



Recommendation No. 140

July 24, 2001

Old Radioactive Waste Burial Ground (ORWBG) Focus Group Final Report

Background

The Burial Ground Complex occupies approximately 195 acres in the central section of the Savannah River Site (SRS). The complex consists of several former and present storage and disposal sites for hazardous and low-level radioactive wastes from SRS activities. The southern area of the complex is called the Old Radioactive Waste Burial Ground (ORWBG) which occupies 76 acres of the complex. The ORWBG received wastes from 1952-1974 with only a small quantity of waste being disposed in 1974. The ORWBG facility is composed of earthen trenches designed for low-level radioactive waste disposal. In 1998, SRS completed the installation of a four-foot thick low-permeability native soil cover to reduce surface radiation levels, reduce storm water infiltration to the waste layer, and mitigate contaminant migration to the groundwater. Final closure is being planned under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as agreed in the SRS Federal Facility Agreement.

In addition, 22 underground Old Storage Tanks (OSTs) remain in place and are a part of the ORWBG. The tanks held spent Plutonium-Uranium Extraction solvent from the reprocessing plants and smaller amounts of tritiated pump oil. The OSTs have not been used since 1977. They have been emptied so that only a small residual of liquids and sludge remain. The residue contains radionuclides and other chemical contaminants. These OSTs do not have the four-foot thick low-permeability native soil cover that was placed over the remainder of the ORWBG in 1998.

As a result of past waste disposal practices, underlying groundwater systems are contaminated with tritium, some other radionuclides, and volatile organic compounds (VOCs). There is some evidence of low concentrations of CERCLA regulated hazardous metals (lead and mercury) in the ground water. The ground water from the southwest plume discharges tritium-contaminated water from surface springs and seeps into a small tributary that eventually flows into Fourmile Branch. Tritium concentrations currently exceed Primary Drinking Water Standards at Fourmile Branch. As part of an interim measure, a sheet pile dam was constructed over the portion of the seepage having the highest tritium concentration. An irrigation system is installed to redistribute the contaminated water over a naturally forested area for remediation purposes. This remediation process is commonly referred to as phytoremediation.

In 1998, the SRS Citizens Advisory Board formed a public Focus Group (FG) to evaluate the need for further remediation and closure of the 76 acre Old Radioactive Waste Burial Ground. The attached report, entitled *Long Range Analysis of the Need for Cleanup and Closure of the Old Radioactive Waste Burial Ground – Human Health Risk Analysis*, is the result of the 2.5-year study of the FG. This report evaluates the risks presented by the ORWBG, draws conclusions, and makes recommendations on needed remediation.

Comments

The main conclusion of the ORWBG FG study is that the ORWBG poses no human health impacts now or into the future under the proposed Institutional Controls (IC). To further protect workers and the public (should Passive IC fail) the FG does recommend two minor remedial actions (recommendations 3 & 4 below). With these remedial actions in place and the first two recommendations in place the FG concludes that the ORWBG poses no human health threat to the workers or to the public in the near-term or the long-term. Based upon a review of ORWBG information, the FG developed seven recommendations and included an analysis of each in the attached report.

The recommendations are:

1. Cease the current collection of tritium-containing groundwater and irrigation of the forest as soon

- as possible.
2. Develop IC specific to the ORWBG and the area between the ORWBG and Fourmile Branch by April 2002.
 3. Fill the solvent tanks with grout to stabilize them and then cover this portion of the ORWBG with 2 to 8 feet of low permeability soil to match the rest of the ORWBG.
 4. Develop a land management strategy to minimize erosion, prevent deep-rooted plants from encroaching, and discourage burrowing animals and insects from bringing waste to the surface.
 5. Consider refining the groundwater transport calculations for Volatile Organic Compounds (VOCs) and other Constituents of Interest (COIs) (other than tritium) in order to be consistent with measurements.
 6. Do not excavate buried plutonium from the ORWBG.
 7. Establish a mixing zone for the ORWBG groundwater plume during active and passive IC. Consider different mixing zones for active IC and for passive IC.

Recommendation

The SRS CAB supports all of the FG conclusions except for number 1 above because the SRS CAB believes phytoremediation is an important technical experiment to treat tritium-contaminated groundwater. The SRS CAB supports the Site's commitment to minimize all radioactive releases to the Savannah River and therefore, recommends the following:

1. The three agencies review the attached FG report and incorporate the remaining six findings in the remedial actions of the ORWBG.
2. SRS develop an implementation plan for the FG report recommendations (Number 2 through Number 7 above) and present the plan to the SRS CAB by October 22, 2001.

References

Long Range Analysis of the Need for Cleanup and Closure of the Old Radioactive Waste Burial Ground – Human Health Risk Analysis, prepared by the Old Radioactive Waste Burial Ground Focus Group, July 2001.

[H. Perry Holcomb, PhD - Minority Report to Recommendation 140](#)

[William Willoughby II, PE - Minority Report to Recommendation 140](#)

Agency Responses

[*Department of Energy-SR*](#)

[*U.S. Environmental Protection Agency*](#)