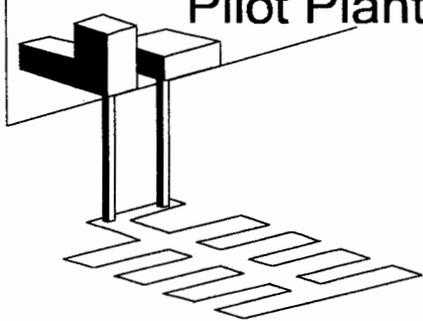


## Waste Isolation Pilot Plant



# Centralized Waste Confirmation At WIPP

## Introduction

The U.S. Department of Energy (DOE) is requesting a modification to the Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit (the permit) issued by the New Mexico Environment Department (NMED) to allow "confirmation" of "characterized" contact-handled (CH) transuranic (TRU) waste at WIPP.

The proposed modification is part of a broader DOE strategy to speed up the cleanup of the 22 sites that depend on WIPP for disposal of their waste, without sacrificing safety or protection of human health and the environment. The overall strategy or approach is referred to as the *Central Characterization Project*.

The original permit did not distinguish between characterization and confirmation. However, after analyzing operation under the permit at WIPP and the sites, DOE has recognized that some waste analysis activities are largely confirmatory, and that it makes sense to do those at WIPP, especially for the Small Quantity Sites.

## Centralized Waste Confirmation

One of the aspects of this project is developing a long-term capability at WIPP to perform the Confirmation portion of the required waste analysis activities. This is the change that is requested in this modification, called *Centralized Waste Confirmation*.

Before any waste is shipped to WIPP, Federal and State law require that existing information on the physical, chemical, and radiological properties of the waste be carefully checked to ensure that it contains only materials allowed to be shipped to WIPP. This process is called *characterization*.

In addition, the permit requires tests and procedures to double-check that the waste contains only materials allowed to be disposed at WIPP before it can be emplaced 2,150 feet underground at WIPP. This double-checking process is called *confirmation*.

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The proposed modification is not an attempt to change any of the procedures in the permit. It is a reorganization that will permit confirmation activities to occur in a different geographic location.

## Rationale

Of the 22 sites currently slated to WIPP for disposal, 97percent of the waste to be disposed at WIPP comes from just five sites (Large Quantity Sites) — Rocky Flats Environmental Technology Site in Colorado, Idaho National Engineering and Environmental Laboratory, Hanford Site in Washington, Savannah River Site in South Carolina, and Los Alamos National Laboratory in New Mexico.

Three percent of the waste is located at 17 other sites (Small Quantity Sites) — one with as few as seven drum equivalents of waste. Teledyne-Brown is no longer included as a Small Quantity Site because of the removal of a single drum of waste. (A “drum equivalent” is the amount of waste that can be placed in a 55-gallon drum. It is approximately equal to one-fifth of a cubic meter.)

The cost of establishing characterization/confirmation capability is \$2-5 million at each Small Quantity Site sending waste to WIPP.

DOE has set up equipment, record keeping, and staff at the five Large Quantity Sites to do the required checking and double-checking (characterization and confirmation). DOE also pays for a program through which New Mexico Environment Department employees and consultants carefully monitor DOE’s audits of this process at Los Alamos and the other four large sites.

DOE and NMED do not currently have enough staff to carry out the confirmation and audit processes at another 17 sites.

It does not make sense to go to the enormous expense and time of installing the equipment, record keeping, DOE staff, and NMED staff for confirmation and auditing at each one of the 17 Small Quantity Sites.

It makes sense to remodel a small part of the existing buildings at WIPP to house the activities necessary to do the confirmation (double-checking) of waste from the 17 small sites. Confirmation activities of the same type are already performed in New Mexico many times each week at Los Alamos National Laboratory. The requested change in the permit would allow 11,200 square feet in two existing buildings to be used for waste storage to support the confirmation activities.

## Background

During the time in which the original WIPP permit application was being prepared (1990-1996), DOE assumed that nearly all of the waste destined for disposal at WIPP would be characterized and confirmed at one of the sites with large quantities of waste. The plan was for some Small Quantity Sites to ship waste to large sites for

confirmation and shipment to WIPP. For those Small Quantity Sites that could not ship to a Large Quantity Site, certified DOE contractors would provide mobile characterization services.

The economic assumptions of this plan have proved to be invalid. Vendors contemplating mobile characterization faced significant front-end costs for equipment, certification, and training in exchange for the financially risky opportunity to compete to characterize a potentially limited amount of waste at a relatively small number of sites for a relatively short period of time. In addition, Small Sites have been unable to develop the waste characterization infrastructure to support independent mobile vendors.

According to data collected for the National TRU Waste Management Plan, the total volume of CH-TRU waste awaiting disposition at all the Small Quantity Sites is 4,594 cubic meters<sup>1</sup>. The total Small Quantity Sites volume represents approximately 50 percent of the volume of CH-TRU waste stored at a single large volume facility (for example, Los Alamos National Laboratory currently stores 9,213 cubic meters.) CH-TRU waste from the Small Quantity Sites represents approximately three percent of the total shipments to WIPP for the life of the project.

The cost of managing one cubic meter (about five 55-gallon drums) of CH-TRU waste for Small Quantity Sites is estimated by the National TRU Waste Management Plan to be \$230,000. By comparison, the cost for managing one cubic meter of CH-TRU waste for LANL is estimated by the National TRU Waste Management Plan to be approximately \$24,000.

The nearly ten-fold difference in cost per cubic meter between the Small Quantity Sites and their larger counterparts results from a combination of regulatory costs, program maintenance costs (incurred at all sites regardless of size), and the inverse relationship between costs of capital improvements for TRU waste handling/characterization, low volumes of waste, and the cost of mobile characterization support.

## **The Process**

Characterization will still be performed at the 17 small sites where the waste is now stored. If the written records for a particular container of waste aren't adequate to show what items are in the waste, then tests by x-ray (radiography) or visual examination of the waste must be performed before that container can be shipped to WIPP.

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<sup>1</sup> These Inventory numbers are subject to change as sites ship waste to WIPP. Also, some sites, particularly Large Quantity Sites, will continue to generate new waste which will partially offset waste shipped to WIPP.

Confirmation activities at WIPP will consist of headspace gas sampling and analysis and non-destructive examination [radiography (x-ray) examination and/or visual examination where required].

If any prohibited items are found when waste is double-checked at WIPP, then those items will be returned to the site from which they were shipped or to another appropriate site, or treated so that they will meet the rules for items disposed of at WIPP. In any case, the disposition will be carried out within 10 days of the discovery of the prohibited item. For example, all aerosol cans must be punctured before they are placed in WIPP salt caverns underground. If a can is found un-punctured, then it will be punctured.

Confirmation may involve opening containers of waste in the Waste Handling Building at WIPP. Since opening containers of waste was not anticipated in the original design of the building, DOE has identified the necessary additional facilities and systems to assure that the strategy for protecting human health and the environment is as effective as it is now.

In order to safely open containers at WIPP, DOE will install a device referred to as a glovebox. Gloveboxes are used at sites throughout the country to allow operators to handle materials (such as radioactive waste) remotely to minimize personal exposure. The openings into the box contain gloves that are sealed into the wall of the box so that an operator can reach in and use the gloves to sort through drums of waste without the waste being released to the room. Gloveboxes have special ventilation systems that capture any radioactivity that may become airborne while the drum of waste is open. In this way, the drum can be opened in the Waste Handling Building, inside the glovebox, without diminishing the level of protection afforded by the previous policy of not opening any drums at WIPP.

Some waste containers that need to be double-checked (confirmed) at WIPP will be held at WIPP for no more than 1 year while awaiting testing. These containers will be stored in existing buildings and subject to existing storage and inspection requirements.

### **Benefits**

Implementing Confirmation activities at a central location will dramatically reduce the overall cost of waste characterization and confirmation.

The Confirmation capability at WIPP also may be used to confirm for disposal some CH-TRU waste from the Large Sites. This will speed up the cleanup of these sites. Confirmation at WIPP, however, would not eliminate the need for these sites to characterize their waste prior to shipment to WIPP.

The requested change would increase the permitted waste container storage limitation from 60 days to one year. The waste will be placed in existing buildings at WIPP before disposal underground. This additional time is required because of time requirements for confirmation procedures provided for in the permit.

The confirmation (double-checking) performed at WIPP will conform to all the safety requirements of the State and Federal permits and regulations.

If the equipment and personnel at WIPP are not busy with waste from the 17 Small Quantity Sites, they will be permitted to perform double-checking of waste from Los Alamos National Laboratory and other sites to help these locations more rapidly dispose of waste at WIPP — up to the 6000 drum limit.

Double-checking (confirmation) activities will be a small part of the WIPP waste disposal operation. WIPP is projected to dispose of 35,000 drum equivalents in the next 12 months. Double-checking activities will be limited to 6,000 drum equivalents per year.

Centralizing confirmation at WIPP avoids having to ship waste twice, thus avoiding a major complication of shipping Small Quantity Site waste to Large Quantity Sites for confirmation. Additionally, Centralized Confirmation reduces the need to address possible waste shipment restrictions from multiple places such as may be necessary with intermediate shipments to Large Quantity Sites.

If the New Mexico Environment Department finds that the confirmation (double-checking) operation at WIPP works well, it could be expanded in the future to centralize all double-checking at WIPP. This capacity at WIPP could also provide for additional random double - checks on containers that have already been through confirmation at the five larger sites.



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