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US Geological Survey
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ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJ.: Request For Approval For Use of Alternative A2 Value For Isotope Br-80m under Appendix A to 10 CFR 71

To Whom It May Concern:

The U.S. Geological Survey TRIGA Reactor (GSTR), Docket 50-274, License R-113, would like to request approval to use a different A2 value for Br-80m than the general A2 value in Table A-3, Appendix A to Part 71.

As part of the facility's operations, radioactive tracer materials are produced for industrial processes; these are shipped as Normal Form materials in DOT Type 7A Containers. One of these tracers is the isotope Br-82, produced by irradiating a bromine target compound in the reactor. Incident to the production of Br-82 are smaller amounts of the isotope Br-80m. Although Br-82 has an entry for its A2 value in Table A-1, Appendix A to Part 71, Br-80m does not. Thus, the general value for A2 listed in Table A-3, Appendix A to Part 71is to be used for Br-80m. This presents a challenge because the general A2 value (0.54 Ci) is unduly restrictive compared to the A2 value for Br-82 (11 Ci).

The general A2 value is considered unduly conservative for calculations in this particular case because Br-80m presents less of a hazard in transportation than Br-82 does. For instance, the Annual Limit on Intake set by the NRC for Br-82 (3000 microCuries) is over 3 times lower (and thus more restrictive) than Br-80m (10,000 microCuries). Additionally, the half-life of Br-80m (4.4 hours) is so short compared to Br-82 (35 hours), that the hazard with the former isotope will drop off quickly in transit. The external hazard provided by gamma rays is also much higher for Br-82 than Br-80m (approximately 1295 keV total energy per disintegration for Br-82 vs under 20 keV for Br-80m).

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In order to remedy the effects of the overly conservative default A2 value for Br-80m, the GSTR is requesting approval to use the A2 value for Br-82 (11 Ci), the more hazardous isotope, as the A2 value for Br-80m. This change would still produce a conservative effect on the safety of transporting these isotopes without being overly conservative to the point of being unwieldy. This approval would not supersede any other regulations.

Please contact me if you need any more information.

Sincerely,

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