



Beltsville Agricultural Research Center: Additional Investigation, BARC 18: Low-level Radiation Burial Site



June 2005

The U.S. Department of Agriculture's Agricultural Research Service (ARS), is in the process of completing a comprehensive environmental investigation at the Beltsville Agricultural Research Center (BARC). The purpose of the investigation is to identify and prioritize potential "areas of concern" (AOCs) where hazardous substances may have been disposed or otherwise exposed to the environment. BARC will be cleaning up any AOCs found to a concern to the environment or human health through a combination of long-term remedial actions and short-term removal actions. As part of this activity, ARS is investigating the nature and extent of potential soil and groundwater contamination associated with BARC's licensed low-level radiation burial site (LLRBS).

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. The site was licensed by the Nuclear Regulatory Commission (NRC). 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 of fenced land.

The NRC license for the LLRBS was recently renewed. The renewed license does not authorize any additional burials of radioactive material, but sets a requirement for continued maintenance and monitoring of the site.

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 50 pits were excavated between 1951 and 1987. The approximate dimensions of the pits were 10 feet wide by 12 feet long by 10 feet deep, with 6 feet between pits. Five feet of clean backfill dirt was 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 waste were buried at the site.

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

Ongoing Activities

A site investigation is in progress at the LLRBS to identify and evaluate the exact nature and extent of contaminants and to determine appropriate cleanup requirements. ARS plans to guide the investigation process were approved by U.S. Environmental Protection Agency and NRC. These include a sampling and analysis plan, a health and safety plan, and a quality assurance project plan.

LLRBS investigation activities in recent years have included testing groundwater in the vicinity of the site to determine the extent of any contaminant migration; installing additional monitoring wells; sampling and analyzing groundwater, surface water, and sediment; and other tasks associated with modeling any residual radioactive contamination in soil, and potential future impacts to groundwater primarily from carbon-14, tritium, and radium 226/228,

which were known to have been disposed of at the site.

Radium is an alkali earth metal, used in the mid-1900s to paint watch and clock faces, and 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.

Future Activities

Excavation of some of the burial pits to more accurately determine the nature of wastes, and the total amount of contamination in soil immediately beneath the burial site, is currently scheduled for fall 2005. NRC recently approved a Test Pit Characterization Work Plan developed to guide the planned excavation.

Field and laboratory data, combined with information relating to site history, will be evaluated to assess the nature and extent of contamination and potential risks associated with future site development and groundwater use.

Groundwater sampling will continue on a semi-annual basis to monitor radionuclides and organic contaminants of potential concern.

Once the burial pits and subsurface soils have been sufficiently characterized, ARS will prepare a Decommissioning Plan in accordance with NRC decommissioning policies and EPA requirements to remove all remaining wastes from the pits. Once these documents are completed and approved by the regulatory authorities, the removal will begin.

For More Information...

Contact Kim Kaplan, ARS Information Staff, at 301/504-1637, 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.