PMC-ND

(1.08.09.13)

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

RECIPIENT: Iowa State University **STATE:** IA

PROJECT TITLE : A closed loop upcycling of single-use plastic films to biodegradable polymers

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002473	DE-EE0009943	GFO-0009943-001	GO9943

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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Iowa State University (ISU) to collect, pretreat, and convert single use flexible plastic film (SUPF) wastes into Polyhydroxyalkanoates (PHAs)(naturally occurring microbial polyester polymers) and new polymers.

This award would be executed over two budget periods. Approximately 50 kg of SUPF waste would be collected and pretreated at ISU. Waste plastics would be deconstructed at ISU and Sandia National Laboratory to produce oxidized intermediate liquid (OIL). The OIL would be used in the PHA biosynthesis and polymer recovery at the University of Missouri and the Ohio State University (Quasar Energy Group). Technoeconomic and life cycle analyses would occur at ISU. All locations are purpose built and would not require physical modifications, ground disturbing activities, change in use, mission, or operation, or require installation of equipment outdoors.

Less than 300 liters of nitrogen and hydrogen emissions, and trace amounts of methanol, tetrahydrofuran, hexane and toluene may result from the use of analytical instrumentation over the life of the project. All emissions would occur in controlled laboratory settings and would be vented through laboratory fume hoods. Award activities would involve the handling and use of hazardous materials, including approximately 100-200 liters of solvents and approximately 5 kg of plasma-based oils and plastic-derived wax. All such handling and storage would occur within controlled laboratory settings and would follow existing policies and procedures for handling and disposal of these materials. Additional hazards may include use of lasers, pressure devices and high voltage currents. Potential hazards would be mitigated through adherence to established university and corporate health and safety policies and procedures. Approximately 50 kg of liquid non-hazardous waste would be produced via the processing of feedstock and would be disposed of in the local Publicly Owned Treatment Works (POTW) in accordance with ISU's existing pretreatment agreement. Approximately 50 kg of non-hazardous waste would be generated during Quasar Energy Group's testing. These organics would be collected and disposed of at the Buckeye Biogas Plant in Wooster, Ohio. All organisms used for this award would fall under the lowest risk categories concerning individual and public health as described by federal agencies, i.e. Biosafety Level 1 (BSL-1) or Risk Group 1 (RG1). Iowa State University would adhere to all applicable federal, state, and local health, safety, and environmental regulations. DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office (AMO)
NEPA review completed by Amy Lukens, 4/26/2022

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: 4/27/2022

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