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Dr. Inés Triay, Manager
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Dear Dr. Triay:

Find enclosed the papers to be presented by EEG at the WM '02 meeting in Tucson, February 24-28: 1) *EEG's Views on the Proposed Modifications to the WIPP Hazardous Waste Facility Permit*, by Ben Walker and Matthew Silva, and 2) *Technical Evaluations of Proposed Remote-Handled Transuranic Waste Characterization Requirements at WIPP*, by George Anastas and James Channell.

Sincerely,

Matthew K. Silva
Director

MKS:js

Enclosures (2)
cc (w/enclosures): Steve Zappe, NMED
Betsy Forinash, EPA

TECHNICAL EVALUATIONS OF PROPOSED REMOTE-HANDLED TRANSURANIC WASTE CHARACTERIZATION REQUIREMENTS AT WIPP

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ABSTRACT

Characterization, packaging, transport, handling and disposal of remotely handled transuranic (RH TRU) waste at WIPP will be different than similar operations with contact handled transuranic (CH TRU) waste. This paper presents results of technical evaluations associated with the planned disposal of remotely handled transuranic waste at the Waste Isolation Pilot Plant (WIPP).

PRELUDE

The New Mexico Environmental Evaluation Group (EEG) is an interdisciplinary group of scientists and engineers who provide independent technical evaluations of the WIPP to ensure the protection of public health and safety, and the environment of New Mexico. The WIPP Project, located in southeastern New Mexico, became operational in March 1999 for the disposal of transuranic (TRU) radioactive wastes generated by the national defense programs. For 22 years EEG has reviewed the planning, design, construction and now operation of the WIPP. Recent evaluations by EEG regarding RH TRU are the genesis of this paper (1).

INTRODUCTION

The purpose of the WIPP is to safely dispose of TRU waste generated by the United States defense activities relating to the production of nuclear and thermonuclear weapons, the operation of naval nuclear reactors and associated activities such as research, development and demonstration (2). TRU waste means waste materials containing more than 100 nanocuries (3.7 X 10^3 Bq) of alpha-emitting transuranic isotopes with half lives greater than 20 years per gram of waste (3). TRU isotopes, in the context of WIPP, include: all nuclides with an atomic number greater than that of Uranium (with an atomic number of 92)(4). However, other long half life isotopes, such as Uranium-233 (U-233), Uranium-235 (U-235) and Uranium 238 (U-238), may also be present in TRU (5). The waste materials may include: regular laboratory waste, glove box components, machine parts, machine cuttings, rags, paper, respirators, debris, homogeneous solids, soils and gravel, respirator cartridges, all contaminated with TRU (4a).

Contact handled (CH) TRU is packaged TRU which exhibits a dose rate, at any accessible point on the surface of the package, of less than 200 millirem per hour (3a).

Remotely handled (RH) TRU is packaged TRU which exhibits a dose rate, at any accessible point on the surface of the package, greater than 200 millirem per hour and less than 1,000 rem per hour (3b).

The distinguishing difference between CH and RH TRU mixed wastes is the level of radiation doses at the surface of the package (6).

Table I summarizes several of the salient features of TRU destined for WIPP.

Table I. Salient Features of Transuranic Waste Generated from Defense Operations and Destined to WIPP (3c, 4, 7, 8)

TRU	Million cubic feet	Cubic Meters	Drum Equivalents (X 10^3)	Maximum Dose Rate at Surface of Container rem/hr	Number of Curies per liter
CH	5.95	168,485	810	≤0.200	
RH	0.250	7,079			<23
95% of RH	0.2375	6725		0.200≤100	
5% of RH *	0.0125	354		100≤1,000 **	
Total	6.2	175,564			

* No more than 5% of the RH TRU can exceed 100 rem/hr.
** No RH TRU with a dose rate in excess of 1,000 rem/hr can be placed at WIPP.

Figure I is a bar chart graphically showing the differences in surface dose rate for CH and RH TRU containers in accordance with the LWA (3c).

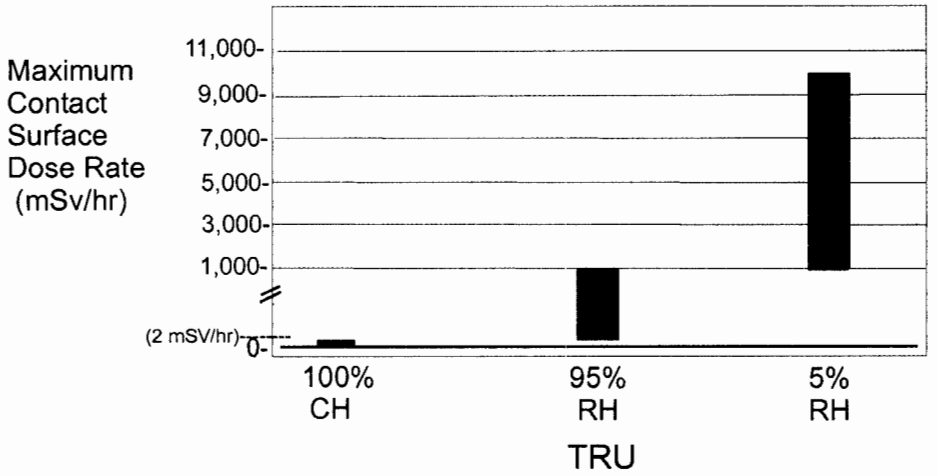

Figure 1. TRU Container Surface Dose Rate

Note: 2 mSv/hr = 0.2rem/hr = 200 mrem/hr

RH TRU

The predominant isotopes in RH TRU for the next several hundred years are Sr-90 and its daughter isotope Y-90, CS-137 and its daughter isotope Ba-137m, Am-241, Pu-238, Pu-239 and Pu-240. Table II summarizes the characteristics of the predominant isotopes contained in RH TRU (8a).

Table II: Characteristics of Isotopes in RH TRU (9,10)

Isotope	Half life	Principle Emissions and Energy (β E_{MAX}), keV	Daughter Product
Sr-90	28.6 y	β 546	Y-90
Y-90	64.1 h	β 2280	None
Cs-137	30.0 y	β 511	Ba-137m
Ba-137m	2.55 m	γ 661	None
Am-241	432.0 y	γ 14, 59, others	Np-237
Np-237	2.1E6 y	γ 13, 29, 86, others	Pa-233
Pa-233	27.0 d	γ 13, 94, 98, 311 others	U-233
Pu-238	88.0 y	γ 13	U-234
U-234	244500 y	γ 13	Th-230
Pu-239	24000 y	γ 13	U-235
U-235	7E8 y	γ 13, 143, 184	
Pu-240	6500y	γ 13	U-236
U-236	3.4E6	γ 13	Th-232

Clearly, after several hundred years, Sr-90 (and Y-90) and Cs-137 (and Ba-137m) will decay to relatively low levels and the isotopes of concern for long term repository performance are Pu-238, Pu-239, Pu-240 and Am-241.

RH TRU was and is generated in a number of locations. Table III presents a brief overview of sites with current (October 2001) estimated quantities of RH TRU.

Table III: Locations and Estimated Quantities of RH TRU (11a,12)

Location	Volume of RH TRU (m^3)				Estimated Stored Activity (Curies)	Estimated Dose Rate (rem/hr)
	Stored	Projected	Total	Planned Disposal		
Large Quantity Sites						
Hanford	207.0	938.0	1145.0	1048.0	36000	0.2-1000
INEEL	84.0	101.3	185.3	275.2	6360	0.2-100
Los Alamos	99.5	24.0	123.5	120.0	10700	
Oak Ridge	1306.0	288.6	1594.6	453.4	587000	0.2-1000
Total LQS	1696.5	1351.9	3048.4	1896.6	640060	
Small-Quantity Sites						
Argonne-East	2.0	8.0	10.0	10.0		0.2-10
Argonne-West	1.1	5.0	6.1	6.1		1.0-100
Battelle-Columbus	0.0	20.8	20.8	20.8	5800	0.2-125
Bettis	3.0	0.0	3.0	3.0	16300	1.0-100
ETAC	8.7	0.0	8.7	5.5	8	0.2-10
Vallecitos	11.8	0.0	11.8	11.8		1.0-100
KAPL	3.7	6.8	10.5	10.5	118	1.0-100
Sandia	1.5	24.0	25.5			NA
West Valley	470.5	8.4	478.9			NA
SRS*	0.0	0.0	0.0			NA
Total SQS	502.3	73	575.3	67.7	22226	
Total of LQS and SQS	2198.8	1424.9	3623.7	1964.3	662286	

LQS means Large Quantity Sites
SQS mean Small Quantity Sites
* The Savannah River Site has not indicated that it possesses any TRU.

BACKGROUND

In May 1998 the Environmental Protection Agency (EPA) certified that WIPP met the radioactive waste disposal requirements and criteria contained in 40 CFR Parts191 and 194 (13,14,15) . This certification allowed DOE to ship and dispose of CH TRU waste at WIPP. DOE began to accept CH TRU waste beginning in March 1999 and as of November 2001 DOE has disposed of approximately 2800 m^3 of CH TRU at WIPP (18).

One of the limitations in the EPA certification was that DOE can not receive nor dispose of RH TRU waste until such time as the EPA accepts the DOE waste characterization program (11).

The New Mexico Environmental Department, consistent with its mandate under the New Mexico Hazardous Waste Act, NMSA section 74-4-1 *et seq.* (HWA) and the Resource Conservation and Recovery Act, 42 USC section 6901 et seq. (RCRA), determined to

impose a permit condition prohibiting the disposal of remote handled waste at WIPP. Part of the basis for this permit condition was that the Applicants failed to provide an approvable waste analysis plan for RH waste as required by regulation and that the Applicants had not prepared any characterization procedures for RH waste (16,17).

OCCUPATIONAL RADIOLOGICAL CONSIDERATIONS

In evaluating operational radiation safety, the type of the radioactivity anticipated in the major constituents in RH TRU waste is far different than the type of radioactivity anticipated in and received in the major constituents of the CH TRU waste. From the 1996 Baseline Inventory Report (19), approximately 98.9 percent of the total CH TRU activity (curies) results from Pu-238, Pu-239, Pu-240, Pu-241, and Am-241. In contrast, 96.5 percent of the total RH TRU activity (curies) result from Cs-137, Ba-137m, Sr-90, Y-90, and Pu-241. The occupational radiation safety concern associated with CH TRU is predominately inhalation and, to a lesser extent, ingestion. The occupational radiation safety concern with RH TRU is both inhalation **AND** external dose rate.

As is pointed out earlier, containers of RH TRU are anticipated to exhibit dose rates substantially in excess of the dose rates exhibited by containers of CH TRU. For example, Hanford has indicated that some of its RH TRU would exhibit unshielded dose rates up to 20,000 R/hr (20). In addition, the packaging, offloading, handling, and disposal of RH TRU are substantially different than for packaging, offloading, handling, and disposal for CH TRU. Compared to CH TRU, RH TRU provides at least several new important dimensions to occupational safety, environmental protection, public health and safety, and process safety. WIPP has an array of sturdy facilities and robust equipment to handle RH TRU: a shipping cask receiving area, a cask unloading room, a transfer cell, a large hot cell, a cask loading room, hoists, shield doors, and so on. However, it would appear worthwhile to evaluate the potential for contact maintenance and repair of remote handling devices and remotely operated conveyances of RH TRU containers under malfunction/breakdown/jammed equipment/contact repair conditions. The evaluation should include scenarios for variable container radioactivity and at several different container locations. Personnel doses should be estimated in connection with ALARA considerations consistent with the WIPP Radiation Safety Program.

RH TRU WASTE ACCEPTANCE CRITERIA –Technical Justifications Deleted

EEG has a long and rich history of correspondence and reviews on the Waste Acceptance Criteria (WAC) for CH TRU and RH TRU waste dating back 22 years. Further, the requirements were not self-imposed by DOE. The criteria were built on information and rationale provided by the Department of Energy, Westinghouse Electric Corporation, and Sandia National Laboratories, with reviews by the Environmental Evaluation Group (21). The first revision of the WAC for CH TRU and RH TRU waste was published 20 years ago (22). Consistent with the stated objectives of the document,

revisions through the first ten years included technical justification for each criterion (e.g. WIPP-DOE-069, Revision 4.0, December 1991). However, in later versions of the Waste Acceptance Criteria, each Technical Justification was deleted by DOE (e.g. DOE/WIPP-069, Revision 5, April 1996). Hence, the later revisions make it difficult to revisit the underlying need for each requirement.

It is Important that all major assumptions, calculations and justifications are documented and carried forward to assure traceability of the information, the design basis and the technical basis of each RH TRU WAC criteria and/or requirement.

EEG has strongly encouraged DOE to return to the practice of including a Technical Justification for each RH TRU WAC criteria/requirement. Such Technical Justification should be supported with a reference, calculations or other scientific foundation.

INVENTORY

An important consideration regarding RH TRU disposal at WIPP is the quantity and activity of the RH TRU contained in the DOE complex and destined for WIPP. There are a number of EEG and DOE reports and correspondence regarding this matter. The most current DOE data available are contained in Chapter 5 (Transuranic Waste) in the April 2001 DOE Report titled "Summary Data on the Radioactive Waste, Spent Nuclear Fuel, and Contaminated Media Managed by the U.S. Department of Energy" (which can be accessed at http://cid.em.doe.gov) (23). These data are based upon the 1996 Integrated Data Base Report (IDB). On page 3-2 the IDB states "the radionuclide inventory is based on the stored TRU inventory at EOCY 1995 that was provided in response to the January 1996 data call" (7). [EOCY End Of Calendar Year]

While the 1995 data are acceptable for 1995, it would be worthwhile to obtain a more recent assessment of the quantity and activity of RH TRU for planning purposes as we near the time when RH TRU may be emplaced at WIPP.

Hanford and Oak Ridge inventory of RH TRU, based upon 1995 data, are as shown in Table IV (28).

Table IV. Summary of RH TRU at Hanford, Oak Ridge and All Other Sites

Site	Number of Stored Curies	% of Total		Estimated Disposal Volume (M^3)	% of Total
Hanford	36,000	5		1048	**53**
Oak Ridge	587,000	88		453.4	**23**
All Others (approximate)	39,286	6		432.9	**22**
Total	**662,286**	**~ 100**		**1964.3**	**~100**

ACCEPTABLE KNOWLEDGE

RH TRU acceptable knowledge (AK) is essentially a process under which RH TRU can be characterized. Based upon problems with records and other historical information (1), records and historical information may not suffice as AK for RH TRU. DOE may have to rely on RH TRU waste characterization or confirmatory testing. There are essentially two reasons for this assertion.

For CH TRU, AK is used to determine hazardous waste numbers, waste matrix, presence of prohibited items, and to establish isotopic ratios. For non-radionuclide characteristics, AK is confirmed by real time radiography and visual examination. For radionuclides, there is 100% non-destructive assay for quantification and confirmation of isotopic ratios. This approach is acceptable and appears to be working.

In September 2001 DOE requested EPA to review proposed revisions to the CH TRU Waste Acceptance Criteria (WAC) (24) and the Technical Basis for Appendix A of the CH WAC (25). One of the items in the DOE request is that a statistical approach be allowed to confirm radionuclide isotopic ratios in lieu of the present requirement for confirmation on each waste container. Upon review of the submittal, EPA was unable to concur on the proposed revision to the CH TRU WAC (26). DOE is planning to use the same basic approach for RH TRU.

DOE documentation has long recognized the need for the construction of RH TRU waste characterization and packaging facilities at Hanford and Oak Ridge (27). For example, at Oak Ridge DOE entered into a $224 million fixed price contract with Foster Wheeler Environmental Corporation to license, permit, construct, test, operate and decontaminate and decommission a facility to treat, process and characterize:

- 900 M^3 of RH TRU sludge
- 1600 M^3 of RH low level waste supernate
- 550 M^3 RH TRU/alpha low level waste solids
- 1000M^3 of CH TRU/alpha low level waste solids.

This project is planned to meet the Waste Isolation Pilot Plant Waste Acceptance Criteria and to meet the Resource Conservation and Recovery Act Land Disposal Requirements (29). With the waste characterization and packaging facilities it would be possible to provide adequate visual examination for about 95% of the RH TRU wastes. This should minimize the need to use historical records and notes as part of the AK process.

DATA QUALITY OBJECTIVES

The DOE has proposed that the only data quality objective (DQO) for any of the RH TRU waste characterization objectives is that quantification of total activity for a unit

(waste stream or individual container) must be within a factor of five of the true value with a confidence level of 95%. This may be expressed as:

0.2 Value (True) < Value (Data) <5.0 Value (True) (at the 95% confidence level) (11b).

The current DQOs for CH TRU waste require an accuracy of 70%-130%.

The rationale behind the factor of five DQO for total activity is:

a. The Land Withdrawal Act limits the total RH TRU radioactivity (from all radionuclides, including short-lived daughters) to 5.1 million curies (3c);

b. Data from the TRU Waste Base Line Inventory Report (TWBIR) estimated that the RH TRU inventory contained about one million curies (30);

c. Therefore, a factor of five was all the accuracy needed to comply with the LWA limit.

The reasoning behind this rationale is questionable. The TWBIR is only a survey and it is in need of being updated. Yet the 1 million curie estimate is treated as a precise number. It is not reasonable to assume that the estimated total activity is much more accurate than is obtainable by a certified nondestructive assay (NDA) system for individual containers.

DOE plans to assay the quantity of Cs-137 by gamma ray analysis and use ratios of Cs-137 to transuranic isotopes determined elsewhere to quantify the transuranic content of a container. These ratios vary significantly (e.g. at Battelle Columbus only 83% of 69 samples had TRU fractions between 1% and 7% and at Oak Ridge 90% of the samples fell between 3% and 12%). This spread in the ratios results in a several fold additional uncertainty in obtaining the TRU activity in an individual container when using this approach.

A reasonable case can perhaps be made that the proposed radio-assay procedure is adequate to ensure long term compliance. However, there are several other reasons why the transuranic radioactivity needs to be known rather accurately:

a. To ensure that only transuranic waste (greater than 100 nanocuries per gram of waste) is disposed at WIPP. The proposed assay procedure would determine the TRU alpha concentration on a waste stream basis, rather than on each container. This has never been allowed with CH TRU waste and seems to be inconsistent with the Consultation and Cooperation (C&C) Agreement and the LWA.

b. To ensure that the RH-72B cask limit of 325 FGE (Fissile Gram Equivalent) can be met for each RH TRU canister;

c. The decay heat limits in the RH TRU TRAMPAC (31) (to control hydrogen gas generation) are calculated from the radionuclide concentrations on each waste container.

It is not clear how the proposed DQOs can lead to the accuracy in the transuranic waste concentrations and ratios necessary to comply with the above three items for all of the RH TRU canisters.

SUMMARY

This paper identified a number of technical considerations which, if provided due consideration, should improve the likelihood of RH TRU disposal at WIPP.

Safety analyses should anticipate the need for maintenance and repair of remote handling equipment under conditions of malfunction, breakdown, and jamming. The evaluations should include scenarios for variable container radioactivity and at different container locations in the handling process.

The DOE should reinstate the technical justification for each waste acceptance criteria with supporting references, calculations, or other scientific justification.

Estimates of the RH TRU inventory rely upon a 1995 survey. The Project is in need of an up-to-date assessment.

The DOE should critically evaluate the propriety of abandoning the current CH TRU NDA process for RH TRU.

The proposed data quality objective for estimating isotopic content of individual RH TRU containers is questionable. And is not acceptable for determining transuranic radioactivity.

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

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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

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

> 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 1). 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

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 1, 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

Table 1. 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)

"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

(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.