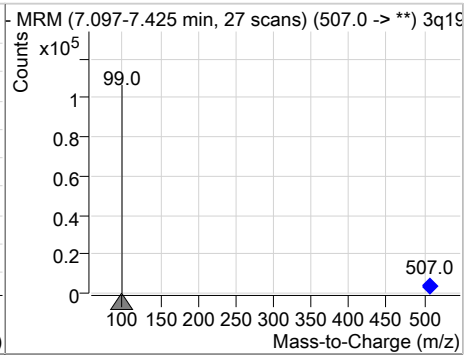




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.52	7.18	-0.01	79045				

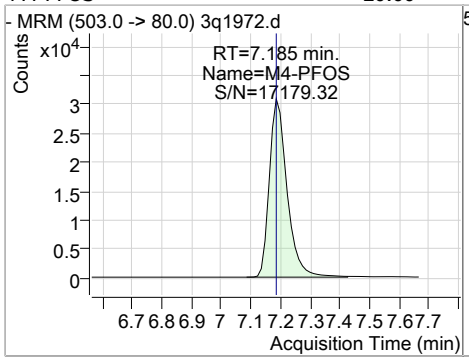


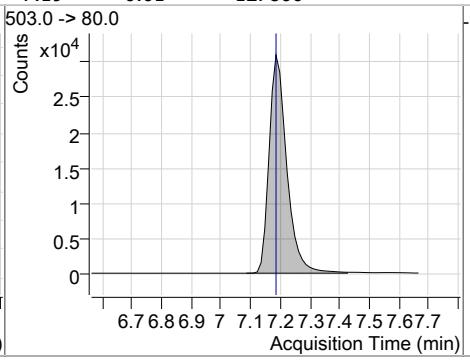


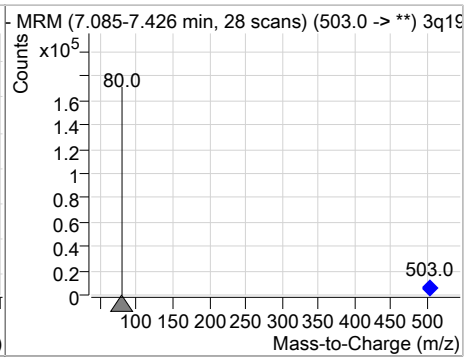


Perfluorinated Compounds by LC/MS/MS

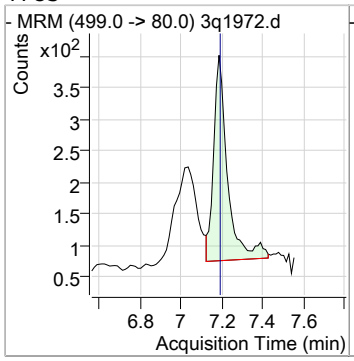
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	127860				

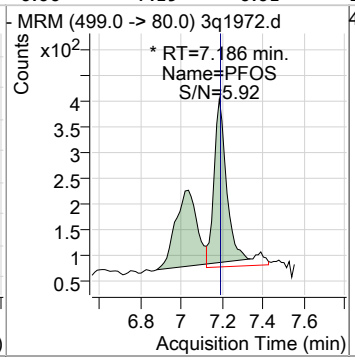


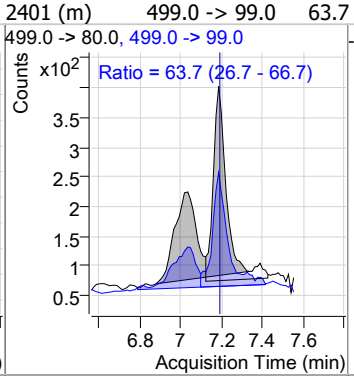


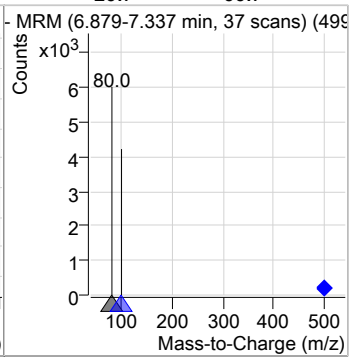


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.66	7.19	-0.01	2401 (m)	499.0 -> 99.0	63.7	26.7	66.7

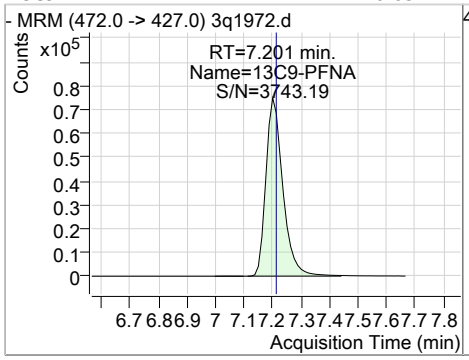


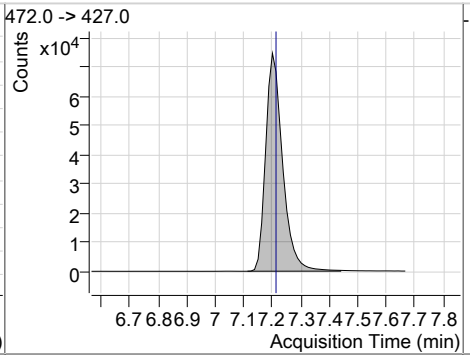


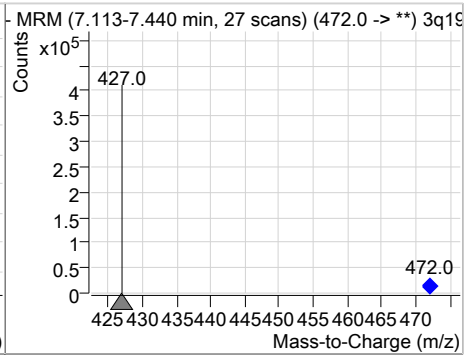




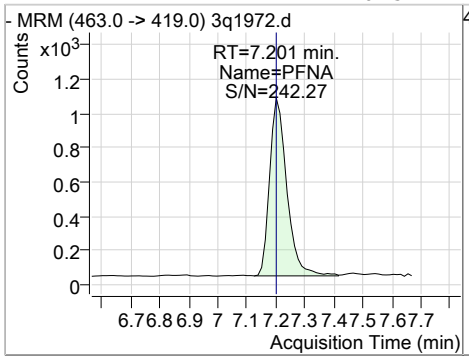
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.65	7.20	-0.01	308566				

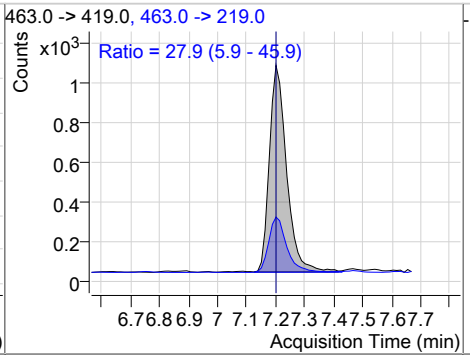


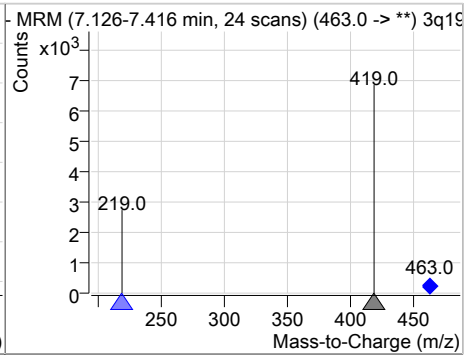




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.45	7.20	-0.01	4284	463.0 -> 219.0	27.9	5.9	45.9

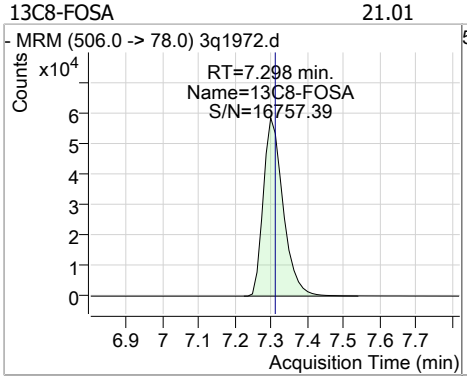


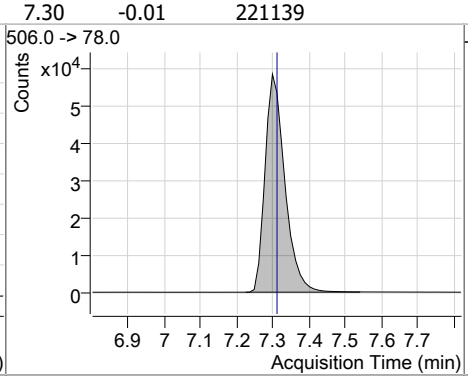


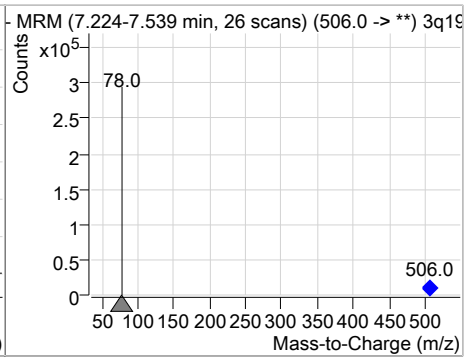


Perfluorinated Compounds by LC/MS/MS

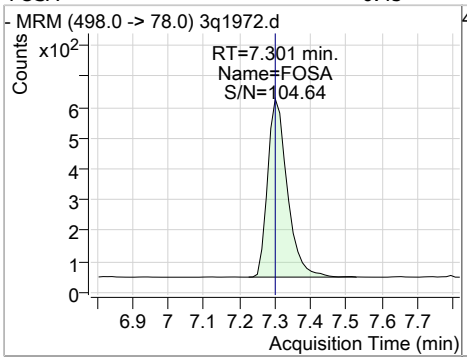
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.01	7.30	-0.01	221139				

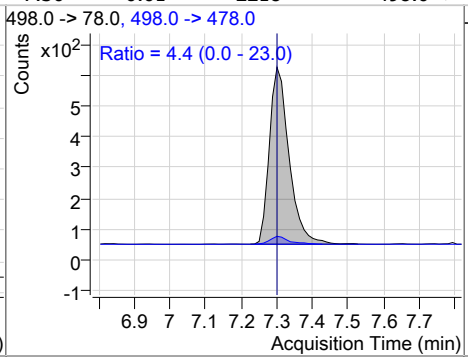


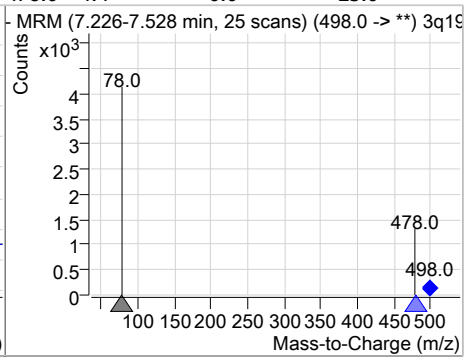




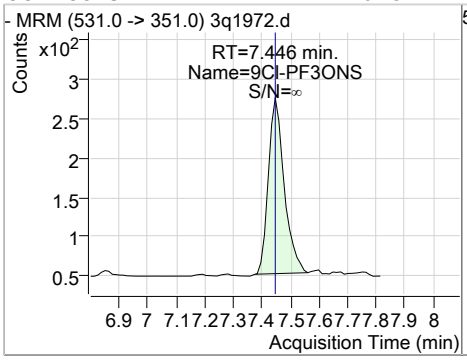
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.45	7.30	-0.01	2218	498.0 -> 478.0	4.4	0.0	23.0

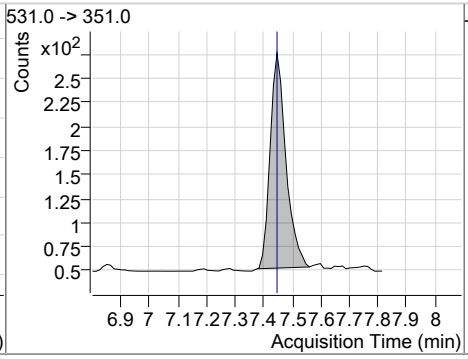


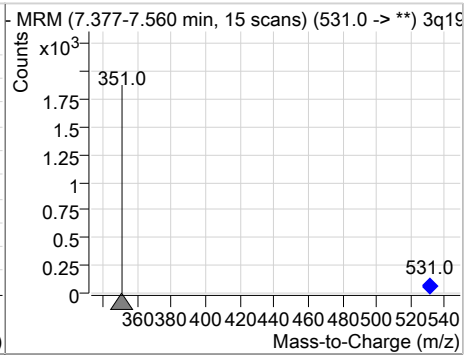




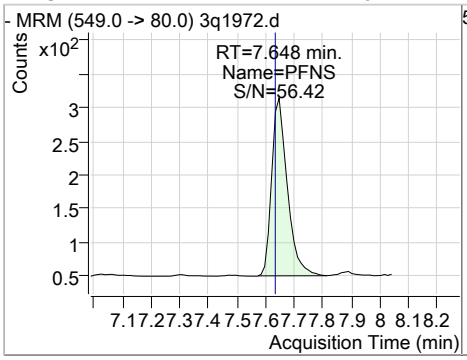
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.45	7.45	0.00	862				

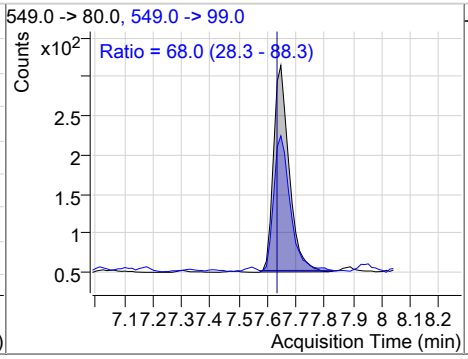


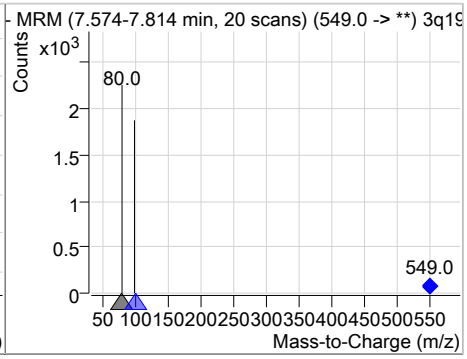




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.47	7.65	0.00	1007	549.0 -> 99.0	68.0	28.3	88.3

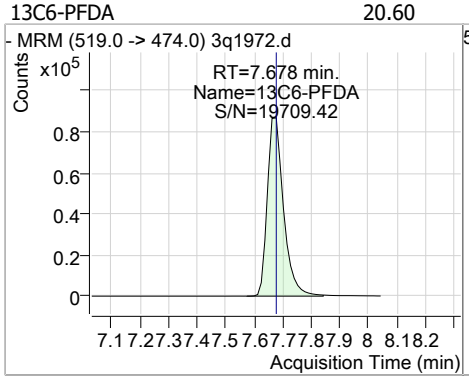


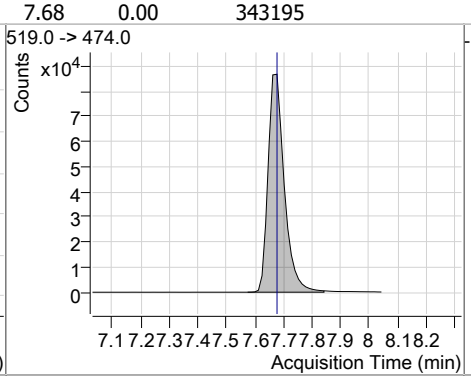


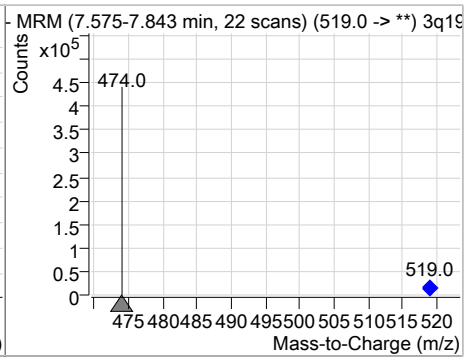


Perfluorinated Compounds by LC/MS/MS

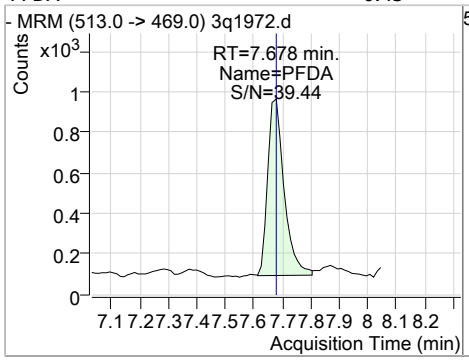
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.60	7.68	0.00	343195				

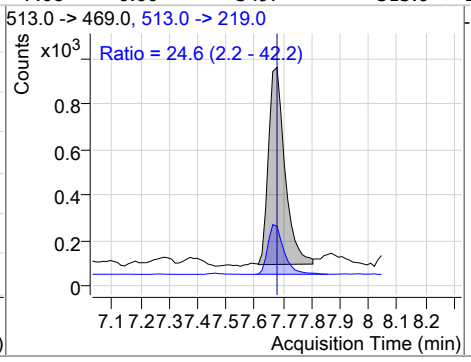


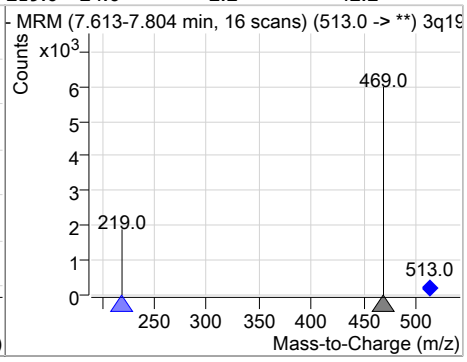




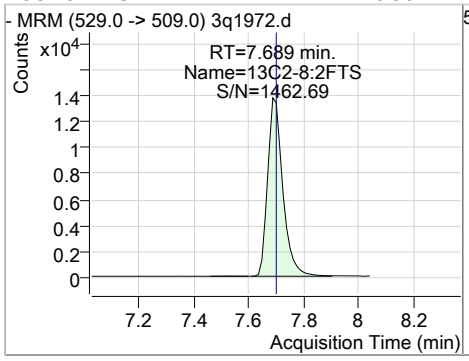
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.43	7.68	0.00	3497	513.0 -> 219.0	24.6	2.2	42.2

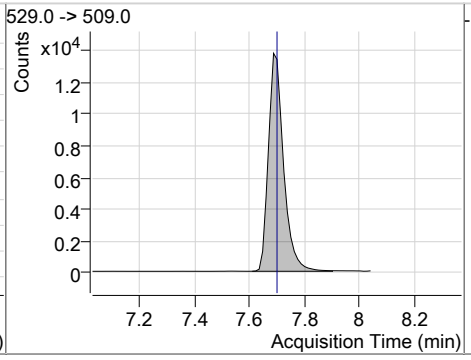


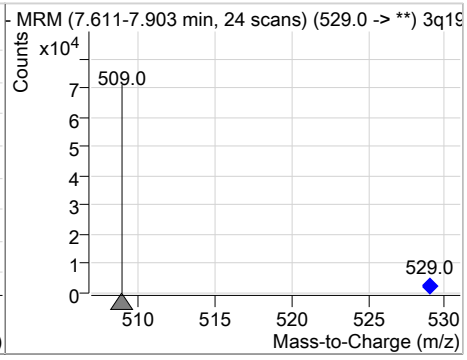




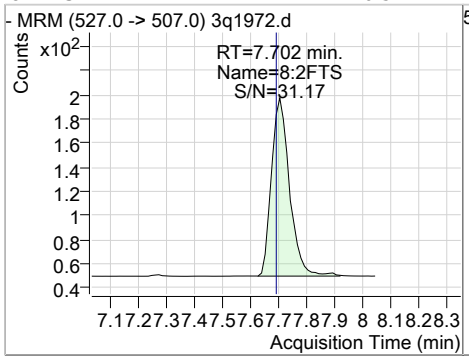
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.90	7.69	-0.01	52832				

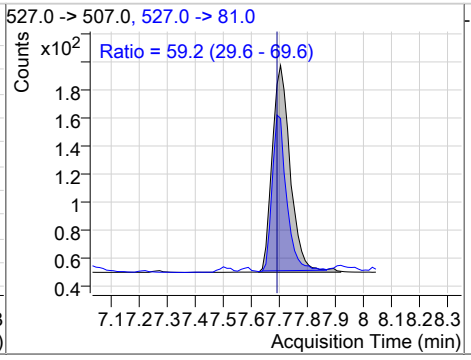


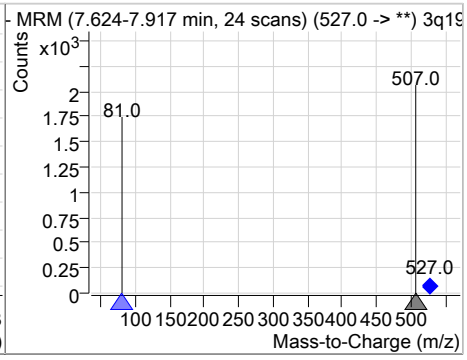




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.51	7.70	0.00	666	527.0 -> 81.0	59.2	29.6	69.6

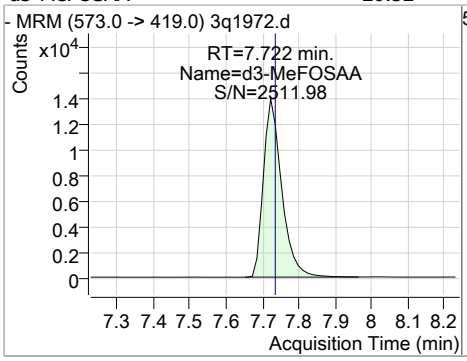


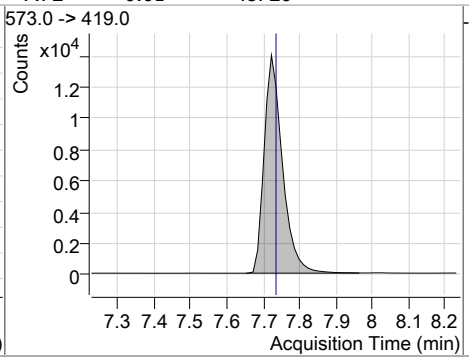


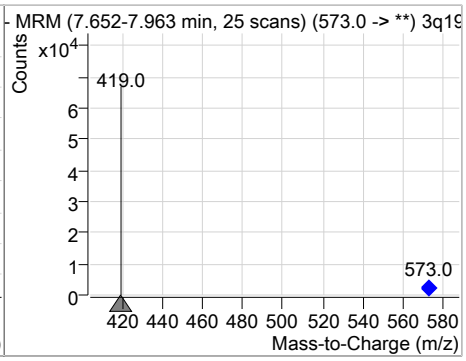


Perfluorinated Compounds by LC/MS/MS

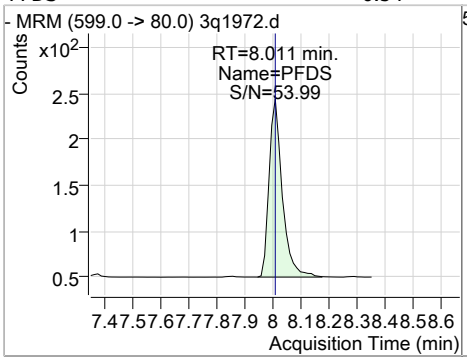
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.52	7.72	-0.01	48726				

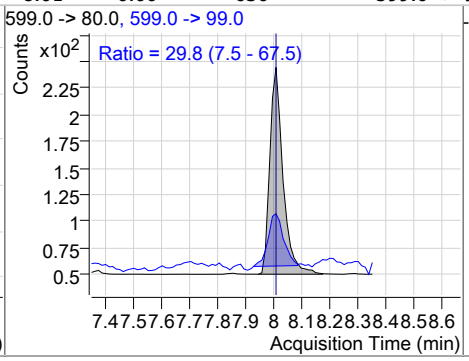


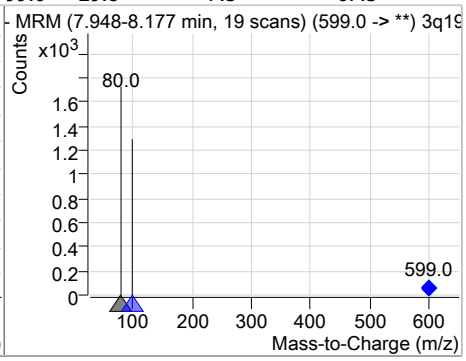




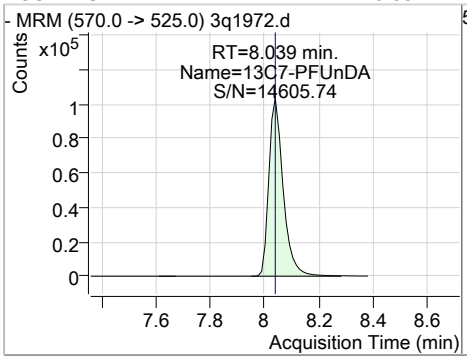
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	0.54	8.01	0.00	636	599.0 -> 99.0	29.8	7.5	67.5

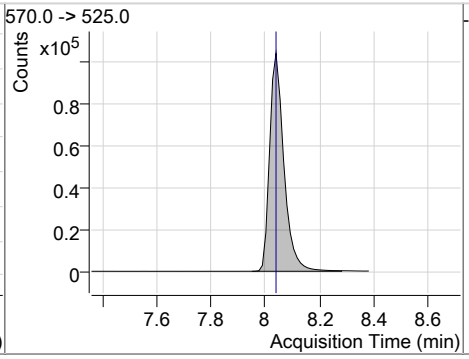


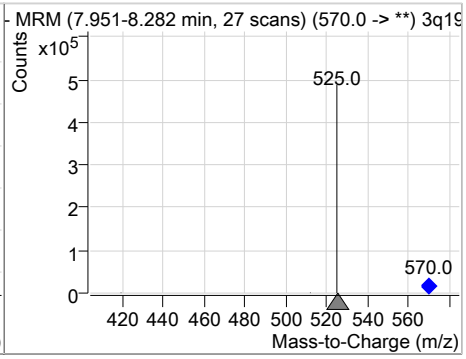




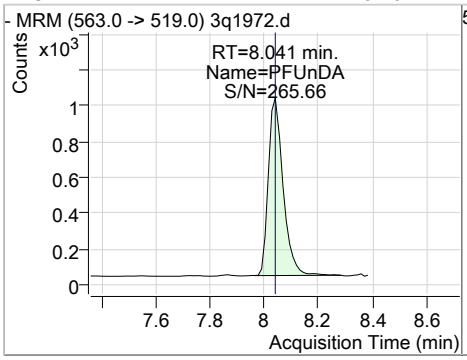
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.55	8.04	0.00	380899				

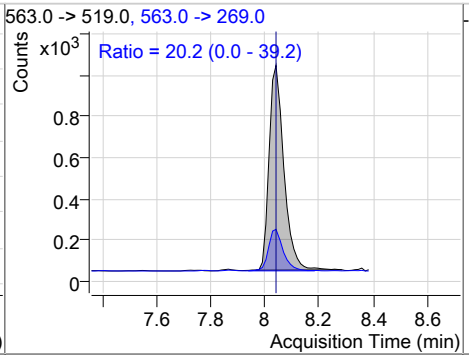


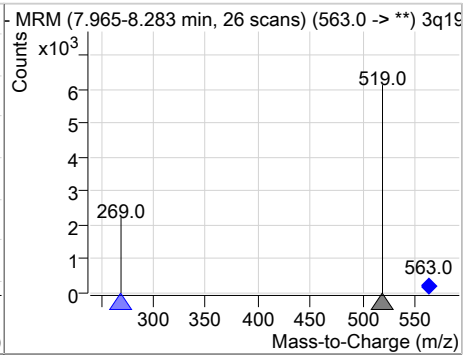




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.46	8.04	0.00	3770	563.0 -> 269.0	20.2	0.0	39.2

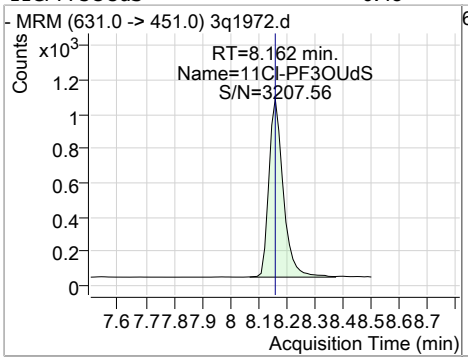


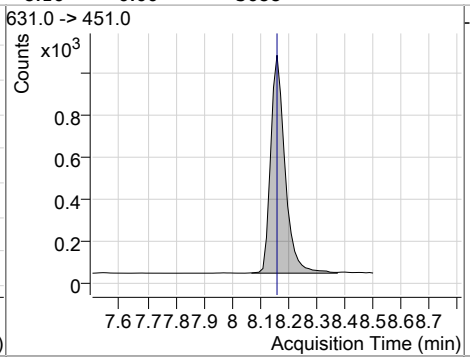


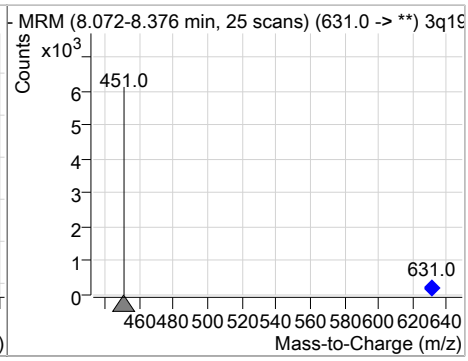


Perfluorinated Compounds by LC/MS/MS

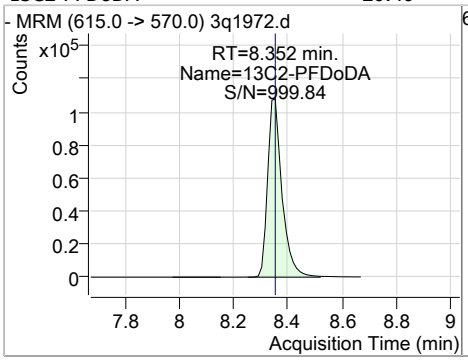
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.48	8.16	0.00	3688				

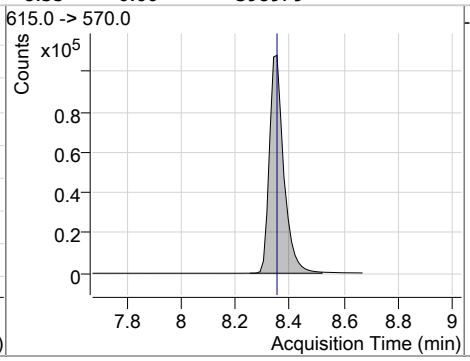


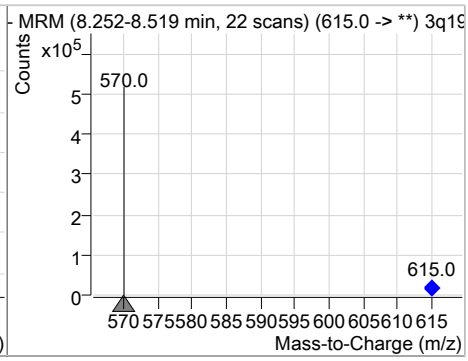




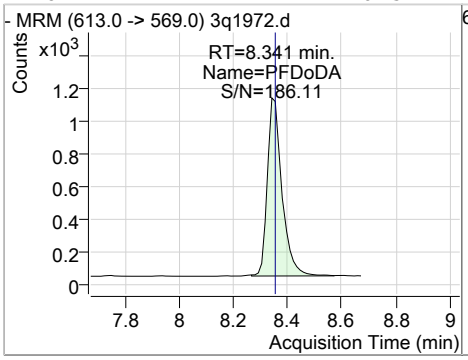
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.40	8.35	0.00	398979				

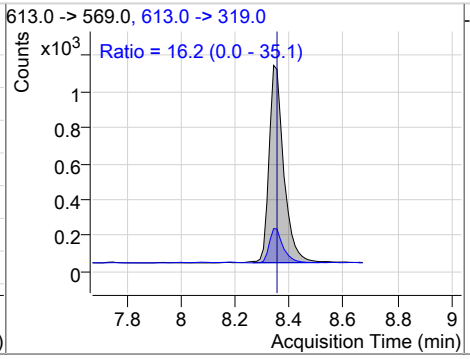


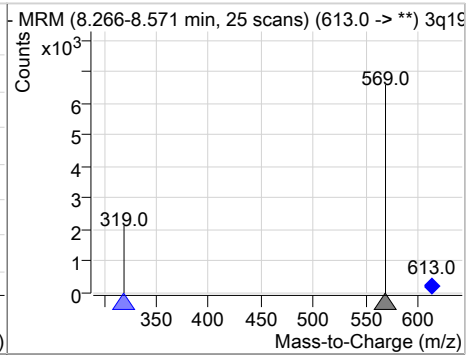




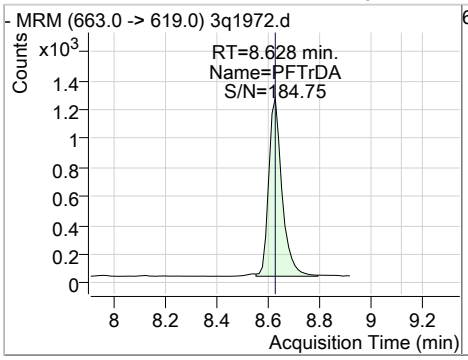
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.45	8.34	-0.01	4113	613.0 -> 319.0	16.2	0.0	35.1

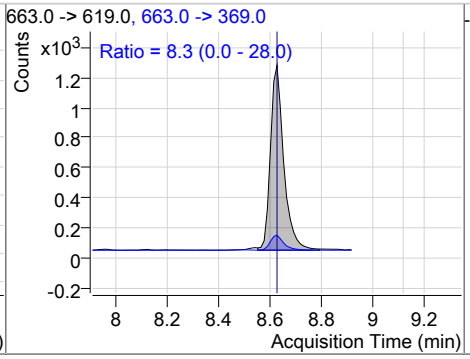


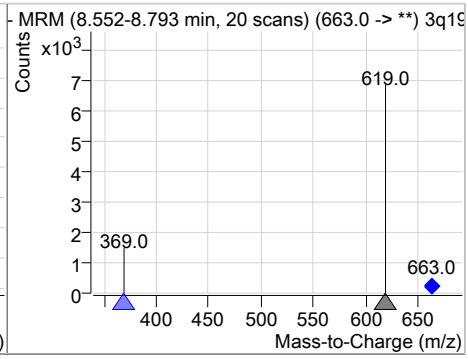




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.44	8.63	0.00	4432	663.0 -> 369.0	8.3	0.0	28.0

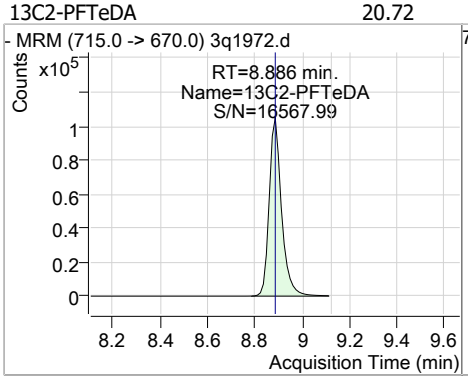


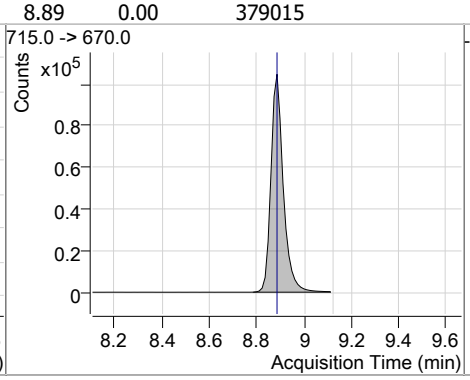


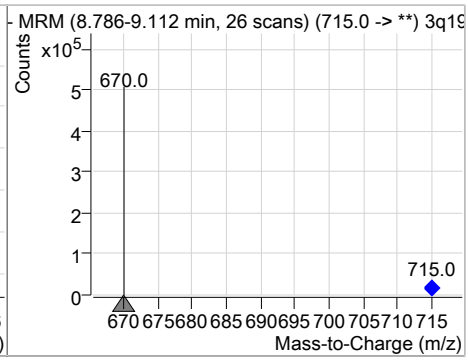


Perfluorinated Compounds by LC/MS/MS

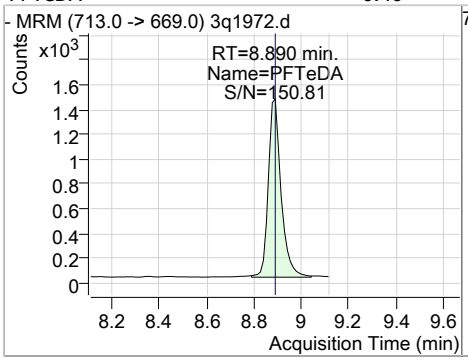
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.72	8.89	0.00	379015				

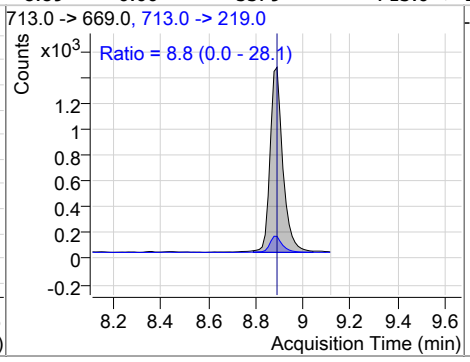


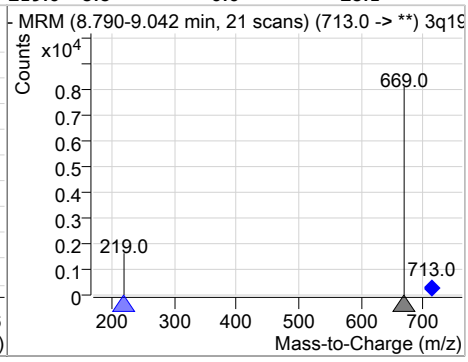




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.46	8.89	0.00	5379	713.0 -> 219.0	8.8	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1972.D
Injection Time: 03/21/19 09:54
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1973.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 10:10:04 AM
Sample Name : ic54-1.0
Vial : P3-A3
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

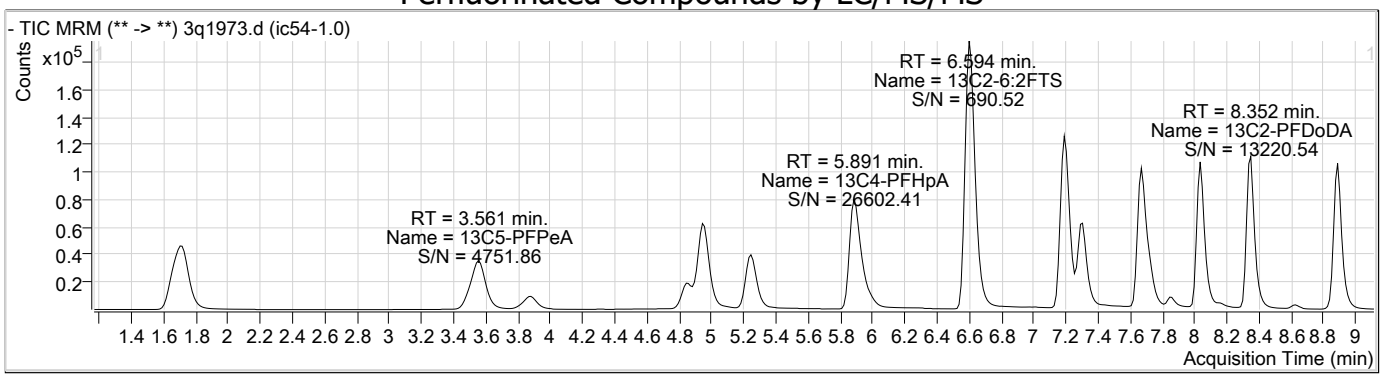
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.702	217.0 -> 172.0	335513	20.00 µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	225001	20.00 µg/L	0.000
M5-PFHxA	4.950	318.0 -> 273.0	302908	20.00 µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	340952	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	327380	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	307041	20.00 µg/L	-0.013
M6-PFDA	7.678	519.0 -> 474.0	346445	20.00 µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	376527	20.00 µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	392150	20.00 µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	370918	20.00 µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	218994	20.00 µg/L	0.000
M3-PFBS	3.879	302.0 -> 99.0	51780	20.00 µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	52290	20.00 µg/L	-0.013
M8-PFOS	7.196	507.0 -> 99.0	79143	20.00 µg/L	0.000
M2-4:2FTS	4.845	329.0 -> 309.0	90935	20.00 µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	87339	20.00 µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	52321	20.00 µg/L	0.000
M3-MeFOSAA	7.722	573.0 -> 419.0	47484	20.00 µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	175445	100.00 µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	428772	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	129178	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.845	329.0 -> 309.0	90781	19.13 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C2-6:2FTS	6.594	429.0 -> 409.0	87346	19.11 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C2-8:2FTS	7.701	529.0 -> 509.0	52320	18.72 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%	
13C2-PFDoDA	8.352	615.0 -> 570.0	392172	20.06 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C2-PFTeDA	8.886	715.0 -> 670.0	371196	20.29 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C3-PFBS	3.879	302.0 -> 99.0	51358	20.36 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C3-PFHxS	5.934	402.0 -> 99.0	51833	20.51 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C4-PFBA	1.702	217.0 -> 172.0	332611	20.39 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C4-PFHpA	5.891	367.0 -> 322.0	340314	20.39 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	4.950	318.0 -> 273.0	301160	20.46 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C5-PFPeA	3.561	268.0 -> 223.0	224962	20.32 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C6-PFDA	7.678	519.0 -> 474.0	346515	20.80 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

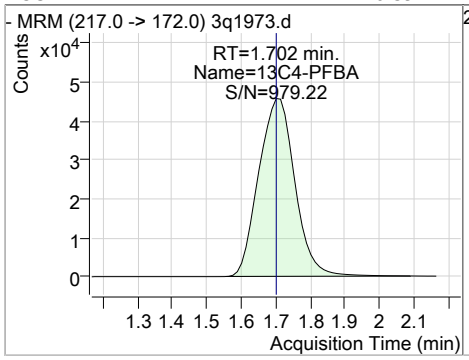
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C7-PFUnDA	8.039	570.0 -> 525.0	376743	20.32 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C8-FOSA	7.311	506.0 -> 78.0	218970	20.81 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%		
13C8-PFOA	6.609	421.0 -> 376.0	327299	20.69 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%		
13C8-PFOS	7.196	507.0 -> 99.0	79458	20.63 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
13C9-PFNA	7.201	472.0 -> 427.0	306751	20.53 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
d3-MeFOSAA	7.722	573.0 -> 419.0	47474	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
13C3-HFPO-DA	5.255	287.0 -> 169.0	175445	105.06 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 105.1%		
M2-PFOA	6.610	415.0 -> 370.0	428772	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.185	503.0 -> 80.0	129178	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						**QValue**
4:2FTS	4.848	327.0 -> 307.0	2489	1.00 µg/L		94
6:2FTS	6.595	427.0 -> 407.0	2114	0.98 µg/L		90
8:2FTS	7.702	527.0 -> 507.0	1280	0.99 µg/L		85
EtFOSAA	7.861	584.0 -> 419.0	1093	1.03 µg/L		97
FOSA	7.301	498.0 -> 78.0	4691	0.96 µg/L		97
MeFOSAA	7.723	570.0 -> 419.0	1063	0.84 µg/L		99
PFBA	1.710	213.0 -> 169.0	3030	0.95 µg/L		100
PFBS	3.883	299.0 -> 80.0	3467	0.96 µg/L		100
PFDA	7.678	513.0 -> 469.0	7472	0.91 µg/L		98
PFDoDA	8.354	613.0 -> 569.0	8378	0.94 µg/L		99
PFDS	8.011	599.0 -> 80.0	1174	1.01 µg/L		97
PFHpA	5.894	363.0 -> 319.0	14199	0.94 µg/L		98
PFHpS	6.618	449.0 -> 80.0	2411	0.97 µg/L		96
PFHxA	4.952	313.0 -> 269.0	5219	0.97 µg/L		97
PFHxS	5.937	399.0 -> 80.0	2801	0.97 µg/L	m	99
PFNA	7.201	463.0 -> 419.0	9039	0.95 µg/L		96
PFNS	7.648	549.0 -> 80.0	2129	0.99 µg/L		99
PFOA	6.611	413.0 -> 369.0	8368	0.95 µg/L		98
PFOS	7.186	499.0 -> 80.0	3903	1.06 µg/L	m	94
PFPeA	3.564	263.0 -> 219.0	10961	0.96 µg/L		100
PFPeS	5.082	349.0 -> 80.0	2078	0.93 µg/L		98
PFTeDA	8.890	713.0 -> 669.0	10881	0.94 µg/L		100
PFTrDA	8.628	663.0 -> 619.0	8932	0.90 µg/L		99
PFUnDA	8.041	563.0 -> 519.0	7418	0.91 µg/L		98
11Cl-PF3OUdS	8.162	631.0 -> 451.0	7278	0.97 µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	1875	0.97 µg/L		100
ADONA	5.994	377.0 -> 251.0	18891	0.93 µg/L		100
HFPO-DA	5.247	329.0 -> 169.0	13206	4.44 µg/L		98

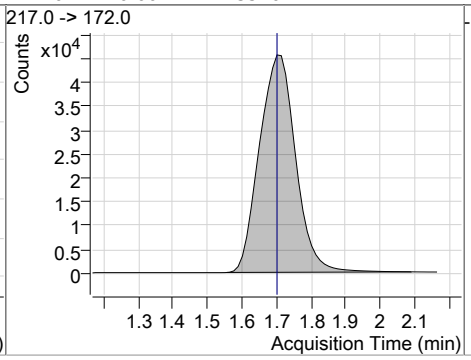
 # = Qualifier out of range, m = manually integrated, + = Area summed

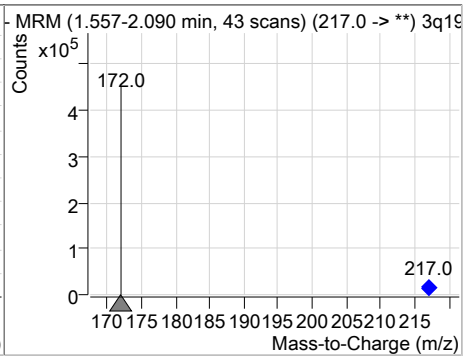
Perfluorinated Compounds by LC/MS/MS



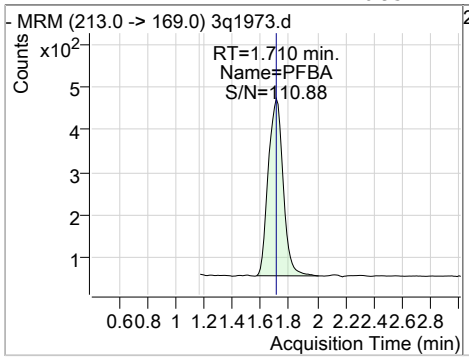
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.39	1.70	0.00	332611				

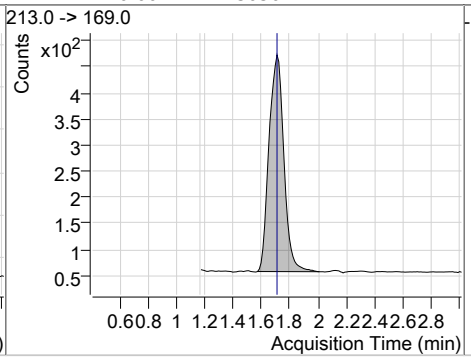


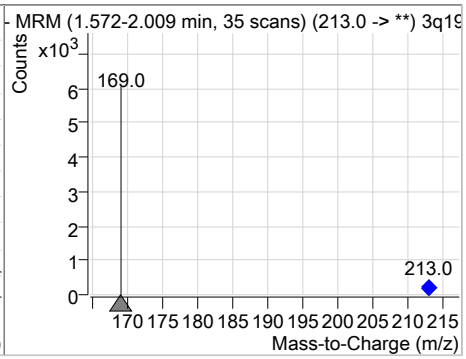




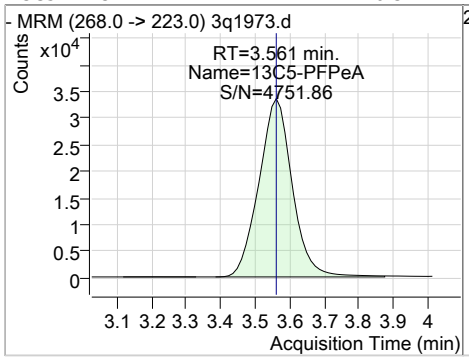
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	0.95	1.71	0.00	3030				

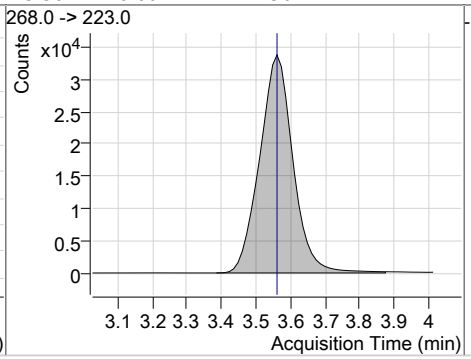


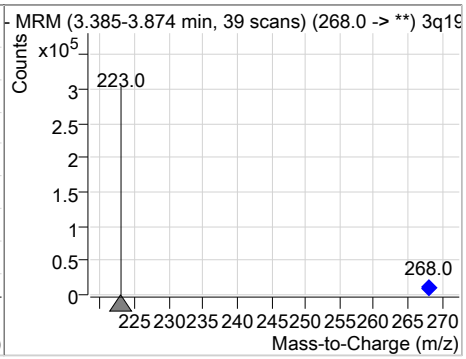




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.32	3.56	0.00	224962				

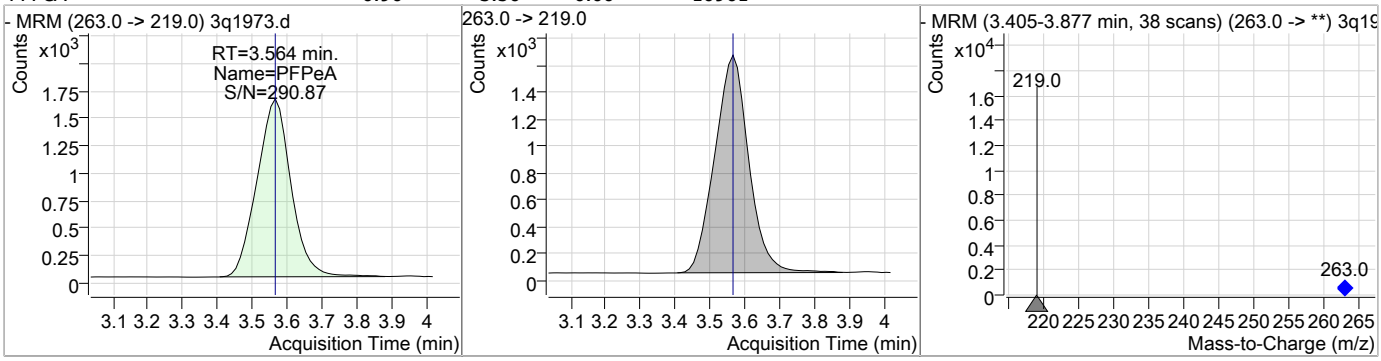




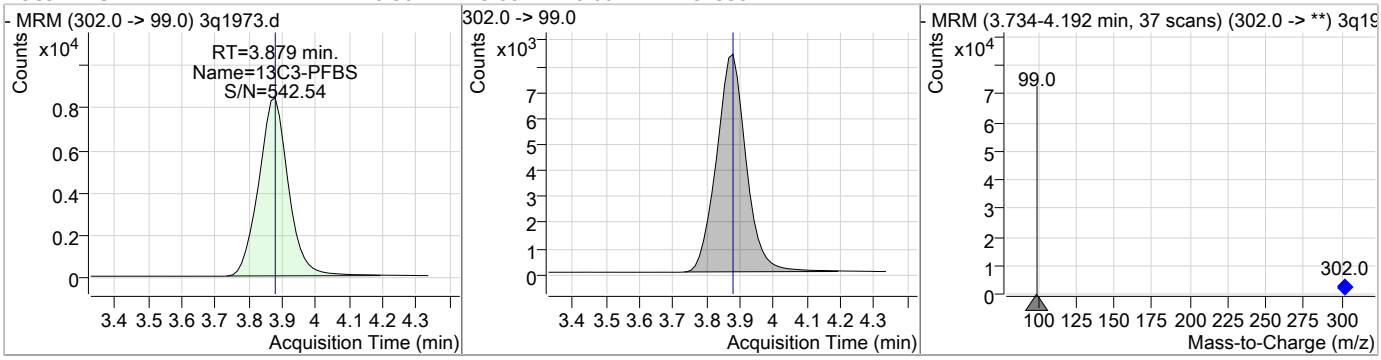


Perfluorinated Compounds by LC/MS/MS

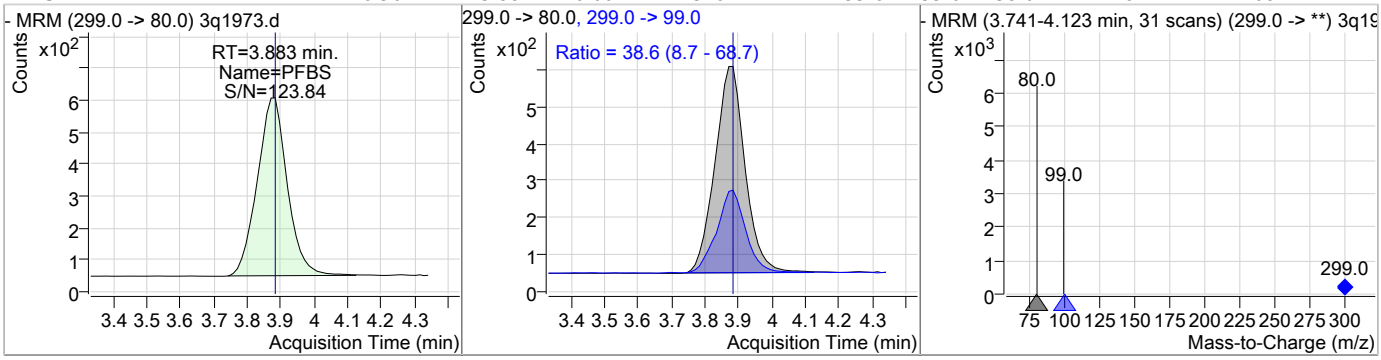
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.96	3.56	0.00	10961				



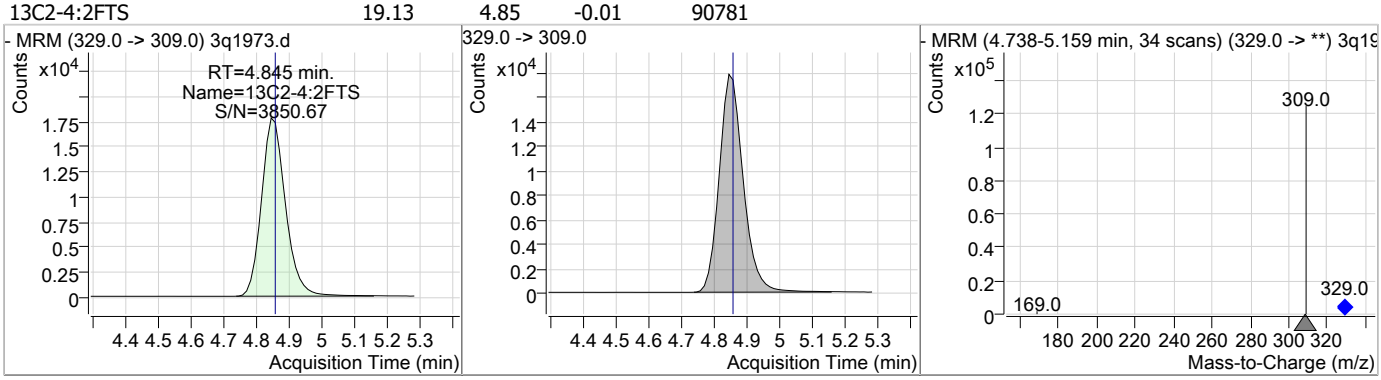
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.36	3.88	0.00	51358				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.96	3.88	0.00	3467	299.0 -> 99.0	38.6	8.7	68.7

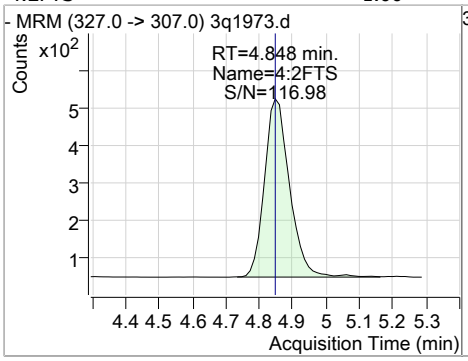


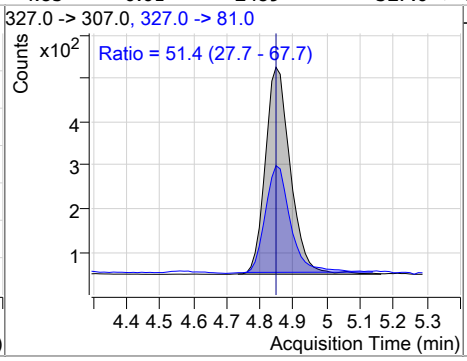
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.13	4.85	-0.01	90781				

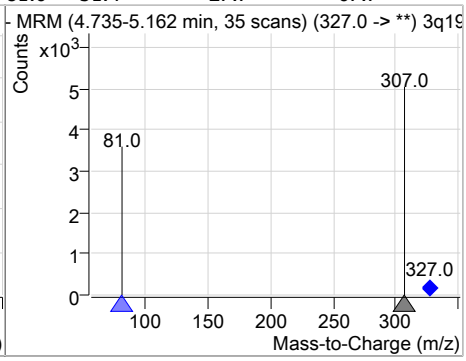


Perfluorinated Compounds by LC/MS/MS

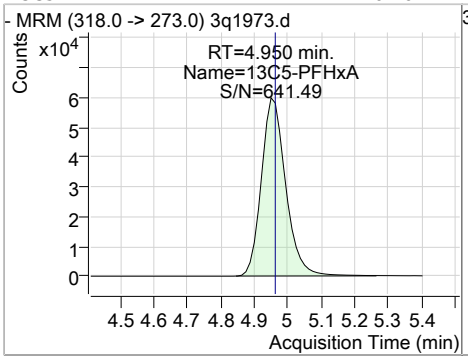
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.00	4.85	-0.01	2489	327.0 -> 81.0	51.4	27.7	67.7

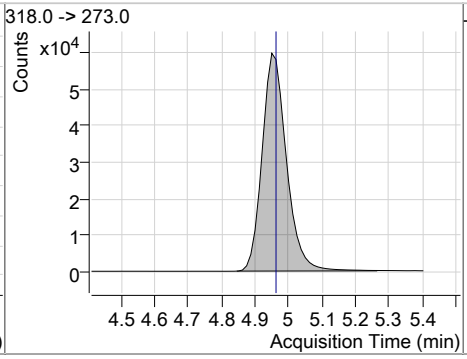


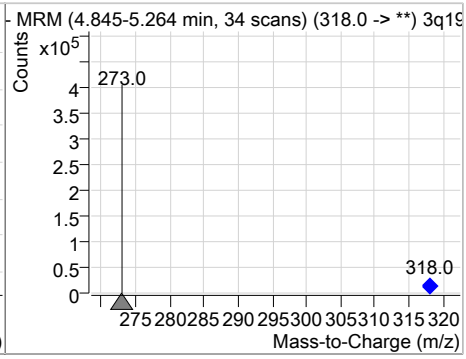




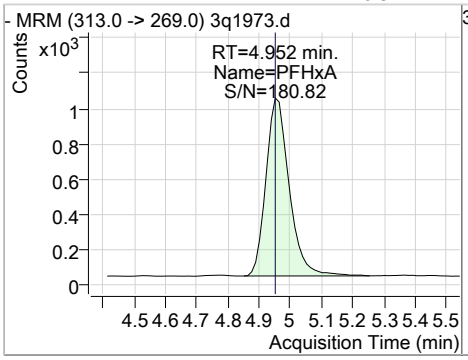
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.46	4.95	-0.01	301160				

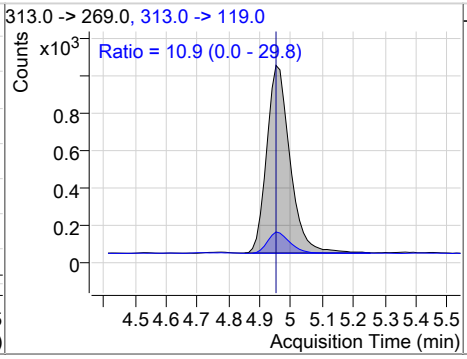


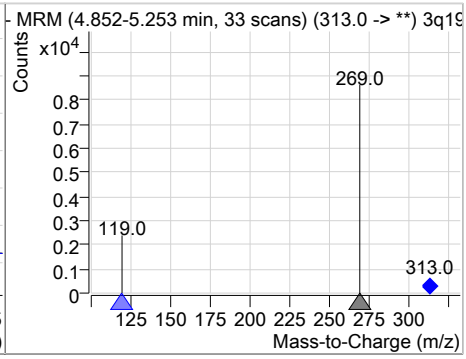




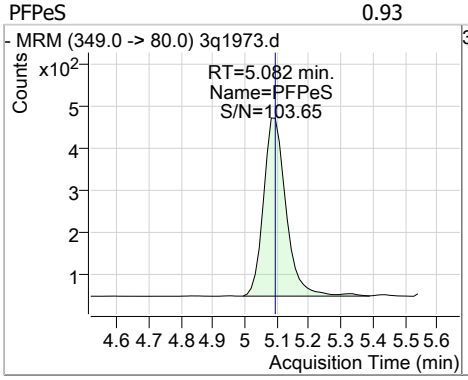
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.97	4.95	-0.01	5219	313.0 -> 119.0	10.9	0.0	29.8

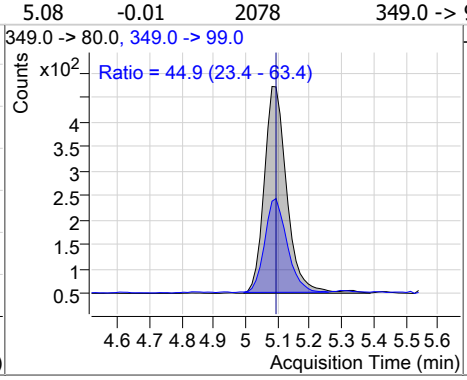


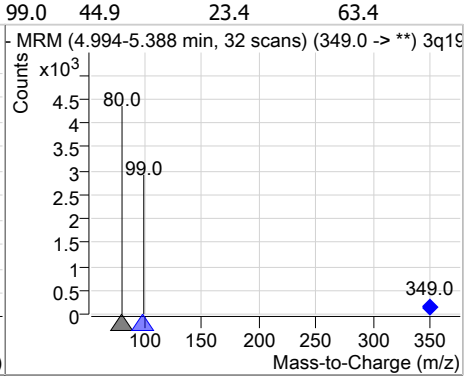




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.93	5.08	-0.01	2078	349.0 -> 99.0	44.9	23.4	63.4

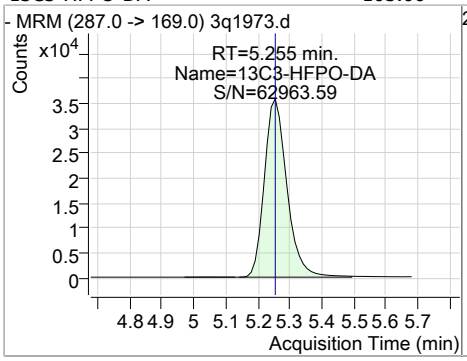


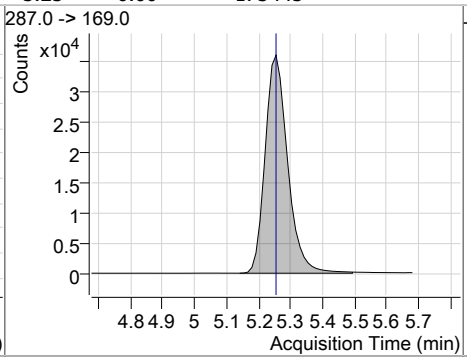


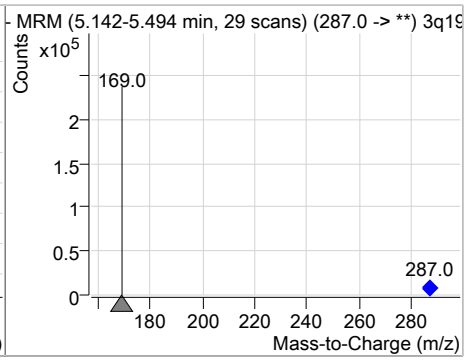


Perfluorinated Compounds by LC/MS/MS

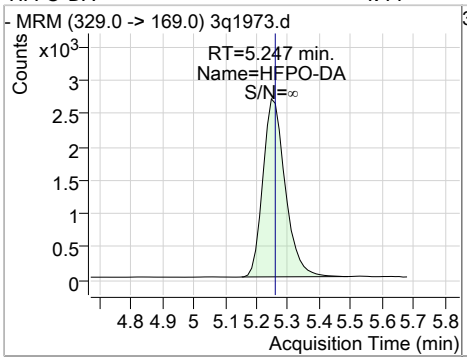
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	105.06	5.25	0.00	175445				

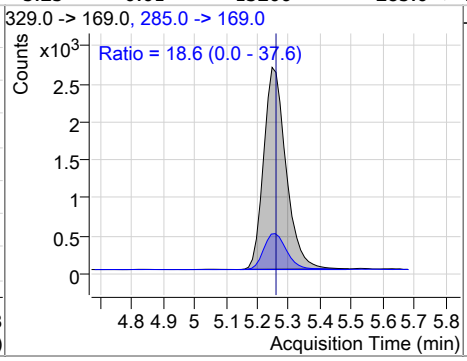


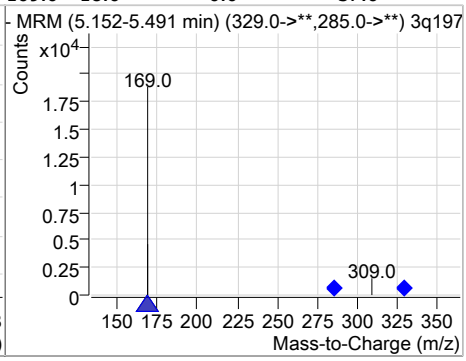




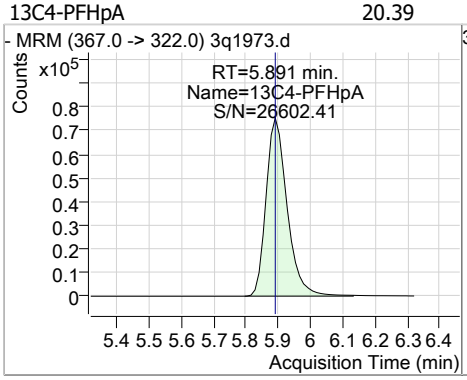
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.44	5.25	-0.01	13206	285.0 -> 169.0	18.6	0.0	37.6

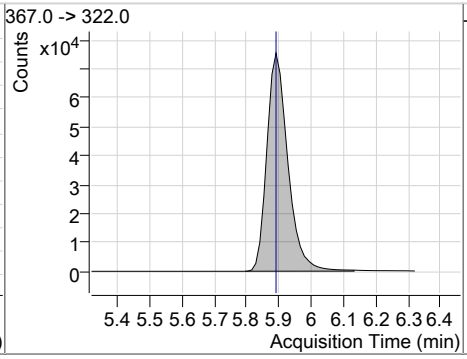


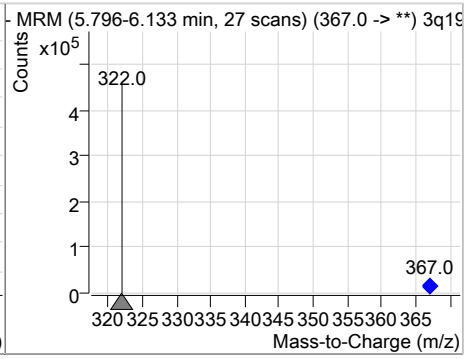




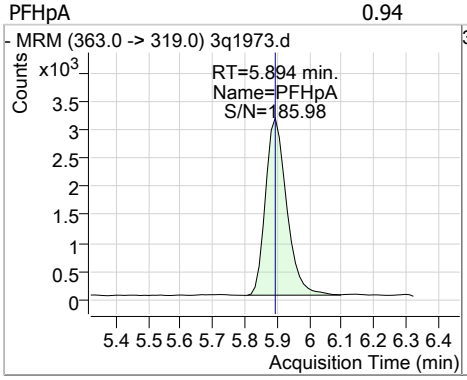
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.39	5.89	0.00	340314				

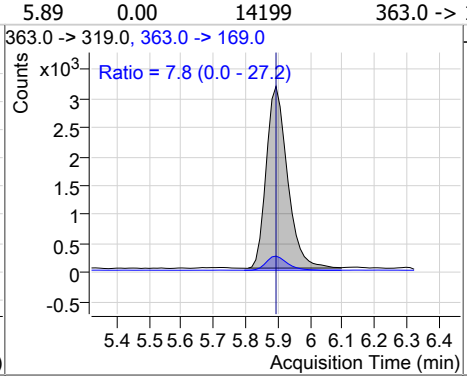


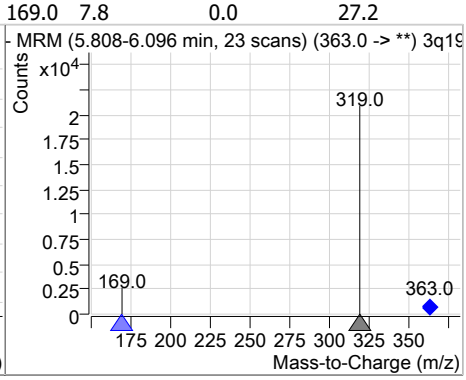




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.94	5.89	0.00	14199	363.0 -> 169.0	7.8	0.0	27.2

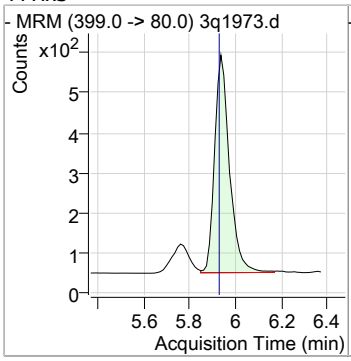


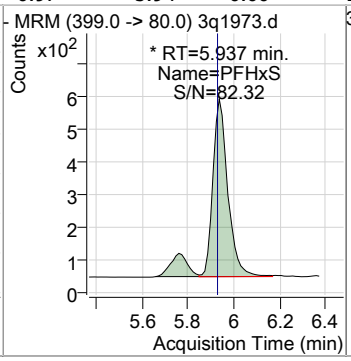


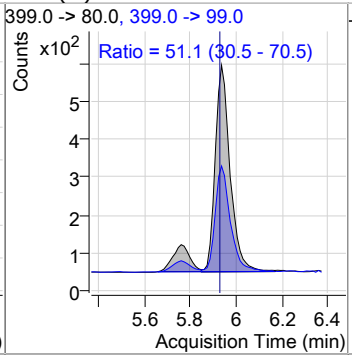


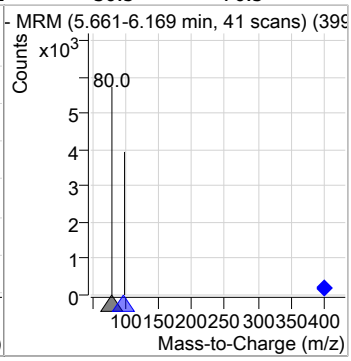
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.97	5.94	0.00	2801 (m)	399.0 -> 99.0	51.1	30.5	70.5

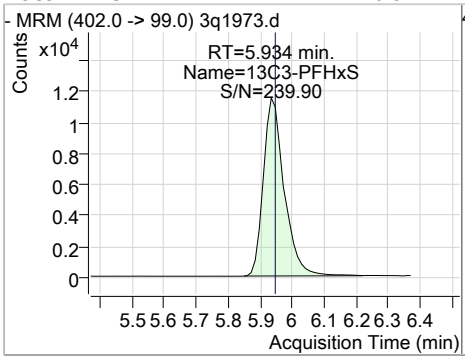


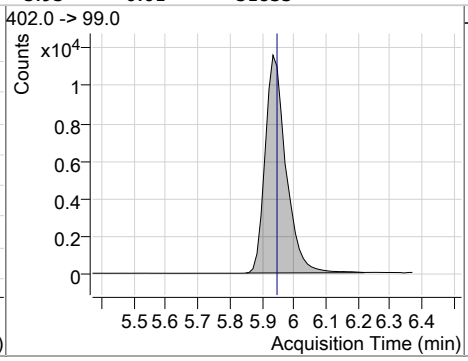


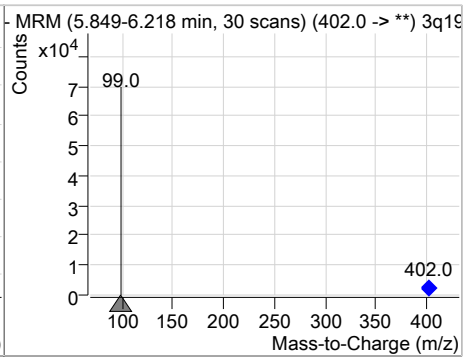




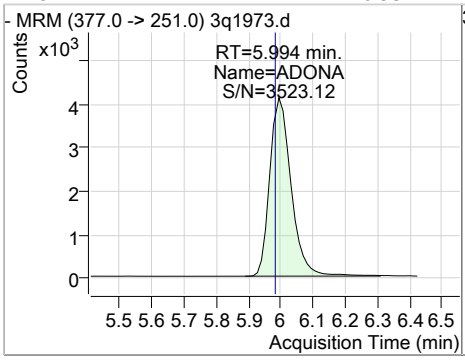
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.51	5.93	-0.01	51833				

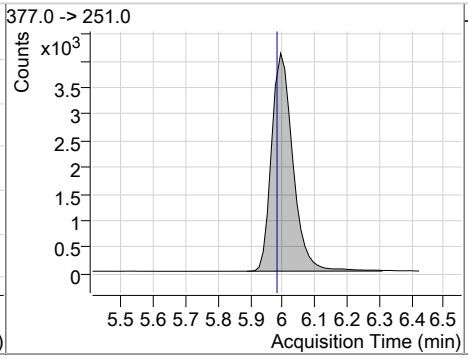


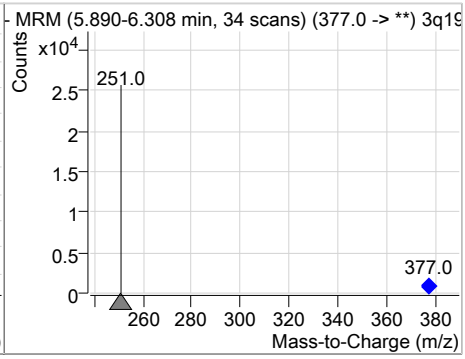




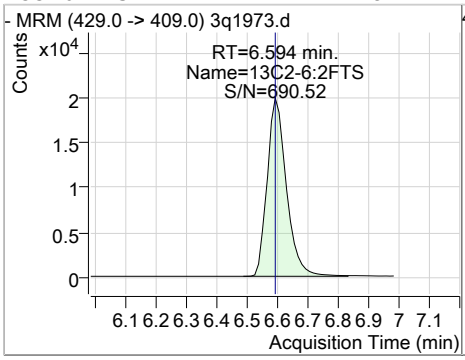
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	0.93	5.99	0.00	18891				

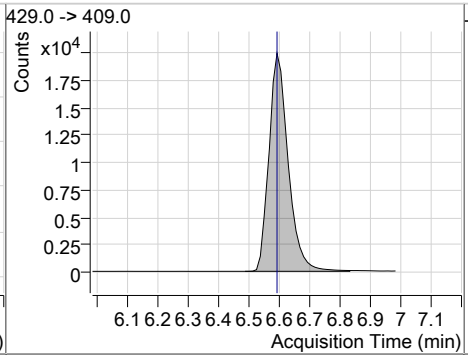


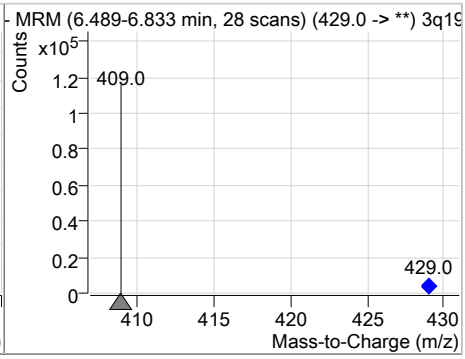




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.11	6.59	0.00	87346				

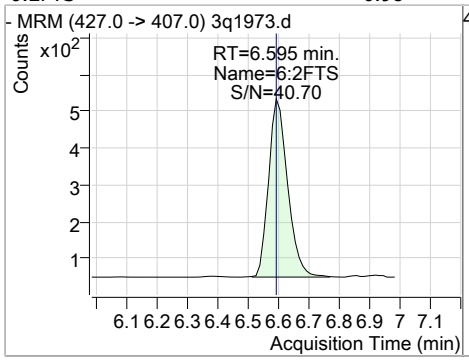


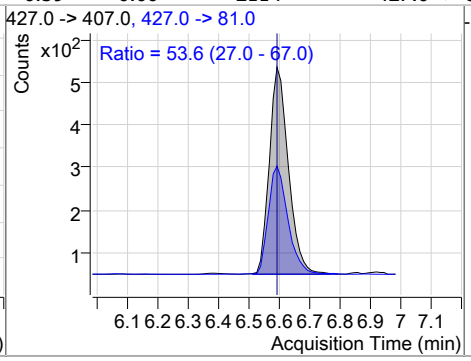


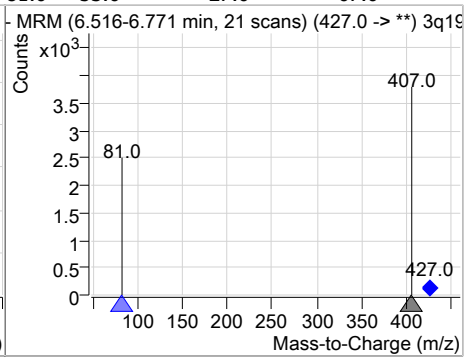


Perfluorinated Compounds by LC/MS/MS

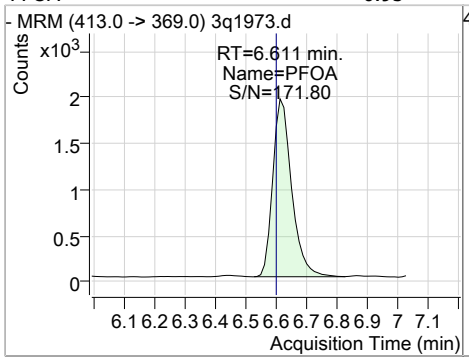
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.98	6.59	0.00	2114	427.0 -> 81.0	53.6	27.0	67.0

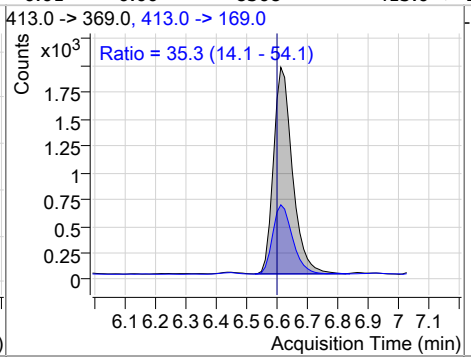


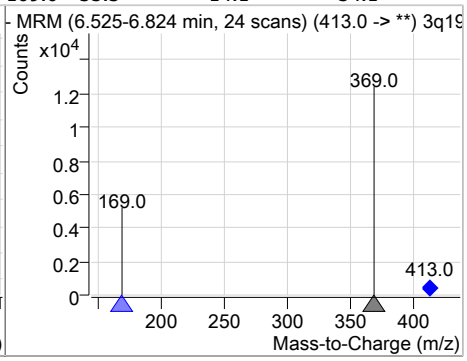




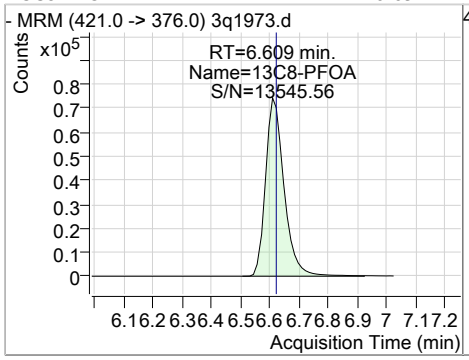
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.95	6.61	0.00	8368	413.0 -> 169.0	35.3	14.1	54.1

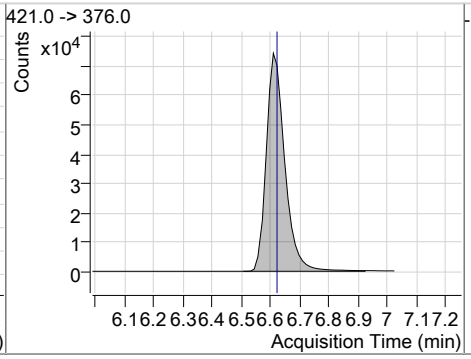


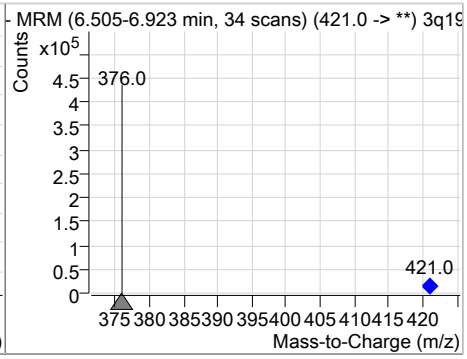




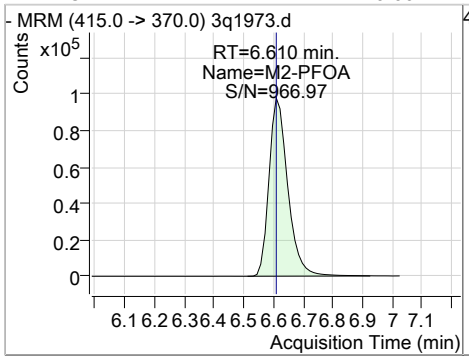
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.69	6.61	-0.01	327299				

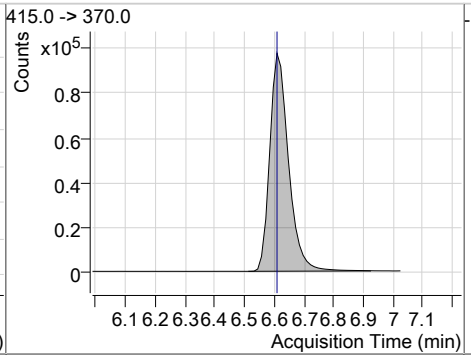


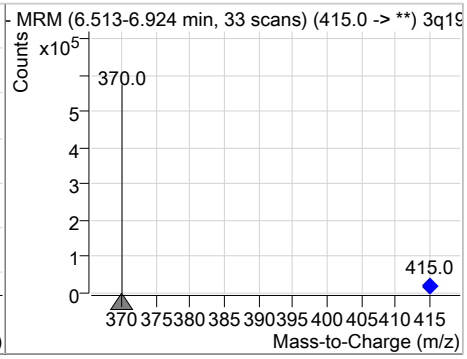




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	428772				

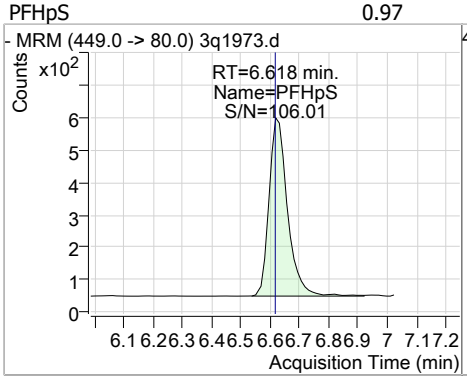


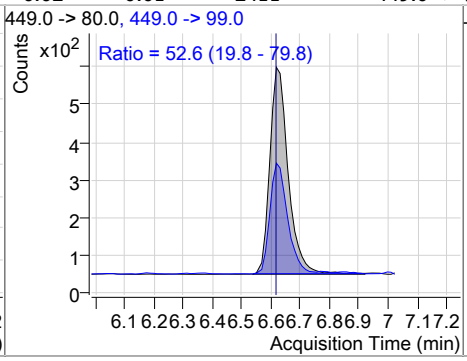


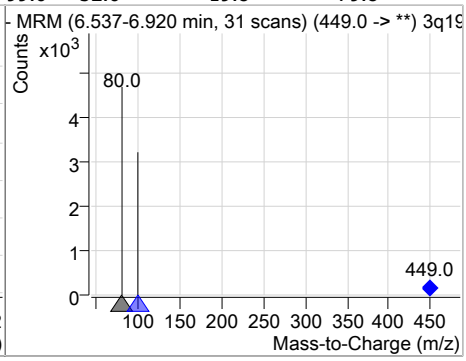


Perfluorinated Compounds by LC/MS/MS

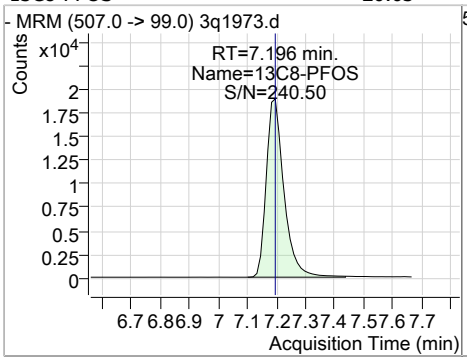
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	0.97	6.62	-0.01	2411	449.0 -> 99.0	52.6	19.8	79.8

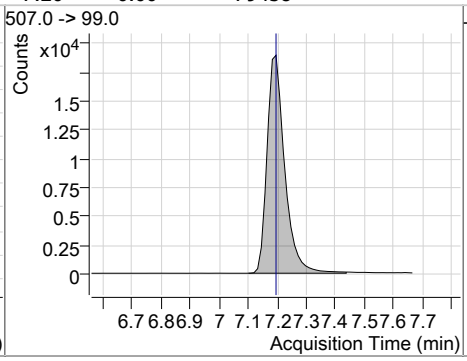


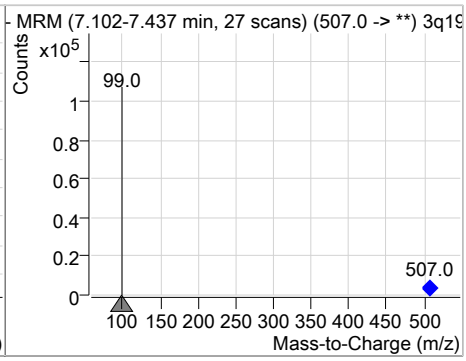




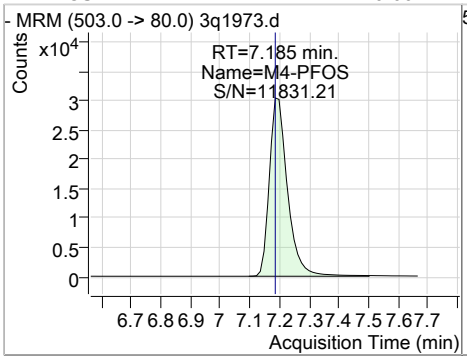
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.63	7.20	0.00	79458				

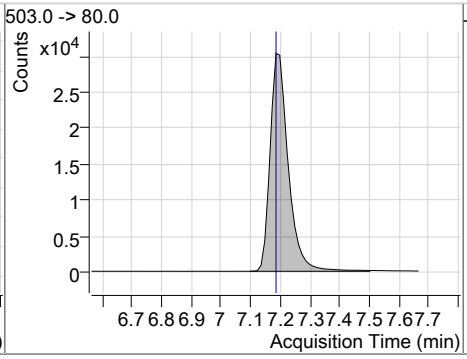


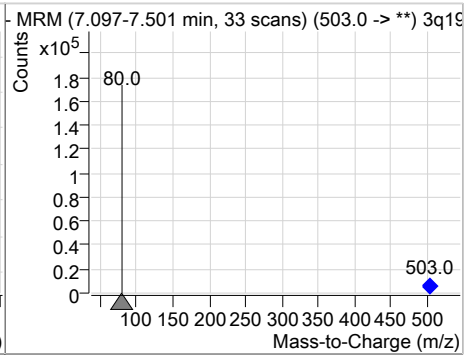




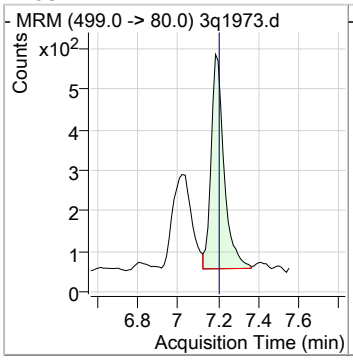
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	129178				

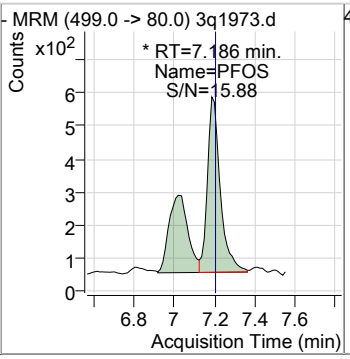


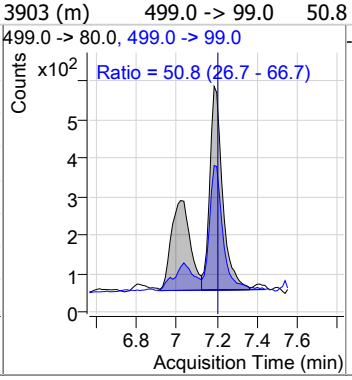


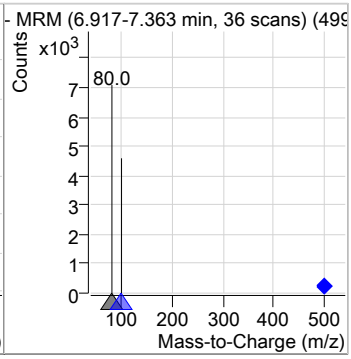


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.06	7.19	-0.01	3903 (m)	499.0 -> 99.0	50.8	26.7	66.7



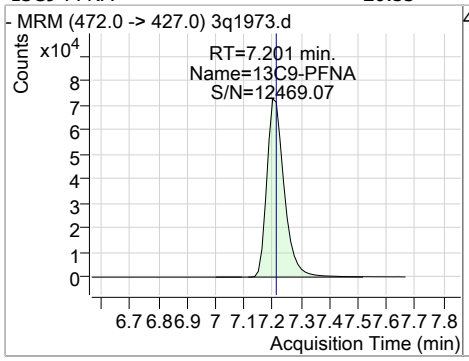


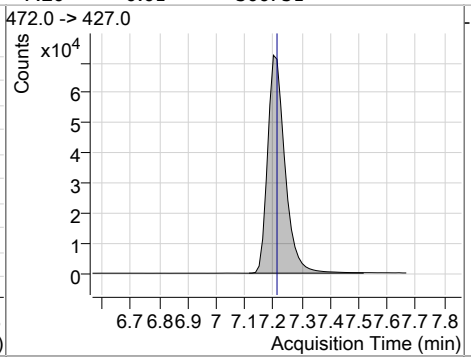


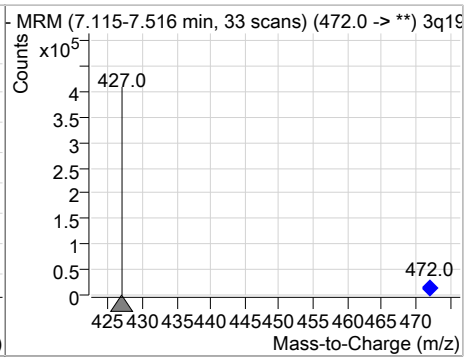


Perfluorinated Compounds by LC/MS/MS

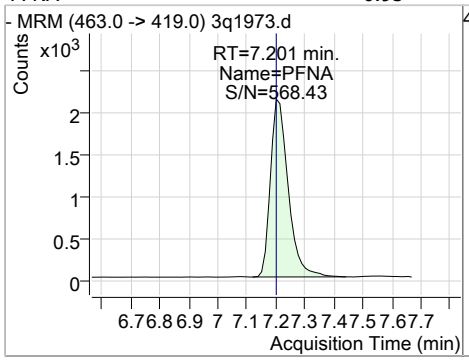
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.53	7.20	-0.01	306751				

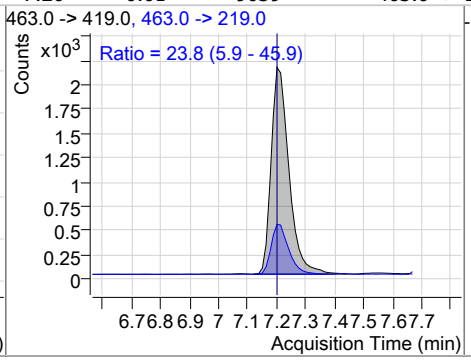


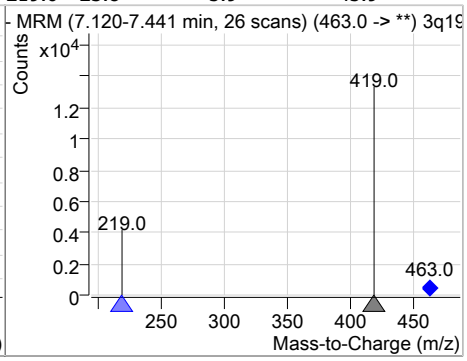




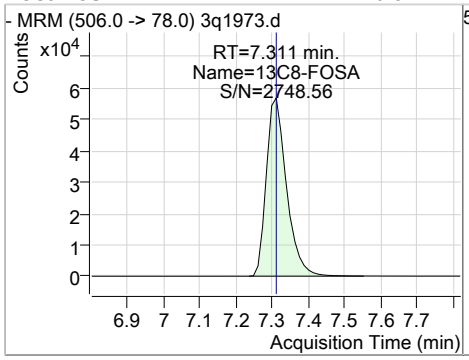
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.95	7.20	-0.01	9039	463.0 -> 219.0	23.8	5.9	45.9

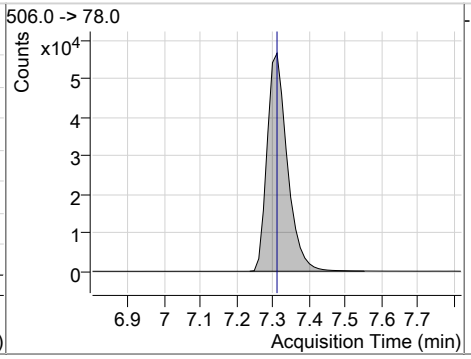


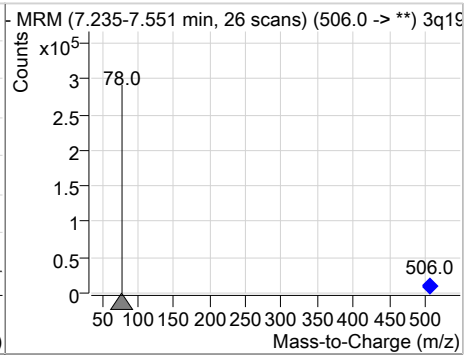




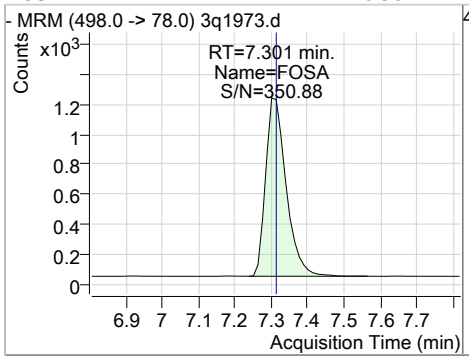
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.81	7.31	0.00	218970				

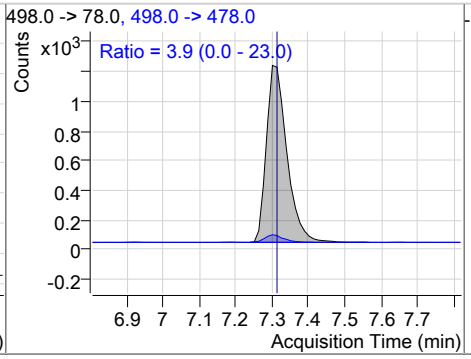


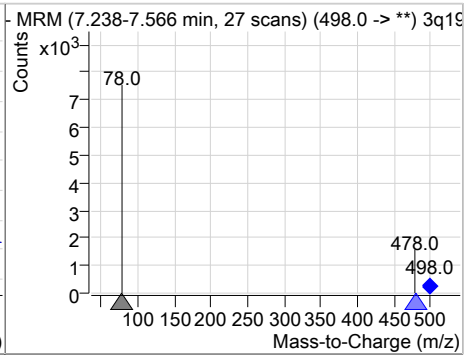




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.96	7.30	-0.01	4691	498.0 -> 478.0	3.9	0.0	23.0

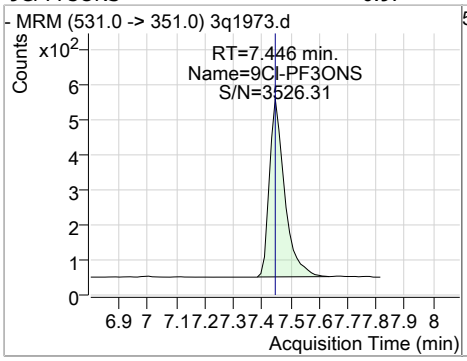


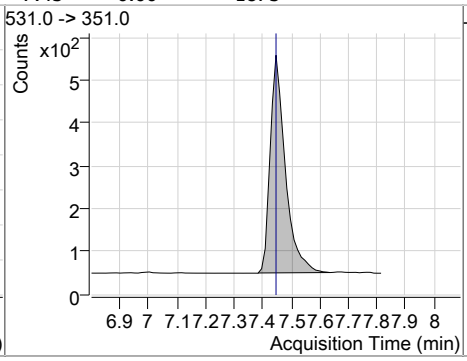


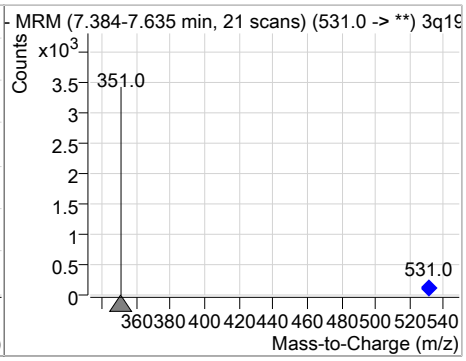


Perfluorinated Compounds by LC/MS/MS

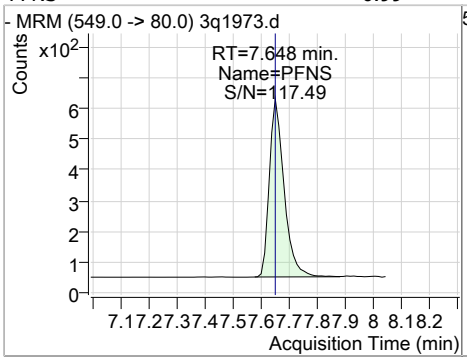
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.97	7.45	0.00	1875				

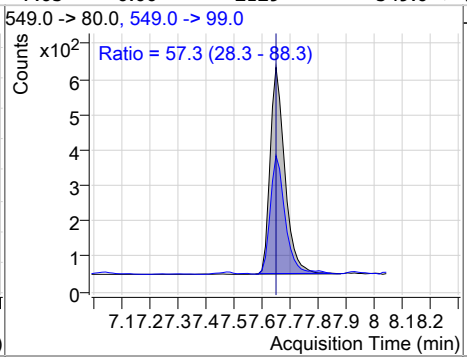


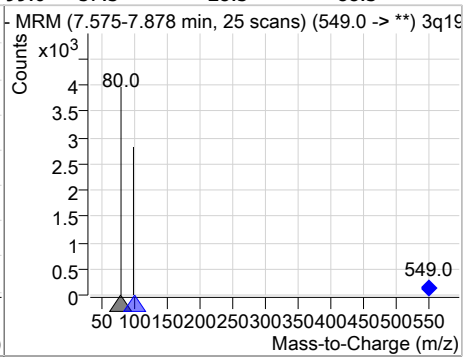




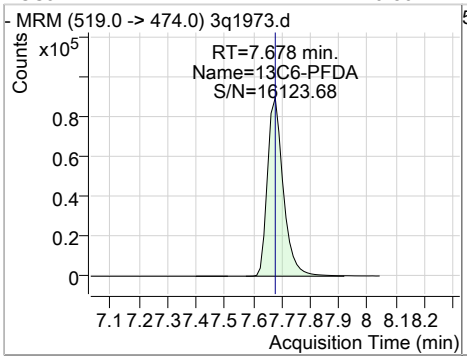
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.99	7.65	0.00	2129	549.0 -> 99.0	57.3	28.3	88.3

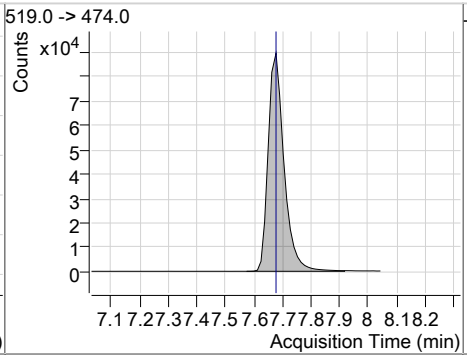


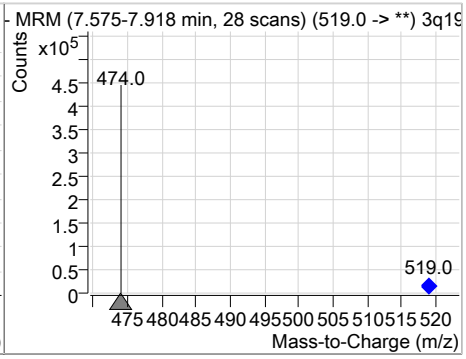




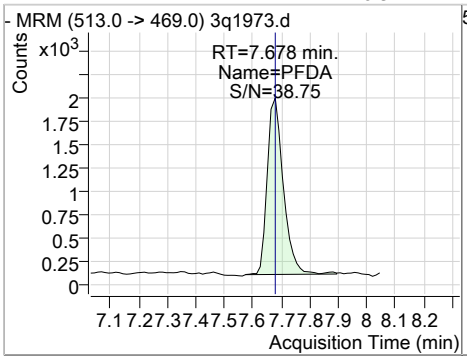
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.80	7.68	0.00	346515				

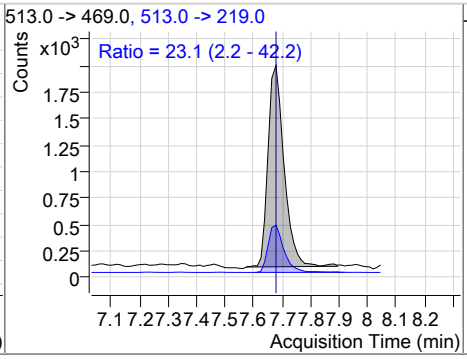


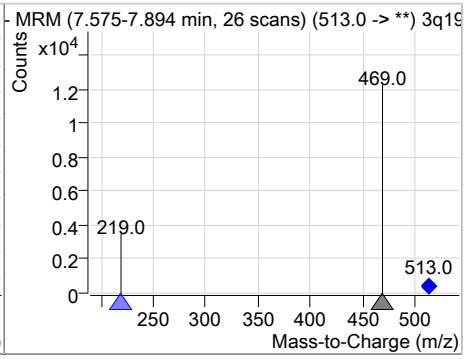




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.91	7.68	0.00	7472	513.0 -> 219.0	23.1	2.2	42.2

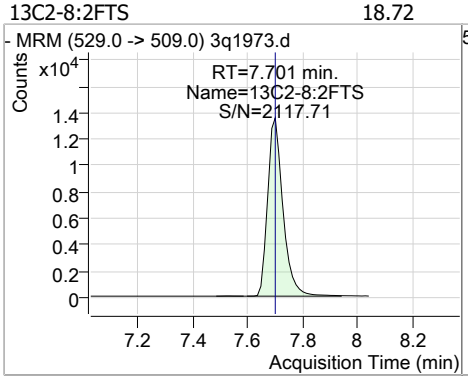


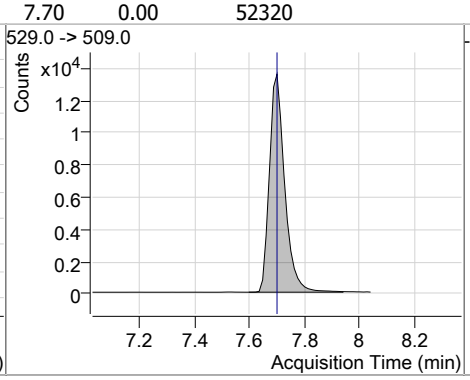


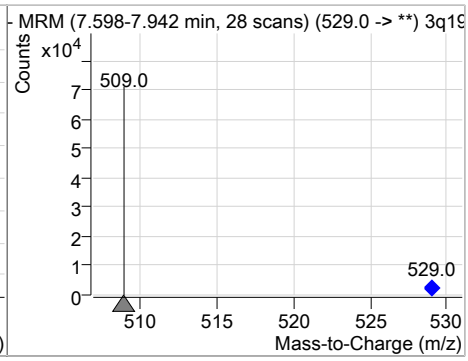


Perfluorinated Compounds by LC/MS/MS

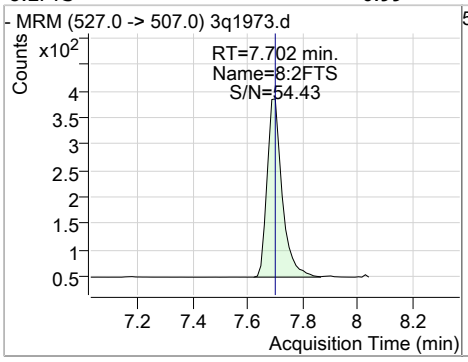
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	18.72	7.70	0.00	52320				

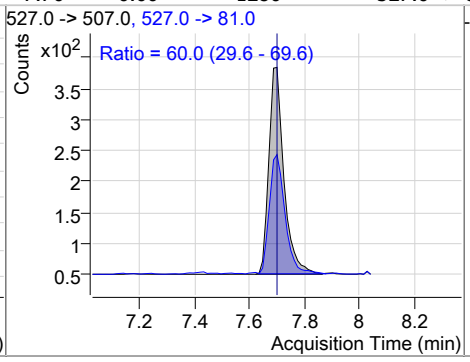


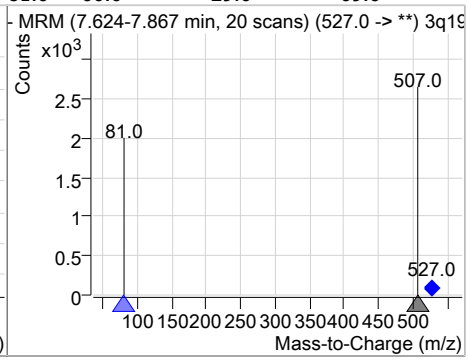




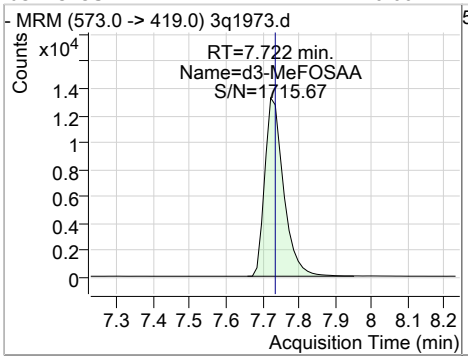
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	0.99	7.70	0.00	1280	527.0 -> 81.0	60.0	29.6	69.6

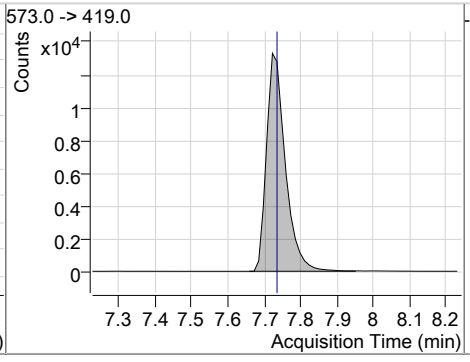


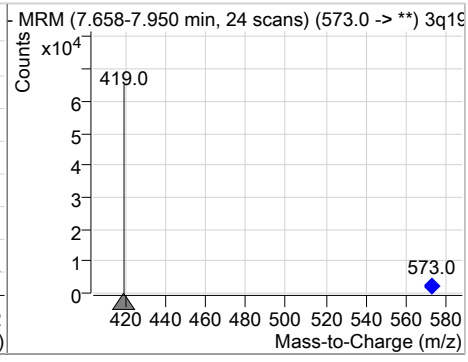




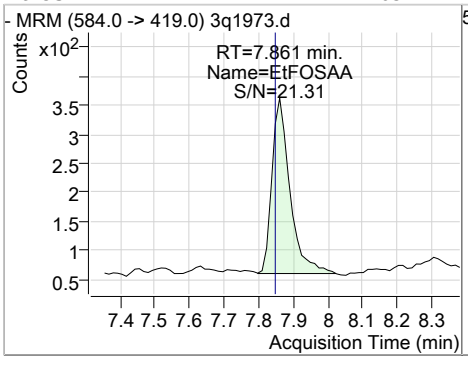
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.00	7.72	-0.01	47474				

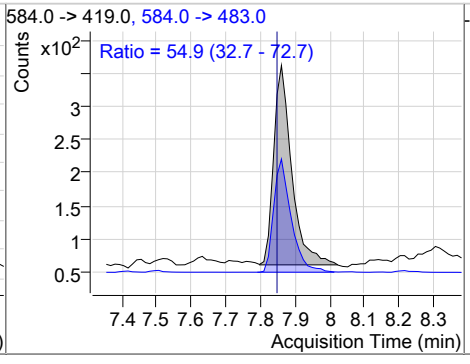


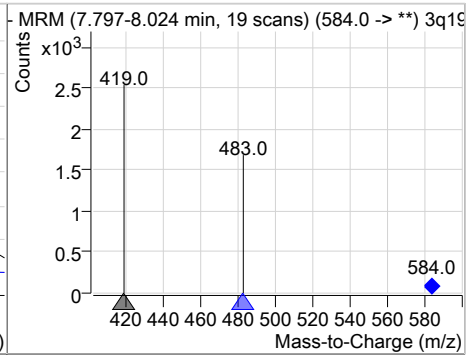




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.03	7.86	0.00	1093	584.0 -> 483.0	54.9	32.7	72.7

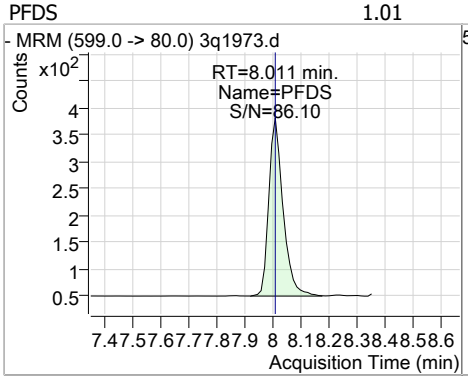


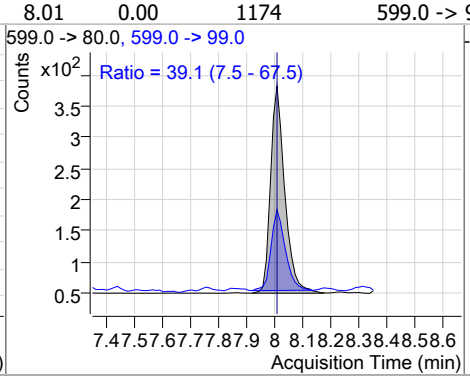


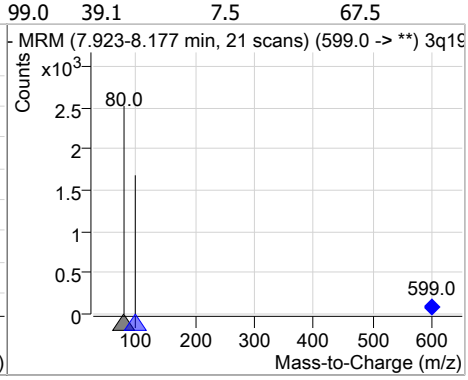


Perfluorinated Compounds by LC/MS/MS

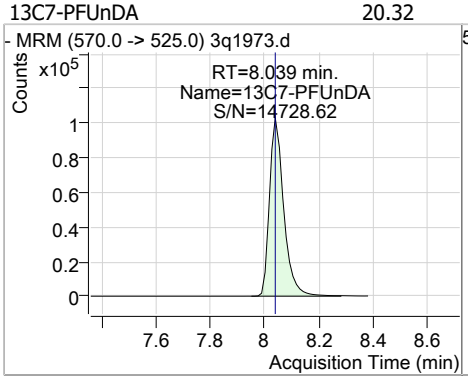
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.01	8.01	0.00	1174	599.0 -> 99.0	39.1	7.5	67.5

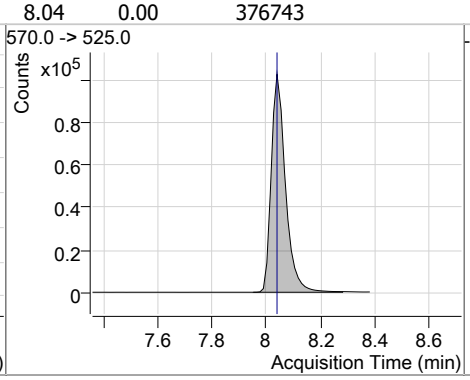


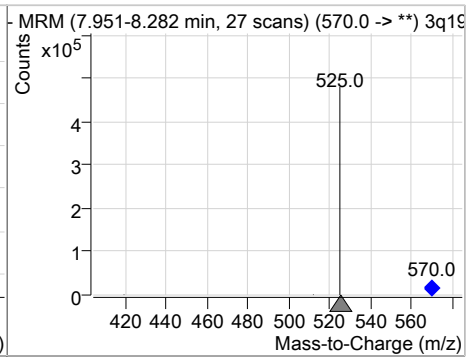




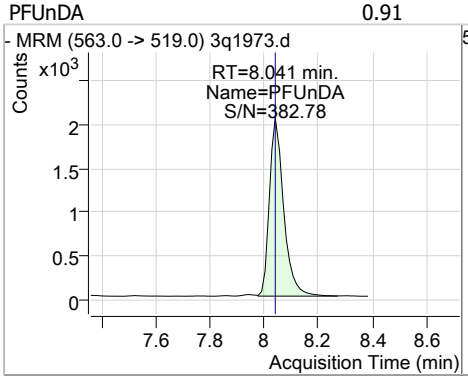
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.32	8.04	0.00	376743				

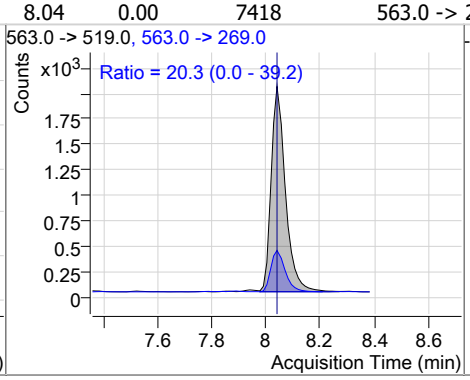


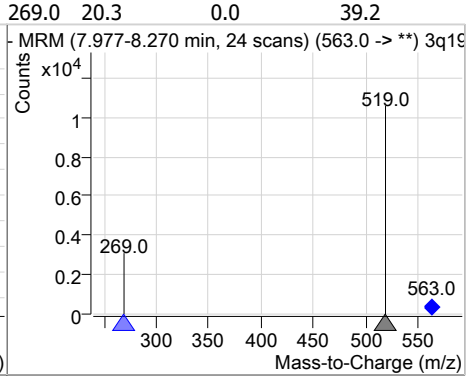




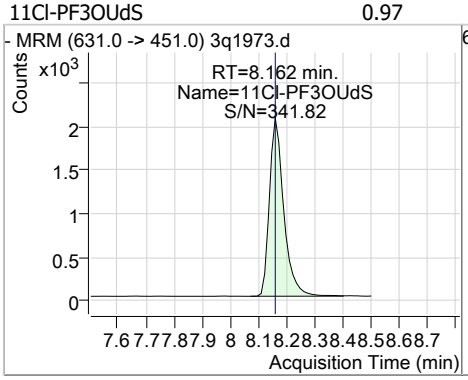
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.91	8.04	0.00	7418	563.0 -> 269.0	20.3	0.0	39.2

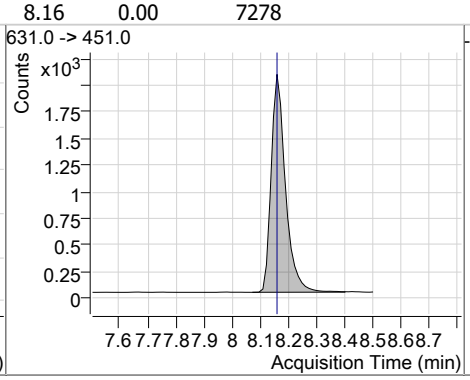


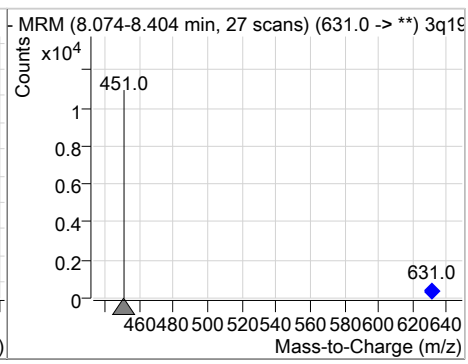




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	0.97	8.16	0.00	7278				

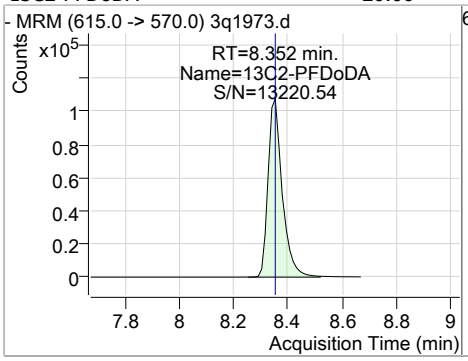


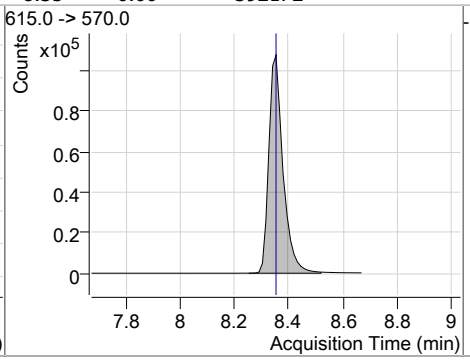


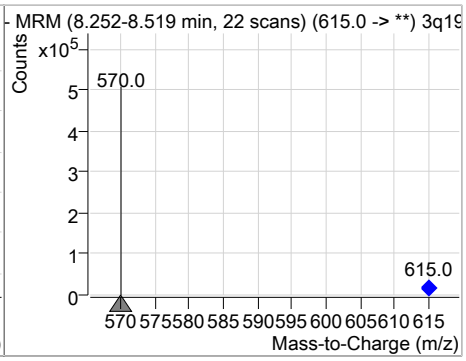


Perfluorinated Compounds by LC/MS/MS

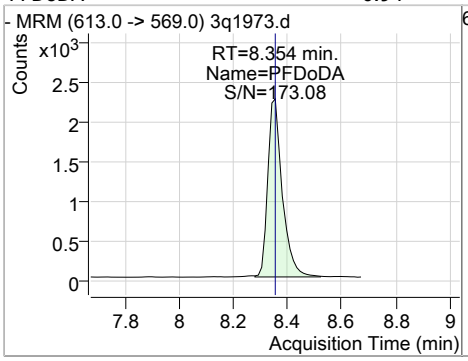
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.06	8.35	0.00	392172				

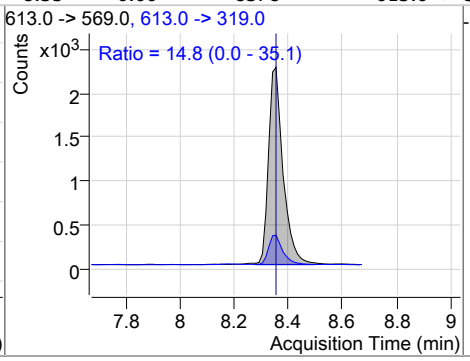


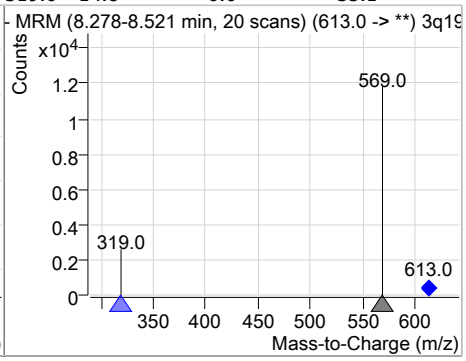




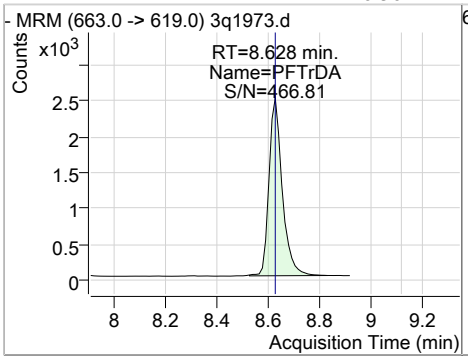
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	0.94	8.35	0.00	8378	613.0 -> 319.0	14.8	0.0	35.1

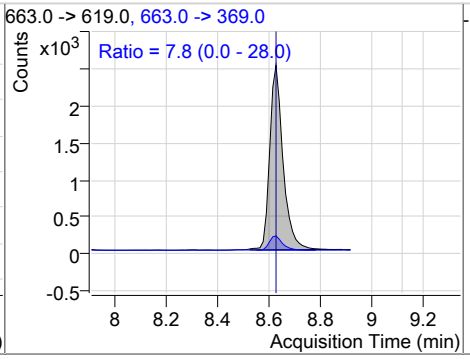


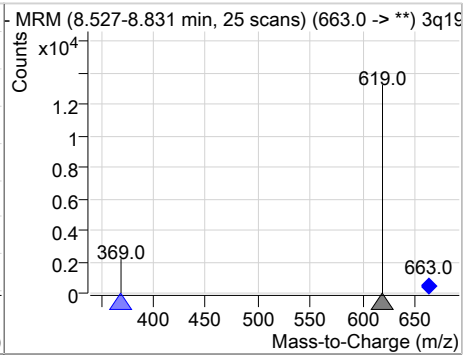




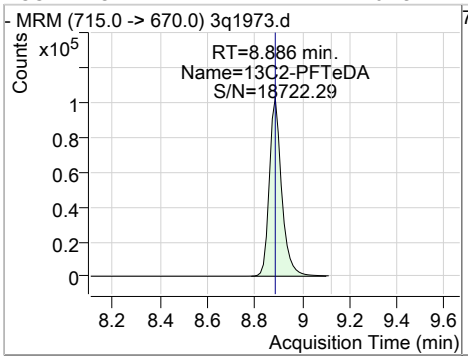
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	0.90	8.63	0.00	8932	663.0 -> 369.0	7.8	0.0	28.0

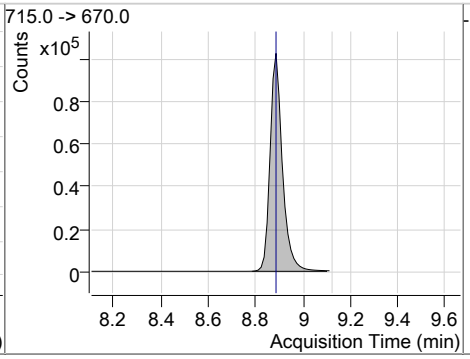


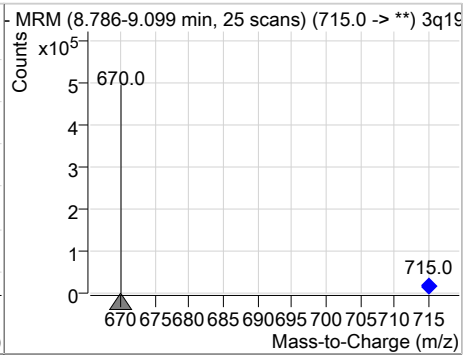




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.29	8.89	0.00	371196				

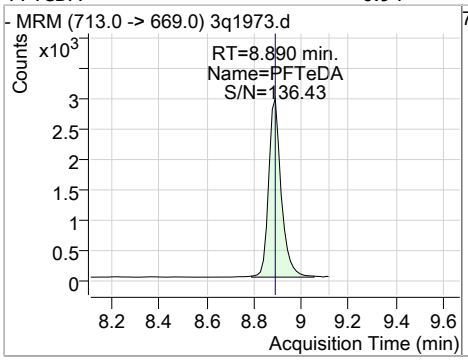


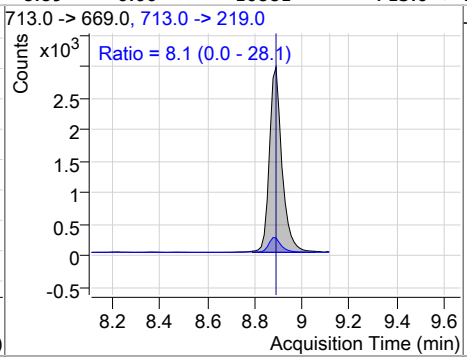


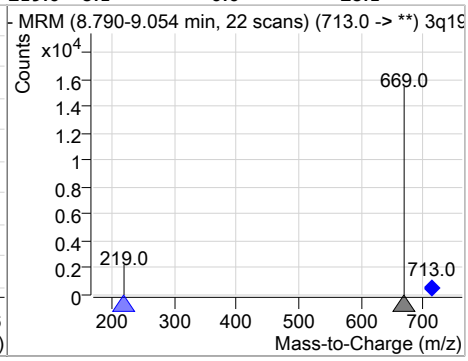


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.94	8.89	0.00	10881	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number:	S3Q54-IC54	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	3Q1973.D	**Analyst approved:**	03/22/19 11:47 Nancy Saunders
Injection Time:	03/21/19 10:10	**Supervisor approved:**	03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1974.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 10:25:10 AM
Sample Name : ic54-2.0
Vial : P3-A4
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

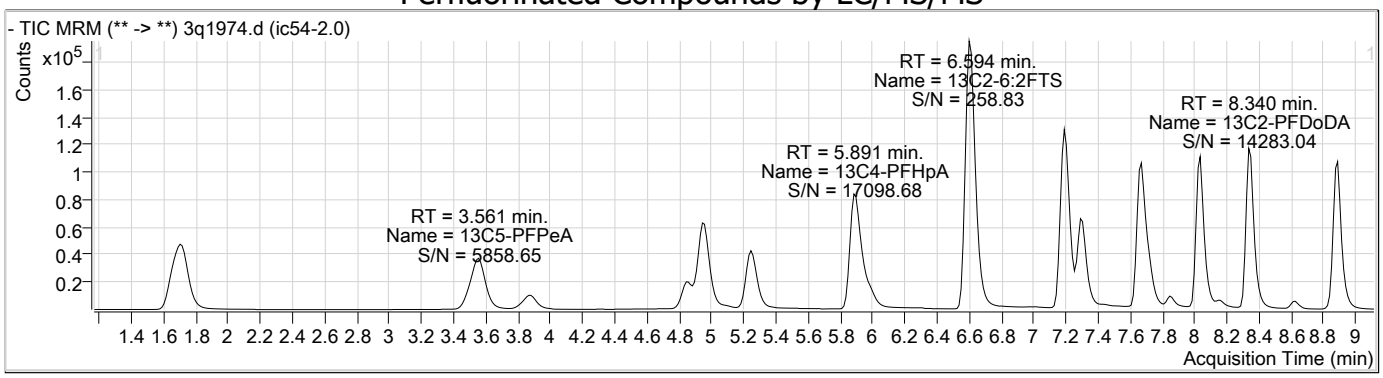
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.702	217.0 -> 172.0	340155	20.00 µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	225263	20.00 µg/L	0.000
M5-PFHxA	4.950	318.0 -> 273.0	302683	20.00 µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	348114	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	328967	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	313426	20.00 µg/L	-0.013
M6-PFDA	7.678	519.0 -> 474.0	349355	20.00 µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	385897	20.00 µg/L	0.000
M2-PFDoDA	8.340	615.0 -> 570.0	402118	20.00 µg/L	-0.013
M2-PFTeDA	8.886	715.0 -> 670.0	372558	20.00 µg/L	0.000
M8-FOSA	7.298	506.0 -> 78.0	222329	20.00 µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	52584	20.00 µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	52637	20.00 µg/L	-0.013
M8-PFOS	7.196	507.0 -> 99.0	81145	20.00 µg/L	0.000
M2-4:2FTS	4.845	329.0 -> 309.0	92341	20.00 µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	90971	20.00 µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	54343	20.00 µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	48562	20.00 µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	175052	100.00 µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	415715	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	124964	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.845	329.0 -> 309.0	91964	19.38 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C2-6:2FTS	6.594	429.0 -> 409.0	90971	19.91 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C2-8:2FTS	7.689	529.0 -> 509.0	54395	19.46 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C2-PFDoDA	8.340	615.0 -> 570.0	403525	20.64 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C2-PFTeDA	8.886	715.0 -> 670.0	372616	20.37 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C3-PFBS	3.879	302.0 -> 99.0	52075	20.65 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C3-PFHxS	5.934	402.0 -> 99.0	52812	20.89 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C4-PFBA	1.702	217.0 -> 172.0	337147	20.67 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C4-PFHpA	5.891	367.0 -> 322.0	347933	20.84 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C5-PFHxA	4.950	318.0 -> 273.0	300887	20.45 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFPeA	3.561	268.0 -> 223.0	227258	20.52 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C6-PFDA	7.678	519.0 -> 474.0	349481	20.98 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

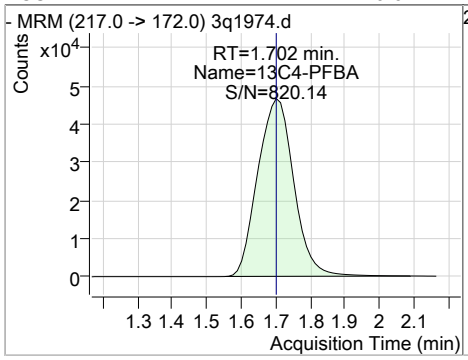
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%			
13C7-PFUnDA	8.039	570.0 -> 525.0	386092	20.83	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.1%			
13C8-FOSA	7.298	506.0 -> 78.0	222176	21.11	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%			
13C8-PFOA	6.609	421.0 -> 376.0	329116	20.80	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.0%			
13C8-PFOS	7.196	507.0 -> 99.0	80851	20.99	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.9%			
13C9-PFNA	7.201	472.0 -> 427.0	312801	20.93	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%			
d3-MeFOSAA	7.722	573.0 -> 419.0	48563	20.46	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%			
13C3-HFPO-DA	5.255	287.0 -> 169.0	175052	104.83	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 104.8%			
M2-PFOA	6.610	415.0 -> 370.0	415715	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	124964	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	5008	1.98	µg/L		97
6:2FTS	6.595	427.0 -> 407.0	4247	1.89	µg/L		98
8:2FTS	7.689	527.0 -> 507.0	2776	2.06	µg/L		97
EtFOSAA	7.861	584.0 -> 419.0	2122	1.95	µg/L		98
FOSA	7.301	498.0 -> 78.0	9379	1.89	µg/L		98
MeFOSAA	7.723	570.0 -> 419.0	2545	1.96	µg/L		99
PFBA	1.710	213.0 -> 169.0	5829	1.81	µg/L		100
PFBS	3.870	299.0 -> 80.0	6744	1.84	µg/L		98
PFDA	7.664	513.0 -> 469.0	15272	1.85	µg/L		100
PFDoDA	8.341	613.0 -> 569.0	16558	1.81	µg/L		99
PFDS	8.011	599.0 -> 80.0	2257	1.90	µg/L		96
PFHpA	5.894	363.0 -> 319.0	27987	1.82	µg/L		98
PFHpS	6.618	449.0 -> 80.0	4794	1.91	µg/L		98
PFHxA	4.952	313.0 -> 269.0	10170	1.89	µg/L		100
PFHxS	5.937	399.0 -> 80.0	5376	1.86	µg/L	m	100
PFNA	7.201	463.0 -> 419.0	17761	1.82	µg/L		98
PFNS	7.648	549.0 -> 80.0	4184	1.91	µg/L		99
PFOA	6.611	413.0 -> 369.0	16357	1.86	µg/L		98
PFOS	7.186	499.0 -> 80.0	6920	1.84	µg/L	m	96
PFPeA	3.564	263.0 -> 219.0	20727	1.82	µg/L		100
PFPeS	5.094	349.0 -> 80.0	4172	1.83	µg/L		100
PFTeDA	8.877	713.0 -> 669.0	21227	1.83	µg/L		100
PFTrDA	8.628	663.0 -> 619.0	18071	1.82	µg/L		99
PFUnDA	8.041	563.0 -> 519.0	14728	1.76	µg/L		97
11Cl-PF3OUdS	8.162	631.0 -> 451.0	14146	1.84	µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	3666	1.88	µg/L		100
ADONA	5.994	377.0 -> 251.0	36591	1.80	µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	25637	8.63	µg/L		98

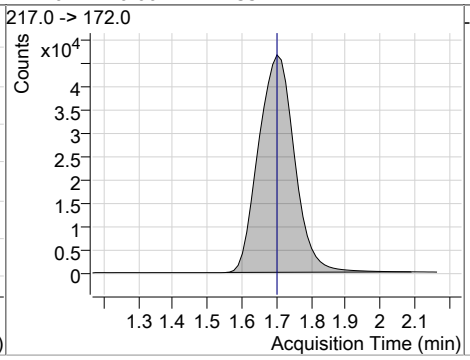
 # = Qualifier out of range, m = manually integrated, + = Area summed

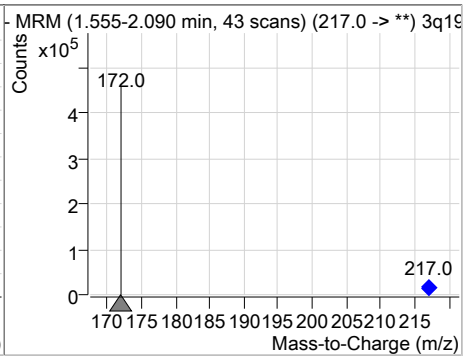
Perfluorinated Compounds by LC/MS/MS



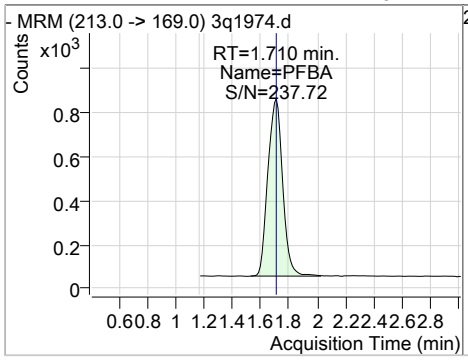
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.67	1.70	0.00	337147				

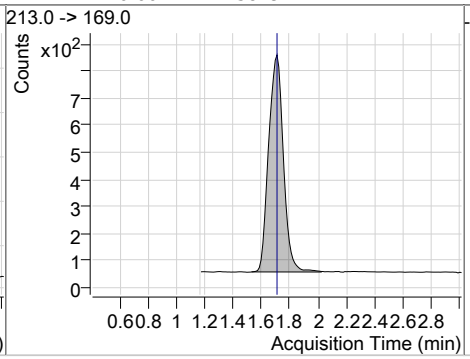


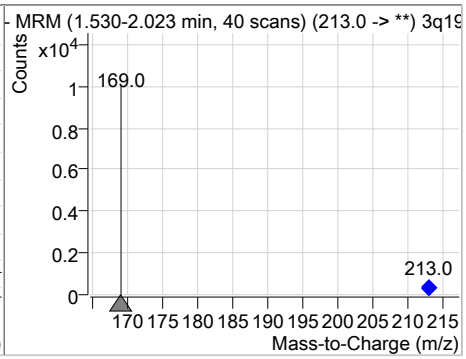




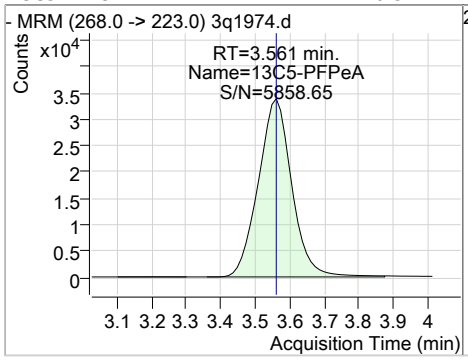
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	1.81	1.71	0.00	5829				

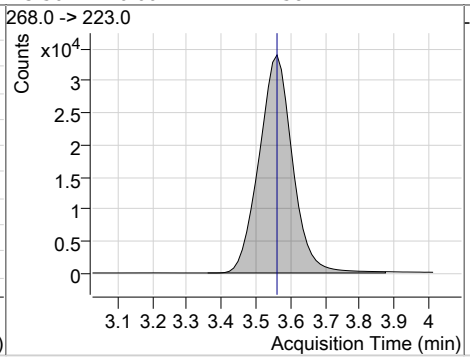


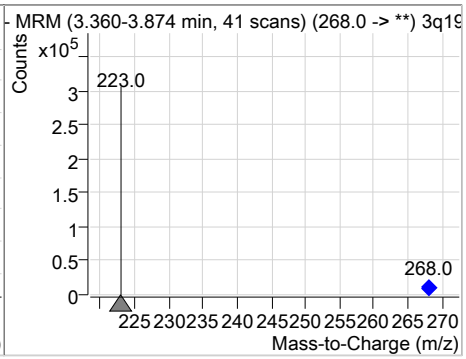




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.52	3.56	0.00	227258				

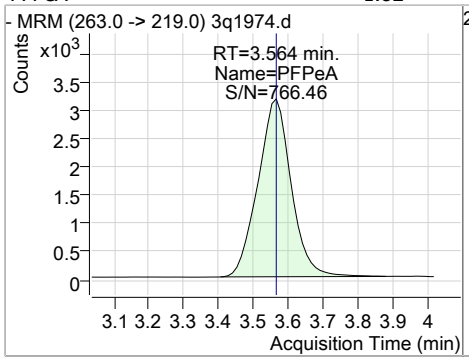


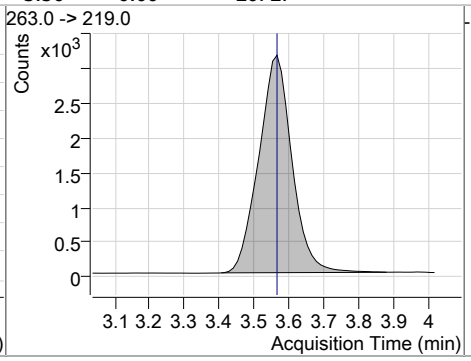


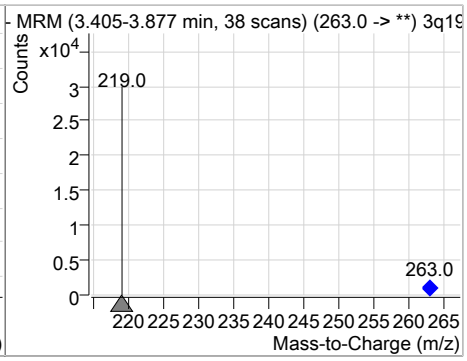


Perfluorinated Compounds by LC/MS/MS

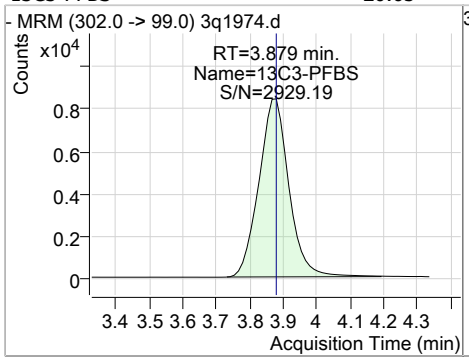
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	1.82	3.56	0.00	20727				

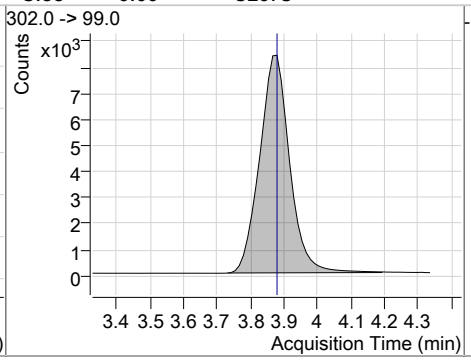


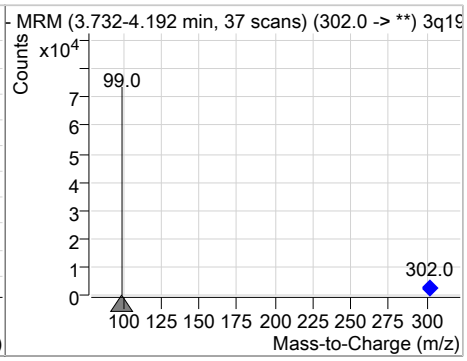




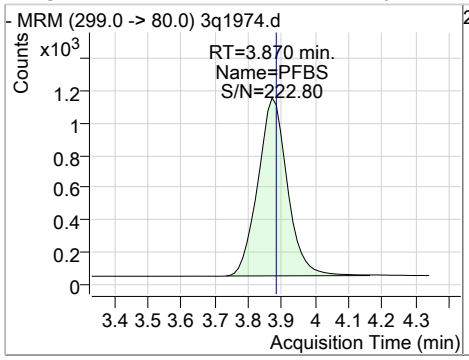
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.65	3.88	0.00	52075				

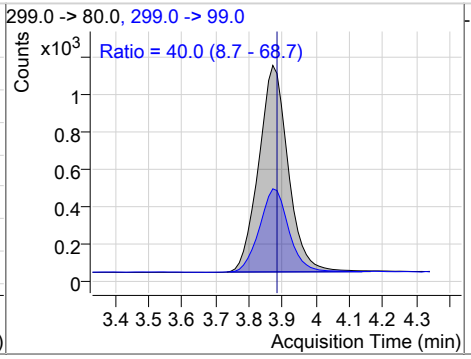


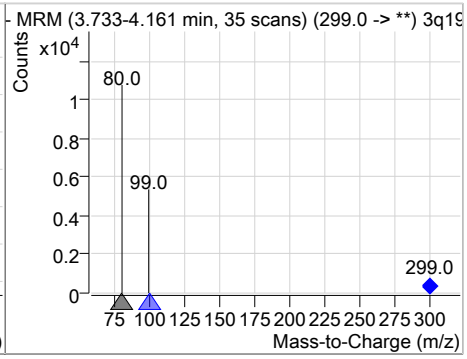




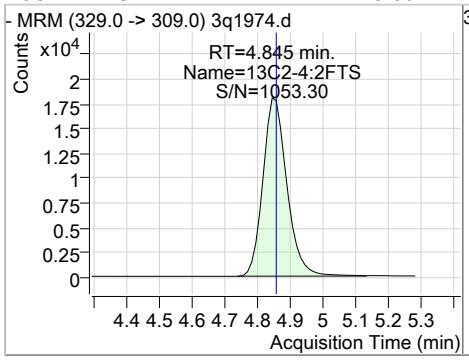
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.84	3.87	-0.01	6744	299.0 -> 99.0	40.0	8.7	68.7

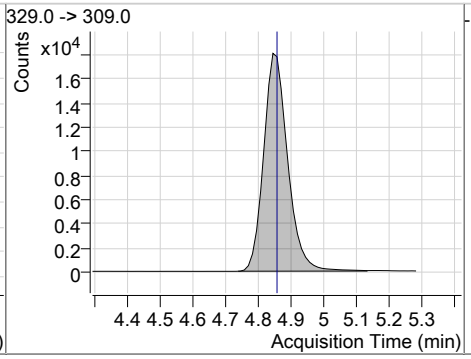


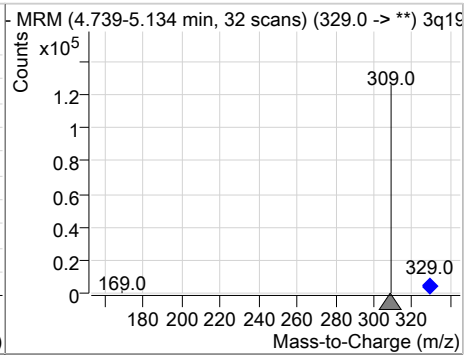




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.38	4.85	-0.01	91964				

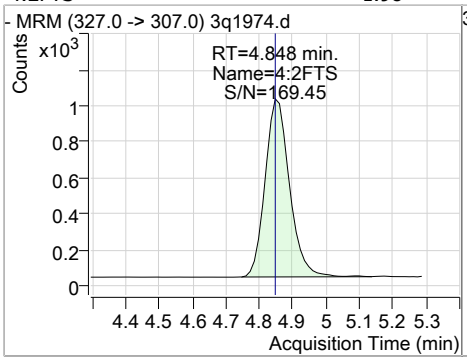


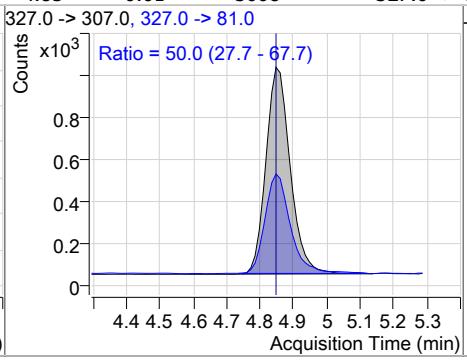


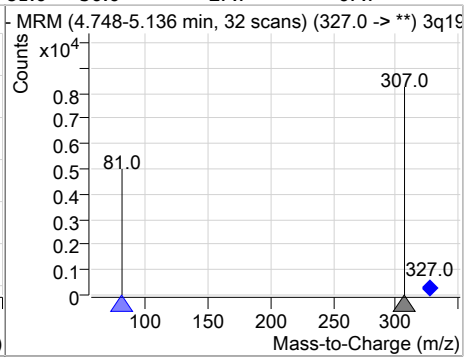


Perfluorinated Compounds by LC/MS/MS

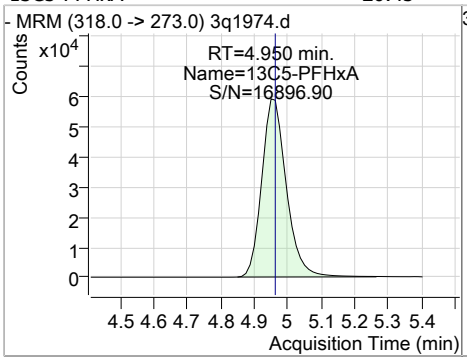
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	1.98	4.85	-0.01	5008	327.0 -> 81.0	50.0	27.7	67.7

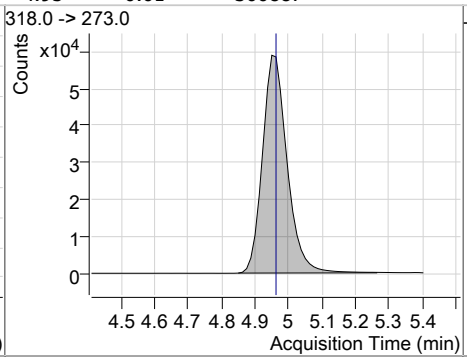


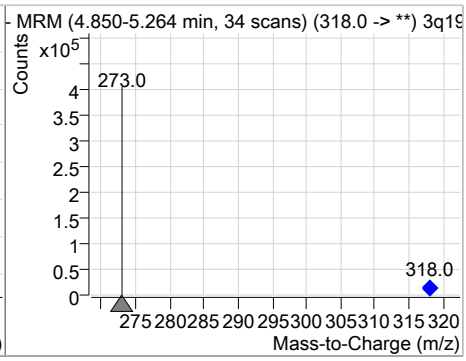




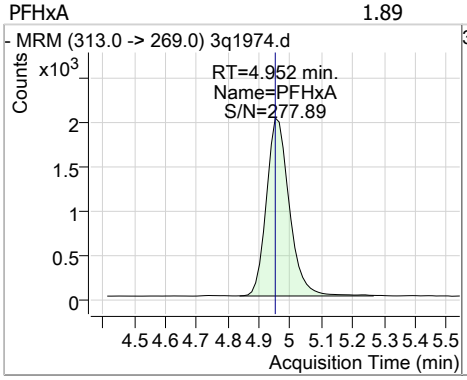
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.45	4.95	-0.01	300887				

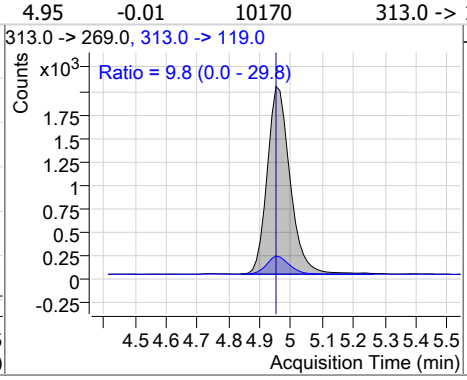


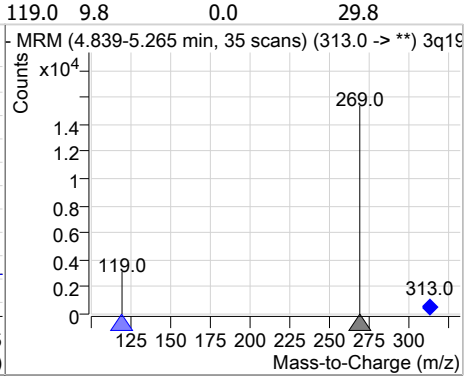




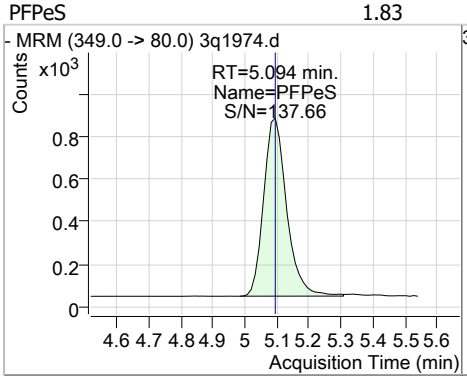
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.89	4.95	-0.01	10170	313.0 -> 119.0	9.8	0.0	29.8

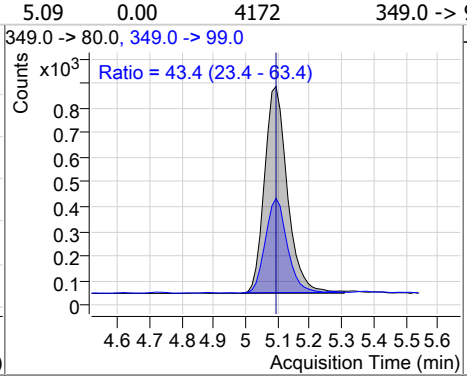


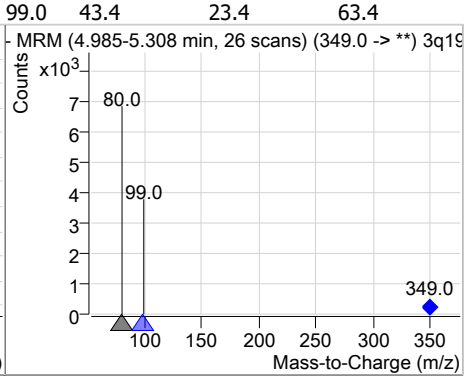




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.83	5.09	0.00	4172	349.0 -> 99.0	43.4	23.4	63.4

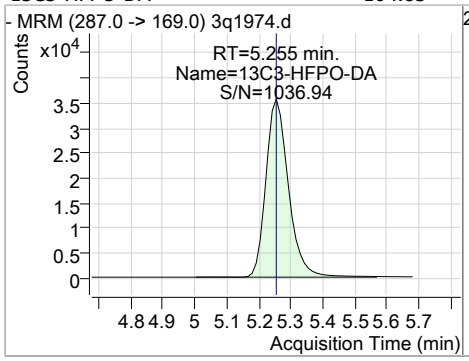


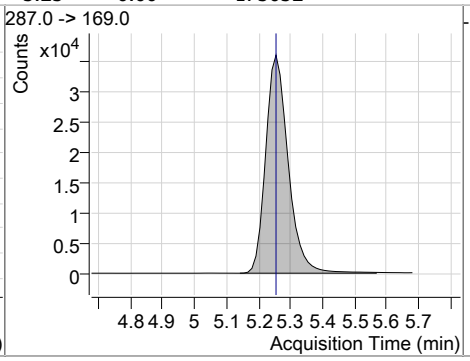


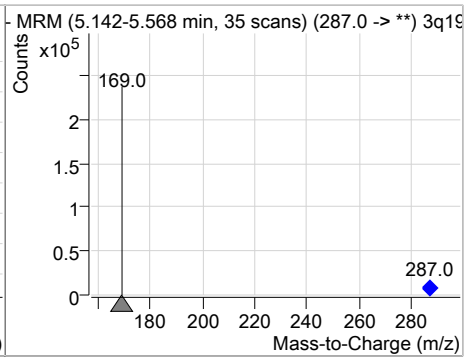


Perfluorinated Compounds by LC/MS/MS

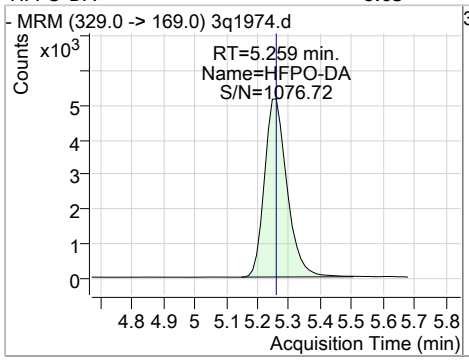
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	104.83	5.25	0.00	175052				

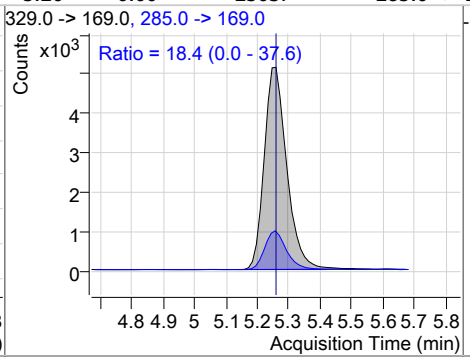


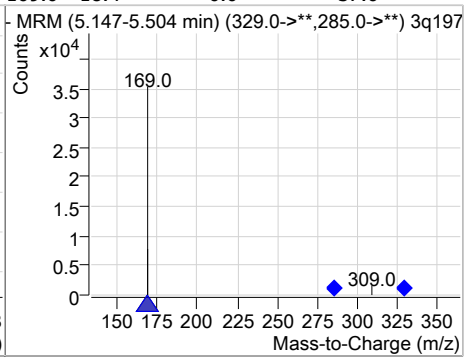




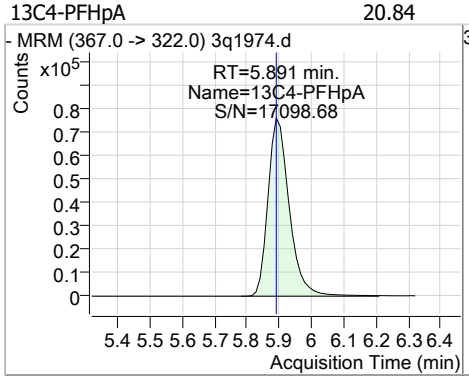
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	8.63	5.26	0.00	25637	285.0 -> 169.0	18.4	0.0	37.6

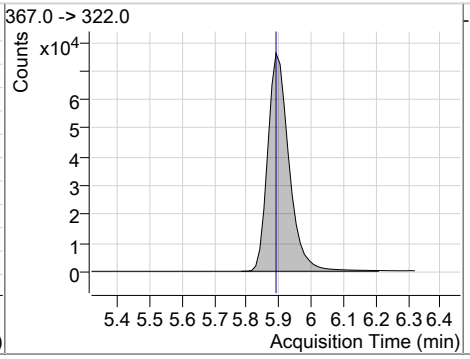


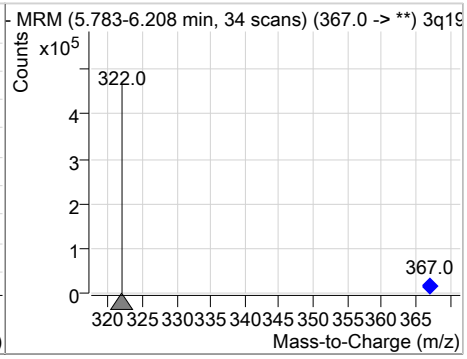




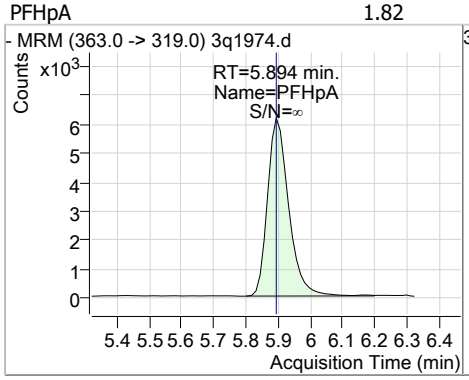
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.84	5.89	0.00	347933				

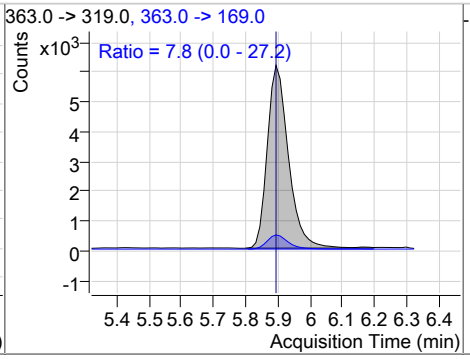


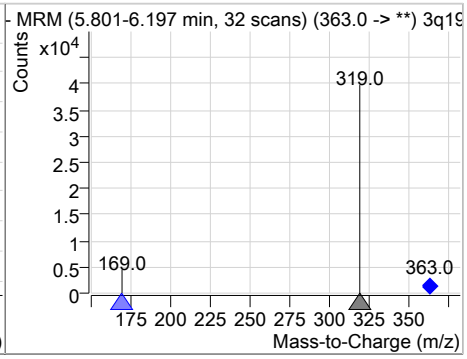




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.82	5.89	0.00	27987	363.0 -> 169.0	7.8	0.0	27.2

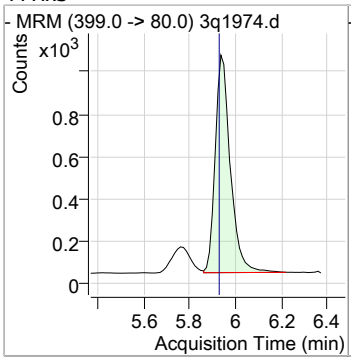


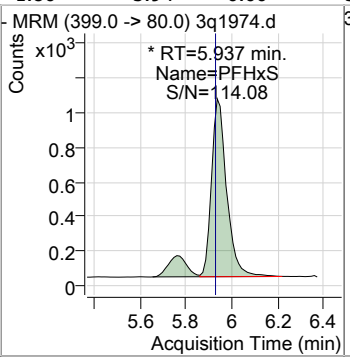


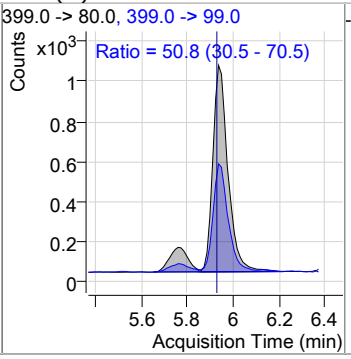


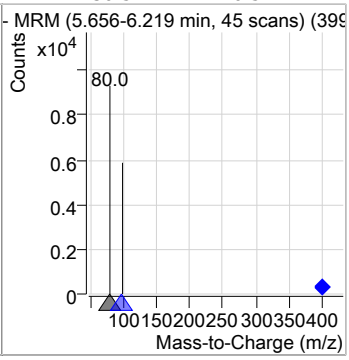
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	1.86	5.94	0.00	5376 (m)	399.0 -> 99.0	50.8	30.5	70.5

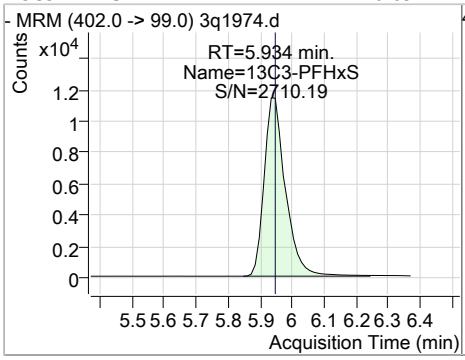


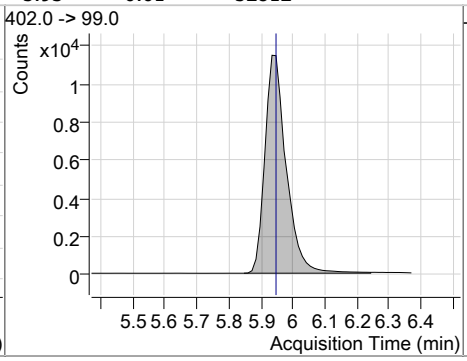


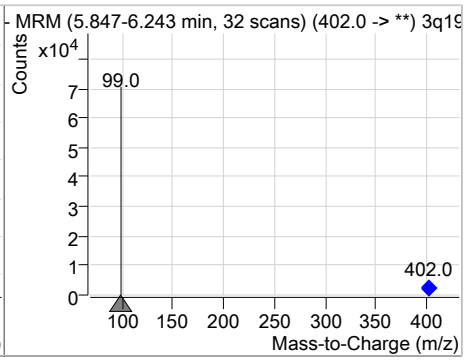




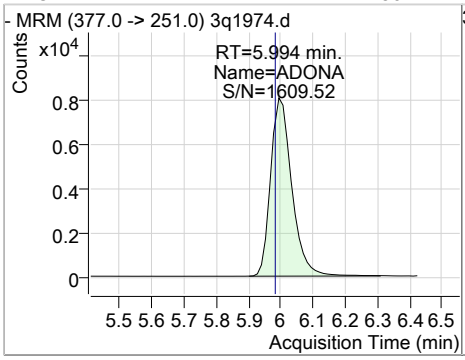
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.89	5.93	-0.01	52812				

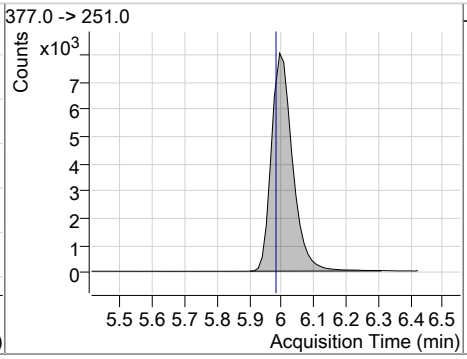


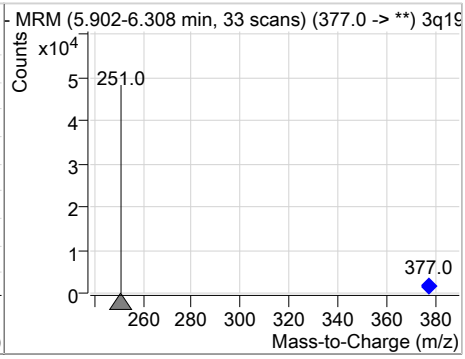




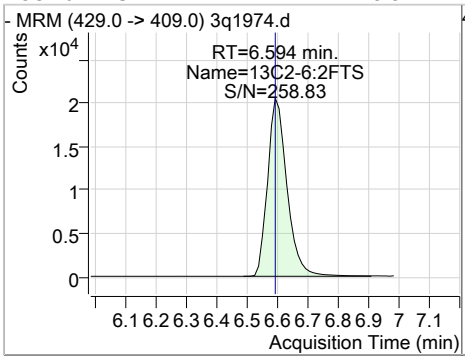
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	1.80	5.99	0.00	36591				

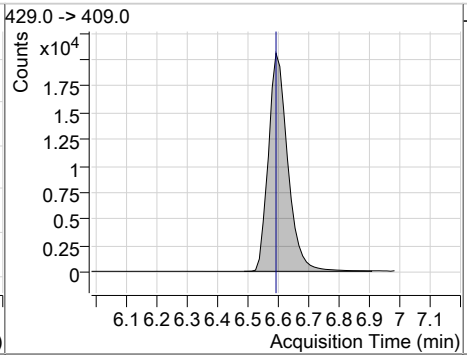


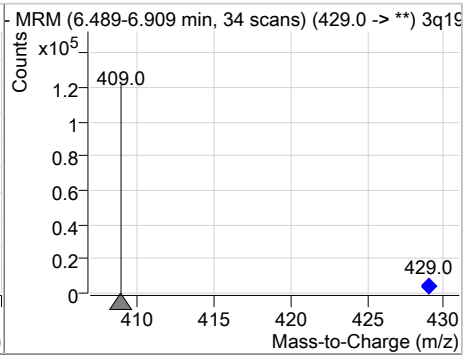




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.91	6.59	0.00	90971				

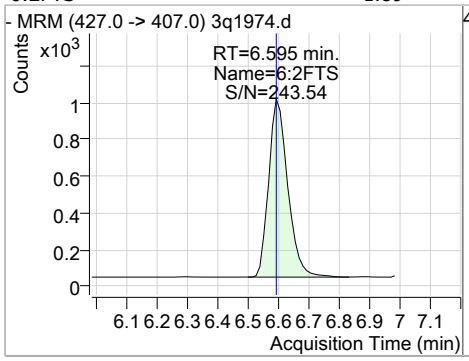


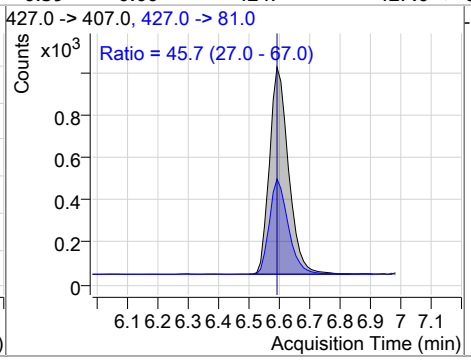


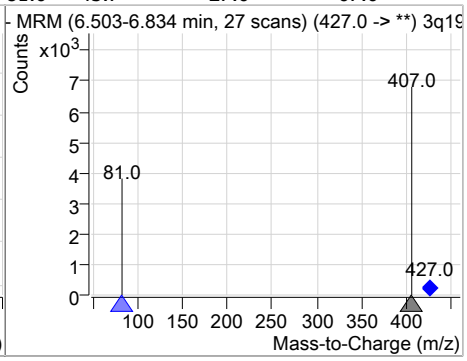


Perfluorinated Compounds by LC/MS/MS

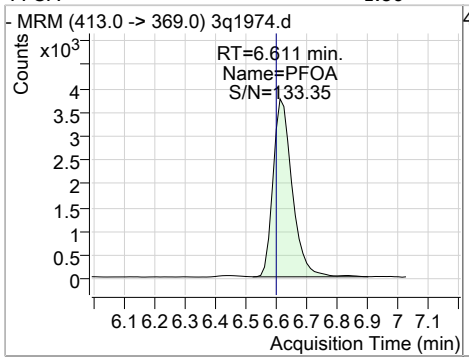
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	1.89	6.59	0.00	4247	427.0 -> 81.0	45.7	27.0	67.0

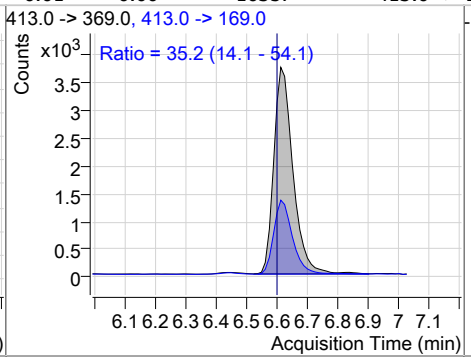


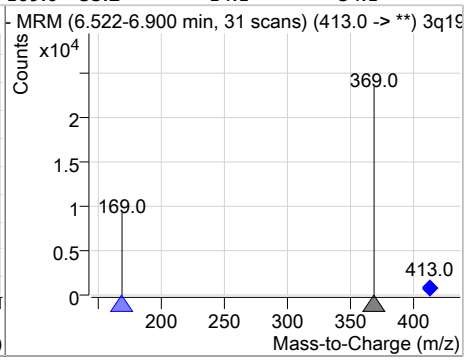




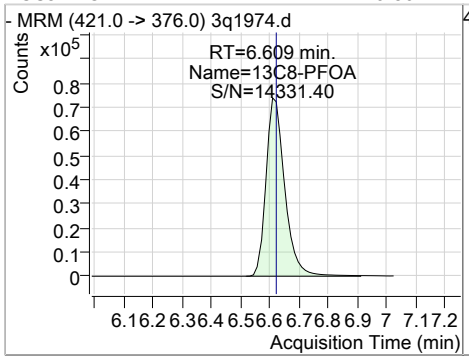
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	1.86	6.61	0.00	16357	413.0 -> 169.0	35.2	14.1	54.1

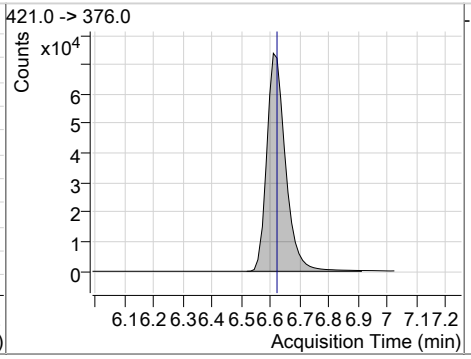


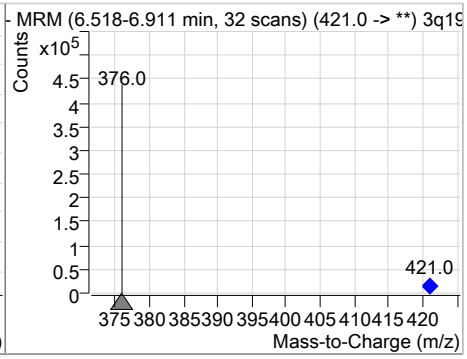




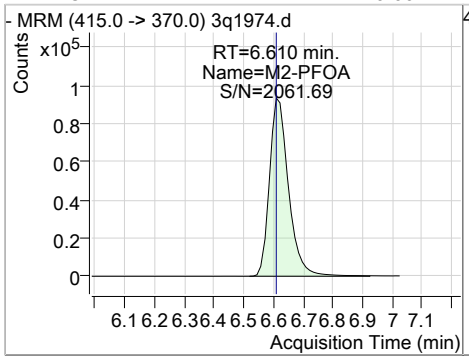
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.80	6.61	-0.01	329116				

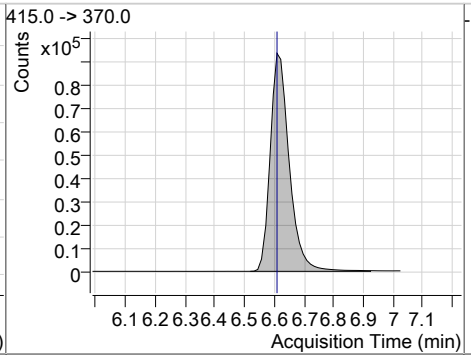


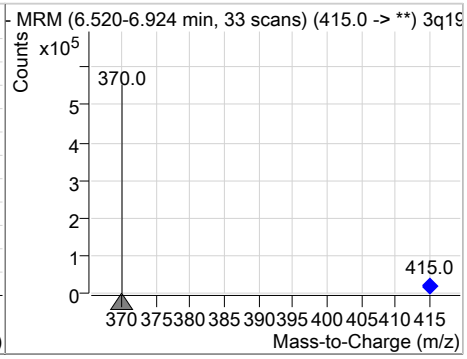




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	415715				

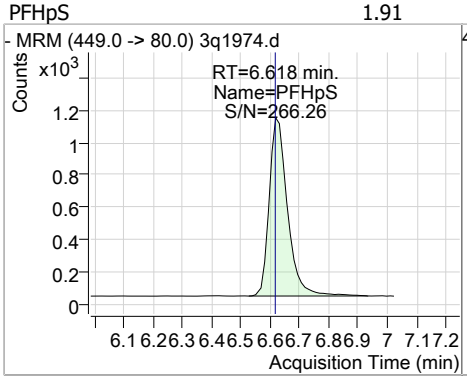


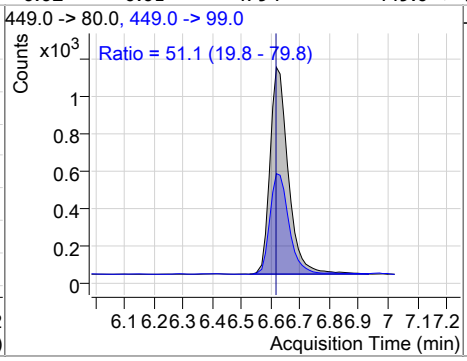


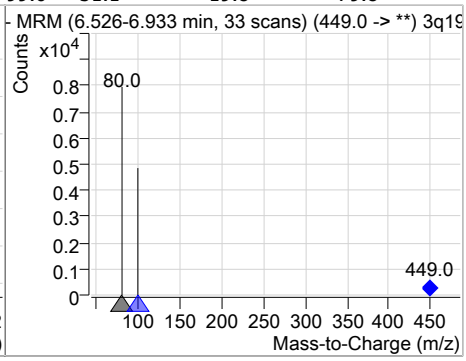


Perfluorinated Compounds by LC/MS/MS

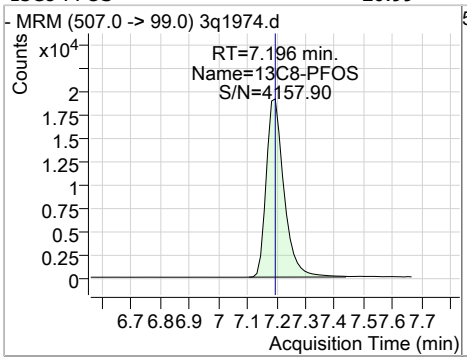
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	1.91	6.62	-0.01	4794	449.0 -> 99.0	51.1	19.8	79.8

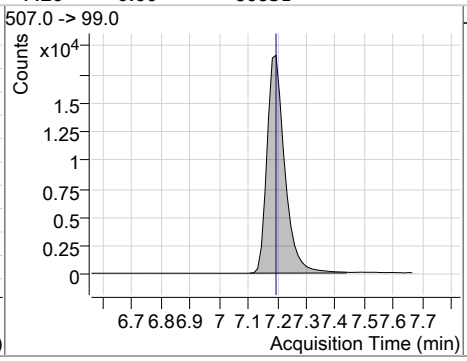


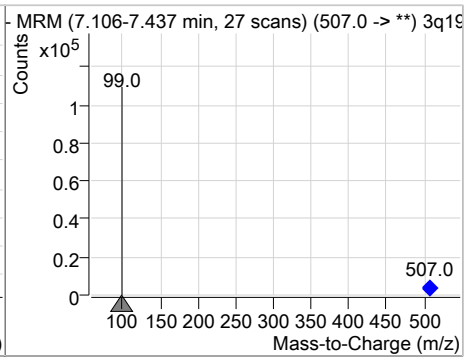




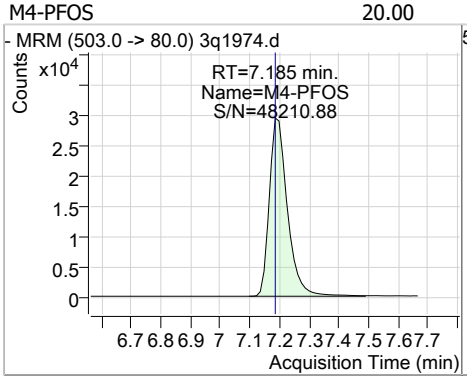
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.99	7.20	0.00	80851				

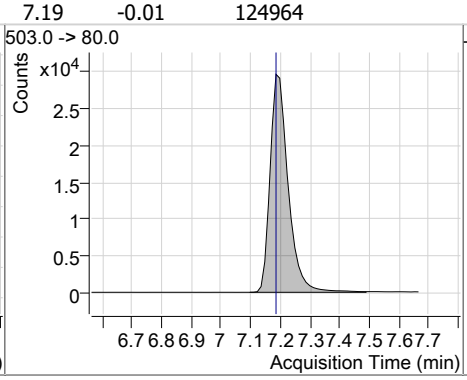


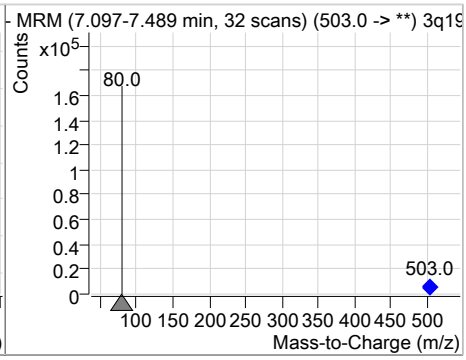




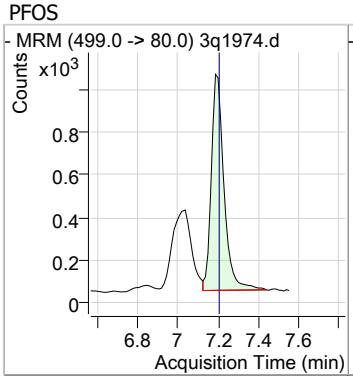
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	124964				

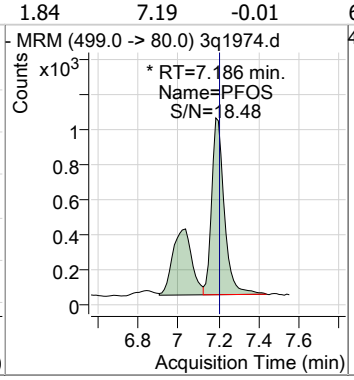


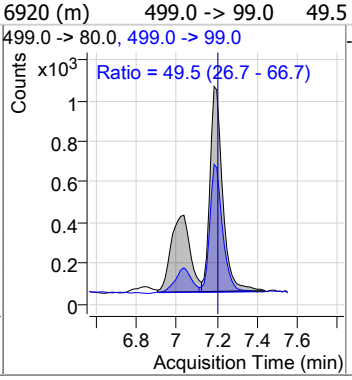


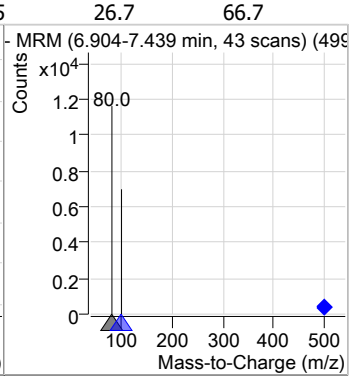


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.84	7.19	-0.01	6920 (m)	499.0 -> 99.0	49.5	26.7	66.7



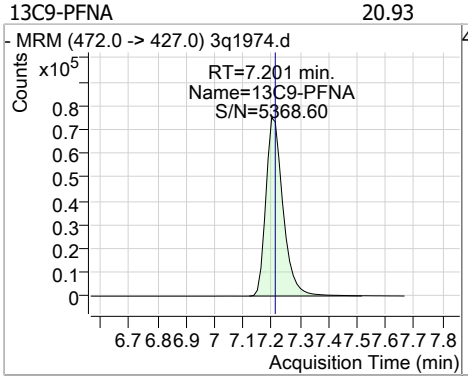


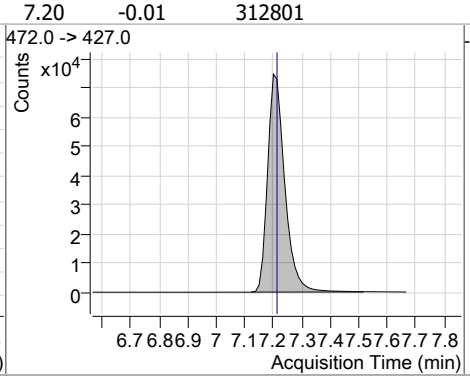


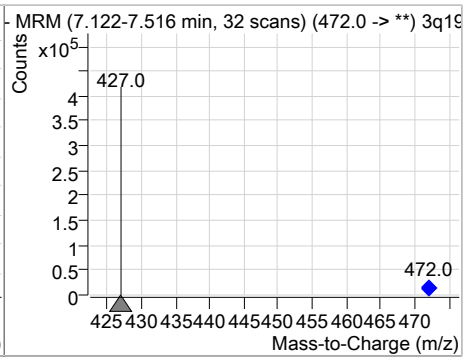


Perfluorinated Compounds by LC/MS/MS

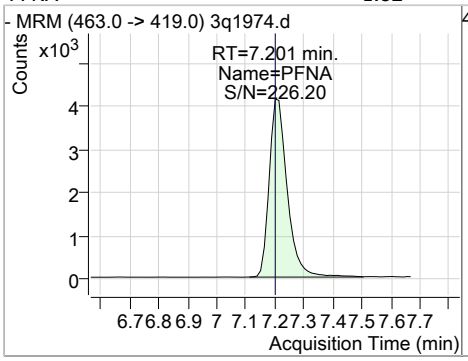
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.93	7.20	-0.01	312801				

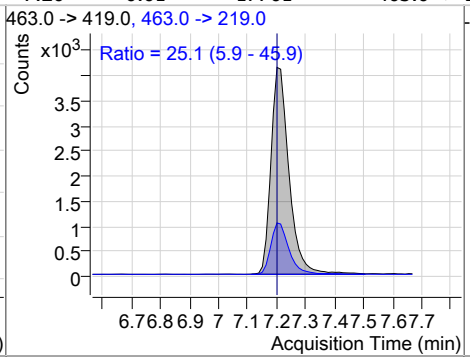


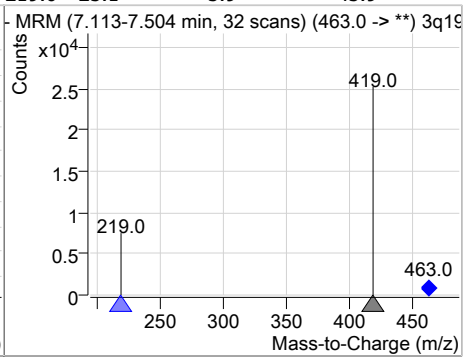




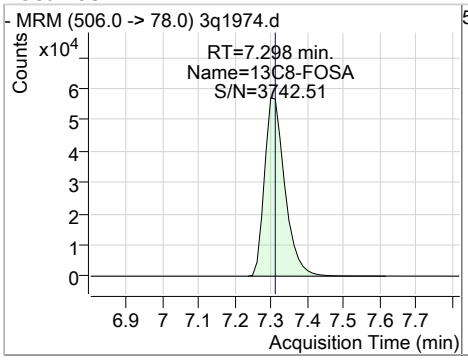
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	1.82	7.20	-0.01	17761	463.0 -> 219.0	25.1	5.9	45.9

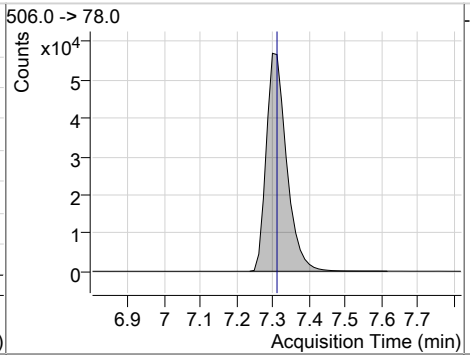


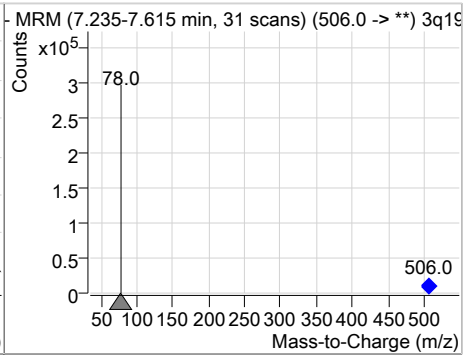




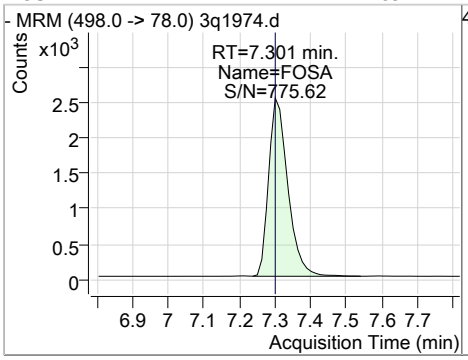
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.11	7.30	-0.01	222176				

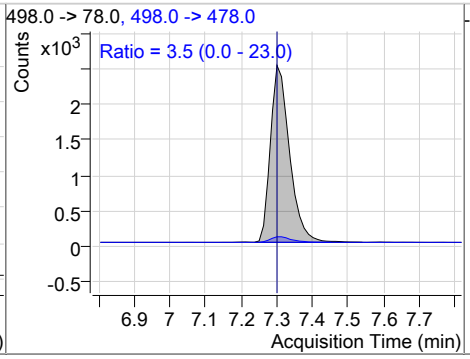


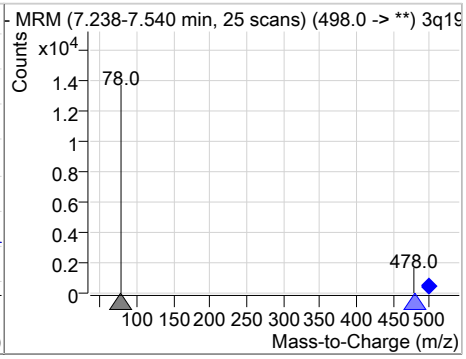




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.89	7.30	-0.01	9379	498.0 -> 478.0	3.5	0.0	23.0

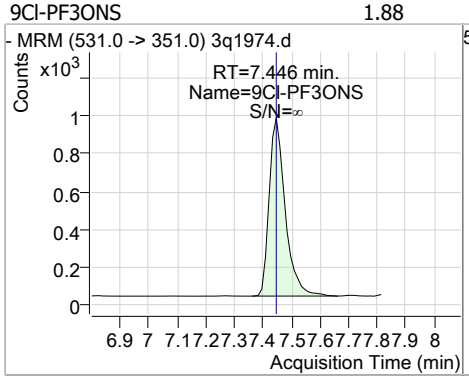


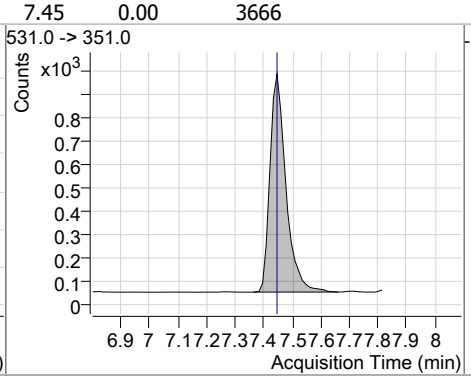


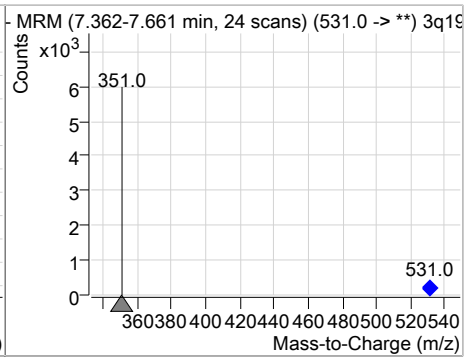


Perfluorinated Compounds by LC/MS/MS

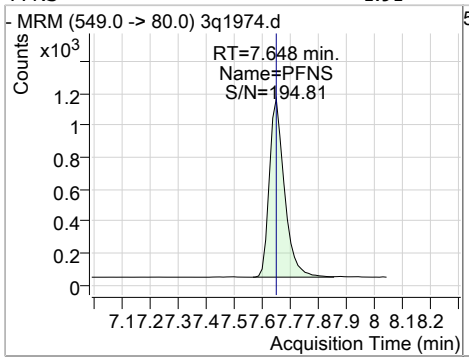
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	1.88	7.45	0.00	3666				

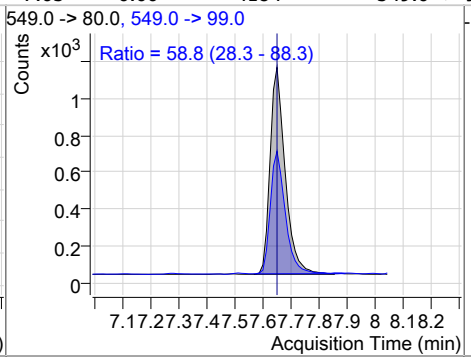


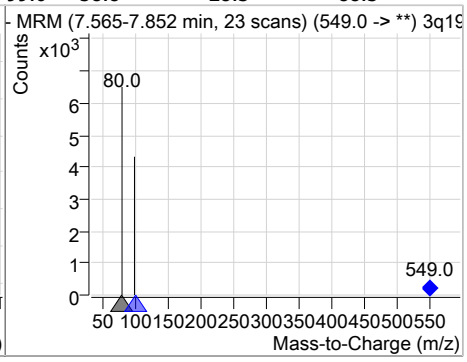




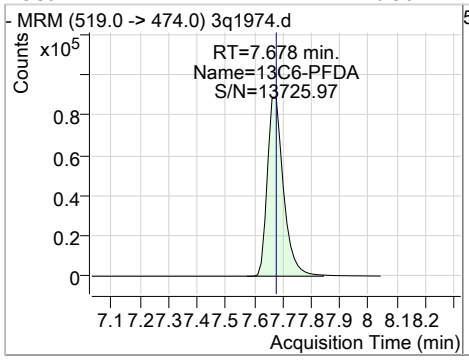
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	1.91	7.65	0.00	4184	549.0 -> 99.0	58.8	28.3	88.3

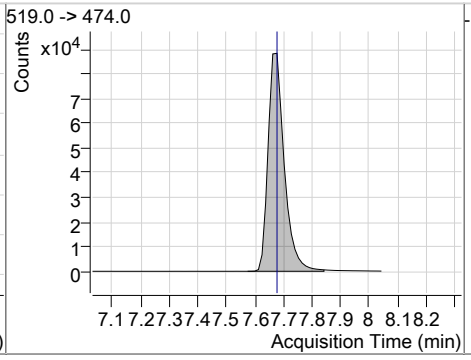


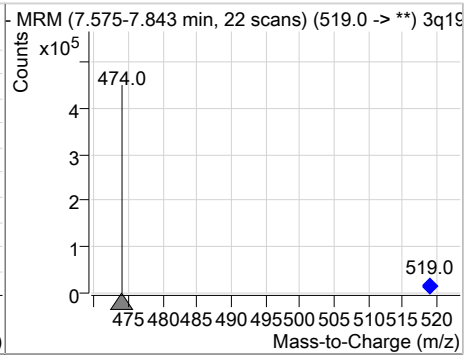




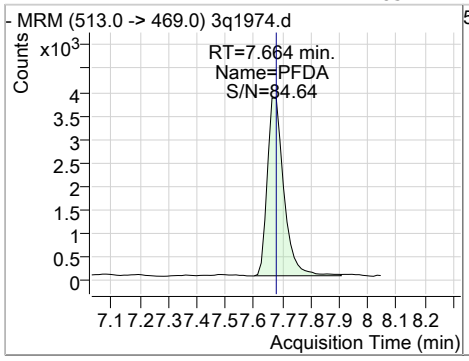
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.98	7.68	0.00	349481				

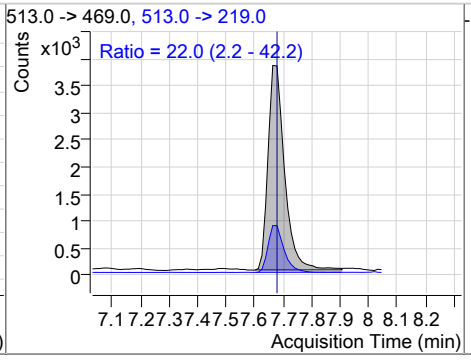


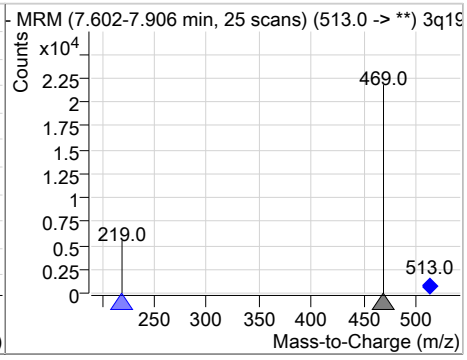




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	1.85	7.66	-0.01	15272	513.0 -> 219.0	22.0	2.2	42.2

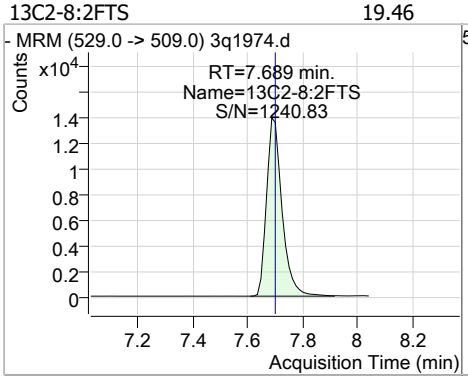


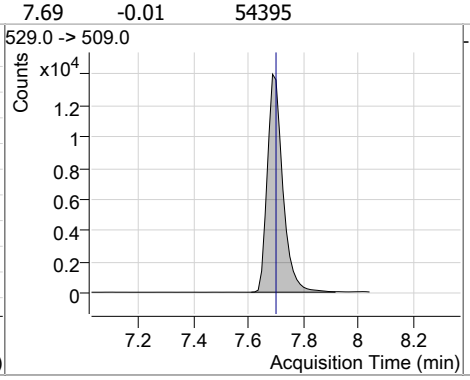


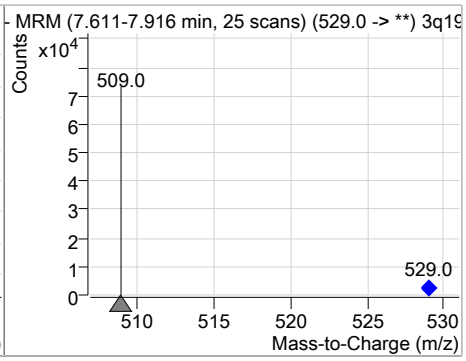


Perfluorinated Compounds by LC/MS/MS

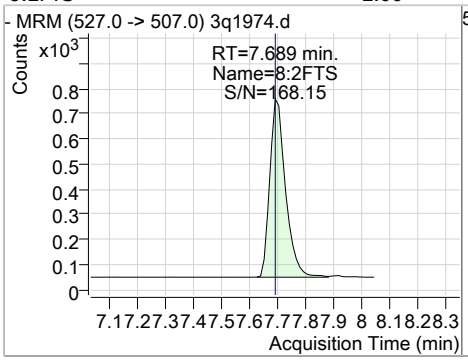
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.46	7.69	-0.01	54395				

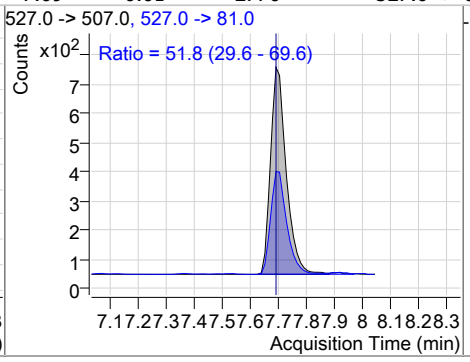


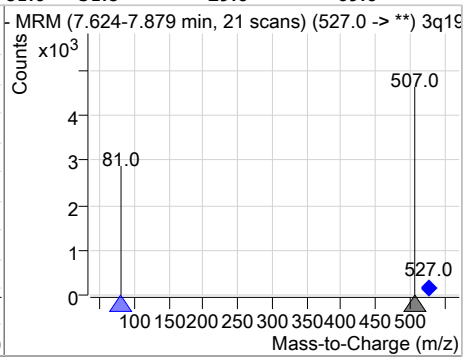




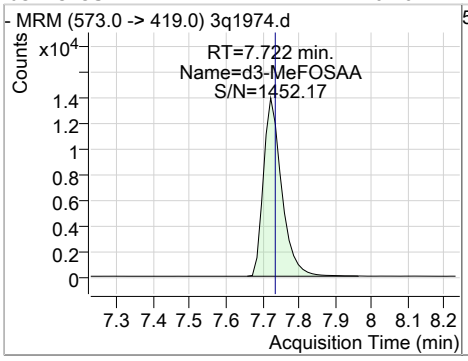
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	2.06	7.69	-0.01	2776	527.0 -> 81.0	51.8	29.6	69.6

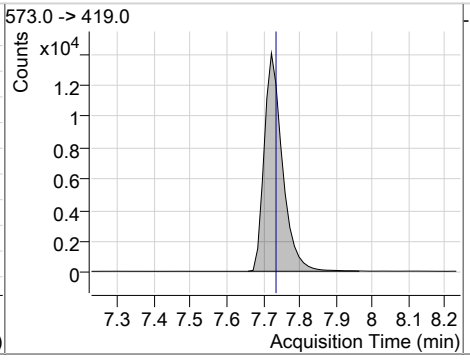


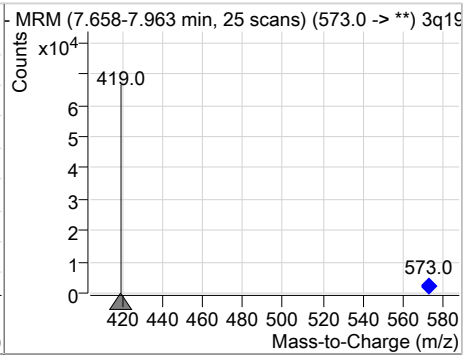




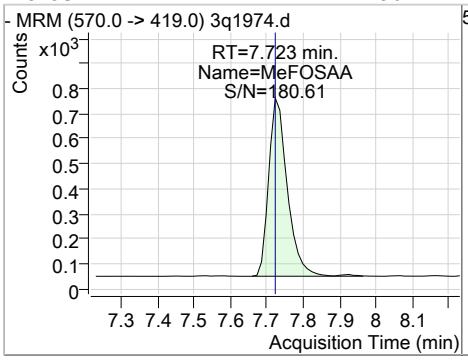
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.46	7.72	-0.01	48563				

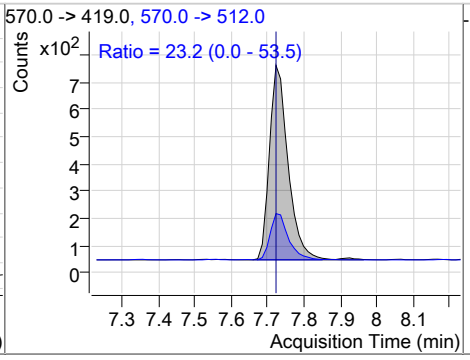


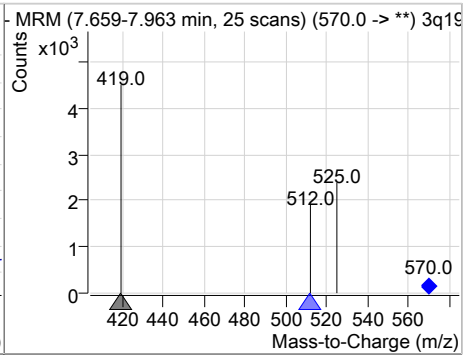




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	1.96	7.72	-0.01	2545	570.0 -> 512.0	23.2	0.0	53.5

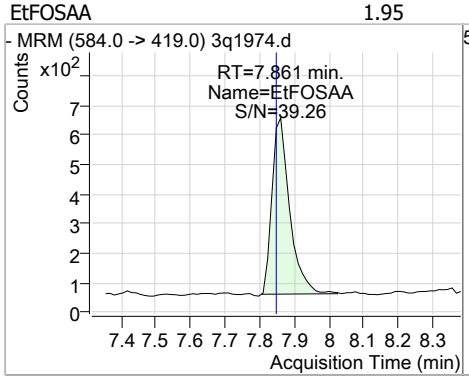


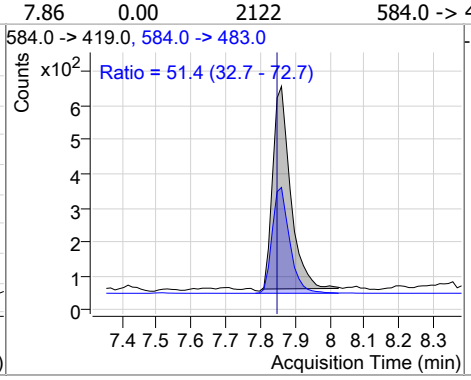


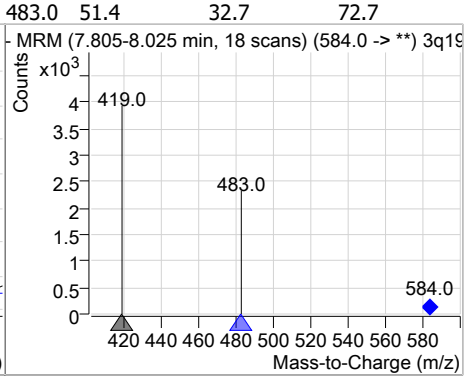


Perfluorinated Compounds by LC/MS/MS

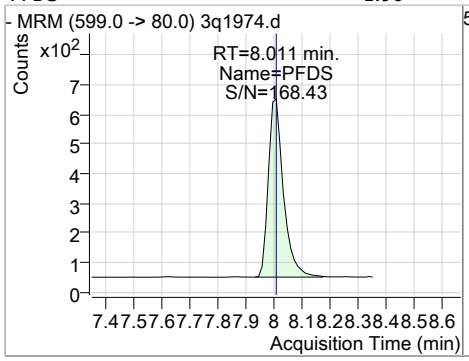
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	1.95	7.86	0.00	2122	584.0 -> 483.0	51.4	32.7	72.7

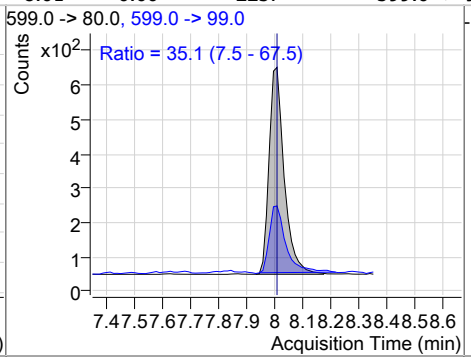


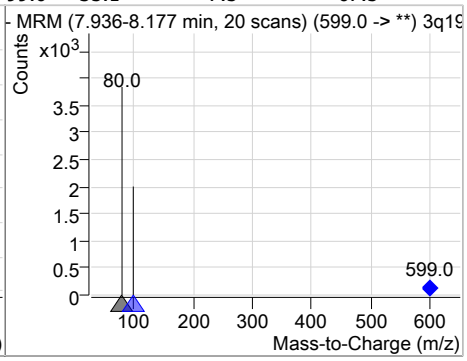




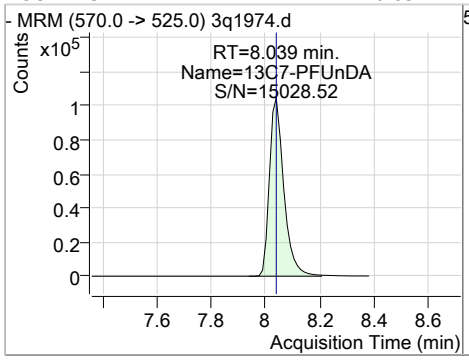
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	1.90	8.01	0.00	2257	599.0 -> 99.0	35.1	7.5	67.5

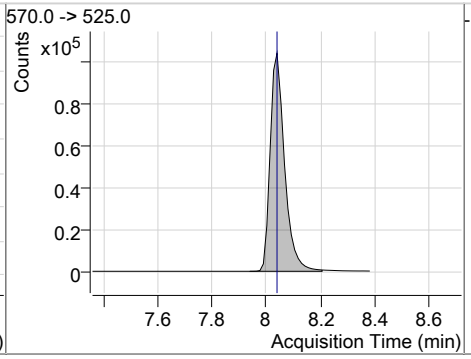


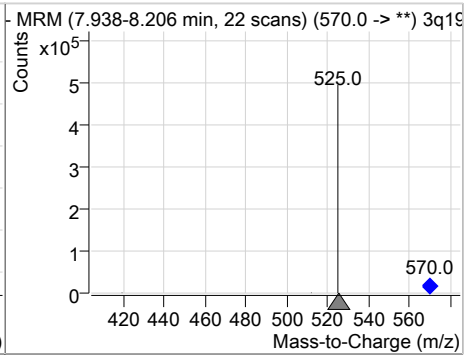




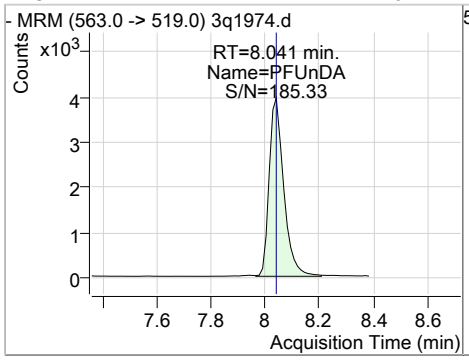
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.83	8.04	0.00	386092				

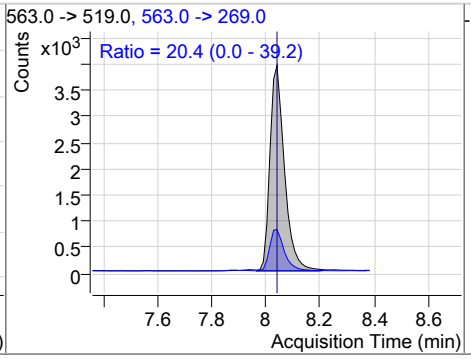


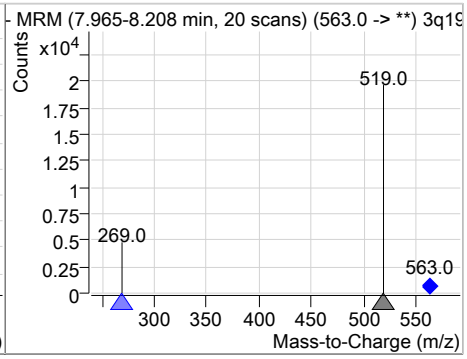




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	1.76	8.04	0.00	14728	563.0 -> 269.0	20.4	0.0	39.2

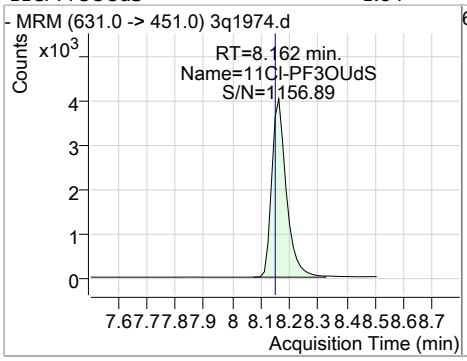


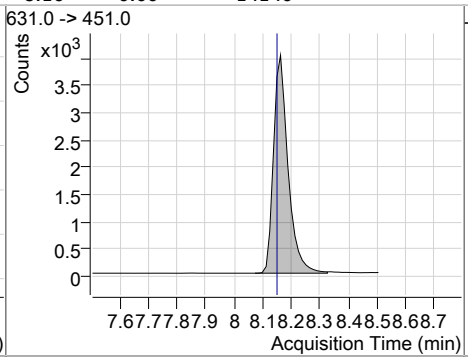


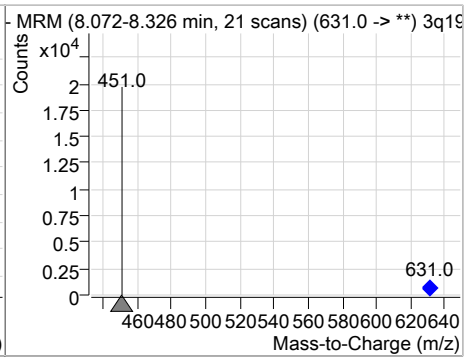


Perfluorinated Compounds by LC/MS/MS

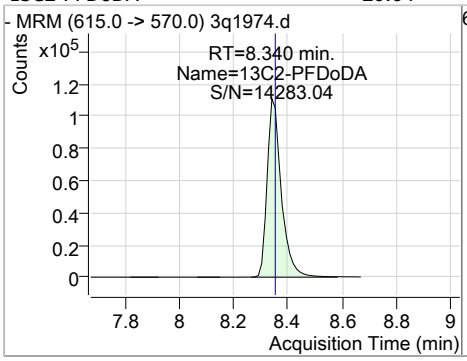
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	1.84	8.16	0.00	14146				

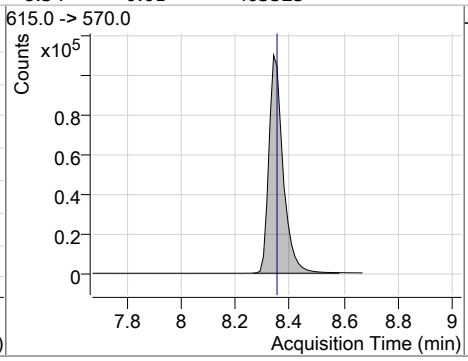


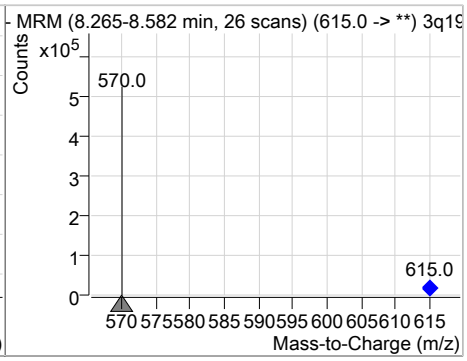




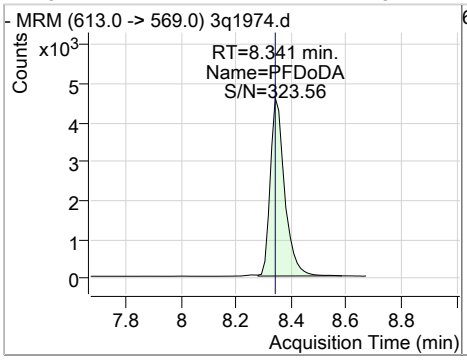
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.64	8.34	-0.01	403525				

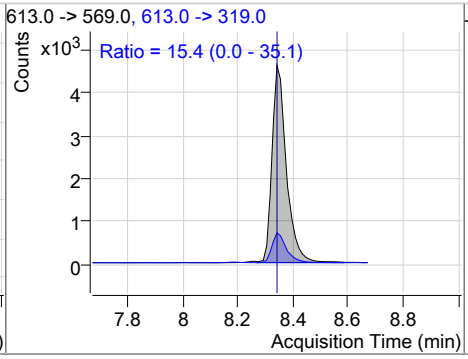


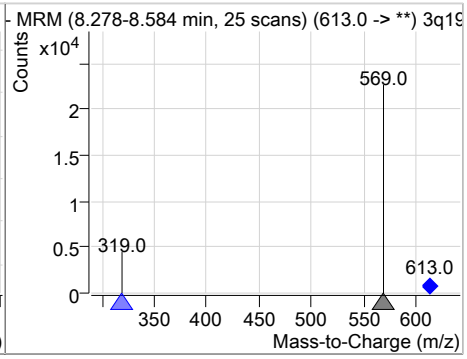




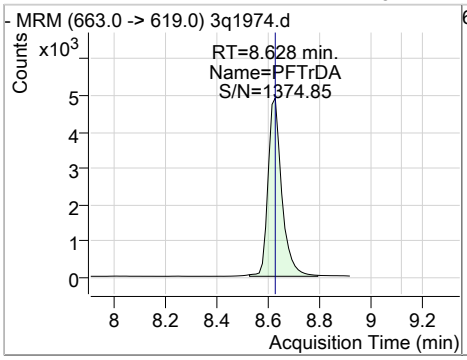
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	1.81	8.34	-0.01	16558	613.0 -> 319.0	15.4	0.0	35.1

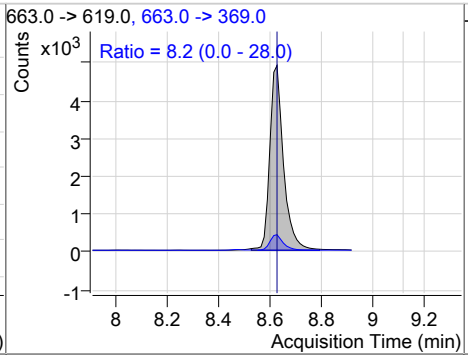


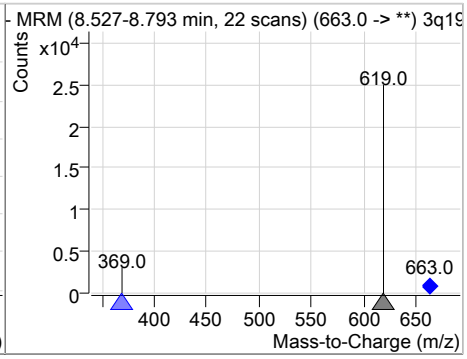




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	1.82	8.63	0.00	18071	663.0 -> 369.0	8.2	0.0	28.0

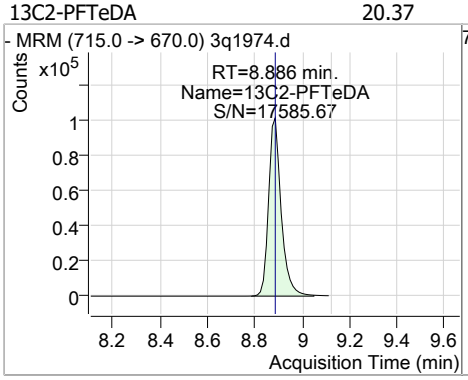


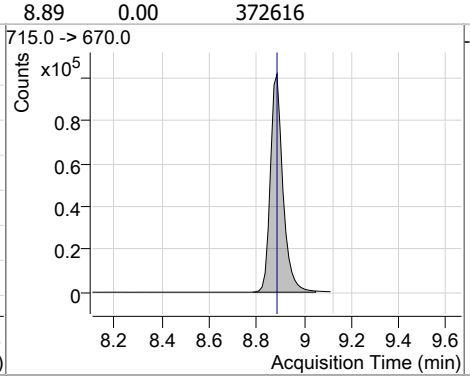


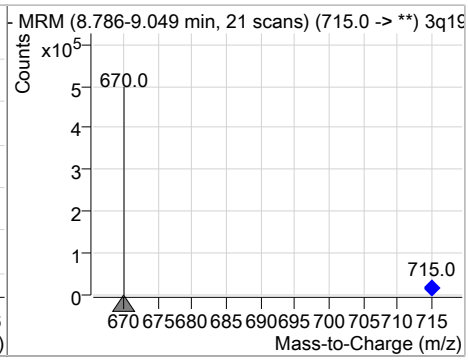


Perfluorinated Compounds by LC/MS/MS

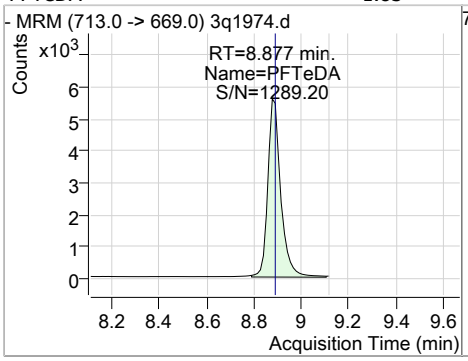
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.37	8.89	0.00	372616				

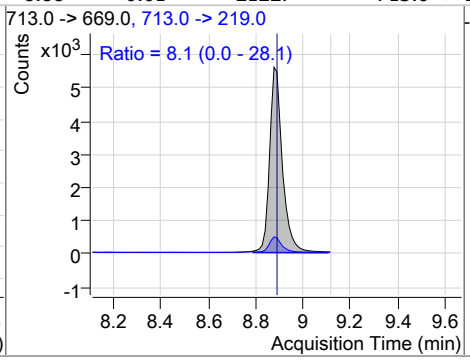


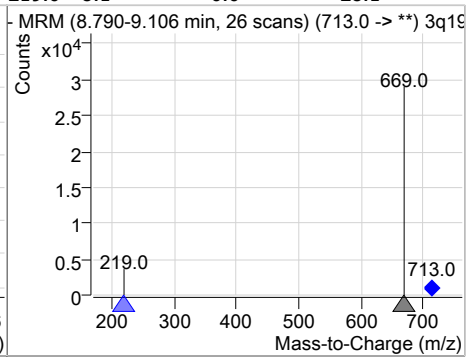




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.83	8.88	-0.01	21227	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1974.D
Injection Time: 03/21/19 10:25
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1975.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 10:40:17 AM
Sample Name : ic54-5.0
Vial : P3-A5
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

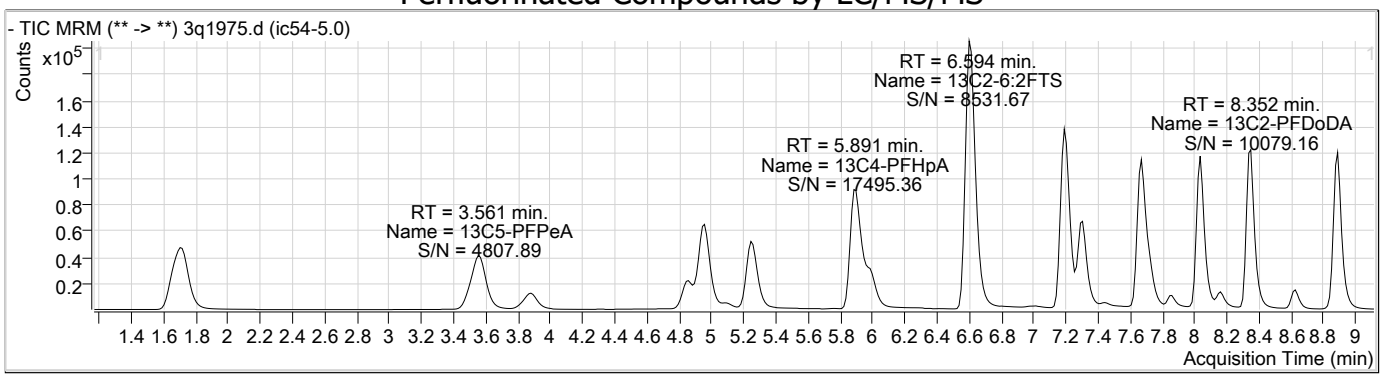
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.702	217.0 -> 172.0	330826	20.00 µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	221221	20.00 µg/L	0.000
M5-PFHxA	4.963	318.0 -> 273.0	295402	20.00 µg/L	0.000
M4-PFHpA	5.891	367.0 -> 322.0	338083	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	321723	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	304920	20.00 µg/L	-0.013
M6-PFDA	7.678	519.0 -> 474.0	338107	20.00 µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	374300	20.00 µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	398019	20.00 µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	375962	20.00 µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	214902	20.00 µg/L	0.000
M3-PFBS	3.879	302.0 -> 99.0	50859	20.00 µg/L	0.000
M3-PFHxS	5.947	402.0 -> 99.0	51108	20.00 µg/L	0.000
M8-PFOS	7.196	507.0 -> 99.0	77836	20.00 µg/L	0.000
M2-4:2FTS	4.858	329.0 -> 309.0	89835	20.00 µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	87980	20.00 µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	53379	20.00 µg/L	0.000
M3-MeFOSAA	7.722	573.0 -> 419.0	46720	20.00 µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	171656	100.00 µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	412371	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	123837	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.858	329.0 -> 309.0	89733	18.91 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C2-6:2FTS	6.594	429.0 -> 409.0	88445	19.35 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C2-8:2FTS	7.701	529.0 -> 509.0	53537	19.15 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C2-PFDoDA	8.352	615.0 -> 570.0	397920	20.35 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C2-PFTeDA	8.886	715.0 -> 670.0	376353	20.57 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C3-PFBS	3.879	302.0 -> 99.0	50688	20.10 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C3-PFHxS	5.947	402.0 -> 99.0	50793	20.10 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFBA	1.702	217.0 -> 172.0	327973	20.11 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	5.891	367.0 -> 322.0	336432	20.15 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFHxA	4.963	318.0 -> 273.0	293948	19.97 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	3.561	268.0 -> 223.0	222469	20.09 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C6-PFDA	7.678	519.0 -> 474.0	338148	20.30 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

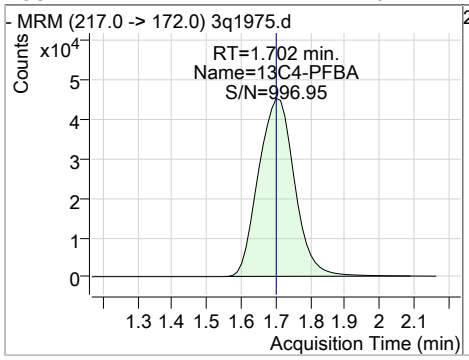
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
13C7-PFUnDA	8.039	570.0 -> 525.0	375453	20.25 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C8-FOSA	7.311	506.0 -> 78.0	214661	20.40 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C8-PFOA	6.609	421.0 -> 376.0	321729	20.34 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.7%		
13C8-PFOS	7.196	507.0 -> 99.0	77976	20.24 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.2%		
13C9-PFNA	7.201	472.0 -> 427.0	303367	20.30 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%		
d3-MeFOSAA	7.722	573.0 -> 419.0	46738	19.69 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C3-HFPO-DA	5.255	287.0 -> 169.0	171656	102.80 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 102.8%		
M2-PFOA	6.610	415.0 -> 370.0	412371	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.185	503.0 -> 80.0	123837	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						**QValue**
4:2FTS	4.848	327.0 -> 307.0	12939	5.27 µg/L		98
6:2FTS	6.595	427.0 -> 407.0	10682	4.92 µg/L		97
8:2FTS	7.702	527.0 -> 507.0	6952	5.26 µg/L		94
EtFOSAA	7.861	584.0 -> 419.0	5218	4.99 µg/L		98
FOSA	7.313	498.0 -> 78.0	23718	4.94 µg/L		98
MeFOSAA	7.735	570.0 -> 419.0	5994	4.79 µg/L		94
PFBA	1.710	213.0 -> 169.0	15080	4.81 µg/L		100
PFBS	3.883	299.0 -> 80.0	17063	4.82 µg/L		99
PFDA	7.678	513.0 -> 469.0	38762	4.84 µg/L		97
PFDoDA	8.354	613.0 -> 569.0	42540	4.69 µg/L		99
PFDS	8.011	599.0 -> 80.0	5839	5.07 µg/L		99
PFHpA	5.894	363.0 -> 319.0	71566	4.78 µg/L		99
PFHpS	6.618	449.0 -> 80.0	12118	4.98 µg/L		98
PFHxA	4.965	313.0 -> 269.0	24842	4.72 µg/L		99
PFHxS	5.937	399.0 -> 80.0	13312	4.74 µg/L	m	100
PFNA	7.201	463.0 -> 419.0	44183	4.66 µg/L		100
PFNS	7.648	549.0 -> 80.0	11060	5.25 µg/L		96
PFOA	6.611	413.0 -> 369.0	42099	4.89 µg/L		100
PFOS	7.186	499.0 -> 80.0	17519	4.86 µg/L	m	97
PFPeA	3.564	263.0 -> 219.0	53978	4.82 µg/L		100
PFPeS	5.094	349.0 -> 80.0	10813	4.91 µg/L		97
PFTeDA	8.890	713.0 -> 669.0	56140	4.80 µg/L		100
PFTrDA	8.628	663.0 -> 619.0	47824	4.78 µg/L		100
PFUnDA	8.041	563.0 -> 519.0	39653	4.88 µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	37270	4.89 µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	9244	4.89 µg/L		100
ADONA	5.994	377.0 -> 251.0	94926	4.76 µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	67650	23.22 µg/L		99

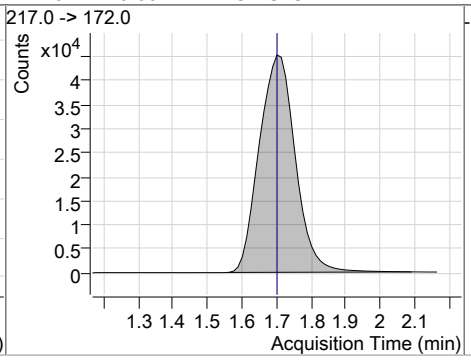
 # = Qualifier out of range, m = manually integrated, + = Area summed

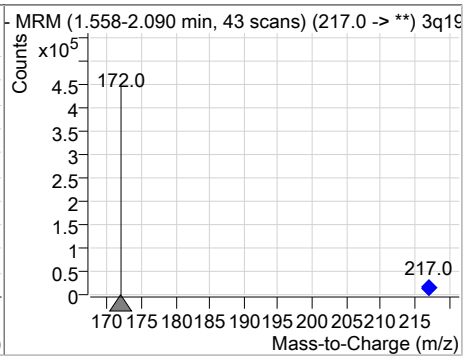
Perfluorinated Compounds by LC/MS/MS



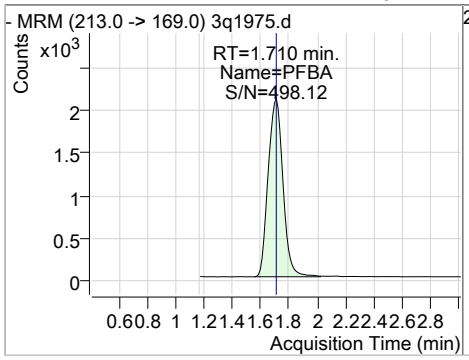
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.11	1.70	0.00	327973				

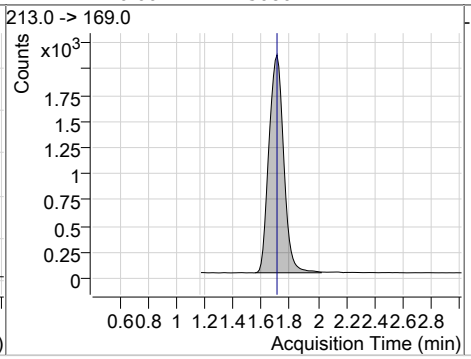


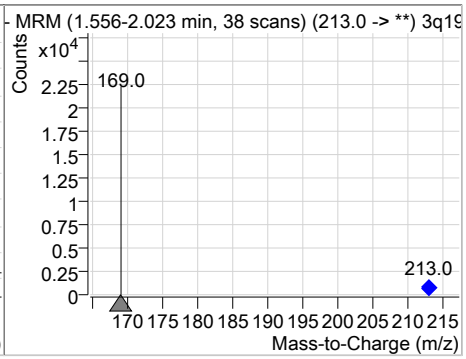




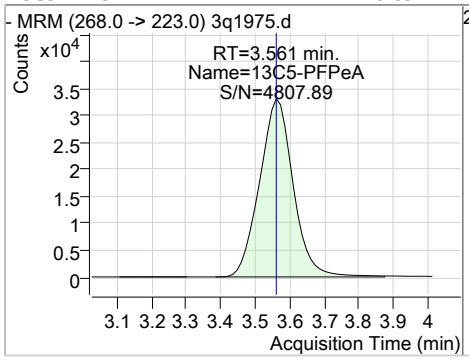
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	4.81	1.71	0.00	15080				

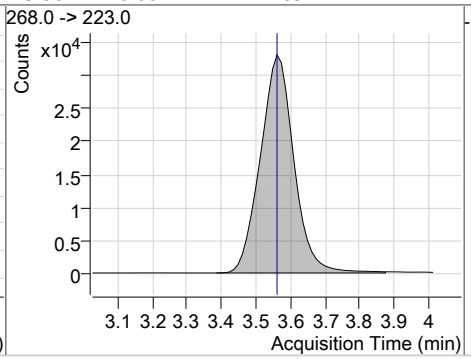


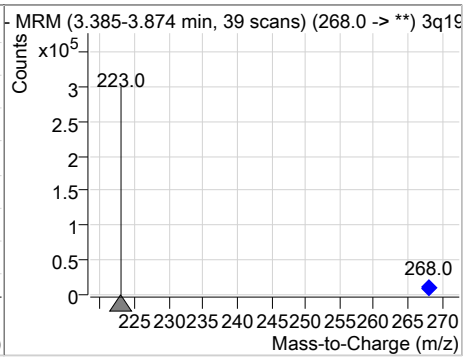




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.09	3.56	0.00	222469				

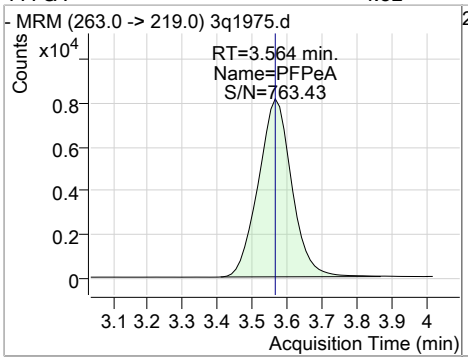


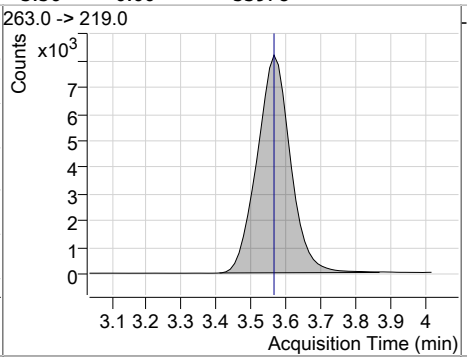


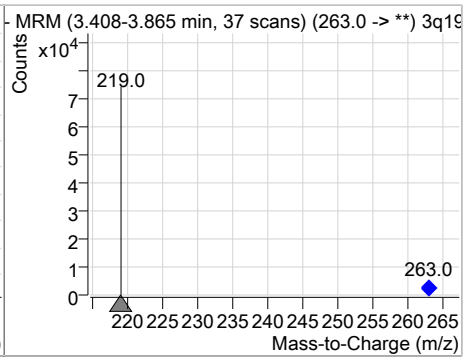


Perfluorinated Compounds by LC/MS/MS

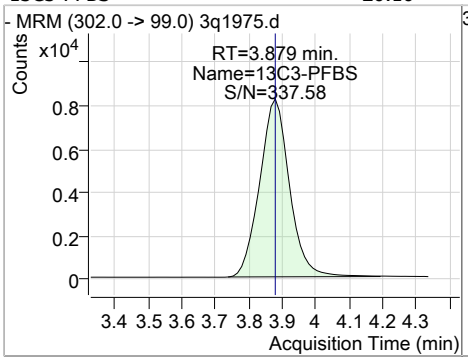
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.82	3.56	0.00	53978				

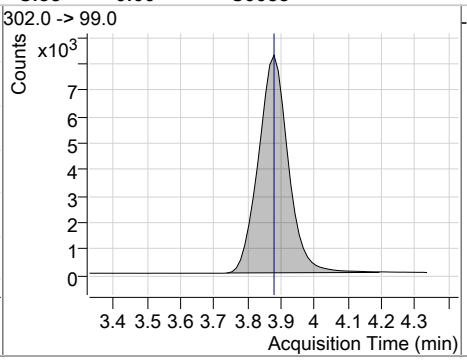


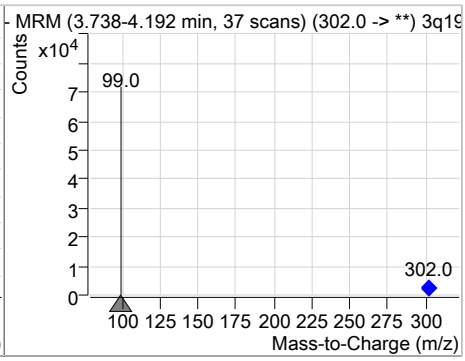




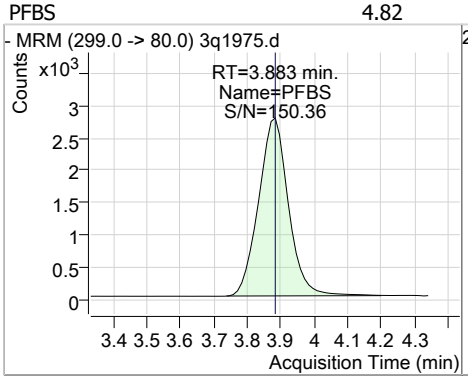
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.10	3.88	0.00	50688				

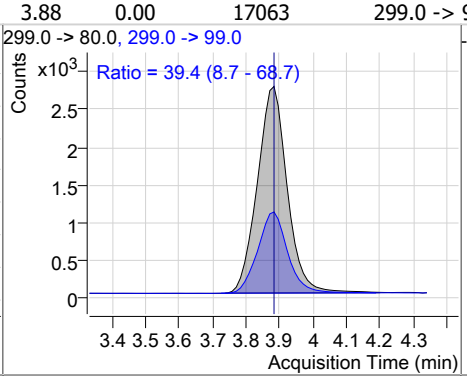


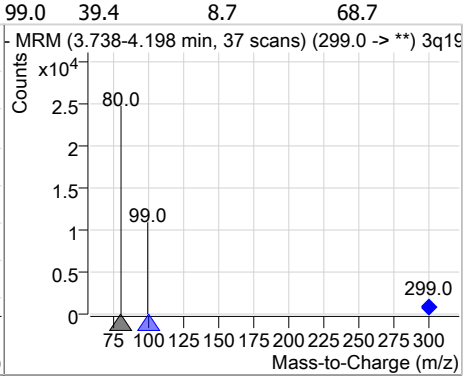




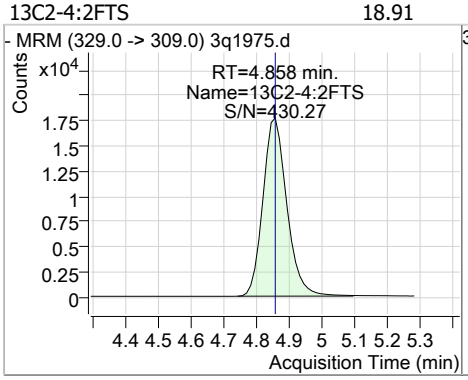
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	4.82	3.88	0.00	17063	299.0 -> 99.0	39.4	8.7	68.7

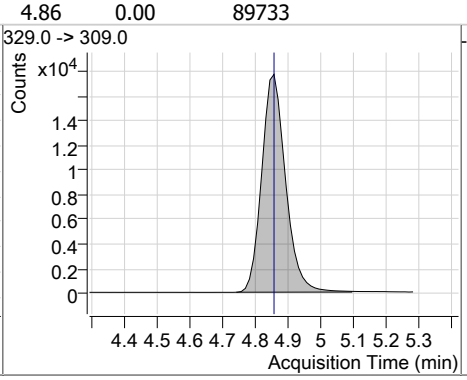


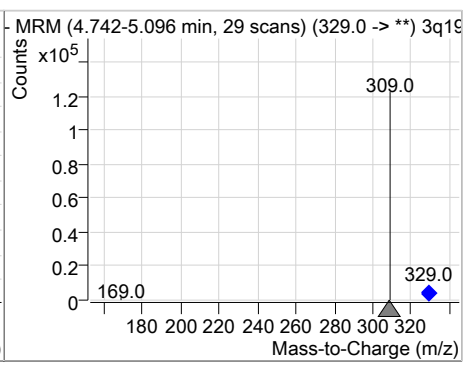




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.91	4.86	0.00	89733				

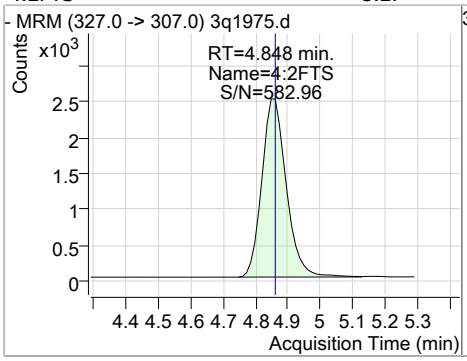


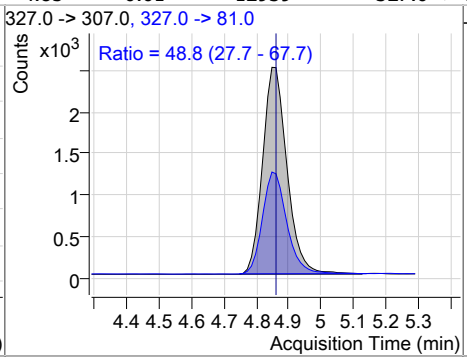


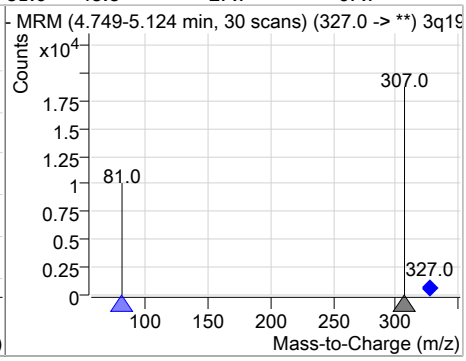


Perfluorinated Compounds by LC/MS/MS

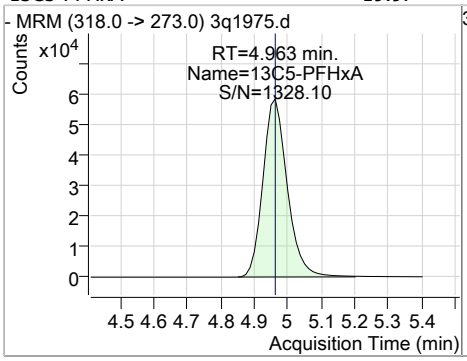
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	5.27	4.85	-0.01	12939	327.0 -> 81.0	48.8	27.7	67.7

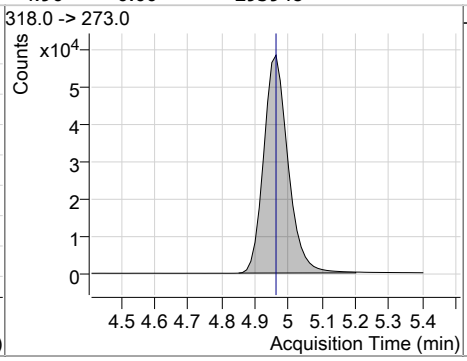


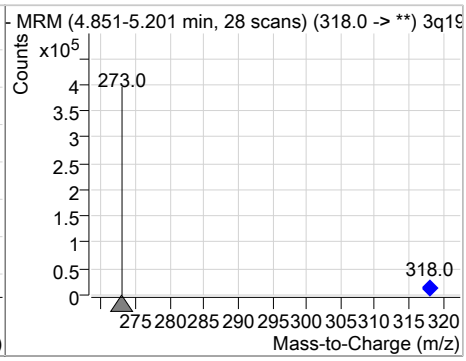




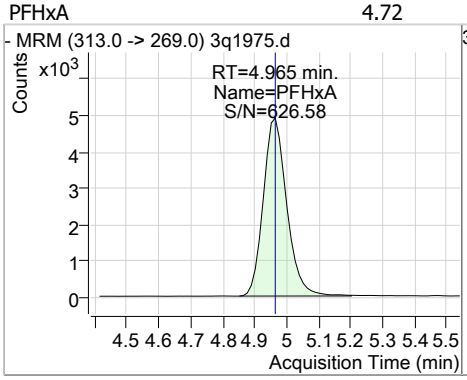
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.97	4.96	0.00	293948				

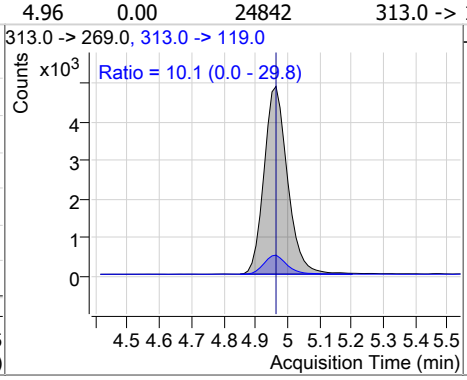


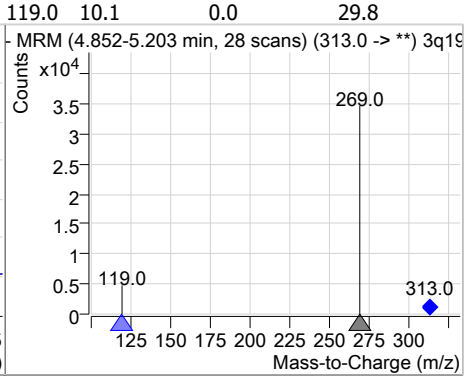




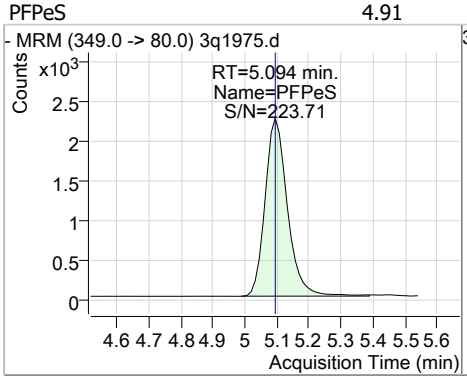
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	4.72	4.96	0.00	24842	313.0 -> 119.0	10.1	0.0	29.8

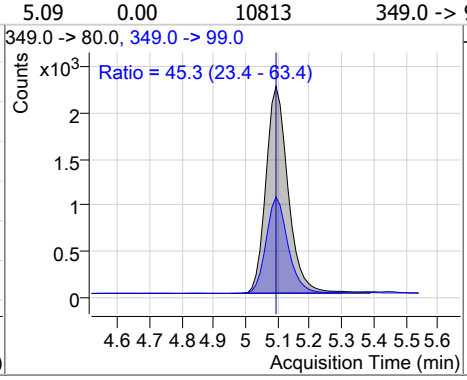


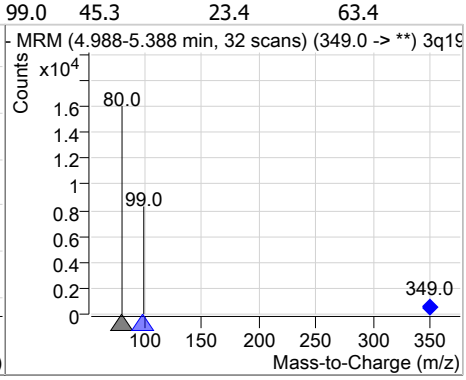




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	4.91	5.09	0.00	10813	349.0 -> 99.0	45.3	23.4	63.4

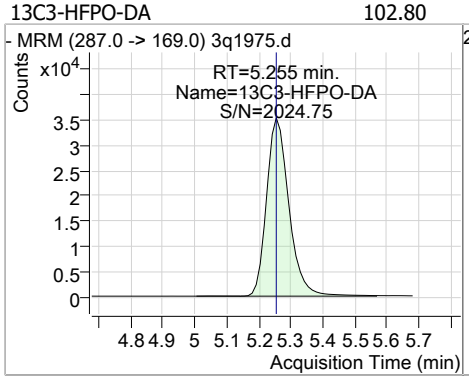


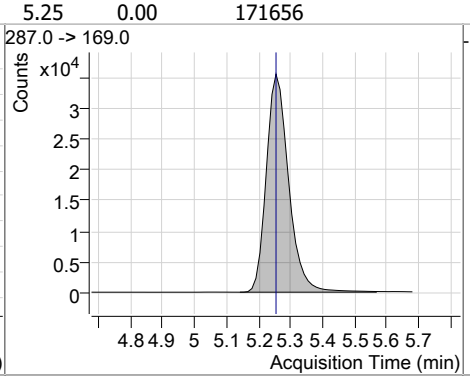


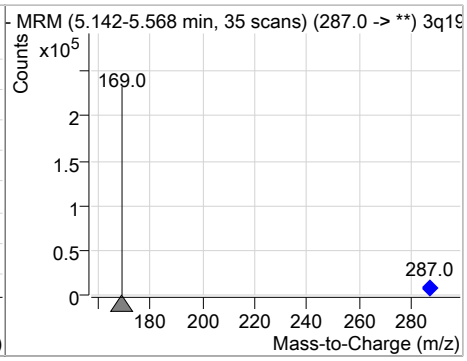


Perfluorinated Compounds by LC/MS/MS

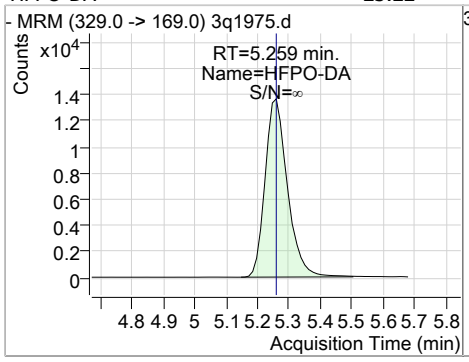
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	102.80	5.25	0.00	171656				

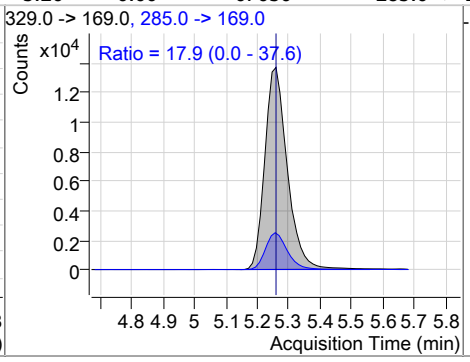


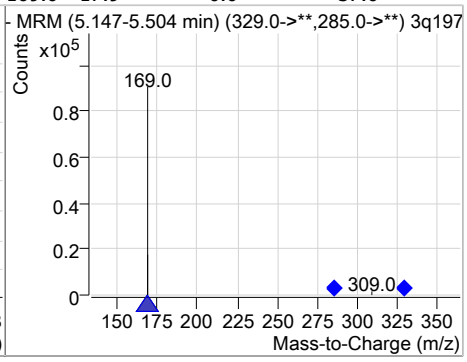




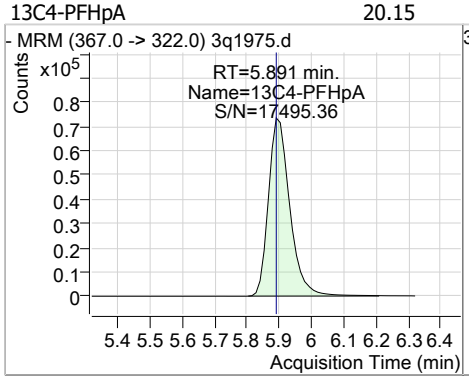
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	23.22	5.26	0.00	67650	285.0 -> 169.0	17.9	0.0	37.6

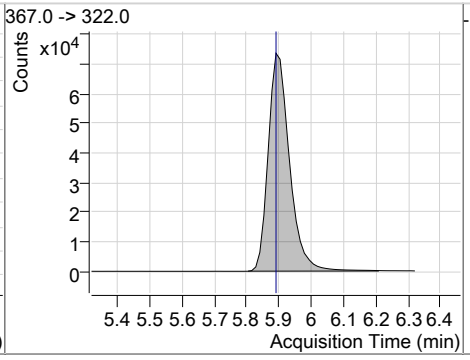


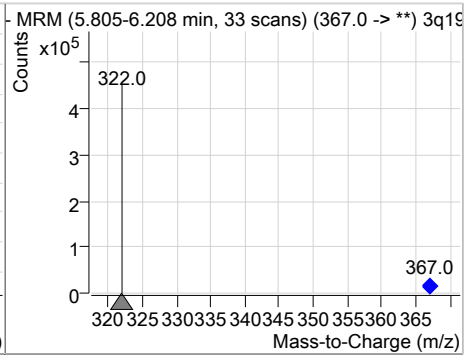




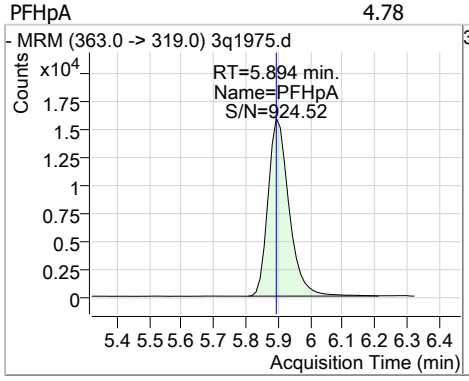
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.15	5.89	0.00	336432				

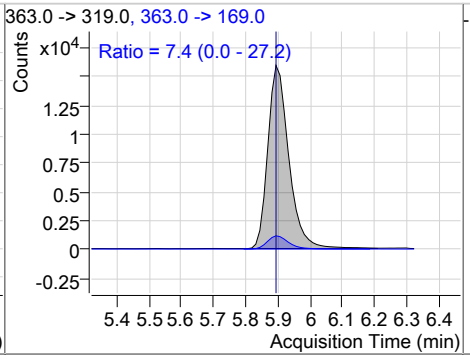


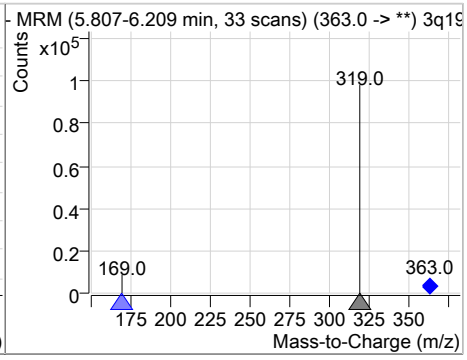




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	4.78	5.89	0.00	71566	363.0 -> 169.0	7.4	0.0	27.2

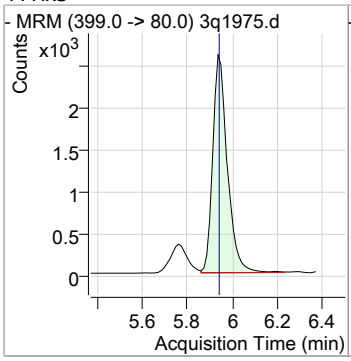


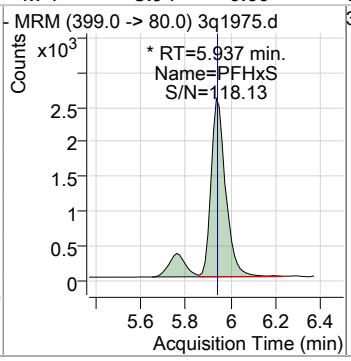


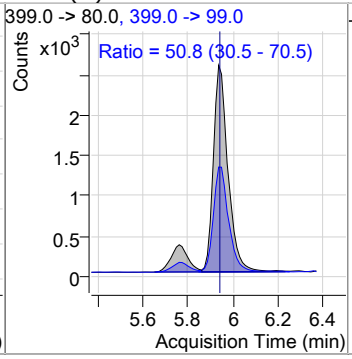


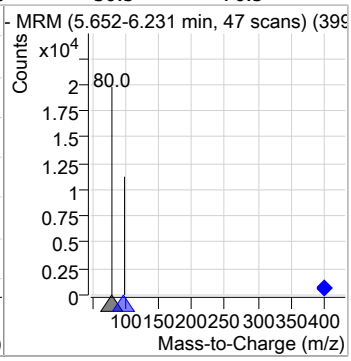
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	4.74	5.94	0.00	13312 (m)	399.0 -> 99.0	50.8	30.5	70.5

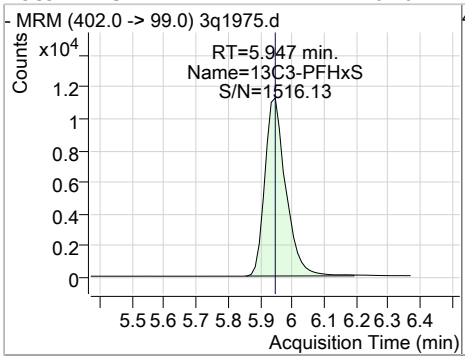


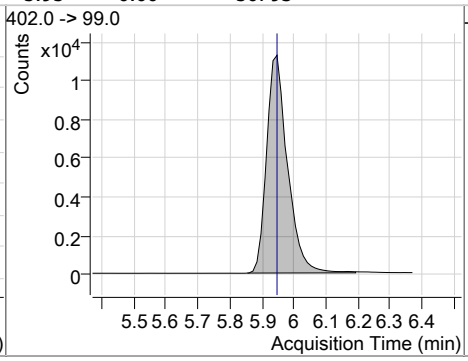


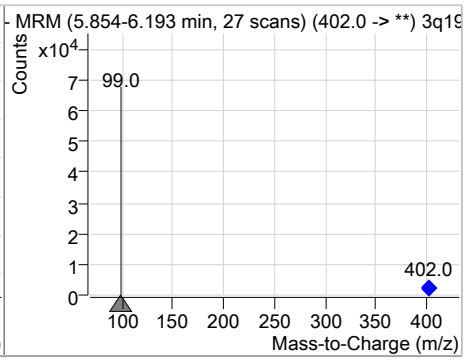




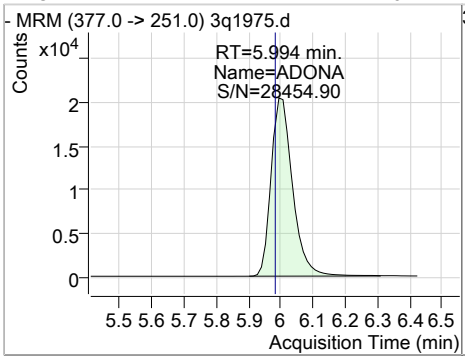
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.10	5.95	0.00	50793				

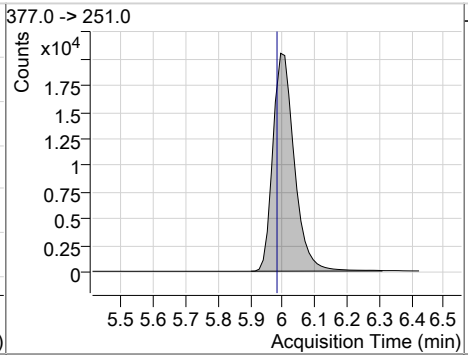


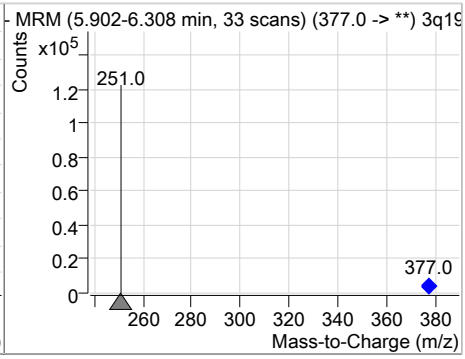




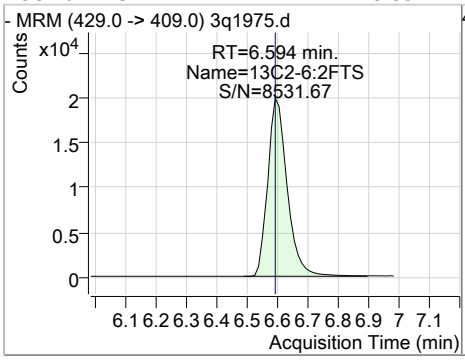
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.76	5.99	0.00	94926				

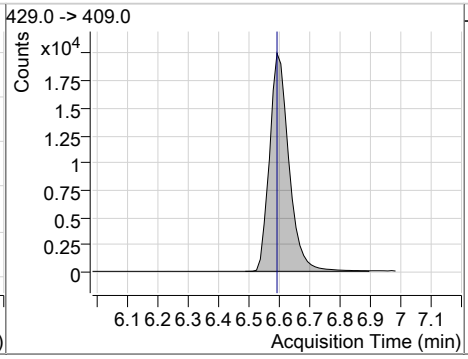


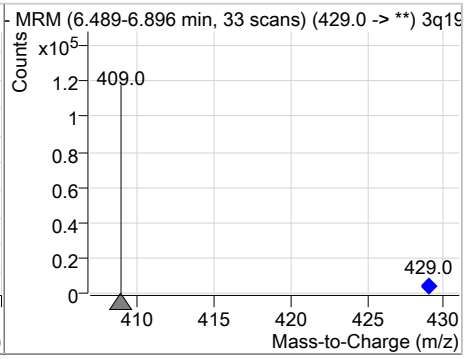




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.35	6.59	0.00	88445				

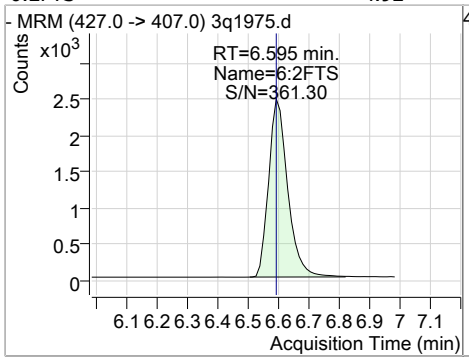


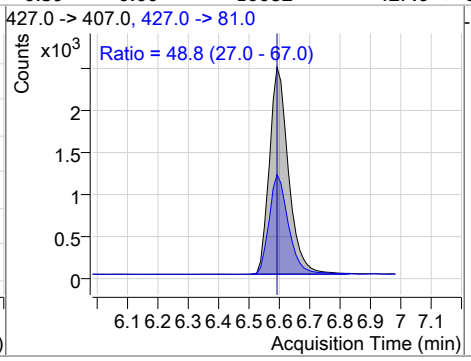


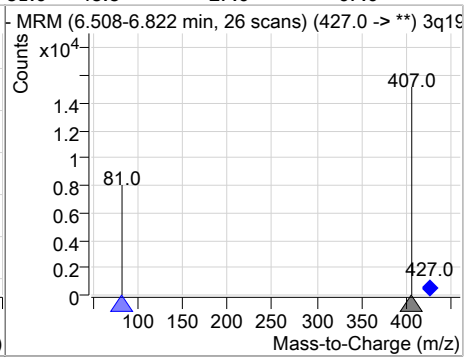


Perfluorinated Compounds by LC/MS/MS

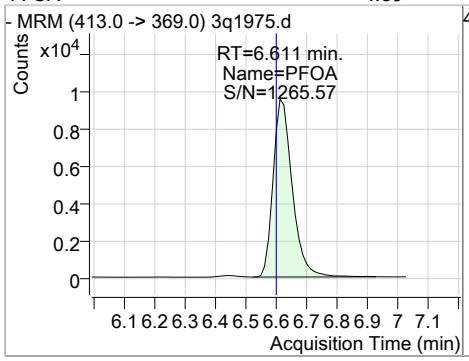
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	4.92	6.59	0.00	10682	427.0 -> 81.0	48.8	27.0	67.0

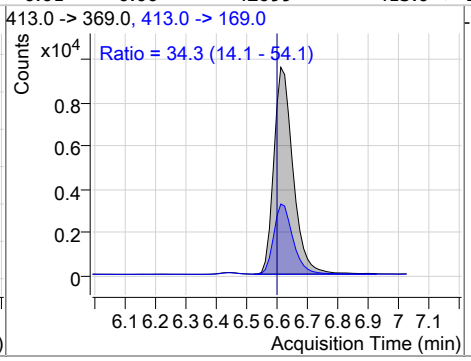


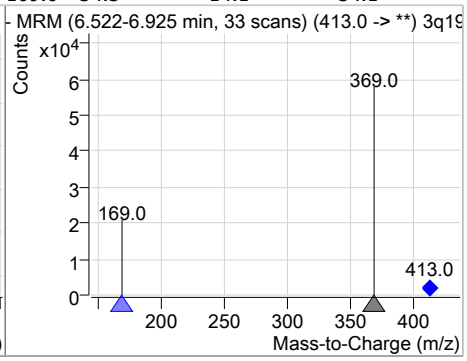




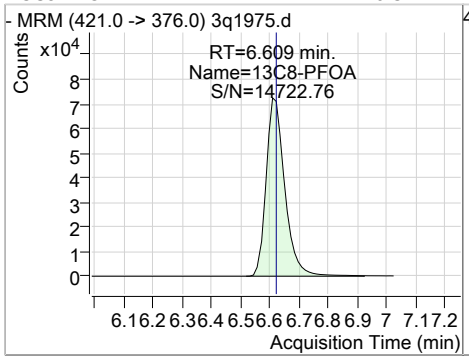
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	4.89	6.61	0.00	42099	413.0 -> 169.0	34.3	14.1	54.1

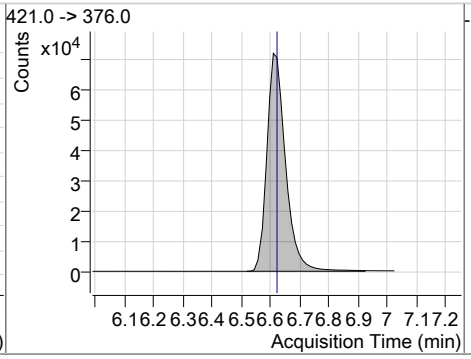


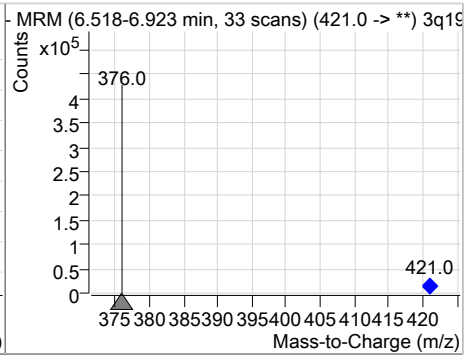




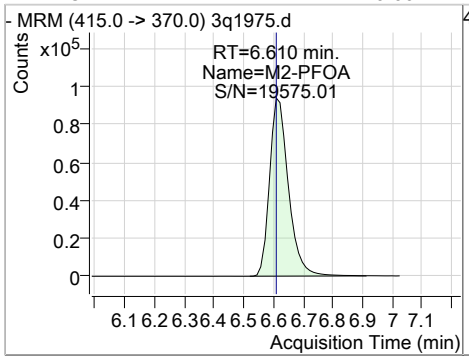
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.34	6.61	-0.01	321729				

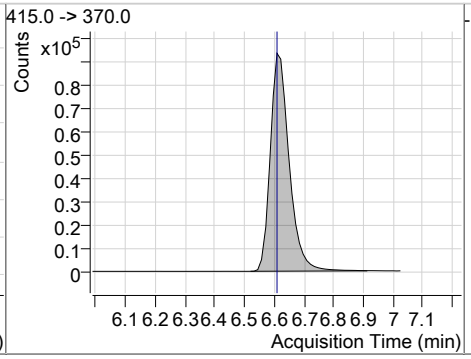


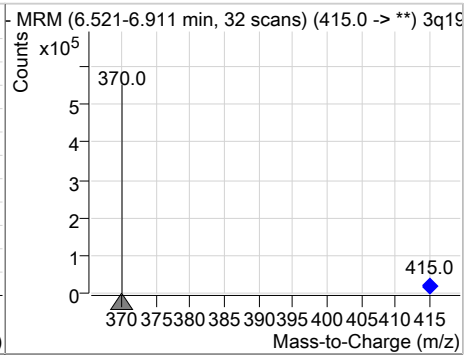




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	412371				

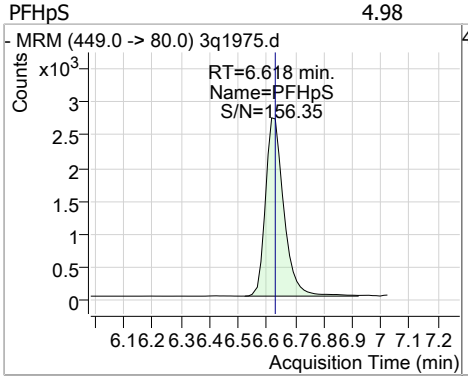


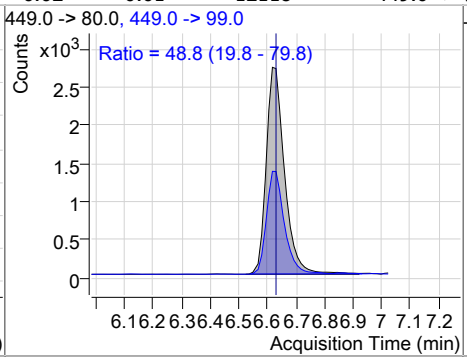


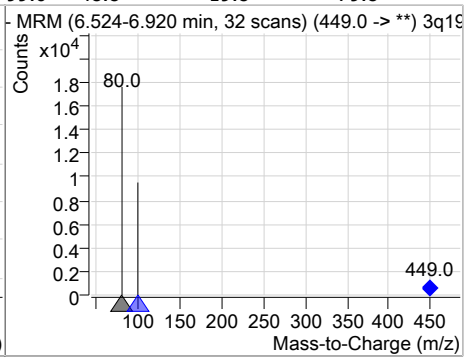


Perfluorinated Compounds by LC/MS/MS

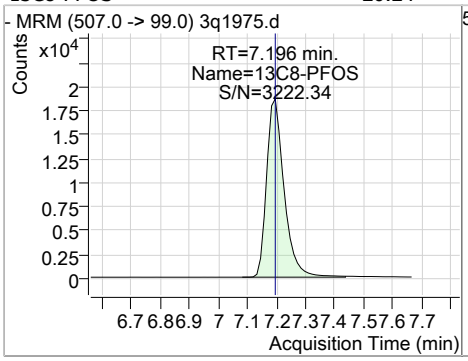
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	4.98	6.62	-0.01	12118	449.0 -> 99.0	48.8	19.8	79.8

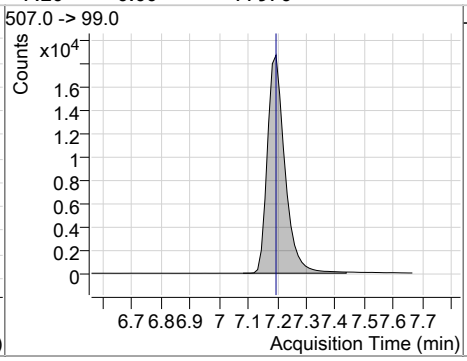


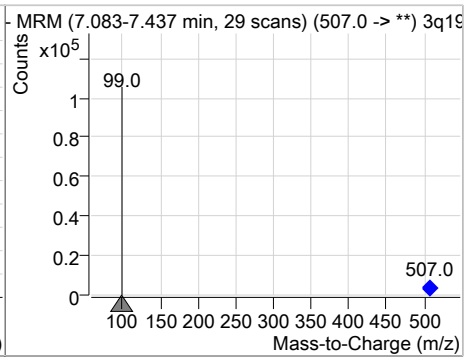




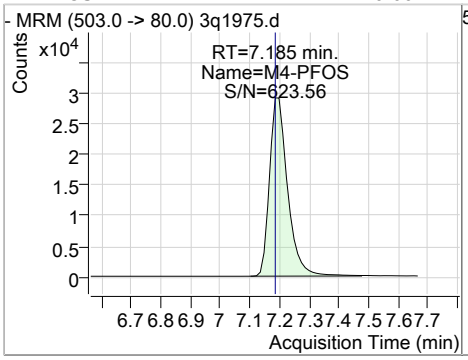
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.24	7.20	0.00	77976				

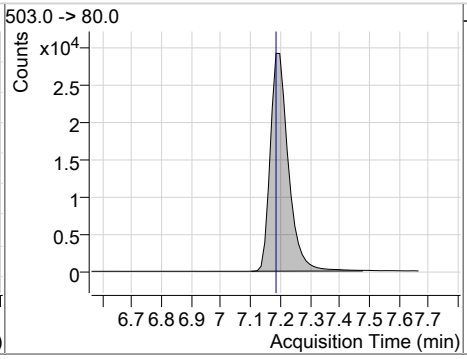


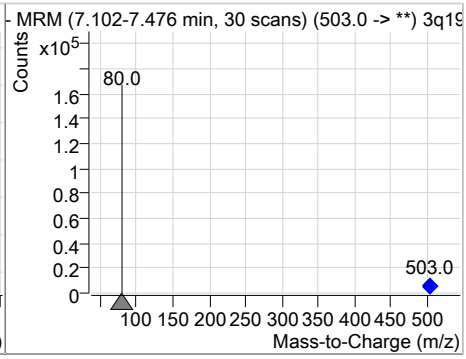




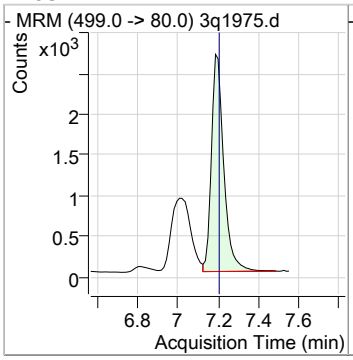
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	123837				

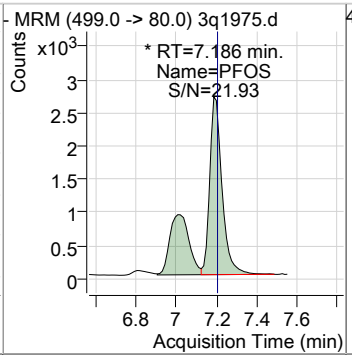


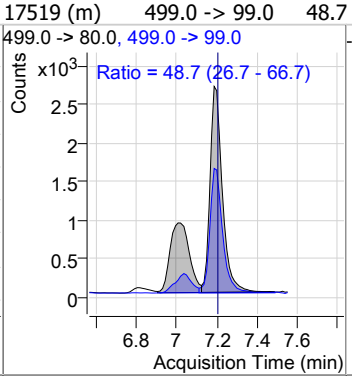


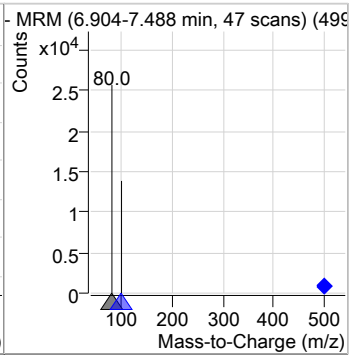


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	4.86	7.19	-0.01	17519 (m)	499.0 -> 99.0	48.7	26.7	66.7



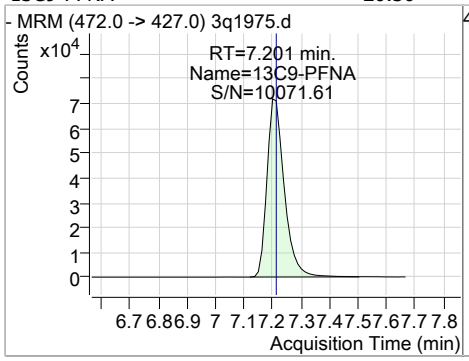


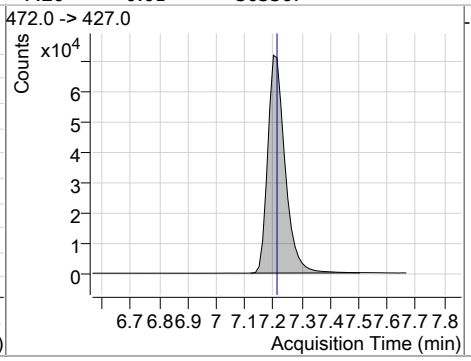


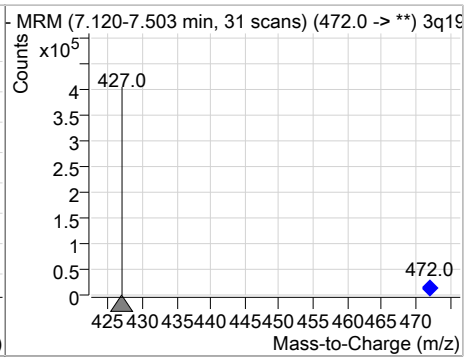


Perfluorinated Compounds by LC/MS/MS

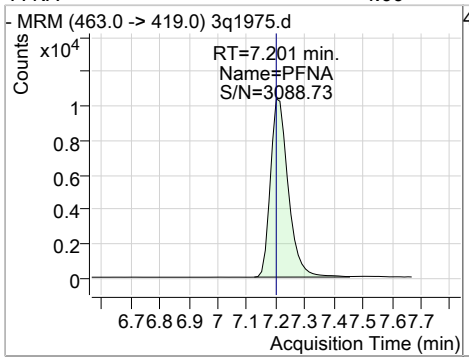
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.30	7.20	-0.01	303367				

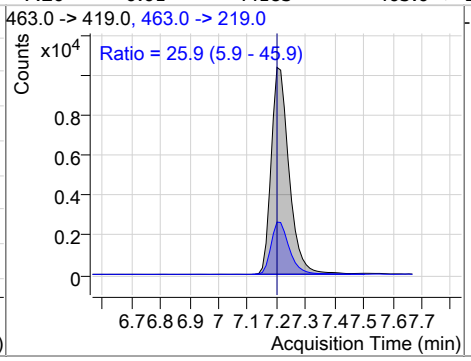


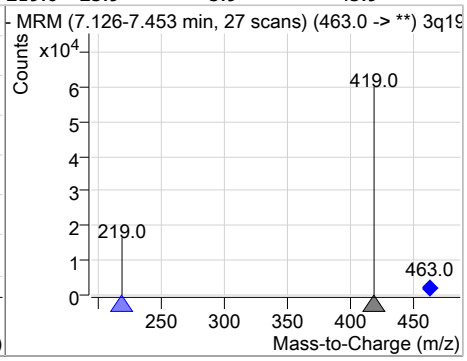




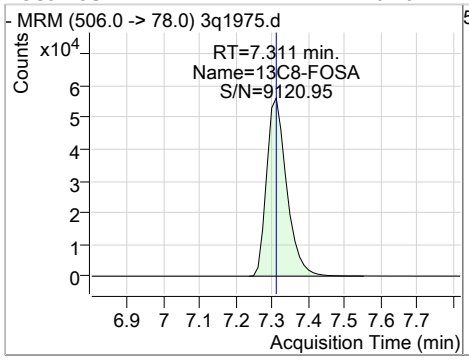
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	4.66	7.20	-0.01	44183	463.0 -> 219.0	25.9	5.9	45.9

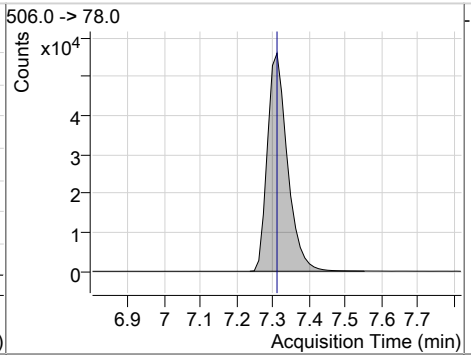


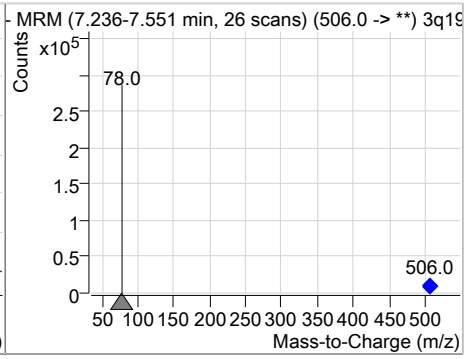




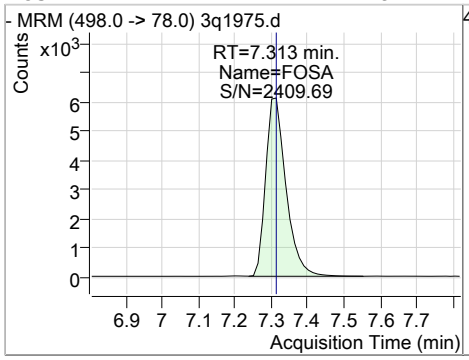
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.40	7.31	0.00	214661				

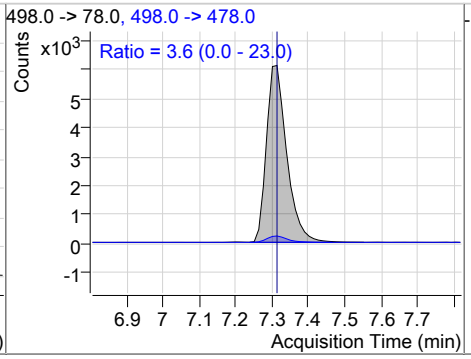


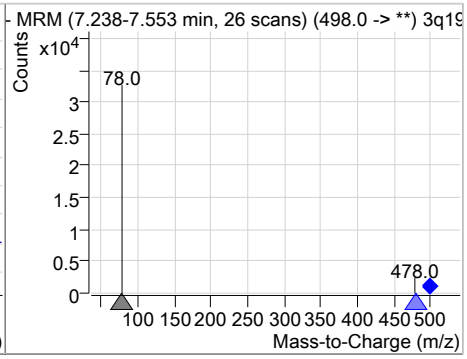




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	4.94	7.31	0.00	23718	498.0 -> 478.0	3.6	0.0	23.0

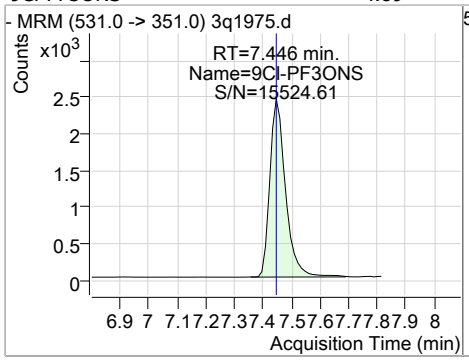


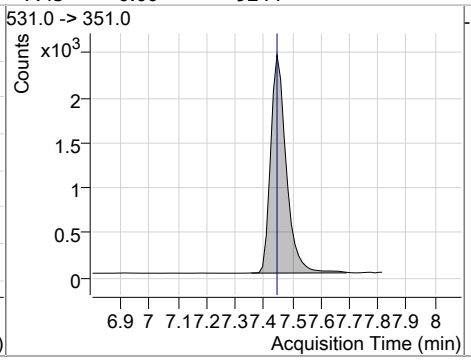


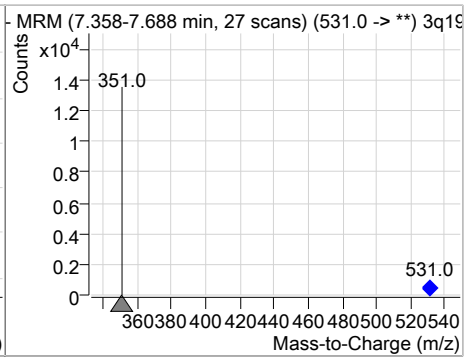


Perfluorinated Compounds by LC/MS/MS

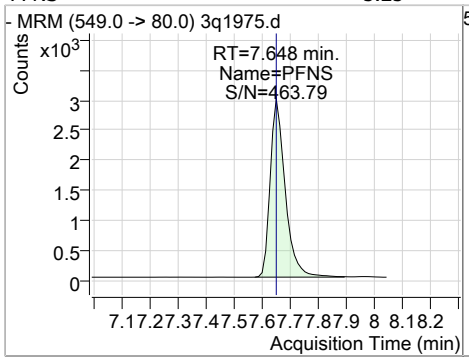
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.89	7.45	0.00	9244				

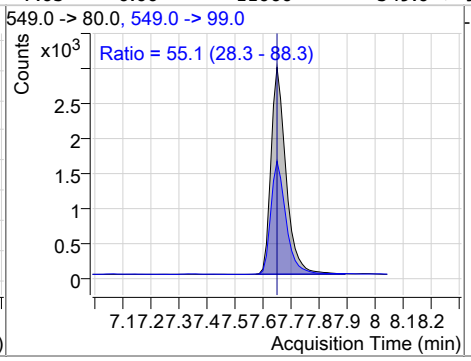


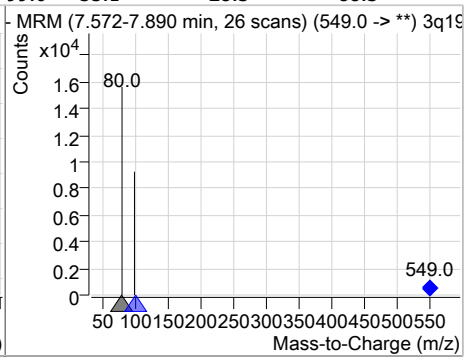




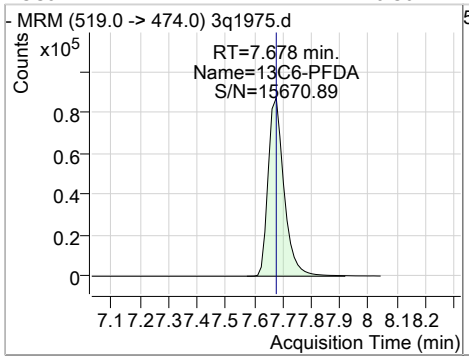
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	5.25	7.65	0.00	11060	549.0 -> 99.0	55.1	28.3	88.3

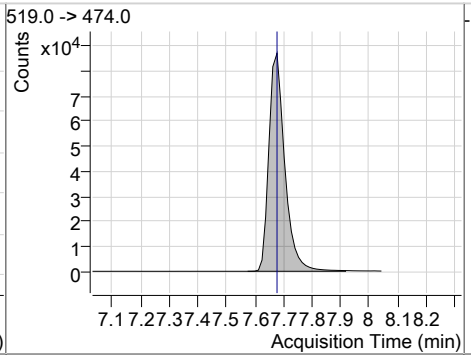


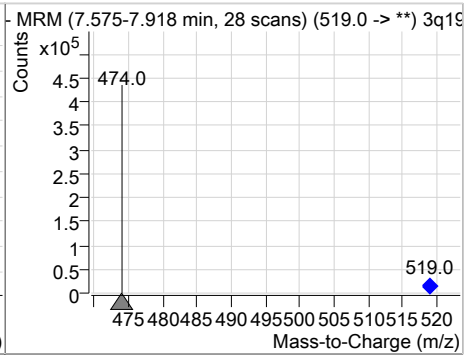




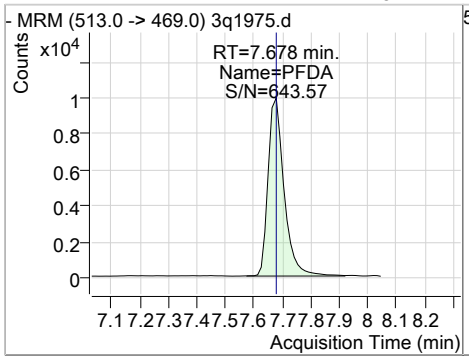
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.30	7.68	0.00	338148				

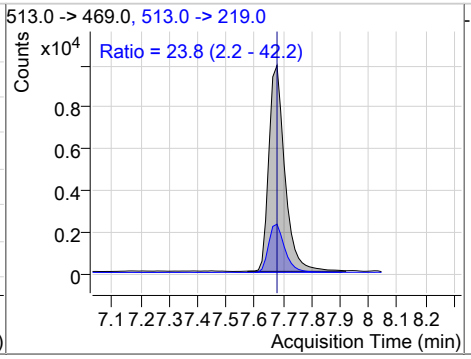


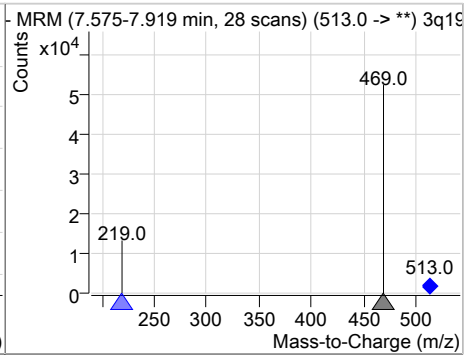




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	4.84	7.68	0.00	38762	513.0 -> 219.0	23.8	2.2	42.2

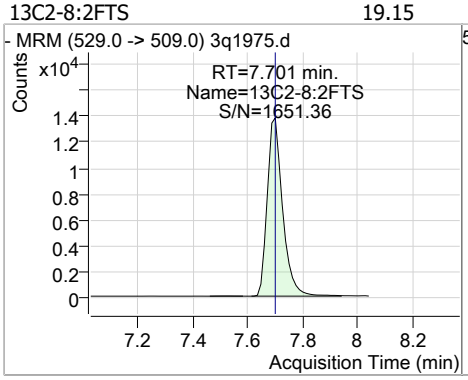


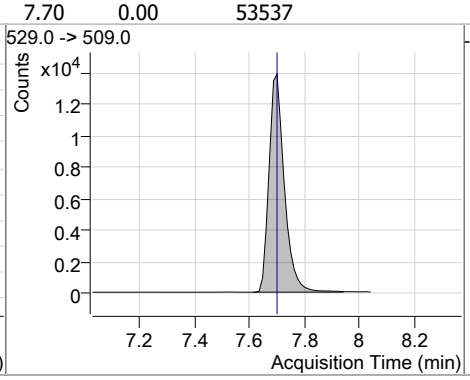


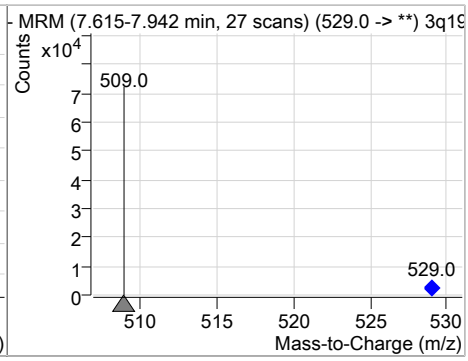


Perfluorinated Compounds by LC/MS/MS

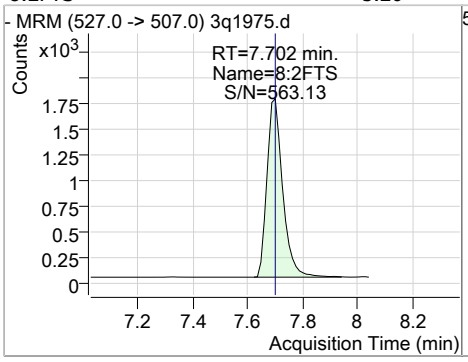
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.15	7.70	0.00	53537				

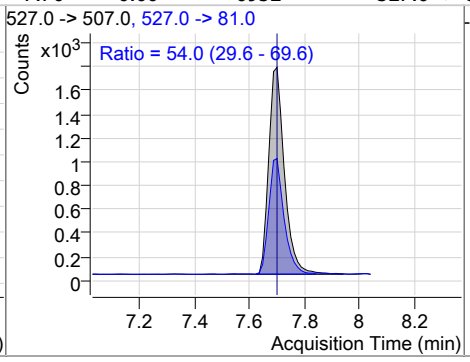


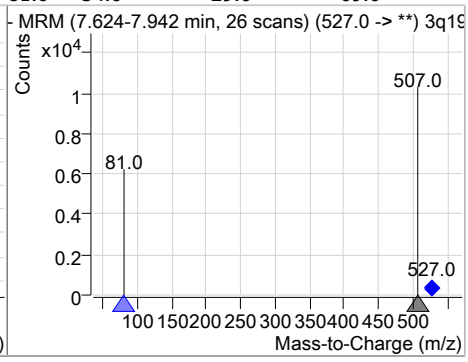




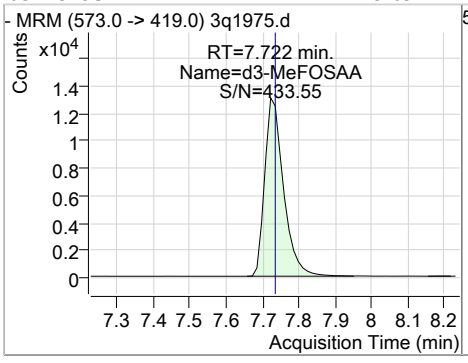
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	5.26	7.70	0.00	6952	527.0 -> 81.0	54.0	29.6	69.6

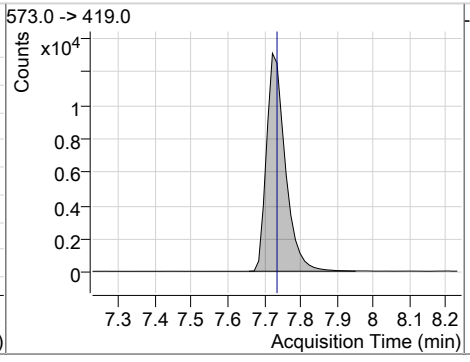


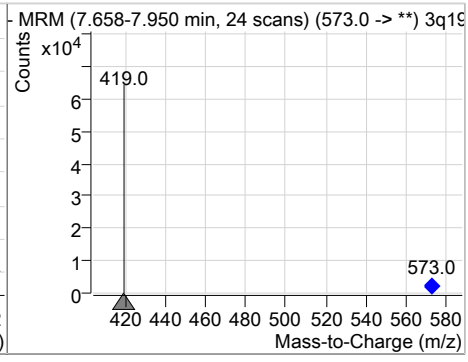




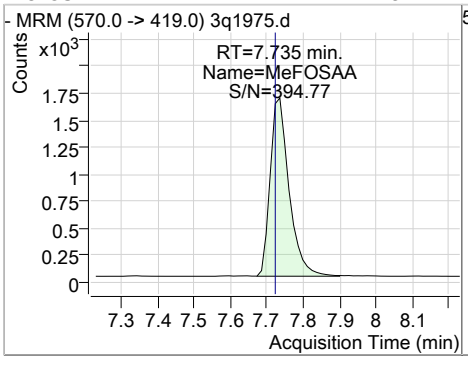
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.69	7.72	-0.01	46738				

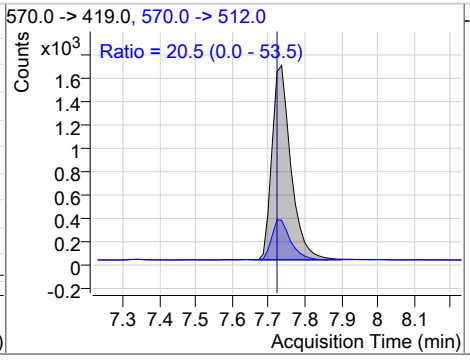


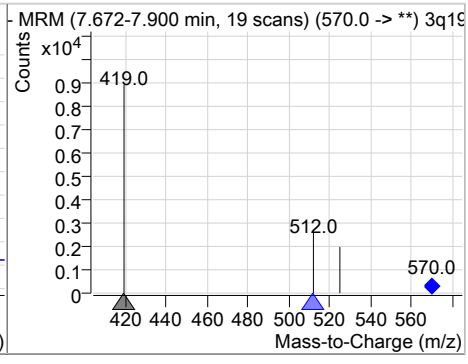




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	4.79	7.74	0.00	5994	570.0 -> 512.0	20.5	0.0	53.5

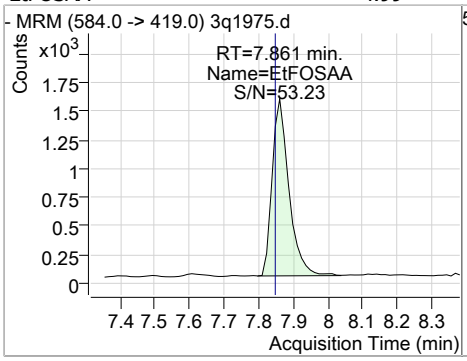


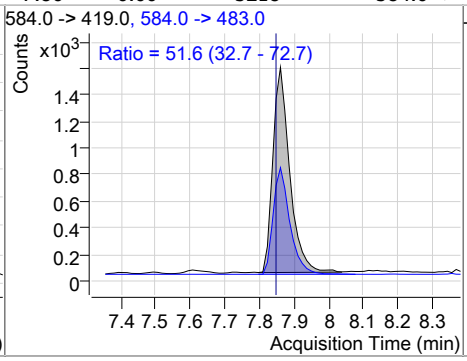


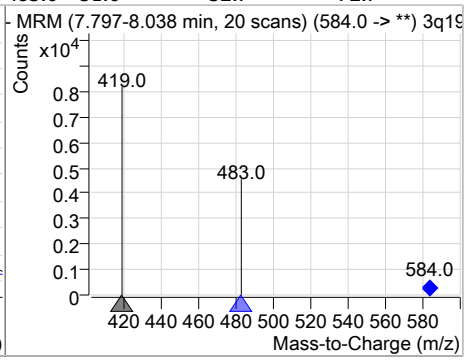


Perfluorinated Compounds by LC/MS/MS

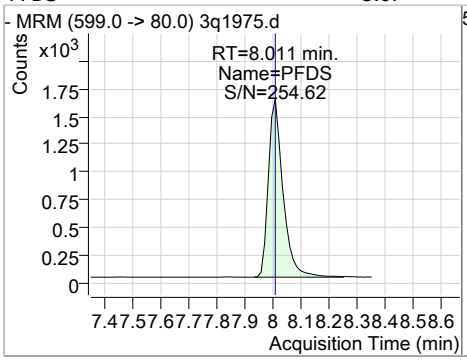
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	4.99	7.86	0.00	5218	584.0 -> 483.0	51.6	32.7	72.7

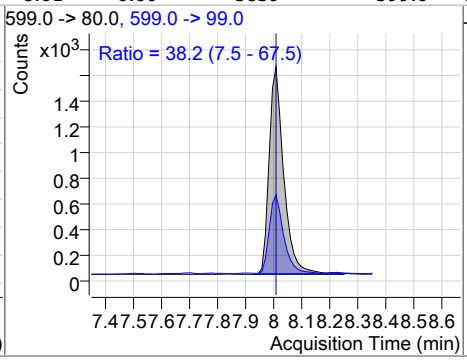


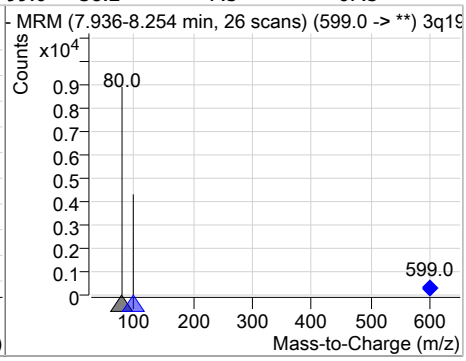




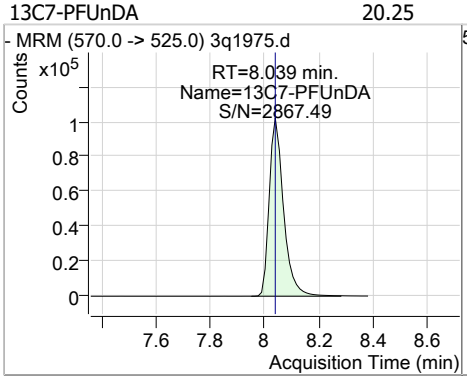
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	5.07	8.01	0.00	5839	599.0 -> 99.0	38.2	7.5	67.5

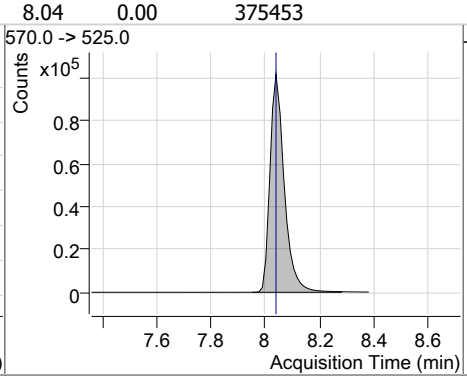


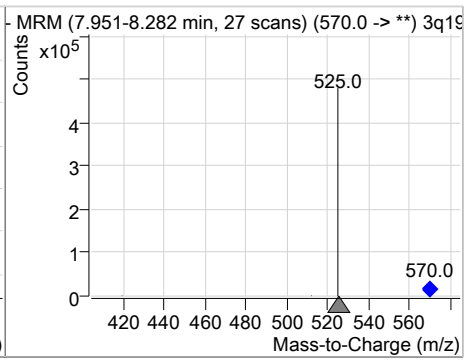




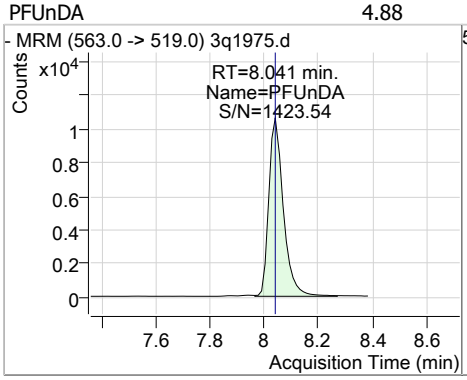
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.25	8.04	0.00	375453				

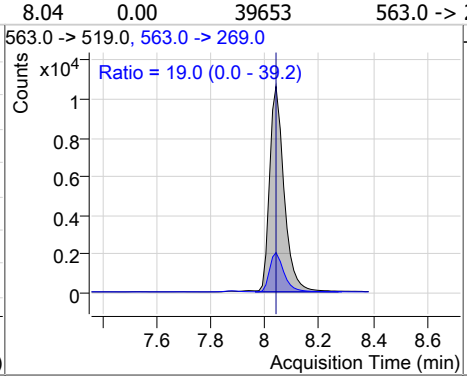


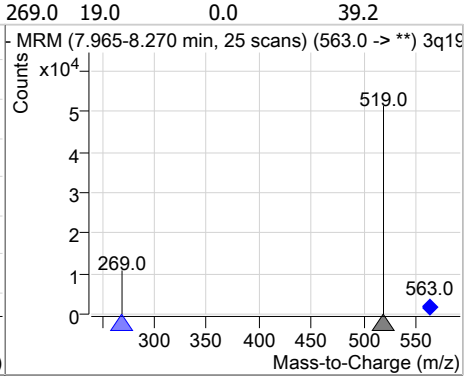




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	4.88	8.04	0.00	39653	563.0 -> 269.0	19.0	0.0	39.2

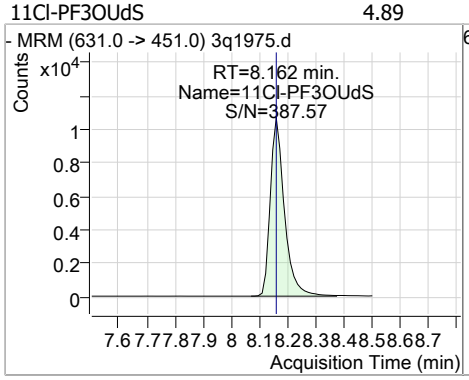


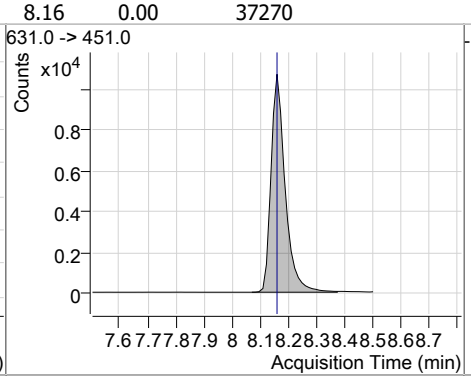


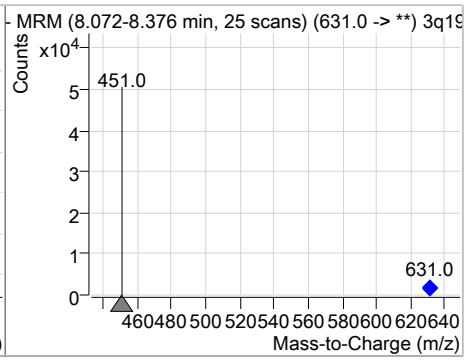


Perfluorinated Compounds by LC/MS/MS

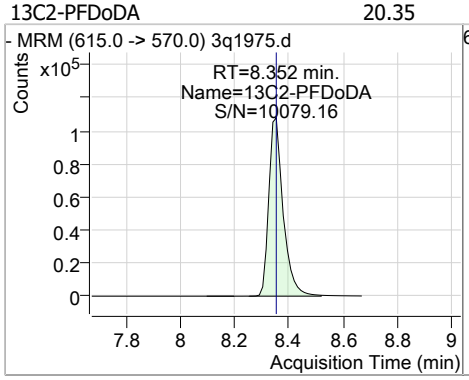
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.89	8.16	0.00	37270				

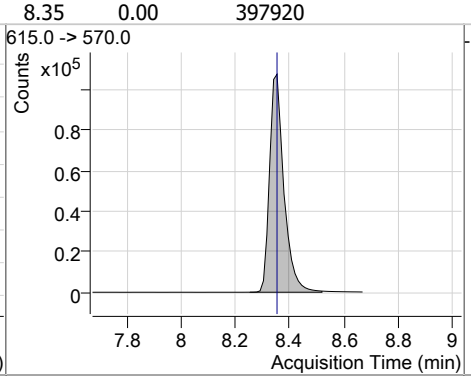


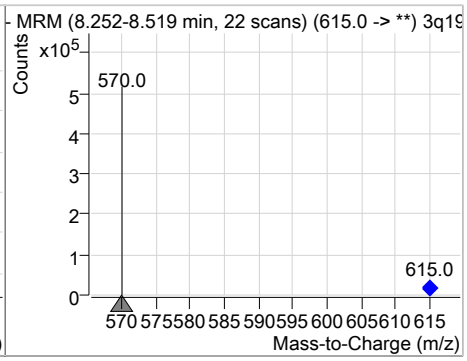




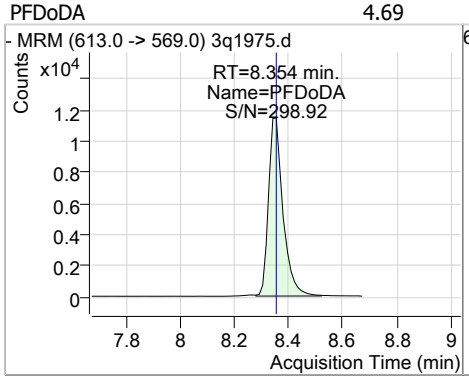
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.35	8.35	0.00	397920				

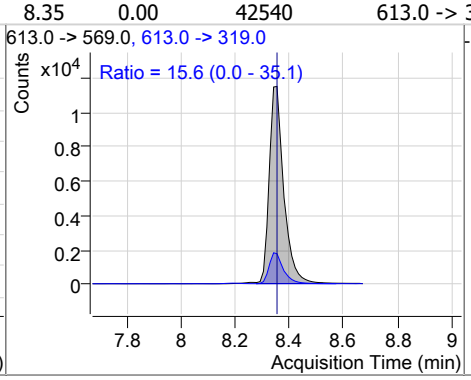


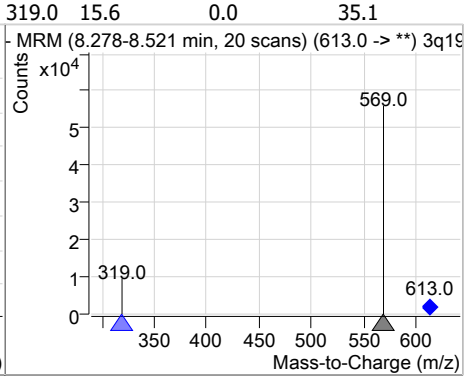




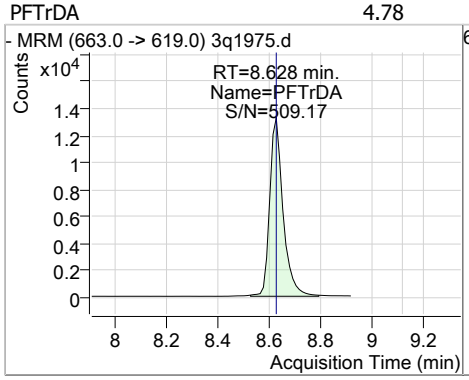
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	4.69	8.35	0.00	42540	613.0 -> 319.0	15.6	0.0	35.1

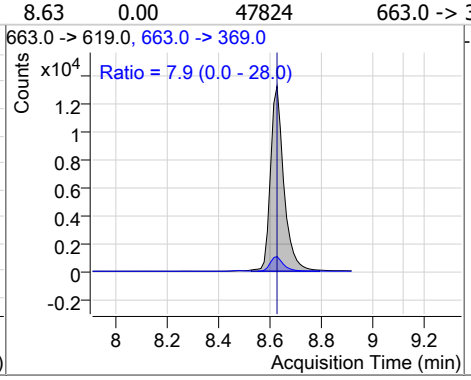


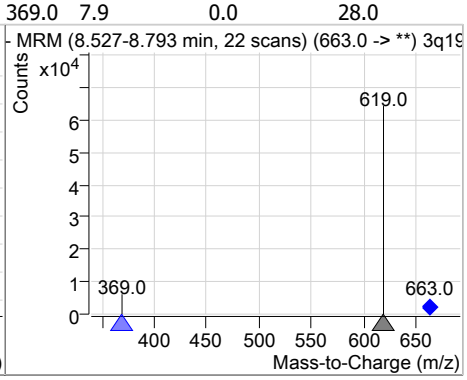




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	4.78	8.63	0.00	47824	663.0 -> 369.0	7.9	0.0	28.0

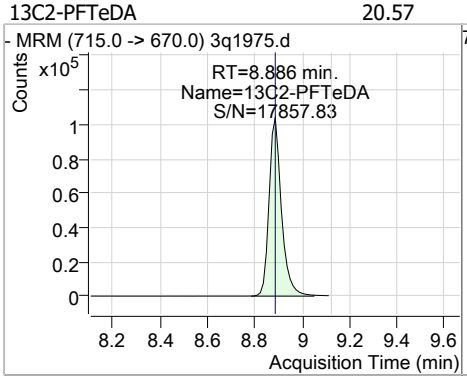


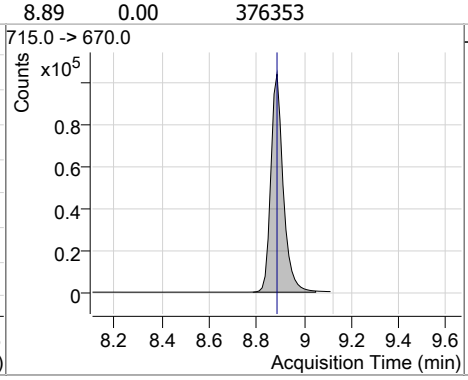


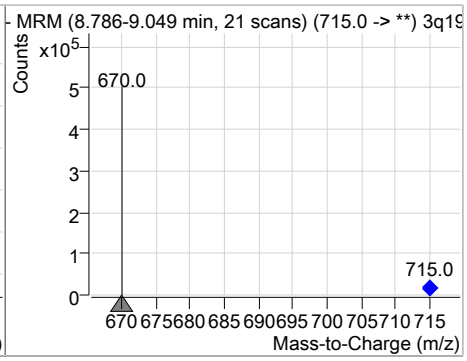


Perfluorinated Compounds by LC/MS/MS

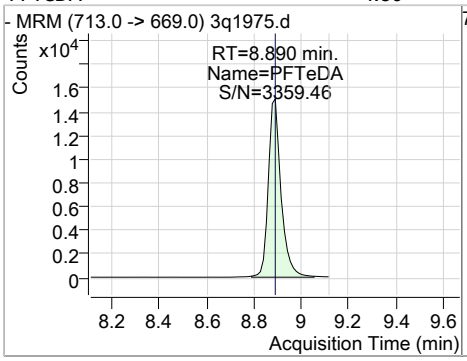
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.57	8.89	0.00	376353				

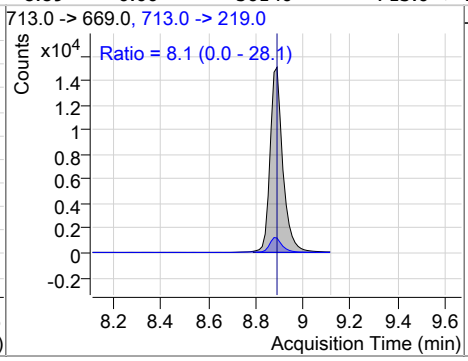


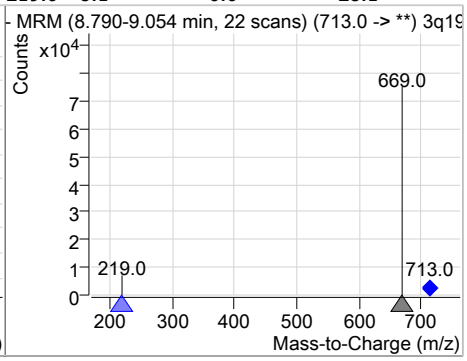




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	4.80	8.89	0.00	56140	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1975.D
Injection Time: 03/21/19 10:40
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1976.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 10:55:23 AM
Sample Name : ic54-10
Vial : P3-A6
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

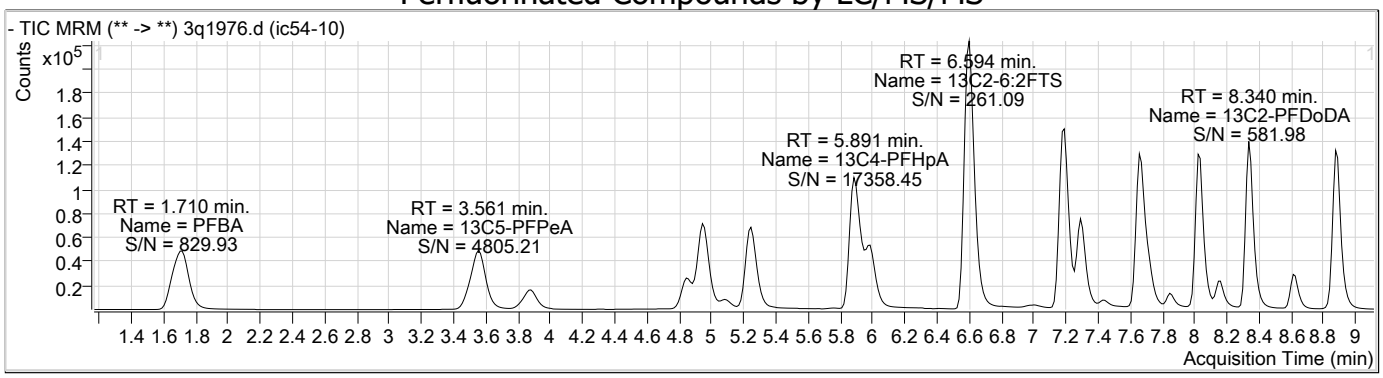
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.714	217.0 -> 172.0	327317	20.00	µg/L	0.013
M5-PFPeA	3.561	268.0 -> 223.0	218165	20.00	µg/L	0.000
M5-PFHxA	4.950	318.0 -> 273.0	295386	20.00	µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	332190	20.00	µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	318672	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	297098	20.00	µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	334317	20.00	µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	376466	20.00	µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	393818	20.00	µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	367980	20.00	µg/L	-0.013
M8-FOSA	7.298	506.0 -> 78.0	214289	20.00	µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	50469	20.00	µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	50239	20.00	µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	76371	20.00	µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	90912	20.00	µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	89172	20.00	µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	53120	20.00	µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	47115	20.00	µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	173555	100.00	µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	413568	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	124866	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.845	329.0 -> 309.0	91022	19.18	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C2-6:2FTS	6.594	429.0 -> 409.0	88578	19.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C2-8:2FTS	7.689	529.0 -> 509.0	53224	19.04	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
13C2-PFDoDA	8.340	615.0 -> 570.0	391431	20.02	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.1%		
13C2-PFTeDA	8.874	715.0 -> 670.0	367981	20.12	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C3-PFBS	3.879	302.0 -> 99.0	50010	19.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C3-PFHxS	5.934	402.0 -> 99.0	50247	19.88	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
13C4-PFBA	1.714	217.0 -> 172.0	324904	19.92	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.6%		
13C4-PFHpA	5.891	367.0 -> 322.0	331412	19.85	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C5-PFHxA	4.950	318.0 -> 273.0	293388	19.94	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C5-PFPeA	3.561	268.0 -> 223.0	219515	19.83	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C6-PFDA	7.663	519.0 -> 474.0	334429	20.08	µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

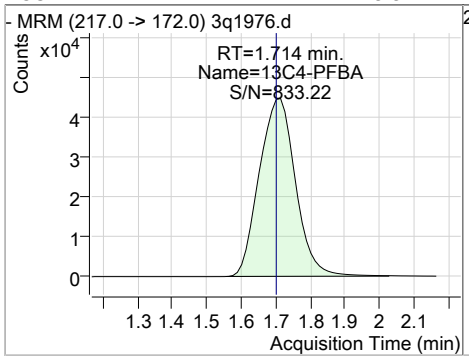
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%			
13C7-PFUnDA	8.026	570.0 -> 525.0	376500	20.31	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.5%			
13C8-FOSA	7.298	506.0 -> 78.0	214239	20.36	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.8%			
13C8-PFOA	6.609	421.0 -> 376.0	318615	20.14	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.7%			
13C8-PFOS	7.183	507.0 -> 99.0	76324	19.81	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%			
13C9-PFNA	7.201	472.0 -> 427.0	295908	19.80	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%			
d3-MeFOSAA	7.722	573.0 -> 419.0	47215	19.89	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%			
13C3-HFPO-DA	5.255	287.0 -> 169.0	173555	103.93	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.9%			
M2-PFOA	6.610	415.0 -> 370.0	413568	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	124866	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	26381	10.61	µg/L		99
6:2FTS	6.595	427.0 -> 407.0	22118	10.06	µg/L		100
8:2FTS	7.689	527.0 -> 507.0	13789	10.49	µg/L		94
EtFOSAA	7.848	584.0 -> 419.0	10698	10.13	µg/L		99
FOSA	7.301	498.0 -> 78.0	48034	10.01	µg/L		99
MeFOSAA	7.723	570.0 -> 419.0	11936	9.47	µg/L		99
PFBA	1.710	213.0 -> 169.0	30331	9.78	µg/L		100
PFBS	3.870	299.0 -> 80.0	34651	9.87	µg/L		100
PFDA	7.664	513.0 -> 469.0	79266	10.01	µg/L		99
PFDoDA	8.341	613.0 -> 569.0	89066	9.92	µg/L		98
PFDS	7.999	599.0 -> 80.0	11187	9.65	µg/L		94
PFHpA	5.894	363.0 -> 319.0	143424	9.76	µg/L		100
PFHpS	6.618	449.0 -> 80.0	23886	9.99	µg/L		99
PFHxA	4.952	313.0 -> 269.0	52285	9.94	µg/L		100
PFHxS	5.937	399.0 -> 80.0	27393	9.92	µg/L	m	100
PFNA	7.201	463.0 -> 419.0	92647	10.04	µg/L		99
PFNS	7.635	549.0 -> 80.0	21189	10.26	µg/L		99
PFOA	6.611	413.0 -> 369.0	84066	9.85	µg/L		98
PFOS	7.186	499.0 -> 80.0	34496	9.75	µg/L	m	99
PFPeA	3.564	263.0 -> 219.0	109835	9.94	µg/L		100
PFPeS	5.082	349.0 -> 80.0	21575	9.88	µg/L		99
PFTeDA	8.877	713.0 -> 669.0	113330	9.90	µg/L		99
PFTrDA	8.615	663.0 -> 619.0	97034	9.91	µg/L		99
PFUnDA	8.028	563.0 -> 519.0	80280	9.83	µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	74982	9.94	µg/L		100
9Cl-PF3ONS	7.434	531.0 -> 351.0	18674	9.93	µg/L		100
ADONA	5.994	377.0 -> 251.0	193842	9.79	µg/L		100
HFPO-DA	5.247	329.0 -> 169.0	137417	46.66	µg/L		99

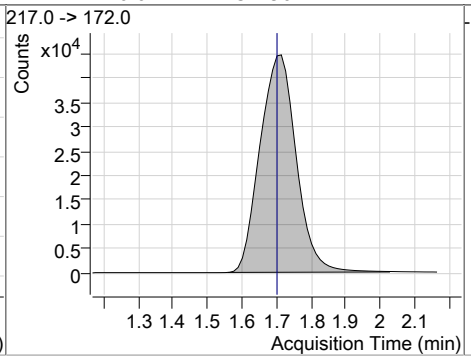
 # = Qualifier out of range, m = manually integrated, + = Area summed

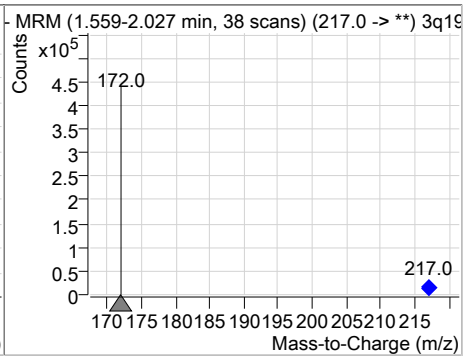
Perfluorinated Compounds by LC/MS/MS



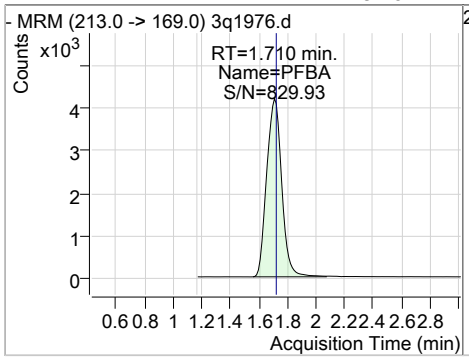
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.92	1.71	0.01	324904				

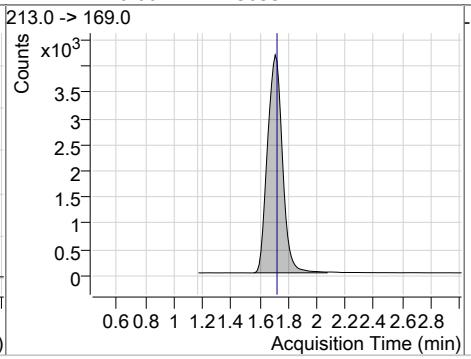


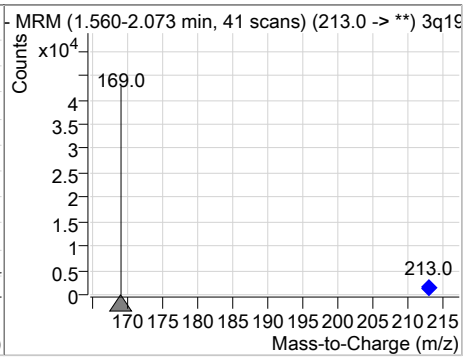




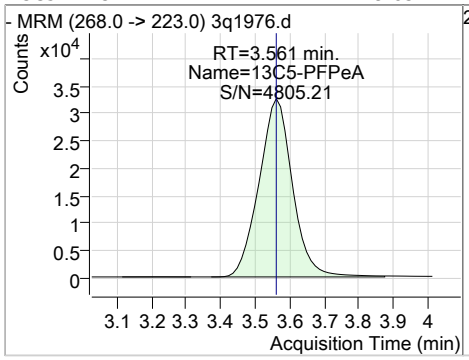
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	9.78	1.71	0.00	30331				

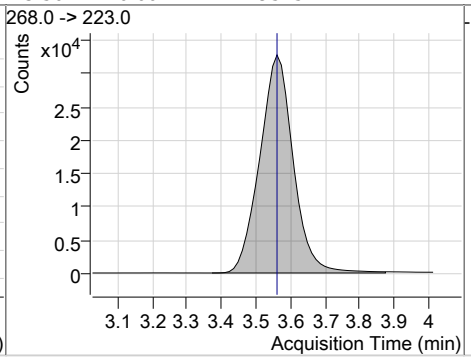


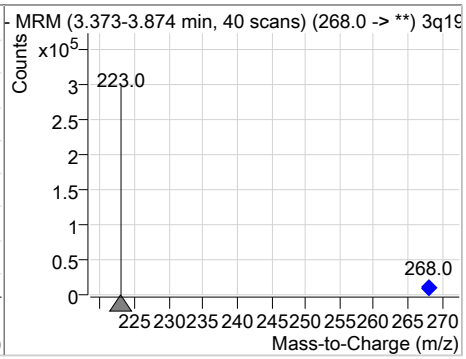




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.83	3.56	0.00	219515				

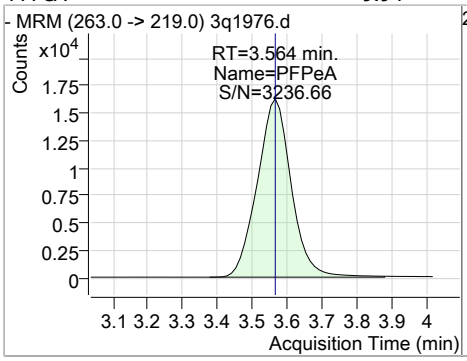


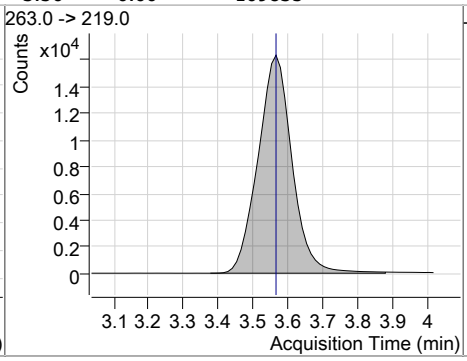


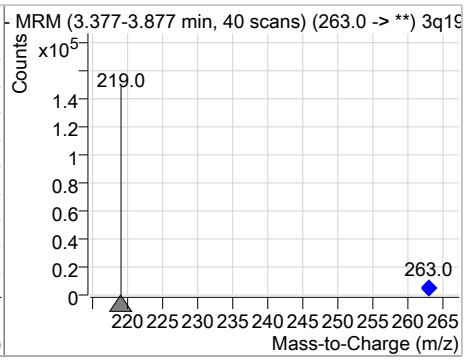


Perfluorinated Compounds by LC/MS/MS

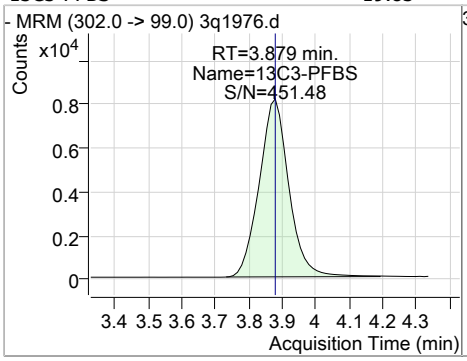
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	9.94	3.56	0.00	109835				

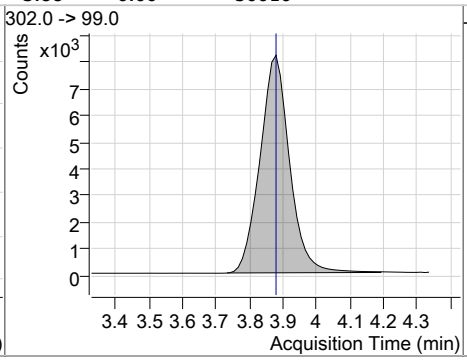


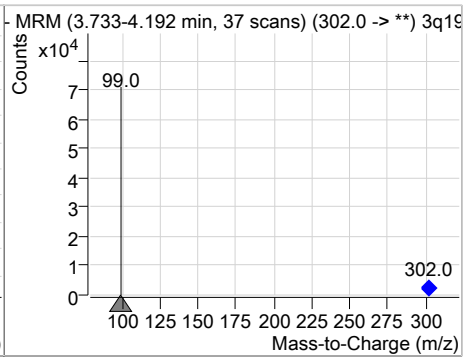




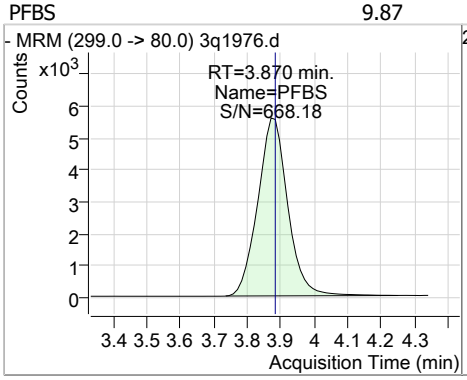
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.83	3.88	0.00	50010				

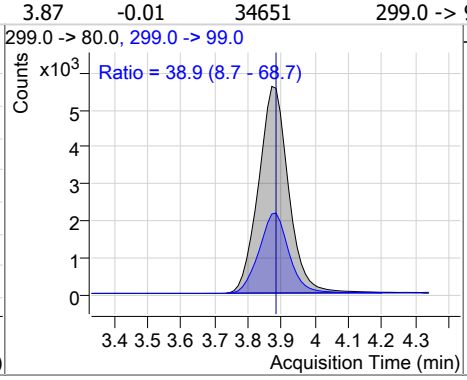


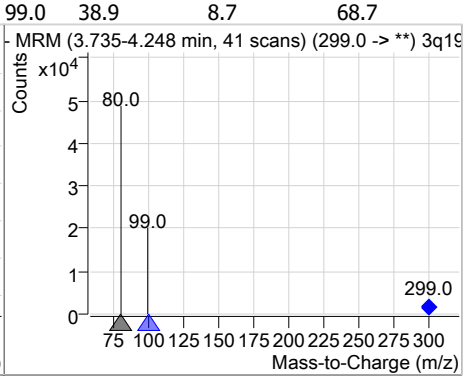




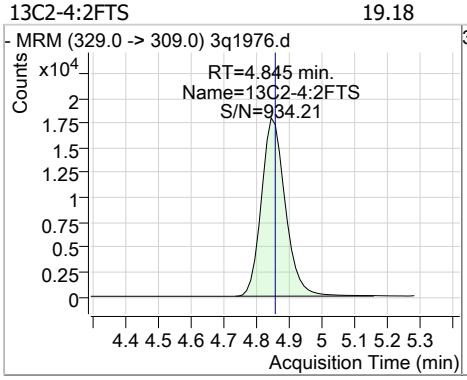
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	9.87	3.87	-0.01	34651	299.0 -> 99.0	38.9	8.7	68.7

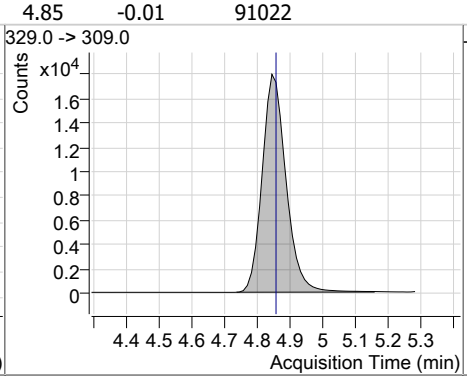


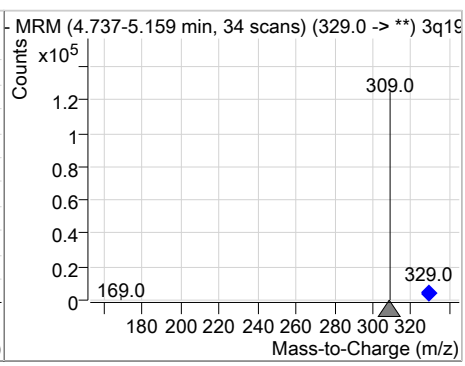




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.18	4.85	-0.01	91022				

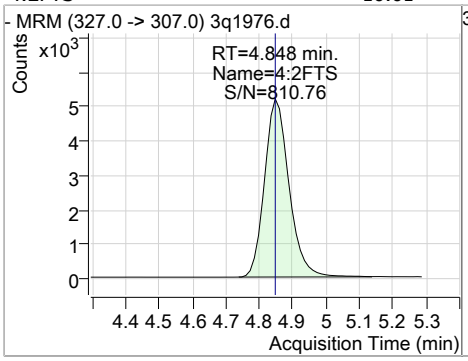


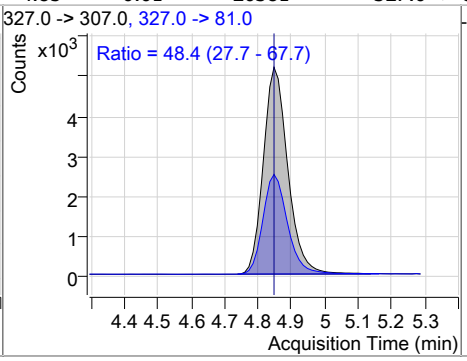


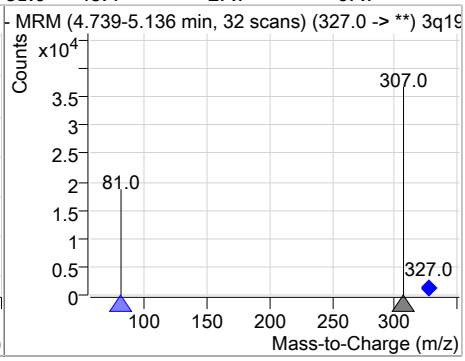


Perfluorinated Compounds by LC/MS/MS

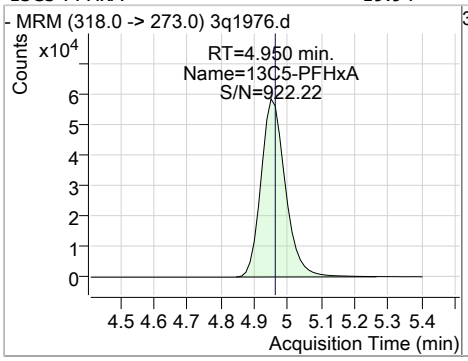
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	10.61	4.85	-0.01	26381	327.0 -> 81.0	48.4	27.7	67.7

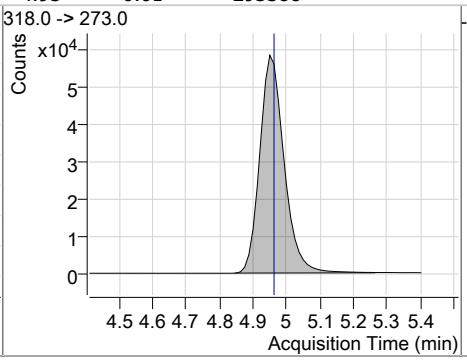


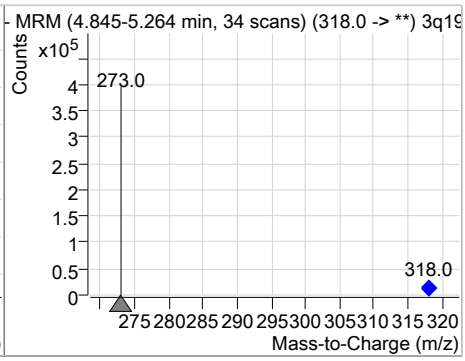




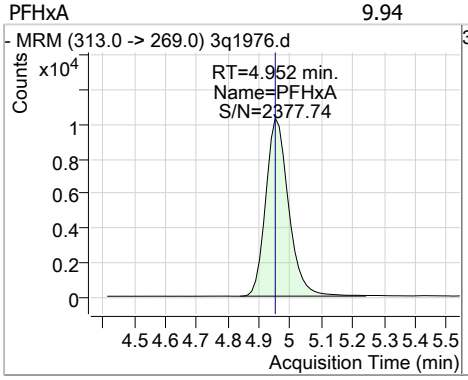
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.94	4.95	-0.01	293388				

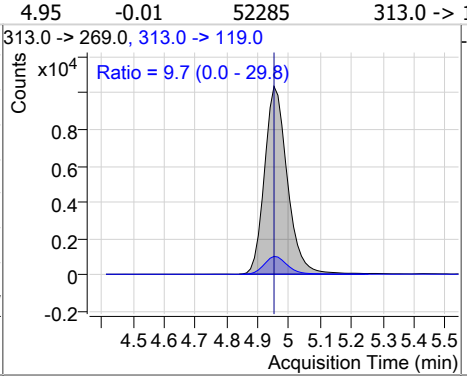


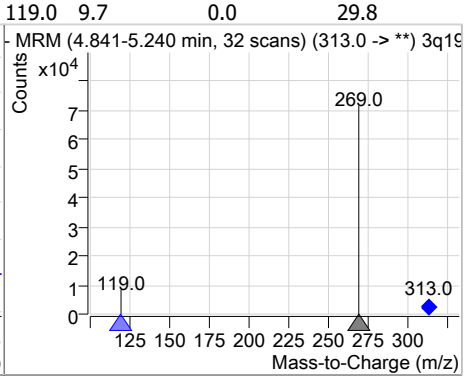




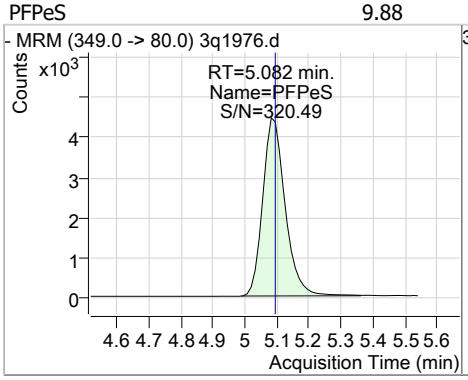
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	9.94	4.95	-0.01	52285	313.0 -> 119.0	9.7	0.0	29.8

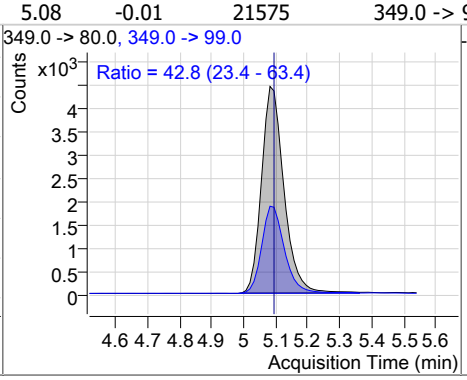


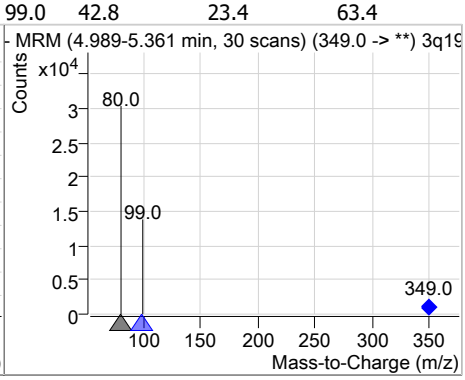




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	9.88	5.08	-0.01	21575	349.0 -> 99.0	42.8	23.4	63.4

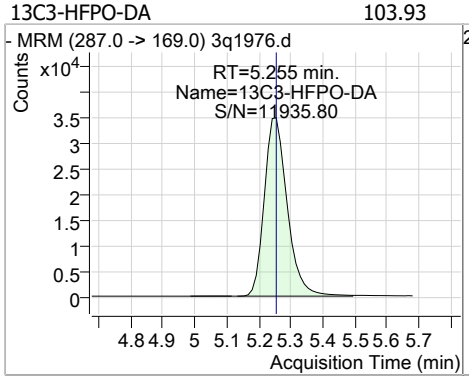


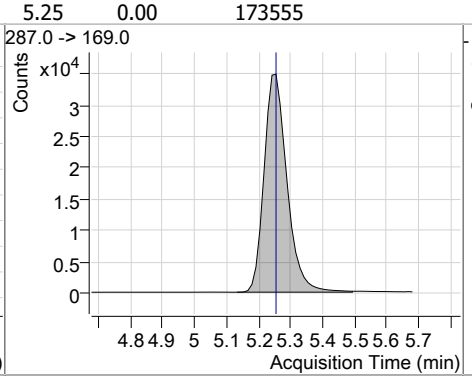


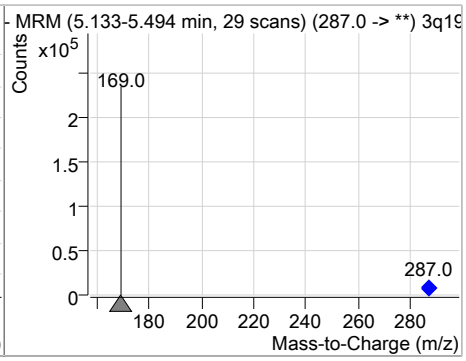


Perfluorinated Compounds by LC/MS/MS

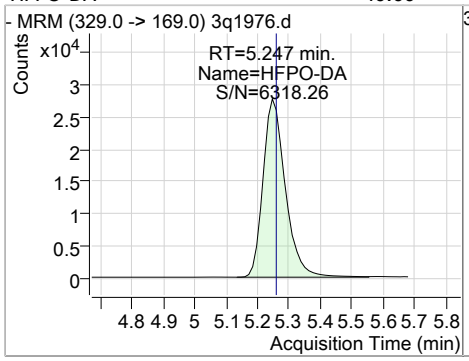
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.93	5.25	0.00	173555				

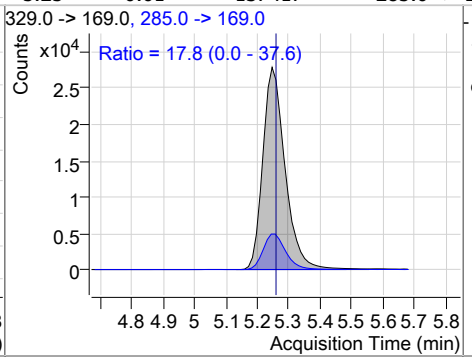


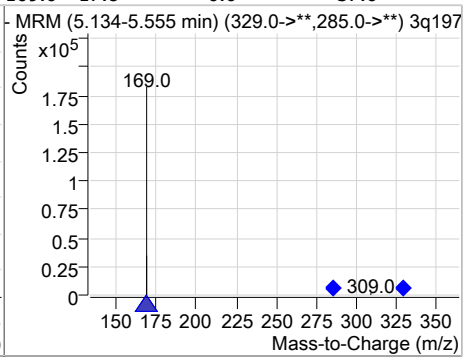




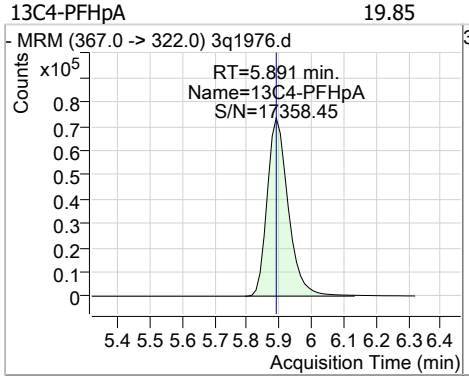
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	46.66	5.25	-0.01	137417	285.0 -> 169.0	17.8	0.0	37.6

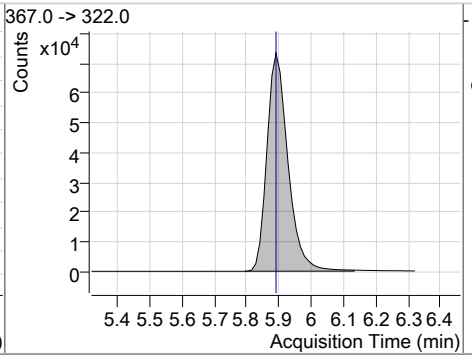


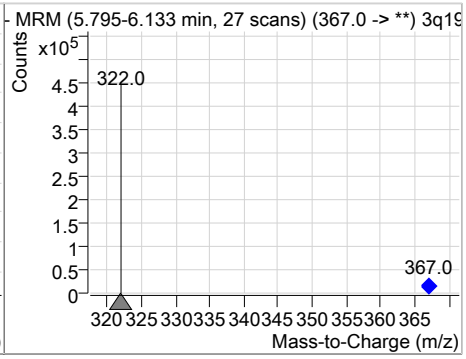




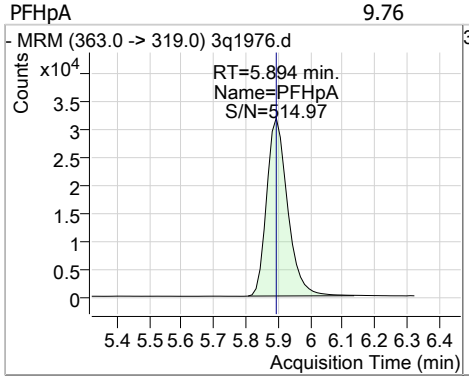
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.85	5.89	0.00	331412				

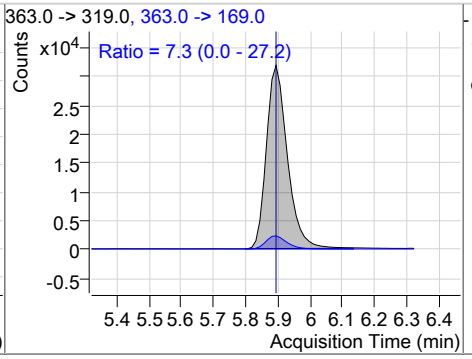


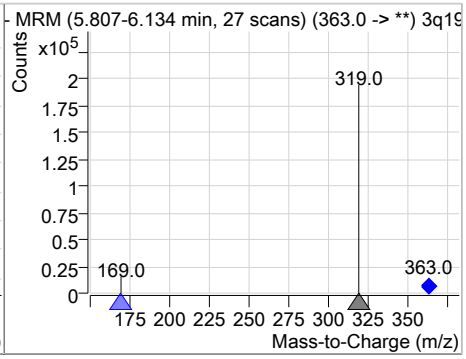




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	9.76	5.89	0.00	143424	363.0 -> 169.0	7.3	0.0	27.2

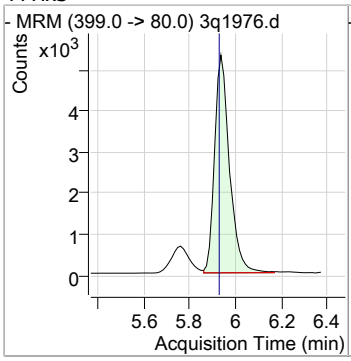


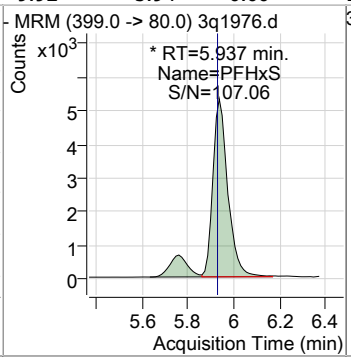


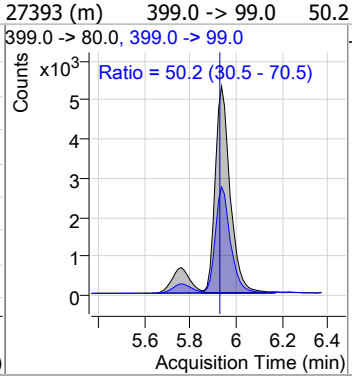


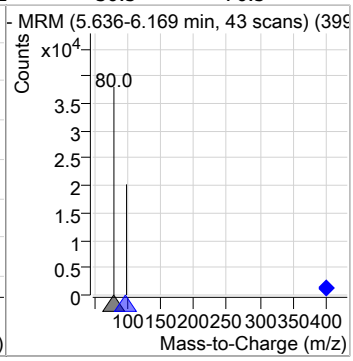
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	9.92	5.94	0.00	27393 (m)	399.0 -> 99.0	50.2	30.5	70.5

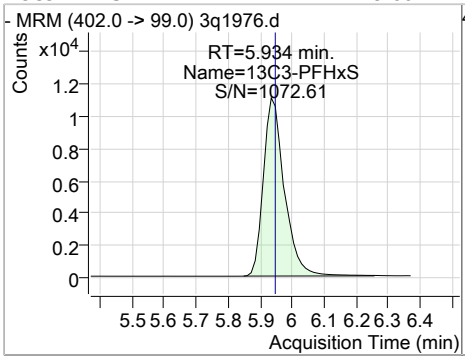


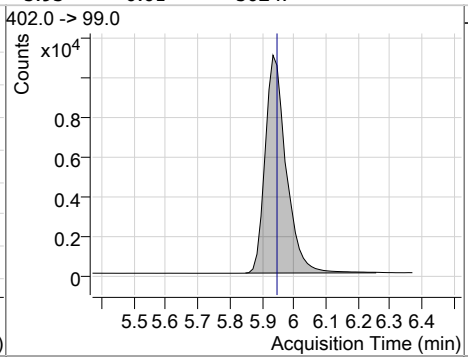


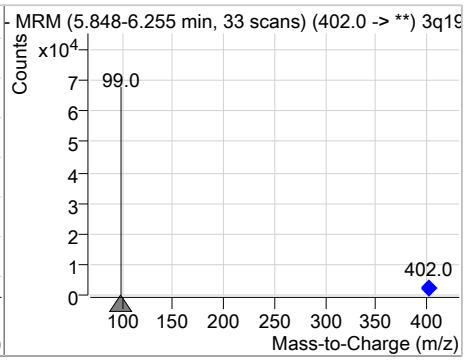




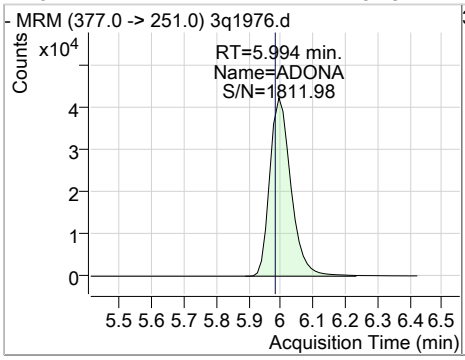
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.88	5.93	-0.01	50247				

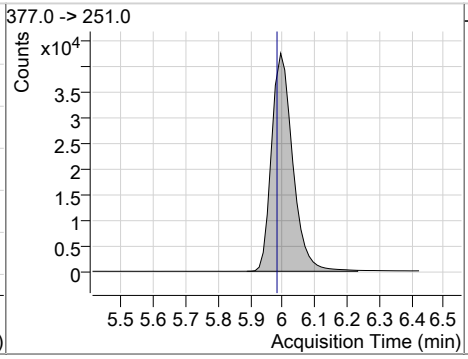


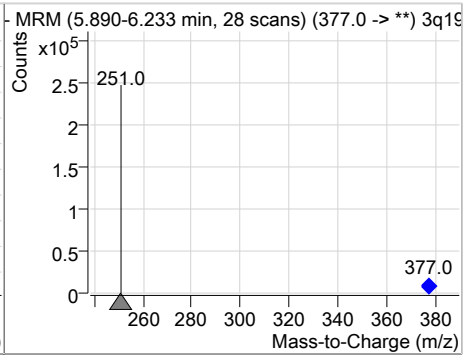




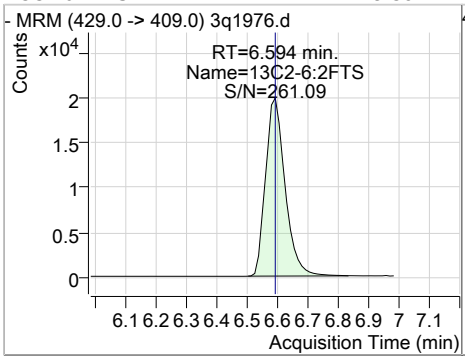
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	9.79	5.99	0.00	193842				

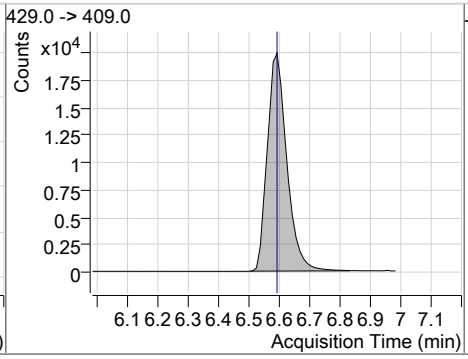


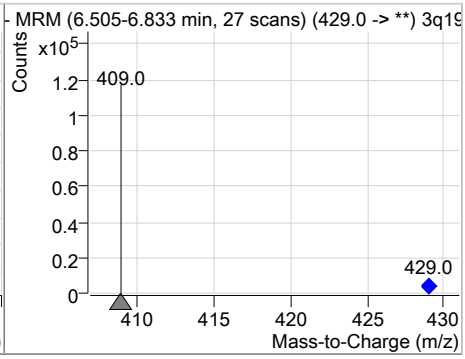




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.38	6.59	0.00	88578				

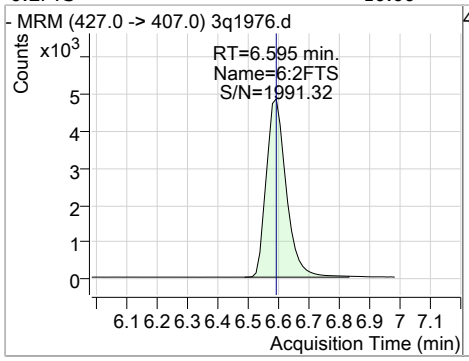


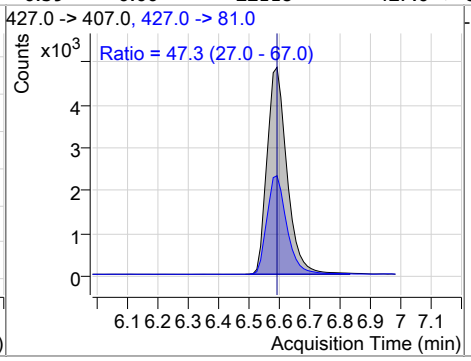


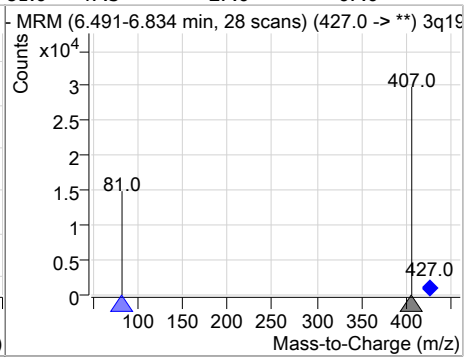


Perfluorinated Compounds by LC/MS/MS

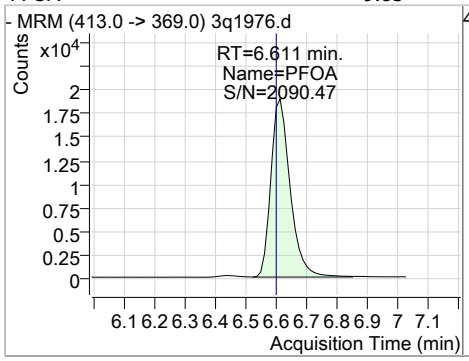
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	10.06	6.59	0.00	22118	427.0 -> 81.0	47.3	27.0	67.0

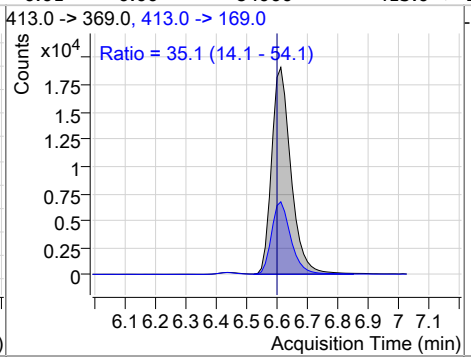


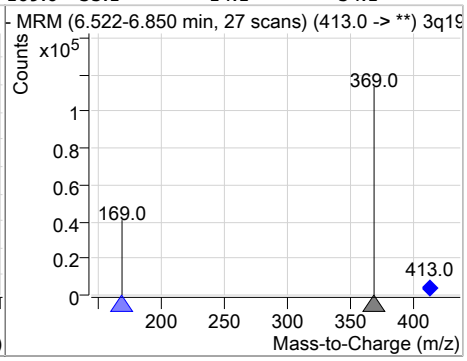




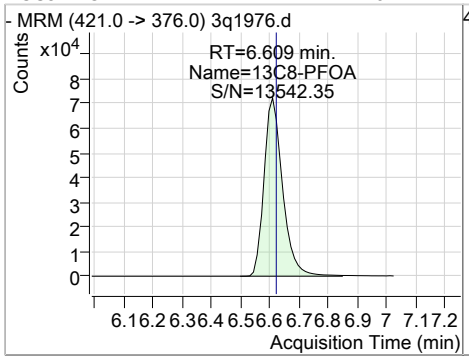
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	9.85	6.61	0.00	84066	413.0 -> 169.0	35.1	14.1	54.1

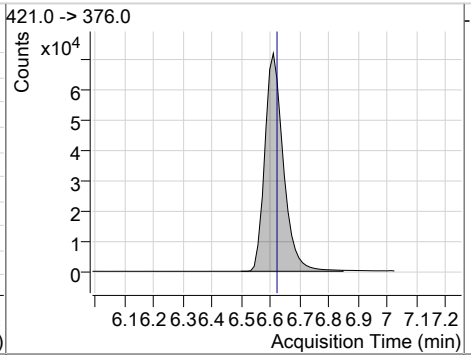


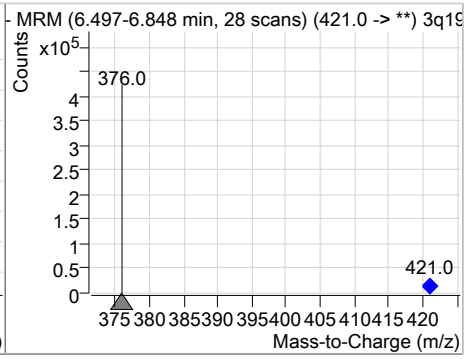




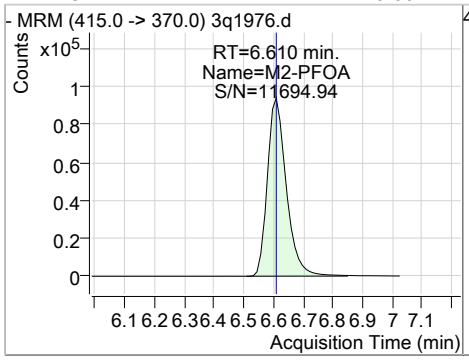
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.14	6.61	-0.01	318615				

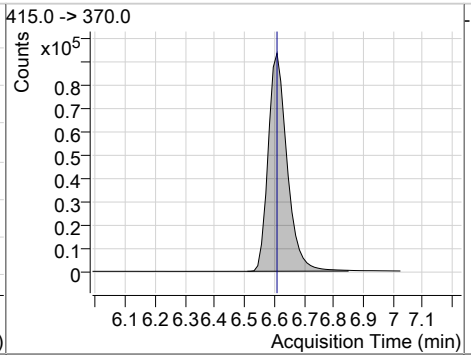


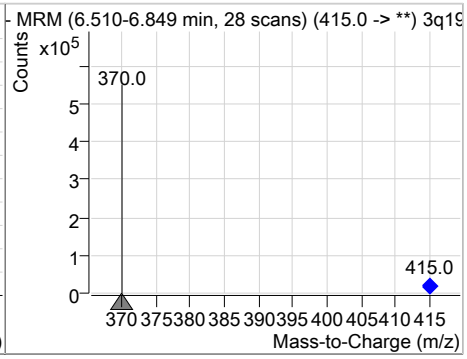




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	413568				

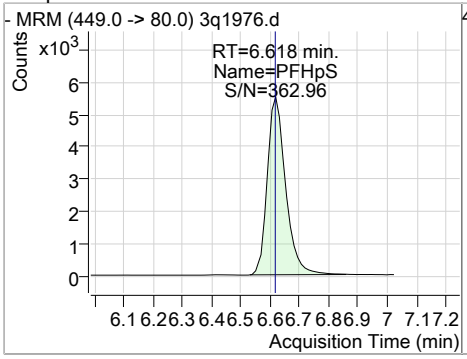


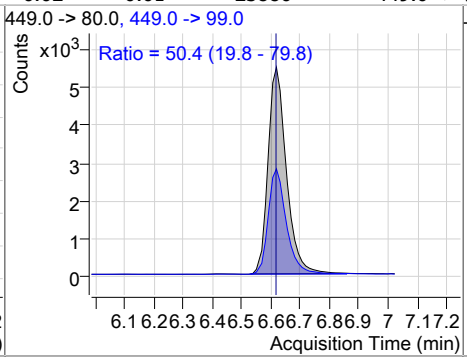


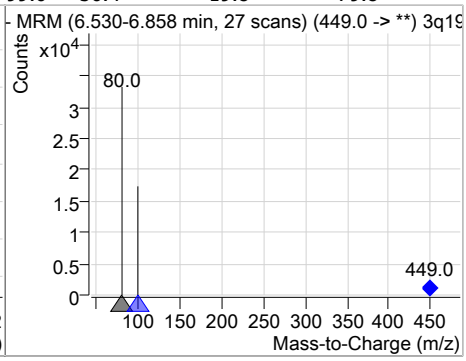


Perfluorinated Compounds by LC/MS/MS

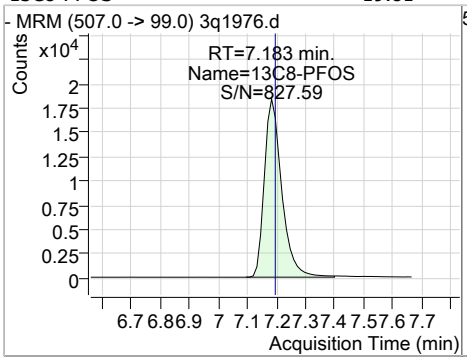
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	9.99	6.62	-0.01	23886	449.0 -> 99.0	50.4	19.8	79.8

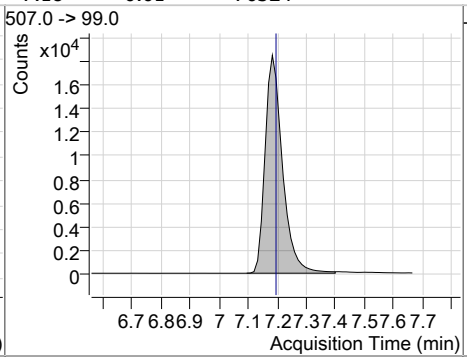


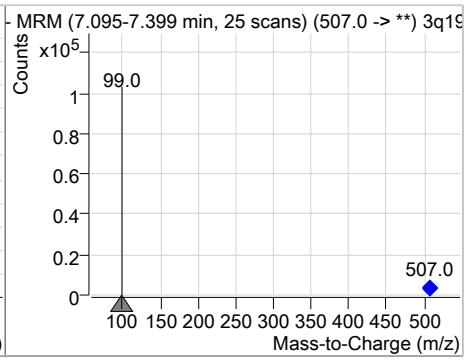




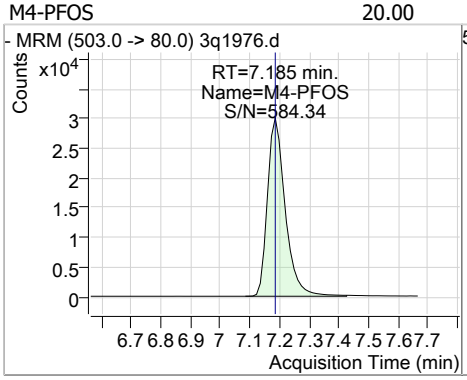
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.81	7.18	-0.01	76324				

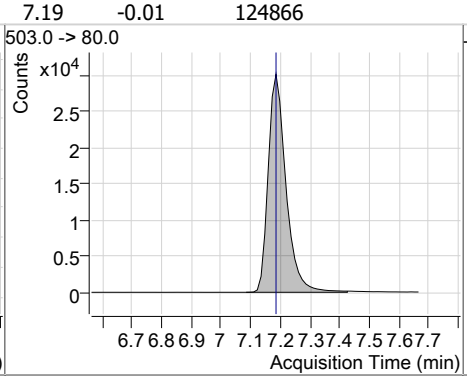


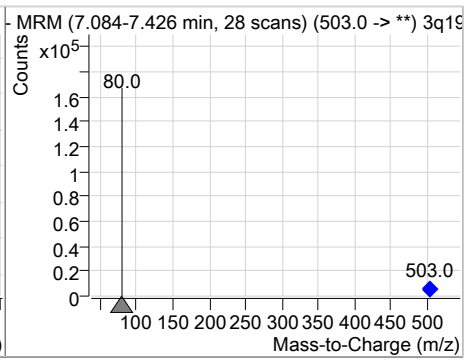




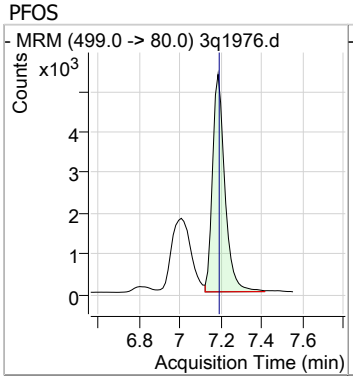
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	124866				

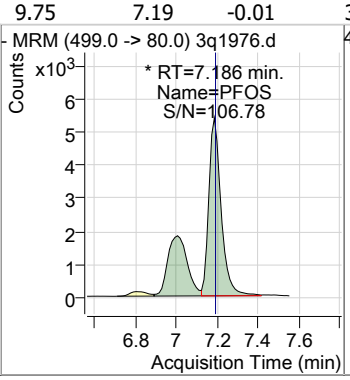


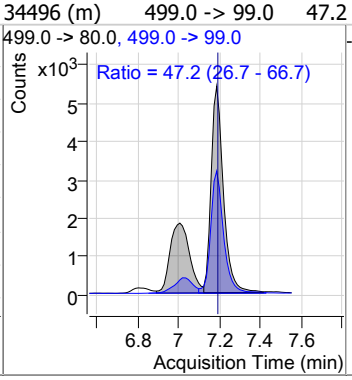


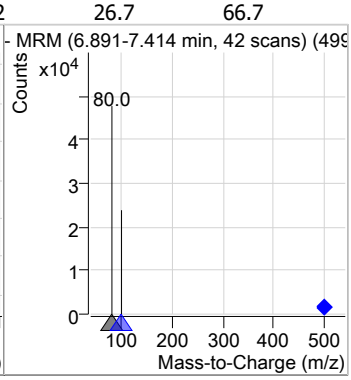


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	9.75	7.19	-0.01	34496 (m)	499.0 -> 99.0	47.2	26.7	66.7



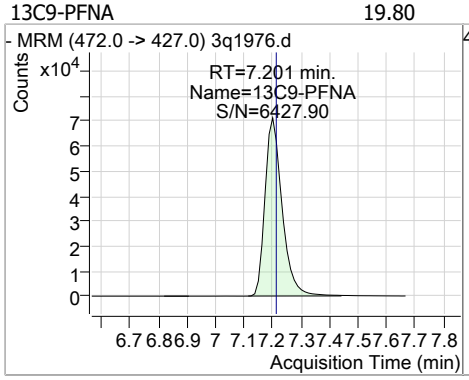


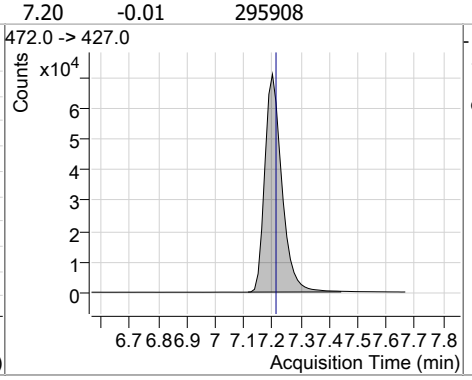


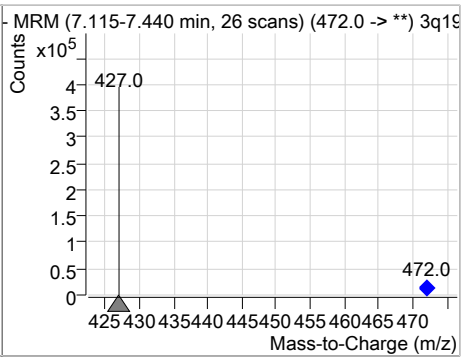


Perfluorinated Compounds by LC/MS/MS

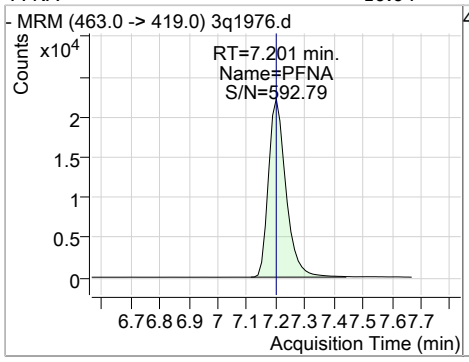
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.80	7.20	-0.01	295908				

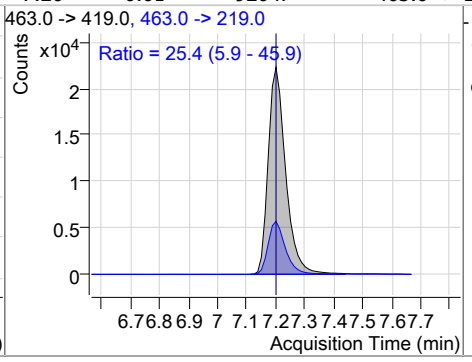


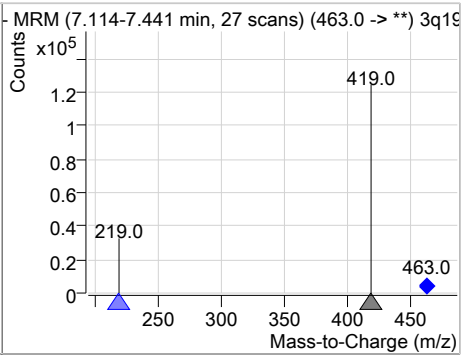




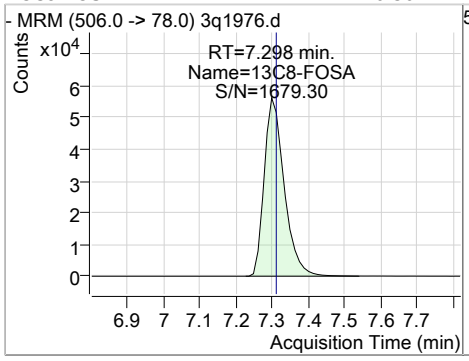
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	10.04	7.20	-0.01	92647	463.0 -> 219.0	25.4	5.9	45.9

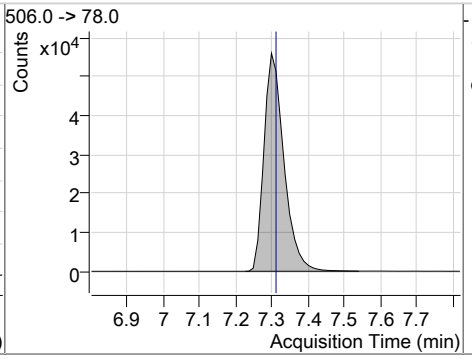


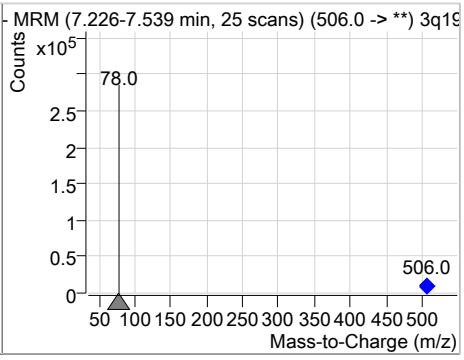




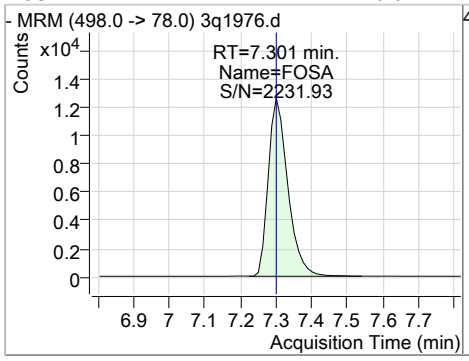
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.36	7.30	-0.01	214239				

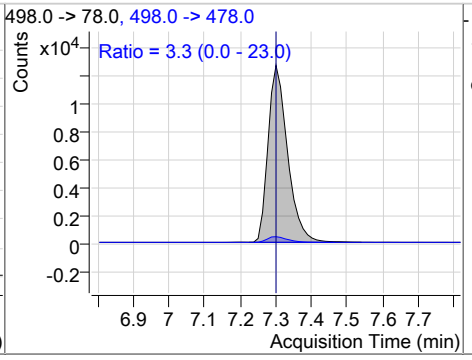


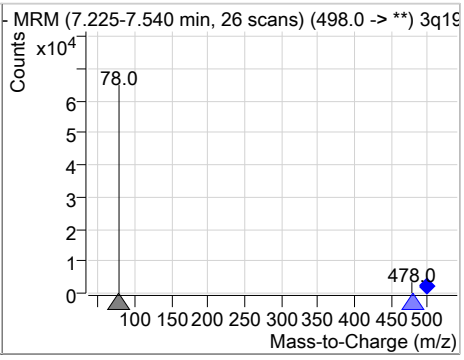




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	10.01	7.30	-0.01	48034	498.0 -> 478.0	3.3	0.0	23.0

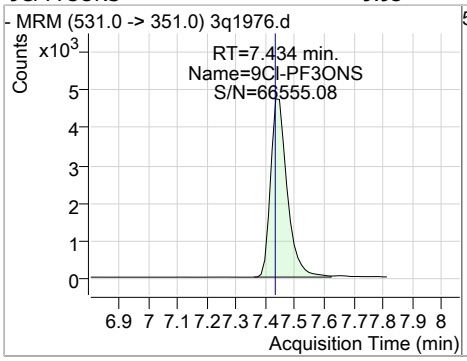


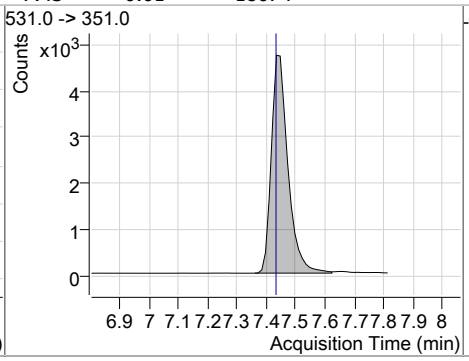


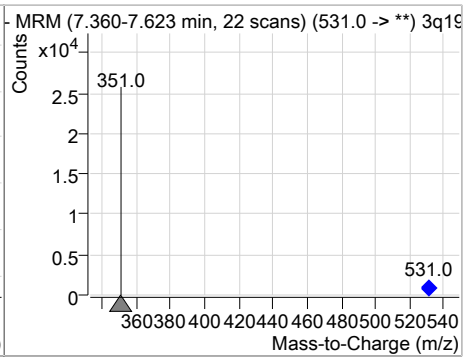


Perfluorinated Compounds by LC/MS/MS

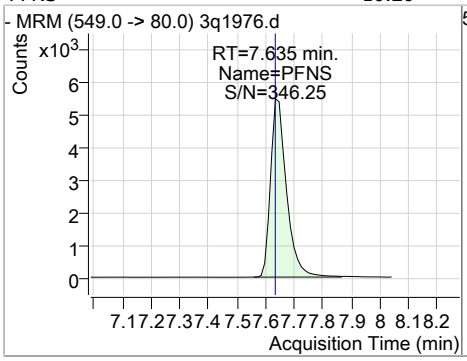
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	9.93	7.43	-0.01	18674				

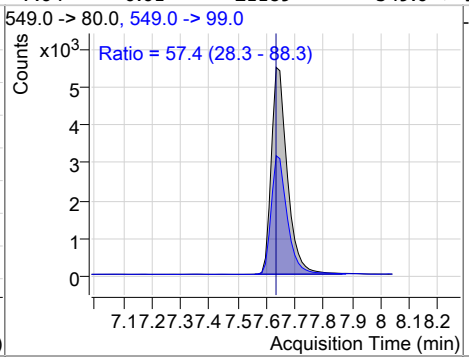


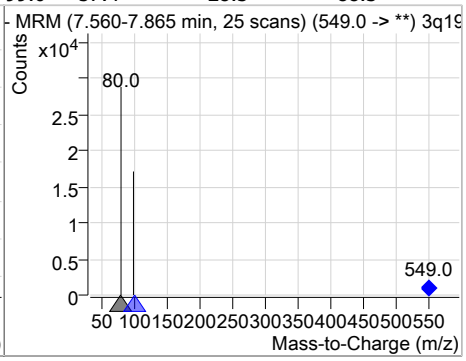




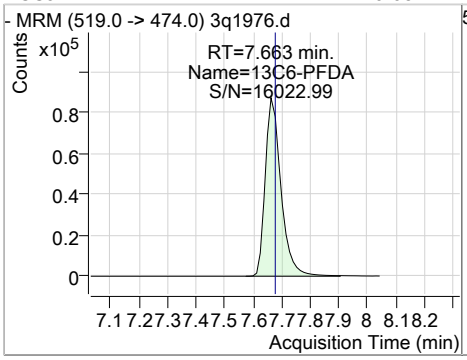
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	10.26	7.64	-0.01	21189	549.0 -> 99.0	57.4	28.3	88.3

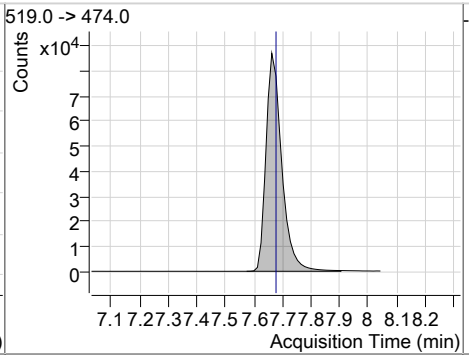


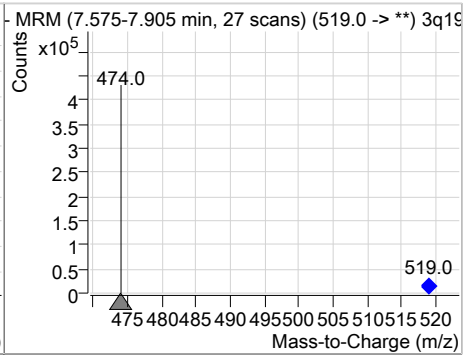




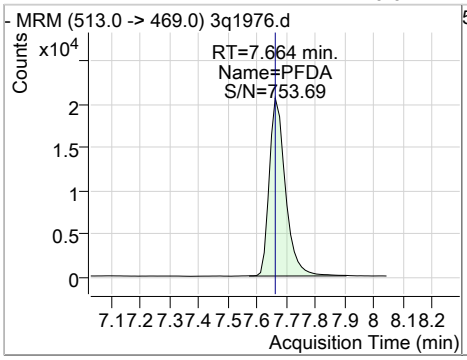
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.08	7.66	-0.01	334429				

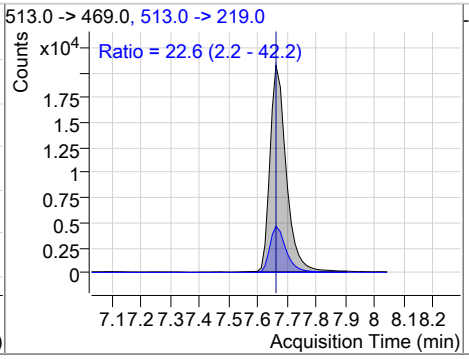


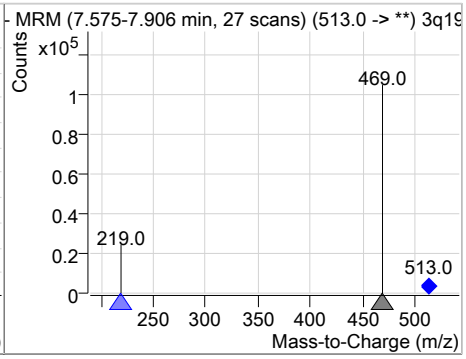




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	10.01	7.66	-0.01	79266	513.0 -> 219.0	22.6	2.2	42.2

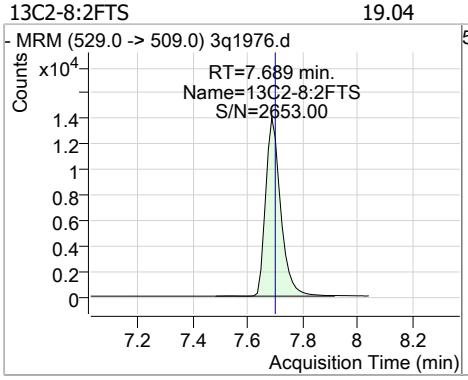


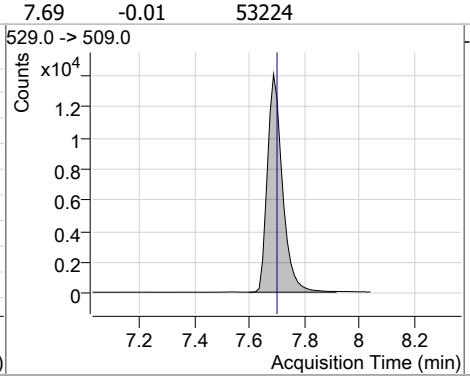


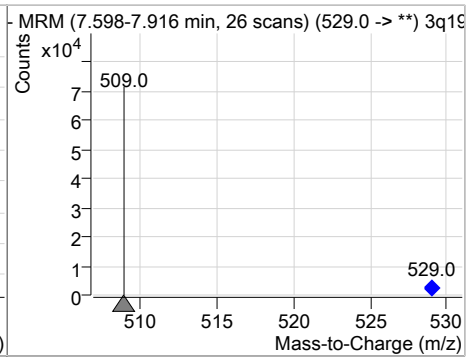


Perfluorinated Compounds by LC/MS/MS

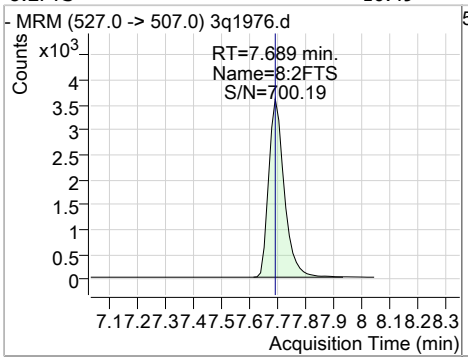
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.04	7.69	-0.01	53224				

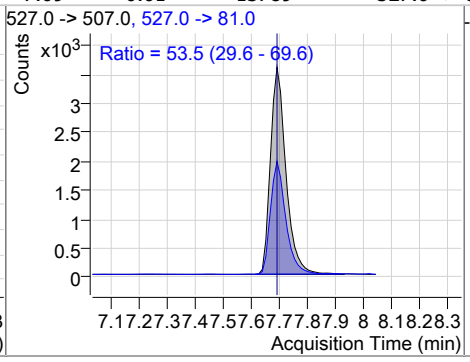


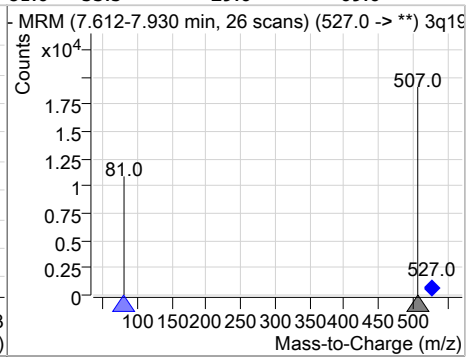




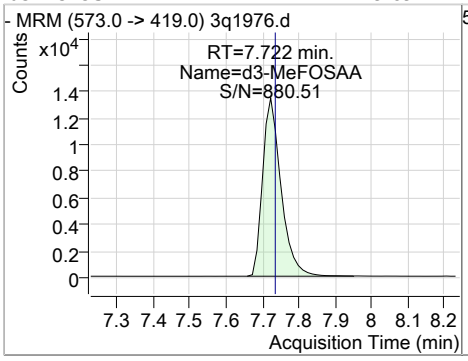
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	10.49	7.69	-0.01	13789	527.0 -> 81.0	53.5	29.6	69.6

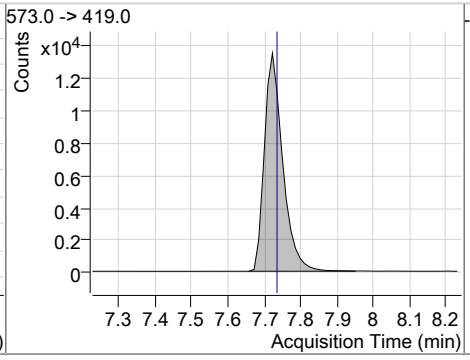


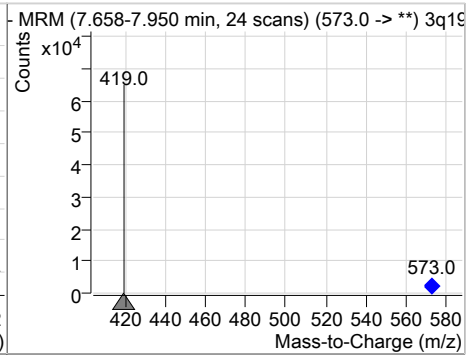




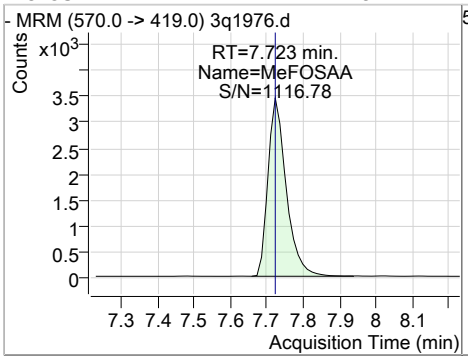
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.89	7.72	-0.01	47215				

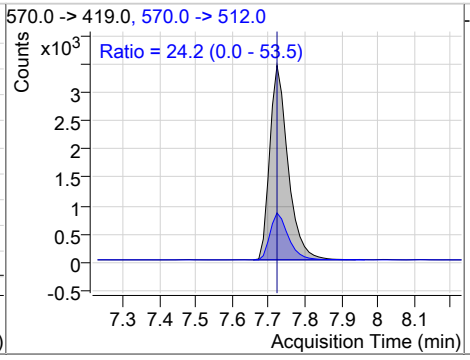


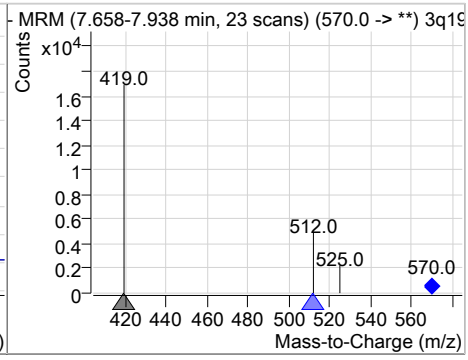




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	9.47	7.72	-0.01	11936	570.0 -> 512.0	24.2	0.0	53.5

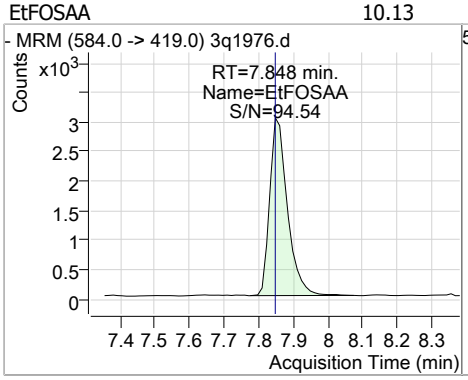


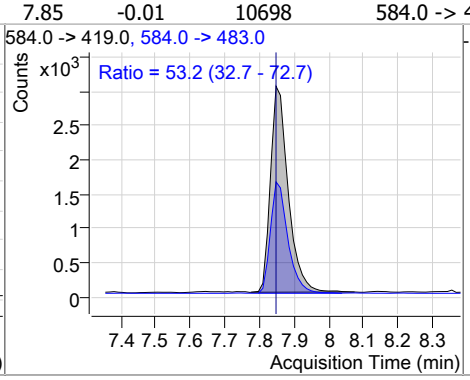


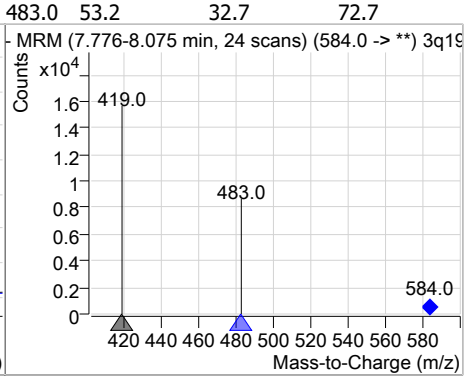


Perfluorinated Compounds by LC/MS/MS

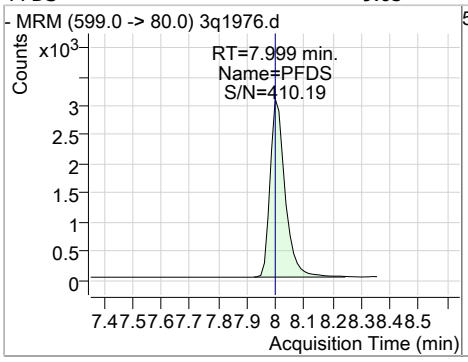
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	10.13	7.85	-0.01	10698	584.0 -> 483.0	53.2	32.7	72.7

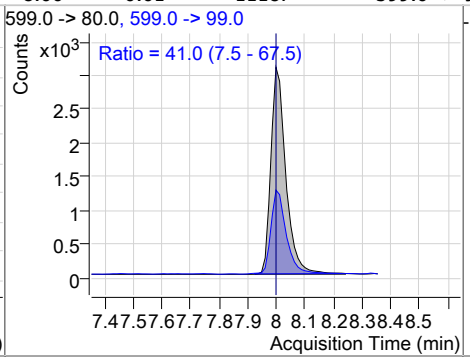


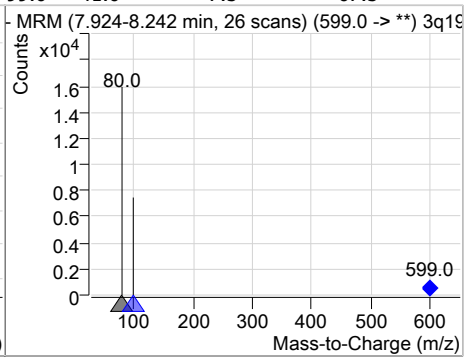




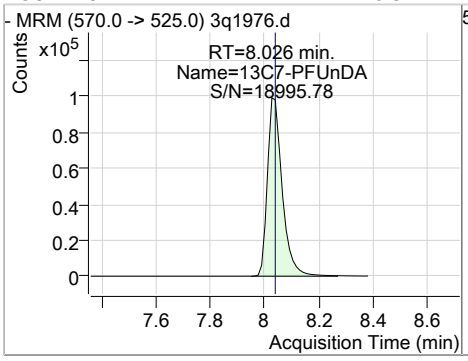
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	9.65	8.00	-0.01	11187	599.0 -> 99.0	41.0	7.5	67.5

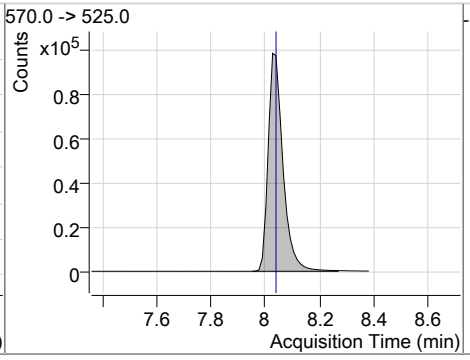


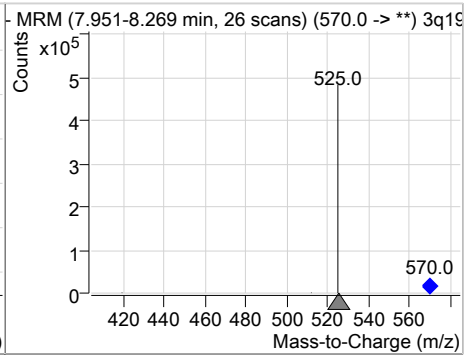




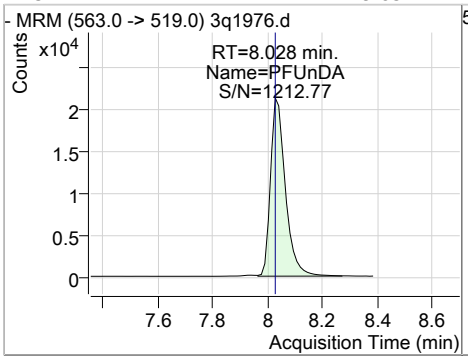
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.31	8.03	-0.01	376500				

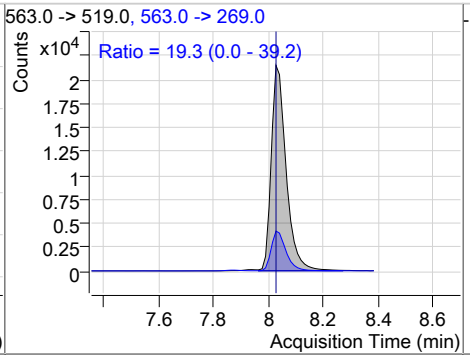


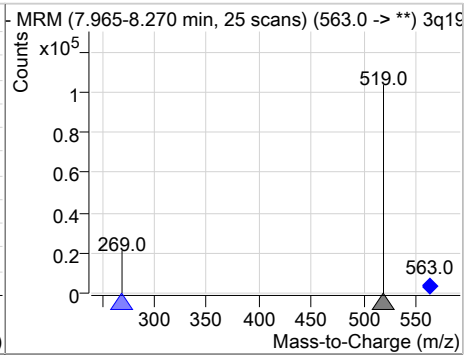




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	9.83	8.03	-0.01	80280	563.0 -> 269.0	19.3	0.0	39.2

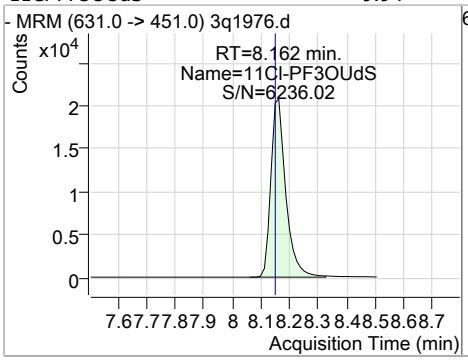


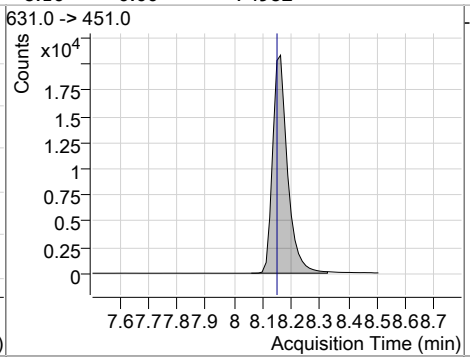


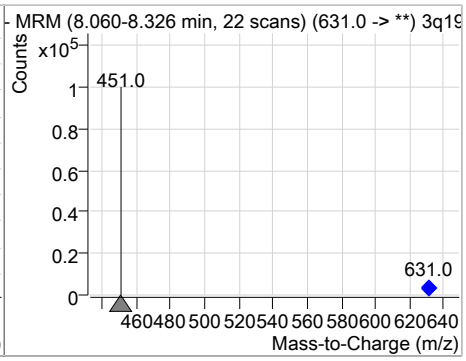


Perfluorinated Compounds by LC/MS/MS

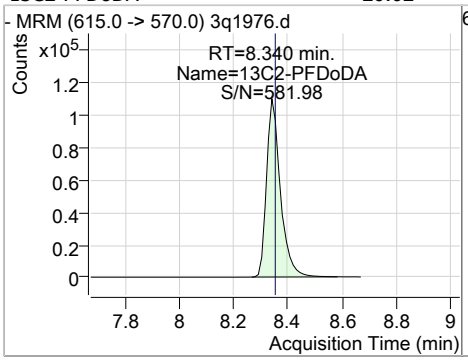
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	9.94	8.16	0.00	74982				

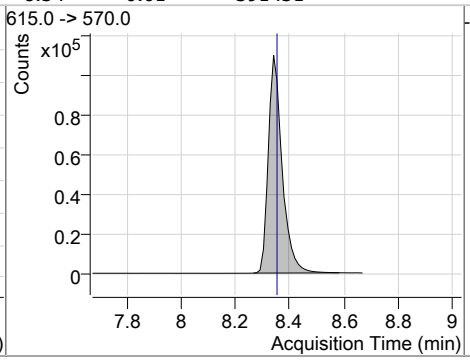


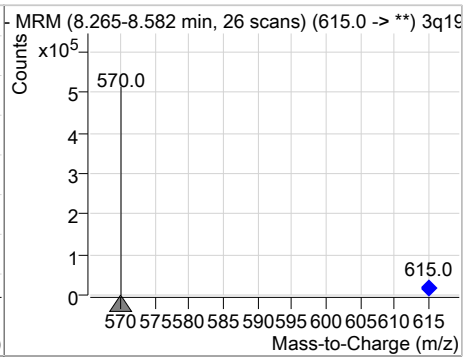




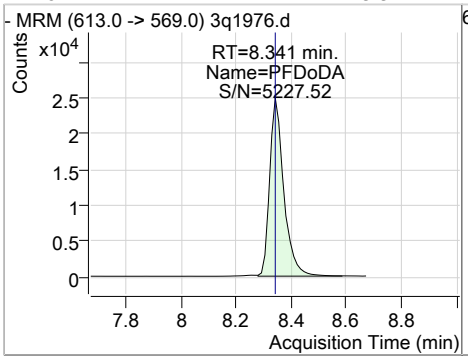
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.02	8.34	-0.01	391431				

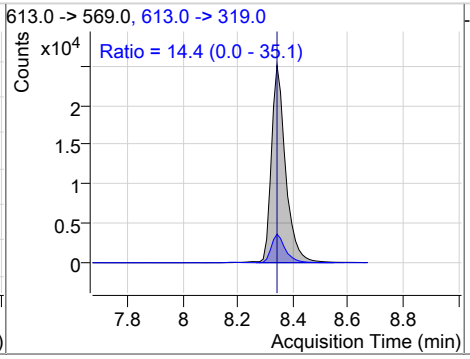


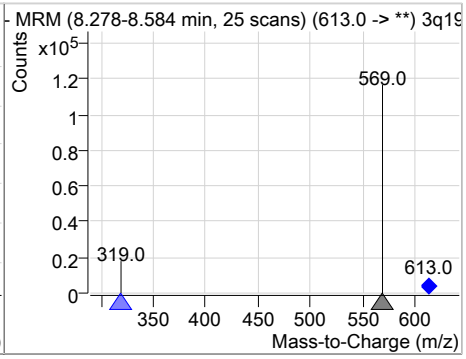




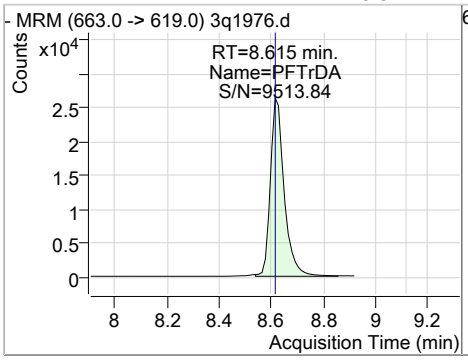
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	9.92	8.34	-0.01	89066	613.0 -> 319.0	14.4	0.0	35.1

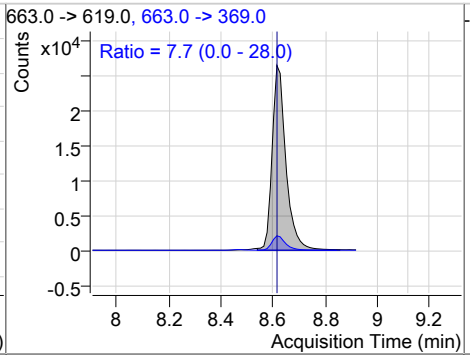


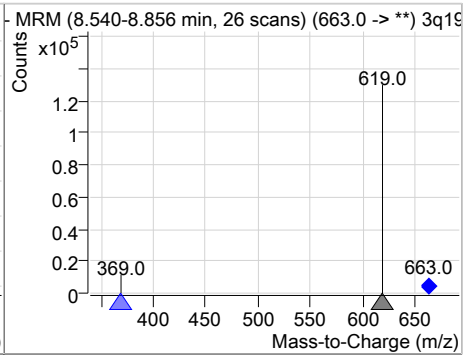




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	9.91	8.62	-0.01	97034	663.0 -> 369.0	7.7	0.0	28.0

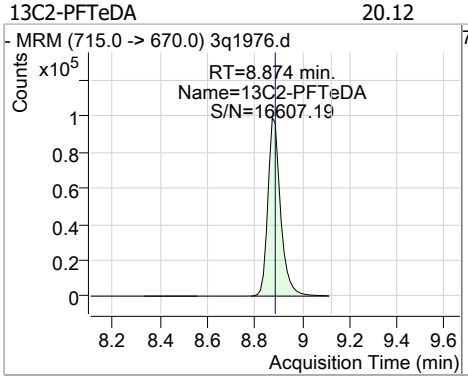


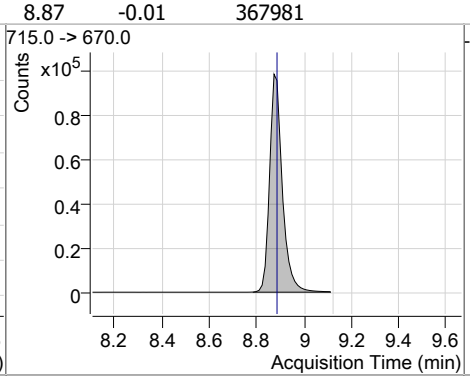


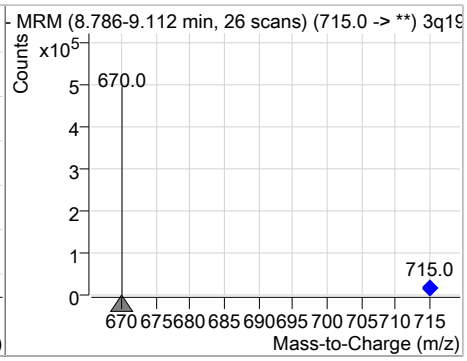


Perfluorinated Compounds by LC/MS/MS

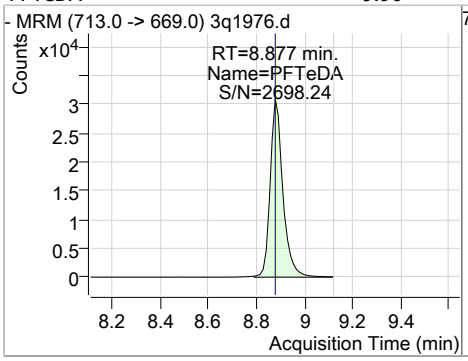
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.12	8.87	-0.01	367981				

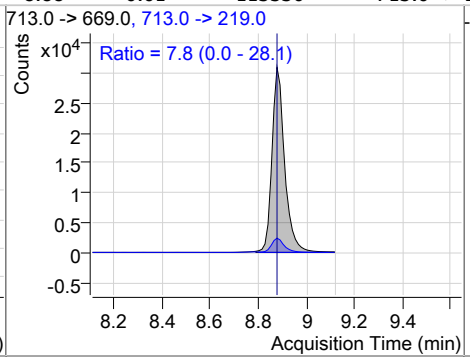


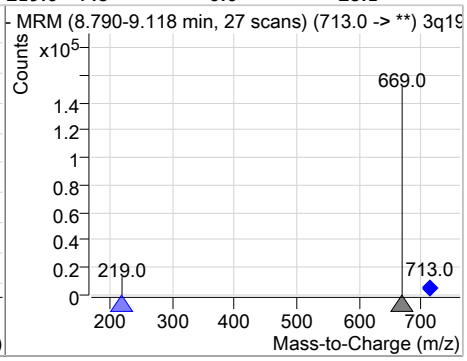




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	9.90	8.88	-0.01	113330	713.0 -> 219.0	7.8	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1976.D
Injection Time: 03/21/19 10:55
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1977.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 11:10:30 AM
Sample Name : icc54-20
Vial : P3-A7
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

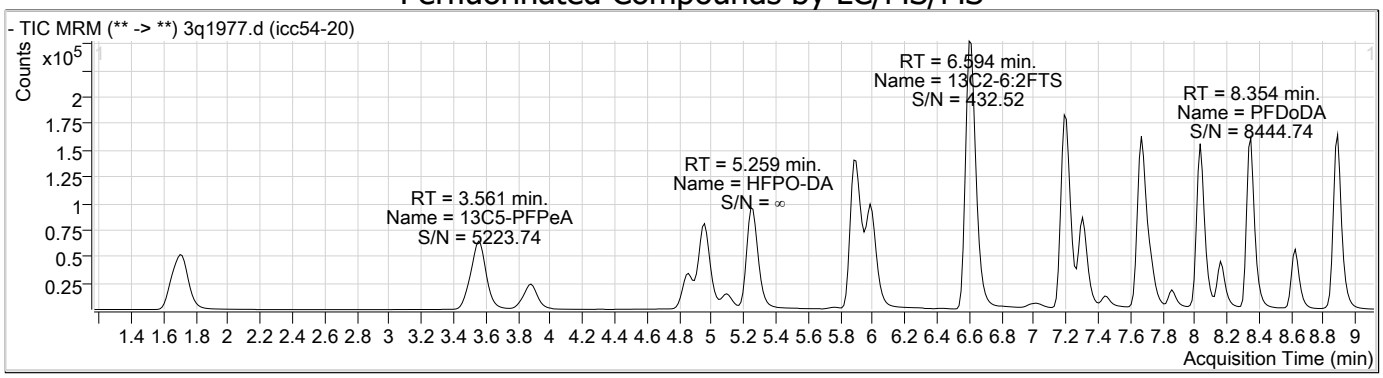
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.702	217.0 -> 172.0	321547	20.00	µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	215528	20.00	µg/L	0.000
M5-PFHxA	4.963	318.0 -> 273.0	287626	20.00	µg/L	0.000
M4-PFHpA	5.891	367.0 -> 322.0	328026	20.00	µg/L	0.000
M8-PFOA	6.621	421.0 -> 376.0	308042	20.00	µg/L	0.000
M9-PFNA	7.213	472.0 -> 427.0	294310	20.00	µg/L	0.000
M6-PFDA	7.678	519.0 -> 474.0	329722	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	363548	20.00	µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	386059	20.00	µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	364490	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	207622	20.00	µg/L	0.000
M3-PFBS	3.879	302.0 -> 99.0	49333	20.00	µg/L	0.000
M3-PFHxS	5.947	402.0 -> 99.0	49657	20.00	µg/L	0.000
M8-PFOS	7.196	507.0 -> 99.0	75325	20.00	µg/L	0.000
M2-4:2FTS	4.858	329.0 -> 309.0	92525	20.00	µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	90570	20.00	µg/L	0.000
M2-8:2FTS	7.701	529.0 -> 509.0	54456	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	47335	20.00	µg/L	0.000
M3-HFPO-DA	5.255	287.0 -> 169.0	163481	100.00	µg/L	0.000
13C2-PFOA	6.622	415.0 -> 370.0	403246	20.00	µg/L	0.000
13C4-PFOS	7.198	503.0 -> 80.0	120795	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	91995	19.38	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%		
13C2-6:2FTS	6.594	429.0 -> 409.0	90566	19.82	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.1%		
13C2-8:2FTS	7.701	529.0 -> 509.0	54589	19.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.6%		
13C2-PFDoDA	8.352	615.0 -> 570.0	386118	19.75	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.7%		
13C2-PFTeDA	8.886	715.0 -> 670.0	364579	19.93	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C3-PFBS	3.879	302.0 -> 99.0	49180	19.50	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.5%		
13C3-PFHxS	5.947	402.0 -> 99.0	49423	19.55	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
13C4-PFBA	1.702	217.0 -> 172.0	318666	19.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C4-PFHpA	5.891	367.0 -> 322.0	328772	19.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C5-PFHxA	4.963	318.0 -> 273.0	287621	19.54	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C5-PFPeA	3.561	268.0 -> 223.0	217226	19.62	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C6-PFDA	7.678	519.0 -> 474.0	329627	19.79	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

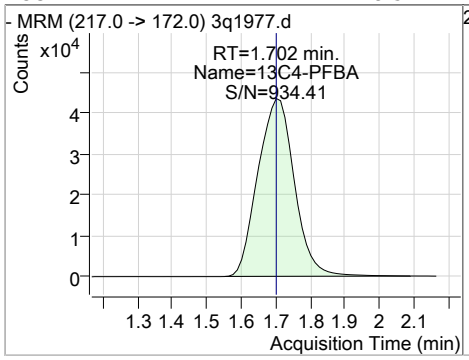
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C7-PFUnDA	8.039	570.0 -> 525.0	364702	19.67 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C8-FOSA	7.311	506.0 -> 78.0	207602	19.73 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C8-PFOA	6.621	421.0 -> 376.0	308064	19.47 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C8-PFOS	7.196	507.0 -> 99.0	75334	19.56 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
13C9-PFNA	7.213	472.0 -> 427.0	294474	19.71 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
d3-MeFOSAA	7.735	573.0 -> 419.0	47370	19.95 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C3-HFPO-DA	5.255	287.0 -> 169.0	163481	97.90 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 97.9%		
M2-PFOA	6.622	415.0 -> 370.0	403246	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.198	503.0 -> 80.0	120795	20.00 µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						**QValue**
4:2FTS	4.861	327.0 -> 307.0	52513	20.76 µg/L		100
6:2FTS	6.595	427.0 -> 407.0	43674	19.55 µg/L		100
8:2FTS	7.702	527.0 -> 507.0	28242	20.95 µg/L		100
EtFOSAA	7.861	584.0 -> 419.0	21156	19.89 µg/L		100
FOSA	7.313	498.0 -> 78.0	93325	20.04 µg/L		100
MeFOSAA	7.735	570.0 -> 419.0	24560	19.39 µg/L		100
PFBA	1.710	213.0 -> 169.0	60059	19.72 µg/L		100
PFBS	3.883	299.0 -> 80.0	68514	19.96 µg/L		100
PFDA	7.678	513.0 -> 469.0	155435	19.91 µg/L		100
PFDoDA	8.354	613.0 -> 569.0	172799	19.63 µg/L		100
PFDS	8.011	599.0 -> 80.0	22398	20.01 µg/L		100
PFHpA	5.894	363.0 -> 319.0	286156	19.71 µg/L		100
PFHpS	6.630	449.0 -> 80.0	46961	19.87 µg/L		100
PFHxA	4.965	313.0 -> 269.0	101452	19.81 µg/L		100
PFHxS	5.937	399.0 -> 80.0	53870	19.73 µg/L	m	100
PFNA	7.214	463.0 -> 419.0	180124	19.70 µg/L		100
PFNS	7.648	549.0 -> 80.0	41866	20.55 µg/L		100
PFOA	6.611	413.0 -> 369.0	166352	20.17 µg/L		100
PFOS	7.199	499.0 -> 80.0	68859	19.74 µg/L	m	100
PFPeA	3.564	263.0 -> 219.0	217345	19.90 µg/L		100
PFPeS	5.094	349.0 -> 80.0	42941	20.12 µg/L		100
PFTeDA	8.890	713.0 -> 669.0	223130	19.68 µg/L		100
PFTrDA	8.628	663.0 -> 619.0	188713	19.45 µg/L		100
PFUnDA	8.041	563.0 -> 519.0	158172	20.06 µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	147489	19.95 µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	37056	19.77 µg/L		100
ADONA	5.994	377.0 -> 251.0	385528	20.03 µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	269020	96.98 µg/L		100

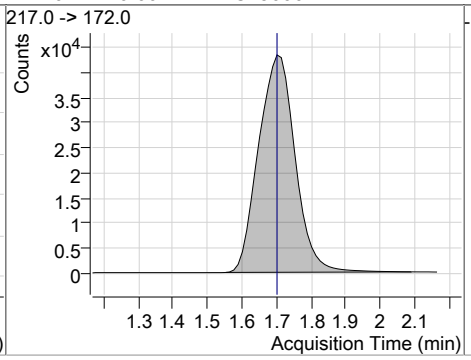
 # = Qualifier out of range, m = manually integrated, + = Area summed

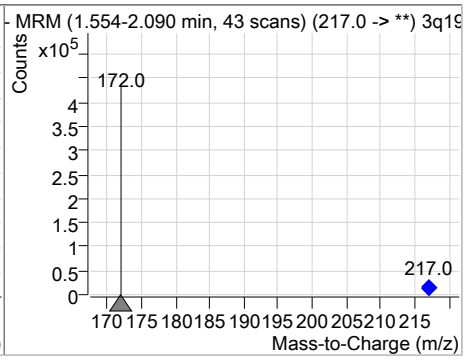
Perfluorinated Compounds by LC/MS/MS



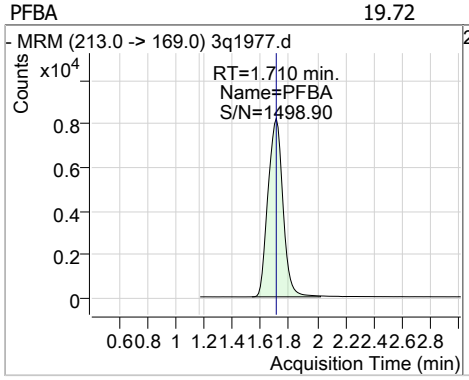
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.54	1.70	0.00	318666				

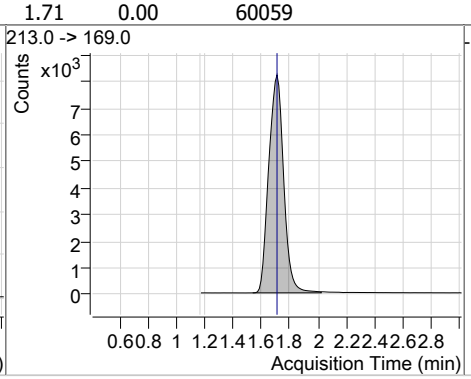


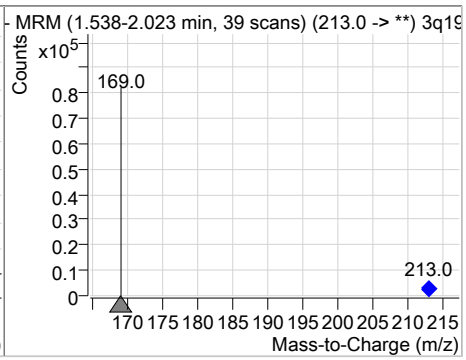




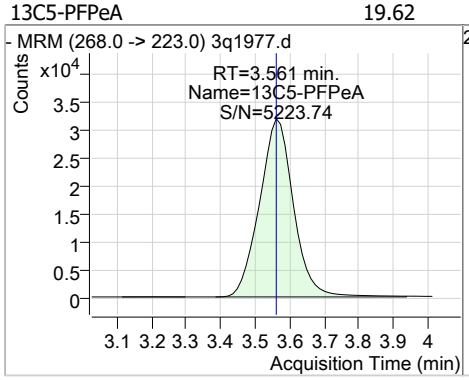
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.72	1.71	0.00	60059				

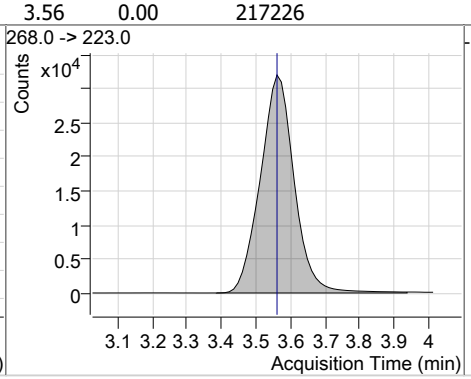


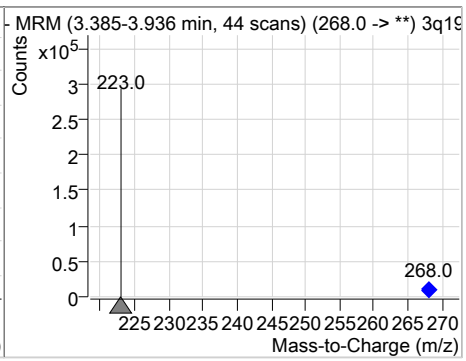




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.62	3.56	0.00	217226				

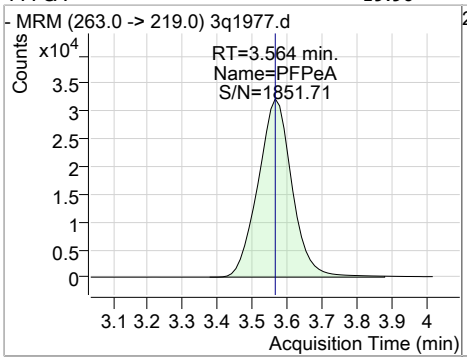


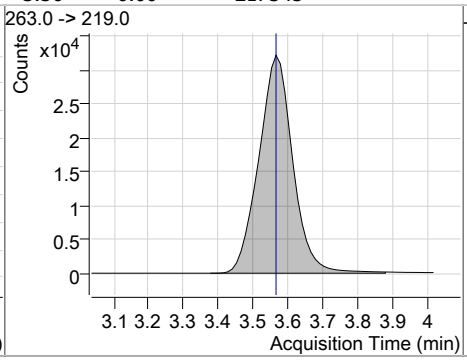


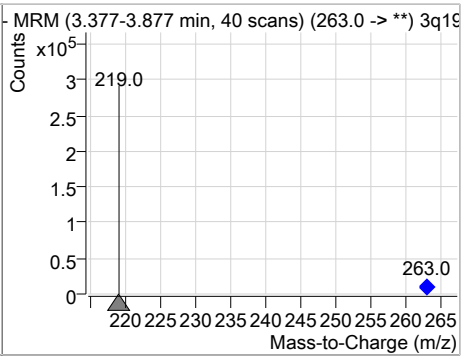


Perfluorinated Compounds by LC/MS/MS

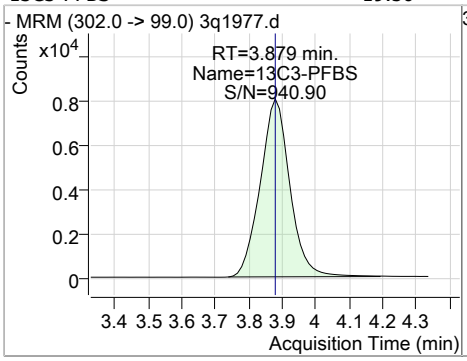
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.90	3.56	0.00	217345				

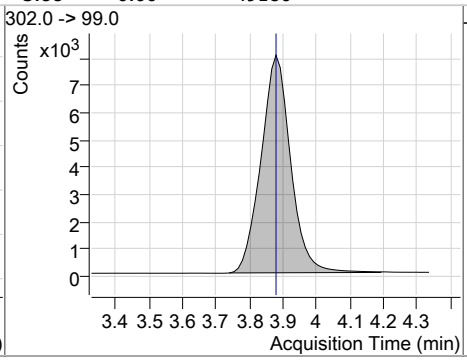


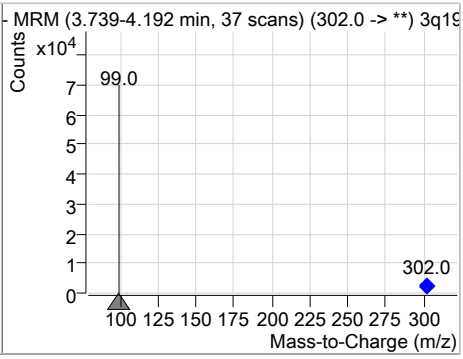




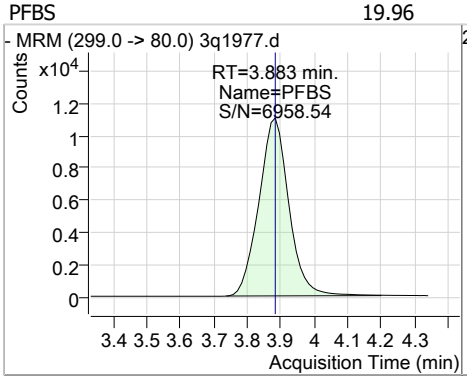
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.50	3.88	0.00	49180				

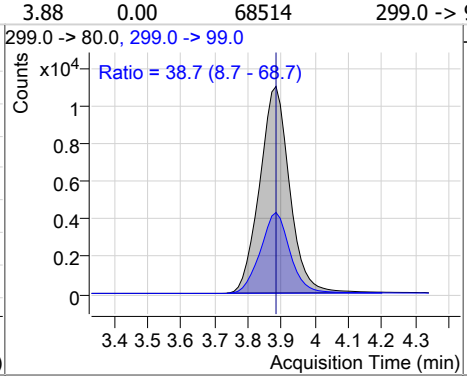


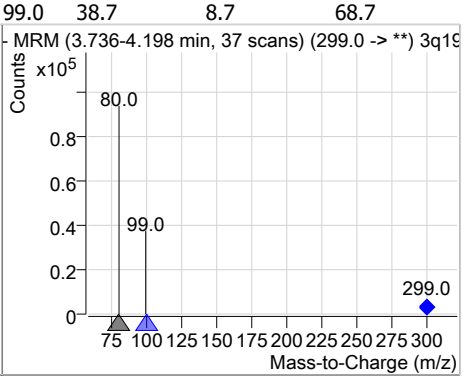




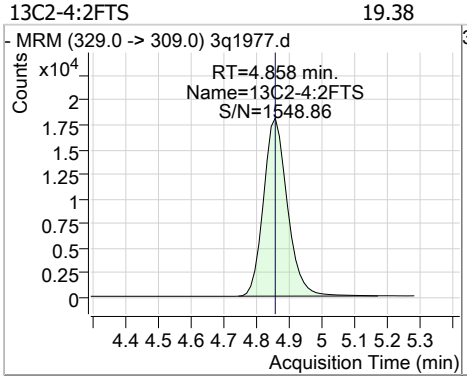
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.96	3.88	0.00	68514	299.0 -> 99.0	38.7	8.7	68.7

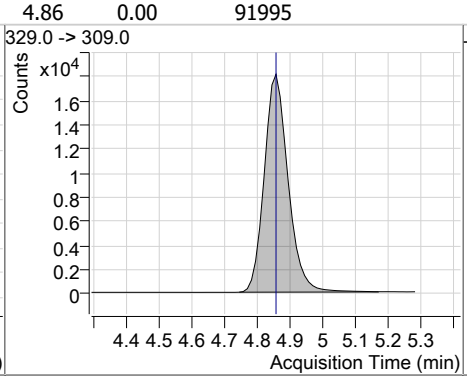


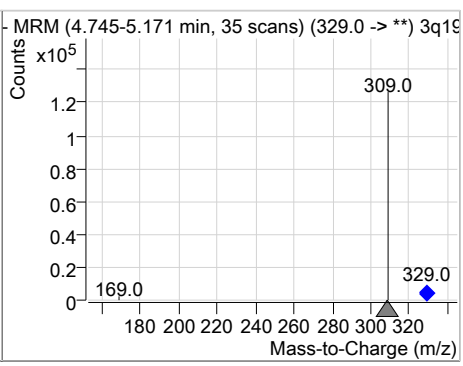




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.38	4.86	0.00	91995				

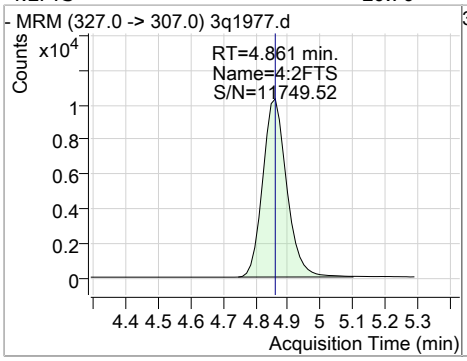


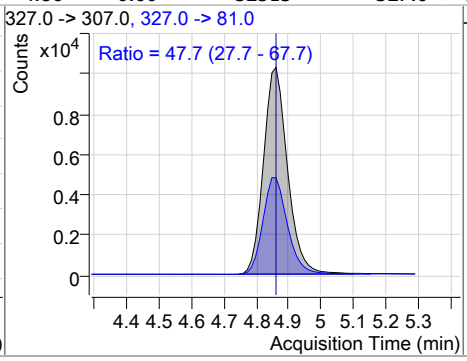


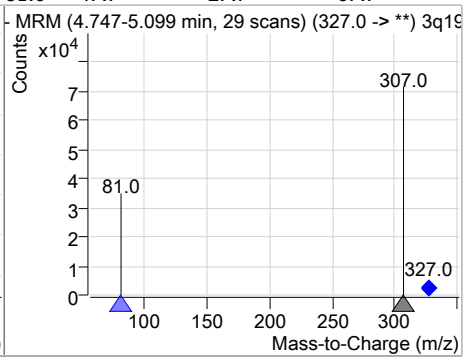


Perfluorinated Compounds by LC/MS/MS

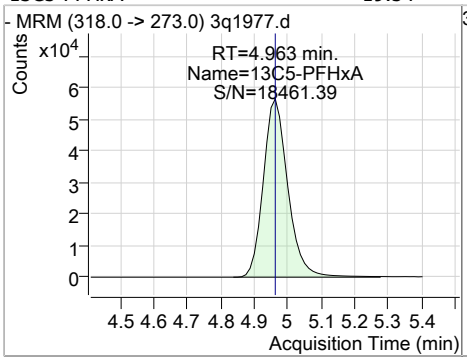
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.76	4.86	0.00	52513	327.0 -> 81.0	47.7	27.7	67.7

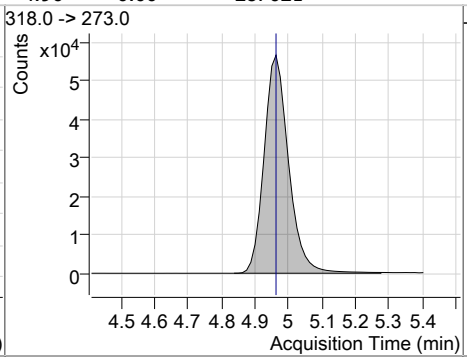


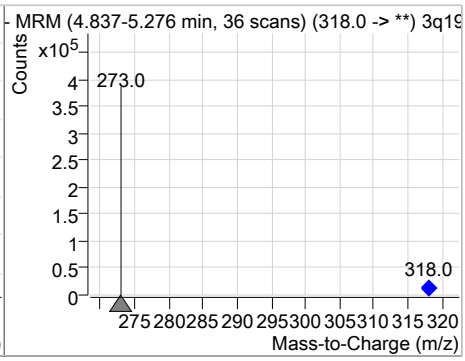




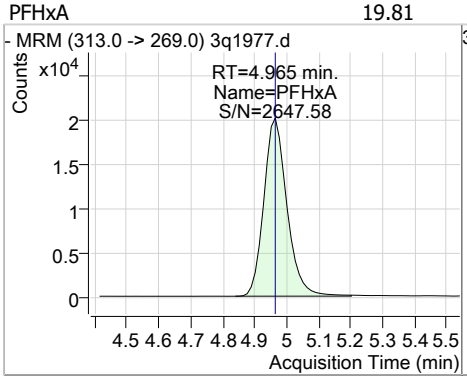
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.54	4.96	0.00	287621				

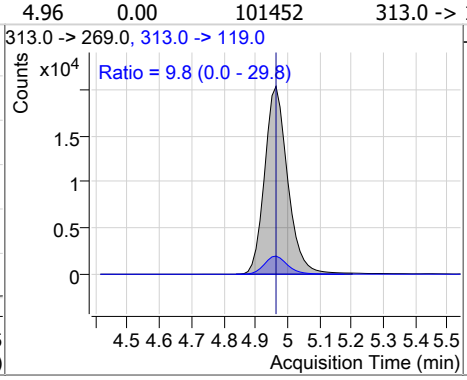


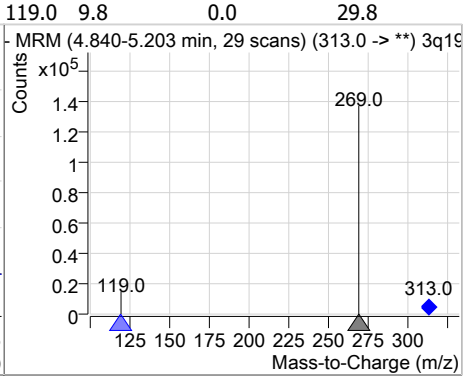




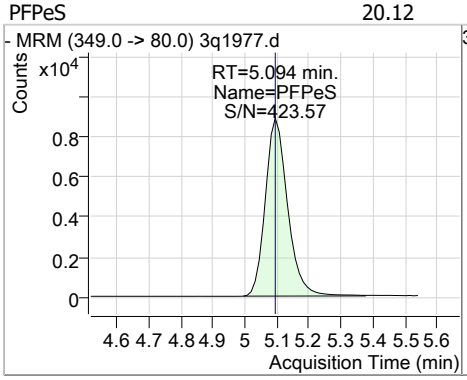
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.81	4.96	0.00	101452	313.0 -> 119.0	9.8	0.0	29.8

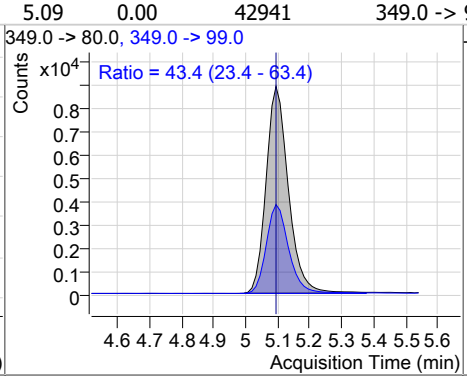


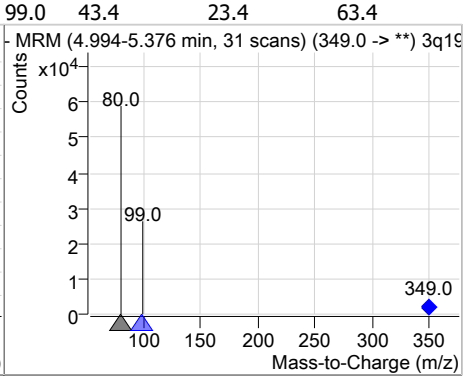




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.12	5.09	0.00	42941	349.0 -> 99.0	43.4	23.4	63.4

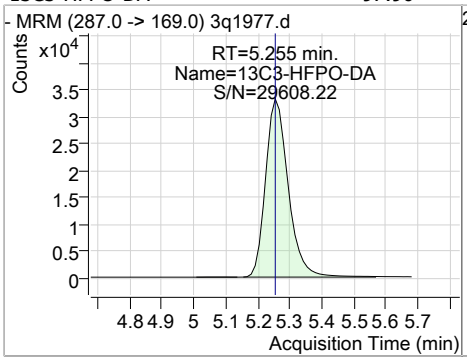


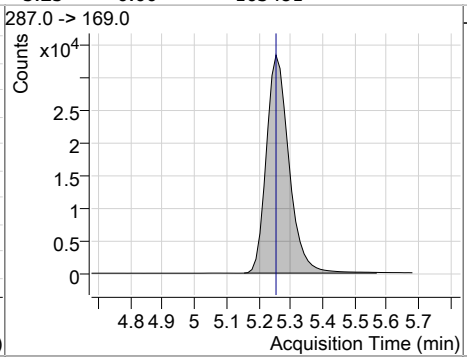


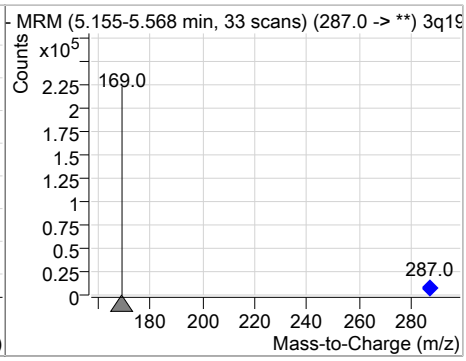


Perfluorinated Compounds by LC/MS/MS

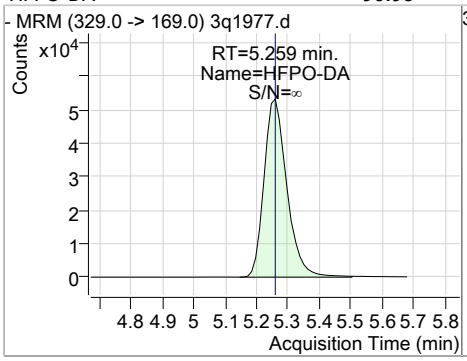
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	97.90	5.25	0.00	163481				

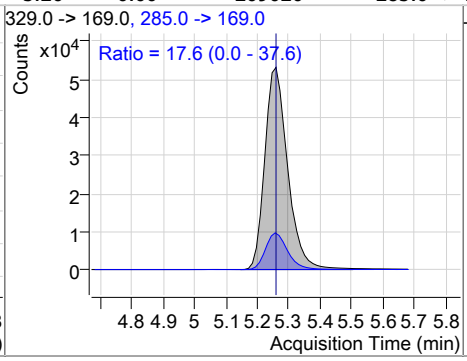


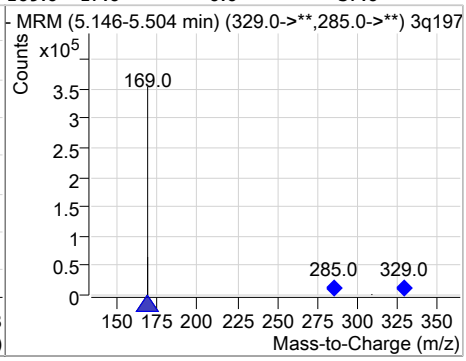




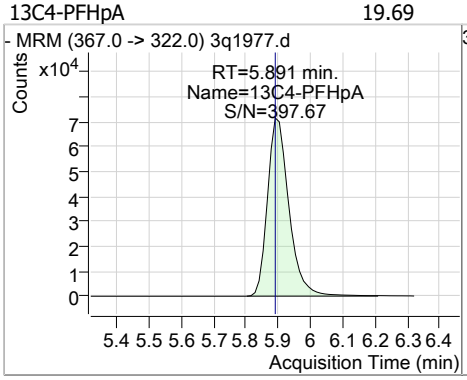
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	96.98	5.26	0.00	269020	285.0 -> 169.0	17.6	0.0	37.6

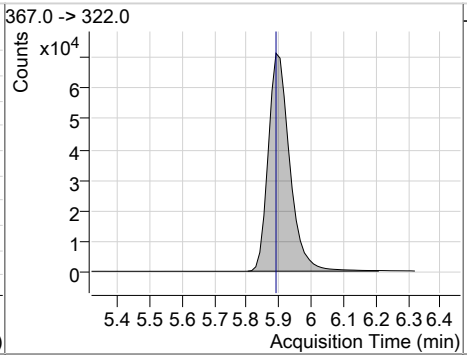


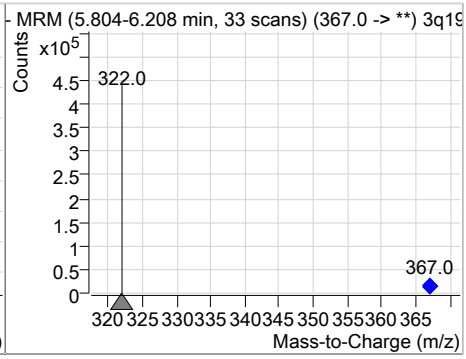




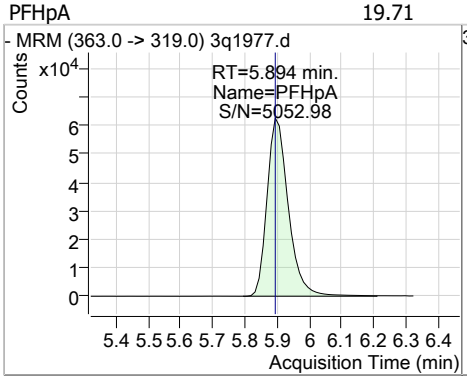
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.69	5.89	0.00	328772				

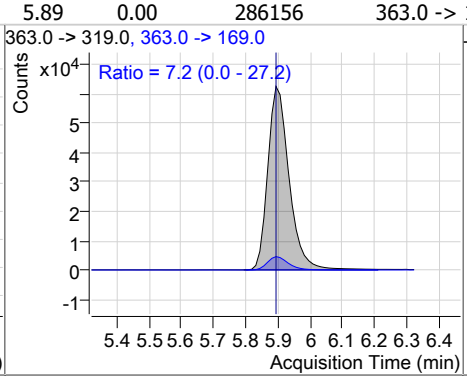


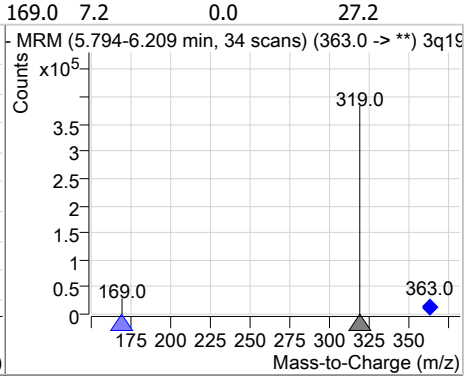




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.71	5.89	0.00	286156	363.0 -> 169.0	7.2	0.0	27.2

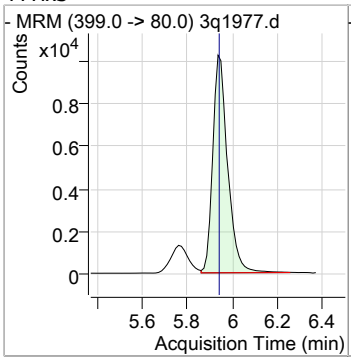


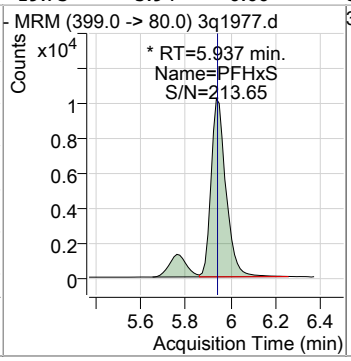


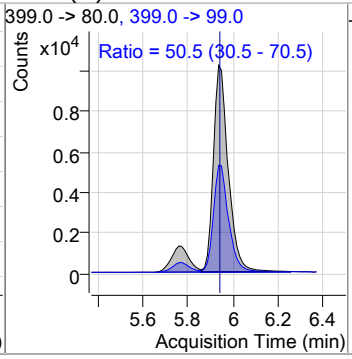


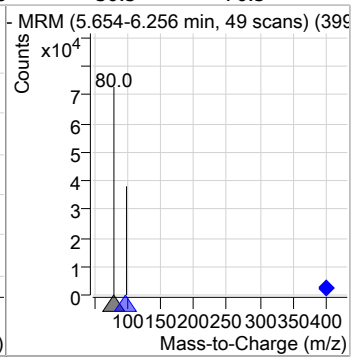
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.73	5.94	0.00	53870 (m)	399.0 -> 99.0	50.5	30.5	70.5

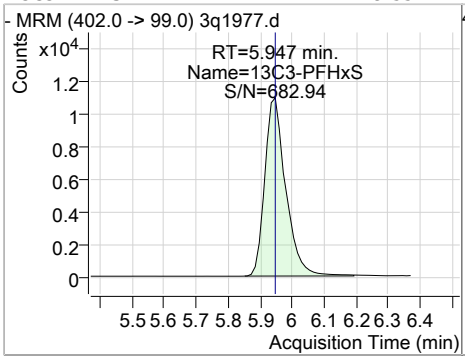


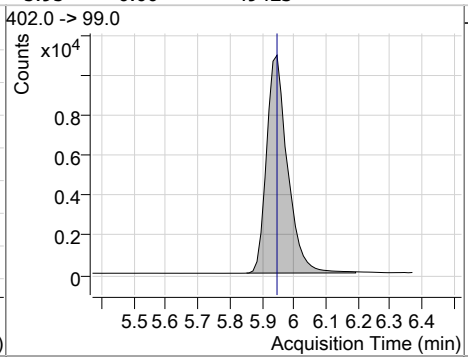


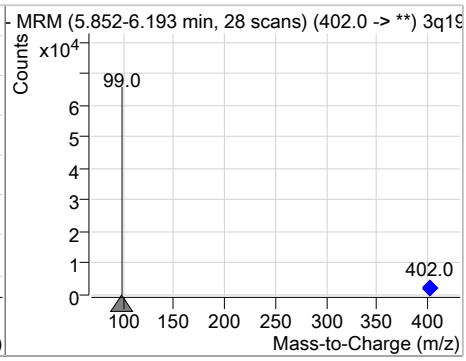




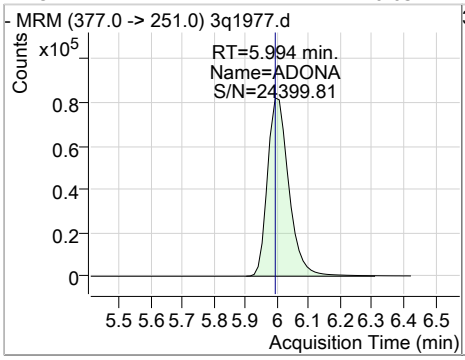
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.55	5.95	0.00	49423				

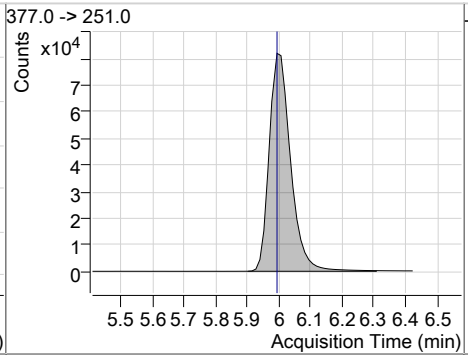


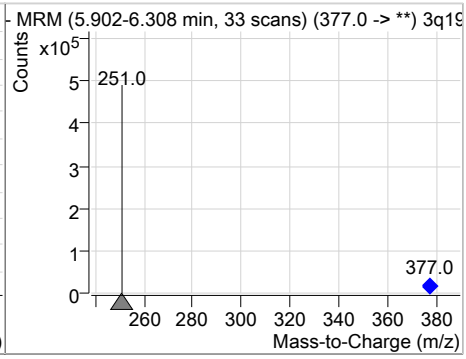




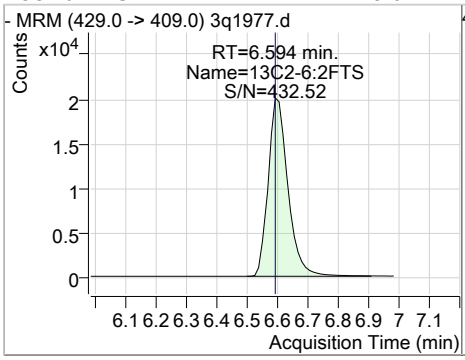
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	20.03	5.99	0.00	385528				

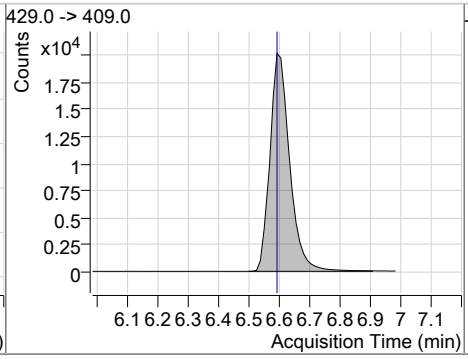


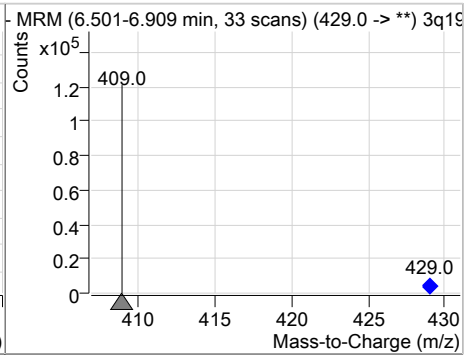




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.82	6.59	0.00	90566				

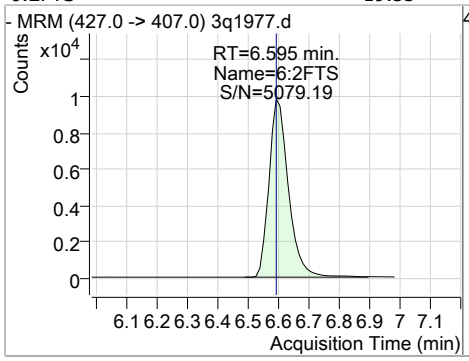


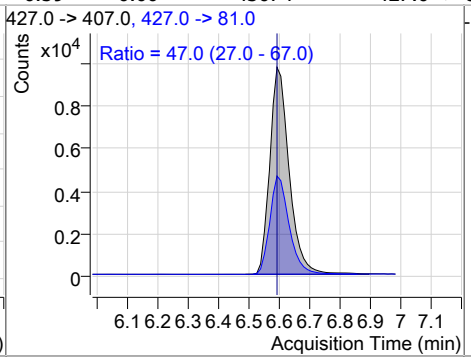


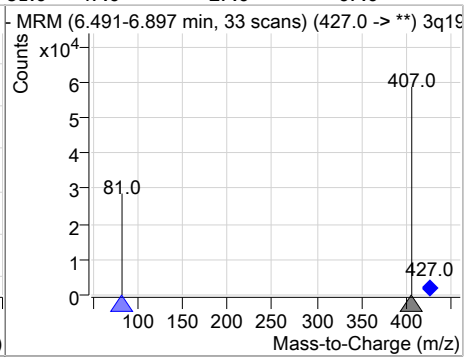


Perfluorinated Compounds by LC/MS/MS

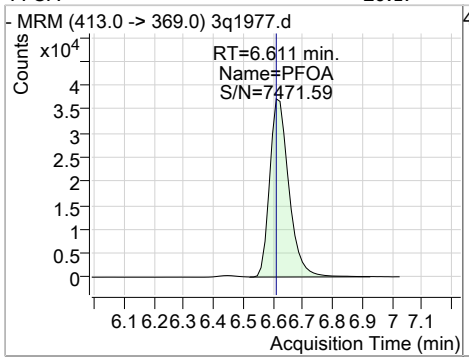
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.55	6.59	0.00	43674	427.0 -> 81.0	47.0	27.0	67.0

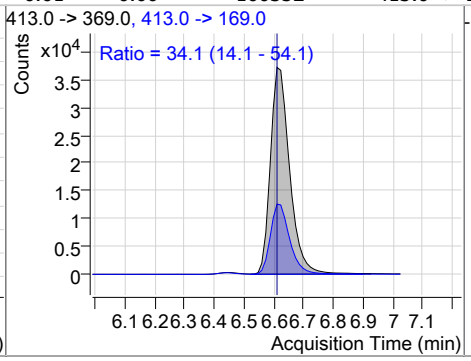


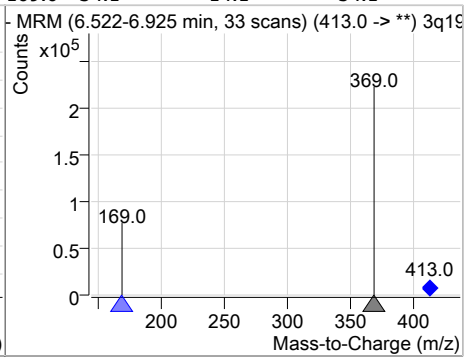




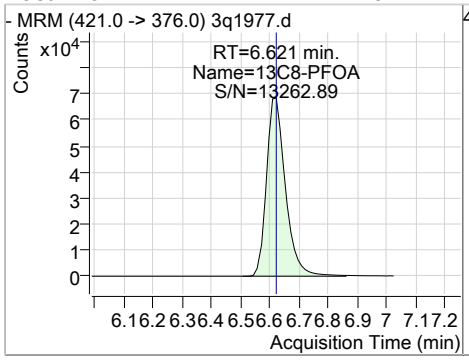
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.17	6.61	0.00	166352	413.0 -> 169.0	34.1	14.1	54.1

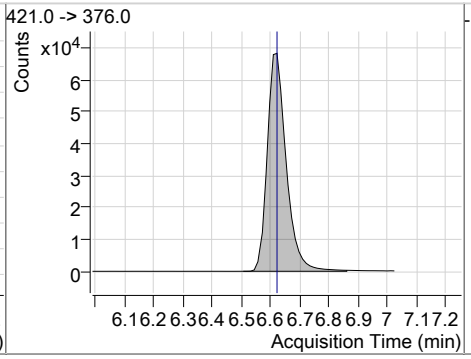


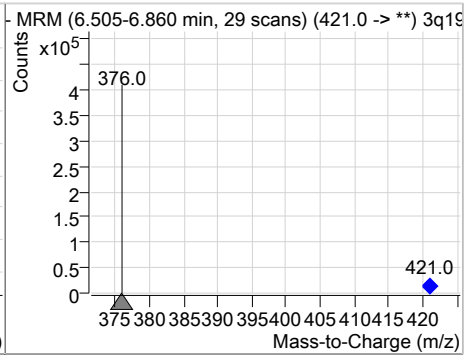




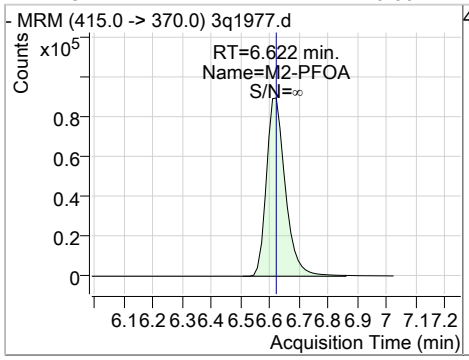
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.47	6.62	0.00	308064				

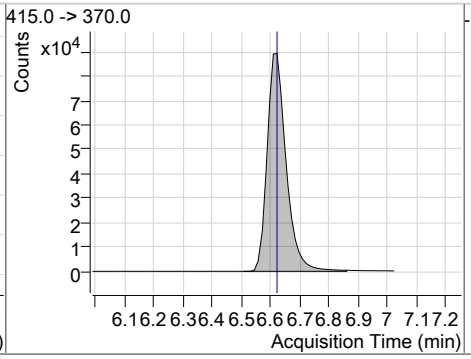


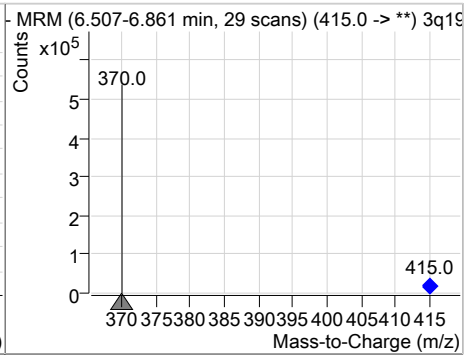




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.62	0.00	403246				

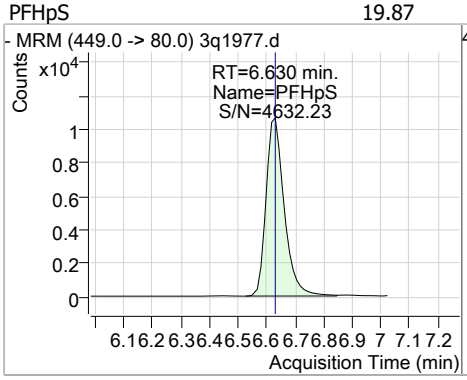


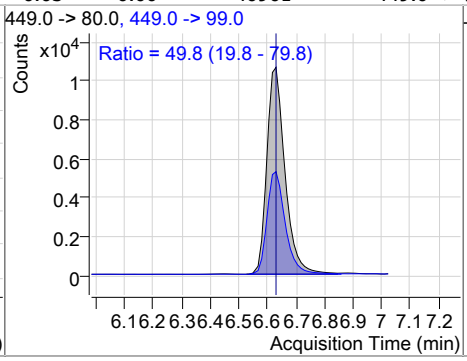


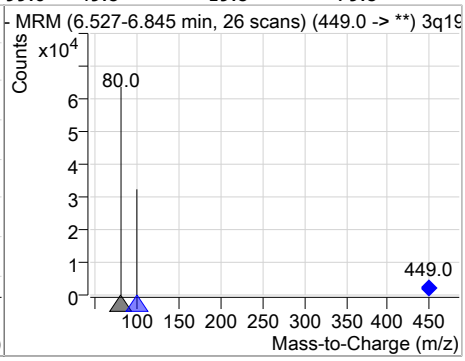


Perfluorinated Compounds by LC/MS/MS

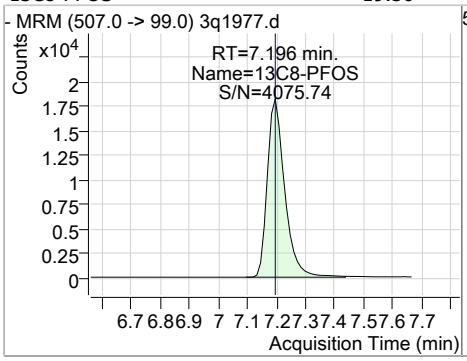
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	19.87	6.63	0.00	46961	449.0 -> 99.0	49.8	19.8	79.8

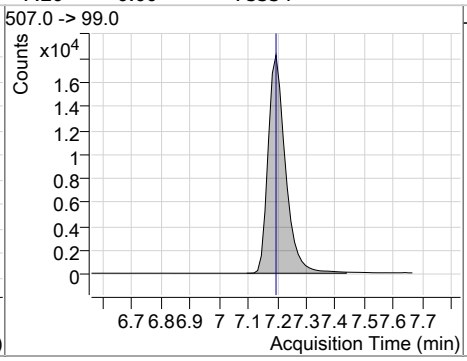


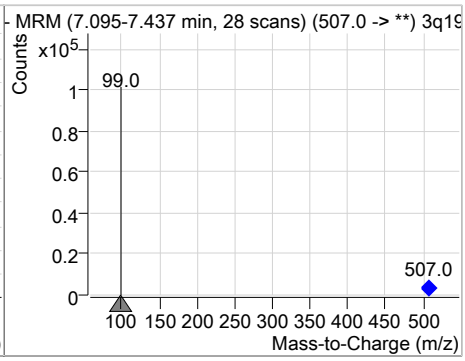




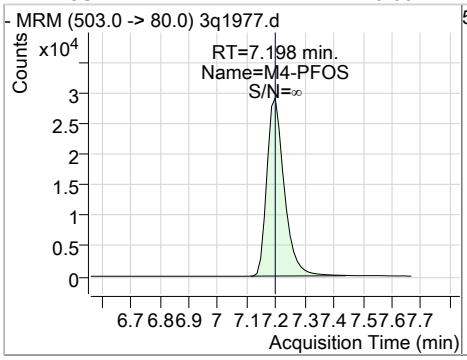
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.56	7.20	0.00	75334				

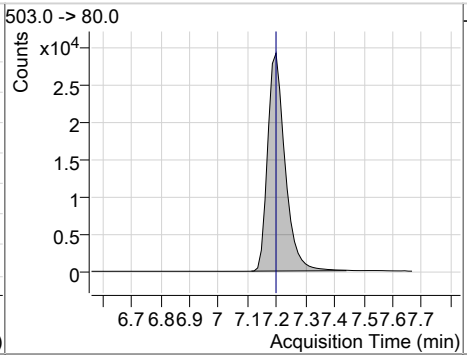


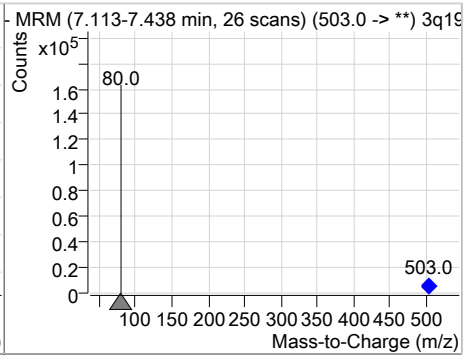




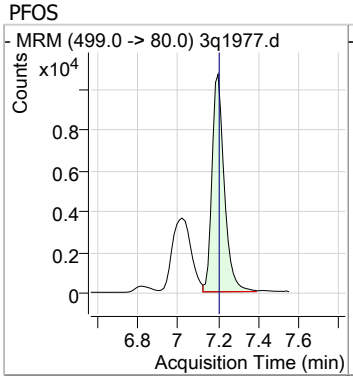
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	120795				

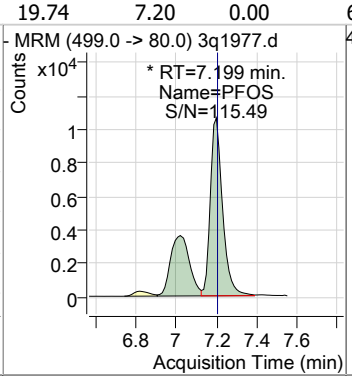


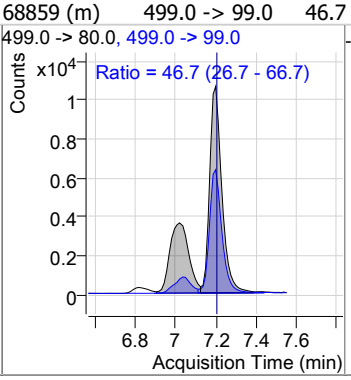


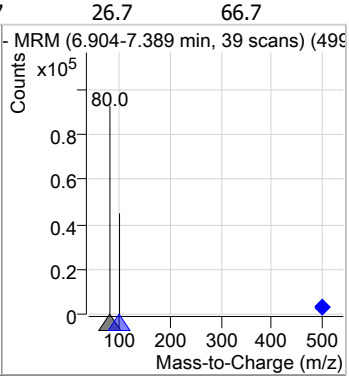


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.74	7.20	0.00	68859 (m)	499.0 -> 99.0	46.7	26.7	66.7



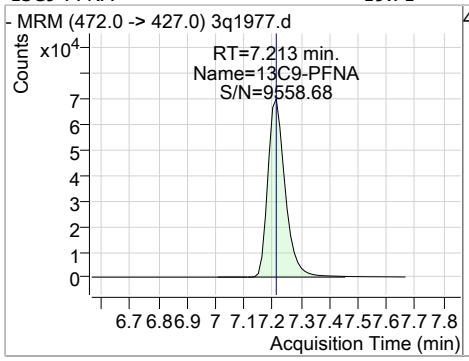


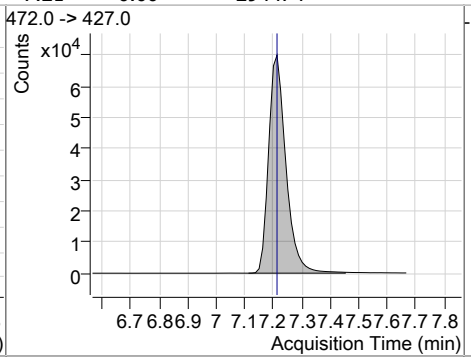


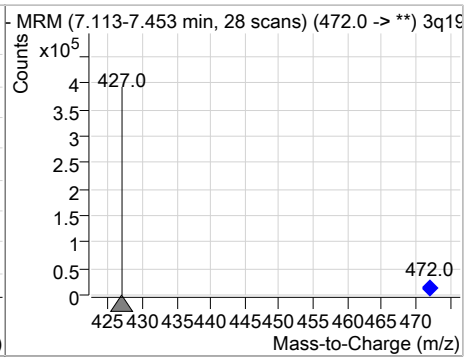


Perfluorinated Compounds by LC/MS/MS

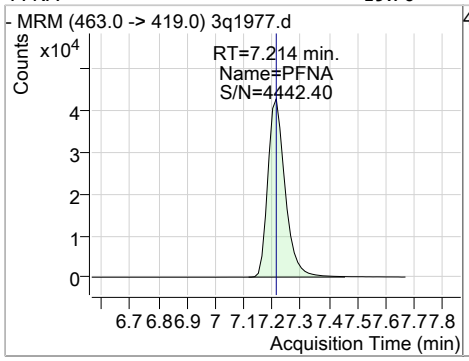
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.71	7.21	0.00	294474				

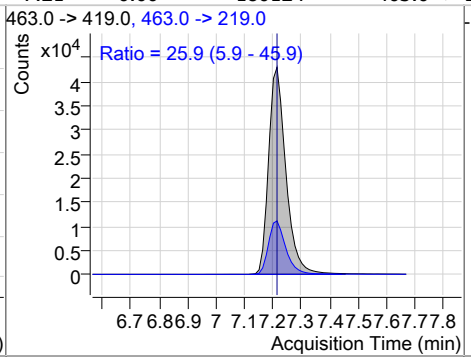


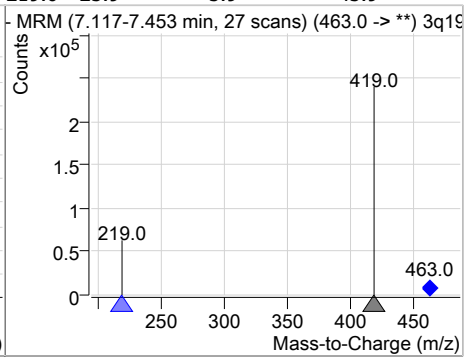




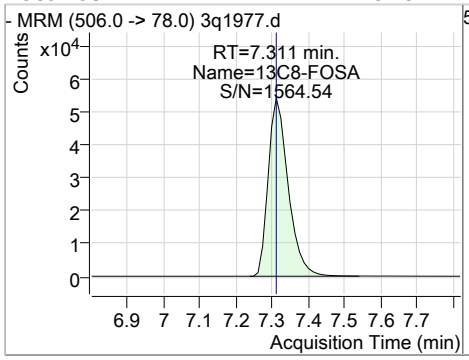
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.70	7.21	0.00	180124	463.0 -> 219.0	25.9	5.9	45.9

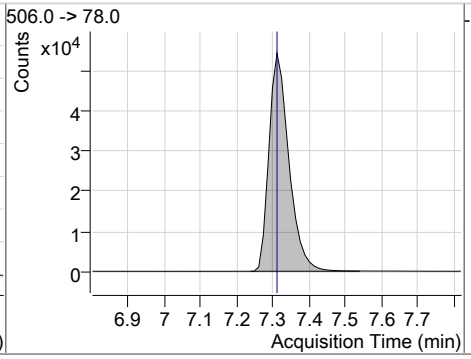


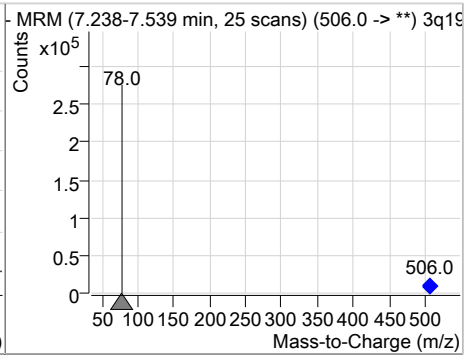




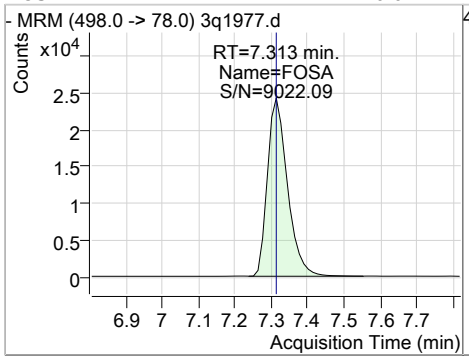
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	19.73	7.31	0.00	207602				

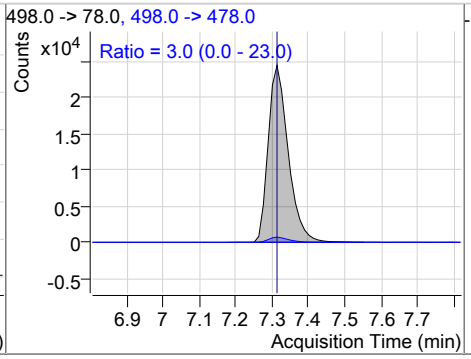


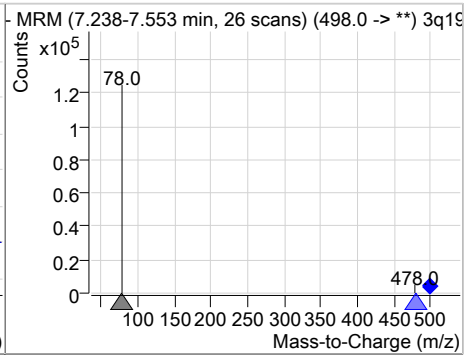




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.04	7.31	0.00	93325	498.0 -> 478.0	3.0	0.0	23.0

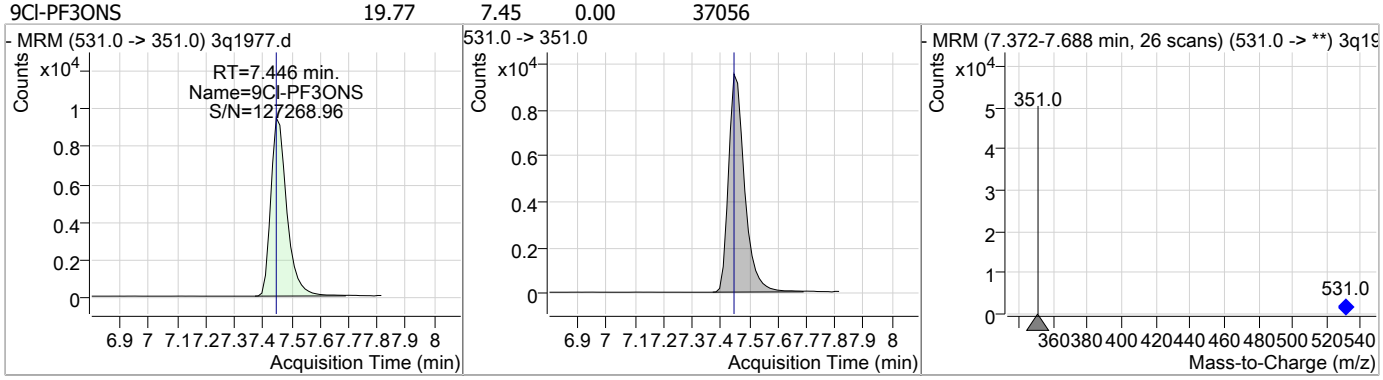




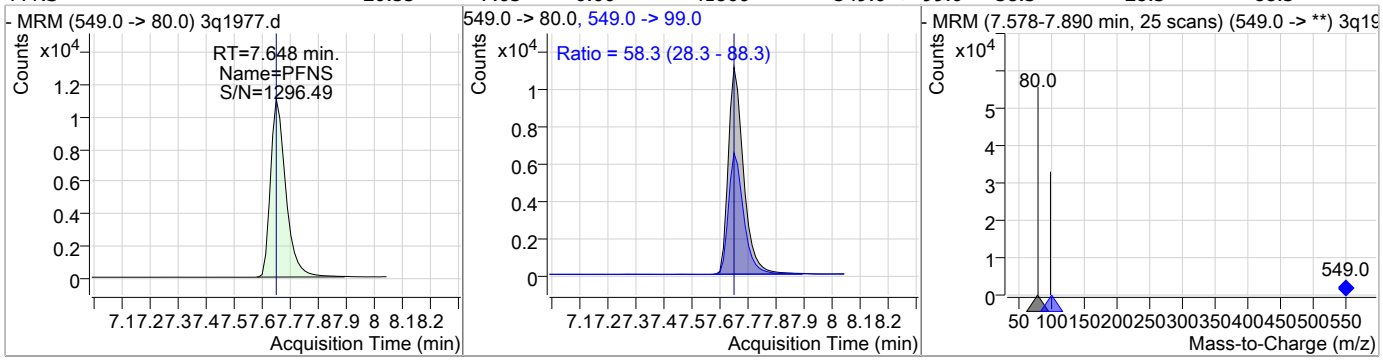


Perfluorinated Compounds by LC/MS/MS

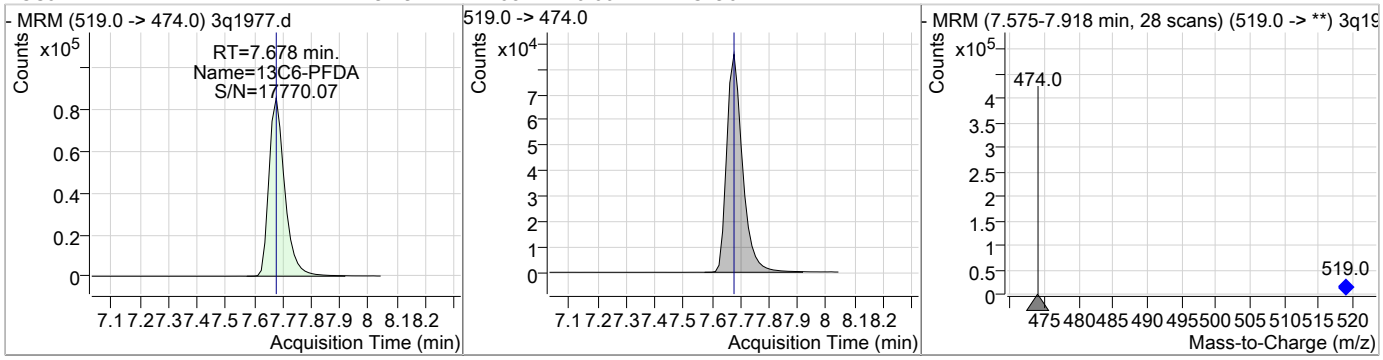
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	19.77	7.45	0.00	37056				



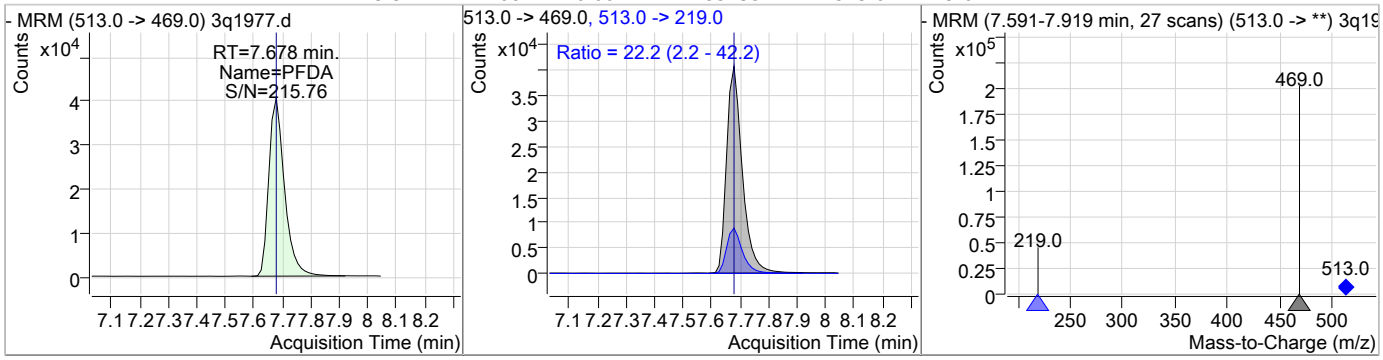
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.55	7.65	0.00	41866	549.0 -> 99.0	58.3	28.3	88.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.79	7.68	0.00	329627				

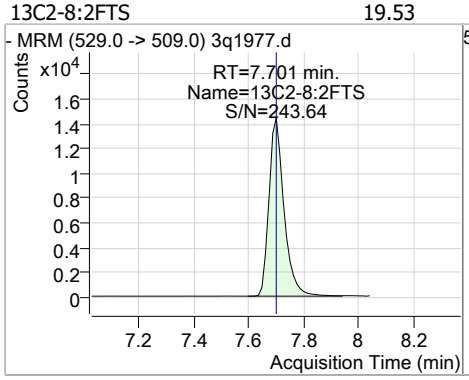


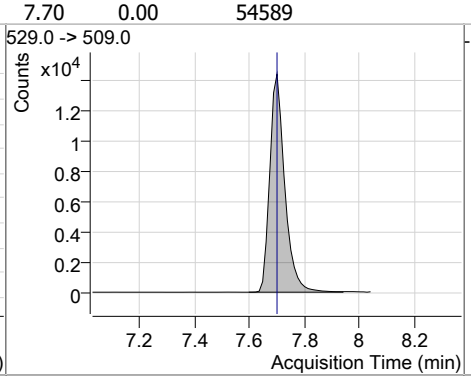
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.91	7.68	0.00	155435	513.0 -> 219.0	22.2	2.2	42.2

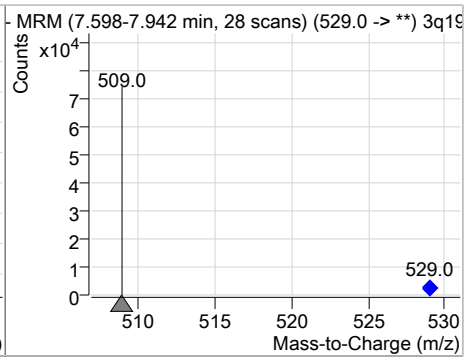


Perfluorinated Compounds by LC/MS/MS

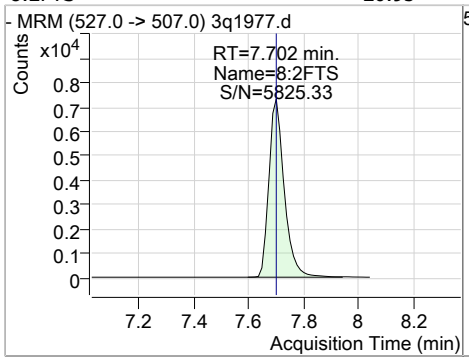
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.53	7.70	0.00	54589				

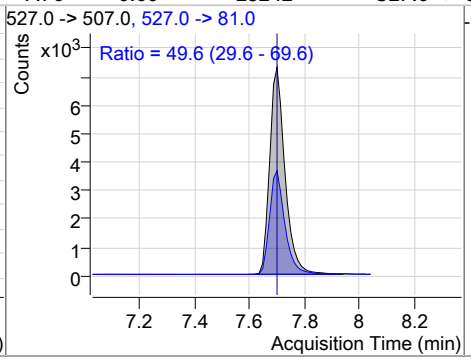


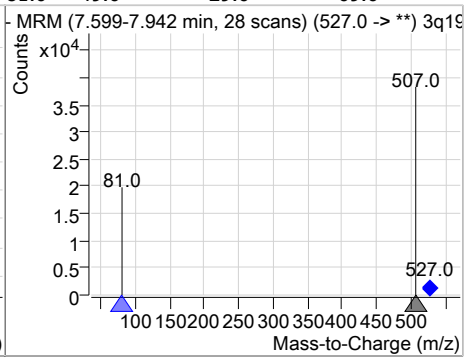




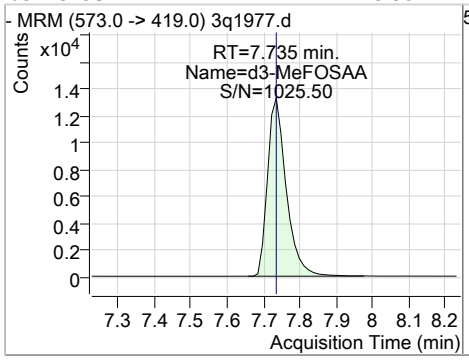
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.95	7.70	0.00	28242	527.0 -> 81.0	49.6	29.6	69.6

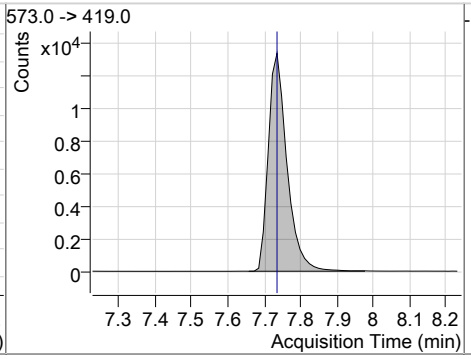


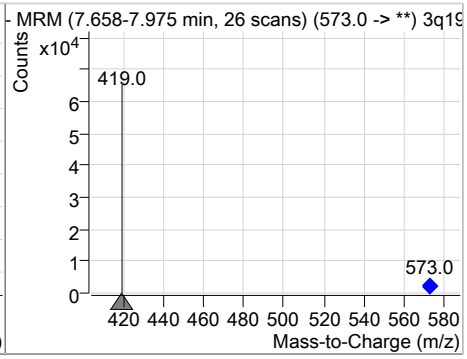




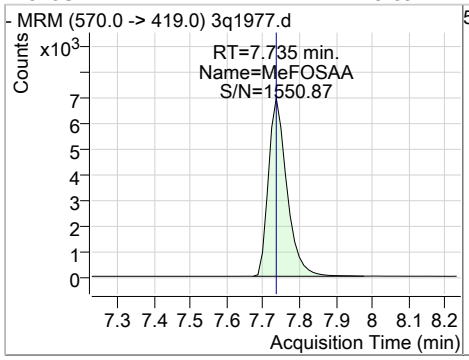
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.95	7.73	0.00	47370				

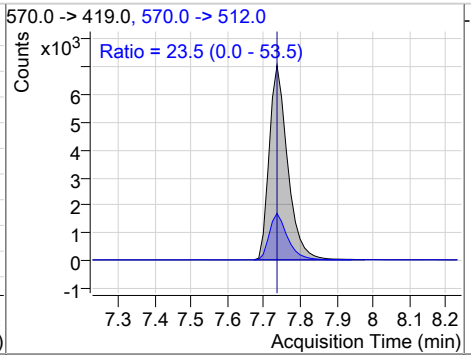


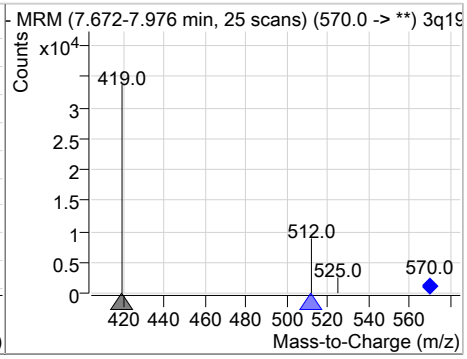




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	19.39	7.74	0.00	24560	570.0 -> 512.0	23.5	0.0	53.5

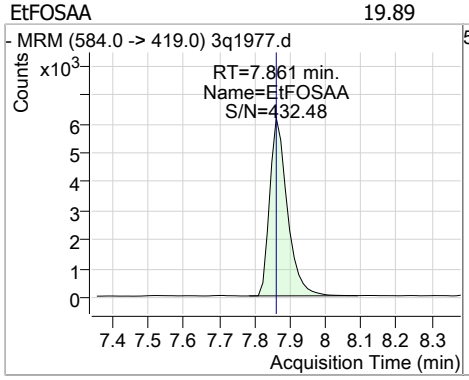


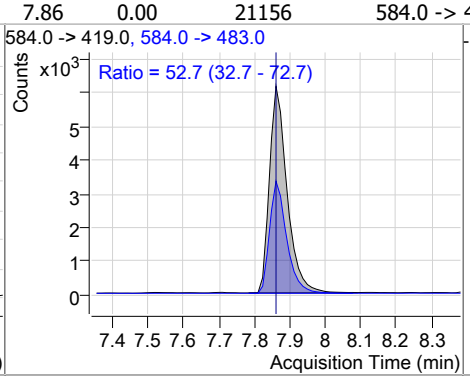


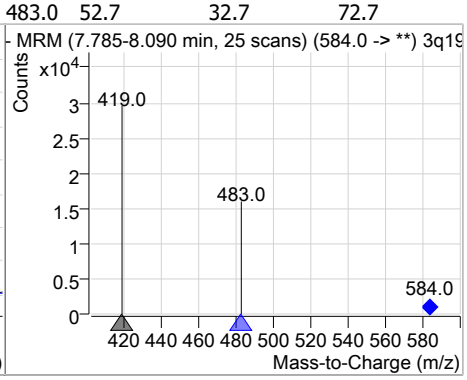


Perfluorinated Compounds by LC/MS/MS

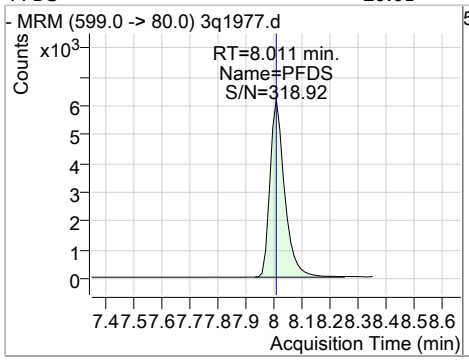
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	19.89	7.86	0.00	21156	584.0 -> 483.0	52.7	32.7	72.7

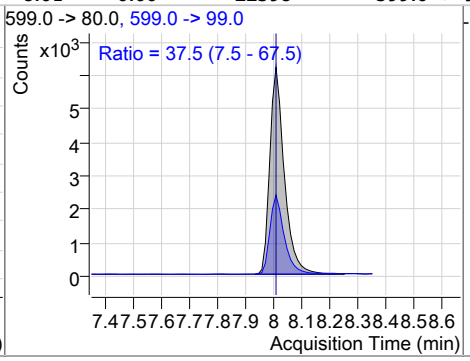


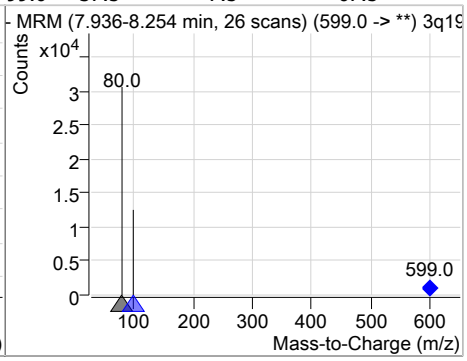




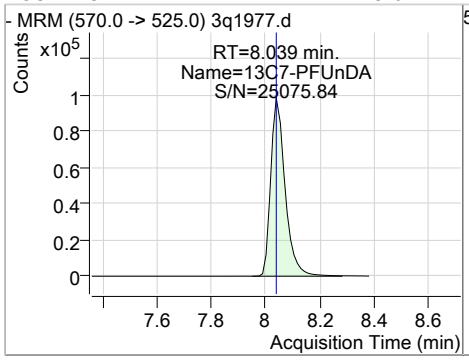
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	20.01	8.01	0.00	22398	599.0 -> 99.0	37.5	7.5	67.5

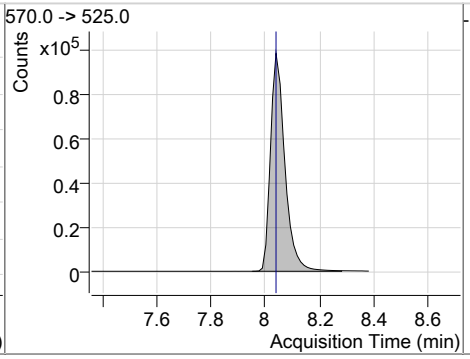


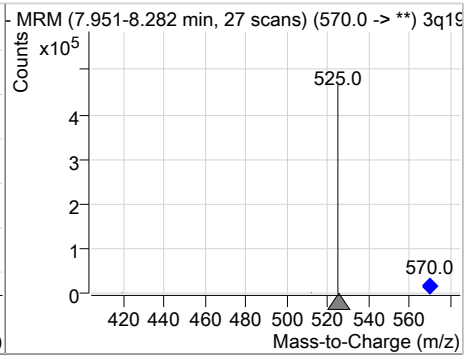




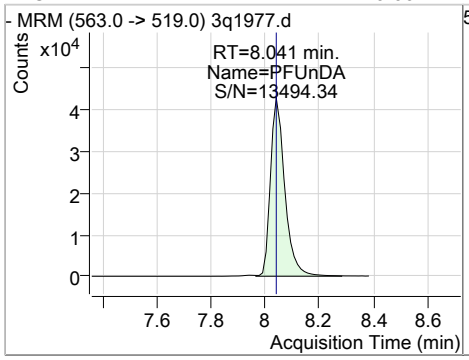
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.67	8.04	0.00	364702				

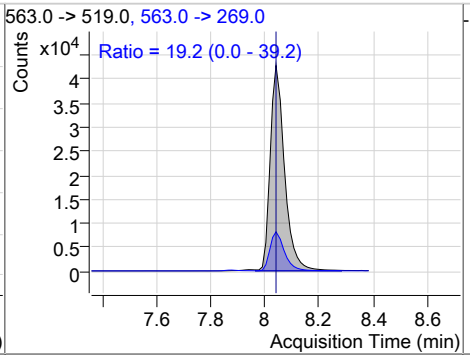


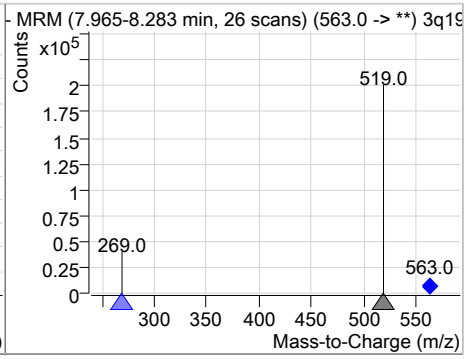




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	20.06	8.04	0.00	158172	563.0 -> 269.0	19.2	0.0	39.2

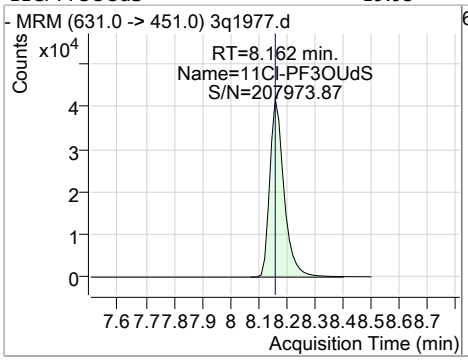


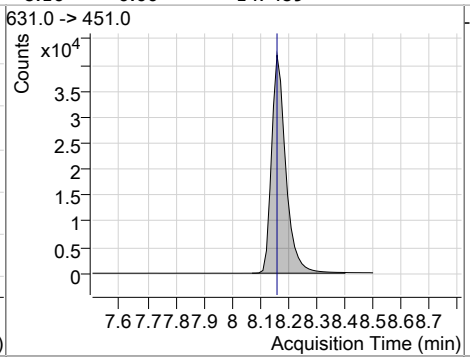


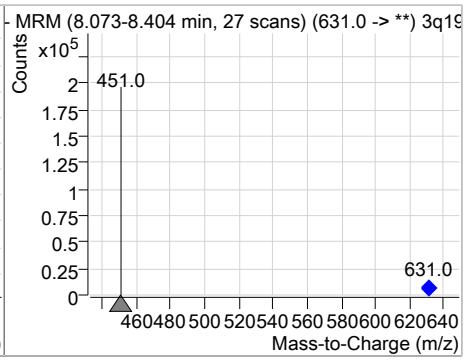


Perfluorinated Compounds by LC/MS/MS

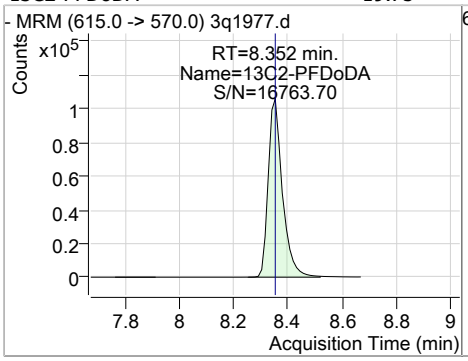
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	19.95	8.16	0.00	147489				

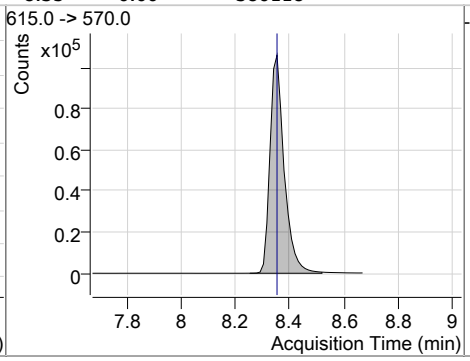


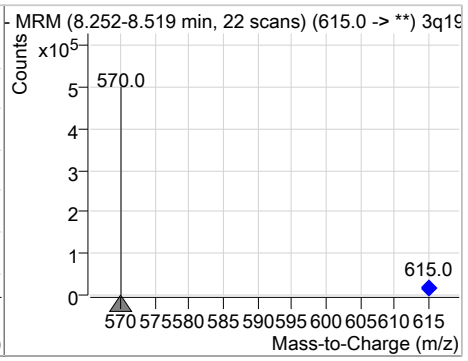




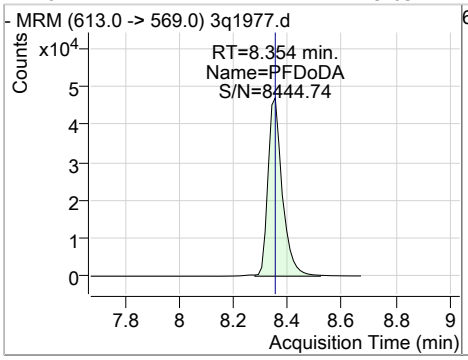
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.75	8.35	0.00	386118				

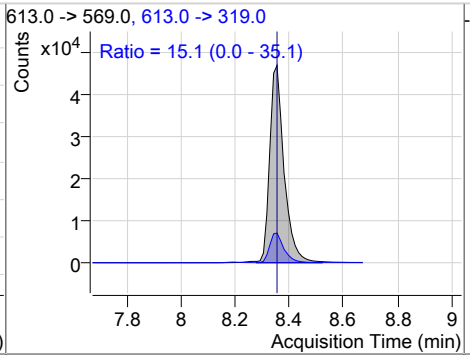


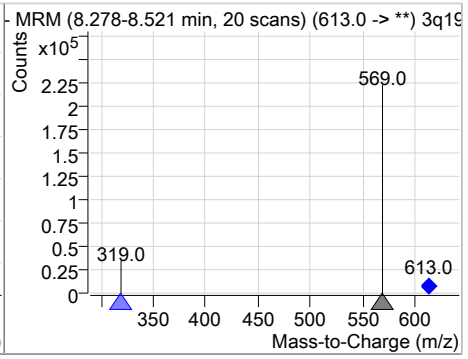




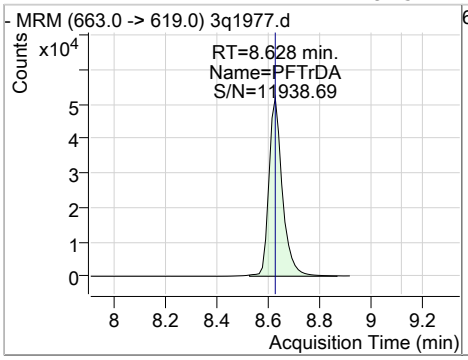
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.63	8.35	0.00	172799	613.0 -> 319.0	15.1	0.0	35.1

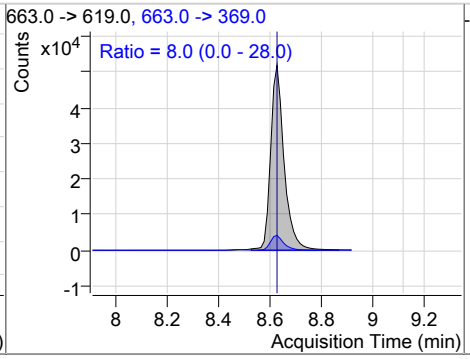


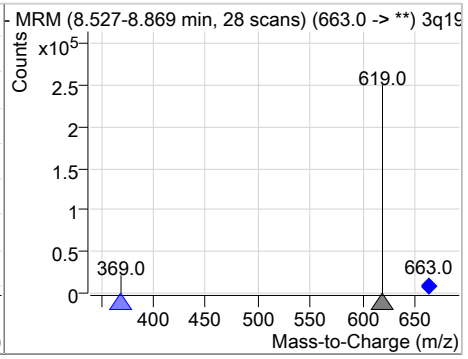




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.45	8.63	0.00	188713	663.0 -> 369.0	8.0	0.0	28.0

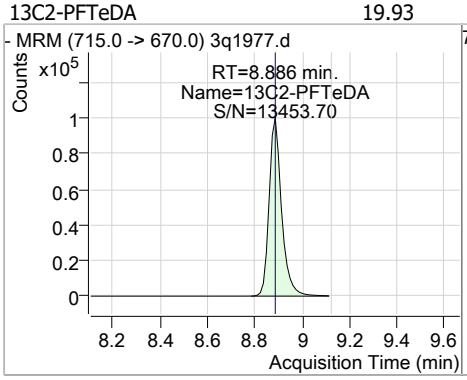


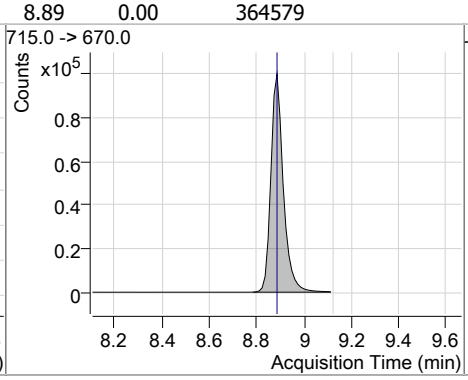


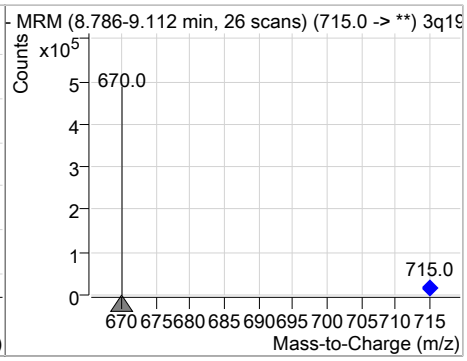


Perfluorinated Compounds by LC/MS/MS

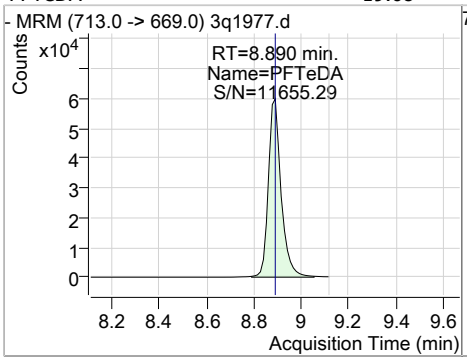
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.93	8.89	0.00	364579				

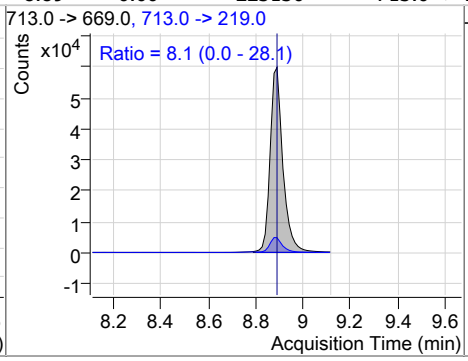


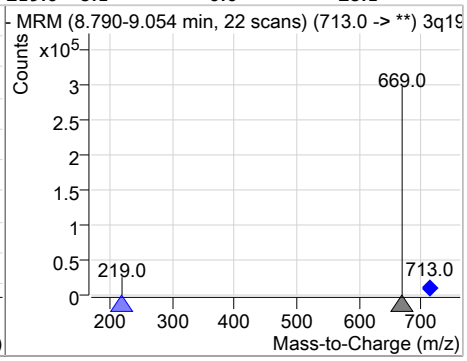




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.68	8.89	0.00	223130	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-ICC54
Lab FileID: 3Q1977.D
Injection Time: 03/21/19 11:10
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak

3Q1978.D

Manual Integrations APPROVED (compounds with "m" flag)

Mike Eger 03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File	:	3q1978.d
Operator	:	nancyf
Acq. Method	:	dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time	:	3/21/2019 11:25:37 AM
Sample Name	:	ic54-50
Vial	:	P3-A8
DA Method File	:	ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name	:	s3q54.batch.bin
Sample Information	:	op74053,S3Q54,250,,,1.0,1,WATER

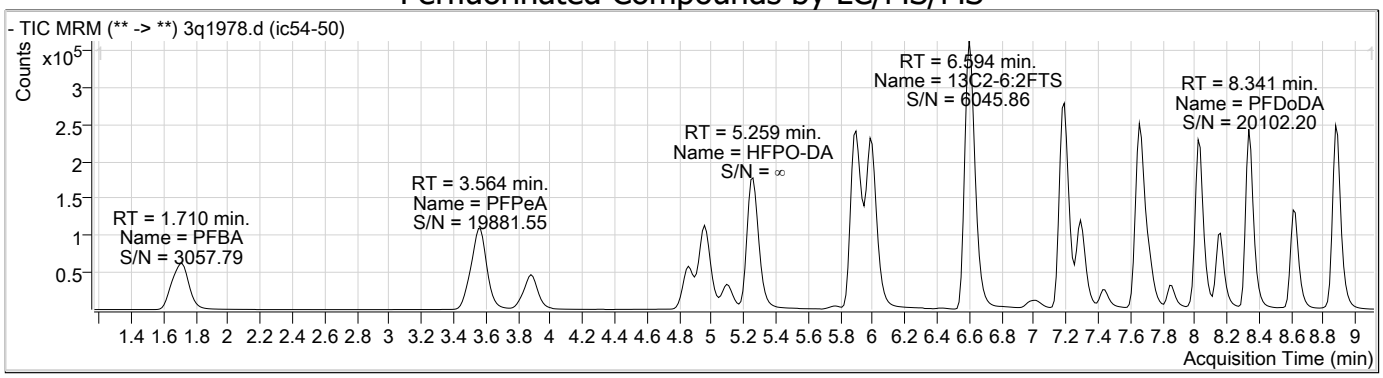
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.714	217.0 -> 172.0	319766	20.00	µg/L	0.013
M5-PFPeA	3.573	268.0 -> 223.0	215536	20.00	µg/L	0.013
M5-PFHxA	4.963	318.0 -> 273.0	285009	20.00	µg/L	0.000
M4-PFHpA	5.904	367.0 -> 322.0	322363	20.00	µg/L	0.013
M8-PFOA	6.609	421.0 -> 376.0	299893	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	284989	20.00	µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	317675	20.00	µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	357372	20.00	µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	377753	20.00	µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	348086	20.00	µg/L	-0.013
M8-FOSA	7.298	506.0 -> 78.0	196993	20.00	µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	49260	20.00	µg/L	0.000
M3-PFHxS	5.947	402.0 -> 99.0	48493	20.00	µg/L	0.000
M8-PFOS	7.183	507.0 -> 99.0	74368	20.00	µg/L	-0.013
M2-4:2FTS	4.858	329.0 -> 309.0	99003	20.00	µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	92184	20.00	µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	58704	20.00	µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	46592	20.00	µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	158682	100.00	µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	391111	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	120503	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	98627	20.78	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.9%		
13C2-6:2FTS	6.594	429.0 -> 409.0	92377	20.21	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.1%		
13C2-8:2FTS	7.689	529.0 -> 509.0	58693	21.00	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.0%		
13C2-PFDoDA	8.340	615.0 -> 570.0	379302	19.40	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C2-PFTeDA	8.874	715.0 -> 670.0	348179	19.03	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
13C3-PFBS	3.879	302.0 -> 99.0	49104	19.47	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.3%		
13C3-PFHxS	5.947	402.0 -> 99.0	48610	19.23	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C4-PFBA	1.714	217.0 -> 172.0	317439	19.46	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.3%		
13C4-PFHpA	5.904	367.0 -> 322.0	321523	19.26	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.3%		
13C5-PFHxA	4.963	318.0 -> 273.0	283248	19.25	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.2%		
13C5-PFPeA	3.573	268.0 -> 223.0	215546	19.47	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.3%		
13C6-PFDA	7.663	519.0 -> 474.0	317591	19.07	µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

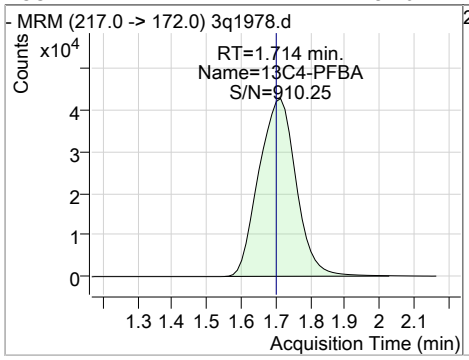
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.3%			
13C7-PFUnDA	8.026	570.0 -> 525.0	357417	19.28	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%			
13C8-FOSA	7.298	506.0 -> 78.0	196973	18.72	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 93.6%			
13C8-PFOA	6.609	421.0 -> 376.0	299866	18.95	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%			
13C8-PFOS	7.183	507.0 -> 99.0	74417	19.32	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.6%			
13C9-PFNA	7.201	472.0 -> 427.0	284627	19.05	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
d3-MeFOSAA	7.722	573.0 -> 419.0	46602	19.63	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%			
13C3-HFPO-DA	5.255	287.0 -> 169.0	158682	95.03	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 95.0%			
M2-PFOA	6.610	415.0 -> 370.0	391111	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	120503	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.861	327.0 -> 307.0	132202	48.84	µg/L		100
6:2FTS	6.595	427.0 -> 407.0	108023	47.51	µg/L		99
8:2FTS	7.689	527.0 -> 507.0	70346	48.41	µg/L		98
EtFOSAA	7.861	584.0 -> 419.0	52779	50.02	µg/L		98
FOSA	7.301	498.0 -> 78.0	222463	49.99	µg/L		100
MeFOSAA	7.723	570.0 -> 419.0	62889	50.44	µg/L		97
PFBA	1.710	213.0 -> 169.0	150646	49.73	µg/L		100
PFBS	3.883	299.0 -> 80.0	171632	50.08	µg/L		100
PFDA	7.664	513.0 -> 469.0	373023	49.59	µg/L		98
PFDoDA	8.341	613.0 -> 569.0	431065	50.05	µg/L		100
PFDS	7.999	599.0 -> 80.0	54241	49.29	µg/L		99
PFHpA	5.894	363.0 -> 319.0	704871	49.40	µg/L		100
PFHpS	6.618	449.0 -> 80.0	117052	50.70	µg/L		99
PFHxA	4.965	313.0 -> 269.0	254367	50.12	µg/L		99
PFHxS	5.950	399.0 -> 80.0	132576	49.72	µg/L	m	100
PFNA	7.201	463.0 -> 419.0	441556	49.86	µg/L		100
PFNS	7.635	549.0 -> 80.0	102473	50.96	µg/L		99
PFOA	6.611	413.0 -> 369.0	399921	49.81	µg/L		98
PFOS	7.186	499.0 -> 80.0	169831	49.31	µg/L	m	100
PFPeA	3.564	263.0 -> 219.0	545842	49.98	µg/L		100
PFPeS	5.094	349.0 -> 80.0	106852	50.14	µg/L		99
PFTeDA	8.877	713.0 -> 669.0	539864	49.87	µg/L		100
PFTrDA	8.615	663.0 -> 619.0	463667	50.04	µg/L		99
PFUnDA	8.028	563.0 -> 519.0	384705	49.62	µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	361059	49.91	µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	93449	50.19	µg/L		100
ADONA	6.007	377.0 -> 251.0	954127	50.12	µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	648849	240.97	µg/L		99

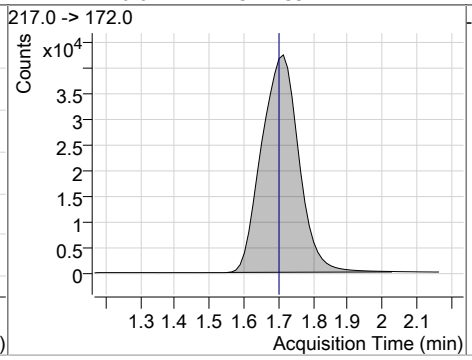
 # = Qualifier out of range, m = manually integrated, + = Area summed

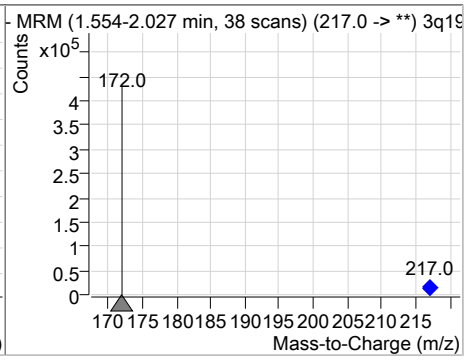
Perfluorinated Compounds by LC/MS/MS



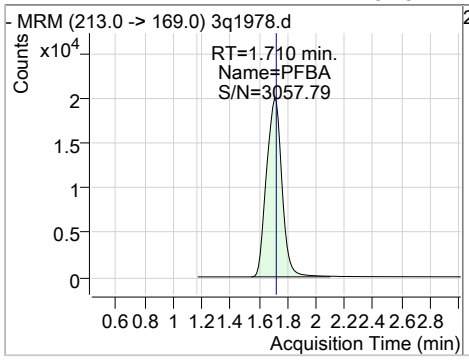
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.46	1.71	0.01	317439				

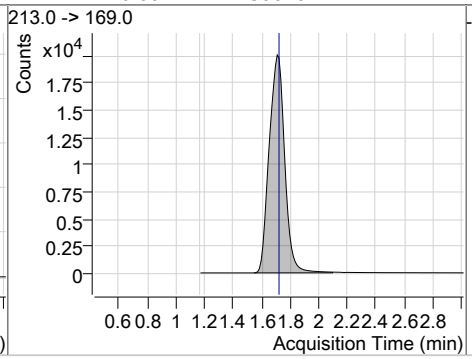


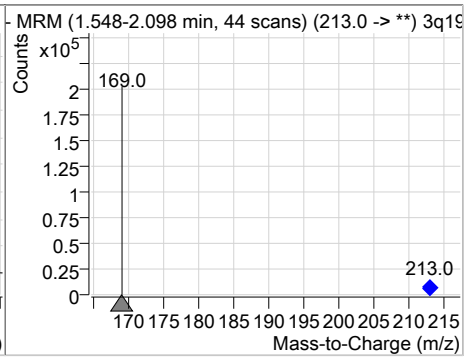




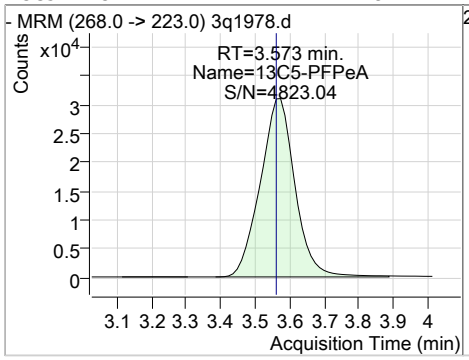
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	49.73	1.71	0.00	150646				

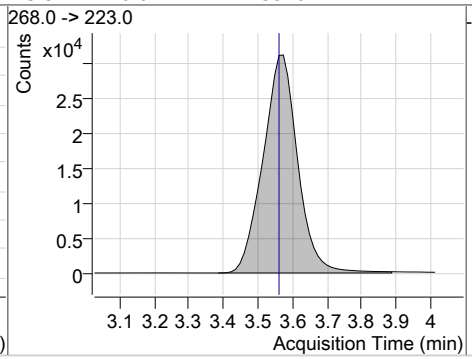


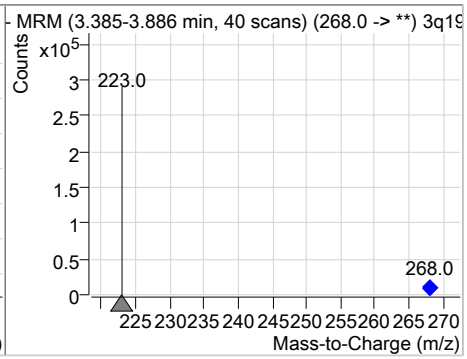




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.47	3.57	0.01	215546				

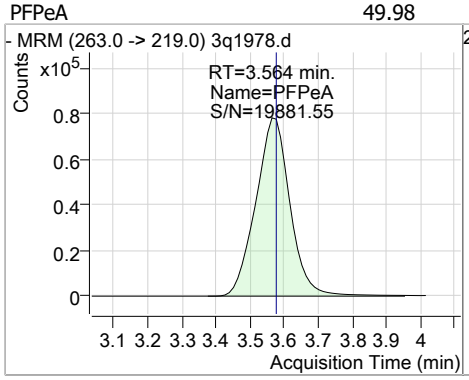


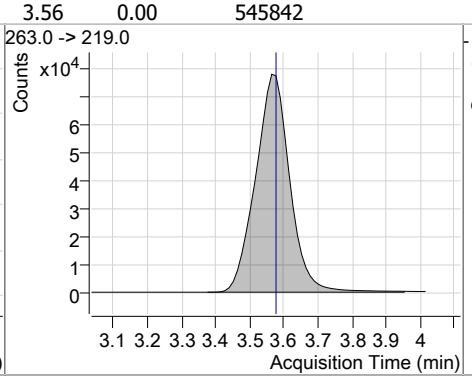


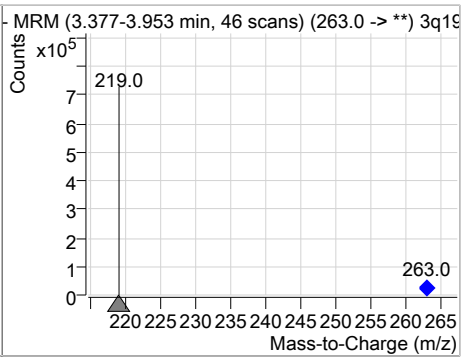


Perfluorinated Compounds by LC/MS/MS

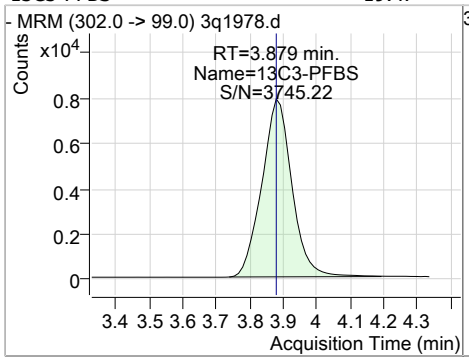
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	49.98	3.56	0.00	545842				

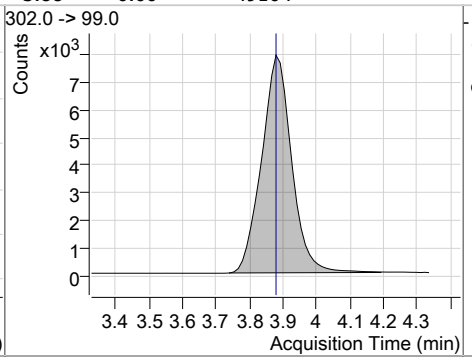


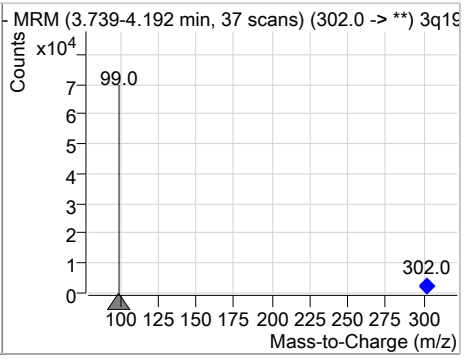




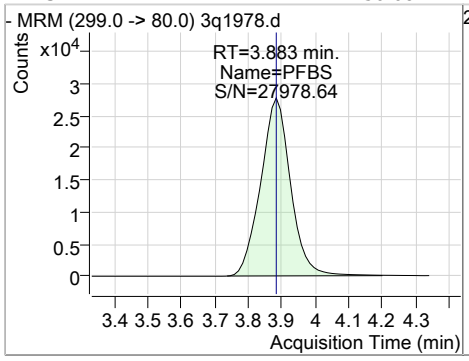
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.47	3.88	0.00	49104				

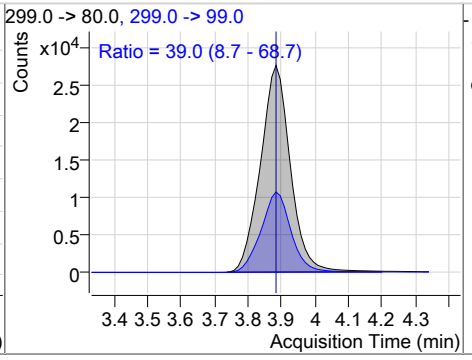


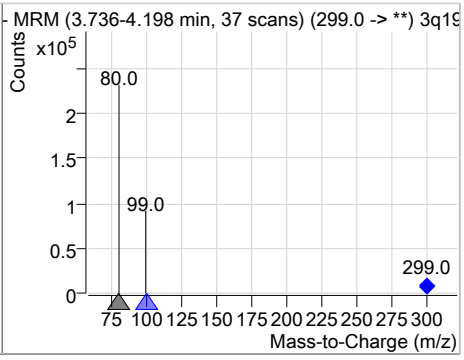




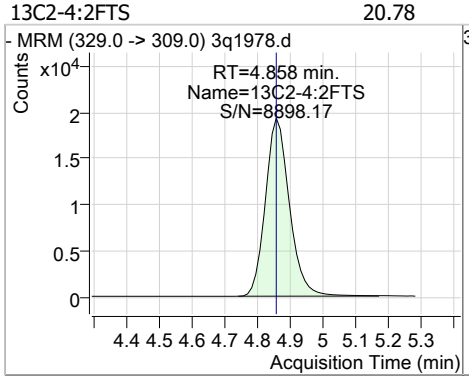
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	50.08	3.88	0.00	171632	299.0 -> 99.0	39.0	8.7	68.7

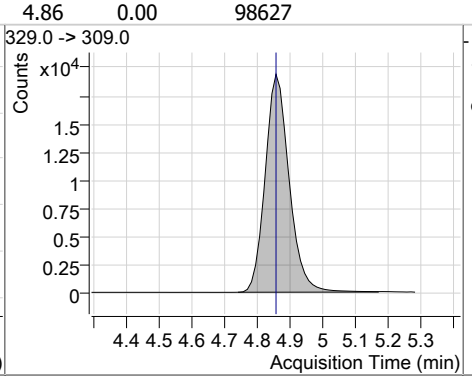


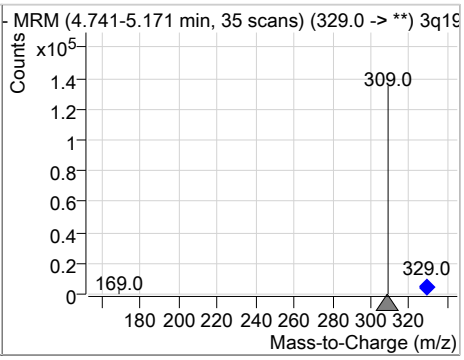




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.78	4.86	0.00	98627				

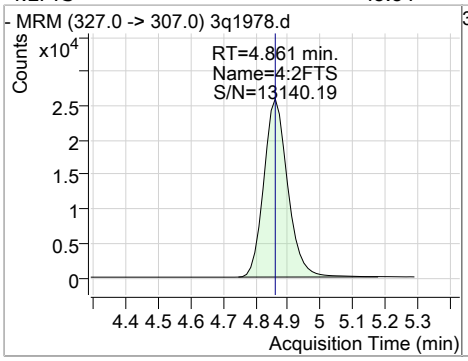


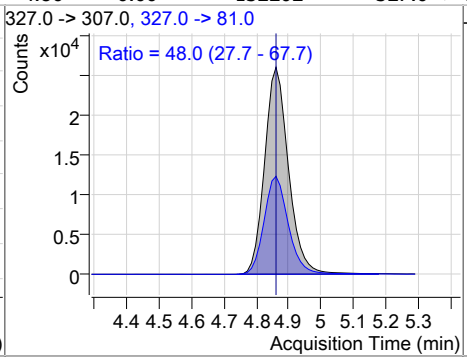


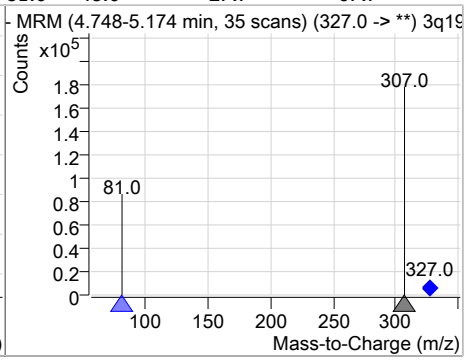


Perfluorinated Compounds by LC/MS/MS

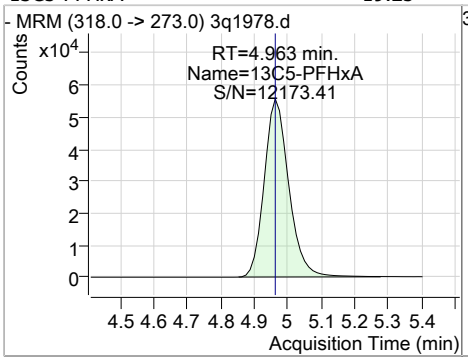
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	48.84	4.86	0.00	132202	327.0 -> 81.0	48.0	27.7	67.7

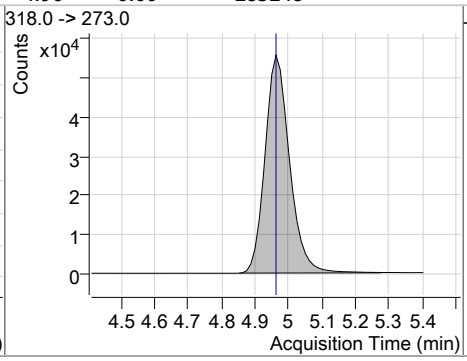


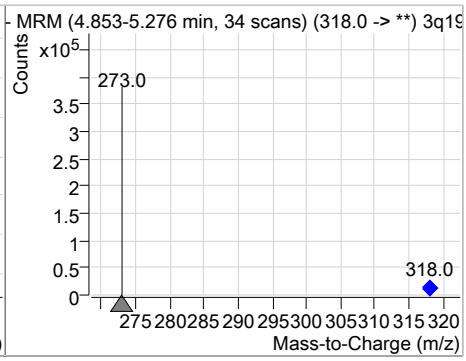




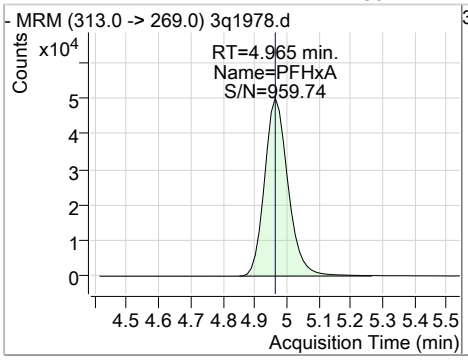
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.25	4.96	0.00	283248				

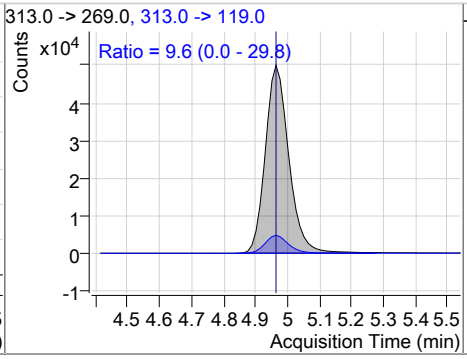


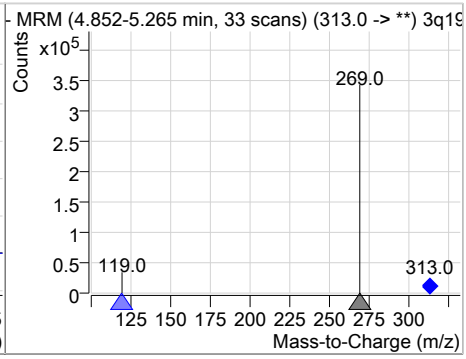




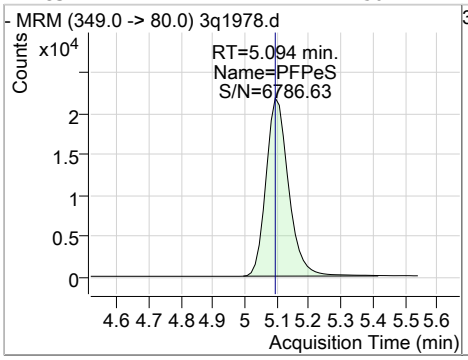
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	50.12	4.96	0.00	254367	313.0 -> 119.0	9.6	0.0	29.8

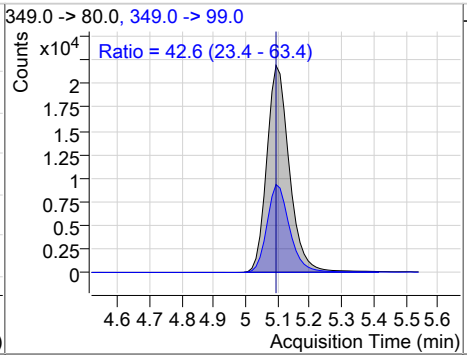


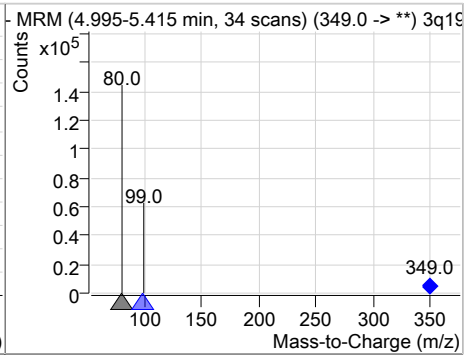




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	50.14	5.09	0.00	106852	349.0 -> 99.0	42.6	23.4	63.4

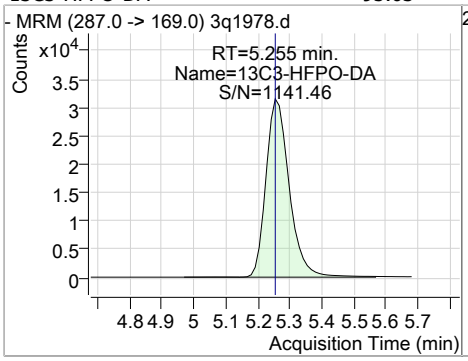


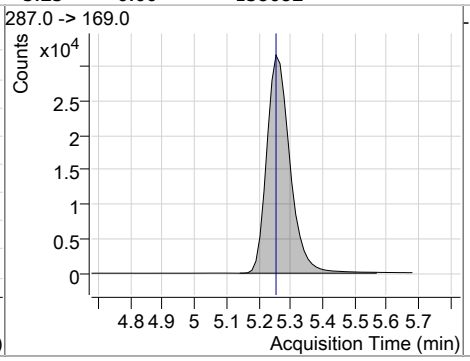


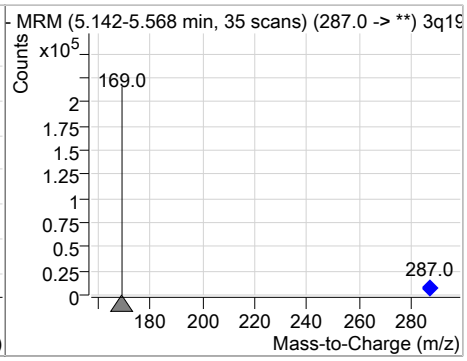


Perfluorinated Compounds by LC/MS/MS

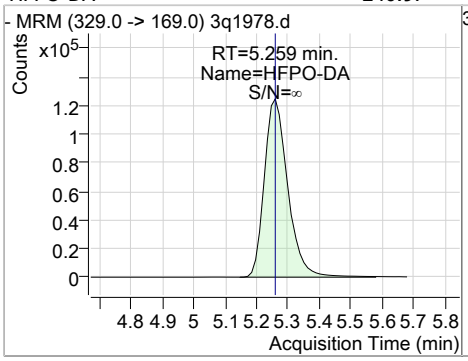
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	95.03	5.25	0.00	158682				

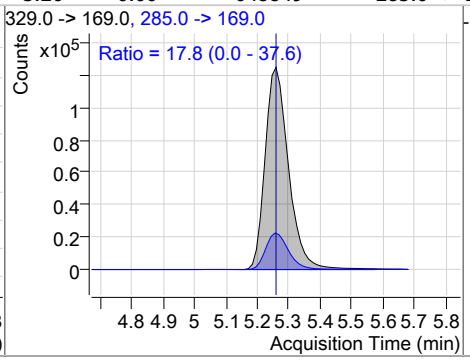


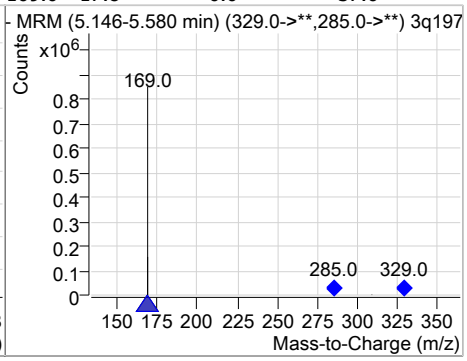




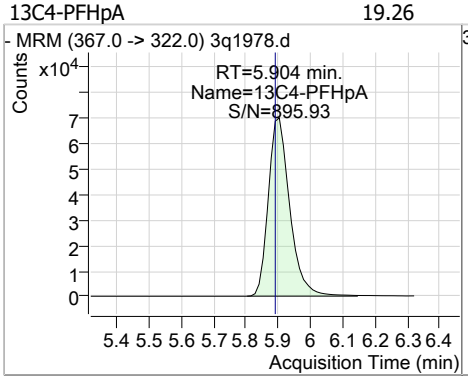
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	240.97	5.26	0.00	648849	285.0 -> 169.0	17.8	0.0	37.6

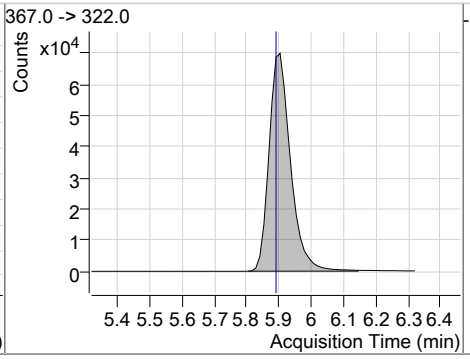


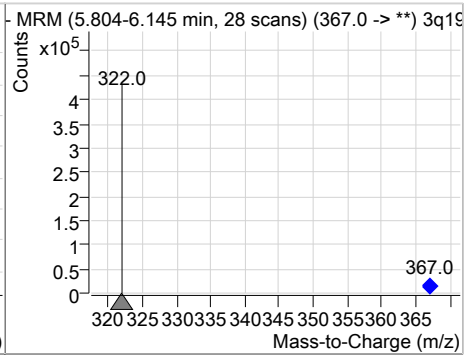




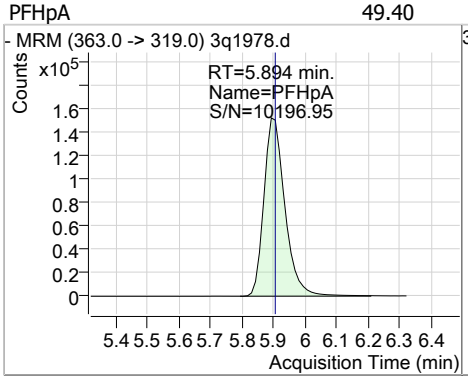
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.26	5.90	0.01	321523				

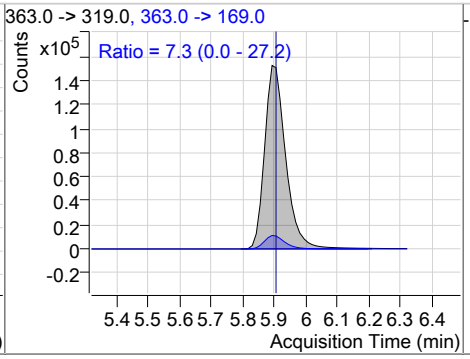


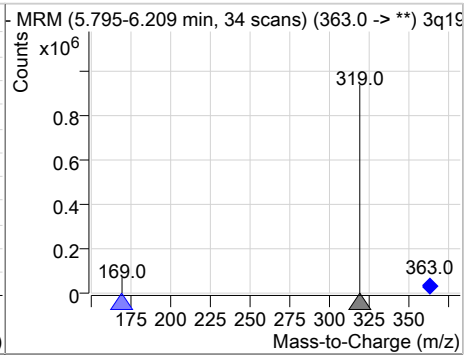




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	49.40	5.89	0.00	704871	363.0 -> 169.0	7.3	0.0	27.2

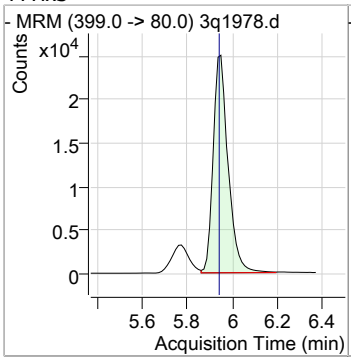


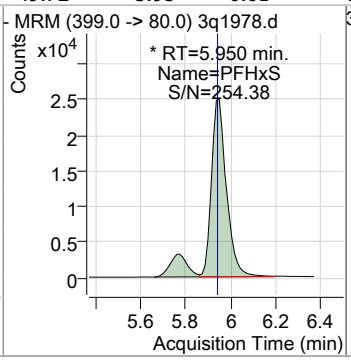


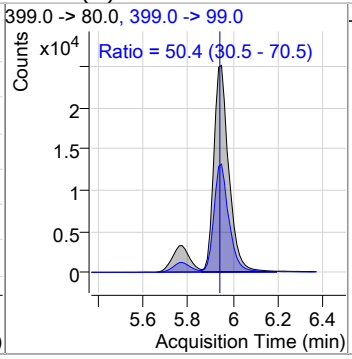


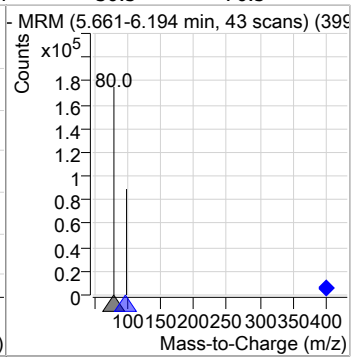
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	49.72	5.95	0.01	132576 (m)	399.0 -> 99.0	50.4	30.5	70.5

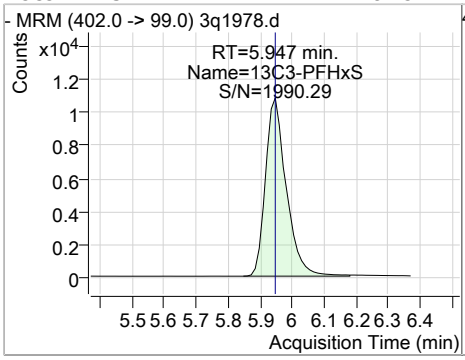


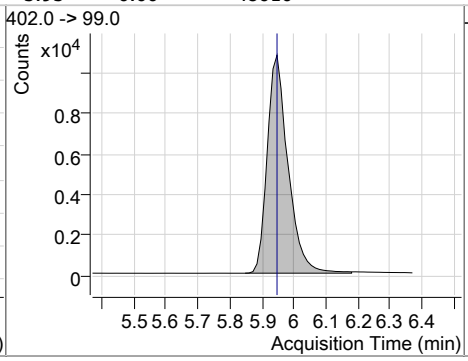


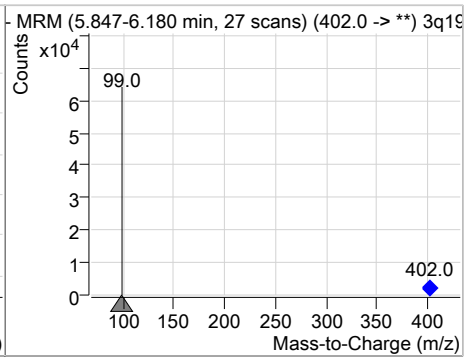




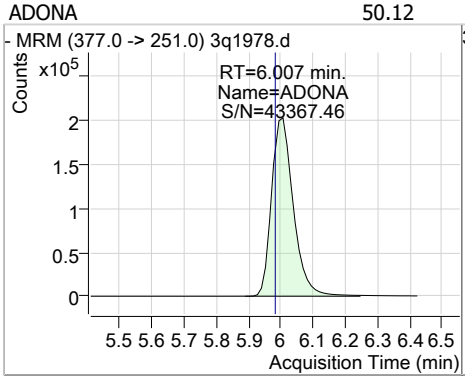
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.23	5.95	0.00	48610				

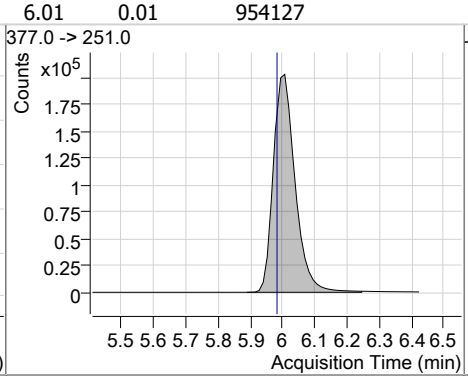


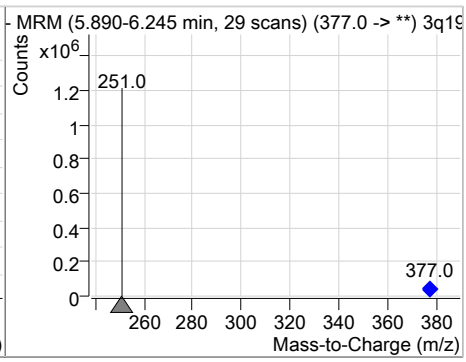




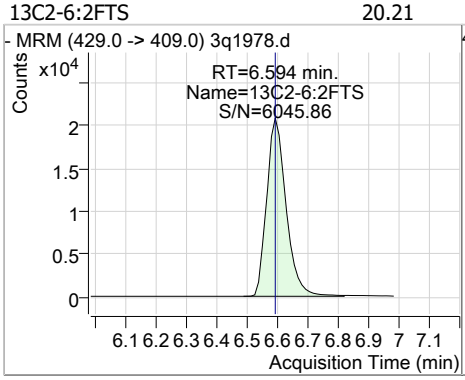
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	50.12	6.01	0.01	954127				

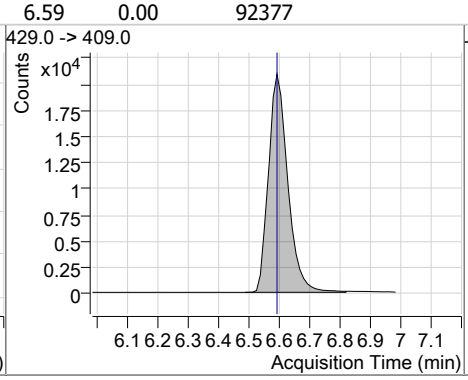


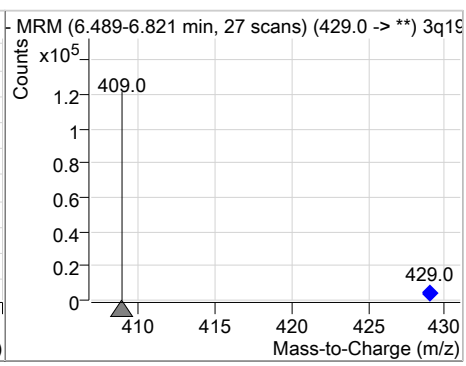




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.21	6.59	0.00	92377				

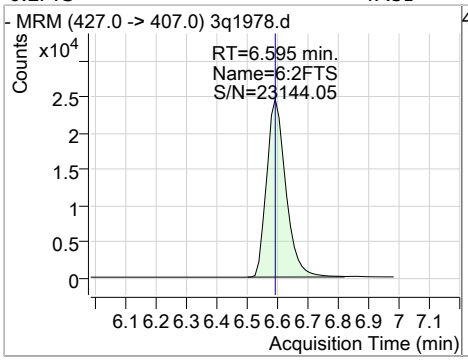


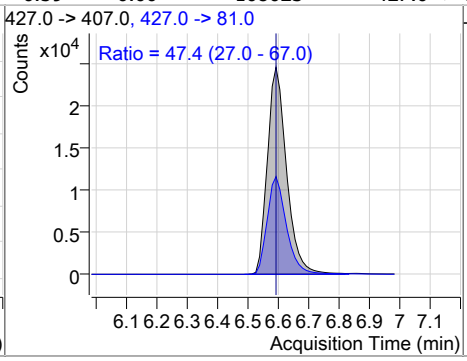


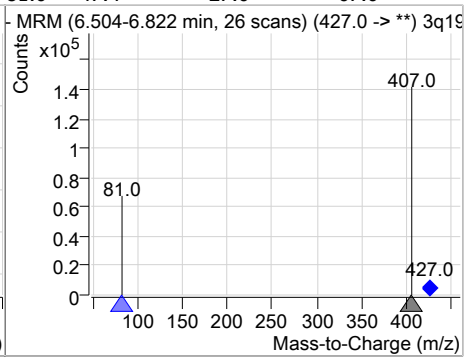


Perfluorinated Compounds by LC/MS/MS

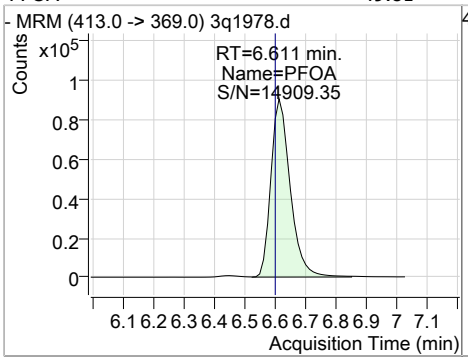
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	47.51	6.59	0.00	108023	427.0 -> 81.0	47.4	27.0	67.0

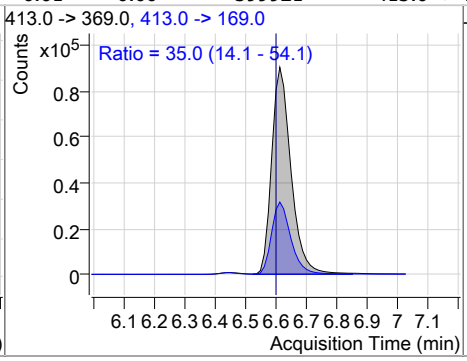


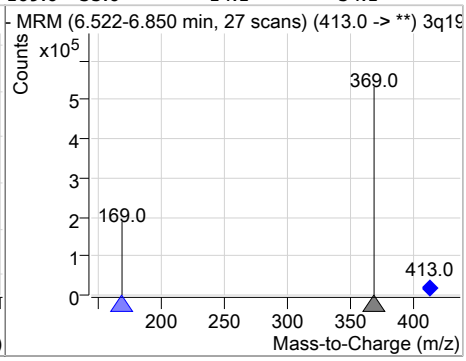




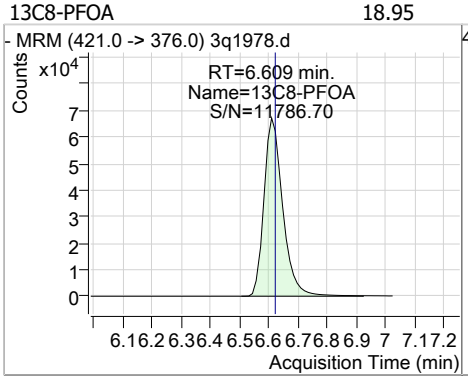
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	49.81	6.61	0.00	399921	413.0 -> 169.0	35.0	14.1	54.1

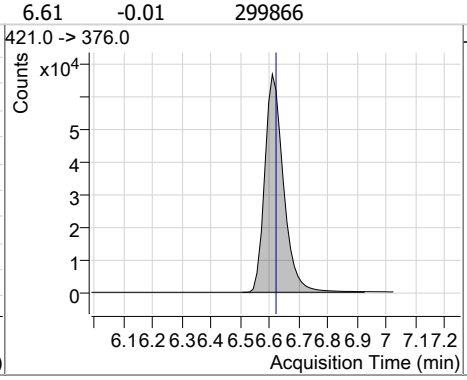


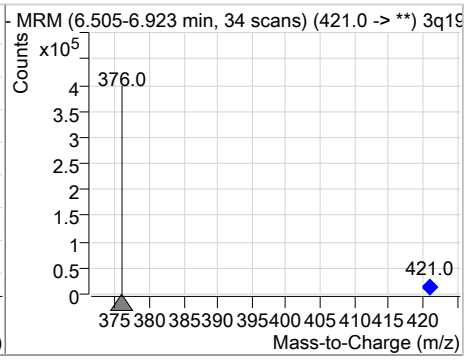




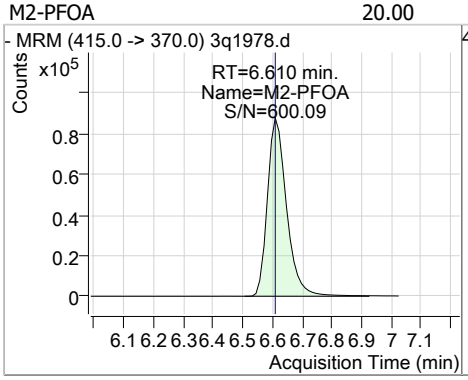
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.95	6.61	-0.01	299866				

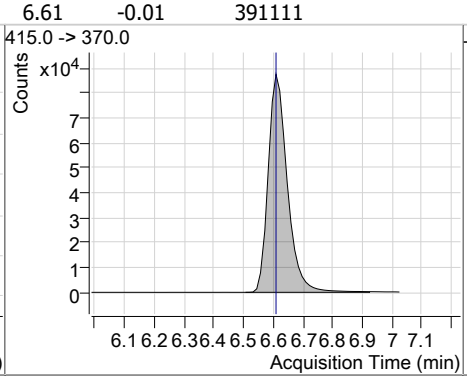


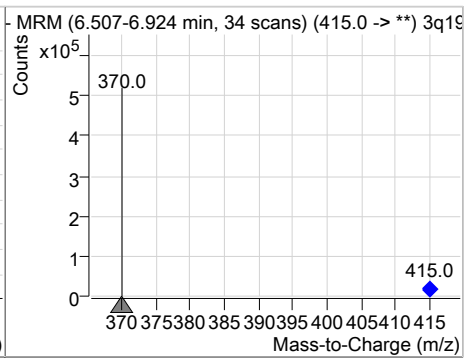




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	391111				

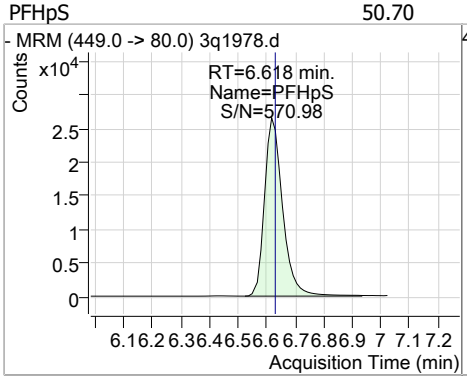


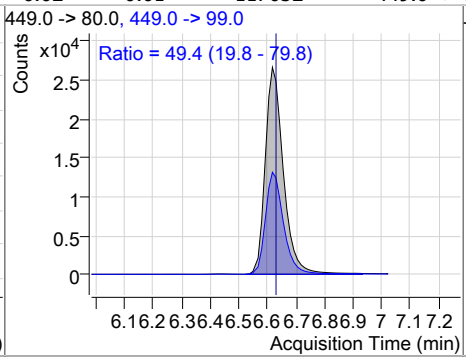


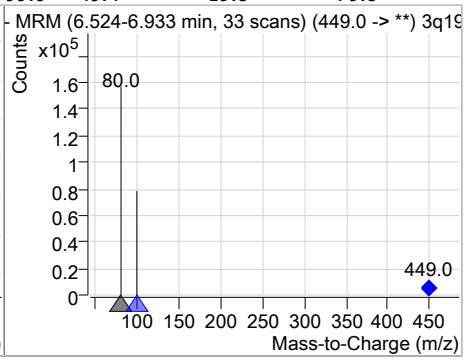


Perfluorinated Compounds by LC/MS/MS

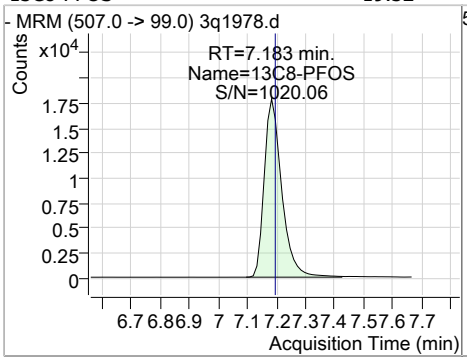
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	50.70	6.62	-0.01	117052	449.0 -> 99.0	49.4	19.8	79.8

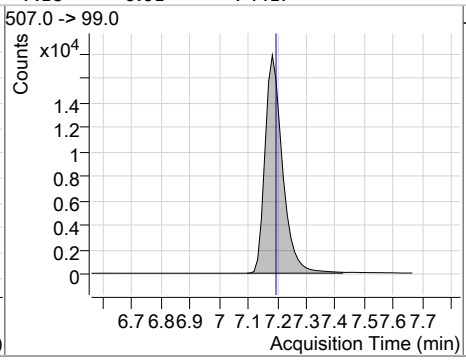


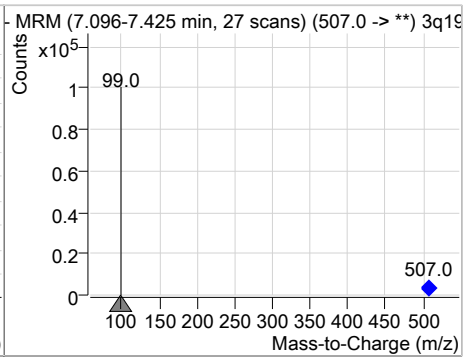




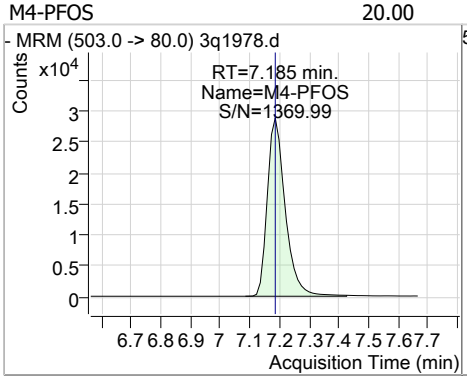
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.32	7.18	-0.01	74417				

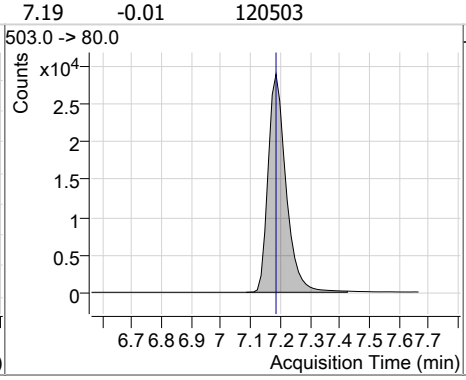


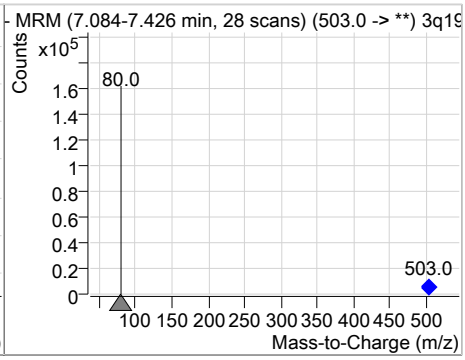




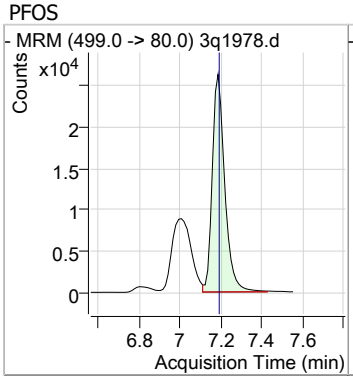
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	120503				

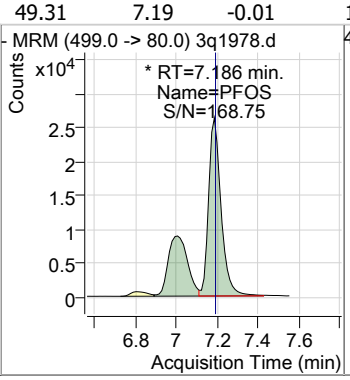


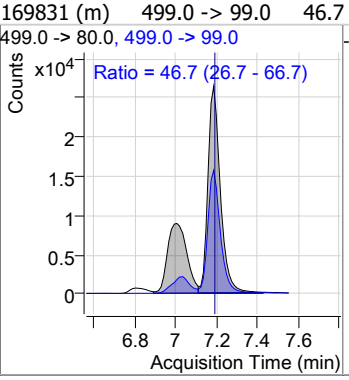


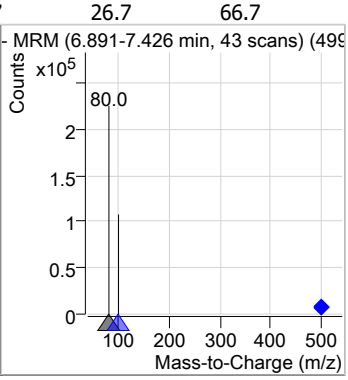


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	49.31	7.19	-0.01	169831 (m)	499.0 -> 99.0	46.7	26.7	66.7



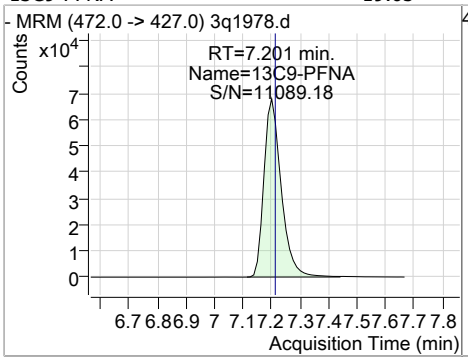


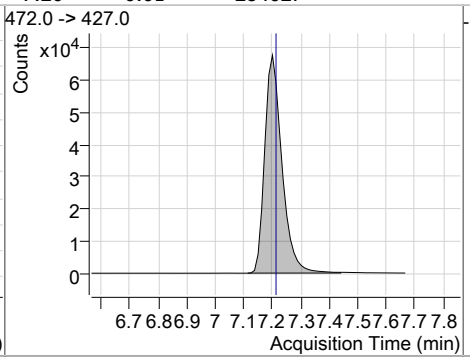


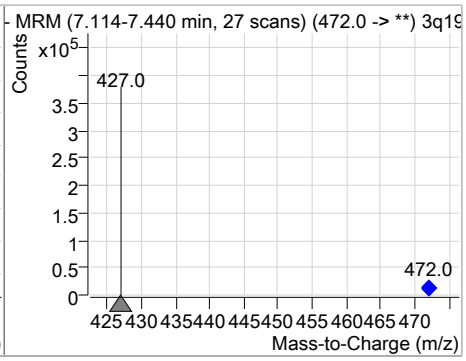


Perfluorinated Compounds by LC/MS/MS

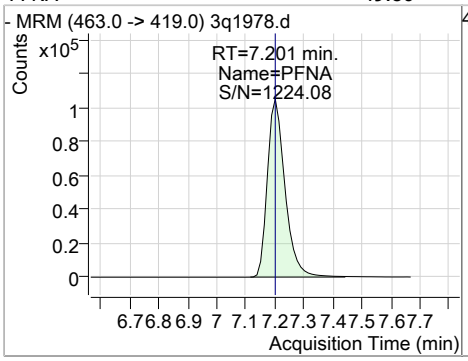
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.05	7.20	-0.01	284627				

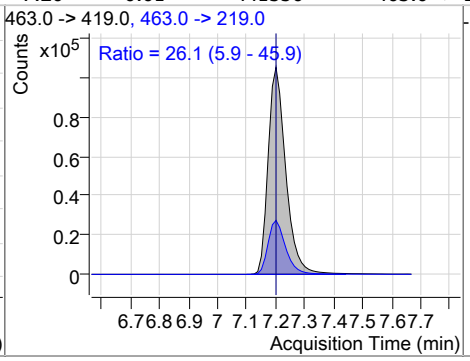


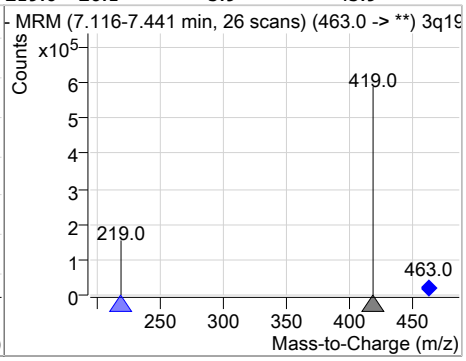




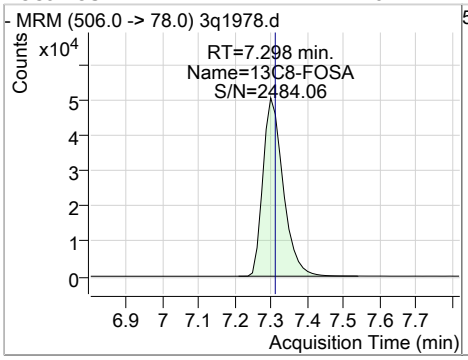
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	49.86	7.20	-0.01	441556	463.0 -> 219.0	26.1	5.9	45.9

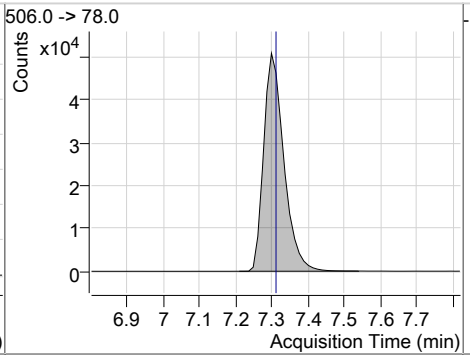


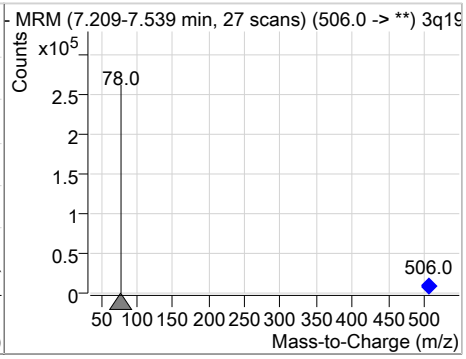




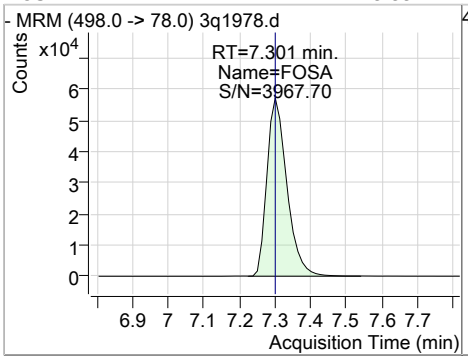
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	18.72	7.30	-0.01	196973				

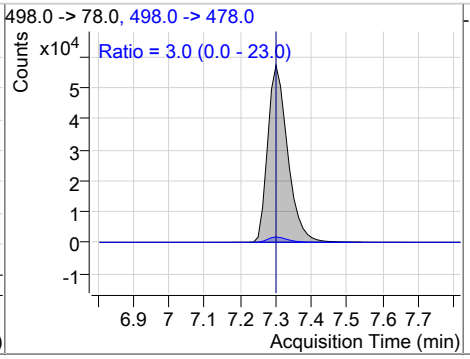


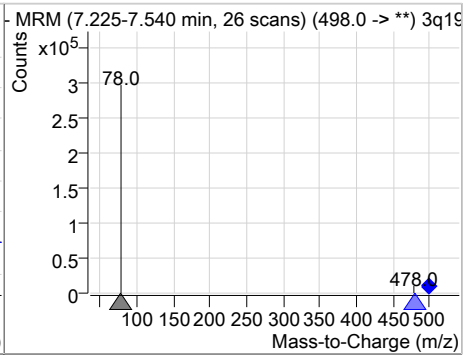




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	49.99	7.30	-0.01	222463	498.0 -> 478.0	3.0	0.0	23.0

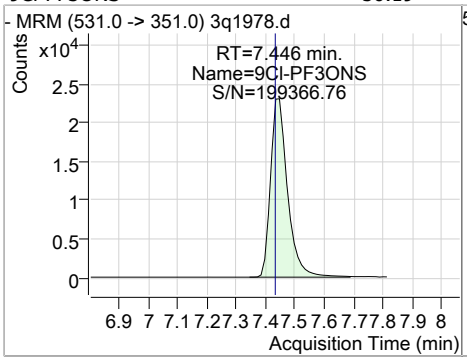


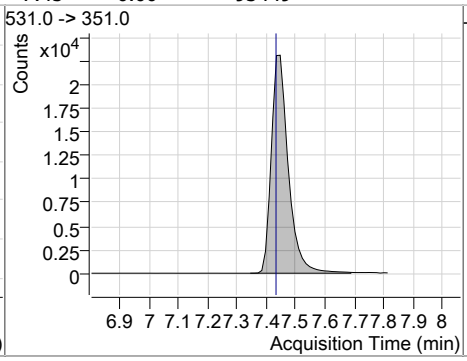


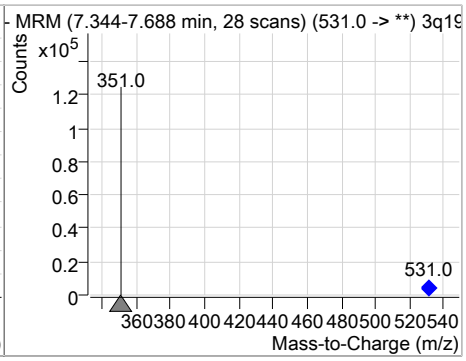


Perfluorinated Compounds by LC/MS/MS

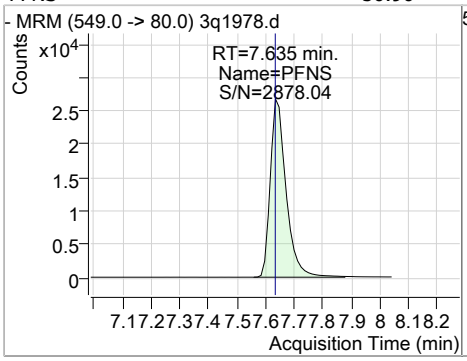
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	50.19	7.45	0.00	93449				

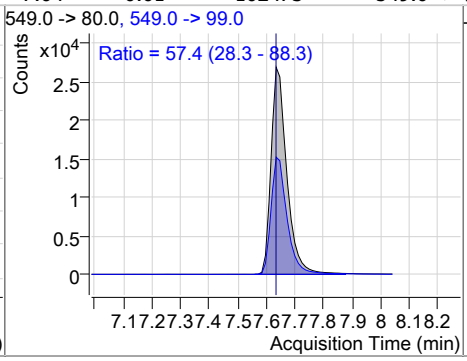


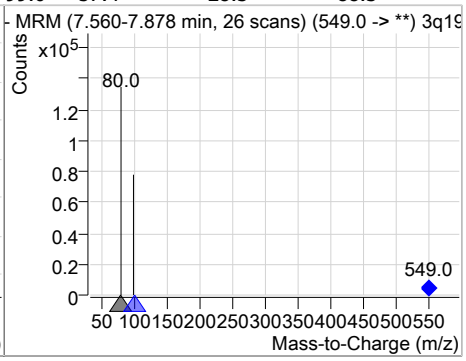




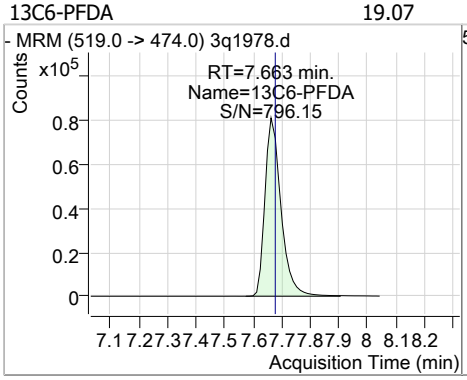
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	50.96	7.64	-0.01	102473	549.0 -> 99.0	57.4	28.3	88.3

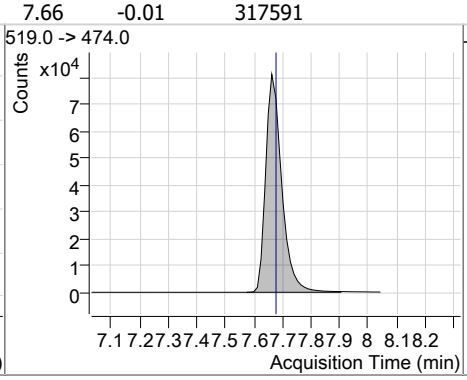


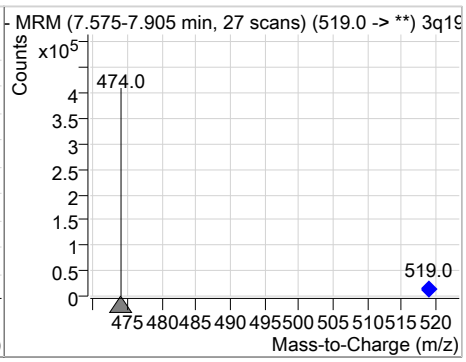




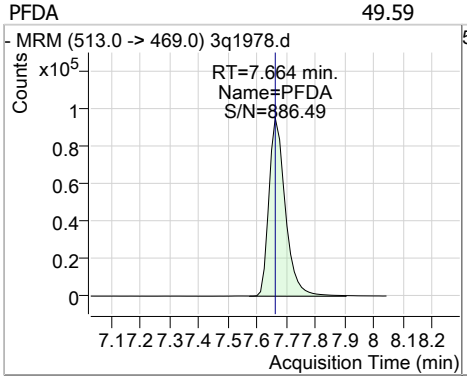
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	19.07	7.66	-0.01	317591				

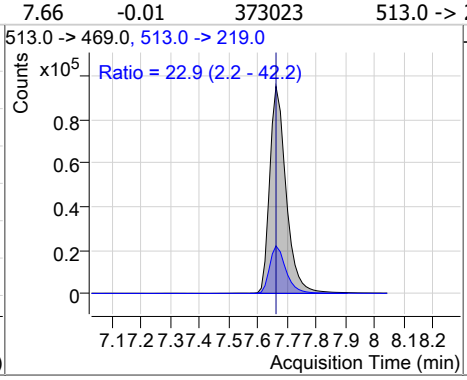


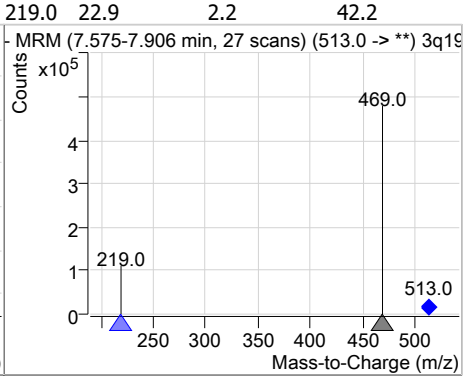




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	49.59	7.66	-0.01	373023	513.0 -> 219.0	22.9	2.2	42.2

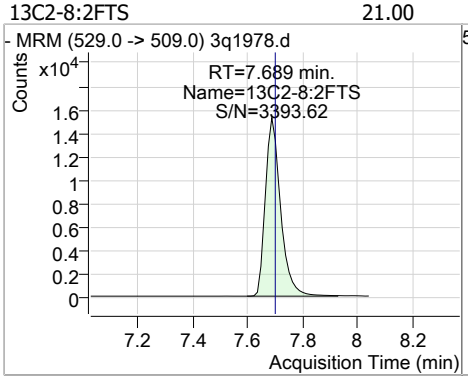


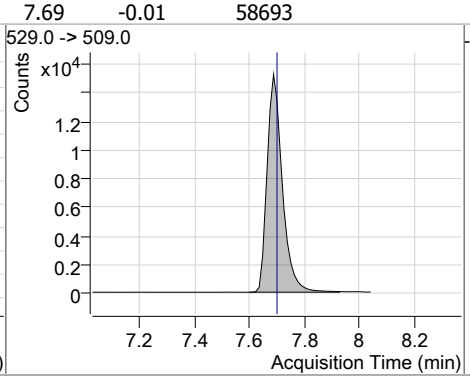


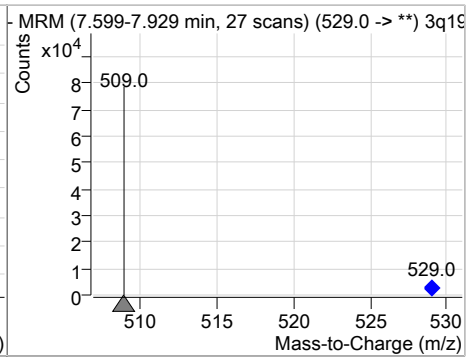


Perfluorinated Compounds by LC/MS/MS

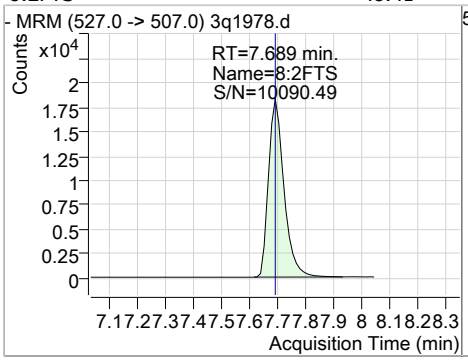
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	21.00	7.69	-0.01	58693				

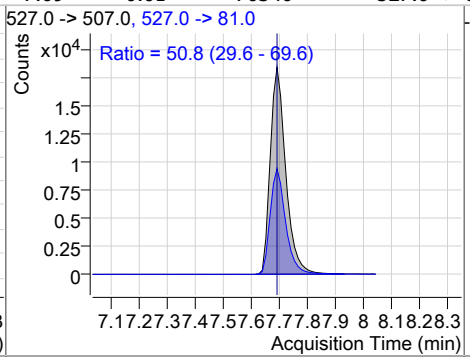


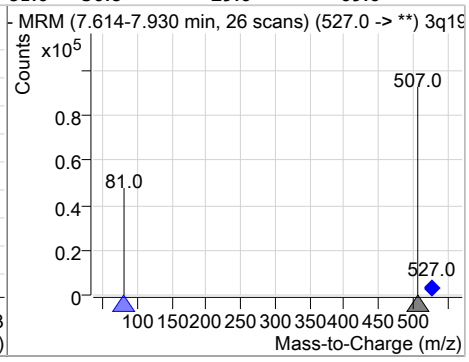




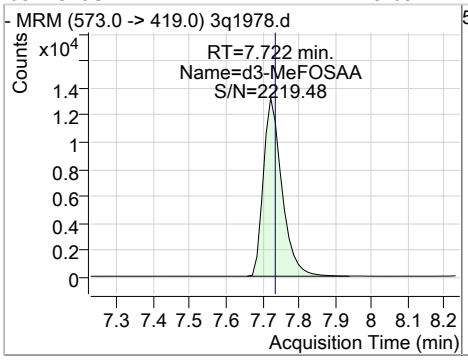
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	48.41	7.69	-0.01	70346	527.0 -> 81.0	50.8	29.6	69.6

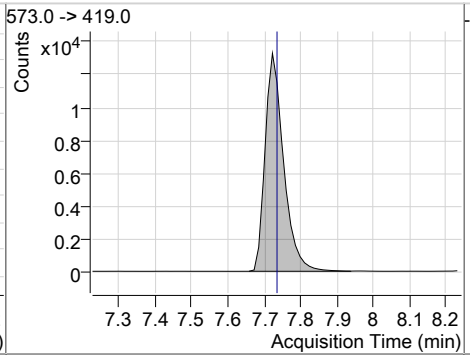


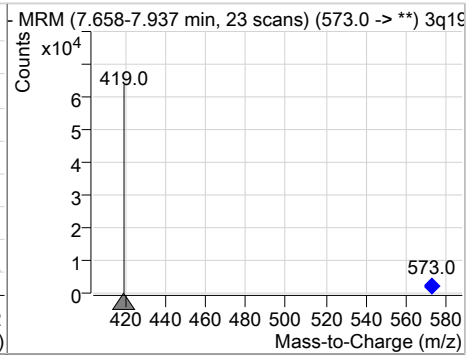




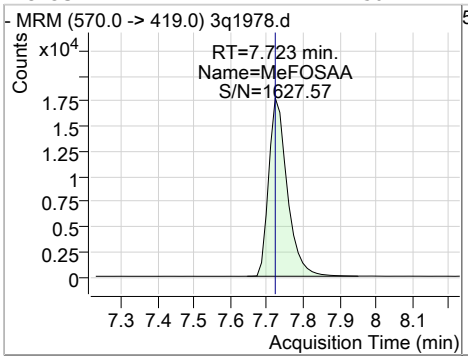
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.63	7.72	-0.01	46602				

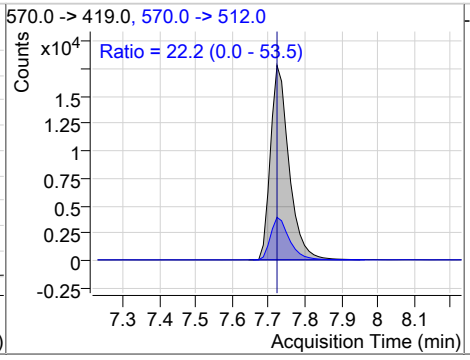


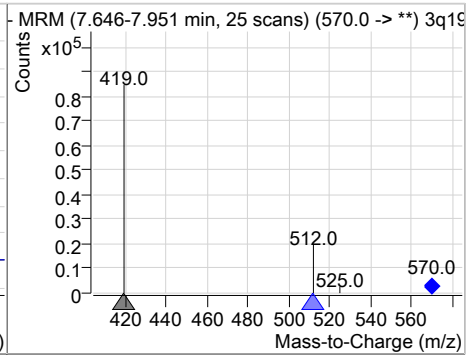




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	50.44	7.72	-0.01	62889	570.0 -> 512.0	22.2	0.0	53.5

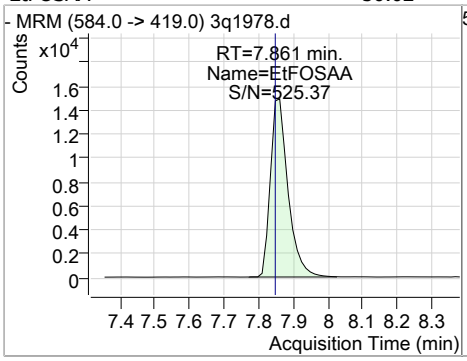


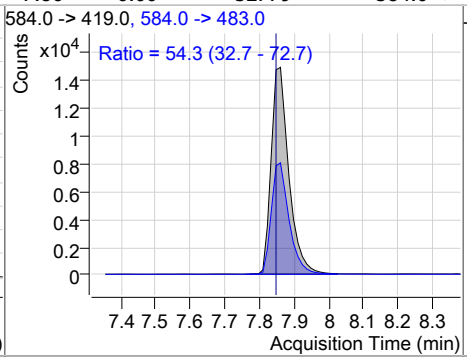


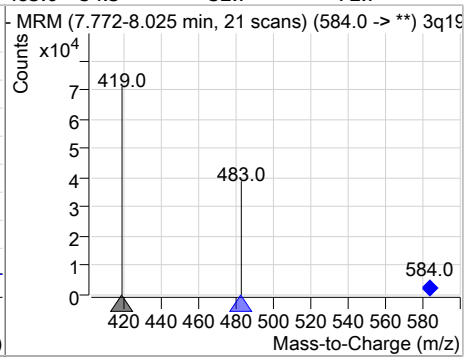


Perfluorinated Compounds by LC/MS/MS

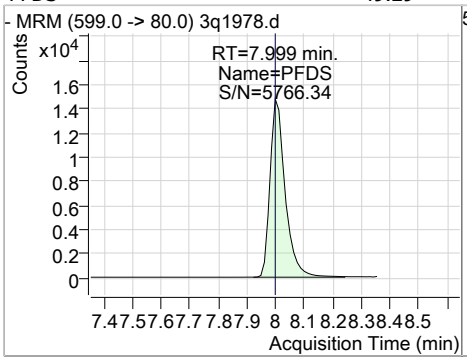
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	50.02	7.86	0.00	52779	584.0 -> 483.0	54.3	32.7	72.7

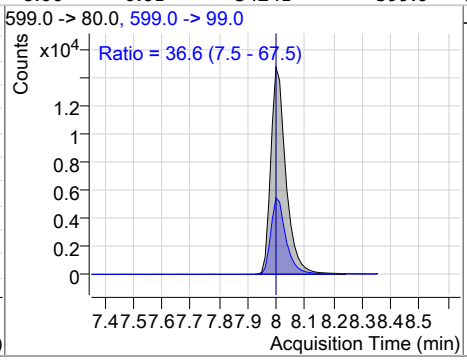


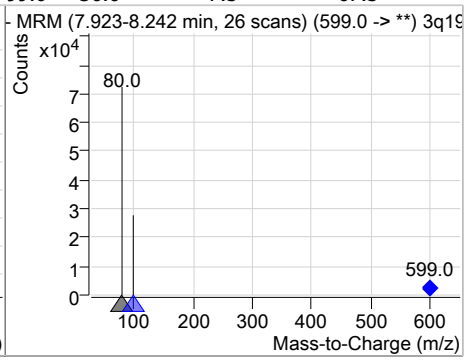




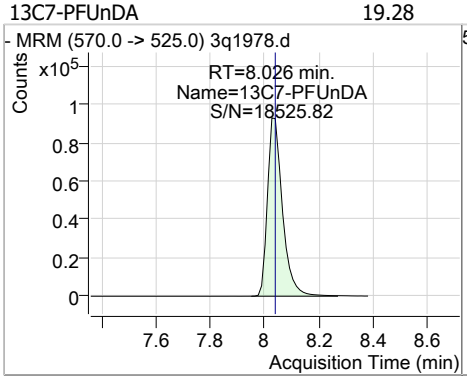
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	49.29	8.00	-0.01	54241	599.0 -> 99.0	36.6	7.5	67.5

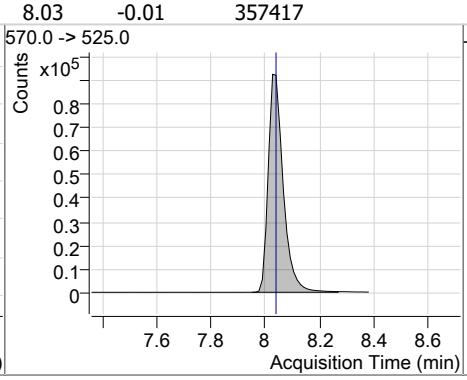


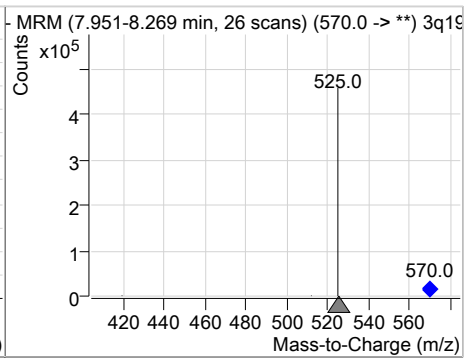




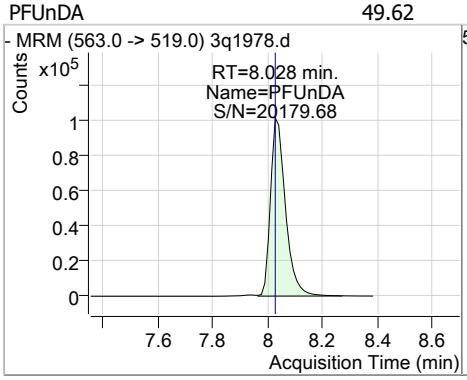
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	19.28	8.03	-0.01	357417				

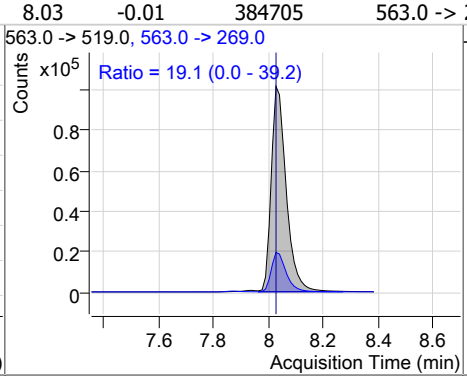


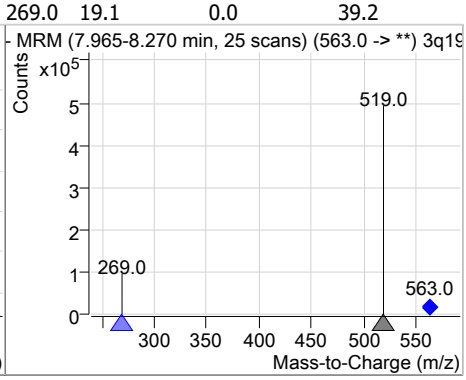




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	49.62	8.03	-0.01	384705	563.0 -> 269.0	19.1	0.0	39.2

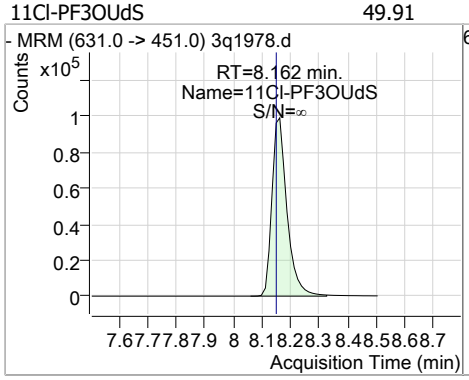


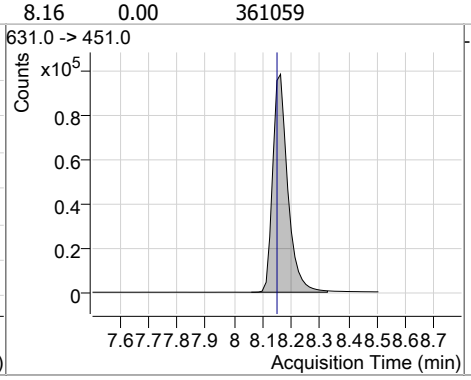


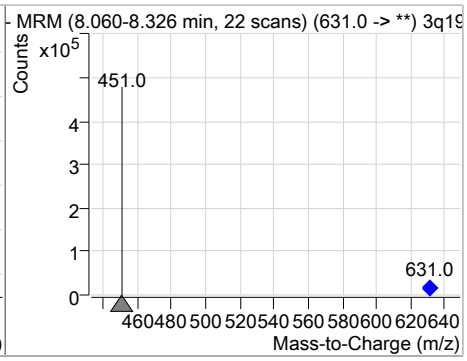


Perfluorinated Compounds by LC/MS/MS

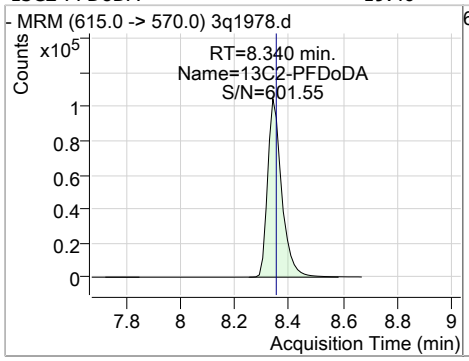
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	49.91	8.16	0.00	361059				

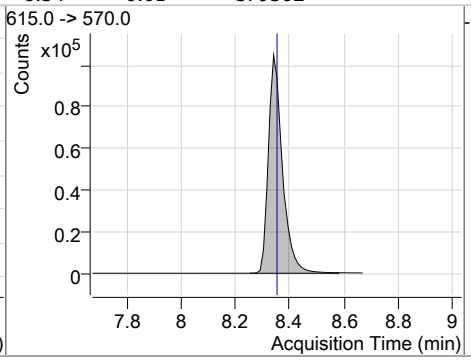


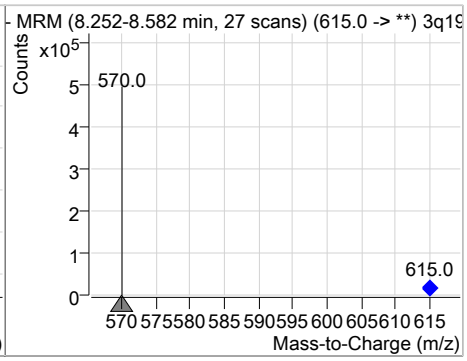




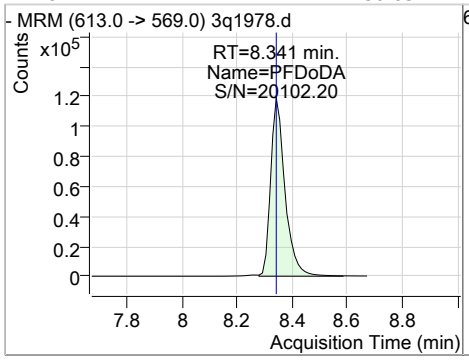
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.40	8.34	-0.01	379302				

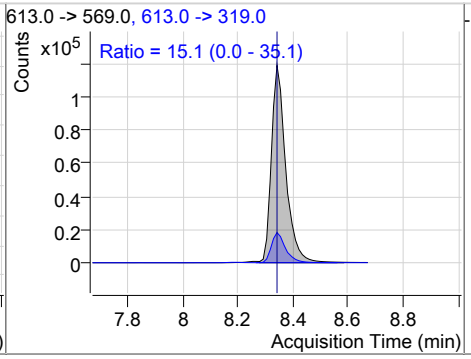


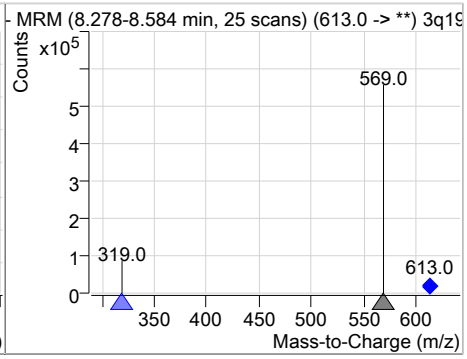




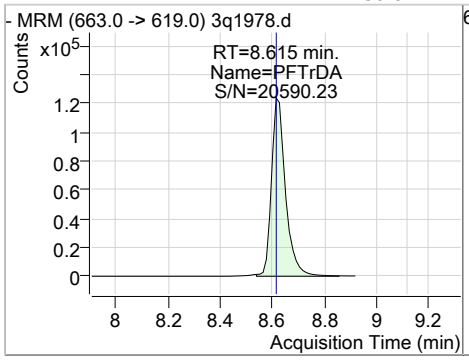
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	50.05	8.34	-0.01	431065	613.0 -> 319.0	15.1	0.0	35.1

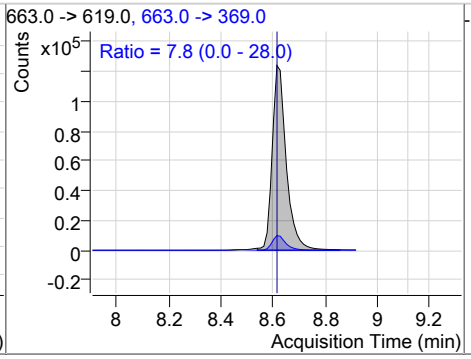


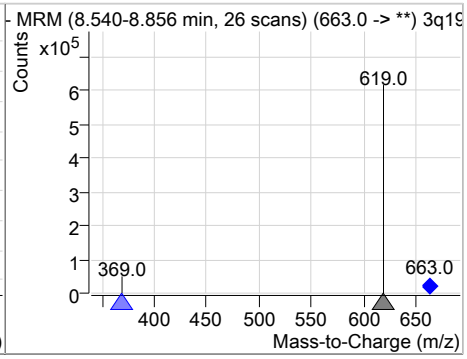




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	50.04	8.62	-0.01	463667	663.0 -> 369.0	7.8	0.0	28.0

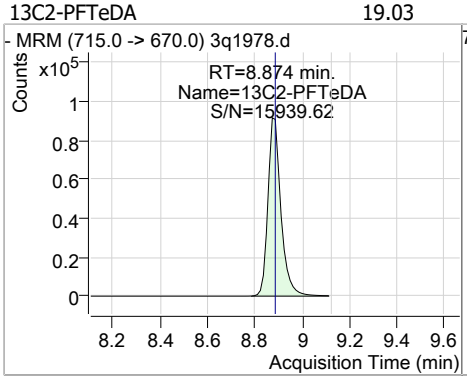


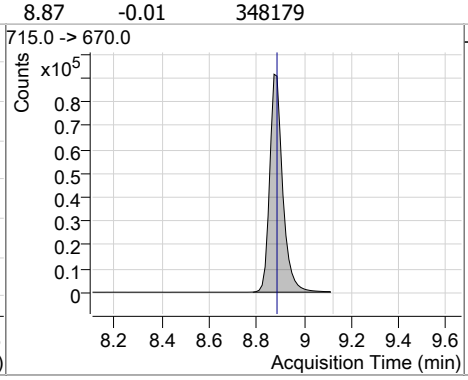


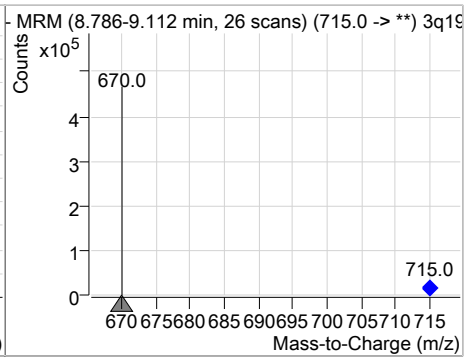


Perfluorinated Compounds by LC/MS/MS

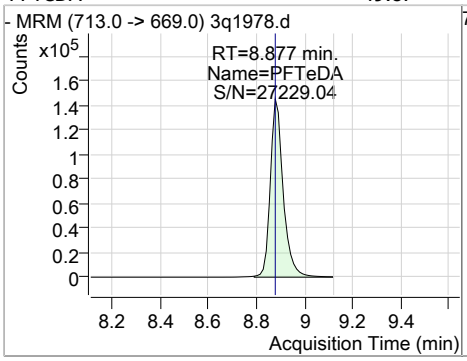
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	19.03	8.87	-0.01	348179				

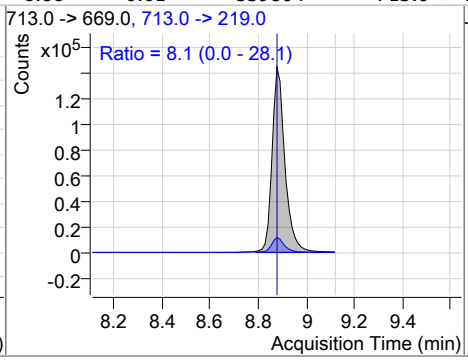


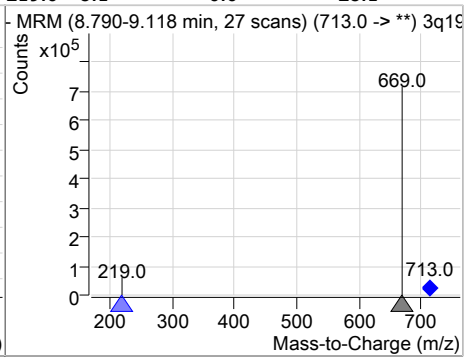




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	49.87	8.88	-0.01	539864	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1978.D
Injection Time: 03/21/19 11:25
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger 03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1979.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 11:41:20 AM
Sample Name : ic54-100
Vial : P3-A9
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

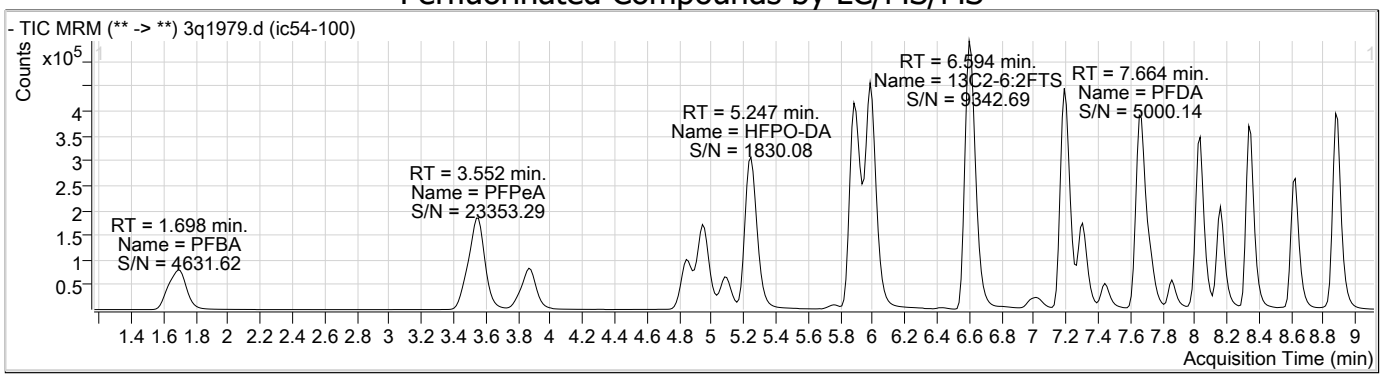
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.702	217.0 -> 172.0	327952	20.00 µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	222184	20.00 µg/L	0.000
M5-PFHxA	4.950	318.0 -> 273.0	294421	20.00 µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	323880	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	298387	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	285535	20.00 µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	306272	20.00 µg/L	-0.015
M7-PFUnDA	8.039	570.0 -> 525.0	348222	20.00 µg/L	0.000
M2-PFDoDA	8.340	615.0 -> 570.0	379312	20.00 µg/L	-0.013
M2-PFTeDA	8.886	715.0 -> 670.0	346899	20.00 µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	188236	20.00 µg/L	0.000
M3-PFBS	3.867	302.0 -> 99.0	50631	20.00 µg/L	-0.013
M3-PFHxS	5.934	402.0 -> 99.0	48987	20.00 µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	73393	20.00 µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	114535	20.00 µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	105573	20.00 µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	67692	20.00 µg/L	-0.013
M3-MeFOSAA	7.735	573.0 -> 419.0	46978	20.00 µg/L	0.000
M3-HFPO-DA	5.242	287.0 -> 169.0	147212	100.00 µg/L	-0.013
13C2-PFOA	6.610	415.0 -> 370.0	397898	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	122382	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.845	329.0 -> 309.0	114533	24.13 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 120.7%	
13C2-6:2FTS	6.594	429.0 -> 409.0	105579	23.10 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 115.5%	
13C2-8:2FTS	7.689	529.0 -> 509.0	67676	24.21 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 121.0%	
13C2-PFDoDA	8.340	615.0 -> 570.0	379287	19.40 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C2-PFTeDA	8.886	715.0 -> 670.0	346937	18.97 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
13C3-PFBS	3.867	302.0 -> 99.0	50147	19.88 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C3-PFHxS	5.934	402.0 -> 99.0	48861	19.33 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C4-PFBA	1.702	217.0 -> 172.0	325532	19.96 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	5.891	367.0 -> 322.0	324327	19.43 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C5-PFHxA	4.950	318.0 -> 273.0	292790	19.89 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	3.561	268.0 -> 223.0	222184	20.07 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C6-PFDA	7.663	519.0 -> 474.0	306284	18.39 µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

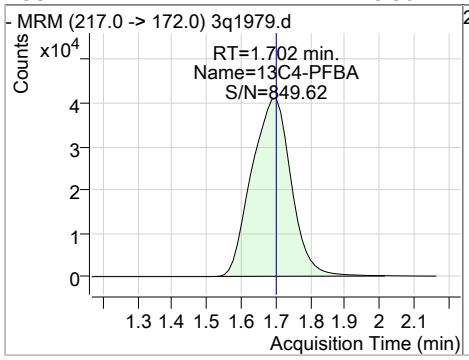
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 91.9%			
13C7-PFUnDA	8.039	570.0 -> 525.0	348488	18.80	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.0%			
13C8-FOSA	7.311	506.0 -> 78.0	188195	17.88	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 89.4%			
13C8-PFOA	6.609	421.0 -> 376.0	298342	18.86	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.3%			
13C8-PFOS	7.183	507.0 -> 99.0	72960	18.94	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.7%			
13C9-PFNA	7.201	472.0 -> 427.0	284536	19.04	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.2%			
d3-MeFOSAA	7.735	573.0 -> 419.0	47159	19.86	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.3%			
13C3-HFPO-DA	5.242	287.0 -> 169.0	147212	88.16	µg/L		-0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 88.2%			
M2-PFOA	6.610	415.0 -> 370.0	397898	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	122382	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	276313	88.23	µg/L		100
6:2FTS	6.595	427.0 -> 407.0	220542	84.70	µg/L		99
8:2FTS	7.689	527.0 -> 507.0	141395	84.38	µg/L		98
EtFOSAA	7.861	584.0 -> 419.0	107755	100.00	µg/L		97
FOSA	7.313	498.0 -> 78.0	430023	100.00	µg/L		100
MeFOSAA	7.735	570.0 -> 419.0	125667	99.97	µg/L		97
PFBA	1.698	213.0 -> 169.0	311396	100.23	µg/L		100
PFBS	3.870	299.0 -> 80.0	352231	99.99	µg/L		100
PFDA	7.664	513.0 -> 469.0	726968	100.24	µg/L		99
PFDoDA	8.341	613.0 -> 569.0	865464	100.08	µg/L		100
PFDS	8.011	599.0 -> 80.0	105984	98.84	µg/L		100
PFHpA	5.894	363.0 -> 319.0	1439110	100.40	µg/L		100
PFHpS	6.618	449.0 -> 80.0	232464	99.68	µg/L		100
PFHxA	4.952	313.0 -> 269.0	524254	100.00	µg/L		100
PFHxS	5.937	399.0 -> 80.0	269969	100.22	µg/L	m	99
PFNA	7.201	463.0 -> 419.0	888532	100.15	µg/L		99
PFNS	7.648	549.0 -> 80.0	197223	99.37	µg/L		98
PFOA	6.611	413.0 -> 369.0	799530	100.08	µg/L		98
PFOS	7.186	499.0 -> 80.0	341345	100.43	µg/L	m	100
PFPeA	3.552	263.0 -> 219.0	1126282	100.05	µg/L		100
PFPeS	5.082	349.0 -> 80.0	218865	99.92	µg/L		98
PFTeDA	8.877	713.0 -> 669.0	1080613	100.15	µg/L		100
PFTrDA	8.628	663.0 -> 619.0	924562	100.12	µg/L		100
PFUnDA	8.041	563.0 -> 519.0	756934	100.21	µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	726998	100.07	µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	188349	99.97	µg/L		100
ADONA	5.994	377.0 -> 251.0	1942586	99.97	µg/L		100
HFPO-DA	5.247	329.0 -> 169.0	1262962	505.58	µg/L		100

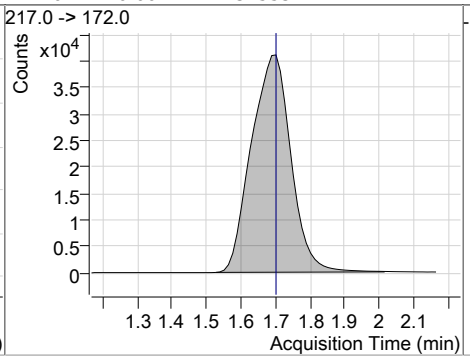
 # = Qualifier out of range, m = manually integrated, + = Area summed

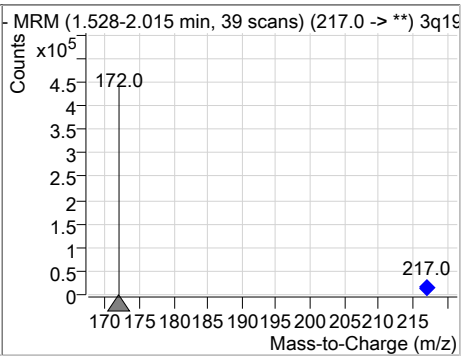
Perfluorinated Compounds by LC/MS/MS



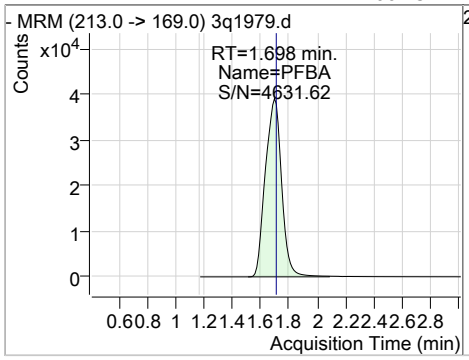
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.96	1.70	0.00	325532				

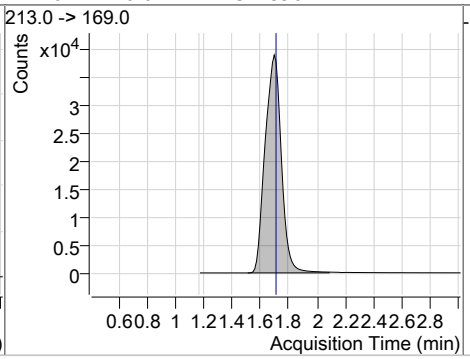


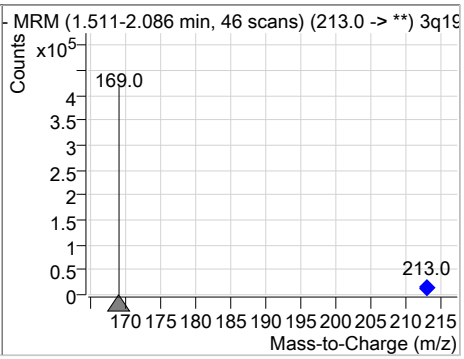




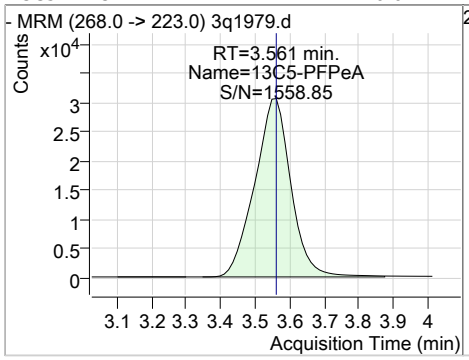
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	100.23	1.70	-0.01	311396				

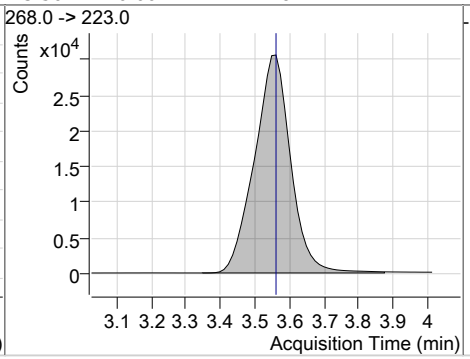


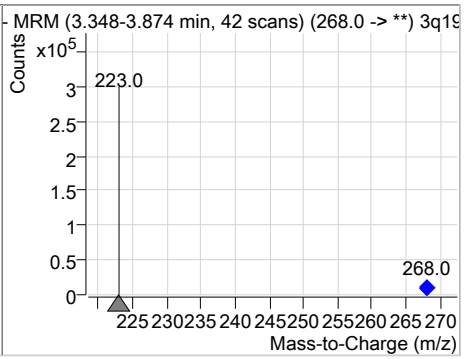




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.07	3.56	0.00	222184				

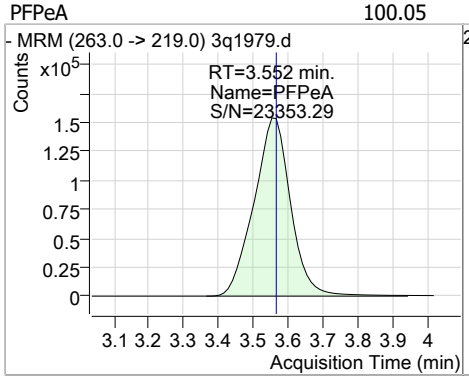


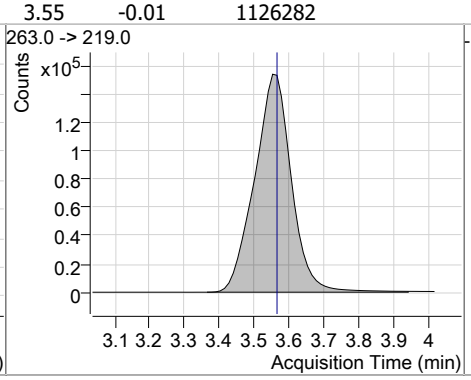


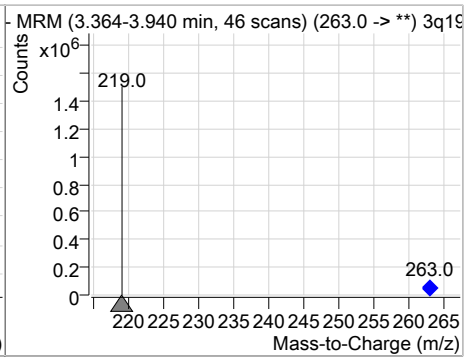


Perfluorinated Compounds by LC/MS/MS

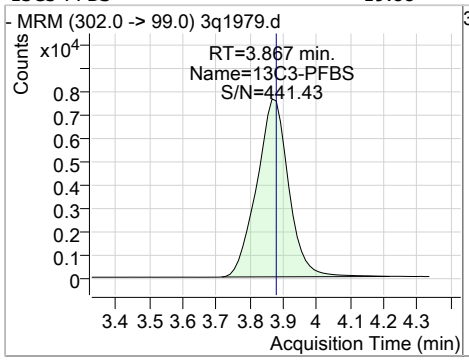
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	100.05	3.55	-0.01	1126282				

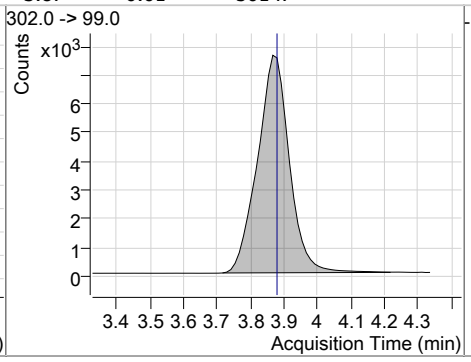


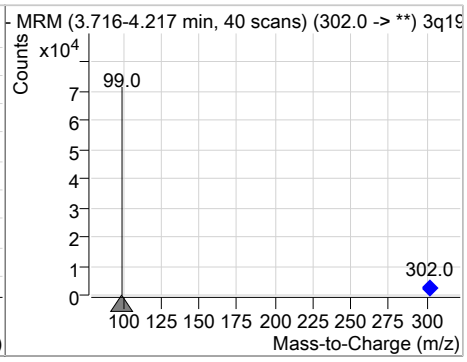




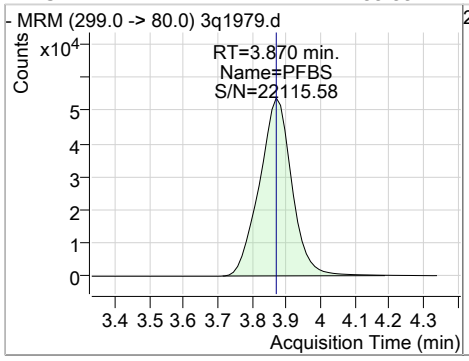
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.88	3.87	-0.01	50147				

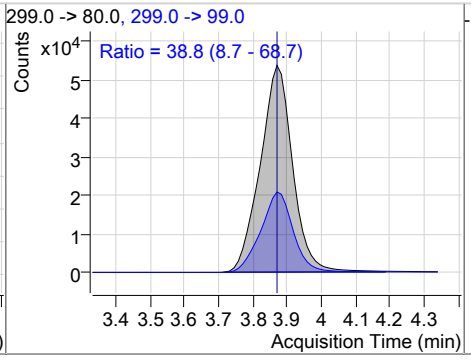


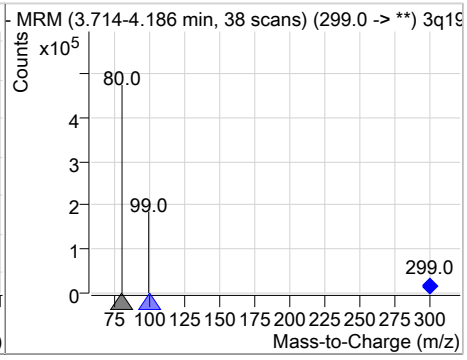




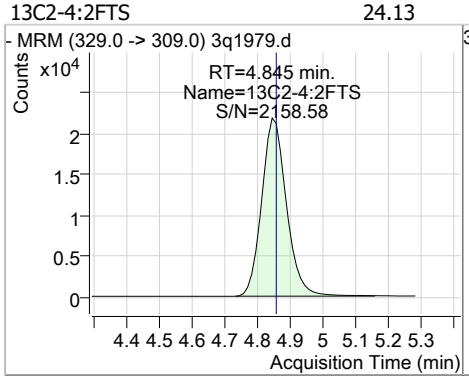
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	99.99	3.87	-0.01	352231	299.0 -> 99.0	38.8	8.7	68.7

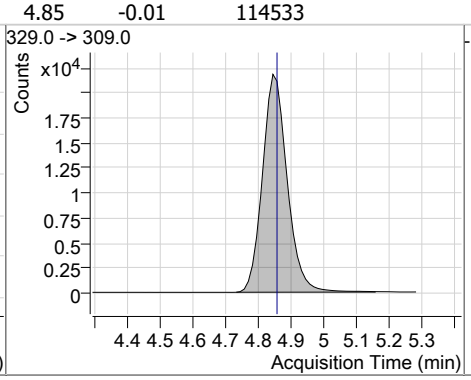


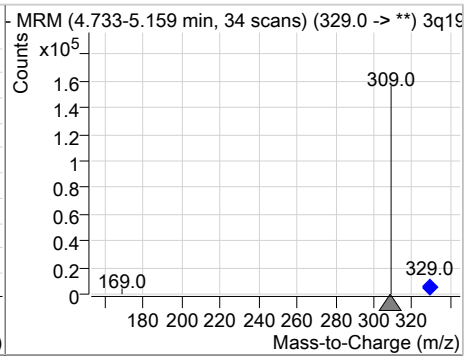




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	24.13	4.85	-0.01	114533				

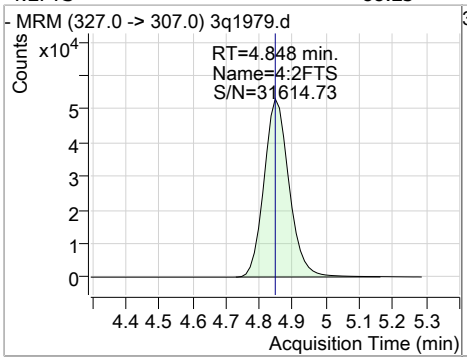


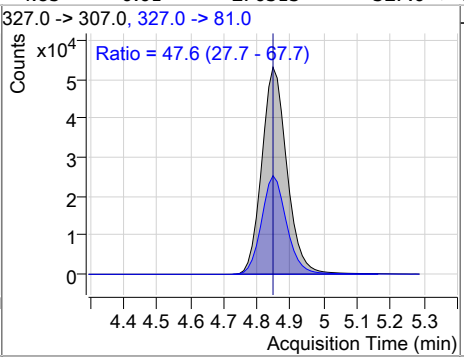


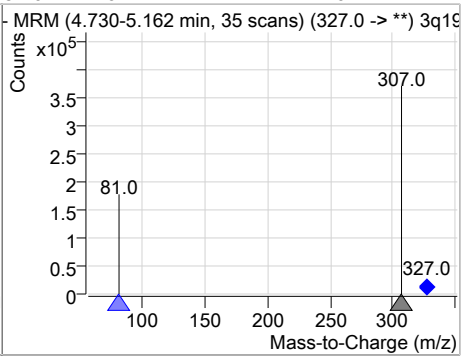


Perfluorinated Compounds by LC/MS/MS

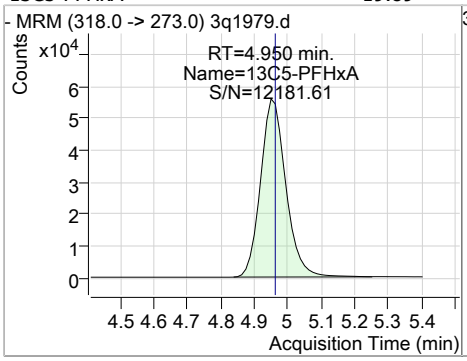
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	88.23	4.85	-0.01	276313	327.0 -> 81.0	47.6	27.7	67.7

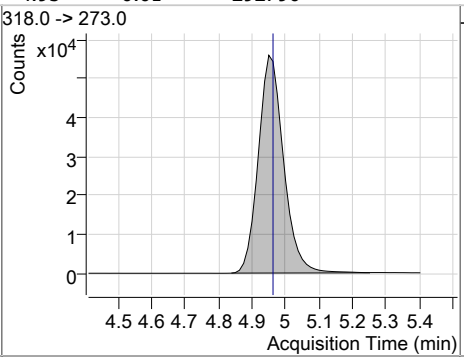


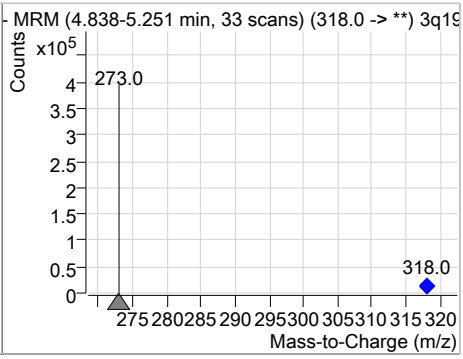




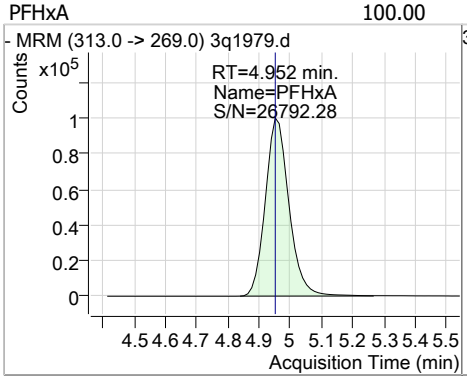
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.89	4.95	-0.01	292790				

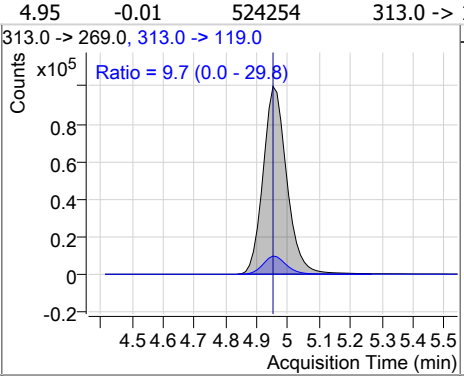


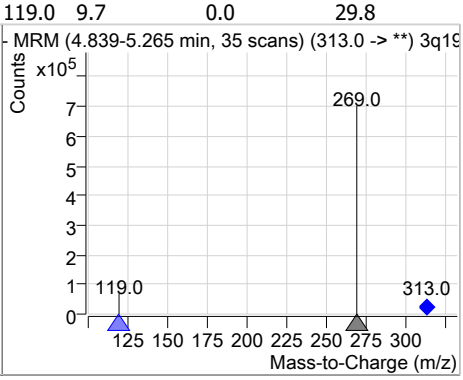




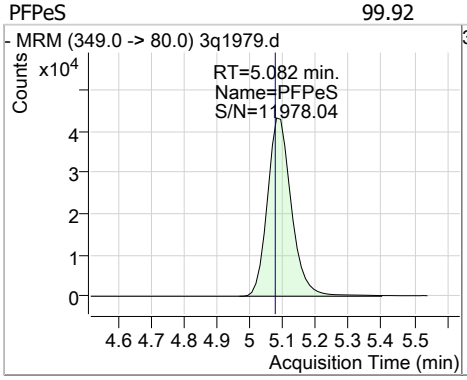
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	100.00	4.95	-0.01	524254	313.0 -> 119.0	9.7	0.0	29.8

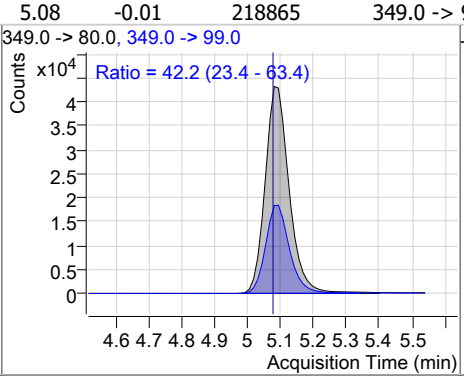


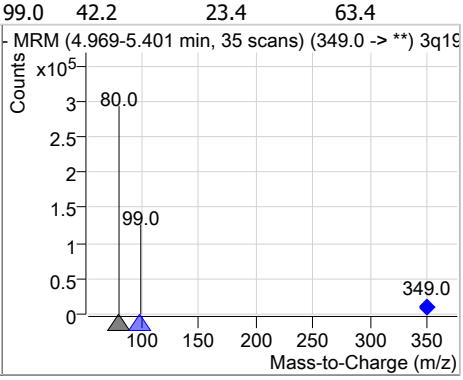




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	99.92	5.08	-0.01	218865	349.0 -> 99.0	42.2	23.4	63.4

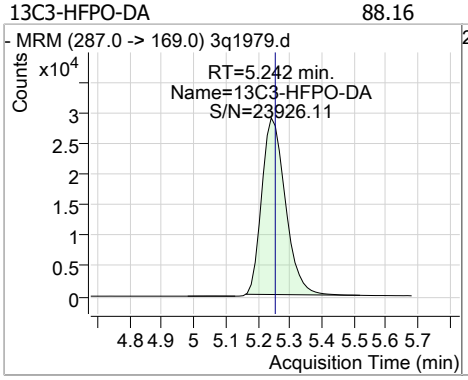


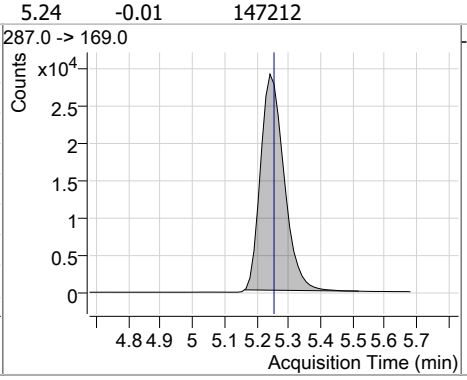


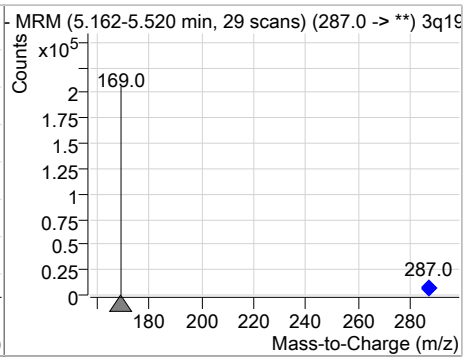


Perfluorinated Compounds by LC/MS/MS

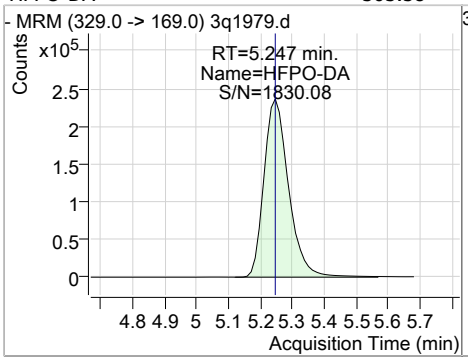
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	88.16	5.24	-0.01	147212				

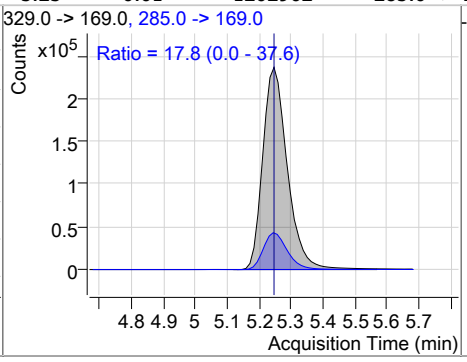


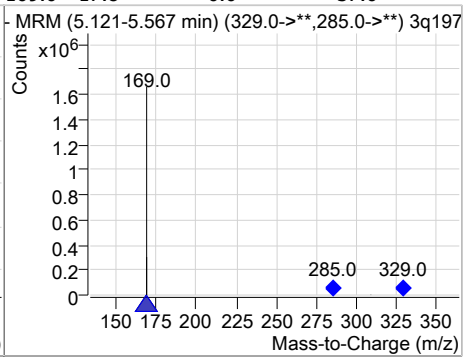




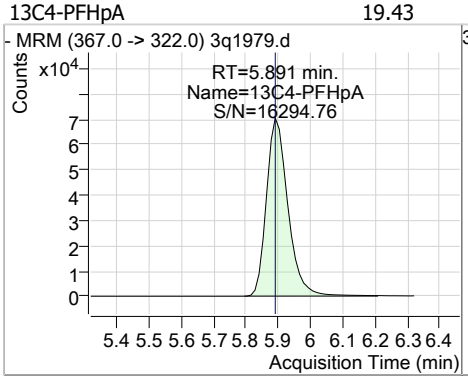
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	505.58	5.25	-0.01	1262962	285.0 -> 169.0	17.8	0.0	37.6

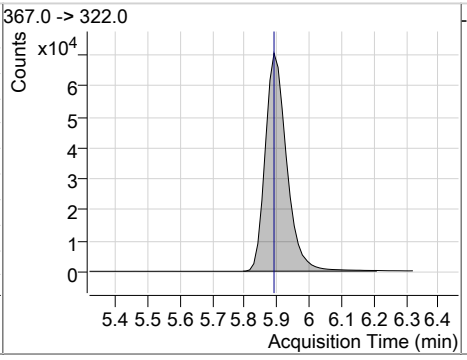


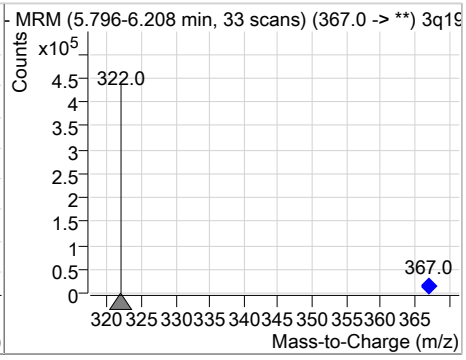




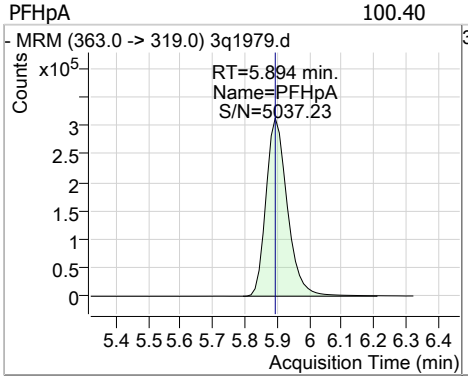
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.43	5.89	0.00	324327				

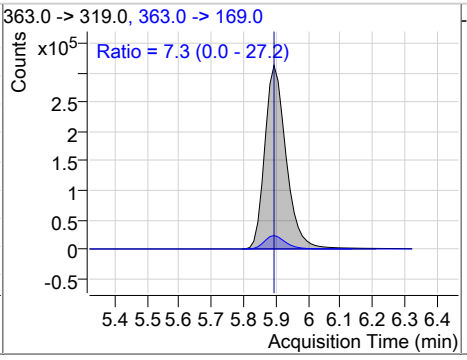


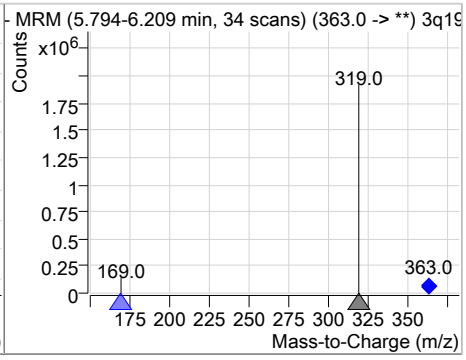




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	100.40	5.89	0.00	1439110	363.0 -> 169.0	7.3	0.0	27.2

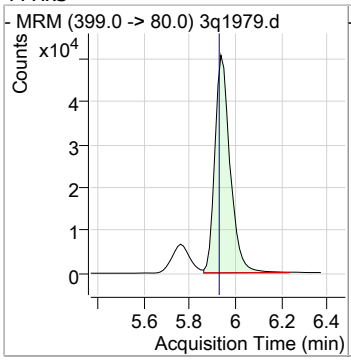


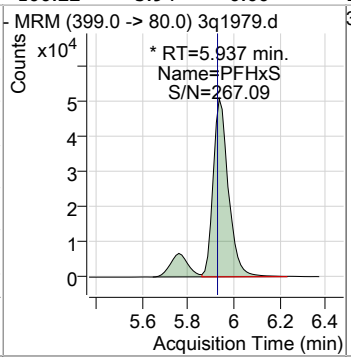


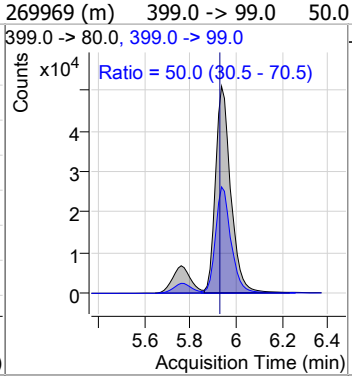


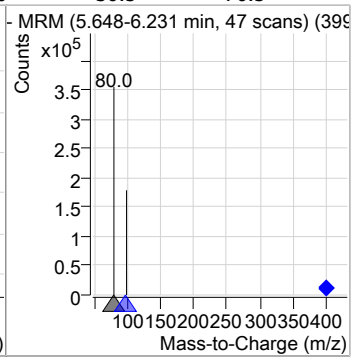
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	100.22	5.94	0.00	269969 (m)	399.0 -> 99.0	50.0	30.5	70.5

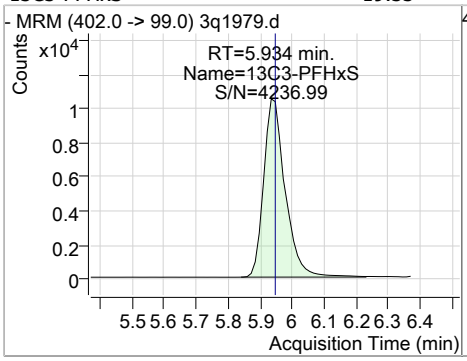


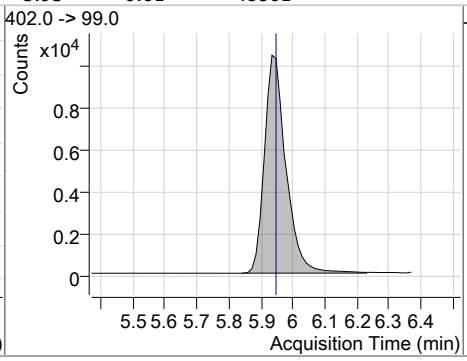


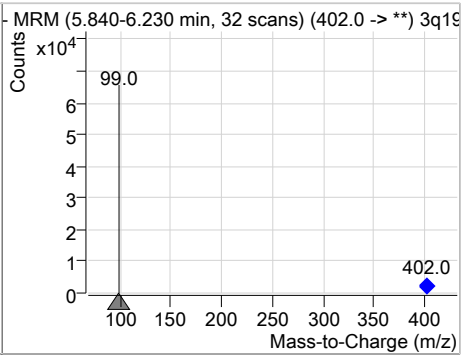




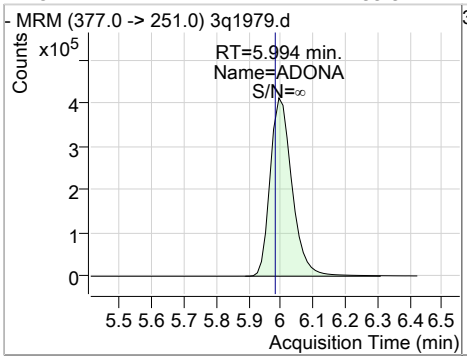
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.33	5.93	-0.01	48861				

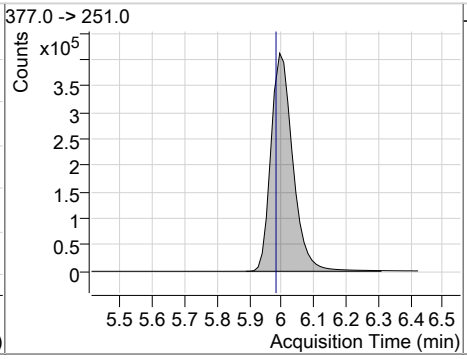


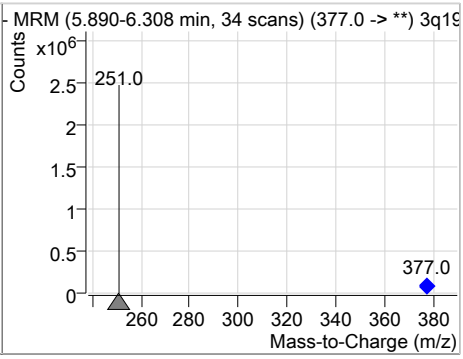




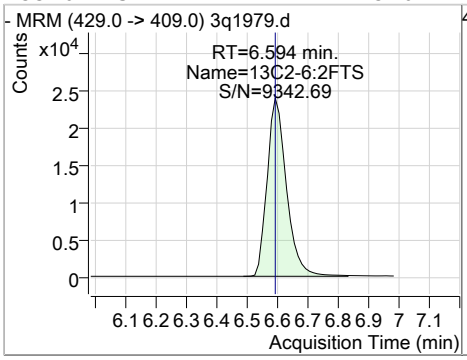
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	99.97	5.99	0.00	1942586				

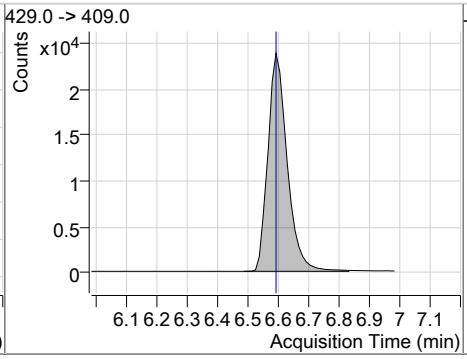


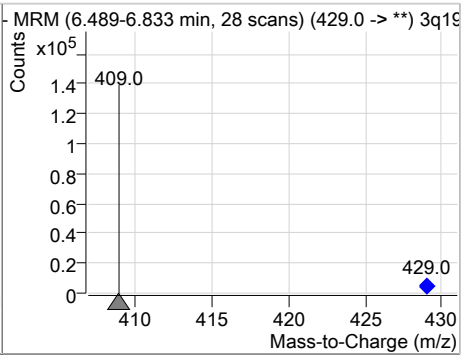




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	23.10	6.59	0.00	105579				

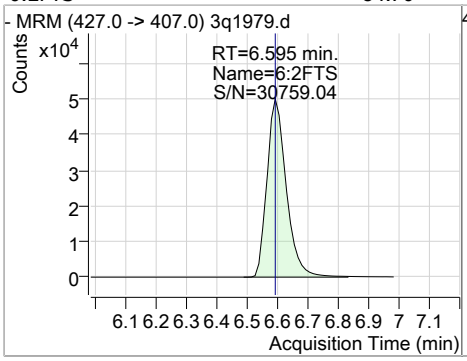


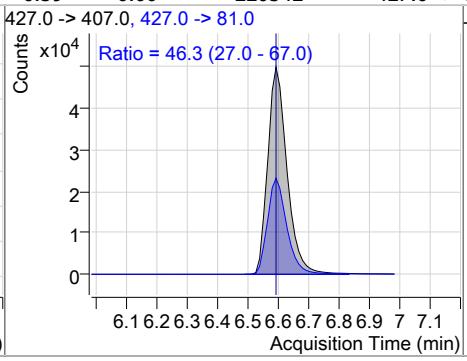


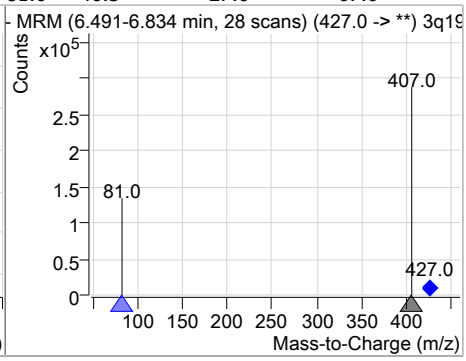


Perfluorinated Compounds by LC/MS/MS

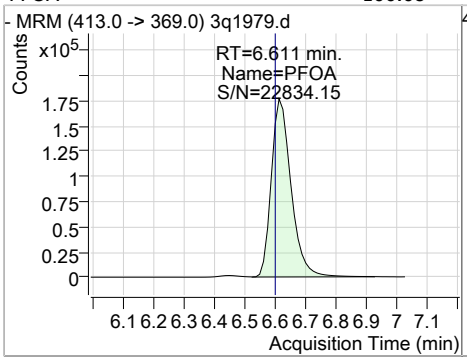
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	84.70	6.59	0.00	220542	427.0 -> 81.0	46.3	27.0	67.0

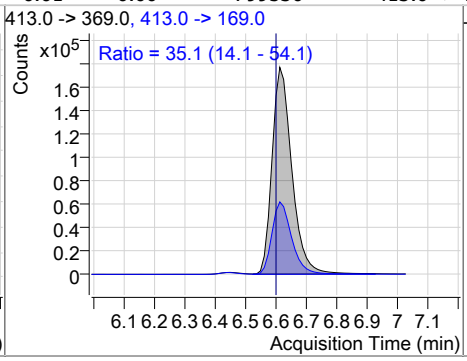


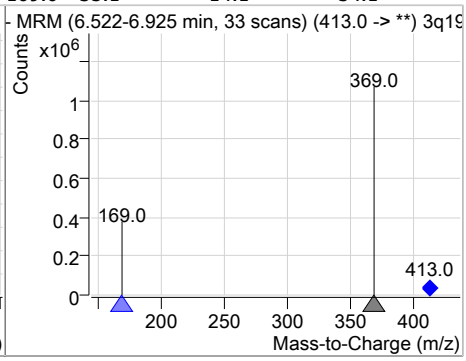




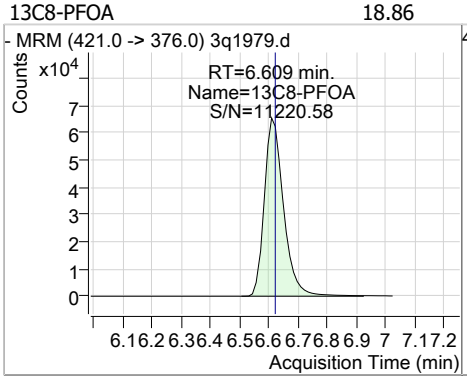
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	100.08	6.61	0.00	799530	413.0 -> 169.0	35.1	14.1	54.1

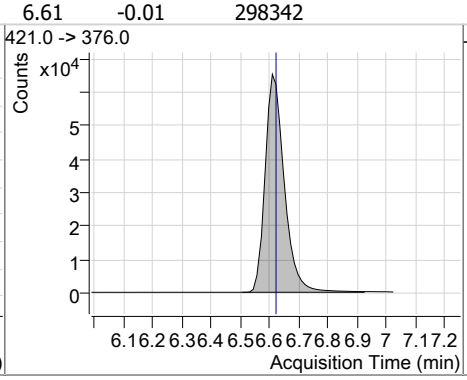


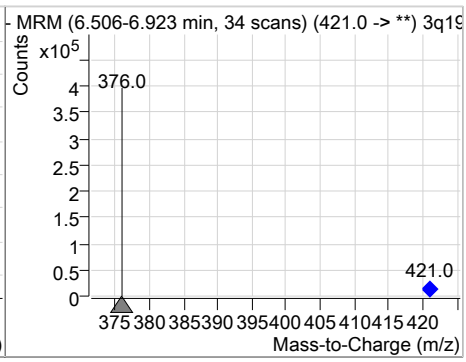




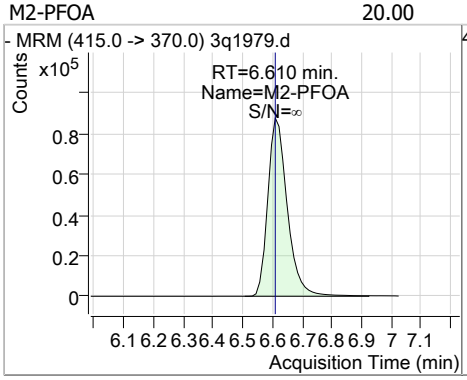
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	18.86	6.61	-0.01	298342				

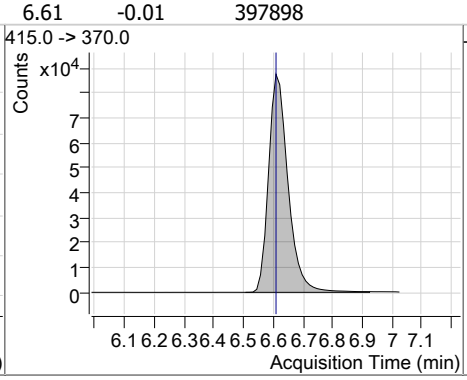


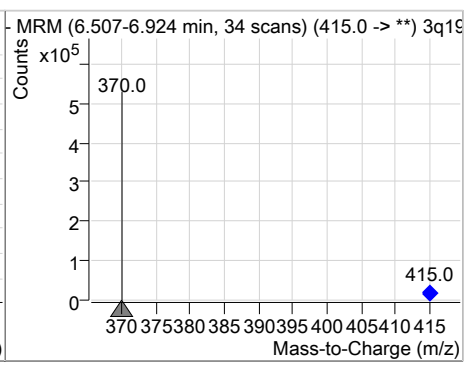




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	397898				

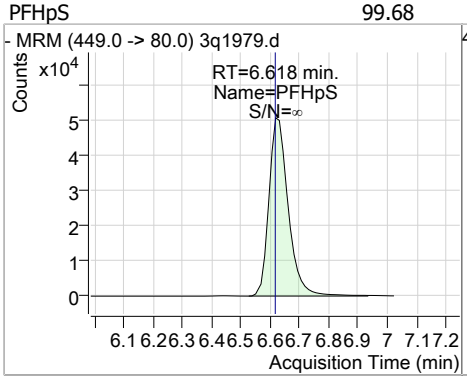


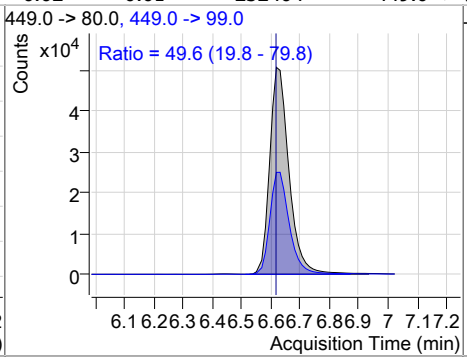


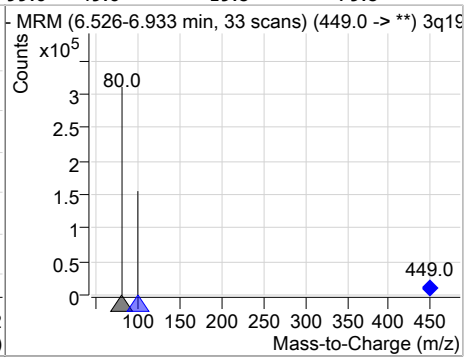


Perfluorinated Compounds by LC/MS/MS

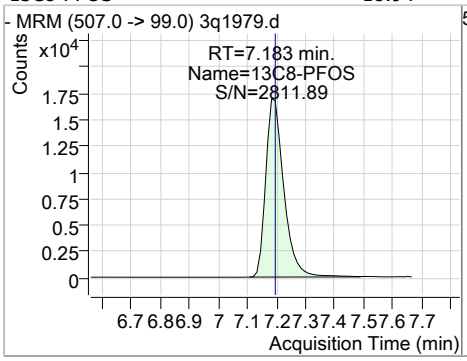
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	99.68	6.62	-0.01	232464	449.0 -> 99.0	49.6	19.8	79.8

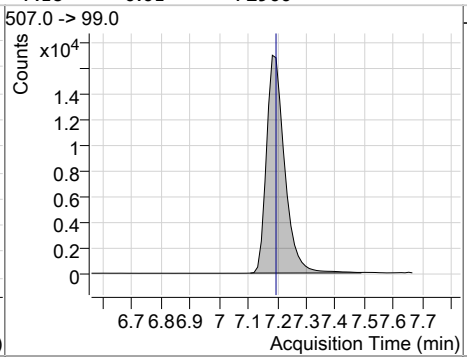


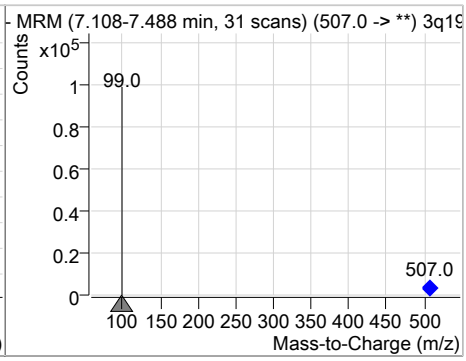




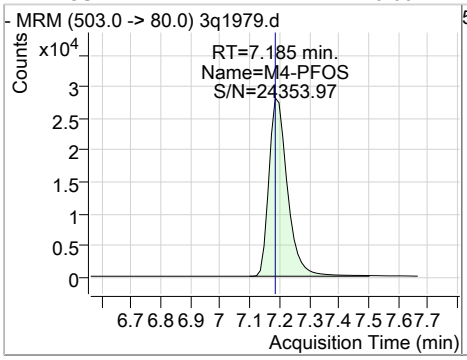
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	18.94	7.18	-0.01	72960				

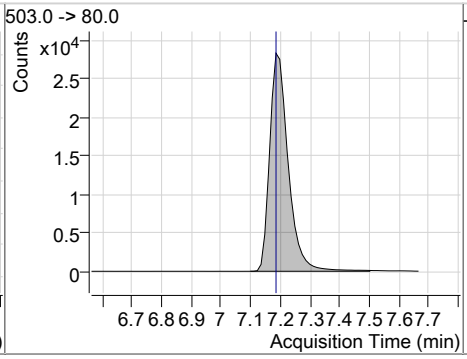


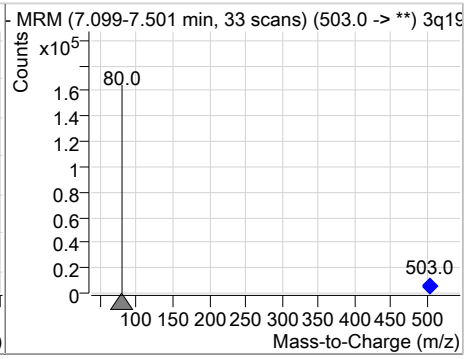




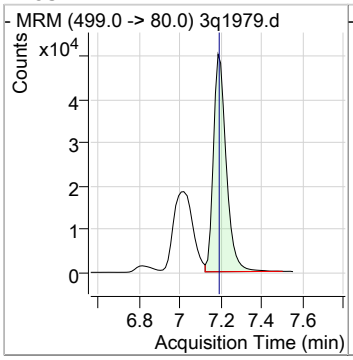
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	122382				

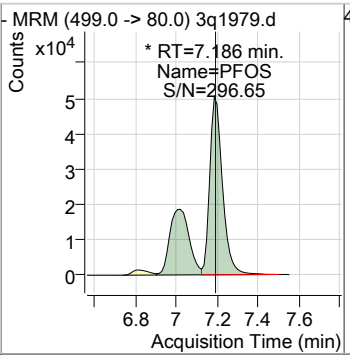


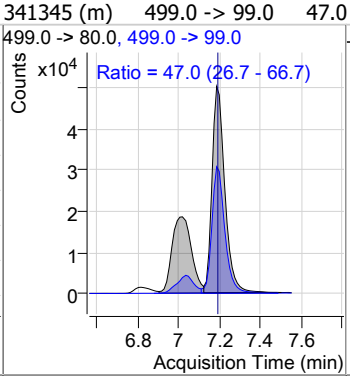


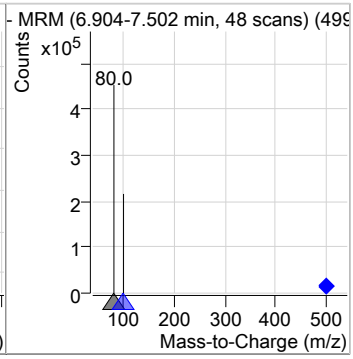


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	100.43	7.19	-0.01	341345 (m)	499.0 -> 99.0	47.0	26.7	66.7



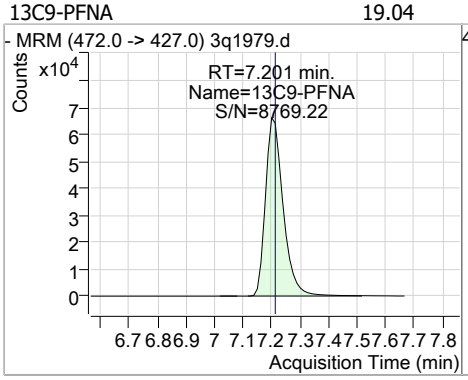


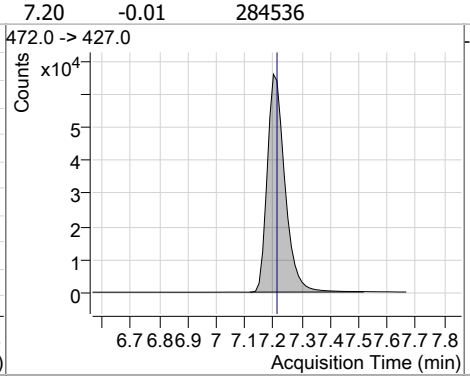


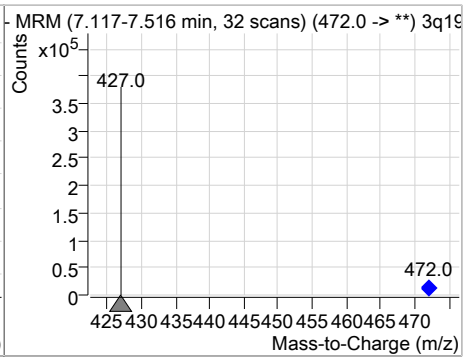


Perfluorinated Compounds by LC/MS/MS

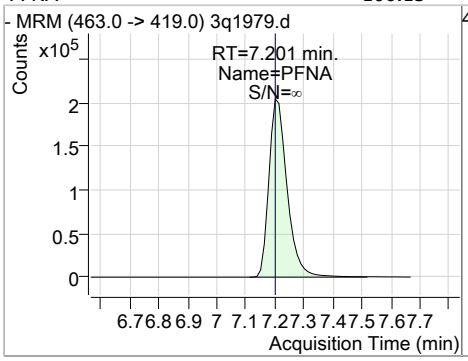
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	19.04	7.20	-0.01	284536				

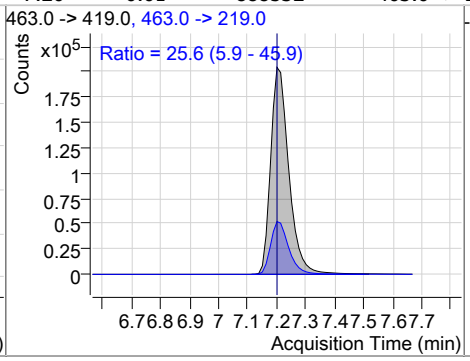


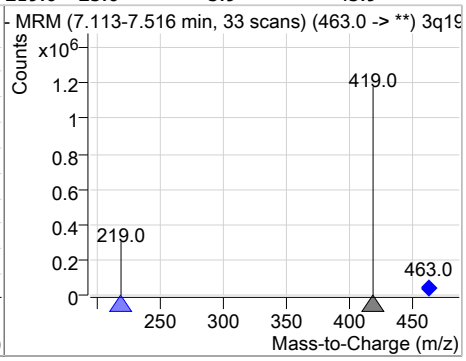




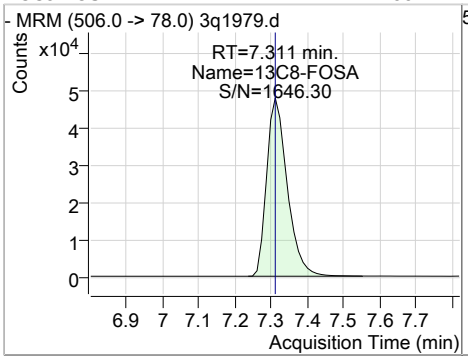
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	100.15	7.20	-0.01	888532	463.0 -> 219.0	25.6	5.9	45.9

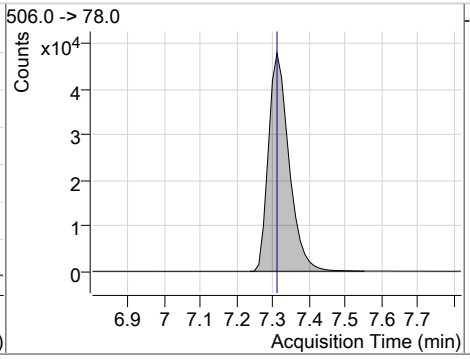


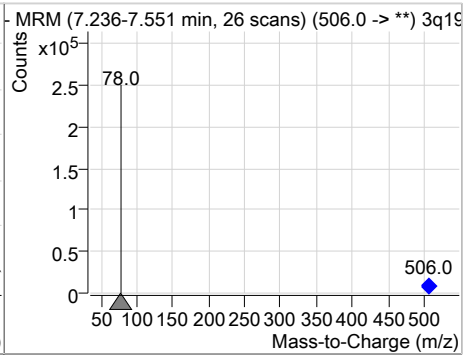




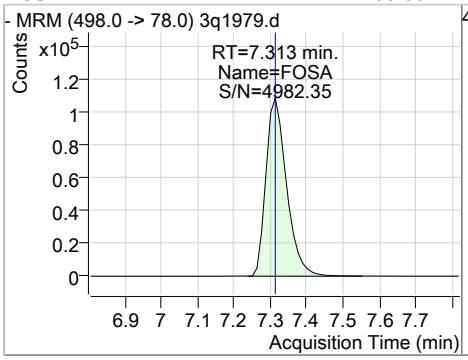
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	17.88	7.31	0.00	188195				

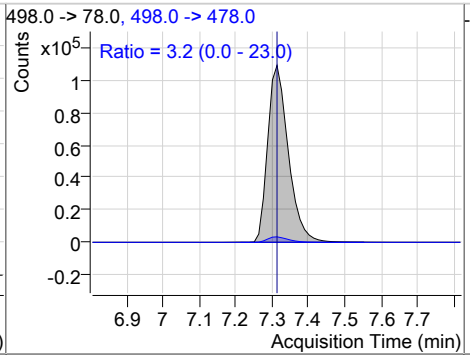


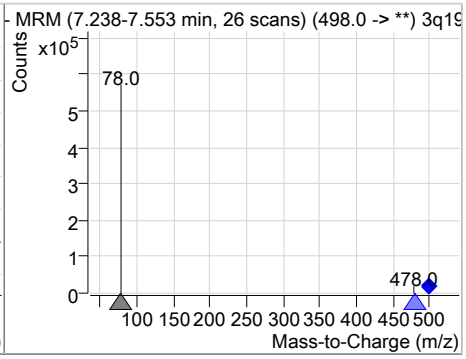




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	100.00	7.31	0.00	430023	498.0 -> 478.0	3.2	0.0	23.0

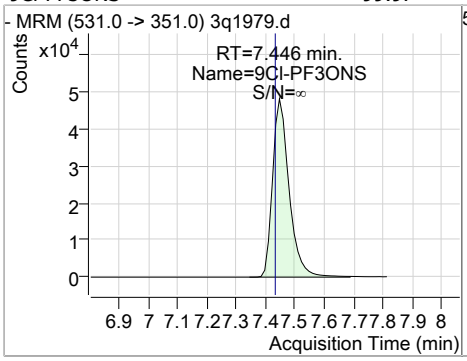


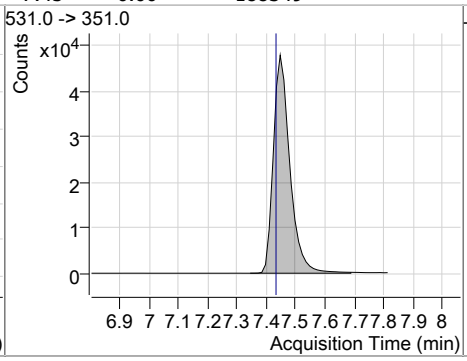


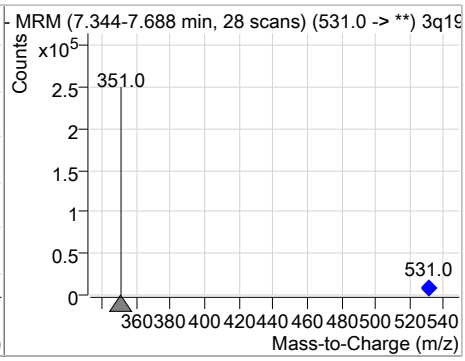


Perfluorinated Compounds by LC/MS/MS

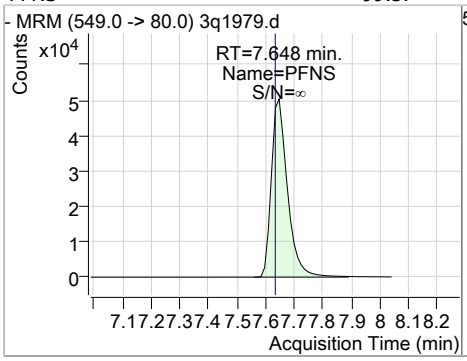
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	99.97	7.45	0.00	188349				

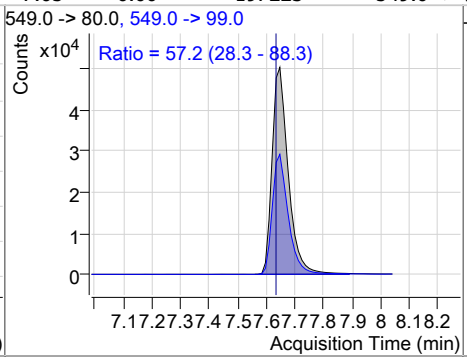


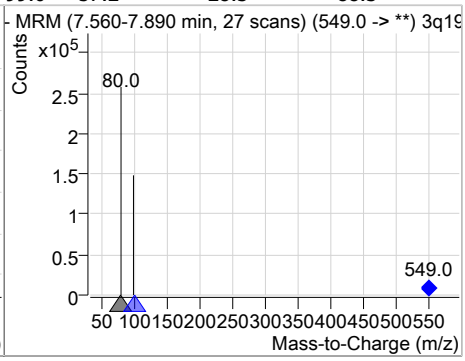




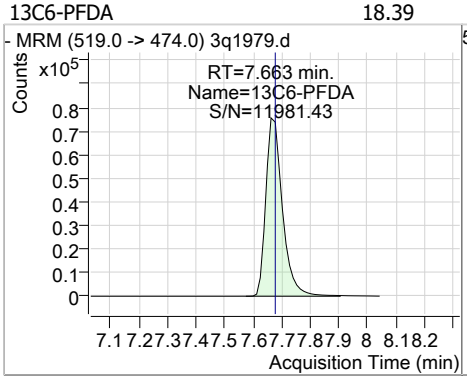
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	99.37	7.65	0.00	197223	549.0 -> 99.0	57.2	28.3	88.3

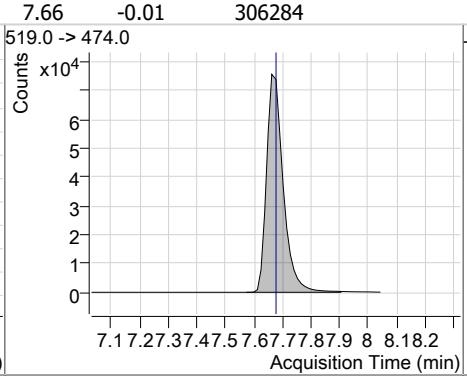


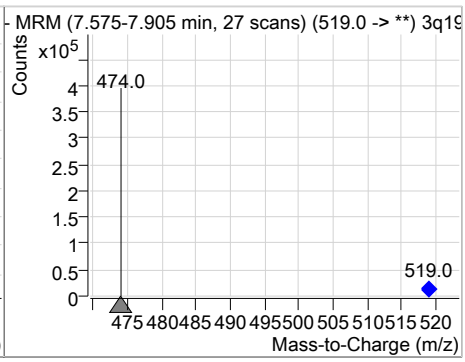




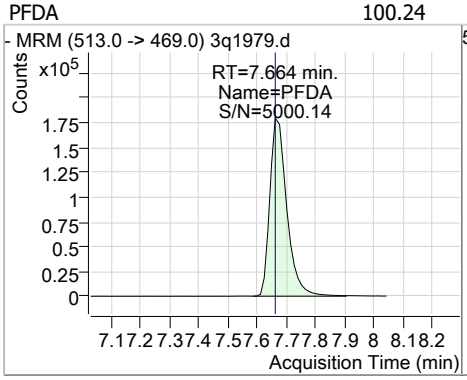
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	18.39	7.66	-0.01	306284				

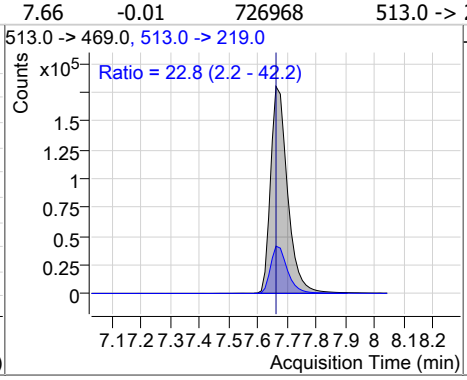


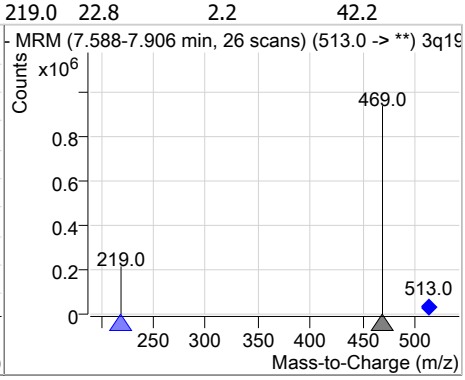




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	100.24	7.66	-0.01	726968	513.0 -> 219.0	22.8	2.2	42.2

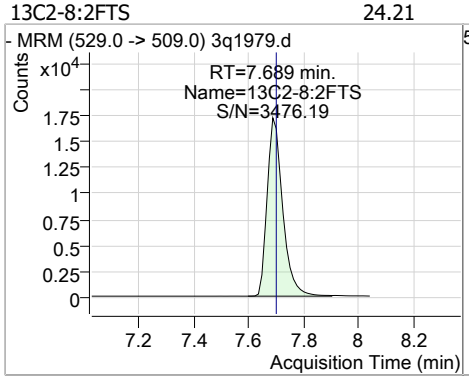


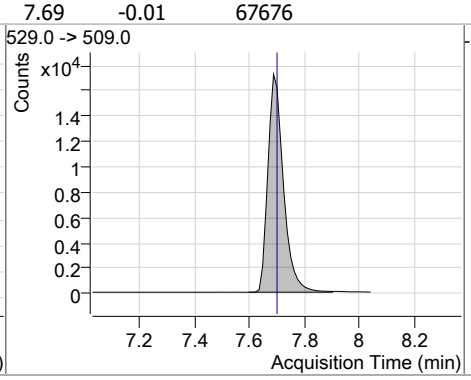


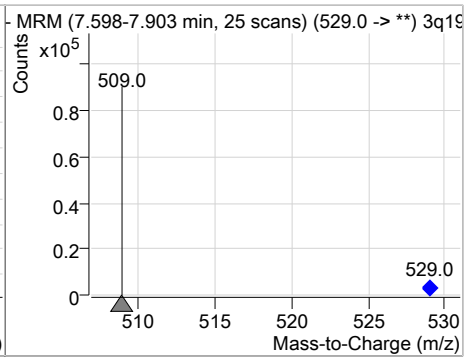


Perfluorinated Compounds by LC/MS/MS

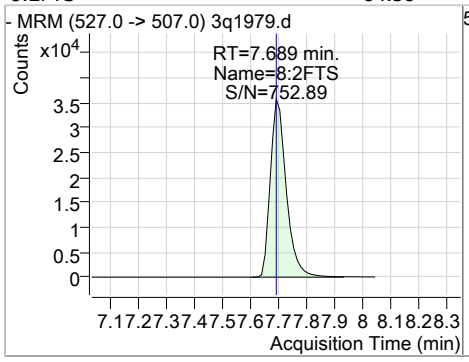
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	24.21	7.69	-0.01	67676				

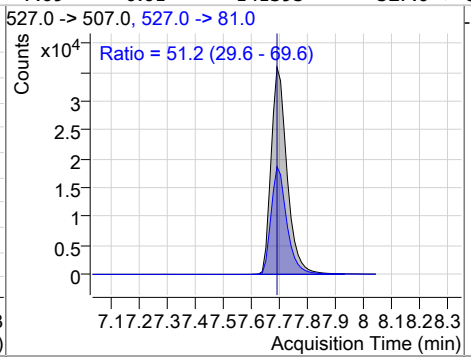


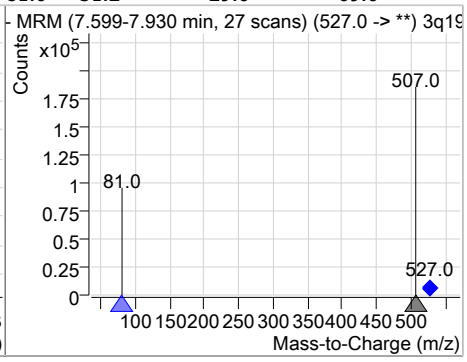




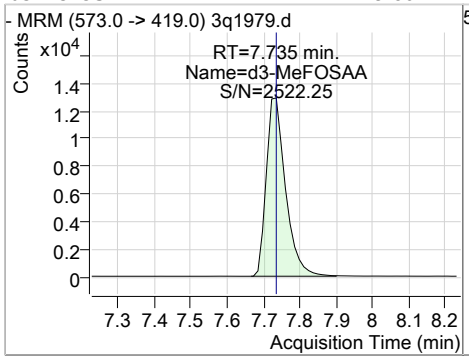
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	84.38	7.69	-0.01	141395	527.0 -> 81.0	51.2	29.6	69.6

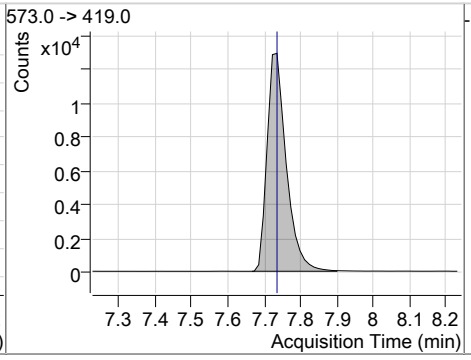


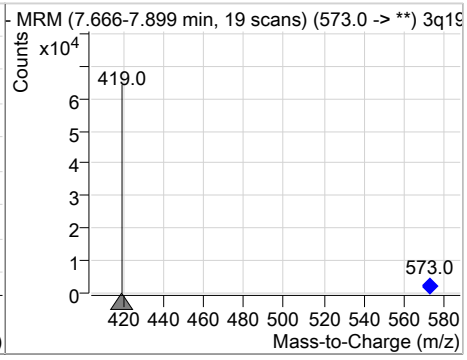




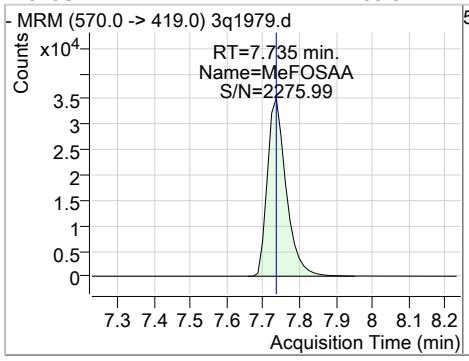
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	19.86	7.73	0.00	47159				

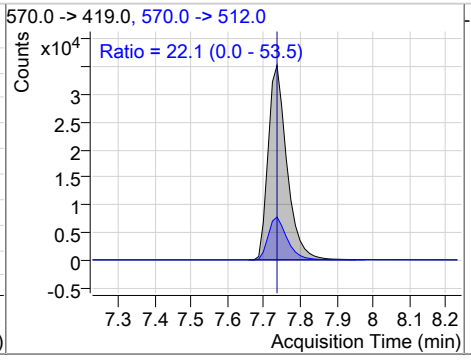


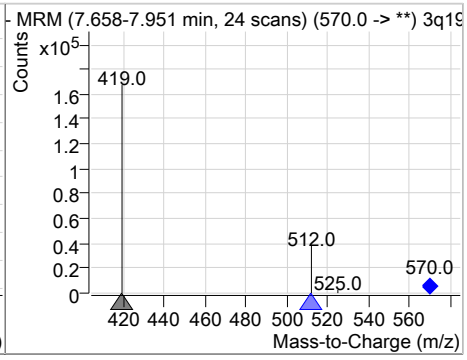




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	99.97	7.74	0.00	125667	570.0 -> 512.0	22.1	0.0	53.5

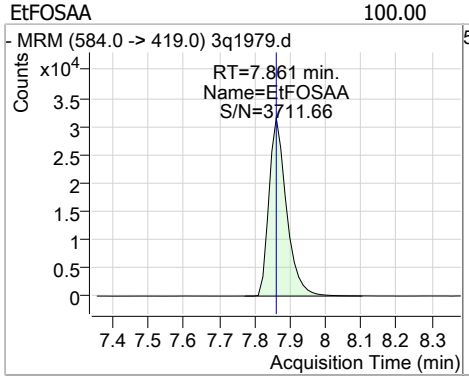


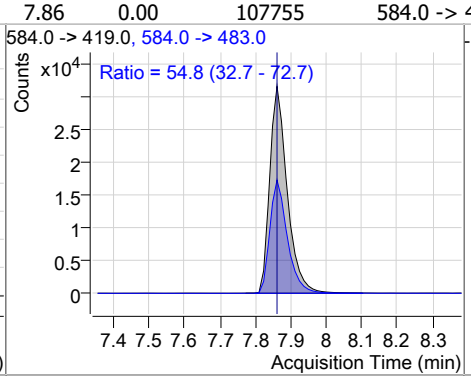


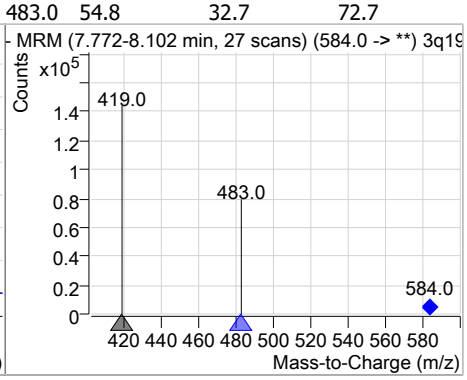


Perfluorinated Compounds by LC/MS/MS

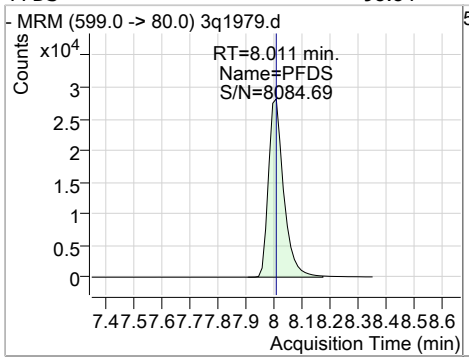
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	100.00	7.86	0.00	107755	584.0 -> 483.0	54.8	32.7	72.7

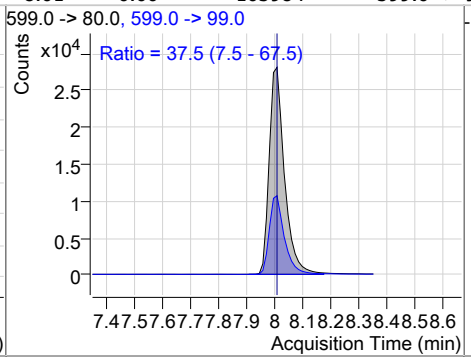


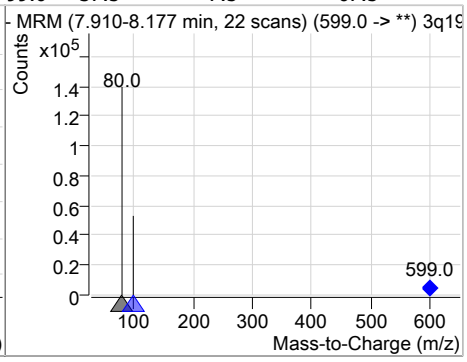




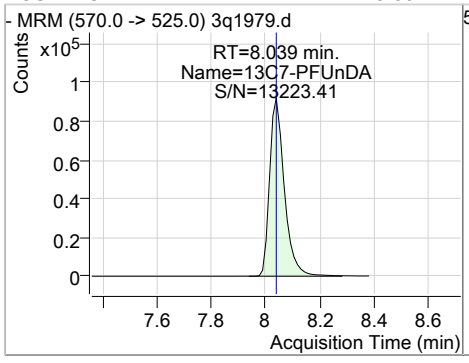
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	98.84	8.01	0.00	105984	599.0 -> 99.0	37.5	7.5	67.5

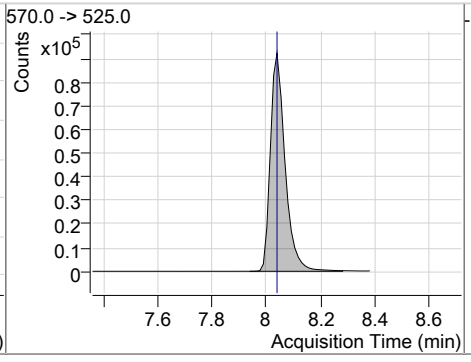


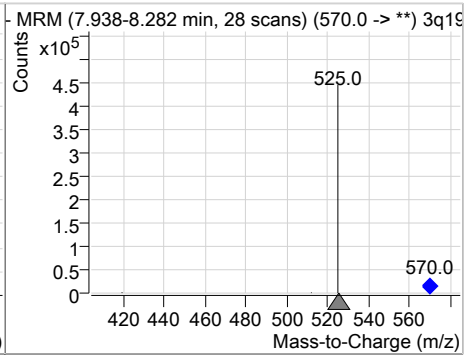




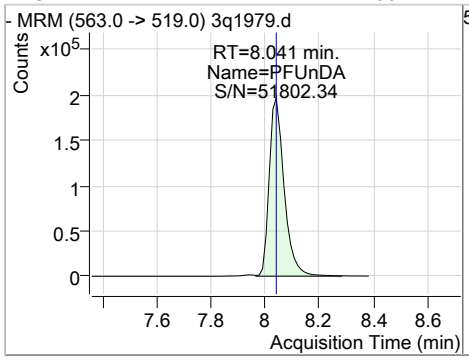
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	18.80	8.04	0.00	348488				

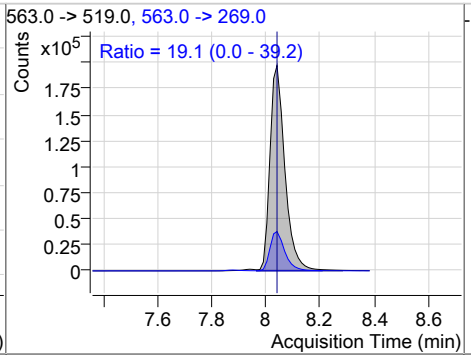


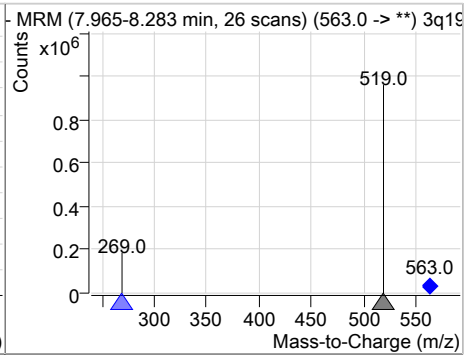




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	100.21	8.04	0.00	756934	563.0 -> 269.0	19.1	0.0	39.2

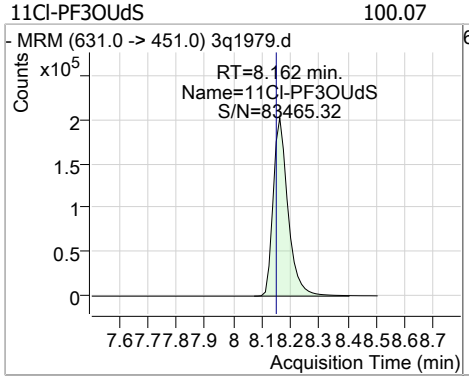


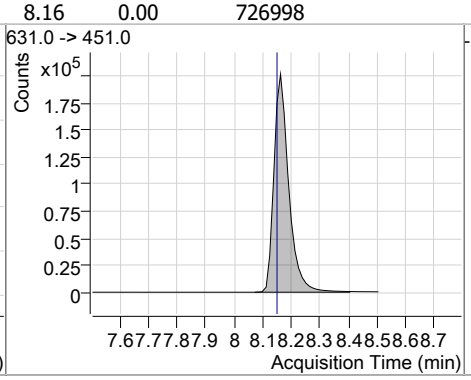


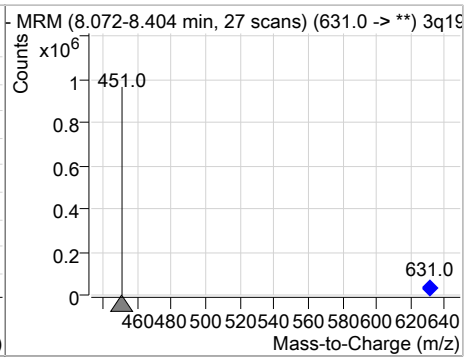


Perfluorinated Compounds by LC/MS/MS

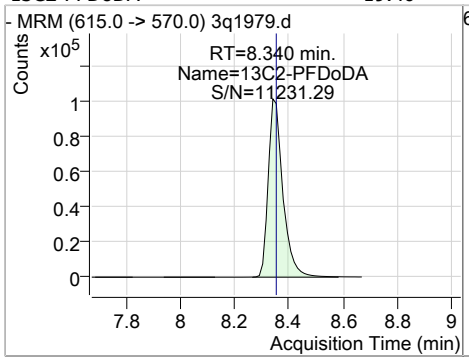
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	100.07	8.16	0.00	726998				

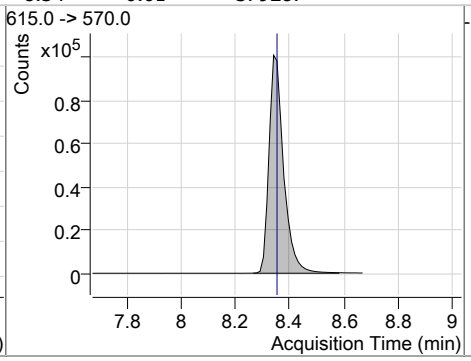


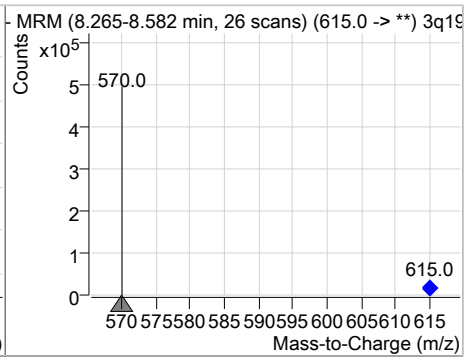




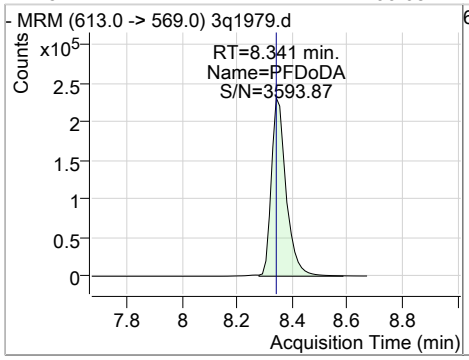
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	19.40	8.34	-0.01	379287				

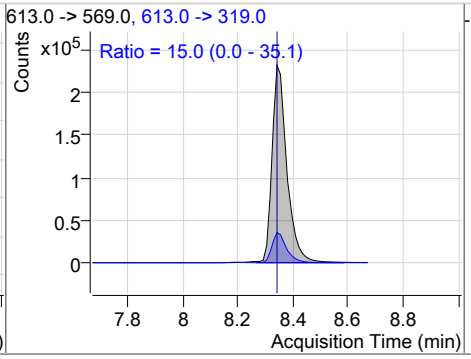


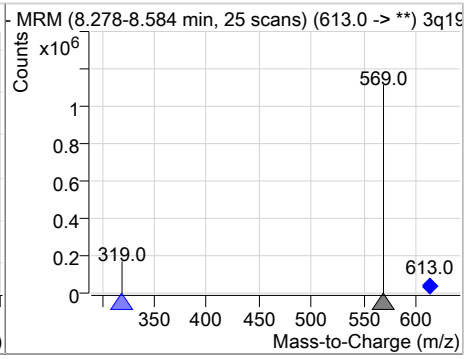




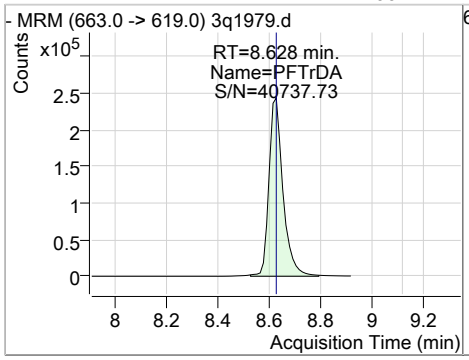
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	100.08	8.34	-0.01	865464	613.0 -> 319.0	15.0	0.0	35.1

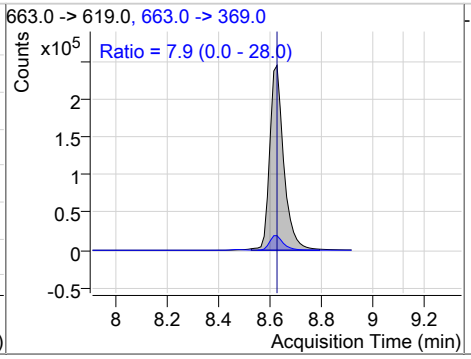


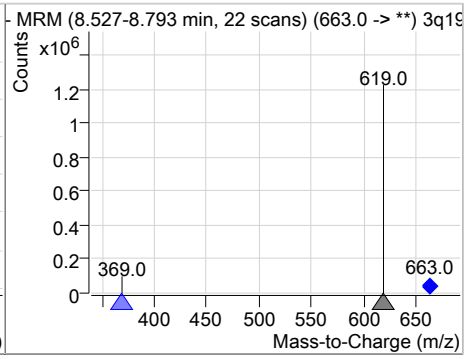




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	100.12	8.63	0.00	924562	663.0 -> 369.0	7.9	0.0	28.0

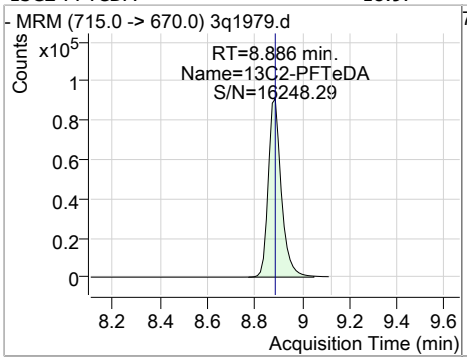


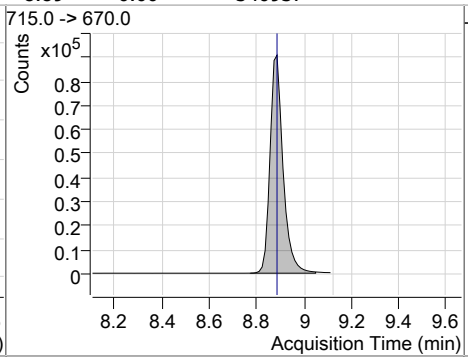


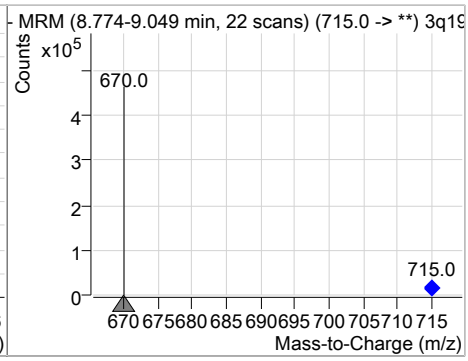


Perfluorinated Compounds by LC/MS/MS

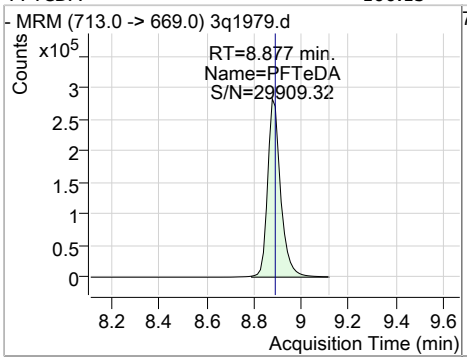
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	18.97	8.89	0.00	346937				

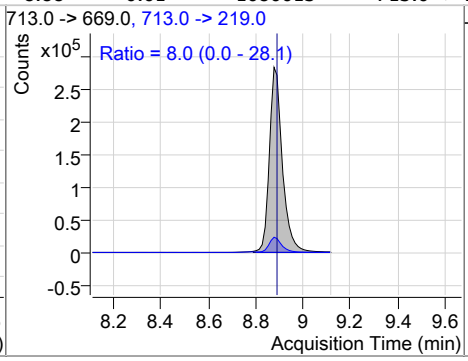


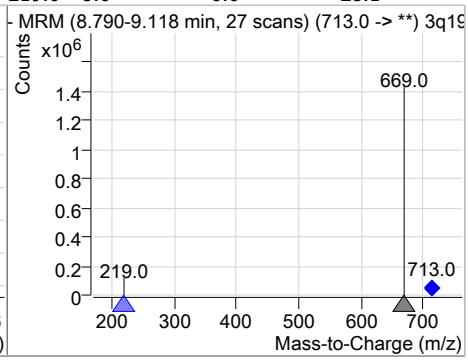




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	100.15	8.88	-0.01	1080613	713.0 -> 219.0	8.0	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-IC54
Lab FileID: 3Q1979.D
Injection Time: 03/21/19 11:41
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1981.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 12:11:32 PM
Sample Name : icv54-20
Vial : P3-B1
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

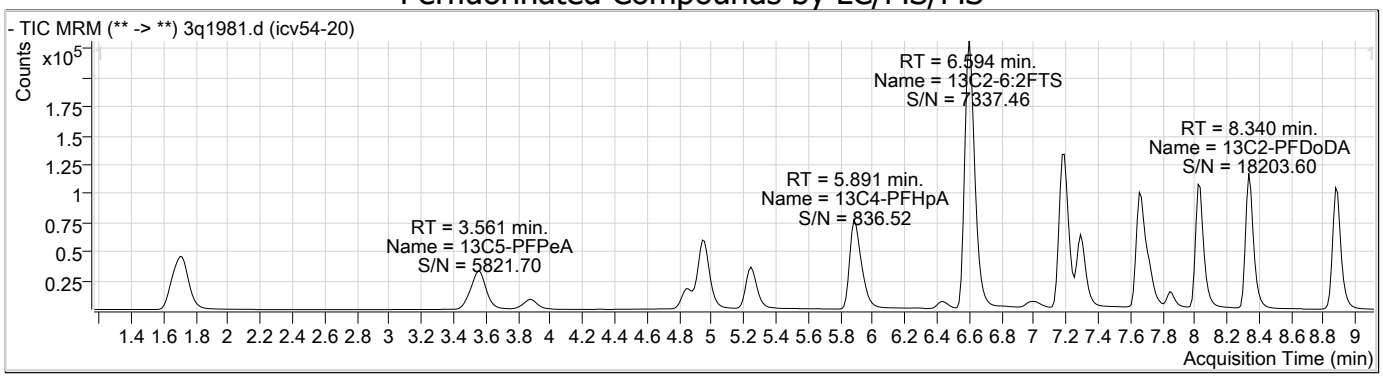
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.702	217.0 -> 172.0	334602	20.00	µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	223674	20.00	µg/L	0.000
M5-PFHxA	4.950	318.0 -> 273.0	298500	20.00	µg/L	-0.013
M4-PFHpA	5.891	367.0 -> 322.0	341972	20.00	µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	325910	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	308735	20.00	µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	353259	20.00	µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	400107	20.00	µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	416296	20.00	µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	388363	20.00	µg/L	-0.013
M8-FOSA	7.298	506.0 -> 78.0	223491	20.00	µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	51140	20.00	µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	51892	20.00	µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	78642	20.00	µg/L	-0.013
M2-4:2FTS	4.845	329.0 -> 309.0	90215	20.00	µg/L	-0.013
M2-6:2FTS	6.594	429.0 -> 409.0	89242	20.00	µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	54868	20.00	µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	49600	20.00	µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	173297	100.00	µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	431932	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	128287	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.845	329.0 -> 309.0	89625	18.89	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 94.4%		
13C2-6:2FTS	6.594	429.0 -> 409.0	89261	19.53	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C2-8:2FTS	7.689	529.0 -> 509.0	54862	19.63	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.1%		
13C2-PFDoDA	8.340	615.0 -> 570.0	416326	21.29	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.5%		
13C2-PFTeDA	8.874	715.0 -> 670.0	388472	21.24	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.2%		
13C3-PFBS	3.879	302.0 -> 99.0	51109	20.26	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C3-PFHxS	5.934	402.0 -> 99.0	51351	20.32	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C4-PFBA	1.702	217.0 -> 172.0	331544	20.33	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C4-PFHpA	5.891	367.0 -> 322.0	340751	20.41	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C5-PFHxA	4.950	318.0 -> 273.0	296582	20.15	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%		
13C5-PFPeA	3.561	268.0 -> 223.0	223641	20.20	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C6-PFDA	7.663	519.0 -> 474.0	354839	21.30	µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

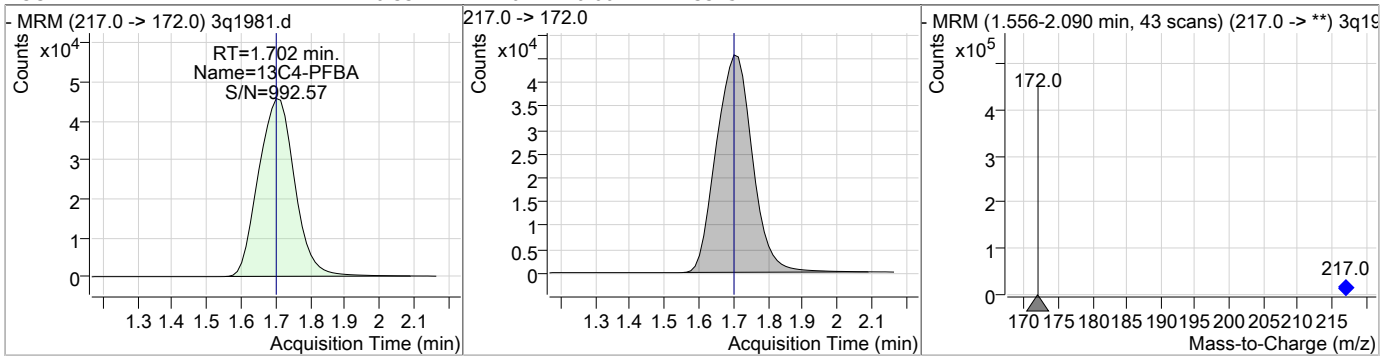
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.5%			
13C7-PFUnDA	8.026	570.0 -> 525.0	400123	21.58	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.9%			
13C8-FOSA	7.298	506.0 -> 78.0	223431	21.23	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.1%			
13C8-PFOA	6.609	421.0 -> 376.0	325885	20.60	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%			
13C8-PFOS	7.183	507.0 -> 99.0	78265	20.32	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%			
13C9-PFNA	7.201	472.0 -> 427.0	309021	20.68	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.4%			
d3-MeFOSAA	7.722	573.0 -> 419.0	49642	20.91	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.6%			
13C3-HFPO-DA	5.255	287.0 -> 169.0	173297	103.78	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 103.8%			
M2-PFOA	6.610	415.0 -> 370.0	431932	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	128287	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	7.848	584.0 -> 419.0	16815	15.11	µg/L	m	88
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	7.723	570.0 -> 419.0	22685	17.09	µg/L	m	95
PFBA	-	213.0 -> 169.0	-	N.D.			
PFBS	-	299.0 -> 80.0	-	N.D.			
PFDA	-	513.0 -> 469.0	-	N.D.			
PFDoDA	-	613.0 -> 569.0	-	N.D.			
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.894	363.0 -> 319.0	0	0.00	µg/L	m	1
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	-	313.0 -> 269.0	-	N.D.			
PFHxS	5.937	399.0 -> 80.0	0	0.00	µg/L	m	1
PFNA	-	463.0 -> 419.0	-	N.D.			
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.611	413.0 -> 369.0	151617	17.38	µg/L	m	95
PFOS	7.186	499.0 -> 80.0	70711	19.42	µg/L	m	97
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	-	713.0 -> 669.0	-	N.D.			
PFTrDA	-	663.0 -> 619.0	-	N.D.			
PFUnDA	-	563.0 -> 519.0	-	N.D.			
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

 # = Qualifier out of range, m = manually integrated, + = Area summed

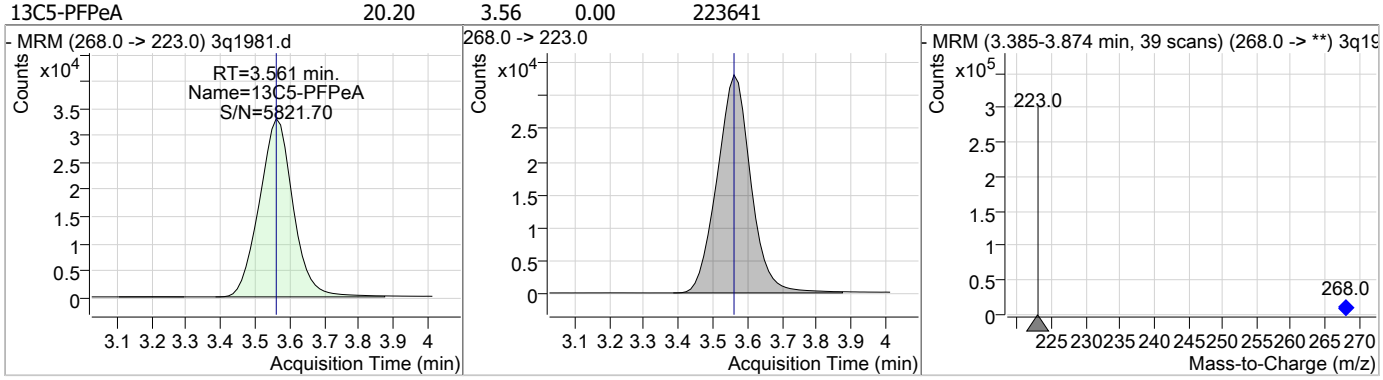
Perfluorinated Compounds by LC/MS/MS



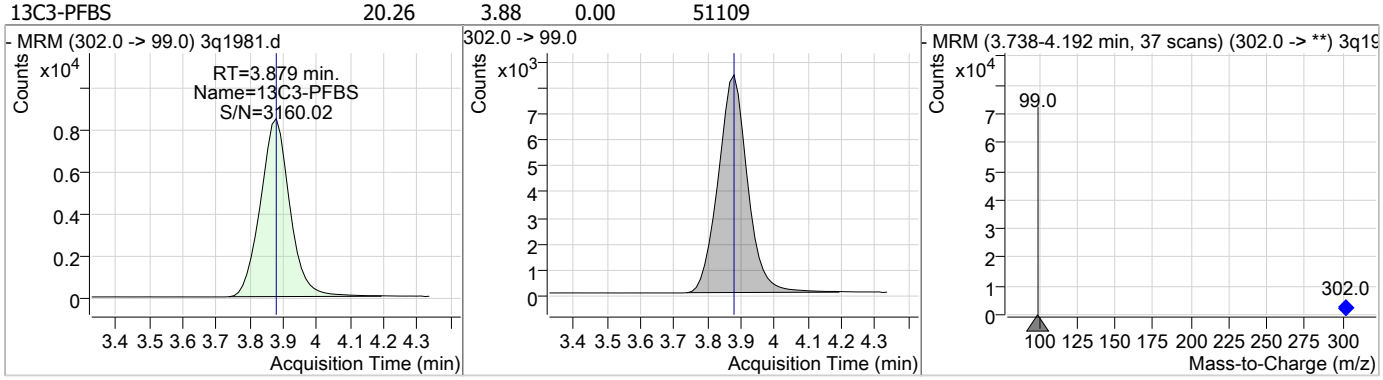
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.33	1.70	0.00	331544				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.20	3.56	0.00	223641				

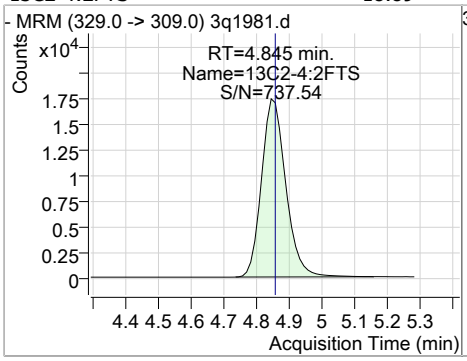


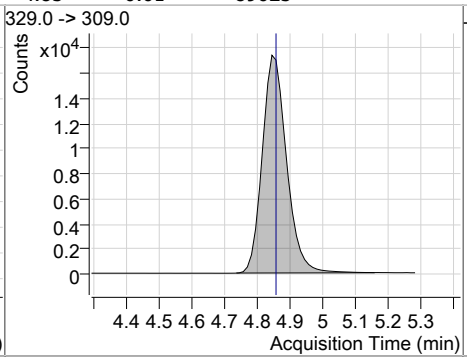
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.26	3.88	0.00	51109				

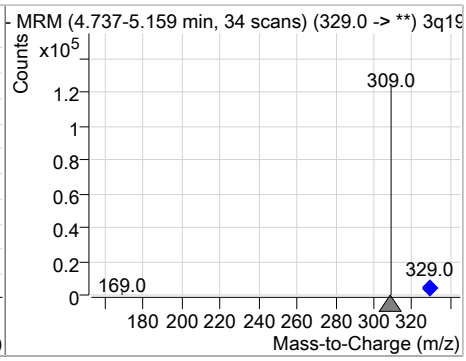


Perfluorinated Compounds by LC/MS/MS

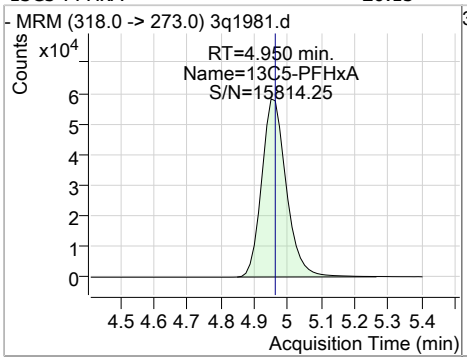
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	18.89	4.85	-0.01	89625				

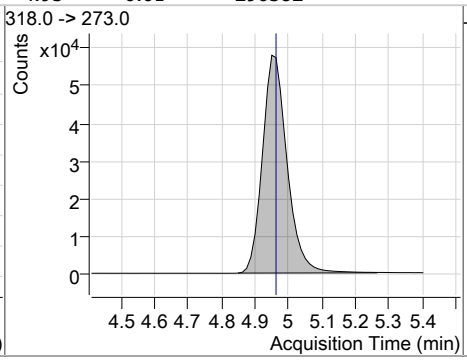


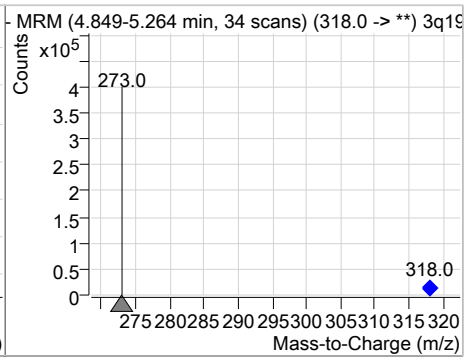




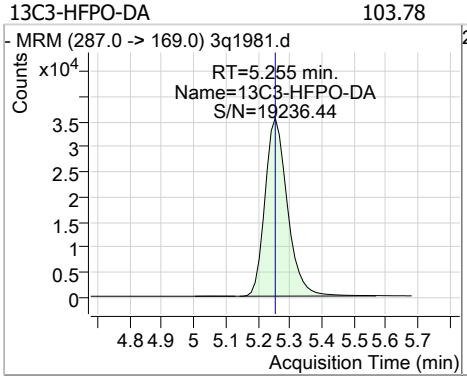
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.15	4.95	-0.01	296582				

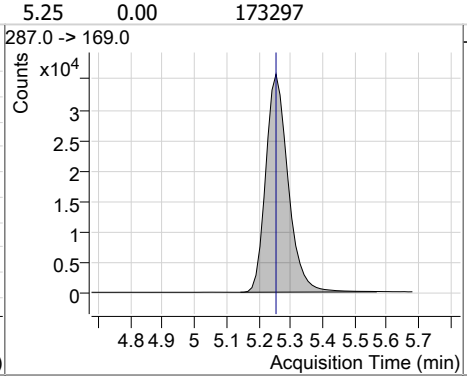


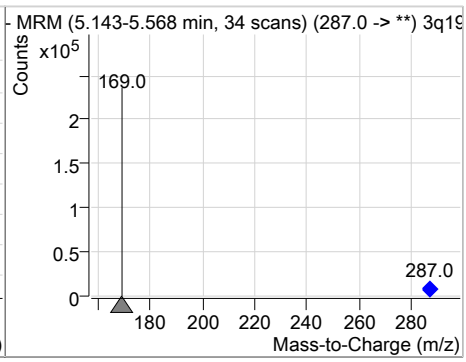




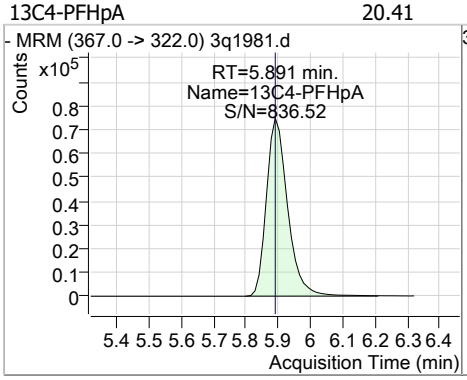
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	103.78	5.25	0.00	173297				

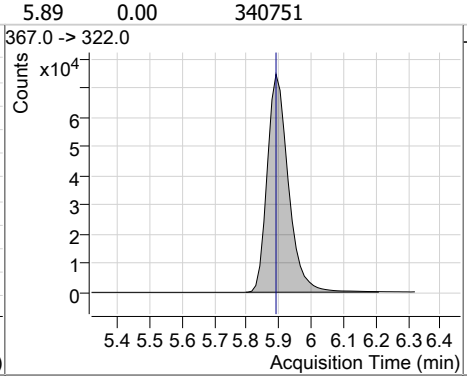


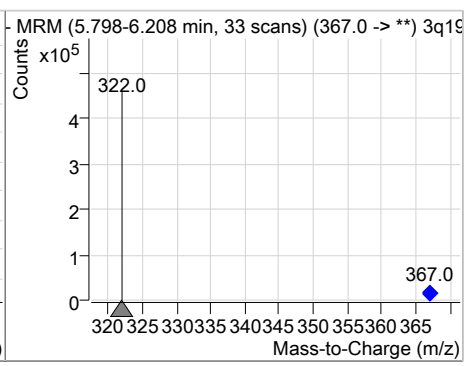




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.41	5.89	0.00	340751				

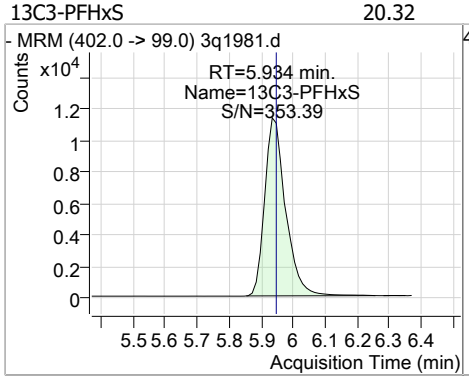


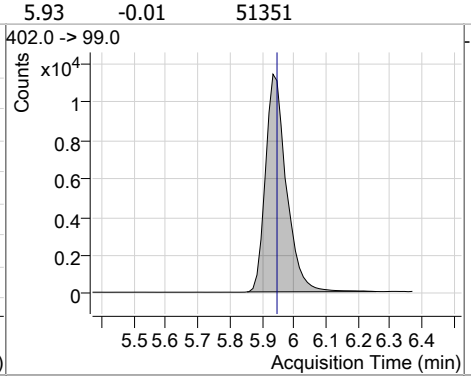


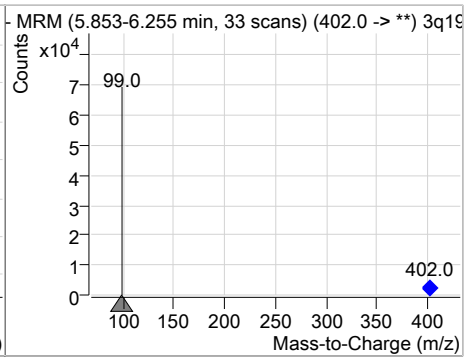


Perfluorinated Compounds by LC/MS/MS

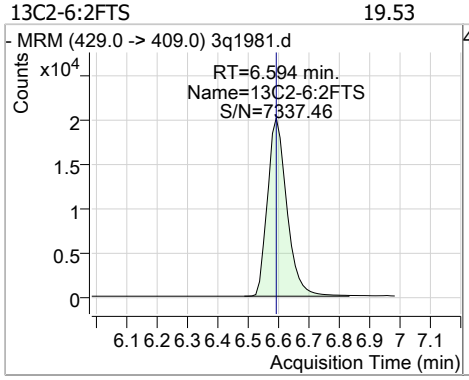
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.32	5.93	-0.01	51351				

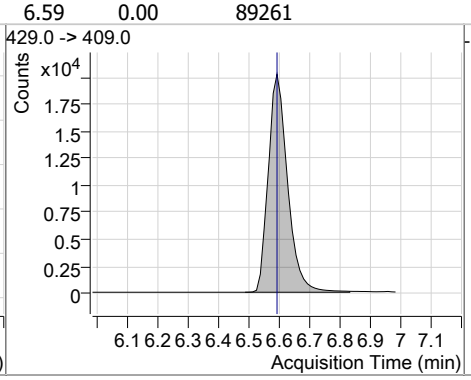


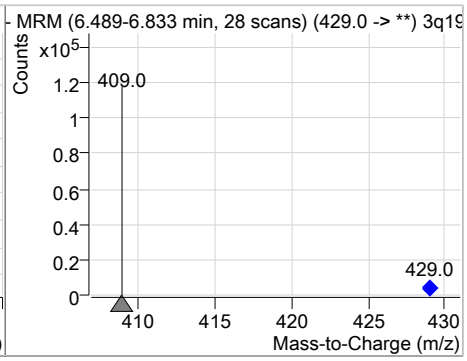




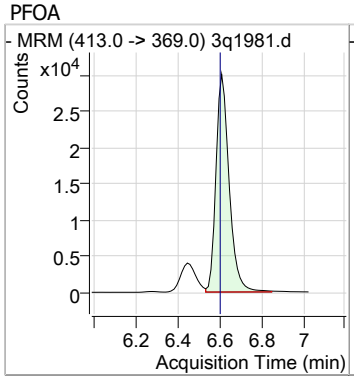
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.53	6.59	0.00	89261				

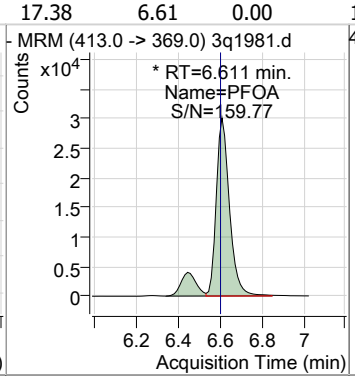


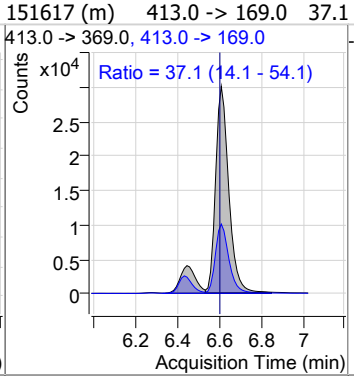


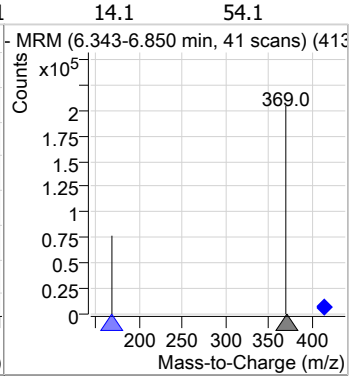


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	17.38	6.61	0.00	151617 (m)	413.0 -> 169.0	37.1	14.1	54.1

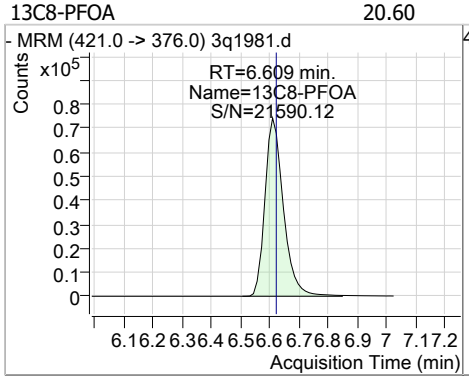


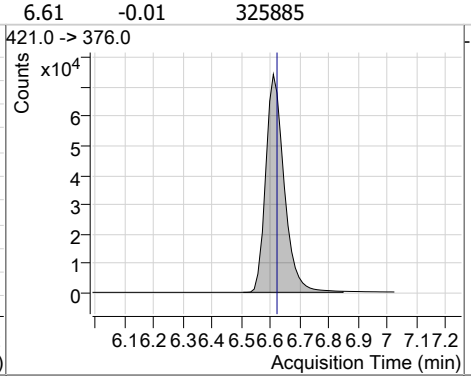


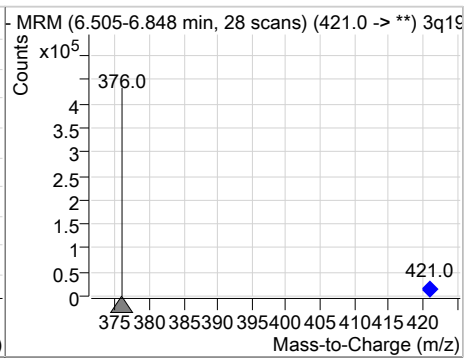




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.60	6.61	-0.01	325885				

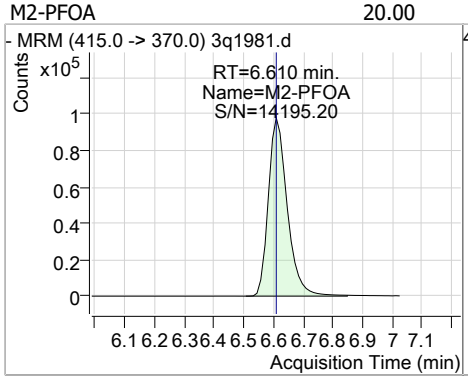


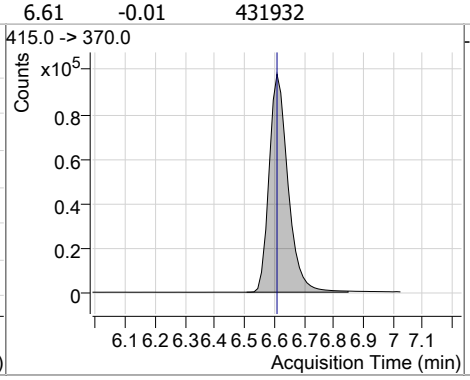


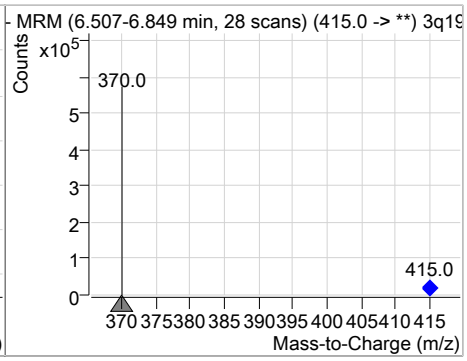


Perfluorinated Compounds by LC/MS/MS

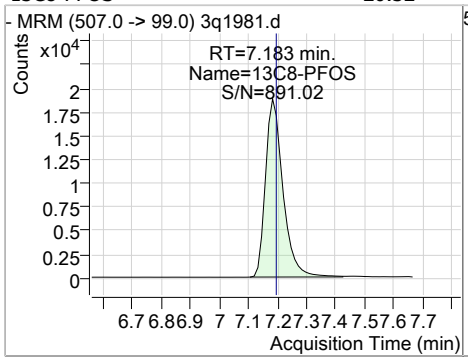
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	431932				

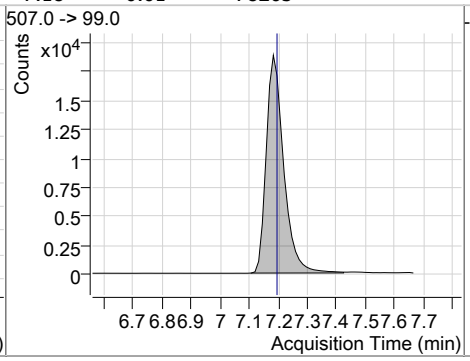


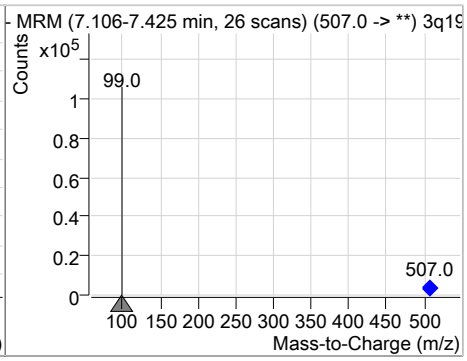




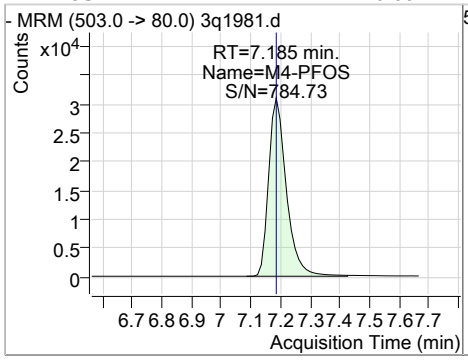
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.32	7.18	-0.01	78265				

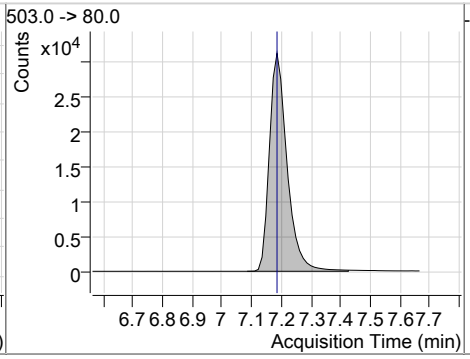


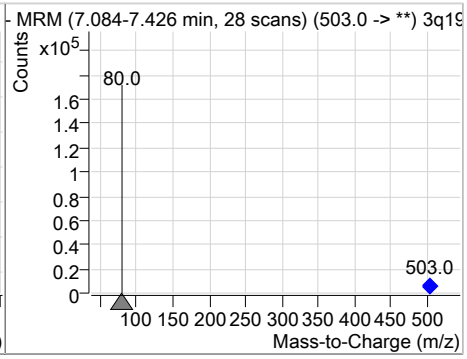




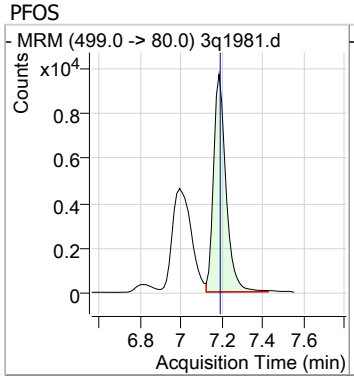
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	128287				

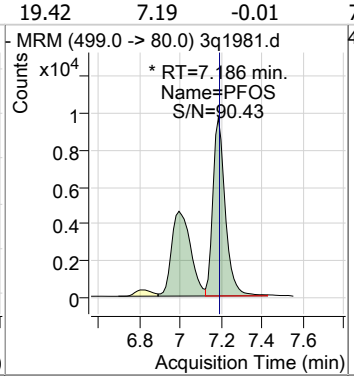


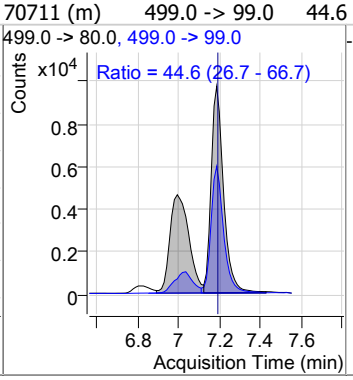


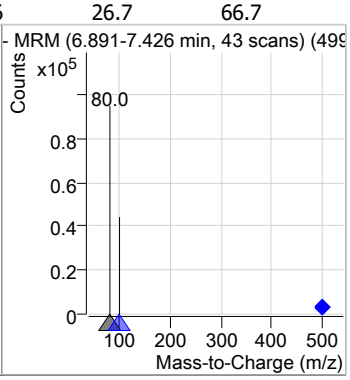


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.42	7.19	-0.01	70711 (m)	499.0 -> 99.0	44.6	26.7	66.7



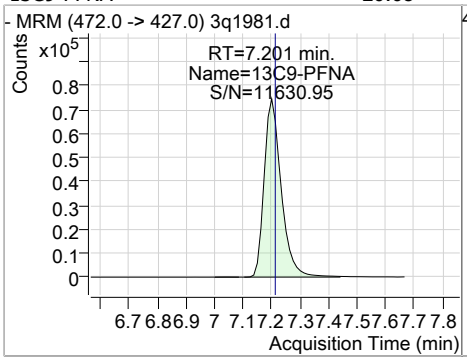


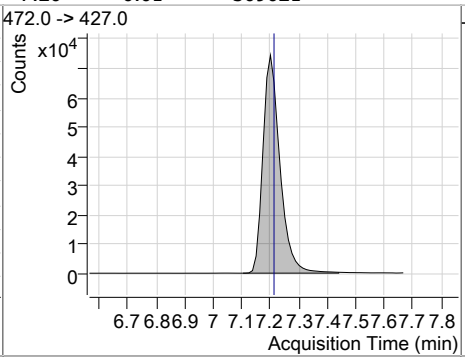


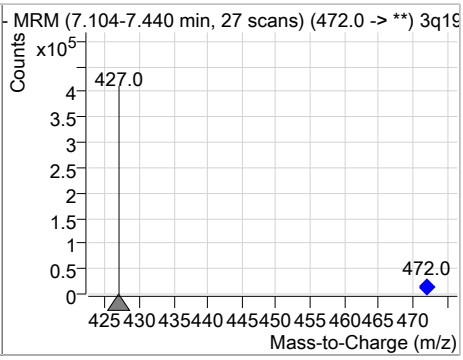


Perfluorinated Compounds by LC/MS/MS

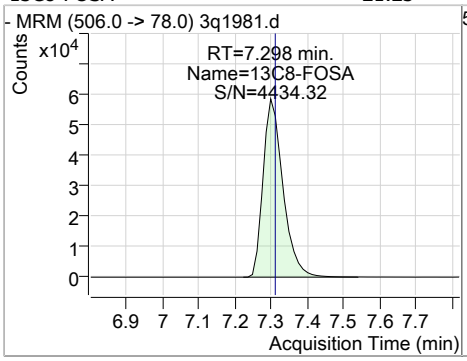
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.68	7.20	-0.01	309021				

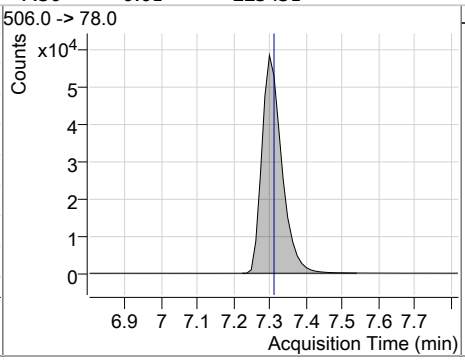


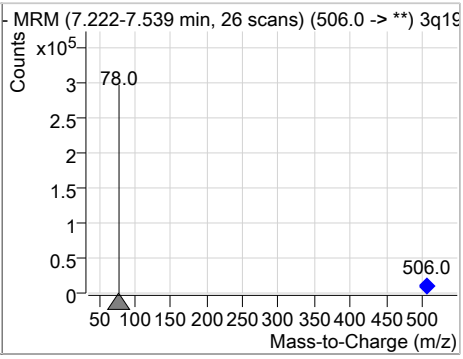




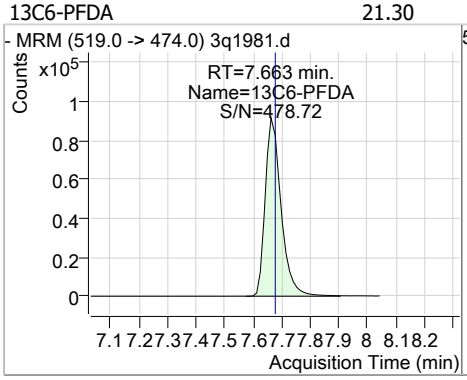
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.23	7.30	-0.01	223431				

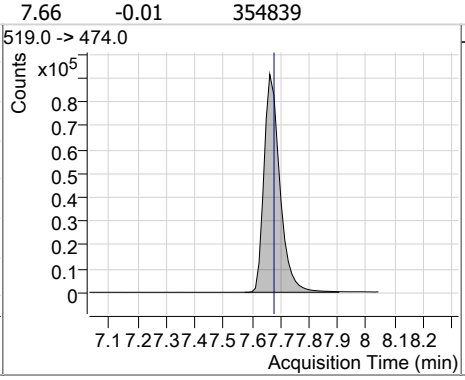


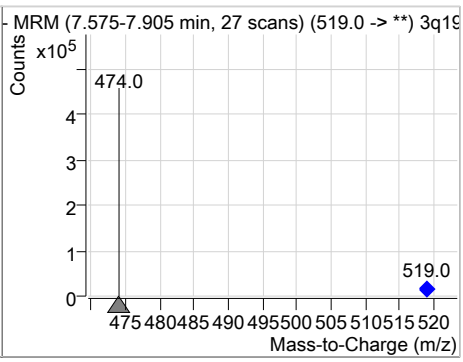




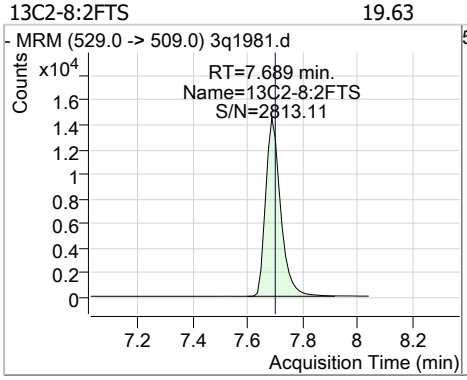
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.30	7.66	-0.01	354839				

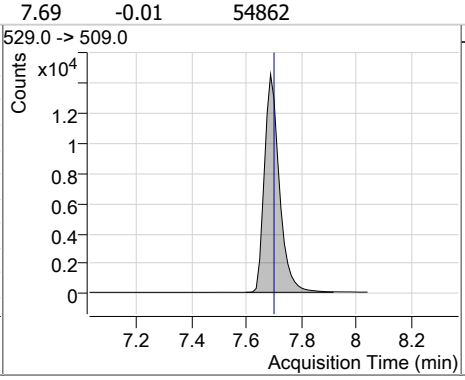


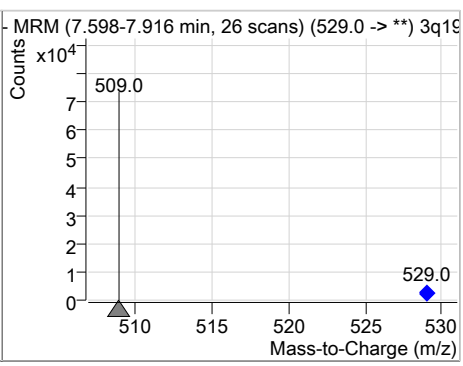




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.63	7.69	-0.01	54862				

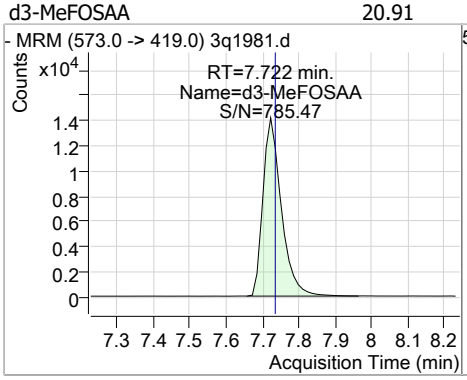


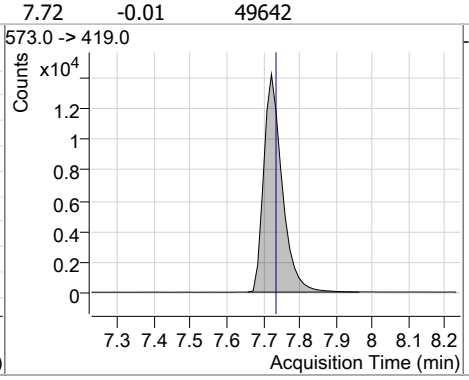


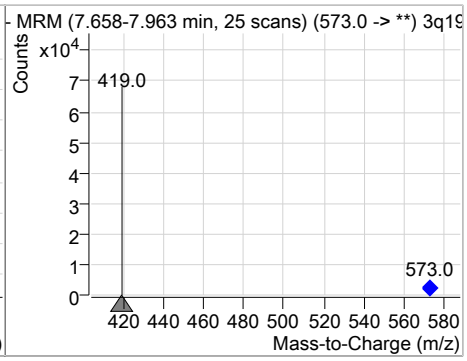


Perfluorinated Compounds by LC/MS/MS

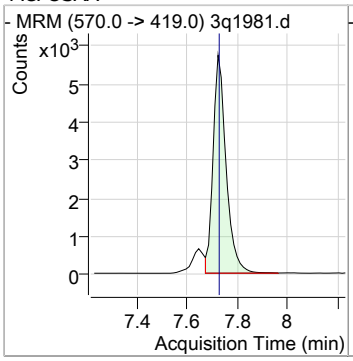
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.91	7.72	-0.01	49642				

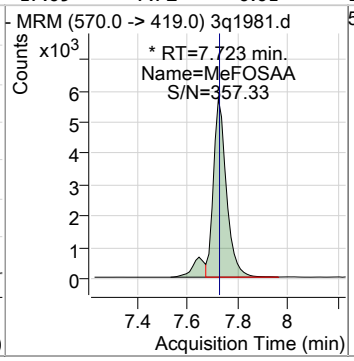


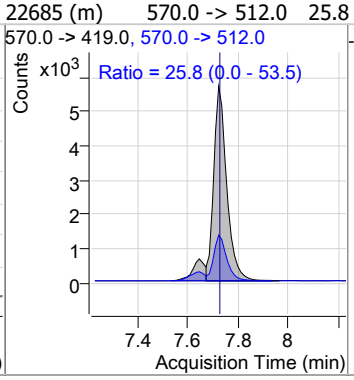


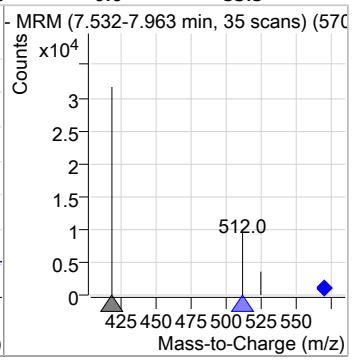


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	17.09	7.72	-0.01	22685 (m)	570.0 -> 512.0	25.8	0.0	53.5

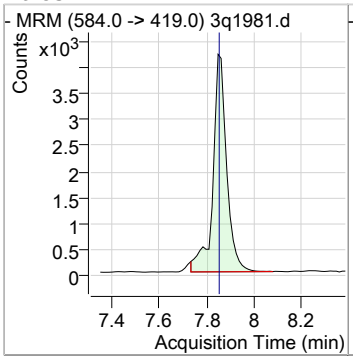


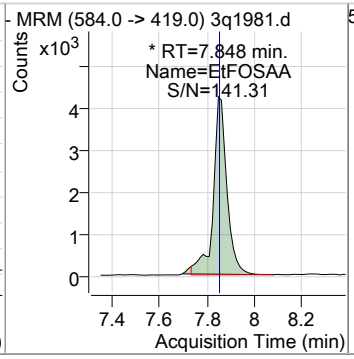


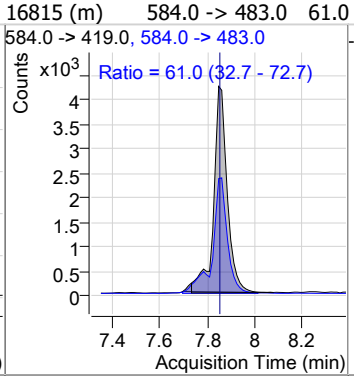


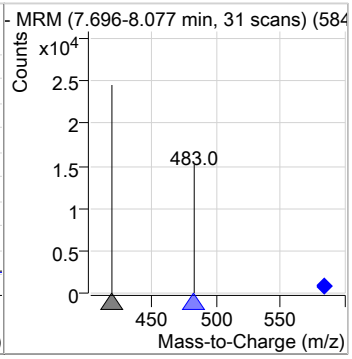


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	15.11	7.85	-0.01	16815 (m)	584.0 -> 483.0	61.0	32.7	72.7

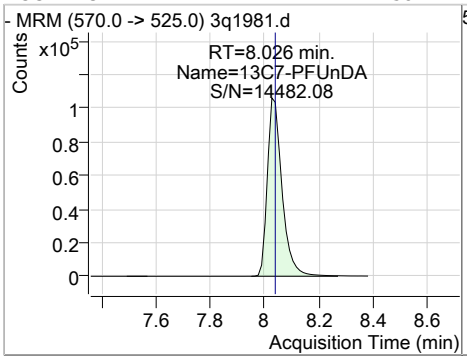


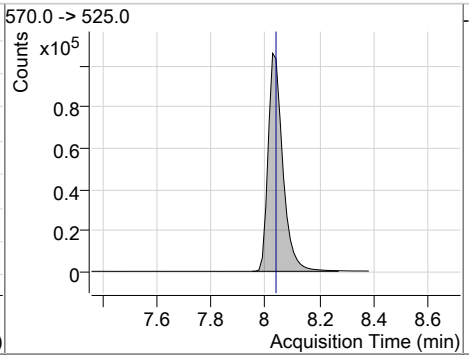


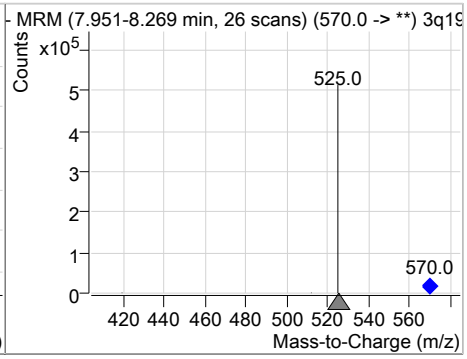




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.58	8.03	-0.01	400123				

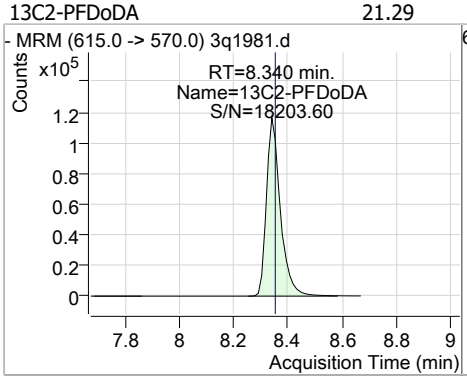


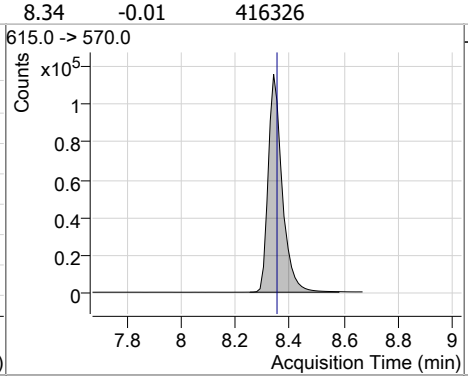


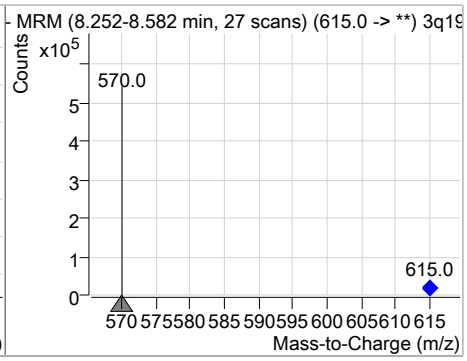


Perfluorinated Compounds by LC/MS/MS

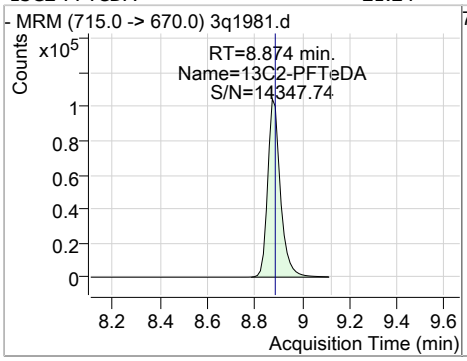
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	21.29	8.34	-0.01	416326				

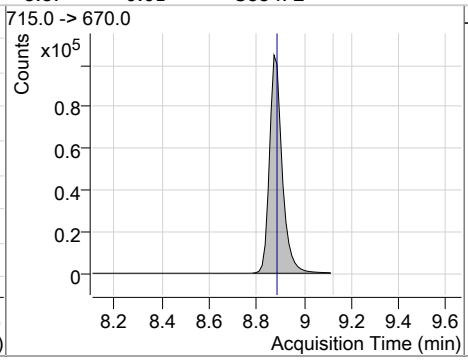


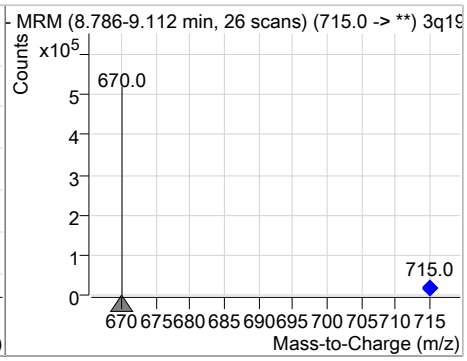




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	21.24	8.87	-0.01	388472				







Manual Integration Approval Summary

Sample Number: S3Q54-ICV54
Lab FileID: 3Q1981.D
Injection Time: 03/21/19 12:11
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.61	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak
MeFOSAA	2355-31-9		7.72	Split peak
EtFOSAA	2991-50-6		7.85	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1982.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 12:26:38 PM
Sample Name : icv54-20
Vial : P3-B2
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

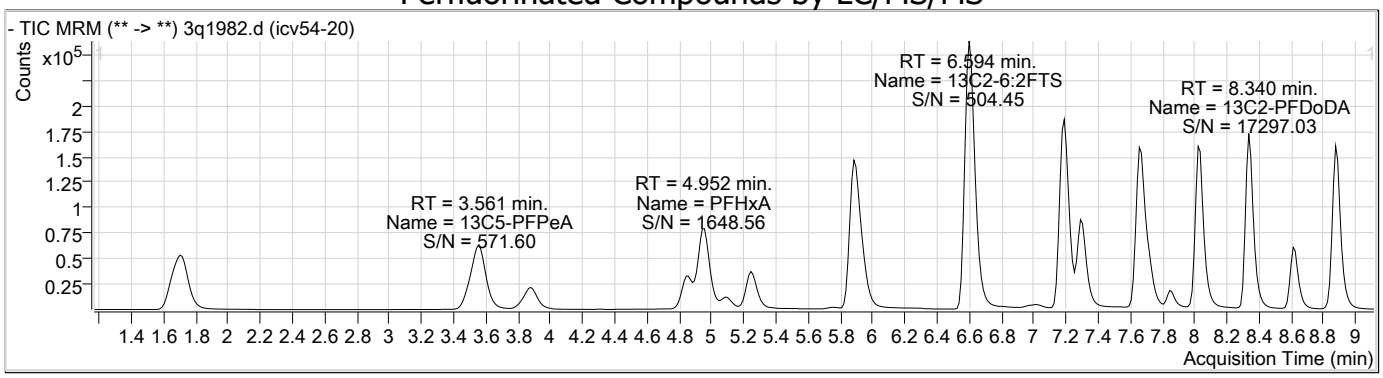
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.702	217.0 -> 172.0	333736	20.00	µg/L	0.000
M5-PFPeA	3.561	268.0 -> 223.0	224414	20.00	µg/L	0.000
M5-PFHxA	4.963	318.0 -> 273.0	298557	20.00	µg/L	0.000
M4-PFHpA	5.891	367.0 -> 322.0	341085	20.00	µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	322829	20.00	µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	305628	20.00	µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	348824	20.00	µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	389519	20.00	µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	407238	20.00	µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	376679	20.00	µg/L	-0.013
M8-FOSA	7.298	506.0 -> 78.0	214606	20.00	µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	50972	20.00	µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	51957	20.00	µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	79163	20.00	µg/L	-0.013
M2-4:2FTS	4.858	329.0 -> 309.0	95386	20.00	µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	92688	20.00	µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	57184	20.00	µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	49646	20.00	µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	176215	100.00	µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	420516	20.00	µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	126655	20.00	µg/L	-0.013
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	95367	20.10	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C2-6:2FTS	6.594	429.0 -> 409.0	92684	20.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C2-8:2FTS	7.689	529.0 -> 509.0	57157	20.45	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C2-PFDoDA	8.340	615.0 -> 570.0	408873	20.91	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%		
13C2-PFTeDA	8.874	715.0 -> 670.0	376762	20.60	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C3-PFBS	3.879	302.0 -> 99.0	50917	20.19	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C3-PFHxS	5.934	402.0 -> 99.0	51855	20.52	µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%		
13C4-PFBA	1.702	217.0 -> 172.0	330773	20.28	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C4-PFHpA	5.891	367.0 -> 322.0	339345	20.33	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.6%		
13C5-PFHxA	4.963	318.0 -> 273.0	296923	20.18	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C5-PFPeA	3.561	268.0 -> 223.0	224415	20.27	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C6-PFDA	7.663	519.0 -> 474.0	348783	20.94	µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

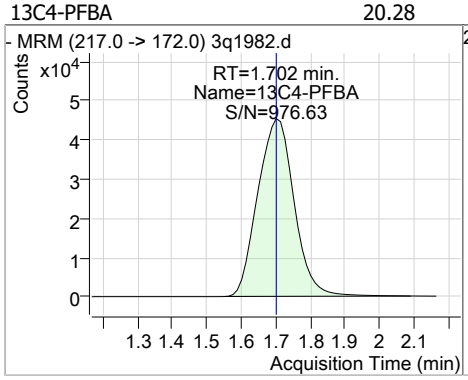
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.7%			
13C7-PFUnDA	8.026	570.0 -> 525.0	391030	21.09	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%			
13C8-FOSA	7.298	506.0 -> 78.0	215417	20.47	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.3%			
13C8-PFOA	6.609	421.0 -> 376.0	322837	20.41	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.0%			
13C8-PFOS	7.183	507.0 -> 99.0	79362	20.60	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.0%			
13C9-PFNA	7.201	472.0 -> 427.0	305422	20.44	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%			
d3-MeFOSAA	7.722	573.0 -> 419.0	49613	20.90	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.5%			
13C3-HFPO-DA	5.255	287.0 -> 169.0	176215	105.53	µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 105.5%			
M2-PFOA	6.610	415.0 -> 370.0	420516	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.185	503.0 -> 80.0	126655	20.00	µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							**QValue**
4:2FTS	4.848	327.0 -> 307.0	47871	18.36	µg/L		100
6:2FTS	6.595	427.0 -> 407.0	40932	17.91	µg/L		100
8:2FTS	7.689	527.0 -> 507.0	27025	19.09	µg/L		98
EtFOSAA	7.848	584.0 -> 419.0	21134	18.95	µg/L		97
FOSA	7.301	498.0 -> 78.0	95361	19.81	µg/L		99
MeFOSAA	7.723	570.0 -> 419.0	25047	18.85	µg/L		97
PFBA	1.710	213.0 -> 169.0	58505	18.50	µg/L		100
PFBS	3.883	299.0 -> 80.0	57365	16.18	µg/L		99
PFDA	7.664	513.0 -> 469.0	140865	17.05	µg/L		99
PFDoDA	8.341	613.0 -> 569.0	180408	19.43	µg/L		100
PFDS	7.999	599.0 -> 80.0	20159	16.81	µg/L		98
PFHpA	5.894	363.0 -> 319.0	293619	19.45	µg/L		100
PFHpS	6.618	449.0 -> 80.0	45167	18.26	µg/L		97
PFHxA	4.952	313.0 -> 269.0	90035	16.94	µg/L		100
PFHxS	5.937	399.0 -> 80.0	45712	16.00	µg/L	m	99
PFNA	7.201	463.0 -> 419.0	167611	17.65	µg/L		100
PFNS	7.648	549.0 -> 80.0	38030	17.77	µg/L		98
PFOA	6.611	413.0 -> 369.0	163810	18.95	µg/L		98
PFOS	7.186	499.0 -> 80.0	66233	18.07	µg/L	m	94
PFPeA	3.564	263.0 -> 219.0	201499	17.72	µg/L		100
PFPeS	5.094	349.0 -> 80.0	34819	15.79	µg/L		99
PFTeDA	8.877	713.0 -> 669.0	200515	17.12	µg/L		100
PFTrDA	8.615	663.0 -> 619.0	205038	20.45	µg/L		99
PFUnDA	8.028	563.0 -> 519.0	162756	19.26	µg/L		100
11Cl-PF3OUdS	-	631.0 -> 451.0	-	N.D.			
9Cl-PF3ONS	-	531.0 -> 351.0	-	N.D.			
ADONA	-	377.0 -> 251.0	-	N.D.			
HFPO-DA	-	329.0 -> 169.0	-	N.D.			

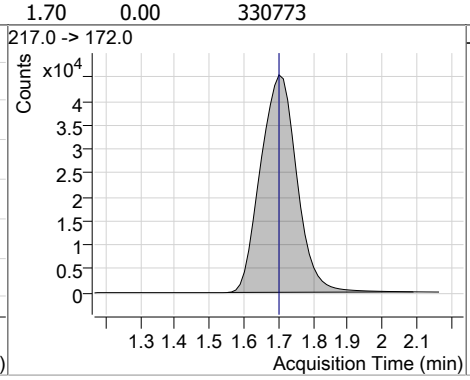
 # = Qualifier out of range, m = manually integrated, + = Area summed

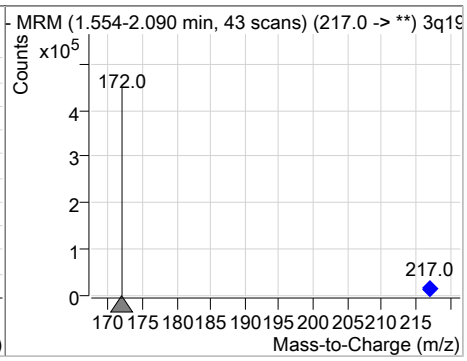
Perfluorinated Compounds by LC/MS/MS



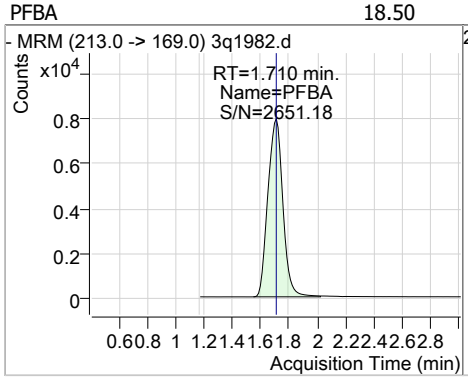
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.28	1.70	0.00	330773				

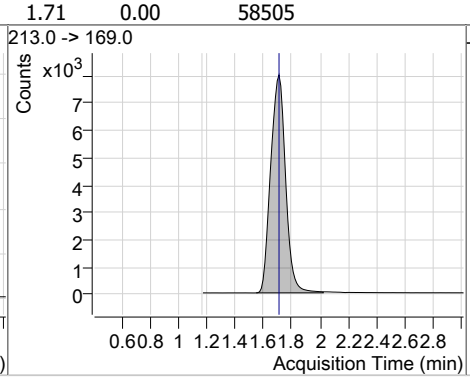


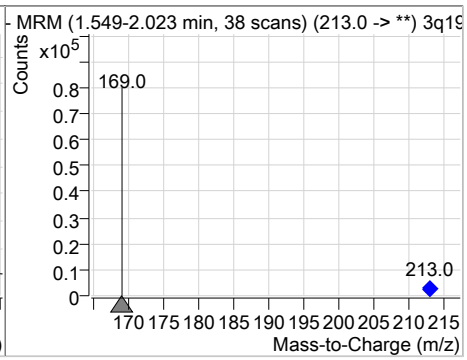




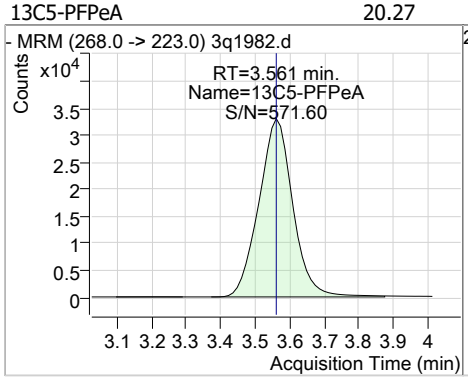
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	18.50	1.71	0.00	58505				

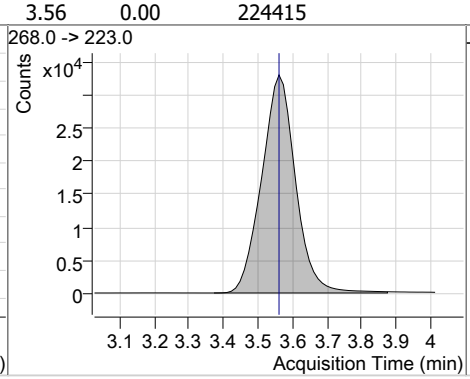


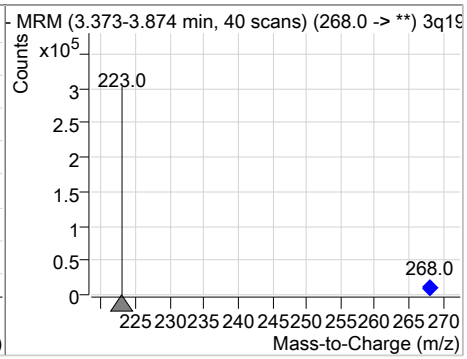




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.27	3.56	0.00	224415				

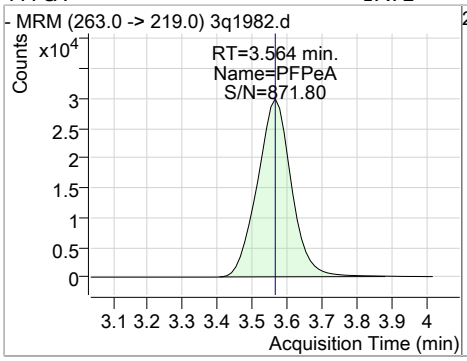


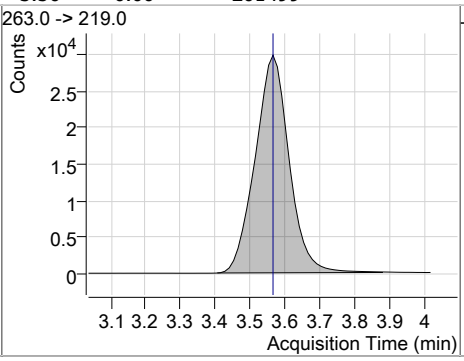


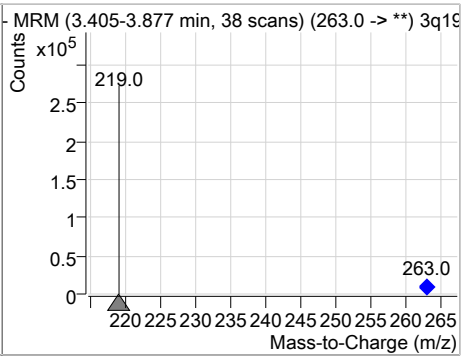


Perfluorinated Compounds by LC/MS/MS

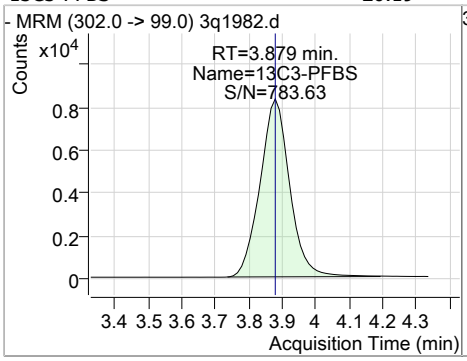
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	17.72	3.56	0.00	201499				

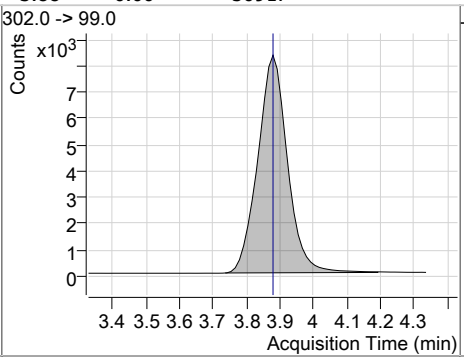


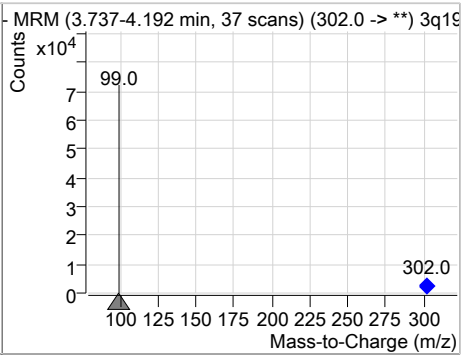




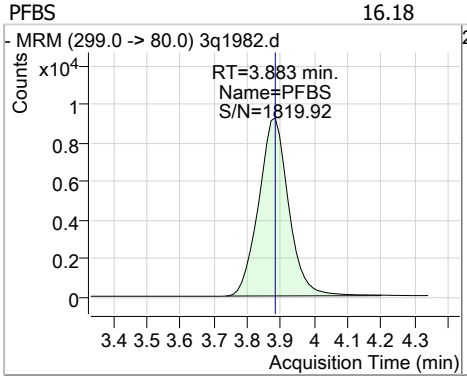
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.19	3.88	0.00	50917				

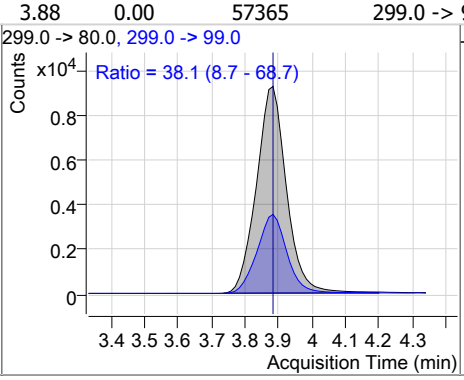


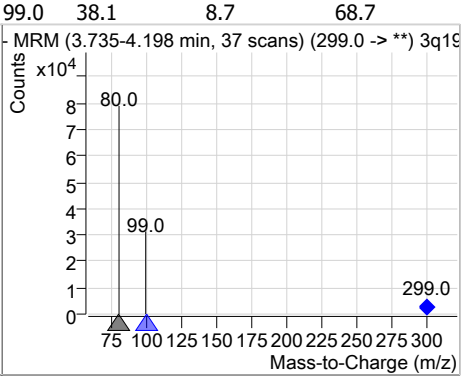




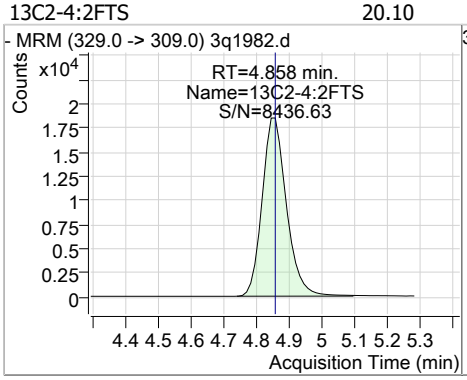
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	16.18	3.88	0.00	57365	299.0 -> 99.0	38.1	8.7	68.7

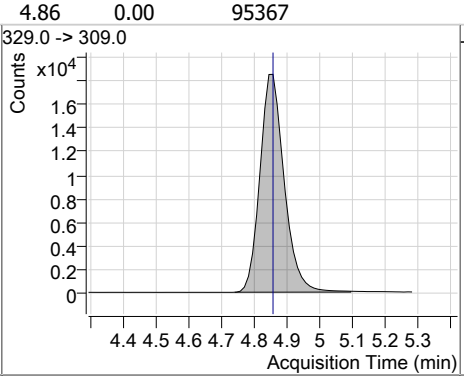


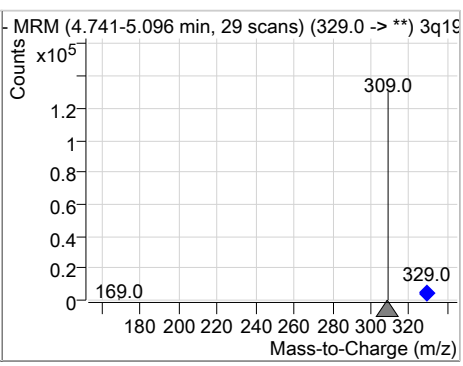




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	20.10	4.86	0.00	95367				

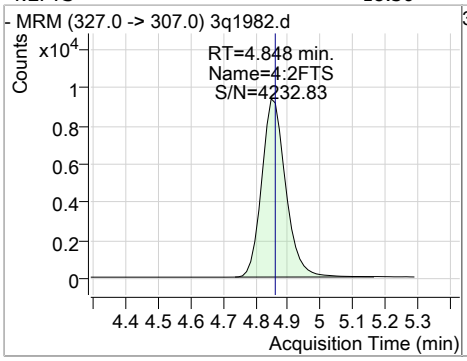


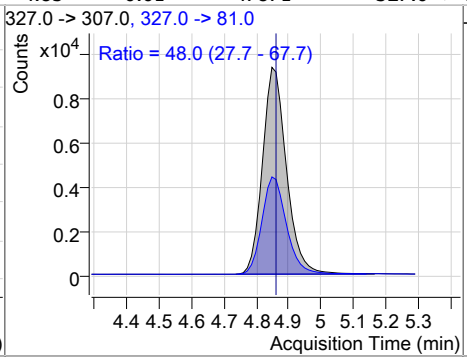


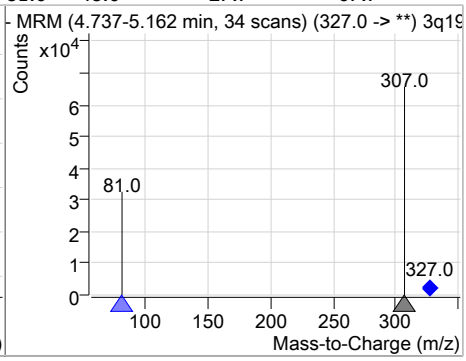


Perfluorinated Compounds by LC/MS/MS

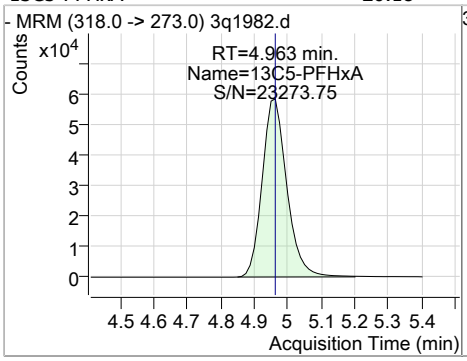
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	18.36	4.85	-0.01	47871	327.0 -> 81.0	48.0	27.7	67.7

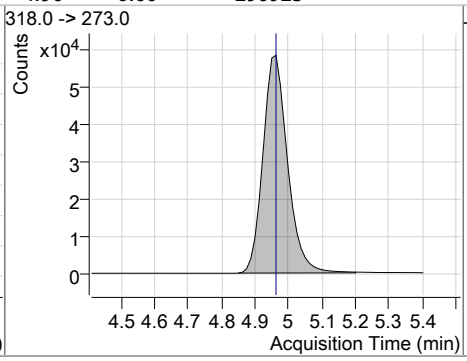


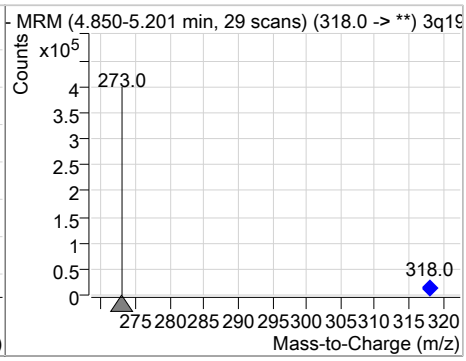




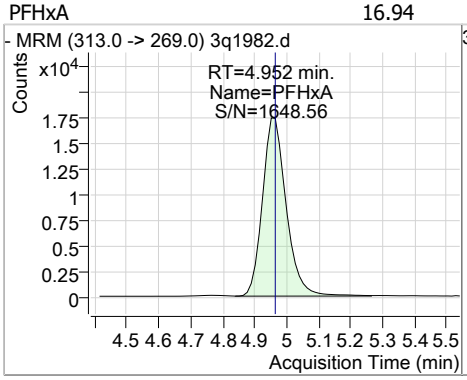
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.18	4.96	0.00	296923				

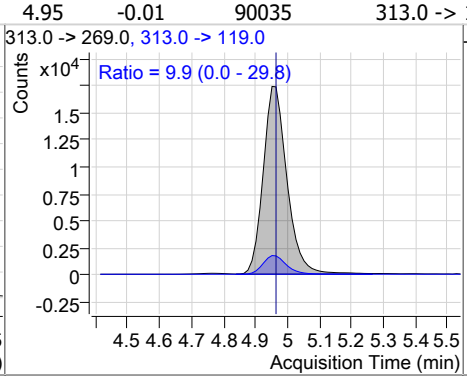


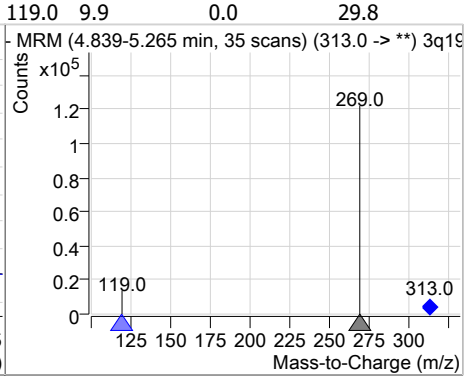




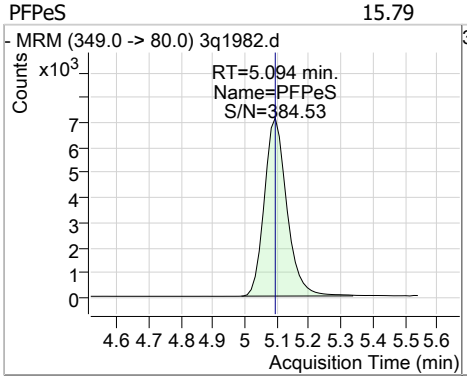
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	16.94	4.95	-0.01	90035	313.0 -> 119.0	9.9	0.0	29.8

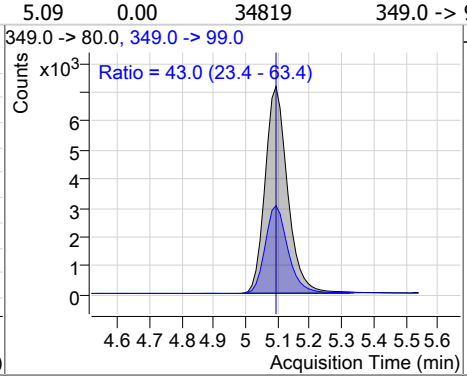


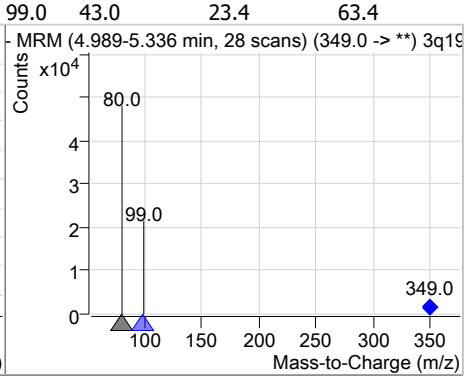




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	15.79	5.09	0.00	34819	349.0 -> 99.0	43.0	23.4	63.4

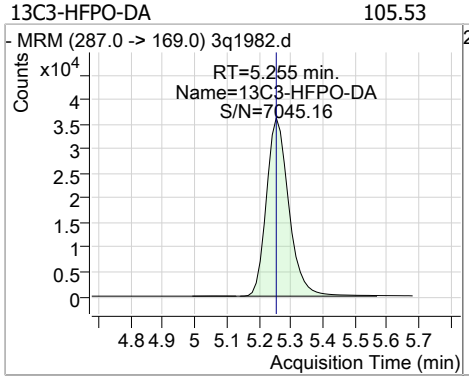


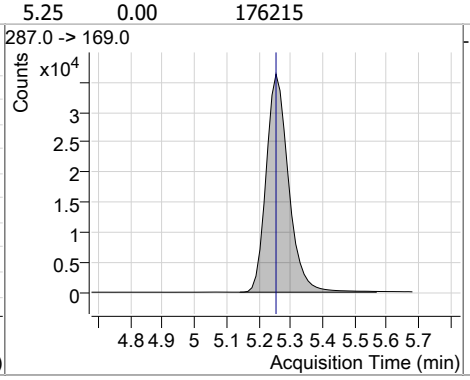


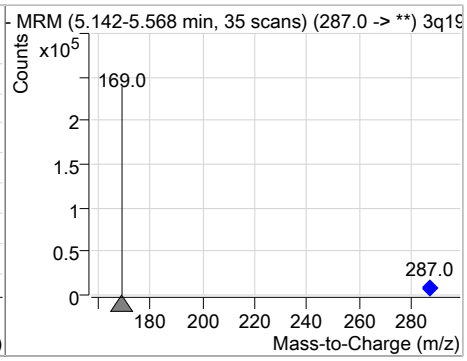


Perfluorinated Compounds by LC/MS/MS

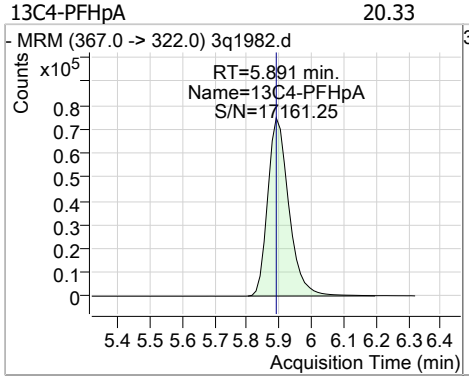
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	105.53	5.25	0.00	176215				

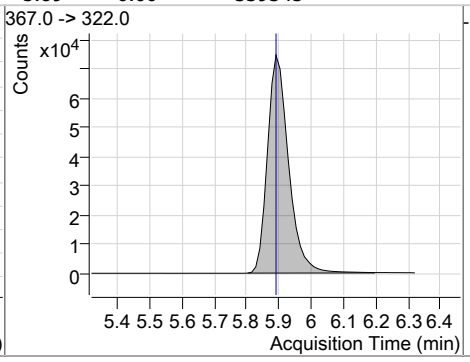


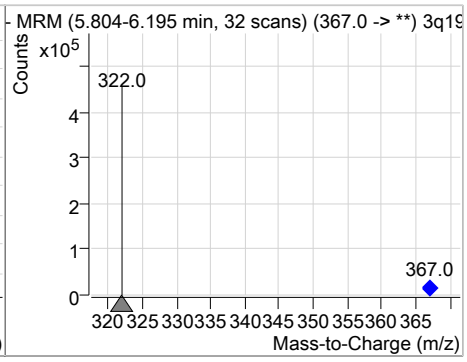




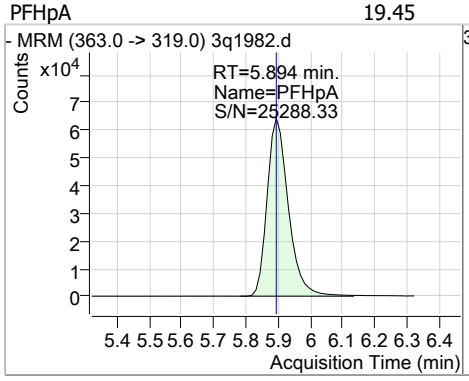
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.33	5.89	0.00	339345				

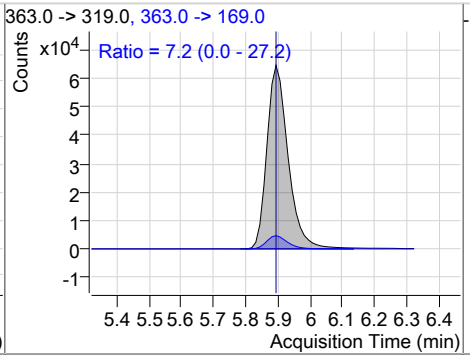


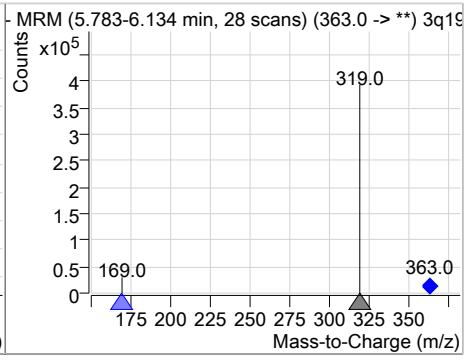




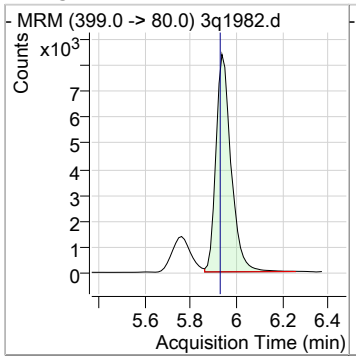
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.45	5.89	0.00	293619	363.0 -> 169.0	7.2	0.0	27.2

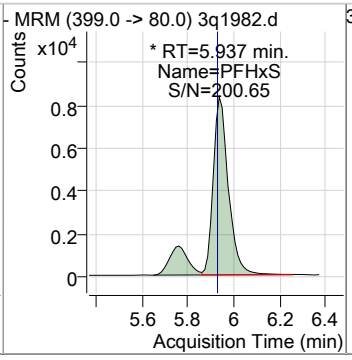


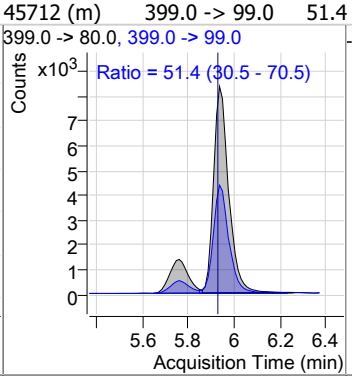


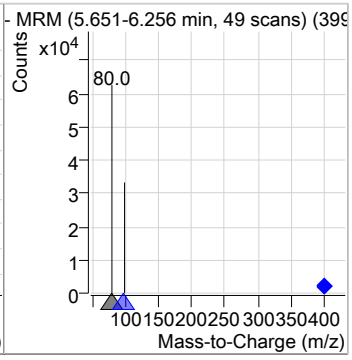


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	16.00	5.94	0.00	45712 (m)	399.0 -> 99.0	51.4	30.5	70.5



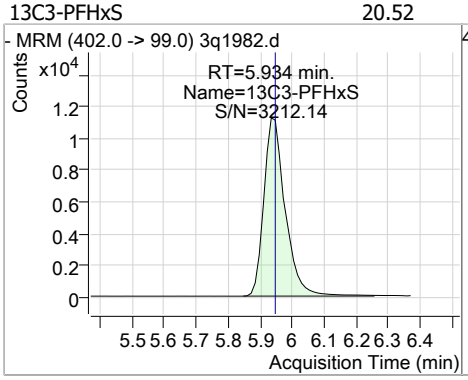


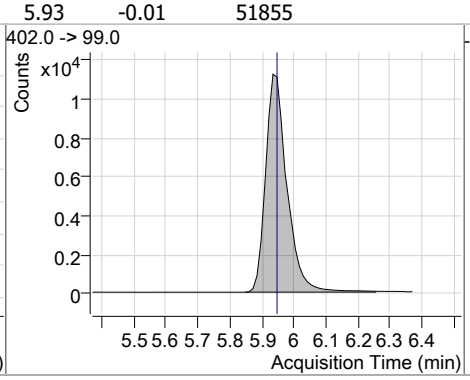


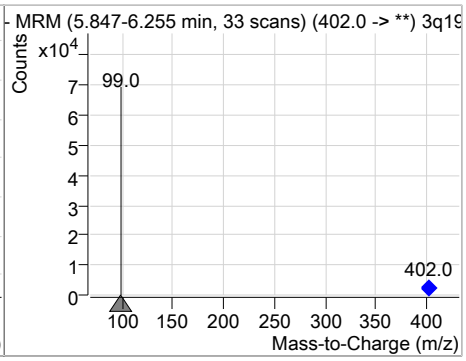


Perfluorinated Compounds by LC/MS/MS

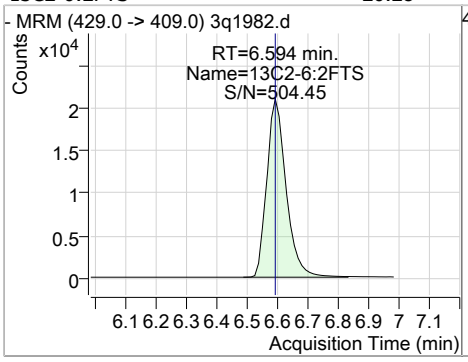
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.52	5.93	-0.01	51855				

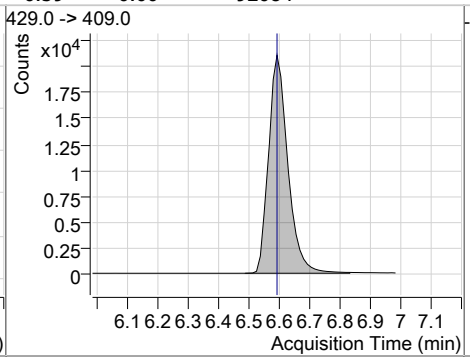


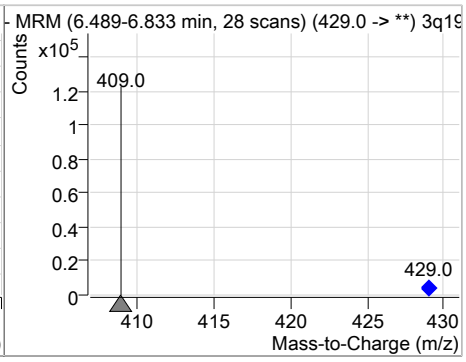




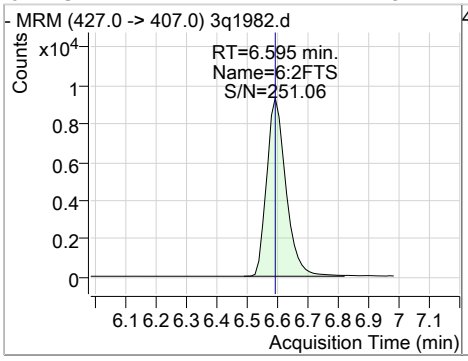
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	20.28	6.59	0.00	92684				

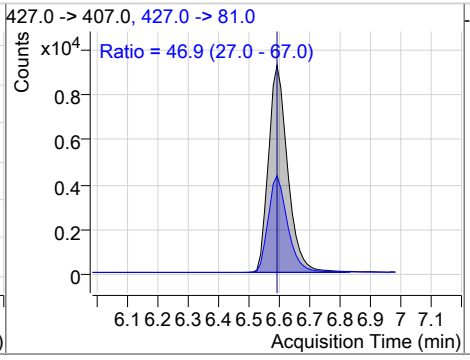


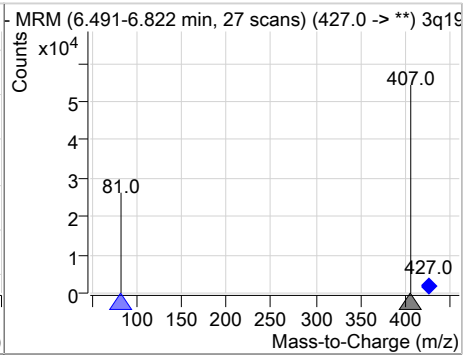




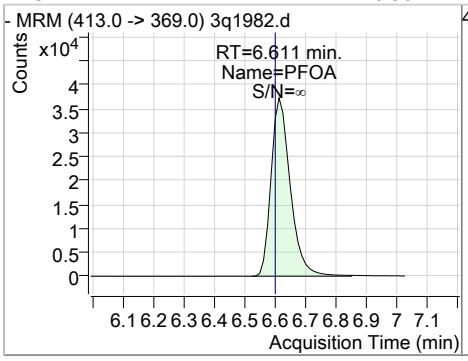
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	17.91	6.59	0.00	40932	427.0 -> 81.0	46.9	27.0	67.0

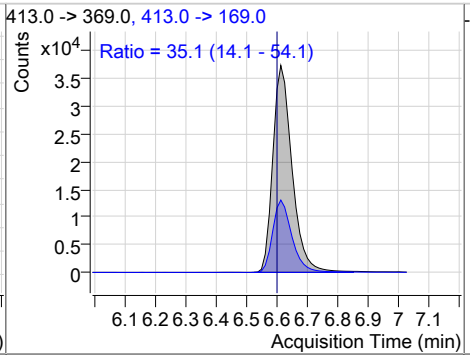


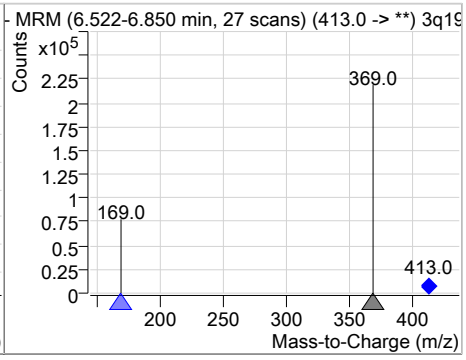




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	18.95	6.61	0.00	163810	413.0 -> 169.0	35.1	14.1	54.1

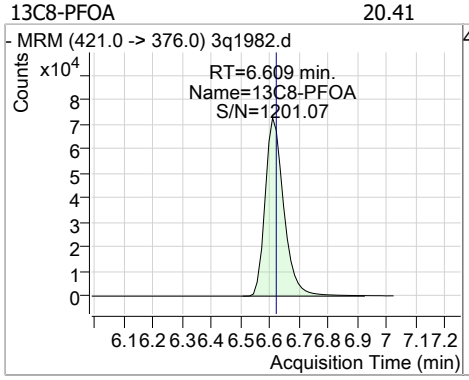


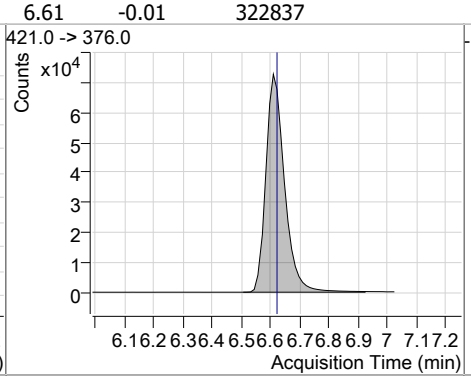


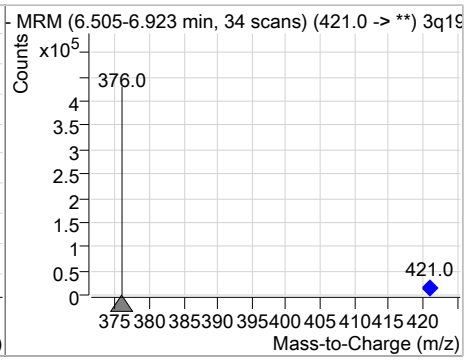


Perfluorinated Compounds by LC/MS/MS

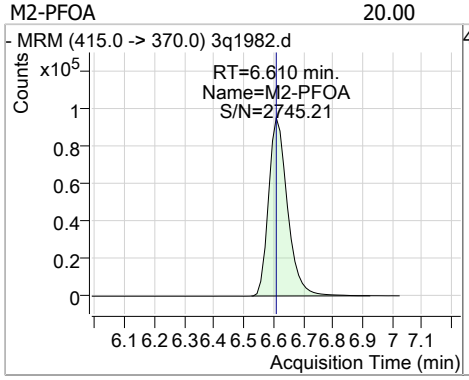
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.41	6.61	-0.01	322837				

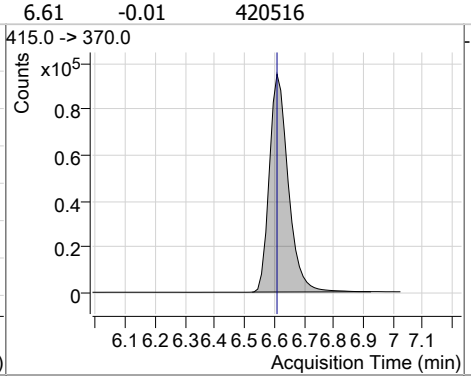


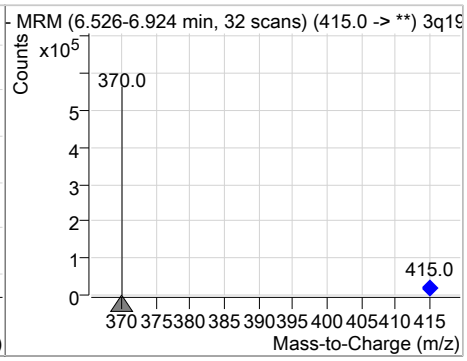




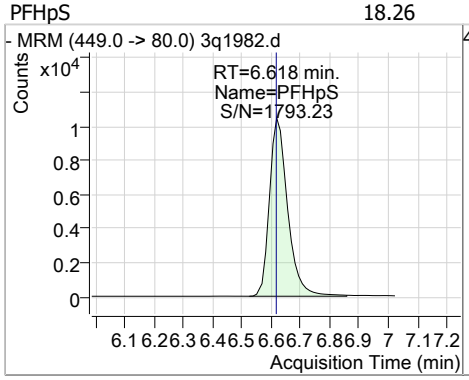
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	420516				

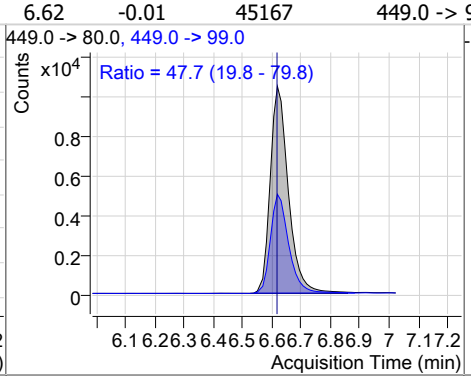


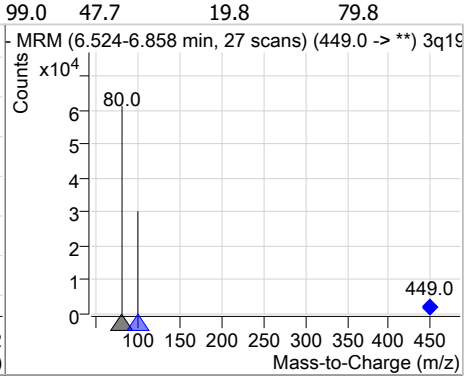




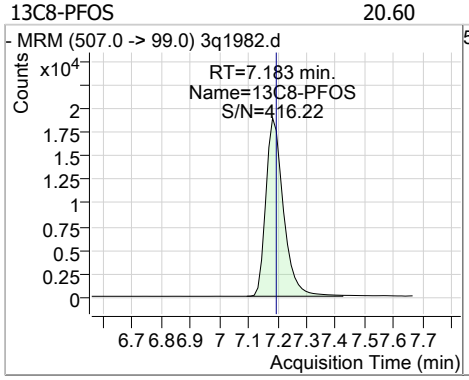
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	18.26	6.62	-0.01	45167	449.0 -> 99.0	47.7	19.8	79.8

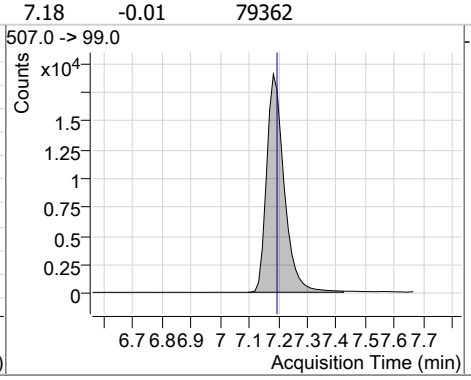


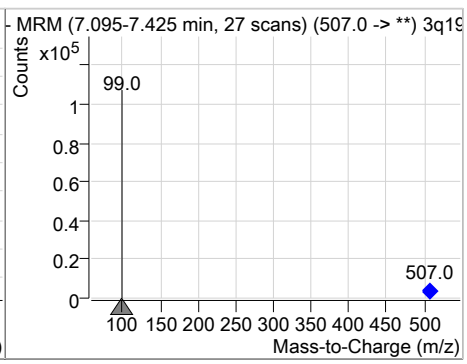




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.60	7.18	-0.01	79362				

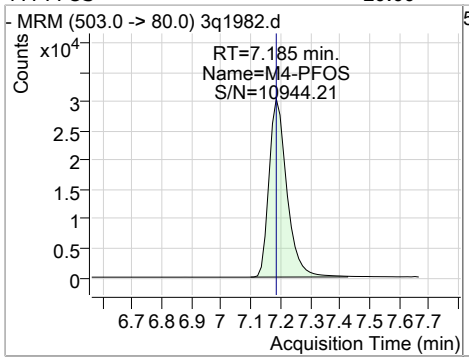


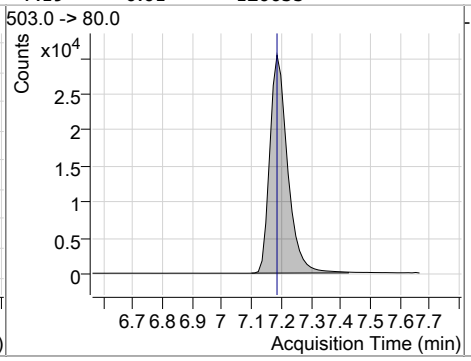


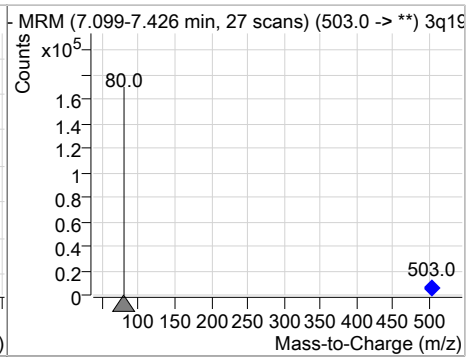


Perfluorinated Compounds by LC/MS/MS

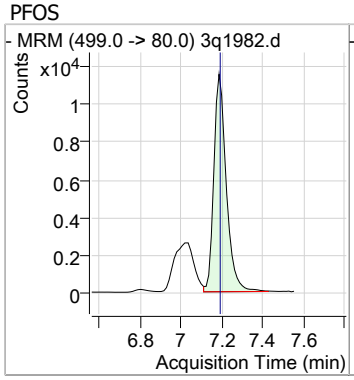
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	126655				

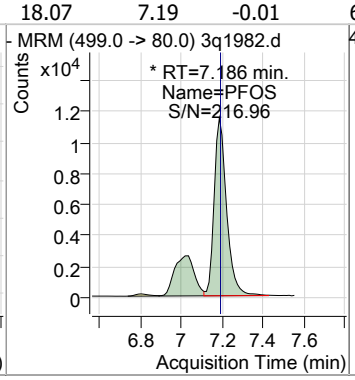


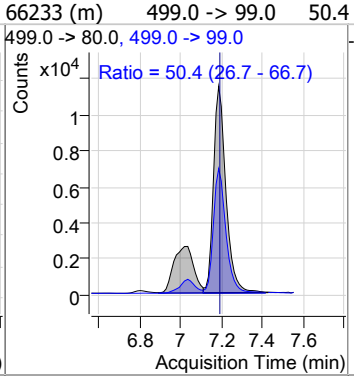


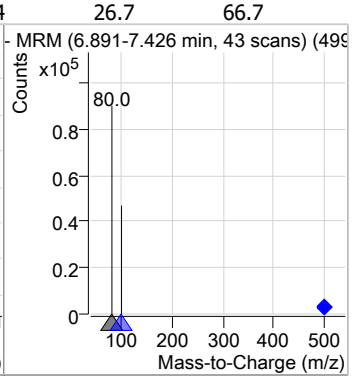


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.07	7.19	-0.01	66233 (m)	499.0 -> 99.0	50.4	26.7	66.7

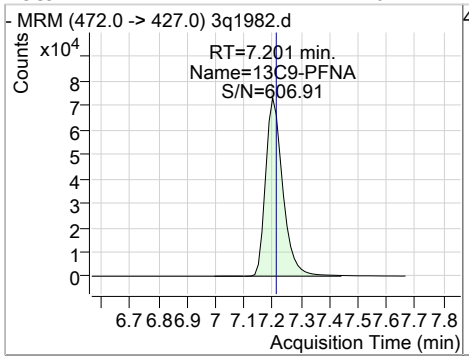


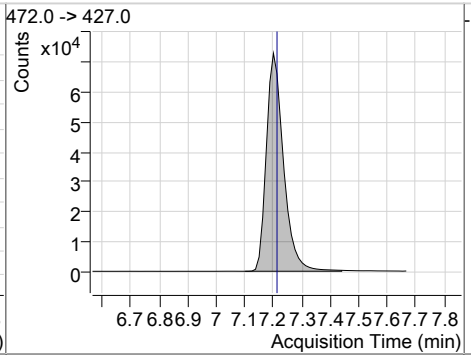


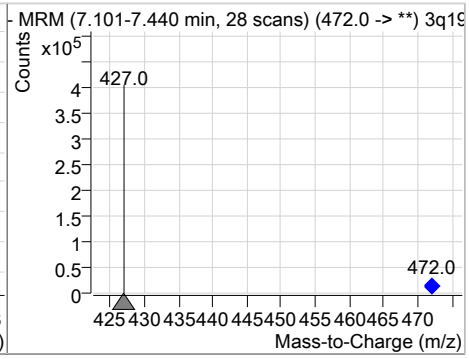




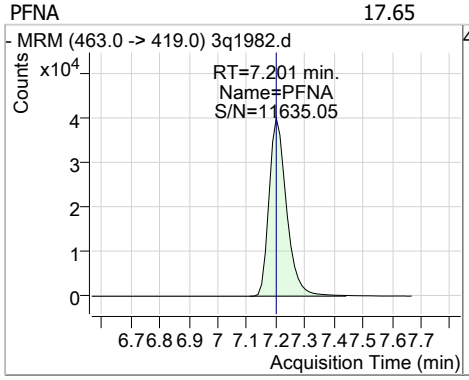
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.44	7.20	-0.01	305422				

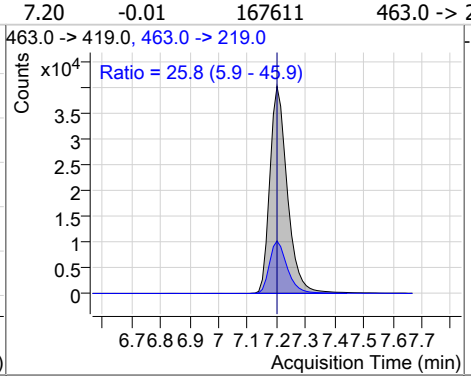


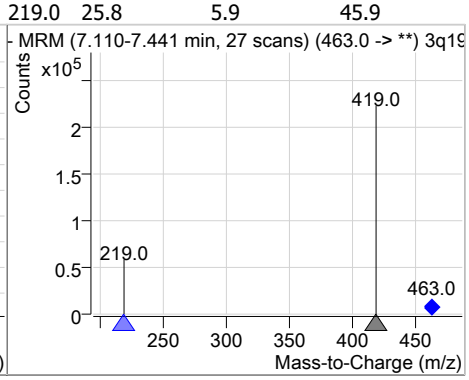




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	17.65	7.20	-0.01	167611	463.0 -> 219.0	25.8	5.9	45.9

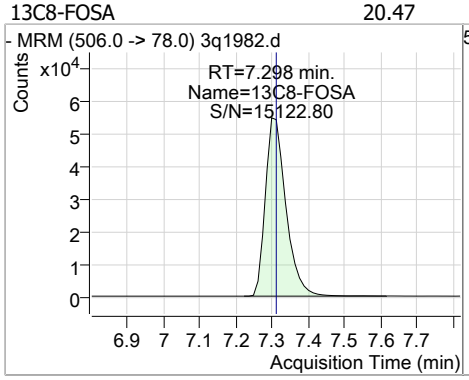


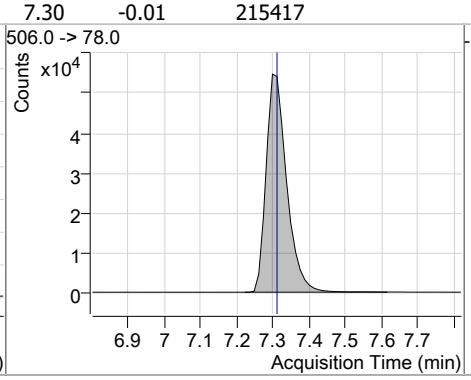


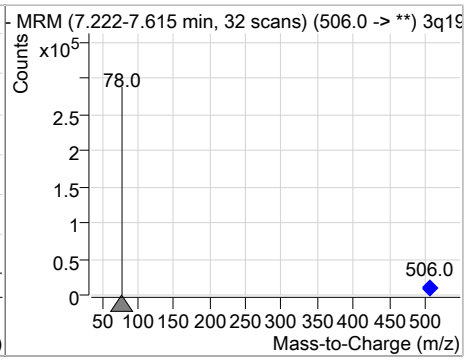


Perfluorinated Compounds by LC/MS/MS

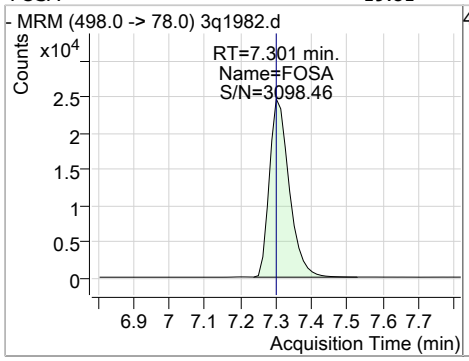
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.47	7.30	-0.01	215417				

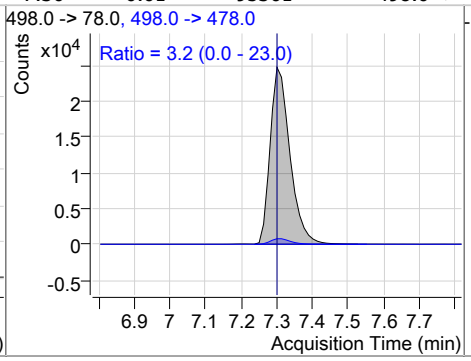


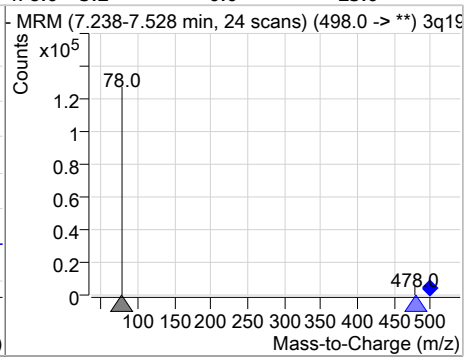




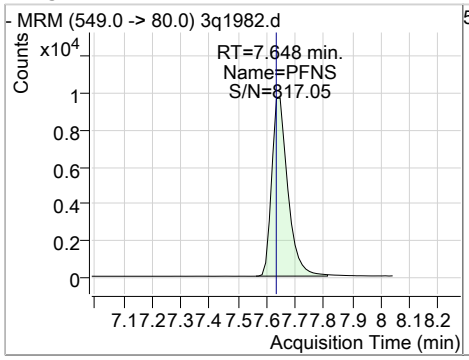
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.81	7.30	-0.01	95361	498.0 -> 478.0	3.2	0.0	23.0

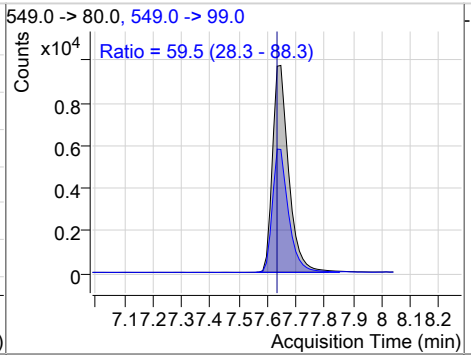


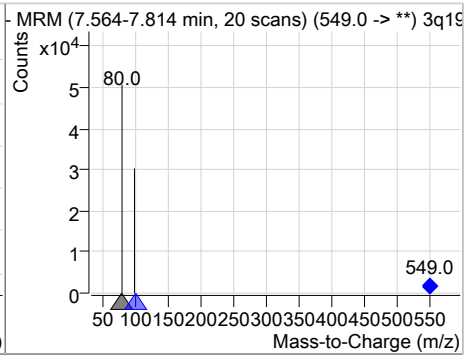




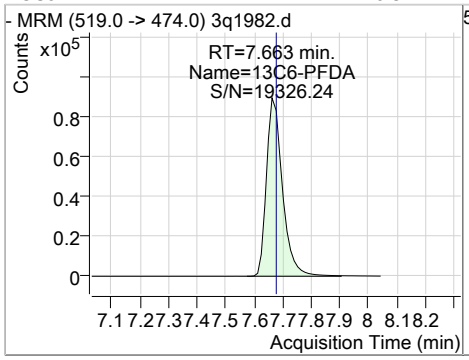
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	17.77	7.65	0.00	38030	549.0 -> 99.0	59.5	28.3	88.3

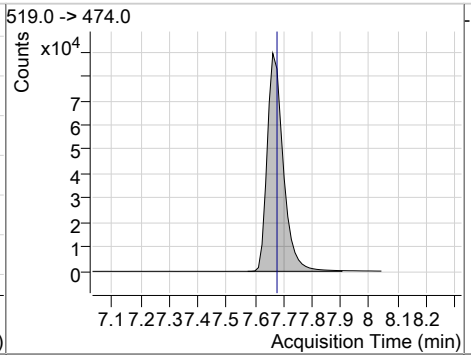


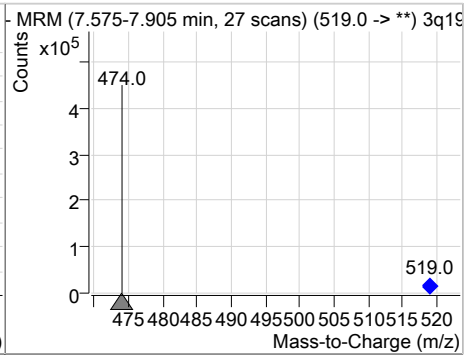




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.94	7.66	-0.01	348783				

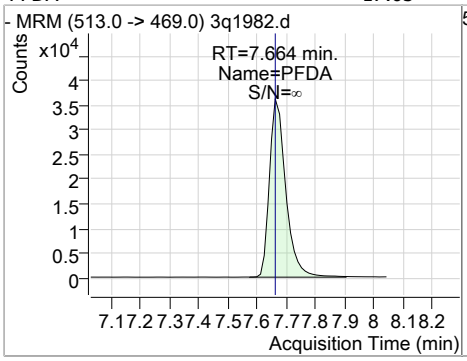


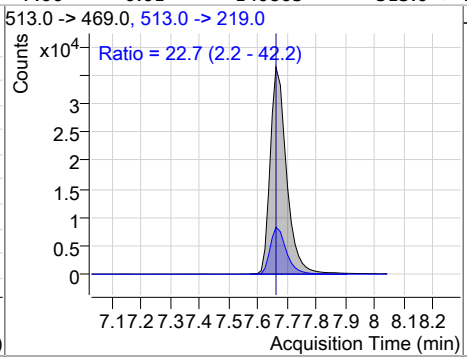


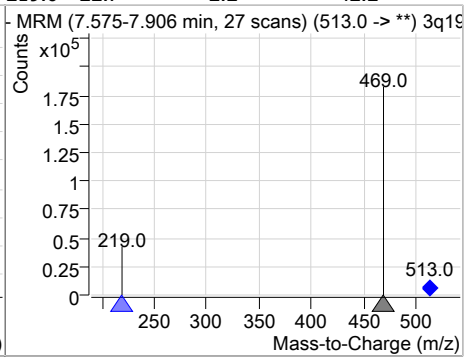


Perfluorinated Compounds by LC/MS/MS

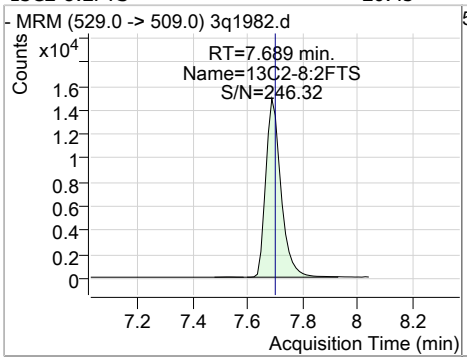
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	17.05	7.66	-0.01	140865	513.0 -> 219.0	22.7	2.2	42.2

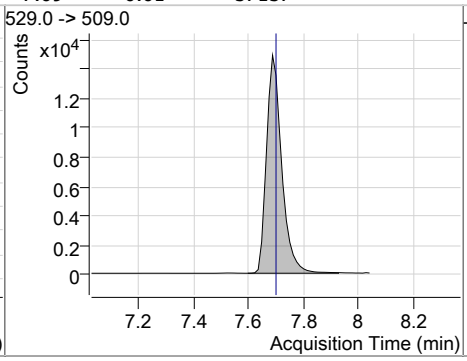


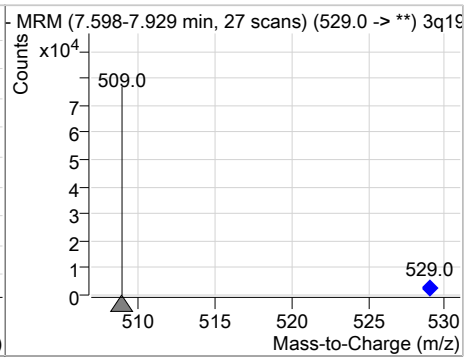




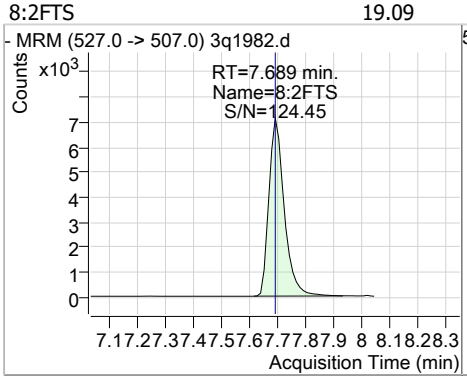
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.45	7.69	-0.01	57157				

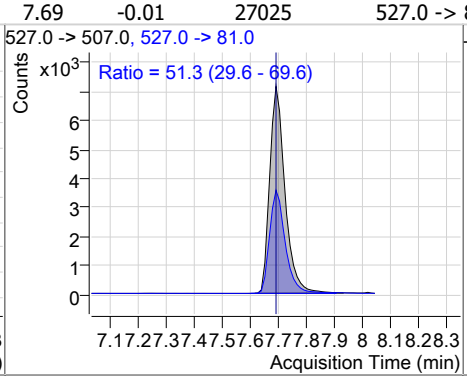


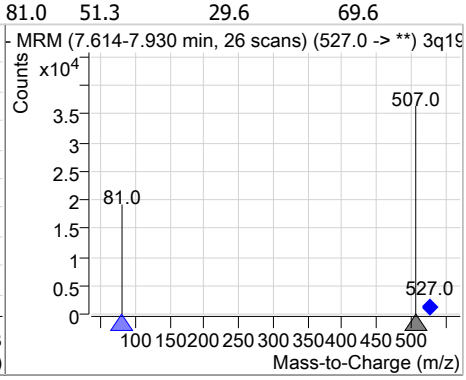




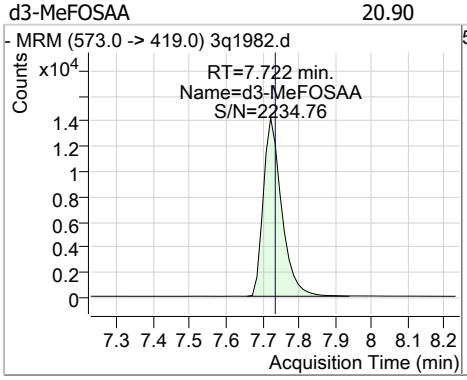
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	19.09	7.69	-0.01	27025	527.0 -> 81.0	51.3	29.6	69.6

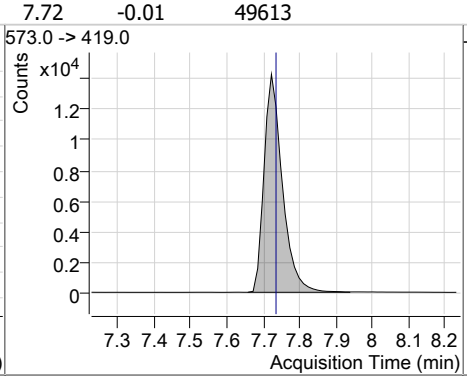


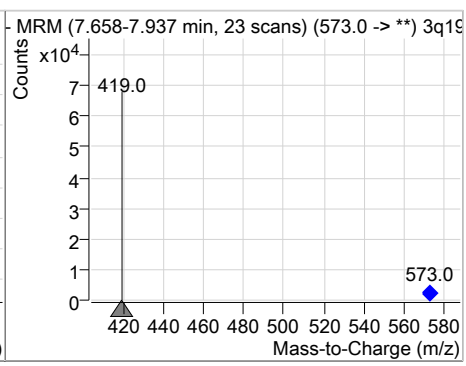




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.90	7.72	-0.01	49613				

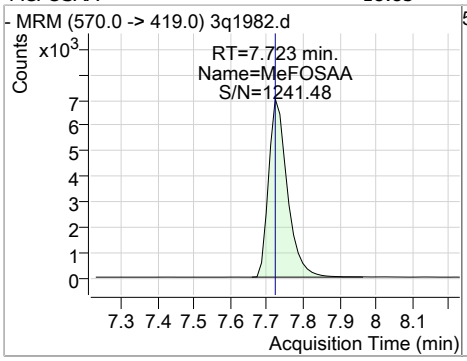


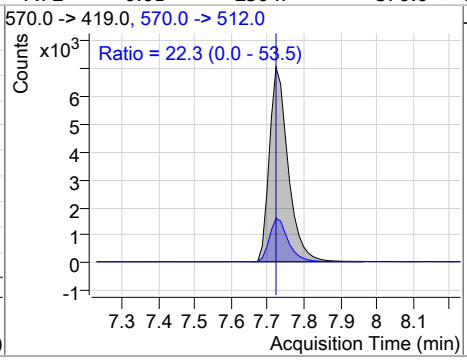


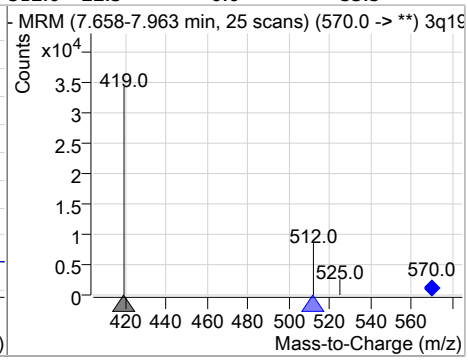


Perfluorinated Compounds by LC/MS/MS

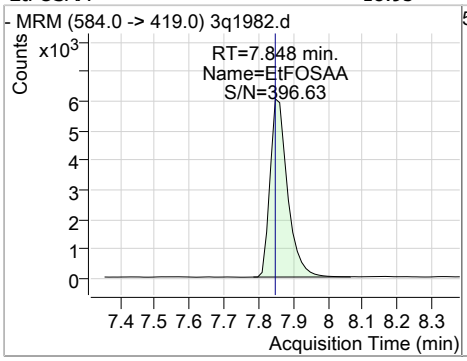
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	18.85	7.72	-0.01	25047	570.0 -> 512.0	22.3	0.0	53.5

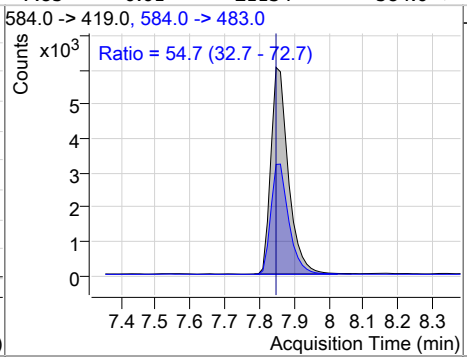


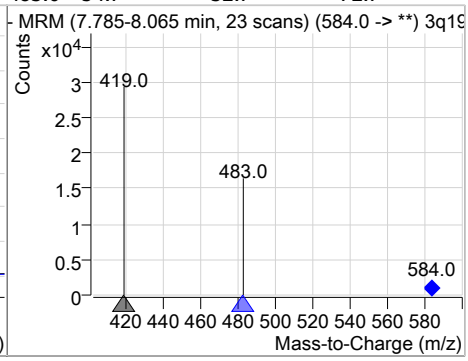




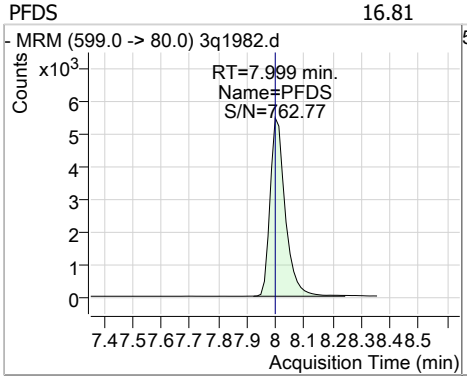
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	18.95	7.85	-0.01	21134	584.0 -> 483.0	54.7	32.7	72.7

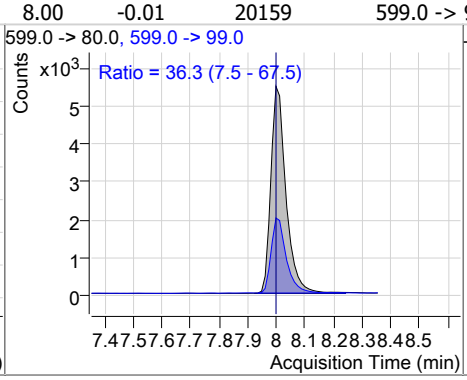


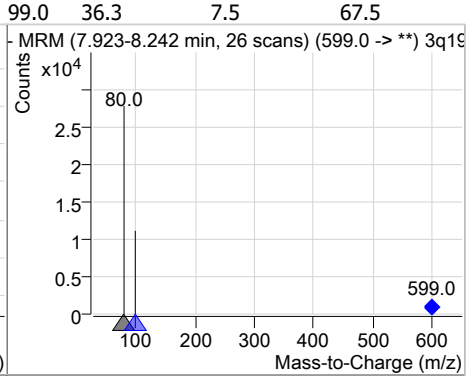




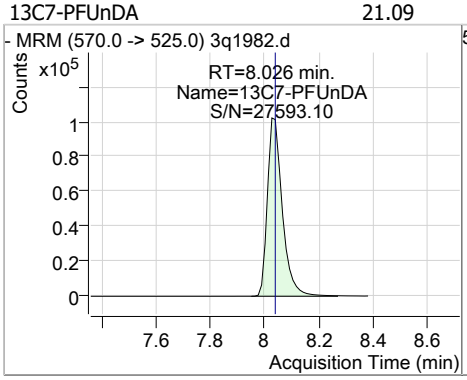
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	16.81	8.00	-0.01	20159	599.0 -> 99.0	36.3	7.5	67.5

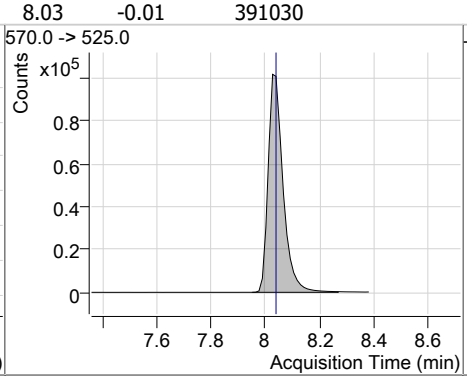


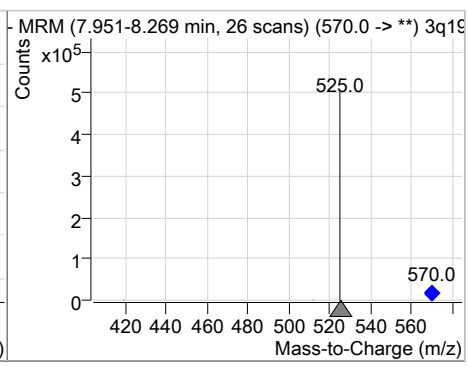




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.09	8.03	-0.01	391030				

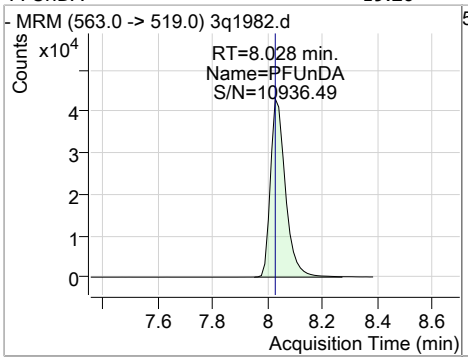


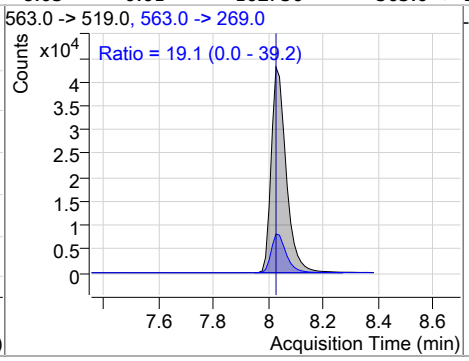


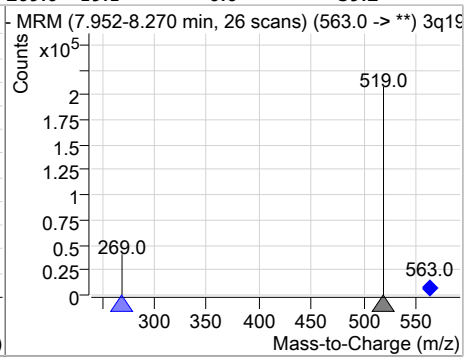


Perfluorinated Compounds by LC/MS/MS

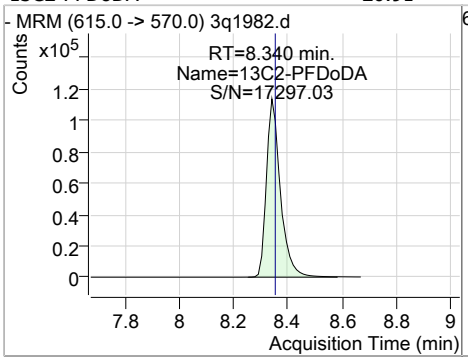
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.26	8.03	-0.01	162756	563.0 -> 269.0	19.1	0.0	39.2

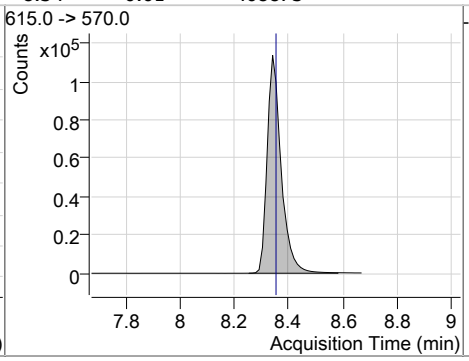


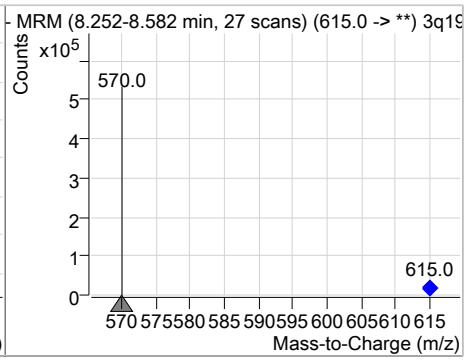




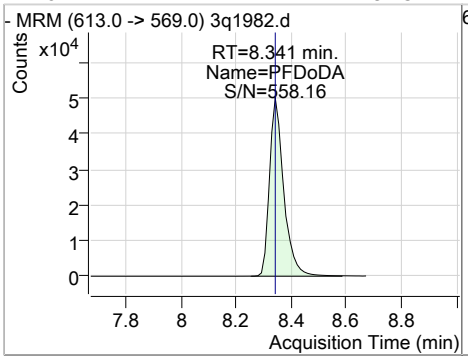
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.91	8.34	-0.01	408873				

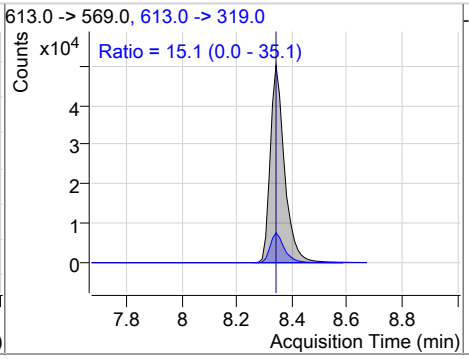


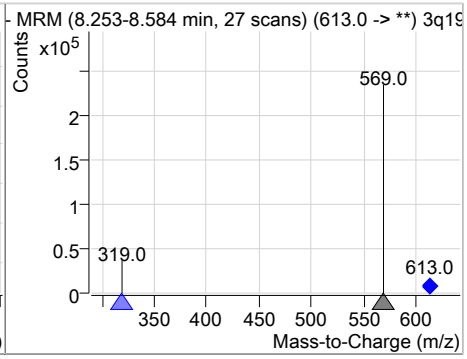




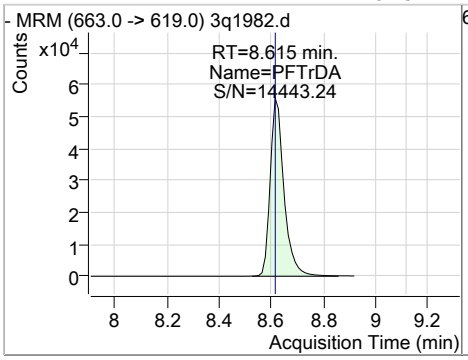
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.43	8.34	-0.01	180408	613.0 -> 319.0	15.1	0.0	35.1

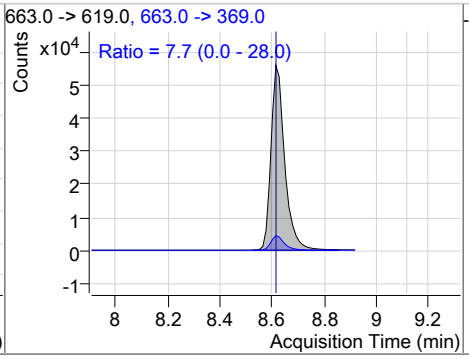


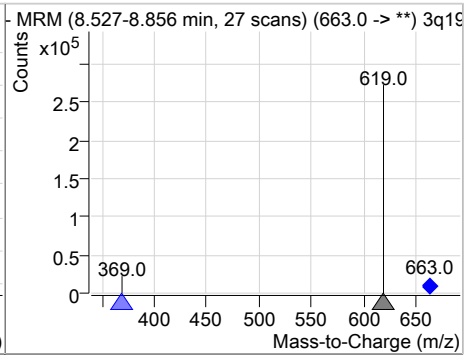




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	20.45	8.62	-0.01	205038	663.0 -> 369.0	7.7	0.0	28.0

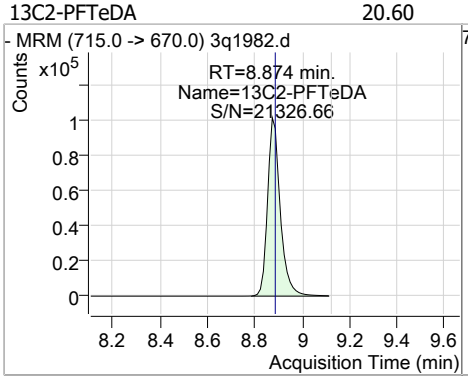


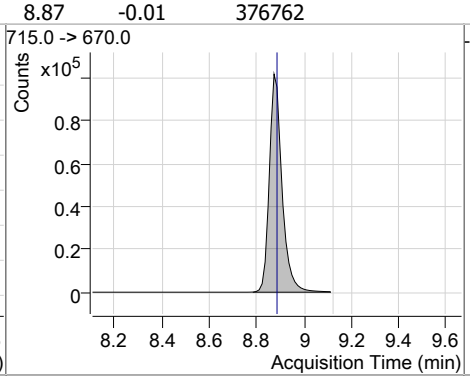


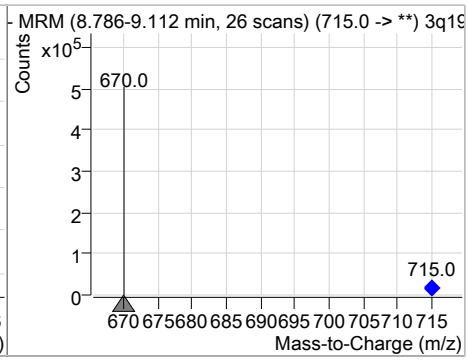


Perfluorinated Compounds by LC/MS/MS

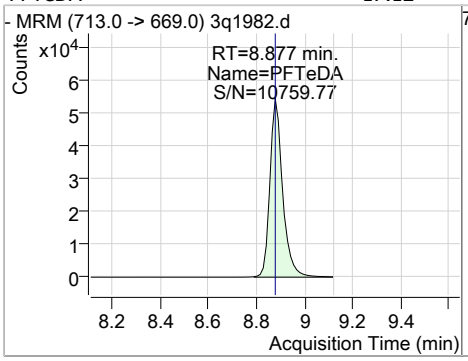
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.60	8.87	-0.01	376762				

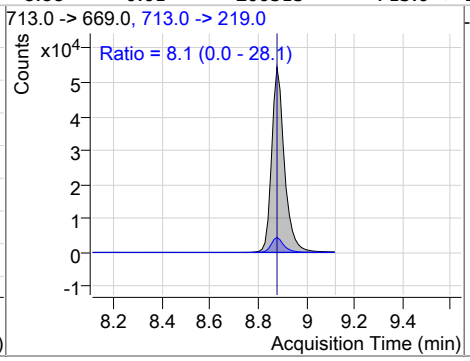


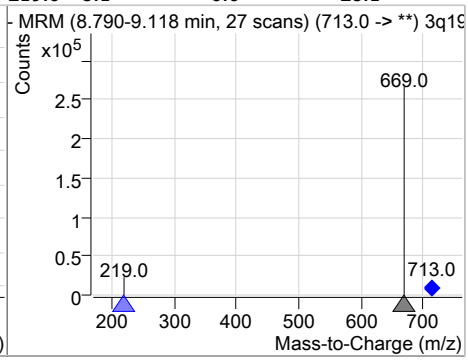




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	17.12	8.88	-0.01	200515	713.0 -> 219.0	8.1	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-ICV54
Lab FileID: 3Q1982.D
Injection Time: 03/21/19 12:26
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:07

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1983.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 12:41:45 PM
Sample Name : icv54-20
Vial : P3-B3
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

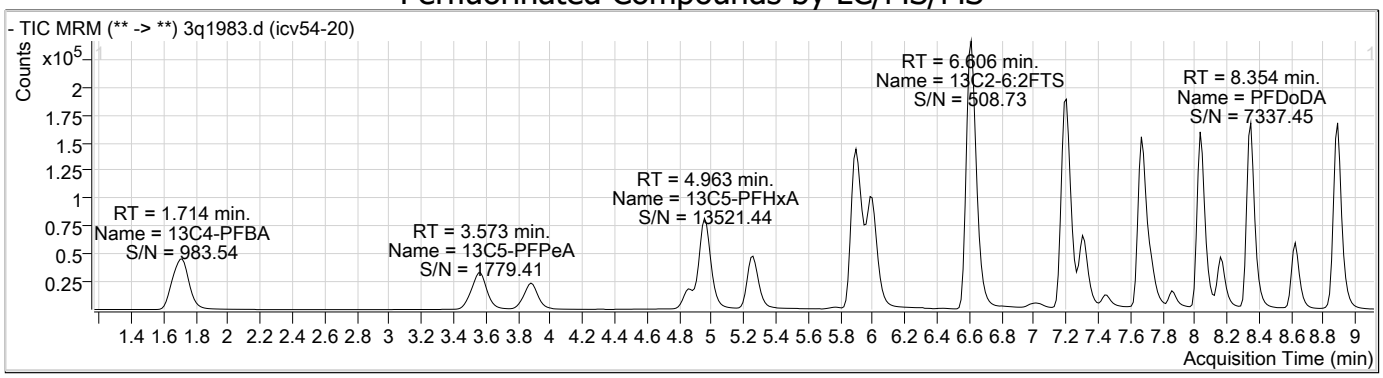
Compound	RT	QIon	Resp.	Conc.	Units	Dev(Min)
Internal Standards						
M4-PFBA	1.714	217.0 -> 172.0	331350	20.00	µg/L	0.013
M5-PFPeA	3.573	268.0 -> 223.0	222879	20.00	µg/L	0.013
M5-PFHxA	4.963	318.0 -> 273.0	296083	20.00	µg/L	0.000
M4-PFHpA	5.904	367.0 -> 322.0	335718	20.00	µg/L	0.013
M8-PFOA	6.621	421.0 -> 376.0	325739	20.00	µg/L	0.000
M9-PFNA	7.213	472.0 -> 427.0	308702	20.00	µg/L	0.000
M6-PFDA	7.678	519.0 -> 474.0	358083	20.00	µg/L	0.000
M7-PFUnDA	8.039	570.0 -> 525.0	393729	20.00	µg/L	0.000
M2-PFDoDA	8.352	615.0 -> 570.0	407773	20.00	µg/L	0.000
M2-PFTeDA	8.886	715.0 -> 670.0	379684	20.00	µg/L	0.000
M8-FOSA	7.311	506.0 -> 78.0	224626	20.00	µg/L	0.000
M3-PFBS	3.879	302.0 -> 99.0	50921	20.00	µg/L	0.000
M3-PFHxS	5.947	402.0 -> 99.0	50450	20.00	µg/L	0.000
M8-PFOS	7.196	507.0 -> 99.0	78333	20.00	µg/L	0.000
M2-4:2FTS	4.858	329.0 -> 309.0	90683	20.00	µg/L	0.000
M2-6:2FTS	6.606	429.0 -> 409.0	89621	20.00	µg/L	0.013
M2-8:2FTS	7.701	529.0 -> 509.0	55478	20.00	µg/L	0.000
M3-MeFOSAA	7.735	573.0 -> 419.0	50074	20.00	µg/L	0.000
M3-HFPO-DA	5.267	287.0 -> 169.0	168872	100.00	µg/L	0.013
13C2-PFOA	6.622	415.0 -> 370.0	427134	20.00	µg/L	0.000
13C4-PFOS	7.198	503.0 -> 80.0	126368	20.00	µg/L	0.000
System Monitoring Compounds						
13C2-4:2FTS	4.858	329.0 -> 309.0	90295	19.03	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.1%		
13C2-6:2FTS	6.606	429.0 -> 409.0	89605	19.61	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C2-8:2FTS	7.701	529.0 -> 509.0	55047	19.69	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.5%		
13C2-PFDoDA	8.352	615.0 -> 570.0	407946	20.86	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%		
13C2-PFTeDA	8.886	715.0 -> 670.0	379760	20.76	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.8%		
13C3-PFBS	3.879	302.0 -> 99.0	50720	20.11	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.5%		
13C3-PFHxS	5.947	402.0 -> 99.0	50859	20.12	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C4-PFBA	1.714	217.0 -> 172.0	330801	20.28	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C4-PFHpA	5.904	367.0 -> 322.0	336636	20.16	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%		
13C5-PFHxA	4.963	318.0 -> 273.0	296183	20.13	µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C5-PFPeA	3.573	268.0 -> 223.0	222879	20.13	µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.6%		
13C6-PFDA	7.678	519.0 -> 474.0	358083	21.50	µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

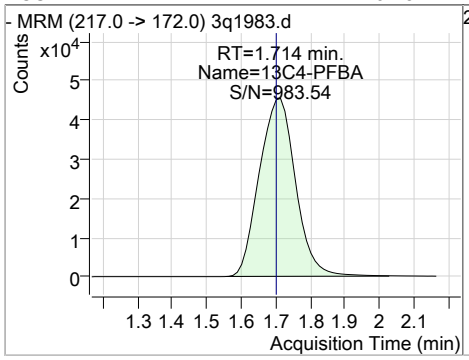
Compound	RT	QIon	Resp.	Conc.	Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 107.5%			
13C7-PFUnDA	8.039	570.0 -> 525.0	393747	21.24	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.2%			
13C8-FOSA	7.311	506.0 -> 78.0	224899	21.37	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 106.8%			
13C8-PFOA	6.621	421.0 -> 376.0	325734	20.59	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.9%			
13C8-PFOS	7.196	507.0 -> 99.0	78029	20.26	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 101.3%			
13C9-PFNA	7.213	472.0 -> 427.0	307270	20.56	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.8%			
d3-MeFOSAA	7.735	573.0 -> 419.0	50088	21.10	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 105.5%			
13C3-HFPO-DA	5.267	287.0 -> 169.0	168872	101.13	µg/L		0.013
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 101.1%			
M2-PFOA	6.622	415.0 -> 370.0	427134	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
M4-PFOS	7.198	503.0 -> 80.0	126368	20.00	µg/L		0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%			
Target Compounds							QValue
4:2FTS	-	327.0 -> 307.0	-	N.D.			
6:2FTS	-	427.0 -> 407.0	-	N.D.			
8:2FTS	-	527.0 -> 507.0	-	N.D.			
EtFOSAA	7.861	584.0 -> 419.0	19803	17.61	µg/L	m	94
FOSA	-	498.0 -> 78.0	-	N.D.			
MeFOSAA	7.735	570.0 -> 419.0	22519	16.81	µg/L	m	97
PFBA	-	213.0 -> 169.0	-	N.D.			
PFBS	3.883	299.0 -> 80.0	66905	18.89	µg/L		99
PFDA	7.678	513.0 -> 469.0	161373	19.03	µg/L		99
PFDoDA	8.354	613.0 -> 569.0	173349	18.65	µg/L		100
PFDS	-	599.0 -> 80.0	-	N.D.			
PFHpA	5.907	363.0 -> 319.0	284923	19.18	µg/L		100
PFHpS	-	449.0 -> 80.0	-	N.D.			
PFHxA	4.965	313.0 -> 269.0	99576	18.89	µg/L		100
PFHxS	5.950	399.0 -> 80.0	53184	19.17	µg/L	m	100
PFNA	7.214	463.0 -> 419.0	188370	19.64	µg/L		99
PFNS	-	549.0 -> 80.0	-	N.D.			
PFOA	6.623	413.0 -> 369.0	169487	19.43	µg/L		99
PFOS	7.199	499.0 -> 80.0	67564	18.62	µg/L	m	99
PFPeA	-	263.0 -> 219.0	-	N.D.			
PFPeS	-	349.0 -> 80.0	-	N.D.			
PFTeDA	8.890	713.0 -> 669.0	221508	18.76	µg/L		100
PFTrDA	8.628	663.0 -> 619.0	199380	19.73	µg/L		99
PFUnDA	8.041	563.0 -> 519.0	161879	18.95	µg/L		100
11Cl-PF3OUdS	8.162	631.0 -> 451.0	155127	19.86	µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	39751	19.54	µg/L		100
ADONA	6.007	377.0 -> 251.0	399095	19.61	µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	55257	19.28	µg/L		100

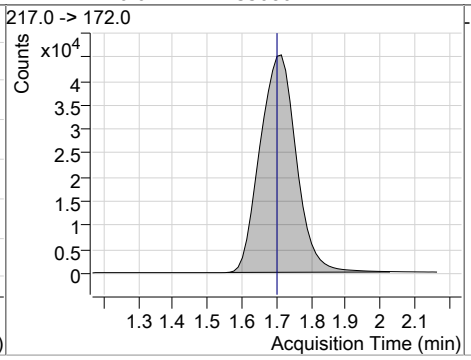
 # = Qualifier out of range, m = manually integrated, + = Area summed

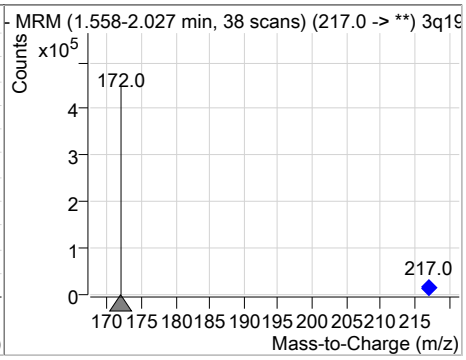
Perfluorinated Compounds by LC/MS/MS



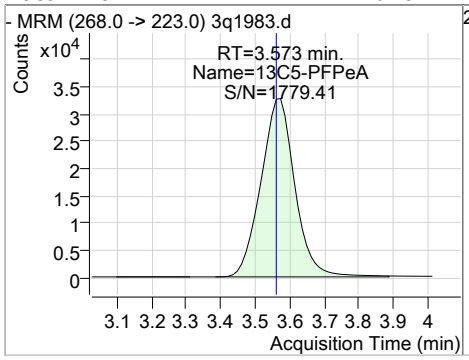
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	20.28	1.71	0.01	330801				

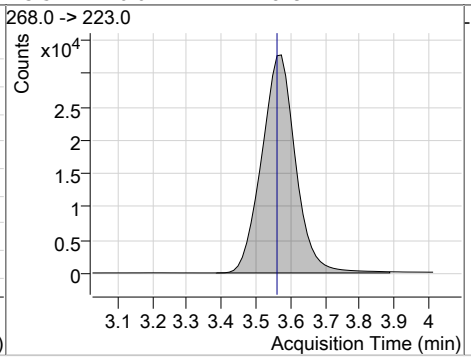


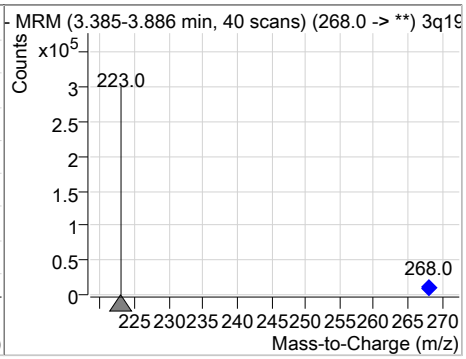




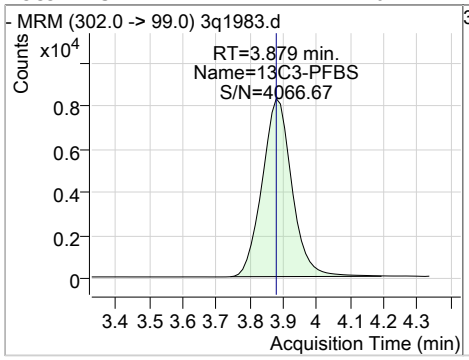
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	20.13	3.57	0.01	222879				

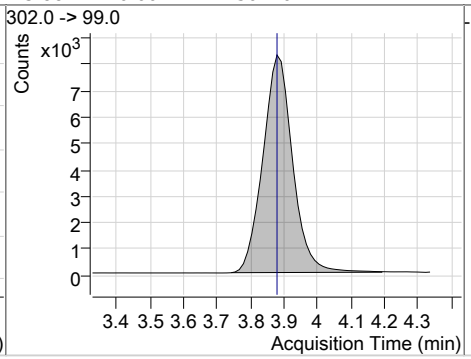


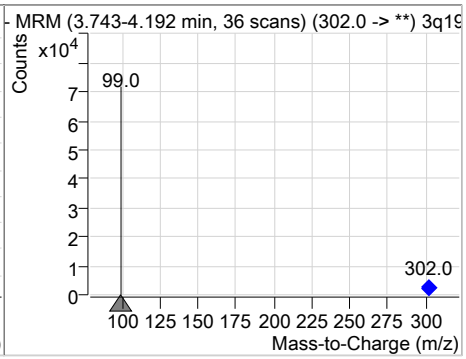




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	20.11	3.88	0.00	50720				

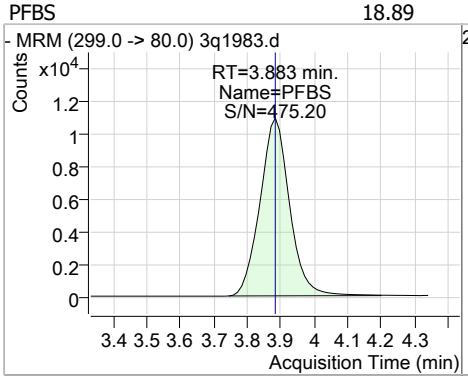


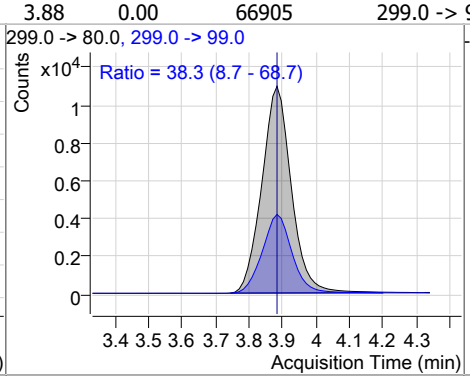


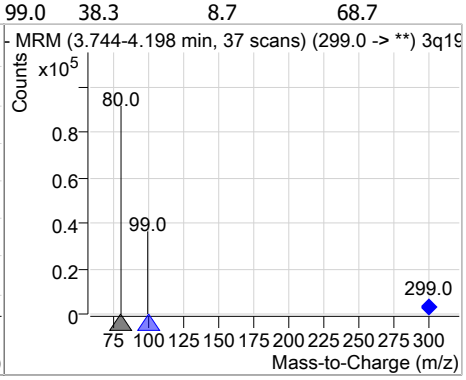


Perfluorinated Compounds by LC/MS/MS

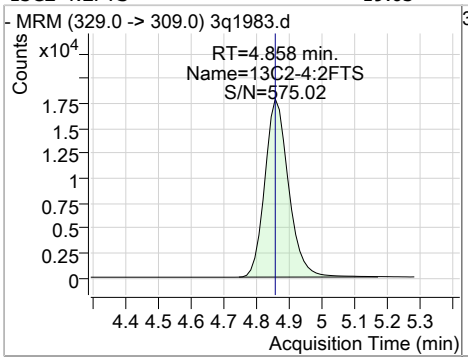
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	18.89	3.88	0.00	66905	299.0 -> 99.0	38.3	8.7	68.7

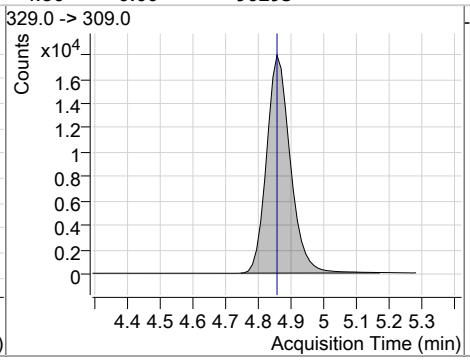


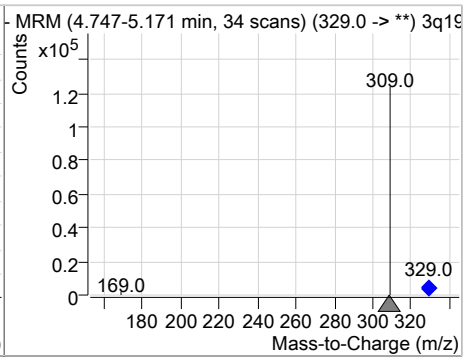




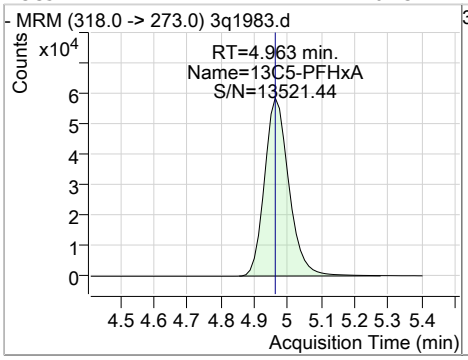
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.03	4.86	0.00	90295				

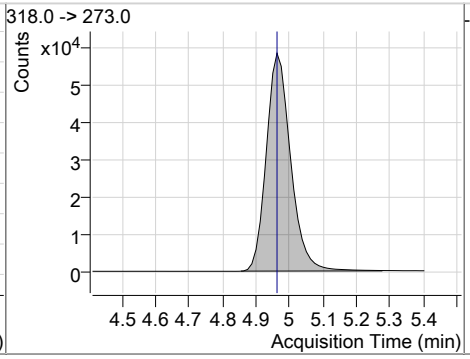


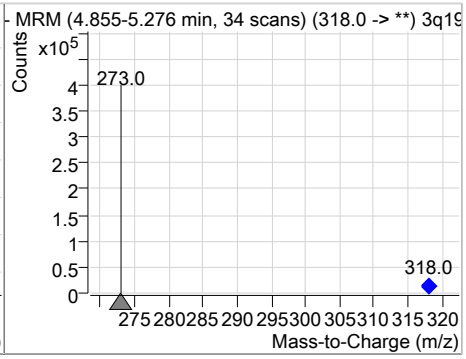




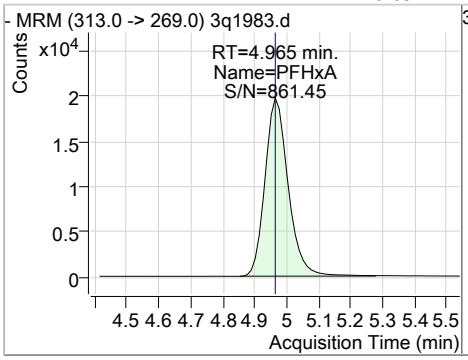
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	20.13	4.96	0.00	296183				

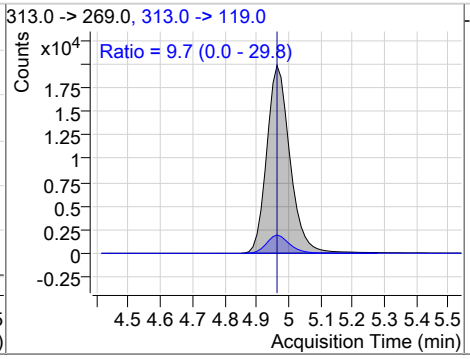


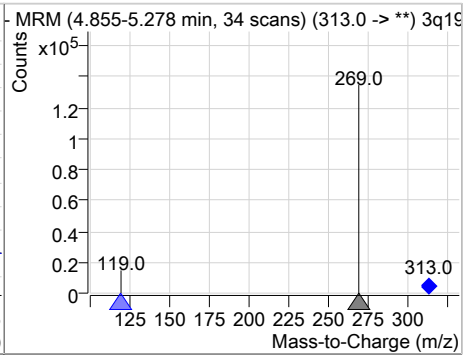




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	18.89	4.96	0.00	99576	313.0 -> 119.0	9.7	0.0	29.8

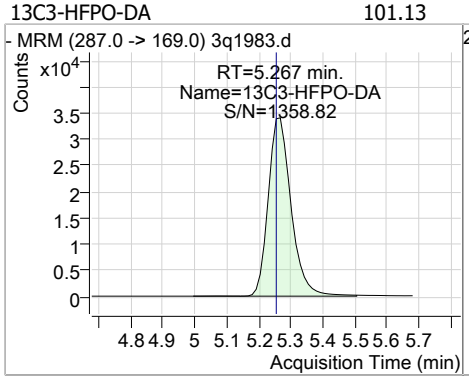


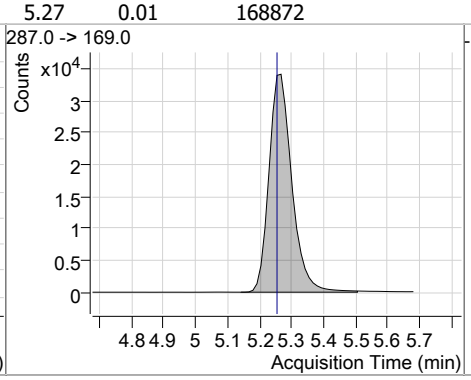


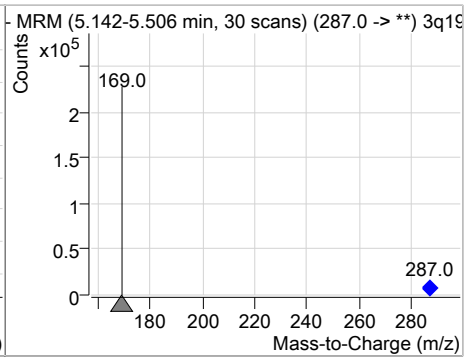


Perfluorinated Compounds by LC/MS/MS

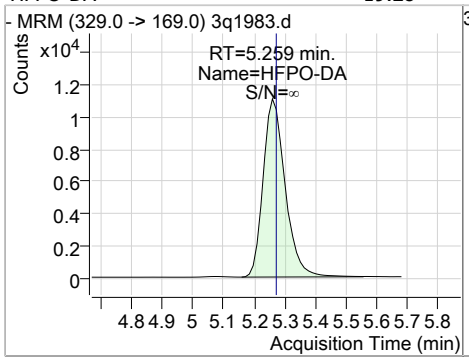
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	101.13	5.27	0.01	168872				

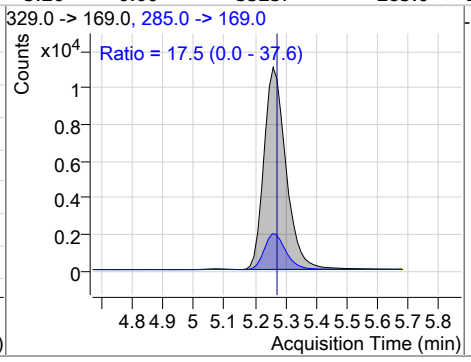


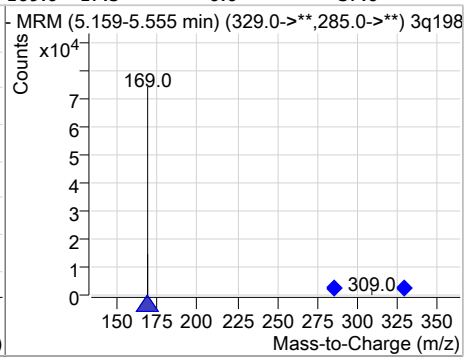




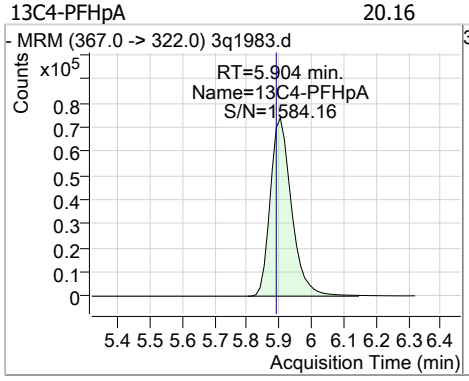
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	19.28	5.26	0.00	55257	285.0 -> 169.0	17.5	0.0	37.6

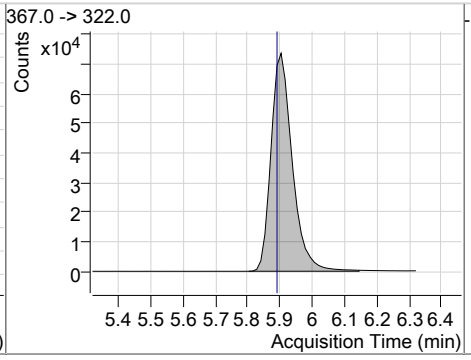


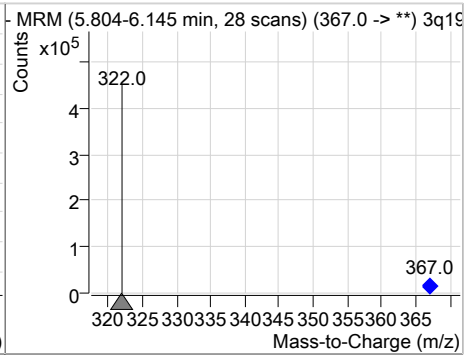




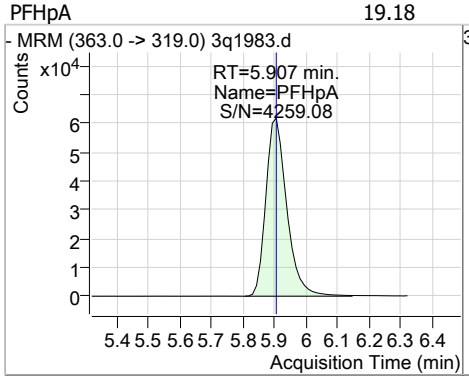
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	20.16	5.90	0.01	336636				

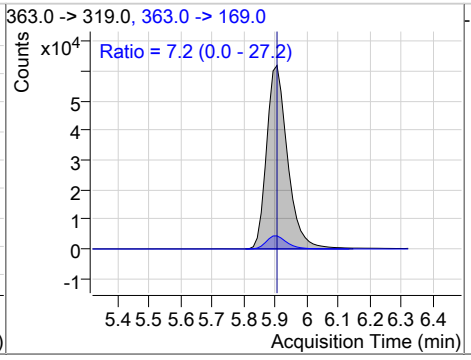


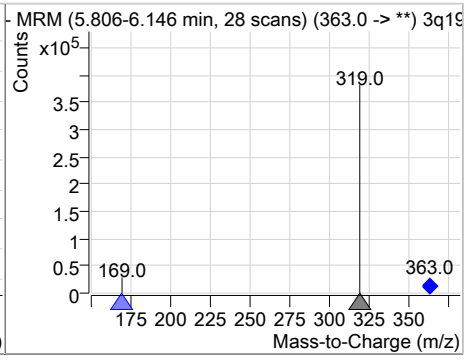




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.18	5.91	0.01	284923	363.0 -> 169.0	7.2	0.0	27.2

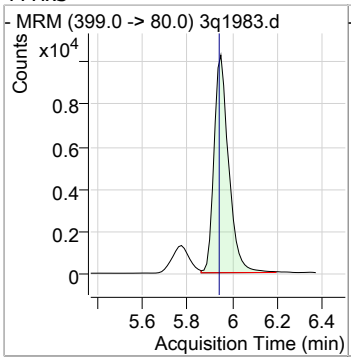


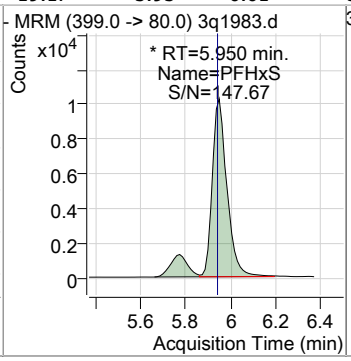


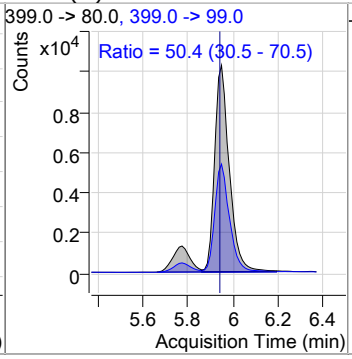


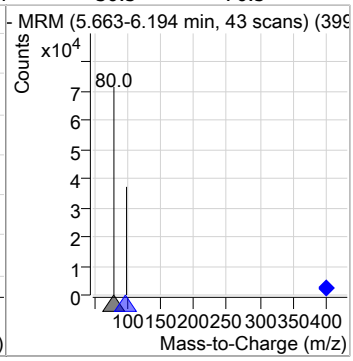
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.17	5.95	0.01	53184 (m)	399.0 -> 99.0	50.4	30.5	70.5

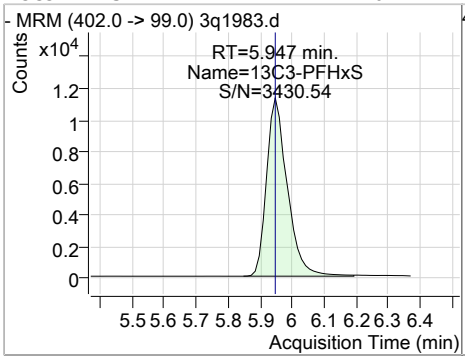


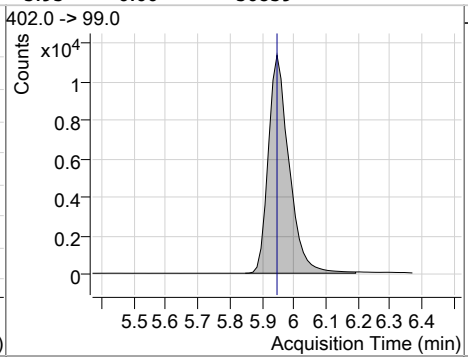


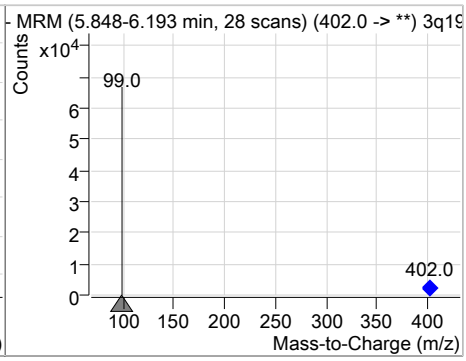




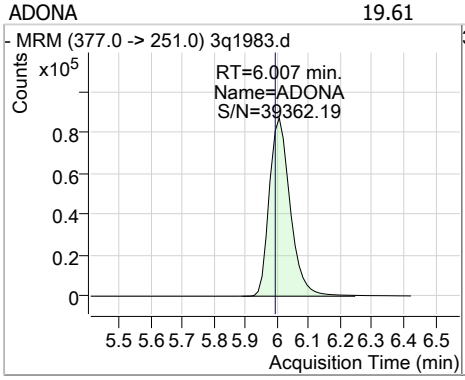
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	20.12	5.95	0.00	50859				

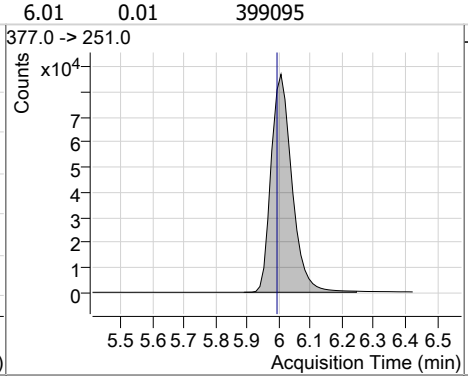


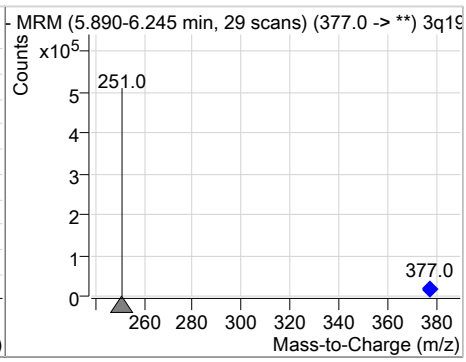




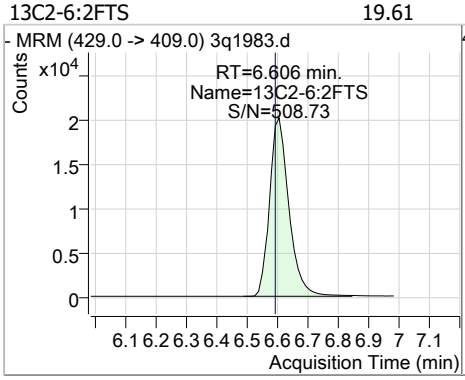
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.61	6.01	0.01	399095				

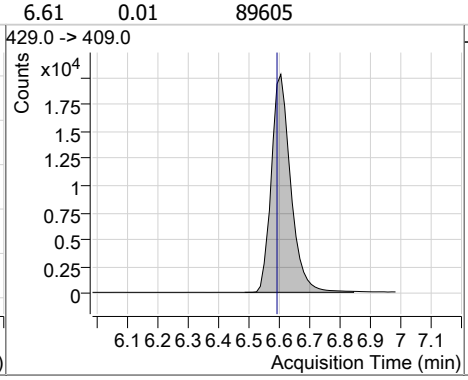


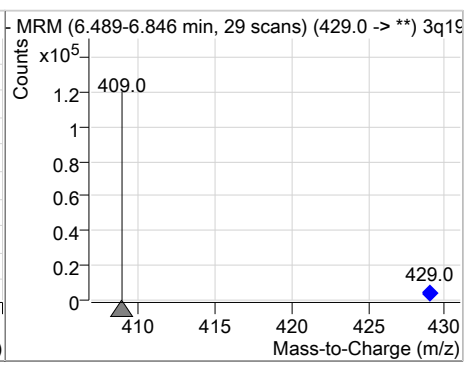




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.61	6.61	0.01	89605				

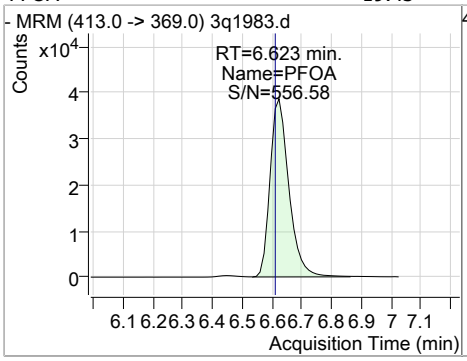


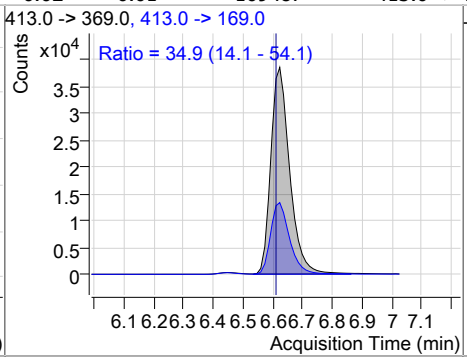


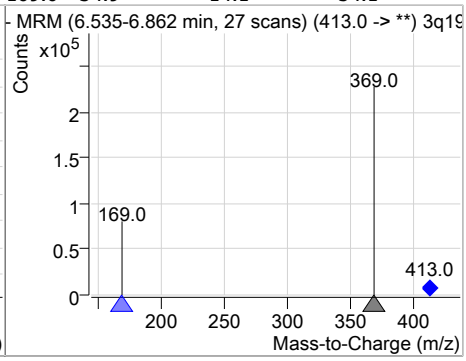


Perfluorinated Compounds by LC/MS/MS

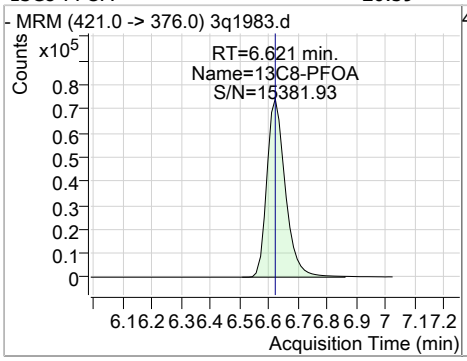
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	19.43	6.62	0.01	169487	413.0 -> 169.0	34.9	14.1	54.1

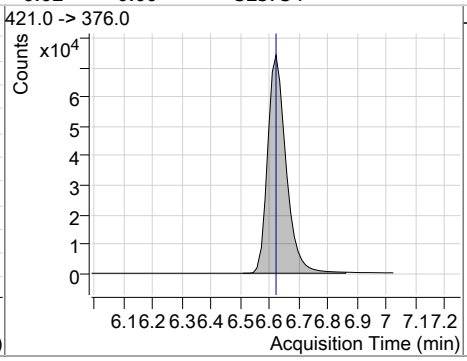


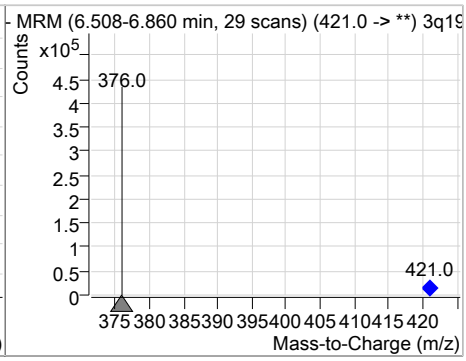




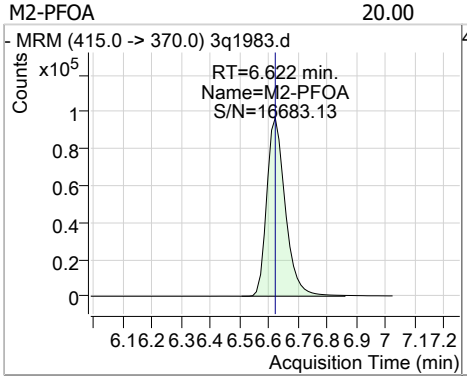
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	20.59	6.62	0.00	325734				

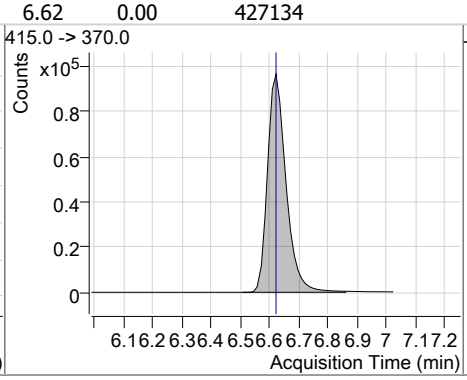


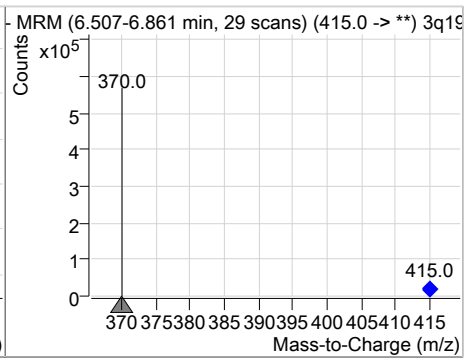




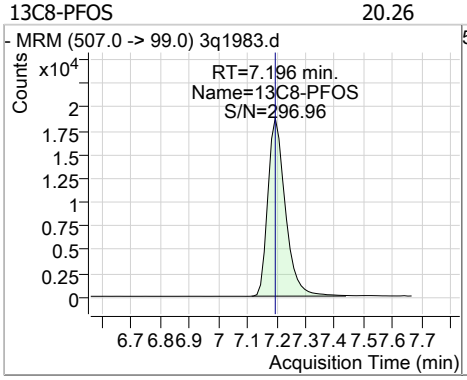
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.62	0.00	427134				

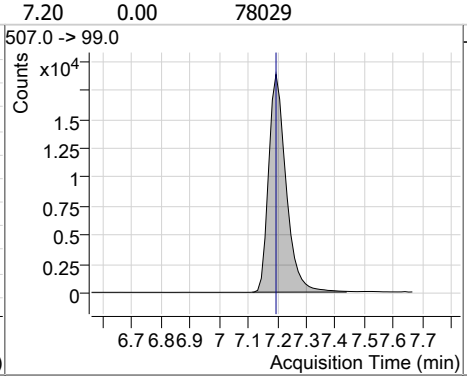


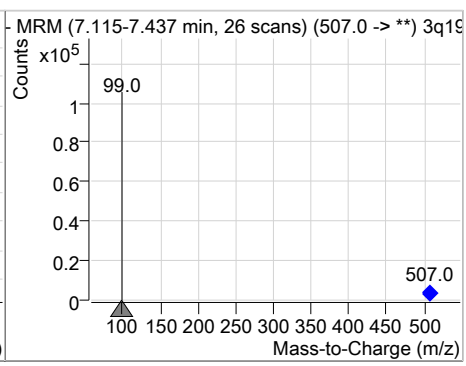




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	20.26	7.20	0.00	78029				

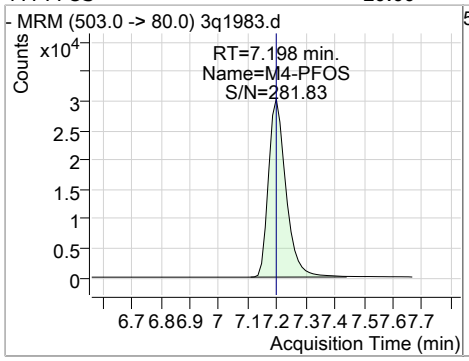


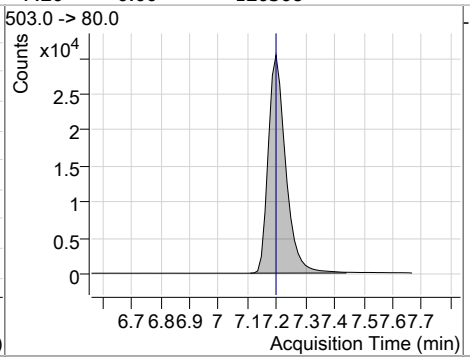


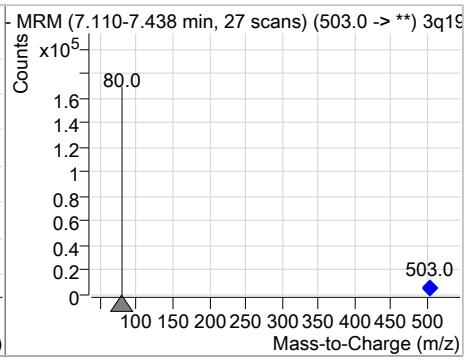


Perfluorinated Compounds by LC/MS/MS

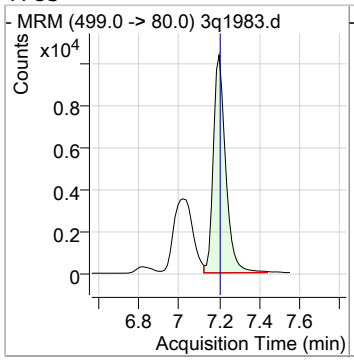
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.20	0.00	126368				

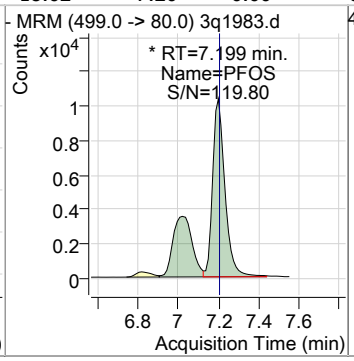


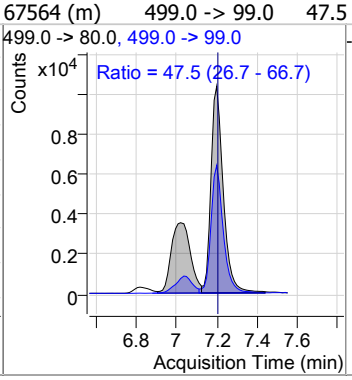


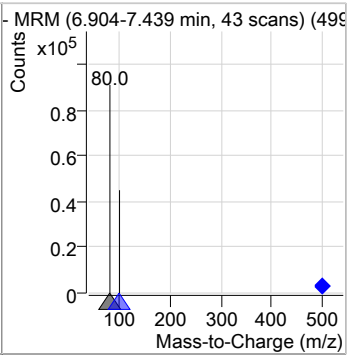


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	18.62	7.20	0.00	67564 (m)	499.0 -> 99.0	47.5	26.7	66.7

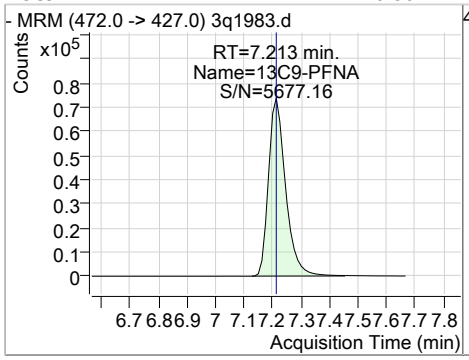


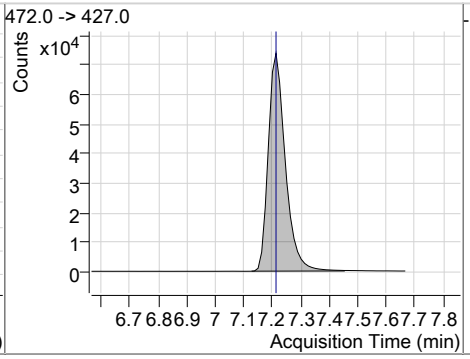


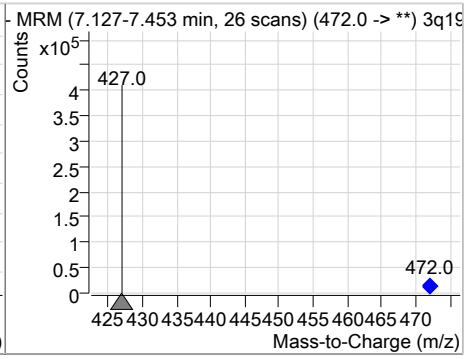




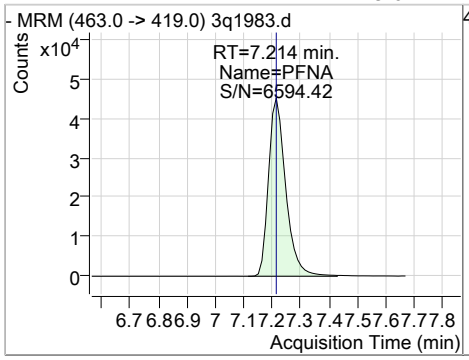
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.56	7.21	0.00	307270				

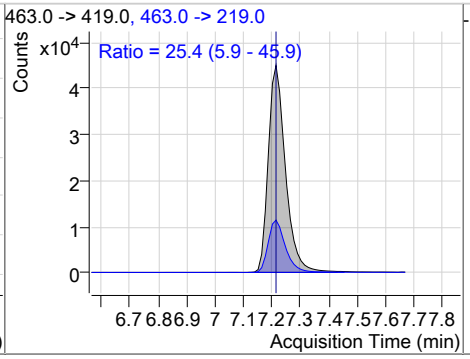


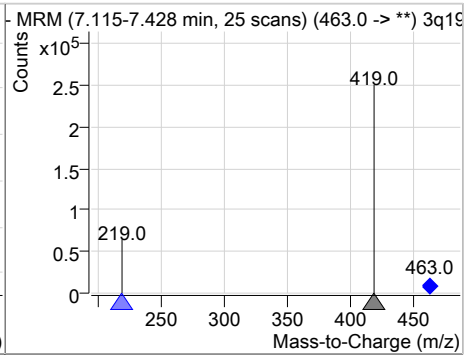




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.64	7.21	0.00	188370	463.0 -> 219.0	25.4	5.9	45.9

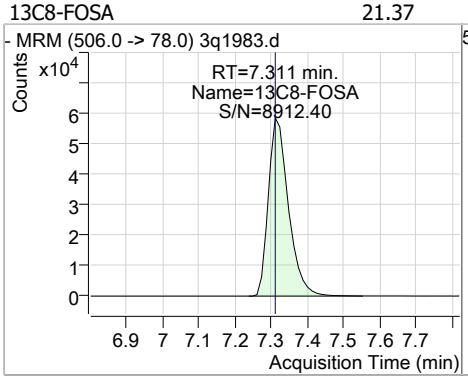


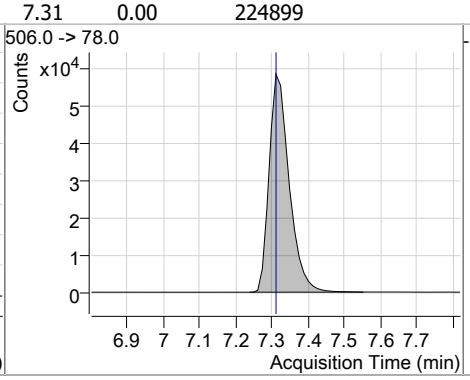


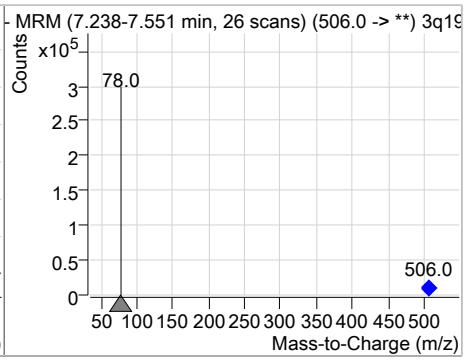


Perfluorinated Compounds by LC/MS/MS

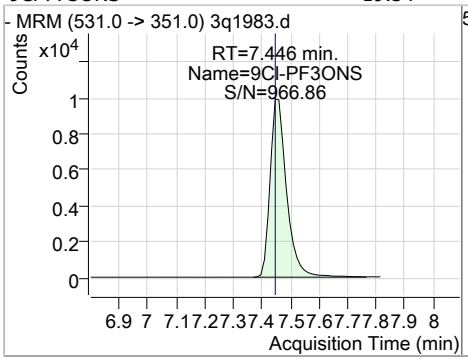
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	21.37	7.31	0.00	224899				

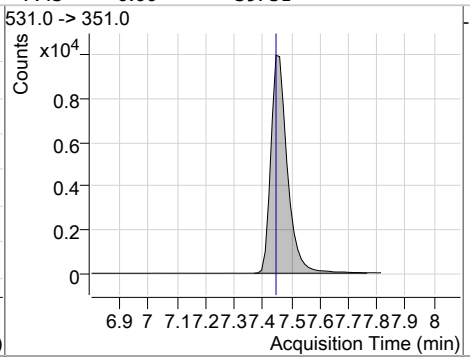


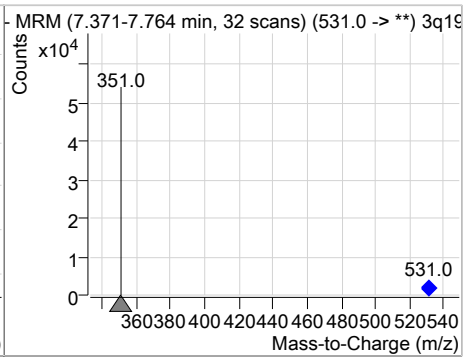




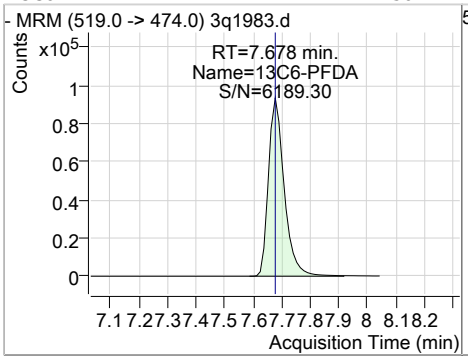
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	19.54	7.45	0.00	39751				

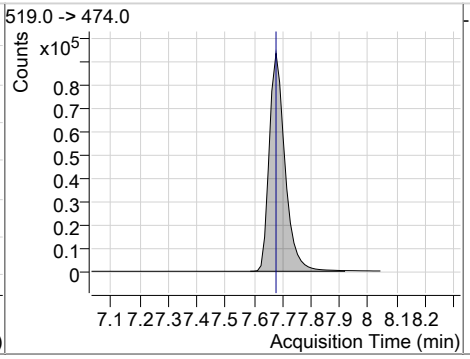


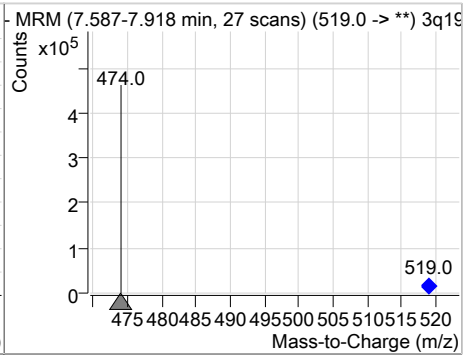




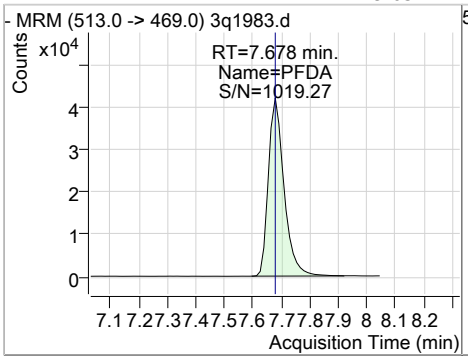
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	21.50	7.68	0.00	358083				

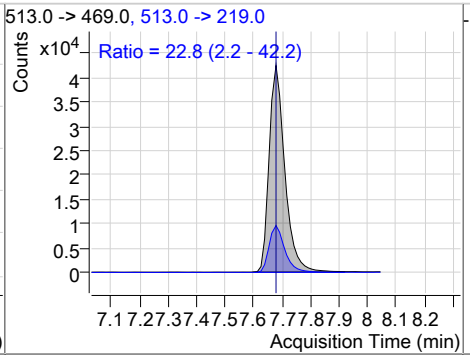


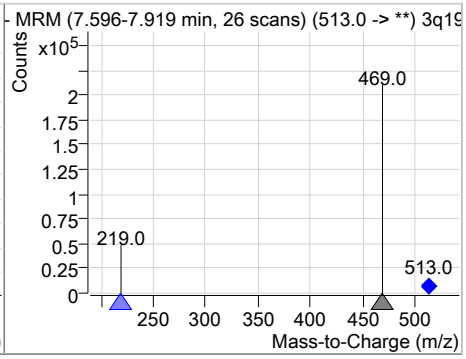




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	19.03	7.68	0.00	161373	513.0 -> 219.0	22.8	2.2	42.2

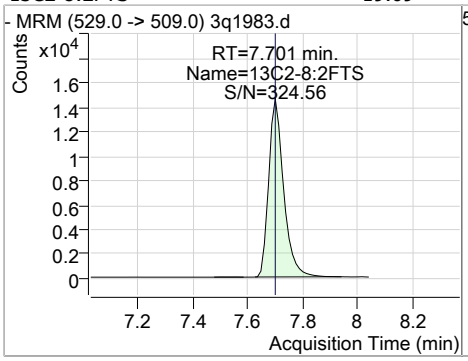


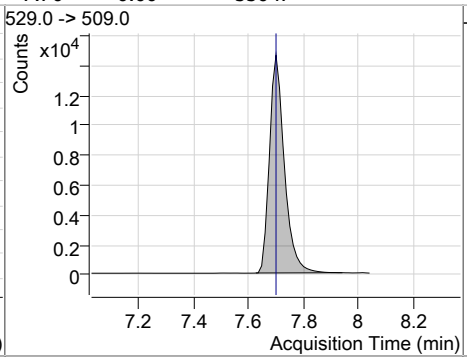


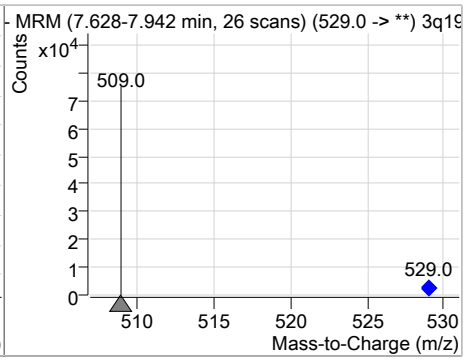


Perfluorinated Compounds by LC/MS/MS

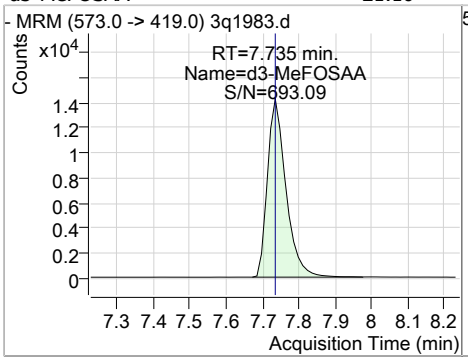
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	19.69	7.70	0.00	55047				

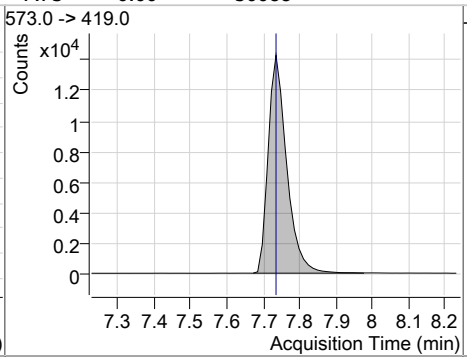


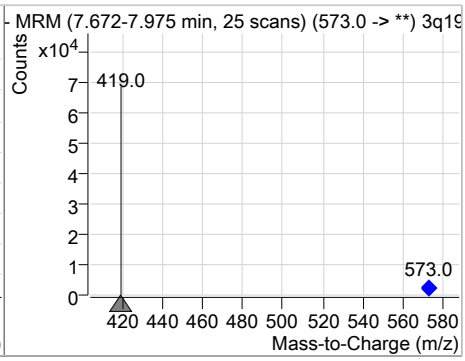




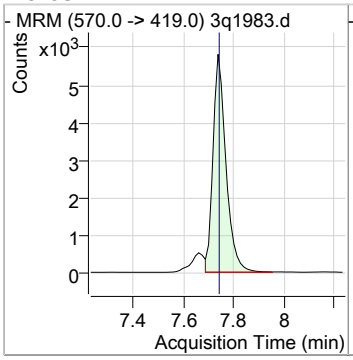
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	21.10	7.73	0.00	50088				

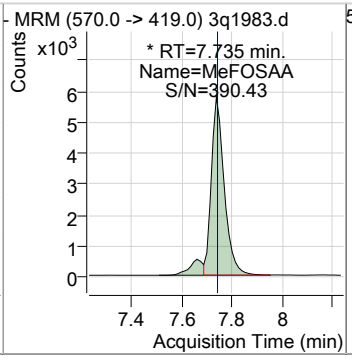


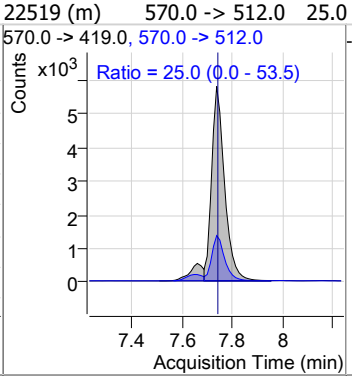


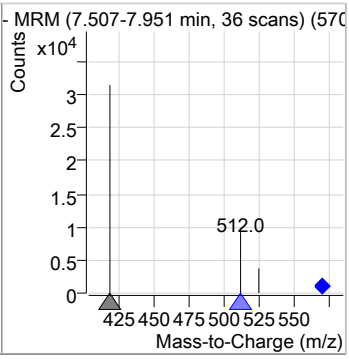


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	16.81	7.74	0.00	22519 (m)	570.0 -> 512.0	25.0	0.0	53.5

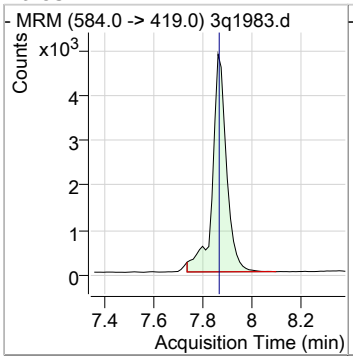


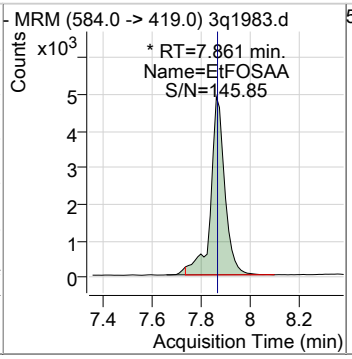


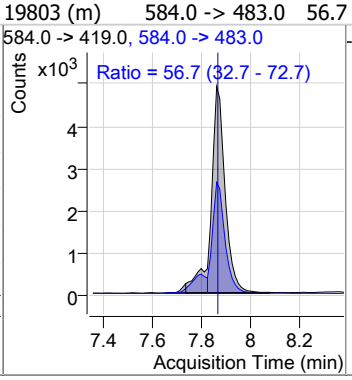


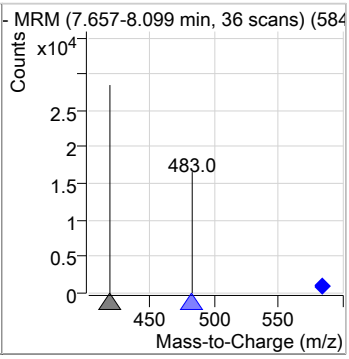


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	17.61	7.86	0.00	19803 (m)	584.0 -> 483.0	56.7	32.7	72.7



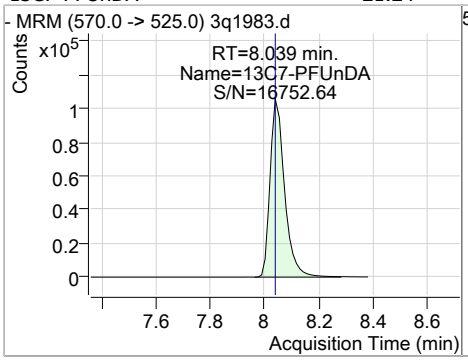


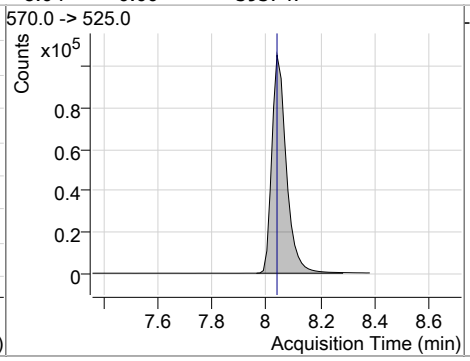


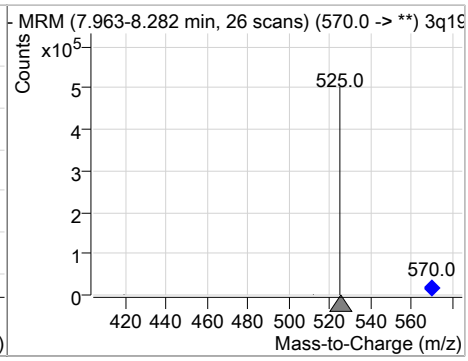


Perfluorinated Compounds by LC/MS/MS

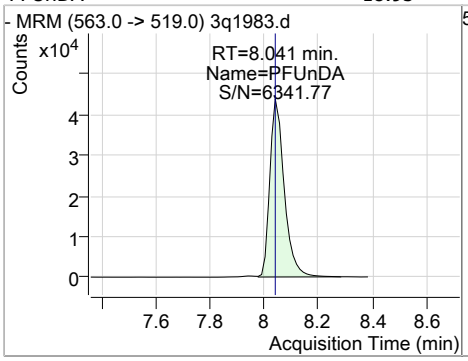
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	21.24	8.04	0.00	393747				

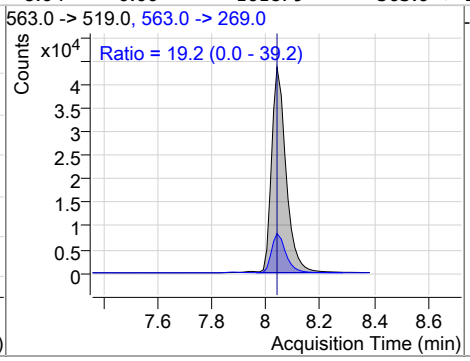


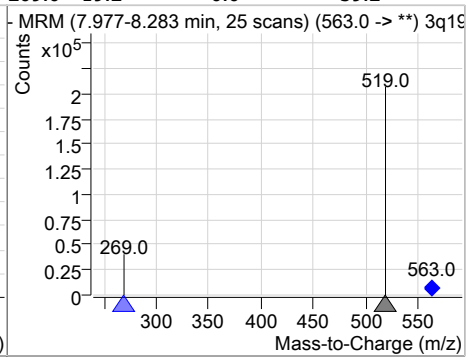




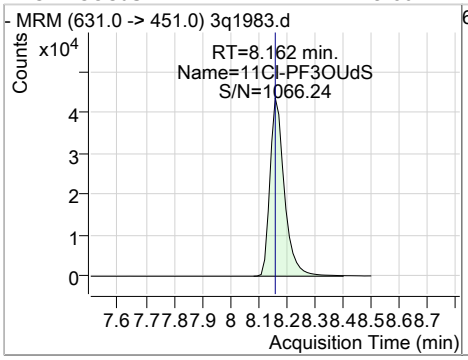
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.95	8.04	0.00	161879	563.0 -> 269.0	19.2	0.0	39.2

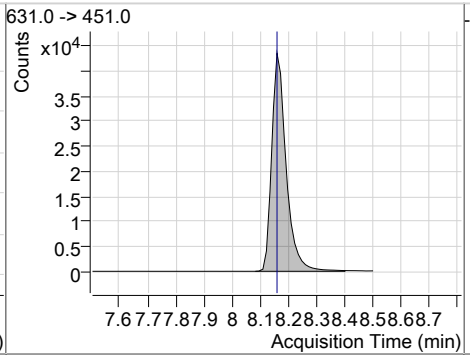


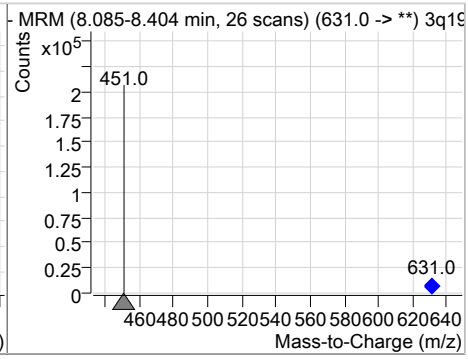




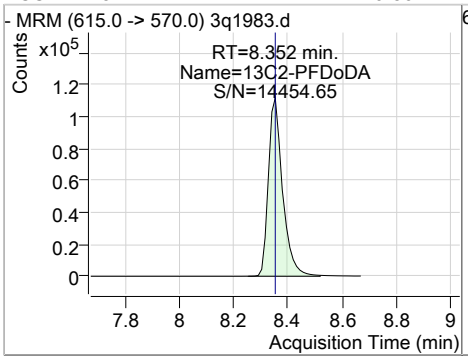
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	19.86	8.16	0.00	155127				

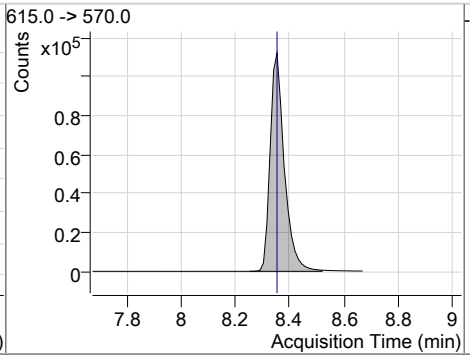


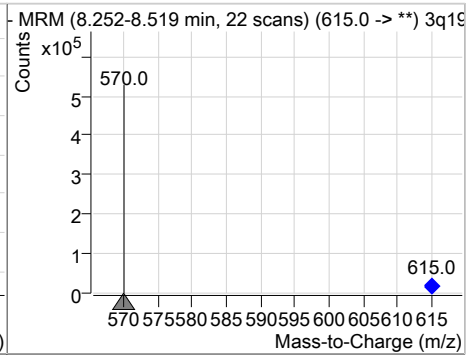




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.86	8.35	0.00	407946				

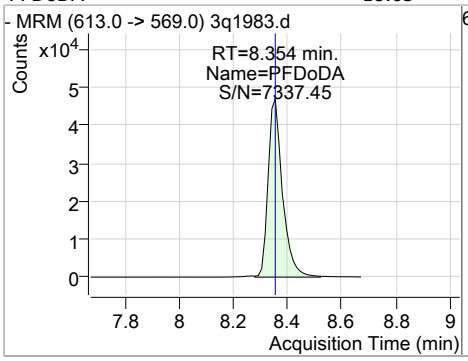


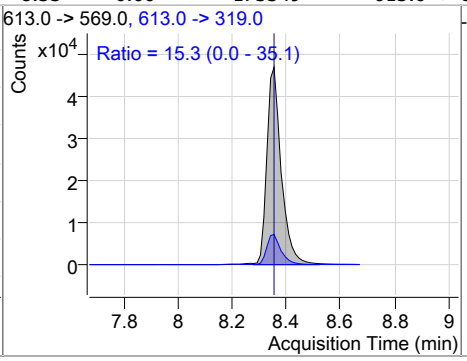


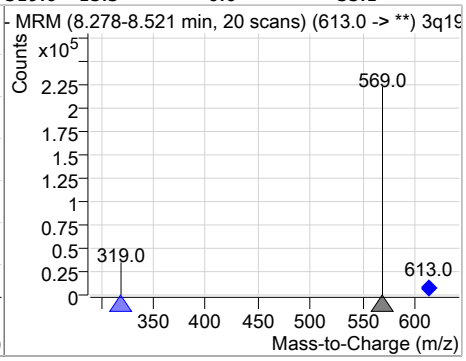


Perfluorinated Compounds by LC/MS/MS

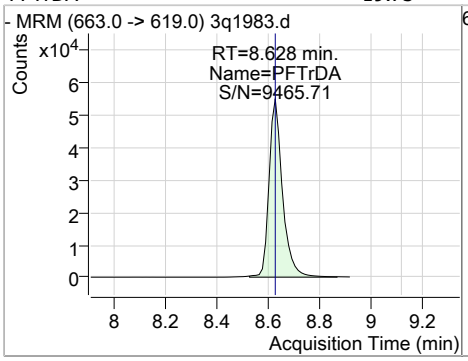
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	18.65	8.35	0.00	173349	613.0 -> 319.0	15.3	0.0	35.1

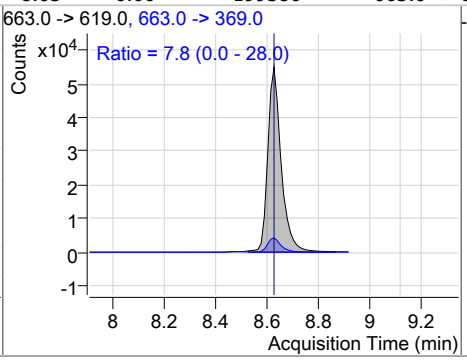


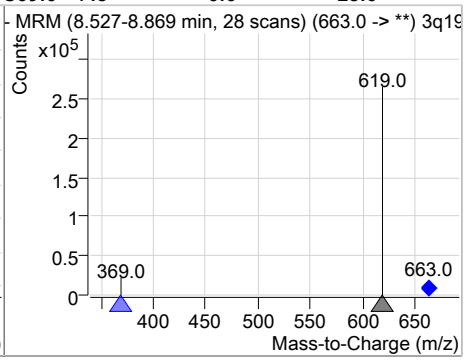




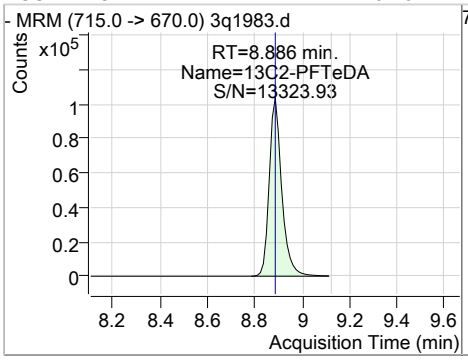
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.73	8.63	0.00	199380	663.0 -> 369.0	7.8	0.0	28.0

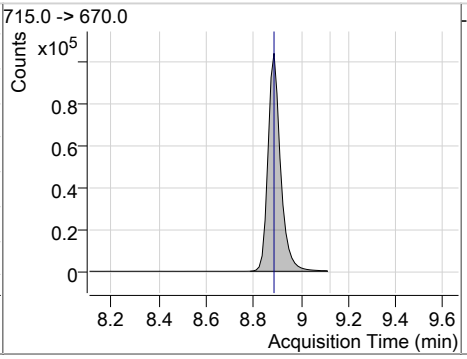


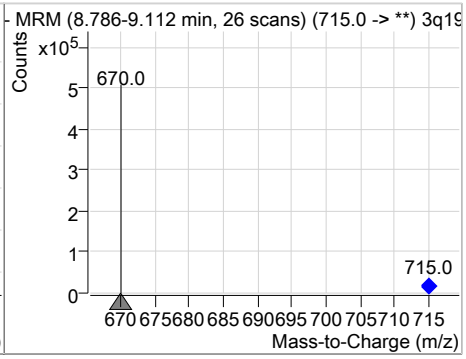




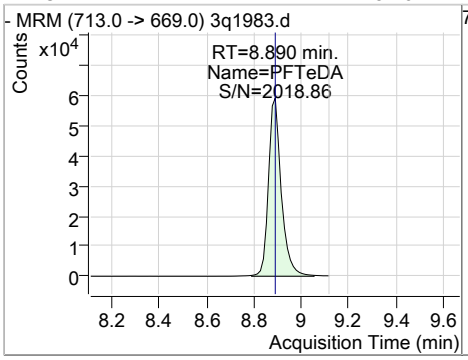
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.76	8.89	0.00	379760				

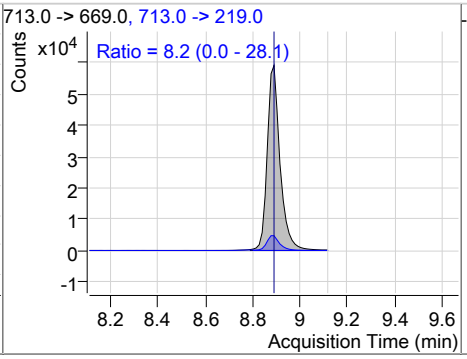


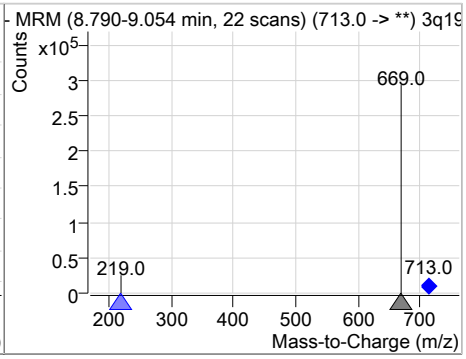




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	18.76	8.89	0.00	221508	713.0 -> 219.0	8.2	0.0	28.1







Manual Integration Approval Summary

Sample Number: S3Q54-ICV54
Lab FileID: 3Q1983.D
Injection Time: 03/21/19 12:41
Method: EPA 537M QSM5.1 B-15
Analyst approved: 03/22/19 11:47 Nancy Saunders
Supervisor approved: 03/24/19 19:07 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.95	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.20	Split peak
MeFOSAA	2355-31-9		7.74	Split peak
EtFOSAA	2991-50-6		7.86	Split peak

Manual Integrations APPROVED (compounds with "m" flag)
Mike Eger
03/24/19 19:08

Perfluorinated Compounds by LC/MS/MS

Data File : 3q1992.d
Operator : nancyf
Acq. Method : dMRM_ID_PFC_2.1_GENX.m
Acq. Date-Time : 3/21/2019 3:07:11 PM
Sample Name : cc54-20
Vial : P3-A7
DA Method File : ID_GENX_032119_S3Q54.quantmethod.xml
Batch Name : s3q54.batch.bin
Sample Information : op74053,S3Q54,250,,,1.0,1,WATER

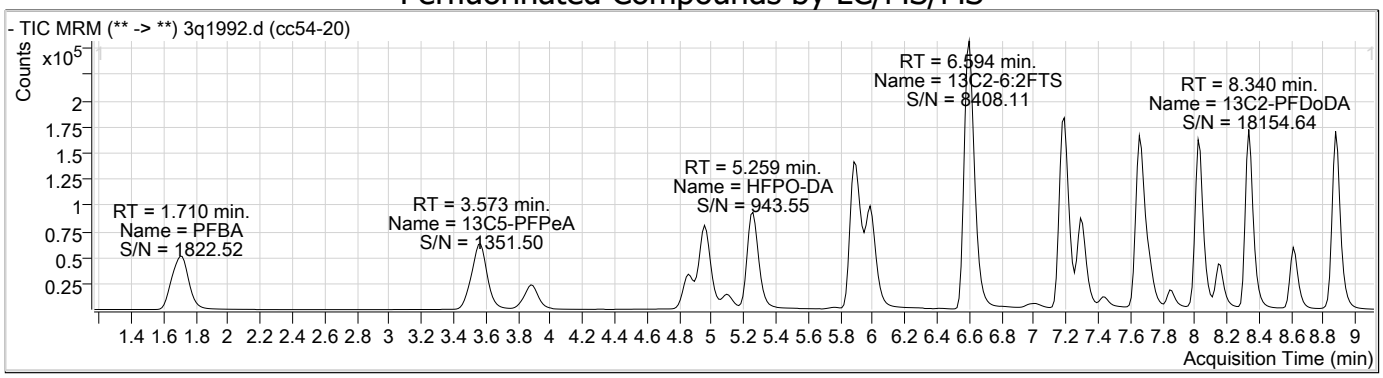
Compound	RT	QIon	Resp.	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	1.714	217.0 -> 172.0	321154	20.00 µg/L	0.013
M5-PFPeA	3.573	268.0 -> 223.0	215160	20.00 µg/L	0.013
M5-PFHxA	4.963	318.0 -> 273.0	286306	20.00 µg/L	0.000
M4-PFHpA	5.891	367.0 -> 322.0	327377	20.00 µg/L	0.000
M8-PFOA	6.609	421.0 -> 376.0	313323	20.00 µg/L	-0.013
M9-PFNA	7.201	472.0 -> 427.0	300576	20.00 µg/L	-0.013
M6-PFDA	7.663	519.0 -> 474.0	340528	20.00 µg/L	-0.015
M7-PFUnDA	8.026	570.0 -> 525.0	386922	20.00 µg/L	-0.013
M2-PFDoDA	8.340	615.0 -> 570.0	407758	20.00 µg/L	-0.013
M2-PFTeDA	8.874	715.0 -> 670.0	379050	20.00 µg/L	-0.013
M8-FOSA	7.298	506.0 -> 78.0	211719	20.00 µg/L	-0.013
M3-PFBS	3.879	302.0 -> 99.0	48813	20.00 µg/L	0.000
M3-PFHxS	5.934	402.0 -> 99.0	49321	20.00 µg/L	-0.013
M8-PFOS	7.183	507.0 -> 99.0	74359	20.00 µg/L	-0.013
M2-4:2FTS	4.858	329.0 -> 309.0	91989	20.00 µg/L	0.000
M2-6:2FTS	6.594	429.0 -> 409.0	90464	20.00 µg/L	0.000
M2-8:2FTS	7.689	529.0 -> 509.0	57377	20.00 µg/L	-0.013
M3-MeFOSAA	7.722	573.0 -> 419.0	48949	20.00 µg/L	-0.013
M3-HFPO-DA	5.255	287.0 -> 169.0	159533	100.00 µg/L	0.000
13C2-PFOA	6.610	415.0 -> 370.0	408724	20.00 µg/L	-0.013
13C4-PFOS	7.185	503.0 -> 80.0	120813	20.00 µg/L	-0.013
System Monitoring Compounds					
13C2-4:2FTS	4.858	329.0 -> 309.0	91937	19.37 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C2-6:2FTS	6.594	429.0 -> 409.0	90461	19.80 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C2-8:2FTS	7.689	529.0 -> 509.0	57362	20.52 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C2-PFDoDA	8.340	615.0 -> 570.0	407747	20.85 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C2-PFTeDA	8.874	715.0 -> 670.0	379219	20.73 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C3-PFBS	3.879	302.0 -> 99.0	48615	19.27 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C3-PFHxS	5.934	402.0 -> 99.0	49234	19.48 µg/L	-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C4-PFBA	1.714	217.0 -> 172.0	318946	19.56 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C4-PFHpA	5.891	367.0 -> 322.0	327291	19.61 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFHxA	4.963	318.0 -> 273.0	284878	19.36 µg/L	0.000
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C5-PFPeA	3.573	268.0 -> 223.0	212294	19.17 µg/L	0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C6-PFDA	7.663	519.0 -> 474.0	340464	20.44 µg/L	-0.015

Perfluorinated Compounds by LC/MS/MS

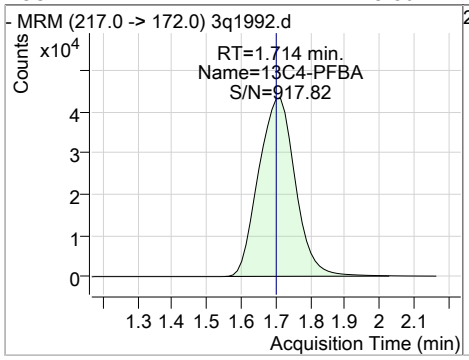
Compound	RT	QIon	Resp.	Conc. Units		Dev(Min)
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C7-PFUnDA	8.026	570.0 -> 525.0	386962	20.87 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 104.4%		
13C8-FOSA	7.298	506.0 -> 78.0	211398	20.09 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.4%		
13C8-PFOA	6.609	421.0 -> 376.0	313241	19.80 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C8-PFOS	7.183	507.0 -> 99.0	74292	19.29 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 96.4%		
13C9-PFNA	7.201	472.0 -> 427.0	301213	20.16 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.8%		
d3-MeFOSAA	7.722	573.0 -> 419.0	48947	20.62 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 103.1%		
13C3-HFPO-DA	5.255	287.0 -> 169.0	159533	95.54 µg/L		0.000
Spiked Amount: 100.00	Range: 50.0 - 150.0%			Recovery = 95.5%		
M2-PFOA	6.610	415.0 -> 370.0	408724	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
M4-PFOS	7.185	503.0 -> 80.0	120813	20.00 µg/L		-0.013
Spiked Amount: 20.00	Range: 50.0 - 150.0%			Recovery = 100.0%		
Target Compounds						QValue
4:2FTS	4.861	327.0 -> 307.0	52750	20.97 µg/L		100
6:2FTS	6.595	427.0 -> 407.0	43865	19.66 µg/L		100
8:2FTS	7.689	527.0 -> 507.0	29221	20.57 µg/L		96
EtFOSAA	7.861	584.0 -> 419.0	22488	20.44 µg/L		100
FOSA	7.301	498.0 -> 78.0	95842	20.18 µg/L		99
MeFOSAA	7.723	570.0 -> 419.0	24736	18.88 µg/L		97
PFBA	1.710	213.0 -> 169.0	60013	19.73 µg/L		100
PFBS	3.883	299.0 -> 80.0	67850	19.98 µg/L		99
PFDA	7.664	513.0 -> 469.0	162602	20.16 µg/L		99
PFDoDA	8.341	613.0 -> 569.0	183195	19.71 µg/L		100
PFDS	7.999	599.0 -> 80.0	21815	18.31 µg/L		98
PFHpA	5.894	363.0 -> 319.0	287324	19.83 µg/L		100
PFHpS	6.618	449.0 -> 80.0	46935	19.99 µg/L		100
PFHxA	4.965	313.0 -> 269.0	101322	19.87 µg/L		100
PFHxS	5.937	399.0 -> 80.0	53294	19.65 µg/L	m	100
PFNA	7.201	463.0 -> 419.0	184842	19.79 µg/L		100
PFNS	7.635	549.0 -> 80.0	42039	20.91 µg/L		98
PFOA	6.611	413.0 -> 369.0	167845	20.01 µg/L		99
PFOS	7.186	499.0 -> 80.0	68548	19.91 µg/L	m	98
PFPeA	3.577	263.0 -> 219.0	213705	19.60 µg/L		100
PFPeS	5.094	349.0 -> 80.0	42494	20.12 µg/L		99
PFTeDA	8.877	713.0 -> 669.0	233507	19.81 µg/L		100
PFTrDA	8.615	663.0 -> 619.0	198039	19.63 µg/L		100
PFUnDA	8.028	563.0 -> 519.0	165785	19.75 µg/L		100
11Cl-PF3OUdS	8.149	631.0 -> 451.0	146698	18.78 µg/L		100
9Cl-PF3ONS	7.446	531.0 -> 351.0	36178	18.71 µg/L		100
ADONA	5.994	377.0 -> 251.0	384526	19.64 µg/L		100
HFPO-DA	5.259	329.0 -> 169.0	264480	97.70 µg/L		99

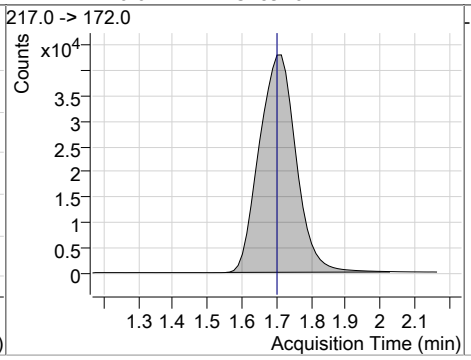
 # = Qualifier out of range, m = manually integrated, + = Area summed

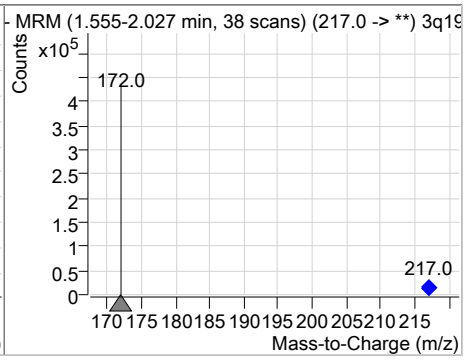
Perfluorinated Compounds by LC/MS/MS



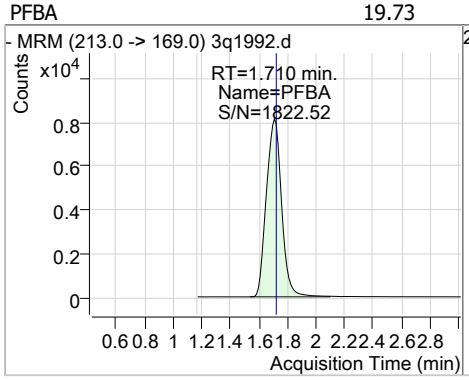
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFBA	19.56	1.71	0.01	318946				

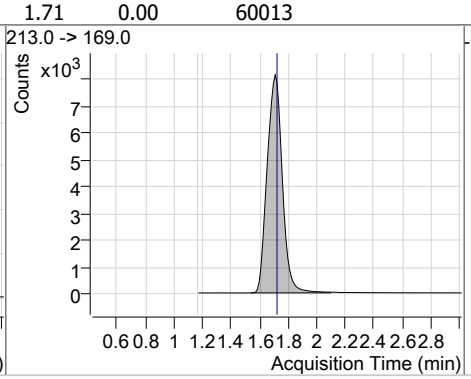


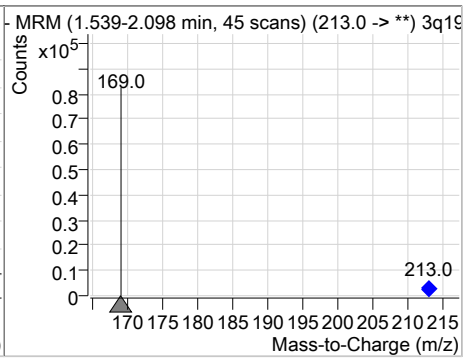




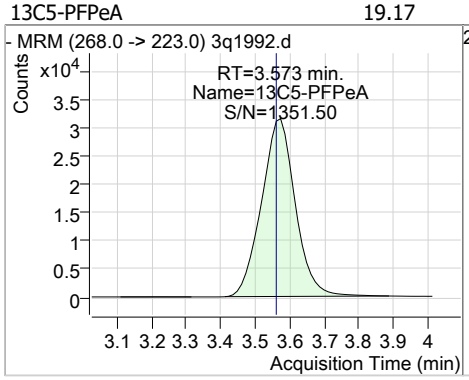
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBA	19.73	1.71	0.00	60013				

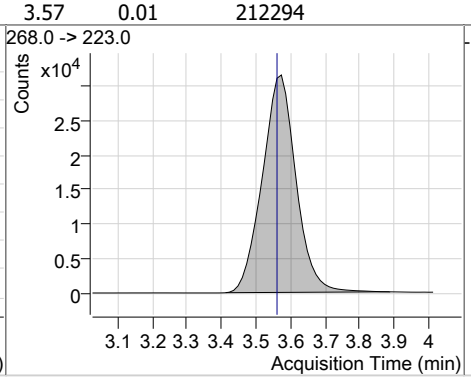


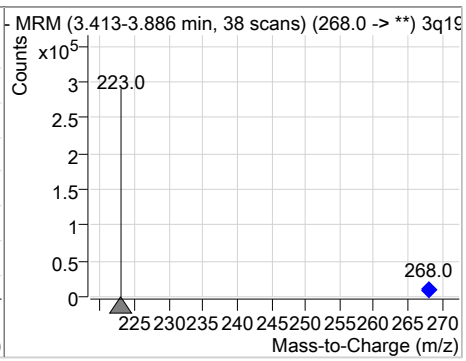




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	19.17	3.57	0.01	212294				

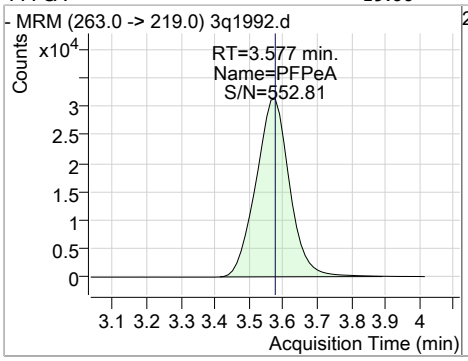


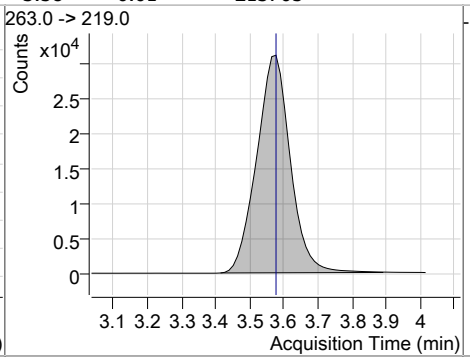


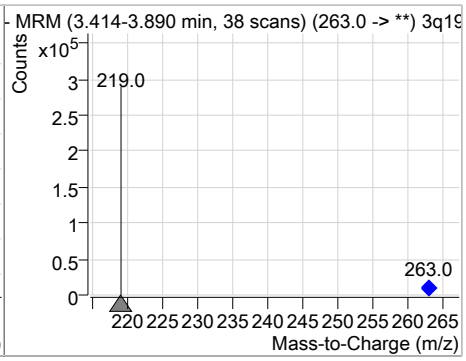


Perfluorinated Compounds by LC/MS/MS

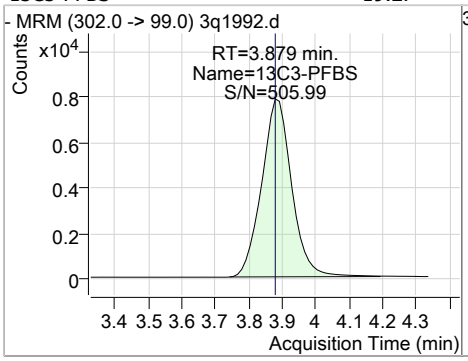
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	19.60	3.58	0.01	213705				

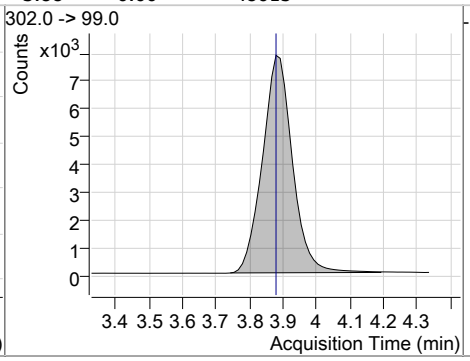


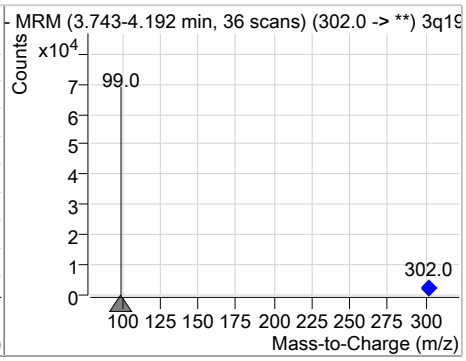




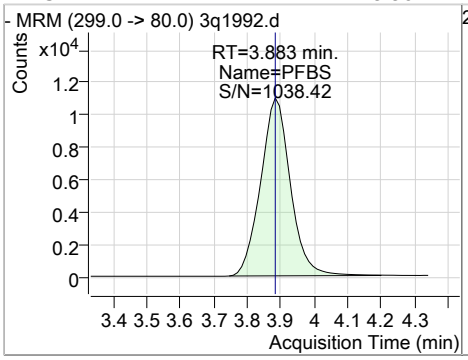
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	19.27	3.88	0.00	48615				

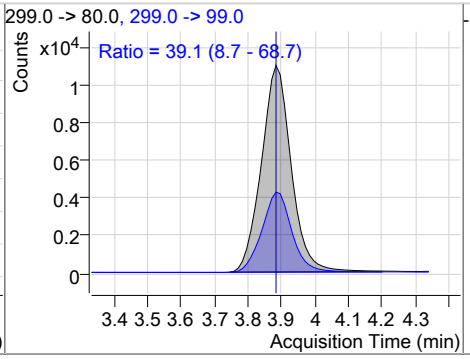


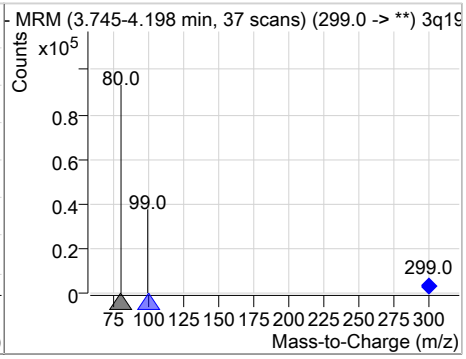




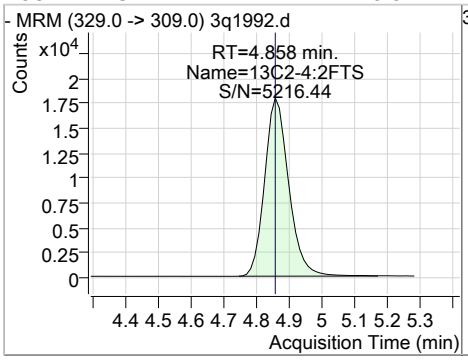
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	19.98	3.88	0.00	67850	299.0 -> 99.0	39.1	8.7	68.7

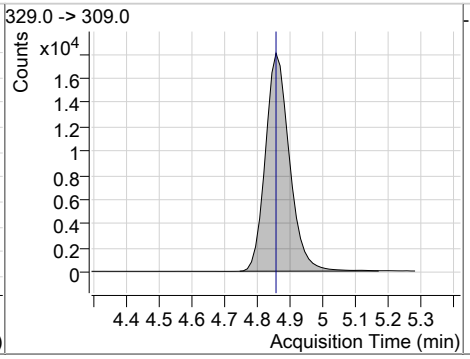


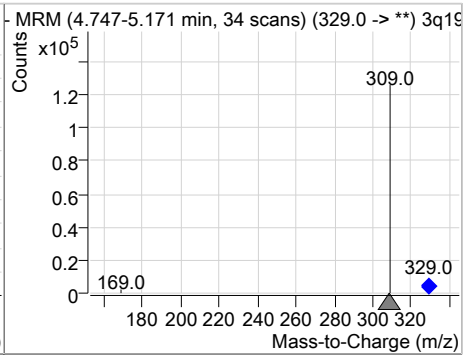




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	19.37	4.86	0.00	91937				

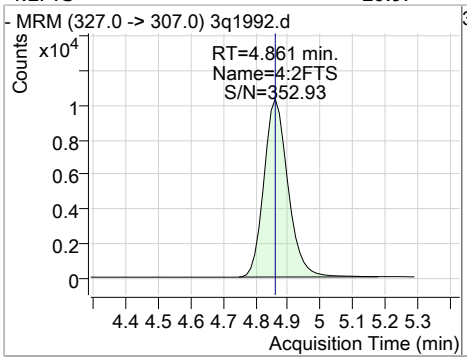


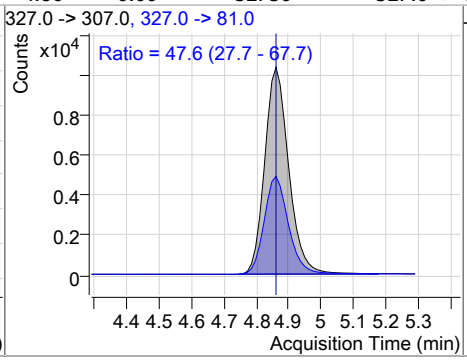


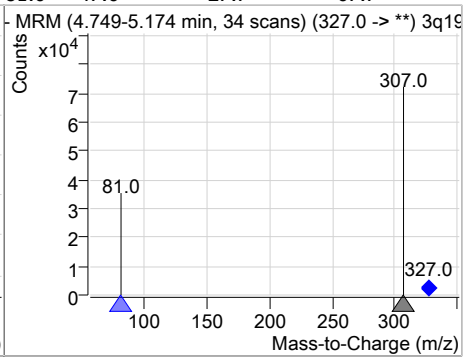


Perfluorinated Compounds by LC/MS/MS

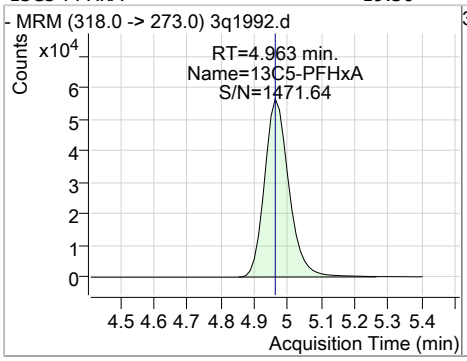
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	20.97	4.86	0.00	52750	327.0 -> 81.0	47.6	27.7	67.7

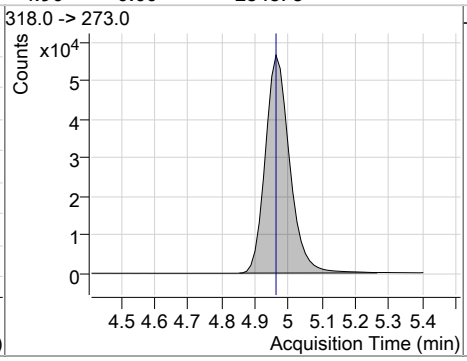


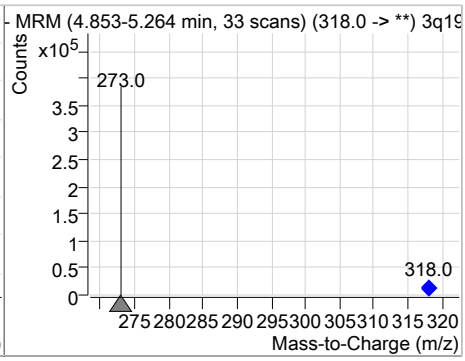




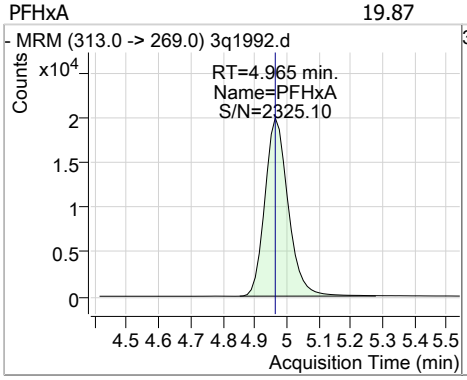
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	19.36	4.96	0.00	284878				

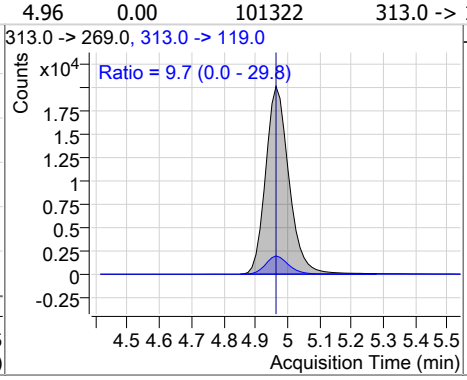


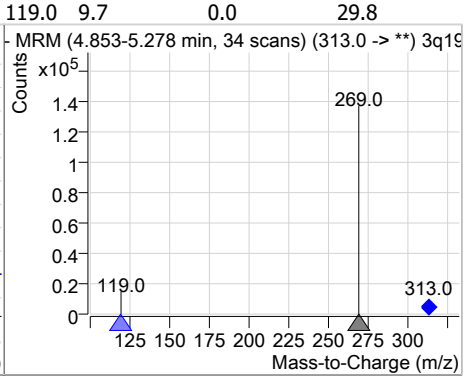




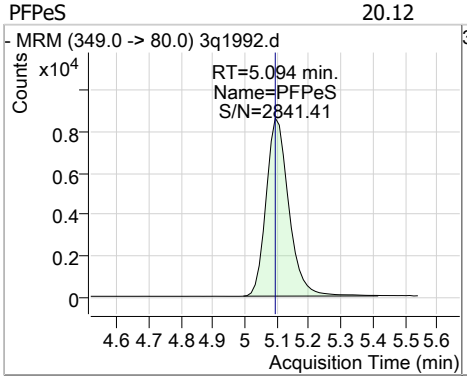
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	19.87	4.96	0.00	101322	313.0 -> 119.0	9.7	0.0	29.8

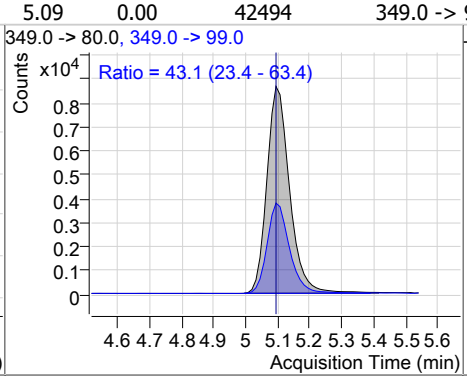


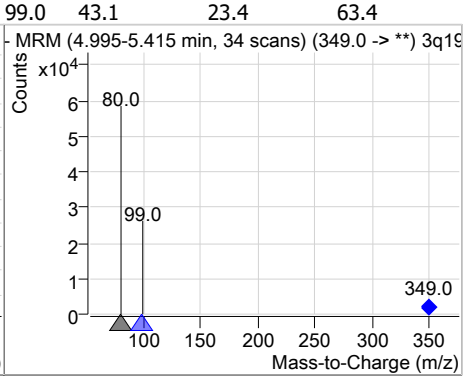




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	20.12	5.09	0.00	42494	349.0 -> 99.0	43.1	23.4	63.4

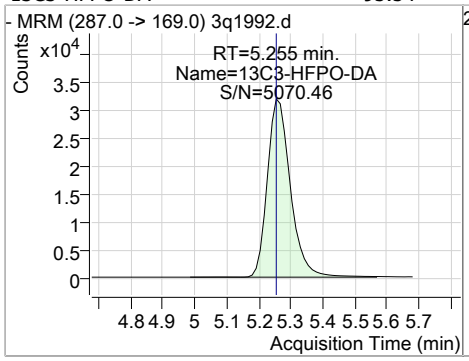


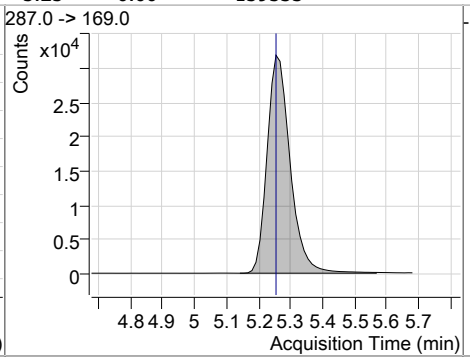


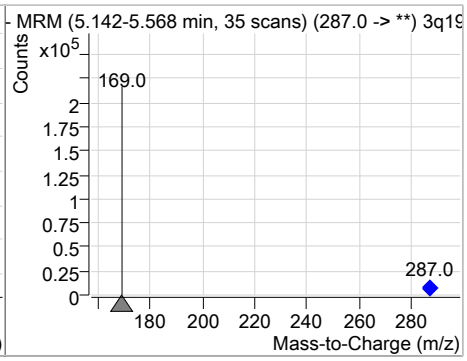


Perfluorinated Compounds by LC/MS/MS

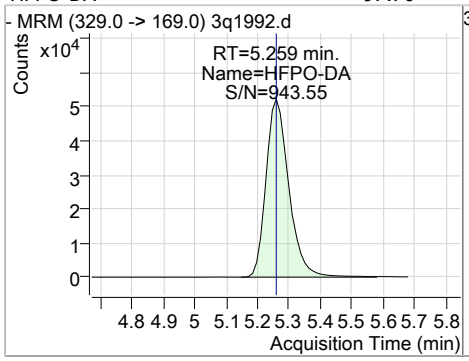
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	95.54	5.25	0.00	159533				

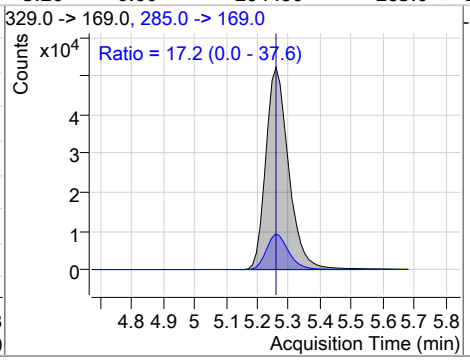


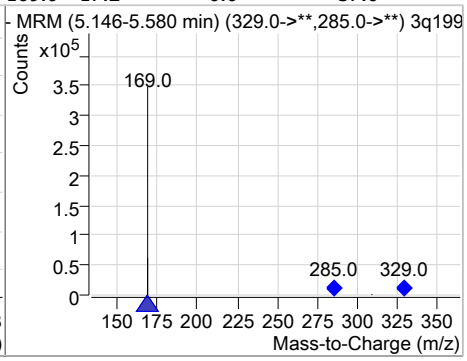




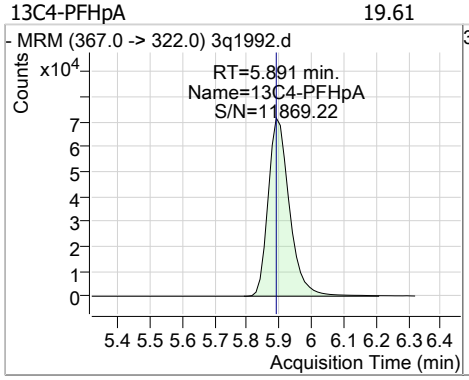
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	97.70	5.26	0.00	264480	285.0 -> 169.0	17.2	0.0	37.6

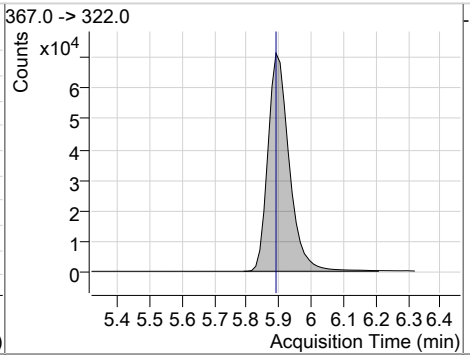


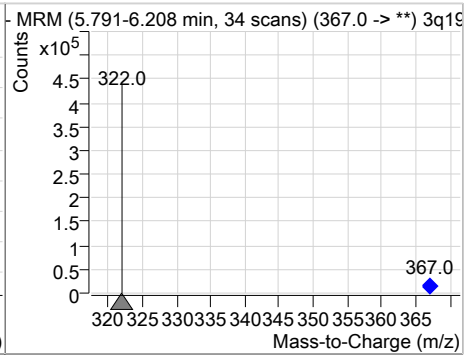




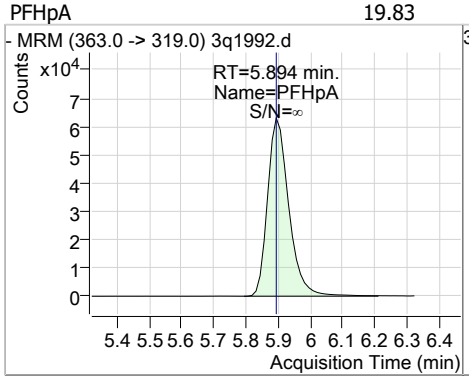
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	19.61	5.89	0.00	327291				

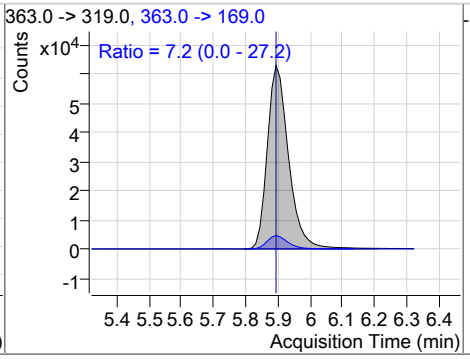


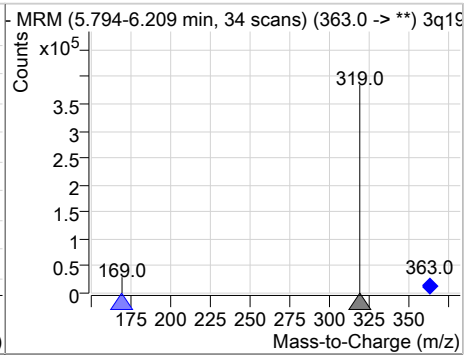




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	19.83	5.89	0.00	287324	363.0 -> 169.0	7.2	0.0	27.2

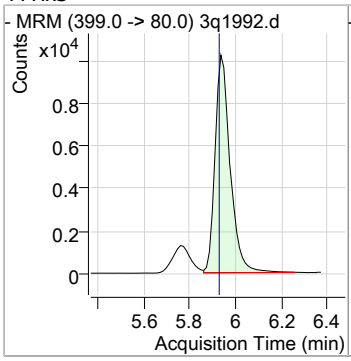


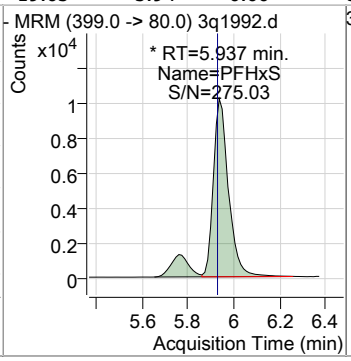


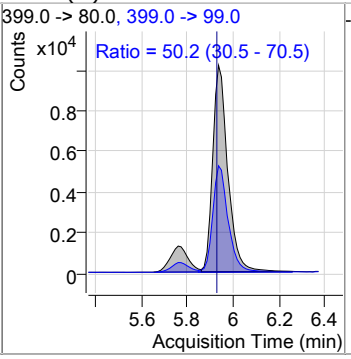


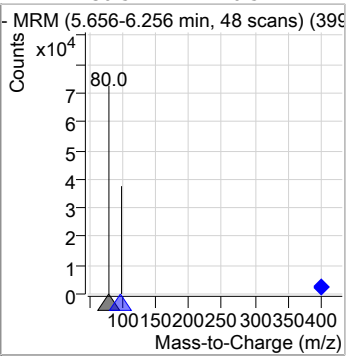
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	19.65	5.94	0.00	53294 (m)	399.0 -> 99.0	50.2	30.5	70.5

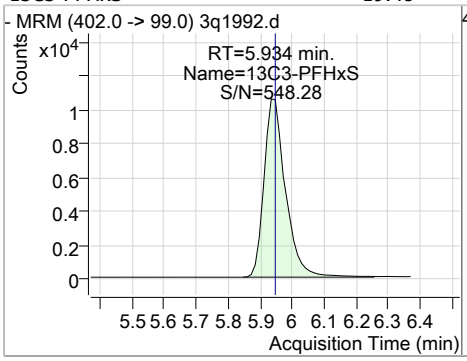


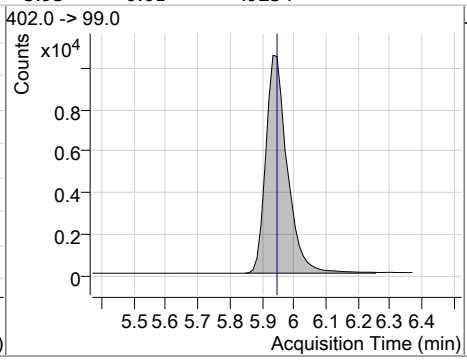


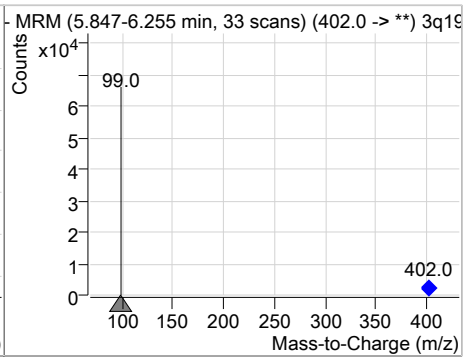




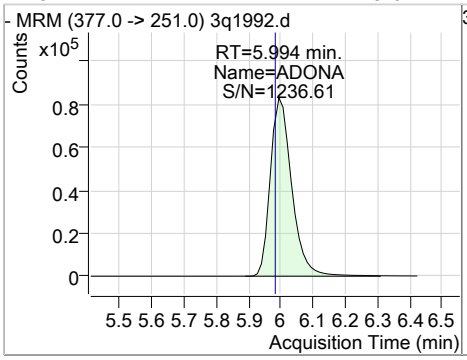
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	19.48	5.93	-0.01	49234				

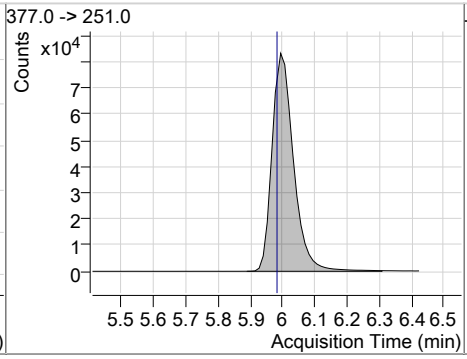


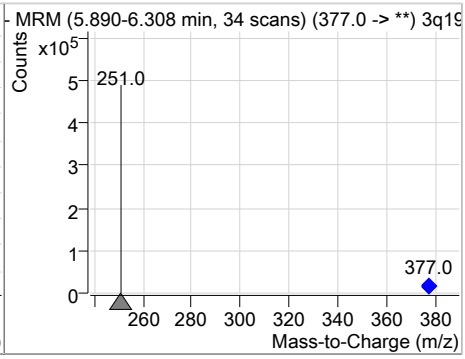




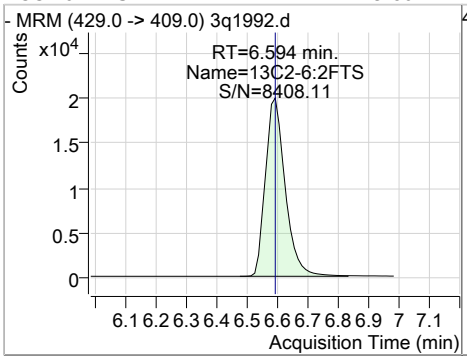
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	19.64	5.99	0.00	384526				

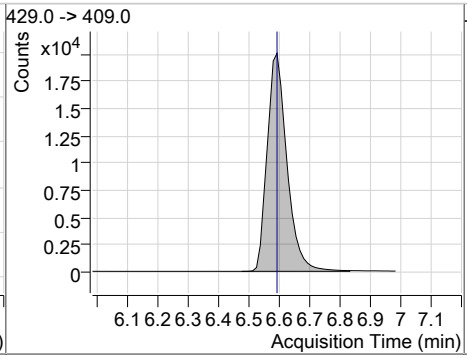


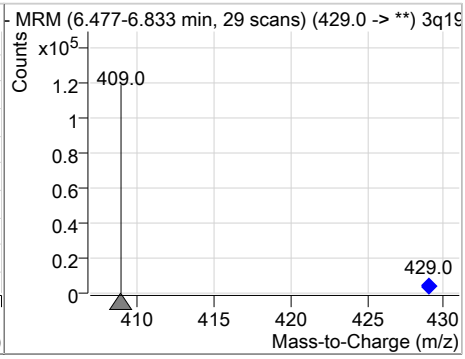




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	19.80	6.59	0.00	90461				

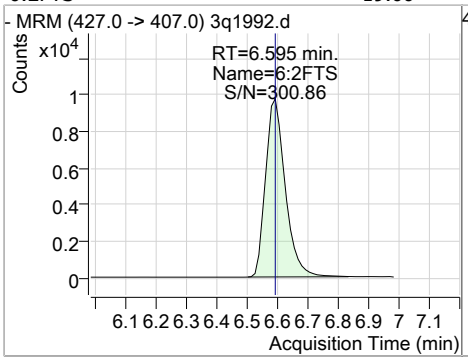


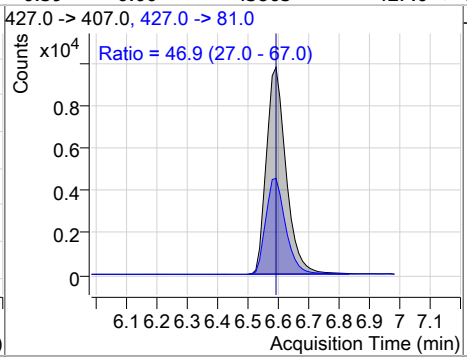


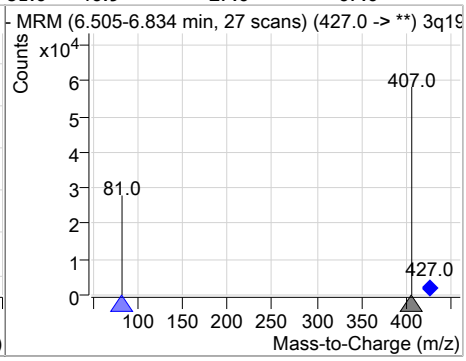


Perfluorinated Compounds by LC/MS/MS

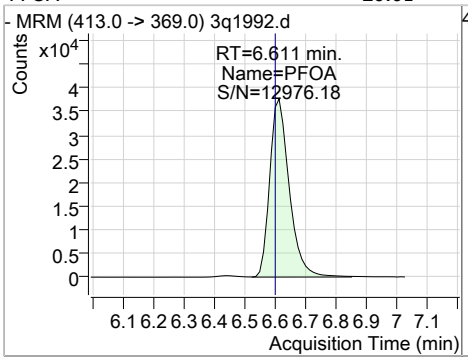
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	19.66	6.59	0.00	43865	427.0 -> 81.0	46.9	27.0	67.0

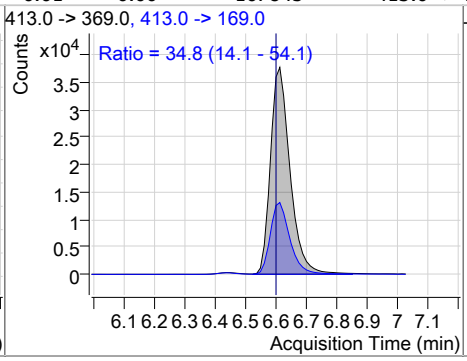


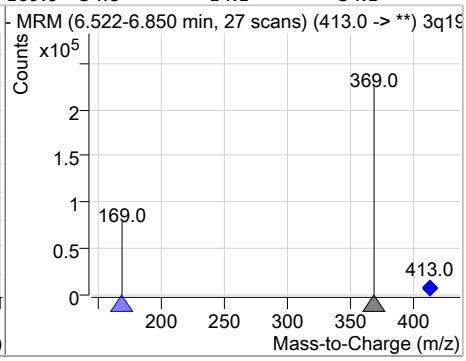




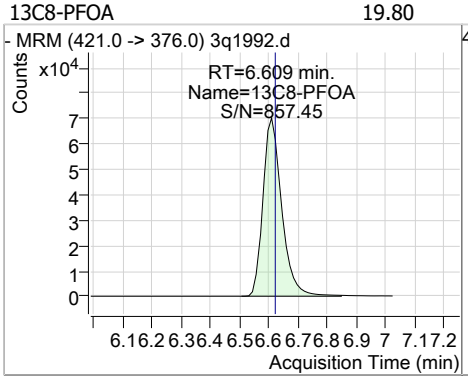
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	20.01	6.61	0.00	167845	413.0 -> 169.0	34.8	14.1	54.1

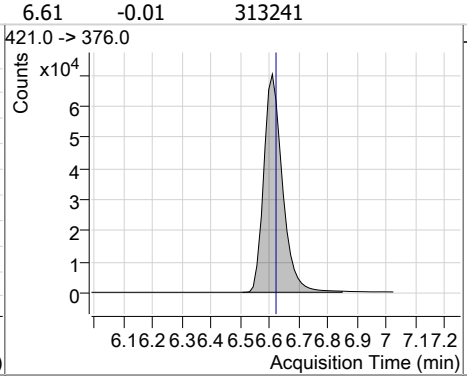


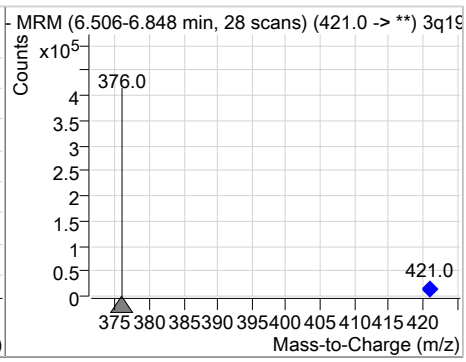




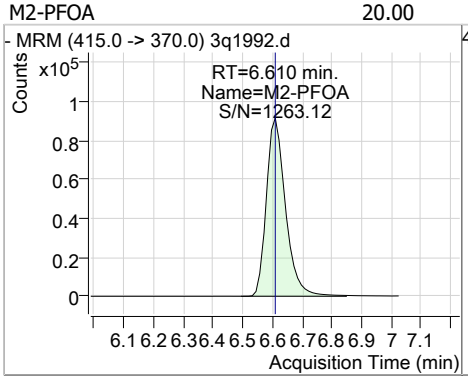
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	19.80	6.61	-0.01	313241				

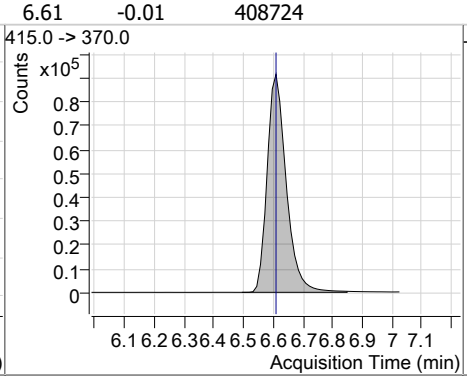


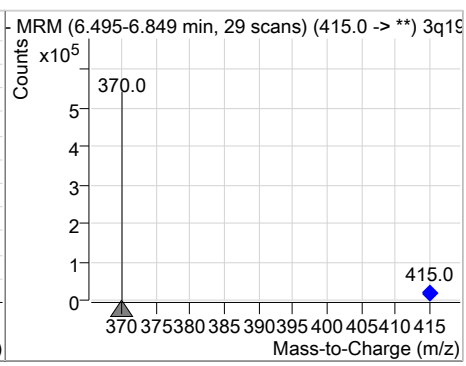




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M2-PFOA	20.00	6.61	-0.01	408724				

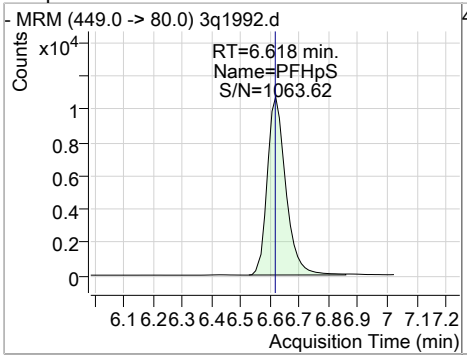


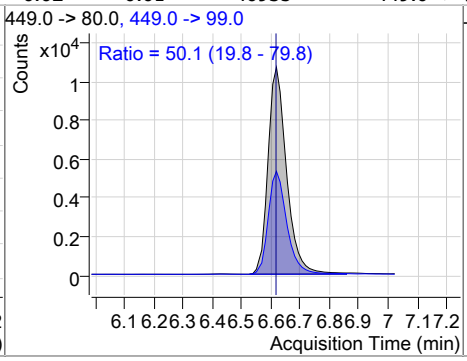


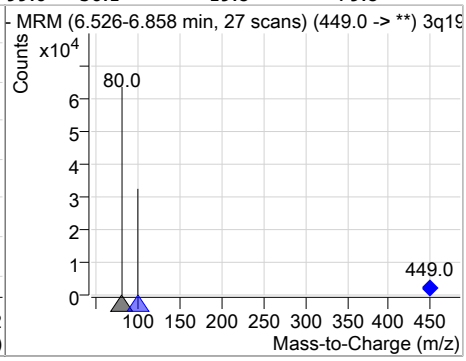


Perfluorinated Compounds by LC/MS/MS

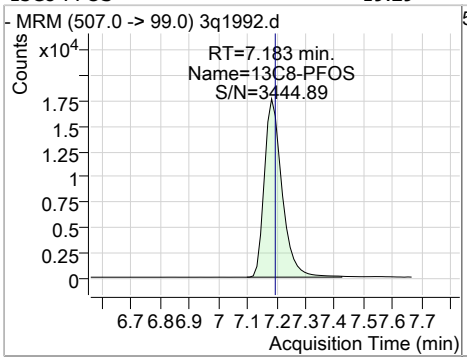
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	19.99	6.62	-0.01	46935	449.0 -> 99.0	50.1	19.8	79.8

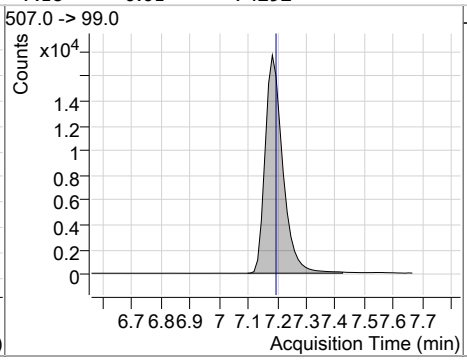


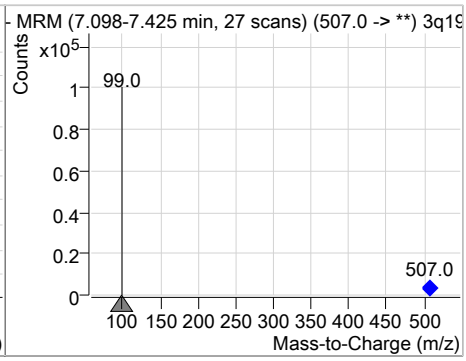




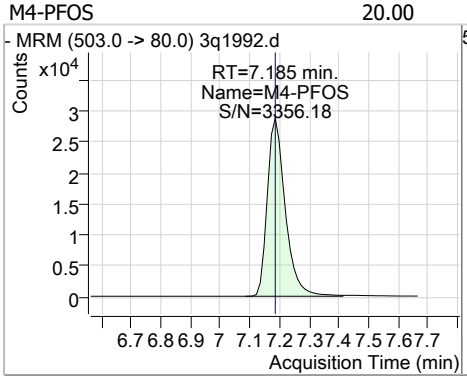
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	19.29	7.18	-0.01	74292				

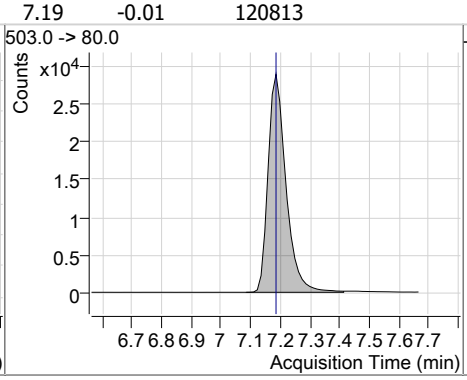


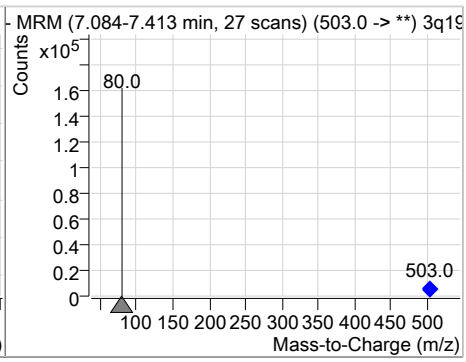




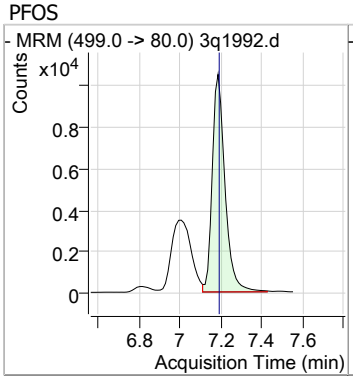
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
M4-PFOS	20.00	7.19	-0.01	120813				

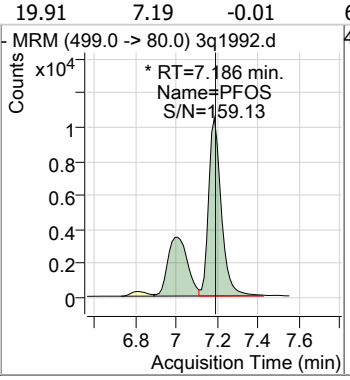


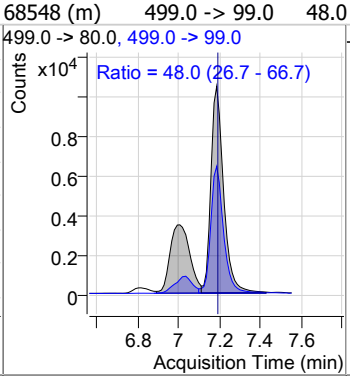


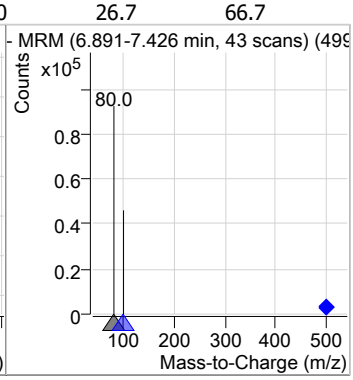


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	19.91	7.19	-0.01	68548 (m)	499.0 -> 99.0	48.0	26.7	66.7



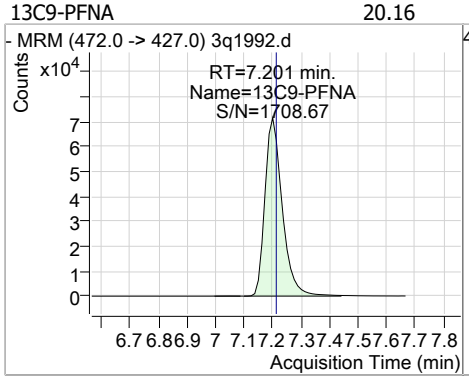


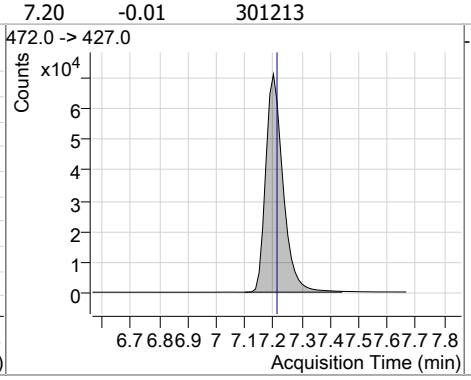


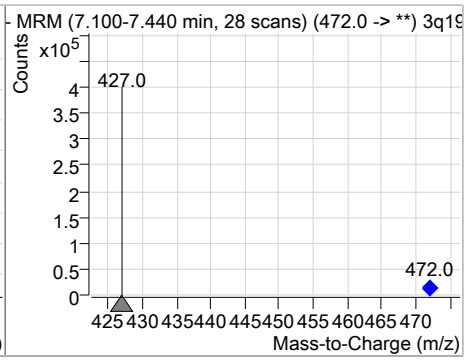


Perfluorinated Compounds by LC/MS/MS

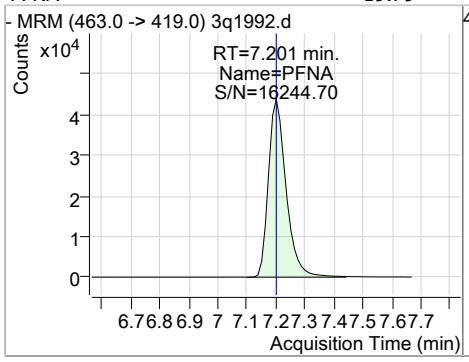
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	20.16	7.20	-0.01	301213				

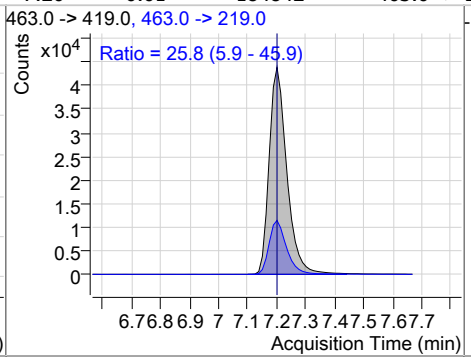


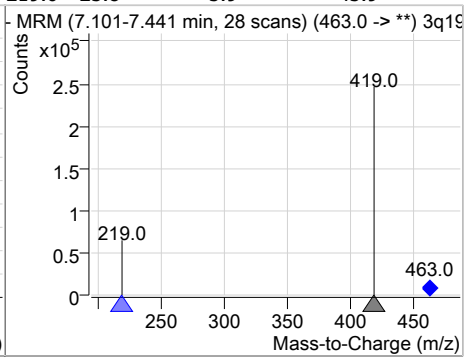




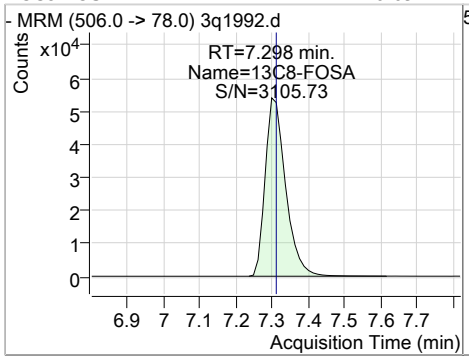
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	19.79	7.20	-0.01	184842	463.0 -> 219.0	25.8	5.9	45.9

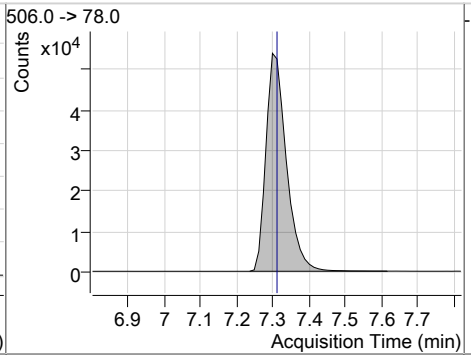


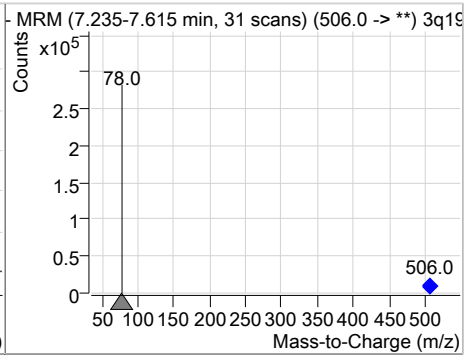




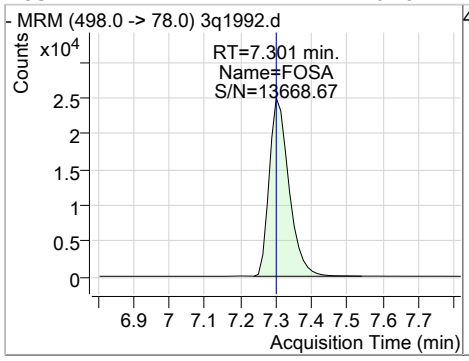
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	20.09	7.30	-0.01	211398				

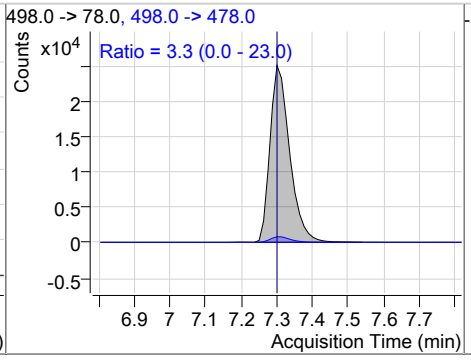


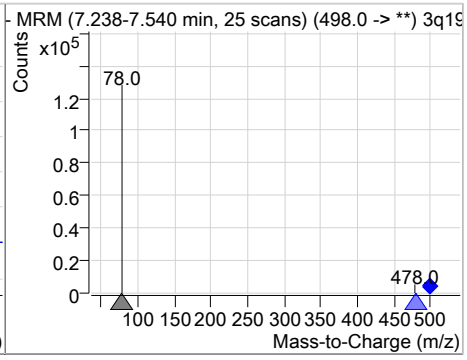




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	20.18	7.30	-0.01	95842	498.0 -> 478.0	3.3	0.0	23.0

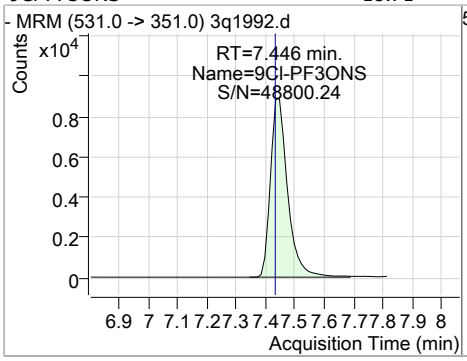


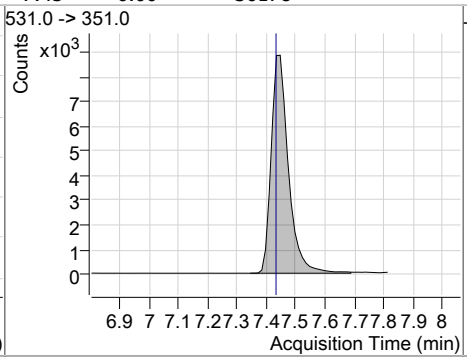


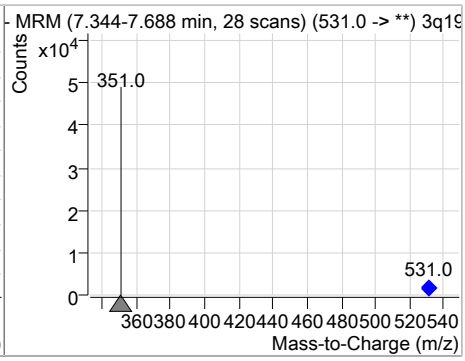


Perfluorinated Compounds by LC/MS/MS

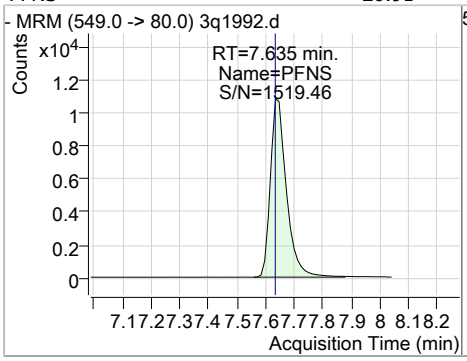
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.71	7.45	0.00	36178				

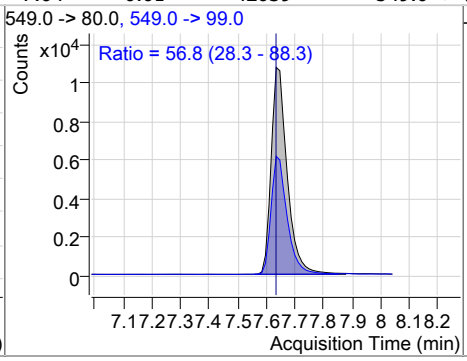


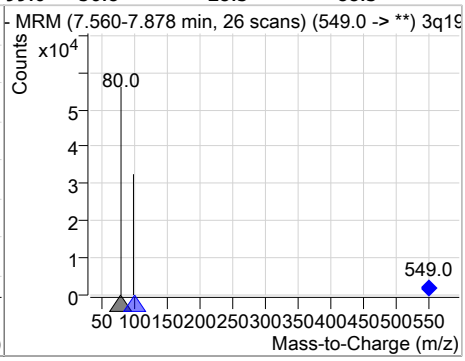




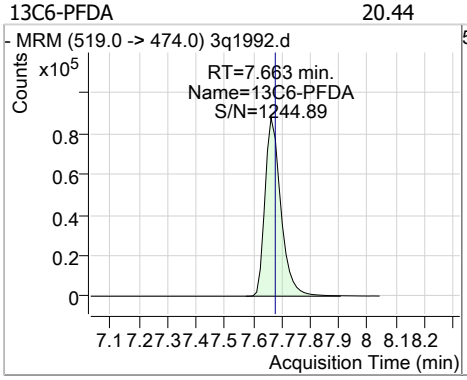
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	20.91	7.64	-0.01	42039	549.0 -> 99.0	56.8	28.3	88.3

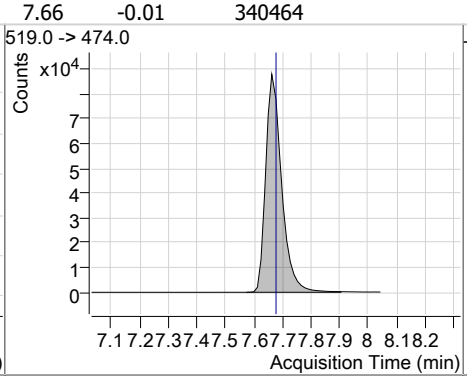


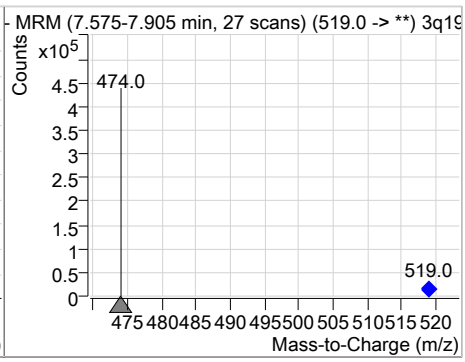




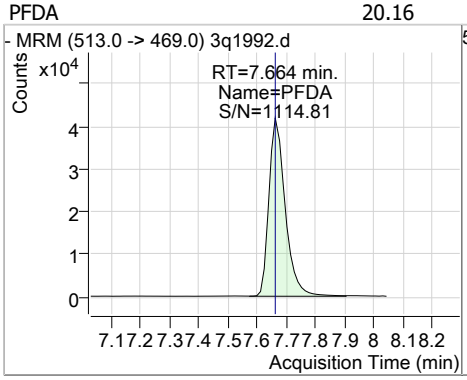
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	20.44	7.66	-0.01	340464				

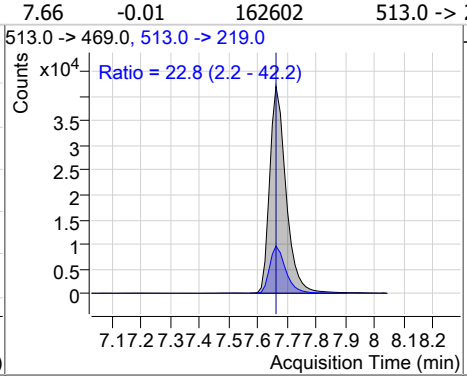


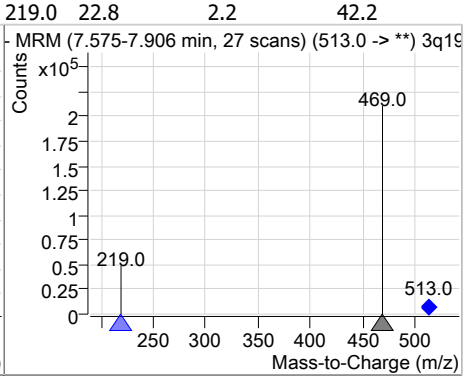




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	20.16	7.66	-0.01	162602	513.0 -> 219.0	22.8	2.2	42.2

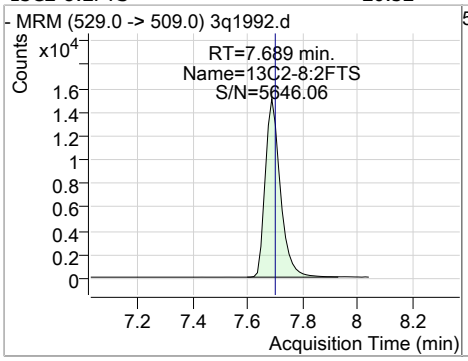


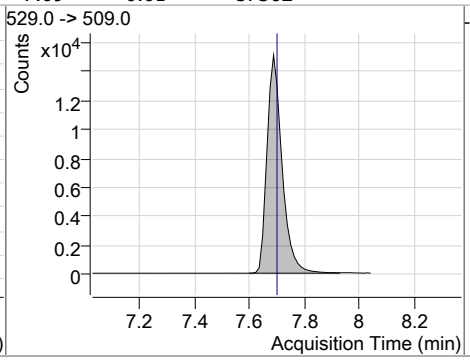


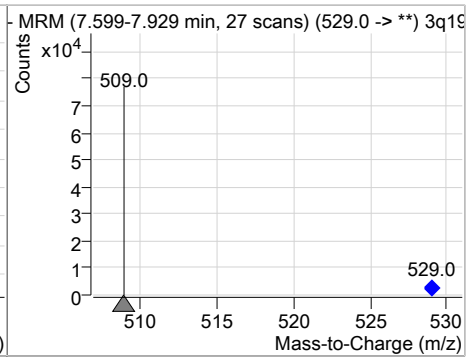


Perfluorinated Compounds by LC/MS/MS

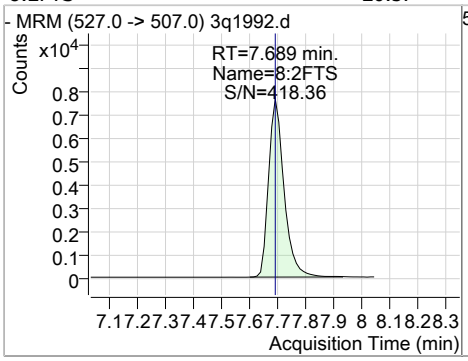
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	20.52	7.69	-0.01	57362				

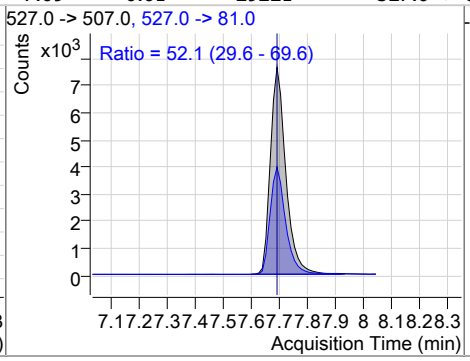


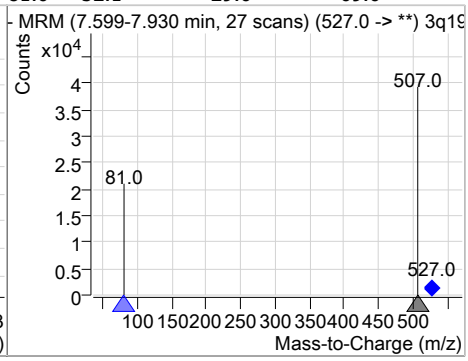




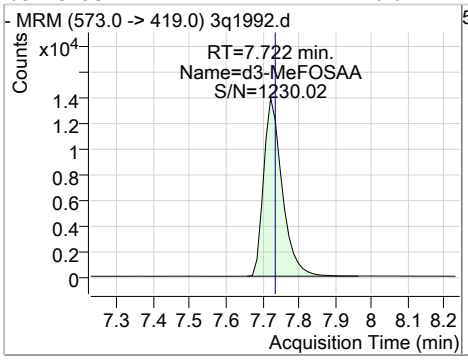
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
8:2FTS	20.57	7.69	-0.01	29221	527.0 -> 81.0	52.1	29.6	69.6

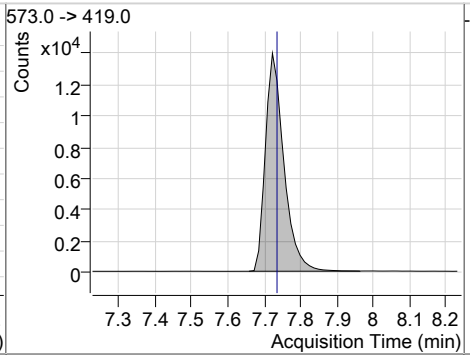


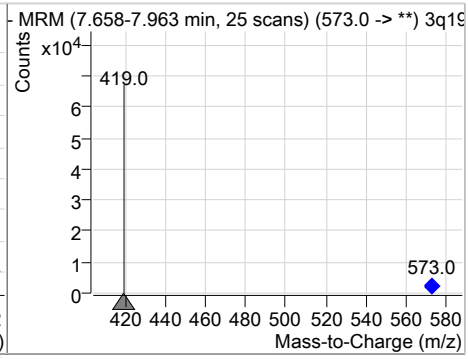




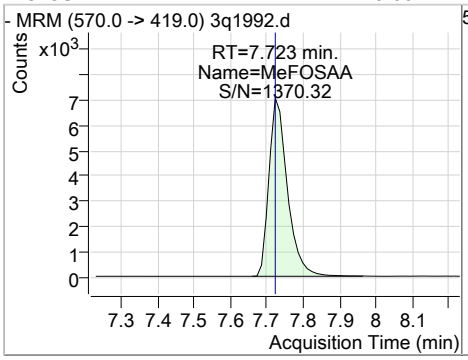
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	20.62	7.72	-0.01	48947				

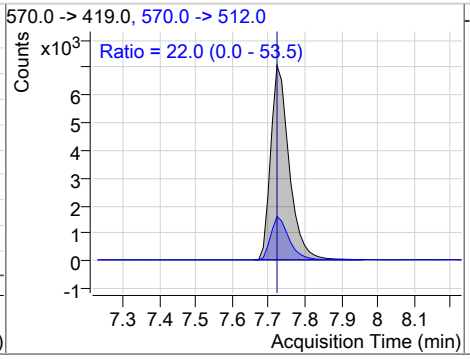


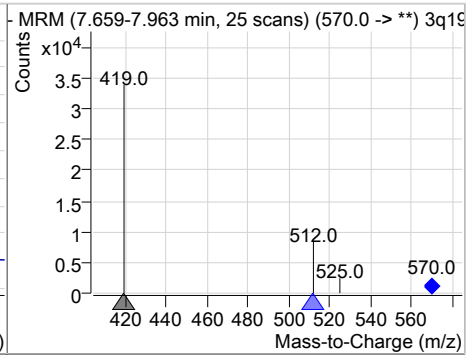




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	18.88	7.72	-0.01	24736	570.0 -> 512.0	22.0	0.0	53.5

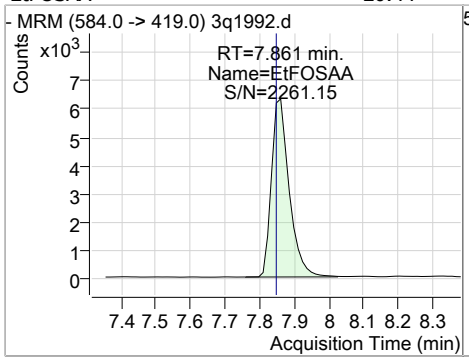


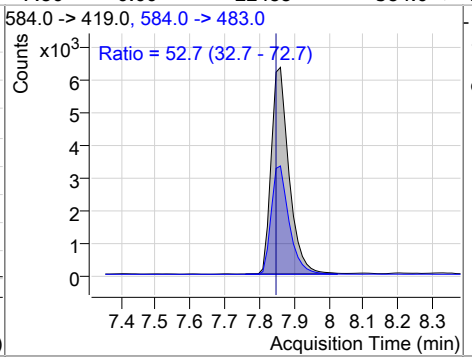


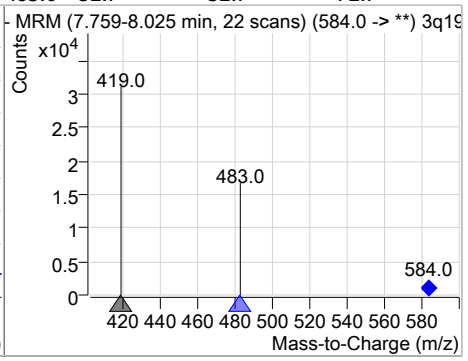


Perfluorinated Compounds by LC/MS/MS

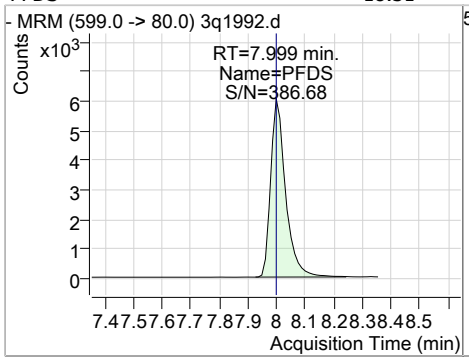
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.44	7.86	0.00	22488	584.0 -> 483.0	52.7	32.7	72.7

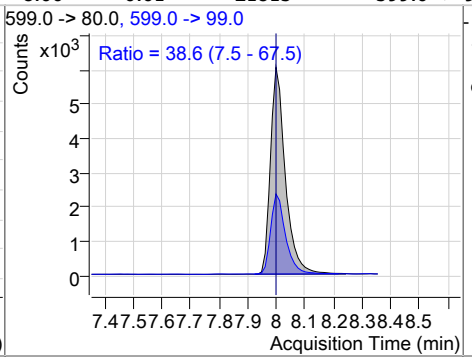


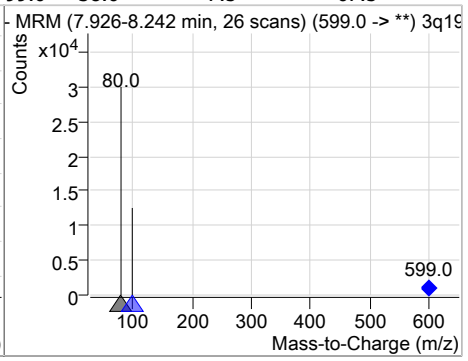




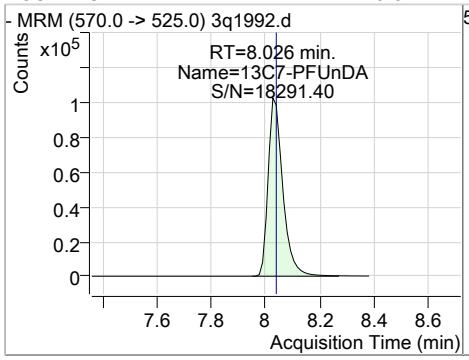
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	18.31	8.00	-0.01	21815	599.0 -> 99.0	38.6	7.5	67.5

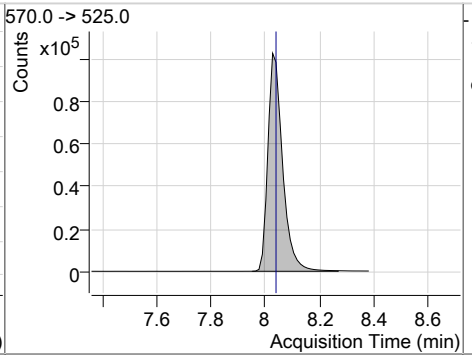


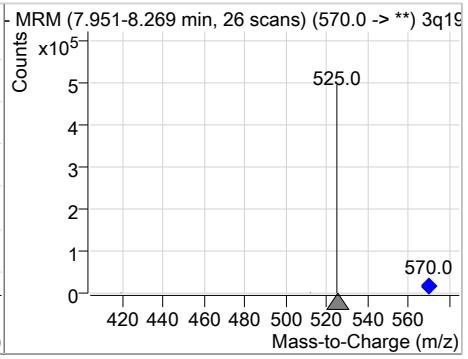




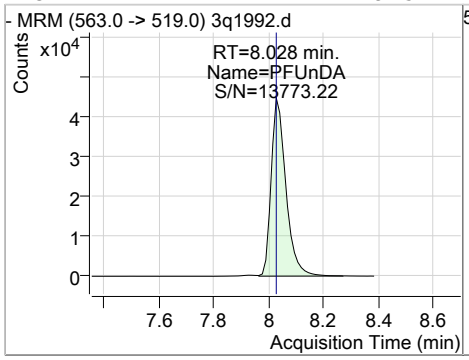
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	20.87	8.03	-0.01	386962				

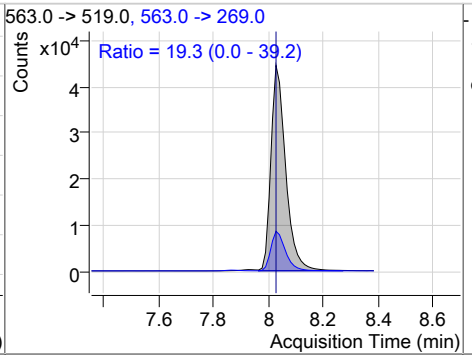


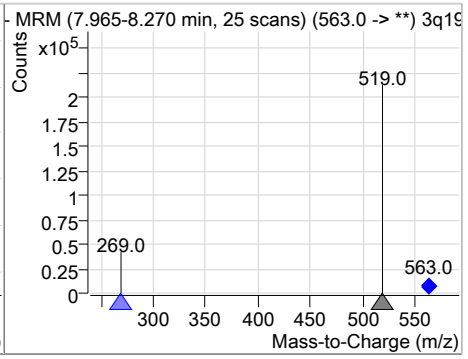




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.75	8.03	-0.01	165785	563.0 -> 269.0	19.3	0.0	39.2

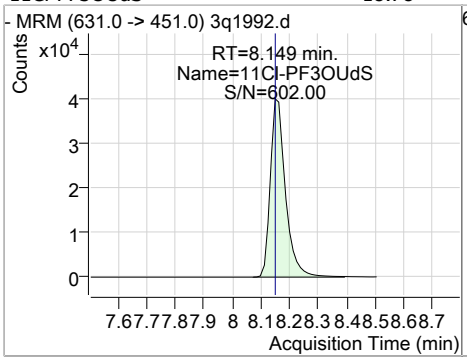


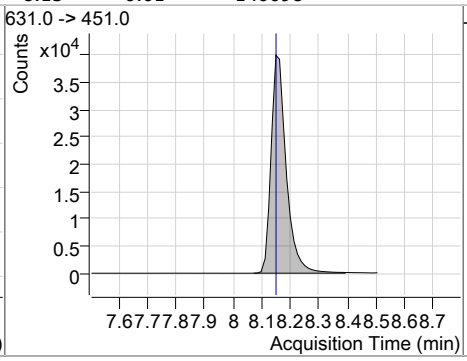


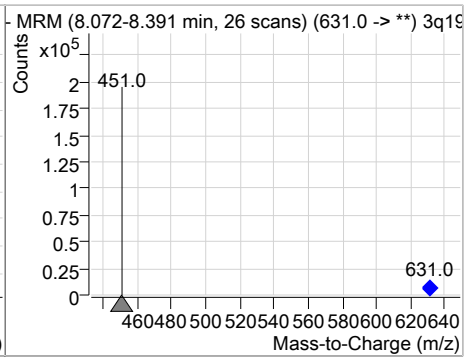


Perfluorinated Compounds by LC/MS/MS

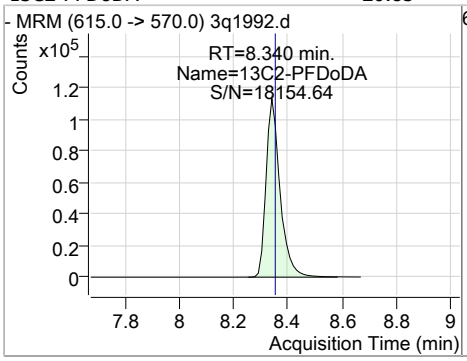
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	18.78	8.15	-0.01	146698				

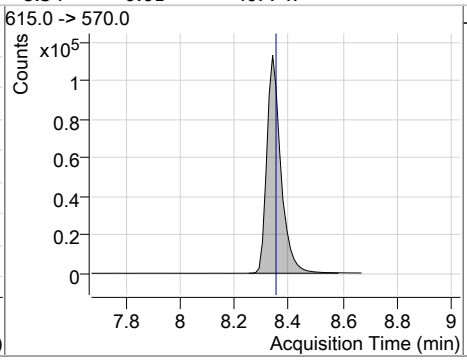


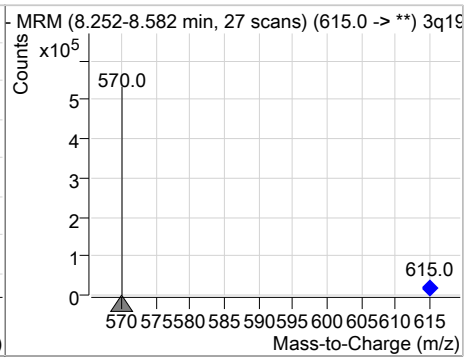




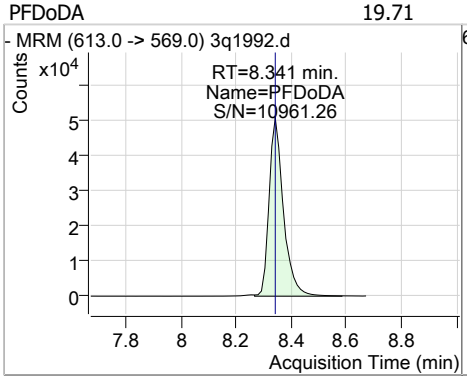
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	20.85	8.34	-0.01	407747				

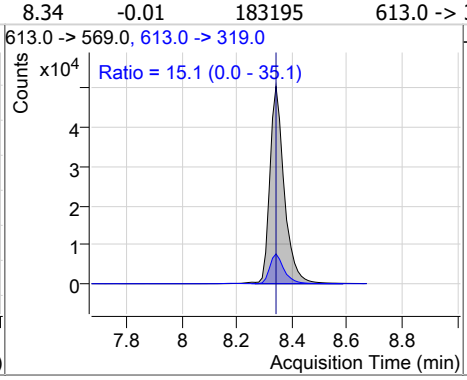


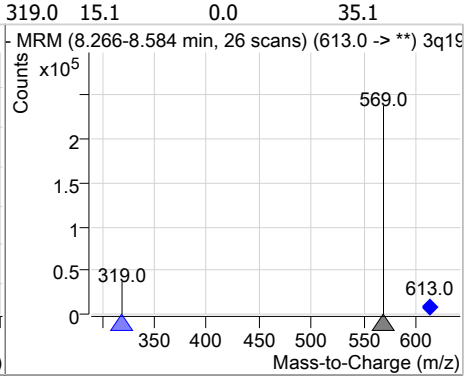




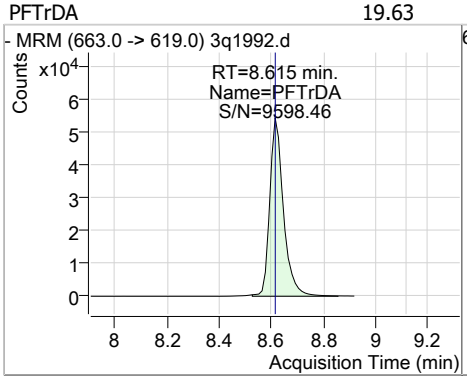
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	19.71	8.34	-0.01	183195	613.0 -> 319.0	15.1	0.0	35.1

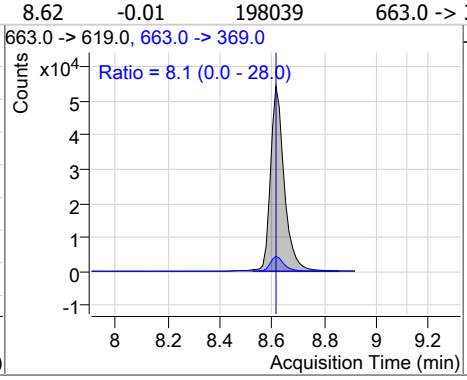


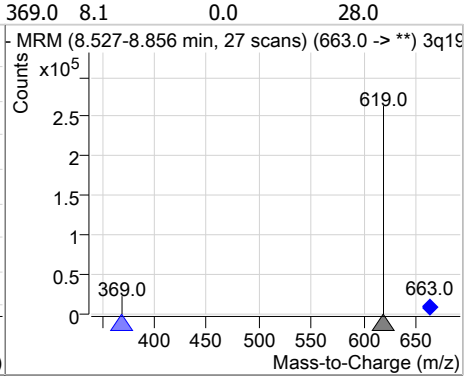




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	19.63	8.62	-0.01	198039	663.0 -> 369.0	8.1	0.0	28.0

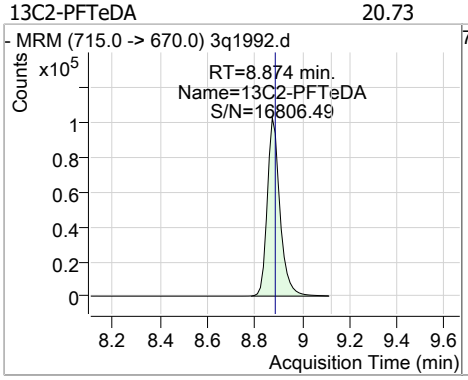


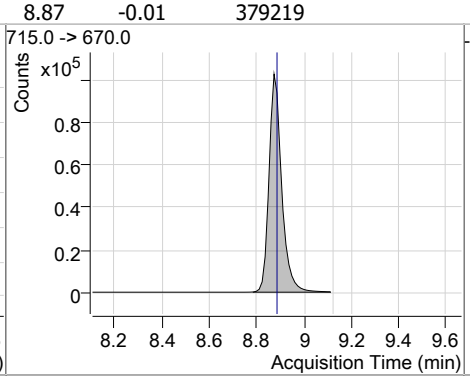


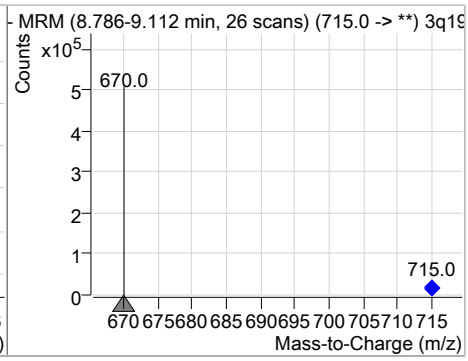


Perfluorinated Compounds by LC/MS/MS

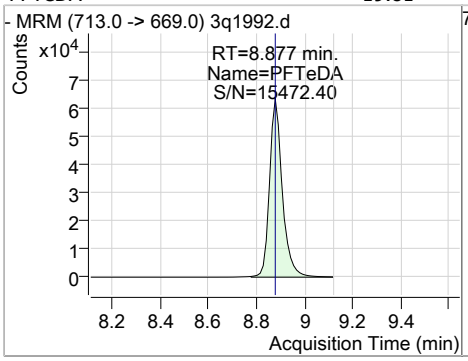
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	20.73	8.87	-0.01	379219				

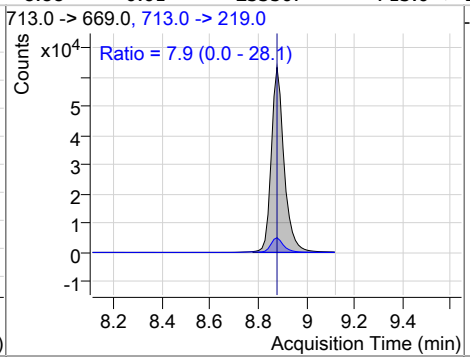


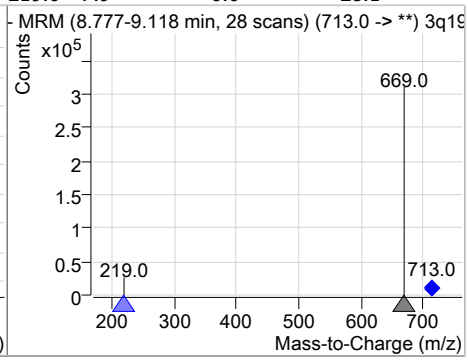




Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	19.81	8.88	-0.01	233507	713.0 -> 219.0	7.9	0.0	28.1







Manual Integration Approval Summary

Sample Number:	S3Q54-CC54	**Method:**	EPA 537M QSM5.1 B-15
Lab FileID:	3Q1992.D	**Analyst approved:**	03/22/19 11:47 Nancy Saunders
Injection Time:	03/21/19 15:07	**Supervisor approved:**	03/24/19 19:08 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.94	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.19	Split peak

SGS ACCUTEST-ORLANDO

DATE:	03-13-19
COLUMN TYPE:	Acroshell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	345

LCMS2-2Q ANALYSIS LOG

METHODS:	ID Lmx
ACQ. METHOD:	dMRM ID PFC 2.1 Lmx
PROC. METHOD:	ID Lmx ~~0316~~ OSB 3/14/19
CALIB. DATE:	03-13-19
RUN BATCH:	S2Q 439

ANALYST:	NAS
ELUENT A LOT #:	196894L w/Acetic Acid
ELUENT B LOT #:	185826
WATER LOT #:	196894L
ISTD Lot #:	LC 1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27558	1	CCB	PFC ID	—	—				✓
2Q 59	1	CCB		—	—				✓
2Q 60	1	CCB		—	—				✓
2Q 61	3	rt		LC1228	100/500				✓
2Q 62	1	CCB		—	—				✓
2Q 63	2	FC439-0.5		LC1228	2.5/500		SP		✓
2Q 64	3	-1.0			5/500		SP		✓
2Q 65	4	-2.0			10/500		SP		✓
2Q 66	5	-5.0			25/500		SP		✓
2Q 67	6	-10			50/500		SP		✓
2Q 68	7	FCC439-20			100/500		SP		✓
2Q 69	8	FC439-50			250/500		SP		✓
2Q 70	9	-100			1X		SP		✓
2Q 71	1	IBLK		—	—				BDL
2Q 72	12	ICV439-20		LC9414B	5/500		SP		Pass
2Q 73	11	-20		LC1160C	5/500		SP		Pass
2Q 74	12	-20		LC1204	100/500		SP		Pass
2Q 75	13	FA61536-4R		0074101	1X				✓
2Q 76	14	-6R							✓ Do not report 2nd run
2Q 77	15	FA61589-10R					SP		✓

*< Conductivity Limit For Perchlorate by SW846 6850
Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

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Analyst's Signature: [signature]

SGS ACCUTEST-ORLANDO

DATE:	03-13-19
COLUMN TYPE:	Poroshell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	347

LCMS2-2Q ANALYSIS LOG

METHODS:	FO 6mx
ACQ. METHOD:	dMAM IDPFC 2.1bmx
PROC. METHOD:	FO umx 031319 S26439
CALIB. DATE:	03-13-19
RUN BATCH: S2Q	439

ANALYST:	NAS
ELUENT A LOT #:	136 642 w/ Acetic Acid
ELUENT B LOT #:	197 626 +
WATER LOT #:	180 642
ISTD Lot #:	LC 1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27576	16	FA62151-12R	PFC ID	OP74101	1x		SP		✓
2Q 79	17	CC 439-20		LC1228	100 TW		SP		Pass
2Q 80	1	CCB							30L
2Q 81	17	FA62151-1		OP74116	1x				✓ RR RTD
2Q 82	10	-2							✓
2Q 83	14	-3							✓
2Q 84	20	OP74116 - ms							✓
2Q 85	21	- msd							✓
2Q 86	22	FA 62151-4							✓
2Q 87	23	-5							✓
2Q 88	24	-6							✓
2Q 89	25	-8							✓
2Q 90	26	-9							✓ RR
2Q 91	7	ECC 439-20		LC1228	100 TW		SP mP		Pass RT shifted
2Q									Look run stopped
2Q							NAS 03-14-19		
2Q									
2Q									
2Q									

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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SGS ACCUTEST-ORLANDO

DATE:	03-15-19
COLUMN TYPE:	PoroSHell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT: LCMS2-2Q	
HEAD PRESSURE:	350

LCMS2-2Q ANALYSIS LOG

METHODS:	ID Cmx
ACQ. METHOD:	dmrm ID PFC 2.1mx
PROC. METHOD:	ID bmx 0313 19 S2Q439
CALIB. DATE:	03-13-19
RUN BATCH: S2Q	441

ANALYST:	NAS
ELUENT A LOT #:	186842 w/Acetic Acid
ELUENT B LOT #:	185826
WATER LOT #:	186842
ISTD Lot #:	LC 1127

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27624	1	CCB	PFC ID	—					✓
2Q 25	9	high std		LC1228	1X				✓
2Q 26	1	FBLK		—	—				BDL
2Q 27 (MI03184)	3	CC439-20.0		LC1228	5/500		SP		Pass
2Q 28	7	-20			100/500		SP		Pass
2Q 29	34	FA62151-1		OP74116	1X		SP		✓
2Q 30	35	-10					SP		✓
2Q 31	36	-14							BDL
2Q 32	7	CC439-20		LC1228	100/500		SP		Pass
2Q 33	1	CCB		—	—				BDL
2Q 34	37	OP74149-BS		OP74149	1X		SP		✓
2Q 35	38	-MB							BDL
2Q 36	40	FA62177-2							BDL DoD
2Q 37	45	-5							BDL
2Q 38	39	-1					SP		✓
2Q 39	41	-3							BDL
2Q 40	42	-4							BDL
2Q 41	43	OP74149-MS					SP		✓
2Q 42	44	-MSD					SP		✓
2Q 43	46	FA62177-6					SP		✓

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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Analyst's Signature: ________

SGS ACCUTEST-ORLANDO

DATE:	03-15-19
COLUMN TYPE:	Poroshell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	370

LCMS2-2Q ANALYSIS LOG

METHODS:	E0 6mX
ACQ. METHOD:	dMRM E0 PFC 2.1 6mX
PROC. METHOD:	E0 6mX 031319 S2R441
CALIB. DATE:	03-13-19
RUN BATCH: S2Q	441

ANALYST:	NMS
ELUENT A LOT #:	186642 w/Acetic Acid
ELUENT B LOT #:	185826 +
WATER LOT #:	186642
ISTD Lot #:	LL1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27644	7	CL439-20	PFC	LL1226	100/TWO		SP		Pass
2Q 45	1	CCB							BDL
2Q 46	47	EA62177-7		OP74149	1x		SP		✓
2Q 47	48	-8					SP		✓
2Q 48	49	-9							BDL
2Q 49	50	-10							BDL
2Q 50	51	-11							BDL
2Q 51	52	-12					SP		✓
2Q 52	53	-13							✓
2Q 53	7	CL439-20		LL1226	100/TWO		SP		Pass
2Q 54	1	CCB							BDL
2Q 55	54	OP74164-BS		OP74164	1x		SP		✓
2Q 56	55	-MB							BDL
2Q 57	56	EA62220-21							✓
2Q 58	57	OP74164-MS					SP		✓
2Q 59	58	EA62220-22							✓
2Q 60	59	OP74164-Dup			✓				✓
2Q 61	60	EA62157-1			10x	AAQ 031419			BDL Rerun 1X
2Q 62	61	-2			10x				BDL + FORM
2Q 63	7	ECL439-20		LL1226	100/TWO		SP		Pass
64	1	CCB							BDL

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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SGS ACCUTEST-ORLANDO

DATE:	03-18-19
COLUMN TYPE:	Purosil II EIW
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	360

LCMS2-2Q ANALYSIS LOG

METHODS:	ID 6mx
ACQ. METHOD:	6mRM ID PFC 2.1 6mx
PROC. METHOD:	ID 6mx 631E19520.442
CALIB. DATE:	03-18-19
RUN BATCH: S2Q	442

ANALYST:	NAS
ELUENT A LOT #:	186642 w/Acetic Acid
ELUENT B LOT #:	187826 L
WATER LOT #:	186642
ISTD Lot #:	LC1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27665	1	CCB	PFC ID	—	—				ISTD & ion ratio
2Q 66	1	CCB		—	—				BDL
2Q 67	2	FC442-0.5		LC1228	2.5/TW		SP		✓
2Q 68	3	-1.0			5/TW		SP		✓
2Q 69	4	-2.0			10/TW		SP		✓
2Q 70	5	-5.0			25/TW		SP		✓
2Q 71	6	-10			50/TW		SP		✓
2Q 72	7	FCC442 -20			100/TW		SP		✓
2Q 73	8	FC442-50			250/TW		SP		✓
2Q 74	9	-100		↓	1x		SP		✓
2Q 75	1	FBLK		—	—				BDL
2Q 76	10	FCV442-20		LC1204	100/TW		SP		PASS
2Q 77	11	-20		LC1140C	5/TW		SP		PASS
2Q 78	12	-20		941483	↓		SP		PASS
2Q 79	62	FA62157-1		0874164	1x				✓ AOL
2Q 80	63	-2		↓ 4					BDL FOSA, reint/redo
2Q 81	40	FA62177-2		0874189		MC 3/4/19			BDL
2Q 82	48	-5					SP OP BR		✓
2Q 83	50	-10							BDL
2Q 84	53	-13	↓	↓	↓		OP BR		✓

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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SGS ACCUTEST-ORLANDO

DATE:	05-19-19
COLUMN TYPE:	Acquity HSS T3
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	360

LCMS2-2Q ANALYSIS LOG

METHODS:	ID 6mx
ACQ. METHOD:	dmam ID PFC 2.16mx
PROC. METHOD:	ID 6mx 031819 S2Q442
CALIB. DATE:	05-19-19
RUN BATCH:	S2Q 442

ANALYST:	NMS
ELUENT A LOT #:	184842 w/Formic Acid
ELUENT B LOT #:	185426 L
WATER LOT #:	186342
ISTD Lot #:	LC 1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27685	46	FA62177-6	PFC	OP74144	1x				use 1st run ISTD
2Q 86	47	-7	↓	↓	↓				use 1st run ISTD
2Q 87	7	CCV442-20		LC1228	100/100		SP		Te ISTD
2Q 88	8	-20		↓	↓		SP		Poss Te surr
2Q 89	1	CCB							
2Q 90	3	CCV442-1.0		LC1228	5/500		SP		Poss Te surr
2Q 91	13	OP74150-bs		OP74150	1x		SP		✓
2Q 92	14	-mb							BDL
2Q 93	15	FA62220-1					SP		✓
2Q 94	16	OP74150-ms					SP		✓
2Q 95	17	-msd					SP		✓
2Q 96	18	FA62220-2							BDL
2Q 97	19	-3					SP		✓
2Q 98	20	-4					SP		✓ ISTD surr ↓ redo
2Q 99	21	-5							✓
2Q 27700	22	-6		↓	↓		SP		✓
2Q 01	7	CCV442-20		LC1228	100/500		SP		Poss Te surr
2Q 02	1	CCB							BDL
2Q 03	23	FA62220-7		OP74150	1x				✓
2Q 07	24	-8	↓	↓	↓				✓ ISTD surr ↓ redo

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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SGS ACCUTEST-ORLANDO

DATE:	03-19-19
COLUMN TYPE:	Perkin Elm
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	360

LCMS2-2Q ANALYSIS LOG

METHODS:	±0 lmx
ACQ. METHOD:	dmem ±0 DFL 2.1lmx
PROC. METHOD:	±0 lmx 031819 S2Q-442
CALIB. DATE:	03-18-19
RUN BATCH:	S2Q 442

ANALYST:	NAS
ELUENT A LOT #:	186842 w/ Formic Acid
ELUENT B LOT #:	185426 1
WATER LOT #:	186842
ISTD Lot #:	LL 1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27705	25	FA62220-9	DFL ID	OP74180	1x				BDL
2Q 06	26	-10							✓
2Q 07	27	-11							BDL
2Q 08	28	-12					SP		✓
2Q 09	29	-13					SP		✓
2Q 10	30	-14					SP		✓
2Q 11	31	-15					SP		✓
2Q 12	32	-16					SP		✓
2Q 13	7	CC442-LO		LCL2B	100/500		SP		Pass
2Q 14	1	CCB							BDL
2Q 15	33	FA62220-17		OP74180	1x		SP		✓ Rerun 2x
2Q 16	34	-18					SP		✓ RR 1x C.O
2Q 17	35	-19					SP		✓
2Q 18	36	-20							✓
2Q 19	7	ECC442-20		LCL2B	100/500		SP		Pass Tr >MRT
2Q 20	1	CCB							
2Q									
2Q							NAS		
2Q							03-19-19		
2Q									

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

Analyst's Signature: _____

SGS ACCUTEST-ORLANDO

DATE:	03-19-19
COLUMN TYPE:	Prosphell ECIB
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	360

LCMS2-2Q ANALYSIS LOG

METHODS:	ID 6mx
ACQ. METHOD:	dmam ID PFC_1.6mx
PROC. METHOD:	ID 6mx 031919 S2Q-443
CALIB. DATE:	03-18-19
RUN BATCH: S2Q	~~442~~ 443

NAS 3/19/19

ANALYST:	NAS
ELUENT A LOT #:	196842 w/ 14ml Acetic Acid
ELUENT B LOT #:	195826 1
WATER LOT #:	196842
ISTD Lot #:	LC1227

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27771	1	CCB	PFC ID	—	—				BDL
2Q 22	1	CCB		—	—				BDL
2Q 23	1	CCB		—	—				BDL
2Q 24	9	high Std		LC1228	1X				✓
2Q 25	1	IBLK		—	—				BDL
2Q 26	3	CC442-1.0		LC1228	5/100		SD		Pass
2Q 27	7	-20		↓	100/100		SD		Pass
2Q 28	13	FA62220-4		OP74180	1X				Istd ↓ redo
2Q 29	23	OP74197-bs		OP74197	1X		SD		✓
2Q 30	24	-mb		↓	↓				BDL
2Q 31	25	FA62151-10					SD DD		✓
2Q 32	26	FA62265-1					-300		✓ BDL
2Q 33	27	OP74197-ms		↓	↓		SD -300		✓
2Q 34	7	CC442-20	↓	LC1228	100/100		SD		Pass
2Q 35	1	CCB		—	—				BDL
2Q 36	17	OP74195-bs		OP74195	1X		SD		✓
2Q 37	18	-mb		↓	↓				✓ PFBA
2Q 38	19	FA62324-1							BDL
2Q 39	20	-2							BDL
2Q 40	21	OP74195-MS	↓	↓	↓		SD		✓

*< Conductivity Limit For Perchlorate by SW846 6850

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration

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SGS ACCUTEST-ORLANDO

DATE:	03-19-19
COLUMN TYPE:	Poroshell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS2-2Q
HEAD PRESSURE:	360

LCMS2-2Q ANALYSIS LOG

METHODS:	ID bmX
ACQ. METHOD:	dmRM ID PFC 2.1 bmX
PROC. METHOD:	ID bmX 031819 S2Q-442
CALIB. DATE:	03-18-19
RUN BATCH:	S2Q 443

ANALYST:	NAS
ELUENT A LOT #:	186842 w/ Acetic Acid
ELUENT B LOT #:	185826
WATER LOT #:	186842
ISTD Lot #:	LC 1127

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ION RATIO	MANUAL INTS RATIONALE, PK #	SCON <CL*	COMMENTS
2Q 27741	22	OP74195-msd	PFC ID	OP74195	1X		SP		✓
2Q 42	7	CC442-20	NAS 032019	LC1228	100/500		SP		Pass
2Q 43	1	CCB							BDL
2Q 44	3	CC442-1.0		LC1228	5/500		SP		Pass
2Q 45	28	OP74196-bs		OP74196	1X		SP		✓
2Q 46	29	-mb							✓ PFBA
2Q 47	30	FA62366-1					SP		✓
2Q 48	31	OP74196-ms					SP		✓
2Q 49	32	-msd					SP		✓
2Q 50	74	FA62220-8		OP74180			SP		redo ISTD↓
2Q 51	15	-18					SP		✓
2Q 52	16	-17			2X		SP		✓
2Q 53	4	ECC442-20		LC1228	100/500		SP		Pass
2Q 54	1	CCB							BDL
2Q 55	91	bmX spike		LCMS 1247	10/500				✓
2Q									
2Q									
2Q							NAS 03-20-19		
2Q									
2Q									

*< Conductivity Limit For Perchlorate by SW846 6850
Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **BR** Baseline Ripple, **PII** Poor Instrument Integration
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

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acq meth: amazin 10 DFC 2.1 lmx
proc meth: DFC ED lmx 032119 53054

SGS - ORLANDO

LCMS3-3Q ANALYSIS LOG

DATE:	03-21-19
COLUMN TYPE:	Perosh II C18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS3-3Q
HEAD PRESSURE:	370

METHODS:	ED 537 lmx
ACQ. METHOD:	~~537 1+4 lmx~~ ED lmx 032119
PROC. METHOD:	~~537 lmx 032519~~ 53054
CALIB. DATE:	DFCED 03-21-19
RUN BATCH: S3Q	54

ANALYST:	NAS
ELUENT A LOT #:	187166
ELUENT B LOT #:	186954
ISTD Lot # / amount added:	LC12430
INJ STD Lot # / amount added:	LC12229

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ISTD DILUTION	ION RATIO	MANUAL INTEGRATIONS*	SCON <CL**	COMMENTS
3Q 1968	P3 A1	CCB	DFC ED							✓
3Q 69	A1	CCB								✓
3Q 70	A7	~~CCB~~ AT		LCMS3 1248	100/TW					✓
3Q 71	A1	CCB								✓
3Q 72	A2	EC54-0.5		LCMS3 1248	2.5/TW			SP		✓
3Q 73	A3	-1.0			5/TW			SP		✓
3Q 74	A4	-2.0			10/TW			SP		✓
3Q 75	A5	-5.0			25/TW			SP		✓
3Q 76	A6	-10			50/TW			SP		✓
3Q 77	A7	EC54-20			100/TW			SP		✓
3Q 78	A8	EC54-50			250/TW			SP		✓
3Q 79	A9	-100			1X			SP		✓
3Q 80	A1	EB1K								BDL
3Q 81	B1	EC54-10		LC1204	100/TW			SP		PGSS
3Q 82	B2	-20		LC1140L	5/TW			SP		PGSS
3Q 83	B3	-20		94198	1			SP		PGSS
3Q 84	B4	OP74233 -B5		OP74233	H			SP		✓
3Q 85	B5	-MB						SP		BDL
3Q 86	B6	FA 62220-4						SP		✓
3Q 87	B7	-8						SP		✓

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **PII** Poor Instrument Integration
*Manual Integration Rationale for Peaks other than including Branched Isomers. **< Conductivity Limit For Perchlorate by SW846 6850
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

Add matrix: AFC 2.1 bmx
...

SGS - ORLANDO

LCMS3-3Q ANALYSIS LOG

DATE:	03-21-19
COLUMN TYPE:	Atrosil C18
AMOUNT INJECTED:	4 ul
INSTRUMENT:	LCMS3-3Q
HEAD PRESSURE:	370

METHODS:	537 bmx
ACQ. METHOD:	~~537 ...bmx~~ FD bmx 032119 S3Q54
PROC. METHOD:	~~...~~ bmx 032119 S3Q54
CALIB. DATE:	03-21-19
RUN BATCH:	S3Q 54

ANALYST:	MAS
ELUENT A LOT #:	187166 w/...
ELUENT B LOT #:	186954
ISTD Lot # / amount added:	LC 12438
INJ STD Lot # / amount added:	LC 12429

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ISTD DILUTION	ION RATIO	MANUAL INTEGRATIONS*	SCON <CL**	COMMENTS
3Q 1988	P388	FA62454-1	AFC ID	0P74233	1x			SP		✓
3Q 89	B9	OP74233-Dup	↓	↓	↓			SP		✓
3Q 90	C1	FA62454-2						SP		✓
3Q 91	C2	OP74233-MS		↓	↓			SP		✓
3Q 92	A7	CC54-20		LCMS1244	1W/FTD			SP		Pass
3Q 93	A1	CCB		—	—					BDL
3Q 94	C3	OP74232-BS		0P74232	1x			SP		✓
3Q 95	C4	-mb								BDL
3Q 96	C5	FA62255-1								RTA PASX
3Q 97	C6	-2								BDL
3Q 98	C7	-3								BDL
3Q 99	C8	-4			↓			SP		✓ FOSA-Fed try 10x
3Q 2000	C9	-4			10			SP	I	✓ still ↓ redo Fed
3Q 01	D1	-5			1x			SP		✓ FOSA, Fed try 10x
3Q 02	D2	-5		↓	10			SP	I	✓ still low redo Fed
3Q 03	A7	CC54-20		LCMS1244	1W/FTD			SP		Pass
3Q 04	A1	CCB		—	—					BDL
3Q 05	D3	FA62289-1		0P74232	1x			SP		✓
3Q 06	D4	-2						SP		✓
3Q 07	D5	OP74232-dup	↓	↓	↓			SP		✓

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **PII** Poor Instrument Integration
*Manual Integration Rationale for Peaks other than including Branched Isomers. **< Conductivity Limit For Perchlorate by SW846 6850
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS3_3Q_log.xls NF rev. 11/18 **20 of 100** Analyst's Signature: [signature]

Cal method: ANAL FO PFC 2.1 bmx
Proc method: PFC FO bmx 032119 S3Q54

SGS - ORLANDO

DATE:	03-21-19
COLUMN TYPE:	Poroshell EC18
AMOUNT INJECTED:	4 ul
INSTRUMENT: LCMS3-3Q	
HEAD PRESSURE:	370

LCMS3-3Q ANALYSIS LOG

METHODS:	537 bmx
ACQ. METHOD:	~~537 Lit bmx~~ FO bmx 032119 S3Q54
PROC. METHOD:	~~537 bmx~~ 032119 S3Q54
CALIB. DATE:	PFC FO 03-21-19
RUN BATCH: S3Q	54

ANALYST:	MAS
ELUENT A LOT #:	19 7166 w/Ace Acid
ELUENT B LOT #:	186 974
ISTD Lot # / amount added:	LC 1243
INJ STD Lot # / amount added:	LC 1229

DATA FILE		ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ISTD DILUTION	ION RATIO	MANUAL INTEGRATIONS*	SCON <CL**	COMMENTS
3Q	2008	P3D6	FA62289-3	PFC FO	OP74236	1X			SP		✓
3Q	09	D7	-4						SP		✓ RR 2X
3Q	10	D8	FA62320-1						SP		✓
3Q	11	D9	OP74232-MS						SP		✓
3Q	12	E1	FA62320-2						SP		✓
3Q	13	A7	CC54-20		LCMS1244	100/TD			SP		Pass
3Q	14	A1	CCB		—						BDL
3Q	15	A3	CC54-1.0		LCMS1244	5/TD			SP		Pass
3Q	16	E2	FA62306-1		OP74270	10X					✓ Run 1X
3Q	17	E3	-1			20X					Not needed
3Q	18	E4	OP74210-dup			50X					Run 10X
3Q	19	E5	FA62306-3			1X					✓ Pe, FOSA↓
3Q	20	E6	-3			10X					✓ BA↓
3Q	21	E7	-4			5X					✓
3Q	22	E8	-4			25X					Not needed
3Q	23	E9	-5			1X					✓ Pe, BA, FOSA↓
3Q	24	F1	-5			20X					X no ISTD.
3Q	25	A7	CC54-20		LCMS1244	100/TD			SP		Pass
3Q	26	A1	CCB		—						BDL
3Q	27	F2	FA62306-6		OP74270	10X					✓ BA↓

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **PII** Poor Instrument Integration
*Manual Integration Rationale for Peaks other than including Branched Isomers. **< Conductivity Limit For Perchlorate by SW846 6850
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

Analyst's Signature: [signature]

acq meth: AMRM ED ARC 2.1 bmx
proc meth: PFC ED bmx 032119 S3Q54

LCMS3-3Q ANALYSIS LOG

SGS - ORLANDO

DATE:	03-21-19
COLUMN TYPE:	Purospher E C18
AMOUNT INJECTED:	4 ul
INSTRUMENT: LCMS3-3Q	
HEAD PRESSURE:	370

METHODS:	537 bmx
ACQ. METHOD:	~~537 List bmx~~ EDbmx 032119 S3Q54
PROC. METHOD:	~~537 bmx~~ 032119 S3Q54
CALIB. DATE:	~~PFC bmx~~ 03-21-19
RUN BATCH: S3Q	PFC EDbmx 54

NAS 032519

ANALYST:	NAS
ELUENT A LOT #:	187166 w/ Acetic Acid
ELUENT B LOT #:	186954 ↓
ISTD Lot # / amount added:	6C1143
INJ STD Lot # / amount added:	6C1229

	DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	ISTD DILUTION	ION RATIO	MANUAL INTEGRATIONS*	SCON <CL**	COMMENTS
3Q	2028	P3 F3	FA62306-6	PFC ED	OP74210	50x					Not needed
3Q	29	F4	-7	↓	↓	5x					✓ ~~Run 25x~~ NAS 032619
3Q	30	F5	-7			25x					✓ Not needed
3Q	31	F6	-8			1x					✓ 7e↓
3Q	32	F7	-8			5x					Report 1x
3Q	33	F8	-9			5x					✓ PFBA↓
3Q	34	↓ F9	-9			25x					✓
3Q	35	P4 A1	OP74210-MS		↓	25x					RR 5x
3Q	36	P3 A7	CCS4-20		LCMS	100/500			SP		Pass
3Q	37	P3 A1	CCB			1x					BDL
3Q	NAS 032619 38 39	P4 A2	FA62306-10		OP74210 NAS 032619	~~10x~~ 1x					✓ FOS, 6A, PeHA↓
3Q	39	A3	-10			20x					✗ No ISTD
3Q	40	A4	-11		NAS 032619	~~20~~ 1x					✓ FOSA↓
3Q	41	A5	-11			20x					✗ No ISTD
3Q	42	↓ A6	-12		↓	1x					✓
3Q	43	P3 A7	ECCS4-20		LCMS	100/500			SP		Pass
3Q	44	P3 A1	CCO	↓		—					BDL
3Q											
3Q									NAS		
3Q									03-22-19		

Manual Integration Rationale SOP QA029: **MP** Missed Peak, **OP** Overlapping Peak, **SP** Split Peak, **PDB** Poorly Defined Baseline, **PII** Poor Instrument Integration
*Manual Integration Rationale for Peaks other than including Branched Isomers. **< Conductivity Limit For Perchlorate by SW846 6850
All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS3_3Q_log.xls NF rev. 11/18 | **22 of 100** | Analyst's Signature: [signature]

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03-14-19 7:00 Started {mm/dd/yy 24:00}

Date/Time: 03/15/19 ~~1030~~ 1330 Finished {mm/dd/yy 24:00} MS 03/15/19

Prep Method: 3535A or 537 or 537MOD (circle)

Analytical Method: LC 537 (LD)

Batch#: OP74164 Ext. By: MV Conc. By: MB Vialed By: MB

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Manifold ID	Comments
OP74164 MB	X	250	6	NA	20uL		1ml	D	
OP74164 BS	X	250	↓	↓	↓	50uL	↓	↓	
FA62157-1	1	250	↓	↓	↓	↓	↓	↓	
-2	1	250	↓	↓	↓	↓	↓	↓	
FA62220-21	1	250	↓	↓	↓	↓	↓	↓	
-22	1	250	↓	↓	↓	↓	↓	↓	
FA62220-21 MS	2	250	6	NA	20uL	50uL	1ml	D	
MSD									
-22 DUP	2	250	6	NA	20uL		1ml	D	

MB 03/15/19

Comments:

Surr.1 ID: LC1236B Conc: 1.0 ppm Exp. Date: 02-22-20 Inj. By: MV Ver. By MV

Spk.1 ID: LC1233 Conc: 400 ppb Exp. Date: 08-21-19 Inj. By: MV Ver. By MV

Spk.2 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By ✓

Spk.3 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By ✓

TurboVap Temp (Therm ID): — N-Evap Temp (Therm ID): ✓

Observed Temp °C: 45°C Corr. Temp °C: ✓ Observed Temp °C: ✓ Corr. Temp °C: ✓

Methanol Lot # 186954 SPE Lot # 6429443-09 pH Paper # 212218

Acetonitrile Lot # ✓ Syringe filter Lot # ✓ Reagent # 2%MEOH, 186954

Water Lot# OP73908 Pre-filter Lot# ✓ Reagent # 2%NH4OH, 7118050

Solvent# ✓ Carbon Lot# 107563 Other ✓

Relinquished By: Date: 03/15/19

Accepted By: Date: 03-15-19

ORLD-EXT-0001-3-08-FORM-extwater_spe.xls 032718

7.8.1

7

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03/15/19 7:30
Started {mm/dd/yy 24:00}

Date/Time: 03/18/19 11:50
Finished {mm/dd/yy 24:00}

Prep Method: 3535A or 537 or 537MOD (circle)

Analytical Method: LC537

Batch#: OP74180 Ext. By: MV Conc. By: MV Vialed By: MV

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Manifold ID	Comments
OP 74180 MB	X	250	6	NA	20 ul		1 ml	B	
OP 74180 BS	X	250				50 ul			
FA 62220-1	1	250							*
-2	1	250							
-3	1	250							*
-4	1	250							*
-5	1	250							*
-6	1	250							
-7	1	250							
-8	1	250						C	
-9	1	250							
-10	1	250							*
-11	1	250							
-12	1	250							
-13	1	250							
-14	1	250							
-15	1	250							*
-16	1	250							
-17	1	250							
-18	1	250							
-19	1	250							
-20	1	250							
FA62220-1 MS	2	250				50 ul		B	*
-1MSD	3	250	↓	↓	↓	↓		↓	*
DUP									

Comments: * Hard Time Passing Through SPE Cartridge, MS-MSD-1, -3-4, -5, -10, -15

Surr.1 ID: LC1236B	Conc: 1.0 ppm	Exp. Date: 02-22-20	Inj. By: MV	Ver. By MV
Spk.1 ID: LC1233	Conc: 400 ppb	Exp. Date: 08-21-19	Inj. By: MV	Ver. By MV
Spk.2 ID: ✓	Conc: ✓	Exp. Date: ✓	Inj. By: ✓	Ver. By ✓
Spk.3 ID: ✓	Conc: ✓	Exp. Date: ✓	Inj. By: ✓	Ver. By ✓

TurboVap Temp (Therm ID): TV #12	N-Evap Temp (Therm ID): ✓
Observed Temp °C: 45C Corr. Temp °C: ✓	Observed Temp °C: ✓ Corr. Temp °C: ✓

Methanol Lot # 186489	SPE Lot # 642944B-09	pH Paper # 212218
Acetonitrile Lot # ✓	Syringe filter Lot # ✓	Reagent # 2% MF01P, 186954
Water Lot# OP73908	Pre-filter Lot# ✓	Reagent # 2% NH4OH, 7118050
Solvent# ✓	Carbon Lot# 107563	Other ✓

Relinquished By: Date: 3/18/19

Accepted By: Date: 03-18-19

ORLD-EXT-0001-3-08-FORM-extwater_spe.xls 032718

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 3-20-19 12:00 Started {mm/dd/yy 24:00}

Prep Method: 3535A or 537 or 537MOD (circle)

Date/Time: 03/21/19 1100 Finished {mm/dd/yy 24:00}

Analytical Method: LC 537 (ID)

Batch#: OP74233 Ext. By: MV Conc. By: MB Vialed By: MV

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Manifold ID	Comments
OP74233 MB		130	6	NA	20 ul		1 ml	D	
OP74233 BS		130				50 ul			
FA62220-4RE	2	250							
-8RE	2	250							
FA62454-1	1	130							
-2	1	130	↓	↓	↓		↓	↓	
FA62454-2 MS	2	130	6	NA	20 ul	50 ul	1 ml	D	
MSD									
FA62454-1 DUP	2	130	6	NA	20 ul		1 ml	D	

MB 03/21/19

Comments:

Surr.1 ID: LC12433 Conc: 1.0 ppm Exp. Date: 2-12-20 Inj. By: MV Ver. By MV

Spk.1 ID: LC1233 Conc: 400 ppb Exp. Date: 8-21-19 Inj. By: MV Ver. By MV

Spk.2 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By ✓

Spk.3 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By ✓

TurboVap Temp (Therm ID): TV # 12 N-Evap Temp (Therm ID): ✓

Observed Temp °C: 45°C Corr. Temp °C: ✓ Observed Temp °C: ✓ Corr. Temp °C: ✓

Methanol Lot # 186489 SPE Lot # 6429443-10 pH Paper # 212218

Acetonitrile Lot # ✓ Syringe filter Lot # ✓ Reagent # 2% MeOH, 186954

Water Lot# OP73908 Pre-filter Lot# ✓ Reagent # 2% NH4OH, 7118050

Solvent# ✓ Carbon Lot# 107563 Other ✓

Relinquished By: Date: 03/21/19

Accepted By: Date: 03-21-19

ORLD-EXT-0001-3-08-FORM-extwater_spe.xls 032718

APPENDIX B

Real Property Records for FAAF Aviation Hangars

DACA05-77-C-0071

1 FACILITY NO.	2. DESIGNATION	3 CATEGORY CODE	4 DESIGNED CAPACITY	5. TOTAL AREA
507 F.O.	Mnt Hangar COMB	211-12		64,919.75

6. UNIT OF MEASURE	7. DRAWING NO.	8. MAP NO.	9. LEASED / OWNED
SF	186-25-595		[ ] LEASED [XX] OWNED; LEASE NO.

10. AIR CONDITIONING
- a. TYPE
- b. CAPACITY
- c. SQ YD AIR COND

11. HEATING
- a. SOURCE HW circulating
- b. FUEL fuel oil (See inside flap)

12. HOT WATER FACILITIES
- a. CAPACITY 80 gal
- b. TEMPERATURE RISE 100°

13. NO. USABLE FLOORS Office area 2 floors

14. OTHER MEASUREMENTS

16. FIRE PROTECTION
- a. NUMBER Sprinkler Sys/Hoses
- b. TYPE Fare Alarm Control Panel

17. MATERIALS
- a. FOUNDATION conc
- b. FLOOR conc
- c. WALLS steel/CMU
- d. ROOF steel
- e. SURFACE built-up
- f. BASE

18. TYPE OF CONSTRUCTION [XX] PERM [ ] SEMI-PERM [ ] TEMP

BUILDING DIMENSIONS
- a. MAIN BLDG 365'x80'6" 1 Story
- 2 Story Office Storage Area
- c. ~~WINGS~~ xxxx is 43'6"x365'x2=31,755
- d. ~~BASEMENT~~ OFFSET: 1 Story: 30'9"x123'
- e. ATTIC

20. TYPE OF CARD [X] BLDG [ ] MISC STR [ ] UTIL DIST SYS [ ] RAILROAD [ ] LAND [ ] SURFACED AREAS

15. UTILITY CONNECTIONS

	NUMBER	SIZE	CAPACITY
a. WATER	1	4"	
b. SEWER	2	6"	
c. ELECTRICITY	1	120/208V	800 AMPS
d. GAS	–		
e. STEAM	–		
f. CONDENSATE	–		

21. REMARKS 1 ea. 2 Ton underslung single gird Bridge crane and 2 Ton Powered Hoist.
Air compressor and Air Separator
Paging System including Amplifiers
1 ea. 8,000 gallon U.G. fuel Oil Stg Tank w/3/4"FOR &FOS Lines.
Emergency Shower & Eyewash.

DA FORM 2877 1 NOV 64 ☆ GPO : 1965 O—759-639 REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50, 5-51, AND 5-52, WHICH ARE OBSOLETE. **REAL PROPERTY RECORD** (AR 735-27)

CATEGORY CODE	DESIGNATION	FACILITY NO.

22. COST DATA

VOUCHER NO	DATE COMPLETED	DESCRIPTION OF CHANGE	COST OF CHANGE	TOTAL COST
78-79	14Mar79	FOR TRANSFER OF REAL PROPERTY LISTED:	64,919.75SF	$2,045,753(P)
113-80	29Jul180	F.C. voc 78-79 $2,157,978.(+$112,225.00)		$2,157,978.00
97-89	28Feb89	Capital Impr: Install security screens & hasps on exits a bldg. WO#SC-72161-7J. $2574.33		$2,160,552.33
41-90	24Oct89	Capital Impr: Upgrade lighting. +$1000) est. SC-62541-6J.		$2,161,552.33

CATEGORY CODE	DESIGNATION	FACILITY NO.

1 FACILITY NO.	2. DESIGNATION	3 CATEGORY CODE	4 DESIGNED CAPACITY	5. TOTAL AREA
510 Ft Ord	Mnt Hangar AVUM	211 10		21,947

6. UNIT OF MEASURE	7. DRAWING NO.	8 MAP NO.	9. ☐ LEASED ☒ OWNED
SF	53-15-16		LEASE NO.

10. AIR CONDITIONING	16. FIRE PROTECTION	18. TYPE OF CONSTRUCTION
a. TYPE	a. NUMBER radio fire alarm	☒ PERM ☐ SEMI-PERM ☐ TEMP
b. CAPACITY	b. TYPE transmitter	19. BUILDING DIMENSIONS
c. SQ YD AIR COND	17. MATERIALS	a. MAIN BLDG 128'4" x 135'8"
11. HEATING	a. FOUNDATION Reinf Conc	b. OFFSETS 120' x 17'10" 2nd Floor
a. SOURCE Convectors & Unit Heaters	b. FLOOR Reinf Conc	c. ~~WINGS~~ OFFSETS 91'4" x 17'10"
b. FUEL Nat. Gas	c. WALLS Conc Block & mtl siding	d. ~~BASEMENT~~ 10'8" x 12'8"
12. HOT WATER FACILITIES	d. ROOF 3 Ply Built-up	e. ~~ATTIC~~ 18'4" x 10'
a. CAPACITY	e. SURFACE	20. TYPE OF CARD
b. TEMPERATURE RISE	f. BASE	☒ BLDG ☐ MISC STR
13. NO. USABLE FLOORS	14. OTHER MEASUREMENTS	☐ UTIL DIST SYS ☐ RAILROAD
2		☐ LAND ☐ SURFACED AREAS

15. UTILITY CONNECTIONS

	NUMBER	SIZE	CAPACITY
a. WATER	3	1 2", 2 6"	
b. SEWER	3	4"	
c. ELECTRICITY	1	3 #250MCM &	1 3"
d. GAS	1	3"	
e. STEAM	18	13 3", 5 4"	
f. CONDENSATE			

21. REMARKS

Automatic Sprinkling System
Hanger Fire Alarm System
Restricter Vents on Feed Pipes
Sand separator
oil/water separator
CONTRACT DA-04-203 ENG-5347 2nd & Final

DA FORM 2877
1 NOV 54

* GPO : 1965 O—759-639

REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50, 5-51, AND 5-52, WHICH ARE OBSOLETE.

REAL PROPERTY RECORD
(AR 735-27)

CATEGORY CODE	DESIGNATION	FACILITY NO.

22. COST DATA

VOUCHER NO	DATE COMPLETED	DESCRIPTION OF CHANGE	COST OF CHANGE	TOTAL COST
933-60	24 Nov 59	For transfer of property listed above Est. Cost		$455,314
1935-60	24 Feb 60	Hanger Fire Alarm System - Est. Cost	+$426	455,740
2323-60		Final Cost Statement on Hanger - $455,943	+$629	456,369
1908-61	7 Jun 61	Revised Final Cost Statement		
		Hanger - $462,464	+$6,521	
		Alarm Sys - $ 352	- 7	
			+$6,447	$462,816
95-78	10May78	Installation of a hoist flange (capacity 2 tons) on overhead beam. $2,548.00.		$465,364.00
143-83	26Apr83	CAPITAL DECREASE; Removal of 1 ea toilet, sink, urinal, steam radiator & steal-framed window. -$370.00		$464,994.00
76-90	24 Oct 89	Cap Impr: Install shower and emergency eyewash with activation alarms. TF-00204-6P. +$2200. est.		$467,194.00

CATEGORY CODE	DESIGNATION	FACILITY NO.

DA-04-2-3 ENG=5824

1 FACILITY NO.	2 DESIGNATION	3 CATEGORY CODE	4 DESIGNED CAPACITY	5 TOTAL AREA
524 F.O.	Mnt Hangar COMB	211-12		36,006.82

6 UNIT OF MEASURE	7 DRAWING NO.	8 MAP NO.	9 ☐ LEASED ☒ OWNED
SF	53-16-205.1 Sheets 62-86		LEASE NO.

10 AIR CONDITIONING	16 FIRE PROTECTION	18 TYPE OF CONSTRUCTION
a. TYPE	a. NUMBER see remarks	☒ PERM ☐ SEMI-PERM ☐ TEMP
b. CAPACITY	b. TYPE	19 BUILDING DIMENSIONS
c. SQ YD AIR COND	17 MATERIALS	a. MAIN BLDG see reverse
11 HEATING	a. FOUNDATION REIN-F CONCRETE	b. OFFSETS
a. SOURCE Convectors	b. FLOOR CONCRETE	c. WINGS
b. FUEL Natural Gas	c. WALLS CONCRETE BLOCK	d. BASEMENT
12 HOT WATER FACILITIES	d. ROOF 5 Ply blt up on 1" insul	e. ATTIC
a. CAPACITY 1 ea. 70 ga. & 30 ga.	e. SURFACE	20 TYPE OF CARD
b. TEMPERATURE RISE 100 degree	f. BASE	☒ BLDG ☐ MISC STR
13 NO. USABLE FLOORS	14 OTHER MEASUREMENTS	☐ UTIL DIST SYS ☐ RAILROAD
2		☐ LAND ☐ SURFACED AREAS

15 UTILITY CONNECTIONS

	NUMBER	SIZE	CAPACITY
a. WATER	1	8" CI	
b. SEWER	1	4" CI	
c. ELECTRICITY	1	120/208V, 3 Phase, 4W, 600 Amps.	
d. GAS	1		
e. STEAM			
f. CONDENSATE			

21 REMARKS

Fire Alarm and Deluge System, Automatic Sprinkler System

oil/water separator and separator

DA FORM 2877 1 NOV 54 * GPO: 1965 O—759-639 REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50, 5-51, AND 5-52, WHICH ARE OBSOLETE.

REAL PROPERTY RECORD (AR 735-27)

CATEGORY CODE	DESIGNATION	FACILITY NO.

22 COST DATA

VOUCHER NO	DATE COMPLETED	DESCRIPTION OF CHANGE	~~COST OF~~ SF CHANGE	TOTAL COST
1778-61	25 Apr 61	FOR TRANSFER OF PROPERTY LISTED ABOVE	22,644.32SF	$448,325(P)
55-63	31Jul 62	FINAL COST VOC. 1778-61 (+$48,996.)		$497,321.00
122-64	12Jun64	Addn of Shops A, B and Flam Storage		
		+13,362.50 SF, +$319,061.00(P)	36,006.82 SF	$816,382.00
147-66	11 Jan 66	Final Cost for Voc 122-64 (-$1,732.)		$814,659.00
76-90	24Oct 89	Cap Impr: Install shower and emergency eyewash with activation alarms. FF-00264-6P. +$2200. est.		$816,859.00
182-90	30Jan 90	Cap Impr: Install fire alarm transceiver FD-00084-4P +$4,000		$820,859.00

CATEGORY CODE	DESIGNATION	FACILITY NO.

Contract DACA05-76-C-0069

1. FACILITY NO.	2. DESIGNATION	3. CATEGORY CODE	4. DESIGNED CAPACITY	5. TOTAL AREA
527 FO	Mnt Hangar AVUM	211-10		39446

6. UNIT OF MEASURE	7. DRAWING NO.	8. MAP NO.	9. ☐ LEASED ☒ OWNED LEASE NO.
SF	186-25-577		

10. AIR CONDITIONING	16. FIRE PROTECTION	18. TYPE OF CONSTRUCTION
a. TYPE	a. NUMBER * see remarks	☒ PERM ☐ SEMI-PERM ☐ TEMP
b. CAPACITY	b. TYPE	19. BUILDING DIMENSIONS
c. SQ YD AIR COND	17. MATERIALS	a. MAIN BLDG 122 x 242 (1st floc
11. HEATING	a. FOUNDATION conc	b. ~~xxxxxxx~~2d floor(41'x242')
a. SOURCE HW space heaters	b. FLOOR conc	c. WINGS
b. FUEL Fuel Oil	c. WALLS Steel Studs	d. BASEMENT
12. HOT WATER FACILITIES	d. ROOF Metal	e. ATTIC
a. CAPACITY 60 Gal	e. SURFACE Metal	20. TYPE OF CARD
b. TEMPERATURE RISE 100°	f. BASE	☒ BLDG ☐ MISC STR
13. NO. USABLE FLOORS 2	14. OTHER MEASUREMENTS	☐ UTIL DIST SYS ☐ RAILROAD
		☐ LAND ☐ SURFACED AREAS

15. UTILITY CONNECTIONS

	NUMBER	SIZE	CAPACITY
a. WATER	1	2½"	
b. SEWER	1	6"	
c. ELECTRICITY	1	480/208V 3Ø, 4W	
d. GAS			
e. STEAM			
f. CONDENSATE			

21. REMARKS

Fuel Oil storage tank 5000 gal w/14' of 3/4" FOS and 14' of 3/4" FOR. Airnay obstructural light on NE corner of hangar

Cost of Tank: $3,316.00(P)
Cost of Obst Ltg: $11,638.00(P)
Cost of Bldg: $2,069,612.00(P)
$2,084,566.00(P)

DA FORM 2877
1 NOV 64

GPO : 1972 O - 456-348

REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50, 5-51, AND 5-52, WHICH ARE OBSOLETE.

REAL PROPERTY RECORD
(AR 735-27)

22. COST DATA

VOUCHER NO.	DATE COMPLETED	DESCRIPTION OF CHANGE	COST OF CHANGE	TOTAL COST
157-77	7Sep77	FOR TRANSFER OF REAL PROPERTY AS LISTED.	39,446 SF	$2,084,566.00
43-78	6 Jan 78	+$3,150.00 for installation of telephone terminals and house cables.		$2,087,716.00
				$2,243,445.00
133-80	9-9-80	F.C. voc 157-77 $2,240,295.00 (+$155,729.00) ($2,225,552.00 Bldg, $3,269.00 for Tank, $11,474.00 for Obst Lgtg on Roof.)		
260-90	5 Mar 90	Cap Impr; Fabricate cone bolts + #170 55-82380-8J		$2,243,615.00

CATEGORY CODE	DESIGNATION	FACILITY NO.

1 FACILITY NO.	2 DESIGNATION	3 CATEGORY CODE	4 DESIGNED CAPACITY	5 TOTAL AREA
533 Ft Ord	Mnt Hangar Comb	211 12		35,000 w/shops

6 UNIT OF MEASURE	7 DRAWING NO.	8 MAP NO.	9 [ ] LEASED [X] OWNED
SF	39-01-64		LEASE NO.

10. AIR CONDITIONING	16. FIRE PROTECTION	18. TYPE OF CONSTRUCTION
a. TYPE	a. NUMBER	[X] PERM [ ] SEMI-PERM [ ] TEMP
b. CAPACITY	b. TYPE	19. BUILDING DIMENSIONS
c. SQ YD AIR COND	17. MATERIALS	a. MAIN BLDG 130' x 159'6"
11. HEATING	a. FOUNDATION Reinf Conc	b. OFFSETS
a. SOURCE Hot Wtr Unit heaters	b. FLOOR Reinf Conc	c. WINGS
b. FUEL	c. WALLS Steel & Conc Block	d. BASEMENT
12. HOT WATER FACILITIES	d. ROOF Blt-up truss, 5plymopped	e. ATTIC
a. CAPACITY	e. SURFACE	20. TYPE OF CARD
b. TEMPERATURE RISE	f. BASE	[X] BLDG [ ] MISC STR
13. NO. USABLE FLOORS	14. OTHER MEASUREMENTS	[ ] UTIL DIST SYS [ ] RAILROAD
2 (shops)		[ ] LAND [ ] SURFACED AREAS

15. UTILITY CONNECTIONS

	NUMBER	SIZE	CAPACITY
a. WATER	1	10" CI water Line	
b. SEWER	1	8" VCP Sewer Line	
c. ELECTRICITY*	1	2" Conduit, 3 # 2/0 W	
d. GAS	1	2½" steel pipe gas line	
e. STEAM			
f. CONDENSATE			

21. REMARKS 4 Fire Hydrants Rich #960
W/shops each 22'-4" x 159'-6" on either side of the main hangar bldg, complete with 2 usable floors, divided into rooms for various operations and parts storage facilities.
*220V + 480V

DA FORM 2877
1 NOV 54

* GPO: 1965 O—759-639

REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50, 5-51, AND 5-52, WHICH ARE OBSOLETE.

REAL PROPERTY RECORD
(AR 735-27)

CATEGORY CODE	DESIGNATION	FACILITY NO.

22. COST DATA

VOUCHER NO.	DATE COMPLETED	DESCRIPTION OF CHANGE	COST OF CHANGE	TOTAL $ COST
71-63	29 Jan 63	New Constr: P-533		775,486.00
		Paint Spray Booth in P-533 +$3,860.		779,346.00
		Hangar(FM) w/shops & access apron +$31,108		810,454.00
		Acid Pit for Fld Mnt Hangar +$4,083.00		814,537.00
117-64	27 May 64	FC @ P-533 -$19,999.		794,538.00
		FC @ Paint Spray Booth -$17.		794,521.00
		FC @ Hangar(FM) -$153.		794,368.00
		FC @ Acid Pit -$23.		794,345.00
61-65	30 Sep 64	Installed elec wiring service, etc. +$708.		795,053.00
--	14 Feb 83	Per AR 415-28 cat code & designation		
		changed from 211-14		
143-89	5 May 89	Per msg 7 Feb 89, DAEN-ZCI, cat code chg		
		from 211 90, Mnt Hgr Gen Spt to 211 12,		
		Mnt Hangar Comb.		
100-89	7 Mar 89	Capital Impr. + $901.57.		795,954.57
127-89	23 Jan 89	Capital Impr. + $896.82.		796,851.39
135-89	24 Mar 89	Capital Impr. + $854.		797,705.39

CATEGORY CODE	DESIGNATION	FACILITY NO.

APPENDIX C

Responses to USEPA Comments on the Draft Technical Summary Report

Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the U.S. Environmental Protection Agency (USEPA)[2]

GENERAL COMMENT 1: The Draft PFAS Report does not adhere to the investigative process identified in the *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)*, dated September 2018 (the Army PFAS Guidance). According to the Army PFAS Guidance, the first step of the investigative process is to conduct a preliminary assessment (PA) at installations where aqueous film-forming foam (AFFF) or other per- and polyfluoroalkyl substances (PFAS)-containing materials were used or stored; however, the Draft PFAS Report does not demonstrate that this first step was followed for each of the 52 sites. Table 1 (Site Summary and Primary Records Review Results) does not demonstrate that PAs were performed at each site or provide rationale for exclusion of each site from further evaluation.

Further, the primary reviews described in Section 1.2 (Review Methodology) and summarized in Table 1 (Site Summary and Primary Records Review Results) do not meet the objectives of a PA, which are specified in Section 4.0 (Reporting Requirements) and Table 4-1 (PA Narrative Report, Outline of Contents) of the United States Environmental Protection Agency's (EPA's) *Guidance for Performing Preliminary Assessments Under CERCLA*, EPA/540/G-91/013, dated September 1991 (the PA Guidance). Please revise the Draft PFAS Report to follow the procedures listed in the Army PFAS Guidance, meet the reporting requirements for a PA as outlined in Section 4.0 and Table 4-1 of the PA Guidance, and include documentation for each of the 52 sites evaluated.

RESPONSE TO GENERAL COMMENT 1: *The U.S. Department of the Army (Army) does not intend for the Technical Summary Report to be a PA; therefore, it was not revised per the comment. The Army scoped and developed the Technical Summary Report based on requests for information from USEPA and the California Department of Toxic Substances Control (DTSC) that predated the* Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS) *(Army PFAS Guidance):*

- *In a letter dated June 7, 2017, USEPA requested the Army "conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord, and that the results be summarized in a technical memo… site[s] on Fort Ord where products containing PFOA/PFOS were possibly used or disposed of, should be evaluated."*[3]
- *In a letter dated January 27, 2017, DTSC requested PFOA and PFOS be added to the list of analytes for groundwater at Sites 2 and 12, Operable Unit 2 (OU2), and Operable Unit Carbon Tetrachloride Plume (OUCTP).*[4] *The Army agreed to sample groundwater associated with OU2*

[1] Administrative Record No. OU2-722.
[2] In a letter dated December 3, 2019 (Administrative Record No. OU2-722.5). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.
[3] From USEPA comments on the *4th Five-Year Review Report for Fort Ord Superfund Site* (Administrative Record No. BW-2834).
[4] Administrative Record No. BW-2785B.2.

because it is possible products containing PFOA and PFOS were disposed of at the Fort Ord Landfills.

Accordingly, the Technical Summary Report is limited to a review of Army activities with the potential to cause PFOA and PFOS contamination in soil and groundwater at the former Fort Ord, and reporting the results of groundwater monitoring at OU2 for PFOA and PFOS. Therefore, referring to the document as a PA or the "PFAS Report" is incorrect and misleading, and the responses to comments herein refer to it as the "Technical Summary Report."

Because the Army PFAS Guidance was issued as the quality assurance project plan (QAPP) for PFOA/PFOS sampling and analysis for OU2 groundwater was being prepared, the Army PFAS Guidance was only applied to the extent practicable for the former Fort Ord basewide review given the scope and intent of the Technical Summary Report. However, the Army will request funding to perform a PA based on the results of the basewide review presented in the Technical Summary Report, though per the Army PFAS Guidance, Army installations are prioritized and sequenced for PAs consistent with the U.S. Department of Defense (DoD) "worst first" approach, and the former Fort Ord is a lower risk site because 1) the Army does not own or operate a potable water supply system there, 2) there is no hydraulic communication between shallow aquifers where PFAS might be found (A-Aquifer) and deeper aquifers of adjacent potable water supply systems (Lower 180-Foot Aquifer and 400-Foot Aquifer), and 3) PFOA and PFOS are not detected in the adjacent potable water supply systems.

GENERAL COMMENT 2: The Draft PFAS Report is missing information about migration pathways and exposure pathways. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the Draft PFAS Report should discuss the pathways for groundwater, surface water, soil, and air for the installation, including:

- Groundwater Use and Characteristics
    - Identification of private and municipal wells within a 4-mile radius (locations, distance, populations served, etc.);
    - Distance to the nearest drinking water well;
- Surface Water Use and Characteristics
    - Site locations with respect to floodplains and information on the flood frequency;
    - Identification of surface water bodies within 15 downstream miles (types, characteristics, etc.);
    - Identification of drinking water intakes within 15 downstream miles (locations, populations served, etc.);
    - Identification of fisheries, wetlands, and other sensitive environments within 15 downstream miles;
    - Distance to the nearest surface water body;
- Soil Exposure Pathways
    - Number of people living within a 200-foot radius and number of workers within a 200-foot radius;
    - Identification of schools and/or day care facilities within a 200-foot radius;
    - Populations within a 1-mile radius;
    - Identification of terrestrial sensitive environments;
- Air Exposure Pathways

- Populations within a 4-mile radius; and
- Identification of acreage of wetlands and sensitive environments within a 4-mile radius.

This information is key to the PA stage and is identified in the "core PA data elements" in the EPA's guidance document, *Federal Facilities Remedial Preliminary Assessment Summary Guide*, dated July 21, 2005 (the PA Summary Guide). Please revise the Draft PFAS Report to discuss groundwater, surface water, soil, and air pathways for the installation consistent with the information outlined in Army PFAS Guidance, PA Guidance, and the PA Summary Guide.

RESPONSE TO GENERAL COMMENT 2: *The Technical Summary Report is not intended to be a PA and was not revised per the comment.*

GENERAL COMMENT 3: The Draft PFAS Report contains insufficient site descriptions, operational histories, and waste characteristics for each site. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the following information for each site should be included:

- Site type (hanger, fire station, testing area, etc.);
- Site status (active or inactive);
- Years of operation and summary of operational history;
- Latitude and longitude coordinates;
- Physical characteristics (dimensions, size, structures, buildings, boarders, drainage patterns, etc.); and
- Identification of nearby drinking water wells, residences, and other sensitive receptors (schools, daycares, hospitals, etc.).
- Sensitive environments (wetlands, etc.)
- Current and former owners and site activities
- Types of waste generated, quantities, etc.
- Past regulatory activities, removals, investigations, and analytical data presented in tabular form and discussed

Please revise the Draft PFAS Report to expand the site descriptions for each of the 52 sites to include the information outlined in Figure 2-1 and Table 4-1 of the PA Guidance.

RESPONSE TO GENERAL COMMENT 3: *The Technical Summary Report contains sufficient information to evaluate historical activities with the potential to cause PFAS contamination in soil and groundwater at the former Fort Ord per USEPA's request, but it is not intended to be a PA and was not revised per the comment.*

GENERAL COMMENT 4: The Draft PFAS Report should include site-specific figures for each of the 52 sites assessed. A site-specific figure displaying the location of relevant site features (e.g., AFFF storage areas, floor drains, suspected runoff areas, etc.) should be included for each site evaluated. The figures currently provided in the Draft PFAS Report are only for sites identified as requiring further evaluation, and those figures do not include locations of relevant site features (such as the storm line drain discharge at Site 34, the Imhoff tank at Site 36, etc.). Please revise the Draft PFAS Report to include site-specific figures that depict relevant site features for each site evaluated.

RESPONSE TO GENERAL COMMENT 4: *Inclusion of site-specific figures in the Technical Summary Report is not necessary for sites that were eliminated from further evaluation after the primary and secondary site reviews because no activities occurred at these sites that could have resulted in a release of PFAS. However, the figures for sites identified as requiring further evaluation were revised and site-specific figures were added as appropriate to identify relevant site features per the comment.*

GENERAL COMMENT 5: The Draft PFAS Report should provide a photographic log for each site evaluated. The photographic log should include a description of pertinent features identified during the site reconnaissance at each site (e.g., surface water flow direction, drainage structures, surface covers). Please revise the Draft PFAS Report to provide photographic documentation of the site reconnaissance at each of the 52 sites evaluated.

RESPONSE TO GENERAL COMMENT 5: *Site reconnaissance of all 52 sites evaluated exceeds the scope and intent of the Technical Summary Report. The primary and secondary reviews of basewide historical records was sufficient to determine whether activities may have occurred at a particular site that would have resulted in a release of PFAS (i.e., FTAs, AFFF storage, aircraft crashes, aviation hangars, landfilling, and wastewater treatment). If the primary or secondary review of basewide historical records determined these activities did not occur at a site, then a site reconnaissance was unnecessary and the site was eliminated from further evaluation. Photographs, where appropriate for the purposes of the basewide review, are included in the Technical Summary Report; however, historical photographs of many of the sites reviewed are included in the* Draft Final Field Investigation and Data Review, Solid Waste Management Units, Fort Ord, California *(Administrative Record No. BW-1496A).*

GENERAL COMMENT 6: The Draft PFAS Report includes figures indicating a general groundwater flow direction at the sites proposed for further evaluation; however, it is unclear if the groundwater flow directions are known or estimated for each site evaluated. Please clarify whether groundwater flow directions are known or estimated for each site evaluated. If known, provide groundwater elevation data and potentiometric surface maps or a reference to such data to support such statements. If estimated, revise the Draft PFAS Report to indicate that the groundwater flow directions are unknown but estimated based on surface elevation, geology, distance to nearest water body, etc. In addition, at least one figure displaying the potentiometric surface map for groundwater at the installation should be included to support the direction of groundwater flow.

RESPONSE TO GENERAL COMMENT 6: *The figures indicating general groundwater flow directions were revised to include a note with a reference to recent groundwater monitoring reports. The groundwater monitoring reports include the groundwater elevation data and contour maps that support the direction of groundwater flow.*

GENERAL COMMENT 7: The Draft PFAS Report should discuss whether any foaming of the runway(s) or foam salutes occurred at the installation. Foaming of the runway was an aviation safety practice that consisted of spreading a layer of fire suppression foam on an airport runway to prevent fires prior to an emergency landing while foam salutes is a celebratory practice that consists of spraying two streams of AFFF to create an arch that planes would pass under during inaugural or final flights. Please revise the Draft PFAS Report to indicate whether foaming of the runway(s) or any foam salutes occurred. If so, please revise the Draft PFAS Report to provide information on how many times this occurred on each runway and the volume of foam used.

RESPONSE TO GENERAL COMMENT 7: *Interviews with former Fort Ord fire department personnel indicate no foaming of the runways or foam salutes occurred at Fritzsche Army Airfield (FAAF). There was one reported emergency landing at FAAF, as described in in Section 2.3.3 of the Technical Summary Report; however, AFFF was not deployed for this incident. Water salutes are a relatively common practice for inaugural or final flights; however, AFFF or other foams are not used because they can foul aircraft engine intakes and cause engine damage. Additionally, helicopters were the primary aircraft used at Fort Ord, and a foam salute for a helicopter to pass through while the rotors are operating would result in an undesirable distribution of the foam.*

GENERAL COMMENT 8: The Draft PFAS Report regularly refers to personal communication with the former Chief of the Monterey Fire Department, Mr. Jack Riso. Yet, documentation of these interviews are not provided. As a result, the information obtained from Mr. Riso cannot be substantiated. Per the PA Guidance, please revise the Draft PFAS Report to provide documentation of the referenced personal communication information used during the evaluation.

RESPONSE TO GENERAL COMMENT 8: *The interviews with Chief Riso are documented in Section 4.0 (References). This is consistent with historical practice for documentation of interviews at the former Fort Ord and, as noted in the responses to previous comments, the Technical Summary Report is not intended to be a PA. The Technical Summary Report was not revised per the comment.*

GENERAL COMMENT 9: According to Section 2.1.5, contaminated soil within Operable Unit 1 – FAAF Fire Drill Area was treated in 1988 using an aqueous nutrient formulation to stimulate microbial degradation of the hydrocarbons in the soil and was then transported to a soil borrow area for use as fill in construction projects at the former Fort Ord. As a result, the soil borrow area and the sites where the fill was used are potential PFAS contaminated sites. Revise the Draft PFAS Report to recommend further evaluation of Operable Unit 1 – FAAF Fire Drill Area and potential sites of fill use.

RESPONSE TO GENERAL COMMENT 9: *The Technical Summary Report was revised to state that no additional investigation of the soil borrow or fill areas at historical construction sites is recommended because the soil excavated from Operable Unit 1 (OU1) was removed from the borrow area and there is no available record of the locations of the construction sites. Note that Section 2.1.5 is now Section 2.1.6.*

GENERAL COMMENT 10: According to Section 2.4.1 (Site 20 – South Parade Ground and 3800 and 519th Motor Pools), aerial photographs and property records were reviewed, and personnel interviews were conducted as part of the PA for Site 20 – South Parade Ground and 3800 and 519th Motor Pools. However, these records and interviews are not included in the Draft PFAS Report to substantiate the decision to eliminate this site from further evaluation. Revise the Draft PFAS Report to include all historical information (e.g., aerial photographs, property records, documentation of personnel interviews) used during the evaluation.

RESPONSE TO GENERAL COMMENT 10: *Review of aerial photographs and property records, and personnel interviews are incorporated by reference to the* Draft Final Site Characterization, Site 20 – South Parade Ground, 3800 and 519th Motor Pools, Fort Ord, California *(HLA, 1995b). Regardless, as indicated in Section 2.4.1, Site 20 was not used as an airfield after the early 1960s, which precludes the use of AFFF. The Technical Summary Report was not revised per the comment.*

GENERAL COMMENT 11: The Draft PFAS Report states that contaminated soils from Sites 8 (Range 49, Molotov Cocktail Range), 10 (Burn Pit/Fire Training Area), and 40 (FAAF Helicopter Defueling Area) were transported to the Fort Ord Soil Treatment Area (FOSTA) for treatment; however, the FOSTA was not included in the 52 sites evaluated. In addition, information on how soils were treated at the FOSTA are not provided and/or referenced. Given that the FOSTA received excavated soil from potentially PFAS contaminated sites, please revise the Draft PFAS Report to include an assessment of the FOSTA.

RESPONSE TO GENERAL COMMENT 11: *The Technical Summary Report was revised to include an assessment of the FOSTA in Section 2.6 (Landfills) per the comment. While not a landfill per se, the FOSTA was used to temporarily store and manage soils from other sites at Fort Ord, and all these soils were ultimately placed at the Fort Ord Landfills.*

GENERAL COMMENT 12: The Draft PFAS Report does not include any information on the location(s) of fire stations or AFFF storage. While the burn pit and fire training area at the Fort Ord Fire Station is discussed in Section 2.1.2 (Site 10 – Burn Pit/Fire Training Area), no fire stations were evaluated, and the twelve sites identified as potential AFFF storage sites did not store AFFF. Given that AFFF was used onsite, please revise the Draft PFAS Report to include assessments of fire stations and AFFF storage locations. If no known AFFF storage locations can be identified, include such discussion in the Draft PFAS Report.

RESPONSE TO GENERAL COMMENT 12: *Section 2.2 of the Technical Summary Report was revised to include an evaluation of fire stations as potential AFFF storage locations per the comment.*

GENERAL COMMENT 13: The Draft PFAS Report should summarize data for all PFAS analytes, not just PFOA and PFOS, detected in the narrative of the report. Please also include this information in Table 3, Figure 6, Figure 7, and elsewhere as appropriate.

RESPONSE TO GENERAL COMMENT 13: *Per the response to General Comment 1, only PFOA and PFOS were sampled, analyzed for, and reported by the analytical laboratory. The Technical Summary Report was not revised per the comment; however, it is recommended in Section 3.0 that, for any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory should report results for the 18 PFAS compounds listed in the Army PFAS Guidance.*

GENERAL COMMENT 14: Throughout the Draft PFAS Report, the analysis of the PFAS detections should be based on the screening levels identified in the October 15, 2019 DOD Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (e.g., 40 ppt PFOA and PFOS, individual, if multiple PFAS are detected) as well as the EPA Health Advisory Level of 70 ppt for groundwater that is a current or potential source of drinking water.

RESPONSE TO GENERAL COMMENT 14: *The Technical Summary Report was revised per the comment to compare detections of PFOA and PFOS in groundwater at OU2 to the DoD screening levels referenced in the comment along with the USEPA lifetime health advisory levels. Please note the USEPA lifetime health advisory levels are specifically for drinking water and not groundwater (see USEPA memorandum dated November 15, 2016), but were applied here as screening level concentrations to determine the need for further action.*

SPECIFIC COMMENT 1: Section 1.1, PFOA and PFOS Background, Page 1: Although the Draft PA Report is dated September 2019, Section 1.1 does not reference EPA's Per- and Polyfluoroalkyl Substances

(PFAS) Action Plan, EPA 823R18004, dated February 2019 (EPA PFAS Action Plan). Given that the EPA PFAS Action Plan describes EPA's approach to identifying and understanding PFAS, approaches to addressing current PFAS contamination, preventing future contamination, and effectively communicating with the public about PFAS, its inclusion in Section 1.1 is warranted. Please revise Section 1.1 to discuss the EPA PFAS Action Plan.

RESPONSE TO SPECIFIC COMMENT 1: *While the USEPA PFAS Action Plan is informative with respect to USEPA's objectives, it is not prescriptive and does not appear to add useful information with respect to the process described in the Technical Summary Report or the Army's current framework for addressing PFAS. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 2: Section 1.2, Review Methodology, Page 2: While aircraft crash sites where AFFF may have been applied for fire control are included as locations with the greatest likelihood of PFAS releases, runways where AFFF may have been applied in anticipation of an aircraft crash are not included as a location with the greatest likelihood of PFAS releases. Please revise Section 1.2 to include runways where AFFF may have been applied in anticipation of an aircraft crash as a location with the greatest likelihood of PFAS releases.

RESPONSE TO SPECIFIC COMMENT 2: *There is no evidence AFFF was applied to runways in anticipation of an aircraft crash at FAAF. To the contrary, there was one reported emergency landing at FAAF, as described in in Section 2.3.3 of the Technical Summary Report; however, AFFF was not deployed for this incident. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 3: Section 1.2.1, Primary Site Review, Page 3: Section 1.2.1 indicates that "There are no known sites where large fires were suppressed using AFFF;" however, it is unclear if there is documentation to substantiate that large fires were specifically not addressed by AFFF. Please revise the Draft PFAS Report to include documentation which specifically shows that large fires were not suppressed using AFFF.

RESPONSE TO SPECIFIC COMMENT 3: *As noted in Section 1.1 of the draft Technical Summary Report (now Section 1.3), AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets, fuel farms, or aircraft crash sites. There are no documented large fires associated with these types of sites at the former Fort Ord. Additionally, large non-petroleum fires, such as structure fires and range fires, contraindicate use of AFFF. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 4: Section 1.3.1, Sampling Events and Objectives, Page 4: This section lists the primary objectives of the OU2 PFOA/PFOS sampling. However, the objective of verifying that groundwater treatment plant (GWTP) effluent concentrations are below the EPA PFOA and PFOS health advisory (HA) levels is not listed. Please revise Section 1.3.1 to include verification of GWTP effluent concentrations below EPA PFOA and PFOS HA levels as a primary objective of OU2 PFOA/PFOS sampling.

RESPONSE TO SPECIFIC COMMENT 4: *The objective of verifying that GWTP effluent concentrations are below the USEPA PFOA and PFOS health advisory levels is not listed because it is not one of the goals of the study identified in the QAPP.[5] The Technical Summary Report was not revised per the comment.*

[5] Administrative Record No. OU2-715B.

SPECIFIC COMMENT 5: Section 1.3.1, Sampling Events and Objectives, Pages 4-5: California State Water Resources Control Board (SWRCB) has notification levels for PFOA (0.0051 µg/L) and PFOS (0.0065 µg/L) for drinking water (https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html). Although these are non-promulgated, these guidance values for PFAS in drinking water should be referenced and used for screening. Please revise Section 1.3.1 to discuss and screen the analytical results against the California SWRCB notification levels.

RESPONSE TO SPECIFIC COMMENT 5: *Per the California guidelines, the notification requirement only applies to "local water agencies." The Army does not own or operate any water supply system at or near the former Fort Ord. As stated in the QAPP, the purpose of the groundwater sampling effort was only to screen for the presence of PFOA and PFOS in groundwater associated with OU2 at the former Fort Ord to determine the need for further action. Additionally, all of the wells sampled were monitoring wells, not water supply wells. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 6: Section 2.1.5, Operable Unit 1 – FAAF Fire Drill Area, Page 9: Footnote 8 on Page 9 states that firefighting foam in the form of protein foam was used at Fort Ord prior to 1972. The Army PFAS Guidance states that these protein foams were typically fluoroprotein foams, which contained other fluorinated surfactants, including perfluorooctanesulfonic acid (PFOS). Revise the PFAS Report to recommend additional investigation in areas where protein foams were reportedly stored or used. It is noted that Operable Unit 1 – FAAF Fire Drill Area is already recommended for additional investigation.

RESPONSE TO SPECIFIC COMMENT 6: *The Army PFAS Guidance also states the primary mechanism for releases of PFAS is through use of AFFF after 1972. As noted in the comment, footnote 8 states protein foam was used at Fort Ord prior to 1972, and is therefore not a significant mechanism for release of PFAS, if at all. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 7: Section 2.4.2, Site 34 – FAAF Multiple Sites, Page 13: It is unclear whether the original fire suppression systems in Buildings 510 and 524 have been modified for AFFF use. The text states that these systems could have been modified for AFFF use after 1972, but no further information is provided. Revise the text to clarify what type of fire suppression systems are currently in place at Buildings 510 and 524 and provide photographic documentation of these systems.

RESPONSE TO SPECIFIC COMMENT 7: *According to the Airport Services Manager, Mr. Jeff Crechriou, the fire suppression systems currently in place for all the hangars at the Marina Municipal Airport are deluge systems supplied by 10-inch diameter water pipelines. Water system basemaps provided by the Marina Coast Water District confirm the presence of the pipelines and indicate they are for nonpotable water. Section 2.4.2 of the Technical Summary Report was revised to include this information and figures were added with photographs of Buildings 510 and 524.*

SPECIFIC COMMENT 8: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete's Pond and Pete's Pond Extension, Page 17: Insufficient information is provided to substantiate the elimination of this site from further evaluation. For example, Section 2.6.2 states that, "Though AFFF may have been discharged at the wash rack associated with Building 4900 during maintenance activities, the volumes would have been small and intermittent, and would have mostly been contained in the oil/water separator;" however, information to substantiate that the volume of AFFF charged to the wash rack was small and

intermittent is not provided and/or referenced. As such, the statements provided supporting elimination of the site from further evaluation are circumstantial and based on assumption rather than fact. Please revise the Draft PFAS Report to include factual evidence to support the elimination of this site from further evaluation, or alternately recommend further evaluation of this site.

RESPONSE TO SPECIFIC COMMENT 8: *Chief Riso previously stated the AFFF tanks on fire department vehicle were flushed at Building 2722 (Site 12) and Building 4900 (Site 16) before servicing; however, he has clarified that AFFF was drained out of the tanks at the Main Garrison Fire Station prior to servicing at these facilities, and the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years. This additional information indicates the amount of AFFF potentially discharged at Site 16 was negligible. The Technical Summary Report was revised to include this information.*

SPECIFIC COMMENT 9: Section 3.3, Site 10 – Burn Pit/Fire Training Area, Page 26: The Draft PFAS Report does not provide sufficient information to justify the use of MW-OU2-29-180 as an appropriate location to monitor for potential PFAS impacts to groundwater. MW-OU2-29-180 is 1.7 miles downgradient of Site 10, and the specific "characteristics of the Upper 180-Foot Aquifer" to justify the use of this well as appropriate are not discussed. Please revise the PFAS Report to discuss the specific characteristics of the aquifer and how they justify the use of the proposed monitoring well.

RESPONSE TO SPECIFIC COMMENT 9: *Section 3.3 was revised to note that hydraulic conductivities in the Upper 180-Foot Aquifer range up to 366 feet per day and groundwater modeling indicates PFAS could have traveled in the Upper 180-Foot Aquifer from Site 10 to the Fort Ord Landfills within 30 years. Therefore, monitoring wells MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 are recommended to be sampled for PFAS analysis in addition to MW-OU2-29-180.*

SPECIFIC COMMENT 10: Section 3.5, Site 34 – FAAF Aviation Hangars, Page 27: The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 34. Although the text states that "long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible," the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 34.

RESPONSE TO SPECIFIC COMMENT 10: *Section 3.5 (now Section 3.4) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 11: Section 3.7, Site 40A – East FAAF Helicopter Defueling Area, Page 28: The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 40A. Although the text states that "long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible," the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 40A.

RESPONSE TO SPECIFIC COMMENT 11: *Section 3.7 (now Section 3.6) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 12: Figure 6, OU2 A-Aquifer Sampling Locations: Figure 6 does not illustrate the information presented in Section 2.6.5 (Operable Unit 2 – Fort Ord Landfills). Specifically, Figure 6 does not include the extents of six landfill areas, groundwater flow directions, depths or formations monitoring and extraction wells are completed in, etc. Please revise Figure 6 to include the extents of landfills, groundwater flow directions, and the depths or formations in which monitoring and extraction wells are completed. In addition, indicate on the figure which extraction wells were in operation when GWTP samples were collected.

RESPONSE TO SPECIFIC COMMENT 12: *Figure 6 was revised to identify the extents of the six Fort Ord Landfills areas, groundwater flow directions, and to indicate which OU2 extraction wells were in operation when the GWTS samples were collected. Similar revisions were made to Figure 7. Please note that Figures 6 and 7 are now Figures 14 and 15, respectively. Section 1.0 of the text was revised to include information about the depths and formations in which monitoring and extraction wells are completed for the A-Aquifer and the Upper 180-Foot Aquifer.*

APPENDIX D

Responses to DTSC Comments on the Draft Technical Summary Report

Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the Department of Toxic Substances Control (DTSC)[2]

COMMENT 1: Site 39 – Inland Ranges/Mudhen Lake Helicopter Crashes. Additional investigation of the Mudhen Lake crash should be conducted to confirm the presence or absence of a helicopter crash and subsequent fuel spill clean-up, and the Site 39 – Inland Ranges helicopter crash locations should be included for further evaluation.

As noted in the Report, Aqueous Film-Forming Foam (AFFF) was applied to a fuel spill that occurred at the Fritzche Army Airfield (FAAF) Helicopter Defueling Area to reduce the risk of fire and to aide in the clean-up of the spill. AFFF contains PFAS and PFOA which bioaccumulate in humans and wildlife and poses a risk to human-health and the environment. As noted in the Report, during the historical review of Mudhen Lake, a helicopter crash was reported during a helicopter survey of Fort Ord on August 2, 1993. However, during the munitions response at Mudhen Lake, the presence of helicopter wreckage was not observed. This crash could have potentially been misattributed to Mudhen Lake and could potentially be referring to one of the helicopter crashes reported at Site 39 – Inland Ranges in the 1980s. The primary concern for the Mudhen Lake crash was a fuel spill with no fire associated with the crash. As the potential for AFFF to be applied to fuel spills at Fort Ord exists, and due to the uncertainty of the crash location, a data gap is present for these areas.

RESPONSE TO COMMENT 1: *No additional investigation of the reported helicopter crash sites is warranted. As noted in Section 2.3, no AFFF was used at these sites. The reported fuel spill at the East FAAF helicopter defueling area (Site 40A) was large in volume (5,000 to 10,000 gallons of fuel) and occurred on a paved surface (i.e., there was a large pool of fuel on an impervious surface), which prompted the use of AFFF to mitigate the potential for fire. Helicopters used at Fort Ord in the 1980s included the Bell UH-1H Iroquois (Huey), Bell OH-58A Kiowa, and Bell AH-1G Cobra, each of which had fuel tank capacities of less than 250 gallons. If a helicopter fuel tank leaked or ruptured after a crash in the Inland Ranges or Mudhen Lake, the relatively small amount fuel would have quickly infiltrated the sandy soil at the ground surface, precluding the need for applying AFFF. Without evidence or records of known AFFF releases in these areas, there is insufficient justification for further investigation, and it is not feasible to conduct investigations everywhere in Fort Ord where small quantities of AFFF theoretically could have been released.*

COMMENT 2: Site 40 – FAAF Helicopter Defueling Area Further Evaluation. Section 2.5.2 of the report states that there is no evidence an AFFF or other PFAS release occurred at Site 40, and that the site was eliminated for further evaluation. However, the next sentence states that additional investigation is recommended because of reported use of AFFF for a fuel spill response at this location. This section

[1] Administrative Record No. OU2-722.

[2] In a letter dated December 3, 2019 (Administrative Record No. OU2-722.3). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

should be revised to: 1) provide clarity to whether additional evaluation is warranted at Site 40, or 2) if additional work is not recommended, provide a basis for why.

RESPONSE TO COMMENT 2: *The next sentence states additional investigation is recommended at Site 40A, not Site 40. The text was not revised.*

COMMENT 3: Monitoring Well Installation Work Plan. Two new aquifer groundwater monitoring wells are proposed to be installed in the former Operable Unit 1 area, where all previous monitoring wells had been decommissioned. A work plan for the proposed monitoring wells should be prepared and submitted to DTSC for review and approval.

Provision of a workplan is needed because it allows regulators and other stakeholder to determine the appropriateness of the proposed monitoring well locations, well construction, sample frequency, sample collection methodology, QA/QC procedures, proposed analyses, and decision rules if elevated concentrations of PFAS/PFOA compounds are detected from samples collected from the proposed monitoring wells. Decision rules for additional groundwater investigation at Site 10 from groundwater analytical results from monitoring well MW-OU2-29-180 should be included in the work plan.

RESPONSE TO COMMENT 3: *The U.S. Department of the Army (Army) is performing remedial actions at the former Fort Ord per the CERCLA process; therefore, in accordance with the Fort Ord Federal Facility Agreement (FFA; Administrative Record No. BW-0119), all draft primary and secondary remedial action documents are submitted to the USEPA, DTSC, and CCRWQCB for review. Should the parties to the FFA agree it is appropriate to install additional monitoring wells, the Army will prepare a well installation work plan and submit it for regulatory agency and stakeholder review. Note that decision rules related to analytical results for PFAS compounds and for additional groundwater investigation at Site 10 will be included in a quality assurance project plan (QAPP), separate from a well installation work plan.*

COMMENT 4: Sampling and Analysis Plan. For areas where further evaluation through representative soil sampling is recommended, Site 34 – FAAF Aviation Hangars, Site 46 – FAAF Sewage Treatment Plant, Site 40A – East FAAF Helicopter Defueling Area, and Site 39 – Inland Ranges, a sampling and analysis plan (SAP) should be prepared and submitted to DTSC for review and approval.

The SAP should include proposed sampling locations, sample collection depths, sample collection methodologies, soil sampling analytical methods, QA/QC procedures, decision rules for soil samples that contain elevated levels of PFAS/PFOA compounds, and decision rules that will trigger additional groundwater investigation to establish a connection between soil and potential groundwater impacts.

RESPONSE TO COMMENT 4: *Should the parties to the FFA agree the soil sampling recommended in the Technical Summary Report is appropriate, the Army will prepare a QAPP per Army and Department of Defense policy that will include the information suggested in the comment.*

APPENDIX E

Responses to CCRWQCB Comments on the Draft Technical Summary Report

Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the Central Coast Regional Water Quality Control Board (CCRWQCB)[2]

GENERAL COMMENT 1: Throughout the Report it is stated that there is not an exposure pathway to human receptors for groundwater that may contain PFAS. Please revise the Report to include a review of domestic and municipal water supply wells within a minimum two-mile radius as groundwater from water supply wells is a potential exposure pathway for PFAS to human receptors.

RESPONSE TO GENERAL COMMENT 1: *The Technical Summary Report states there is no exposure pathway to human receptors for groundwater at Operable Unit 1 (OU1), Site 12, Site 34, Site 36, and Site 40. OU1 and Sites 34, 36, and 40 overlie the A-Aquifer in the area of the former Fritzsche Army Airfield (FAAF) and Site 12 overlies the unconfined Upper 180-Foot Aquifer adjacent to Monterey Bay; however, water supply wells in the vicinity of the former Fort Ord are screened in the Lower 180-Foot Aquifer or deeper, and there is no hydraulic communication between the shallow aquifers at the sites listed above and these deeper aquifers that would justify the review suggested by the comment. Additionally, such a review is outside the scope of the Technical Summary Report, which was prepared in response to a request from the U.S. Environmental Protection Agency (USEPA) to "conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord" and is consistent with U.S. Department of the Army (Army) guidance for reviewing and identifying potential sites where per- and polyfluoroalkyl substances (PFAS) releases may have occurred. The Technical Summary Report was not revised per the comment.*

GENERAL COMMENT 2: It should be noted that quarterly groundwater testing of all military owned municipal drinking water supply wells is currently being performed in response to the State Water Resources Control Board (State Water Board's) November 13, 2019 memorandum[3] sent to Mr. Richard Mach of the Office of the Assistant Secretary of the Navy and cc'd to other Navy, Army, and Air Force officials. The State Water Board also plans to issue California Health &Safety Code, Section 116378 orders to non-military municipal water supply wells within a two-mile radius of Department of Defense sites for one year of quarterly PFAS analysis to verify that these wells have not been impacted.

Please revise the Report to include a discussion and summary table for all available PFAS sampling results for the Marina Coast Water District and any other public water supply wells within a 2-mile radius of former Fort Ord to support the basewide PFAS review.

[1] Administrative Record No. OU2-722.

[2] In a letter dated December 13, 2019 (Administrative Record No. OU2-722.4). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

[3] The SWRCB's Memorandum can be found at: https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/9592189967/DoD_PFAS_Drinking%20Water%20Well_memo_11-13-19.pdf

RESPONSE TO GENERAL COMMENT 2: *Inclusion of the summary table suggested by the comment is outside the scope of the Technical Summary Report and not relevant to the basewide review (see response to General Comment 1). The Technical Summary Report was not revised per the comment.*

GENERAL COMMENT 3: While it is acknowledged that notification levels are non-regulatory and precautionary health-based measures, please add reference to the California State Water Board's Department of Drinking Water (DDW) PFAS notification levels of 6.5 parts per trillion (ppt) for PFOS and 5.1 ppt for PFOA. These levels were revised in August 2019 based on updated health-impact information provided by the Office of Environmental Health Hazard Assessment (OEHHA)[4]. It should also be noted in the Report that the laboratory reporting limits provided in the PFAS Quality Assurance Project Plan (QAPP)[5] for the OU2 groundwater sampling and analysis are below these notification levels. These values should be used as screening levels in the event that future decisions are based on a lower level than the current 70 parts per trillion (ppt) combined PFOA and PFOS lifetime Health Advisory Level issued by the United States Environmental Protection Agency (USEPA).

RESPONSE TO GENERAL COMMENT 3: *Per the California guidelines, the notification requirement only applies to "local water agencies." The Army does not own or operate any water supply system at or near the former Fort Ord. As stated in the quality assurance project plan (QAPP), the purpose of the groundwater sampling effort was only to screen for the presence of PFOA and PFOS in groundwater associated with OU2 at the former Fort Ord and compare the results to the USEPA Health Advisory levels to determine the need for further action. The Technical Summary Report was not revised per the comment.*

GENERAL COMMENT 4: The Report includes a summary of the OU2 groundwater sampling results for PFOA and PFOS. Please provide a table summarizing any additional PFAS analytes reported by the laboratory.

RESPONSE TO GENERAL COMMENT 4: *Only PFOA and PFOS were sampled, analyzed for, and reported by the analytical laboratory. The Technical Summary Report was not revised per the comment; however, it is recommended in Section 3.0 that, for any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory should report results for the 18 PFAS compounds listed in the Army PFAS Guidance.*

GENERAL COMMENT 5: A QAPP specific to PFAS soil sampling and analysis should be prepared or the OU2 PFAS QAPP should be revised to include soil. The soil QAPP should include risk-based Regional Screening Levels (RSLs) for residential and industrial populations such as those referenced in the U.S. Army Public Health Center's Technical Information Paper on environmental criteria for PFOA and PFOS[6].

RESPONSE TO GENERAL COMMENT 5: *Should the USEPA, California Department of Toxic Substances Control (DTSC), and CCRWQCB (collectively the "regulatory agencies") agree with the Army that soil sampling is appropriate per the recommendations presented in the Technical Summary Report, the Army*

[4] The August 2019 Notification Levels for PFOA and PFOS can be found at: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html

[5] The PFAS QAPP can be found at: https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/8352859735/DOD100221900.PDF

[6] The U.S. Army Public Health Center Technical Paper on Perfluorinated Alkyl Compounds can be found at: https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_85-067-0117_EnvironmentalCriteriaPerfluorinatedAlkylCompounds.pdf.

will prepare a QAPP to describe applicable methods and procedures for sampling and analysis of soil, and the QAPP will include appropriate reference screening levels in accordance with applicable Army and Department of Defense policy.

GENERAL COMMENT 6: Groundwater sampling should be performed to confirm the presence or absence at all PFAS investigation areas since these compounds are highly water soluble, persistent in soil and groundwater, and source areas in soil may not be easily identified/located or were previously removed.

RESPONSE TO GENERAL COMMENT 6: *Per Table 2 of the Technical Summary Report, there are three sites recommended for only soil sampling at this time (Sites 34, 36, and 40A). As noted in the response to General Comment 1, there is no exposure pathway to human receptors for groundwater at these sites; however, per Section 3.0 of the Technical Summary Report, groundwater investigations may be warranted in downgradient areas depending on the analytical results for the soil samples.*

GENERAL COMMENT 7: In a meeting on November 21, 2019 between the Army, State Water Resources Control Board, Regional Water Quality Control Boards, USEPA, and Department of Toxic Substances Control (DTSC) regarding PFAS investigations at California Army installations, fire department locations and nozzle testing areas were discussed as potential areas of concern. Based on this discussion, a review and recommendations for Fire Department locations and potential nozzle testing areas should be included in the Report.

RESPONSE TO GENERAL COMMENT 7: *An evaluation of fire department locations for potential AFFF storage was added to Section 2.2 of the Technical Summary Report. Per the* National Fire Protection Association (NFPA) 1962 Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances*, nozzles associated with firefighting vehicles and equipment are both flow and hydrostatically tested with water, not AFFF. There is no evidence nozzle testing of this type using AFFF was done at the former Fort Ord; however, fixed foam generator nozzles, such as those observed in Building 507, may have been tested intermittently using AFFF in accordance with DoD policy. Any releases associated with this type of testing would be addressed by the additional investigation recommended in Section 3.4 of the draft final Technical Summary Report.*

SPECIFIC COMMENT 1: Section 2.1.1, Site 8 – Range 49, Molotov Cocktail Range; Section 2.1.3, Site 34B – Former Burn Pit; and Section 2.1.4, Site 41 – Crescent Bluff Fire Drill Area – These areas were listed as potential or known FTA's with the potential for AFFF use and were recommended for removal from the PFAS investigation based on personal communication with the retired Fire Chief indicating that there were no records of fires requiring suppression using AFFF and/or the area wasn't in use after 1973, when AFFF was first used at Army installations. Please provide additional justification to support removing each of these areas from the basewide PFAS investigation. If additional supporting documentation is not available, please revise the Report to include these areas.

RESPONSE TO SPECIFIC COMMENT 1: *Chief Riso served as an active duty firefighter at Fort Ord for over 40 years and the Army considers him to be a credible source of information regarding historical fire incidents and firefighting practices at the former Fort Ord. Additionally, all three of these sites were Interim Action (IA) sites where contaminated soil was excavated and removed. This information is presented in the discussion of Site 8, and the Technical Summary Report was revised to also include this information for Site 34B (now Section 2.1.4) and Site 41 (now Section 2.1.5). Additional supporting*

documentation regarding the operation of these sites while Fort Ord was an active installation has not been found; however, based on what is known about these areas from the existing literature and Chief Riso, there is no evidence of AFFF use to justify additional investigation at these sites.

SPECIFIC COMMENT 2: Section 2.1.5, Operable Unit 1 – Former Fire Drill Area (FDA) – The Report indicates that approximately 4,000 cubic yards of contaminated soil were removed from the former FDA to a depth of 31 feet, and the area was backfilled with clean soil. Excavated soils were spread over the area of the former FDA to a depth of 2.5 to 3 feet above the original ground surface and remediated using treated groundwater to stimulate microbial degradation of hydrocarbons. As the soil was remediated it was then transported to a soil borrow area for use as fill for construction projects at Former Fort Ord. A remediation confirmation study and risk assessment indicated chemicals remaining in soil at the former FDA did not present an unacceptable risk to human health or the environment and the remaining soil was left in-place. Many conventional remedial technologies used to address organic compounds are ineffective at breaking down PFAS chemicals due to their low volatility and resistance to biodegradation[7]. Therefore, this area should be considered for further soil investigation to confirm whether there is PFAS present in the soil left in-place.

RESPONSE TO SPECIFIC COMMENT 2: *As noted in Section 3.1 of the Technical Summary Report, analytical results for PFOA and PFOS in samples collected in May 2015 from A-Aquifer wells downgradient of the former FDA indicated the former FDA was no longer a source of PFAS in groundwater. Specifically, concentrations of PFOA and PFOS in the downgradient wells closest to the FDA were not detectable or less than the USEPA health advisory (HA) levels and U.S. Department of Defense (DoD) screening levels, and higher concentrations of PFOA and PFOS were detected in wells further downgradient, indicating source removal and subsequent contaminant migration in groundwater (i.e., similar to fate and transport in groundwater of the ten chemicals of concern identified in the OU1 Record of Decision [Administrative Record No. OU1-362]). No further soil investigation at the FDA is recommended.*

SPECIFIC COMMENT 3: Section 2.4.2, Site 34 – Fritzsche Army Airfield (FAAF) Multiple Sites – The Report recommends investigating Building 507 related to a reported accidental discharge of foam from the fire suppression system in an unknown hanger. Building 507 is proposed for investigation since it was constructed after 1972 and currently has a foam suppression system. While the interior of Building 527 has no indication of a foam suppression system nor infrastructure in place to support one, it was also constructed after 1972 and it is possible that the hangar has been modified in the last 45 years to remove a foam suppression system and/or infrastructure. Based on this information, please include Building 527 in the PFAS investigation activities unless additional justification for removal of Building 527 can be provided.

Please also provide a figure showing the locations of the five aviation hangars at FAAF that are still in existence (Buildings 507, 510, 524, 527, and 533).

RESPONSE TO SPECIFIC COMMENT 3: *While it is possible Building 527 was modified to remove a foam suppression system and associated infrastructure, it is unlikely based on the information presented in Army real property records (Appendix B). Additionally, typical for utility systems that are no longer used,*

[7] Additional information on Groundwater and PFAS can be found at: https://www.ngwa.org/docs/default-source/default-document-library/publications/pfas-doc-section1-overview.pdf?sfvrsn=f4ae9fe6_2.

decommissioning of a foam suppression system would most likely have included cutting and capping pipelines at key locations and then abandoning the system in place, similar to what is visible in Building 507, because it is not cost effective or necessary to remove the system in its entirety. Because the current fire suppression system at Building 527 (and the other four hangars) is a water-supplied deluge system and likely the originally installed system, and there is no evidence a foam suppression system existed at Building 527, no additional investigation is recommended. Section 2.4.2 was revised to include this information.

New Figure 6, showing the locations of the existing aviation hangars, was added to the Technical Summary Report per the comment.

SPECIFIC COMMENT 4: Section 2.6.1, Site 12 – Lower Meadow Disposal Area – The Report indicates that surface water containing PFAS could have been discharged from Outfall 15 to a closed depression within the dunes where contaminated soil was excavated in 1997 and 1998. Additionally, the Report indicates that several pipes discharged into the Lower Meadow, including Outfall 31 which was located at the southeast corner. Based on the high infiltration rates of dune sands and the rationale provided in General Comment no. 6, please include groundwater sampling of the Outfall 15 and Outfall 31 discharge areas as part of the Site 12 PFAS investigation.

RESPONSE TO SPECIFIC COMMENT 4: *Chief Riso previously stated the AFFF tanks on fire department vehicle were flushed at Building 2722 (Site 12) and Building 4900 (Site 16) before servicing; however, he has clarified that AFFF was drained out of the tanks at the Main Garrison Fire Station prior to servicing at these facilities, and the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years. This additional information indicates the amount of AFFF potentially discharged at Outfall 15 and Outfall 31 was negligible. The Technical Summary Report was revised to include this information. Accordingly, no groundwater sampling at Outfall 15 and Outfall 31 is recommended. Further, based on this new information, the Technical Summary Report was revised to state no additional investigation is recommended at the Lower Meadow.*

SPECIFIC COMMENT 5: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete's Pond and Pete's Pond Extension – This area was used for servicing of fire department vehicles which may have included flushing of tanks and systems containing AFFF. Runoff was reportedly discharged into an adjacent oil/water separator and drainage from the DOL maintenance yard that did not reach the oil/water separator or sanitary sewer system drained to Pete's Pond Extension, a topographic depression northwest of the yard and adjacent to Pete's Pond. Please revise the Report to include Site 16 in the PFAS groundwater investigation activities based on the following:

- There is the potential that runoff containing PFAS did not reach the oil/water separator and may have drained to Pete's Pond Extension;
- The rationale provided in General Comment no. 6; and
- The highest concentration of PFAS was detected in groundwater monitoring well MW-OU2-23-180 which is screened in the Upper 180-Foot Aquifer and located approximately 1,500 feet downgradient of Site 16.

RESPONSE TO SPECIFIC COMMENT 5: *Per the response to Specific Comment 4, the amount of AFFF potentially discharged at Site 16 was negligible. The Technical Summary Report was revised to include this information. As described in Section 2.6.5 and Table 3 of the Technical Summary Report, the highest*

concentrations of PFOA and PFOS were detected in groundwater at monitoring well MW-OU2-23-180; however, based on the information available, the source of PFOA and PFOS at this well is suspected to be the Fort Ord Landfills, not Site 16. Additionally, because this well is screened in the Upper 180-Foot Aquifer it is approximately 3,750 feet downgradient of Site 16, as groundwater from the Site 16 area would first travel west to the edge of the Fort Ord-Salinas Valley Aquitard (FO-SVA) and then east toward MW-OU2-23-180. Based on this information, no groundwater investigation is recommended at Site 16.

SPECIFIC COMMENT 6: Section 2.7.2, Site 2 – Main Garrison Sewage Treatment Plant – The Report indicates that possible sources of PFAS in the sludge include discharges of AFFF at the DOL Automotive Yard and the DOL Maintenance Yard that could have entered the sanitary sewer system. The report also indicates that these discharges would have been intermittent, of relatively small volume, and primarily contained in the oil/water separators at each site however, documentation of this is not provided.

Based on the potential that discharges of AFFF could have entered the sanitary sewer system, PFAS may have been present in sludge stored in this area, and the rationale provided in General Comment no. 6, please include groundwater sampling in this area as part of the basewide PFAS investigation.

RESPONSE TO SPECIFIC COMMENT 6: *Per the responses to Specific Comments 4 and 5, there are no suspected significant releases of AFFF to the sanitary sewer system that would justify groundwater sampling at Site 2. Additionally, as noted in Section 2.7.2 of the Technical Summary Report, contaminants were mainly confined to the sludge in the asphalt-lined drying beds, which were a barrier preventing infiltration of contaminants to the subsurface, and the sludge was removed from the site. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 7: Section 3.1 – FAAF FDA – In the Report, two new A-Aquifer groundwater monitoring wells are proposed in the area of abandoned OU1 monitoring wells MW-OU1-85-A and MW-OU1-88-A that would serve as downgradient monitoring wells for the PFAS investigation at OU1 as well as to define the Operable Unit Carbon Tetrachloride Plume (OUCTP). In a letter dated November 4, 2019 regarding the OUCTP Draft Deployment Area 3A Data Summary Report[8], the Central Coast Water Board recommended considering an additional well or moving the well that is proposed near former well MW-OU1-85-A closer to the central downgradient edge of the CT plume. This comment was related to further defining the OUCTP extent and is also applicable to the basewide PFAS investigation.

As indicated in the comments to Section 2.1, the FAAF FDA should be considered for further investigation to confirm whether there is PFAS present in the soil left in-place following bioremediation.

RESPONSE TO SPECIFIC COMMENT 7: *The downgradient edge of the carbon tetrachloride (CT) plume in the A-Aquifer was revised based on data collected during the third quarter 2019 groundwater monitoring event and review of the FO-SVA elevation contours prompted by the Water Board's comments on the draft and draft final* OUCTP Deployment Area 3A Data Summary Report, Enhanced In Situ Bioremediation Remedial Action*. These data indicate the CT plume is migrating into the northern FO-SVA channel low formerly associated with OU1 (pink dashed line on the illustration below) and into the southern FO-SVA channel low that roughly parallels Reservation Road in Marina (orange dashed line on the illustration below). These two channel lows are separated by an FO-SVA knoll (yellow-shaded area on*

[8] The Water Board's comment letter can be found at: https://geotracker.waterboards.ca.gov/view_documents?global_id=DOD100196800&enforcement_id=6419323.

the illustration below). This same FO-SVA knoll precludes migration of the CT plume into the area indicated in the comment, and the CT plume downgradient edge was redrawn accordingly. Historical groundwater analytical data for OU1 support this interpretation, as OU1 chemicals of concern were not detected at sampling points downgradient of the FO-SVA knoll. However, should future groundwater monitoring indicate a data gap in this area, additional monitoring wells will be considered.

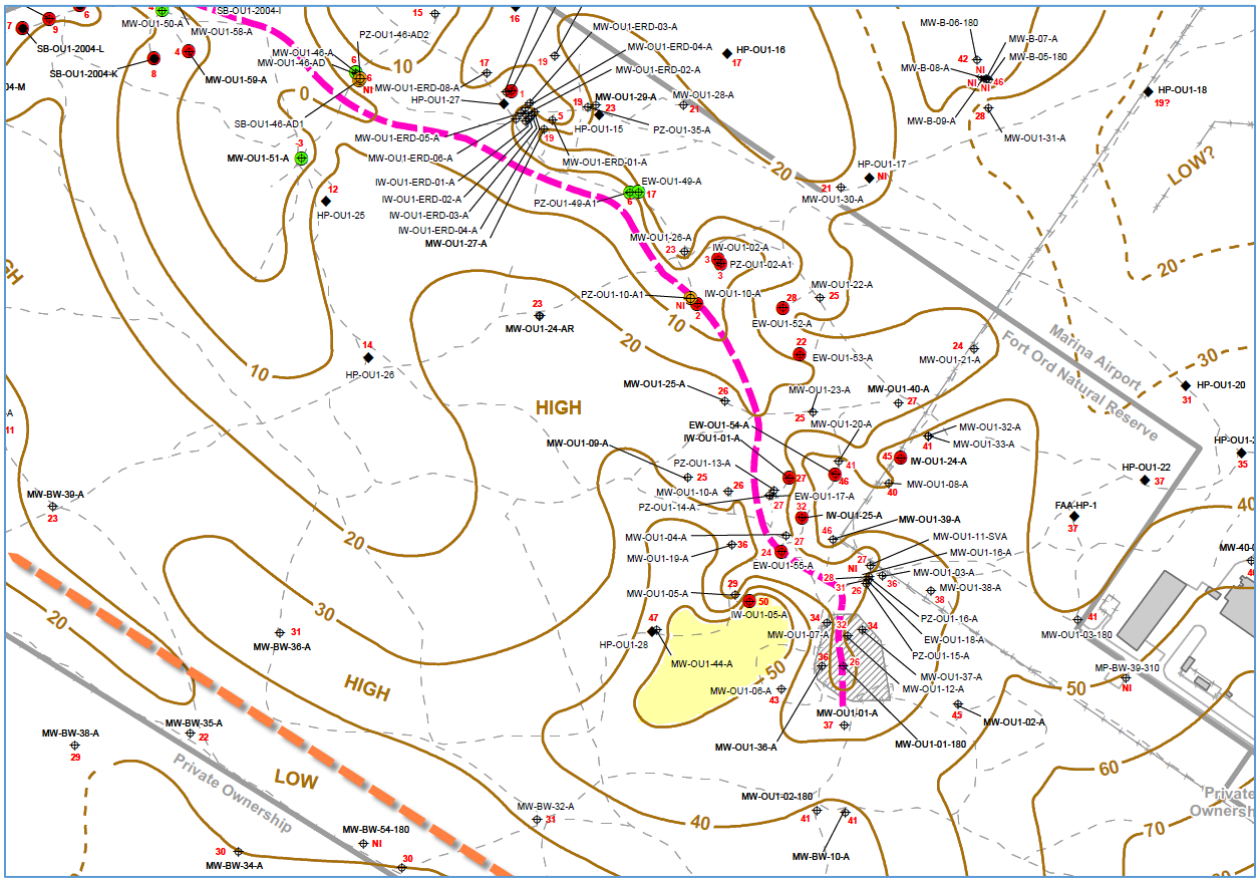

Illustration: *FO-SVA Channel Lows and FO-SVA Knoll (modified from Figure 4 of OU1-623A).*

Additionally, this area is heavily vegetated and within the Fort Ord Natural Reserve (FONR), and preservation of habitat must be a consideration in siting new wells in accordance with the Programmatic Biological Opinion (Administrative Record No. BW-2747A).

As noted in the response to Specific Comment 2, no further soil investigation at the FDA is recommended. The Technical Summary Report was not revised per the comment.

SPECIFIC COMMENT 8: Section 3.2 – Operable Unit 2 (OU2) – Fort Ord Landfills – It is noted that the suspected sources of PFAS at the Fort Ord Landfills are the buried waste and AFFF discharged during fire suppression there however, the locations where fire suppression was performed are not identified. Please provide additional information on the reported fire suppression locations and confirm that the proposed groundwater sampling for PFAS at the Fort Ord Landfills includes these areas.

Section 2.6.5 of the Report indicates that PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide and that the PFOA and PFOS detections may not be associated with the

trichloroethene (TCE) plume in the A-Aquifer. Based on this interpretation please review whether or not additional groundwater monitoring wells in the A-Aquifer and Upper 180-Foot that are within and downgradient of the OU2 Landfills and outside of the OU2 COC plumes should be proposed for sampling.

Additionally, please revise the Report to include additional investigation in the A-Aquifer and sampling of groundwater monitoring well MW-OU2-23-A to confirm the absence or presence of PFAS in groundwater in the A-Aquifer. Well MW-OU2-23-A is screened in the aquifer above the 180-Foot Aquifer where the highest PFAS detection was reported in groundwater monitoring well MW-OU2-23-180.

RESPONSE TO SPECIFIC COMMENT 8: *The text in Section 2.6.5 of the Technical Summary Report was revised to state the exact locations of the landfill fires are unknown, but based on the operational history of the Fort Ord Landfills they were likely in the area south of Imjin Parkway. As stated in Section 2.6.5, PFOA and PFOS were either not detected or detected at concentrations an order of magnitude less than the USEPA HA levels in samples collected from A-Aquifer monitoring wells immediately adjacent to and downgradient of the Fort Ord Landfills, indicating the Fort Ord Landfills are no longer a source of PFAS in groundwater and no additional groundwater investigation in A-Aquifer is necessary.*

Section 2.6.5 of the Technical Summary Report states PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide and the PFOA and PFOS detections may not be associated with the tetrachloroethene (PCE) plume in the A-Aquifer. The analytical results for samples collected from monitoring wells at the downgradient extents of the study area in the A-Aquifer and the Upper 180-Foot Aquifer indicate PFOA and PFOS concentrations would not exceed USEPA HA levels or DoD screening levels outside the study area; therefore, no additional wells outside the study area are proposed for sampling.

Monitoring well MW-OU2-23-A is cross-gradient of the Fort Ord Landfills, it is vertically separated from MW-OU2-23-180 by the FO-SVA, and there is no evidence of hydraulic communication (i.e., a vertical conduit) between the A-Aquifer and the Upper 180-Foot Aquifer in this area to justify sampling MW-OU2-23-A for PFAS analysis. The Technical Summary Report was not revised per the comment.

SPECIFIC COMMENT 9: Section 3.3 – Site 10 – Burn Pit/Fire Training Area – The Report indicates that AFFF was regularly used at Site 10 for at least two decades and well MW-OU2-29-180 is recommended for PFAS analysis to determine if additional groundwater investigation is warranted in the area between this well and Site 10.

Since regular use of AFFF at Site 10 has been documented and the results from well MW-OU2-29-180 may not be indicative of a release as it is a significant distance (1.7 miles) from the potential source area(s), additional investigation at Site 10 is warranted to confirm the absence or presence of PFAS in groundwater. Please revise the Report to include additional groundwater sampling location(s) within the potential source area(s) at Site 10.

RESPONSE TO SPECIFIC COMMENT 9: *Section 3.3 was revised to note that hydraulic conductivities in the Upper 180-Foot Aquifer range up to 366 feet per day and groundwater modeling indicates PFAS could have traveled in the Upper 180-Foot Aquifer from Site 10 to the Fort Ord Landfills within 30 years. Therefore, monitoring wells MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 are recommended to be sampled for PFAS analysis in addition to MW-OU2-29-180.*

SPECIFIC COMMENT 10: Section 3.4 – Site 12 – Lower Meadow Disposal Area – The Report recommends additional groundwater investigation at Site 12 within the historical extent of the Sites 2 and 12 (Site 2/12) TCE groundwater plume. Site 2/12 also includes a tetrachloroethene (PCE) groundwater plume. Please revise the report to include groundwater monitoring wells within the historical and current extent of the PCE groundwater plume in the PFAS investigation.

As indicated in the comment above on Section 2.6.1, due to the likelihood that PFAS containing surface water was discharged in this area, the high infiltration rates of dune sands, and the rationale provided in General Comment no. 6, the Outfall 15 and Outfall 31 discharge areas should be included in the PFAS groundwater investigation.

RESPONSE TO SPECIFIC COMMENT 10: *The source of the historical TCE groundwater plume is suspected to be the Lower Meadow area and the DOL Automotive Yard near former Building 2722, the same area where AFFF was suspected of being discharged when tanks on fire department vehicles were flushed. However, the source of the PCE groundwater plume is suspected to be surface disposal of PCE at a location near the former paint shop at Building 2726, approximately 900 feet east of where AFFF may have been discharged to the Lower Meadow.[9] There is no evidence the PCE groundwater plume is associated with any potential releases of PFAS to justify a PFAS groundwater investigation within the historical and current extent of the PCE groundwater plume. The Technical Summary Report was not revised per the comment.*

As stated in the response to Specific Comment 4, the amount of AFFF potentially discharged at Outfall 15 and Outfall 31 was negligible. Accordingly, no groundwater sampling at Outfall 15 and Outfall 31 is recommended.

SPECIFIC COMMENT 11: Section 3.5 – Site 34 – Fritzsche Army Airfield (FAAF) Multiple Sites – The Report indicates that soil sampling is recommended in this area based on cleanup after the accidental discharge of AFFF that may have resulted in AFFF being discharged to surface drainage channels or the sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF Sewage Treatment Plant. Per the rationale provided in General Comment no. 6, please include groundwater sampling as part of the PFAS investigation in this area as well.

RESPONSE TO SPECIFIC COMMENT 11: *Section 3.5 (now Section 3.4) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 12: Section 3.6 – Site 36 – FAAF Sewage Treatment Plant (STP) – Per the Report recommendations, soil sampling will be performed in the area of the Imhoff tank and evaporation ponds where excavation has not been performed and wastewater containing PFAS may have percolated into the ground and in an area where the A-Aquifer discharges to the ground surface as seepage from the bluffs above the Salinas River. Based on the rationale provided in General Comment no. 6 and the potential for a continued source of PFAS to groundwater, please include groundwater sampling as part of the PFAS investigation in this area.

[9] See the *Final Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12, Former Fort Ord, California* (Administrative Record No. BW-2721B).

RESPONSE TO SPECIFIC COMMENT 12: *As noted in Section 3.6 (now Section 3.5), no additional groundwater investigation at Site 36 is recommended at this time because 1) historical analytical results for groundwater indicate limited migration of contaminants from the surface to groundwater, and 2) if any PFAS were discharged at the FAAF STP and migrated to groundwater, they would have already discharged to the ground surface at the bluffs. The Technical Summary Report was not revised per the comment.*

SPECIFIC COMMENT 13: Section 3.7 – Site 40A – East FAAF Helicopter Defueling Area – Per the Report recommendations, soil sampling will be performed in this area as AFFF was reportedly used for a fuel spill response and may have resulted in AFFF entering the storm drain system that discharges at Outfall 22. Based on the rationale provided in General Comment no. 6 and the reported use of AFFF in this area, please include groundwater sampling as part of the PFAS investigation in this area.

RESPONSE TO SPECIFIC COMMENT 13: *Section 3.7 (now Section 3.6) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment; however, the discharge point was incorrectly identified as Outfall 22 and the Technical Summary Report was revised to delete this reference.*

SPECIFIC COMMENT 14: Figures 6, OU2 A-Aquifer Sampling Locations and Figure 7, OU2 Upper 180-Foot Aquifer Sampling Locations – Please revise Figures 6 and 7 to show the groundwater flow directions in the respective aquifers.

RESPONSE TO SPECIFIC COMMENT 14: *Figures 6 and 7 (now Figures 13 and 14) were revised per the comment.*

SPECIFIC COMMENT 15: Figure 10 – Site 12, Lower Meadow Disposal Area, Recommended Sampling Locations – Please revise Figure 10 to show the locations of Outfall 15 and Outfall 31 and include proposed groundwater sampling locations per the comments on Section 2.6.1 and Section 3.4.

RESPONSE TO SPECIFIC COMMENT 15: *Per the responses to Specific Comments 4 and 10, Figure 10 was deleted from the Technical Summary Report.*

SPECIFIC COMMENT 16: Figure 13 – Site 40A, East FAAF Helicopter Defueling Area Recommended Sampling Locations – Please revise Figure 13 to label Outfall 22 and include proposed groundwater sampling locations per the comment on Section 3.7.

RESPONSE TO SPECIFIC COMMENT 16: *Outfall 22 was incorrectly identified as the discharge point for the storm drain line that runs through the helicopter parking apron. The discharge point is shown in the* Basewide Surface Water Outfall Investigation *(HLA, 1995c), but it is not numbered; therefore, the discharge point is still labeled as "Storm Drain Discharge" on Figure 13 (now Figure 21). Groundwater sampling locations will be proposed based on the results of recommended soil sampling.*

APPENDIX F

Responses to FOCAG Comments on the Draft Technical Summary Report

Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the Fort Ord Community Advisory Group (FOCAG)[2]

COMMENT 1: The FOCAG has had the opportunity to review this Draft document. We find it to be limited in its scope, but recognize it as a beginning, although a weak one. PFAS, as it has been cumulatively called, has three places likely to be found;

1. Former Military Bases - Here we have the second largest Army training base in the U.S., used for infantry training since 2017. Fires occurred when munitions set off grass fires, that were put out by Army personnel. The history of Fort Ord range fires has not been investigated with this Draft report. Firefighting was also practiced with fire pits.
2. Airports - Here we have two, one being the former Fritsche Army Airfield, the second being the Monterey Regional Airport at Del Rey Oaks that borders the former Fort Ord. We could not find any mention of Del Rey Oaks, or for that matter much of anything on other neighboring communities in this Draft report. Regarding Del Rey Oaks, recall the Frog Pond there was discovered to have the frogs dying off several years ago. The water was contaminated. This area was not tested for PFAS.
3. Landfills - here we have multiple landfills on former Fort Ord badged with letter identifiers A through F. These in addition to the Army practice of burying waste on former Fort Ord. We also have a nearby County Landfill in Marina.

RESPONSE TO COMMENT 1: *The U.S. Department of the Army (Army) scoped and developed the Technical Summary Report based on requests for information from the U.S. Environmental Protection Agency (USEPA) and the California Department of Toxic Substances Control (DTSC):*

- *In a letter dated June 7, 2017, USEPA requested the Army "conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord, and that the results be summarized in a technical memo… site[s] on Fort Ord where products containing PFOA/PFOS were possibly used or disposed of, should be evaluated."*[3]
- *In a letter dated January 27, 2017, DTSC requested PFOA and PFOS be added to the list of analytes for groundwater at Sites 2 and 12, Operable Unit 2 (OU2), and Operable Unit Carbon Tetrachloride Plume (OUCTP).*[4] *The Army agreed to sample groundwater associated with OU2 because it is possible products containing PFOA and PFOS were disposed of at the Fort Ord Landfills.*[5]

[1] Administrative Record No. OU2-722.
[2] In a letter dated October 28, 2019 (Administrative Record No. OU2-722.2). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.
[3] From USEPA comments on the *4th Five-Year Review Report for Fort Ord Superfund Site* (Administrative Record No. BW-2834).
[4] Administrative Record No. BW-2785B.2.
[5] Administrative Record No. BW-2785D.

The Technical Summary Report contains sufficient information to evaluate historical activities with the potential to cause per- and polyfluoroalkyl substances (PFAS) contamination in soil and groundwater at the former Fort Ord per USEPA's request, and includes recommendations for additional investigation in areas associated with former fire training areas (FTAs), airfields, and landfills at the former Fort Ord.

RESPONSE TO COMMENT 1-1: *It is noted in Section 2.8 that water tenders were used historically to fight fires in the Inland Ranges; therefore, there is no suspected release of PFAS associated with Aqueous Film-Forming Foam (AFFF) in the Inland Ranges. FTAs at the former Fort Ord are specifically addressed in Sections 2.1, 3.1, and 3.3 of the draft final Technical Summary Report.*

RESPONSE TO COMMENT 1-2: *The purpose of the Technical Summary Report is to review Army activities with the potential to cause perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at the former Fort Ord. The Monterey Regional Airport, Del Rey Oaks, and the other nearby communities are not part of the former Fort Ord and are therefore not within the scope of the Technical Summary Report; however, the State Water Resources Control Board (SWRCB) issued an order to airports throughout California, including the Monterey Regional Airport, to investigate for the presence of PFAS.[6] The area of the Frog Pond was not tested for PFAS because there is no evidence of any Army activity in this area that would have resulted in a release of PFAS to the environment.*

RESPONSE TO COMMENT 1-3: *As shown in Figure 13, the Fort Ord Landfills historically consisted of six landfill areas (lettered A through F); however, Area A was clean closed and no landfill waste remains in this area. Historically, wastes were buried in other areas of the former Fort Ord (e.g., see descriptions in Section 2.6); however, the Army removed the wastes and contaminated soil from these areas and consolidated them in the Fort Ord Landfills, Areas B through F. The Monterey Peninsula Landfill, located north of the City of Marina, is not and never has been part of the former Fort Ord, nor has it ever been an Army-owned or operated facility, and is therefore not within the scope of the Technical Summary Report; however, the SWRCB issued an order to landfills throughout California, including the Monterey Peninsula Landfill, to investigate for the presence of PFAS.[7]*

COMMENT 2: Of the twelve monitoring wells sampled, eight were discovered with PFOA or PFOS. The Draft report tells us most detections were estimated results.

RESPONSE TO COMMENT 2: *PFOA or PFOS were detected in samples collected from eight monitoring wells associated with Operable Unit 2. As shown in Table 3, several of these detections were qualified as estimated because, while it could be determined that PFOA or PFOS was present in the samples, the quantity was so small that a precise measurement could not be made with the laboratory instruments.*

COMMENT 3: There is only one sentence, found on the bottom of page 19, that states that granular activated carbon treatment is effectively removing PFOA and PFOS! This apparent conclusion is based on a few GWTP sampling points downstream of the influent.

[6] The order sent to airports can be found at https://www.waterboards.ca.gov/pfas/docs/airport_pfas_13267_go_03202019.pdf

[7] The order sent to landfills can be found at https://www.waterboards.ca.gov/pfas/docs/landfill_pfas_13267_go_03202019.pdf

RESPONSE TO COMMENT 3: *As shown in Table 3, PFOA and PFOS were detected at the Operable Unit 2 (OU2) groundwater treatment plant (GWTP) influent at concentrations below the U.S. Environmental Protection Agency (USEPA) Health Advisory (HA) level; however, PFOA and PFOS were not detected in the samples collected from the lead granular activated carbon (GAC) vessel effluents or the GWTP effluent, indicating GAC is effective at removing PFOA and PFOS from water. Additionally, the USEPA has determined GAC is one of four treatment technologies that are effective at removing PFAS from water (see https://www.epa.gov/pfas/treating-pfas-drinking-water).*

COMMENT 4: Page 20, the testing done near the Sewage Treatment Plant on the corner of Fort Ord Dunes State Park. PFOA and PFOA seems to have been dismissed here also. How much trouble would it have been to also test for lead here?

RESPONSE TO COMMENT 4: *As noted in Section 2.7.1 on page 20 of the Technical Summary Report, the Ord Village Sewage Treatment Plant (STP) served a residential area and did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Therefore, there is no suspected release of PFAS and the Ord Village STP. Soil and groundwater at the Ord Village STP were sampled during site characterization, and there were no detections of lead exceeding preliminary remediation goals or maximum background concentrations (see Administrative Record No. BW-1370).*

COMMENT 5: The potential for downward leaching of PFAS although recognized as possible, is pretty much dismissed with this Draft report.

RESPONSE TO COMMENT 5: *Downward leaching is acknowledged as a transport mechanism for PFAS in Section 3.0 of the Technical Summary Report, and this is the basis for recommending additional groundwater sampling at the Fritzsche Army Airfield (FAAF) Fire Drill Area, OU2, and Site 10.*

COMMENT 6: The consultants writing the report seem convinced the "showercaps" put atop the unlined landfills will prevent contaminates reaching groundwater.

RESPONSE TO COMMENT 6: *The remedy for the Fort Ord Landfills is functioning as designed and is protective of human health and the environment. The engineered landfill cover system, constructed in accordance with the remedy identified in the* Record of Decision, Operable Unit 2, Fort Ord Landfills *(Administrative Record No. OU2-480), is specifically designed to prevent leaching to the soil and groundwater.*

COMMENT 7: Page 29, References, we find a footnote that informs us that some documents in the Administrative Record "may have been superseded" and were subsequently withdrawn. The FOCAG asks for a listing of documents withdrawn from the Administrative Record.

RESPONSE TO COMMENT 7: *Please contact the Fort Ord Administrative Record regarding this request.*
Telephone: 831-393-9693
Email: adminrecord@fortordcleanup.com

COMMENT 8: We read a rather seminal report was written by Fromel, T., C. Gremmel, I. Dimzon, and P. de Voogt in year 2016. We also find in this Draft report that monitoring wells were being decommissioned on former Fort Ord in year 2017.

RESPONSE TO COMMENT 8: *The document prepared by Frömel et al. provided information relevant to the discussion of wastewater treatment plants and PFAS. Monitoring wells at the former Fort Ord are*

occasionally decommissioned when they are no longer needed for monitoring chemicals of concern in groundwater. A determination that a well may be decommissioned is in accordance with decision rules found in groundwater monitoring quality assurance project plans (e.g., see Administrative Record No. BW-2785I); however, as indicated in the Technical Summary Report, it also may occasionally be necessary to install new wells in areas where old wells were decommissioned to investigate for the presence of emergent contaminants, such as PFAS, that were not previously known about.

COMMENT 9: This reports Table 2. **Sites Recommended for Additional Investigation** lists only 7!

RESPONSE TO COMMENT 9: *The Basewide Review for the former Fort Ord initially identified seven sites where there might have been significant discharges of PFAS to the environment that would justify additional investigation; however, based on additional information received after the draft Technical Summary Report was issued, Site 12 – Lower Meadow Disposal Area, was eliminated from further evaluation and there are now six sites listed in Table 2.*

COMMENT 10: This reports Table 3. **Summary of Groundwater Monitoring Analytical results, March 7, 2019**

Of the 19 Monitoring wells tested, 9 detected PFAS!

RESPONSE TO COMMENT 10: *Samples were collected from twelve monitoring wells and five sample points at the OU2 GWTP. PFOA or PFOS was detected at eight monitoring wells and the influent sample point at the OU2 GWTP; however, concentrations of PFOA and PFOS only exceeded the USEPA HA at one well (MW-OU2-23-180), hence the recommendation for additional groundwater monitoring at OU2 (see Section 3.2).*

COMMENT 11: This reports Table 4. Recommended PFAS Target Analyte List*

***** From Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)

The FOCAG finds this "Army Guidance" has no date, length, who wrote it, when?

RESPONSE TO COMMENT 11: *Table 4 was revised to include additional information about the Army Guidance. The guidance was prepared by the Army and issued in September 2018, and is also listed in the references in Section 4.0.*

COMMENT 12: Fort Ord Site Map Figure 1 shows part of the City of Marina, but fails to show nearby Monterey Regional Airport or the Marina Landfill locations.

RESPONSE TO COMMENT 12: *See the responses to Comments 1-2 and 1-3. The Monterey Regional Airport and the Monterey Peninsula Landfills are not associated with the former Fort Ord and are not within the scope of the Technical Summary Report. Note that Figure 1 is now Figure 2.*

COMMENT 13: The toxic monitoring well MW-OU2-23-180 is South of Imjin Parkway and also South of residential housing, including new housing that is going up. The FOCAG asks,

What is the General Groundwater Flow Direction near where this toxic monitoring well is?

RESPONSE TO COMMENT 13: *The general direction of groundwater flow at MW-OU2-23-180 is to the northeast.*

COMMENT 14: The FOCAG recommends, indeed requests, given the seriousness of this PFAS, that an independent group of experts be brought in to review this Draft and do further testing. Ahtna Environmental, Inc. prepares a lot of documents for BRAC, and they cannot be experts at all things, or do all things. We believe Derek Lieberman deserves a lot of outside assistance with this investigation. It needs to be far more comprehensive in scope.

RESPONSE TO COMMENT 14: *Ahtna Environmental, Inc. prepared the Technical Summary Report; however, significant technical expertise and peer review were provided by the Army, U.S. Army Corps of Engineers, USEPA, California Department of Toxic Substances Control, and California Central Coast Regional Water Quality Control Board.*

APPENDIX G

Responses to USEPA Comments on the Draft Final Technical Summary Report

Responses to Comments on the Draft Final Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the U.S. Environmental Protection Agency (USEPA)[2]

GENERAL COMMENT 1: The Draft PFAS Report does not adhere to the investigative process identified in the *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)*, dated September 2018 (the Army PFAS Guidance). According to the Army PFAS Guidance, the first step of the investigative process is to conduct a preliminary assessment (PA) at installations where aqueous film-forming foam (AFFF) or other per- and polyfluoroalkyl substances (PFAS)-containing materials were used or stored; however, the Draft PFAS Report does not demonstrate that this first step was followed for each of the 52 sites. Table 1 (Site Summary and Primary Records Review Results) does not demonstrate that PAs were performed at each site or provide rationale for exclusion of each site from further evaluation.

Further, the primary reviews described in Section 1.2 (Review Methodology) and summarized in Table 1 (Site Summary and Primary Records Review Results) do not meet the objectives of a PA, which are specified in Section 4.0 (Reporting Requirements) and Table 4-1 (PA Narrative Report, Outline of Contents) of the United States Environmental Protection Agency's (EPA's) *Guidance for Performing Preliminary Assessments Under CERCLA*, EPA/540/G-91/013, dated September 1991 (the PA Guidance). Please revise the Draft PFAS Report to follow the procedures listed in the Army PFAS Guidance, meet the reporting requirements for a PA as outlined in Section 4.0 and Table 4-1 of the PA Guidance, and include documentation for each of the 52 sites evaluated.

RESPONSE TO GENERAL COMMENT 1: *The U.S. Department of the Army (Army) does not intend for the Technical Summary Report to be a PA; therefore, it was not revised per the comment. The Army scoped and developed the Technical Summary Report based on requests for information from USEPA and the California Department of Toxic Substances Control (DTSC) that predated the* Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS) *(Army PFAS Guidance):*

- *In a letter dated June 7, 2017, USEPA requested the Army "conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord, and that the results be summarized in a technical memo… site[s] on Fort Ord where products containing PFOA/PFOS were possibly used or disposed of, should be evaluated."*[3]

[1] Administrative Record No. OU2-722A.

[2] In a letter dated May 4, 2020 (Administrative Record No. OU2-722A.8). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation. USEPA only detailed those responses requiring further clarification in its comments. For those responses, USEPA included its original comment, the Army's response, and the USEPA evaluation. Based on this, the Army assumes USEPA accepts the Army's responses to General Comments 6, 9 through 12, and 14, and the Army's responses to Specific Comments 1 through 7, 9, and 12.

[3] From USEPA comments on the *4th Five-Year Review Report for Fort Ord Superfund Site* (Administrative Record No. BW-2834).

- *In a letter dated January 27, 2017, DTSC requested PFOA and PFOS be added to the list of analytes for groundwater at Sites 2 and 12, Operable Unit 2 (OU2), and Operable Unit Carbon Tetrachloride Plume (OUCTP).[4] The Army agreed to sample groundwater associated with OU2 because it is possible products containing PFOA and PFOS were disposed of at the Fort Ord Landfills.*

Accordingly, the Technical Summary Report is limited to a review of Army activities with the potential to cause PFOA and PFOS contamination in soil and groundwater at the former Fort Ord, and reporting the results of groundwater monitoring at OU2 for PFOA and PFOS. Therefore, referring to the document as a PA or the "PFAS Report" is incorrect and misleading, and the responses to comments herein refer to it as the "Technical Summary Report."

Because the Army PFAS Guidance was issued as the quality assurance project plan (QAPP) for PFOA/PFOS sampling and analysis for OU2 groundwater was being prepared, the Army PFAS Guidance was only applied to the extent practicable for the former Fort Ord basewide review given the scope and intent of the Technical Summary Report. However, the Army will request funding to perform a PA based on the results of the basewide review presented in the Technical Summary Report, though per the Army PFAS Guidance, Army installations are prioritized and sequenced for PAs consistent with the U.S. Department of Defense (DoD) "worst first" approach, and the former Fort Ord is a lower risk site because 1) the Army does not own or operate a potable water supply system there, 2) there is no hydraulic communication between shallow aquifers where PFAS might be found (A-Aquifer) and deeper aquifers of adjacent potable water supply systems (Lower 180-Foot Aquifer and 400-Foot Aquifer), and 3) PFOA and PFOS are not detected in the adjacent potable water supply systems.

USEPA Evaluation of the Response to General Comment 1: The response partially addresses the comment. As noted in the response, the Draft PFAS Report was not intended to represent a preliminary assessment (PA), but rather to respond to requests for information from the United States Environmental Protection Agency (EPA) and the California Department of Toxic Substances Control (DTSC). Given this, the Draft Final PFAS Report should clarify the objective of the document and that it is not representative of a PA and remove any recommendations related to removal of sites from further evaluation as such recommendations should be reserved for the PA. In addition, the Draft Final PFAS Report should clarify that a PA for the site will meet the requirements of the EPA's Guidance for Performing Preliminary Assessments Under CERCLA, EPA/540/G-91/013, dated September 1991 (the PA Guidance) and the Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS), dated September 2018 (the Army PFAS Guidance). Please revise the Draft Final PFAS Report to clarify the objective of the document, indicate that it is not representative of a PA, and remove any recommendations related to removal of sites from further evaluation. In addition, please revise the Draft Final PFAS Report to clarify that a PA for the site will meet the requirements of the PA Guidance and the Army PFAS Guidance

Army Response to the USEPA Evaluation of the Response to General Comment 1: *Referring to the document as a "PFAS Report" is incorrect and misleading, and the responses to comments herein refer to it as the "Technical Summary Report." The objective of the Technical Summary*

[4] Administrative Record No. BW-2785B.2.

Report is already stated in Section 1.0; however, Section 1.0 was revised state the document was not prepared as a PA, and that the Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy. There is sufficient evidence to support the conclusions and recommendations presented in the Technical Summary Report for removal of sites from further evaluation and these recommendations will not be removed from the document. However, the PA will include full evaluations of locations where releases of PFAS may have occurred and which merit evaluation per the Army PFAS Guidance. Specifically, these include:

- *Former fire training areas (FTAs) where AFFF is known or suspected to have been applied.*
- *Former AFFF storage locations.*
- *Aircraft crash sites where AFFF may have been applied for fire control.*
- *Aviation hangars and other buildings where AFFF is or was used in the fire suppression system and where a release may have occurred.*
- *Plating facilities that may have used PFAS-containing mist suppressants.*
- *Landfills where PFAS-containing materials may have been disposed.*
- *Wastewater treatment plants that may have received wastewater from facilities that used or disposed of PFAS-containing liquid effluents.*

If a site at the former Fort Ord does not fall within one of these categories, it does not merit further evaluation. Accordingly, a review of Table 1 of the Technical Summary Report indicates up to 32 sites at the former Fort Ord may merit evaluation in the PA.

GENERAL COMMENT 2: The Draft PFAS Report is missing information about migration pathways and exposure pathways. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the Draft PFAS Report should discuss the pathways for groundwater, surface water, soil, and air for the installation, including:

- Groundwater Use and Characteristics
    - Identification of private and municipal wells within a 4-mile radius (locations, distance, populations served, etc.);
    - Distance to the nearest drinking water well;
- Surface Water Use and Characteristics
    - Site locations with respect to floodplains and information on the flood frequency;
    - Identification of surface water bodies within 15 downstream miles (types, characteristics, etc.);
    - Identification of drinking water intakes within 15 downstream miles (locations, populations served, etc.);
    - Identification of fisheries, wetlands, and other sensitive environments within 15 downstream miles;
    - Distance to the nearest surface water body;
- Soil Exposure Pathways
    - Number of people living within a 200-foot radius and number of workers within a 200-foot radius;
    - Identification of schools and/or day care facilities within a 200-foot radius;

  - Populations within a 1-mile radius;
  - Identification of terrestrial sensitive environments;
- Air Exposure Pathways
  - Populations within a 4-mile radius; and
  - Identification of acreage of wetlands and sensitive environments within a 4-mile radius.

This information is key to the PA stage and is identified in the "core PA data elements" in the EPA's guidance document, *Federal Facilities Remedial Preliminary Assessment Summary Guide*, dated July 21, 2005 (the PA Summary Guide). Please revise the Draft PFAS Report to discuss groundwater, surface water, soil, and air pathways for the installation consistent with the information outlined in Army PFAS Guidance, PA Guidance, and the PA Summary Guide.

RESPONSE TO GENERAL COMMENT 2: *The Technical Summary Report is not intended to be a PA and was not revised per the comment.*

> **USEPA Evaluation of the Response to General Comment 2:** The response partially addresses the comment. See Evaluation of the Response to General Comment #1.
>
> ***Army Response to the USEPA Evaluation of the Response to General Comment 2:*** *The Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy.*

GENERAL COMMENT 3: The Draft PFAS Report contains insufficient site descriptions, operational histories, and waste characteristics for each site. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the following information for each site should be included:

- Site type (hanger, fire station, testing area, etc.);
- Site status (active or inactive);
- Years of operation and summary of operational history;
- Latitude and longitude coordinates;
- Physical characteristics (dimensions, size, structures, buildings, boarders, drainage patterns, etc.); and
- Identification of nearby drinking water wells, residences, and other sensitive receptors (schools, daycares, hospitals, etc.).
- Sensitive environments (wetlands, etc.)
- Current and former owners and site activities
- Types of waste generated, quantities, etc.
- Past regulatory activities, removals, investigations, and analytical data presented in tabular form and discussed

Please revise the Draft PFAS Report to expand the site descriptions for each of the 52 sites to include the information outlined in Figure 2-1 and Table 4-1 of the PA Guidance.

RESPONSE TO GENERAL COMMENT 3: *The Technical Summary Report contains sufficient information to evaluate historical activities with the potential to cause PFAS contamination in soil and groundwater at the former Fort Ord per USEPA's request, but it is not intended to be a PA and was not revised per the comment.*

USEPA Evaluation of the Response to General Comment 3: The response partially addresses the comment. See Evaluation of the Response to General Comment #1.

Army Response to the USEPA Evaluation of the Response to General Comment 3: *The Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy; however, as noted in the Response to Evaluation of the Response to General Comment #1, not all 52 sites described in the Technical Summary Report merit evaluation in the PA.*

GENERAL COMMENT 4: The Draft PFAS Report should include site-specific figures for each of the 52 sites assessed. A site-specific figure displaying the location of relevant site features (e.g., AFFF storage areas, floor drains, suspected runoff areas, etc.) should be included for each site evaluated. The figures currently provided in the Draft PFAS Report are only for sites identified as requiring further evaluation, and those figures do not include locations of relevant site features (such as the storm line drain discharge at Site 34, the Imhoff tank at Site 36, etc.). Please revise the Draft PFAS Report to include site-specific figures that depict relevant site features for each site evaluated.

RESPONSE TO GENERAL COMMENT 4: *Inclusion of site-specific figures in the Technical Summary Report is not necessary for sites that were eliminated from further evaluation after the primary and secondary site reviews because no activities occurred at these sites that could have resulted in a release of PFAS. However, the figures for sites identified as requiring further evaluation were revised and site-specific figures were added as appropriate to identify relevant site features per the comment.*

USEPA Evaluation of the Response to General Comment 4: The response does not address the comment. Given that the document does not represent a PA, it is inappropriate to eliminate sites from further evaluation. The PA should include site-specific figures for each of the 52 sites assessed, displaying the location of relevant site features (e.g., AFFF storage areas, floor drains, suspected runoff areas, etc.). Please ensure that the PA includes site-specific figures for each of the 52 sites assessed, displaying the location of relevant site features.

Army Response to the USEPA Evaluation of the Response to General Comment 4: *There is sufficient evidence to support the conclusions and recommendations presented in the Technical Summary Report for removal of sites from further evaluation and for additional investigation. These recommendations will not be removed from the document. Regardless, the Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy and will include site-specific figures as appropriate; however, as noted in the Response to Evaluation of the Response to General Comment #1, not all 52 sites described in the Technical Summary Report merit evaluation in the PA per the Army PFAS Guidance.*

GENERAL COMMENT 5: The Draft PFAS Report should provide a photographic log for each site evaluated. The photographic log should include a description of pertinent features identified during the site reconnaissance at each site (e.g., surface water flow direction, drainage structures, surface covers). Please revise the Draft PFAS Report to provide photographic documentation of the site reconnaissance at each of the 52 sites evaluated.

RESPONSE TO GENERAL COMMENT 5: *Site reconnaissance of all 52 sites evaluated exceeds the scope and intent of the Technical Summary Report. The primary and secondary reviews of basewide historical*

records was sufficient to determine whether activities may have occurred at a particular site that would have resulted in a release of PFAS (i.e., FTAs, AFFF storage, aircraft crashes, aviation hangars, landfilling, and wastewater treatment). If the primary or secondary review of basewide historical records determined these activities did not occur at a site, then a site reconnaissance was unnecessary and the site was eliminated from further evaluation. Photographs, where appropriate for the purposes of the basewide review, are included in the Technical Summary Report; however, historical photographs of many of the sites reviewed are included in the Draft Final Field Investigation and Data Review, Solid Waste Management Units, Fort Ord, California *(Administrative Record No. BW-1496A).*

> **USEPA Evaluation of the Response to General Comment 5:** The response does not address the comment. Given that the document does not represent a PA, it is inappropriate to eliminate sites from further evaluation. The PA should include photographic documentation of the site reconnaissance at each of the 52 sites evaluated to support any recommendations associated with the sites.
>
> ***Army Response to the USEPA Evaluation of the Response to General Comment 5:*** *The fact that the Technical Summary Report is not a PA is irrelevant. There is sufficient evidence to support the conclusions and recommendations presented in the Technical Summary Report for removal of sites from further evaluation and these recommendations will not be removed from the document. Regardless, the Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy and will include photographic documentation as appropriate; however, as noted in the Response to Evaluation of the Response to General Comment #1, not all 52 sites described in the Technical Summary Report merit evaluation in the PA per the Army PFAS Guidance.*

No USEPA Evaluation of the Response to General Comment 6 was provided. The Army assumes USEPA accepts the Response to General Comment 6.

GENERAL COMMENT 7: The Draft PFAS Report should discuss whether any foaming of the runway(s) or foam salutes occurred at the installation. Foaming of the runway was an aviation safety practice that consisted of spreading a layer of fire suppression foam on an airport runway to prevent fires prior to an emergency landing while foam salutes is a celebratory practice that consists of spraying two streams of AFFF to create an arch that planes would pass under during inaugural or final flights. Please revise the Draft PFAS Report to indicate whether foaming of the runway(s) or any foam salutes occurred. If so, please revise the Draft PFAS Report to provide information on how many times this occurred on each runway and the volume of foam used.

RESPONSE TO GENERAL COMMENT 7: *Interviews with former Fort Ord fire department personnel indicate no foaming of the runways or foam salutes occurred at Fritzsche Army Airfield (FAAF). There was one reported emergency landing at FAAF, as described in in Section 2.3.3 of the Technical Summary Report; however, AFFF was not deployed for this incident. Water salutes are a relatively common practice for inaugural or final flights; however, AFFF or other foams are not used because they can foul aircraft engine intakes and cause engine damage. Additionally, helicopters were the primary aircraft used at Fort Ord, and a foam salute for a helicopter to pass through while the rotors are operating would result in an undesirable distribution of the foam.*

USEPA Evaluation of the Response to General Comment 7: The response addresses the comment; however, documentation of personnel interviews (e.g., completed interview questionnaire) were not provided and/or referenced to substantiate the response. Please revise the Draft Final Report to include documentation of interviews conducted with the former Fort Ord fire department personnel to substantiate that no foaming of the runways or foam salutes were conducted. In addition, please ensure that the PA includes documentation of any interviews conducted.

Army Response to the USEPA Evaluation of the Response to General Comment 7: *The Technical Summary Report will remain consistent with historical practice for documentation of interviews at the former Fort Ord and was not revised; however, the PA will include documentation of interviews conducted consistent with applicable guidance.*

GENERAL COMMENT 8: The Draft PFAS Report regularly refers to personal communication with the former Chief of the Monterey Fire Department, Mr. Jack Riso. Yet, documentation of these interviews are not provided. As a result, the information obtained from Mr. Riso cannot be substantiated. Per the PA Guidance, please revise the Draft PFAS Report to provide documentation of the referenced personal communication information used during the evaluation.

RESPONSE TO GENERAL COMMENT 8: *The interviews with Chief Riso are documented in Section 4.0 (References). This is consistent with historical practice for documentation of interviews at the former Fort Ord and, as noted in the responses to previous comments, the Technical Summary Report is not intended to be a PA. The Technical Summary Report was not revised per the comment.*

USEPA Evaluation of the Response to General Comment 8: The response partially addresses the comment. While the personal communication with Chief Riso is documented in Section 4.0 (References), documentation of the interview (e.g., completed interview questionnaire) is not provided and/or referenced. Please revise the Draft Final Report to include documentation of the interview conducted with Chief Riso. In addition, please ensure that the PA includes documentation of any interviews conducted.

Army Response to the USEPA Evaluation of the Response to General Comment 8: *The Technical Summary Report will remain consistent with historical practice for documentation of interviews at the former Fort Ord and was not revised; however, the PA will include documentation of interviews conducted consistent with applicable guidance.*

No USEPA Evaluations of the Responses to General Comments 9 through 12 were provided. The Army assumes USEPA accepts the Responses to General Comments 9 through 12.

GENERAL COMMENT 13: The Draft PFAS Report should summarize data for all PFAS analytes, not just PFOA and PFOS, detected in the narrative of the report. Please also include this information in Table 3, Figure 6, Figure 7, and elsewhere as appropriate.

RESPONSE TO GENERAL COMMENT 13: *Per the response to General Comment 1, only PFOA and PFOS were sampled, analyzed for, and reported by the analytical laboratory. The Technical Summary Report was not revised per the comment; however, it is recommended in Section 3.0 that, for any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory should report results for the 18 PFAS compounds listed in the Army PFAS Guidance.*

USEPA Evaluation of the Response to General Comment 13: The response partially addresses the comment. Based on EPA's updated Per- and Polyfluoroalkyl Substances (PFAS) Action Plan, EPA 823R18004, dated February 2020 (PFAS Action Plan), Methods 537.1 and 533 should be utilized for evaluating PFAS, which tests for a total of 29 PFAS. Please ensure that any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory reports results for the 29 PFAS compounds listed in the PFAS Action Plan.

Army Response to the USEPA Evaluation of the Response to General Comment 13: *Future sampling for PFAS analysis at the former Fort Ord will be consistent with DoD and Army policy and guidance that is applicable at the time the sampling and analysis is conducted.*

No USEPA Evaluation of the Response to General Comment 14 was provided. The Army assumes USEPA accepts the Response to General Comment 14.

No USEPA Evaluations of the Responses to Specific Comments 1 through 7 were provided. The Army assumes USEPA accepts the Responses to Specific Comments 1 through 7.

SPECIFIC COMMENT 8: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete's Pond and Pete's Pond Extension, Page 17: Insufficient information is provided to substantiate the elimination of this site from further evaluation. For example, Section 2.6.2 states that, "Though AFFF may have been discharged at the wash rack associated with Building 4900 during maintenance activities, the volumes would have been small and intermittent, and would have mostly been contained in the oil/water separator;" however, information to substantiate that the volume of AFFF charged to the wash rack was small and intermittent is not provided and/or referenced. As such, the statements provided supporting elimination of the site from further evaluation are circumstantial and based on assumption rather than fact. Please revise the Draft PFAS Report to include factual evidence to support the elimination of this site from further evaluation, or alternately recommend further evaluation of this site.

RESPONSE TO SPECIFIC COMMENT 8: *Chief Riso previously stated the AFFF tanks on fire department vehicle were flushed at Building 2722 (Site 12) and Building 4900 (Site 16) before servicing; however, he has clarified that AFFF was drained out of the tanks at the Main Garrison Fire Station prior to servicing at these facilities, and the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years. This additional information indicates the amount of AFFF potentially discharged at Site 16 was negligible. The Technical Summary Report was revised to include this information.*

USEPA Evaluation of the Response to Specific Comment 8: The response does not address the comment. Documentation of the interview (e.g., completed interview questionnaire) with Chief Riso, substantiating the information provided in the response, is not provided and/or referenced. Further, supporting evidence (e.g., analytical sampling results) supporting the determination that the amount of aqueous film forming foam (AFFF) potentially discharged at Site 16 was negligible is not provided and/or included. Please revise the Draft Final Report to include documentation of the interview conducted with Chief Riso. In addition, please revise the Draft Final PFAS Report to clarify that the document is not representative of a PA and remove any recommendations related to removal of sites from further evaluation. Also, please ensure that the PA includes documentation of all interviews conducted

Army Response to the USEPA Evaluation of the Response to Specific Comment 8: *The Technical Summary Report will remain consistent with historical practice for documentation of interviews at the former Fort Ord and was not revised; however, the PA will include documentation of interviews conducted consistent with applicable guidance. Section 1.0 was revised state the document was not prepared as a PA, and that the Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy. There is sufficient evidence to support the conclusions and recommendations presented in the Technical Summary Report for removal of sites from further evaluation and these recommendations will not be removed from the document.*

No USEPA Evaluation of the Response to Specific Comment 9 was provided. The Army assumes USEPA accepts the Response to Specific Comment 9.

SPECIFIC COMMENT 10: Section 3.5, Site 34 – FAAF Aviation Hangars, Page 27: The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 34. Although the text states that "long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible," the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 34.

RESPONSE TO SPECIFIC COMMENT 10: *Section 3.5 (now Section 3.4) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

USEPA Evaluation of the Response to Specific Comment 10: The response partially addresses the comment. Given the persistence and mobility of PFAS, lack of knowledge and documentation of former storage and use of AFFF, and location of soil potentially impacted by PFAS as presented in the Draft Final PFAS Report, groundwater sampling should be performed at Site 34. Please revise the Draft Final PFAS Report to clarify that groundwater sampling is warranted at Site 34. In addition, please ensure the PA recommends groundwater sampling at Site 34 be performed.

Army Response to the USEPA Evaluation of the Response to Specific Comment 10: *The persistence and mobility of PFAS is acknowledged and a recommendation for groundwater monitoring was added to Section 3.4; however, Site 34 and any recommendations for additional soil and groundwater investigation will be re-evaluated in the planned PA for PFAS at the former Fort Ord.*

SPECIFIC COMMENT 11: Section 3.7, Site 40A – East FAAF Helicopter Defueling Area, Page 28: The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 40A. Although the text states that "long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible," the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 40A.

RESPONSE TO SPECIFIC COMMENT 11: *Section 3.7 (now Section 3.6) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

> **USEPA Evaluation of the Response to Specific Comment 11:** The response partially addresses the comment. Given the persistence and mobility of PFAS, lack of knowledge and documentation of former storage and use of AFFF, and location of soil potentially impacted by PFAS as presented in the Draft Final PFAS Report, groundwater sampling should be performed at Site 40A. Please revise the Draft Final PFAS Report to clarify that groundwater sampling is warranted at Site 40A. In addition, please ensure the PA recommends groundwater sampling at Site 40A be performed
>
> ***Army Response to the USEPA Evaluation of the Response to Specific Comment 11:*** *The persistence and mobility of PFAS is acknowledged and a recommendation for groundwater monitoring was added to Section 3.6; however, Site 40A and any recommendations for additional soil and groundwater investigation will be re-evaluated in the in the planned PA for PFAS at the former Fort Ord.*

No USEPA Evaluation of the Response to Specific Comment 12 was provided. The Army assumes USEPA accepts the Response to Specific Comment 12.

APPENDIX H

Responses to CCRWQCB Comments on the Draft Final Technical Summary Report

Responses to Comments on the Draft Final Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the Central Coast Regional Water Quality Control Board (CCRWQCB)[2]

SPECIFIC COMMENT 1: Section 2.2.6 – Building 514 FAAF Fire and Rescue Station – This section was added to the Report in response to the request from the USEPA and Central Coast Water Board to perform a review of fire department locations for potential Aqueous Film-Forming Foam (AFFF) storage and nozzle testing areas. AFFF was reportedly stored at Building 514 and discharged nearby at Site 40A, which is part of the PFAS investigation. The Report indicates that based on personal communication with Mr. Jack Riso (Chief Riso), the former Chief of the Monterey Fire Department, there is no evidence of other discharges at this location. Unless additional evidence can be provided to substantiate that a release did not occur from the AFFF that was stored and/or used at Building 514, this area should be included in the per- and poly fluoroalkyl substances (PFAS) soil and groundwater investigation activities.

RESPONSE TO SPECIFIC COMMENT 1: *The presence of a storage facility is not evidence of a release in of itself, and additional investigation at Building 514 is not justified based on the information available. The Technical Summary Report was not revised per the comment; however, the U.S. Department of the Army (Army) intends to conduct a preliminary assessment (PA) for PFAS at the former Fort Ord and Building 514 will be evaluated in the PA as an AFFF storage facility per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release at Building 514, then an investigation may be recommended.*

SPECIFIC COMMENT 2: Section 2.2.10 – Building 4400 Main Garrison Fire Station – This section was added to the Report in response to the request from the USEPA and Central Coast Water Board to perform a review of fire department locations for potential AFFF storage and nozzle testing areas. Chief Riso reported that AFFF was stored at the Main Garrison Fire Station and indicated that it was likely limited to Building S-4403 as Buildings 4400 and 4401 do not have appropriate storage facilities. It was also reported that AFFF tanks on fire department vehicles were drained at this location when repairs on the tanks were needed and some AFFF could have leaked or spilled in the grassy areas adjacent to the fire station. While the releases may have been infrequent, there is the potential for a release of PFAS at this site which warrants additional investigation. Please revise the Report to include this area in the PFAS soil and groundwater investigation activities.

RESPONSE TO SPECIFIC COMMENT 2: *A significant release of PFAS at this site is unlikely based on the information available. The Technical Summary Report was not revised per the comment; however, the Army intends to conduct a PA for PFAS at the former Fort Ord and Building 4400 (along with Building S-4403) will be evaluated in the PA as an AFFF storage facility per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release at Building 4400 or Building S-4403, then an investigation may be recommended. However, these facilities are adjacent to Site 10, which is already*

[1] Administrative Record No. (AR#) OU2-722A.

[2] In a letter dated May 5, 2020 (AR# OU2-722A.7). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

recommended for additional investigation in the Technical Summary Report (Section 3.3). Due to their proximity, any PFAS impacts to groundwater from activities at these facilities can be assessed as part of the Site 10 investigation.

COMMENTS ON APPENDIX E – RESPONSE TO CCRWQCB COMMENTS

COMMENT 1: Response to General Comment 1 – The response to General Comment 1 indicates that there is no hydraulic communication between the shallow aquifers at the Operable Unit (OU) 1, Site 12, Site 34, Site 36, and Site 40 and the deeper aquifers and that a review of domestic and municipal water supply wells within a minimum of a two-mile radius is outside of the scope of the Technical Summary Report. While this request may be outside of the scope of the Technical Summary Report, there is the possibility for hydraulic communication between aquifers due to poorly constructed water supply wells or variations in lithology that may unintentionally act as conduits from the shallow to deeper aquifers. Therefore, please include a review of domestic and municipal wells within a 2-miles radius in the report for the PFAS assessment activities.

RESPONSE TO COMMENT 1: *The aquifer system at the former Fort Ord is very well characterized, with groundwater investigations ongoing since the 1980s.[3] Data from these investigations show that the Fort Ord-Salinas Valley Aquitard (FO-SVA), which separates the A-Aquifer and the Upper 180-Foot Aquifers, is relatively impermeable, except for three failed or incorrectly installed wells in the area of Operable Unit Carbon Tetrachloride Plume (OUCTP) that penetrated the FO-SVA and allowed chemicals of concern to migrate vertically from the A-Aquifer to the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer. Once identified, these wells were decommissioned. The Intermediate 180-Foot Aquitard, which separates the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer, has been found to be discontinuous east of the Fort Ord Landfills, creating a natural conduit between these two aquifers (see Section 1.2). There is no evidence of other conduits allowing hydraulic communication between aquifers in the areas of OU1, Site 12, Site 34, Site 36, and Site 40 to justify including the review suggested by the comment in the Technical Summary Report. In particular, a review of boring logs for wells in the area of the former Fritzsche Army Air Field shows the FO-SVA ranges from 28 to 46 feet thick with no indication of discontinuities. However, the Army intends to conduct a PA for PFAS at the former Fort Ord and the PA will include information on locations of drinking water wells and maps illustrating the relative positions of potential PFAS sites. The PA will evaluate drinking water wells within the area downgradient of suspected PFAS sites at the former Fort Ord where the existing conceptual site model and groundwater modeling indicate a potentially complete exposure pathway.*

COMMENT 2: Response to General Comment 2 – This response indicates that including a summary table for all available PFAS sampling results for the Marina Coast Water District and any other public water supply well within a 2-mile radius of former Fort Ord is outside of the scope of the Technical Summary Report and not relevant to the basewide review. While this request may be outside the scope of the Technical Summary Report, it is relevant to the basewide review and the PFAS detections in groundwater at the OU2 Landfill Area, which is located upgradient from the former Fort Ord supply

[3] For example, see the Basewide Hydrogeologic Characterization in Volume II of the Basewide Remedial Investigation/Feasibility Study (RI/FS; AR# BW-1283A), the Operable Unit 1 Remedial System Modification Plan (AR# OU1-509), the Operable Unit 2 (OU2) Revised Treatment System Plan (AR# OU2-584), the OU2 Plume Delineation Investigation Report (AR# OU2-585), the Carbon Tetrachloride Investigation Report (AR# BW-1997U), the OUCTP RI/FS (AR# OUCTP-0011P), and the Sites 2 and 12 RI/FS Addendum (AR# BW-2721B).

wells currently operated by Marina Coast Water District. It is acknowledged and appreciated that the Report was revised to include sampling OU2 monitoring wells in the Upper and Lower 180- Foot Aquifers located upgradient of the former Fort Ord water supply wells. Please provide the requested summary table of all available PFAS sampling results for the Marina Coast Water District and any other public water supply well within a 2-mile radius of former Fort Ord in the report for the PFAS soil and groundwater investigation activities.

RESPONSE TO COMMENT 2: *Inclusion of the summary table suggested by the comment is outside the scope of the Technical Summary Report and not relevant to the basewide review (see response to Comment 1). The Technical Summary Report was not revised per the comment; however, the Army intends to conduct a PA for PFAS at the former Fort Ord and the PA will include information on locations of drinking water wells and maps illustrating the relative positions of potential PFAS sites. The PA will evaluate drinking water wells within the area downgradient of suspected PFAS sites at the former Fort Ord where the existing conceptual site model and groundwater modeling indicate a potentially complete exposure pathway is possible (i.e., primary target wells). The Army cannot assume responsibility for potential sources of PFAS outside the former Fort Ord and therefore will not evaluate or include data for drinking water wells where there is no likely exposure pathway originating at the former Fort Ord (e.g., wells that are upgradient of suspected PFAS sites).*

COMMENT 3: Response to General Comment 3 – The initial comment requested updating the text to reference the California State Water Board's Department of Drinking Water (DDW) PFAS notification levels for PFOA (5.1 ppt) and PFOS (6.5 ppt). The response indicates that the text will not be updated per this comment as stated in the quality assurance project plan (QAPP), the purpose of the groundwater sampling effort was only to screen for the presence of PFOA and PFOS in groundwater associated with OU2 at the former Fort Ord and compare the results to the USEPA Health Advisory levels to determine the need for further action. It is acknowledged that these levels may not necessarily be used as screening levels however, we respectfully request that the text acknowledge the DDW drinking water system notification levels for PFOA and PFOS as well as the February 6, 2020 revised response levels of 10 ppt for PFOA and 40 ppt for PFOS as there are active water supply wells in the vicinity of former Fort Ord.

RESPONSE TO COMMENT 3: *Section 1.3 was revised to note the DDW notification and response levels for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS); however, as previously noted, the presence of active water supply wells in the vicinity of former Fort Ord is not relevant to the basewide review.*

COMMENT 4: Response to General Comment 6 – The Central Coast Water Board indicated that groundwater sampling should be performed to confirm the presence or absence of PFAS at all investigation areas. The response indicates that groundwater investigations may be warranted in downgradient areas depending on the analytical results for soil samples. As stated in the initial comment, groundwater should be sampled at all PFAS investigation areas regardless of the soil sampling results as the source areas in soil may not be easily identified/located or were previously removed. Please revise the Report to include groundwater sampling at all investigation areas.

RESPONSE TO COMMENT 4: *Due to the mobility of PFAS, the text in Sections 3.4 and 3.6 and Table 2 were revised to recommend groundwater monitoring at Sites 34 and 40A; however, based on the location of Site 36 near the boundary of the former Fort Ord and historical groundwater monitoring*

results at this site, no additional groundwater investigation is recommended at this time. Regardless, the Army intends to conduct a PA for PFAS at the former Fort Ord and Sites 34, 36, and 40A, and any recommendations for additional soil and groundwater investigation, will be re-evaluated in the PA.

COMMENT 5: Response to Specific Comment 4: Section 2.6.1, Site 12 – Lower Meadow Disposal Area – The Central Coast Water Board requested groundwater sampling at Outfall 15 and Outfall 31 discharge areas as part of the Site 12 PFAS investigation. The response to this comment indicates that Chief Riso provided further clarification that AFFF was drained out of the tanks on fire department vehicles at the Main Garrison Fire Station prior to servicing at Building 2722 (Site 12) and Building 4900 (Site 16) and that the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years and therefore, the original recommendation for PFAS groundwater investigation in this area was removed. Although the Report indicates that releases of PFAS were likely residual and infrequent, please revise the Report to include the original groundwater sampling proposed at Site 12 as there is the potential for a release in this area. Additionally, please revise the Report to indicate that based on the results from the proposed groundwater sampling at Site 12, the need for additional groundwater sampling at Outfall 15 and Outfall 31 discharge areas will be evaluated.

RESPONSE TO COMMENT 5: *A significant release of PFAS at Site 12 is unlikely based on the information available, and Site 12 does not merit additional evaluation with respect to fire department vehicle servicing at Building 2722 per the Army PFAS Guidance. No additional recommendations for sampling will be added to the Technical Summary Report because the Army intends to conduct a PA for PFAS at the former Fort Ord. Site 12 will be evaluated in the PA as a disposal site and washout area per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release at Site 12, then an investigation may be recommended.*

COMMENT 6: Response to Specific Comment 5: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete's Pond and Pete's Pond Extension – Specific Comment 5 indicated that Site 16 should be included in the PFAS groundwater investigation activities. The response to Specific Comment 5 indicates that the amount of AFFF potentially discharged at Site 16 was negligible. Although the Report indicates that releases of PFAS in this area were likely residual and infrequent, Site 16 should still be included in the PFAS investigation based on the potential for a release in this area.

RESPONSE TO COMMENT 6: *A significant release of PFAS at Site 16 is unlikely based on the information available, and Site 16 does not merit additional evaluation with respect to fire department vehicle servicing at Building 4900 per the Army PFAS Guidance. No additional recommendations for sampling will be added to the Technical Summary Report because the Army intends to conduct a PA for PFAS at the former Fort Ord. Site 16 will be evaluated in the PA as a disposal site and washout area per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release at Site 16, then an investigation may be recommended.*

COMMENT 7: Response to Specific Comment 6: Section 2.7.2, Site 2 – Main Garrison Sewage Treatment Plant – Specific Comment 6 indicated that Site 2 should be included in the PFAS groundwater investigation activities. The Response to Specific Comment 6 indicates that there were no significant releases of AFFF to the sanitary sewer system that would justify groundwater sampling as the releases of AFFF to the sanitary sewer from Sites 12 and 16 were reportedly residual and infrequent in nature and would have been contained to the sludge in the asphalt-lined drying beds. Therefore, please revise the

Report to indicate that the need for additional PFAS investigation at Site 2 will be further evaluated based on PFAS sampling results at Site 12 and Site 16.

RESPONSE TO COMMENT 7: *Per the responses to Comments 5 and 6, there are no suspected significant releases of AFFF at Site 12 and 16 that would justify additional investigation at those sites; therefore, additional PFAS investigation at Site 2 cannot be justified and the Technical Summary Report was not revised per the comment. However, the Army intends to conduct a PA for PFAS at the former Fort Ord and Site 2 will be evaluated in the PA as a wastewater treatment plant that may have received wastewater from facilities that disposed of PFAS-containing liquid effluents per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release at Site 2, then an investigation may be recommended.*

COMMENT 8: Response to Specific Comment 9: Section 3.3 – Site 10 – Burn Pit/Fire Training Area – This section was updated to include monitoring wells MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 in the PFAS groundwater investigation for Site 10. The text references the well locations on Figure 19. Please change view of Figure 19 to show the locations of wells MW-OU2-54-180 and MW-OU2-62-180.

RESPONSE TO COMMENT 8: *Figure 19 was revised per the comment.*

APPENDIX I

Responses to FOCAG Comments on the Draft Final Technical Summary Report

Responses to Comments on the Draft Final Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by the Fort Ord Community Advisory Group (FOCAG)[2]

COMMENT 1: Reading the BRAC response to EPA's General Comment 5 in the Subject document, it says, "If the primary or secondary review of base wide historical records determine these activities did not occur at a site, then a site reconnaissance was unnecessary and the site was eliminated from further evaluation."

The FOCAG reminds BRAC and the Regulators that shortly after BRAC closed Fort Ord, the majority of base-wide historical records were gathered up and shipped off site, reputed to have gone to Ft. Lewis. The point to this is the absence of records should not be convincing evidence to just eliminate further evaluation.

RESPONSE TO COMMENT 1: *As shown in Section 4.0 of the Technical Summary Report, many of the documents referenced were prepared prior to the closure of Fort Ord in September 1994. These documents include information from many types of historical sources that was collected, researched, and incorporated. These documents are available in the Fort Ord Administrative Record and include sufficient information from before Fort Ord closed to assess in the primary and secondary reviews whether sites at the former Fort Ord were of the types with the greatest likelihood of per- and polyfluoroalkyl substances (PFAS) releases (fire training areas, aircraft crash sites, aviation hangars, landfills, etc.). The absence of documents was not a factor in eliminating sites from further evaluation.*

COMMENT 2: Former Fort Ord was the U.S. Army headquarters for CDEC (Combat Development Experimentation Command). Yes, some of the experimentation was implemented at Camp Roberts in San Luis Obispo County. However, Fort Ord was where the Arms Manufacturers and Supply Manufacturers representatives would arrive at to meet with CDEC and show off their wares. These records are apparently classified. A scaled down CDEC continued to be operational in Monterey County near Fort Ord through the 1990's. The point to this is; given Fort Ord's history of wild land fires burning on Army training ranges, experimental fire retardants may well have been tried here.

RESPONSE TO COMMENT 2: *A review of historical records indicates CDEC used facilities at Fort Ord for administrative functions and CDEC field experiments were conducted at Fort Hunter Liggett. The USACDEC Experimentation Manual states that the CDEC used Fort Ord "only rarely" for field experimentation as Fort Hunter Liggett was preferred due to the isolation from urban populations and dark night skies making it a "excellent site" for combat training experimentation.[3] Additionally, documents in the Fort Ord Administrative Record that reference CDEC experiments indicate these activities took place at Fort Hunter Liggett:*

[1] Administrative Record No. OU2-722A.
[2] In a letter dated May 4, 2020 (Administrative Record No. OU2-722A.5). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.
[3] USACDEC Experimentation Manual dated Oct. 1981. https://apps.dtic.mil/dtic/tr/fulltext/u2/a124297.pdf

- *Update of the Initial Installation Assessments of Fort Ord and Subinstallations, Presidio of Monterey and Fort Hunter Liggett*[4]
- *Environmental Restoration Program Planning Guide for Fort Ord, Fort Hunter Liggett and, Presidio of Monterey, Monterey, California*[5]
- *Draft Site Investigations Fort Ord and Fort Hunter Liggett Part 1- Report*[6]
- *Final Site Investigation Report, Fort Ord and Fort Hunter Liggett, California, Part I – Text*[7]
- *Final Land Use Baseline Study of Fort Ord*[8]

Per the USACDEC Experimentation Manual, the mission of the CDEC was combat development testing and training development testing, and the listed CDEC experiments indicate a focus on military tactics and hardware functionality in various environments using conventional weapons. There was one experiment at Fort Ord that Fort Hunter Liggett was not suited for: testing of a laser guidance system in foggy conditions. Experimental firefighting techniques and retardants were not within the CDEC mission scope and there is no evidence such experiments were conducted at the former Fort Ord.

COMMENT 3a: U.S. EPA Comment 8 says, "The Draft PFAS Report regularly refers to personal communication with the former chief of the Monterey Fire Department, Mr. Jack Riso. Yet, documentation of these interviews are not provided. As a result, the information obtained from Mr. Riso cannot be substantiated…"

The response to General Comment 8 refers the reader to Section 4.0 of the Subject document. Going to Section 4.0, page 40, one finds four "Personal communication" with Riso, Jack, Chief (retired), Presidio of Monterey Fire Department;

April 30, 2019
May 8, 2019
December 16, 2019
January 20, 2020

Meaning no disrespect to retired Chief Riso, his integrity, memories, or his good intentions, Mike Weaver also has a perspective on the burns and ordnance induced wildfires on former Fort Ord because I grew up immediately across Highway 68 from Fort Ord beginning in 1951. I have a 68-year history from a hilltop looking over hundreds of acres of Fort Ord. These years took in Fort Ord transitioning from infantry training for WWII, to the Korean War, the Viet Nam War, and training for other conflicts. I remember well witnessing the wild land range fires.

RESPONSE TO COMMENT 3a: *As also noted in the response to U.S. Environmental Protection Agency (USEPA) General Comment 8, the documentation of interviews with Chief Riso in the Technical Summary Report is consistent with historical practice at the former Fort Ord. Specific information obtained during the interviews is incorporated into the associated report; however, full transcripts of interviews are not appended to the reports. Per the U.S. Department of the Army (Army) PFAS Guidance, the Army plans to conduct a Preliminary Assessment (PA) for PFAS at the former Fort Ord consistent with USEPA PA*

[4] Administrative Record No. BW-0013.
[5] Administrative Record No. BW-0042.
[6] Administrative Record No. BW-0091.
[7] Administrative Record No. BW-0099.
[8] Administrative Record No. BW-2414.

guidance. A PA is a part of the "Superfund" process, and PA investigators collect readily available information and conduct a site and environs reconnaissance. This will include interviewing persons who are knowledgeable about historical activities that may have resulted in the release of PFAS at the former Fort Ord, such as Chief Riso. Accordingly, Mr. Mike Weaver will be invited to participate in a telephone interview as part of the PA. The product of the PA will be a narrative report that summarizes what is known about the site and what is inferred or assumed, the activities conducted during the PA, and information researched.

COMMENT 3b: In response to FOCAG's comment 1.1 in the Draft, authors Ahtna Environmental, Inc. says; "It is noted in Section 2.8 that water tenders were used historically to fight fires in the inland ranges; therefore, there is no suspected release of PFAS associated with Aqueous Film-Foaming Foam (AFFF) in the Inland Ranges…"

Definition, water tenders; a truck equipped with a water tank and used especially in firefighting.

Growing up across from former Fort Ord I witnessed many fires on the Army Base. Army bulldozers did a pretty good job of creating and maintaining fire breaks, however, there were thousands of acres to take care of, and it was not a priority. Commanding Generals at Fort Ord were changed out every few years. After a big fire in the hills on the Base, us kids would watch T.V. news (rabbit ear antennae) and a reporter for Channel 8 would interview the current Commanding General asking, what happened? Each Commanding General would tell the listening audience it was an accident, but, he would assure the audience, that it will never happen again! This got to be a running joke in the household. "Look Dad, it is a different General, again."

We would see the smoke from the hilltop, often following infantry maneuvers, hot shrapnel, or flares, would ignite dry grass. My Mother would call my Father on the party phone line telling him to come home immediately. Then she would go outside and set up the garden hoses. Looking out over Fort Ord we would see infantry troops dispatched with shovels to dig fire breaks. Army Bulldozers would arrive and could be heard and seen also furiously digging firebreaks ahead of the leaping Flames. Then, the planes would begin to go overhead, dropping clouds of fire retardant on the fire. What types of fire retardant you might wonder? I do not know, I do know that it seemed to work well. Maybe it was some of the experimental stuff munitions manufacturers were offering to CDEC.

I also know that I don't recall seeing water tender trucks on those steep hillsides, ridges, or rough dirt clod fire breaks.

RESPONSE TO COMMENT 3b: *Noted that water tender trucks may have had difficulty accessing some areas of the former Fort Ord and aircraft may have been used instead for fighting fires in those areas; however, AFFF is a Class B fire retardant designed to extinguish flammable and combustible liquid fires and would not have been used on rangeland wildfires. Class A foam retardants do not contain PFAS and are the preferred fire retardant for wood-based fires. Historically, the fire department mainly used water for fire suppression during fires on the ranges and has stated Class A foams were used for pre-treatment and fires that jumped fire lines. Based on this information, the aircraft described in the comment were likely deploying water. As noted in the response to Comment 2, experimental firefighting techniques and retardants were not within the CDEC mission scope and there is no evidence such experiments occurred at the former Fort Ord.*

COMMENT 3c: Response to Comment 1-2, "The Frog Pond was not tested for PFAS". FOCAG knows the Frog Pond near Del Rey Oaks to be adjacent to a rather large Army Tank training area on former Fort Ord. Something was in that water and killing those frogs.

RESPONSE TO COMMENT 3c: *The purpose of the Technical Summary Report is to review Army activities with the potential to cause perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at the former Fort Ord. The area of the Frog Pond was not tested for PFAS because there is no evidence of any Army activity in this area that would have resulted in a release of PFAS to the environment. Additionally, the Army has conducted numerous surveys for California Tiger Salamander (CTS), another amphibian, in vernal pools across the Inland Ranges, which are adjacent to the Frog Pond area, and there have been no documented die-offs of CTS. However, unlike the CTS habitat in the Inland Ranges, the Frog Pond area is an isolated remnant of a much larger ecosystem that has undergone significant changes in the last several decades due to human influence, including cattle grazing and construction of Highway 218, North-South Road (now General Jim Moore Boulevard), and the Noche Buena subdivision, which permanently disrupted the natural hydrologic cycle and system for the Frog Pond.[9] As a result, the Frog Pond landscape has evolved from marshland to grassland to dense willow riparian forest,[10] and potential changes in frog populations are more likely the result of this evolution than any Army activities in adjacent areas.*

COMMENT 3d: Response to Comment 1-3 "…the Fort Ord Landfills historically consisted of six landfill areas (lettered A through F)…" The point to the FOCAG's concern is there were and are other relatively close landfills to former Fort Ord and Landfills can be a source for PFAS contamination of soil and groundwater. One little known Landfill was the City of Monterey Landfill now on the westernmost side of the Pasadera housing subdivision on Highway 68. Pasadera (formerly Bishop Ranch) is immediately adjacent to Fort Ord's South Boundary Road. At one time there were burns in this landfill. A Condition of Project Approval for the housing subdivision was that vapor barriers were to be installed around foundations and basements for houses to be built near the old landfill. The Bishop Water Company was subsequently acquired by California Water Service, who now owns it as a separate water company from it's Monterey Peninsula water service.

RESPONSE TO COMMENT 3d: *Based on the information provided in the comment, the City of Monterey Landfill is synonymous with the Laguna Seca Landfill. This landfill was not evaluated for PFAS because there is no evidence of any Army activity in this area that would have resulted in a release of PFAS to the environment. The Army did lease this area in prior years, but it was revested to the owner April 1, 1944,[11] before PFAS were invented, and the Laguna Seca Landfill was operated from 1953 to 1966,[12] which is after the Army leased the property and before AFFF came into use at Army installations.*

COMMENT 3e: Regarding the impermeable aquitards underlying former Fort Ord and preventing toxins from migrating to lower level aquifers. That is what the FOCAG has been told before. The Army's experts

[9] http://www.fortag.org/frogpond/docs/1994_09_FrogPondManagementPlan_StatusUncertain.pdf
[10] http://www.fortag.org/frogpond/index_2_history.htm
[11] Real Estate Map of the Former Fort Ord dated April 27, 1948.
[12] From "Historical Highlights of the Monterey Regional Waste Management District (MRWMD)" (http://www.mrwmd.org/wp-content/uploads/2013/03/Historical-Highlights.pdf), 2011 Annual Report, and MRWMD.

have been wrong before…..the reason there are so many monitoring wells on and adjacent to former Fort Ord now. The impermeable aquitard must've had a hole in it.

RESPONSE TO COMMENT 3e: *The Army has installed numerous monitoring wells on and around the former Fort Ord to measure groundwater elevations and concentrations of chemicals of concern (COCs) in groundwater. Additionally, the soil data collected during installation of these wells is used to map aquifers and aquitards under the former Fort Ord in three dimensions. Together, these data are used to determine COC plume extents and evaluate the effectiveness of the Army's groundwater remedial systems. These data also show that the Fort Ord-Salinas Valley Aquitard (FO-SVA), which separates the A-Aquifer and the Upper 180-Foot Aquifers, is relatively impermeable except for three failed or incorrectly installed wells in the area of Operable Unit Carbon Tetrachloride Plume that penetrated the FO-SVA and allowed COCs to migrate vertically from the A-Aquifer to the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer. Once identified, these wells were decommissioned by injecting a cement grout sealing material into the well casing under pressure. The Intermediate 180-Foot Aquitard, which separates the Upper 180-Foot Aquifer and the Lower 180-Foot Aquifer, has been found to be discontinuous east of the Fort Ord Landfills, creating a natural conduit between these two aquifers (see Section 1.2).*

APPENDIX J

Responses to M.A. Wright Comments on the Draft Final Technical Summary Report

Responses to Concerns Regarding the Draft Final Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California[1] submitted by M.A. Wright[2]

Regarding:

- the Draft Final Report, dated 02/27/2020, titled "Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2 Former Fort Ord, California" AND
- interview in Monterey County Weekly, dated 04/23/2020, with William Collins, BRAC *[Base Realignment and Closure]* Environmental Co-ordinator for Fort Ord, titled "Forever Chemicals: Army report analyzes the risk of PFAS chemical contamination on Fort Ord" : http://www.montereycountyweekly.com/news/local_news/army-report-analyzes-the-risk-of-pfas-chemical-contamination-on-fort-ord/article_e12585a2-84f1-11ea-a0df-27f39759febe.html

A. Introduction and Executive Summary

I am a Monterey Peninsula homeowner taxpayer layman, who resides approximately 5 miles from the southern border and 13 miles from the northern border of former Fort Ord army base, an EPA designated National Priority Superfund toxic waste site. I am not a member of any local or state activist group and my comments are not meant to be personal criticisms in nature nor should they be taken as such by any individual federal government employee or contractor.

My observations regard disparities, omissions, and inaccuracies in what BRAC Environmental Co-ordinator, Wm. Collins claimed in a 04/23/2020 Monterey County Weekly interview about Ahtna's report on "forever chemicals"; what was actually done by Ahtna in its "Basewide review of Historical Activities at former Fort Ord" relative to my expectations. Based on comments made by the regulatory agencies at the USEPA, DTSC, CCRWQCB, I am not alone in my disappointment.

B. Concerns

Concern 1. "Basewide Review of Historical Activities" creates an expectation of research being done on the breadth of DOD archived historical documents + BRAC + FORA + Monterey County + CSUMB *[California State University Monterey Bay]* archived historic documents for Fort Ord base as a whole - for 70 years of Army activities at a base that encompassed 27,000 acres of land and overlaid 3 drinking water producing aquifer sub-basins in the same Hydrologic Unit located in Marina and Seaside and unincorporated Monterey county - versus what the Technical Summary Report actually represents:

i.e. a narrow overview of Fort Ord risk sites for PFOS and PFA, that were identified per the DOD's highly selective guidance steps. The 52 potential PFAS risk sites were further de-selected to a handful

[1] Administrative Record No. OU2-722A.

[2] In a letter dated May 4, 2020 (AR# OU2-722A.6). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation. The comments were modified to define acronyms and abbreviations *[italicized in brackets]* if they were not defined in the responses.

which Ahtna recommended should be studied in greater depth, under a new future contract with the DOD.

It appears that Ahtna used some DOD historic documents it found to support a "safe" adjudication so as to exclude those sites from the risk list. Other historic resource documents do not appear to have been consulted. Ahtna also used interviews with retired Fire Chief, Jack Riso, to exclude other sites for which it could not find historic documents to support exclusion.

Ahtna started this technical summary review in 2017. It's hard to believe so many historic documents about Fort Ord were not available to Ahtna's researchers that this compelled Ahtna to rely on the memories of a senior citizen.

Response to Concern 1: *The characterization of the basewide review of historical activities (basewide review) as "narrow" and the* Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS) *(Army PFAS Guidance) as "highly selective" is incorrect. The U.S. Environmental Protection Agency (USEPA) specifically requested the U.S. Department of the Army (Army) conduct a site-wide review of historical activities with the potential to cause perfluorooctanoic acid (PFOA)/ perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at the former Fort Ord, and that the results be summarized in a technical memorandum. The Technical Summary Report meets these objectives. The basewide review incorporated information from multiple sources, as indicated by the list of references in Section 4.0 of the Technical Summary Report. Many of these references are from the Fort Ord Administrative Record because this is a comprehensive collection of documents that describe the operational and environmental history of the former Fort Ord. Extensive site-wide research and investigations, including interviews with site personnel, were conducted during the development of these documents, each of which underwent review by USEPA, the California Department of Toxic Substances Control (DTSC), and the Central Coast Regional Water Quality Control Board (CCRWQCB) (e.g., the* Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volumes I through VI*, Administrative Record No. BW-1283A).*

As described in Section 1.4 of the Technical Summary Report, former Fort Ord sites underwent a three-step review process to determine whether there was a likelihood of PFAS releases in accordance with the Army PFAS Guidance, which identifies several types of sites where such releases could occur. Specifically, these include:

- *Former fire training areas (FTAs) where aqueous film-forming foam (AFFF) is known or suspected to have been applied.*
- *Former AFFF storage locations.*
- *Aircraft crash sites where AFFF may have been applied for fire control.*
- *Aviation hangars and other buildings where AFFF is or was used in the fire suppression system and where a release may have occurred.*
- *Plating facilities that may have used PFAS-containing mist suppressants.*
- *Landfills where PFAS-containing materials may have been disposed.*
- *Wastewater treatment plants that may have received wastewater from facilities that used or disposed of PFAS-containing liquid effluents.*

If the site was not a location with a likelihood of PFAS releases (i.e., it was not a "potential PFAS risk site"), then it could be reasonably eliminated from further evaluation.

Concern 1 suggests documents were selected for review based on achieving a desired outcome (i.e., elimination of sites from further evaluation) and implies the review was biased and sites were intentionally omitted, which is untrue. As noted above, the basewide review incorporated information from multiple sources, as indicated by the list of references in Section 4.0 of the Technical Summary Report. Concern 1 also states that other historical resource documents were not consulted but does not list those documents.

The interviews supplement the research conducted on the historical documents and are a valuable and accepted part of the investigative process for environmental sites per Army and USEPA guidance, similar to how witness interviews supplement physical evidence in criminal investigations. The process of interviewing people that have institutional knowledge of relevant events and site activities aids in providing a complete picture of historical site activities for the decision making process. Accordingly, the interviews with Chief Riso (and others) supplement existing evidence and fill in data gaps where they exist and some sites were eliminated from further investigation based on information provided; however, other sites were recommended for additional investigation that otherwise might not have been (e.g., Building 507 aircraft hangar). Concern 1 suggests senior citizens would not be able to recall accurately what occurred during their tenure at the site; however, the Army considers these citizens to valuable sources of information, particularly with respect to emerging contaminants, such as PFAS, that were not historically recognized and where little documentation exists. In this case, Chief Riso served as an active duty firefighter at Fort Ord for over 40 years and the Army considers him to be a credible source of information regarding historical fire incidents and firefighting practices at the former Fort Ord.

The body of knowledge referenced in the Technical Summary Report is significant and sufficient to support the conclusions and recommendations presented therein. Regardless, the Army plans to conduct a Preliminary Assessment (PA) for PFAS at the former Fort Ord consistent with USEPA PA guidance. A PA is a part of the "Superfund" process, and PA investigators collect readily available information and conduct a site and environs reconnaissance. This will include interviewing persons who are knowledgeable about historical activities that may have resulted in the release of PFAS at the former Fort Ord, such as Chief Riso. The purpose of the PA is to distinguish between sites that pose little or no threat to human health and the environment and sites that warrant further investigation. The PA also identifies sites requiring assessment for possible emergency response actions and fulfills public information needs in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The PA is at the beginning of the CERCLA process. Accordingly, the PA will be a compilation of existing information about the sites evaluated and the surrounding areas, with an emphasis on obtaining comprehensive information on people and resources that might be threatened by a release of PFAS from these sites. To evaluate the threat to human receptors, the PA will include information about groundwater gradients, topographic maps, locations of drinking water wells, and maps illustrating the relative positions of potential PFAS sites to drinking water wells. A PA involves a reconnaissance of a site and its environs, though environmental sampling is generally not conducted during a PA.

The product of the PA will be a narrative report that summarizes what is known about the site and what is inferred or assumed, the activities conducted during the PA, and information researched. If there are additional historical documents that would provide relevant information regarding PFAS at the former Fort Ord, the Army would appreciate knowing about these to support the PA process.

If the PA recommends further investigation, a Site Inspection (SI) is performed. SI investigators typically collect environmental samples to determine the substances present at a site and whether they are being released to the environment. The objective of the SI is to identify which sites have a high probability of qualifying for a response under CERCLA. A second objective is to identify sites posing immediate health or environmental threats that require emergency response.

If a site qualifies for a response under CERCLA based on the results of the SI, the site is further characterized by conducting a Remedial Investigation/Feasibility Study (RI/FS), which involves an evaluation of the nature and extent of contamination and assessing potential threats to human health and the environment. This stage of the CERCLA process also includes evaluation of the potential performance and cost of the treatment options identified for a site.

Based on the results of the RI/FS, the Army and USEPA, in consultation with DTSC and CCRWQCB, will recommend a preferred remedy and present the cleanup plan in a document called a Proposed Plan that will be made available for public review and comment. This is the public's opportunity to provide formal comments on the proposed remedy for a site. Following the public comment period, the Army and USEPA, with the concurrence of the State of California, will issue a Record of Decision (ROD) that defines the selected remedy taking into consideration public comments on the Proposed Plan. After the ROD is complete, site cleanup is initiated, starting with a Remedial Design and followed by the Remedial Action.

Concern 2. Interviews With retired Fire Chief Jack Riso - conflicts in his 2011 Monterey Herald statements versus Ahtna's conclusions drawn from Ahtna's recent Jack Riso interviews. Ahtna lists the dates of a half dozen recent interviews with retired Fire Chief Jack Riso, without even providing transcripts of these interviews. Based on interviews with Mr. Riso, Ahtna claims: ***"there was one reported emergency landing at FAAF, however AFFF was not deployed for this incident....Additionally, helicopters were the primary aircraft used at Fort Ord."***

* However according to a 03/31/2011 Monterey Herald article, Mr. Riso revealed an entirely different picture of fire and crash events at Fort Ord and military aircraft that used Fort Ord's airfields:

"Firefighters converged on helicopter crashes, brushfires ignited by troops training with live ammunition and plane crashes at Fritzsche Army Airfield, now known as Marina Municipal Airport.

"The Army never let a lot of stuff out. They kept a close hold on it. People didn't realize everything that was going on here," Riso said.

So contrary to Ahtna's interview conclusions, in the Monterey Herald interview, Mr. Riso indicated there were airplane crashes [plural] + helicopter crashes [plural] associated with FAAF and Fort Ord. He also told the Monterey Herald that the Army "never let a lot of stuff out."

* lmho, the sites which Ahtna eliminated as PFAS risk sites based interviews with retired Fire Chief Riso, should be added back on the list of PFAS risk sites, because either Ahtna inaccurately transcribed or omitted information that Mr. Riso said, in accordance with the Army's known policy of "never letting a lot of stuff out" and a tendency "to keep a close lid" on information released to the public.

https://www.montereyherald.com/2011/03/31/presidio-of-monterey-retiring-fire-chief-has-seen-it-all-in-40-years/

Response to Concern 2: *As also noted in the response to USEPA General Comment 8 (see Appendix G), the documentation of interviews with Chief Riso in the Technical Summary Report is consistent with historical practice at the former Fort Ord. Specific information obtained during the interviews is incorporated into the associated report; however, full transcripts of interviews are not appended to the reports. The Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current Department of Defense (DoD) and Army policy, as described in the Response to Concern 1, and the PA will include documentation of interviews conducted consistent with applicable guidance.*

The statement in the Monterey Herald article from March 31, 2011 regarding helicopter and airplane crashes is that of the reporter, Kevin Howe, and not a direct quote from Chief Riso. Regardless, it is consistent with the information provided in the Technical Summary Report, which describes several separate aircraft crashes [plural] in Section 2.3, and the conclusion that only one of the airplane crashes occurred at Fritzsche Army Airfield (FAAF) is accurate based in the information available.

Information from the interviews with Chief Riso (and others) was accurately transcribed into the Technical Summary Report and no information was intentionally omitted, as this would bias decisions for a site based on the aggregated data. Additionally, associating Chief Riso's statement in the Monterey Herald article that "The Army never let a lot of stuff out. They kept a close hold on it. People didn't realize everything that was going on here" with activities resulting in releases of PFAS at the former Fort Ord is speculative. There is no evidence that the Army or Chief Riso are withholding information on this subject and there is sufficient evidence to support the conclusions and recommendations presented in the Technical Summary Report for removal of sites from further evaluation or for additional investigation. These recommendations will not be revised in the Technical Summary Report; however, the Army intends to perform a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy as described in the Response to Concern 1, and sites evaluated in the Technical Summary Report that merit evaluation per the Army PFAS Guidance will be included in the PA.

Concern 3a. April 23, 2020 MC *[Monterey County]* Weekly interview with Wm. Collins, BRAC Environmental Coordinator - inadvertent misleading impressions of what Ahtna's technical summary report actually involved; Fort Ord base's minimal use of PFAS in the course of 70 years of Army historic activities, which begs the question of why BRAC Fort Ord ended up on the DOD 2018 list of active and decommissioned military installations associated with PFAS use; and his questionable confidence in the successful removal of "forever" PFAS chemical constituents by a GWETS [groundwater extraction and treatment system] facility built in the 1990's and that no nearby communities' drinking water supply sources were contaminated by Fort Ord's PFASs.

Response to Concern 3a: *The statements in the Monterey County Weekly article dated April 23, 2020 indicating products containing PFAS were used infrequently and in small quantities at the former Fort Ord relative to other military installations are factual based on the evidence summarized in the Technical Summary Report. It is assumed the "DOD 2018 list" is referring to the 2018 Summary of PFOS/PFOA Testing of Drinking Water Systems for DoD Installations, which was included in a DoD briefing to the House Armed Services Committee and can be accessed at:*

https://denix.osd.mil/derp/home/documents/pfos-pfoa-briefing-to-the-hasc/

The former Fort Ord is included on the DoD 2018 list because PFOA and PFOS were detected in two groundwater monitoring wells at Operable Unit 1 (OU1) at concentrations exceeding USEPA's lifetime

health advisory (HA) levels for PFOA and PFOS of 0.07 micrograms per liter (µg/L). As described in Section 2.1.6 of the Technical Summary Report, OU1 is associated with the former FAAF Fire Drill Area (FDA) where AFFF was used intermittently during firefighter training. As noted in the DoD 2018 list and in Section 2.1.6 of the Technical Summary Report, USEPA, DTSC, and CCRWQCB concluded OU1 groundwater monitoring and remediation were complete and OU1 could be closed, though PFAS investigations would continue independently of the completed OU1 remediation effort, and additional work associated with PFAS at any part of the former Fort Ord will not be associated with the now complete OU1 remedy.

As shown in Table 3 of the Technical Summary Report, PFOA and PFOS were detected at the Operable Unit 2 (OU2) groundwater treatment plant (GWTP) influent at concentrations below the USEPA HA levels; however, PFOA and PFOS were not detected in the samples collected from the lead granular activated carbon (GAC) vessel effluents or the GWTP effluent, indicating GAC is effective at removing PFOA and PFOS from water. Additionally, the USEPA has determined GAC is one of four treatment technologies that are effective at removing PFAS from water (see https://www.epa.gov/pfas/treating-pfas-drinking-water).

Concern 3b. I have included the interview Mr. Collins gave to Monterey County Weekly published in its April 23, 2020 issue because the interview focused exclusively on Ahtna's technical summary report. Part of BRAC's mission is to inform the public about Fort Ord contamination and cleanup efforts. I would like to respond to information conveyed in Mr. Collins' interview about Ahtna's Technical Summary Report. **My comments are not meant to question Mr. Collins' good intentions.**

Mr. Collins was quoted as saying ***"Fortunately, compared to other [Department of Defense] sites, the presence of PFAS is not that extensive... The chemicals were not frequently used here and not in large quantities...The report shows no indication that the toxic PFAS chemicals from Fort Ord entered the region's supply of drinking water. A water treatment facility built in the 1990s to clean up trichloroethane in the aquifer also happened to catch PFAS, he says: The good news is that where we found PFAS, it is being removed."***

* Wm. Collins' optimism is admirable but factually unfounded. Ahtna's technical summary report did not provide evidence to support the sweeping cheerful conclusions about little risk of PFAS contamination at Fort Ord base either as a class or PFOS and PFOA specifically. Nor did Ahtna test the groundwaters of the 3 main water producing aquifer sub-basins that lie under Fort Ord base to verify that no PFOS or PFOA chemical constituents exist in those aquifer sub-basins, which supply the region with drinking water.

Response to Concern 3b: *The statements in the Monterey County Weekly article dated April 23, 2020 are based on facts and are supported by the evidence presented in the Technical Summary Report. A three-step review process was implemented for the sites at the former Fort Ord to determine the likelihood of a PFAS release. This process included reviews of existing information about use and disposal practices at each site and collection of limited field data, which do indicate that, compared to other sites, the presence of PFAS is not that extensive.*

Groundwater samples for PFOA and PFOS analysis were not collected from aquifers used for drinking water supply because there was no evidence of a complete pathway from potential PFAS sites at the former Fort Ord to drinking water wells. However, the Army intends to conduct a PA for PFAS at the former Fort Ord and the PA will include information on locations of drinking water wells and maps

illustrating the relative positions of potential PFAS sites. The PA will evaluate drinking water wells within the area downgradient of suspected PFAS sites at the former Fort Ord where the existing conceptual site model and groundwater modeling indicate a potentially complete exposure pathway. Additionally, California American Water (CalAm), Marina Coast Water District (MCWD), and Monterey One Water are already monitoring their drinking water supply wells for PFAS per California State Water Resources Control Board (SWRCB) orders, and the results of that monitoring are available via interactive maps and charts at https://www.waterboards.ca.gov/pfas/drinking_water.html.

Concern 3c: * It is surprising that Fort Ord military base is so singularly lucky that "the presence of PFAS is not that extensive," especially in light of the summarized findings of a 2016 Harvard University research study:

"Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants"

https://pubs.acs.org/doi/full/10.1021/acs.estlett.6b00260

Drinking water contamination with poly- and perfluoroalkyl substances (PFASs) poses risks to the developmental, immune, metabolic, and endocrine health of consumers. We present a spatial analysis of 2013-2015 national drinking water PFAS concentrations from the U.S. Environmental Protection Agency's (US EPA) third Unregulated Contaminant Monitoring Rule (UCMR3) program. The number of industrial sites that manufacture or use these compounds, ***the number of military fire training areas, and the number of wastewater treatment plants are all significant predictors of PFAS detection frequencies and concentrations in public water supplies. Among samples with detectable PFAS levels, each additional military site within a watershed's eight-digit hydrologic unit is associated with a 20% increase in PFHxS, a 10% increase in both PFHpA and PFOA, and a 35% increase in PFOS.*** *The number of civilian airports with personnel trained in the use of aqueous film-forming foams is significantly associated with the detection of PFASs above the minimal reporting level. We find drinking water supplies for 6 million U.S. residents exceed US EPA's lifetime health advisory (70 ng/L) for PFOS and PFOA. Lower analytical reporting limits and additional sampling of smaller utilities serving <10000 individuals and private wells would greatly assist in further identifying PFAS contamination sources. [**Responder's Note:** this excerpt is the abstract for the cited article, which appears in the American Chemical Society's Environmental Science & Technology Letters, Volume 3, Issue 10. Emphasis was added by the commenter.]*

Response to Concern 3c: *The extent of PFAS at the former Fort Ord is not attributable to luck, but instead the limited historical usage of PFAS-containing materials and site-specific geologic and hydrologic conditions, as described in the Technical Summary Report. The spatial analysis used in the above referenced article (linked to Figure S1 under "PFAS Point Sources") included point source information for 16 industrial sites listed in the USEPA's 2010/2015 PFOA Stewardship Program, 8572 wastewater treatment plants, 290 military FTAs that contain 664 military fire training sites, and 533 civilian airports that are compliant with Title 14 Code of Federal Regulations, Part 139 for personnel trained in the use of AFFF. The report references the DoD Inventory of Fire/Crash Training Area Sites (as of the end of FY 2014) (https://cswab.org/wp-content/uploads/2010/09/List-of-military-fire-and-crash-training-sites-2014.pdf). This list includes one former Fort Ord site (FTO-041 – FAAF FDA, also known as OU1), which is discussed in Section 3.1 of the Technical Summary Report. Despite the broad conclusions of the article, closer examination of the maps and figures included in the article show PFAS were not detected in the*

hydrological units associated with the former Fort Ord. However, the Army intends to conduct a PA for PFAS at the former Fort Ord that will include an evaluation of the FAAF FDA as a fire training area per the Army PFAS Guidance. If the PA identifies additional evidence indicating a potential release of PFAS at the FAAF FDA, then the Army may conduct an SI, which may include additional soil and groundwater sampling to determine whether or not a release of PFAS has occurred.

Concern 3d: * Mr. Collins' hopeful remarks about PFAS "being removed" where found at Fort Ord by a 19 year old GWETS that uses inadequate bio-remediation and GAC treatment methods are also not supported by ATSDR's June, 2018 toxicology profile of PFAS, the 852 page report is a very grim, detailed study of PFASs variety of chemical constituents, precursors, transformed PFC's *[perfluorinated compounds]* that remain after treatment, the risks of C8 PFAS as well as GenX shorter carbon chain replacement chemicals, their persistence in the environment [lengthy half-life], and resistance to being eliminated by current technologies like GAC or by natural attenuation processes; worse still are the bioaccumulation harmful health impacts in humans at trace amount levels over protracted period of exposure, especially in sensitive populations like fetuses, young children, HIV/Cancer/transplant patients, senior citizens.

https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf

Response to Concern 3d: *Mr. Collins was quoted in the Monterey County Weekly article dated April 23, 2020 as stating, "The good news is that where we found PFAS, it is being removed." This quote does not reflect the full extent of Mr. Collins remarks to the Monterey County Weekly, where he also noted the OU2 GWTP is removing PFAS from groundwater extracted from the OU2 area of the former Fort Ord, not everywhere PFAS have been found at the former Fort Ord (e.g., OU1, as described in the Response to Concern 3a).*

The "water treatment facility" referred to in the Monterey County Weekly article dated April 23, 2020 is the OU2 GWTP. The original OU2 GWTP began operation in October 1995; however, this facility was decommissioned and a new OU2 GWTP began operation in November 2019. The primary treatment technology for contaminants in groundwater used at both the old and new OU2 GWTPs is adsorption by granular activated carbon (GAC). Bioremediation is not and has not ever been used as a treatment technology for groundwater at OU2. During its operational lifetime, the Army operated and maintained the old OU2 GWTP to effectively and continuously treat contaminated groundwater and continues to do so with the new OU2 GWTP. The OU2 GWTP is designed to remove primarily volatile organic compounds from groundwater and not PFAS; however, contrary to the assertion in Concern 3d, GAC is known to be effective for removing PFAS from water, and this is noted in several places in the Toxicological Profile for Perfluoroalkyls prepared by the Agency for Toxic Substances and Disease Registry (ATSDR). Additionally, the USEPA has determined GAC is one of four treatment technologies that are effective at removing PFAS from water (see https://www.epa.gov/pfas/treating-pfas-drinking-water).

As shown in Table 3 of the Technical Summary Report, PFOA and PFOS were detected at the OU2 GWTP influent at concentrations below the USEPA HA level; however, PFOA and PFOS were not detected in the samples collected from the lead GAC vessel effluents or the GWTP effluent, further demonstrating GAC is effective at removing PFAS from water. It is noted that, while GAC works well on longer-chain PFAS like PFOA and PFOS, shorter-chain PFAS like perfluorobutanesulfonic acid (PFBS) and perfluorobutanoic acid

(PFBA) do not adsorb as well.[3] However, as shown in Table 4 of the Technical Summary Report, future sampling and analysis for PFAS at the former Fort Ord will include these shorter-chain compounds.

Concern 3e: * The following research article's findings are particularly troubling regarding the persistence and variety of PFOS chemical constituents in AFFF foam in groundwaters where the foam was used, which found 57 classes of PFAS molecules, each of which could contain many individual chemicals. Chris Higgins, a professor of environmental engineering at the Colorado School of Mines and one of the study's authors, ***estimated that between 500 and 700 PFAS compounds have been found at sites where the foam has been used, though Higgins put the number of PFAS that are "major components" of the foam much lower, at between 30 and 50. It is impossible to find and remove all of these chemicals, many of which have only recently been identified. "The manufacturers themselves probably didn't know exactly what was in them," said Higgins. In most cases, their dangers to humans also remain mysterious. While some of these compounds may be less toxic than PFOS and PFOA, according to Higgins, "some could be more toxic."***

"Discovery of 40 Classes of Per- and Polyfluoroalkyl Substances in Historical Aqueous Film-Forming Foams (AFFFs) and AFFF-Impacted Groundwater"
https://pubs.acs.org/doi/abs/10.1021/acs.est.6b05843

*Aqueous film-forming foams (AFFFs), containing per- and polyfluoroalkyl substances (PFASs), are released into the environment during response to fire-related emergencies. Repeated historical applications of AFFF at military sites were a result of fire-fighter training exercises and equipment testing. Recent data on AFFF-impacted groundwater indicates that ~25% of the PFASs remain unidentified. In an attempt to close the mass balance, a systematic evaluation of 3M and fluorotelomer-based AFFFs, commercial products, and AFFF-impacted groundwaters from 15 U.S. military bases was conducted to identify the remaining PFASs. Liquid chromatography quadrupole time-of-flight mass spectrometry was used for compound discovery. Nontarget analysis utilized Kendrick mass defect plots and a "nontarget" R script. Suspect screening compared masses with those of previously reported PFASs. Forty classes of novel anionic, zwitterionic, and cationic PFASs were discovered, and an additional 17 previously reported classes were observed for the first time in AFFF and/or AFFF-impacted groundwater. All 57 classes received an acronym and IUPAC-like name derived from collective author knowledge. Thirty-four of the 40 newly identified PFAS classes derive from electrochemical fluorination (ECF) processes, most of which have the same base structure. Of the newly discovered PFASs found only in AFFF-impacted groundwater, 11 of the 13 classes are ECF-derived, and the remaining two classes are fluorotelomer-derived, which suggests that both ECF- and fluorotelomer-based PFASs are persistent in the environment. [**Responder's Note:** this excerpt is the abstract for the cited article, which appears in the American Chemical Society's Environmental Science & Technology, Volume 51, Issue 4.]*

***Response to Concern 3e:** Because PFAS are contaminants of emerging concern, and there are many classes of these compounds, analytical laboratories test for indicator compounds to determine the presence or absence of PFAS. At the time of this report, there are only a handful of laboratories that are certified to analyze for PFAS and the typical compound list for analysis includes 24 indicator PFAS compounds, not thousands of compounds. However, the science related to PFAS continues to evolve and*

[3] Reducing PFAS in Drinking Water with Treatment Technologies (https://www.epa.gov/sciencematters/reducing-pfas-drinking-water-treatment-technologies).

analytical methods are being developed that can detect more PFAS compounds at lower concentrations (e.g., see the USEPA's PFAS Action Plan at https://www.epa.gov/pfas/epas-pfas-action-plan). Additionally, USEPA is committed to monitoring for PFAS in the next UCMR cycle and will be issuing a proposed rule this year for UCMR 5 testing starting in 2023.

Concern 4. the inadequacies of the Army's 19 year old OU2 GWETS facility for removal of PFAS, including PFOS and PFOA chemical constituents, and the possibility of worsening the spread of PFAS to unpolluted areas of the aquifers' groundwaters, without detection.

* It is my understanding that the Army's OU2 GWETS uses a combination of bioremediation and soil vapor extraction, pump and treat GAC technology, incineration, and a hopeful hypothesis that natural attenuation will decrease remaining PFAS constituents post treatment, which has been shown to have a low probability of success because the man-made C-F bonds are too strong and resist degradation by natural processes.

** "The stability and surfactant nature of PFAS make many treatment technologies ineffective, including those that rely on contaminant volatilization (for example, **air stripping, soil vapor extraction) or bioremediation** (for example, biosparging, biostimulation, bioaugmentation)." Aggressive technologies such as thermal treatment require extreme temperatures beyond typical practices to be effective in destroying PFAS.*

https://pfas-1.itrcweb.org/12-treatment-technologies/

* Incineration has other problematic issues. New data suggests incineration of per- and polyfluoroalkyl substances (PFAS) not only does not break down these hardy chemicals, but also spreads them into surrounding areas downwind/downstream up to 31 miles away.

https://cen.acs.org/environment/persistent-pollutants/Incinerators-spread-break-down-PFAS/98/web/2020/04?utm source=mostread&utm medium=mostread&utm campaign=CEN

* Furthermore, GAC's efficiency is impacted by the presence of competing chemical contaminants [like TCE *[trichloroethene]* for example]; dissolved organic matter effects, which have often been overlooked in ideal lab conditions; and the regeneration of PFAS exhausted adsorbents is very challenging.

https://www.sciencedirect.com/science/article/abs/pii/S0043135419311558

*A 2015 research paper presented by Joseph F. Keely at the EPA titled **"Performance Evaluations of Pump-and-Treat Remediations**" sums up multiple problematic issues associated with pump-and-treat remediations especially in respect to contaminant plumes' outer edges as well as the risk of pump-and-treat remediations spreading PFAS contaminants to unpolluted groundwaters. Mr. Keely notes that monitoring wells, which the OU 2 GWETS remediation effort relies on, may not be useful for future predictions regarding contaminant plumes.

https://www.epa.gov/sites/production/files/2015-06/documents/performance_eval_pump_treat.pdf

Summary:

Pump-and-treat remediations are complicated by a variety of factors. Variations in ground-water flow velocities and directions are imposed on natural systems by remediation wellfields, and these variations complicate attempts to evaluate the progress of pump-and-treat remediations. This is in

part because of the tortuosity of the flowlines that are generated and the concurrent re-distribution of contaminant pathways that occurs.

An important consequence of altering contaminant pathways by remediation wellfields is that historical trends of contaminant concentrations at local monitoring wells may not be useful for future predictions about the contaminant plume.

*An adequate understanding of the true extent of a contamination problem at a site may not be obtained unless the site's geologic, hydrologic, chemical, and biological complexities are appropriately defined. By extension, optimization of the effectiveness and efficiency of a pump-and-treat remediation may be enhanced by the utilization of sophisticated site characterization approaches to provide more complete, site- specific data for use in remediation design and management efforts. [**Responder's Note:** this text is excerpted from the summary section of the cited document.]*

* OCWD discovered to its chagrin how one isolated PFAS plume, while being surveilled by monitor wells, in reality had spread much farther across aquifer groundwaters than monitoring wells and models had predicted. OCWD is now in the process of shutting down 1/3 of its drinking water well producers.

https://fullertonobserver.com/2018/11/19/epa-on-fullerton-water-supply-protection-and-clean-up/

Response to Concern 4: *The primary treatment technology for contaminants in groundwater used at the OU2 GWTP is adsorption by GAC. Bioremediation, soil vapor extraction, incineration, and natural attenuation are not and never have been used as treatment technologies for groundwater at OU2. Bioremediation and natural attenuation are used at Operable Unit Carbon Tetrachloride Plume (OUCTP) and soil vapor extraction and treatment are used as part of the remedy at Sites 2 and 12 for treatment of volatile organic compounds, not PFAS. Factsheets providing more information about the groundwater remedies employed at the former Fort Ord can be found at https://fortordcleanup.com/factsheets/. The Army does not hypothesize that natural attenuation would be effective for PFAS. In fact, it is specifically noted in Section 1.3 of the Technical Summary Report that PFAS are stable in the environment and resist typical environmental degradation processes.*

As shown in Table 3 of the Technical Summary Report, PFOA and PFOS were detected at the OU2 GWTP influent at concentrations below the USEPA HA level; however, PFOA and PFOS were not detected in the samples collected from the lead GAC vessel effluents or the GWTP effluent, indicating GAC is effective at removing PFOA and PFOS from water. Additionally, the USEPA has determined GAC is one of four treatment technologies that are effective at removing PFAS from water (see https://www.epa.gov/pfas/treating-pfas-drinking-water). It is acknowledged that the efficiency of GAC declines over time as the GAC removes more contaminants from the groundwater stream; however, the Army employs a regular process monitoring schedule at the groundwater treatment facilities that use GAC so that the GAC is replaced with new or regenerated GAC when its adsorptive capacity is reached.[4]

It is noted that Mr. Keely's document is from October 1989, not 2015, and the information therein is dated. The geologic, hydrologic, chemical, and biological complexities at the former Fort Ord are very

[4] The monitoring schedule is presented in the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Final Revision 7, Groundwater Remedies and Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume* (Administrative Record No. BW-2785I).

well characterized, with investigations ongoing since the 1980s,[5] and the groundwater monitoring well network has become extensive, with new well locations taking groundwater treatment system (GWTS) operations into consideration. The Army uses data collected from these monitoring wells to assess the status and performance of the groundwater remedies and, as new data are collected, to optimize the GWTS for greater remedy efficiency under the oversight of USEPA, DTSC, and CCRWQCB. As a result, the OU2 GWTS has been successful at reducing the size of groundwater contaminant plumes and reducing concentrations of contaminants in groundwater (e.g., see Administrative Record No. OU2-719A).

Concern 5. Ahtna's narrow focus on mainly AFFF foam and post 1960's timeline is not what the EPA requested: i.e. a base wide research of all historic activities at Fort Ord - no date windows were given by the EPA - for all risks of PFOA and PFOS occurrences - not just for AFFF foam contamination - at the entire 27,000 acre Ford Ord army base property. **Furthermore dismissing the use of AFFF foam use at Fort Ord prior to the 1960's is a questionable theory, because Protein fire suppressants that were used prior to FAAF's construction in the mid 1960's, may have had synthetic surfactants in their compound mixture.**

*Here's a timeline of synthetic types of foam concentrate development:

1930s - Development of early chemical foams with alcohol resisting properties. The concepts of aspiration and proportioning were developed for mechanical foam systems much as we know them today. Experimental work started on synthetic types of foam concentrate.

1940s - 3% Protein foam concentrates developed to offer space and weight savings over the existing 6% concentrates.

1950s - Low, medium and high expansion foams could now be produced from a single synthetic foam concentrate. First water-miscible liquid resistant mechanical foam concentrate developed.

1960s - Fluoroprotein and AFFF (Aqueous Filmforming Foam) foam concentrates developed. Improved alcohol resistant foams developed.

1970s - Further development of alcohol resistant foam concentrates to produce multipurpose foams for use at 3% on hydrocarbons and 6% on water miscible liquids. "Hazmat" foams developed for the suppression of vapour from hazardous materials.

* The history of PFAS military applications started 2 decades earlier than the 1960's. Dr. Roy Plunkett discovered PTFE or polytetrafluoroethylene, the basis of Teflon, in April 1938. PFASs have in production since 1945 when PTFE was first marketed under the DuPont Teflon® trademark, originally used only for industrial and military purposes as of 1945, because it was so expensive to make.

PFOA and PFOS chemical constituents were used to manufacture Teflon®. Subsequently in the 1960's PFAS - including PFOS and PFOA chemical constituents - have been used in a variety of industrial and commercial and agricultural and golf course maintenance, and consumer product applications [e.g. Ag

[5] For example, see the Basewide Hydrogeologic Characterization in Volume II of the Basewide Remedial Investigation/Feasibility Study (RI/FS; AR# BW-1283A), the Operable Unit 1 Remedial System Modification Plan (AR# OU1-509), the Operable Unit 2 (OU2) Revised Treatment System Plan (AR# OU2-584), the OU2 Plume Delineation Investigation Report (AR# OU2-585), the Carbon Tetrachloride Investigation Report (AR# BW-1997U), the OUCTP RI/FS (AR# OUCTP-0011P), and the Sites 2 and 12 RI/FS Addendum (AR# BW-2721B).

industry pesticides and insecticides, golf course fertilizers, pesticides, insecticides, pharmaceuticals, water repellent on clothing, leather, cookware, and paper products, furniture, personal care products].

https://www.ewg.org/research/pfcs-global-contaminants/pfoa-and-other-pfcs-comecommon-products-every-home

* Fort Ord's historic activities until its closure in 1994 included all the afore-mentioned PFOS and PFOA applications, which potentially contaminated soil and underlying aquifers' groundwaters, and may continue to be seeping into Monterey Bay, a National Marine Sanctuary; PFOS and PFOA chemical constituents in wastes were transported to Fort Ord's sewage sanitation facilities or were disposed of in Fort Ord's landfills.

Ahtna did not devote much research into other historic Fort Ord army activities that would result in persistent PFOS and PFOA contamination impacts.

Response to Concern 5: *The Technical Summary Report is in direct response to USEPA's request for the Army to perform a basewide review of historical activities with the potential to cause PFOA and PFOS contamination in soil and groundwater at former Fort Ord sites, and USEPA acknowledges this in its comments (see Appendix G). Accordingly, the Technical Summary Report evaluates several different types of sites where activities occurred that had the potential to release PFAS to the environment, including landfills and wastewater treatment plants. Sites where AFFF may have been stored or used are of primary concern because, as noted in Section 1.3 of the Technical Summary Report, at Army installations, the primary mechanism for releases of PFAS is through the historical use of AFFF, a product applied during firefighting and firefighting-related training associated with fuel- or petroleum-based fires, though AFFF was not used at Army installations before 1973.*

The statement that protein fire suppressants may contain synthetic surfactants in their compound mixture is understood to mean that protein fire suppressants may contain PFAS. It is not stated where the timeline presented in Concern 5 is sourced from; however, a timeline presented in the Interstate Technology Regulatory Council (ITRC) fact sheet "History and Use of Per- and Polyfluoroalkyl Substances (PFAS)" shows PFAS were not used in firefighting foams until the 1960s (i.e., earlier protein fire suppressants did not contain PFAS).[6]

The ITRC timeline confirms PTFE was invented in the 1930s and was used for non-stick coatings in the 1940s, with PFOA and PFOS being used in the 1950s and going forward in stain and water-resistant products and protective coatings. As noted in Concern 5, these PFAS-containing products have a number of industrial and commercial applications that could result in waste streams entering landfills and wastewater treatment plants, which is why these types of facilities are evaluated in the Technical Summary Report.

Based on the body of knowledge regarding the geology, hydrology, chemistry, and biology at the former Fort Ord and the findings in the Technical Summary Report, it is unlikely PFAS releases resulting from Army activities at the former Fort Ord are migrating into the Monterey Bay. However, the Army intends to conduct a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy as

[6] https://pfas-1.itrcweb.org/wp-content/uploads/2017/11/pfas_fact_sheet_history_and_use__11_13_17.pdf

described in the Response to Concern 1, and the PA will include an evaluation of migratory pathways in soil and groundwater for sites where PFAS releases may have occurred.

Concern 6. complexities of PFAS, PFOS and PFOA in particular, are insufficiently detailed in Ahtna's technical research summary report.

* Christine Haag, Wisconsin's DNR *[Department of Natural Resources]* remediation and redevelopment program director, provides an alarming summary of the challenges presented by PFAS. Ms. Haag says PFAS chemical compounds are *"remarkably dynamic in the way that they move around the environment. PFAS, PFOS, and related chemicals have been detected in landfills, private wells, bio-masses, waterways, the air, and in the very tissues of living creatures...' this is still very emerging as a science." Eerily, she notes, "once it enters the environment it moves through. It doesn't really seem to have an end-point where it's captured and contained.' Thus, PFAS and PFOS compounds have been dubbed, 'forever chemicals,' which do not break down."*

* Below are links to 2017 slide show presentations prepared by Eurofin, a leading NELAC certified testing lab for PFAS, which confirms Ms. Haag's remarks that PFAS represent a host of complex issues:

a. Even the 2 most studied PFAS family members have unique characteristics and differing capabilities and affinities for soil versus groundwater contamination. Furthermore Eurofin explains that the EPA's UCMR 3 MRLs *[method reporting limits]* were inadvertently set too high and significantly underestimated PFAS actual occurrences. UCMR 3 MRL's were determined based on a simulation from data from only a few labs (see next slide) back in 2008 (multi generations in terms of LC-MS-MS technology).
b. Method 537 was/is capable of reliably measuring:
   - Levels that are 10-20X lower than UCMR 3
   - A much longer list of PFAS chemical compounds than the UCMR 3 list only.

* The EPA set the limits for UCMR 3 at "relatively high" levels (because of the way the MRL is established). The DOD follows those flawed, "relatively high" MRLs for its HA guidance. Eurofin suggests that federal and state regulatory authorities should consider monitoring groundwaters (at lower testing detection levels, which specialized labs are capable of measuring) to check for potential plumes, even if the UCMR 3 database showed no detection. Furthermore Eurofin states that at lower testing detection levels, some of the other UCMR 3 PFAS compounds (besides PFOS/PFOA) are frequent, as are some non UCMR 3 PFAS compounds.

https://greensciencepolicy.org/wp-content/uploads/2017/12/Andy Eaton UCMR3 PFAS data.pdf

https://nysawwa.org/docs/presentations/2017/FINAL-PFAS%20Monitoring%20in%20Post%20health%20Advisory%20World-What%20Should%20We%20Be%20Doing-2017.pdf

* In late 2019, the State of California's recommended Health Advisory MRLs were set at 10 ppt. for PFOA and 40 ppt for PFOS. Consider that 1 ppt is equivalent to four grains of sugar in an Olympic sized swimming pool. The new state levels are based on updated health recommendations from the state's Office of Environmental Health Hazard Assessment. The OEHHA's announcement also noted at the time that the State Water Resources Control Board has identified seven other PFAS chemicals in wells and has requested recommendations for standards to apply to those toxins as well. The State Water

Resources Control Board had good reason for its concerns about the 7 other PFAS chemical family members and homologous chemicals.

* PFHxS, for example, is a homologue of PFOS and is a key ingredient of fire-fighting foam as well as insecticides. The url link below is the 2019 IPEN White Paper for the Stockholm Convention on Persistent Organic Pollutants Review Committee regarding the toxicity of PFHxS. The Executive Summary of the expert panel's study, pages 12 and 13 along with more details in pages 20-42 are quite worrisome.

https://ipen.org/sites/default/files/documents/pfhxs socio-economic impact final oct.2019.pdf

* Below is just one of many medical research studies showing the harmful impacts of perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnA), and perfluorohexane sulfonic acid (PFHxS) on human fetuses:

"Concentrations of perfluoroalkyl substances (PFASs) in human embryonic and fetal organs from first, second, and third trimester pregnancies"

https://www.sciencedirect.com/science/article/pii/S0160412018326102

Response to Concern 6: *The purpose of the Technical Summary Report was to assess for the presence of PFOA and PFOS at the former Fort Ord in response to requests for information from USEPA and DTSC. An analysis of the complexities of PFAS, specifically PFOA and PFOS, was not required for this purpose and was not within the scope of the Technical Summary Report.*

The statement that DoD follows "flawed" method reporting limits is false. As described in Section 1.3 of the Technical Summary Report, DoD screening levels for PFOA and PFOS are consistent with the SWRCB's Department of Drinking Water established response levels for PFOA and PFOS. Further, the laboratory detection limits for the groundwater samples collected at OU2 were lower than the Department of Drinking Water established notification levels for PFOA and for PFOS.[7]

Concern 7. Plumes

Concern 7a. Fort Ord base is no stranger to plumes. Indeed, multiple plumes have been identified at Fort Ord base previously. Ahtna did not sufficiently detail BRAC's previous plume research studies or provide updated information about their movement, current status or whether new plumes have been identified by up-to-date detection methodology using unmanned aerial vehicles (UAVs)-based thermal infrared (TIR) mapping, example included at the url below.

"Unmanned aerial vehicles (UAVs)-based thermal infrared (TIR) mapping, a novel approach to assess groundwater discharge into the coastal zone"

https://aslopubs.onlinelibrary.wiley.com/doi/pdf/10.1002/lom3.10132

Response to Concern 7a: *Information about the Army's previous groundwater chemical of concern (COC) plume investigations and the current status of the COC plumes at the former Fort Ord was incorporated*

[7] See Worksheet #15 in the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Final Addendum No. 1, Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis, Operable Unit 2, Former Fort Ord, California* (Administrative Record No. OU2-715B).

by reference because that level of detail is not required for the purposes of the basewide review. Groundwater COC plumes at the former Fort Ord have been studied since the 1980s and are well characterized. Technologies such as TIR using UAVs are not necessarily useful at the former Fort Ord, as the local geologic and hydrologic conditions are significantly different than those of the Korean island assessed in the study. Further, the purpose of the TIR study was to map submarine groundwater discharge (SGD) thermal plumes by measuring the difference in temperature between groundwater and seawater using infrared, not to measure contaminant plumes.

Concern 7b. * Previous identification of multiple plumes in groundwaters of aquifers underlying Ford Ord base over the years:

https://www.montereycountyweekly.com/news/local%20news/leaky-toxic-dump-near-csumb-housing-scares-some-students/article%20b617b04c-1e46-5e2c-8f1f-85590c635acc.html

https://www.montereycountyweekly.com/news/local news/new-well-restrictions-high-light-safety-question-of-fort-ord-groundwater/article ac33711a-5075-50c5-9f3e-21e836c5a6c1.html

https://www.montereycountyweekly.com/blogs/news blog/army-grant-will-fund-new-treatment-system-for-polluted-fort-ord-groundwater/article 283f1178-442b-11e4-b897-0017a43b2370.html

https://www.montereycountyweekly.com/archives/new/s/2000/aug/03/citizen-pain/how-two-ordinary-people-uncovered-an-environmental-hazard-at-the-airport-that-went-untold-for/article 24ae967b-4b92-50e0-aa8e-7036b18fd4d2.html

Response to Concern 7b: *the articles listed from the Monterey County Weekly do not pertain to identification of groundwater COC plumes at the former Fort Ord:*

- *Monterey County Weekly article titled "Leaky toxic dump near CSUMB housing scares some students" dated November 21, 2002: pertains to the Fort Ord Landfills and landfill gas (LFG) emissions but does not discuss groundwater. Note that the Army installed an LFG extraction and treatment system in 2001 to mitigate LFG migration where housing is located closest to the landfill and expanded the system in 2006 with additional LFG extraction wells and a thermal treatment unit. The LFG extraction and treatment system successfully controls the migration of LFG in accordance with Title 27 California Code of Regulations.*[8]
- *Monterey County Weekly article titled "New well restrictions highlight safety questions of Fort Ord groundwater" dated April 22, 1999: pertains to development of a Special Groundwater Protection Zone at the former Fort Ord to restrict construction of water supply wells in areas within or adjacent to groundwater COC plumes.*[9] *Such wells could draw in contaminated groundwater or make the Army's remedial systems less effective. At the time this article was published OUCTP had not yet been identified.*
- *Monterey County Weekly article titled "Army grant will fund new treatment system for polluted Fort Ord groundwater" dated September 24, 2014: pertains to construction of the new OU2 GWTP (see Response to Concern 3d) for a groundwater COC plume identified in the early 1990s.*

[8] See the *Annual Report 2018, Operations and Maintenance, Operable Unit 2 Landfills, Former Fort Ord, California*. (Administrative Record No. OU2-718).

[9] The Special Groundwater Protection Zone is codified in Title 15 of the Monterey County Code, Chapter 15.08.

- *Monterey County Weekly article titled "How two ordinary people uncovered an environmental hazard at the airport that went untold for 10 years" dated August 3, 2000: pertains to groundwater contamination at the Monterey Regional Airport (Naval Auxiliary Air Station Monterey from 1943 to 1972), which was never part of the former Fort Ord.*

The identification of groundwater COC plumes at the former Fort Ord is an iterative process conducted in accordance with CERCLA, which culminates in the Army and USEPA jointly selecting a remedy, with the concurrence of the State of California, that is documented in a CERCLA decision document, such as a (ROD).[10]

Concern 7c. * Nor did Ahtna reference BRAC's future plume study plans, which is the next significant step in the DOD's agenda for remediation of PFAS contamination at military sites.

In a March 16, 2020 interview, Maureen Sullivan, Deputy Assistant Secretary of Defense for the Environment, said: "As the Defense Department begins to study the groundwater contamination in more depth, it will look at *"where is the plume? How is it moving?" Sullivan said, referring to potential underground pools of PFAS contamination. Over time, those pools can seep into mainstream water sources. "It is a lot of engineering work, a lot of drilling wells and all of that which is expensive," she said. "Then you get to the remedy, which is even more expensive. We're back here right now," she said, pointing to a graphic in the new Defense Department report that described the cleanup phases, "and we're at three billion."*

https://www.bnd.com/news/local/article241232326.html

Response to Concern 7b: *The purposes of the Technical Summary Report are to summarize the results of the basewide review and groundwater monitoring for PFOA and PFOS at OU2. A discussion of future "plume study plans" is not necessary to achieve these objectives; however, the Army intends to conduct a PA for PFAS at the former Fort Ord, during which the Army will gather historical and other available information about site conditions. If the results of the PA indicate further investigation is needed, the Army may conduct an SI, which may include additional soil and groundwater sampling to determine whether or not a release of PFAS has occurred.*

Secretary Sullivan's comments are acknowledged. Other points noted in the article from the Belleville News-Democrat dated March 16, 2020 include:

- *Any location where drinking water was contaminated has already been addressed.*
- *PFAS is a family of chemical compounds that are found in low levels in everyday household products, such as the non-stick coating on cooking pans, but is highly concentrated in the military's firefighting foam.*
- *The military has used firefighting foam with the PFAS compounds to fight aircraft fires since the 1970s.*

Concern 8a. Fort Ord's PFAS contamination of 3 aquifers, whose groundwaters are drinking water sources for nearby communities, and potential impact on Monterey Bay National Marine Sanctuary - Ahtna distances the Army from any responsibility.

[10] RODs and other decision documents for the cleanup of former Fort Ord groundwater COC plumes can be found at https://fortordcleanup.com/reference-documents/records-of-decision/

Ahtna paid little attention to the 3 sister raw drinking water source aquifers that lie beneath Fort Ord base - the 180 and 400 in Marina and the Seaside Aquifer in Seaside and unincorporated Monterey County or the Monterey Bay, for that matter. Ahtna said the Army is not a drinking water purveyor, and the current water utilities using those aquifers as drinking water sources have found no PFAS.

But Ahtna provides no timely testing support data details for those broad statements.

Response to Concern 8a: *There is no evidence that three aquifers are contaminated with PFAS at the former Fort Ord, or that drinking water sources for nearby communities are affected. As described in Section 2.6.5 of the Technical Summary Report, groundwater samples were collected at OU2 from the A-Aquifer and the Upper 180-Foot Aquifer for analysis and PFOA and PFOS were detected; however, neither of these aquifers are used for drinking water purposes. Additionally, as noted in the Response to Concern 3b, CalAm, MCWD, and Monterey One Water are monitoring their drinking water supply wells for PFAS per SWRCB orders, and the results of that monitoring are available via interactive maps and charts at https://www.waterboards.ca.gov/pfas/drinking_water.html. These wells draw water from the Lower 180-Foot Aquifer, the 400-Foot Aquifer, the 900-Foot Aquifer, and the Seaside Basin.*

As noted in the Response to Concern 5, based on the information available, it is unlikely PFAS releases resulting from Army activities at the former Fort Ord are impacting the Monterey Bay. However, the Army intends to conduct a PA for PFAS at the former Fort Ord in accordance with current DoD and Army policy as described in the Response to Concern 1, and the PA will include an evaluation of migratory pathways in soil and groundwater for sites where PFAS releases may have occurred, information on locations of drinking water wells, and maps illustrating the relative positions of potential PFAS sites. The PA will also evaluate drinking water wells within the area downgradient of suspected PFAS sites at the former Fort Ord where the existing conceptual site model and groundwater modeling indicate a potentially complete exposure pathway.

Concern 8b. Small water utilities in unincorporated Monterey County serving less than a 10,000 population base were exempted from doing PFAS testing in the EPA's 2013-2015 survey. Whatever PFAS testing Marina Coast Water District and MP Water Management District/CalAm may have done for their respective drinking water aquifers' groundwater sources, test results have not been released to the public to my knowledge. I am uncertain any testing has been done of Monterey Bay National Marine Sanctuary waters by any federal agency. If testing was done, results have not been released to the public.

Whether the afore-mentioned drinking water utilities used NELAC certified labs for PFAS testing is uncertain. ELAP *[Environmental Laboratory Accreditation Program]* labs would have been cheaper and more readily available in 2013-2015. Trace level analysis of PFAS chemical constituents by ELAP labs would have been imprecise, due to lack of staff expertise and specialized equipment.

Response to Concern 8b: *The Army cannot speak to the PFAS testing requirements for local drinking water purveyors; however, as previously noted, the results of PFAS monitoring conducted per SWRCB orders are available via interactive maps and charts at https://www.waterboards.ca.gov/pfas/drinking_water.html. Additional groundwater information may be found at https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/.*

Additionally, per USEPA's Unregulated Contaminant Monitoring Rule (https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule), MCWD sampled for PFAS in 2014 and data can be found at https://www.mcwd.org/docs/wq/UCMR3_report.pdf.

The National Oceanic and Atmospheric Administration is the federal agency primarily responsible for management of the Monterey Bay National Marine Sanctuary and may be able to provide more information about any testing (https://montereybay.noaa.gov/).

Concern 8c: Though Ahtna tries to distance the Army from any responsibility for PFAS contaminants that may exist in those 3 aquifer groundwaters located in the same 8 digit hydrologic unit, the Army - not current water utilities - is the main 70 year long polluter of record for the aquifers that lie under Fort Ord base. As testing methods become more sophisticated and the EPA adds more PFAS to its regulated contaminant lists per the SDWA and Clean Water Act, the Army will likely be the most visible entity responsible for cleanup, and for good reason, per the 2016 Harvard U research study:

Among samples with detectable PFAS levels, each additional military site within a watershed's eight-digit hydrologic unit is associated with a 20% increase in PFHxS, a 10% increase in both PFHpA and PFOA, and a 35% increase in PFOS.

"Detection of Poly- and Perfluoroalkyl Substances (PFASs) in U.S. Drinking Water Linked to Industrial Sites, Military Fire Training Areas, and Wastewater Treatment Plants"

https://pubs.acs.org/doi/full/10.1021/acs.estlett.6b00260

And as Ms. Maureen Sullivan noted 2 months ago, remediation engineering costs keep increasing with passage of time.

Response to Concern 8c: *The purpose of the basewide review and groundwater monitoring at OU2 was to assess the presence of PFOA and PFOS at the former Fort Ord in response to requests for information from the USEPA and the DTSC. The Army is by no means, through a contractor or otherwise, attempting to distance itself from responsibility for PFAS at the former Fort Ord, as evidenced by Army PFAS policy and guidance. Through a systematic process of reviewing sites, resources can be allocated more efficiently in the future to determine whether releases of PFAS have occurred. The Technical Summary Report is only the beginning of this process under CERCLA to assess the nature and extent of PFAS in the environment at the former Fort Ord, and the Army intends to continue this process with a PA for PFAS. If the PA identifies additional evidence indicating a potential release of PFAS, then an SI may be recommended to determine whether or not a release of PFAS has occurred.*

Neither is the Army attempting to place responsibility for PFAS potentially originating at the former Fort Ord on local water purveyors; however, as noted in the Response to Concern 3c, the "Harvard U" article actually shows PFAS were not detected in the hydrological units associated with the former Fort Ord.

Secretary Sullivan's comments are acknowledged; however, assessing the presence of PFAS at the former Fort Ord will be a systematic process conducted per CERCLA requirements. Unless there is evidence of an immediate risk to public safety a remedy, if needed, cannot be selected or implemented until that process is complete.

Concern 8d: * Less is known about Seaside Aquifer's groundwater quality than the 180 and 400 because it has not been the main raw source of drinking water for 80,000 Monterey Peninsula [*MP*] residents south of the hydraulic trough at NPGS after the 1994 Fort Base closure.

However, Seaside Aquifer's decades of underuse as a main drinking water source will change as of 12/31/2021 when MP District's **unique*** potable recycle project comes online. A new pipeline circumventing the hydraulic trough has been constructed to accommodate the Pure Water Monterey [*PWM*] Project, which will distribute Seaside Aquifer groundwaters mixed with PWM's recycle product to over 100,000 MP residents for potable use. The District and its lead partner, the MC Sanitation M1W *[Monterey One Water]* agency will attempt to purify heavily polluted wastewater sources like Blanco's 303d "impaired waters" combined with medical wastewaters with pharmaceuticals and viral and bacterial pathogens from 3 hospitals and multiple nursing homes combined with Monterey County's domestic sewage combined with urban stormwater runoff. **PWM is unique because no other permitted potable recycle facility in operation in California combines municipal sewage with Ag Industry impaired wastewaters and pipes it directly for injection to an aquifer.** PWM represents a very high risk to public health and Fort Ord's Seaside Aquifer's dubious quality groundwaters will be a partner of PWM's public health risk operation and liability.

* In upholding the decision of the US Sixth Circuit in Flint v Guertin, SCOTUS recognized the public has a fundamental constitutional right that is first among equals to "personal security and bodily integrity." In Flint, residents were delivered highly polluted and unsafe drinking water that resulted in a multitude of health calamities. The Sixth Circuit in the Flint case determined that "a government actor violates individuals' right to bodily integrity knowingly and intentionally introducing life-threatening substances into individuals without their consent, especially when such substances have zero therapeutic benefit."

* Below is a 2017 article about the flaws of potable recycle and that's regarding the handful of California operations that only use municipal sewage as their heavily polluted water source, not combined with 303d Ag Industry wastewaters:

https://undark.org/article/return-to-sender-california-water-recyling/

...in reality, mostly only water molecules get through reverse-osmosis membranes. The technology filters out most contaminants but not all of them. Some especially small molecules, like acetone (the stuff in nail polish remover), 1,4 dioxane (an industrial solvent), or n-nitrosodimethylamine (formerly used to manufacture rocket fuel), can potentially slip right through... How well reverse osmosis works to filter out other contaminants, like pharmaceuticals and pesticides, depends on the specific chemical and the amount of pollution in the water. The water reuse textbook states that reverse-osmosis membranes strain out 90 to 96 percent of the toxic pesticide atrazine, for example, and 85 to 95 percent of the poisonous element arsenic... When these chemicals get through advanced treatment, it means that other, more dangerous, compounds have likely gone through as well... Solvents are a class of chemicals used for a range of purposes from dry cleaning to paint thinning to manufacturing. Many of them are small molecules, so they can slide untreated through reverse osmosis. And many of them are poisonous to humans. Solvents and other industrial chemicals that can disrupt hormones in the body's endocrine system are particularly worrisome. With a litany of dreadful health effects like cancer, birth defects, and infertility, these endocrine-disrupting chemicals can be extremely toxic even at the very low levels that could potentially get through even the most advanced water treatment, including reverse osmosis and advanced oxidation... "It's not reassuring to me to hear that chemicals are present "only" at parts per

trillion levels," said Ted Schettler, a physician and the science director of the nonprofit Science and Environmental Health Network. "There are many chemicals that you would worry about at parts per trillion." Parts per trillion is really tiny — like having one drop of poison spread throughout 20 Olympic-size pools. For some chemicals, we don't even have analytical methods that can accurately detect such low concentrations. Yet even such a minuscule amount can have an effect on our bodies. "Our bodies' hormone systems operate at low parts per trillion levels," Schettler explained. "The hormone receptors are exquisitely sensitive to even minor shifts in those concentrations."....The Environmental Protection Agency counts about 85,000 industrial chemicals registered for current use, but requires additional toxicity testing for only about 200 of them. Pesticides in home and garden products, which are regulated by the EPA's Federal Insecticide, Fungicide, and Rodenticide Act, can also make their way down the drain, as can FDA-regulated pharmaceuticals, which people excrete naturally after use. This all means that tens of thousands of different chemicals may be present in sewage before treatment — and after treatment we still don't have a full idea of the range of chemicals that get through. "What you really need to do is figure out what's in the water, and at what levels," Schettler said....And since detecting tiny amounts of chemicals relies on identifying them by their unique characteristics, it's nearly impossible for them to recognize a chemical they weren't already looking for.... "There's a lot [of chemicals] out there, that show up in monitoring, but that we don't really know what the broad effects might be from them," said David Spath, the former chief of the Division of Drinking Water and Environmental Management for the State of California. Even more troubling is that a combination of chemicals can be more toxic than the sum of their parts. It could be a big problem, according to Spath, "if you get three or four chemicals that are all endocrine disruptors that disrupt the same endocrine process, or if you have two or three chemicals that are all carcinogens that result in the same carcinogenic endpoint..."

* Furthermore, according to Seaside Watermaster Committee meeting minutes, Seaside Aquifer is known to seep its groundwaters into Monterey Bay.

* In light of the recent SCOTUS decision regarding County of Maui, Hawaii v. Hawaii Wildlife Fund, it may behoove the Army to do in depth water testing of Seaside Aquifer as well as the 180 and 400 aquifers groundwaters to establish a legally defensive hedge against future lawsuits for cleanup of Monterey Bay - what persistent contaminants currently exist in the 3 aquifer groundwaters, especially Seaside Aquifer, before Pure Water Monterey's novel potable recycle facility becomes fully operational.

Response to Concern 8d: *The Army cannot speak to any plans other agencies may have for use of recycled water for drinking water purposes or use of the Seaside Basin as a drinking water source.*[11] *Based on the information available, it is unlikely PFAS releases resulting from Army activities at the former Fort Ord are migrating into the Monterey Bay. However, the Army intends to conduct a PA for PFAS at the former Fort Ord, including sites in the area of the Seaside Basin. If the PA identifies additional evidence indicating a potential release of PFAS, then an SI may be recommended to determine whether or not a release of PFAS has occurred.*

Concern 8e: * FOCAG produced an extensive list, sourced from federal government documents, of potential pollutants, including forever PFAS chemical compounds, associated with Fort Ord army base.

[11] Recycled water production and use is regulated by the CCRWQCB with concurrence by the State Water Resources Control Board Division of Drinking Water (DDW). More information about DDW's monitoring requirements for PFAS is available at https://www.waterboards.ca.gov/pfas/ or by contacting DDW's Monterey District office at dwpdist05@waterboards.ca.gov.

FOCAG's list could be a helpful guidance paper for BRAC's future testing. I am a ratepayer resident in the MP Water Management District, one of two lead principals of the PWM Project, so I have made a point of reading PWM's EIR *[environmental impact report]* documents. FOCAG was a recognized stakeholder on The District's scoping EIR list. FOCAG submitted a letter to Duffy Associates warning PWM principals that Seaside Aquifer was an unsuitable raw drinking water source due to military grade pollutants associated with Army historic activities. The District's "health expert" who was a sanitation engineer, ignored FOCAG's letter of concern. FOCAG felt so strongly about its concerns regarding Seaside Aquifer groundwaters that it subsequently sent a letter of concern to the CPUC *[California Public Utilities Commission]*, which was also ignored FOCAG's letter of concern.

Nonetheless, FOCAG's letters are on Administrative Record. Unlike PWM principals and the CPUC Board members, environmental organizations may choose to make use of the letters from FOCAG and its multiple page list of Fort Ord army base's contaminants in the future.

Response to Concern 8e: *The Fort Ord Community Advisory Group's (FOCAG's) contributions to the Fort Ord Administrative Record are acknowledged and responses to FOCAG comments on the Technical Summary Report are included herein at Appendix F and Appendix I. However, the Army has significant technical expertise in the form of environmental experts, chemists, biologists, toxicologists, hydrogeologists, and other scientists and engineers, who collaborate with their counterparts at USEPA, DTSC, and CCRWQCB to determine relevant and appropriate chemicals to sample and analyze for based on site history or use. FOCAG does not have these resources. Additionally, a candidate chemical goes through the process of discovery, research, and investigation prior to listing by the USEPA, and the path to listing must be consistently followed for all candidate chemicals. Further information on this process can be found at https://dtsc.ca.gov/emerging-chemicals-of-concern/.*

Concern 8f: * The SCOTUS 6-3 ruling in April, 2020 has Clean Water Act implications for the Army as it applies to Fort Ord base's 3 coastal sister aquifers' groundwaters and their potential pollutant seepage into Monterey Bay National Marine Sanctuary.

https://www.sciencemag.org/news/2020/04/scotus-clean-water

Hypothetically, if PFAS pollutants seep into Monterey Bay from Seaside Aquifer, as an example, which entity will held liable for cleanup? The Army or M1W and MPWMD *[Monterey Peninsula Water Management District]*? Persistent PFAS chemical constituents are found in fire suppressants, agricultural pesticides and commercial use of pesticides at golf courses [Fort Ord base had 2 of them] and pharmaceuticals [Fort Ord base had a medical clinic].

Given the Army's use of contaminants that included PFOS and PFOA chemical constituents and PWM's advance treatment technology flaws, when these CEC's *[chemicals of emerging concern]* are found in Monterey Bay waters from Seaside Aquifer seepage, it will be difficult for the Army to disentangle itself from primary polluter cleanup responsibilities, if the Army intends to use Ahtna's specious deselection of PFAS risk sites at Fort Ord base for its legal defense in future lawsuits related to "functional equivalent" pollution by contaminated aquifer groundwaters.

Response to Concern 8f: *The April 2020 Supreme Court of the United States (SCOTUS) ruling regarding applicability of the federal Clean Water Act to groundwater is acknowledged; however, Concern 8f is hypothetical and the Army will not speculate on the nebulous legalities of determining responsible*

parties in such a scenario. Based on the information available, it is unlikely PFAS releases resulting from Army activities at the former Fort Ord are migrating into the Monterey Bay. However, the Army intends to conduct a PA for PFAS at the former Fort Ord, including sites in the area of the Seaside Basin, in accordance with current DoD and Army policy as described in the Response to Concern 1, and the PA will include an evaluation of migratory pathways in soil and groundwater for sites where PFAS releases may have occurred. If the PA identifies additional evidence indicating a potential release of PFAS, then an SI may be recommended to determine whether or not a release of PFAS has occurred.

Concern 8g: * Ahtna's obvious attempt at trying to distance the Army from any responsibility for PFOS and PFAO contamination of the region's aquifers' groundwaters functions as a red flag rather than a credible legal defense document.

Response to Concern 8g: *The purpose of the basewide review and groundwater monitoring at OU2 was to assess the presence of PFOA and PFOS at the former Fort Ord in response to requests for information from the USEPA and the DTSC. The Army is by no means, through a contractor or otherwise, attempting to distance itself from responsibility for PFAS at the former Fort Ord, as evidenced by Army PFAS policy and guidance. While the Technical Summary Report was not written to be a "legal defense document," there is sufficient evidence to support the conclusions and recommendations presented therein.*

Concern 8h: * In-depth testing of soil and drinking water and groundwaters of the aquifers in the same 8 digit hydrologic unit at Fort Ord base, by specialized NELAC TNI certified labs that have the expertise to do precise detection of emerging chemical contaminants, should be done by a federal and/or state regulatory authority and the test results should be released to the public in layman user friendly language. More reports by DOD subcontractors with insufficient data, whose hidden agenda is to conceal rather than to inform, represent a continued sink hole of tax money with negligible returns to the public, whom government agencies are supposed to serve. *[**Responder's Note:** "TNI" means "The NELAC Institute."]*

Response to Concern 8h: *The Army has very stringent requirements for which laboratories may analyze samples collected from Army environmental sites. Not only are the laboratories required to possess active certifications under the National Environmental Laboratory Accreditation Conference (NELAC), but they also are required to be certified under the DoD National Environmental Laboratory Accreditation Program (NELAP). More information on California NELAC is available at https://nelac-institute.org/news.php?id=2656 and a list of NELAP certified laboratories is available at https://www.denix.osd.mil/edqw/accreditation/accreditedlabs/*

The implication that the Army or its contractors have hidden agendas or are concealing information is false. The Army works closely with the USEPA, DTSC, and CCRWQCB to ensure environmental investigations and remediation at the former Fort Ord are conducted in accordance with applicable laws and regulations and transparently to serve the public interest. Additionally, the Fort Ord Administrative Record is fully accessible to the public and includes every document prepared as part of the CERCLA process at the former Fort Ord. Similar to the Technical Summary Report, other documents that summarize analytical data from environmental sampling at the former Fort Ord include laboratory reports that are prepared by third-party independent laboratories, reviewed by third-party data validators, and reviewed by USEPA, DTSC, and CCRWQCB.

Concern 9. the DOD's history of paying insufficient attention to emerging CEC's like PFAS and not informing Congress of CEC $ cleanup needs.

* The GAO expressed deep concerns in a 2017 report that the DOD had paid insufficient attention to emerging CEC's [which include PFAS] and furthermore, that the DOD had failed to provide mandated feedback about CEC's to Congress annually as required by law. I believe the DOD's questionable conduct has been unhelpful to all concerned parties, including BRAC staff, because Congress cannot make informed funding decisions. Ahtna's technical summary report appears to be an extension of the DOD's longstanding policy on obscuring contamination facts and realities.

https://www.gao.gov/products/GAO-17-151

**** What GAO Found:***
The Department of Defense (DOD) has captured and reported more comprehensive cost information in its environmental cost reporting for installations closed under the Base Realignment and Closure (BRAC) process since GAO last reported on the issue in 2007. *For example, GAO reported in 2007 that the costs DOD reported for environmental cleanup for installations closed under the 2005 BRAC round were not complete; however, since fiscal year 2009, DOD's annual reports to Congress on environmental cleanup have included cleanup costs for all identified munitions and contaminants. For example, DOD estimated as of September 30, 2015, that it will need about $3.4 billion to complete environmental cleanup for installations closed under all BRAC rounds, in addition to the approximately $11.5 billion it has already spent.* ***Despite this improvement in reporting, DOD has not reported to Congress in its annual report that the removal of certain emerging contaminants (i.e., contaminants that have a reasonable possible pathway to enter the environment, present a potential unacceptable human health or environmental risk, and do not have regulatory standards based on peer-reviewed science) will be significant. Without DOD including in its annual report to Congress its best estimate of these increased costs, Congress will not have visibility into the significant costs and efforts associated with the cleanup of emerging contaminants on BRAC installations and therefore will not have the necessary information to make more informed funding decisions.*** *[**Responder's Note:** this text is excerpted from the Government Accountability Office (GAO) website. Emphasis was added by the commenter.]*

Response to Concern 9: *The assertion that the Technical Summary Report and DoD obscure contamination facts and realities is false. GAO did not express "deep concerns" and Concern 9 failed to note the GAO recommendation for DoD posted along with the GAO report:*

"To provide Congress with better visibility over the costs for the environmental cleanup of properties from all Base Realignment and Closure rounds to inform future funding decisions, the Secretary of Defense should direct the Secretaries of the military departments to include in future annual reports to Congress that environmental cleanup costs will increase due to the cleanup of perfluorinated compounds and other emerging contaminants, and to include best estimates of these costs as additional information becomes available."

Concern 9 also failed to note that the status of this recommendation is "closed" because DoD has taken actions that satisfy the intent of the recommendation. Specifically:

"…DoD concurred with this recommendation and stated that information on cleanup of perfluorinated compounds would be included in the fiscal year 2017 annual report to Congress. In November 2017, DoD

told [GAO] that the Defense Environmental Restoration Programs Annual Report to Congress for Fiscal Year 2016 will include language related to the possible increase in cost estimates due to emerging contaminants like perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). In the fiscal year 2016 Defense Environmental Programs Annual Report to Congress (issued June 2018), DoD stated that it expects that environmental cleanup costs will increase due to the investigation and cleanup of PFOS and PFOA and that as additional information becomes available, DoD will include a best estimate of these costs in its environmental cleanup costs. DoD further stated that as of December 31, 2016, the Department has spent approximately $202 million on sampling, analysis, and response actions to address PFOS and PFOA."

The purpose of the report was to assess the presence of PFOA and PFOS at the former Fort Ord in response to requests for information from the USEPA and the DTSC. Therefore, a discussion on the way DoD spends environmental cleanup money was not presented. The historical review was performed to determine the sites that have a higher likelihood of containing PFOA/PFOS, not to obscure facts and realities. This was performed through a systematic process of narrowing the list of sites, with a review of the available data. The Army intends to conduct a PA for PFAS at the former Fort Ord. If the PA identifies additional evidence indicating a potential release of PFAS, then an SI may be recommended.

Concern 10. CERCLA's future changes

* EPA has asked for public responses on the last step before adding 2 PFAS and future PFAS family members to its drinking water list of regulated chemicals. Public comments have a June 10 deadline. After the EPA makes its decision about regulating PFOS and PFOA, CERCLA will likely add PFAS members to its list of hazardous substances for cleanup. A recent legal paper suggests BRAC may be required to come back and cleanup PFAS found at its decommissioned military sites. The Army may want to act proactively rather than be compelled to return later when remediation costs are higher.

https://www.natlawreview.com/article/managing-pfas-environmental-due-diligence-future-s-uncertain

A CERCLA listing for PFOS and PFOA could also mean that responsible parties would need to cover the costs of providing a drinking water supply and repairing damage to natural resources caused by PFOS and PFOA for which they are responsible. The consequences of listing PFAS as a CERCLA hazardous substance may represent a case of "be careful what you wish for." ***In particular, the specter of revisiting or reopening sites, including once-federally listed Superfund sites that were closed by federal or state action, could be particularly troubling****....A more nuanced effect of a CERCLA hazardous substance listing of PFAS would be in the area of environmental due diligence in real estate and business transactions. Environmental due diligence is the process of evaluating the current and historical use and ownership of a property to ascertain the possible presence of a "release" of hazardous substances. [****Responder's Note:*** *this excerpt is from the cited article, which appears in the National Law Review, Volume X, Number 189. Emphasis was added by the commenter.]*

Response to Concern 10: *The Army and other DoD components have acted proactively in initiating the CERCLA process for PFAS, even though no PFAS compounds have been identified as CERCLA hazardous substances, and in providing bottled water or filtration systems where drinking water sources were impacted by PFAS. As of July 2019, DoD had spent more than $550 million on PFAS investigations and*

responses including providing bottled water and in-home water filtration systems.[12] As previously stated, the Army intends to conduct a PA for PFAS at the former Fort Ord. If the PA identifies additional evidence indicating a potential release of PFAS, then an SI may be recommended.

Conclusion (Concern 11). In conclusion, I would like to add that American taxpayers are growing increasingly concerned about public health issues related to environmental contamination. The DOD and the Army should be more in sync with the domestic priorities of American taxpayers today as opposed to 9/11 priorities from 2 decades ago. Going forward, BRAC and its partner regulatory agencies should prioritize transparent identification of health impactful pollutants, based on today's reality rather than antiquated and arcane SDWA/Clean Water/CERCLA hazard lists and guidelines, and should promote modern remediation technology based on best efficacy, as opposed to cheapest cost.

As Americans, we are all in this together. The toxic effects of PFOA and PFOS occur even at small doses and may only be detected years later, meaning that any lapses in our cleanup approach in the here-and-now may cost us dearly down the line. With this in mind, I hope that BRAC and its regulatory agency partners will work together with local residents to implement an effective plan based on up-to-date science and medical research.

Response to Conclusion (Concern 11): *The DoD and the Army continue to take responsibility for their environmental obligations locally, nationally, and internationally. In July 2019, DoD announced a task force to address PFAS at U.S. military installations overseas and stateside. The task force is focused on three goals:[13]*

- *Mitigating and eliminating the use of AFFF: DoD only uses AFFF to respond to emergency events and no longer uses it for land-based testing and training, and treats each use of AFFF as a spill response to limit environmental effects. Furthermore, DoD updated the Military Specification for AFFF to ensure that supplies available for emergency firefighting responses do not contain detectable levels of PFOS or PFOA.*
- *Understanding the effects of PFAS on human health: the task force is educating DoD healthcare providers and their patients, monitoring PFAS exposure research and data, collaborating with the Department of Veterans Affairs and other federal agencies, and preparing to offer annual testing to DoD firefighters. DoD has provided $30 million, and will send an additional $10 million in FY 2020, to the ATSDR to conduct exposure assessments in the communities around eight current and former military installations and a multi-site health study. The results of these assessments and studies will be publicly available when complete.*
- *Fulfilling cleanup responsibilities related to PFAS: DoD is assessing PFAS use or potential release at 651 military installations as of September 2019. Actions to address drinking water exposure have already been taken and remaining efforts are primarily to address PFAS in groundwater. The DoD Components continue to conduct investigations and take action under CERCLA at installations where there are known or suspected releases of PFAS.*

[12] https://www.cnbc.com/2019/07/12/new-drinking-water-crisis--stemming-from-us-military-bases-pfas-contamination.html

[13] DoD PFAS Task Force Progress Report, March 2020 (https://media.defense.gov/2020/Mar/13/2002264440/-1/-1/1/PFAS_Task_Force_Progress_Report_March_2020.pdf).

DoD is aggressively working to complete these goals by evaluating and establishing policy positions and reporting requirements, encouraging and accelerating research and development, and ensuring the DoD Components are addressing and communicating about PFAS in a consistent, open, and transparent matter. To work toward a national solution to address PFAS, the Task Force coordinates and collaborates with other federal agencies on PFAS, including USEPA, the Department of Health and Human Services, the Office of Management and Budget, the Federal Aviation Administration, the U.S. Department of Agriculture, the National Aeronautics and Space Administration, the U.S. Department of Energy, the U.S. Geological Survey, the U.S. Coast Guard, and the U.S. Food and Drug Administration.

The Safe Drinking Water Act (SDWA), Clean Water Act, CERCLA, and other environmental laws were developed by the U.S. Congress for protection of human health and the environment. Over time, regulatory agencies have developed a robust framework of regulations and guidance to implement these laws as intended by Congress and much of this information is available to the public in layman's terms (e.g., see information about CERCLA at https://www.epa.gov/superfund). It is a mischaracterization to say these laws are antiquated and arcane, and it would be ill-advised (and illegal) to ignore them as suggested in the conclusion.

The former Fort Ord is a CERCLA (Superfund) site, and there are processes in place and procedures that must be followed to obtain data that is acceptable, usable, and defensible for its intended purpose. Part of the CERCLA process includes evaluating potential remedial alternatives by nine criteria that are part of the National Contingency Plan. Cost is one of the criteria; however, it is secondary to overall protection of human health and the environment and compliance with existing laws and regulations. Additionally, a remedy or remedial technology must be demonstrated to be effective, actually reduce contamination, implementable, and acceptable to the community (by definition, CERCLA is a public process; therefore, when the Army issues documents as part of that process they are made available for public review and comment). Accordingly, the Army works with the regulatory agencies to select and implement remedies that meet the nine criteria and are of best value to American taxpayers. Lowest cost is not and cannot be the deciding factor in remedy selection.