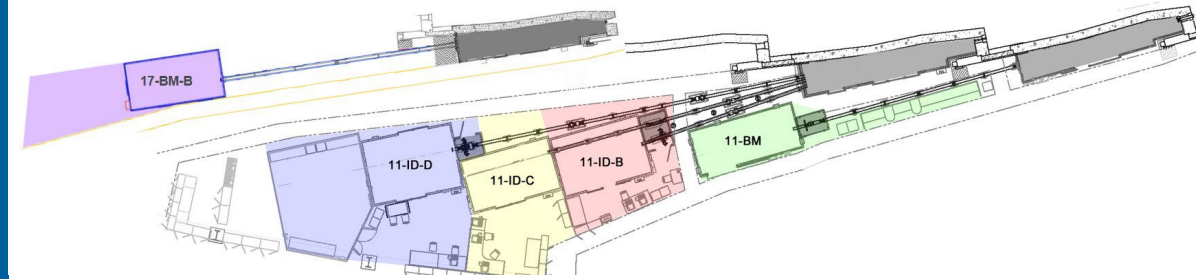


# X-RAY SCIENCE DIVISION STRUCTURAL SCIENCE GROUP SECTOR ORIENTATION 11-BM / 11-ID / 17-BM



# EMERGENCIES

For Emergencies Call:

- 911 from any ANL phone
- 630/252-1911 from cell phone or off-site



In case of fire, leave the building via the nearest exit. Do NOT use fire extinguishers unless you are trained in their proper use.

Tornado shelters include mens/womens restrooms and the machine shop.

## Non-Emergencies

For non-emergencies, contact the Floor Coordinator

Floor Coordinator (on-call)	2-0101	pager
Floor Coordinator (local, Sector 11)	433-C001	office
Floor Coordinator (local, Sector 17)	435-C001	office

APS Safety Staff:

**[Safety Staff Webpage](#)**

Useful Information:

**<https://www.aps.anl.gov/Structural-Science/Useful-Links>**

# BEAMLINe CONTACTS

## XSD-SRS BEAMLINe CONTACTS

Unless the matter is urgent, please refrain from calling between the hours of 10pm and 6am.

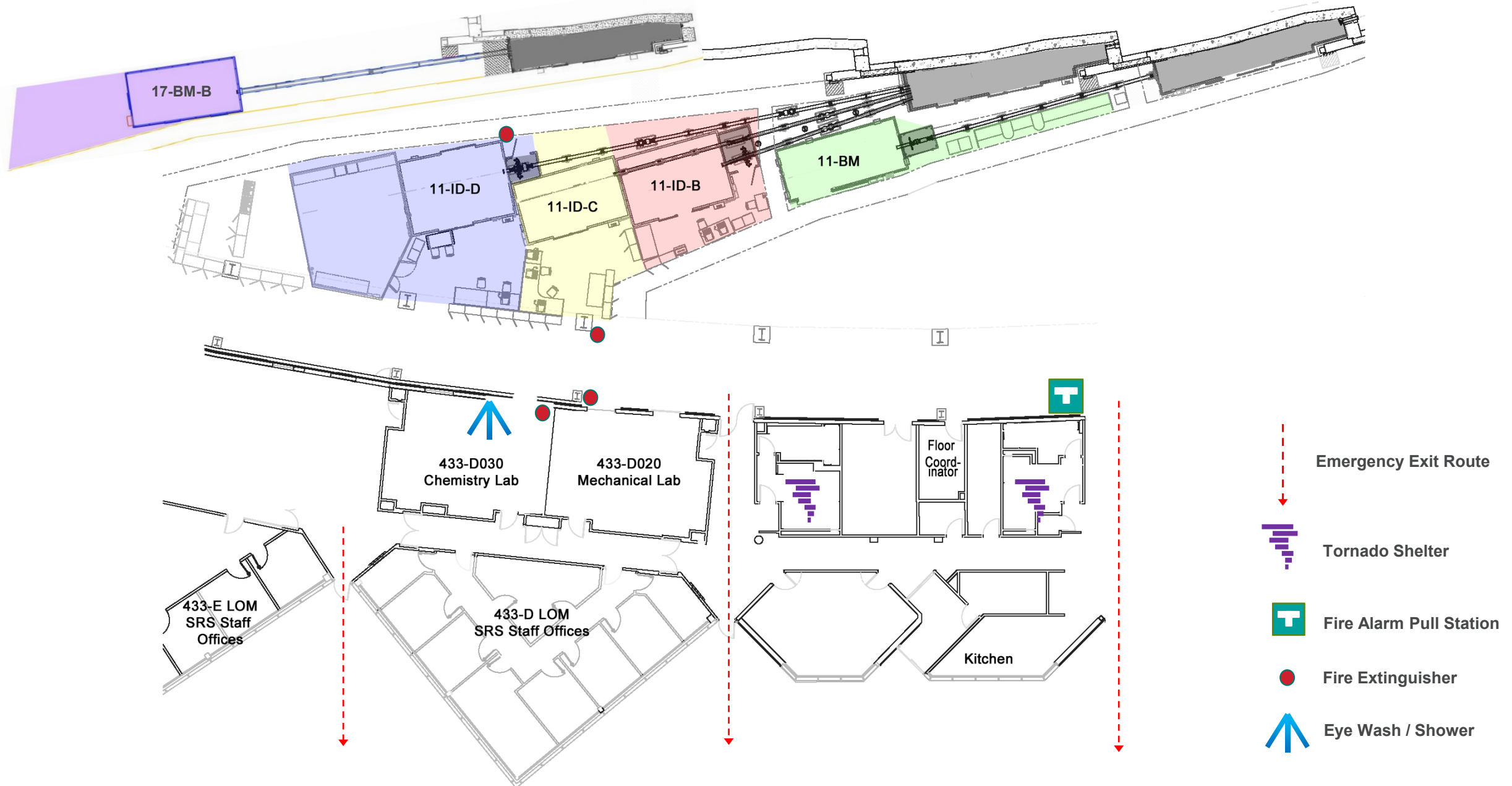
# SAFETY FIRST AND STOP WORK AUTHORITY

- 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 STOP WORK



**DO IT SAFELY OR NOT AT ALL**

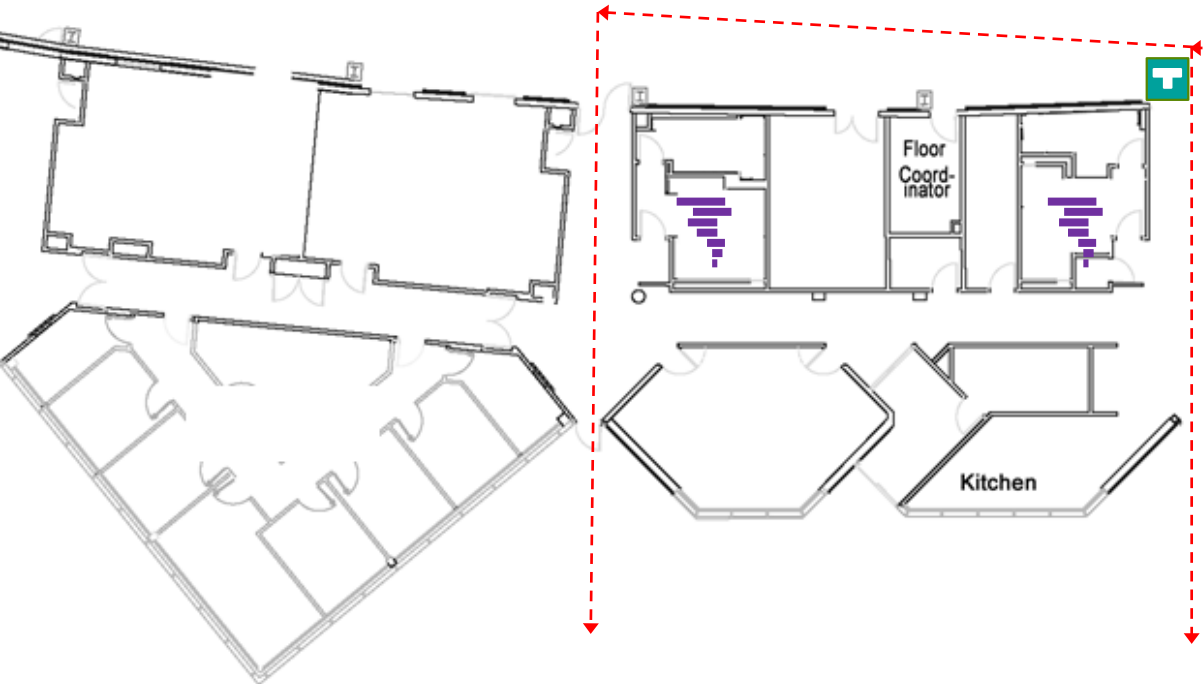
# Sector 11 Beamline Layout







# Sector 17-BM Beamline Layout



Access to 17-ID is restricted for all SRS Users



-  Fire Alarm Pull Station
-  Emergency Exit Route
-  Tornado Shelter
-  Fire Extinguisher

# ELECTRICAL SAFETY REQUIREMENTS

It is required by DOE that all non-NRTL electrical equipment **must be inspected and approved** before use at ANL. Full details of the inspection program can be found in the [Electrical Equipment Inspection pages](#).

The request for an electrical equipment inspection must be submitted at least three (3) days prior to the start of the experiment to allow for scheduling the inspectors.

Electrical equipment bearing the NRTL markings (as shown below) are exempt from inspection unless modified.

Examples of Nationally Recognized Testing Laboratories (NRTL) Listings.



# BEAMLINE EQUIPMENT PROTECTION SYSTEMS

The Beamline Equipment Protection Systems (BLEPS) monitors water flow, vacuum, and temperature reading for the devices that provide X-rays to the experimental stations.

The 11-BM, 11-ID, and 17-BM BLEPSs grant permits to the Storage Ring systems indicating that it is ok to deliver beam to their downstream stations.

If any monitored component deviates from its normal operating condition, the BLEPS can warn Users and beamline staff.

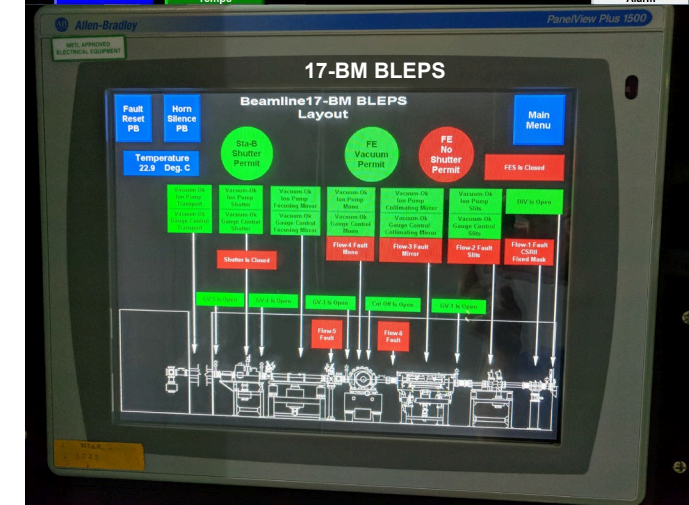
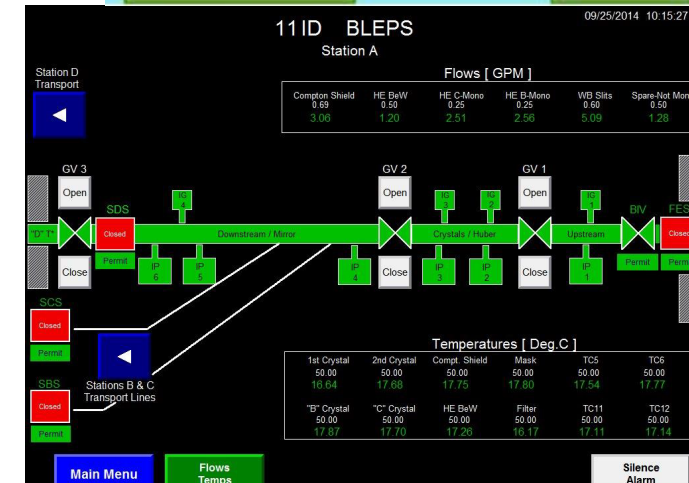
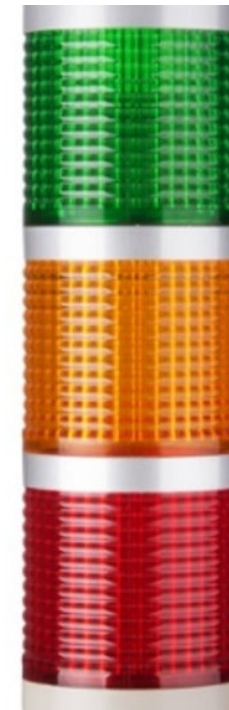
If the deviation is severe, the BLEPS removes its permits and closes the main beamline shutters to avoid damaging equipment with the full intensity X-ray beam.

If any BLEPS changes from **Permit** to **Warning** or **Fault** notify your beamline contact as soon as possible.

Permit

Warning

Fault





# PERSONAL SAFETY SYSTEM (PSS)

- ▶ The PSS is the interface to the beamline X-ray shutters and active shielding components (doors)
- ▶ The PSS is designed to ensure that no one is within an experimental enclosure at the same time that there are X-rays inside.
- ▶ Each experiment station has a PSS panel allowing you to control shutters in the Sector's stations. (Shutters can also be controlled remotely.)
- ▶ The PSS is an interlock system which permits X-rays to enter an enclosure. If the system detects a problem, it will generate a FAULT which will require corrective action and resetting by a person with authority to do so.
- ▶ Your beamline contact will provide instruction on how to properly Search and Secure the enclosure.

## Condition

**PSS Permit:**

**Minor Fault:**

**Serious Fault:**

**Major Fault :**

## Response

**Beam Ready**

**FC reset**

**PSS Staff reset**

**PSS Staff reset**



# EXPERIMENT SAFETY CONSIDERATIONS

When you prepare your ESAF, please check to make sure that it accurately defines your intended work. We recommend insuring that these five items are present:

1. List of ALL materials and equipment (including gases, cryogenes, furnaces, lasers etc.)
2. List of ALL activities performed with the above list of Materials (e.g. handling, mixing, grinding, loading, heating, cooling, exposure to voltage, etc.)
3. Indication of ALL hazards associated with the listed Materials
4. Indication of ALL hazards associated with the activities (e.g. high/low temperatures, electrical exposure, potential exposure to hazards, sharps, etc.)
5. List of ALL actions taken to mitigate the hazards associated with all of the above (sample containment, signage, SOPs, monitoring, etc.)

If you have any questions, contact your beamline host.

## 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								

# SAMPLE PREPARATION

- Samples can be prepared in advance at your home institution.
- Sample preparation can only happen at APS once your **ESAF is approved**.
- Samples can be prepared at the beamline (in the sample prep area only)
- Hazardous samples should be prepared in the SRS Chem lab under the Fume Hood. Due to space limitations, work space should be reserved in advance by contacting the appropriate staff. Refer to beamline contacts page.
- Workers are responsible for practicing good housekeeping throughout their beamtime.
- Please take all your materials with you unless beamline staff has approved otherwise.

# SRS CHEMISTRY LAB

- The SRS Chemistry Lab has many resources available:

## For visiting Users with prior approval

Fume Hood	Furnaces	Glove Boxes*/Bags
Sink	Balances	Ultrasonic Cleaner

- If sample preparation requires Chem Lab use, you must reserve bench space prior to your experiment.
- The Chem Lab has a Fume Hood which should be used for any hazardous sample preparation. Due to the high number of SRS Users, access to the Fume Hood must be scheduled in advance.
- Should your eyes, skin or clothes come in contact with any harmful chemicals, proceed immediately to the Eye Wash/Shower located in the SRS Chemistry Lab.
- Due to the high volume of visiting Users, access to the Chem Lab requires Card Key activation to gain entry.
- Visitors interested in using the E-chem lab must schedule time in advance by contacting [Echem@aps.anl.gov](mailto:Echem@aps.anl.gov)
- **A non-Xray ESAF is required before any work is performed.**

\*Requires additional training

Card Key Reader



# PERSONAL PROTECTIVE EQUIPMENT (PPE)

Your experiment might require the use of Personal Protective Equipment. It is your responsibility to know and understand the need for PPE related to your experiment.

Examples of PPE:

- Safety glasses with side shields
- Gloves for handling toxic, carcinogenic, or other hazardous materials
- Cryogenics: Thermal Gloves, Safety glasses, Face shield, Apron



# COMPRESSED GASES

Your experiment might require the use of Compressed Gases. If so, compressed gas cylinders need to be handled safely. Ask your beamline contact for a list of beamline supplied compressed gases and instruction for safe handling.

- Gas cylinders must be restrained when stored, or in use
- Remove all connections (regulator, transfer lines, etc.) before moving
- Securely place cap on any cylinder you intend to move
- Use an appropriate cart for moving any cylinder



# LASER SAFETY AND AWARENESS

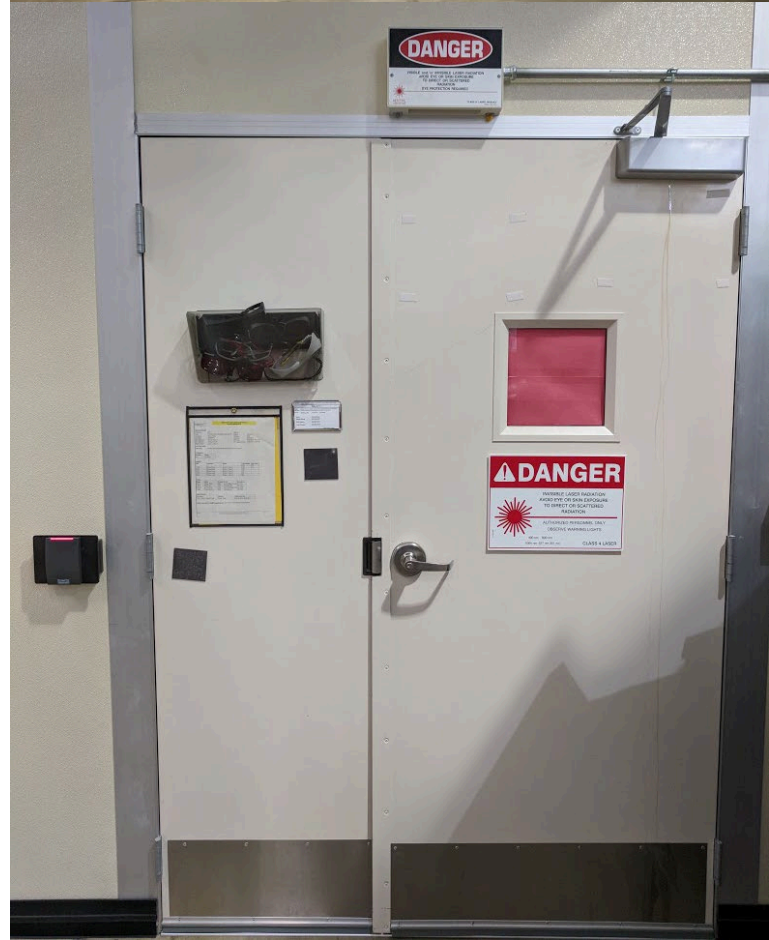
The SRS group operates different laser systems.

When working with or near laser equipment

- Obey all warning signs
- Wear appropriate PPE
- Operate equipment according to manufacturer's specifications



If your experiment requires the use of laser equipment, your beamline contact will provide you with additional safety information.



# HAZARDOUS WASTE GENERATION & DOCUMENTATION

- All hazardous waste containers must be clearly labeled by the waste generator to include the contents (by volume % and concentration) including chemical names of all materials.
- All hazardous waste must be contained inside chemical-compatible containers and labeled with waste generator's name, date and the experiment (ESAF) #.
- Wastes of different chemical-reactivity types must be segregated and stored appropriately in separate compatible containers.
- See your beamline contact before starting to generate chemical waste on-site and to get hazardous waste containers.
- WASTE FORMS are available online, or on the wall by the fume hood. with all requested information about each of your hazardous waste containers.

CW \_\_\_\_\_

Chemical Waste Log – Sector: \_\_\_\_\_

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

- 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.



# SHIPPING SUPPORT

- All APS visitors and collaborators are required to comply with US Department of Transportation, Department of Energy, and ANL/APS requirements for both inbound and outbound shipping.
- APS staff and users are not permitted to transport hazardous material on-site at Argonne in their motor vehicles
- For assistance shipping your materials to ANL or to your home institution contact
  - Lynn Ribaud (17-BM & 11-BM beamlines)
  - Rick Spence (for 11-ID beamlines)
  - Or, your beamline contact.
- All users are required to provide either a FedEx account # or UPS account # to pay for their return shipments from ANL. All hazardous shipments must go through FedEx.
- SDS forms are required for all chemicals being shipped off-site

SRS GROUP SHIPPING INFORMATION FORM						
DATE REQUIRED @ DESTINATION:    /    /						
SHIP TO ADDRESS:		NAME: INSTITUTION: DEPARTMENT/DIVISION: STREET ADDRESS 1: STREET ADDRESS 2: CITY, STATE & ZIP CODE: PHONE NUMBER: E-MAIL ADDRESS:				
		Account Number		FedEx #	UPS #	
#	Chemical name (NOT Formula)	Form	Quantity/each (mg)	Value	Container type	Hazards?
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				
ITEM	DETAILED DESCRIPTION of CONTENTS				ITEM VALUE	BOX #
#1:					\$	
#2:					\$	
#3:					\$	
#4:					\$	
#5:					\$	

Page 1

# BEFORE YOU LEAVE...

- Clean up your work areas before leaving. This means both at the beamline and any workspace your team used in the labs.
- Return any equipment and tools to their original locations.
- Do not leave without your samples or chemicals. We take no responsibility for your samples or other materials. If necessary, talk to your beamline contact to arrange return shipments and/or disposal of your chemicals.
- Be sure to complete all required documentation for both return shipping and for all hazardous waste containers.
- Please dispose of all food and take all belongings with you when you leave.

# REQUIRED SAFETY TRAINING

Your required safety training will be based on your experiment. The level of required training increases with the risk level of the experiment. Below are shown the standard required safety training courses that must be completed before the start of any work at APS at either the beamline or in our labs.

- APS 101: Advanced Photon Source User Orientation
- ESH 100U: ANL User Facility Orientation
- ESH 223: Cybersecurity Annual Education and Awareness
- ESH 738: GERT: General Employee Radiation Training
- ESH 377: Electrical Safety Awareness Training
- APS 211/217: Sector Orientation (this training)

# RECEIVE CREDIT FOR SRS SECTOR ORIENTATION

SRS Sector Orientation Exam: Sector 11

SRS Sector Orientation Exam: Sector 17