

### Remedial Investigation and Feasibility Study

A study that identifies which contaminants are present in an area and assesses the risk they pose to human health and the environment. The study also evaluates ways contamination could be remedied.

### Record of Decision

A decision document signed by DOE, EPA, and the state of Idaho that outlines actions to be taken at a site.



Surface contouring at the Subsurface Disposal Area.

### Buried Waste – Working Toward a Final Solution

Under the Superfund law discussed earlier in this fact sheet, the Department of Energy is conducting a **Remedial Investigation and Feasibility Study** to develop and refine the information on the waste inventory in the Subsurface Disposal Area and compare different alternatives to reduce risks associated with contaminants in with the buried waste. These two documents are scheduled to be complete in 2006. The Environmental Protection Agency and the state of Idaho will review the reports, and work with the Department of Energy to develop a proposed plan for public review and comment. After considering public comments on the plan and the alternatives, the agencies will then select

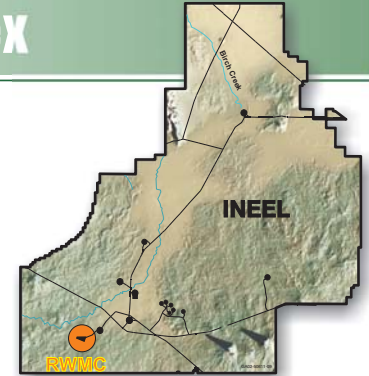
the final alternative, and issue a record of decision document that describes the actions to be taken in detail.

### Public Involvement

The public is invited to participate in the upcoming decision on how to remediate buried waste. Final plans for cleanup of the buried waste will be published in a **Record of Decision** for the Radioactive Waste Management Complex, which is scheduled to be complete in 2007.

Members of the public who have questions about the cleanup work taking place at the Radioactive Waste Management Complex are encouraged to contact the Idaho Completion Project at (208) 526-3127 or by e-mail at [byrabj@inel.gov](mailto:byrabj@inel.gov).

# Radioactive Waste Management Complex



Idaho played an important role in the long-term disposal of waste generated from the production of nuclear weapons during the Cold War. In the 1950s, a remote area in the southwest corner of the former National Reactor Testing Station, now called the Idaho National Engineering and Environmental Laboratory, was selected as a disposal site for waste contaminated with **transuranic** elements. Disposal of this waste was discontinued in 1970s when it was placed in aboveground storage.

### Transuranic waste-

Contains waste contaminated with alpha-emitting particles, has an atomic number greater than uranium, a half-life greater than 20 years, and a concentration greater than 100 nanocuries per gram. Transuranic, or TRU waste is typically contaminated with plutonium or americium.

This landfill, called the Subsurface Disposal Area and part of the Radioactive Waste Management Complex, provided a location to dispose of waste related to nuclear weapons production. Most of the transuranic waste buried in the Subsurface Disposal Area was received from 1954 to 1970 from the Rocky Flats Plant in Colorado. A much smaller portion of the transuranic waste inventory came from other DOE sites as well as some waste generated from operations at the INEEL.

Cleaning up the Cold War legacy buried waste is a high priority and

two actions are being proposed to further protect the Snake River Plain Aquifer. These actions will reduce the risks associated with hazardous and radioactive materials buried in the Subsurface Disposal Area.



Buried waste is located at the Radioactive Waste Management Complex's Subsurface Disposal Area.

## Idaho Completion Project

**Removal Actions**  
A CERCLA cleanup action taken when there is a release or threat of release to the environment..

**CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act, or Superfund)**  
The federal law that establishes a program to identify, evaluate and remediate sites where hazardous substances may have been released (leaked, spilled, or dumped) to the environment.

## Removal Actions

Two **removal actions** are being proposed in the Subsurface Disposal Area beginning this summer – beryllium block grouting and buried waste retrieval from Pit 4. The actions are being conducted as non-time critical removal actions under **CERCLA** or Superfund. Each non-time critical removal action includes a 30-day public comment period for an Engineering Evaluation and Cost Analysis document that describes each removal action in detail.

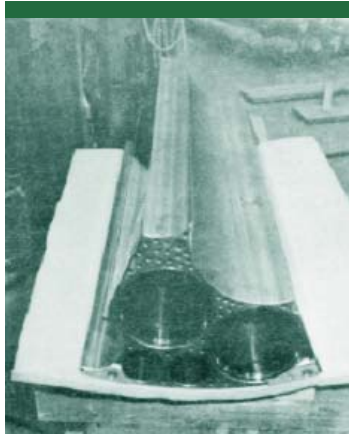
Detailed information about the documents are available in the administrative record located at the Department of Energy Reading Room of the Technical Library in Idaho Falls. Copies can be found at Albertsons Library at Boise State University. Information can also be found on the Internet at <http://cleanup.inel.gov>.

### Beryllium Block Grouting

The Department of Energy is planning to coat blocks of radioactive beryllium with a dense wax-based grout. Coating these blocks with grout will reduce water infiltration from rain and snowmelt, which corrodes the blocks and generates a by-product, carbon-14. Carbon-14 can be pushed toward the aquifer by moisture, creating a threat to the groundwater.

Beryllium blocks were buried in 15 different locations in the Subsurface Disposal Area. At each disposal location, a probe, which is connected to a grout truck, will be inserted into soil next to the beryllium blocks to a depth of approximately 20 feet. A paraffin (or wax) grout will be heated and then pumped down the probe. As grout is injected, the probe is rotated and withdrawn to provide a complete vertical barrier. The probe tip will also be angled to cover the bottom of each block.

The beryllium blocks became radioactive after being used as reflectors in the



*Beryllium blocks were used in INEEL reactors as neutron reflectors.*

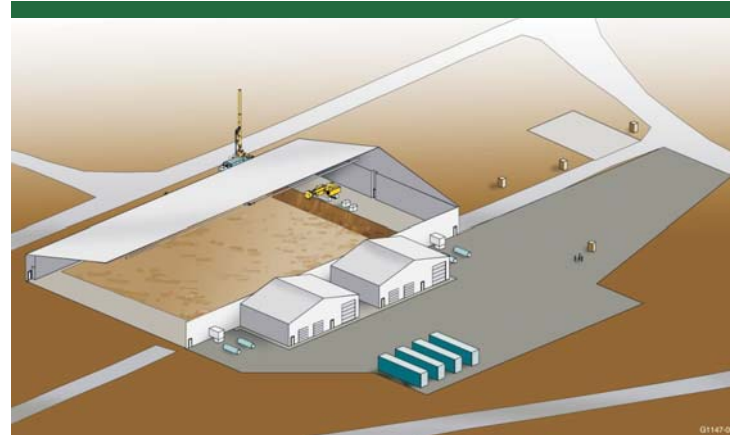
INEEL's Materials Test Reactor, Engineering Test Reactor and the Advanced Test Reactor. The test reactors provided vital research information for development of the nation's nuclear-powered warships and nuclear power reactors.

The blocks weigh a total of approximately 11,000 pounds and were buried at the Subsurface Disposal Area between 1970 and 1993.

### Pit 4 Retrieval

The Department of Energy, in cooperation with the state of Idaho and the Environmental Protection Agency, is proposing to retrieve buried waste from an area of Pit 4.

This proposed work will remove waste containing high concentrations of highly mobile volatile organic compounds like carbon tetrachloride, various isotopes of uranium, and transuranic elements like plutonium and americium.



*An artistic rendering of the Pit 4 retrieval enclosure structure.*

Transuranic waste retrieved during this project will be shipped to the Waste Isolation Pilot Plant in New Mexico for final disposal. Other waste retrieved will be treated and disposed of properly.

### Controlling Surface Runoff

Additional work is being performed at the Subsurface Disposal Area to reduce the ability for water from rain and snowmelt to carry contaminants down toward the aquifer. This work includes grading areas to improve water drainage; reshaping ditches to direct water away from the Subsurface Disposal Area; lining some ditches with concrete to improve water flow and to reduce maintenance; installing culverts; and adding gravel over some existing roadways.

### Removing Volatile Organic Compounds

Since January 1996, more than 162,000 pounds of volatile organic compounds have been successfully destroyed using

vapor vacuum extraction units. These volatile organic compounds, or VOCs, include solvents such as carbon tetrachloride and are known to be mobile contaminants in the subsurface.

The extraction units pull harmful solvent vapors from beneath the ground surface and destroys them. The vapors exist in the vadose zone – the unsaturated layers of rock and soil between the ground surface and the water table. The vapors come from chemicals that are contained in waste buried at the site.

The extraction units can pull and treat hazardous vapors from soil and the basalt rock up to 480 feet below the ground surface. The vapor vacuum extraction units use a catalyst to destroy the contaminants - a process similar to the catalytic converter in automobiles.

Two new units were recently added to replace older units and maximize the removal of the vapors.

More information on the Radioactive Waste Management Complex is available online at <http://cleanup.inel.gov>.