Environmental Review Form for Argonne National Laboratory

Form:	ANL-985
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Created By:	Harris, Amy M.

Creator

Badge:	**49490**	Name:	**Harris, Amy M.**
Cost Center:	**254**	Division:	**WSH**
Job Title:	**Interim EGS Directorate Safety Manager**	Employee Type:	**Regular Full-Time Exempt**
Building:	**362**	Lab Extension:	**2-0484**

General Information

Project/Activity Title: Pilot-Scale Evaluation of Electrodialysis Membranes with Mepiquat Pentaborate

ASO NEPA Tracking No.: AAO-CX-150

Type of Funding: SPP

B & R Code:

Identifying Number: 11137

SPP Proposal Number: 2012-11137.02

CRADA Proposal Number:

Work Project Number:

ANL Accounting Number: (Item 3a in Field Work Proposal)

Other (explain):

List appropriate NEPA Owners:

Division: AMD NEPA Owner:

Financial Plans

To select a Financial Plan, click the magnifying glass icon to open a search window.

Cost Center: **114** Project: **PRJ1001808 85E26 Scl Electrodialysis** Phase: **PH01 General** Task: **PT1397: General Costs**

Description of Proposed Action

Argonne and BASF have been working together since 2002 to develop a technologically feasible and cost-effective process for the production of mepiquat pentaborate. Previous research moved the project from the lab scale to the pilot scale. At the pilot scale, numerous tests were performed and several enhancement to the technology were put in place. Each pilot test required the processing of approximated 130,000 gallons over a 3-6 month period. The project has now reached the point where the process is both technically and economically feasible and the process is ready for technology transfer. However, the market has not grown in size to expectations. Therefore, instead of taking the technology in-house, BASF has decided to divest the technology and product line to a third party. This amendment to the original project addresses the activities that will transfer the technology to a third party, and close out the project at Argonne. The scope of the project involves performing several demonstration runs for candidate third party companies. These companies, already identified, are currently suppliers and/or toll producers to BASF Agricultural Division, with operations in the US and production for the US market. Following demonstration runs in year 1, the successful third company will set up a facility at one of its US locations, with the technical assistance of Argonne and BASF, and produce product at that location in year 2 and into the future. BASF will fund Argonne to aid in the technology transfer in year 1 and year 2. An ERF for this activity was approved Nov. 6, 2001, (AAO-CX-150) and also approved as amended on Dec. 5, 2002 and in 2008. The work utilizes the one-of-a-kind electrodialysis pilot plant in Building 369 High Bay. The proposed work will consist of: 1. Performing demonstration runs (5000 gallons each, 10 batches, and total of 50,000 gallons) to candidate third party companies, for a total of 50,000 gallons. 2. Perform demonstration runs (5000 gallons each, 10 batches, total of 50,000 gallons) to the third party company with the winning bid to acquire the technology. Third party company personnel will be trained to operate the facility at Argonne. 3. After the third party company sets up their new facility, Argonne will view operations and offer technology insight on the operation of that facility. 4. The Argonne Electrodialysis Pilot plant is returned to its initial condition prior to commencing the project with BASF. Mepiquat chloride and mepiquat pentaborate are cotton-industry plant-growth inhibiters, a class of pesticides categorized by several federal agencies, including FIFRA. An EPA Establishment Number under FIFRA is required to perform the R&D at ANL, and the Establishment Number has been issued previously. During operation of the electrodialysis unit, gaseous-hydrogen and oxygen will be generated at a rate of <100 L/h and <50 L/h, respectively. An air emissions permit is not required for these

emissions. Use of the process/storage tanks does not require modification of the existing air permit for ANL. For the proposed work, the project sponsor will supply the necessary feed materials for the batch process (300-600 gallons of 60% mepiquat chloride, 2500-5000 pounds of 99% boric acid crystals, and 80-160 gallons of 50% caustic soda). Each batch produces about 2500-5000 gallons of 10% mepiquat pentaborate solution and about 500-1000 gallons of 5% salt solution. Approximately 10-20 batches will be required. The mepiquat pentaborate solution and salt solution will be picked up by the project sponsor in 5000-gallon tanker trucks. Maximum material on site at ANL at any time for this project will be 10,000 gallons 60% mepiquat chloride, 10,000 gallons of 100% mepiquat pentaborate, 7,000 gallons of 5% salt solution, 50,000 pounds of 99% boric acid crystals, and 1000 gallons of 50% caustic soda. In addition, small amounts of chemicals for routine chemical analyses will be used.

Description of Affected Environment

The project will be performed in an existing high-bay area at Argonne; in Building 369. As mentioned above, the project sponsor will pick up all process streams generated during the project. The facility design includes indoor fittings between the process piping and the transfer hose that will be connected to the tanker truck. Pursuit of the proposed action will have no significant environmental impact. Project personnel have consulted with ANL subject matter experts to assure identification of and conformance with all applicable regulatory and contractual requirements for proper chemical storage and use, proper disposition and transportation of chemicals, and environmental protection and reporting (including the applicable SARA notification/reporting requirements).

Potential Environmental Effects

- Attach explanation for each "yes" response near bottom of form.
- **See Instructions for Completing Environmental Review Form.**

	Section A (Complete For All Projects)	Yes	No	Explanation
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	◉	○	Only the minimum amount of chemicals needed for the project will be used. Potentials spills from the facility will be contained by a dike designed to contain 15,000 gallons. The 5% salt solution will be located outside of the diked area in a 6,000-gallon double-walled tank. All penetrations in the tank are at the top to promote spill prevention. All unused reagents and process streams will be returned to the project sponsor via a carrier under contract to the sponsor.
2.	Air Pollutant Emissions	○	◉	During operation of the electrodialysis unit, gaseous-hydrogen and oxygen will be generated at a rate of <100 L/h and <50 L/h, respectively. An air emissions permit is not required for these emissions.
3.	Noise	○	◉	
4.	Chemical/Oil Storage/Use	◉	○	In facility chemicals: the facility has a capacity to store up to 9,000 gallons of mepiquat chloride reagent in an existing 10,000-gallon tank. Mepiquat pentaborate solution produced will be stored in a second existing 10,000-gallon tank, and will be shipped to the project sponsor in 5,000-gallon tankers. Additionally, 6,000 gallons of solution circulate through the electrodialysis stack during processing. Spill containment: potentials spills from the facility will be contained by a dike, designed to contain 15,000 gallons. In addition, a barrier curtain encloses the facility to minimize potential leaks from spilling outside the diked area. The 5% salt solution will be located outside of the diked area in a 6,000-gallon double-walled tank. All penetrations in the tank are at the top to minimize spills. Temporary storage outside of processing system: up to three 320-gallon totes of 50% caustic soda and hydrochloric acid will be held on their own spill containments during processing. Up to Up to 50,000 pounds of boric acid (delivered in 40,000 lb shipments) will be stored in the High Bay in 2500 lb "supersacks". Analytical chemistry: Only minimal amounts (kilogram quantities) of chemicals required for chemical analysis of process solutions will be used. Hazards of these chemicals includes: Acids, bases, toxic, and dust potential. Hazards and controls for these hazards are documented in a Work Planning and Control Document.
5.	Pesticide Use	○	◉	Mepiquat chloride and mepiquat pentaborate are categorized as pesticides by federal agencies. An EPA Establishment Number under FIFRA is required to process these chemicals. However, the proposed project will not include any planned application or dispersion of the chemicals to the environment.
6.	**Toxic Substances Control Act (TSCA)**			

	Substances				
	6a.	Polychlorinated Biphenyls (PCBs)	○	◉	
	6b.	Asbestos or Asbestos Containing Materials	○	◉	
	6c.	Other TSCA Regulated Substances	○	◉	
	6d.	Import or Export of Chemical Substances	○	◉	
7.	Biohazards		○	◉	
8.	Effluent/Wastewater (If yes, see question #12 and contact Peter Lynch (HSE) at 2-4582 or lynch@anl.gov)		○	◉	
9.	**Waste Management**				
	9a.	Construction or Demolition Waste	○	◉	
	9b.	Hazardous Waste	○	◉	All unused reagents and process streams will be returned to the sponsor via a carrier under contract to the sponsor.
	9c.	Radioactive Mixed Waste	○	◉	
	9d.	Radioactive Waste	○	◉	
	9e.	Asbestos Waste	○	◉	
	9f.	Biological Waste	○	◉	
	9g.	No Path to Disposal Waste	○	◉	
	9h.	Nano-material Waste	○	◉	
10.	Radiation		○	◉	
11.	Threatened Violation of ES&H Regulations or Permit Requirement		○	◉	
12.	New or Modified Federal or State Permits		◉	○	An EPA Establishment Number under FIFRA is required to ship product to the sponsor. This has been issued for the previous project and is still valid. It must be renewed annually.
13.	Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste		○	◉	
14.	Public Controversy		○	◉	
15.	Historic Structures and Objects		○	◉	

16.	Disturbance of Pre-existing Contamination	○	◉	
17.	Energy Efficiency, Resource Conserving, and Sustainable Design Features	○	◉	
Section B (For Projects that Occur Outdoors)		**Yes**	**No**	
18.	Threatened or Endangered Species, Critical Habitats, and/or other Protected Species	○	◉	
19.	Wetlands	○	◉	
20.	Floodplain	○	◉	
21.	Landscaping	○	◉	
22.	Navigable Air Space	○	◉	
23.	Clearing or Excavation	○	◉	
24.	Archaeological Resources	○	◉	
25.	Underground Injection	○	◉	
26.	Underground Storage Tanks	○	◉	
27.	Public Utilities or Services	○	◉	
28.	Depletion of a Non-Renewable Resource	○	◉	
Section C (For Projects Outside of ANL)		**Yes**	**No**	
29.	Prime, Unique, or Locally Important Farmland	○	◉	
30.	Special Sources of Groundwater (such as sole source aquifer)	○	◉	
31.	Coastal Zones	○	◉	
32.	Areas with Special National Designations (such as National Forests, Parks, or Trails)	○	◉	
33.	Action of a State Agency in a State with NEPA-type Law	○	◉	
34.	Class I Air Quality Control Region	○	◉	

Categorical Exclusion

Other (Use field below to enter other categorical exclusion)

An ERF for this activity was approved Nov. 6, 2001, (AAO-CX-150) and also approved as amended on Dec. 5, 2002 and in 2008. In 2011, we went to renew the ERF and the NEPA owner and DOE's signature was not required per attached email communication.

ANL NEPA Reviewer Use Only

- ○ My approval is the final approval necessary
- ◉ This form requires additional approval from DOE

To be Completed by DOE/ASO

Section D	Yes	No
Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal?	○	◉
Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts?	○	◉
If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211?	○	○
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?	◉	○
If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded: This project may be excluded under the following Categorical Exclusion: 10 CFR Part 1021, Subpart D, Appendix B, Category: B 3.6 Small-scale research and development, laboratory operations, 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.		

Attachments

File Description: sow View Attachment

File Description: FIFRA View Attachment

File Description: 2011 ERF email View Attachment

Comments

Add Approver

Approver Name	Approver Badge	Reason	Delete
Hryn, John N.	45247	Supervisor	
McGhee, Ian Riley	272547	ECR	
Mesarch, Matthew B	291600	TSCA, Air Emissions	
Lynch, Peter L.	46304	RCRA,FIFRA	

Notifications

The approval notification email will be copied to the people listed below.

Badge	Name	Division	Delete
45247	Hryn, John N.	AMD	
272547	McGhee, Ian Riley	WSH	
49490	Harris, Amy M.	WSH	
52920	Wozny, Bryan M.	WSH	

ASO-CX Number

ASO-CX- 365

Comments:

ERF for this activity was approved Nov. 6, 2001, (AAO-CX-150) and also approved as amended on Dec. 5, 2002 and in 2008 and in 2011. See attached paperwork and email from NEPA Owner at the time. DOE ASO tracks this CX approval as ASO-CX-365.

Approval

Approver	Action	Date Routed	Action Date	Approval Reason / Comments	Approval Type
Harris, Amy M.	APPROVED	2019-10-09	2019-10-09 08:42:32.0	Creator :	PRIMARY
Harris, Amy M.	APPROVED	2019-10-09	2019-10-09 08:42:32.0	Allows access to the form :	PRIMARY
Harris, Amy M.	APPROVED	2019-10-09	2019-10-09 08:42:32.0	Allows access to the form :	PRIMARY
Harris, Amy M.	APPROVED	2019-10-09	2019-10-09 08:42:32.0	Project Manager :	PRIMARY
Hryn, John N.	APPROVED	2019-10-09	2019-10-09 09:52:08.0	Supervisor :	PRIMARY
Lynch, Peter L.	APPROVED	2019-10-09	2019-10-13 13:04:46.0	RCRA,FIFRA : **If sponsor will be removing any RCRA hazardous waste, or nonhazardous waste, provide NWM with waste manifesting paperwork.Coordinate with QAS SME in early January for annual FIFRA reporting.**	PRIMARY
McGhee, Ian Riley	APPROVED	2019-10-09	2019-10-09 08:48:37.0	ECR :	PRIMARY
Mesarch, Matthew B	APPROVED	2019-10-09	2019-10-14 11:25:22.0	TSCA, Air Emissions :	PRIMARY
Harris, Amy M.	APPROVED	2019-10-09	2019-10-09 08:42:32.0	NEPA Owner Approval for Argonne Environmental Review :	PRIMARY
Ptak, Jill S.	APPROVED	2019-10-14	2019-11-12 15:28:51.0	ANL NEPA Reviewer : **Project duration is understood to last approximately two years**	PRIMARY
Hellman, Karen B.	APPROVED	2019-11-12	2019-11-18 16:08:30.0	ANL-985 Review and Approval :	PRIMARY
Lee, Alice J. for Kearns, Paul K.	APPROVED	2019-11-18	2019-11-18 21:12:21.0	ANL-985 ANL COO Review and Approval :	DELEGATE
Joshi, Kaushik N.	APPROVED	2019-11-18	2019-11-19 11:28:34.0	ANL-985 DOE-ASO Review and Approval : **Approval of this Categorical Exclusion by DOE is tracked as ASO-CX-365.**	PRIMARY
Siebach, Peter Rudolf	APPROVED	2019-11-19	2019-11-19 14:09:29.0	ANL-985 DOE NEPA Compliance Officer Review and Approval :	PRIMARY
