

May 12, 2011

Mr. Billy M. Ray, Project Manager  
Rio Algom Mining LLC  
P.O. Box 218  
Grants, NM 87020

SUBJECT: COMMENTS ON THE RIO ALGOM MINING LLC'S SOURCE MATERIALS  
LICENSE SUA-1473, SECTION 4 DOSE ASSESSMENT, AMBROSIA LAKE,  
NEW MEXICO

Dear Mr. Ray:

The U.S. Nuclear Regulatory Commission (NRC) requested that the Oak Ridge Institute for Science and Education (ORISE) performed confirmatory radiological surveys of the Section 4 area evaporation ponds at the Rio Algom Mining (RAM) LLC Ambrosia Lake facility in Ambrosia Lake, New Mexico. The objectives of the confirmatory survey were to verify that remedial actions were effective in meeting established release criteria and that documentation accurately and adequately described the final radiological conditions of the RAM Section 4 area. The confirmatory survey results, dated February 12, 2010, indicated that further investigation and possible remediation are necessary before the release limits are satisfied.

RAM submitted a response to the ORISE confirmatory survey, on February 9, 2011, and requested that NRC reconsider the position that the Section 4 area does not meet release criteria. ORISE reviewed the RAM submittal and their comments are enclosed. The main feature of the RAM submittal is the recalculation of the survey results using values for radium, thorium and uranium with their respective background values subtracted out.

NRC approved RAM's Soil Decommissioning Plan (DP) in 2006 by issuing License Amendment No. 57 (See ADAMS ML061940206). As part of the approval process, NRC issued a Technical Evaluation Report (TER) (See ADAMS ML061940224). The TER commented on the radium benchmark dose modeling in the DP:

The potential dose to the public if the site contained 5 pCi/g Ra-226 is used to determine the criteria for Th-230 and U-nat (or U-238, assuming it is in equilibrium with U-234). The dose modeling was performed by using the RESRAD version 6.21 computer code. Parameter values reflect site-specific characteristics or values suggested in guidance with a ranching exposure scenario.

Appendix B (Benchmark Dose) references parameter values used in an example in a 1998 Commission paper and in NUREG-1620. RAM modeling results were 18 mrem/yr. This is conservative and results in lower than expected clean-up values. RAM proposes limits for Ra-226 of 7.5 pCi/g, Th-230 of 17 pCi/g, and U-238 of 19 pCi/g. The background values are 2.0, 2.7, and 1.7 pCi/g, respectively.

B. Ray

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RAM's current approved license contains cleanup levels for radium, thorium and uranium which include their respective background values. Section 5 of RAM's approved DP states that the applicable soil clean up levels are determined by adding respective background concentrations to the soil concentration limits. The soil cleanup levels were calculated from the radium benchmark dose of 18 mrem/yr. In areas where uranium and thorium-230 are present, the soil clean up level will be considered in combination to ensure that the applicable concentration objective is met; i.e., the sum of ratios of radionuclide concentration to respective soil clean up level will not exceed one. RAM would need to apply for a license amendment in order to use cleanup levels for radium, thorium and uranium with their background values subtracted out and show what the new benchmark dose would be. The application would also have to include a discussion of how to treat the apparent "hot spots" in the Section 4 area.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/reading-rm/adams.html>.

If you have any questions, please contact Tom McLaughlin at 301-415-4025, or via email, to [Thomas.McLaughlin@nrc.gov](mailto:Thomas.McLaughlin@nrc.gov).

Sincerely,

**/RA/**

Paul Michalak, Branch Chief  
Materials Decommissioning Branch  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Management Programs

Docket No.: 40-8905  
License No.: SUA-1473

Enclosure: ORISE Comments

cc:  
Georgia Cleverley, NMED  
Kevin Myers, NMED  
Larry Shore, NMED  
Tom Pauling, DOE - Grand Junction

B. Ray

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Sincerely,  
**/RA/**  
Paul Michalak, Branch Chief  
Materials Decommissioning Branch  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Management Programs

Docket No.: 40-8905  
License No.: SUA-1473

Enclosure: ORISE Comments

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Georgia Cleverley, NMED  
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