UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FERNALD 900
LOG K-2113
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FILE: 6446.666

JUL 29 1997

REPLY TO THE ATTENTION OF: SRF-5J

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

RE: U.S. EPA Disapproval of the "Use of Thorium-232 Final Remediation Level (FRL) as Basis for Assessing Attainment of All FRL in the Thorium Decay Series" Recommendation Document

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the United States Department of Energy's (U.S. DOE) "Use of Thorium-232 Final Remediation Level (FRL) as Basis for Assessing Attainment of All FRL in the Thorium Decay Series" recommendation document. This document, which is dated May 19, 1997, presents U.S. DOE's rationale for using the FRL for thorium-232 to assess the attainment of FRLs in soil, sediment, and groundwater for the thorium-232, thorium-228 and radium-228 members of the thorium decay series. U.S. EPA's review of the document focused on the technical adequacy of U.S. DOE's rationale for using this proposed approach.

Other recent reports, such as U.S. DOE's *Characterization Comparability Study* dated May 1997, have noted significant discrepancies between the results from Th-232 analyses by alpha spectroscopy and those by gamma spectroscopy. This apparent bias must be resolved and result in valid procedures for the analyses of Th-232 in environmental media at Fernald.

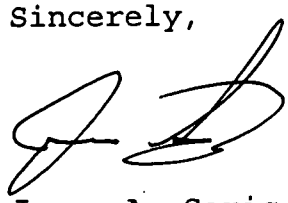
U.S. DOE's document inconsistently presents the half-life of radium-228. Table 2 of the attachment identifies the half-life of radium-228 as 6.7 years. Page 4 of the attachment identifies the half-life of radium-228 as 5.75 years. U.S. DOE should consistently present and use the same value for the half-life of radium-228. Because U.S. EPA uses the 5.75 year half-life in determining slope factors and similar risk-based numbers, U.S. EPA recommends that U.S. DOE use this value.

(Janke(r) partial action response to doe-0196-97 (10499)

U.S. EPA concurs that sufficient time has elasped since 1972 to allow secular equilibrium to be substantially achieved for any thorium-232 released to soils at the site. However, radium may be more soluble than thorium and could be present at various concentrations in sediment and groundwater. The distribution coefficients and subsequent solubilities for thorium and its progeny should be determined for a wide range of pH conditions and under a wide range of organic matter variations before secular conditions can be assumed. Therefore, U.S. DOE's proposed approach of using the FRL for thorium-232 to assess the attainment of the FRLs for all three radionuclides in groundwater and sediment at the site is not acceptable.

Therefore, U.S. EPA disapproves the "Use of Th-232 Final Remediation Level (FRL) as Basis for Assessing Attainment of All FRL in the Thorium Decay Series" recommendation document. Please contact Gene Jablonowski at (312)886-4591 or myself at (312) 886-0992 if you have any questions regarding this matter.

Sincerely,



James A. Saric
Remedial Project Manager
Federal Facilities Section
SFD Remedial Response Branch #2

cc: Tom Schneider, OEPA-SWDO
Tom Ontko, OEPA-SWDO
Bill Murphie, U.S. DOE-HDQ
John Bradburne, FERMCO
Terry Hagen, FERMCO
Tom Walsh, FERMCO