PMC-ND
(1.08.09.13)

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

RECIPIENT: Texas A&M University **STATE:** TX

PROJECT TITLE: Upgrading Lignin-containing Biorefinery Residues for Bioplastics

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001085	DE-EE0007104	GFO-0007104-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 federal funding to Texas A&M University to develop the process of upgrading lignin-containing biorefinery residues for use in bioplastics.

The proposed activities would include process enablement by engineering and optimizing microorganisms to convert biorefinery waste streams to polyhydroxalkanoates (PHA); process development by characterizing biorefinery residues; optimizing lignin treatment and fermentation; designing the novel bioprocess; process integration and optimization by biorefinery on-site scale-up; and technoeconomic and life-cycle analysis for the lignin-to-PHA upgrading process.

Project work would consist of indoor, bench-scale laboratory activities that would occur at Texas A&M University (TAMU) (including the rental facility for Cleamol LLC at Texas A&M University) in College Station, TX, University of Tennessee (UTK) in Knoxville, TN, Washington State University (WSU) in Richland, WA, and ICM Inc. in St. Joseph, MO.

Commonly used industrial strains, Pseudomonas putida and bacillus, would be genetically modified to increase the PHA titer and degrade lignin more efficiently. All storage and handling procedures would follow Biosafety Level (BSL)-1 procedures. In order to transport the genetically modified strains, USDA APHIS would be notified. Any work with genetically modified microorganisms conducted at ICM must first be approved by ICM's Institutional BioSafety Committee, which includes two non-ICM members from the community of St. Joseph, MO, as recommended by federal guidelines. ICM works exclusively with BSL-1 microorganisms. ICM submits an annual report of its work with genetically modified microorganisms to the Centers for Disease Control, Atlanta, GA. Biological waste from all activities would be treated with proper procedures at each facility including sterilization of equipment to avoid environmental and public hazards. The proposed project would utilize about 30kg of biorefinery waste and produce about 2kg of PHA throughout the entire project.

The proposed project would involve limited usage of hazardous chemicals such as chloroform and other organic solvents for compound extraction. Standard environmental and chemical safety procedures are in place and would be followed at each facility. These procedures include special treatment of chemical waste, and the use of a chemical

hood, gloves and glasses for protection. In addition, bacteria transformation would be carried out. All employees have been trained in the proper use, storage, handling, and disposal of these materials, and proper safety equipment would be provided. Any potential risks employees may face as a result of the hazardous materials would be substantially mitigated through safety training and equipment and following university developed and regulated safety procedures and protocols. All hazardous materials would be disposed of in accordance with federal, state, and local environmental regulations.

The work planned under this effort would not require the physical modification of any facilities and as such would not disturb any ground. The planned project would not require any change in the use, mission or operation of the participating institutes' existing facilities, and there would be no installation of equipment outdoors. The facilities are designed for this type of research; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary as a result of the proposed project.

Based on review of the project information and the above analysis, DOE has determined that the proposed activities would not have a significant individual or cumulative impact to human health and/or environment and are consistent with actions outlined in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination" and B3.6 "Small-scale research and development, laboratory operations, and pilot projects" and are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Bioenergy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Logan Sholar on 10/26/2015

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 10/26/2015

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

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

Field Office Manager's Signature: _____ Date: _____

Field Office Manager