

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: Superconducting Cavity Surface Processing Facility

(?)ASO NEPA Tracking No. _____ **(?)Type of Funding:** PHY Div
Programmatic _____ B&R Code _____

(?)Identifying number: _____ WFO proposal # _____ CRADA proposal # _____
Work Project # _____ ANL accounting # (item 3a in Field Work Proposal) _____
Other (explain) _____

(?)Project Manager: Michael Kelly Signature: Michael Kelly Date: 11/24/10

(?)NEPA Owner: M. A. Kamiya Signature: M. A. Kamiya Date: 11/24/2010

ANL NEPA Reviewer: M. A. Kamiya Signature: M. A. Kamiya Date: 11/24/2010

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

This Environmental Review Form supersedes the previous Environmental Review Form, NEPA tracking number ASO-CX-187, and addresses the building 208 laboratory as described below and the much smaller existing facility in building 203 room G150. The overall scope of operations described in the previous NEPA document remain unchanged in terms of the overall quantities of chemicals, the frequency of chemical operations, and the types and locations of chemical operations.

The facilities and activities in both rooms will continue to be reviewed by ad hoc review committee commissioned by the Physics Division Director, which includes Argonne's Subject Matter Expert for Industrial Hygiene.

Building 208, room B101:

A surface processing facility is being jointly operated by Argonne and Fermilab. The facility was constructed at the Argonne site in 2005-2006 using the existing nearly 2000 square foot hi-bay area in room B101 of building 208. Two large chemistry rooms with a large scrubber are administered by Argonne and jointly operated by Argonne and Fermilab personnel. Both rooms are suitable to perform remotely operated electropolishing and buffered chemical polishing on superconducting cavities. A large clean room area adjoining the chemistry rooms consists of an anteroom and two separate class 100 clean areas. The facility also incorporates an ultrasonic cleaning capability and ultra pure high pressure water rinsing system as the final step in surface processing of the cavities.

Operations and Maintenance:

This document updates the language of the previous document to more accurately reflect the status of present and future operations. Planned operations include the use of new electropolishing hardware in one of the two chemistry rooms. This hardware accommodates new cavity shapes, but is essentially the same as hardware in present use.

In either of the two chemistry rooms, cavities will be either chemically or electrochemically etched to remove surface damage that would degrade performance. This polishing consists of exposing the surfaces

of the cavities to acids for a given period of time. Following this treatment the acids are emptied from the cavities into storage containers and the cavities are rinsed with water to remove any acid residues. High pressure water rinsing in the clean rooms is used only to remove any remaining surface particulates.

Routine maintenance activities will be performed in all rooms. For example, clean room air filter and water filter changes.

Building 203, room G150:

Room G150 is also equipped to perform electropolishing and buffered chemical polishing, but on a smaller scale than the building 208 facility.

Operations and Maintenance:

Operations in the G150 processing room take place in a ventilated hood. Processes are the same as for the facility in room B101 of building 208 and include chemically or electrochemically etching cavity components to remove surface damage. Acid storage and cavity rinsing are also performed in the same manner as for room B101.

Routine maintenance activities will be performed. For example, clean room air filter and water filter changes.

II. (?)Description of Affected Environment:

Building 208, room B101:

This room is an existing hi-bay area. All work performed in building 208 will be contained within this room. The scrubber and ventilation stack are adjacent to the room with the stack exiting through the roof.

Building 203, room G150:

This room is an existing laboratory which contains a fume hood and rinsing sink to clean and rinse cavities. The scope of work in this room remains the same, which includes electropolishing, buffered chemical polishing and the operations and maintenance of the equipment and facility.

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 <u>X</u> | No <u> </u> |
| 2. (?)Air Pollutant Emissions | Yes <u>X</u> | No <u> </u> |
| 3. (?)Noise | Yes <u> </u> | No <u>X</u> |
| 4. (?)Chemical/Oil Storage/Use | Yes <u>X</u> | No <u> </u> |
| 5. (?)Pesticide Use | Yes <u> </u> | No <u>X</u> |
| 6. (?) Polychlorinated Biphenyls (PCBs) | Yes <u> </u> | No <u>X</u> |

7. (?) Biohazards Yes ___ No X
8. (?) Liquid Effluent (wastewater) Yes X No ___
9. (?) Waste Management
- a) Construction or Demolition Waste Yes X No ___
 - b) Hazardous Waste Yes X No ___
 - c) Radioactive Mixed Waste Yes ___ No X
 - d) Radioactive Waste Yes ___ No X
 - e) PCB or Asbestos Waste Yes X No ___
 - f) Biological Waste Yes ___ No X
 - g) No Path to Disposal Waste Yes ___ No X
 - h) Nano-material Waste Yes ___ No X
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. NA

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. NA

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 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 Siting/Construction/Operation/Decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects.

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.

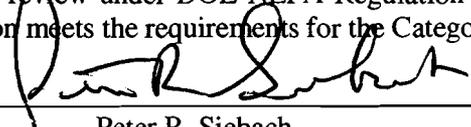
ASO NEPA Coordinator Review: Kaushik N. Joshi

Signature: Kaushik N. Joshi

Date: 11-30-2010

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
Acting Argonne Site Office NCO

Date: 12/1/2010

ASO NCO EA or EIS Recommendation: NA

Class of Action: _____

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

Date: _____

Concurrence with EA or EIS Recommendation: NA

CH GLD: _____

Signature: _____

Date: _____

ASO Manager Approval of EA or EIS Recommendation: NA

An ___ EA ___ EIS shall be prepared for the proposed _____ and
_____ shall serve as the document manager.

Signature: _____
Dr. Joanna M .Livengood
Manager

Date: _____

Yes Response Explanations

1. The use cycle of buffered chemical polishing (BCP) and electropolishing (EP) solutions has been studied and determined to be unsuitable for reuse. Proper chemical processing to achieve high cavity performance requires relatively fresh solutions of BCP and EP.
2. The air emission sources have been evaluated for this project. A design/build construction permit application has been prepared and approved by IEPA (see attached requirements).
4. A maximum of six 55 gallon drums total of BCP and EP solution will be stored within the facility.

BCP is a mixture of:
a. 1 volume part of Hydrofluoric Acid (49% HF)

- b. 1 volume part of Nitric Acid (69.5% HNO₃)
- c. 2 volume parts of Phosphoric Acid (85% H₃PO₄)

EP is a mixture of:

- a. 1 volume part of Hydrofluoric Acid (49% HF)
- b. 9 volume part of Sulfuric Acid (96% H₂SO₄)

The drums are placed in secondary containers whose volumes are sufficient to completely contain the liquid in the event of a primary container failure. The safe handling of the acid drums will follow the approved operating procedures.

- 8. Operations in the facility will generate normal lab waste water including dilute waste water containing small amounts of the acids described above. The dilute waste water generated at the end of a chemical operation is neutralized using sodium bicarbonate or other suitable caustic. After neutralization, this waste water will be sent to the laboratory sewer and will be treated at the ANL laboratory waste water treatment facility.

- 9-a. During construction, there will be minor construction debris and standard waste generated. Debris will be sorted and recycled as appropriate.

- 9-b. The hazardous waste generated in this facility will continue to be disposed of as required by the Argonne Waste Handling Procedures Manual. A Satellite waste Accumulation Area (SAA) is located in the hi-bay area of room B101 in building 208. The area utilizes the Waste Accumulation Tracking function within the Chemical Management System. The two significant wastes generated will be the used concentrated acids and dilute wastewater. Both will be disposed of as described above. Personnel who generated waste and those who prepare waste requisitions are required to complete the chemical waste generator training in accordance with the requirements outlined in applicable LMS procedures.

- 9-e. Future rehabilitation activities may involve the generation of PCB or asbestos waste. The waste will be accumulated, managed, and documented in accordance with the requirements outlined in applicable LMS procedures. Personnel who generated waste and those who prepare waste requisitions are required to complete the chemical waste generator training in accordance with the requirements outlined in applicable LMS procedures.