



ENVIRONMENTAL EVALUATION GROUP

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

7007 WYOMING BOULEVARD, N.E.
SUITE F-2
ALBUQUERQUE, NEW MEXICO 87109
(505) 828-1003
FAX (505) 828-1062

June 8, 2000

RECEIVED
JUN 20 2000

Mr. Steve Zappe
New Mexico Environment Department
2044A Galisteo Street
Santa Fe, New Mexico 87505

Dear Mr. Zappe:

Attached are the EEG comments on the three proposed Class 2 WIPP Hazardous Waste Facility Permit modifications for which the comment period ends on June 11, 2000. While additional information is presented for the NMED to consider, it is EEG's belief that the modifications will not result in significant additional danger to health, safety, or the environment from WIPP activities.

Sincerely,

Matthew Silva
Director

BAW:ss
Enclosure



**EEG Comments on Class 2 Modification for June 11 Submission to NMED
(Cresol/Pyridine Accuracy, Hgas for Homogeneous Waste, Hgas for Thermal Processes)**

The DOE has proposed three Class 2 modifications to the WIPP Hazardous Waste Facility Permit (HWFP); the public comment period on these proposed modifications is usually listed as extending from April 10, 2000 to June 11, 2000. An overall EEG conclusion is that implementation of these modifications will not result in significant additional danger to health, safety, or the environment from WIPP activities.

Comments on each of the modifications are below. The EEG offers two other general conclusions about the proposed modifications:

1. The DOE arguments for the changes are not always well presented. In submitting these modifications, the DOE could have first addressed the rationale for the current permit requirement, then established the rationale for the modification in relationship to that original intent. While this process is evident in the cresol/pyridine submittal, it is not evident in the proposed headspace gas modifications. The cresol/pyridine submittal suffers from a lack of sufficient data to verify that the DOE's argument is correct. While the EEG believes that these concerns are not sufficient for NMED to determine that the modification requests are incomplete in these instances, the DOE should be encouraged to provide more complete and better organized data in future Class 2 modification submittals.
2. The proposed modifications to the HWFP wording for the headspace gas proposals should be improved before adding them to the HWFP. A list of suggested changes to the wording is attached to the end of the comments on the individual modifications.

Item 1 - Accuracy Range Modification for Cresols and Pyridine

DOE has proposed that the accuracy quality assurance objectives (QAOs) for SVOC analysis accuracy be changed from the 60-150% range currently listed in the HWFP to 25%-115% for pyridine and cresols. The 60-150% range in the HWFP was apparently derived for VOC analysis, rather than SVOC analysis that is the target of the modification.

A technical evaluation of the modification's effects is greatly hindered by the lack of information in the modification submittal. The submittal neither contains the data supporting its assertions, nor does it provide adequate reference to where that information is to be found. An argument is presented for modification of the cresol range, but the pyridine portion of the modification is only supported by analogy to the cresol argument.

Accuracy is established by calculating the percent recovery (%R). When a known chemical standard is used, %R is defined as the concentration value determined by chemical analysis of the standard material divided by the known concentration of the standard. While an accuracy greater than 100% could create false concerns, a %R less than 100% indicates measurements may create a sense of false security; thus, modification of the lower limit would seem to be the most pertinent concern. The proposed 25% lower limit on accuracy would allow measurements

to be accepted if they were as little as one-fourth of the “true” value, where the current HWFP requires it to be at least six-tenths of the “true” value.

According to the DOE’s discussion in the Modification submittal, the change is acceptable because a “Contract Laboratory Program”--apparently meaning a document--has a table of SVOC values which are considered more appropriate than the VOC values used to establish accuracy limits in the HWFP. The modification request states (p. A-1),

Calculating a simple average of the SVOC data results in an accuracy range of 25-115%.

“A simple average” would be a single number, not a range. The DOE does not present the data from which this conclusion is made as a part of the modification submittal. The source of the data is not identified well enough in the submittal that the data can be found by other means. The potential hazards from pyridines and cresols are not discussed in the submittal. The amounts of pyridines and cresols that are expected to be in the wastes--either concentrations, or total accumulations--are not a part of the submittal. These data would all seem to be necessary for both confirmation of the DOE’s argument and evaluation of the impact of the modification on safety, health, and the environment.

The NMED should verify the data supplied by the DOE, and should consider the additional information pertinent to the modification before accepting it. The NMED and the DOE should also note that the public comment process can only be effective and useful if the public is given adequate information on which to base their comments.

Item 2 - Headspace Gas Sampling Requirements for Homogeneous Solid and Soil/Gravel Waste Streams with No VOC-related Hazardous Waste Codes

DOE proposes that homogeneous waste streams can be sampled on a statistical basis, rather than at the current requirement of 100% sampling, when acceptable knowledge indicates no hazardous waste codes should be applied to the waste stream. Under this proposal the statistical sampling process for SVOC solid sampling (as described in HWFP Sections B2-2 and B2-3) is also used for headspace gas sampling to provide initial confirmation of the AK. When the waste stream can be shown to meet these requirements, if necessary a second statistical sampling is undertaken to establish a UCL₉₀ (upper confidence level at 90% certainty) for the average waste stream container. Only if >20% more samples are required to establish the UCL₉₀ will additional samples be taken. The UCL₉₀ value is reported in the WWIS for each container in the waste stream that is not selected for headspace gas sampling.

The DOE proposal appears to assume that AK information is always complete, always accurate, and that statistical sampling supplies essentially the same confidence that 100% sampling does.

Doubts about the accuracy and completeness of AK information for retrievably stored wastes led to the current requirement for 100% headspace gas sampling, and the modification submittal does not address these doubts. While sampling can provide adequate confidence on the waste stream, it does little to enhance confidence on the accuracy of AK data for individual containers other than those sampled. Also, the HWFP definition of a waste stream--which allows "similar" hazardous constituents and waste materials in the same waste stream--is broad enough that there could be a wide variety of concentrations and hazardous materials.

These points also apply to total VOC and SVOC sampling, but since 100% headspace gas sampling for VOCs is less intrusive, less risky, less costly, and would still be an acceptable indicator of whether the AK determination fit the individual waste containers, 100% sampling for total VOC and SVOCs has never been a requirement for WIPP wastes. However, the move to statistical sampling for headspace VOCs, under a process that will allow the same drums to be sampled for both kinds of VOCs and SVOCs, would seem to lessen the confidence in total VOC and SVOC results also.

For homogeneous waste containers, it is important to note that headspace gas is likely the best confirmation of AK for individual containers, as radiography/visual examination is much less able to discern anomalies in homogeneous waste than in debris wastes. Eliminating the requirement for 100% headspace gas sampling removes some of the confidence in this major factor in confirmation of AK for individual containers. However, the DOE's suggested requirement that a minimum of 10 samples be randomly selected to determine the statistical values for the nine VOCs with room-based headspace gas concentration limits provides a useful confirmation of acceptable knowledge for the waste stream. The EEG would not concur with a modification that used only AK to establish headspace VOC concentrations.

The DOE submittal argument needs to point out that only if >20% more samples are necessary for UCL_{90} determination will the secondary sampling take place (the proposed HWFP text alteration in Section B2-3b, p. A-15, is the only place the >20% factor is mentioned), and that the waste stream must consist of more than 10 containers (Section B-3a(1)(i)). However, the sampling plan presented is adequate as far as it is described, and the additional risks to safety, health, and the environment would seem to be minimal.

The EEG offers the following specific comments:

1. Care needs to be taken to ensure that the containers are selected in a truly random manner and to define the waste stream being sampled narrowly enough that the waste are of similar VOC characteristics. For example, the solidified organic waste matrix code group data in Appendix C2 of the DOE's HWFP application contains different TRUCON/IDC codes with widely disparate VOC characteristics. Those drums with 226/432 codes meet the proposed

requirements for less than 100% HSG sampling, while the drums with 212/3 codes clearly do not.¹

2. The NMED may want to modify the proposal to require 100% headspace gas sampling for any container that has been found by any WAP method to be significantly different from that specified by the AK (different IDC, layers of packaging, material parameter category or waste matrix code, etc.). The AK will have been shown to be wrong, and a check should be made to see if hazardous constituents do exist that were also missed by AK. Again, the same logic applies to solids sampling--it might be better to require total VOC and SVOC and metals sampling of containers that are found to differ from AK expectations as well.

ITEM 3 - Headspace Gas Sampling Requirement for Waste Streams Generated Using a Thermal Process

DOE proposes that waste that has been thermally treated undergo headspace gas sampling for headspace VOCs on a statistical basis, rather than 100% headspace gas sampling currently required. The thermal treatment would "significantly" reduce or eliminate VOCs from the waste. Since disposal room average headspace VOC concentrations are limited, and waste packaging can produce measurable amounts of VOCs through degassing and radiolysis, headspace gas sampling and analysis values must still be reported. The same statistical process described in the proposed Item 2 modification is used to establish these values.

The bulk of the EEG's comments under Item 2 above also apply to this proposed modification. There is one important addition, specific to thermal treatment. The DOE submittal does not specify the details of thermal treatment. The pyro-oxidation of the RFETS pyrochemical salt residue waste stream, where gallon-sized quantities of waste were heated to approximately 800° C for two hours with an oxidizing airflow passed over the stirred liquified mixture, will obviously remove essentially all of the VOC components. However, could placing vented 55-gallon drums of waste in the sun for a summer be considered thermal treatment? The EEG suggests that minimal requirements for what can be considered thermal treatment be added to the modification. These requirements could be based on treatment temperatures, time of heating, waste compaction and mass treated, VOC evaporation temperatures, air flow during treatment and other such factors.

Another RFETS process--which was not implemented--might serve as a basis for defining thermal treatment. A "thermal desorption" was planned for organic-contaminated combustible residues (cloth, paper, rags, coveralls, rubber, wood, and other miscellaneous materials), and was

¹DOE/WIPP 91-005, Resource Conservation and Recovery Act Part B Permit Application, Revision 6, Appendix C2, Table C2-4.

described in the FEIS for RFETS residues.² This plan involved sorting combustible waste into 1 kg shredded batches, then heating the batches to 80° C for two hours under reduced pressure to volatilize the organic solvent contaminants. While this might be overly restrictive for all types of WIPP waste, it does describe a thermal treatment definition that justifies reduction of headspace gas sampling requirements.

Suggestions Should Either or Both of the Headspace Gas Modifications be Implemented:

The NMED might want to consider the following suggestions if either or both of the headspace gas modifications are implemented. The EEG does not consider these to be comments that NMED need to respond to in writing.

1. Additional text alterations to the HWFP, beyond that proposed by the DOE, may need to be made. For instance, Section IV.D.1, Room-Based Limits, would seem to be more appropriate with the following redline/strikeout change:

The average ~~measured~~ ~~WWIS-reported~~ concentration of VOCs in the headspace gas of all containers in any single room within an Underground HWDU shall not exceed the limits specified in Table IV.D.1 below:...

It may suffice to merely change from “measured” to “reported”. The EEG has not attempted to find all additional areas that may need to be altered--this may be the only instance, or there may be more.

2. Modification of text suggested by the DOE might be improved by judicious editing. The DOE’s alterations of text occasionally changes or adds wording beyond what is required to institute the modification requested. Some suggested editing:
 - a. The DOE redline/strikeout version for Section II.C.3.i is as follows (p. A-7):

Headspace gas sampling and analysis - any waste container that does not have VOC concentration values reported for the headspace which has not undergone headspace gas sampling and analysis to determine concentration of VOCs is not acceptable at WIPP.

²DOE/EIS-0227F, Final Environmental Impact Statement on Management of Certain Plutonium Residues and Scrub Alloys Stored at the Rocky Flats Environmental Technology Site. Volume 2; August, 1998. Section C.4.4 (pp. C-12 and C-13). The process also included a steam passivation process to oxidize plutonium fines, which was likely the more important reason for shredding the material into such small lots.

More consistent with the original wording would be something like the following:

Headspace gas sampling and analysis - any waste container which has not undergone headspace gas sampling and analysis to determine concentration of for VOCs according to WAP requirements is not acceptable at WIPP.

An added advantage would be that future modifications of headspace gas sampling and analysis would not need to consider alteration of this section.

b. The DOE redline/strikeout version for a bullet in Section B-1c (prohibited items) is as follows (p. A-7):

- any waste container that does not have VOC concentration values reported for the headspace which has not undergone headspace gas sampling and analysis to determine concentration of VOCs

Following the logic presented in the previous suggestion, wording along the lines of the following might be deemed more efficacious:

- waste containers for which headspace VOC concentrations have not been determined and reported in accordance with the requirements of this WAP
- c. Section B-3a(1)(i) is added by the DOE for the homogeneous sampling change (p. A-8), and Section B-3a(1)(ii) for thermal treated wastes (p. A-25). Both these additions contain an explanation that seems to be unnecessary. The EEG suggests the following would suffice (redline/strikeout form, using only B-3a(1)(i) as an example):

B-3a(1)(i) Reduced Sampling Requirements for Homogeneous Solid or Soil/Gravel Waste Streams with no VOC-Related Hazardous Waste Codes

~~Headspace gas VOCs that do not exceed the PRQLs in Table B3-2 are not significant and do not impact the acceptable knowledge confirmation, assignment of additional hazardous waste codes, or worker/public health. Headspace gas samples that do not exceed the PRQLs are not significant to the activities that use the results of headspace gas~~

~~sampling defined in the permit. Therefore, 100% h~~Headspace gas sampling of homogeneous solid and soil/gravel wastes that have no VOC-related hazardous waste codes assigned ~~is unnecessary and does not provide additional protection of human health and the environment. Such waste streams~~ may qualify for reduced headspace sampling if they meet ~~certain the following~~ criteria:

~~In order for a waste stream to qualify for reduced headspace gas sampling,~~

- ~~• The waste stream or waste stream lot must consist of more than 10 containers, and the following conditions must be met:~~
- The waste stream must be a homogeneous solid or soil/gravel waste stream that has no VOC-related hazardous waste codes assigned to it.
- The results of the solid sampling and analysis must confirm that no VOC-related hazardous waste codes should be assigned to the waste stream...

A similar change could be implemented to remove the explanation for thermally treated wastes in B-3a(1)(ii), and place the requirement for a minimum 10-container waste as an additional bullet.

- d. The DOE's proposed text alterations include numerous places in the WAP that use a variant of the phrase "...that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1)". For example, Section B-3d) states (p. A-9):

All waste containers (retrievably stored and newly generated) or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) are sampled and analyzed for VOCs in the headspace gas.

Other sections with similar text additions include B-3d(1), B-3d(2), B2-2b, B2-3b, B3-2, B3d(1), B3-2, B4-3d. The NMED should consider rewriting these references, and the surrounding text, to refer simply to headspace gas sampling and analysis in conformance with the WAP (as is exemplified in comments 3.a and 3.b above).

3. DOE's changes to the Section B6 auditing checklists do not require checking of the secondary sampling methods in the added Sections B2-2b and B2-3b. Appropriate checklist items should be added to ensure that a record of permittee review of the method for each generator site is documented.