

May 12, 2006

Mark Travers, Principal
Environ International Corporation
123 North Wacker Drive, Suite 250
Chicago, IL 60606

SUBJECT: REVISED DOSE ASSESSMENT METHODOLOGY, BRECKENRIDGE
DISPOSAL SITE, ST. LOUIS, MICHIGAN

Dear Mr. Travers:

This refers to your April 25, 2006, letter with Revised Dose Assessment Methodology for the Breckenridge Disposal Site located outside of St. Louis, Michigan. We have completed our review of the document and have determined that additional information will be needed, as follows:

1. Equilibrium of Decay Chain of Natural Uranium

The assessment methodology used an assumption of 50 percent equilibrium of the natural uranium decay chain for the dose assessment. A significant dose contribution may come from Ra-226, depending on the percentage of the equilibrium. Based on the analytical results from the Breckenridge Disposal Site Characterization Report, dated March 5, 2002, the concentration of Ra-226 may exceed U-238 in some of the contaminated soils. Because of that, the isotopic analyses of a representative number of contaminated soils from the site will be required to determine the average activity ratio of Ra-226 to U-238. Please provide the isotopic analytical results.

2. Distribution coefficient (Kd)

The dose from the ground water pathway is sensitive to the variation of the Kd, especially for the Ra-226, Pa-231. The values of Kd depend strongly on the chemical compound of the radionuclides and the pH value in the soil solution due to geochemical species in the contaminated soil. The specific Kd based on laboratory analysis of the soil collected from the site should be used to perform the dose assessment. Otherwise, the conservative default values from RESRAD should be used for the dose assessment. Please indicate whether you intend to use the specific Kd value or the default values from RESRAD.

3. Derived Concentration Guidelines (DCGLs)

Your methodology indicates that you plan to backfill the excavation with excavated soil with activity levels at the subsurface DCGLs and covered with clean soil from off-site. Once the site is released, the subsurface soil could be disturbed and brought to the

surface. If that occurs, the dose may exceed the release criteria due to the dominant external exposure pathway. Please confirm that the concentrations of the subsurface soil, when brought to the surface, will not exceed the surface DCGLs.

For the ground water pathway, the dose increases as the thickness of the contaminated zone increases. The depths of the excavation may vary from location to location. Please describe the method to ensure the thickness of the backfilled soil with activity levels at the subsurface DCGLs will not exceed 2 feet as stated in the Revised Dose Assessment Methodology.

4. Underestimation of the Doses

In the Revised Dose Assessment Methodology, there is no dose contribution from a water dependent pathway, due to the higher values of the selected Kd. All the doses come from the water independent pathway. The values of selected input parameters are 112 kg/yr for fruits, vegetables and grain consumption, 21.4 kg/yr for leafy vegetable consumption, and 233 L/yr for milk consumption. But, the actual values of the input parameters used in the dose assessment were 42.7 kg/yr for fruits, vegetables and grain consumption, 4.66 kg/yr for leafy vegetable consumption, and 92 L/yr for milk consumption. Therefore, the doses were underestimated due to the inconsistent input parameters. Because of that, the DCGLs with the above selected input parameters will be about 33 percent of the proposed subsurface DCGLs and 88 percent of the proposed surface DCGLs. Please revise your input values or provide justification for use of the lower values.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions or require clarification of any of the information stated above, please do not hesitate to contact me at (630) 829-9833, or Dr. Peter J. Lee at (630) 829-9870.

Sincerely,

/RA by G. McCann Acting for/

Jamnes L. Cameron, Chief
Decommissioning Branch
Division of Nuclear Materials Safety

cc: Robert Skowronek, State of Michigan

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