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**OHIO EPA COMMENTS ON: OU2 TREATABILITY
STUDY WORK PLAN**

09-24-91

**OEPA/DOE-FSO
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LETTER**



State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

September 24, 1991

Mr. Jack R. Craig
U.S. DOE FEMP
P.O. Box 398705
Cincinnati, Ohio 45239

Dear Mr. Craig:

Attached are Ohio EPA's comments on the Treatability Study Work Plan for O.U. 2. If you have any questions about these comments, please contact me.

Sincerely,

Graham E. Mitchell
Project Manager

GEM/klj

Attachment

cc: Kathy Davidson, Ohio EPA
Jim Saric, U.S. EPA
Lisa August, Geo Trans
Ed Schuessler, PRC
Robert Owen, ODH
John Razor, ASI/IT

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OHIO EPA COMMENTS ON:
OU2 TREATABILITY STUDY WORK PLAN

General Comments

1. The work plan should indicate that the treatability study will be conducted to comply with 40 CFR 261.4(e) and (f) and Ohio Administrative Code 3745-51-04(E) and (F).
2. Following the EPA's "Guide for Conducting Treatability Studies under CERCLA", the following section is missing or omitted: Schedule - Since schedules were recently negotiated with U.S. EPA, a detailed schedule for the treatability study should be available and incorporated into the document.
3. This treatability study addresses solidification, but does not address other alternatives such as separation and thermal treatment. Separation and thermal treatment should also be addressed, so that the best alternative can be selected.
4. Using the term solidification seems to limit this treatability study just to cementation. Considering that vitrification is being tested in the other operable unit's treatability study, examining vitrification as an alternative should be possible for this treatability study.

Specific Comments

1. Section 1, pg. 1, line 28: This sentence implies that radionuclides will be eliminated by incineration. Please clarify this sentence.
2. Section 1.1, pg. 2, line 3: An additional objective should be to determine the leachability of the metals and radionuclides present in the final waste forms. To stay consistent throughout the document, please address the specific levels that this study will try to achieve.
3. Section 1.1, pg. 2, lines 28-31: Solidification and stabilization should not be used interchangeably. As stated in EPA's Handbook for Stabilization/Solidification of Hazardous Wastes: "Solidification implies that the beneficial results of treatment are obtained primarily, but not necessarily exclusively, through the production of a solid block of waste material which has high structural integrity--a product often referred to as a "monolith." Stabilization techniques are generally those whose

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beneficial action is primarily through limiting the solubility or mobility of the contaminants with or without change or improvement in the physical characteristics of the waste. Both stabilization and solidification refer to treatment processes that are designed to accomplish one or more of the following results: (1) improve the handling and physical characteristics of the waste, as in the sorption of free liquids; (2) decrease the surface area of the waste mass across which transfer or loss of contaminants can occur; and/or (3) limit the solubility of any hazardous constituents of the waste such as pH adjustment or sorption phenomena."

4. Section 1, pg. 5, Table 1-1: Cadmium should be added to the list for the Inactive Fly Ash Disposal Area. Chlordane and PCBs should be added to the list for the Lime Sludge Ponds (See Appendix B, pg. 5).
5. Section 1.2.2, pg. 6: It should be noted in this section that both PCBs and Chlordane were detected within the north Lime Sludge Pond.
6. Section 1.2.2, pg. 6, line 6: Unless trip blanks had these contaminants detected during analysis, attribution to laboratory contamination should not occur. Conclusions concerning laboratory contamination should be reserved for the RI report unless DOE intends to provide more detailed information within this document.
7. Section 1.2.2, pg. 6, line 12: Provide a reference for determination of background levels for radionuclides in the lime sludge ponds. DOE has failed to adequately define background concentrations of radionuclides and other naturally occurring inorganics at the site. The concentrations DOE is considering background must be stated in the text.
8. Section 1.2.2, pg. 6, lines 19-21: Conclusions such as this should be reserved for the RI report where sample locations, analysis and data are available to provided justification. If DOE insists on leaving the conclusion, additional data and information must be provided to support the conclusion.
9. Section 1.2.3, pg. 7, line 3: Provide a reference for the stated inorganic background levels. As stated in previous Ohio EPA comments and letters, DOE has failed to adequately address site background levels for naturally occurring inorganics.

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10. Section 1.2.5, pg. 8, lines 7-9: See Comment #8.
11. Section 1.2.7, pg. 8, line 28: There is a mention of "original interpretation" of the U.S. EPA "Guide for Conducting Treatability Studies Under CERCLA." There is no explanation for another interpretation.
12. Section 1.2.6, Figure 1-2:
 - a) The actual remedial action goals for non-carcinogens are to be based upon maintaining a Hazard Index of less than 1. Simply maintaining doses of non-carcinogens at less than the specific RfD will not necessarily achieve a Hazard Index of less than 1.
 - b) The site-wide remedial action goal for carcinogens is to maintain lifetime cancer risks to between 10^{-4} and 10^{-6} . Simply meeting this goal for each pathway for each operable unit will not necessarily result in an additive site-wide cancer risk range of 10^{-4} to 10^{-6} . This section should reference the methodology recently negotiated in the Amended Consent Decree between U.S. EPA and DOE for ensuring the attainment of site-wide risk levels.
13. Section 1.2.7, pg. 13, line 1: Please provide a reference for the revision of terminology in the treatability study guidance document.
14. Section 1.3.1, pg. 15: The Wet-dry test (ASTM D559-57) should be included as a test for durability of the monolith. This durability test is an important test to prove that the selected matrix has longevity.
15. Section 1.3.2.1, pg. 17, Sanitary Landfill: Possible airborne emissions are not addressed. If the landfill contains radionuclides then emission for the lab furnace could cause the radionuclides to become an airborne contaminant. DOE should address, within the text, how this potential release will be mitigated.
16. Section 1.3.2.1, pg. 17, line 3; and Section 4.1.1, pg. 5, line 7: Describe how the laboratory furnace adequately simulates full-scale incineration of the sanitary landfill waste.
17. Section 1.3.2.4, pg. 17: This section must discuss potential treatment options for the Inactive and Active Flyash Disposal Areas should reagent mixtures incorporating flyash prove to be ineffective. Treatment must be considered for the flyash which is not incorporated into

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- other waste stream treatments.
18. Section 1.3.3, pg. 17, line 30: Provide reasoning for the 28-day curing period.
 19. Section 1.3.3, pg. 17, lines 31-32: Specifically define relatively low permeability and minimal volume increase.
 20. Section 1.3.3, pg. 18, line 7: DOE should define to which discharge standards this sentence refers.
 21. Section 1.3.3, pg. 18, lines 11-14: This sentence mentions durability testing. Please explain what tests will be run for durability.
 22. Section 1.3.3, pg. 18, line 18: Another factor affecting short-term effectiveness is any potential off-gassing which may occur during treatment. DOE should discuss any potential for off-gassing and how this would be quantified.
 23. Section 2, pg. 1, line 13: The treatability study includes procedures for studying the lime sludge pond wastes. Why does this sentence state that the ponds are not part of this treatability study?
 24. Section 3, pg. 1, line 7: This section does not actually establish performance objectives for the treatment technologies, as stated. It does establish specific objectives for the treatment tests to be performed.
 25. Section 3, pg. 2, Table 3-1: Why does this table have a secondary title, "TCLP Analysis List"?
 26. Section 3, pg. 2, Table 3-1: Additional information which should be acquired is the total alpha and total beta concentrations in the leachate. This information is important in determining compliance with MCLs based upon these parameters.
 27. Section 3, pg. 2, Table 3-1: In Table 3-1, footnote "b" refers to a "characterization study." What characterization study does this footnote refer to?
 28. Section 3.2, pg. 3, second paragraph: It is stated that the establishment of DQOs is the part of the process that defines the data quality needs of the project. The process should work in the opposite fashion. The DQOs are determined by the intended uses of the data or data needs. For example, if the data needs are to support the design of

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- the remedy, the DQOs would have a higher analytical level than would be required for a technology screening analysis. Please revise.
29. Section 3.2.1, pg. 7, lines 2-4: Provide a reference for the bulking factor formula.
 30. Section 3.2.1.1, pg. 7, line 13: This sentence seems to indicate that each area's samples will be composited with other samples. Please reword.
 31. Section 3.2.1.1, pg. 7, lines 18-20: These sentences are confusing. Please reword.
 32. Section 3.2.2, pg. 7, line 22: Define what makes additional work under stage II "necessary."
 33. Section 3.2.3, pg. 7, line 29: This sentence states that the EPA method for permeability "will be used as a guide." If the study does not intend to follow the method, a new method should be incorporated into the revised site-wide QAPP to be submitted in September, 1991.
 34. Section 4.1, pg. 1, lines 21-23: Explain the rationale for using a 3/8 inch mesh screen. Define "obvious debris."
 35. Section 4.1, pg. 1, line 30: Define how much bottom ash would be considered too much. What type of commercial fly ash might be substituted?
 36. Section 4.1.1, pg. 5, lines 6-9: Will the described incineration regiment for the landfill material be representative of actual remediation incineration? DOE should include a discussion laboratory conditions will relate to actual remedial actions.
 37. Section 4.1.4, pg. 5, lines 33: DOE should provide a standard procedure/method which supports determining shear strength 10 minutes after mixture.
 38. Section 5, pg. 2, Table 5-1: This table should include the manufacturer and manufacturing number.
 39. Section 6, pg. 1, line 2: DOE should discuss the implications of using archived samples for testing. Is this action representative of what will occur during remediation? What affect will the use of archived samples have on the treatability work, if some of the organics have volatilized or degraded over time?

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40. Section 8.3, pgs. 1-3: Provide references for all formulas.
41. Section 9: It should be noted that when Ohio EPA approves this and any other work plans, approval is not given to the Health and Safety Plan. It is Ohio EPA policy not to approve Health and Safety Plans.
42. Appendix B, Table B-1, Item 7: Define "Volatile Inorganics."
43. Appendix B, Table B-1: DOE should provide the levels "assumed" to be background for both naturally occurring radionuclides and inorganics. Justification for these levels should also be discussed. As previously stated, Ohio EPA does not believe that DOE has adequately addressed background concentrations for naturally occurring radionuclides and other inorganics.
44. Appendix B, Table B-3, Item 6: There is an obvious omission within the radionuclide data for the Active Flyash Pile. As printed it suggests the presence of enriched uranium within the pile. DOE should correct this error.