

## Environmental Review Form for Argonne National Laboratory

Click on the blue question marks (?) for instructions, contacts, and additional information on specific line items.

**(?)Project/Activity Title:** Investigation of Photoactive Devices and Catalysts (CSE062)

**(?)ASO NEPA Tracking No.** ASO-CX-260      **(?)Type of Funding:** DOE  
B&R Code \_\_\_\_\_

**(?)Identifying number:** \_\_\_\_\_ WFO proposal # \_\_\_\_\_ CRADA proposal # \_\_\_\_\_  
Work Project # \_\_\_\_\_ ANL accounting # (item 3a in Field Work Proposal) \_\_\_\_\_  
Other (explain) WP&C CSE-CEG04

**(?)Project Manager:** Brian Ingram      Signature: *B. Ingram*      Date: 12-15-2009

**(?)NEPA Owner:** Roberta Riel      Signature: *Roberta Riel*      Date: 12/15/09

ANL NEPA Reviewer: Mark Kamiya      Signature: *Mark Kamiya*      Date: 12/15/2009

**I. (?)Description of Proposed Action:**

The proposed project will investigate the effect of solar radiation, simulated by a high intensity light source, on photoactive devices and photocatalysts. The goal of the project is to establish a photoactive catalyst to efficiently reduce carbon dioxide to carbon monoxide or simple hydrocarbons, and mitigated the release into the atmosphere.

The laboratory light source is a 300 W xenon arc lamp, which is housed in a filtered collimated enclosure. The filtered light has a spectrum approximating natural sunlight at the surface of the Earth. All experimental work utilizing the light source will be performed in a well ventilated hood located in Building 205 X-157 with treated glass panels to absorb 99% of generated UV radiation.

**II. (?)Description of Affected Environment:** All proposed activities will be conducted indoors in existing bench-scale laboratory spaces within ventilation hoods in Building 205, X-157.

**III. (?)Potential Environmental Effects:** (Attach explanation for each "yes" response. See Instructions for Completing Environmental Review Form)

**A. Complete Section A for all projects.**

1. (?)Project evaluated for Pollution Prevention and Waste Minimization opportunities and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable      Yes  No \_\_\_\_\_

2. (?)Air Pollutant Emissions      Yes  No \_\_\_\_\_

Some bench-scale research activities may emit low levels of hazardous air pollutants or criteria pollutants such as hydrocarbons, and carbon monoxide as defined by the Clean Air Act. Such emissions from bench scale research are categorized as an insignificant activity under Argonne's Title V permit.

3. (?)Noise      Yes \_\_\_\_\_ No

4. (?)Chemical Storage/Use      Yes  No \_\_\_\_\_

The proposed activities will involve the use and storage of chemicals. Pure gases, such as nitrogen, argon, helium, hydrogen, oxygen, and carbon dioxide, as well as mixtures of these pure gases may be used during the course of the project.

Additionally, solid metal-oxides will be stored and utilized in the scope of the experiments. These materials will be on the nano-scale and will be further addressed in section III.A.9.h.

5. (?) Pesticide Use Yes \_\_\_ No X
6. (?) Polychlorinated Biphenyls (PCBs) Yes \_\_\_ No X
7. (?) Biohazards Yes \_\_\_ No X
8. (?) Liquid Effluent (wastewater) Yes \_\_\_ No X
9. (?) Waste Management
- a) Construction or Demolition Waste Yes \_\_\_ No X
- b) Hazardous Waste Yes X No \_\_\_

The proposed activities may involve generation of hazardous waste. The waste will be accumulated, managed and documented in accordance with the ANL Waste Handling Procedures Manual. Generators will consult with Waste Management personnel before the generation of unusual or difficult waste streams. Personnel who generate waste and those who prepare waste requisitions are required to complete the required training in accordance with Argonne requirements.

- c) Radioactive Mixed Waste Yes \_\_\_ No X
- d) Radioactive Waste Yes \_\_\_ No X
- e) PCB or Asbestos Waste Yes \_\_\_ No X
- f) Biological Waste Yes \_\_\_ No X
- g) No Path to Disposal Waste Yes \_\_\_ No \_\_\_
- h) Nano-material Waste Yes X No \_\_\_

The proposed activities may involve generation of nano-material waste. The waste will be accumulated, managed, and documented in accordance with the ANL Waste Handling Procedures Manual. Personnel who generate waste and those who prepare waste requisitions are required to complete the required training in accordance with Argonne requirements.

10. (?) Radiation Yes \_\_\_ No X
11. (?) Threatened Violation of ES&H Regulations or Permit Requirements Yes \_\_\_ No X
12. (?) New or Modified Federal or State Permits Yes \_\_\_ No X
13. (?) Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste Yes \_\_\_ No X
14. (?) Public Controversy Yes \_\_\_ No X
15. (?) Historic Structures and Objects Yes \_\_\_ No X

16. (?)Disturbance of Pre-existing Contamination Yes \_\_\_ No X

17. (?)Energy Efficiency, Resource Conserving, and Sustainable Design Features Yes \_\_\_ No X

**B. For projects that will occur outdoors, complete Section B as well as Section A. N/A**

18. (?)Threatened or Endangered Species, Critical Habitats, and/or other Protected Species Yes \_\_\_ No \_\_\_

19. (?)Wetlands Yes \_\_\_ No \_\_\_

20. (?)Floodplain Yes \_\_\_ No \_\_\_

21. (?)Landscaping Yes \_\_\_ No \_\_\_

22. (?)Navigable Air Space Yes \_\_\_ No \_\_\_

23. (?)Clearing or Excavation Yes \_\_\_ No \_\_\_

24. (?)Archaeological Resources Yes \_\_\_ No \_\_\_

25. (?)Underground Injection Yes \_\_\_ No \_\_\_

26. (?)Underground Storage Tanks Yes \_\_\_ No \_\_\_

27. (?)Public Utilities or Services Yes \_\_\_ No \_\_\_

28. (?)Depletion of a Non-Renewable Resource Yes \_\_\_ No \_\_\_

**C. For projects occurring outside of ANL complete Section C as well as Sections A and B. N/A**

29. (?)Prime, Unique, or Locally Important Farmland Yes \_\_\_ No \_\_\_

30. (?)Special Sources of Groundwater (such as sole source aquifer) Yes \_\_\_ No \_\_\_

31. (?)Coastal Zones Yes \_\_\_ No \_\_\_

32. (?)Areas with Special National Designations (such as National Forests, Parks, or Trails) Yes \_\_\_ No \_\_\_

33. (?)Action of a State Agency in a State with NEPA-type Law Yes \_\_\_ No \_\_\_

34. (?)Class I Air Quality Control Region Yes \_\_\_ No \_\_\_

**IV. (?)Subpart D Determination: (to be completed by DOE/ASO)**

Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal? Yes \_\_\_ No X

Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts? Yes \_\_\_ No X

If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211?

Yes \_\_\_ No \_\_\_

Can the project or activity be categorically excluded from preparation of an Environment Assessment or Environmental Impact Statement under Subpart D of the DOE NEPA Regulations?

Yes  No \_\_\_

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded. B.3.6 operation of facilities for bench-scale research.

If no, indicate the NEPA recommendation and class(es) of action from Appendix C or D to Subpart D to Part 1021 of 10 CFR.

**ASO NEPA Coordinator Review: Ken Chiu**

Signature: *Ken Chiu*

Date: 12/16/09

**ASO NCO Approval of CX Determination:**

The preceding pages are a record of documentation that an action may be categorically excluded from further NEPA review under DOE NEPA Regulation 10 CFR Part 1021.400. I have determined that the proposed action meets the requirements for the Categorical Exclusion identified above.

Signature: *Peter R. Siebach*  
Peter R. Siebach  
Acting Argonne Site Office NCO

Date: 12/16/2009

**ASO NCO EA or EIS Recommendation:** N/A

Class of Action: \_\_\_\_\_

Signature: \_\_\_\_\_  
Peter R. Siebach  
Acting Argonne Site Office NCO

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

**Concurrence with EA or EIS Recommendation:**

CH GLD: \_\_\_\_\_

Signature: \_\_\_\_\_

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

**ASO Manager Approval of EA or EIS Recommendation:**

An \_\_\_ EA \_\_\_ EIS shall be prepared for the proposed \_\_\_\_\_ and

\_\_\_\_\_ shall serve as the document manager.

Signature: \_\_\_\_\_

Ronald J. Lutha  
Site Manager

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