

Yolande Norman

From: Yolande Norman
Sent: Monday, April 20, 2009 8:29 AM
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Cc: Adam Schwartzman; Karen Pinkston; Rebecca Tadesse; Lifeng Guo; Varughese Kurian; Yolande Norman
Subject: JPG 's Proposed Changes to Leaching Study
Attachments: 04.20.2009_Issues with Leaching Test Methods.doc

Paul,

Attached is a copy of NRC's comments on the leaching study that the Army outlined in the SAIC memo dated March 16, 2009. The first two changes are acceptable.

The third issue, modifying the times of the cycles for the leaching study, is also acceptable. However, the order of the different stages of each cycle proposed by the Army differs from the referenced ASTM method. NRC requires the Army to continue to follow the order of the stages provided in the ASTM method.

We can discuss these issues during our teleconference call this morning.

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NRC's Review of the Army's March 16, 2009 Memo Requesting Modifications to the JPG – Field Sampling Plan (FSP) - Addendum 7

The memo dated March 16, 2009 (*Selection of Depleted Uranium Penetrators for Leachability Testing – prepared by SAIC*) proposed three changes to the JPG – Field Sampling Plan (FSP) - Addendum 7, October 2008.

Issue 1:

FSP - Addendum 7 originally proposed the use of a riffle splitter to separate soil samples.

Proposed change: Army proposes the use a tumbler instead of a riffle splitter to separate soil samples.

Rationale provided: A riffle splitter requires drying the soil and possibly destroying bacteria within the soil (i.e., drying the soil could alter the initial conditions of the soil). A tumbler would allow the soil to be mixed and separated in its original moist conditions.

NRC Review: Proposed change acceptable.

Issue 2.

FSP - Addendum 7 originally proposes to saturate the soil using 4 liters of water per 1 kg of soil.

Proposed change: Army proposes to use a smaller water-to-soil ratio based on the procedures discussed in ASTM Method D5744-96.

Rationale provided: Enough water would be added to each humidity cell during the leaching portion of the cycle to cover the soil to a depth of at least 1 inch. This modification would simulate conditions that are more consistent with the site-specific conditions of the site.

NRC Review: Proposed change acceptable.

Issue 3.

Army proposes a clarification/modification of the testing regime discussed in ASTM Method D5744-96. Specifically, the Army would like to extend the leachability test to increase the potential that uranium can be observed in the leachant samples (keeping time proportions the same).

Cycle according to ASTM Method D5744-96

- 20 1-week cycles
- Dry air flow for 3 days
- Wet air flow for 3 days
- Flood (water leach) – soil submerged for 1 hour, 23 hours for draining

Proposed modification proposed by the Army

- 10 3-week cycles
- Flood (water leach) – soil submerged for 3 hours, 69 hours to drain
- Dry air flow for 9 days
- Wet air flow for 9 days

NRC's Comments/Concerns-

- Increasing the time should not be a problem. In fact, the ASTM method indicates that 20 weeks may not be enough time depending on the objectives of the experiment.
- The ASTM method dictates that the flooding step be at the end of the cycle; the Army has proposed to have the flooding step at the beginning. NRC staff has concerns that moving the flooding portion of the cycle to the beginning would yield results that would be different than if the flooding followed the periods of dry air flow and wet air flow. This would especially be true for cycle #1 and cycle #10. NRC would propose to allow the time changes but keep the steps in the order indicated in the ASTM method (dry air flow, then wet air flow, the flooding).

Issue 4 –Identified by NRC

It should also be noted that the ASTM method referenced in the March 16, 2009 memo, ASTM Method D5744-96, "Standard Test Method for Accelerated Weathering of Solid Materials Using a Modified Humidity Cell," has been superseded by ASTM Method D5744-07, "Standard Test Method for Laboratory Weathering of Solid Materials Using a Humidity Cell." It should be noted, however, that none of the statements from the older standard that are referred to in the memo were modified in the updated standard.

NRC's Comments: Army to address accordingly in future submittal.