ER Site No. 43: Radioactive Material Storage Yard (TA-II)

ADS: 1303
Operable Unit: Tech Area II

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Site History

The low-level Radioactive Material Storage Yard (RMSY), designated as Solid Waste Management Unit (SWMU) 57 in the Resource Conservation and Recovery Act (RCRA) Facility Assessment, (RFA) (1987), is located on the west side of Technical Area-II (TA-II). It is approximately 50-ft wide and 100-ft long, and was formerly surrounded by a chain link fence with a locked gate. The fence was installed around 1970 and removed in 2001. Around 1959, geology from 113 SSS was established and operated by the Health Physics Division. The Radioactive and Mixed Waste Department took over management in 1989. No written records are available concerning the types and quantities of potential contaminants once stored at the RMSY.

The RMSY was used from about 1961 to 1994 for temporary storage of small, sealed radioactive sources of 10 to 20 microcuries for a maximum period of one year each. The sources stored at the RMSY were purchased by various SNL/NM organizations for research and development purposes. When the sources were no longer required by these organizations, they were temporarily stored at RMSY before being disposed or reapplied elsewhere.

Cobalt-60 and cesium-137 were the primary radioactive sources stored at the RMSY. Other radioactive sources, including tritium, may have been stored at the site. The sources were placed in lead casks with 1-inch-thick walls; the casks were then placed into 250-cu-ft transportainers. After holding a source for one year, casks were placed into larger containers and encapsulated with concrete. The concrete-filled containers were subsequently disposed in the Mixed Waste Landfill (MWL) located in TA-III. Some empty casks were temporarily stored on pallets at the RMSY. These empty casks were previously used in various work areas to store slightly activated materials.

The RMSY was also reportedly used as a temporary holding area for contaminated material such as cabinets, fume hoods, laboratory benches, desks, and trailers until they could be disposed in the MWL.

Based on limited historical interviews and records, constituents of concern at the RMSY include radioactive constituents, including cobalt, cesium, uranium, and tritium, and possibly heavy metals.

In September 1991 two surface (0 - 0.5 feet bgs) soil samples were collected and analyzed for tritium, total uranium, and other radioisotopes by gamma spectroscopy. All sample analysis was performed at off-site laboratories. One sample showed tritium activity and a total uranium concentration significantly above background levels. Both locations showed cesium-137 above background levels.

In November 1993 surface (0 - 0.25 feet bgs) and near-surface (2 - 3 feet bgs) samples were collected and analyzed for gross alpha and beta activity, isotopic plutonium, tritium, total uranium, heavy metals, and other radioisotopes by gamma spectroscopy. All sample analysis was performed at off-site laboratories. All the surface sample locations showed cesium-137 above background levels. Samples analyzed for heavy metals showed a few locations where cadmium was above background levels. Two surface samples showed cadmium above but within the range of background. Chromium was elevated at all sampling locations while zinc and lead exceeded background only at the surface sample locations. The lead anomalies were all surface samples except for one deeper sample that was within the range of background.

In April 1994 seven additional soil samples were collected (0 - 2 feet bgs) and analyzed for isotopic plutonium and other radioisotopes by gamma spectroscopy. All sample analysis was performed at off-site laboratories. All the surface sample locations showed cesium-137 above background levels.

In June 1999, the New Mexico Environmental Department (NMED) Department of Energy (DOE) Oversight Bureau and SNL/NM collected and split two surface (0 - 0.5 feet bgs) soil samples to verify that an anomalous tritium detection from the September 1991 sampling event did not represent an undetected area of contamination. Both samples were analyzed at an off-site laboratory. All the analytical results for tritium were below background levels.

Constituents of Concern

Tritium
Cobalt-60
Cesium-137
Cadium
Uranium
Chromium

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

A No Further Action Proposal (NFA) was submitted to the Environmental Protection Agency (EPA) in October 1994. In June 1999, additional information and a revised risk assessment requested by the NMED were submitted by SNL. Because COCs at ER Site 43 are present in concentrations or activities greater than background screening levels or because constituents were present that did not have background screening levels, it was necessary to perform a risk screening assessment for the site. The total and incremental human health hazard indices are 0.03 and 0.03, respectively. The NMED guideline is 1.00. The total and incremental human health excess cancer risk is 7E-8 and 7.04E-8, respectively. The NMED guideline for the ER Site 43 excess cancer risk drivers (class A&B carcinogens) is less than 1E-6 and less than 1E-5 for class C carcinogens. The human health industrial land-use scenario TEDE is 0.56 mrem/yr. The EPA's numerical guideline is 15 mrem/yr. Ecological hazard quotients greater than 1 (NMED guideline) were predicted using maximum values. However, closer examination of the exposure assumptions revealed an overestimation of risk primarily attributed to exposure concentration (maximum COC concentration was used in estimating risk), exposure setting (area use factors of one were assumed meaning the animal only ate and lived in contaminated area), and background risk. Based upon an evaluation of these uncertainties, ecological risks associated with this site are acceptable.

In December 1999, Site 43 was deemed acceptable by the NMED for NFA approval. The NFA was approved by NMED in October 2000 after completing the public review and permit modification process.

Future Work Planned

No further work is planned at ER Site 43 all records will be put into the record center and this site will be closed through the administrative closure process.

Waste Volume Estimated/Generated

No waste was generated at ER Site 43.

Information for ER Site 43 was last updated Jan 24, 2003.