

ECP Workshop
Fort Monmouth, New Jersey

[Alberth Edit]

Radiological Materials and Radiological Decommissioning

Data available during the ECP Team visit at Fort Monmouth was not sufficient to determine historically all locations at Fort Monmouth where radiological materials had been handled or used, the identity of the radiological materials handled, and the status of the installation relative to radiological decommissioning and closeout. A radiological Historical Site Assessment (HSA) will be needed to answer these questions and assess the level of sampling and other activities that will be required to achieve closeout of all applicable U.S. Nuclear Regulatory Commission (NRC) Licenses and U.S. Army Radiation Authorizations (ARAs).

Representatives of the Installation Management, the DPW Environmental Office, and the U.S. Army Communications-Electronics Command (CECOM) Safety Office have indicated that certain radioactive commodities have been stored or used at Fort Monmouth.

The CECOM is a major tenant and main user of radioactive materials at Fort Monmouth. In addition to the radiation sources in the CECOM Safety Office Laboratory, the CECOM Safety Office is the U.S. Army Materiel Command (AMC) NRC License Manager for several generally licensed radioactive commodities, as well as having the mission of Radiation Safety Officer for the Army National Guard.

Other units/tenants at Fort Monmouth that use radioactive materials are the U.S. Military Academy Preparatory School (USMAPS) and the U.S. Federal Bureau of Investigation (FBI).

Both Installation Management and USACHPPM historical reports have indicated that certain radioactive commodities may have been stored or used at Fort Monmouth. An archive/records search is needed to identify the radioactive commodities that were present.

Mr. David Alberth of USACHPPM has taken the lead on interviewing additional installation staff and will make a recommendation with respect to the best means of completing the Historical Site Assessment for use of radioactive materials for the purposes of the ECP assessment.

An initial assessment of radioactive sources and materials formerly used or in use at Fort Monmouth was made during the ECP Team visit to Fort Monmouth. The following information is provided:

Fort Monmouth Radiation Safety Program. The CECOM Safety Office and the Garrison Radiation Safety Officer (RSO) supplement applicable Federal, State, and Army regulations governing the methods for control of potential health hazards resulting from the procurement, possession, storage, transportation, use and disposal of radioactive materials and equipment capable of producing potentially hazardous radiation with a local CECOM regulation and Command policies, which apply to all activities assigned or attached to Fort Monmouth for health physics support.

Radioactive Materials Use. Fort Monmouth operations involving radioactive materials or machine-produced radiation were or are performed under the following licenses and authorizations (current documents and expiration dates need to be obtained during the HSA):

- NRC Byproduct Material License No. 29-01022-06, Expiration Date _____, Research and development (R&D) broadscope, issued to CECOM.
- NRC Byproduct Material License No. 29-01022-07, Expiration Date _____, Irradiator sources.
- NRC Byproduct Material License No. 29-01022-14, Expiration Date _____, Items of supply (radioactive commodities).
- U.S. Army Radiation Authorization (ARA) No. 29-10-01, Expiration Date _____, Various small sources.
- U.S. Army Radiation Authorization (ARA) No. 29-10-06, Expiration Date _____, Radium-226 items of supply.
- U.S. Army Radiation Authorization (ARA) No. 29-10-10, Expiration Date _____, Electron tubes in supply.
- U.S. Army Radiation Authorization (ARA) No. 29-10-12, Expiration Date _____, Thorium-232 in Night Vision Systems.
- NRC License No. _____ (?), issued to Fort Monmouth MEDDAC (U.S. Patterson Army Hospital) [possible historical document].
- NRC Registration Certificate – *In Vitro* Testing with Byproduct Material under General License, 21 June 1975, Fort Monmouth MEDDAC (U.S. Patterson Army Hospital) [historical document].
- The Fort Monmouth Garrison, USMAPS, and U.S. Army Reserve Command (USARC) units may have stored and used or are currently storing and using RADIAC survey meters, chemical agent monitors, and chemical agent detectors, all with sealed radioactive sources, at Fort Monmouth. These radioactive commodities are all generally licensed by the NRC under U.S. Army Materiel Command (AMC) subordinate commands. Some possible generally-licensed radioactive commodities, under NRC Licenses and ARAs used by Fort Monmouth tenants include:

Table. List of NRC-Licensed and ARA Radioactive Commodities
(Current and Historical Items)

NOMENCLATURE	ISOTOPE	ARMY LICENSEE
M4 Front Sight Post Assembly	H-3	ACALA
Radioluminous Fire Control Device	H-3	ACALA
Compasses	H-3	TROSCOM
M1 Muzzle Reference Sensor	H-3	ACALA
M1A1 Collimator, Infinity Aiming Ref	H-3	ACALA
L4A1 Quadrant Fire Control Device	H-3	ACALA
M58 and M59 Light Aiming Post	H-3	ACALA
Wrist Watches	H-3	TROSCOM
Chemical Agent Monitor	Ni-63	ACALA
MX 7338 RADIAC Check Source	Kr-85	CECOM
UDM/2 RADIAC Calibration Set	Sr-90	CECOM
M72 Light Antitank Weapon (LAW)	Pm-147	IOC
M16A1 Front Sight Post Assembly	Pm-147	ACALA
Radium Dials/Compasses/Check Sources	Ra-226	ARA
T55 Aircraft Engine Components	Th-232	AVSCOM
Night Vision Devices	Th-232	CECOM
UDM/6 RADIAC Calibration Set	Pu-239	CECOM
MC1 Moisture Density Tester	Am-241/Cs-137	TACOM
Chemical Agent Alarm	Am-241	ACALA

The proposed HSA needs to identify tenants at Fort Monmouth who maintain storage rooms for radioactive commodities (e.g., Arms Rooms, NBC Rooms, and Storage Cabinets), which will require closeout surveys to document proper close-out procedures were accomplished to support the eventual decommissioning of the Army Materiel Command's U.S. Nuclear Regulatory Commission (NRC) Licenses for these Army radioactive commodities.

Radioactive Materials Inventory. The CECOM Safety Office maintains a semi-annual Radioactive Materials Inventory for all radioactive materials and commodities possessed, used, and disposed of at Fort Monmouth activities and organizations under the CECOM Byproduct Material Licenses and ARAs.

Radioactive Waste Storage Facility. The CECOM Safety Office stores various radioactive commodities and waste in their Radioactive Waste Storage Facility (Buildings 2540/2539, CECOM Safety Office) until they can be removed for ultimate disposal by U.S. Army Field Support Command (USAFSC), Rock Island Arsenal, Illinois. These include H-3 exit signs, damaged Army radioactive commodities, radium dials, laboratory radioactive waste, and other radioactive material classified as waste. As part of the close-out activities under BRAC, the cost for ultimate disposal of these sources by USAFSC will have to be considered as part of the costs of the Fort Monmouth close-out.

Additional Buildings with Radioactive Materials. The following buildings at Fort Monmouth require further investigation and a records search to determine if radioactive materials were used or stored in them:

- Squire Building, Building _____
- Myers Center, Building 1950

They should definitely be included in the radiological HSA and scoping survey.

Close-Out Surveys of NRC-Licensed Activities/ARA Activities. Close-out surveys will most likely include the two previously listed buildings, as well as the CECOM Safety Office Buildings, the Patterson Army Health Clinic, the Communications-Electronics Museum, Garrison NBC Rooms, and potentially the landfills. All Fort Monmouth buildings and facilities where NRC-licensed radioactive materials or ARA radioactive materials will require close-out surveys and documented reports for the historical archives. Also, surveys to document that all ionizing radiation producing devices were removed from the facilities and properly transferred or disposed of must be completed and documented.

CECOM Safety Office. The CECOM Safety Office maintains several Health Physics laboratories, a nuclear counting laboratory, and a Radioactive Waste Storage Facility (Buildings 2539 and 2540). The laboratories contain several analytical laboratory instruments that are ionizing radiation producing devices. In addition, there is a JL Shepherd & Associates gamma irradiator and three RADIAC Calibrators. If it is determined that the CECOM is to be moved to another Army installation, then the costs of transferring these radioactive sources and construction of new laboratories and shielded rooms for irradiators and RADIAC Calibrators should be considered part of the BRAC close-out costs for Fort Monmouth. This will ensure that the CECOM Safety Office continues its Radiation Safety Program for the Army.

USACHPPM Radiation Protection Surveys of Fort Monmouth Activities. Under the requirements of AR 40-5, *Preventive Medicine*, USACHPPM, and its predecessors, the Army Environmental Hygiene Agency and the Army Industrial Hygiene Laboratory, has performed audits of the Fort Monmouth Radiation Protection Program for over 40 years for the Office of The Surgeon General (OTSG). USACHPPM audit reports were used as the basis for formulating questions during the BRAC 2005 ECP Team visit to Fort Monmouth.

U.S. Army Health Clinic/U.S. Army Hospital. The current Health Clinic, though it also has diagnostic x-ray machines, does not use radioactive materials for medical use. During the 1960s and 1970s, the former U.S. Army Hospital used radionuclides in clinical laboratory tests or radioimmunoassay (*in vitro*) procedures. An archive/records search is needed to identify the radioactive

materials that were present and what, if anything was done for their ultimate disposal for the past operations.

U.S. Army Communications-Electronics Museum. According to the museum curator, the Communications-Electronics Museum possesses Army Radiation Authorization (ARA) Number A 29-0122, Expiration Date _____, for possession and storage of historical technical instruments, items, and other materiel containing low-level radioactive material. All historical displays of military equipment and vehicles and installation monuments have been demilitarized to remove radioactive material such as radium. Demilitarization has been accomplished by the CECOM Safety Office. The museum curator also stated that approximately 65 historical items containing radioactive commodities are in storage in Building 292. If it is determined that the museum's historical accessions are to be transferred to another museum at another Army installation, then the costs of transferring these radioactive items should be considered part of the BRAC close-out of Fort Monmouth.

Former Manhattan District Project Work. There were no documents available at Fort Monmouth during the ECP Team visit to indicate that Manhattan District Project work during the 1940s was done at Fort Monmouth. Squire Hall was the main research laboratory at Fort Monmouth during the 1940s.

All Fort Monmouth Buildings. According to DPW and the CECOM RSO, all installed Emergency Exit Signs containing tritium (hydrogen-3 or H-3), a form of radioactive material, in Fort Monmouth buildings are turned in to the CECOM Safety Office for disposal when they are removed during modifications or demolition of installation buildings. The CECOM RSO stores them in the CECOM Radioactive Waste Storage Facility on Fort Monmouth (Building 2540, CECOM Safety Office) until they can be removed for ultimate disposal by U.S. Army Field Support Command, Rock Island Arsenal, Illinois.

Army Radon Reduction Program. As a requirement of the Army Radon Reduction Program, Fort Monmouth conducted monitoring of the indoor air for radon in multiple buildings during the 1980s. Records of radon testing were provided to the ECP Team, including a Memorandum of Record, dated 3 May 1991, subject: Army Radon Reduction Program.

Radionuclides in Drinking Water and the Sanitary Sewage System. Drinking water quality records are available at Fort Monmouth to document that laboratory results for water samples analyzed for naturally occurring radioactive contaminants were within the maximum contaminant levels (MCLs) for all tested naturally occurring radionuclides.

Historical Records Review. An historical records review for radioactive material procurement, use, and disposal is required.

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