USACHPPM

U.S. Army Center for Health Promotion and Preventive Medicine
(Provisional)

INDUSTRIAL RADIATION HISTORICAL DATA REVIEW
NO. 27-43-E2HU-1-94
SEVENTH INFANTRY DIVISION AND FORT ORD
FORT ORD, CALIFORNIA
10 JANUARY - 15 APRIL 1994

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE (Provisional)

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) lineage can be traced back over fifty years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed three thousand dollars. Its mission was to conduct occupational health surveys of Army operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's (DOD) industrial production base and proved to be beneficial to the Nation's war effort.

Most recently, it has been nationally and internationally known as the U.S. Army Environmental Hygiene Agency or AEHA. Its mission, by this time, had been expanded to support the worldwide preventive medicine programs of the Army, DOD and other Federal Agencies through consultations/supportive services, investigations and training.

Today, it is redesignated the U.S. Army Center for Health Promotion and Preventive Medicine. Its mission for the future is to provide worldwide technical support for implementing preventive medicine, public health and health promotion/wellness services into all aspects of America's Army and the Army Community anticipating and rapidly responding to operational needs and adaptable to a changing world environment.

The professional disciplines represented at the Center include chemists, physicists, engineers, physicians, optometrists, audiologists, nurses, industrial hygienists, toxicologists, entomologists, and many others as well as sub-specialties within these professions.

The organization's quest has always been one of excellence and continuous quality improvement; and today its vision, to be the nationally recognized Center for Health Promotion and Preventive Medicine, is clearer than ever. To achieve that end, it holds ever fast to its values which are steeped in its rich heritage:

- Integrity is the foundation
- Excellence is the standard
- Customer satisfaction is the focus
- Its people are the most valued resource
- Continuous quality improvement is its pathway

Once again, the organization stands on the threshold of even greater challenges and responsibilities. It is being totally reorganized with a provisional structure and will obtain its first General Officer leadership. As it moves into the next century, new programs are being added related to health promotion/wellness, soldier fitness and disease surveillance. As always, its mission focus is centered upon the Army Imperatives so that we are trained and ready to enhance the Army's readiness for war and operations other than war.

It is an organization fiercely proud of its history, yet equally excited about the future. It is destined to continue it development as a world-class organization with expanded services to the Army, DOD, other Federal Agencies, the Nation and the World Community.

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

INDUSTRIAL RADIATION HISTORICAL DATA REVIEW NO. 27-43-E2HU-1-94
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I. Reference NUREG/CR-5849, Manual for Conducting Radiological Surveys in support of License Termination, Draft Report for comment, June 1992.

II. AUTHORITY.

A. Memorandum, 7th Infantry Division, ATTN: AFZW-DL-PO, subject: Request for Base Closure Assistance as Pertaining to the Radiological Protection Program, 21 July 1993.

B. Memorandum, ACSIM, ATTN: DAIM-ED-R, subject: Nuclear Regulatory Commission (NRC) Licensed Material Site Characterization Survey at Fort Ord, and endorsements thereto, 1 December 1993.

III. PURPOSE. The historical data review is a preliminary survey to establish the history of radioactive sources at Fort Ord. The locations of sources, the activity of those sources, how they were utilized, accidents or leaks that may have contaminated any areas, and general history of all units radiological activities on Fort Ord.

IV. GENERAL.

A. Mr. Harris Edge, CPT Robert Friedman and SGT David Hays established contact with the Nuclear Regulatory Commission (NRC), Department of the Army licensees, installation Radiation Protection Officer (RPO), Base Realignment and Closure (BRAC) Office, State of California, various other Fort Ord personnel and USAEHA files to obtain information to aid in identifying the areas requiring survey.

B. An extensive review of the NRC licenses, DARAs, USAEHA survey records, inventories, disposal records, maps, Radiation Standard Operating Procedures (SOPs), Fort Ord Radiation Control Committee Minutes, records of accidents, newspaper articles, and various other documents were reviewed and evaluated.

V. FINDINGS.

A. History of Fort Ord.

1. Fort Ord comprises an area of approximately 44 square miles in Northwestern Monterey County. Neighboring cities include Seaside, Marina, Sand City, Del Rey Oaks, Salinas, and Monterey.

2. Fort Ord was established in 1917 and has served primarily as a training and staging facility for infantry. Between 1947 and 1975, the installation was a basic training facility. Prior to 1947 and since 1975, the 7th Infantry Division has occupied the Installation. The 7th Infantry became a light infantry division in 1983; the light infantry does not use heavy tanks or heavy armor.

3. In the early 1960's, Fritzsche Army Airfield was completed and became part of the Fort Ord complex. Currently, there are three major developed areas within Fort Ord; the Main Garrison, the East Garrison, and Fritzche Army Airfield. Development in these areas include office complexes, family housing, medical facilities, recreational facilities, warehouses, industrial shops, and training facilities.

4. Approximately 20,000 acres of Fort Ord are undeveloped and used for training activities. Fort Ord, when active, employed approximately 15,000 active duty military personnel and about 5,000 civilian employees.

B. Uses of Radioactive Materials at Fort Ord.

1. There are at least 117 structures on Fort Ord that have used or stored radioactive commodities at some time when the post was active. The uses of radioactive commodities at Fort Ord were limited to those under the control of a specific NRC license, or those authorized and managed under a DA authorization. As defined by the Army, a radioactive commodity is an item of government property composed in whole or in part of radioactive materials and to which a National Stock Number (NSN) or part number has been assigned. A radioactive commodity is any item in the Department of Defense (DOD) Supply System that contains radioactive materials equal to or in excess of the quantities listed in 10 CFR, Part 20, Appendix C, or contains a specific activity greater than 0.002 microcurie (μCi) per gram of radioactive material and is NRC license exempt. These quantities were established so that control procedures could be published and implemented for the receipt, storage, use, maintenance, transportation and disposal of radioactive commodities in the DOD Supply System. A radioactive commodity should not be confused with a radioactive device, however, they are similar in appearance. The DOD has defined a radioactive device as a manufactured article, such as instruments, clocks, electron tubes, apparatus or similar devices having radioactive materials

(other than liquids) in a nondispersable form as a component part.

2. The radioactive commodities used and stored at Fort Ord include:

NOMENCLATURE	ISOTOPE	LICENSE
M4 Front Sight Post Assembly	H-3	AMCCOM
Radioluminous Fire Control Device	H-3	AMCCOM
Compasses	H-3	TROSCOM
M1 Muzzle Reference Sensor	H-3	AMCCOM
M1A1 Collimator	H-3	AMCCOM
L4A1 Quadrant Fire Control Device	H-3	AMCCOM
M58 and M59 Light Aiming Post	H-3	AMCCOM
M8A1 Diver Watches	H-3	TROSCOM
CAM Chemical Agent Monitor	Ni-63	AMCCOM
MX-7338 Radiac Check Source	Kr-85	CECOM
UDM/2 Radiac Calibration Set	Sr-90	CECOM
M72 Light Antitank Weapon (LAW)	Pm-147	AMCCOM
M16A1 Front Sight Post Assembly	Pm-147	AMCCOM
Radium Dials/Compasses and Check Source	Ra-226	DARA
T-55 Aircraft Engine Components	Th-232	AVSCOM
Night Vision Devices	Th-232	CECOM
Depleted Uranium Munitions	U-238	AMCCOM
UDM/6 Radiac Calibration Set	Pu-239	CECOM
MC-1 Moisture Density Tester	Am-241	TACOM
Chemical Agent Alarm	Am-241	AMCCOM

3. All radioactive commodities used and stored at Fort Ord were authorized under a specific NRC license or a DA authorization that granted the use of radioactive commodities for world-wide use to the Army and in some cases, other military services in DOD. All radioactive commodities were designed and developed specifically for military use and were designed and developed to accomplish specific assigned missions. As such, each radioactive commodity was subjected to use and environmental factors during the initial design tests to establish and prove the military usefulness and safety of the item. For instance, drop, shock, vibration, temperature extreme tests, altitude, and accelerated weathering tests such as those established in Title 10, Part 32.101 were included as part of the testing protocol.

4. In the spring of 1992, a group of Canadian soldiers visited Fort Ord for training mission and left behind 1186 Tritium rifle sites at the Ammunition Supply Point (ASP). They were later turned-in to the post RPO, who stored them in the radioactive waste holding area to await disposal.

5. The use of radioactive materials for diagnostic and therapy procedures at Fort Ord was authorized by NRC Byproduct Material License No. 04-12727-02. The USAEHA Survey No. 28-43-0602-88, Fort Ord, 13-16 June 1988, documents the license termination and closeout survey of the radioactive material usage areas. The NRC authorized the release of these areas for unrestricted use.

6. The U.S. Army Combat Development Experimentation Command at Fort Ord used tritium sources as road marking beacons. These beacons were utilized to test the concept of night time road marking system for military forces. They were authorized under two byproduct material licenses. License No. 04-12727-01, application dated 21 February 1972, and amendment No. 01, dated 19 April 1972. License No. 04-12727-03, dated 13 September 1973, which replaced License No. 04-12727-01 (see Appendix C).

C. Outdoor Survey Sites.

1. The ASP Yard consists of an area of 100 x 30 meters. The area will be evaluated to assess potential radiological contamination that may have been accidentally placed in the yard. All radiological surveys and environmental sampling will be conducted in accordance with NRC, EPA and the State of California guidance. The ASP Yard will be surveyed to evaluate potential alpha, beta and beta-gamma activities in surface soil. The survey will include instrumentation surveys and environmental samples, such as soil, and if applicable, water and vegetation samples. Radiochemistry laboratory analyses will be performed by USAEHA, Radiochemistry Analysis Branch or its contractor.

2. The Artillery Wash-Down Area is an area approximately 300 x 300 meters. The area will be evaluated to assess potential radiological contamination on the wash-down pad, of soil surrounding the pad and drainage streams resulting from water runoff.

3. The Defense Reutilization and Marketing Office (DRMO) sites consist of areas about 200 x 100 meters each. Both areas will be evaluated for potential radiological contamination of the soil from radium-226 found in vehicle instrument dials and gauges. All radiological surveys and environmental sampling will be conducted in accordance with EPA guidelines and methodologies. Both areas will be surveyed to evaluate potential contamination from alpha, beta and beta-gamma emitting radioisotopes and specifically radium-226. The survey will include instrumentation surveys and collection of environmental samples. Radiochemistry laboratory support will be provided by USAEHA, Radiochemistry Analysis Branch.

D. CPT Robert Friedman, and SGT David Hays interviewed personnel involved in handling the radioactive commodities, or personnel who may have knowledge of accidents, usage or disposal of those commodities to evaluate the potential for residual activity beyond expected locations. For a list of the typical type of questions asked (see Appendix A).

E. The 117 buildings originally identified will be thoroughly surveyed. There was an approximately 230 additional buildings added that were suspected to have contained/stored radioactive commodities at some point in the past, but had no documented evidence. A good faith effort will be made to demonstrate that those additional buildings are free of contamination by randomly selecting 20% for a thorough survey. That sampling will be considered representative of the entire 230 buildings, therefore enabling the survey effort to represent the remaining buildings (see Appendix B).

VI. CONCLUSION. The historical record search and interview with key personnel revealed that there is little chance of contamination from the type of commodities used at Fort Ord.

VII. RECOMMENDATIONS. The buildings and land areas identified in this report, that have documented proof of radioactive commodities storage should be further characterized. In the unlikely event that contamination is found, the contamination should be remediated and a final status survey performed prior to their release as an unrestricted use area.

OSCAR E. JAMES
SFC, USA
Health Physics Specialist
Health Physics Division

APPROVED:

HARRIS EDGE
Chief, Industrial Health Physics
Branch
Health Physics Division