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# **Beltsville Agricultural Research Center: Low-Level Radiation Burial Site Decommissioning**

**December 2008**

The U.S. Department of Agriculture's Agricultural Research Service (ARS) is in the process of investigating the nature and extent of any soil and groundwater contamination at the Low-Level Radiation Burial Site (LLRBS) at the Beltsville Agricultural Research Center (BARC). A decommissioning plan for the site's closure is also being prepared.

## **Background**

The LLRBS is an inactive landfill formerly used for the disposal of low-level radioactive waste (LLRW) and other wastes from the late 1940s to the mid-1980s. Waste materials came from veterinary and animal experiment laboratories. The site is completely within the boundaries of BARC, and encompasses approximately 60,000 square feet (1.4 acres) of fenced land. This site was licensed by the Nuclear Regulatory Commission (NRC).

The NRC license for the LLRBS was renewed in 2005 to address decommissioning, remediation and closure. The renewed license prohibits any further burials of radioactive material, stipulates requirements for continued maintenance and monitoring of the site, authorizes a Waste Characterization Study, requires preparation of a Decommissioning Plan, and performance of cleanup.

The original NRC license required only the preparation of radionuclide and activity records for wastes disposed at the site. The total volume of waste buried at the site is unknown; however, ARS records indicate that, between 1951 and 1987, 50 pits were excavated that were about 10 feet wide by 12 feet long by 10 feet deep, with 6 feet between pits. Five feet of clean backfill was reportedly placed on top of the contents of each pit in order to fill the pits to ground level. ARS estimates that as much as 33,000 cubic feet of wastes were buried at the site.

Among the low-level radioactive materials buried in the LLRBS are scintillation vials; metal, glass, and plastic objects; animal carcasses; and animal wastes. It is also likely that ash from incinerated animal tissue is buried in the site.

## **Past and Ongoing Activities**

Past investigation activities at the LLRBS have included sampling and analysis of groundwater in the vicinity of the site to determine the extent of any contaminant migration; installing permanent monitoring wells; sampling and analysis of nearby surface water and sediment; and tasks associated with modeling any residual radioactive contamination in soil, and its potential future impacts to groundwater primarily from carbon-14, tritium, and radium 226/228; radioisotopes used in BARC research, and which are known to have been disposed of at the LLRBS.

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Radium is an alkali earth metal used in cancer treatments and scientific research. Tritium, which has a very weak radiation that cannot penetrate skin, is used to label compounds such as carbohydrates, nucleotides, and amino acids so they can be tracked in experiments. Carbon-14 is used as a tracer in biological systems and for archaeological dating and has not been found to be harmful to human health.

A Waste Characterization Survey was completed in 2006 to identify the contents of five individual burial pits, selected to be representative of disposal practices over time. Survey data is currently being used to determine excavation approaches and cleanup procedures and to identify waste disposal options and likely waste transportation and disposal costs.

## **Future Activities**

Regular groundwater sampling will continue to monitor radionuclides and other contaminants of potential concern in groundwater. Once Waste Characterization Survey data is compiled and waste transportation and disposal options identified, ARS will complete revision of the draft Decommissioning Plan to include the Waste Characterization Survey data in accordance with NRC and EPA requirements. The revised Decommissioning Plan will be submitted to regulatory authorities. Once the plan is approved, full-scale removal and remediation activities can be scheduled.

## **For More Information...**

Contact Kim Kaplan, ARS Information Staff, at 301-504-1637, [Kim.Kaplan@ars.usda.gov](mailto:Kim.Kaplan@ars.usda.gov), or visit the ARS Information Repository located in Room 014, Building 003, 10300 Baltimore Avenue, Beltsville, MD. The Information Repository is open to the public Monday through Friday, 8:30am to 4:30pm. The Information Repository is also available at the Prince George's County Memorial Library at 4319 Sellman Road. The library's hours of operation are Monday through Wednesday, 10 am to 9 pm; Thursday and Friday, 10 am to 6 pm; and Saturday, 10 am to 5 pm.