



POSITION PAPER
SMALL QUANTITY SITE SOLUTIONS
LOCATED AT
WIPP HAZARDOUS WASTE FACILITY
CARLSBAD, NEW MEXICO

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EXECUTIVE SUMMARY

The U.S. Department of Energy Waste Isolation Pilot Plant (WIPP) facility intends to modify its current hazardous waste permit (NM4890139088) to allow for the on-site characterization of waste generated from a variety of sources including the small quantity generator sites (SQS).

Many of these sites are currently in dire need of assistance in the disposal of their transuranic (TRU) waste. The first step in assisting these sites is to characterize their wastes in a manner that is consistent with the WIPP permit requirements.

The permit requires that each site that sends waste to WIPP must first establish a waste characterization program that is in compliance with the WIPP permit. Next, this program must be audited by the Department of Energy (DOE) Carlsbad Area Office (CAO) and, finally, be approved by the New Mexico Environment Department (NMED). This process, which is both very costly and time consuming, requires highly specialized and extremely technical analytical techniques. In many instances the generator sites have neither the resources nor the expertise to perform these analyses.

The Department of Energy understands the unique problems associated with these laboratories and research facilities and, in an attempt, to remove the waste from these sites in a safe and efficient manner is proposing today to assume the responsibility for characterizing waste at WIPP.

DOE's approach is twofold:

- Transport most waste directly to WIPP using TRUPACT II
- Send waste that cannot be shipped in TRUPACT II to a large site for repackaging.

Upon arrival at the WIPP site these containers will be characterized sufficiently to allow their disposal in the underground repository. This characterization will encompass four basic activities. These include:

1. sampling and analysis of the air inside the containers (headspace gas sampling)
2. determination of the type and quantity of radioactivity in the waste (non-destructive assay)
3. a x-ray of each container's contents (real time radiography)
4. A visual examination of the containers contents

All of these characterization processes will be performed under rigorously controlled conditions and within contained environments so as to have no impact on public health or the environment.

The intent of this modification is to reduce the current burden placed upon the many State and local governmental entities who are attempting to find suitable ways to ensure the safe and environmentally sound transportation and disposal of TRU waste around the country. The Department of Energy believes that this permit modification will ultimately allow that goal to be achieved.

BACKGROUND INFORMATION

The WIPP facility has been permitted, constructed and operated to manage TRU waste from DOE facilities throughout the United States. The WIPP site is designated as the national repository for mixed and non-mixed defense related waste.

The WIPP facility was permitted under the regulations specified in The Resource Conservation and Recovery Act (RCRA) as issued by the US Environmental Protection Agency (USEPA) and adopted by the New Mexico Environment Department (NMED).

The current permit requires any site generating TRU waste destined for disposal at WIPP to perform a detailed characterization of their waste. This characterization involves the use of specific analytical techniques; highly sophisticated equipment and well trained technicians to accurately and precisely characterize these waste streams. Many of these programmatic requirements are already in place within the large quantity sites. However, for those locations where the quantity of waste is limited or the staff and equipment have been reduced due to funding limitations this characterization process is almost insurmountable. They simply do not have the resources available to comply with the permit required waste characterization.

Additionally, during this permitting process the regulatory community applied a permit condition that requires each waste generating site to undergo an extensive audit procedure. This audit calls for an independent evaluation and approval of all personnel; equipment; techniques and record keeping associated with the required waste characterization.

Continued storage of TRU waste under current conditions poses problems. Some of this waste, having been stored since the early 1970's, will require repackaging in order to maintain proper storage or be shipped to WIPP while container integrity allows. This additional, and potentially unnecessary, worker exposure and the considerable expense associated with maintaining indefinite storage or upgrading facilities to allow for detailed waste characterization will be avoided by implementing the WIPP Waste Characterization Facility.

The WIPP Waste Characterization Facility would be designed to manage waste that is sent directly to WIPP from the generator site using TRUPACT II. However, some of the existing waste at these sites cannot be shipped in TRUPACT II due to size limitations (large boxes) or radiological properties (high heat generation). In this case, waste would be shipped to a large site for management. In some cases, this waste would be repackaged and sent to WIPP, in other cases, an equivalent quantity of the large site's waste would be transported to WIPP for characterization and disposal.

OVERVIEW OF PROPOSED MODIFICATION

The Department of Energy (DOE) Carlsbad Area Office (CAO) intends to request a modification to its existing WIPP Hazardous Waste Permit to allow for the storage and characterization of waste for ultimate disposal within the geologic repository. The CAO believes that this modification falls into the category of a Class 2 modification.

The USEPA believes that a hazardous waste permit must be viewed as a living document that can be modified to allow facilities to make technological improvements, respond to changing waste streams and generally improve waste management practices. Since permits are written for the life of the facility, EPA understands that permit modifications are inevitable. The USEPA has defined a Class 2 modification as ones that cover changes that are necessary to enable a permittee to respond, in a timely manner, to variations in the types and quantities of wastes managed at the facility and technological advancements. Class 2 modifications also allow for an increase in storage capacity of no more than 25% and modifications to improve the design of the hazardous waste management units and improve management practices. Finally, EPA allows under its "preconstruction rule" a facility to begin any required construction for a Class 2 permit modification sixty days after the modification has been submitted.

As stated above it is the intent to submit this modification as a Class 2 modification under the following justifications:

- The Department of Energy is not proposing to add any new wastes to those already approved at WIPP. All of the codes that may be added are State specific codes which are already included within the permit. EPA has stated that a Class 2 modification is appropriate for wastes that are sufficiently similar to wastes currently authorized in the permit so that no additional or different management practice, design or process is required other than those specifically associated with waste characterization.
- The Department of Energy is not proposing any new techniques nor equipment. All equipment, techniques, training, record keeping and reporting will be identical to what has already been permitted and is included within the Waste Analysis Plan. Many of the changes to the Permit within this area may not require any modification whatsoever. For example, EPA has stated that so long as the frequency and content of the inspections specified are fulfilled, additional inspections would not require a Permit modification. The Department of Energy, however, is including all such changes within this modification to keep all stakeholders informed of the changes at WIPP.

- The Department of Energy is not proposing any reduction in the waste characterization as required in the Waste Analysis Plan. All TRU waste will still be characterized as required by the Permit. Activities such as characterization and waste analysis are normally not considered “regulated activities or units” and therefore are not subject to any permitting or permitting requirements. For example. EPA has stated that any changes in sampling or analysis procedures or statistical procedures are in fact a Class 1 permit modification. In fact, EPA believes that most changes will be made to improve permitted systems because of new information, improved technology or other considerations and therefore, public health and the environment will be best served by an expedited review process.
- Finally this modification was driven by the previous belief that waste characterization was best accomplished at the small quantity sites. Due to the recent technological innovations and the ability to develop portable analytical capabilities this former belief has been obviated.

Therefore, the Department of Energy, Carlsbad Area Office will, within the next several weeks, submit a class 2 permit modification for the items described within this document with the intent to begin construction of all required facilities within sixty days.

SPECIFIC PERMIT MODIFICATION

The Department of Energy will be requesting a permit modification in the following areas:

- Storage Capacity Increase
- Expansion of Permitted Storage Area
- Addition of State Specific Waste Codes
- Onsite Waste Characterization
- Temporary Authorization to Operate Prior to Modification Review and Approval

Storage Capacity Increase and Storage Area Expansion

In an attempt to allow for the management of waste from all sites in both an economical and environmentally sound manner the Department of Energy is modifying their current hazardous waste permit for the WIPP facility to allow for additional storage and waste characterization activities.

WIPP is requesting an expansion of the container storage capacity from the current limit of 4309 cubic feet to the proposed limit of 5386 cubic feet. This is an increase of 25 percent of the current maximum storage. This additional storage capacity will allow for a reasonable throughput rate. To allow for this increase in storage capacity it will be necessary to permit additional storage areas within the Waste Handling Building (WHB). The area chosen was the Overpack and Repair Room (Room 108). This is an existing area within the WHB which is ideally suited for the storage of waste containers and will require only minimal construction related modifications.

Addition of State Specific Codes

Several of the states from which waste will be received have their own unique waste codes that are applied over and above the hazardous waste codes assigned under RCRA. These codes do not, in any way, change the type of waste to be received at WIPP but are only an additional way of describing these wastes which are specific to a particular State. For example, in California a waste which is assigned a RCRA code for lead of D-008 is also assigned a unique California Hazardous Waste State Code. WIPP is permitted to accept wastes containing lead but did not foresee the need for specific State Codes addressing the same material. This problem will be resolved by this modification.

Onsite Waste Characterization

Headspace Gas

The headspace gas sampling and analysis system will be located in the Overpack and Repair Room. The headspace gas system will employ a Drum Venting and Analysis System (DVAS) which includes a gas chromatography/mass spectrometry (GC/MS) system for the analysis of the retrieved sample. It is not necessary to open any container during this process. This system is similar to that already audited by DOE and approved by NMED. This area is under negative pressure and vented through a HEPA filtration system.

Visual Examination

All visual examination (VE) will occur in the Site Generated Waste Room. The VE system will consist of a dual glove boxes, each of which is designed to manage one container at a time. The waste container will be attached to one end of the glove box and sealed in such a manner to ensure 100% containment. The drum will be emptied into the glove box and all items visually assayed to ensure that the contents meets the waste acceptance criteria. This is the only time that it is necessary to open any container of off-site waste at WIPP. Once again this system is similar to that already audited by DOE and approved by NMED. The glove boxes will be contained within a room that is under negative pressure and vented through a HEPA filtration system.

Real Time Radiography

The real time radiography (RTR) system will be housed in a support trailer which will be located in the TRUPACT Maintenance Facility (TMF). In this system a drum will be placed in a vault and the system energized to allow inspection of the contents. During this inspection both audio and video taping will occur and this tape will be subsequently reviewed by another radiographer to verify the initial results. It is not necessary to open any container during RTR. The RTR system to be employed at WIPP is similar to those which have already undergone auditing by DOE and approval by NMED.

Non-Destructive Assay

Non-destructive assay (NDA) is a mechanism by which the radionuclides within the waste and their activity are documented. This system, which consists of a variety of detectors capable of delineating alpha, gamma and neutron emissions. The NDA system is self contained within a portable building which will be located in the TRUPACT Maintenance Facility. It is not necessary to open any container to complete the NDA process. As with the other characterization activities which will occur at WIPP this NDA system is similar to those already evaluated and approved via the audit process.

All of the characterization equipment; techniques; operations and required documentation will comply with the existing Permit Waste Analysis Plan (WAP). The DOE is not requesting any modification to any of those requirements. The Waste Characterization Facility will undergo the same auditing and approval process that is currently required.

Temporary Authorization

The Department of Energy will, along with this modification, request from the NMED a temporary authorization to construct and operate the facility until such time as the permit modification process has been allowed to run the course of review and approval.

This temporary authorization will allow WIPP to begin the required building modifications; install the necessary characterization equipment and perform analyses on a variety of wastes in anticipation of the facility audit.

Temporary authorizations are allowable under the criteria outlined in 40CFR Part 270 which states in part that such authorizations may be granted to ensure that waste management activities at existing facilities are not disrupted; to allow facilities to respond to changes in the types and quantities of waste being managed and to carry out other changes that protect human health and the environment. WIPP believes that they can make substantial arguments within these areas to realize this goal.

Safety and Environmental Issues

Safety, with regards to human health and environmental management, are always the most important concern at WIPP. The waste characterization facility will continue that trend at WIPP. Every potential impact has been evaluated and addressed. Every potential avenue of contamination has been reviewed and eliminated. The impact that this new facility will have on human health and the environment has been shown to be negligible.

As stated earlier the only time that a container will be opened is during visual examination and then only under extremely controlled conditions. This work is performed in the TRUPACT Maintenance Facility within an enclosure which operates under negative pressure and is equipped with a HEPA air filtration system.

The containers which arrive for characterization at WIPP will have been adequately characterized at these locations to ensure that they meet the appropriate transportation requirements. This characterization will allow the waste generator to assign the appropriate hazardous waste codes; complete the required shipping papers and certify that the waste does not contain any items specifically prohibited at WIPP.

Schedule

The proposed modification for the waste characterization facility will be submitted to the New Mexico Environment Department on or about June 1, 2000 for their review and approval.

Simultaneously, the Department of Energy will submit a request for issuance of temporary authorization. We anticipate that this request will be granted within thirty days after submittal.

Upon issuance of the temporary authorization, work will commence on the required facility construction and installation of the necessary analytical instrumentation. All construction related activities should be completed by August of this year.

In September the first waste shipment for test characterization should arrive at WIPP.

Once the test characterization phase has been completed (approximately thirty days), the facility will undergo an audit by the Carlsbad Area Office. The final audit report would be sent to the NMED for final approval.

We anticipate an approval by NMED of the proposed modification in November and final audit approval before the end of the year.

Waste can be shipped to WIPP for characterization and emplacement prior to the end of 2000.

Benefits

The benefits which will result from this modification span the entire nation. The waste characterization facility at WIPP will allow the shipment and disposal of TRU waste from a variety of facilities in both an economical and environmentally sound manner.

The characterization at WIPP will be addressing a waste legacy throughout the nation which currently affects millions of people in dozens of major metropolitan locations. The Department of Energy is under federal mandate to address this issue within very stringent time constraints. The modification of the WIPP site will also result in an earlier decrease in the financial burden associated with maintaining indefinite waste storage throughout the nation.

The WIPP characterization facility is also a fiscally sound policy. The average cost to certify a facility for waste characterization is approximately \$2 to \$5 million dollars. There are approximately 18 small quantity sites each of which would require certification for a total cost of from \$36 to \$90 million dollars. A single certification at WIPP would result in a cost savings of from \$34 to \$85 million dollars.

The benefits to the State of New Mexico and the Carlsbad area in particular are both significant and widespread. The Department of Energy and its related subcontractors spends approximately \$29,000,000 per year in New Mexico through purchases related to the WIPP project. Of that amount approximately \$21,000,000 stays within the southeastern New Mexico area. The majority of those purchases (approximately 91%) is spent in support of small and disadvantaged business. The Department of Energy and its subcontractors supports approximately 7000 Carlsbad area residents and has an economic impact to the Carlsbad economy of over \$161,000,000 per year.

The proposed modification to the WIPP facility will continue to expand that economic impact through new employment, additional purchasing needs and an increasing tax bases for both the State of New Mexico and the Carlsbad area itself.

Conclusion

In conclusion the Department of Energy firmly believes that the most efficient, economical and environmentally sound mechanism by which to deal with the legacy wastes located at laboratories and research sites throughout the nation is a centralized waste characterization facility. The logical location of that facility would be at the WIPP facility which is where the waste will be disposed and which is already permitted to manage TRU wastes.

We anticipate that this process will entail a Class 2 permit modification and that the WIPP facility will begin receiving waste in August.