

ONLINE 7-ID SECTOR ORIENTATION

TIME RESOLVED
RESEARCH GROUP

X-RAY SCIENCE DIVISION



Online 7-ID Sector Orientation

Introduction

This is part 1 of 7-ID Sector Orientation. Please read through all slides as they contain important safety procedures, rules and contact information that will be important during your time at both our beamline and Argonne.

Part 2 of Sector Orientation will include a tour of 7-ID along with additional information from beamline staff that is essential for all visiting users.

Both Parts 1 & 2 must be completed before performing any work at 7-ID.

7-ID BEAMLINE CONTACTS

Station	Contact	Office phone	Cell Phone	Email
▪ 7-ID	Don Walko	2-0271	630.740.3549	d-walko@anl.gov
▪ 7-ID & 25-IDE	Burak Guzelturk	2-0165	650.561.2481	burakg@anl.gov
▪ 7-ID	Jin Wang	2.9125	630.734.9188	wangj@anl.gov
▪ 7-ID	Haidan Wen	2-0278	734.507.1879	wen@anl.gov
▪ 7-ID & 25-IDE	Don Jensen	2-8611	708.774.5231	dpjensen@anl.gov
▪ 7-ID & 25-IDE	Rick Spence	2-1290	630.247.5870	spence@anl.gov

TRR Group Leader: XIAOYI ZHANG

Unless previously arranged,
Do NOT Call staff between the hours of 10pm and 6am.

In the event of an emergency, call **911** from a lab phone
or **630/252-1911** from your cell phone.

IN CASE OF EMERGENCY

- Call 911 from any Argonne phone
- Call 630/252-1911 from cell phone or off-site
- 7-ID location is blg. 400, column 85 if contacting 911
- In case of fire, exit the building via the nearest fire exit.
- **Do NOT** use fire extinguisher unless you are trained in their proper use and can do so safely.
- The nearest Fire extinguisher is at column 85.
- The nearest fire alarms are at columns 82 and 88.
- **Tornado shelters** include the men's & women's restrooms as well as the 432 machine shop.



Building Evacuation Route from 7-ID beamline:

Exit the building through any of the 432 exit doors. Walk straight out of the building to the road. Turn right and follow the road until you're in front of the building 435 main entrance. Wait outside until a PA announcement gives clearance to return to building 432.

NON-EMERGENCIES

For non-emergencies, contact the Floor Coordinator (FC)

Floor Coordinator	On-call Pager:	2-0101	Leave phone # after beep
Floor Coordinator	On-call Cell Phone:	630.863.0808	FC On-Call Cell Phone
Local FC – 432	Bruno Fieramosca	Phone: 2-0201	FC Office 432- C001

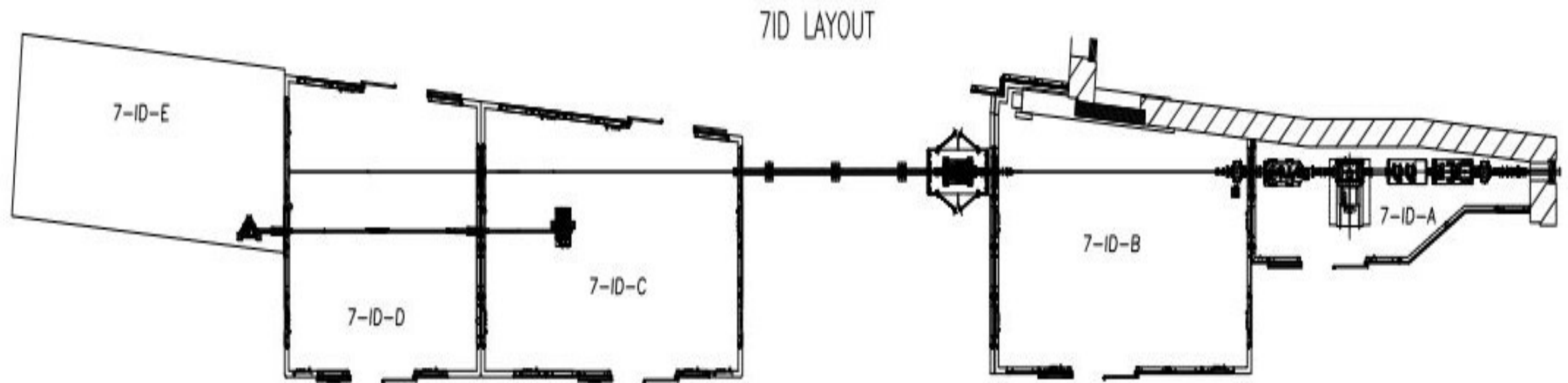
During normal operations, Floor Coordinators are on-site for the following hours:

Monday - Friday from 8am – 10pm

Saturday - Sunday from 8am – 6pm

APS Safety Staff: **Safety Staff Webpage**

7-ID BEAMLINE LAYOUT



EXPERIMENT SAFETY ASSESSMENT FORM

The Experiment Safety Assessment Form (ESAF) is required for all APS experiments and must be fully approved before any work begins at APS. The ESAF must accurately define all intended work and should include the following:

- Materials (chemicals, gases, cryogenics) and equipment (furnaces, power supplies, etc.) must be listed on ESAF.
- Activities including sample handling (mixing, grinding, loading, heating, cooling, applied voltage, etc.) as well as associated hazards and actions taken to mitigate hazards (sample containment, signage, SOPs, monitoring, PPE, etc.). Note: PPE defined on pg. 17.
- Users must have all required training completed prior to ESAF approval. All trainings are available online except for in-person Sector Orientation.

Work must be conducted within the scope of the ESAF & the SOP. Any changes to the ESAF's scope of work requires additional approval before beginning this work.

Talk to beamline staff for assistance.

APS ESAF - Experiment Hazard Control Plan Report

Printed date: 05/16/2018

PEN: 11-IDBCD-2018-0130 Experiment ID: 178719 (Beamline set up)
ID Start Date: 01/30/2018 08:00 AM ID End Date: 04/25/2018 08:00 AM
Spokesperson: Beyer GUP ID:
Title: Alignment and Commissioning for 11-ID-A: 2018-1

On-Site Spokesperson

The information on this hazard control plan is accurate and complete. All materials/samples to be used and hazards have been identified. All users are listed. Activities are restricted to the scope of work declared in the ESAF.

Name	Institution	Phone
Kevin Beyer	Argonne National Laboratory	

Materials Hazards

Material	Qty	Tox	Bio	Flam	Rad	Carcin	Corro	Oxid	Expl	Nano	Othe	Disp	Lab
Helium gas		N	N	N	N	N	N	N	N	N	N	N	N
Isopropanol		Y	N	Y	N	N	N	N	N	N	N	Y	N
Nitrogen gas		N	N	N	N	N	N	N	N	N	N	N	N

Beamline Laboratory Used

Beamline Laboratory is not used.

Equipment Hazards

Cryogenics

Electrical Equipment (includes any equipment that will be plugged into an electrical outlet)

Experiment Description

Commissioning and alignment activities in 11-ID-A. Activities include vacuum work, alignment & mechanical adjustments, and electronic interfacing on equipment such as slits, mirrors, monochromators, beam position monitors, x-ray lenses, cryo-cooled optics, and the associated motion control, vacuum, mechanical and electrical systems.

Attached File: Beamline_Work_Control-id178719.pdf

Hazard Classes That Apply

Base	Cryo	High T	Laser	High P	Chem	BSL	Rad	Magnet	RF	EE	High V	Nano	Other
<input checked="" type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.1	<input type="checkbox"/> 4.2	<input type="checkbox"/> 5.1	<input checked="" type="checkbox"/> 6.0	<input type="checkbox"/> 7.1	<input type="checkbox"/> 8.1	<input type="checkbox"/> 9.0	<input type="checkbox"/> 10.1	<input checked="" type="checkbox"/> 12.0	<input type="checkbox"/> 13.0	<input type="checkbox"/> 14.1	<input type="checkbox"/> 15.1
		<input type="checkbox"/> 3.2	<input type="checkbox"/> 4.3a	<input type="checkbox"/> 5.2	<input type="checkbox"/> 6.1	<input type="checkbox"/> 7.2	<input type="checkbox"/> 8.2	<input type="checkbox"/> 9.0N	<input type="checkbox"/> 10.2			<input type="checkbox"/> 14.2	<input type="checkbox"/> 15.2
		<input type="checkbox"/> 3.3	<input type="checkbox"/> 4.3b	<input type="checkbox"/> 5.3	<input type="checkbox"/> 6.2	<input type="checkbox"/> 7.3	<input type="checkbox"/> 8.3					<input type="checkbox"/> 14.3	<input type="checkbox"/> 15.3
		<input type="checkbox"/> 3.4	<input type="checkbox"/> 4.4	<input type="checkbox"/> 5.4	<input checked="" type="checkbox"/> 6.3	<input type="checkbox"/> 7.4							
			<input type="checkbox"/> 4.5	<input type="checkbox"/> 5.4N	<input checked="" type="checkbox"/> 6.4	<input type="checkbox"/> 7.5							
			<input type="checkbox"/> 4.6	<input type="checkbox"/> 5.5	<input type="checkbox"/> 6.5								
					<input type="checkbox"/> 6.6								
					<input type="checkbox"/> 6.7								

SAFETY FIRST AND STOP WORK AUTHORITY

- **SAFETY FIRST**

No work we do is so important that it needs to be done without proper safety measures in place.

- **STOP WORK AUTHORITY**

If you see work or actions that appear unsafe, you have the authority and obligation to stop the work and bring the situation to the immediate attention of your local contact and/or the Floor Coordinator.

- **IF YOU ARE ASKED TO STOP WORK – YOU MUST COMPLY AND STOP WORK IMMEDIATELY**



DO IT SAFELY OR NOT AT ALL

REQUIRED SAFETY TRAINING

Shown below are the required safety training courses that must be completed before the start of any work at APS (at either the beamline or in our labs) + the training interval in (). Additional training requirements may be identified in the experiment safety assessment depending on your experiment.

- APS 101: Advanced Photon Source User Orientation (2 years)
- APS100U: Argonne National Lab User Facility Orientation (2 years)
- ESH 223U: Cybersecurity Annual Education and Awareness (1 year)
- ESH 738: GERT: General Employee Radiation Training (2 years)
- APS 207: Sector 7-ID Orientation - this training (2 years)

GENERAL USER SAFETY

TRICYCLE USAGE:

All tricycles belong to a specific beamline or group. The TRR group operates both 7-ID-B/C/D and 25-ID-E experimental stations. Users can use tricycles marked either Sector 7 or 25-IDE. The speed limit for tricycles is a fast walking pace. Only 1 person is allowed on a tricycle at a time.

Be careful to watch for pedestrians crossing the aisle, forklifts, scissor lifts and other tricycles. Exercise caution and look both ways before stepping into the aisle from beamlines or labs.

WORKING ALONE:

Users are not allowed to work alone except for nonhazardous work such as taking data or changing nonhazardous samples. It is advised to check in with a coworker every hour when working alone.

EGRESS AISLES

Egress aisles are walkways outlined in yellow safety tape between beamline stations.

They must be kept clear at all times. Items are not to be stored inside the egress aisles.

MEALS:

Users may dine in either the kitchen area or the conference room. Light snacks are permitted at the beamline workstations but food and drink are prohibited in the labs & experimental stations.

Be sure to clean up after yourselves – including towels, gloves, as well as food and drink debris.

PERSONAL SAFETY SYSTEM (PSS)

- The PSS interfaces with the beamline X-ray shutters and active shielding components (doors). Each beamline has a PSS panel that allows you to control X-ray shutters in the experimental stations.
- If the system detects a problem, it will generate a FAULT that requires corrective action and resetting by an authorized person. To have faults reset, contact a floor coordinator at 2-0101.
- Your beamline contact will provide instructions on how to properly get the X-ray beam into the experimental station, as described in the next slide.

Condition

PSS Permit:

Minor Fault:

Serious Fault:

Major Fault:

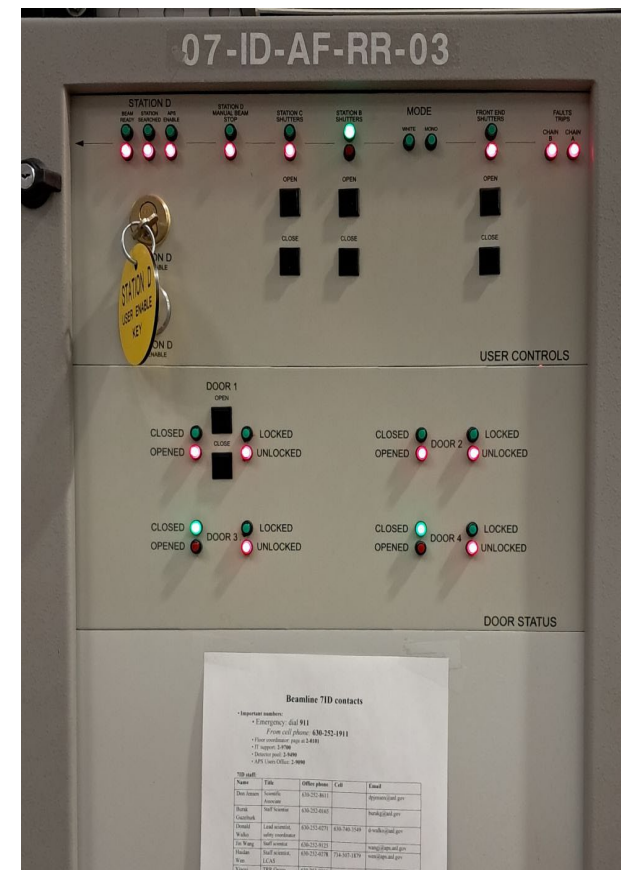
Response

Beam Ready

FC reset

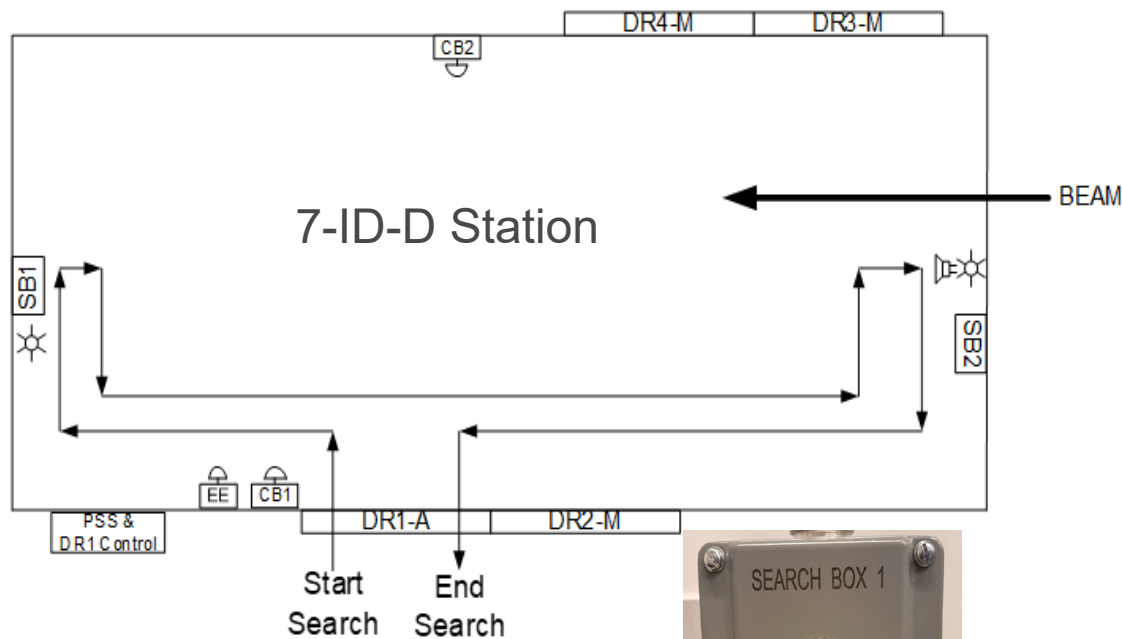
PSS Staff reset

PSS Staff reset



SEARCH & SECURE PROCEDURE

- Ask others to leave the hutch.
- Following the search path as shown below, pressing search buttons in order.



- After completing the search, exit the hutch, go to the station panel and press and hold the “CLOSE” button. When the “DOOR POSITION CLOSED” indicator light changes to green, you can let go of the button.

After the magnetic lock engages, you can use the PSS panel to open the X-ray shutter.



No one is allowed inside an experimental station with all the doors closed!

EMERGENCY BEAM STOP

If you become locked inside the hutch:

- **Press the Emergency Beam Stop button immediately.** This action will dump the beam to ensure your safety.
- To exit the hutch, press and hold the door 'OPEN' button on the Door Control for 3 seconds. If the door does not open automatically, press the 'MANUAL DOOR' button, then manually open the door.
- To reset the button, pull the Emergency Beam Stop button out.

Note:

If the search lights are not flashing before search buttons are pressed, ensure the Emergency Beam Stop button is pulled out and all manual doors are closed. If this doesn't solve the problem, a fault has occurred. Contact the on-call Floor Coordinator at 2-0101 for assistance.



APS RADIATION SAFETY

Configuration Controlled Equipment refers to beamline equipment that protects us from radiation and must never be tampered with. See yellow tag on right for an example from Sector 1BM. Contact a Floor Coordinator or beamline staff with questions.

Radiation dosimeters are used to measure potential radiation and must be worn by All personnel on the Experiment Hall Floor. Your dosimeter must be worn at all times by users and staff who go beyond the office area to the main aisle and beamline area.

Radiation dosimeters must be requested at least 72 hours before your ESAF start date. Late requests may delay your experiment. Use this link to register/request a dosimeter:

[Dosimeter Request](#)

NOTES: You will need a domain account and GERT training to submit the dosimeter request form. Specify 432 entrance for rack location & Beta Gamma for dosimeter type in request form.

See a dosimeter image to the right.



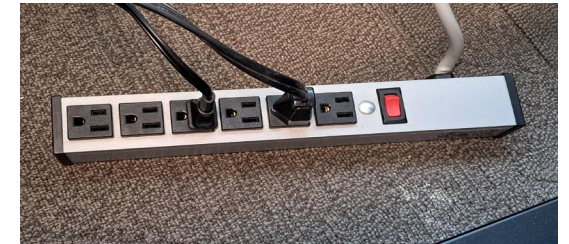
ELECTRICAL SAFETY — PG 1 OF 2

- DOE mandates that all non-Nationally Recognized Testing Laboratories (NRTL) electrical equipment undergo inspection and approval before being used at ANL.
- Electrical inspection requests & equipment listings are to be included in your ESAF.
- Requests for inspection of electrical equipment must be submitted at least three days prior to the start of the experiment to facilitate scheduling of inspectors. Failure to submit request on time may result in a delay of your experiment.
- NRTL-marked equipment is exempt from inspection unless modified. Please consult the OSHA NRTL list to see all the currently accepted NRTL listings. 3 examples to right.
- The green label indicates the unlisted electrical equipment with this sticker passed electrical inspection by a DEEI.



ELECTRICAL SAFETY — PG 2 OF 2

- Visiting users are NOT allowed to do unsupervised electrical work while at Argonne.
- Electrical work is only allowed **with power off**.
- Users are NOT allowed to reset tripped circuit breakers.
- Prohibited activities include: No rewiring of plugs, cables or any other electrical equipment; and no disconnecting of motor cables with power on.
- Extension cords and power strips must be used safely. No overloading or daisy-chaining of power strips is allowed.
- Contact your beamline staff for questions or assistance.



PERSONAL PROTECTIVE EQUIPMENT (PPE)

Your experiment might require the use of Personal Protective Equipment (PPE). It is your responsibility to know and understand the need for PPE related to your experiment. The Chem lab requires PPE for handling any hazardous solvents and/or chemicals. Ask your beamline contact for assistance.

Examples of PPE:

- Safety glasses with side shields
- Gloves for handling toxic, carcinogenic, or other hazardous materials
- Cryogenics: Thermal Gloves, Safety glasses, Face shield and Apron are all required when working with liquid nitrogen.



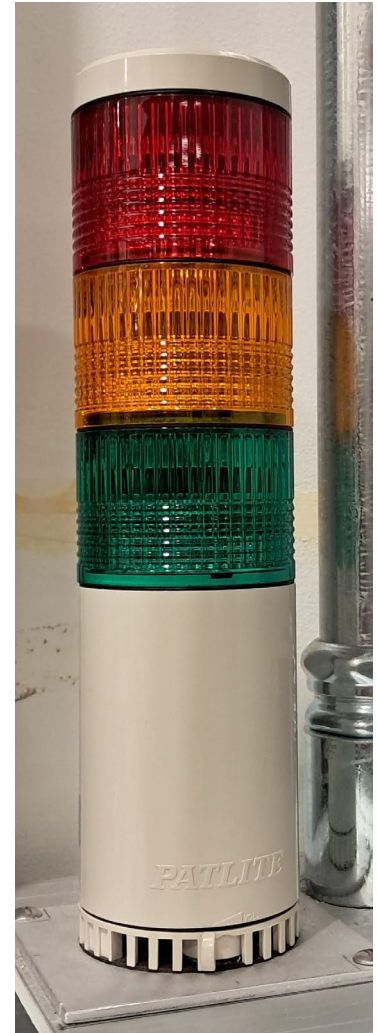
BEAMLINE EQUIPMENT PROTECTION SYSTEMS

- The Beamline Equipment Protection System (BLEPS) monitors water flow, vacuum pressure, and temperature readings for devices that provide X-rays to the experimental stations.
- If any monitored component deviates from its normal operating condition, BLEPS transitions from **Permit** to either **Warning** or **Fault**. Please notify your beamline contact as soon as possible if this occurs.
- The main beamline shutters will be closed under a BLEPS **Fault** condition with the red light flashing.

Fault

Warning

Permit



LASER SAFETY AND AWARENESS

- Users of 7-ID typically use ultrafast, high-power lasers in the user operation mode, where the laser safety interlock system ensures the laser safety shutter opens only when all X-ray hutch doors are closed.
- Please contact the beamline staff if you would like to perform minimal laser alignment inside X-ray hutch. Additional instruction and training will be required and/or provided.



CHEMISTRY LAB USE

Uses can have access to a Chemistry Lab in 432-D030. If your sample preparation requires use of Chem Lab, you must reserve bench space prior to your experiment with your beamline contact.

Resources available with prior approval

Fume Hoods	Sinks	Basic Supplies	Balance
Refrigerator	Microscope	Vacuum Oven	Heat/stir plates

- Indicate 'LAB USE' on the ESAF.
- Access to the Chem Lab requires Card Key activation to gain entry. Talk to your beamline contact to get prox card access.
- **A fully approved ESAF is required before any lab work is performed.**



HAZARDOUS WASTE HANDLING

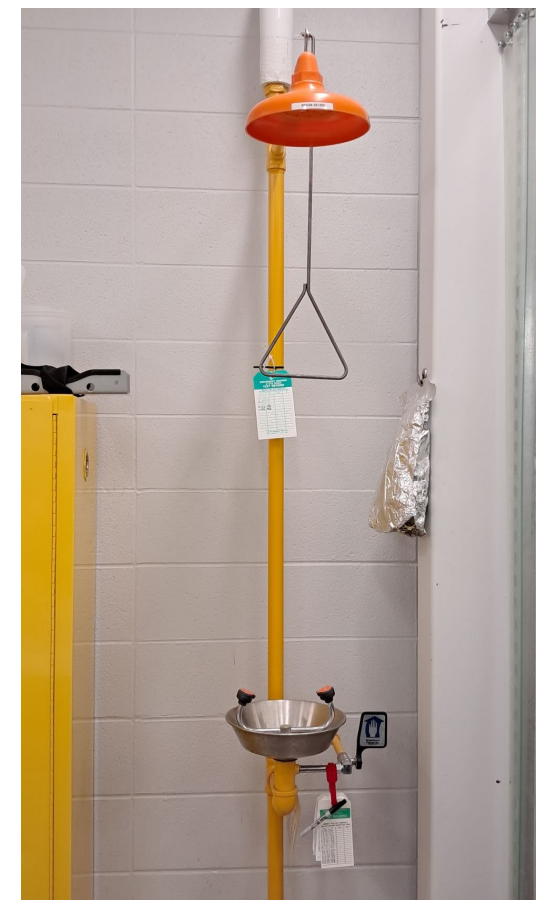
- All hazardous waste must be contained inside chemical-compatible containers that are labeled “Hazardous Waste”, with waste generator’s name, experiment start date, beamline and the ESAF #.
- Wastes of different chemical-reactivity types must be segregated and stored appropriately in separate compatible containers.
- All hazardous waste containers must be clearly labeled by the waste generator, including contents (by volume %, ml of each chemical or concentration) and chemical names of all materials.
- Consult your beamline contact before generating chemical waste on-site and to get hazardous waste containers.
- WASTE FORMS are available online, or on the fume hood wall, with all required information about each of your hazardous waste containers.
- For any questions, contact Don Jensen or your beamline contact.

CW _____			
Chemical Waste Log – Sector: _____			
Name _____	Phone # _____	Date _____	
Principal Investigator _____	GUP# _____	Experiment ID# (from ESAF) _____	
Description of how waste was generated: (Please check all that apply)			
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <input type="checkbox"/> Waste is discarded sample material. <input type="checkbox"/> Waste was used to prepare sample material. <input type="checkbox"/> Waste is a discarded PURE reagent grade chemical. </div> <div style="width: 48%;"> <input type="checkbox"/> Waste was used to clean/prepare sample holders. <input type="checkbox"/> Waste was used as an etching solution. <input type="checkbox"/> Other _____ </div> </div>			
Container #/Description/location <i>(size, glass, poly, etc. - ONE form per container)</i>	Physical Form	For Liquids	
		<i>pH=</i>	
	<input type="checkbox"/> Liquid	Flash Point <= 140° F	
	<input type="checkbox"/> Solid	Flash Point >= 140° F	
			Do contents include nanomaterials? YES <input type="checkbox"/> NO <input type="checkbox"/>
<u>Constituents:</u> Provide Complete Chemical Name (No Formulas). Attach MSDS sheet for each chemical.			% or % Range
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
MSDS CAS#:			
(Use back of sheet for more constituents...)			
Total volume =		Unit of Measure =	
		Total	100%

- Waste container must be properly labeled with your name, date, and contents.
- Please leave paper documentation with the waste container. (e.g.: this form, ESAF, MSDS, etc.)
- Please send completed forms and direct any questions to your Experiment Host.

CHEM LAB SAFETY RULES

- **No food or drink** is allowed in the Chem lab.
- **Eye protection:** Safety glasses must be worn at all times.
- **Personal Protective Equipment (PPE):** Always wear appropriate PPE (lab coats, gloves, closed-toe shoes).
- **Emergency Equipment:** Eye Wash & Chemical Shower are both located at the downstream end of the Chem lab (shown on the right).
- **Sample preparation:**
 - Non-hazardous: Can be prepared in beamline sample prep area.
 - Hazardous: Prepared in the Fume Hood, glovebox, or glove bag.
- **Hazardous waste:** Follow the procedures on the next page.
- **Housekeeping**
 - Clean glassware after use (drying rack, Alconox & scrubbers by sink).
 - Label all non-original containers with chemical name, hazards, and owner's name.
 - Do not leave chemicals unattended in open containers.
- **End of experiment:** Take all materials with you unless approved by beamline staff.



SPECIAL CONDITIONS

■ Cryogenic Conditions:

- Wear insulated gloves and full face shielding.
- Handle cryogenic materials in well-ventilated areas to avoid asphyxiation hazards.

■ Sharps Handling:

- Use designated sharps containers for disposal of non-hazardous items including needles, blades, and broken glass.
- Do not overfill sharps container; Put cover on when three-quarters full. Ask staff for replacement.
- Handle all sharps with care to avoid punctures or cuts, and never attempt to recap needles.



COMPRESSED GASES

- Contact your beamline contact or Don Jensen for use of compressed gas. Additional safety instructions will be provided.
- TRR group gas cylinders are stored outside the 432 high bay door in the 7-ID cage in the gas yard. Do not use gas cylinders from other cages.
- Always restrain gas cylinders, whether in storage or in use.
- Before moving a cylinder, remove all connections (regulator, transfer lines, etc.) and secure the cap.
- Use a gas cart to move cylinders. Gas carts are located downstream of the 7-IDD station.
- 7-ID has a gas-changeover system for delivering helium and nitrogen to the hutches. If alarm sounds, push the button to silence alarm and tell your beamline contact you did this.



SHIPPING SUPPORT

- All shipments must comply with US Department of Transportation, Department of Energy, and ANL requirements for both inbound and outbound shipping.
- Do not transport hazardous materials on-site at Argonne in personal vehicles.
- Provide either a FedEx or UPS account number for return shipments from ANL.
- Hazardous material shipments must be sent via FedEx.
- SDS forms must be provided (in electronic form) for all chemicals shipped off-site.
- Shipping Information Forms (SIFs) are available from beamline staff. See sample form on right.
- For shipping assistance, contact Don Jensen or your beamline contact.

SHIPPING INFORMATION FORM (SIF)

DATE REQUIRED @ DESTINATION: / /

THE FOLLOWING INFORMATION IS NEEDED FOR ALL SHIPMENTS:

1. Your complete SHIP TO address. (Include contact person, home institution, full address, phone number and e-mail address)

SHIP TO ADDRESS:	NAME: _____
	INSTITUTION: _____
	DEPARTMENT/DIVISION: _____
	STREET ADDRESS 1: _____
	STREET ADDRESS 2: _____
	CITY, STATE & ZIP CODE: _____
	PHONE NUMBER: _____
	E-MAIL ADDRESS: _____

2. Enter either a FedEx or UPS account # in this table >>>

FedEx #	UPS #
---------	-------

NOTE: FedEx must be used for all hazardous shipments sent from ANL.

3. If shipping chemicals - complete table below with # of samples, chemical names, form, quantity (mg or ml), value & container type.

4. Quantity should be for each sample - NOT the total for all similar samples.

#	Chemical name (NOT Formula)	Form	Quantity/each (mg)	Value	Container type
CHEMICAL #1				\$	
CHEMICAL #2				\$	
CHEMICAL #3				\$	
CHEMICAL #4				\$	
CHEMICAL #5				\$	
CHEMICAL #6				\$	
CHEMICAL #7				\$	
CHEMICAL #8				\$	
CHEMICAL #9				\$	
CHEMICAL #10				\$	
^ # of samples per chemical type					

BEFORE LEAVING...

- Clean up your work areas, including the beamline, control area, lab space and any other area your team used while at Argonne.
- Return all tools and equipment to their original locations.
- Take your samples and chemicals with you; arrange return shipments and/or hazardous waste disposal with your beamline contact if needed.
- Complete all shipping and hazardous waste documentation before leaving Argonne.
- Dispose of food and take all your belongings.
- If unsure, ask your beamline contact for guidance.

Online Sector Orientation Conclusion

This confirms you have completed Online 7ID Sector Orientation training:

Part 1 of 2 Sector Orientation parts

Please click the “Confirmation” link below. You will need to log in with your badge number and confirm that you have completed Online 7-ID Sector Orientation training.

Meet with beamline staff to complete In-Person 7-ID Sector Orientation
(Part 2 of 7-ID Sector Orientation)

This will complete your 7-ID Sector Orientation training.

CONFIRMATION