This fact sheet provides comprehensive descriptions of key activities that took place throughout the cleanup process at Weldon Spring, Missouri.

Fact Sheet

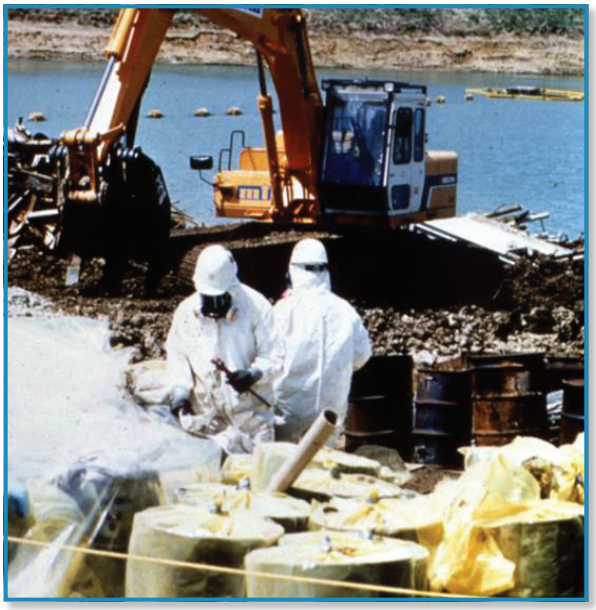
U.S. DEPARTMENT OF ENERGY | Legacy Management

Weldon Spring, Missouri, Site
Raffinate Pit Waste Treatment

This site is managed by the U.S. Department of Energy Office of Legacy Management.

The Weldon Spring Chemical Plant was operational from 1957 to 1966 and four unlined pits were constructed to store waste products from the uranium refining process. These wastes (called raffinates) were placed in the pits in the form of liquids and fine-grained sludges. In addition, thousands of drums and hundreds of tons of rubble from earlier decontamination activities were disposed of, primarily in Raffinate Pit 4.

Removal of debris was the first step in the overall cleanup of the raffinate pits. Debris consolidation was conducted from April to December 1996. During this time, approximately 3,385 cubic yards of debris was removed from the pits, including about 6,130 drums. Many of the drums contained wastes, such as polychlorinated biphenyl (PCB)-contaminated oils, asbestos insulation, uranium wastes, magnesium compounds, graphite, and sediment. Many of the drums were sampled, repackaged, and placed in storage to await final treatment and/or placement in the onsite disposal cell.



Raffinate Pit 4 Debris Cleanup Activities

Raffinate Pit 2 Cleanup Activities

Other wastes removed from the pits included wood and metal debris, process equipment, piping, and construction materials. This debris was sorted, sized for volume reduction, and placed in the disposal cell.

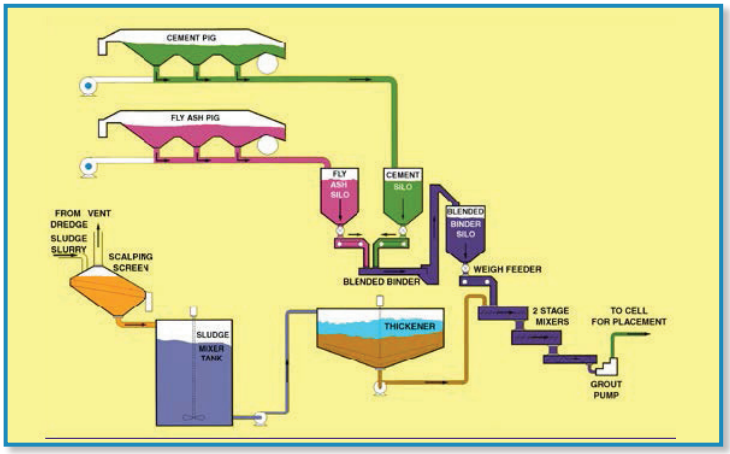
Onsite Chemical Stabilization and Solidification (CSS) was selected as the technology for treatment of the contaminated sludge from the raffinate pits. In the CSS process, fly ash and portland cement were mixed with the sludge to produce a grout-like product that provides the necessary physical characteristics for placement of the waste in the disposal cell.

In support of designing a full-scale CSS Plant, a pilot-scale facility was constructed in 1994 and became operational in spring 1995. Information received from the pilot facility was used to design and construct the full-scale plant. Construction of the Plant began in May 1997 and was completed in February 1998. Use of modules accelerated construction of the Plant. Startup and commissioning of this plant commenced in March 1998, and plant operations started in June 1998.

CSS Plant Nearing the Completion of its Construction

CSS Grout Being Pumped into the Disposal Cell from the CSS Plant

A Thickener Tank as Part of the CSS Plant Operations



The Chemical Stabilization and Solidification Process

On November 13, 1998, the CSS Plant completed processing sludge from Raffinate Pit 3. The sludge from Raffinate Pits 1 and 2 had been previously dredged and pumped to Raffinate Pit 3. Approximately 122,000 cubic yards of sludge was treated. More than 75 million gallons of water with an average of 8 to 10 percent solids was pumped to move the sludge from the raffinate pits to the treatment plant. The sludge was screened for oversize materials, then thickened with a polymer before it was blended with portland cement and fly ash materials for transfer as grout to the disposal cell. Approximately 186,000 cubic yards of grout was produced. In addition, more than 25,000 cubic yards of sludge was treated in situ in Raffinate Pit 4 and then excavated and transported to the disposal cell.

Contacts

Documents related to the Weldon Spring Site are available on the DOE Office of Legacy Management website at http://www.lm.doe.gov/weldon/sites.aspx.

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