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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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CHICAGO, IL 60604-3590

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REPLY TO THE ATTENTION OF: SRF-5J

Mr. Johnny W. Reising
United States Department of Energy
Fernald Area Office
P.O. Box 538705
Cincinnati, Ohio 45253-8705

Subject: Response to Comments on Draft "Authorized Limits for Fernald Copper Ingots"

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the above-referenced response document as part of its oversight activities for the Fernald Environmental Management Project. The response document, which is dated May 29, 1998, was received by U.S. EPA on June 23, 1998, and was prepared by the U.S. Department of Energy (U.S. DOE). The response document provides U.S. DOE's responses to the U.S. EPA and other stakeholder comments on the draft "Authorized Limits for Fernald Copper Ingots" document. The draft "Authorized Limits for Fernald Copper Ingots" document was developed by U.S. DOE to support the approval of limits for the unrestricted release of 59 tons of copper ingots with volumetric radioactive contamination. Current guidance does not provide generic release standards for releasing scrap metal containing volumetric contamination.

U.S. EPA still expresses the concern that after refining the copper ingots, the resulting slag may be a hazardous, low-level or mixed waste requiring appropriate disposal. In the "Authorized Limits for Fernald Copper Ingots" document, U.S. DOE clearly states that the radioactive contamination in the copper ingots is volumetric and that surface decontamination techniques would not be capable of addressing the volumetric contamination. U.S. DOE also states that options are limited for further decontamination prior to release to the general public, and that mature technologies for decontaminating the copper ingots have not been identified.

U.S. DOE provided information on the melting of Fernald scrap ferrous metal at a radiologically controlled facility. The process generated a substantial quantity of slag, which was returned to Fernald for disposal as low level waste.

U.S. DOE screened out the restricted-reuse alternative on the basis of poor demand for products made from restricted-reuse copper. U.S. DOE states that copper for inclusion in a reuse product such as a disposal container would require processing the copper in a controlled facility to produce required product shapes, and that the cost impacts of manufacturing in a controlled facility may make inclusion of reuse copper not cost-effective. U.S. DOE contends that while the copper ingots may not be suitable for reuse in disposal containers, it could be released to the secondary copper industry for refining, fabrication into end-use products and subsequent public use of those products, provided that approved authorized limits for release are developed.

U.S. DOE does not appear to be able to determine the waste characteristics of the resulting slag. In the event that the slag is considered radioactive

waste, the costs of waste management, disposal and associated decontamination activities should be included in the overall cost analysis. A facility processing the copper ingots should be radiologically controlled and licensed by the Nuclear Regulatory Commission (or Agreement State) in the event that processing of the ingots generates a radioactive waste.

Further, while U.S. DOE claims that it would be cost-effective to free release the copper ingots, that claim is contingent upon a broker purchasing the copper ingots from U.S. DOE at an assumed price of $1200/ton. In the event that U.S. DOE cannot sell the copper at the assumed price, after costly preparation for free release, the cost-effectiveness of free release is greatly diminished. The document does not provide an assessment of the market for the copper ingots. Considering the inventory of Fernald products that appear to have no market value and may ultimately be dispositioned as waste, a market study may be appropriate.

Given the uncertainties with regard to the radionuclide content of the copper ingots, questions concerning the true value of volumetrically-contaminated copper on the open market, and the potential for generation of radioactive waste at unlicensed facilities, it would seem most appropriate to consider disposal of the copper ingots at an off-site low-level waste facility.

U.S. DOE's responses to many of U.S. EPA's comments are generally adequate. However, a few issues require further consideration or clarification. Please contact me at (312) 886-4591 if you have any questions.

Sincerely,

E Jablonowski

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 OF RESPONSES TO COMMENTS ON
DRAFT "AUTHORIZED LIMITS FOR FERNALD COPPER INGOTS"

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

(Two Pages)

TECHNICAL REVIEW OF RESPONSES TO COMMENTS ON
DRAFT "AUTHORIZED LIMITS FOR FERNALD COPPER INGOTS" 1591

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

GENERAL COMMENTS:

Commenting Organization: U.S. EPA Commentor: Jablonowski
Section #: Not Applicable (NA) Page #: NA Line #: NA
DOE Response #: 17 (Original General Comment #: 2)
Comment: The original general comment expresses a concern that after refining the copper ingots, the resulting slag may be considered hazardous, low-level or mixed waste that would require disposal. However, it does not appear that this comment was adequately addressed. The response summarizes the refining process and states that slag generated from the process is generally used as roadbed material or disposed of as industrial waste. However, if radionuclide concentrations in the slag are higher that those in the copper ingots, it is not clear how the slag could meet the definition of industrial waste. Currently, all industrial waste disposal sites have limits for the radionuclide content in the waste. Such limits should be further reviewed before assuming that the slag would be considered industrial waste. Furthermore, in the event that the slag is considered radioactive waste, the costs of waste management and disposal and of associated decontamination activities should be included in the overall cost analysis.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
DOE Response #: 23 (Original General Comment #: 1)
Comment: The original general comment requests that the restricted reuse alternative be further evaluated. This alternative is screened out in the draft authorized limits document because of limited demand. However, the original general comment points out that at other U.S. Department of Energy sites with similar volume-contaminated metals, restricted reuse was the only alternative. The response to this comment states that the screening analysis will be revisited in the final authorized limits document. The response also states that copper would play a specialized role in providing heat dissipation for certain high-level waste containers and may not be used for container designs already selected for development or fabrication. However, the meaning of the last part of this response is unclear. The alternatives analysis should not be limited to designs that have already been selected. Instead, this analysis should address viable options for copper use including development projects as well as current procurement projects. The alternatives analysis should be revised to further examine such potential options.

SPECIFIC COMMENTS:

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.4 Page #: 13 Line #: NA

DOE Response #: 12 (Original Specific Comment #: 2)

Comment: The original specific comment questions whether uranium 236 (U-236) could be present in the copper ingots. The response states that uranium in the copper likely came from non-reactor, recycling sources. However, if this is the case, it is not clear why technetium 99 (Tc-99) would be assumed to be present in the copper ingots. If Tc-99 is present in the ingots, U-236 is present as well. The response further states that isotopic analysis of samples for U-236 will be specifically requested. This analysis should be conducted using both mass spectroscopy and alpha spectroscopy because use of only one of these methods may not reveal the presence of additional radionuclides. For example, the specific activity of U-236 is about 200 times greater than that of U-238. Therefore, any small mass contribution from U-236 may not be discernible in mass spectroscopy even though U-236 may be a large activity contributor. Because U-236 emits roughly the same energy alpha particle as U-235, U-236 may not be discernible in alpha spectroscopy. Therefore, a combination of the two methods is required to verify the presence or absence of U-236.