

Background on buried waste at the INL Site



On July 1, 2008, the U.S. Department of Energy (DOE) and the State of Idaho announced an agreement on cleaning up transuranic waste buried at DOE's Idaho Site. At the same time, DOE issued a draft record of decision for remediating the buried waste in the Subsurface Disposal Area (SDA) at the Idaho Site. The buried waste has long been a topic of discussion among Idahoans, who are concerned that its presence about 600 feet above the Snake River Plain Aquifer could pose a threat to an important source of drinking and irrigation water for southern Idaho.

What does this agreement mean in terms of protecting the aquifer? The bottom line is that DOE and its regulators believe this agreement will ensure the buried transuranic waste poses no safety threat to the water in the aquifer that may be used for drinking or irrigation. DOE also believes that its cleanup plan, outlined in the draft record of decision, will protect the aquifer from any long-term threats posed by any of the buried waste in the SDA.

How did the waste get here?

Before we get into more detail on the cleanup plan, a little history is in order. Shortly after the National Reactor Testing Station (now the Idaho National Laboratory) was designated to support commercial nuclear power and national security research in 1949 by the Atomic Energy Commission (a forerunner of the Department of Energy), government officials recognized the need for waste disposal facilities. The Radioactive Waste Management Complex was developed in the early 1950s to fulfill this purpose, and from 1954 to 1970, it received both radioactive and hazardous wastes from Idaho operations and from other federal facilities. This waste consisted of everything from tools and protective clothing and rags to solidified sludge containing radioactive elements and hazardous chemicals. Much of the waste was generated at DOE's



Rocky Flats Plant in Colorado, where components of nuclear weapons were manufactured. The waste was buried in unlined pits and trenches at the Subsurface Disposal Area which is located the Radioactive Waste Management Complex.

Over the decades, as scientists learned more about waste disposal practices, the Department made the decision to discontinue burying certain types of waste – in particular, wastes that contained hazardous chemicals that could leach into the aquifer below, or wastes that contained long-lived radioactive elements like plutonium. There has been a good deal of discussion and debate in the intervening years about whether DOE and its contractors should dig up some or all of the buried transuranic (plutonium-contaminated) waste.

Cleanup Agreements Set the Stage

In the early 1980s, Congress passed legislation requiring the federal government to evaluate areas where past disposal of chemicals and radioactive elements could potentially harm the environment, and to decide, based on risk, whether those sites should be cleaned up. DOE then entered into a legal agreement with its regulators – the State of Idaho and the U.S. Environmental Protection Agency – for establishing a process to evaluate the risks posed by the buried waste in Idaho, and to look at potential approaches for cleaning up the waste. DOE also entered into an agreement, called “the Idaho Settlement Agreement,” to resolve litigation related to the management of spent nuclear fuel and other wastes at the Idaho Site.

DOE and the State have long differed over the extent to which the Idaho Settlement Agreement covered removal of buried transuranic waste from the Idaho Site. The agreement announced on July 1, 2008 has brought resolution to the issue by establishing detailed performance obligations for DOE.

Under the 2008 agreement, DOE and its contractors will dig up a specific amount of Targeted Waste – that is, the waste that DOE and its regulators are most concerned about. This includes radioactive elements like plutonium. Retrieving this waste also will allow for the retrieval of hazardous chemicals like carbon tetrachloride. The hazardous chemicals pose the biggest concern because they, unlike plutonium, may migrate into the aquifer. Although the radioactive elements have not proven to be very mobile and there is no indication they are moving toward the aquifer, they are of concern because they will remain radioactive for thousands of years.

Already Attacking the Problem



DOE and its contractors have been working toward a solution to protect the environment from these materials for many years. For example, a large vacuum system is used to draw the hazardous vapors to the surface and then destroy them. Over 223,000 pounds of hazardous chemical vapors have already been removed from below the burial ground and destroyed. Under a cleanup plan proposed by DOE, this hazardous vapor extraction will continue through the period of retrieval of the Targeted Waste, and longer, as necessary, based on five-year regulatory reviews.

In addition to extracting the hazardous chemicals, DOE and its contractor have also been digging up drums of radioactive waste and hazardous chemicals from the burial ground. To date, over 11,930 cubic meters of material has been excavated, resulting in over 5,500 drums of Targeted Waste. The transuranic Targeted Waste is repackaged and sent to DOE's Waste Isolation Pilot Plant - a permitted disposal facility - in New Mexico. The other Targeted Waste is being shipped out of the State of Idaho to other licensed disposal facilities. Under the agreement with the State of Idaho, the Department intends to excavate 6,238 cubic meters of Targeted radioactive and hazardous waste over the life of the buried waste cleanup.

What the Cleanup Plan Includes

Not all of the waste buried at DOE's Idaho Site will be removed, and here's why: full retrieval of the buried waste poses increased risks to workers from high radiation and chemical exposures. Also, full retrieval of the buried waste does not offer significant improvement in reducing long-term risk, is not readily implementable (interim storage and new disposal paths would be required), and would pose a greater risk to workers and the public. Again, according to our modeling, leaving some materials in place will not threaten the aquifer.

In addition to removing targeted radioactive and hazardous wastes, the cleanup plan includes the following elements: 1) Unlike plutonium, a very small amount of the radioactive elements that are buried are very mobile – specifically technetium-99 and iodine-129. DOE intends to grout these elements (grout means, basically, surrounding the materials with concrete) so they will not migrate to the aquifer; 2) After DOE and its contractor have successfully removed the targeted waste, an earthen cap will be installed over the entire burial ground in order to trap and remove moisture, so it won't drive remaining contaminants down toward the aquifer; 3) DOE and its contractor will continue to monitor the buried waste and the aquifer below it to make sure the cleanup is effective and the remaining waste will not release contaminants to the aquifer above safe drinking water standards.

Three Things to Remember



There are three important points to keep in mind regarding the buried waste situation:

1. Ongoing monitoring, both by DOE and independent agencies, has shown that no radioactive or hazardous constituents in the aquifer have ever left the INL Site boundaries in concentrations even close to exceeding Safe Drinking Water Standards.
2. Computer modeling predicts the proposed remedy will slow any migration of contaminants;
and
3. There will be ongoing monitoring of the burial grounds and the aquifer below to ensure the remedy remains effective.