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**COMMENTS ON OU 1 TREATABILITY STUDY
WORK PLAN**

08-23-91



State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

August 23, 1991

RE: COMMENTS ON OU 1
TREATABILITY STUDY W.P.

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

Dear Mr. Craig:

4-003-
303.5

Attached are Ohio EPA's comments on the O.U. 1 Treatability Study Work Plan. It is our opinion that this document is much superior to the O.U. 4 treatability study (OEPA comments dated 8/22/91) in organization and content. We would recommend that DOE use the O.U. 1 treatability study to model treatability studies for the other operable units. If you have any questions about these comments please contact me.

Sincerely,

Graham E. Mitchell
DOE Coordinator

GEM/bjb

cc: Kathy Davidson, OEPA
Jim Saric, U.S. EPA
Lisa August, GeoTrans
Ed Schuessler, PRC
Robert Owen, ODH

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**OHIO EPA COMMENTS CONCERNING:
THE TREATABILITY STUDY WORK PLAN FOR OPERABLE UNIT 1**

General Comments

1. The treatability study work plan for OU #1 concentrates on physical treatment (cementation, vitrification) of the waste pits material. Why are no chemical separation/stabilization/vitrification combinations (such as those proposed in the OU #4 Treat. W.P.) to separate radioactive from hazardous substances being considered?
2. 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).
3. Following the EPA's "Guide for Conducting Treatability Studies under CERCLA", the following section is missing or omitted:
 - a) Schedule - Since schedules were recently negotiated with USEPA, a detailed schedule for the treatability study should be available and incorporated into the document.
4.
 - a) A contaminant of concern for the waste pits is radon, yet radon emissions are not confronted within this work plan. The work plan should address how radon (and possibly thoron) emissions will be affected by the proposed treatment options. The following, at a minimum should be addressed: What level of radon would be released during actual remediation via the specific treatment option? How much radon will be emitted by the waste form following treatment? If this can not be directly measured, then can it be estimated via some other measure (i.e., pore size)?
 - b) The proposed treatment options may also result in the volatilization of various organic contaminants within the waste pit materials. An analysis of the magnitude of these emissions during and following the specific treatment options should be addressed.
5. A number of analytical methods have been proposed within this work plan (MTCLP, Bulking Factor, etc.). Few if any of these refer to approved QAPP SOPs or ASTM methods. All new analytical methods should be incorporated into the revised site-wide QAPP to be submitted in September, 1991. Approved analytical methods are essential to using the data in risk assessments as well as assuring the quality of data in

choosing remedial actions.

Specific Comments

1. Section 1, pg. 1, line 18: The date of the EPA guidance (1988) doe not agree with the date in the reference list (1989). Please correct this discrepancy.
2. Section 1.2.2: Provide the definition for raffinate being used in the text. Is this the same definition as used in the OU #4 treatability work plan?
3. Section 1.2.2, pg. 7, line 12: Start new paragraph with "Waste Pit 3...".
4. Section 1.2.2, pg. 7, lines 14-15: This sentence needs rewording, it sounds like the lime neutralized the radioactive raffinate concentrate.
5. Section 1.2.3, pg. 8, line 26: In Table 1-2, footnote "a" states that chemicals are expected to reach the aquifer within 500 years. How was the 500 year time period calculated?
6. Section 1.2.3, pg. 10, Table 1-2, SEDIMENT: Contaminants within Paddys Run may be attributable to this operable unit. Specifically radium contamination within the sediments.
7. Section 1.2.4, 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 USEPA and DOE for ensuring the attainment of site-wide risk levels.
8. Section 1.3.1, pg. 25, 12-13: The paragraph addresses the 1991 sampling effort. A brief summary of the effort would be useful.
9. Section 1.3.1, pg. 25, line 18: Correct bullet to read, "change in treated waste volume". Vitrification may decrease

volume.

10. Section 1.3.1, pg. 25, bullets: An additional objective should be to determine the leachability of the radionuclides present in the final waste forms. Also see general comment #3.
11. Section 1.3.1, p. 26, line 10: When stating the objectives of the treatability study, it appears that all objectives should be attained, not "have pocket penetrometer values of approximately 500 psi or greater, metal concentrations in the modified TCLP (MTCLP) near to the TCLP limits, or a relatively low bulking factor". Also the objective should state an "unconfined compressive strength of 500 psi" instead of the pocket penetrometer. Clarify this sentence.
12. Section 1.3.1, pg. 26, line 17: Is any information available on the comparability of results from the proposed MTCLP to results obtained from TCLP analysis? Is it reasonable to look for results near the TCLP regulatory limits using the MTCLP? While it seems acceptable to utilize the MTCLP for the Preliminary Phase testing, perhaps the results should be viewed in a strictly comparative sense. That is the most promising formulation will have the lowest metal concentrations in the MTCLP and achieve the other desired performance criteria
13. Section 1.3.3, pg. 27: Please discuss location/source of on-site soil.
14. Section 1.3.4, pg. 28, line 22: An additional test relating to the long-term effectiveness and permanence needs to be considered for the cement stabilization forms at least. The Wetting and Drying Test of Solid Wastes (ASTM D4843) would provide information about the long-term stability of the stabilized waste form. It would be an appropriate test to conduct because it cannot be assured that the treated waste will not be subjected to repeated cycles of wetting and drying following final disposal. The treatability testing data should provide supplemental information necessary to fully evaluate the alternative technologies.
15. Section 3.0, 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.
16. Section 3.1, pg. 3, Table 3-1: In Table 3-1, footnote "a" refers to a "Characterization Study." What the characterization study does this footnote refer to?

17. Section 3.2, pg. 4, line 8: 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 the remedy, the DQOs would have a higher analytical level that would be required for a technology screening analysis. Please revise.
18. Section 3.2.1, pg. 4, line 29: Provide a copy of the MTCLP method. Discuss how the changes in the method would still provide for valid results for use in the treatability study.
19. Section 3.2.3, pg. 9, line 15: Define at what depths top, middle and bottom samples were collected
20. Section 3.2.3, pg. 9, line 22: Explain why ASTM 2166, a test for cohesive soils, is considered to be the appropriate test for the stabilized waste. It is understood that the stabilized waste form will be cement-like. As such, the Unconfined Compressive Strength for Cylindrical Cement Specimens (ASTM D1633-85) would seem to be more appropriate.
21. Section 3.2.3, pg. 10, line 3: The title of this document should be provided and it must be included in the References Section.
22. Section 3.2.3, pg. 10, line 8: An adequate rationale must be provided for the use of the 5-Day Static Leach Test. This should include an explanation of how the data generated will support the remedy selection process. The work plan does not identify what data will be generated by the proposed procedure. The American Nuclear Society Leach Test (ANS-16.1-1986) from which the procedure is derived is intended to provide values for an effective diffusion coefficient and a leachability index. The static leach test cannot provide those values.
23. Section 3.2.3, p. 10, line 21: The work plan should identify the methods (EM-1110-2-1906) which will be used to determine permeability and provide the rationale for selection of the methods identified.
24. Section 3.2.3, pg. 10, line 22: Describe which methods might be used and in what situations they will be used.
25. Section 4.1, pg. 1, line 26: Explain the rationale for using composite samples for Pits 5 and 6 and the Clearwell in the advanced phase of testing.

26. Section 4.1, pg. 4, Figure 4-1:
 - a) Testing for the Advanced Stage should include the Wetting and Drying Test of Solid Wastes (ASTM D4843).
 - b) Complete testing should follow Advanced Stage II reformulations (i.e., TCLP/5 Day Static Leach). See Figure 4-2.
27. Section 4.1.3, pg. 5, line 33: It appears that a word was omitted before the word "formulations."
28. Section 4.1.6, pg. 6, line 22: Explain the rationale for using a 3/8 inch mesh screen. Define "obvious debris."
29. Section 4.2.1, pg. 10, Table 4-2: Justify not conducting a replicate of run #6 with 50 w/w site soil.
30. Section 6.0, pg. 1, lines 20 and 23: On line 20, it is stated that the composite and strata samples will potentially be sampled for the parameters listed in Table 6-1, however on line 23, it is stated that these parameters will be analyzed for. Please eliminate the discrepancy.
31. Section 4.2.6, pg. 11, line 8: Add full TCLP for final waste form.
32. Table 5-1, "Equipment and Materials": This table should include the manufacturer and manufacturing number.
33. Section 6, pg. 1, line 9: Please identify the location of the 13 borings. This would reference useable information.
34. Section 6, pg. 1, lines 19-24: These sentences could be written more clearly so that they would not be construed to be contradictory.
35. Section 8.4: Provide a reference for these formulas.
36. Appendix C, p. 2, line 23: Has the ASTM subcommittee approved or commented on the PCT?