PMC-ND
(1.08.09.13)

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

RECIPIENT: University of California, Berkeley **STATE:** CA

PROJECT TITLE: Design and development of bio-advantaged vitrimers as closed-loop bioproducts

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001916	DE-EE0008493	GFO-0008493-001	GO8493

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 federal funding to the University of California, Berkeley (UCB) to design and develop infinitely recyclable and therefore closed-loop polymeric bio-based materials, specifically focusing on a new class of polymers called vitrimers that combine the processing and recycling ease of thermoplastics with the performance advantages of thermosets.

The proposed project is comprised of laboratory research and development (R&D) tasks aimed at engineering bacteria to produce the desired products. Associated activities would include computational materials genomics, process development, and bench-scale synthetic biology and materials chemistry research. The Recipient would perform various R&D tasks at the Keasling Laboratory (Emeryville, CA), a state-of-the-art facility that is part of UCB and Lawrence Berkeley National Laboratory (LBL). Additional synthetic biology research would be conducted by the Helms Group laboratory at LBL (Berkeley, CA). Sample characterization would be conducted by the Russell Group at LBL. Computational screening would be conducted by the Persson Group at LBL. Technoeconomic and life-cycle assessment models would be developed by the Scown Group at LBL.

The proposed project would involve the use and handling of various hazardous materials, such as industrial solvents. All such handling would occur in-lab by trained employees following existing health and safety policies and procedures, including proper protective equipment, engineering controls, monitoring, and internal assessments. Chemical work would be done in a certified fume hood. Specific genes encoding engineered polyketide synthases would be introduced into Streptomycetes (a genus of bacteria). The proposed procedures and parent bacterium are classified as Biosafety Level 1 (BSL-1), the lowest level of risk assessed by the Centers for Disease Control (CDC) which represents minimal potential hazard to laboratory personnel and the environment. Genetically engineered bacteria would be treated with bleach and autoclaved prior to disposal via established protocols at UCB and LBL.

All project activities would occur at R&D facilities operated by UCB and/or LBL. These facilities were purpose-built for the type of activities being proposed; therefore, no adverse impacts to sensitive resources are expected as a

result of the proposed activities at any location. No change in the use, mission or operation of existing facilities would arise out of project efforts. UCB/LBL have all applicable permits in place, and would not need additional permits for the proposed activities.

Any work proposed to be conducted at a DOE laboratory may be subject to additional NEPA review by the cognizant DOE NEPA Compliance Officer for the specific DOE laboratory prior to initiating such work. Further, any work conducted at a DOE laboratory must meet the laboratory's health and safety requirements.

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assisstance agreement:

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.

Notes:

Bioenergy Technologies Office
This NEPA determination requires a tailored NEPA Provision.
NEPA review completed by Whitney Doss, 11/21/2018

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: 11/26/2018

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