
Safety
VPP
STAR SITE
Research &
Development
Transportation
Public Involvement
Coordination
with Sites
Mining

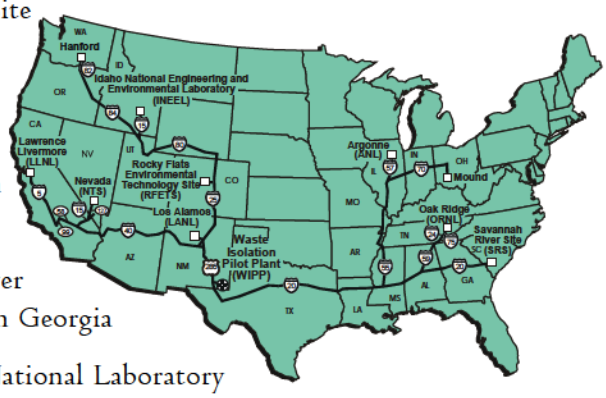
Looking to the Future

The WIPP's first waste receipt, 11 years later than originally planned, was a monumental step forward in the safe management of nuclear waste. Far from ending, however, the WIPP story has really just begun. For the next 35 years, the DOE will face many challenges as it manages a complex shipment schedule from transuranic waste sites across the United States and continues to ensure that the repository complies with all regulatory requirements. The DOE will work to maintain the highest level of safety in waste handling and transportation.

Coordination with sites

Disposal operations require coordination with sites that will ship transuranic waste to the WIPP and include periodic certification of waste characterization and handling practices at those facilities. During the WIPP's operational phase, shipments will originate from 10 major sites and a number of small-quantity sites. The 10 major sites are:

- Los Alamos National Laboratory (LANL) in New Mexico
- Idaho National Engineering and Environmental Laboratory (INEEL) in Idaho
- Rocky Flats Environmental Technology Site (RFETS) in Colorado
- Hanford Site (Hanford) in Washington
- Savannah River Site (SRS) in Georgia
- Oak Ridge National Laboratory (ORNL) in Tennessee
- Nevada Test Site (NTS) in Nevada
- Mound Plant (Mound) in Ohio
- Lawrence Livermore National Laboratory (LLNL) in California
- Argonne National Laboratory - East (ANL-E) in Illinois



Transuranic waste sites that ship to the WIPP are required to obtain CAO certification and approvals by EPA and the New Mexico Environment Department (NMED) prior to

Future

Anticipated: 2000
First mixed-waste receipt.

Anticipated: January 2002
Remote-handled transuranic waste shipping system operational.

Anticipated: October 1, 2002
Seventeen shipments per week will arrive at the WIPP through the life of the program.

shipping. Certification ensures that a site's procedures and processes meet regulatory requirements and accurately control waste characterization, packaging, and transportation activities.

The Los Alamos, Idaho, and Rocky Flats facilities were the first to obtain EPA certification and ship non-mixed waste to the WIPP. Now that WIPP has a hazardous waste facility permit, the NMED must also approve the final CAO audit report for each site.

Before a site is certified, CAO audit teams review documentation and observe operations. Typically, EPA and NMED representatives accompany the teams. Sites must be able to accurately identify what is inside the waste containers, ensure that it meets the WIPP waste acceptance criteria, and confirm that it is packaged correctly.

To coordinate shipments effectively, the CAO ensures that the correct number and type of shipping containers are sent to the sites at the right time. In addition, DOE must consider legal agreements that may affect the shipping schedule. For example, Idaho and the DOE negotiated an agreement that required the first transuranic waste shipment to leave the state by April 30, 1999. This requirement was met with INEEL's first shipment on April 27, 1999.

Transportation

The unique design of the TRUPACT-II shipping containers makes the transportation of waste one of the most noticeable activities of the disposal phase. For the transportation of contact-handled (CH) transuranic waste, each shipment consists of a truck and trailer with up to three TRUPACT-II containers. Upon certification by the Nuclear Regulatory Commission, a shorter, lighter version of the shipping container, called the HalfPACT, may substitute for one or more TRUPACT-IIs.

In 1999, the DOE awarded contracts to manufacture 12 additional TRUPACT-IIs, which will be put into use beginning in 2000. Eventually, the WIPP will be capable of handling 17 shipments per week. Additional

Safety plays a key role in all aspects of the WIPP

Safety is no accident. It is the result of careful planning and practice. WIPP employees at every level have the authority and responsibility to stop others from working in an unsafe manner. This approach includes sites around the country that package and store transuranic waste, as well as the transportation system that carries waste to southeastern New Mexico.

The WIPP has earned "Star Status" in the Voluntary Protection Program, was awarded the Operator of the Year mine safety award eight consecutive times (1988 through 1995), and performs exceptionally well during Mine Safety and Health Administration inspections.

In addition, on January 16, 1998, Westinghouse employees celebrated the completion of one million work hours without an on-the-job injury that would prevent an employee from working as usual.

Anticipated: 2004
EPA re-certification of the WIPP.

Anticipated: October 2004
Six shipments per week of remote-handled transuranic waste will arrive at the WIPP.

shipping containers will be ordered in the future as necessary.

Remote-handled transuranic waste
Remote-handled (RH) transuranic waste has a higher level of radioactivity than CH waste. RH waste is handled and shipped in shielded containers to protect people and the environment from exposure.

Unlike CH waste, RH waste will not be shipped in a TRUPACT-II. Instead, it will be shipped in a cask called the RH-72B. Both shipping containers require Nuclear Regulatory Commission certification. The Commission has already certified the TRUPACT-II; certification of the RH-72B cask is pending.

RH disposal operations are anticipated to begin in 2002 with two shipments per week, eventually increasing to four shipments per week.

Waste volumes and characteristics
The capacity of the WIPP is limited by the WIPP Land Withdrawal Act to 175,590 cubic meters of waste. A breakdown of the anticipated volume of waste from each major site is shown in the table on this page.

The waste itself can be described in a variety of ways:

- It is classified as defense-generated waste.
- More than half the waste is considered mixed transuranic waste (meaning it contains hazardous components, usually metals or organic solvents) and is subject to regulation by RCRA.
- About 97 percent of the waste is CH transuranic waste, while the remaining three percent is RH transuranic waste.
- The waste currently in storage at sites around the country was generated after 1970. Most of the remainder will be generated from activities such as environmental restoration, decontamination, and decommissioning.

How much waste are we talking about?

The following table gives the anticipated volumes of waste in cubic meters to be received from the major transuranic waste sites.*

Site	CH waste	RH waste
ANL-E	203	0
Hanford	23,432	1,782
INEEL	79,584	139
LANL	16,799	229
LLNL	1,132	0
Mound	247	0
NTS	637	0
ORNL	1,097	1,368
RFETS	8,493	0
SRS	29,536	22

*Includes stored and projected waste
Source: National TRU Waste Management Plan, December 1997.

Anticipated: 2006
Rocky Flats Environmental Technology Site meets its target closing date.

Anticipated: 2034
WIPP disposal phase ends. Five-year decommissioning phase begins.

Mining

The WIPP repository will eventually consist of eight panels, each of which contains seven waste disposal rooms. Panel 1, which was completed in 1988, is the only one that has been mined so far. Since 1988, the walls and floors have been maintained by shaving off the salt that creeps, or closes in on, open areas due to the plastic nature of the salt formation. In addition, workers have installed roof bolts in Panel 1 to reinforce the ceiling.

The DOE will mine the remaining panels as they are needed. Completion of the mining of Panel 2 is anticipated in 2000. Panels will be closed as they are filled, and waste disposal will continue in the next panel. When a panel is half filled with waste, mining will begin on the next panel. Each panel is expected to take approximately five years to mine, fill, and close.

Institutional controls

One of the WIPP's greatest challenges will begin at the end of the disposal phase: minimizing the risk of human intrusion for thousands of years. The DOE plans to use active institutional controls—fences and guards—to prevent intrusion into the repository for 100 years after the disposal phase ends. Concurrently, the DOE will develop and construct passive institutional controls. These controls will inform people in the future of the nature of the repository and discourage them from digging into it.

Public involvement

The WIPP is now in the operational phase, but the DOE will continue informing stakeholders and encouraging them to express their concerns and opinions. To aid informed involvement, the Carlsbad Area Office distributes information on all aspects of the project and solicits public comment and participation. Public education and involvement are legal and practical obligations and are integral to establishing and operating the site.

As the world's first deep geologic repository for transuranic radioactive waste, the WIPP has attracted international interest. The challenge facing the Carlsbad Area Office is to respond appropriately to researchers, political representatives, and citizens with a wide range of interests and technical training. Brief fact sheets provide all of the information some stakeholders want. Others want to evaluate and comment on lengthy technical documents.

Here is how to get more information about the WIPP and become involved:

- Call the WIPP Information Center (1-800-336-WIPP).
- Visit the WIPP Home Page at www.wipp.carlsbad.nm.us.
- Request a presentation from the WIPP Speakers Bureau.
- Take a tour of the WIPP.
- Schedule an exhibit for a major event or conference.
- Sign up on the WIPP mailing list to receive the *CAO Monthly Calendar*, the *TRU Progress* newsletter, and other materials.

Anticipated: 2039
Active institutional controls (fences and guards) in place.

Anticipated: 2134
Passive institutional controls in place to deter human intrusion. Active institutional controls no longer used at the WIPP.

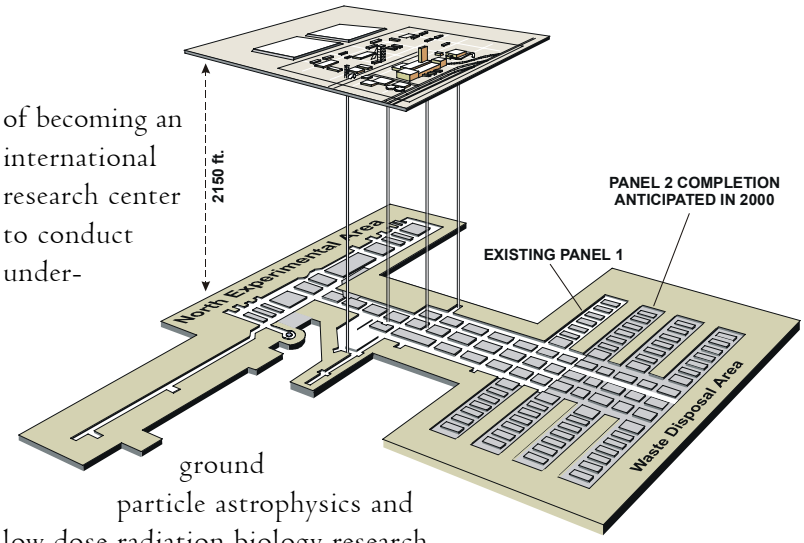
The messages will be delivered by:

- Permanent markers located directly above the "repository footprint" (the boundary at the surface of the underground waste disposal rooms) and at the outer boundary of the land reserved for the WIPP (16 square miles)
- Records in archives, such as the Library of Congress and the United Nations, and in libraries around the world
- Government ownership documents and land use restrictions to warn those seeking natural resources
- Other means of distributing knowledge, such as encyclopedias, text books, and maps

One challenge is to anticipate the possibility that, within the next 10,000 years, people may not understand any language now in use. Messages on the permanent markers will be engraved in seven languages. Pictograms will complement the written information or convey it independently.

Future research and development

The characteristics of the WIPP repository and its infrastructure make it uniquely suited for other research. The DOE is proceeding with its vision of becoming an international research center to conduct underground particle astrophysics and low dose radiation biology research, improve natural resource extraction, provide repository science services to other nations, and demonstrate nuclear safeguards and transparency technologies.



In addition, the CAO is pursuing technology transfer opportunities along the U.S.-Mexico border and elsewhere.

All of these activities, which can and will be conducted without compromising the primary disposal mission and the priority on safety, will benefit tremendously from the DOE's significant financial and intellectual investment in the WIPP.