

SECTION A. Project Title: Capture of Organic Iodides from Vessel Off-Gas Streams – Syracuse University**SECTION B. Project Description**

Syracuse University, in collaboration with Georgia Tech and Idaho National Laboratory, proposes to compare the adsorption capacity of three Ag-containing adsorbents: (1) reduced Ag mordenite (Ag0Z), (2) reduced Ag-functionalized aerogel (Ag0-aerogel) and (3) Ag alumina. With the selected adsorbent, adsorption experiments and material characterizations will be performed to determine the adsorption kinetics and reaction pathways for the organic iodides. This study also proposes to develop adsorption models to simulate iodine uptake by reduced-silver adsorbents.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage/Waste Disposal, Hazardous Waste Generation, and Air Emissions – The laboratory has been modified to safely study the adsorption of iodine in fume hoods specially vented to permit exhaust of iodine at acceptable concentrations to the ambient air. Special alarm systems are in place for detection of unacceptable levels of iodine in the laboratory and to force laboratory shut down if needed. Two continuous-flow adsorption systems and a system for studying the aging process of Ag-containing adsorbents have been constructed at Syracuse University. These systems will be used to acquire adsorption kinetic and equilibrium data for organic iodides adsorption by the Ag-containing adsorbent.

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 activities to evaluate adsorption capacity of Ag-containing adsorbents.

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 08/16/2018