

PMC-ND  
(1.08.09.13)

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



**RECIPIENT:**The Dow Chemical Company

**STATE:** MI

**PROJECT TITLE**  
: Bio-syngas to Fatty Alcohols (C6-14) as a Pathway to Fuels

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001433	DE-EE0007728	GFO-0007728-001	GO7728

**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 the Dow Chemical Company to develop a process for syngas fermentation to C6-C14 alcohols using engineered bacteria. These alcohols could then be used as precursors for production of renewable hydrocarbon fuels meeting the 2022 cost target of \$3/gallon gasoline equivalent (gge) from lignocellulosic biomass.

Activities associated with the proposed project would include baseline validation (Task 1), strain and fermentation optimization (Tasks 2, 3, 7 & 8), identification of products and pathways (Tasks 4 & 5), development of plans for purification of products (Task 6), process validation (Task 9), and project management (Task 10). Literature searches, information gathering, computer modeling, feasibility studies, and document preparation would be completed by Northwestern University. Fermentation and strain modeling, development and demonstration activities would take place at LanzaTech, Inc. facilities in Skokie, IL. Strain characterization, cell banking, and identification of products and pathways would be completed by The Dow Chemical Company from their research facilities in Freeport, TX and Midland, MI. The facilities utilized for all lab work under this award are pre-existing, purpose-built facilities and would not need any physical modification or additional permits for the proposed activities.

The proposed project would necessitate the use and handling of various hazardous materials, including industrial solvents as well as non-pathogenic, genetically modified, micro-organisms (*Clostridium autoethanogenum*) of Biosafety Level 1 (BSL1). All labs conducting work with these microorganisms are rated BSL1 or higher. Fermentation broths would be decontaminated with use of an antimicrobial powder and disposed of according to the operating procedures detailed in the Safety Data Sheets (SDS). All other hazardous materials and/or wastes generated as a result of the proposed project would be managed and disposed of in accordance with applicable federal, state and local requirements.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of 10 CFR 1021 subpart B outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is 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 the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Bioenergy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Rebecca McCord, 09/08/2016.

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: \_\_\_\_\_

 Electronically Signed By: Kristin Kerwin  
NEPA Compliance Officer

Date: 9/12/2016

**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: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_