U-006-303.5

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ADDENDUM TO OPERATE UNIT 4 TREATABILITY STUDY WORK PLAN OCTOBER 1991

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ADDENDUM

TO

OPERABLE UNIT 4 TREATABILITY STUDY WORK PLAN

OCTOBER 1991

The following text revisions and radon leach test procedure should be included in the Operable Unit 4 Treatability Study Work Plan:

1. Add the following to Table 3-6, Advanced; and Table 3-7, Advanced:

   - Test - Radon Leach
   - Appendix C
   - DQO Comment - To determine leachability of radon
   - DQO Level - V

2. Delete Section 4.1.2, page 6, second sentence of line 24; Section 4.1.3, page 7, last sentence; and Section 4.2.6, page 23, sentence on radon, line 7.

3. Add the following to Section 4.1.4:

   Radon emission and radon leach tests will be conducted. Archive samples will be used for these experiments.

4. Add the following to Section 4.2.1.3:

   In the optional stage radon emission and radon leach tests will be performed on the insoluble residue if the combined Ra-226 and Ra-228 levels in the treated residue are below the 40CFR192.12(a)(2) limit of 15 pCi/g. Archive samples will be used for these experiments.

5. Add the following to Section 4.2.2:

   In the optional stage, radon emission and radon leach tests will be performed on the vitrified material. Archive samples will be used for these experiments.

6. Add the following to Section 4.2.6:

   As an optional step, radon emission and radon leach tests will be conducted on the stabilized solid, archive samples will be used for these experiments.

PROPOSED MEASUREMENT OF RADON LEACHING IN WATER

1.0 Purpose and Application

This procedure proposes a method for determining the leachability of radon (Rn) from stabilized Operable Unit 4 waste into a water leachant. The test will determine the activity of radon leached or emitted from the stabilized waste form by measuring the radon activity in the water leachate. The detection limit goal for Rn will be 300 pCi/l. See Federal Register 56, p. 33050 - 33127, July 18, 1991.

2.0 Procedure

2.1 Summary

2.1.1 A stabilized material of known mass and approximate geometric surface area will be leached in deionized water for 30 days. The leachant volume (cm^3) to specimen geometric surface area (cm^2) will be maintained greater than 10. The measured Rn in the leachate will be back calculated to the amount of Rn leached from the stabilized mass during the leaching period.

2.2 Interference

No known interferences

2.3 Sample Handling, Preservation, and Holding Time

2.3.1 Application of these procedures on hazardous waste samples must consider the known or suspected hazardous compounds present. Project-specific selection of work area, safe working practices, and personal protective equipment shall be made based upon exposure potential to the hazardous components.

2.3.2 All applicable safety and compliance guidelines set forth by IT Corporation and by federal, state, and local regulations must be followed during performance of this procedure. All work must be stopped if a known or potential compromise to the health or safety of any IT Analytical Services (ITAS) Associate, and must be reported immediately to a laboratory supervisor.

2.3.3 There are no preservation requirements applicable to this procedure.

2.4 Required Equipment

2.4.1 Demonstrated sealable Teflon or glass container of known volume.

2.4.2 Timer

2.4.3 Agitator

2.4.4 Polymeric net to suspend sample in leachant.

2.4.5 Liquid scintillation counter

2.5 Operation

2.5.1 Remove plastic mold or crucible from stabilized waste.

2.5.2 Determine approximate surface area of stabilized waste.

2.5.3 Insert stabilized waste into polymeric net.

2.5.4 Insert waste and net assembly into container. The waste should not contact the bottom or sides of the container.

2.5.5 Add deionized water to the container. Enough water shall be added to exceed the 10 to 1 leachant volume to sample geometric surface area requirement and to minimize vapor space in the container.

2.5.6 Close container, note the date and time the container was sealed.

2.5.7 Place container in agitator. Agitate slowly.

2.5.8 Agitate during normal working hours for 30 days.

2.5.9 Rapidly remove enough leachate to conduct the liquid scintillation test.

2.5.10 Perform liquid scintillation test.

2.5.11 Calculate the Rn in the liquid scintillation sample, in the original leachate solution, and the amount of Rn leached or emitted during the leaching period.

2.6 Quality Control

2.6.1 The data will be inspected by the QC officer. Deviations from the established procedure will be noted in nonconformance memos.

3.0 Nonconformance and Corrective Action

3.1 Any failure to follow this procedure will be noted on a nonconformance memo. The corrective action will be verified by the quality control coordinator and approved by the appropriate operations manager.

4.0 Records Management

4.1 All data will be recorded in standard laboratory notebooks.