2137

# RI/FS WORK PLAN ADDENDUM TREATABILITY STUDY OPERABLE UNIT 4 U.S. DOE FERNALD UNIT 4 U.S. DOE FERNALD OH6 890 008

09-06-90

USEPA/DOE-FSO
6
LETTER

[redacted] File Copy

2137

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION 5**
**230 SOUTH DEARBORN ST.**
**CHICAGO, ILLINOIS 60604**

SEP 06 1990

REPLY TO THE ATTENTION OF:

5HR-12

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

RE: RI/FS WORK PLAN ADDENDUM
TREATABILITY STUDY
OPERABLE UNIT 4
U.S. DOE Fernald
OH6 890 008

Dear Mr. Davis:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the remedial investigation/feasibility study (RI/FS) Work Plan Addendum for the Bench-Scale Treatability Study of wastes for Operable Unit #4 at the Feed Materials Production Center site in Fernald, Ohio. The United States Department of Energy (U.S. DOE) submitted this document to U.S. EPA on August 6, 1990.

GENERAL COMMENTS:

1. The last few appendices containing referenced analytical methods were not submitted with the work plan.

2. The treatability study work plan should state clearly what the study objectives are and how they will be met.

3. Additional discussion should be provided regarding what the quality assurance/quality control (QA/QC) procedures are for the treatability study. In addition, the work plan should consider collection of additional samples to cover sample losses, such as those caused by containers breaking, and analytical mistakes requiring re-analysis.

4. The work plan should include a separate section clearly describing the roles and responsibilities of the U.S. Department of Energy and all its subcontractors involved in the treatability study.

5. The work plan should include a schedule with milestones so that the treatability study's progress can be tracked. Also, the plan should include examples of data collection sheets, to show what data will be recorded during each task, and a list of all standard test methods to be used during the study. If nonstandard methods are proposed, the reason for using the nonstandard method should be provided, along with the method. 1

Date Rec'd SEP 07 1990
Log D-3215
File 1446.568

6. The plan should discuss why it is not considering a mass balance of constituents and analyzing sample prior to and after leaching.

SPECIFIC COMMENTS

7. Introduction, Page 1, Paragraph 1: "The samples are representative of the matrix of materials that are required to be treated in the full scale project." The work plan should clearly (1) identify the samples to which the plan refers and (2) state the purpose of the samples.

8. Introduction, Page 1, Paragraph 1: "The silo samples may not be quantitatively representative of the actual silo contents. However the samples are representative of the type of matrix found in the silos. As such, it is anticipated that the optimal treatment developed here will also be the optimal treatment for the representative material." The plan should define optimal treatment. Also, since the treatability study samples do not have the same relative proportions of the materials in the silos, it is unlikely that an optimal treatment can be developed.

9. Introduction, Page 1, Paragraph 1: "The second set of samples from this program will be subjected to the optimum treatability process, then analyzed for efficiency of separation." This sentence is unclear. The plan should clearly define what is meant by efficiency of separation.

10. Introduction, Paragraph 4, Page 2: The second sentence states that lead and uranium will be tracked as target metals. The plan should state why these two parameters were selected.

11. Introduction, Paragraph 5, Page 2: The last word in the last sentence should be "reduced" instead of "reduces."

12. Introduction, Paragraph 1, Page 3: The first sentence states that the optimum leaching medium and optimum conditions will be those that give the greatest lead and uranium removal. The plan should state how the optimum leaching medium and/or conditions will be determined if the medium and conditions corresponding to the greatest lead removal yield a relatively low uranium removal.

    The remainder of the paragraph then apparently contradicts the first sentence. It states that the criterion for judging successful treatment will be determined by analyzing the leachate's lead content and multiplying that by the volume of the leachate. No mention is made of analyzing the leachate for uranium. This discrepancy should be resolved.

13. Introduction, Paragraph 2, Page 3: The second sentence states that passive radon detectors and/or an alpha-CAM detector will be used to measure radon emissions during testing. The plan should state when will the decision to use one detector over the other be made.

14. The last sentence states that radon (misspelled as radion) emissions will be minimal in field operations. This statement should be substantiated or clarified since radon emission monitoring has not yet been conducted during treatability testing.

15. Introduction, Paragraph 3, Page 3: The first sentence states that some of the tasks in the overall treatability program are being performed by others. The work plan should describe the roles and responsibilities of each key individual/firm associated with the treatability testing.

16. Introduction, Paragraph 3, Page 3: The last sentence, which discusses the ability of the K-65 silo materials to be slurried, seems unnecessary and should be excluded from the treatability study work plan.

17. Introduction, Paragraphs 1 and 2, Page 4: The work plan states that the results of the program will influence selection of the most suitable remedial alternative, guide the methods to be used in the removal action for the silos, and satisfy the requirements outlined in Figures 5-3 through 5-6 of the initial screening of alternatives document for Operable Unit 4. The plan should clarify to which results it is referring -- the results from the laboratory treatability study screening or subsequent treatability testing results.

18. Task IA, Paragraph 1, Page 4: The table on the following page should be cited and discussed in this section. Also, the last sentence states that one of two filter combinations will be used. The plan should state when the selection of the filter combination be made.

19. Task IA, Untitled Table, Page 5: Many portions of this table should be explained. For example, the table should state what the three soil types presented for each of the two K-65 silos represent. The table should explain the multiple weights listed for the "brown" soil of Silo 1 and the "white" soil of Silo 2. Moreover, the table should explain why the total sample weight from Silo 1 is almost twice the weight of the Silo 2 sample.

20. Task IB, Paragraph 1, Page 5: This section should discuss why the selected baseline analyses were chosen. Other than total organic carbon (TOC), no other organic parameters are being proposed for analysis. The plan should explain why.

21. Task IIA, Paragraph 1, Page 6: The second sentence cites room temperature. The plan should define room temperature and state whether this temperature will be recorded for each test. The third sentence references Appendix III; this appendix was not provided with the treatability study work plan. Also, the meaning of the third sentence is unclear.

22. Task IIA, Table 1, Page 6: This table should define whether the weight-basis dose ratio is weight of sample to weight of acid or vice-versa.

23. Task IIA, Paragraph 1, Page 7: The discussion of sample digestion addresses extraction and analysis of lead but not uranium. The sixth sentence mentions disposal of sample solids but does not state how this will be done. The eighth sentence cites an analytical procedure in Appendix IV. This appendix was not provided with the treatability study work plan. The ninth sentence discusses solvent substitution -- 1,1,1-trichloromethane for carbon tetrachloride. The work plan should explain why the procedure was modified. In the sentence "Quantification of the lead will be by HACH DRL-3," what is meant by HACH DRL-3 should be clarified. The work plan should also state what conditions would require that the HACH DRL-3 instrument be placed inside the glove box.

24. Task IIA, Paragraph 2, Page 7: The plan should state what the leaching procedures are for the second set of samples. The plan also should clarify whether the leachates from those samples be analyzed for lead and uranium or only lead.

25. Task IIB, Paragraph 2, Page 8: The work plan cites an analytical procedure for uranium in Appendix V; this appendix was not provided with the treatability study work plan.

26. Task IIB, Paragraph 3, Page 8: This paragraph states that the amount of lead and uranium leached from the samples will be compared to the other leaching test results to determine success. This contradicts the earlier sections that discuss using only lead for comparison of test results. This discrepancy should be resolved.

27. Task III, Paragraph 1, Page 9: The second sentence states that the optimum treatment will be the one(s) with the highest lead and uranium concentrations. The plan should clarify how the optimum treatment will be determined if the treatment resulting in the highest lead concentration doesn't correspond to the highest uranium concentration or vice-versa. Perhaps the optimum treatment be based on the sum of the lead and uranium concentrations. If so, this should be stated.

28. Task III, Paragraph 1, Page 9: The third sentence states that the optimum treatment will be rerun on five fresh samples but it doesn't explain what is meant by "fresh samples." The plan should clarify if these additional five samples are of the same material used for the previous tests, or if these are new samples, which will be collected and are to be quantitatively more representative of the material in the two silos.

29. Task III, Paragraph 1, Page 9: The last sentence states that the optimum leach time will be determined by plotting leached lead/uranium concentration against time. However, the plan should state how the optimum leach time will be determined. Also, since five samples will be used and one sample will be removed and analyzed for lead and uranium each hour, it appears that the maximum leach time to be examined will be 5 hours. The plan should state what will be done if the optimum leach time has not yet been reached after 5 hours.

30. Task IV, Paragraph 1, Page 9: The last sentence should clarify what is meant by filtration being beneficial.

31. Task V, Paragraph 1, Page 9: The first sentence states that three fresh samples from each silo will be contacted with optimum leachant. The work plan should explain what is meant by "fresh samples."

32. Task VIA, Paragraph 1, Page 10: The last sentence states that solids will be held for analysis of lead, uranium, and modified TCLP. The work plan should state what modifications are proposed and why.

33. Task VIB, Paragraph 1, Page 10: : The last sentence cites again a modified TCLP. The work plan should explain what the proposed modification is and why it is needed.

34. Task VII, Paragraph 1, Page 10: See Comment No. 20. The work plan should explain why only the RCRA hazardous waste characteristic for lead (D008) is being addressed and not others. In the last sentence, Tasks VIIIa to VIIIc apparently should be Tasks VIIA to VIIC. This reference should be corrected.

35. Task VIIA, Paragraph 1, Page 11: "Dry ash from the boiler house or dry uncontaminated site dirt will be added in increments sufficient to pass the PFT." The plan should explain why these are the only two solidification agents being considered. The plan should also clarify if these materials will be characterized before being added to the leached residue.

36. Task VIIB, Paragraph 1, Page 11: This paragraph cites an analytical method attached to the treatability study work plan. No attachment was provided with the plan.

37. Task VIIC, Item 5, Footnote 1, Page 12: The plan should explain why the proposed test considers only lead, and not lead and uranium.

38. Task VIII, Paragraph 1, Page 12: The plan should include an overall study schedule that addresses when decisions will be made concerning the success or failure of the proposed tests.

The above comments must be addressed in a revised plan within thirty (30) days of the date of this letter.

If you have any questions, I may be contacted at (312/FTS) 886-4436.

Sincerely,

Catherine A. McCord

Catherine A. McCord
Remedial Project Manager

cc: Richard Shank, OEPA
Graham Mitchell, OEPA
Leo Duffy, U.S. DOE - HDQ
Joe LaGrone, U.S. DOE - ORO