



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
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CHICAGO, IL 60604-3590

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

REPLY TO THE ATTENTION OF: SRF-5J

Subject: **Technical Review Comments on "RTRAK Applicability  
Measurements in Locations of Elevated Radionuclide Concentrations"**

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the above-referenced document as part of its oversight activities for the Fernald Environmental Management Project. The document, which is dated September 1997, is an addendum to the July 1997 "RTRAK Applicability Study" report and was prepared by Fluor Daniel Fernald for the U.S. Department of Energy (U.S. DOE). The document presents the results of a study that U.S. DOE conducted in the Drum Baling Area, which has variably high radionuclide concentrations.

U.S. EPA's review of the document focused on its technical adequacy to support use of the radiation tracking system (RTRAK) for waste acceptance criteria screening. U.S. EPA's review revealed several issues related to quality control, the sampling error of RTRAK in a heterogeneous area, and data interpretation. U.S. EPA's general and specific review comments are enclosed.

Please contact me at (312) 886-4591 if you have any questions.

Sincerely,

Gene Jablonowski  
Remedial Project Manager  
Federal Facilities Section  
SFD Remedial Response Branch #2

Enclosure

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

ENCLOSURE

TECHNICAL REVIEW COMMENTS ON  
"RTRAK APPLICABILITY MEASUREMENTS IN LOCATIONS  
OF ELEVATED RADIONUCLIDE CONCENTRATIONS"

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

(Six Pages)











measured thorium-232 progeny photons from areas outside the field of view of the RTRAK, additional information should be provided to explain this occurrence. Furthermore, because information on analyte heterogeneity in high concentration areas is not provided, it is not possible to assess whether the existing RTRAK calibration is adequate when the system is used to measure elevated concentrations.

The text should be revised to include additional HPGe detector data, physical sampling results, or both for the RBS area to indicate what heterogeneities may exist. Also, the HPGe detector measurements used in the accuracy check were taken 1 meter above the ground surface. If the gamma photons that influenced the HPGe detector were outside the field of view of the RTRAK, the HPGe detector's height should be lowered for future measurements so that the two systems' viewing angles are similar.

Commenting Organization: U.S. EPA  
Section #: NA Page #: 23  
Original Specific Comment #: 12

Commentor: Saric  
Line #: NA

Comment: The equation on this page uses the standard normal deviate for the constant "k." However, the purpose of the equation is to determine the lower confidence limit on the limiting criterion--that is, the value that gives 95 percent confidence that the measured value is less than the criterion. This equation involves a sampling distribution and not a population distribution (that is, a distribution of all possible values). Therefore, this equation should use the appropriate value of Student's t for n-1 degrees of freedom instead of the normal deviate. The values of "k" would then be 12.706 for 2 measurements, 3.182 for 4 measurements, and 2.000 for 60 measurements. The text should be revised to use these values of "k."