

AMWTP-008-5
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AMWTP

Advanced Mixed Waste Treatment Project

Public Reading Room
U. S. Department of Energy
Idaho Operations Office

Why Treat Waste at the AMWTP?

Words You Should Know

Alpha Low-Level Waste:

Low-level waste that contains alpha-emitting radionuclides with an atomic number greater than 92 and half-lives greater than 20 years, at concentrations between 10 and 100 nanocuries per gram. This waste was previously classified as transuranic waste.

Mixed Waste:

Waste that is contaminated with both radioactive and hazardous materials.

Privatization:

A contract reform to boost performance and save taxpayer dollars by substituting private market mechanisms for government programs. Privatization seeks to improve management, reduce the costs of doing business, and shift financial risk to the private sector.

Settlement Agreement:

A court-ordered agreement among the State of Idaho, DOE, and the Navy. Under the Settlement Agreement, DOE must ship out the transuranic waste stored at TSA by a target date of the year 2015 and no later than 2018. According to the Agreement, after January 1, 2003, a running average of no fewer than 2,000 cubic meters per year will be shipped out of Idaho.

Transuranic Waste:

Waste that contains alpha-emitting radionuclides with an atomic number greater than 92 and half-lives greater than 20 years, at concentrations greater than 100 nanocuries per gram.

Today, **transuranic mixed waste** generated from our national defense programs is stored at the Idaho National Engineering and Environmental Laboratory (INEEL). The Department of Energy (DOE) stored the waste in temporary, above-ground facilities with the commitment to eventually remove the waste from Idaho. Recently, this commitment was formalized in an agreement among the State of Idaho, DOE, and the U.S. Navy that addresses a broad range of nuclear waste issues. This **Settlement Agreement** establishes specific milestones for removing an estimated 65,000 cubic meters of INEEL **transuranic and alpha low-level mixed waste** out of Idaho by the year 2015.



The AMWTP will treat 65,000 cubic meters of waste.

The waste is currently stored at the Radioactive Waste Management Complex Transuranic Storage Area (TSA). TSA was never intended to provide permanent storage or environmentally sound disposal. For example, some containers designed to last only 20 years are starting to degrade. It's time for this waste to be retrieved, treated, and packaged for shipment to the **Waste Isolation Pilot Plant (WIPP)** for disposal. To do so, we must treat it as required by environmental laws, meet WIPP's **waste acceptance criteria**, and comply with the Settlement Agreement.

To accomplish this task, DOE determined a **privatized** facility would be the best value for taxpayers. Through a competitive bidding process, DOE awarded a contract in December 1996 for the Advanced Mixed Waste Treatment Project (AMWTP). The AMWTP will provide the range of technologies needed to fulfill its primary mission: to prepare INEEL alpha low-level and transuranic mixed waste stored at TSA for shipment and disposal outside of Idaho.

Environment, Safety, and Health

Treatment will package the waste to be safer and more stable (though still radioactive), minimizing potential threats to the environment. For example, the processes of macroencapsulation or vitrification will encase the waste in a solid form, immobilizing the hazardous materials and preventing them from leaching into the environment. Another treatment process, incineration, will actually destroy some hazardous wastes, such as volatile organics.

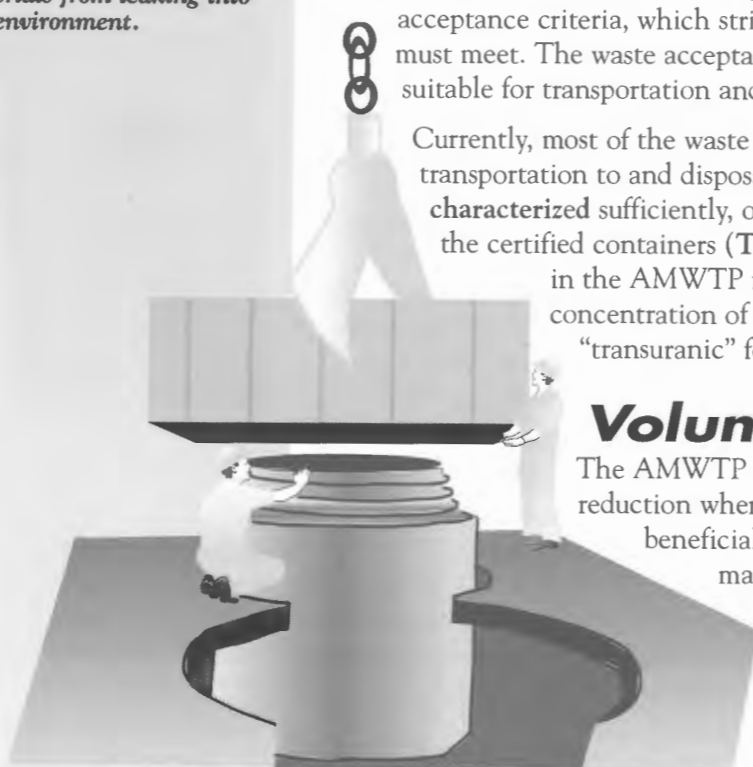
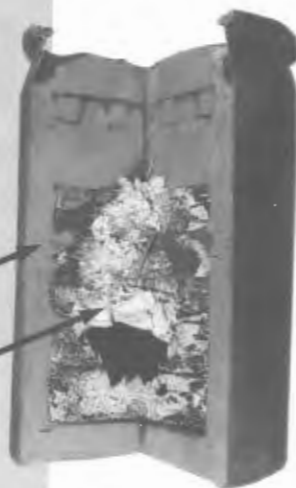
Requirements for Disposal

Several environmental laws require that we treat the waste stored at TSA. The Resource Conservation and Recovery Act governs treatment and storage (to be done at AMWTP), as well as disposal (to be done at WIPP) of hazardous wastes, like cadmium or lead. Although WIPP-bound waste has been exempted from the Resource Conservation and Recovery Act's land disposal restrictions, much of the stored mixed waste does not meet



Encapsulant
Hazardous Waste
Macro-encapsulation

seals the waste in a cement-like substance, keeping hazardous materials from leaking into the environment.



Even if No Other Treatment

was needed, some waste containers at TSA would need to be processed because they are the wrong size or shape to fit in TRUPACT-II shipping containers.



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the WIPP waste acceptance criteria and, therefore, must be treated. For example, about 1,500 cubic meters of drummed waste at the TSA may have greater than 50 parts per million of polychlorinated biphenyls (PCBs). Not only would such waste not meet WIPP's standards, but the Toxic Substances Control Act requires the incineration of polychlorinated biphenyl-contaminated waste prior to disposal.

The Federal Facility Compliance Act, an amendment to the Resource Conservation and Recovery Act, requires DOE to develop a treatment plan for the mixed waste at each site. In INEEL's Site Treatment Plan, DOE outlined the technology and types of facilities needed at INEEL—including the AMWTP. After reviewing the Plan and incorporating public comments, the State of Idaho approved it in 1995 and issued an order requiring DOE to comply with the Plan.

WIPP Waste Acceptance Criteria

Before a shipment of waste is accepted at WIPP, it must comply with WIPP's waste acceptance criteria, which strictly specify the form, contents, and packaging that waste must meet. The waste acceptance criteria are designed to ensure that only waste suitable for transportation and disposal is sent to WIPP.

Currently, most of the waste at the TSA does not meet the requirements for transportation to and disposal at WIPP. For example, some has not been characterized sufficiently, or is in boxes or drums that are unsuitable for shipping in the certified containers (TRUPACT-II) for WIPP. Some waste requires treatment in the AMWTP for other reasons, such as not having the proper concentration of alpha-emitting radionuclides to meet the definition of "transuranic" for acceptance at WIPP.

Volume Reduction

The AMWTP contract requires BNFL Inc. to target a 65% volume reduction when treating the waste. Although reducing volume is beneficial because the capacity of WIPP is limited, it would not make the waste inherently safer. However, in some cases it would prepare the waste for an AMWTP process (such as vitrification or macroencapsulation), which would place the waste in a safer form, and prepare the waste for removal from Idaho and disposal at WIPP.

Settlement Agreement

DOE and the State of Idaho have agreed to important and aggressive milestones for getting transuranic waste out of Idaho. The Settlement Agreement requires a contract (now in place), construction, and operation of a facility to treat this waste. It provides court-enforceable deadlines to remove from Idaho the 65,000 cubic meters of transuranic waste currently stored at TSA. The AMWTP will allow us to meet the commitments made in the Settlement Agreement, while helping solve an important challenge: environmentally sound disposal of radioactive waste.

**For More Information on the AMWTP Please Call
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(208)526-0833 (208)524-8484**



United States Department of Energy



Transuranic Packaging Transporter Model 2 (TRUPACT-II):

Special stainless steel containers designed and tested for safely shipping transuranic radioactive waste to WIPP. TRUPACT-II containers are 8 feet in diameter and 10 feet high, doubly-contained, non-vented, certified by the Nuclear Regulatory Commission, and compliant with U.S. Department of Transportation safety requirements.

Waste Acceptance Criteria:

The standards a waste must meet to be accepted at a facility for treatment, storage, or disposal. Waste will have to meet AMWTP waste acceptance criteria before being treated. Treated waste will have to meet waste acceptance criteria for WIPP.

Waste Characterization:

Examining or testing a waste to determine its physical, chemical, and radiological composition and properties.

Waste Isolation Pilot Plant (WIPP):

Developed by DOE as a geologic disposal facility near Carlsbad, New Mexico for defense transuranic waste. The disposal area is 2,150 feet (almost half a mile) underground in excavated, natural salt formations. WIPP could begin waste disposal as early as May, 1998.

For More Information,

see the "Proposed Action" fact sheet for more details on the treatment technologies proposed for the AMWTP.