Environmental Review Form for Argonne National Laboratory

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Your Form ID:	ANL-985-1034
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Created By:	Woodford, John B.

Creator

Badge:	**51790**	Name:	**Woodford, John B.**
Cost Center:	**254**	Division:	**HSE**
Job Title:	**Safety Specialist 5**	Employee Type:	**Regular Full-Time Exempt**
Building:	**208**	Lab Extension:	**2-0910**

General Information

Project/Activity Title: Sodium/CO2 Interaction Experiment Product Handling

ASO NEPA Tracking No.: Type of Funding:

B & R Code: RC0508 Identifying Number: NE18-001

SPP Proposal Number: CRADA Proposal Number:

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

Other (explain):

List appropriate NEPA Owners:

Division: NE NEPA Owner:

Financial Plans

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

Cost Center: Project: Phase: Task:

Description of Proposed Action

During a sodium-CO2 reaction experiment in the SNAKE (Supercritical CO2-Na Kinetics Experiment) apparatus, at least 4.5 kg solid reaction products (sodium carbonate, sodium oxide, carbon, possibly sodium bicarbonate, possible traces of carbon monoxide, possible traces of sodium oxalate, along with small quantities of unreacted sodium) are formed as a result of the reaction between approximately 100 g CO2 and approximately 5000 g sodium, and collect in the test vessel. In order to run the next experiment the solid reaction products must be removed from the test vessel and characterized, and the test vessel must be cleaned. This evaluation covers the potential environmental impact of handling the solid reaction products, preparing them for chemical evaluation, and disposing of them once evaluation has been completed. Depending on the humidity and air temperature in the vicinity of the operation, exposed sodium will slowly react with water vapor in the air. This will generate a small amount of heat, as well as sodium oxide. Should there be substantial sodium oxide smoke generated, sand will be available to cover the sodium, and the material will be transferred to the scrubber for safe treatment. The presence of sodium oxalate has been inferred, but not experimentally confirmed in previous test runs. Even if present it is not a RCRA-listed hazardous waste material despite its toxicity.

Description of Affected Environment

The SNAKE apparatus is in the Bldg. 206 High Bay, and the characterization work takes place in an adjacent laboratory (C111). Waste disposal and sodium treatment (if necessary) would take place at either the Bldg. 206 scrubber or the Bldg. 308 scrubber.

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
	Project evaluated for Pollution Prevention and Waste Minimization opportunities			The minimum amount of sodium necessary for the test is used, reducing

1.	and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable		◉	○	the mass of waste products to dispose of.
2.	Air Pollutant Emissions		◉	○	There is the potential for release of carbon monoxide in trace amounts. Detectors are in place for personnel protection. Amounts emitted were transient and less than 100 ppm.
3.	Noise		○	◉	
4.	Chemical/Oil Storage/Use		◉	○	The work entails handling the reaction products described above.
5.	Pesticide Use		○	◉	
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	◉	○	The bulk of the reaction product mass is sodium carbonate, which is not a RCRA characteristic hazardous waste. However, traces of sodium metal may be found in the reaction products or adhering to system components. This material will be treated in one of the permitted scrubbers managed by NE Division.
	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		○	◉	
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		◉	○	Minimizing amount of sodium used conserves resources.
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

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/activity can be excluded under the following categories of Appendix B: B 3.6 Small-scale research and development, laboratory operations, and pilot projects; and B 6.2 Waste collection, treatment, stabilization, and containment facilities.

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:

Comments

None.

Add Approver

Approver Name	Approver Badge	Reason	Delete

Notifications

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

Badge	Name	Division	Delete

ASO-CX Number

ASO-CX- 352

Comments:

This NEPA ERF categorical exclusion (CX) is tracked as ASO-CX-352 Sodium/CO2 Interaction Experiment Product Handling.

Approval

Approver	Action	Date Routed	Action Date	Approval Reason / Comments	Approval Type
Woodford, John B.	APPROVED	2018-03-27	2018-03-27 17:29:27.0	Creator :	PRIMARY
Woodford, John B.	APPROVED	2018-03-27	2018-03-27 17:29:27.0	Project Manager :	PRIMARY
Brocker, William A.	APPROVED	2018-03-27	2018-03-28 13:35:58.0	NEPA Owner Approval for Argonne Environmental Review :	PRIMARY
Ptak, Jill S.	APPROVED	2018-03-28	2018-04-10 13:50:31.0	ANL NEPA Reviewer :	PRIMARY
Hellman, Karen B.	APPROVED	2018-04-10	2018-04-23 10:30:37.0	ANL-985 Review and Approval :	PRIMARY
Stine, Gail Y.	APPROVED	2018-04-23	2018-04-26 15:00:49.0	ANL-985 Review and Approval :	PRIMARY
Lee, Alice J. for Kearns, Paul K.	APPROVED	2018-04-26	2018-04-26 15:08:07.0	ANL-985 ANL COO Review and Approval :	DELEGATE
Joshi, Kaushik N.	APPROVED	2018-04-26	2018-04-30 11:53:11.0	ANL-985 DOE-ASO Review and Approval : **This ERF CX is tracked as ASO-CX-352**	PRIMARY
Siebach, Peter R.	APPROVED	2018-04-30	2018-05-01 09:36:47.0	ANL-985 DOE NEPA Compliance Officer Review and Approval :	PRIMARY