Environmental Review Form for Argonne National Laboratory

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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: Stabilization and Storage of Potentially-Pyrophoric Powdered Materials

ASO NEPA Tracking No.:	Type of Funding:	
B & R Code:	Identifying Number: CFC001	
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: EGS 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

Within two controlled areas in the 200 and 300 areas at Argonne, there are tens of kilograms of finely-divided depleted or natural uranium metal. This legacy material is potentially-pyrophoric or self-heating, and much of it is stored in aging containers. In most cases, the material was originally packaged under an inert atmosphere (typically argon or nitrogen) and sealed for storage. However, due to the age of some containers, leaks can (or have) developed in the packaging (most often, plastic lids) leading to unintended air ingress and subsequent reaction with the pyrophoric or self-heating material. A number of containers hold more than 2.5 kg uranium metal, exceeding the ASO-CX-325 generic categorical exclusion (CX) threshold for a bench-scale laboratory activity. Hence, a DOE NEPA determination is required before activities with those containers can take place.This action covers processes for handling containers of depleted or natural uranium powder for the purposes of inspecting, characterizing, and stabilizing the material. Methods for stabilization and further management would include: i) overpacking potentially damaged containers in larger containers, filling the larger containers with argon or other appropriate inert gas, and sealing for short-term stable storage; ii) moving containers of material with potential programmatic use to a cabinet maintained under an inert atmosphere for long-term stable storage; iii) placing the material under vacuum in a desiccator or other container designed for vacuum use; or iv) covering the material with mineral oil or Portland cement in an appropriate container to stabilize for disposal. Material that has been prepared for disposal by being covered in mineral oil or Portland cement would be removed by Waste Management personnel using their procedures and processes. Material that is to be retained for future programmatic use would continue to be stored in a location with HEPA-filtered exhaust after it has been placed into an inert environment (inert gas or vacuum). At this point, personnel from the Engineering, Operations, & Facilities (EOF) and Nuclear Science & Engineering (NSE) Divisions are designing a cabinet for long-term storage of finely divided uranium under a continuous low flow of argon. Material stored in the cabinet would be monitored, at a minimum, by monthly checks of the argon supply. Argonne Fire Protection and HSE-Industrial Hygiene are engaged in the design review process. This cabinet would be kept where the bulk of the potentially-useful legacy uranium metal is to be stored. In addition to the legacy material described above, personnel from the Chemistry & Fuel Cycle Technologies Division (CFC) will be receiving 10 kg of depleted uranium/molybdenum alloy powder for a research project. Although current research plans for this material call for using most or all of it, it is possible that these plans will change. If so, disposition of quantities exceeding the ASO-CX-325 generic CX bench-scale threshold would take place according to the process laid out here. Note that on receipt the material will be stored under vacuum. The material is to be stored in a laboratory in the 200

area, but will be moved to another building in the 200 area in the next one or two years when the research effort it is to be used for moves. If necessary, excess powder would be covered with mineral oil or Portland cement in an appropriate container and disposed of through Waste Management according to their process.

Description of Affected Environment

The bulk (~70 kg) of the legacy material of interest is stored in a cabinet in a laboratory in the 200 area. In addition over 30 kg legacy depleted uranium saw chips are stored in a high bay in the 300 area, and as noted above 10 kg uranium alloy powder will be received and stored in one of two laboratories in the 200 area. In the general case, per input from Argonne Fire Protection stabilization must take place in an area with HEPA filtration, and as much of the work as possible must take place in a chemical fume hood with HEPA-filtered exhaust. The bulk of the legacy material is stored in an area with HEPA-filtered exhaust via the adjacent laboratory, and HSE-IH has conducted a ventilation study to verify airflow. Stabilization would take place in that adjacent laboratory, which contains a fume hood which also has HEPA-filtered exhaust. Both laboratories where the uranium alloy powder would be stored and potentially stabilized for disposal have HEPA-filtered exhaust, and also contain hoods with HEPA-filtered exhaust. The high bay where the legacy depleted uranium saw chips are stored does not have HEPA-filtered exhaust. Stabilization would take place in a high bay elsewhere in the same building complex, which not only has HEPA-filtered exhaust but also a walk-in hood with HEPA-filtered exhaust. Movement of the material from its current location to the work area would be performed under the supervision of Argonne Material Control & Accountability personnel, and according to their processes.

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		◉	○	See individual items below.
2.	Air Pollutant Emissions		◉	○	No air emissions other than incidental release of argon gas are anticipated to take place. Handling the finely divided uranium, however, does offer the potential for ignition of the metal itself, or (more likely, but still not expected) the potential for self-heating that ignites other combustible material in the vicinity (such as a plastic container). To preclude release of combustion products to the environment in the event of a fire, the work activity would be required to take place in a room with HEPA-filtered exhaust ventilation as specified in the Description of Affected Environment. Class D fire extinguishing material would be kept on hand to control such a fire, and the Argonne Fire Department (AFD) would be notified when work is to take place. AFD personnel have been involved in the work planning and control process for this activity.
3.	Noise		○	◉	
4.	Chemical/Oil Storage/Use		◉	○	Argon gas would be kept on hand to inert the finely divided uranium batches, and mineral oil or Portland cement would be used to passivate uranium for disposal. Containers would be selected to minimize the amount of argon or oil necessary. The vacuum pump used to evacuate the desiccator for uranium alloy powder storage uses less than 2L oil.
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	○	◉	
	9c.	Radioactive Mixed Waste	○	◉	
	9d.	Radioactive Waste	◉	○	Some of the uranium powder would be disposed of. In addition, uranium-contaminated personal protective equipment such as gloves, shoe covers, and coveralls would be generated in the event of a spill. All of this material would be treated as low-level waste.
	9e.	Asbestos Waste	○	◉	
	9f.	Biological Waste	○	◉	
	9g.	No Path to Disposal Waste	○	◉	
	9h.	Nano-material Waste	○	◉	
10.		Radiation	◉	○	Depleted and natural uranium are low-activity radioactive materials.
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	◉	○	Containers will be as small as reasonable to minimize argon/Portland cement used.
Section B (For Projects that Occur Outdoors)			**Yes**	**No**	
		Threatened or			

18.	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:

The stabilization and storage of powdered depleted or natural uranium can be excluded under the following categories of Appendix B of Subpart D of 10 CFR Part 1021: B 1.28 Placing a facility in an environmental safe condition, 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

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- 355

Comments:

This ERF CX is tracked as ASO-CX-355.

Approval

Approver	Action	Date Routed	Action Date	Approval Reason / Comments	Approval Type
Woodford, John B.	APPROVED	2018-05-16	2018-05-16 08:56:18.0	Creator :	PRIMARY
Woodford, John B.	APPROVED	2018-05-16	2018-05-16 08:56:18.0	Project Manager :	PRIMARY
Riel, Roberta T. for Brocker, William A.	APPROVED	2018-05-16	2018-05-16 09:25:42.0	NEPA Owner Approval for Argonne Environmental Review :	DELEGATE
Ptak, Jill S.	APPROVED	2018-05-16	2018-05-16 10:24:41.0	ANL NEPA Reviewer :	PRIMARY
Budd, Jason R. for Hellman, Karen B.	APPROVED	2018-05-16	2018-05-17 16:11:54.0	ANL-985 Review and Approval :	DELEGATE
Stine, Gail Y.	APPROVED	2018-05-17	2018-05-22 10:41:46.0	ANL-985 Review and Approval :	PRIMARY
Lee, Alice J. for Kearns, Paul K.	APPROVED	2018-05-22	2018-05-22 11:01:21.0	ANL-985 ANL COO Review and Approval :	DELEGATE
Joshi, Kaushik N.	APPROVED	2018-05-22	2018-05-22 11:45:29.0	ANL-985 DOE-ASO Review and Approval : **ASO-CX-355**	PRIMARY
Siebach, Peter R.	APPROVED	2018-05-22	2018-05-22 12:01:31.0	ANL-985 DOE NEPA Compliance Officer Review and Approval :	PRIMARY