

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Monitoring of Actinide Concentrations in Molten LiCl-KCl Salt using Alpha Spectroscopy – The Ohio State University**

**SECTION B. Project Description**

Ohio State University proposes to investigate a novel radiometric method to measure the concentration of actinide isotopes in the salt of an electrorefiner or drawdown system. A novel sensor will be developed that uses electrochemical reduction to pre-concentrate the actinides onto the surface of a detector to facilitate accurate quantitative detection of alpha emission in the harsh molten salt environment.

**SECTION C. Environmental Aspects / Potential Sources of Impact**

Radioactive Material Use – Radioactive materials in use in this work will be small sealed solid sources, such as Am-241 in the order of 1uCi as an alpha emitter, to test the sensor. The Ohio State University Research Reactor will also be used to test the radiation-hardness of the sensor. The sensor evaluation using alpha source will be performed the Nuclear Analysis and Radiation Sensor Lab (NARS) located at OSU. Both NARS and Reactor lab has permits and licenses to work with the respective radiation sources and will be under supervision by the Radiation Safety Office at OSU for handling and storage of the proposed radioactive materials.

**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 university-scale research aimed at investigating a novel radiometric method to measure the concentration of actinide isotopes in the salt of an electrorefiner.

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 06/17/2015