

EEG'S VIEWS ON THE PROPOSED MODIFICATIONS TO THE WIPP HAZARDOUS WASTE FACILITY PERMIT

Ben A. Walker and Matthew K. Silva
Environmental Evaluation Group
7007 Wyoming Blvd., NE, Suite F-2
Albuquerque, NM 87109

ABSTRACT

Waste characterization for the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) is regulated principally by the Waste Analysis Plan (WAP) portion of the WIPP Hazardous Waste Facility Permit (HWFP). Proposed modifications to the WAP by the WIPP permittees have often been rejected or withdrawn after public comment over the last two years. These problematic modifications appear to have failed in part because of one or more of the following problems: misclassification of the modification request; insufficient supporting data; proposed text changes with unintended consequences and proposed text changes that are not related to the modification request; and a failure to meet regulator expectations. The EEG suggests that by following the document preparation quality assurance process instituted for many other WIPP-related documents the permittees could reduce or eliminate these problems.

INTRODUCTION

The DOE disposes of the nation's defense transuranic (TRU) waste at the Waste Isolation Pilot Plant (WIPP) in southeastern New Mexico. The 1992 WIPP Land Withdrawal Act (LWA) (1) required the U.S. Environmental Protection Agency (EPA) to certify that the facility would meet the EPA transuranic waste disposal standards. These standards establish limits for a performance assessment-derived expected release of radioactive components from the repository to the environment over a period of 10,000 years (2). The EPA certified the facility in May 1998, and non-mixed transuranic waste was initially received on March 26, 1999.

However, most of the TRU waste to be disposed at WIPP is mixed waste--in addition to the radioactive components it also contains non-radioactive hazardous materials, the handling and disposal of which are regulated by the Solid Waste Disposal Act (SWDA) (3). Although amendments to the LWA in 1996 exempted the facility from compliance with the long term disposal requirements in the SWDA, the facility must comply with the other storage and disposal requirements for hazardous waste in the Act (4). New Mexico is an EPA "approved State" under the SWDA, and the New Mexico Environment Department (NMED) promulgated the HWFP effective November 27, 1999 to establish the facility-specific requirements (5).

The HWFP prescribes operational limitations and processes for the WIPP facility itself, but is also the principle document outlining waste characterization requirements for the material to be disposed at the WIPP. The DOE's initial decision was that waste characterization would take place at the various DOE sites around the nation where the waste is generated and stored. Since

the NMED has no jurisdiction over the out-of-New Mexico sites, the relevant 40 CFR 264.13(a)(1) requirement for a detailed chemical and physical analysis of a representative sample of the waste prior to storage or disposal of waste is administered through the WAP portion of the HWFP (Attachments B).

The WIPP HWFP permittees are the DOE's Carlsbad Field Office (CBFO) and the WIPP Management and Operating Contractor, currently Westinghouse TRU Solutions (WTS). The permittees have submitted to the NMED a number of proposed modifications to the WIPP HWFP since the document became official in November of 1999. The bulk of these submissions have been related to modification of the waste characterization process. While some of these proposals have been accepted by the NMED, others have been rejected, or withdrawn by the permittees for various reasons.

The Environmental Evaluation Group (EEG) provides an independent technical review of the WIPP project to ensure protection of the public health and safety and protection of the environment of New Mexico. The EEG has provided comments to NMED and CBFO on all proposed Class 2 and Class 3 modifications, and has for the most part agreed with the intent of the proposals. However, the EEG's comments have often identified elements of the proposals that were important to acceptance or rejection by the NMED. This paper discusses several types of problems that appear to have affected disposition of the ten Class 2 and Class 3 permit modifications requests (PMRs) related to waste characterization that have been submitted prior to October 1, 2001 (see Table I for a list of the PMRs).

PROPER CLASSIFICATION OF PROPOSED MODIFICATIONS

Proper classification of a proposed modification to the HWFP has been shown to be important. The New Mexico Administrative Code (NMAC) incorporates the entire 40 CFR 270 process that governs the EPA's hazardous waste permitting program virtually without change (at 20.4.1.900 NMAC). These regulations specify three classes of modifications for use by permittees.

Class 1 Modifications

Use of Class 1 modifications, the simplest classification, have created several problems for the DOE's transuranic waste disposal complex. 40 CFR 270.42, which is wholly incorporated into the NMAC, states that Class 1 modifications are to be limited to routine changes such as correction of typographical errors or title and name changes. Other changes that can be made as Class 1 modifications are clearly delineated in Appendix 1 to 40 CFR 270.42. Class 1 changes should not substantially alter permit conditions, or affect the capacity of the facility to protect human health or the environment, and should be easily reversible. Permittees are thus allowed to implement a Class 1 modification as soon as it is submitted. No comment period for public input is required of a Class 1 modification, but outside parties can request that the regulator review the modification, and the regulating authority can reject it anytime after it has been submitted (6).

The WIPP permittees have submitted over a hundred Class 1 submissions in the last two years, most of which clearly fell within the Class 1 guidelines. However, the classification of many of the Class 1 submissions related to waste characterization have been questionable. The NMED has rejected several, and others have been withdrawn by the permittees after discussions with the NMED.

One particularly important Class 1 modification, on Drum Age Criteria (DAC), was submitted on November 13, 2000. The DAC functions to allow the volatile organic compound concentrations in the headspace gases of a container to reach 90 percent of steady state concentration within the innermost layer of confinement prior to headspace gas sampling. The DAC originally required 142 days for debris wastes and 225 days for homogeneous wastes, but these long periods can be a major constraint on waste characterization times and storage area availability during waste characterization. The submitted Class 1 modification was verbally rejected by the NMED, who noted that the technical complexity of the proposal required at least a Class 2 designation and process (7). This rejection resulted in an apparent slowdown of shipments from the Idaho National Engineering Laboratory (INEEL) in November and December 2000 (8). The INEEL had expected to be able to accelerate processing of waste using the shorter DAC times in the Class 1 modification.

Other WIPP HWFP Class 1 modifications were more recently rejected because they contained substantive changes (9). Some of these modifications were in use for over a year before the rejection, and all had been in use for at least eight months. Consequently, recertification audit reports from several waste generating sites (Hanford, INEEL, RFETS) were rejected by the NMED because these sites had incorporated the modifications into their procedures (10). The NMED granted a two-month period (to November 27, 2001) in which waste previously characterized under these modifications could continue to be received at the WIPP. This NMED action apparently was intended, at least in part, to prevent a slow-down in shipping related to the modification rejections. However, because of other waste generator site shipping problems during the two-month period (for example, significant delays occurred due to terrorism prevention activities) some of the waste characterized utilizing the rejected modifications may not have been shipped prior to the deadline.

The NMED's year-long delay in rejecting these Class 1 modifications could appear to have exacerbated problems caused by this rejection. The 1988 Federal Register announcement of the permit modification process would seem to clearly place this burden on the WIPP permittees (53 FR 39712):

Several commenters asked for a specified time frame for Agency decisions for the Class 1 modifications that require prior approval. Therefore in today's rule a new provision has been added at § 270.42(a)(3) that allows the permittee to elect to follow the Class 2 process instead of the Class 1 procedure. As discussed the following section, the Class 2 process will assure that an Agency decision will be made on the modification request within established time frames (generally 90 to 120 days)...the deadlines in the Class 2 process balance the concerns of the

Agency, the public, and the permittee, and are readily adaptable to the types of facility changes encompassed in Class 1.

40 CFR 270.42(d)(1) also allows the permittees to submit a proposed modification requesting that the NMED declare a Class after reviewing the permittee's recommendation and supporting information. Utilizing this process, or a Class 2 process, would likely have prevented the problems that these Class 1 modifications have caused.

Class 2 Modifications

The permittees have also had problems with misclassified Class 2 PMRs. 40 CFR 270.42(d)(2)(ii) states:

Class 2 modifications apply to changes that are necessary to enable a permittee to respond, in a timely manner, to (A) Common variations in the types and quantities of the waste that are managed under the facility permit, (B) Technological advancements, and (C) Changes necessary to comply with new regulations.

As with Class 1 modifications, Appendix 1 to 40 CFR 270.42 describes the types of changes that qualify as Class 2 modification requests. Class 2 modification requests require a 60-day public comment period, after which the regulator can either accept the proposal as submitted, modify it according to specific recommendations in the comments, or reject it. However, the Class 2 process does not allow the regulator to extensively interact with the permittees after the public comment period, so that an unacceptable PMR cannot be altered into an acceptable one.

The NMED has rejected several proposed Class 2 modifications. One of these, a request to increase storage space for ten-drum overpacks, was rejected because it was based on an inappropriate Class 1 modification. The Drum Age Criteria (DAC) that had been rejected as a Class 1 modification was resubmitted as a Class 2 PMR dated January 22, 2001. It, too, was rejected when "...numerous public commentators suggested that there were significant technical inadequacies" (11). The NMED's rejection letter also stated (p. 2):

Due to its complex technical nature and in consideration of NMED's and the public's comments, the Permittees may wish to resubmit this permit modification request as a Class 3 modification under 20.4.1.900 (incorporating 40 CFR §270.42(b)(6)(i)(A)) because none of the commentators proposed sufficiently detailed changes to rectify the technical inadequacies they identified. Such changes would have had to be fairly substantial to overcome the significant shortcomings of the proposed modification, and would also have to be subject to additional public comment. Furthermore, NMED was unable to reclassify this modification request to follow the procedures for Class 3 modifications specified in 20.4.1.900 (incorporating 40 CFR §270.42(b)(6)(i)(C)) because the request was not approvable as submitted.

The NMED's comments attached to the letter also stated (Attachment, p. 2):

While the mathematics appears generally appropriate, NMED has a number of questions concerning assumptions, applicability, etc., which remain unanswered because NMED did not have access to the authors nor have an opportunity to interact with the Permittees after the modification was submitted. This is primarily due to the nature of the Class 2 permit modification process, which does not provide for supplementing the administrative record with information obtained from a request for supplemental information (RSI) or a notice of deficiency (NOD).

RSIs and NODs are two of the principal advantages of using a Class 3 process. Despite this NMED encouragement to submit the DAC as a Class 3 PMR, the WIPP submitted a reworked Class 2 DAC PMR on April 27, 2001. The EEG's comments on this new DAC proposal quoted the NMED statements above, and also stated that "...The new modification request appears to be at least as complex as was the modification request that was rejected..."(12). After the mandatory public comment period, the NMED did change the proposal to a Class 3 PMR (13):

NMED is not approving [the] DAC Class 2 modification request with changes as allowed under 20.4.1.900 (incorporating 40 CFR §270.42(b)(6)(ii)(A)) because the complex nature of these changes necessitate the development of a draft permit. Therefore, the NMED is reclassifying this modification request to follow the procedures for Class 3 modifications specified in 20.4.1900 (incorporating 40 CFR §270.42(b)(6)(ii)(C)).

Class 3 Modifications

It appears that the WIPP permittees had hoped to avoid a Class 3 modification process, for which the NMED must prepare a draft permit, whenever possible. The draft permit requires an additional public comment period, and can require a public hearing; a Class 3 process can easily take over a year to complete. However, the various modification efforts proposed by the permittees to revise the Drum Age Criteria took nearly a year, with the bulk of the Class 3 process still to be performed.

The same observation could be made for the proposed Class 2 modification to allow waste characterization to take place at the WIPP site itself (06/06/01 proposal in Table I). This PMR proposed shipment of transuranic waste that had not completed the waste characterization process prior to shipment of the waste into the state of New Mexico. The change was of great concern to the state and its residents. The PMR was withdrawn at the end of the public comment period, and almost exactly one year elapsed before it was resubmitted (significantly altered) as a Class 3 PMR.

The criteria for Class 1 and Class 2 modifications is described in 40 CFR 270.42 Appendix 1. On occasion, the NMED has provided guidance for PMR classification. The WIPP permittees

could enhance the success of their proposed PMRs by ensuring that the proposals meet these criteria and guidance prior to submitting them. When uncertainty exists as to the proper classification--that is, the Appendix 1 criteria do not clearly apply to the proposed modification--the proposal could be submitted under the provisions of 40 CFR 270.42(d)(1). This allows the permittees to provide information in support of classifying the modification as either a Class 1 or 2, but allows the NMED to make the class determination. For any complex proposals, the Class 3 allowance of NODs and RSIs could help the permittees to correct for the insufficient technical justifications that is the next topic.

INSUFFICIENT TECHNICAL JUSTIFICATION FOR PROPOSED MODIFICATIONS

A recurring problem often found in waste characterization and management modification submittals is a failure to provide sufficient technical analysis and/or data to justify the proposed change. In June 2000, the EEG commented on the first two sets of Class 2 PMRs (03/30/00 and 04/20/00 proposals in Table I) that proposed substantive changes to six items (14). The EEG stated that the DOE arguments were not always well presented and suffered from a lack of sufficient data to verify the DOE argument. While the EEG concluded that the modifications would be acceptable, the EEG was able to reach that conclusion only after developing its own, independent supporting technical justifications from relevant literature and knowledge. This additional information became a part of the modification record, and may have aided the NMED's acceptance of the PMRs. Reliance on public comment to provide necessary supporting data would appear to put proposed modifications at risk. Indeed, EEG comments on subsequent PMRs have also noted insufficient support for the technical adequacy of many of the PMRs. These proposals have a rather poor acceptance rate by the NMED (see Table I).

The lack of technical information in one PMR that the EEG believes could be highly useful has resulted in a significant delay to its implementation. A Class 2 PMR to allow Digital Radiography/Computed Tomography (DR/CT) technology to replace visual examination was submitted on January 21, 2001. The submittal provided general information on the improved imaging capability of the DR/CT unit. The EEG's comments noted that the proposal did not provide any data comparing the results on actual waste drums by DR/CT with that of radiography/visual examination (15). The permittees withdrew the PMR after the public comment period, indicating that the public's technical comments would need to be addressed prior to further processing.

Item 3 in the most recently proposed Class 2 PMR (09/28/01 proposal in Table I) appeared to EEG to be deficient in technical justification. Successful tests were performed on 12-inch pipe-overpack containers in support of the modification (to allow filters to be removed so that gas samples could be extracted through the filter opening) (16). Pipe-overpack lids have steel plates underneath the filters for radiation control, with four millimeter-size holes to allow access to the filter, so that even with the filter removed the mixing of ambient air with the container contents would be severely restricted. However, the PMR would also have allowed filters to be removed from other waste containers, where removal of the filter would leave an opening of inch-scale size. The PMR would have added language to the HWFP stating that the generator/storage sites

performing this type of sampling "...must provide documentation demonstrating that the time between removing the filter and installing the airtight sampling device has been established by testing to assure a representative sample" (p. A-30). The NMED could have chosen to approve of the PMR only after the worst-case example to be approved, rather than the best case, had been tested. Instead, the NMED approved of the PMR, but only for use with the pipe-overpack containers (17). Thus, if sampling through the filter on other types of containers is necessary, another PMR will need to be submitted.

While 40 CFR 270.42 does not require that a technical justification be supplied for PMRs, it is obvious to the EEG that proposed modifications to the HWFP will not be accepted unless they have been demonstrated to be technically correct. The permittees should ensure that sufficient technical justification is provided in future PMRs.

TEXT CHANGE DEFICIENCIES

Proposed changes to the HWFP text have often also suffered from deficiencies that fall into two general categories: 1) text alterations that create apparently unintended changes to operations and 2) text alterations unrelated to the PMR. An example of the former condition appears in EEG comments on the Class 3 PMR currently under consideration to allow centralized waste characterization (Table I, 06/06/01 Item 1). The EEG noted that the PMR would allow currently approved waste characterization operations at the sites to ship partially characterized waste not intended for the centralized waste characterization facility to the WIPP (18). The withdrawn Class 2 PMR to allow essentially the same centralized characterization process (Table I, 07/21/00 Item 1) included text changes which would have greatly altered the acceptable knowledge process, even though the discussion portion of the PMR did not indicate that such a change would be made (19). 40 CFR 270.42(b)(1) requires that Class 2 modification proposals describe the exact change, and why it is needed. In these cases, and many others like them, the requirement does not appear to have been met.

ADDRESSING REGULATOR EXPECTATIONS

The NMED has offered suggestions and comments to the permittees on PMRs that have been rejected or withdrawn. However, the WIPP record of making adjustments in accordance with these suggestions is spotty, at best. As noted above in discussing the Drum Age Criteria PMR, ignoring the NMED comments created additional delay in the modification process. As another example, in a letter on the withdrawn Class 2 PMR to implement the proposed centralized waste characterization process the NMED stated an expectation that any future submittal would address not only the NMED's comments but also any of the pertinent comments received from the public. The Class 3 PMR for centralized characterization currently under consideration does contain a response to the comments section, and some of the other comments appear to have been addressed by text alterations. However, it does not appear that the bulk of the comments of either the NMED or the pertinent public comments were addressed in the PMR. It would seem that neglecting to fully address the recommendations of the regulatory authority is a recipe for delay, if not failure.

CONCLUSIONS AND RECOMMENDATIONS

The current process used by the WIPP permittees to modify waste handling and characterization requirements has not had a high success rate. The rejected or withdrawn PMRs modifications are not conducive to improved relations with the NMED, have caused delays in achieving the mission of the WIPP, and could result in negative publicity for the high-profile project.

In the past the EEG has suggested that using the document review and approval process required by both the WTS and CBFO quality assurance programs for other types of documents could enhance the PMR process. Section 1.4.2 of the current (Revision 3) CBFO Quality Assurance Program Document (QAPD; CAO-94-1012), requires documents that specify waste characterization requirements to be reviewed for adequacy, correctness, and completeness prior to issuance; that criteria be established for these reviews; that the reviewers be technically competent in the subject area being reviewed; that the organizations affected by the document are to be among the reviewers; that these reviews be performed according to approved procedures; and that review comments be resolved according to established procedures. The same requirements are also found in Section 1.4.1 of the current WTS QAPD (WP 13-1, Revision 20), though the requirements there do not specifically point to documents that specify waste characterization requirements.

The EEG still believes that using this process would greatly enhance the quality of, and response to, proposed PMRs to the WIPP Hazardous Waste Facility Permit.

WM'02 Conference, February 24 - 28, 2002, Tucson, AZ

Table I. WIPP HWFP Waste Characterization and Management Class 2 and 3 Modification Proposals

Proposal Date	Mod Class	Item #	Proposed Modification	Disposition
03/30/00	2	1	Alter accuracy acceptance criteria for cresols and pyridines	Accepted
		2	Use hgas statistical sampling of homogeneous containers when AK does not indicate hazardous VOCs	Accepted
		3	Use hgas statistical sampling of containers when waste was thermally treated	Accepted
04/20/00	2	1	Add allowance for 3 sub-samples to be taken from solidified container cores	Accepted
		2	Change miscertification rate to SCG from waste stream	Accepted
07/21/00	2	1	Perform waste characterization at the WIPP	Withdrawn
		2	Combine data package reviews; eliminate off-site audits for SQS	Withdrawn
12/07/01	2	1	Change headspace has drum age criteria (DAC I)	Rejected
01/22/01	2	1	Perform visual examination by tomography	Withdrawn
03/06/01	2	4	Add new hazardous waste numbers to HWFP	Accepted
04/27/01	2	1	Allow additional storage space for TDOPs	Rejected
04/27/01	(2) 3	1	Change headspace gas drum age criteria (Revised; DAC II)	Moved to Class 3; in process
06/06/01	3	1	Allow Central Characterization Facility (CCF) at the WIPP	In process
		2	Add storage capacity for the CCF	In process
		3	Increase allowed storage time at the WIPP to one year	In process
		4	Allow prohibited items to be received at the WIPP	In process
09/28/01	2	1	Allow compositing of headspace gas samples for analysis	Accepted
		2	Alter random sampling for visual examination to allow for site safety considerations	Rejected
		3	Allow headspace gas samples to be taken through existing filter openings	Partially Accepted (POCs only)
<p>"hgas" = headspace gas "homogeneous containers" = containers of solidified or soil/gravel wastes "VOC" = volatile organic compound "AK" = acceptable knowledge "SCG" = summary category group (debris wastes, solidified wastes, and soil/gravel are the 3 SCGs) "SQS" = small quantity sites "TDOP" = ten-drum overpack containers "POC" = pipe-overpack container</p>				

REFERENCES

- (1) U.S. Congress, 1992. *Waste Isolation Pilot Plant Land Withdrawal Act*. Public Law 102-579, 106 Stat. 4777, October 30, 1992, 102nd Congress, Washington, D.C.
- (2) 40 CFR 191, Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes.
- (3) U.S. Congress, 1976. *Solid Waste Disposal Act*. Public Law 94-580, 90 Stat. 2795, 94th Congress, October 21, 1976.
- (4) U.S. Congress, 1996. *The Waste Isolation Pilot Plant Land Withdrawal Act as Amended by HR 3230, 104th Congress*. Public Law 104-201, Subtitle F, September 23, 1996.
- (5) *Hazardous Waste Facility Permit Issued to Waste Isolation Pilot Plant*. EPA No. 4890139088, New Mexico Environment Department, October 27, 1999 (the August 31, 2001 update was the version used in this paper).
- (6) This description of Class 1 modifications are taken from 40 CFR 270.42(a) and (d), and the EPA's *Final Rule for Permit Modifications for Hazardous Waste Management Facilities*, Federal Register, Vol. 53 No. 188, pp. 37912 - 37939), September 28, 1988. The principal Class 1 discussions in the Final Rule are on pp. 37914 - 37916.
- (7) *December 8, 2000 Waste Isolation Pilot Plant Notice of Class 1 Permit Modifications*, Carlsbad Field Office and Westinghouse Government Environmental Services Company, p. 2.
- (8) Figure 1 of EEG's Testimony to the New Mexico State Legislature Radioactive and Hazardous Waste Committee, October 16, 2001 (see also p. 5 of the testimony).
- (9) September 24, 2001 letter from NMED's Lewis to the permittees' Triay (CBFO) and Lee (WTS), p. 2. The five rejected Class 1 modifications covered compositing of headspace gas samples (2 modifications), changes to the process for selecting containers for visual examination (1), and using the filter opening on waste containers to obtain samples of headspace gas (2). These were later resubmitted as three Class 2 PMRs, with mixed results—see Table I, 09/28/01 proposed modifications.
- (10) October 11, 2001 letter from NMED's Lewis to permittees Triay and Lee.
- (11) March 26, 2001 letter from the NMED's Lewis to permittees Triay (CBFO) and Herrera (WTS).
- (12) Attachment to June 27, 2001 letter from EEG's Silva to NMED's Zappe, p. 1.

WM'02 Conference, February 24 - 28, 2002, Tucson, AZ

- (13) August 30, 2001 letter from the NMED's Lewis to permittees Triay and Lee.
- (14) Attachments to two letters of transmittal dated June 8, 2000 and June 23, 2000, from the EEG's Silva to the NMED's Zappe.
- (15) Attachment to April 2, 2001 letter from the EEG's Silva to the NMED's Zappe, p.1 and 5.
- (16) RFETS "Test Plan" portion of Appendix D to the 09/28/01 Class 2 modification request. "Pipe overpacks" are stainless steel cylinders used to package some types of high-activity transuranic wastes; the cylinders, or "pipes" are overpacked in 55-gallon drums, with fiberboard packing material that keeps the cylinder in the center of the drum.
- (17) Attachment 1 to November 27, 2001 letter from the NMED's Lewis to permittees Triay and Lee, p.4 (added text to HWFP section B1-1a(3(iii))).
- (18) Attachment to September 27, 2001 letter from the EEG's Silva to the NMED's Zappe, pp. 31-32.
- (19) Attachment to September 27, 2000 letter from the EEG's Silva to the NMED's Zappe, Comment 5, p. 8, and pp. 19 and 20, comments to modifications h.1 through h.5.