

Ms. Barbara Dankmeyer, Resident Manager
 Molycorp Incorporated
 300 Caldwell Avenue
 Washington, PA. 15301

March 31, 1995

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Dear Ms. Dankmeyer:

We have performed a review of your Site Characterization Report (SCR) entitled, "Site Characterization Report for License Termination of the Washington, Pa. facility." This transmittal provides our preliminary request for additional information regarding your site decommissioning activities. Our request for information regarding your Site Characterization Report should be complete once we are able to obtain firsthand knowledge from a site visit.

Our comments are provided in the accompanying attachment and are listed by review subject. Please note that item II.5 indicates that Molycorp should immediately submit to NRC your proposed alternatives to the no action case that was presented in the SCR. This information is necessary before NRC can make a final determination about what additional information is necessary for the site characterization phase of your decommissioning activities. Molycorp could supply this information at an upcoming site visit.

Within the next two weeks, we will be in touch with you to arrange a site visit, to get a first hand look at the site, and to discuss any concerns you may have regarding our review. Please feel free to call me (301-415-7297) or Roy Person of my staff (301- 415-6701) if you have questions concerning this matter.

Sincerely,
 [Original signed by]

LeRoy S. Person
 Low-Level Waste and Decommissioning
 Projects Branch
 Division of Low-Level Waste Management
 and Decommissioning
 Office of Nuclear Material Safety
 and Safeguards

cc: G. Dawes, Molycorp
 T. Malloy, Molycorp
 J. Yusko, PA-DER-RP
 B. Belanger, EPA Region 3
 J. Kinneman, NRC Region I

TICKET:D-33

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I. Hydrogeology

1. In the chapter on site hydrogeology, Molycorp describes the modeling flow and transport at the site using MODFLOW and MT3D. This code appears to use K_d 's as the retardation factors in the contaminant transport model calculations. The K_d 's selected for the hazardous metals Cd, Se, and Mo were 6.5, 300, and 20, respectively. These values come from Baes, 1984. Since both selenium and molybdenum can occur as anions, the values chosen could be nonconservative. Please provide the bases for your choice of K_d 's for these metals.
2. The solubility of thorium is strongly dependent on pH and concentration of complexants (Langmuir and Herman, 1980). Analyses of the groundwater does not include constituents needed to calculate thorianite solubilities. The additional constituents that could be measured are phosphate, fluoride, alkalinity, and organic ligands (such as citrate, oxalate, and EDTA). It might be possible to eliminate the need for analyzing all of these constituents if it can be shown through a modeling exercise that varying the value of each of these constituents would not significantly increase the concentration of thorium in the groundwater. Please provide either the measured value of the aforementioned constituents or a sensitivity analysis that demonstrates that thorium concentrations will not increase with varying concentrations of these constituents.
3. Molycorp should determine the radiological background for waters at the site. This is needed to establish a baseline upon which to compare the radiologic characteristics of waters on the site and to trace any potential contamination of the aquifer.

II. EXTENT AND CONCENTRATION OF SUBSURFACE SOIL CONTAMINATION

1. Examination of the SCR gamma logging technique shows that the radiation levels were measured in counts per minute and then converted thorium-232 concentrations to pico-curies per gram, (pCi/g). This approach indicates that Molycorp's analytical technique may not be sufficiently sensitive to determine the actual concentration of thorium, specifically at concentration levels less than 25% of the NRC guideline value. This was concluded based on Molycorp's data that shows values for thorium that are frequently less than the detection limit of the technique.

The current methodology in determining thorium concentrations may be acceptable only for identifying and characterizing the approximate location and extent of contamination at the "site characterization" stage of decommissioning. However, a more sensitive method should be employed in determining thorium concentrations at levels less than 25% of the NRC guideline value. This approach is also essential in order to discriminate between affected and unaffected areas as recommended by NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination." Therefore, prior to final survey, the use of the gamma logging technique will need to be supplemented with soil sampling and laboratory analysis to verify the accuracy of derived soil concentrations.

Enclosure

2. Using average soil concentrations (e.g., using 50 pCi's/g for RESRAD) is not conservative since it neglected certain zones (or areas) within the site that showed much higher concentration. Therefore, the licensee should assume other concentration levels in order to account for potential residence on areas with high thorium concentration. The licensee may assume three source term scenarios in order to account for hot areas at the site. This approach is also useful to allow for more alternatives for cleanup or remediation of different portions of the site.
3. Molycorp should model multiple source terms assuming different concentration levels at different portions of the site. Subsequently, the licensee should calculate the dose for the industrial worker and resident farmer at the site (or portion of the site) assuming different alternatives for remediations of the intermediate and high thorium concentrations.
4. Please provide the input data for the three dimensional-graphics EARTHVISION system that provides the basis for your estimate of subsurface soil concentration volumes.
5. Molycorp should provide a description of the alternatives they would propose considering your conclusion that "Results show that leaving the waste in its present untreated-unstabilized condition in a layer on top of the ground gives a direct exposure and an inhalation exposure that contribute to a total effective dose that exceeds current regulatory standards."