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**OU#4 - TREATABILITY STUDY
U.S. DOE - FERNALD
OH6 890 008 976**

11-21-90

**USEPA/DOE-FSO
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LETTER**



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

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REPLY TO ATTENTION OF:

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

5HR-12

RE: OU#4 - Treatability Study
U.S. DOE - Fernald
OH6 890 008 976

Dear Mr. Avel:

On August 6, 1990, the United States Department of Energy (U.S. DOE) submitted a proposed bench-scale treatability study work plan for Operable Unit #4. The United States Environmental Protection Agency (U.S. EPA) provided comments on this proposal on September 6 and 7, 1990. U.S. DOE submitted a revised document on October 23, 1990. (document was due October 7, 1990). U.S. EPA has reviewed the revised proposal and has found that the majority of the comments were addressed by the revision or no longer apply to the more limited, revised treatability study screening activities. However, the comments that are not relevant to the revised proposal will apply to the subsequent bench-scale treatability studies and should be addressed by U.S. DOE in its work plan for those studies. Some of these comments for future work plans include:

1. The last two comments of the September 7, 1990, comments were not addressed. However, comment No. 11, which questions the suitability of further sample processing because radium and thorium are not being analyzed, seems to be addressed indirectly by U.S. DOE's response to comment No 10.
2. Comment No. 12 requests additional information on low level radioactive waste disposal. Based on the revised scope of activities for the initial screening activities, it seems that this comment applies more to the subsequent bench-scale treatability studies and should be addressed in U.S. DOE's work plan for those studies.

Since U.S. DOE changed the scope of this project, U.S. EPA have reviewed this proposal as a new work plan rather than a revised

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work plan. U.S. EPA is not approving the work plan and the following deficiencies have been identified:

1. Remedial Technology Description, Page 2: The revised plan states that, after leaching of metal contaminants from the waste with nitric acid, the nonhazardous solids will then undergo solid/liquid separation and the leachate will be sent to a precipitation stage. In the precipitation stage, sodium phosphate and nitric acid will be added.

First, the plan should state that the solids remaining after acid leaching will undergo testing to determine whether they are nonhazardous. Second, the plan should clarify why nitric acid will be added with sodium phosphate to generate a precipitate.

2. Test Objectives, Page 2: This section states that the leaching methods that yield the greatest concentrations of lead and uranium will be retained for additional testing in the bench-scale treatability program. This section should include DOE's response to comment No. 10, which partially explains why lead and uranium were chosen as the target parameters in the screening study. U.S. DOE should provide further justification and data for selecting these screening parameters in lieu of others (such as thorium and radium).
3. Table 2, Page 4: The mineral acid extraction portion of the screening tests will generate 108 discrete samples rather than 144. This difference is due to the fact that the temperature parameter (referred to in the plan as a treatment) does not generate a sample. Because the "acid" column accounts for the two extraction temperatures (room and 100°C), the number of discrete samples should be 108 (2 silos x 18 acids x 3 treatments).
4. Acid Extractions, Paragraph 1, Page 5: The revised plan states that, if necessary, the HACH DRL-3 spectrophotometer will be modified to fit inside the glove box. It further states that it would be preferable to perform the analyses outside the glove box. U.S. DOE's responses indicate that the acid solutions will undergo a digestion step in the glove box and that an alpha-CAM detector will be used to continuously monitor fugitive emissions from the glove box. The plan should explain how the analyses could be performed outside the glove box and when the decision to do so will be made.
5. Data Management, Paragraph 1, Page 7: This section of the revised plan refers to standard quality assurance/quality control (QA/QC) protocol. This standard protocol should be either appended to the revised plan or referenced, and should include a section on corrective action.



6. Table 5, Page 10: This table identifies equipment and materials to be used during screening tests. However, the table does not include a thermometer, needed to measure room temperature and 100°C, and a scale, needed to weigh the sample and acid aliquots. These two items should be added to the table.

SPECIFIC COMMENTS ON U.S. DOE RESPONSES:

1. Response to comment No. 3, first set: The response states that the bench-scale treatability plan will cover QA/QC procedures in depth. However, because the results of the screening procedures will determine the subsequent treatability tests, QA/QC procedures for the screening activities should be either included as an appendix to the revised plan or referenced, and should be the same as or compatible with the QA/QC procedures for the subsequent treatability tests.
2. Response to comment No. 5, first set: The response refers to Work Plan No. 4. It is not clear if this response refers to the remedial investigation/feasibility study work plan; however, the latest version U.S. EPA has is dated March 31, 1988. In any case, because the revised plan covers only the screening portion of the treatability studies, which is scheduled to take only 16 weeks to complete, additional information requested under comment No. 5, first set, is not needed. However, that additional information should be supplied in the subsequent bench-scale treatability study work plan.
3. Response to comment No. 10, first set: Comment No. 10 requests additional information on why DOE has selected to monitor lead and uranium during the screening activities. U.S. DOE's response that other radionuclides should behave similarly to uranium should be supported with additional data and justification, and should be incorporated into Section 3.0, Test Objectives.
4. Responses to comments No. 13, 14, and 18, first set; and comment No. 4, second set: These comments deal with radon monitoring and discharge during the screening activities. A summary of U.S. DOE's responses to these comments should be incorporated into Section 9.0, Health and Safety.

A revised work plan must be submitted within thirty (30) days of the date of this letter.

Please contact me at (312/FTS) 886-4436, if you have any questions.

Sincerely,



Catherine A. McCord
Remedial Project Manger

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

