

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** 3M Company**STATE:** MN

PROJECT TITLE: Degradation of Poly- and Perfluoroalkyl Substances (PFASs) in Water via High Power, Energy-Efficient Electron Beam Accelerator

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001980	DE-EE0009132	GFO-0009132-001	G09132

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 the 3M Company (3M) for the evaluation and optimization of an accelerator electron beam (e-beam) to degrade per- and polyfluoroalkylated substances (PFAS) in water in an energy efficient and economical manner as compared to conventional water treatment technologies. PFASs are compounds of environmental and human health concern worldwide. Treatment options would be proposed for future development and commercialization. The project would be completed over 2 Budget Periods (BPs), with a Go/No-Go decision point between each BP. This NEPA determination applies to both BPs.

In BP1 of the project, research would determine how to effectively decompose select PFAS contaminants and detect potentially hazardous bi-products. Proposed project activities would include data analysis, laboratory research and testing on water samples, and economic analysis. Water samples would either be artificially generated in the 3M laboratory or obtained from 3M owned water remediation sites. The samples would be sent to Fermi National Accelerator Laboratory (FNAL) where they would undergo e-beam exposure/treatment using the e-beam located in a cement bunker at the FNAL facility. Samples would be shipped back to 3M for analysis to assess the roles of e-beam and chemical additives on the degradation of PFASs in water. Ideal operating parameters would be obtained as well as the most effective additives to use, such as nitric acid and sodium hydroxide, when treating PFASs via e-beam. Findings would be used to suggest at which point the e-beam accelerator could be used during the water treatment process in order to treat PFASs.

In BP2, an economic and energy analysis on the PFASs treated with different electron beam accelerator designs would be performed and evaluated for suitability from an energy efficiency and cost standpoint. Energy requirements associated with conventional water treatment technologies like granular activated carbon would be compared to e-beam treatment technologies for water treatment.

Project work would occur in existing purpose built facilities and no modifications, new permits, or change in the use, mission, or operation of either facility would be required. Project activities would involve the use and handling of chemicals and an e-beam accelerator. Any risks associated with the handling of these materials would be mitigated through adherence to established health and safety policies and procedures. Protocols would include the use of personal protective equipment and engineering controls such as fume hoods and a concrete housing in which the e-beam is contained. All waste products would be disposed of by licensed waste management service providers. 3M and FNAL would observe all applicable environmental, health, and safety laws and regulations.

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:

Advance Manufacturing Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Shaina Aguilar on 8/19/2020.

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: 8/20/2020
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