

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Managing Zirconium Chemistry and Phase Compatibility in Combined Process Separations for Minor Actinide Partitioning– Washington State University**

**SECTION B. Project Description**

Washington State University, in collaboration with Idaho National Laboratory and CEA-Marcoule in France, proposes to develop improved approaches to characterizing and controlling zirconium chemistry in streamlined actinide recycling streams by determining thermodynamic data for Zr and Hf ligand complexation, and characterize the molecular scale impacts of diluents and phase modifiers, by which some of the metal complexation studies will consider  $Zr^{4+}$  organic phase complexes.

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

**Radioactive Material Use** – Various radioactive isotopes will be used in accordance with WSU Environmental Health and Safety procedures and the WSU Radiation Safety Office.

**Radioactive Waste Generation** – Solid and liquid radioactive waste will be generated. Radioactive wastes are segregated in specific containers until disposal. Efforts are made to minimize radioactive waste generation through prudent purchasing practices, product substitution, and recycling or reducing the amount of chemicals used. Radioactive waste container label inscriptions specifically identify isotopes contained in the waste and level of radioactivity and are collected by the WSU Radiation Safety Office.

**Mixed Waste Generation** – Acidic and basic radioactive aqueous solutions will be prepared and mixed wastes will be generated. Mixed waste containers will be clearly labelled as such and segregated until disposal. Radioactive waste container label inscriptions specifically identify isotopes contained in the waste and level of radioactivity (in addition to chemical waste label inscriptions) and are collected by the WSU Radiation Safety Office.

**Chemical Use/Storage** – Acids and bases will be used and are stored in appropriate containers and secure storage locations.

**Chemical Waste Disposal** – Chemical wastes are collected in appropriate labelled containers and collected, upon request, by the WSU Department of Chemistry EH&S.

**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 streamlining separation processes for advanced fuel cycles 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 11/21/2013