



Environmental Review Form for Argonne National Laboratory

Form: ANL-985
Version: 4
Your Form ID: ANL-985-639
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Date: 12/23/2015 11:05:07 AM
Created By: Woodford, John B.

Creator

Badge: 51790 Name: Woodford, John B.
Cost Center: 115 Division: NE
Job Title: Manager, ESH/QA Operations Employee Type: Regular Full-Time Exempt
Building: 208 Lab Extension: 2-0910

General Information

Project/Activity Hands-on Operation of Countercurrent Centrifugal Contactors with In-Line/On-Line
Title: Instrumentation Measurements

ASO NEPA Tracking No.: Type of Funding:
B & R Code: NN2001000 Identifying Number: NN2001000
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:

Cost Code

Task: 67720 Center: 115 Project: Activity:

Description of Proposed Action

This is research on spent fuel reprocessing via solvent extraction using centrifugal contactors, to measure the status of the contactors and concentration of species of interest using in-line/on-line instrumentation. In-line UV-vis (ultraviolet-visible) fiber optic probes are used to measure the concentration of U and Pu during operation of the UREX and PUREX solvent extraction flowsheets. The purpose of the experiments is to collect data to validate modeling results calculated by Argonne's solvent extraction code AMUSE (Argonne Model for Universal Solvent Extraction). In addition, data from such experiments has been and continues to be provided to other groups at Argonne and at other national laboratories for the purposes of developing/studying the safeguards aspects of primarily non-PUREX solvent extraction flowsheets. Countercurrent centrifugal contactors experiments include work in both uncontrolled and radiologically controlled laboratories. Most of the contactor work (and all of the radiological contactor work) is small in scale. However, two single contactors used for nonradiological studies can use up to 100 L aqueous (dilute mineral acid) and organic (generally an alkane with added tributyl phosphate) phases.

Description of Affected Environment

The work takes place in Bldg. 205, Rooms H-101 (radiological) and X-158 (nonradiological). Both of these areas are laboratories with adequate ventilation, and the work takes place in vac-frame hoods. The contactors are in secondary containment in case of spills.

Potential Environmental Effects

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

Table with 4 columns: 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	<input checked="" type="radio"/>	<input type="radio"/>	See below for details.
2.	Air Pollutant Emissions	<input type="radio"/>	<input checked="" type="radio"/>	
3.	Noise	<input type="radio"/>	<input checked="" type="radio"/>	
4.	Chemical/Oil Storage/Use	<input checked="" type="radio"/>	<input type="radio"/>	Up to 100 L dilute mineral acid (most often nitric) and up to 100 L solvent are used in the largest contactors.
5.	Pesticide Use	<input type="radio"/>	<input checked="" type="radio"/>	
6.	<b>Toxic Substances Control Act (TSCA) Substances</b>			
6a.	Polychlorinated Biphenyls (PCBs)	<input type="radio"/>	<input checked="" type="radio"/>	
6b.	Asbestos or Asbestos Containing Materials	<input type="radio"/>	<input checked="" type="radio"/>	
6c.	Other TSCA Regulated Substances	<input checked="" type="radio"/>	<input type="radio"/>	Nitric acid, kerosene, and dodecane are all regulated under TSCA.
6d.	Import or Export of Chemical Substances	<input type="radio"/>	<input checked="" type="radio"/>	
7.	Biohazards	<input type="radio"/>	<input checked="" type="radio"/>	
8.	Effluent/Wastewater (If yes, see question #12 and contact Peter Lynch (FMS-SEP) at 2-4582 or lynch@anl.gov)	<input type="radio"/>	<input checked="" type="radio"/>	
9.	<b>Waste Management</b>			
9a.	Construction or Demolition Waste	<input type="radio"/>	<input checked="" type="radio"/>	
9b.	Hazardous Waste	<input checked="" type="radio"/>	<input type="radio"/>	At the end of the process, dilute nitric acid and organic solvent must be disposed of.
9c.	Radioactive Mixed Waste	<input checked="" type="radio"/>	<input type="radio"/>	In the radiological extraction, some radioactive species are left in the organic phase and in the aqueous acid phase.
9d.	Radioactive Waste	<input checked="" type="radio"/>	<input type="radio"/>	This work studies the extraction of plutonium and uranium, so all of the hardware involved will have to be disposed of as low-level waste once the project has been completed, in addition to contaminated personal protective equipment and other items.
9e.	PCB or Asbestos Waste	<input type="radio"/>	<input checked="" type="radio"/>	
9f.	Biological Waste	<input type="radio"/>	<input checked="" type="radio"/>	
9g.	No Path to Disposal Waste	<input type="radio"/>	<input checked="" type="radio"/>	
9h.	Nano-material Waste	<input type="radio"/>	<input checked="" type="radio"/>	
10.	Radiation	<input checked="" type="radio"/>	<input type="radio"/>	The subject of this research is the extraction of uranium and plutonium, so there is a small direct radiation hazard during the work.
11.	Threatened Violation of ES&H Regulations or Permit Requirement	<input type="radio"/>	<input checked="" type="radio"/>	
12.	New or Modified Federal or State Permits	<input type="radio"/>	<input checked="" type="radio"/>	
13.	Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste	<input type="radio"/>	<input checked="" type="radio"/>	
14.	Public Controversy	<input type="radio"/>	<input checked="" type="radio"/>	
15.	Historic Structures and Objects	<input type="radio"/>	<input checked="" type="radio"/>	
16.	Disturbance of Pre-existing Contamination	<input type="radio"/>	<input checked="" type="radio"/>	
17.	Energy Efficiency, Resource Conserving, and Sustainable Design Features	<input checked="" type="radio"/>	<input type="radio"/>	The work performed in the large contactors does not include chemical extraction, so the solvent and aqueous phases are pumped through the contactor in a continuous loop. This serves to minimize the total amount of material used.
<b>Section B (For Projects that Occur Outdoors)</b>		<b>Yes</b>	<b>No</b>	
18.	Threatened or Endangered Species, Critical Habitats, and/or other Protected Species	<input type="radio"/>	<input checked="" type="radio"/>	
19.	Wetlands	<input type="radio"/>	<input checked="" type="radio"/>	

20.	Floodplain	<input type="radio"/>	<input checked="" type="radio"/>	
21.	Landscaping	<input type="radio"/>	<input checked="" type="radio"/>	
22.	Navigable Air Space	<input type="radio"/>	<input checked="" type="radio"/>	
23.	Clearing or Excavation	<input type="radio"/>	<input checked="" type="radio"/>	
24.	Archaeological Resources	<input type="radio"/>	<input checked="" type="radio"/>	
25.	Underground Injection	<input type="radio"/>	<input checked="" type="radio"/>	
26.	Underground Storage Tanks	<input type="radio"/>	<input checked="" type="radio"/>	
27.	Public Utilities or Services	<input type="radio"/>	<input checked="" type="radio"/>	
28.	Depletion of a Non-Renewable Resource	<input type="radio"/>	<input checked="" type="radio"/>	
<b>Section C (For Projects Outside of ANL)</b>		<b>Yes</b>	<b>No</b>	
29.	Prime, Unique, or Locally Important Farmland	<input type="radio"/>	<input checked="" type="radio"/>	
30.	Special Sources of Groundwater (such as sole source aquifer)	<input type="radio"/>	<input checked="" type="radio"/>	
31.	Coastal Zones	<input type="radio"/>	<input checked="" type="radio"/>	
32.	Areas with Special National Designations (such as National Forests, Parks, or Trails)	<input type="radio"/>	<input checked="" type="radio"/>	
33.	Action of a State Agency in a State with NEPA-type Law	<input type="radio"/>	<input checked="" type="radio"/>	
34.	Class I Air Quality Control Region	<input type="radio"/>	<input checked="" type="radio"/>	

### Categorical Exclusion

Indoor Bench-Scale Research Projects and Conventional Laboratory Operations within Existing Buildings at Argonne National Laboratory

### ANL NEPA Reviewer Use Only

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

### Attachments

**File Description:** Cover memo to J. Livengood from P. Kearns [View Attachment](#)

**File Description:**

**File Description:**

### Comments

Please review attached cover memo to J. Livengood from P. Kearns above.

### Add Approver

Approver Name	Approver Badge	Reason	Delete
Riel, Roberta T.	30889	Division NEPA Owner (unlisted)	<input type="checkbox"/>

### Notifications

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

Badge	Name	Division	Delete
			<input type="checkbox"/>

### ASO-CX Number

ASO-CX-

Comments:

## Approval

<u>Approver</u>	<u>Action</u>	<u>Date Routed</u>	<u>Action Date</u>	<u>Approval Reason / Comments</u>	<u>Approval Type</u>
Woodford, John B.	APPROVED	2015-12-23	2015-12-23 11:05:55.0	Creator :	PRIMARY
Woodford, John B.	APPROVED	2015-12-23	2015-12-23 11:05:55.0	Project Manager :	PRIMARY
Riel, Roberta T.	APPROVED	2015-12-23	2015-12-23 11:06:46.0	Division NEPA Owner (unlisted) :	PRIMARY
Brocker, William A.	APPROVED	2015-12-23	2015-12-23 13:40:48.0	NEPA Owner Approval for Argonne Environmental Review :	PRIMARY
Stauber, Joel V.	APPROVED	2015-12-23	2016-01-06 10:39:24.0	ANL NEPA Reviewer :	PRIMARY
Hellman, Karen B.	APPROVED	2016-01-06	2016-01-06 15:09:23.0	ANL-985 Review and Approval :	PRIMARY
Stine, Gail Y.	APPROVED	2016-01-06	2016-01-06 15:14:24.0	ANL-985 Review and Approval :	PRIMARY
Kearns, Paul K.	APPROVED	2016-01-06	2016-01-11 14:53:18.0	ANL-985 ANL COO Review and Approval :	PRIMARY
Joshi, Kaushik N.	APPROVED	2016-01-11	2016-01-28 12:06:57.0	ANL-985 DOE-ASO Review and Approval : <b>Approval Number is ASO-CX-322.</b>	PRIMARY
Siebach, Peter R.	APPROVED	2016-01-28	2016-01-28 15:45:45.0	ANL-985 DOE NEPA Compliance Officer Review and Approval : <b>Appendix B 3.6 Small-scale research and development, laboratory operations, and pilot projects.</b>	PRIMARY

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