DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-18-054

SECTION A. Project Title: Novel Processes for Capture of Radioactive Iodine Species from Vessel Off-Gas Streams – University of Idaho

SECTION B. Project Description

The University of Idaho, in collaboration with Idaho National Laboratory, proposes to develop a comprehensive understanding of the sorption system performance and effectiveness for capture of radioiodine species present in the off-gas streams from the used nuclear fuel (UNF) recycling operations, focusing particularly on the organic iodine species. The specific objectives defined for the research are to: (1) obtain experimental data on the capture of radioiodine species by target sorbent (silver mordenite) as a function of parameters including gas composition and temperature, (2) examine the effectiveness of novel modification of the sorption system involving incorporation of a pretreatment stage upstream of the sorption apparatus, and (3) develop comprehensive process models that explain the mechanism of capture and quantify the kinetics of sorption.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage/Waste Disposal and Hazardous Waste Generation – Project involves investigations of sorption of iodine from gaseous streams on to sorbent such as silver zeolites. Laboratory chemical reagents will be used in the experiments generating small quantities of chemical waste (1-2 kg/yr) , which may contain silver and organic iodide compounds. The waste will be handled according to the policies and procedures of the University of Idaho, administered through the ES&H unit of the Public Safety and Security department of 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 a comprehensive understanding of the sorption system performance and effectiveness for capture of radioiodine species present in the off-gas streams from the UNF recycling operations.

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 08/03/2018