

**7801**

**R-020-207.31**

**MIXED WASTE CHEMICAL TREATMENT PROJECT WORK PLAN**

**08/16/96**

**USEPA**

**DOE-FN**

**9**

**COMMENTS**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

7801

J-2729

AUG 16 1995

REPLY TO THE ATTENTION OF:

SRF-5J

Mr. Johnny W. Reising  
United States Department of Energy  
Feed Materials Production Center  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705

RE: Mixed Waste Chemical  
Treatment Project  
Work Plan

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the United States Department of Energy's (U.S. DOE) mixed waste chemical treatment project neutralization, precipitation, deactivation, and stabilization technology specific work plan.

The mixed waste treatment work plan provides information on implementing the treatment and disposal of the following mixed wastes: barium chloride salts, corrosives, reactives and oxidizers. These wastes will be treated using combinations of precipitation, neutralization, deactivation, and stabilization methods.

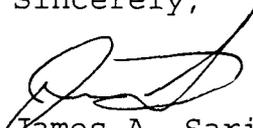
The work plan contains several inconsistencies and deficiencies which must be addressed. Therefore, U.S. EPA disapproves the work plan pending incorporation of adequate responses to the attached comments.

U.S. DOE must submit a revised work plan and responses to comments within thirty (30) days receipt of this letter.

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Please contact me at (312) 886-0992 if you have any questions regarding this matter.

Sincerely,



James A. Saric  
Remedial Project Manager  
Federal Facilities Section  
SFD Remedial Response Branch #2

Enclosure

cc: Tom Schneider, OEPA-SWDO  
Jack Baublitz, U.S. DOE-HDQ  
John Bradburne, FERMCO  
Charles Little, FERMCO  
Terry Hagen, FERMCO  
Tom Walsh, FERMCO



from 5-gallon buckets to 112-cubic-foot white metal boxes (WMBs)." The tables and text should be revised to present accurate and consistent numbers and volumes of containers for each waste category.

- Several discrepancies exist between the information summarized in Table 2-1 and the information provided in Appendix C. For example, Table 2-1 lists 19 drums of magnesium powder and turnings under "reactive category waste." However, in Appendix C, only six containers are labeled as "magnesium powder and turnings" under the "reactives" category. As another example, Table 2-1 lists "magnesium metal contaminated with oil rags" as having U.S. EPA waste code D003. Appendix C, however, lists U.S. EPA waste code D001 for this waste. In addition, Appendix C lists under the "reactives" category a waste described as "cobalt trifluoride, cobaltic fluoride, cof." This waste is not listed in Table 2-1 under the reactive waste category. Table 2-1 should be revised to be consistent with the waste inventory provided in Appendix C. Because these discrepancies represent examples only, all of Table 2-1 should be checked against Appendix C for consistency and accuracy.

Commenting Organization: U.S. EPA

Commentor: Saric

Section #: 2.0

Page #: 4

Line #: NA

Original Specific Comment #: 2

Comment: The "Fernald Environmental Management Project Mixed Waste Chemical Treatment Project General CERCLA Work Plan" dated November 1995 states that the barium chloride salts waste category includes "TC [toxicity characteristic] metals, barium, and lead" as primary contaminants. However, neither Section 2.0 or Table 2-1 of the work plan mention any TC metals other than barium and lead (for example, arsenic or cadmium). The text should be revised to clarify whether or not additional TC metals are present in the barium chloride salts waste category.

The text also states that the oxidizer waste category contains U.S. EPA waste codes D001, D002, D005, D007, and D008. Table 2-1 indicates that some wastes under the oxidizer category also contain wastes with U.S. EPA waste codes D004, D009, and D011. The text should be revised to mention these waste codes as well.

Commenting Organization: U.S. EPA  
Section #: 3.1 Page #: 8  
Original Specific Comment #: 3

Commentor: Saric  
Line #: NA

Comment: The text states that neutralization of the corrosive waste stream removed the corrosive characteristic during bench-scale testing. The text also states that "treatment for the remaining hazardous constituents in the corrosive waste stream is outside the scope of this project. NFS also added sodium sulfide to precipitate the metals from the neutralized solution." These two statements appear contradictory because precipitation of metals in the neutralized solution represents treatment for at least some of "the remaining hazardous constituents" in the corrosive waste stream. The text should be revised to resolve this apparent discrepancy. The text should also briefly discuss when and how the "remaining hazardous constituents" will be treated.

Commenting Organization: U.S. EPA  
Section #: 3.2.2 Page #: 10  
Original Specific Comment #: 4

Commentor: Saric  
Line #: NA

Comment: The text states that during waste treatment, the mix unit operator may add more than the minimum amount of reagent specified in the design recipe notice if extra addition is needed to meet performance specifications. The text should be revised to state that the design recipe notices will provide information regarding maximum allowable dosages for all reagents.

Commenting Organization: U.S. EPA  
Figure #: 3-2 Page #: 13  
Original Specific Comment #: 5

Commentor: Saric  
Line #: NA

Comment: This figure shows that " $\text{Na}_4(\text{SO}_4)_2$ " will be used to adjust the pH of the barium chloride waste slurry under the "Precipitation/Stabilization" treatment process flow diagram.  $\text{Na}_4(\text{SO}_4)_2$  is a weak base and would be effective only in making the slurry slightly more basic. However, it would not be effective in adjusting the slurry to a lower, more acidic pH. The sulfate ions in this compound will also form a precipitate with the barium ions in the slurry.  $\text{Na}_4(\text{SO}_4)_2$  may therefore be more effective as a precipitating agent than as a pH adjuster. The work plan should provide more justification that shows that this compound can accomplish pH adjustment. The text should also explain why ferrous sulfate will also be used to precipitate barium when  $\text{Na}_4(\text{SO}_4)_2$  is already accomplishing this task. In addition,  $\text{Na}_4(\text{SO}_4)_2$  has the same stoichiometry as  $\text{Na}_2\text{SO}_4$  (anhydrous sodium sulfate). If " $\text{Na}_4(\text{SO}_4)_2$ " is meant to represent  $\text{Na}_2\text{SO}_4$ ,

the more common formula ( $\text{Na}_2\text{SO}_4$ ) should be used in the figure and work plan.

Sections 3.3.2 and 3.3.4 state that the barium chloride and oxidizer category wastes will be sampled and analyzed after the wastes are treated with ferrous sulfate. The process flow diagram in Figure 3-2 for treating barium chloride category wastes designates this analysis as a "qualitative check spectrophotometer for barium." However, the process flow diagram for treating oxidizer category wastes does not include this analysis. This analysis should be added to the process flow diagram for treating oxidizer category wastes. The process flow diagrams in Figure 3-2 and the text of the technology-specific work plan should be revised to present the treatment processes consistently.

Commenting Organization: U.S. EPA  
Section #: 3.3.1 Page #: 10 and 12  
Original Specific Comment #: 6

Commentor: Saric  
Line #: NA

Comment: Section 3.3.1 contains several inconsistencies. For example, Section 3.3.1 states that if inorganic wastes cannot be neutralized before organic wastes, the treatment equipment will be "triple rinsed, per Section 3.9" before treatment of inorganics begins. However, Section 3.9 contains no decontamination procedure that involves only a triple rinse (although the triple rinse is mentioned as one step in a decontamination process). Section 3.3.1 also states that basic wastes will be neutralized by combining them with acidic wastes. However, later in Section 3.3.1, the text states that bases will be neutralized by sodium bisulfate. The text in this section should be revised to be internally consistent and provide information that is consistent with other information throughout the work plan.

Commenting Organization: U.S. EPA  
Section #: 3.3.2 Page #: 12  
Original Specific Comment #: 7

Commentor: Saric  
Line #: NA

Comment: This section states that for barium chloride waste having barium only, the stabilization agent "will be a sulfate in a commercially available dry form (sodium, aluminum, or ferrous sulfate)...." The text should specifically indicate which sulfate compound will be used to precipitate the barium. The technology-specific work plan should also consistently refer to the specific sulfate compound that will be used.





