

April 30, 2004

Mr. Bill Vinzant
Project Manager, KACC
Kaiser Aluminum & Chemical Corporation
9141 Interline Avenue, Suite 1A
Baton Rouge, LA 70809

SUBJECT: DOSE ASSESSMENT FOR DISPOSAL OF KAISER WASTE CONTAINING
LESS THAN 0.05 PERCENT BY WEIGHT SOURCE MATERIAL AT U.S.
ECOLOGY OF IDAHO, INC.

Dear Mr. Vinzant:

On September 15, 2003, Kaiser Aluminum (Kaiser) submitted a request to dispose of material containing unimportant quantities of source material (less than 0.05% by weight source material) at a RCRA - permitted disposal facility. The U.S. Nuclear Regulatory Commission (NRC) responded on October 29, 2003, by saying that prior to sending any waste to a RCRA - permitted disposal facility, Kaiser must perform and submit a dose analysis to the NRC which determines the potential dose consequence to members of the public from the disposal.

On February 27, 2004, Kaiser transmitted a dose assessment for disposal of unimportant quantities of thorium contaminated material at the U.S. Ecology Idaho facility. Based on our review (see attachment), the staff has verified that the expected individual and collective doses due to transfer and disposal of the Kaiser waste will be well below 25 mrem/yr. Therefore, the staff accepts Kaiser's dose assessment and approves its plans to dispose of waste at the U.S. Ecology Idaho facility.

If you have questions concerning this letter, please contact John Buckley at (301) 415-6607.

Sincerely,

/RA/

Daniel M. Gillen, Deputy Director
Decommissioning Directorate
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

Attachment: Review of Dose Assessment

Docket No.: 040-2377
License No.: STB-472 (Terminated)

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***See previous concurrence**

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Technical Evaluation of the Kaiser Aluminum Waste Containing Less Than 0.05 Percent
Weight Source Material at US Ecology Idaho (USEI) Facility
April 12, 2004

References

- "Dose Assessment for Disposal of Kaiser Waste Containing Less than 0.05 Percent by Weight Source Material at the US Ecology of Idaho, Inc.," Kaiser Aluminum Corporate Environmental Affairs, CEC Project 040-341, Tulsa Oklahoma Facility, February 2, 2004.
- "Disposal of Mallinckrodt 10 CFR Part 40 Section 13(a) Material at the US Ecology Idaho Site" Mallinckrodt, Inc., St. Louis, Missouri, Docket 40-6563, License STB-401, June 24, 2002.

Licensee Summary

Kaiser Aluminum (Kaiser) proposes to dispose of waste containing unimportant quantities of source material as defined in 10 CFR 40.13, (less than 0.05 percent by weight) at the U.S. Ecology Idaho (USEI) Facility near Grand View, Idaho. US Ecology operates the facility under joint Idaho DEQ/US EPA Part RCRA B and TSCA Permits. The soil debris source term contains thorium and radium, but essentially no uranium. The thorium concentration of the soil approaches 55 pCi/g, corresponding to the 0.05% weight source material limit for waste containing unimportant quantities. The Kaiser Decommissioning Plan is referenced as the bases for the source term determination.

The submittal provides a dose assessment for members of the public from the disposal of the Kaiser facility waste at the USEI Facility. The Kaiser dose estimates are 0.42 mrem for the off-site resident and 1.3 E-5 mrem for the railroad worker. Both estimates are low and well below the 100 mrem/yr public dose limit, and the 25 mrem/yr unrestricted use limit in 10 CFR 20, subpart E.

Evaluation of Results

Kaiser assessed the occupational dose to USEI disposal workers, a radiation protection technician, an equipment operator/truck driver, the rail car employee, and members of the public using MicroShield v 6.02. The staff finds the assumptions utilized, as well as the source term data, to be reasonable and accurate. The Kaiser dose assessment results in occupational doses of 1.6 E-3 mrem for the USEI radiation protection technician and 6.2 E-3 mrem for USEI disposal workers. Kaiser estimated the off-site member of the public dose results as 1.3 E-5 mrem for the rail worker and 0.42 mrem for the off-site resident. All doses are well within the required dose limits.

For determining the dose to the off-site resident, Kaiser used the June 2002 Malinckrodt submittal, as the bases for the calculation. This approach was determined to be acceptable based on the thorium source term consistency and similar waste disposal activities. The calculated off-site resident dose is within the required dose limit.

Dose to any future on-site resident after site closure was assessed by the NRC staff using RESRAD v 6.21. Input data such as site specific data, source term and dose conversion factors, were used to validate the dose assessment using the RESRAD (v. 6.2). The NRC RESRAD validated dose was estimated to be 4.25 mrem and were consistent with the Kaiser assessment and well within the regulatory limits for the future on-site resident after closure at 1000 years.

Conclusion

The NRC staff concurs with Kaiser that the thorium contaminated soil containing unimportant quantities of source material from the Tulsa facility can be safely transferred and disposed of at the USEI facility. Both the expected individual and collective doses due to transfer and disposal of the Tulsa facility waste have been demonstrated to be well below the 25 mrem/yr regulatory limit.

Bruce A. Watson, CHP
Health Physicist
NMSS/DWM/Decommissioning Directorate