ONLINE SECTOR ORIENTATION

TIME RESOLVED RESEARCH GROUP

X-RAY SCIENCE DIVISION

Online Sector Orientation

Introduction

This is part 1 of 25-ID-E 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 25-ID-E 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 25-ID-E.

25-ID-E BEAMLINE CONTACTS

Station	Contact	Cell Phone	Email
25-ID-E	Cunming Liu	585.298.5689	cunming.liu@anl.gov
25-ID-E	Rick Spence	630.247.5870	spence@anl.gov
25-ID-E/ 7-ID	Burak Guzelturk	650.561.2481	burakg@anl.gov
25-ID-E / 7-ID	Xiaoyi Zhang	630.303.6827	xyzhang@anl.gov
25-ID-E	25-ID-E Phone	x 2-1725	

TRR Group Leader: XIAOYI ZHANG

Unless the matter is urgent, Do NOT call beamline staff between the hours of 10pm and 6am.

IN CASE OF EMERGENCY

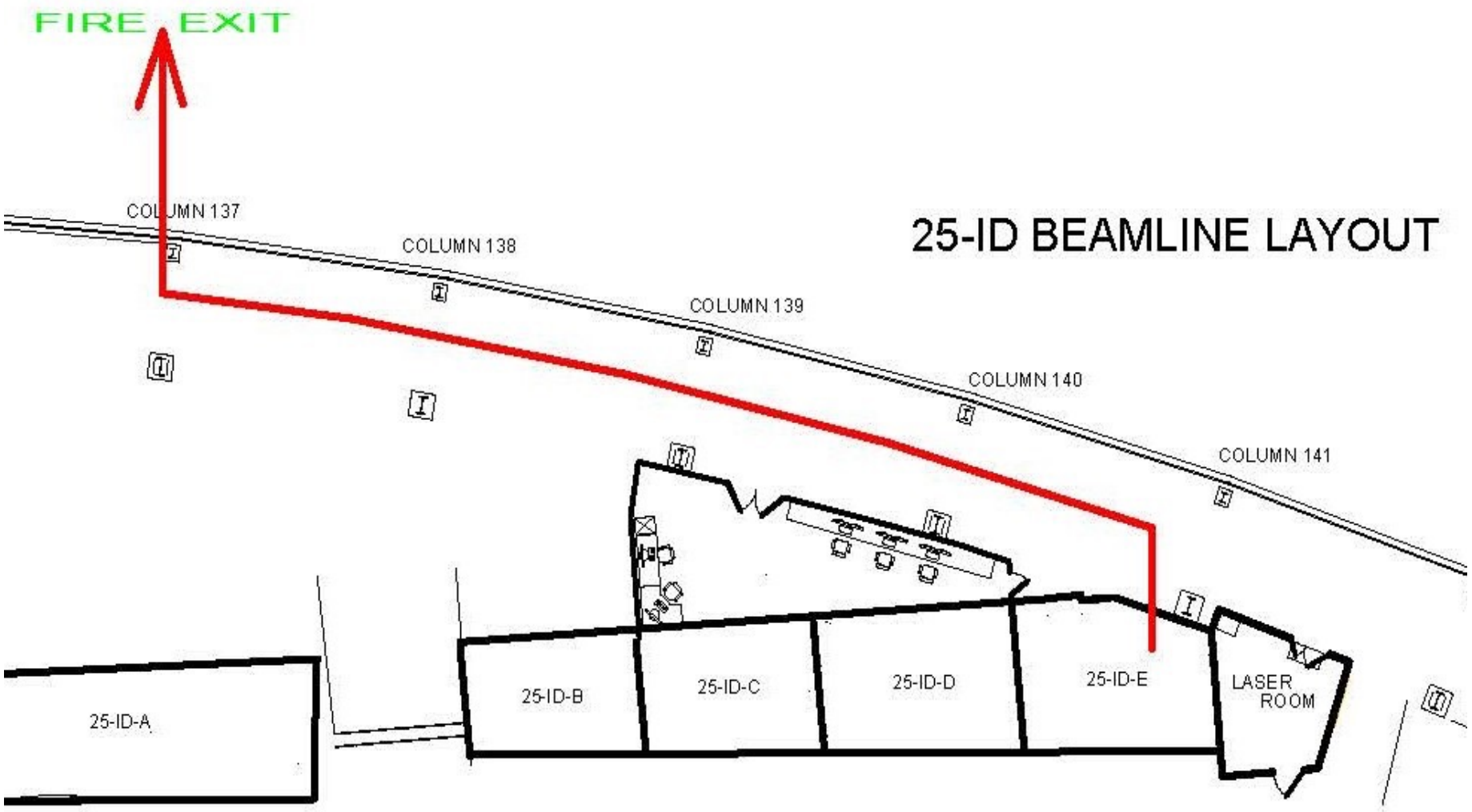
- **Call 911 from any Argonne phone**
- **Call 630/252-1911 from cell phone or off-site**
- **25-ID-E location is blg. 400, column 141 if contacting 911**

– In case of fire, exit the building at column 137.
– **Do NOT** use fire extinguisher (@ column 140) unless you are trained in their proper use and can do so safely.
– **Tornado shelters** include men's & women's restrooms in either 436 (closest) or 437 and the machine shop in 436.
– The nearest Fire Alarm is upstream of 25-ID at Column 142.

Building Evacuation Route from 25-IDE beamline:

Exit the building via the 436 exit door at column 137; walk straight out to the main road; turn right and walk to the Stop sign; turn right on Rock Road and follow the road until you're in front of blg. 437 main entrance. Wait outside until a PA announcement gives clearance to return to the 436 building.

25-ID BEAMLINE LAYOUT & FIRE EXIT



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 – 437	Shane Flood	Phone: 2-0600	FC Office 437-A002
Local FC – 436	Ashley Wayman	Phone: 2-0602	FC Office 436-C001

When beam is available, Floor Coordinators are on-site for the following hours:
Monday-Friday from 8am – 10pm
Saturday-Sunday from 8am – 6pm

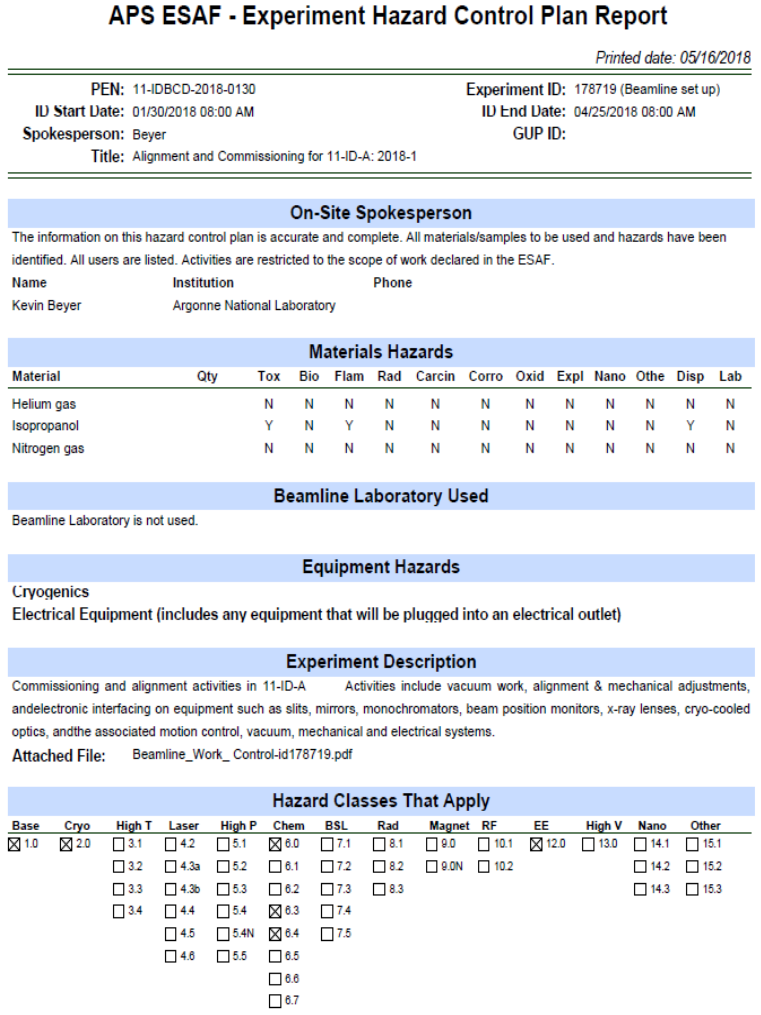
APS Safety Staff: **Safety Staff Webpage**

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 intended work and should include the following:

- Materials (chemicals, gases, cryogens) 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. 18
- Users: all required training must be completed prior to the 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. 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, andelectronic interfacing on equipment such as slits, mirrors, monochromators, beam position monitors, x-ray lenses, cryo-cooled optics, andthe 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
☒ 1.0	☒ 2.0	☐ 3.1	☐ 4.2	☐ 5.1	☒ 6.0	☐ 7.1	☐ 8.1	☐ 9.0	☐ 10.1	☒ 12.0	☐ 13.0	☐ 14.1	☐ 15.1
		☐ 3.2	☐ 4.3a	☐ 5.2	☐ 6.1	☐ 7.2	☐ 8.2	☐ 9.0N	☐ 10.2			☐ 14.2	☐ 15.2
		☐ 3.3	☐ 4.3b	☐ 5.3	☐ 6.2	☐ 7.3	☐ 8.3					☐ 14.3	☐ 15.3
		☐ 3.4	☐ 4.4	☐ 5.4	☒ 6.3	☐ 7.4							
			☐ 4.5	☐ 5.4N	☒ 6.4	☐ 7.5							
			☐ 4.6	☐ 5.5	☐ 6.5								
					☐ 6.6								
					☐ 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 225: Sector 25 Orientation -this training (2 years)

GENERAL USER SAFETY

TRICYCLE USAGE:

All tricycles belong to a specific beamline or group. The TRR group operates both 25-ID-E and 7-ID-B/C/D experimental stations. Users can use tricycles marked either 25-ID-E or 7-ID.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 non hazardous work such as taking data or changing samples. It is advised to check in with a coworker every hour when working alone.

EGRESS AISLES

Egress aisles are walkways 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.

PERSONAL SAFETY SYSTEM (PSS)

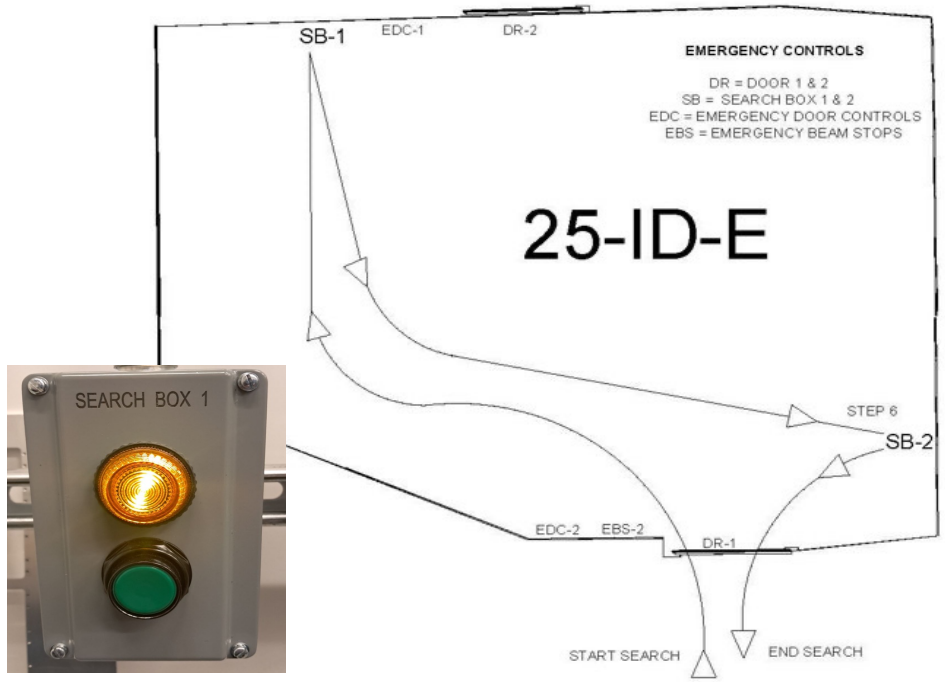
- The PSS interfaces with the beamline X-ray shutters and active shielding components (doors). Each beamline has a PSS panel that allows you to control X-ray shutters in the experimental stations.
- If the system detects a problem, it will generate a FAULT that requires corrective action and resetting 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	Response
PSS Permit:	**Beam Ready**
Minor Fault:	FC reset
Serious Fault:	**PSS Staff reset**
Major Fault:	**PSS Staff reset**

SEARCH & SECURE PROCEDURE

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

25-ID-E Search path



- After completing the search, exit the hutch, go to the station E panel and press and hold the green “CLOSE” button. When the “DOOR POSITION CLOSED” indicator 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

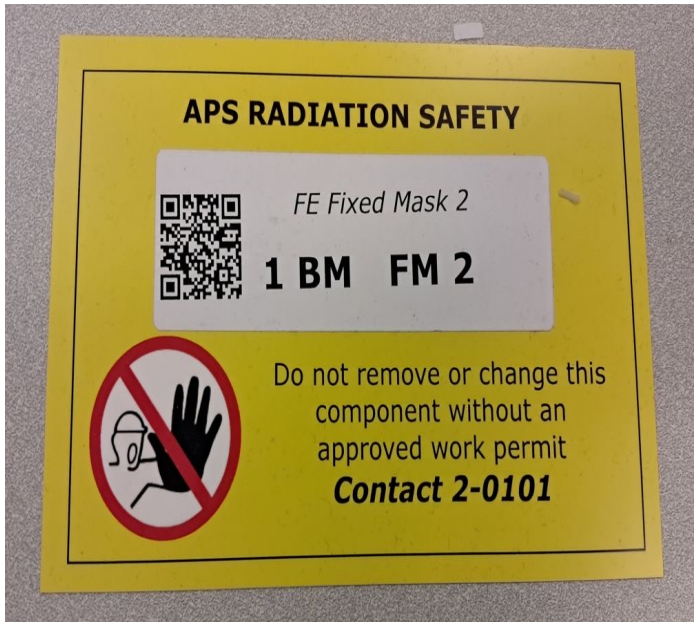
If you become locked inside the hutch:

- **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. If the door does not open automatically, press the ‘DOOR DISABLE’ 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. If this doesn’t solve the problem, there is a fault. Contact the on-call Floor Coordinator 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 1-BM. Contact a Floor Coordinator or beamline staff with questions.



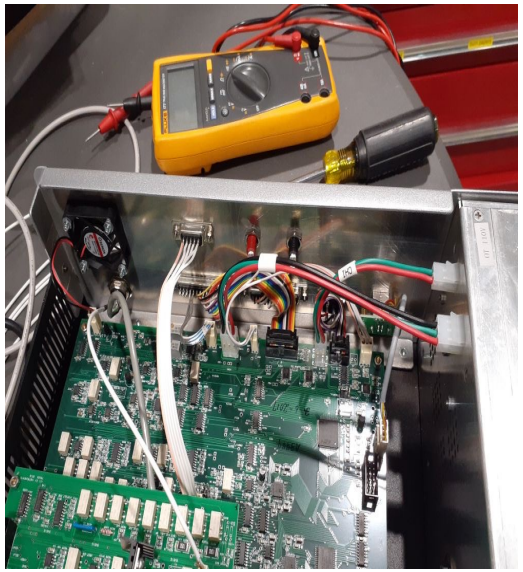
Radiation dosimeters are used to measure potential radiation and must be worn by All personnel on the Experiment Hall Floor. You will be issued a dosimeter by your beamline staff and it must be worn at all times by users and staff who go beyond the office area to the main aisle and beamline area. See a dosimeter to the right.

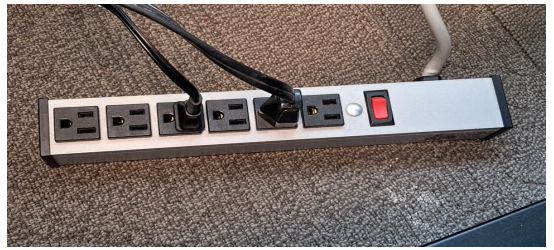
ELECTRICAL SAFETY – PG 1 OF 2

- DOE mandates that all non-Nationally Recognized Testing Laboratories (NRTL) electrical equipment undergo inspection and approval before being used at ANL.
- 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.
- 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 cords must be used safely. Overloading or daisy-chaining of power cords is NOT allowed.
- Contact your beamline staff for questions or assistance.





PERSONAL PROTECTIVE EQUIPMENT (PPE)

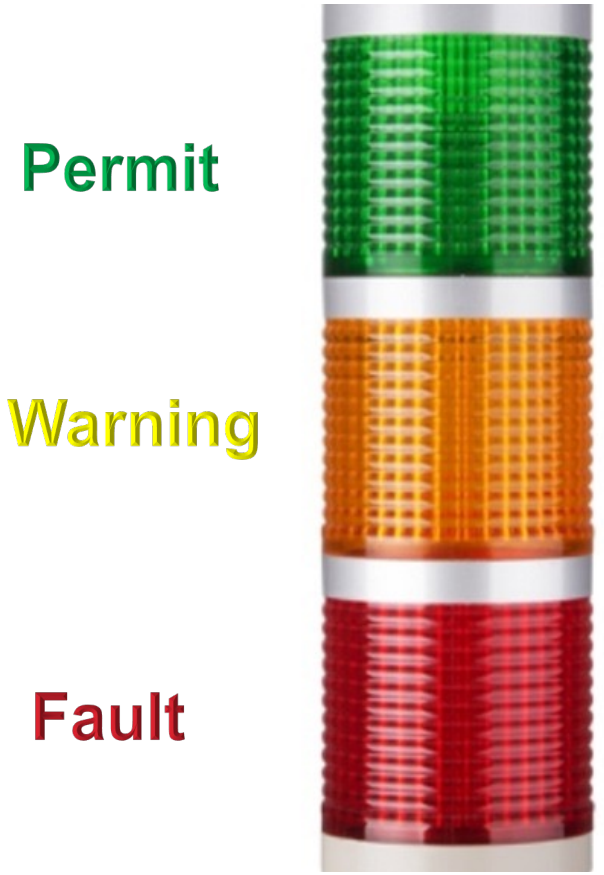
Your experiment might require the use of Personal Protective Equipment (PPE). It is your responsibility to know and understand the need for PPE related to your experiment. The Chem lab requires PPE for handling any hazardous solvents and/or chemicals. Ask your beamline contact for assistance.

Examples of PPE:

- Safety glasses with side shields
- Gloves for handling toxic, carcinogenic, nanomaterials 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 BLEPS **Fault** condition with the red light flashing.



LASER SAFETY AND AWARENESS

- Users of 25-ID-E 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.

LASER SAFETY - USER OPERATION MODE

The laser interlock controls that are accessible by users are located inside the hutch on the right side of the entrance door.

- Open the laser safety shutter. After closing all hutch doors, turn the KEY on the key switch box clockwise and hold until the LED display on the Illuminating status panel changes to "DANGER/BEAM ACCESSIBLE".
- Close the laser safety shutter. Press the **GREEN** button on the key switch box or the **EMERGENCY STOP** button. Check the illuminating status panel, which should show: **NO HAZARD/LASER OFF.**

CHEMISTRY LAB USE

Uses can have access to our Chemistry Lab in 437-A020. If you're sample preparation requires use of Chem Lab, you must reserve bench space prior to your experiment with Rick Spence spence@anl.gov

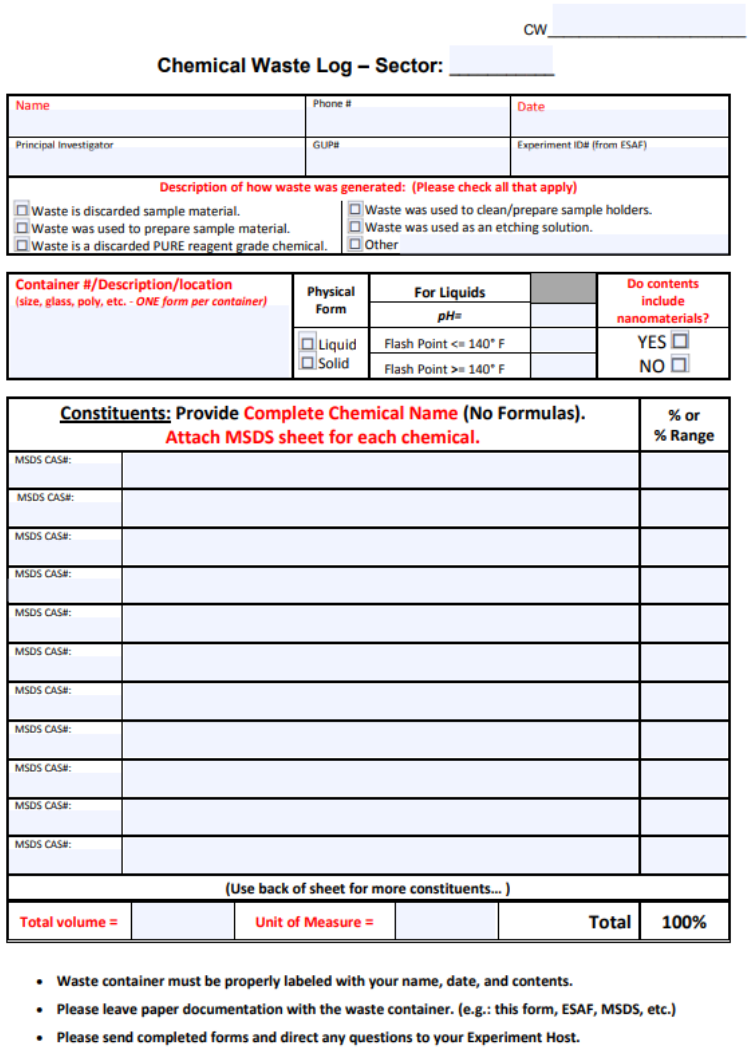
Resources available with prior approval			
Fume Hoods	Sinks	Basic Supplies	Balance
Refrigerator	UV-vis spectrometer	Ultrasonic Cleaner	Heat/stir plates

- Indicate 'LAB USE' on the ESAF.
- Access to the Chem Lab requires Card Key activation to gain entry. Contact Rick Spence to get prox card access.
- **A fully approved ESAF is required before any lab work is performed at APS.**

Card Key Reader

HAZARDOUS WASTE HANDLING

- All hazardous waste must be contained inside chemical-compatible containers that are clearly labeled “Hazardous Waste” along with waste generator’s name, experiment start date. beamline and the ESAF #.
- Use waste forms to document the contents of all hazardous waste containers. Forms must be filled out by the waste generator, and must include a breakdown of contents (by volume %, ml of each chemical or concentration) and chemical names of all materials.
- Wastes of different chemical-reactivity types must be segregated and stored appropriately in separate compatible containers.
- Consult your beamline contact before generating chemical waste on-site and to get hazardous waste containers.
- WASTE FORMS are available either in the Chem lab (on the fume hood wall) or from your beamline contact.
- If you need assistance with hazardous waste, contact either Rick Spence 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)

- ☐ Waste is discarded sample material.
- ☐ Waste was used to prepare sample material.
- ☐ Waste is a discarded PURE reagent grade chemical.
- ☐ Waste was used to clean/prepare sample holders.
- ☐ Waste was used as an etching solution.
- ☐ Other

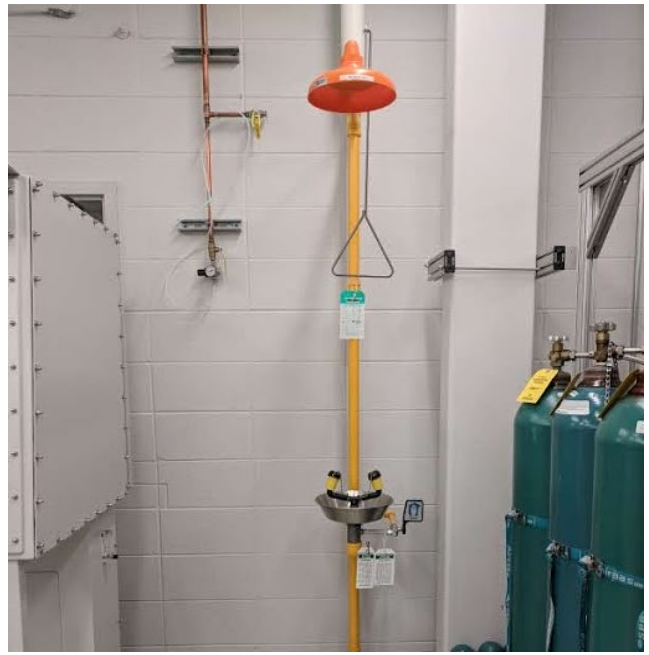
Container #/Description/location (size, glass, poly, etc. - *ONE form per container*)	Physical Form	For Liquids		Do contents include nanomaterials?
		pH=		
	☐ Liquid ☐ Solid	Flash Point <= 140° F		YES ☐
		Flash Point >= 140° F		NO ☐

Constituents: 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#:		
(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 PRACTICE

- **No food or drink.**
- **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 Lab Chem lab.
- **Sample preparation:**
  - Non-hazardous: Can be prepared at the beamline.
  - Hazardous: Prepared in the Fume Hood, glovebox, or glove bag.
- **Hazardous waste:** Follow procedures on the next page.
- **Housekeeping**
  - Clean glassware after use (supplies 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 Rick Spence for use of compressed gas. Additional safety instructions will be provided.
- TRR group gas cylinders are stored outside the 436 entrance in the 25-ID cage (closest to the building). Do not use 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 upstream of the 25-ID-B station.

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 Rick Spence 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 areas 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 or disposal with your beamline contact as needed.
- Complete all return shipping and hazardous waste documentation before leaving.
- Dispose of food and take all belongings.
- If unsure, ask your beamline contact for guidance.

Online Sector Orientation

Conclusion

This concludes Part 1 of 25-ID-E Sector Orientation

Please click the “Confirmation” link below. You will need to log in with your badge number and confirm that you have completed Part 1 of Sector Orientation.

When you arrive onsite, please see a member of 25-ID-E beamline staff in order to complete Part 2 of Sector Orientation. This will complete 25-ID-E Sector Orientation training.

CONFIRMATION