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: [signature] Date: 12-15-2009

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

ANL NEPA Reviewer: Mark Kamiya Signature: [signature] 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 hyrocarbons, 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 appoximating 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 X No ____

2. (?)Air Pollutant Emissions — Yes X 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 X

4. (?)Chemical Storage/Use — Yes X 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

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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 X 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 facility 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: Kenneth 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 Date: 12/16/2009
Peter R. Siebach
Acting Argonne Site Office NCO

ASO NCO EA or EIS Recommendation: N/A

Class of Action: _____

Signature: _____ Date: _____
Peter R. Siebach
Acting Argonne Site Office NCO

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.

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Signature: _____ Date: _____

Ronald J. Lutha
Site Manager