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**OHIO EPA COMMENTS ON THE O.U. 2
TREATABILITY STUDY WORK PLAN FOR
FLYASH/LIME SLUDGE STABILIZATION**

12/20/93

**OEPA/DOE-FN
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COMMENTS
OU2**



State of Ohio Environmental Protection Agency

Southwest District Office

40 South Main Street
Dayton, Ohio 45402-2086
(513) 285-6357
FAX (513) 285-6404

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George V. Voinovich
Governor

December 20, 1993

Mr. Jack R. Craig
Project Manager
U.S. DOE FEMP
P. O. Box 398705
Cincinnati, Ohio 45239-8705

Dear Mr. Craig:

Attached are Ohio EPA comments on the O.U. 2 Treatability Study Work Plan for Flyash/Lime Sludge Stabilization. If you have any questions please contact Tom Schneider or me.

Sincerely,

Graham E. Mitchell
Project Manager

GEM/bjb

cc: Jenifer Kwasniewski, DERR
Tom Schneider, DERR
Laura Hegge, DERR
Jim Saric, U.S. EPA
Lisa August, GeoTrans
Jean Michaels, PRC
Robert Owen, ODH

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OHIO EPA COMMENTS
OU2 TREATABILITY STUDY WORK PLAN FOR FLYASH/LIME SLUDGE
STABILIZATION

- 1) Commenting Organization: Ohio EPA Commentor: DERR
Section #: General Comment Pg #: Line #: Code: c
Original Comment #:
Comment: The document is deficient in providing a justification and objectives for the treatability study. DOE must provide additional justification for conducting the treatability study. DOE states one of the tests for success is passing TCLP, yet it is Ohio EPA's understanding that none of the wastes being tested have failed TCLP prior to any treatment. The document should include a discussion of DOE's intended use for the waste material following treatment.

Response:
Action:

- 2) Commenting Organization: Ohio EPA Commentor: DERR
Section #: General Comment Pg #: Line #: Code: C
Original Comment #:
Comment: Phases and options as described in the text are difficult to follow. Although a flow chart is listed, a more simplified text or diagram would be easier to follow.

Response:
Action:

- 3) Commenting Organization: Ohio EPA Commentor: DERR
Section #: General Comment Pg #: Line #: Code: C
Original Comment #:
Comment: Describe the anticipated state of the fly ash and lime when it is unearthed. If the material is dry, what will be done to keep the material from becoming airborne and contaminating a larger area. If the material is wet and may be exposed for a long period of time, describe what will be done to prevent the materials from scattering.

Response:
Action:

- 4) Commenting Organization: Ohio EPA Commentor: DERR
Section #: General Comment Pg #: Line #: Code: C
Original Comment #:
Comment: Discuss how the fly ash from the inactive pile will be removed and treated when it is characterized as being discarded with building rubble, concrete, asphalt, steel rebar and asbestos containing transite. It seems to be difficult to remove and treat fly ash alone.

Response:

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Action:

- 5) Commenting Organization: Ohio EPA Commentor: DERR
Section #: General Comment Pg #: Line #: Code: C
Original Comment #:
Comment: Volume Two of the work plan lists analytical data on the lime sludge ponds, active fly ash pile, and inactive fly ash pile incorrectly. In several instances, the < J qualifier was used, which is inaccurate. This data should be listed as UJ or < UJ. Make corrections accordingly.

Response:

Action:

- 6) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 1 Pg #: 7 Line #: Code: C
Original Comment #:
Comment: It is Ohio EPA's understanding that DOE is no longer using the water softening system which generates lime sludge. The text should be revised to clarify whether disposal within the lime sludge ponds is currently on-going.

Response:

Action:

- 7) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 1 Pg #: 8 Line #: Code: C
Original Comment #:
Comment: Briefly describe removal action performed on the active fly ash pile. In addition, describe the techniques used when transporting the fly ash to prevent fugitive air pollution.

Response:

Action:

- 8) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 1.3.3 Pg #: 10 Line #: Code: C
Original Comment #:
Comment: Section 1.3.3 states material is visible at the surface of the inactive fly ash pile. Relate what steps are being taken to prevent exposure and scattering of contents of the pile.

Response:

Action:

- 9) Commenting Organization: Ohio EPA Commentor: DERR

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Section #: 1.4 Pg #: 1-10 Line #: Code: c
Original Comment #:

Comment: This section refers to the draft OU2 RI report from October 1991. Substantial data has been gathered since that time. DOE must evaluate this new data and determine if it will add relevant and useful information to the work plan.

Response:
Action:

10) Commenting Organization: Ohio EPA Commentor: DERR
Section #: Table 1-1 Pg #: Line #: Code: C
Original Comment #:

Comment: Include description of notations (1) and (2) listed after each primary contaminant in the table. Additionally, what basis is DOE using for a sample size ≤ 2 to determine the use of the maximum detected concentration (see footnote "a"). The approved OU4 RI used 7 positive detections and the disapproved OU1 RI proposed 4 positive detections. DOE must justify the use of the ≤ 2 sample size determination.

Response:
Action:

11) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 1.4.3 Pg #: 1-12 Line #: Code: c
Original Comment #:

Comment: Does DOE believe that the flyash in the inactive flyash pile is separable from the other wastes, soil and vegetation within the pile? DOE should discuss data supporting this position.

Response:
Action:

12) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 2.1 Pg #: 2-1 Line #: Code: c
Original Comment #:

Comment: This section discusses the treatment of clay from the inactive flyash pile yet no discussion of this "clay" or the need to treat it is provided in the previous two sections. DOE should provide a discussion of this "clay" and the justification for treating it.

Response:
Action:

13) Commenting Organization: Ohio EPA Commentor: DERR

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Section #: 2 Pg #: 3 Line #: Code: C

Original Comment #:

Comment: How did the FEMP derive the required mass and volume figures? Provide justification for the use of these figures.

Response:

Action:

14) Commenting Organization: Ohio EPA Commentor: DERR

Section #: 2.2.3 Pg #: 2-4 Line #: Code: c

Original Comment #:

Comment: By using two different locations for collecting the flyash DOE will be introducing a bias into the study. If all the flyash treated in the study came from the same location, then the results of study A and study B would be comparable. Additionally, DOE should discuss the basis for the selected locations for collection of flyash. Were sampling results from the latest sampling used to locate the samples?

Response:

Action:

15) Commenting Organization: Ohio EPA Commentor: DERR

Section #: Table 2-2 Pg #: 2-9 Line #: Code: c

Original Comment #:

Comment: a) Will the analyses presented in the table be conducted on the waste itself or upon the TCLP leachate as is suggested in Tables 3-1, 3-2 & 3-3 (see footnote 2 in Table 3-3)? If analyses will be conducted on leachate the table should be revised to state this. If not, DOE should explain how it intends to compare pre-treatment total samples with post-treatment leachate samples.

b) DOE must provide a justification for the abbreviated list of inorganics being analyzed in the TCLP leachate (see footnote 3). Antimony, beryllium, etc. are COCs for the OU2 wastes yet aren't being analyzed. DOE should use the full HSL inorganic list.

Response:

Action:

16) Commenting Organization: Ohio EPA Commentor: DERR

Section #: 3-1 Pg #: 3-1 Line #: Code: c

Original Comment #:

Comment: The objectives of this study are not sufficiently defined. The objectives provided are too general (e.g. "meet groundwater protection standards") or have already been met prior to treatment (e.g. pass TCLP). DOE should provide specific numerical objectives for the waste form to meet for the expected contaminants.

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Response:
Action:

- 17) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3.1.1 Pg #: 3-2 Line #: Code: c
Original Comment #:

Comment: The document fails to provide a basis for the 10^{-6} permeability objective for this waste type. This waste form does not have to meet any compressive strength requirements, yet no discussion of the basis for its exclusion is included. All previous treatability studies at FEMP employing cementation/solidification have used a compressive strength requirement. No durability testing and no freeze/thaw testing are proposed for the waste forms. It would seem these would be appropriate tests since DOE suggests these materials will be used as backfill and subject to such conditions.

Response:
Action:

- 18) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3.1.2 Pg #: 3-2 Line #: Code: c
Original Comment #:

Comment: This waste form does not have to meet any permeability requirements yet is required to meet a compressive strength test that the A study does not require. DOE must provide a justification for the differing objectives of the two studies. Additionally, DOE should provide a basis for the 75 psi limit. As stated previously, durability as well as freeze/thaw testing would seem appropriate tests for the proposed waste forms.

Response:
Action:

- 19) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3 Pg #: 3 Line #: Code: C
Original Comment #:

Comment: Document states that Phase II testing will develop operating ranges and conduct analyses to assure that the final waste form is protective of groundwater. This implies that the current form is not protective of groundwater. Provide information relating to the possible contamination of the Great Miami Aquifer and how FEMP will assure the protection of groundwater. This protection could be assessed through the use of TCLP, durability, and/or freeze-thaw tests.

Response:
Action:

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20) Commenting Organization: Ohio EPA Commentor: DERR
Section #: Table 3-3 Pg #: 3-8 Line #: Code: c
Original Comment #:
Comment: This table suggests the final waste forms will be analyzed for HSL contaminants within the TCLP leachate yet Table 2-2 suggests the waste itself will be analyzed for HSL contaminants prior to treatment. If this is DOE's proposed course of action, the treatability study will produce no quantifiable information regarding treatment success (i.e., will be comparing apples to oranges). DOE should clarify the tests to be conducted prior to and following treatment and ensure they are comparable.

Response:
Action:

21) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3 Pg #: 11 Line #: Code: C
Original Comment #:
Comment: Section 3.2.1.3 describes adjustment of materials used in sampling to a pH of 12.0. Provide justification for this pH reading and why a more neutral level would not be desirable.

Response:
Action:

22) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3 Pg #: 14 Line #: Code: C
Original Comment #:
Comment: Document states that Study B will be performed to evaluate solidification/stabilization of the interlain clay and clay cover. Describe the current condition of the clay that is now present in the pile and cover.

Response:
Action:

23) Commenting Organization: Ohio EPA Commentor: DERR
Section #: 3 Pg #: 15 Line #: Code: C
Original Comment #:
Comment: DOE should provide justification for the 75 psi within the text.

Response:
Action:

24) Commenting Organization: Ohio EPA Commentor: DERR

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Section #: 1 Pg #: 1 Line #: Code: C
Original Comment #:

Comment: Under the conditions described in the text, the resulting mixture of lime sludge and fly ash to be used as backfill will be classified as a solid waste. Justify the use of this material as a solid waste.

Response:
Action:

25. Page 1-1
Comment: "The lime sludge originated from the water treatment process which generated process water for the facility". This sentence in the 2nd paragraph is awkward. Rewrite as: "The lime sludge originated from water treatment which generated process water for the facility."
26. Page 1-12
Comment: Omit the extra parenthesis in "(.075)mm)". "(3rd paragraph)
27. Page 1-12
Comment: Dry density for the Active Flyash Pile and the Inactive Flyash Pile are reported in two different notations in paragraphs 3 & 6. Choose one of "lbs/cf" or "lb/ft₃".
28. Page 1-13
Comment: Table 1-2. Why weren't U234, U235 and U236 considered a contaminant of concern as they were in other tables.
29. Page 3-12
In Study A, for the transition from Phase I to Phase II select the top two mixes to advance to Phase II for further testing. Having two rather than just one mix advance through the testing process would provide some basis for comparison and provide a backup to ensure success.
30. Provide a reference page at the beginning for all acronyms used in the document.