



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 19, 2016

Ms. Jennifer T. Opila, MPA, Manager
Radiation Control Program
Colorado Department of Public Health
and Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Dear Ms. Opila:

This is a response to your letter dated June 20, 2016 in which you requested the U.S. Nuclear Regulatory Commission (NRC) staff provide an opinion about whether: 1) the waste produced from the ablation process is considered byproduct material if the waste does not contain hazardous materials or radioactive materials at concentrations above background; and 2) the Colorado Department of Public Health and the Environment (CDPHE) can enact new regulations for uranium ablation technology and remain compatible with the NRC's regulatory program. In developing the NRC response to your questions, the NRC staff reviewed the latest information provided by Black Range Minerals to CDPHE staff and other information related to uranium ablation previously provided to NRC staff. Our responses to the questions you raised are provided in the enclosure.

The NRC staff is interested in the outcome of the Colorado public hearing process related to ablation technology. As CDPHE continues its evaluation process, the NRC staff is available to assist the CDHPE by addressing technical, regulatory, or policy questions and resolving any regulatory issues should they arise as a result of your evaluation process.

If you have any additional questions feel free to contact me or Stephen Poy.

Sincerely,

/RA/

Paul Michalak, Chief
Agreement State Programs Branch
Division of Material Safety, State, Tribal
and Rulemaking Programs
Office of Nuclear Material Safety
and Safeguards

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ENCLOSURE

STATEMENT OF POINTS & NRC RESPONSES

1. Fundamental to the regulatory framework for uranium mills is the production of byproduct material which is defined in part as “the tailings or wastes produced by the extraction or concentration of uranium or thorium from ore processed primarily for its source material content...” Byproduct material from a conventional uranium mill contains both hazardous and concentrated radioactive material. Would the NRC consider waste, produced from a process that concentrates uranium, byproduct material if the waste does not contain hazardous materials or radioactive materials at concentrations above background?

Response: Since uranium ablation technology involves the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, then any wastes produced by the process would meet the criteria to be classified as byproduct material as defined in Section 11e.(2) of the Atomic Energy Act, as amended and 10 CFR 40.4. Byproduct material is defined in 10 CFR 40.4 as the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Note that with respect to radioactive materials and NRC regulations, the radioactive or hazardous constituents contained in tailings or waste resulting from extraction or concentration of uranium does not matter. That is, the term byproduct material is defined by an action, not the characteristics of the waste. The criteria for disposal of tailings or wastes resulting from the extraction or concentration of source material from ores processed primarily for their source material content are contained in Appendix A to 10 CFR Part 40. These regulations contain a provision allowing licensees to propose alternatives to the specific requirements in Appendix A, Any alternative must achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the requirements of this Appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR Part 192, Subparts D and E.

2. It is our understanding that no current NRC regulation explicitly addresses the regulation of uranium ablation. We further understand that NRC has not made any other decision regarding how uranium ablation activities should be regulated. Nor do any of the Suggested State Regulations for Control of Radiation specifically address uranium ablation. And, to the best of our understanding, commercial-scale uranium ablation activities are being proposed solely in the State of Colorado at this time. Given this, we believe that any new regulations proposed in Colorado specifically to address uranium ablation are likely to fall within the NRC's Category D (Program Elements Not Required for Compatibility). Under Category D, the State of Colorado would have the flexibility to adopt and implement program elements based on those of the Commission or other program elements within the State's jurisdiction that are not addressed by NRC. Please let us know if NRC disagrees and if the NRC believes that the State of Colorado cannot enact new regulations for ablation technology and remain compatible with the NRC's program.

Response: Based on our review of the latest information provided by Black Range Minerals to CDPHE staff and other information related to uranium ablation previously provided to NRC staff, the NRC staff finds the uranium ablation process at a minimum requires a source material license, and should be considered uranium milling and regulated under Colorado's equivalent regulations to 10 CFR Part 40, and 10 CFR Part 40 Appendix A. The NRC staff considers 10 CFR Part 40 and Appendix A to be the appropriate regulatory framework for the use of the ablation process on uranium ore. A review of the compatibility category for most of these requirements are compatibility category C or H&S and not compatibility category D.

In determining that the uranium ablation process should be considered uranium milling, NRC staff notes that the ablation process involves the extraction or concentration of uranium or thorium from an ore processed primarily for its source material content. Black Range Minerals has indicated that the waste from their process does not contain hazardous and concentrated radioactive material. A review of the materials provided by Black Range Minerals, including those submitted to reply to CDPHE's Request for Information dated April 4, 2016 (specifically, Attachment 2.4), indicates otherwise. The documents provided by Black Range Minerals can be found in the NRC Agencywide Documents Access and Management System using the Accession Number ML16271A287. If Black Range Minerals further develops this technology to the point where data shows that the process does not produce waste containing hazardous and concentrated radioactive material, the CDPHE could consider whether to grant an exemption request pursuant to Colorado's equivalent to 10 CFR 40.14 "Specific Exemptions" or approve the licensee's proposal consistent with the provisions in Appendix A, as discussed in response to question one.

While the NRC staff considers 10 CFR Part 40 and Appendix A to be the appropriate regulatory framework for ablation processing of uranium ore, the State of Colorado can choose to enact new regulations for ablation technology. If the State of Colorado chooses to enact new regulations for ablation technology, these regulations would be subject to a compatibility or health and safety review by the NRC.