

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Development and Demonstration of an In-situ Tritium Scavenger – University of Wisconsin**

**SECTION B. Project Description**

The University of Wisconsin proposes to use an inherent feature of salt- and gas-cooled reactors towards the capture and removal of tritium from the primary coolant system: the presence of the graphite moderator. The objectives of the project are to: 1) Characterize tritium transport in liquid fluoride salts and graphite, 2) demonstrate the in-situ effectiveness of tritium absorption by the graphite fuel elements, and 3) develop a design for a graphite bed tritium filter that can integrate with salt-to-air heat exchangers.

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

Radioactive Material Use – Tritium or tritiated solvents, up to 1 Ci of tritium, but most likely a few mCi, may be used as part of this project. Approval to handle tritium will be obtained through the Office of Radiation Safety at UW Madison.

Chemical Use/Storage / Chemical Waste Disposal – Up to 5 kg of LiF-BeF<sub>2</sub> salts and other fluoride salt mixtures will be used. Work might also be done with fluoro-borates and boro-hydrates. For the handling of Be-containing salts, the office of Occupational Medicine is involved in monitoring all researchers for Be-exposure and on safety procedures for safe handling of Be-salts. Chemical waste will be disposed of per university policy by the Environmental Health and Safety Office (EHS).

Hazardous Waste Generation – Less than 10 kg per year of broken glass will be disposed in accordance with EHS sharps disposal guidelines.

**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 an in-situ tritium scavenger.

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 06/18/2015