

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Innovative Elution Processes for Recovering Uranium and Transition Metals from Amidoxime-based Sorbents – University of Idaho

SECTION B. Project Description

The University of Idaho, in collaboration with Oak Ridge National Laboratory, proposes to develop an efficient, economic, and environmentally sustainable technique for sequestering uranium from seawater. Objectives include:

1. Study durability of the amidoxime-based sorbent during carbonate-H₂O₂ elution of uranium in the presence of different transition metals and varying amounts of H₂O₂
2. Investigate sc-CO₂ extraction of transition metals from sorbent
3. Develop a combined carbonate- H₂O₂ and sc-CO₂ extraction process
4. Compare the developed elution method with conventional acid leaching method for uranium and transition metals recovery
5. Transfer the developed elution technology to Oak Ridge National Laboratory for real seawater experiments.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use – Simulated seawater containing 10 ppm of natural uranium will be used for sorption and elution experiments using amidoxime-based polymer sorbents.

Radioactive Waste Generation – Slightly radioactive aqueous solutions containing natural uranium will be generated from our sorption and elution experiments. The uranium containing solution will be stored in glass bottles and disposed by the university's radiation safety officer.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial development.

Justification: The activity consists of developing a method for extraction uranium from seawater for research purposes.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 12/3/2013