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# COMMENTS ON RAISED RI/FS RISK ASSESSMENT WORK PLAN ADDENDUM

03/06/92

OHEPA/DOE-FN
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LETTER

OhioEPA
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George V. Voinovich
Governor

March 6, 1992

RE: COMMENTS ON REVISED RI/FS RISK ASSESSMENT WORK PLAN ADDENDUM

2971

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

Dear Mr. Craig:

Listed below are Ohio EPA's comments on the Revised RI/FS Risk Assessment Work Plan Addendum.

**Response to Comments**

1. Comment 2 (OEPA 11/22/91): This task is larger and more involved than implied by DOE's two sentence response. This action must be closely documented and all changes/assumptions must be solidly defended. The Ohio EPA must be involved in this process.

2. Comment 3 (OEPA 11/22/91): The DOE has not presented any investigations on contaminant rate migration for any of the varying glacial overburden conditions. This information is presumed to be critical for vadose zone modeling.

3. Comment 73 (OEPA 11/22/91): The failure to select the groundhog as an indicator species due to its low abundance is quite irrational. The fact that a species is unexpectedly absent would suggest the possibility that site related factors may be affecting that organism, thus supporting further investigation of it. Additionally, one does not have to go to Oak Ridge to see groundhogs residing near waste pits. Field activities were recently initiated at FEMP to resolve groundhog intrusion into the Waste Pit 5 berm. Groundhog excavations have also been noted in various OU2 areas. Groundhogs are likely to be receiving a larger external and internal radiation dose and chemical exposure than the white-footed mouse due to their intrusive nature and the depth to which they must excavate and reside. The high fat content and hibernating nature of groundhogs additionally makes them susceptible to significant exposures. DOE should reconsider the use of groundhogs as an additional indicator species.



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4. Comment #75 (OEPA 11/22/91): It is hard to believe that DOE was unable to find any better transfer factor to use for white-footed mouse than the plant-to-beef factor. It would seem that a significant volume of data exists for other rodents (i.e., rat bioaccumulation and toxicity studies). The use of plant-to-beef ratios with no uncertainty factors or literature support for similarity in uptake rates further indicates the need for site-specific data.

5. Comment #192 (USEPA): While it is impossible to sample every location in a large environmental medium, it is imperative that the number of samples obtained be sufficient to adequately represent the medium.

**Specific Comments**

1. Section 3.1, Table 3-1, page 3:

   a. It is unclear from this table what each report will provide. Does the WMCO Environmental Monitoring Annual Report include background data on all naturally occurring HSL and radionuclide contaminants found on site? Additionally, is all the Environmental Monitoring data of RI/FS QAPP quality? If not, the usefulness of this data for RI/FS background is questionable.

   b. Does DOE intend to use background soil concentrations to infer background sediment concentrations? This does not appear to be an appropriate assumption since the distribution of particle size and sediment types varies significantly along the length of a stream. DOE should incorporate specific sediment sampling into the background soil sampling plan to obtain site specific sediment data.

2. Section 4.4, Table 4-4, page 15:

   a. The following radionuclides should be added to Table 4-4 as contaminants in OU4: Pb-214, Bi-214, Th-227, Ra-223, Rn-219, and Pb-211. These radionuclides were detected in the K-65 waste during the "Characteristics of Fernald Residue Before, During, and After Vitrification" 1991 study.

b. The following inorganics should be added for OU1: Sb, Ca, Fe, K, and Na (see recent OU1 Runoff Removal Action sampling results).

3. Section 5.1.4.2, page 15, lines 30-34: Is the visitor receptor being evaluated under this scenario? If so, how will the individual's exposure differ from the trespasser?

4. Section 6.1.4.7, page 29, line 4: Complete reference for Petrucci, 1977 is not provided.

5. Section 6.1.4.7, page 28, line 14: Why include very short-lived species, such as Ra-224 (half-life of .009918 years or 3.62 days), when secular equilibrium assumptions can be used? In computer modeling chain decay isotopes, it is common to only model the longer-lived species. Using the assumption of secular equilibrium, the mass of short-lived intermediate species can be calculated based on the ratio of the parent and daughter half-lives. Thus, in modeling over a period of years, decades and centuries, one would not expect to include species with half-lives that are on the order of years.

6. Section 6.1.4.7, page 27, line 3: While radioactive decay follows first-order decay, daughter products are produced. There is no discussion of daughter products and how these will be handled. All radioactive decay can be simplified into 4 decay chains. For long-term analysis (thousands of years) these chains are simplified into 3, 4 or 5 species each. Inclusion of daughter products is of particular importance over long periods of time as the daughter will have different sorption and radiologic characteristics.

   In saturated groundwater transport, the SWIFT III code can be used to model the 4 decay chains with a multitude of components in each chain. In the vadose zone, the SESOIL code cannot address this issue. How will daughter products be addressed in the vadose zone?

7. Section 6.1.4.7, Page 28: References for half-lives are not provided. There should exist an accessible reference to check these reported values.

8. Section 6.1.4.7, page 28, line 13: The half-life for Pu-239 is 2.44E+4 years, but Pu-240 is only 6,540 years. These should be entered separately as they are in different decay chains.

9. Section 6.1.4.7, page 28: Why are so few isotopes listed? While Table 6-5 is consistent with Table 4-4, there are other long-lived isotopes which should be considered. These include: Np-237, U-233, Th-229, U-236 and Pu-242.

10. Section 6.1.4.7, page 28: Why include radioactive decay of isotopes whose half-life is significantly greater than the period of stimulation. On page 18, line 21, the period for stimulation is up to 1,000 years. It would seem reasonable to exclude isotopes greater than 10,000 years from any decay processes.

11. Section 7.4.2.1, page 33, lines 1-2: The ability of a red fox to capture and consume a white-tailed deer at any age is debatable. It is highly improbable that white-tailed deer make up any portion of the red fox diet at the FEMP. Statements such as this indicate the need for DOE to support such assumptions with either site-specific data or references to peer-reviewed literature.

12. Section 10: The references for USEPA 1991 documents are incorrect throughout this section (i.e., EPA 1991e should be EPA 1991f). Please correct this section.

13. Section 10.1.1, page 4, lines 9-13: This sentence suggests DOE intends to conduct an ecological risk assessment for each operable unit. Is this DOE's intention or will the ecological assessment be conducted during the OU5 RI? Please clarify the text.

14. Section 10.1.2.3, page 7, and Table 10-3: The paragraph and table fail to adequately define how DOE will address perched groundwater as potable water supplies. The paragraph and table should clearly define this aspect of perched groundwater so that Remedial Investigations can be geared to making this determination and appropriate PRGs can be developed for specific perched water zones (i.e., Plant 2/3 area).

15. Section 10.3, Table 10-5: The model needs to be corrected to define Alternatives 5A and 5B as <u>off-site</u> disposal options.

If you have any questions, please contact me.

Sincerely,

Graham E. Mitchell
Project Manager

GEM/klj

cc: Jenifer Kwasniewski, DERR
Jim Saric, U.S. EPA
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