

WIPP Hazardous Waste Facility Permit 2008Update — 8011

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ABSTRACT

Important new changes to the Hazardous Waste Facility Permit (**HWFP**) were implemented during 2007. The challenge was to implement these changes without impacting shipping schedules. Many of the changes required advanced preparation and coordination in order to transition to the new waste analysis paradigm, both at the generator sites and at the WIPP without interrupting the flow of waste to the disposal facility. Not only did aspects of waste characterization change, but also a new Permittees' confirmation program was created. Implementing the latter change required that new equipment and facilities be obtained, personnel hired, trained and qualified, and operating procedures written and approved without interruption to the contact-handled (**CH**) transuranic (**TRU**) waste shipping schedule. This was all accomplished successfully with no delayed or cancelled shipments.

Looking forward to 2008 and beyond, proposed changes that will deal with waste in the DOE TRU waste complex is larger than the TRUPACT-II's can handle. Size reduction of the waste would lead to unnecessary exposure risk and ultimately create more waste. The WIPP is working to have the Nuclear Regulatory Commission (**NRC**) certify the TRUPACT-III. The TRUPACT-III will be able to accommodate larger sized TRU mixed waste. Along with this new NRC-certified shipping cask, a new disposal container, the Standard Large Box, must be proposed in a permit modification. Containers for disposal of TRU mixed waste at the WIPP must meet the DOT 7A standards and be filtered. Additionally, as the TRUPACT-III/Standard Large Box loads and unloads from the end of the shipping cask, the proposed modification will add horizontal waste handling techniques to WIPP's vertical CH TRU waste handling operations.

Another major focus will be the Hazardous Waste Facility Permit reapplication. The WIPP received its HWFP in October of 1999 for a term of ten years. The regulations and the HWFP require that a new permit application be submitted 180-days before the expiration date of the HWFP. At that time, the WIPP will request only one significant change, the permitting of Panel 8 to receive TRU mixed waste.

WIPP HAZARDOUS WASTE FACILITY PERMIT

The Hazardous Waste Facility Permit (**HWFP**) [1] is one of the several important documents that make up the Waste Isolation Pilot Plant's (**WIPP**) authorization basis. The HWFP defines

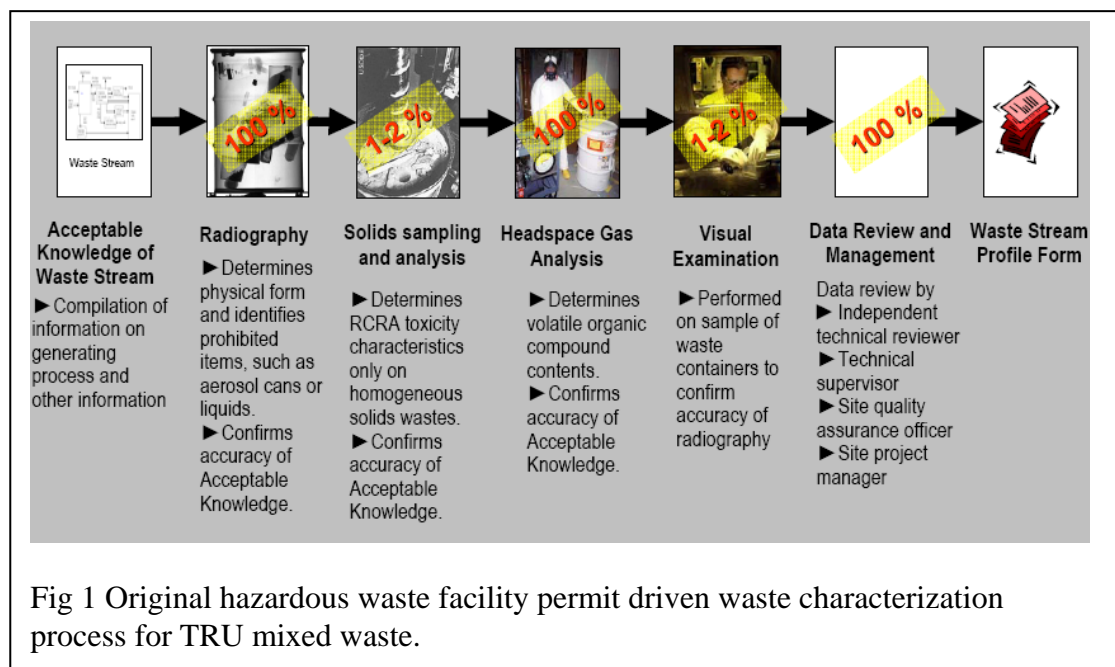
the parameters of hazardous waste disposal activities. The impacts of the WIPP HWFP are far-reaching in that generator sites that desire to send waste to WIPP for management and disposal must demonstrate that their waste conforms to the waste acceptance criteria in the WIPP HWFP.

Since the HWFP was issued in October 1999, the DOE has successfully modified key permit provisions in order to make waste characterization and waste management processes more efficient while maintaining the high level of protection for human health and the environment inherent in the HWFP. In addition, as the shipping envelope has expanded, it has become necessary to expand the list of waste forms and waste containers that are allowed by the HWFP. Two of the more significant changes that were recently implemented are the use of acceptable knowledge alone to characterize a waste stream and the implementation of the Permittee's confirmation program. Two upcoming changes are the use of TRUPACT III and the management of standard large boxes.

Background

When the HWFP was issued in 1999, the expectation was that waste would arrive in a TRUPACT-II containing 55-gallon drums or standard waste boxes (SWBs). Much of the planning for operations revolved around these two container types, although 85-gallon drums were also considered in the event a 55-gallon drum needed to be overpacked. Waste characterization at the generator site involved multiple steps to assure that the waste contained no prohibited items and that the proper EPA hazardous waste numbers were assigned to the waste stream. As depicted in Fig. 1, the steps in characterization included the following:

- Assembly of Acceptable Knowledge (AK) for the entire waste stream
- Radiography of 100 percent of packaged waste to determine the physical form and to confirm AK. Generators could use visual examination of the waste in lieu of



radiography.

- Solids sampling of 1 to 2 percent of homogeneous solids or soil and gravel waste. Debris waste did not require solids sampling and analysis.
- Headspace gas sampling of every container of waste.
- Visual examination of 1 to 2 percent of the radiographed waste as a quality control check on radiography.
- Non-destructive assay of each container (not shown in Fig. 1 because it is not a HWFP requirement)
- Four levels of data review and approval
- Preparation of a waste stream profile form for approval by the Permittees.

Over the eight years since the HWFP was issued, the DOE has worked with the New Mexico Environment Department (NMED) and stakeholders in New Mexico to reduce the waste characterization and waste confirmation requirements as well as expand the envelope of shippable waste. This has included broadening the transportation system.

Major Improvement in the HWFP

There have been over 100 modifications submitted to the HWFP. However, several stand out as significant in terms of improving waste characterization and confirmation and reducing cost. For example, a modification was made to allow the compositing of headspace gas samples from up to 20 containers. This greatly facilitated that analytical process and significantly reduced the data review burden. Compositing was instrumental in DOE meeting the 3,100 cubic meter commitment in the Idaho Compliance Agreement on time 5 years ago. Other changes allow 100-gallon drums with supercompacted waste, minimal sampling and analysis for sealed sources

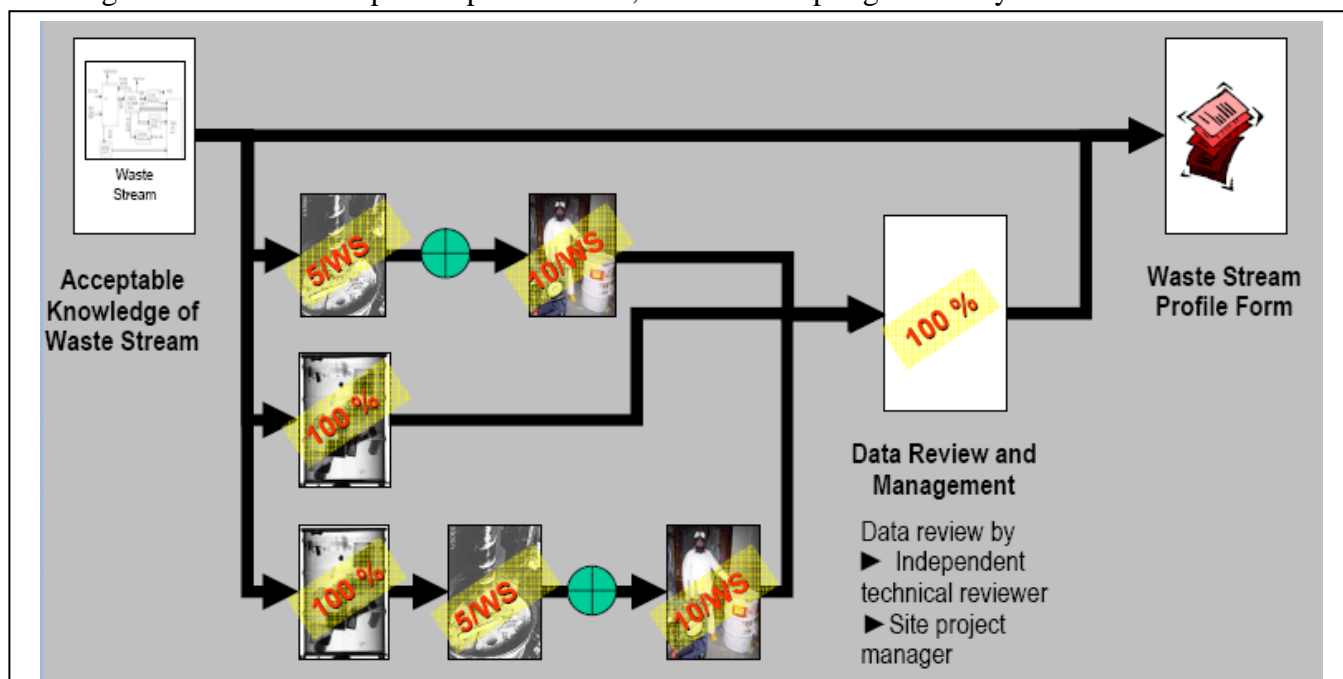


Figure 2 Waste characterization as the result of 2006 changes to the hazardous waste facility permit.

from Los Alamos National Laboratories, and reduced headspace gas sampling and analysis for thermally treated waste and waste with no volatile organic compounds. Most recently, however, the HWFP was modified to allow the management of remote-handled TRU waste and to reduce the waste characterization as shown in Fig. 2

The four characterization pathways in Fig. 2 represent a significant reduction in chemical sampling and analysis and the potential reduction in physical characterization for the waste. One aspect in common is the identification of AK and its compilation into an auditable record. However, based on the AK available, the generator can take one of four pathways for characterization:

- AK only
- AK with chemical sampling
- AK with physical examination
- AK with chemical sampling and physical examination

In all cases, the amount of chemical sampling and analysis is reduced significantly.

Another significant change to the HWFP involves conditions to notify stakeholders when certain actions are taken by the Permittees. The DOE developed a “Stakeholder E-Mail Notification List” via the WIPP worldwide web home page. Subscribers receive timely notification of such actions as submittal of audit reports for NMED approval, submittal of requests to NMED to provide review and comments on acceptable knowledge sufficiency determinations (AKSD), and other actions as shown in Fig. 3.

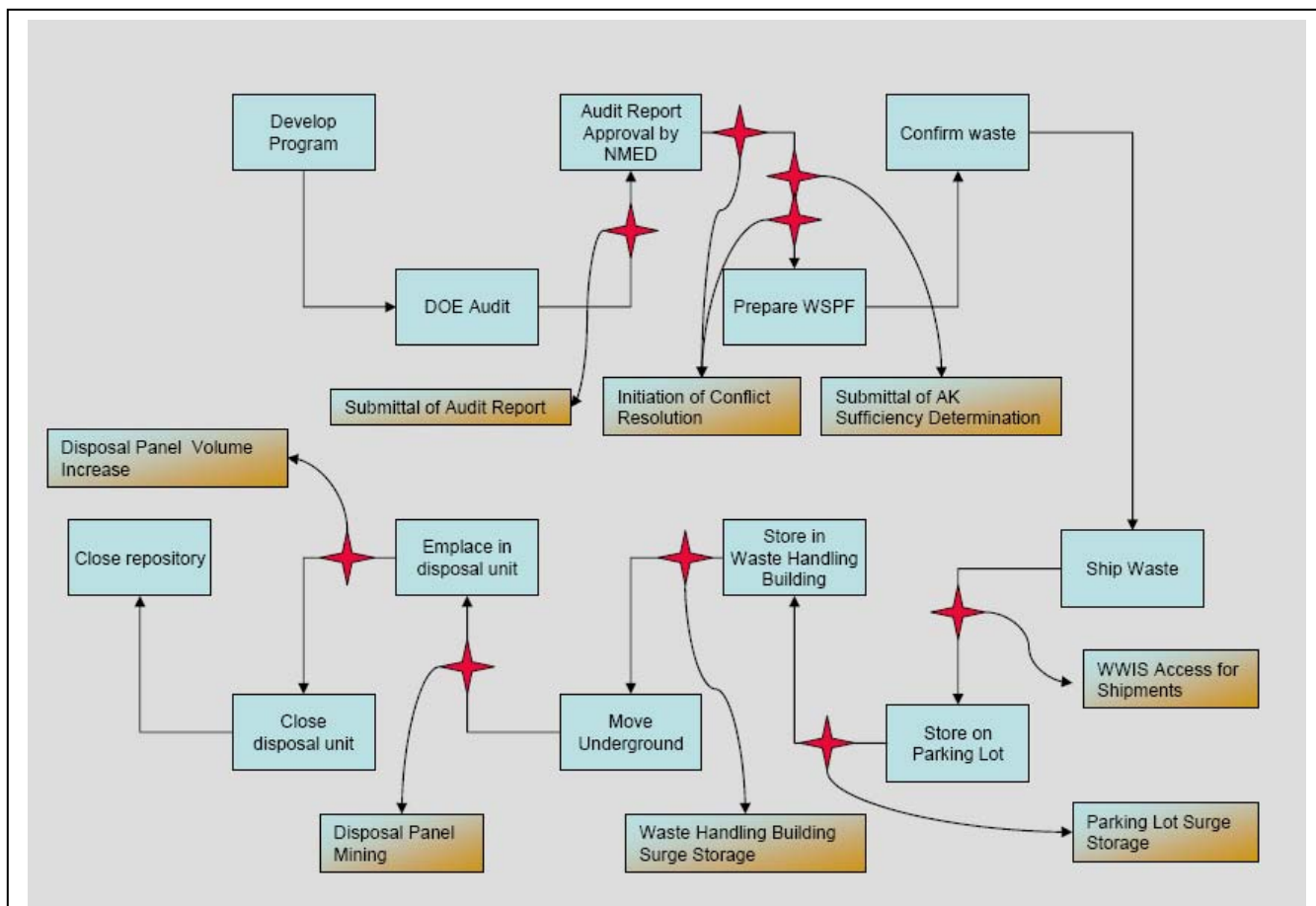


Figure 3 Activities (shown as red stars) that trigger stakeholder notification are depicted relative to where they occur in the waste management process.

HOW THE MOST RECENT CHANGES ARE AFFECTING THE PROGRAM

Operation under the most recent major modification to the HWFP has been underway for one year. It is now possible to evaluate if the changes are impacting the program and the extent of such impacts. Four specific aspects are discussed:

- Acceptable Knowledge Sufficiency Determination
- Chemical and Physical Sampling
- Waste Confirmation
- Stakeholder Notification

Acceptable Knowledge Sufficiency Determination

As of the first anniversary of the HWFP modifications, only one organization has prepared an acceptable knowledge sufficiency determination request. The organization is the Central Characterization Program and they have prepared AKSD requests for one remote-handled waste

stream at Los Alamos [2] and for the Battelle Columbus [3] remote-handled waste that is stored at the Savannah River Site. Both have received provisional approval from the DOE and have been sent to the NMED for review. NMED has not provided comments or requests for additional information, although NMED recently indicated that they were working on both requests.

An AKSD request consists of a completed AK checklist, an AK summary, Quality Control documentation (such as training records for AK Experts), and source documentation. For the LANL RH TRU waste stream, original packaging records are available to satisfy the need for physical characterization information and to provide a record that can be reviewed in order to complete the confirmation requirements for shipment of waste from the waste stream. The Battelle waste stream was videotaped as containers were being filled. These videotapes provide a record of the physical characterization of the waste stream. The LANL AKSD covers 16 RH TRU canisters in storage at LANL. The Battelle waste AKSD covers approximately 100 55-gallon drums of waste in storage at Savannah River.

Chemical and Physical Sampling

No sites have opted to seek an AKSD for chemical sampling of contact-handled TRU waste. This is in part because many of the waste streams that are currently being shipped were shipping at the time the new requirements went into effect. The result was that it was easier for the generator to simply reduce headspace sampling from 100 percent to a minimum of ten samples per lot than to prepare the needed AKSD documentation. However, information collected from the WIPP Waste Information System (WWIS) database indicates that the number of HSG and solids samples that are being collected and analyzed is reduced by about 40 percent. These are summarized in Fig. 4. There have not been enough solids or soil and gravel characterization activity to determine if changes have occurred. Changes, if any, would not be expected to be as dramatic as headspace gas sampling because the solids sampling frequencies are nearly the same in the revised permit as in the previous version.

Waste Confirmation

One of the more significant requirements that the DOE has implemented is waste confirmation. The modified permit requires that the DOE confirm waste information on seven percent of the containers in each shipment for each waste stream. Waste confirmation is used to ensure that there is no ignitable, reactive or corrosive waste present, that the Summary Category Group and Waste Matrix Code are correct and that the hazardous waste numbers assigned are all acceptable at WIPP. This is done through either radiography, visual examination, or the review of radiography or visual examination audio/video media and associated records.

The waste confirmation program consists of two teams, one located in Idaho Falls, Idaho consisting of ten members and dedicated to waste shipments from the Idaho National Laboratory and one located in Carlsbad, New Mexico consisting of five members and responsible for shipments from all other generator sites. Confirmation is applied to a minimum of seven percent of each waste stream in each shipment. This confirmation rate was selected in order to assure that the equivalent of one container per TRUPACT II was selected and confirmed. For example, in a shipment of 42 55-gallon drums from a single waste stream in three TRUPACT IIs, each

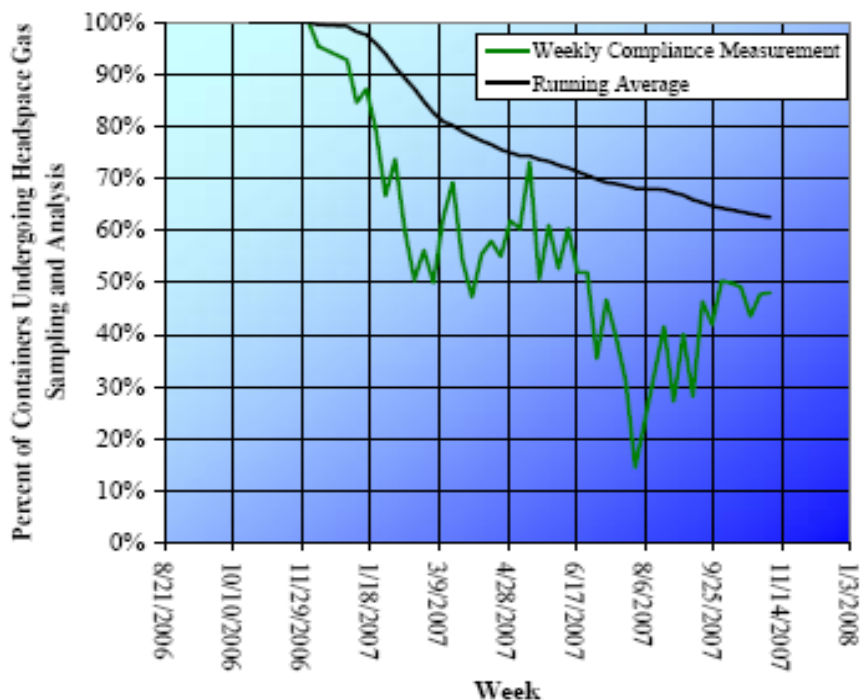


Fig. 4 Waste Stream Information Showing the Reduction from 100 percent sampling of Headspace Gases for the period 10/23/06 through 11/11/07

containing 14 drums, three containers would be selected for confirmation. The confirmation process involves a random selection of the containers from the shipment, a review of the radiography or VE record, and a determination that the containers were free of prohibited items before the shipment leaves the generator site. Of course, not all shipments are single waste streams and not all waste is shipped in 55-gallon drums. For example, a shipment of three ten drum overpacks (TDOPs) in three TRUPACT IIs each containing ten drums would result in the random selection of one of the TDOPs for confirmation. Each of the 55-gallon drums in the selected TDOP would be confirmed. This would be a 33 percent confirmation rate for that shipment. If each TDOP contained a different waste stream, then all 55-gallon drums would be confirmed.

Waste confirmation began on November 17, 2006. In the first year, there were 931 shipments containing 10,915 payload containers. Doing random selection of a minimum of seven percent of the payload containers for each waste stream in each shipment resulted in confirmation of 9,446 containers. According to information in the WWIS, 20,268 individual containers were shipped. Therefore the actual confirmation rate can currently be calculated to be 47 percent. Only one container has been rejected by the confirmation team during this period of time.

Stakeholder Notification

In order to comply with the revised HWFP an e-mail based stakeholder notification system was necessary. This was developed by sending a letter to the 2,500 members of the WIPP Facility Mailing list, inviting them to set up a notification account. The account is set up online through

the WIPP Home Page. Seventy-six individuals have subscribed to the e-mail notifications. A summary of the notifications sent to the stakeholders are shown in Table 1.

Table 1. Summary of E-mail Notifications Sent to Stakeholders between November 2006 and October 2007

Notification Type	Number Sent
Submittal of Final Audit Reports	10
Submittal of Acceptable Knowledge Sufficiency Determination	2
Notice of Submittal of a Dispute Resolution	0
Notice of Proposed Capacity Increase in the Repository	0
Notice of Surge Storage in the Parking Unit Area	0
Notice of the Use of Surge Storage in the Waste Handling Building	0

In all cases, the notification links the recipient to a copy of the transmittal letter sent by DOE to the NMED. Attachments to the letter, such as audit reports, are not posted on the notification page. These are generally available by request from the DOE or from the NMED.

In addition to the e-mail notification process, stakeholders have access to data on disposed waste via the WIPP Home Page. Users can select specific containers and view characterization data as well as disposal location (Panel, Room, Row, Column and Height).

FUTURE PLANS

Several important changes are planned for the HWFP. First, the Permit will be modified to accommodate shipment in TRUPACT III and standard large boxes. This involves establishing a drum age value for headspace gas sampling and modification to some of the waste management processes at the WIPP facility.

DOE is also planning to use shielded containers to manage some portion of the RH TRU inventory as a means of making RH TRU waste management more efficient and optimizing the disposal of RH TRU waste in WIPP. Shielded containers will require a change to the HWFP.

Another major activity is the preparation of the HWFP renewal application. The current HWFP expires in November 2009 and a renewal application must be submitted at least 180 days prior to the expiration date. The renewal application will only make limited changes to the current facility configuration, by permitting Panel 8 for TRU waste disposal. Under the current permit, only the construction and certification of Panel 8 is allowed.

CONCLUSIONS

One year after making major changes to the WIPP HWFP, the WIPP continues to receive waste and complete disposal in a timely manner. Confirmation has resulted in greater confidence in the accuracy of characterization activities. Stakeholders are active participants in decision making regarding permit changes and are well informed. Changes planned for next year will expand the WIPP envelope to waste in boxes that is not amenable to repackaging into drums and will allow alternatives for RH TRU waste packaging and disposal with shielded containers.

REFERENCES

1. Department of Energy, *Hazardous Waste Facility Permit, Waste Isolation Pilot Plant*, issued by the New Mexico Environment Department October 27, 1999. Current Revision dated September 13, 2007.
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3. Department of Energy, *Request for Evaluation of an AK Sufficiency Determination for SL-RL-BCLDP.001 dated September 4, 2007*, available at http://www.wipp.energy.gov/library/STKInfo/Acceptable_Knowledge/Request_for_Evaluation_of_an_AK_Sufficiency_Determination_for_SR-RL-BCLDP.001.pdf