

SECTION A. Project Title: Group Actinide Separation by Crystallization: A Single-Technology Approach to Used Nuclear Fuel Recycle – Texas A&M University

SECTION B. Project Description

The Texas A&M University proposes to develop a new method of group actinide (Ans) separations. To accomplish this goal, the project will pursue three specific aims:

- (1) Develop thermodynamically based dissolution-recrystallization cycles for producing purified Ans streams at high yield and good kinetics.
- (2) Study the effects of different oxidation methods on the formation of the crystalline phase.
- (3) Develop an understanding of the molecular structure and bonding of the crystalline phase containing the An(VI) species.

SECTION C. Environmental Aspects / Potential Sources of Impact

Actinides, U-238, Np-237, Pu-239, and Am-243 will be used. Current radiation permit (# 964) and Project Safety Analysis Plan (M1602637) allow for a total of 0.034, 0.070, 6.2, and 2.0 mCi, respectively. All material use and waste disposal is controlled by the Texas A&M Environmental Health and Safety Department (EHSD). The action would not create additional environmental impacts above those already occurring at the university.

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 developing actinide separations.

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

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on 08/17/2017