PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Cornell University **STATE:** NY

PROJECT TITLE: Integrated Reuse and Co-Utilization of Slag, Sludge and Dust With Inherent Heavy Metal Capture and Nanoscale Calcium Carbonate Production as an Enhanced Fluxing Agent in Steel Plants (INSIGHT)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002252	DE-EE0009391	GFO-0009391-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	Siting, construction, modification, operation, and decommissioning of facilities for smallscale 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 deployment.
B3.15 Small-scale indoor research and development projects using nanoscale materials	Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Cornell University for the development of an integrated technology to co-utilize slag, sludge and dust for producing products such as nano-scale calcium carbonate for reutilization as a fluxing agent, functionalized silica particles for heavy metal removal, and iron oxide for reuse in the steel manufacturing process. Project work would occur in the research and development facilities at Cornell University (Ithaca, NY) and Columbia University (New York, NY). Reaction Engineering International (Midvale, UT) would perform techno-economic and life cycle assessments for the project.

Project activities include design, development, characterization, synthesis, and extraction activities that would occur within existing laboratories utilizing standard laboratory equipment; therefore, no modifications, new permits, additional licenses and/or authorizations would be necessary. No ground disturbing activities, no changes in the operation of existing facilities, and no installation of equipment outdoors would occur for project activities. The project would involve the use and handling of various hazardous materials, including metal and heavy metal bearing slag, sludge, and dust materials; organic solvents; and concentrated acids and bases. All such handling would occur in facilities with dedicated proper handling, storage, and disposal practices. All personnel would be trained to be compliant with the Environmental Health and Safety requirements of each respective institution and would utilize personal protective equipment (PPE) as appropriate. All hazardous materials would be managed in accordance with federal, state and local environmental regulations. Project activities at Cornell include working with nanoscale carbonates which could pose an inhalation hazard. Personnel would use PPE, including face masks, to ensure safety while working with nanoscale carbonates. Gloves would be used when handling to ensure that the nanoparticles do not adhere to the skin. Nanoparticles would be synthesized in a fume hood with a continuous air supply to ensure that the particles are not released into the lab and do not accumulate in laboratory environments. The nanoparticles would be stored in closed containers to be opened when needed only in a fume hood with circulating air and would be disposed of in

compliance with the Environmental Health and Safety requirements at Cornell University. DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office
This NEPA determination does not require a tailored NEPA provision.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 3/5/2021
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☑ Field Office Manager review not required
☐ Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager