

# SAFETY GUIDANCE MANUAL



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**NOTE:** This North Campus Research Complex (NCRC) guidance manual was developed primarily to address topics commonly encountered with operation of a research laboratory. Individuals working in laboratories should be familiar with this entire document.

If your activities at NCRC do not involve laboratory work, please familiarize yourself with the topics above preceded by the \*.

## Health and Safety Expectations

The NCRC adheres to the health and safety standards set forth by U-M Department of Environment, Health & Safety (EHS), in addition to NCRC specific building policies. EHS promotes health, safety and environmental compliance within the University of Michigan campus community. At the University of Michigan, protection of the environment and safety on the job is everyone’s responsibility. Please visit the U-M EHS website <https://ehs.umich.edu/> for general safety and health guidance on a variety of topics and visit <http://ehs.umich.edu/plans-guidelines/> to view specific hazard guidelines.

Please assist in creating a safe and secure work environment by wearing your MCard ID badge in a visible manner at all times while on the NCRC campus.

## Alarms (building or equipment related)

### Automated External Defibrillator (AED) – Audible & Visual Alarms

The AED cabinet doors will emit an audible and visual local alarm once opened. The list of AEDs available at NCRC (current as of 12/14/20) is referenced below. Refer to Emergency Plan for exact location of AED.

<b>NCRC</b>	<b>B010</b>	1 <sup>st</sup> floor, lobby
	<b>B014</b>	1 <sup>st</sup> floor, south stair, outside room 171
	<b>B016</b> (3 units)	-Basement, wellness center -Ground floor, elevator lobby -1 <sup>st</sup> floor, elevator lobby
	<b>B018</b> (3 units)	-Entrance, lobby -Ground floor, dining hall -1 <sup>st</sup> floor, outside room 122
	<b>B020</b> (2 units)	-1 <sup>st</sup> floor, center corridor -3 <sup>rd</sup> floor, center corridor
	<b>B026</b> (2 units)	-1 <sup>st</sup> floor, north elevator lobby -3 <sup>rd</sup> floor, north elevator lobby
	<b>B032</b>	1 <sup>st</sup> floor, lobby
	<b>B035</b>	Ground floor, outside G491
	<b>B080 Power Plant</b>	1 <sup>st</sup> floor, control room
	<b>B090 Receiving Dock</b>	Security Desk, room 104
	<b>B100</b>	Entrance, lobby
	<b>B300</b>	Ground floor, elevator lobby
	<b>B520</b> (2 units)	-1 <sup>st</sup> floor, east elevator lobby -3 <sup>rd</sup> floor, east elevator lobby

## Compressed gas cylinder switchover stations – Audible & Visual Alarms

Cylinder use areas may be equipped with an automatic cylinder switchover system. This is generally a multiple tank system with an automatic switchover from a depleted cylinder to a full one. As the last tank on the system is depleted an audible (local only) alarm is produced to alert users that critical equipment connected to the gas supply may not be receiving the desired gas. In B026, floors 2 & 3, the alarm is within the closet. In B020, the alarm is in the hallway, located remotely from the closet. In B520 the cylinders and switchover systems are located in the service corridor. Pictures of each system are included here for reference.

Instructions for silencing the audio alarm may be located on the switchover station.

### B020 switchover and alarm



B026 switchovers and alarms (2 different systems in use)



In B026 the Western Innovator brand manifolds have Cylinder Replacement and Handling instructions on the right side of the manifold. Refer to these instructions.

B520 switchover and alarm



In B520 the Cylinder Replacement process is detailed on the front panel of the switchover device. Refer to those directions for operation and cylinder replacement guidance.



## Environmental (Warm/Cold) Rooms - Audible Alarm

A local, audible, alarm may sound for several reasons including power failure and temperature fluctuations. If temperature within the room exceeds a predetermined range (lower or higher than the desired temperature) a local alarm will sound. In addition to the local alarm Central Energy Plant will receive automatic notification and will dispatch a staff member to investigate.

If you encounter a local environmental room alarm and are unsure of the cause, please contact Facilities Service Center at 647-2059.

A picture of a display panel is shown to the right.



Top portion provides system status

NOTE: Chart recorder not maintained by NCRC. Users should contact a vendor or submit a non-general fund work order for repair or maintenance to unit.

## Fire - Audible and Visual Alarms

The 1600 and 2800 campuses are on separate, independent, fire alarm systems. When a pull station, smoke detector or sprinkler is activated in a NCRC building on the west side of Huron Parkway (2800 side), affected NCRC buildings on the west side of Huron Parkway are required to evacuate. If a fire detection element on the east side of Huron Parkway (1600 side) activates, all NCRC buildings on the east side will be evacuated.

Occupants in an affected building are expected to evacuate via the nearest emergency exit and assemble in a designated location. Occupants should not reenter NCRC until they receive an “all clear”.



Emergency plans are often posted near elevators and stairwells. Become familiar with the plan for your area and also the location of emergency exits.

**Building Occupants:**

- Immediately Exit the Building
- Gather at the designated assembly area. Do not re-enter the building until given the "all clear"

**Remember to:**

- Close doors behind you while exiting
- Walk to the nearest exit (DO NOT USE ELEVATORS)
- Notify UMPD or fire department personnel if you suspect someone is injured or trapped inside the building

**Freezer Alarm - Audible**

Freezers, if equipped with an alarm, would be a local alarm only.

**Any response/action to the alarm would be the responsibility of the freezer's owner.**

Common display panel on a -80 freezer is shown here for reference.





## Fume Hood Alarms - Audible

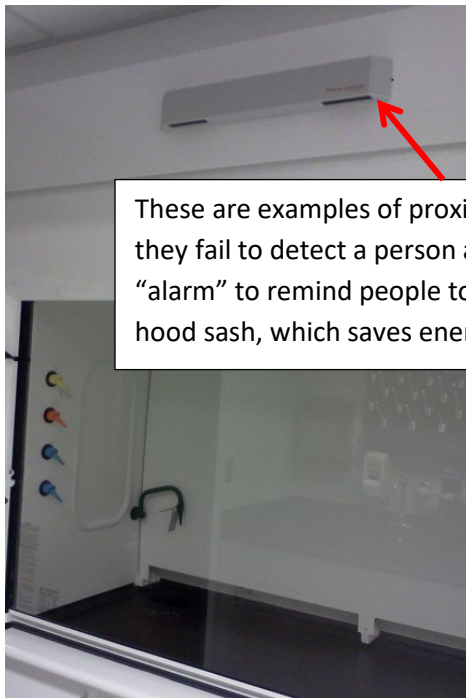
### TROUBLE ALARMS

If the fume hood experiences a power failure, or exhaust fan failure, the hood will alarm. Sufficient exhaust is not available and the fume hood should not be used. Cap/close all hazardous materials within the fume hood and bring any experiments in the hood to a safe mode. In addition to the local alarm, Central Energy Plant will receive automatic notification of either condition. Contact the Facilities Service Center at 647-2059 to report the alarm.

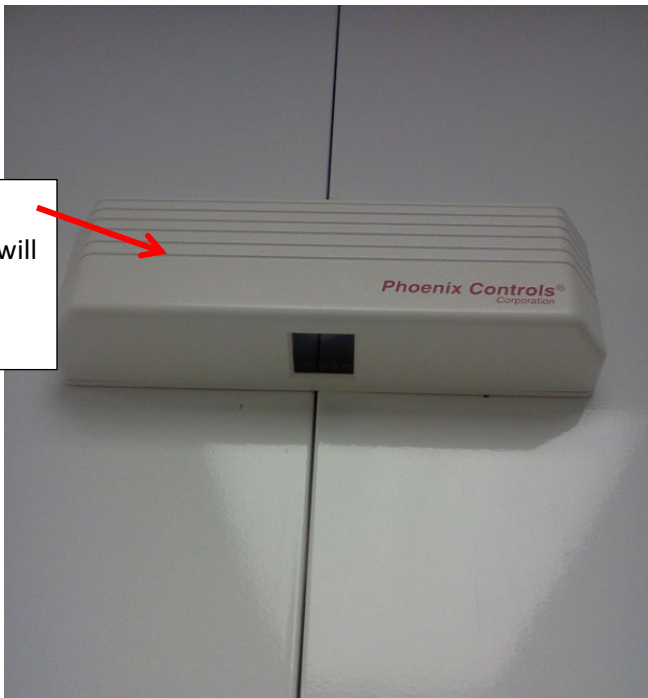
### ENERGY SAVINGS "ALARM"

A fume hood may be equipped with a proximity sensor that will alarm when it doesn't detect a body standing at the fume hood and the sash has not been closed. This is an energy saving "alarm" and can be silenced by closing the fume hood sash. This alarm is local only.

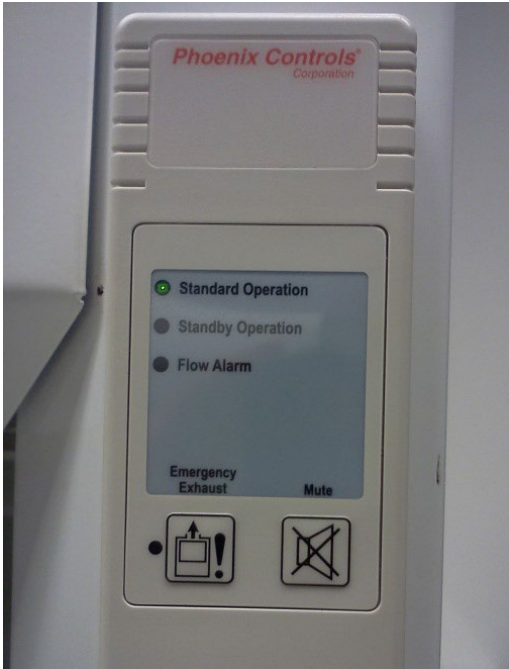
Various fume hood flow monitors are installed throughout NCRC. Pictures of the different monitors, and system status or alarm conditions, are included here for reference.



These are examples of proximity sensors. If they fail to detect a person at the hood they will "alarm" to remind people to close the fume hood sash, which saves energy.



The following pictures show fume hood system status monitors at NCRC and various system status conditions:



NORMAL STATUS



LOW FLOW – CALL 7-2059, DO NOT WORK IN THE HOOD



EMERGENCY EXHAUST HAS BEEN ACTIVATED



Call 9-1-1 for assistance

## EMERGENCY PROCEDURES



THE FASTEST WAY TO RECEIVE UM EMERGENCY ALERTS IS VIA THE U-M PUBLIC SAFETY APP.

DOWNLOAD THE APP AT [DPSS.UMICH.EDU/APP](https://dpss.umich.edu/app)

# 911

Emergency

Police, Fire, Medical

### BE THE ONE WHO MAKES THE CALL

As soon as you become aware of any crime, suspicious activity or public safety concern call immediately! Our emergency and non-emergency numbers are answered 24 hours a day, 365 days a year.

The best option is to call!

NON-EMERGENCY  
(734) 763-1131



DOWNLOAD THE U-M PUBLIC SAFETY APP  
[dpss.umich.edu/app](https://dpss.umich.edu/app)



REGISTER FOR EMERGENCY ALERTS  
[dpss.umich.edu/umalert](https://dpss.umich.edu/umalert)

SCAN FOR ADDITIONAL SAFETY INFORMATION

[dpss.umich.edu/safety](https://dpss.umich.edu/safety)



Active Attacker

### RUN. HIDE. FIGHT.

Get out of the building/area, if you can  
Hide if you can't get out & secure your location  
Fight as a last resort



Fire Safety

### EVACUATE

Activate nearest fire alarm & call 911  
Use fire extinguisher, if possible  
Exit the building using stairs, not elevators



Tornado Safety

### SEEK SHELTER

Move to the lowest interior space away from glass  
Crouch down under heavy, well-supported furniture  
Protect your head and neck



Medical Emergencies

### ATTEND TO VICTIM

Call 911 & administer care as appropriate  
Do not move victim unless necessary  
Keep victim calm & direct first responders to location



Chemical Spill

### EVACUATE

Alert others in the immediate area & call 911  
Avoid breathing vapors  
If contaminated, wash affected body part  
(use emergency eyewash or shower if available)

# Engineering Controls

## Biological Safety Cabinet (BSC)

A Biological Safety Cabinet (BSC) is a valuable supplement to good sterile technique and a necessary containment device when working with biohazard agents. If the BSC is not operated correctly, it will not provide adequate protection. The Department of Health & Human Services, Centers for Disease Control and Prevention, and National Institutes of Health have authored a document on proper use of BSC. The document (Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets) is a valuable resource when working in a BSC. The CDC document is in Appendix A and available at: <https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2009-P.PDF>

Detailed information on EHS services for BSC can be found on the Biological Safety Cabinet [webpage](#).

U-M EHS staff certifies the operation of BSC on an annual basis and places a sticker on the face of the BSC indicating the parameters observed at the time of certification. If the date on the sticker is more than a year-old contact EHS at 647-1143.

## Fume Hood

A fume hood is a ventilated, enclosed work space intended to capture, contain and exhaust harmful or dangerous fumes, vapors and particulate matter generated by procedures conducted within the hood. The following work practices are always required when using chemical fume hoods; and more stringent work practices may be necessary in some circumstances.

1. Conduct all work and keep all apparatus at least 6 inches back from the face of the hood. A stripe on the bench surface is a good visual reminder.
2. Keep the hood sash closed as much as possible.
3. Keep the hood slots and baffles free of obstruction by apparatus or containers.
4. Do not permanently store chemicals or apparatus in the hood. Large equipment used inside the hood should be placed on blocks to allow airflow under the equipment.
5. Do not put your head in the hood when contaminants are being generated.
6. Do not use the hood as a waste disposal mechanism. Solvent bottles in the fume hood must be capped when not in use.
7. Minimize foot traffic by the face of the hood. Do not make fast movements when taking things in and out of the hood.

8. Keep laboratory doors closed unless required by laboratory design. This maintains appropriate room pressurization.
10. Do not remove hood sash or sash panels except when necessary for apparatus set-up. Always replace sash or panels prior to working in the hood.
11. Do not place electrical receptacles or other spark sources inside the hood when flammable liquids or gases are present.
12. Use an appropriate barricade if there is a chance of explosion, implosion or eruption.

U-M EHS staff certifies the operation of fume hoods on an annual basis and places a sticker on the face of the fume hood indicating the parameters observed at the time of certification. If the date on the sticker is more than a year-old contact EHS at 647-1143.

## LEV (Local Exhaust Ventilation)

LEV include a variety of configurations for local exhaust or capture of point source emissions, providing personnel protection and/or smoke, odor, dust or heat control. This class of engineering controls includes snorkels, canopies, paint booths, gas cabinets, dirty animal bedding dump stations, etc.

When EHS staff certifies a LEV a sticker will be placed on the device.

## Fire Extinguishers and Fire Alarm Pull Stations

Fire extinguishers and fire alarm pull stations are available throughout each building. Identify the extinguisher and fire alarm pull station closest to your work location. Activate the pull station before you try to use the fire extinguisher.

**NOTE:** you should only use a fire extinguisher if you have been properly trained, and it is safe to do so. All fires and fire extinguisher usage must be reported to UMPD at 9-1-1.

All employees, especially those in certain occupations, should learn to use a fire extinguisher. Call EHS Fire Safety Services at 647-1143 to discuss fire extinguisher training.



## Hazardous Waste Collection and Disposal

### Biohazard

Generators of biohazard waste are required to comply with rules and regulations promulgated by federal, state and local regulatory agencies. The Michigan Medical Waste Regulatory Act regulates the generation, storage, treatment, and disposal of medical waste and administers the Medical Waste Regulatory Program covering medical waste producing facilities. The Department of Transportation requires compliance with Federal Motor Carrier Safety Regulations during transportation of regulated medical waste and the Michigan Department of Licensing and Regulatory Affairs regulates occupational exposure to blood and other potentially infectious material and waste disposal.

NCRC Research Services provides biohazard containers (with red bag liners), fiber board drums and sharps containers to lab occupants of NCRC. Research Services staff will collect the full biohazard waste containers and prepare them for collection and disposal through an outside vendor.

### Chemical

Generators of hazardous waste are required to comply with extensive and complex rules and regulations promulgated by federal, state and local regulatory agencies. The Resource Conservation and Recovery Act (RCRA) require a “cradle to grave” system of accounting for hazardous waste; the Department of Transportation requires compliance with Federal Motor Carrier Safety Regulations during transportation of hazardous waste; the Michigan Department of Environmental Quality licenses, inspects and regulates generators, haulers and disposal facilities handling hazardous waste.

The safety guidelines, regulations and procedures presented are intended to help generators comply with governmental rules and regulations designed to protect human health and the environment. Strict compliance with these regulations ensures the waste is managed, transported, and disposed of safely and properly while reducing potential liability to the University.

- Use waste containers that are in good condition to ensure that your waste is safely contained while in your possession and during transport.
  - For information about waste containers available through EHS click [here](#).
  - For information about selecting a waste container click [here](#).
- Attach a completed University of Michigan "Hazardous Waste" label to your container. This helps emergency responders identify your waste containers quickly.
  - For information about completing the "Hazardous Waste" label click [here](#).
- Keep all containers closed except when adding waste to prevent accidental spills and evaporation.
- Ensure that your waste is not kept for longer than 60 days to ensure disposal in a timely manner.
- Please call your waste in for pick up within 60 days of your accumulation start date. This will ensure that the waste will be sent for disposal prior to the 90-day regulatory limit.
- Ensure that an accumulation start date is written on the waste label. That allows you to know exactly how much time you have before the waste must be sent off for disposal.
- Have waste labels visible for inspection to allow emergency responders to easily identify your wastes. It also allows you to keep better track of your wastes.



- Provide adequate secondary containment for waste containers so that if your container starts to leak, the spill can be limited from spreading and making the contamination problems larger.
- Identify all chemicals and document them on the waste label and manifest so that all of the waste constituents in your container can be identified. This helps the people handling and disposing of your waste to know what hazards are involved. It also helps emergency responders know what steps to take if they have to respond to an incident involving your waste.
- Keep containers in a secure location. Ensure they are protected from exposure to weather, vandalism and unauthorized access.

## Consumer Electronics

NCRC Research Services works with EHS Hazardous Materials Management (HMM) and U-M Property Disposition to ensure that consumer electronics that are not designated for resale are properly recycled. Proper management of consumer electronics is essential to protect human health and the environment.

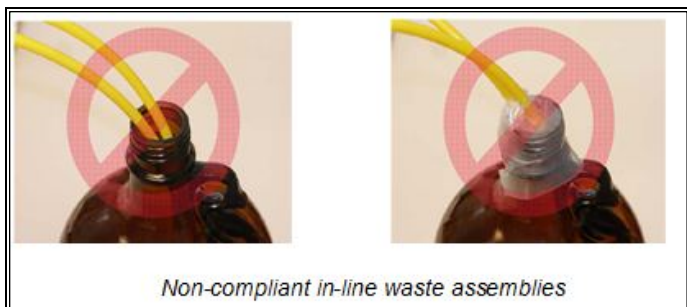
Many electronic devices contain hazardous materials that can have a negative impact on the environment if not managed properly. Electronics can contain lead, mercury, cadmium, chromium, nickel, zinc, silver, gold, lithium, beryllium and brominated flame retardants. Keeping e-waste out of our landfills prevents the leaching or emitting of toxic materials.

For additional guidance on types of waste covered, waste containers available and specific procedures please refer to this [website](#) or contact NCRC Research Services at 763-0773.

## In-line Waste Cap

State and Federal regulations require that all containers holding hazardous waste be closed except when it is necessary to add or remove waste. The term “In-line” waste describes the process where chemical waste flows through tubing from a machine into a collection container. The tubing is hard connected from the machine and fits into a specially designed cap that meets closed container requirements. Typically, High Performance Liquid Chromatography (HPLC) and Inductively Coupled Plasma (ICP) instruments generate waste in this manner.

Pictured below are two examples of non-compliant in-line waste assemblies. Inserting waste lines into an open bottle top (a missing cap), or sealing a container with “Parafilm” does not constitute a closed container. Additionally, drilling holes through an original cap and inserting waste lines through the cap does not meet the regulatory intent of a closed container.



EHS-HMM is assisting waste generators in complying with this important regulation by supplying, at no cost, an in-line waste collection system. To order, contact EHS-HMM at 763-4568 and provide the following information:

The number of in-line waste kits your lab will need

The location of your waste containers and your contact information

Additional fittings can be requested from EHS-HMM



Compliant in-line waste assembly

## Radioactive

The EHS Hazardous Materials Management (HMM) program is responsible for the collection, processing and disposal of low level radioactive waste generated in research laboratories and health care facilities located throughout the U-M campuses. Proper management of low-level radioactive waste at the point of generation is crucial to ensuring a safe and cost effective means of disposal. For additional guidance on the types of waste covered, waste containers available and specific procedures please refer to this [website](#).

## Housekeeping

Exits, aisles and emergency response material must NOT be obstructed in any way with equipment, furniture, or other items. Laboratory aisles must be maintained with 36 inches in clear width. Work areas and floors are not to be used for excessive storage. Counter tops should be tidy and free of spilled chemicals.

## Personal Protective Equipment (PPE)

Personal protective equipment and personal hygiene are basic aspects of laboratory safety. Wearing appropriate personal protective equipment, and practicing good personal hygiene, will minimize exposures to hazardous chemicals.

THESE BASIC GUIDELINES DO NOT REPLACE LAB SPECIFIC REQUIREMENTS. DEPENDING ON YOUR LABORATORY OPERATIONS, MORE OR LESS PPE MAY BE APPROPRIATE.

### Eye Protection

1. All lab personnel (including students, staff and visitors) are required to wear safety glasses or safety goggles at all times in laboratories where eye hazards are present.
2. Contact lenses DO NOT provide protection from chemical splashes but can be worn safely in combination with appropriate personal protective eyewear.
3. Wear goggles when a chemical splash is possible.
4. Wear a full-face shield, in addition to proper eye protection, when conducting a procedure that could result in a violent reaction, or when working with large quantities of a hazardous chemical.

### Gloves

1. ONE TYPE OF GLOVE IS NOT GOOD FOR ALL MATERIALS. Choose proper gloves based on the chemical hazard.
2. Refer to chemical resistance glove charts, the manufacturer, or EHS when choosing appropriate gloves.
3. The proper glove will prevent skin absorption, infection or burns.
4. Change gloves frequently, especially after known or suspected contamination.

**Gloves may become contaminated during research procedures**



### Wearing gloves into public areas may lead to cross-contamination



As a routine safety precaution, gloves should be **Removed** prior to entering any unrestricted area such as corridors, elevators, restrooms, public dining areas, and offices. Please be considerate and protect both the safety and peace of mind of others.

## LAB ATTIRE – “Why you SHOULD”

When performing work in a research laboratory you have the potential for exposure to different types of hazards – chemical, biological, radiological – to name just a few. The text that follows is based on the presumption that you are intelligent, conscientious, dedicated and care deeply about your health and safety – and also that of your colleagues as well.

You should want to prepare yourself for a safe lab experience. A major component of a safe lab experience begins shortly after awakening for the work day: “What will I wear?” which then may lead to “What activities are on my schedule?” or “What do I hope to accomplish in the lab today?”

From a self-preservation standpoint you should want to cover, with appropriate clothing, as much skin as possible to act as a barrier should you spill or drop something hazardous. Consider this clothing your first layer of protection against the hazards mentioned. In addition:

- 1. You should fully cover your feet to protect them against spills of hazardous materials**
  - Flip-flops, “Crocs”, clogs, sandals – do not fully cover feet
- 2. You should fully cover your lower extremities**
  - Full-length pants or equivalent
- 3. You should wear a fully buttoned lab coat when working with, or adjacent to, procedures involving hazardous materials. The lab coat may need to be flame resistant (FR), depending on chemicals or equipment used.**
  - DO NOT take dirty lab coats home with you for laundering! Lab coats should be regularly washed, but it is not recommended to wash them in your home machine. Details on medical school laundry services is available within the Research Services [website](#).
- 4. You should wear eye protection (safety glasses or goggles) while in any area where hazardous materials are used or stored.**

- a. Why wouldn't you do everything possible to protect your eyes and vision? You may not get a second chance.

**5. You should wear protective gloves, of appropriate design and material, while utilizing hazardous materials.**

- a. Your hands are vitally important to many activities of daily living, why wouldn't you protect them?

Several Notes: Personal Protective Equipment (PPE) will only protect you if you wear it AND it is appropriate for the activity you are performing. Additional PPE and safe work practices may be warranted based on the chemical's Safety Data Sheet (SDS), the Standard Operating Procedure, a facility policy or safety regulations. Always consult your laboratory director if you have questions about appropriate attire or PPE for the task you are performing.

## Personal Hygiene

Wash hands:

- after glove removal
- before leaving a lab
- before eating, drinking, smoking or applying cosmetics
- after contact with any hazardous material

## Respiratory protection

1. Always work in a fume hood, or provide other local exhaust ventilation, when working with materials that produce hazardous vapors or fumes.
2. If respirator use is required, you must comply with the EHS Respiratory Protection Program. Contact EHS Respirator Program Administrator at 647-1143 for more information.

## Required Written Plans and Manuals

### Biosafety Manual (BSM)

The template for this manual is not intended to cover every aspect of biosafety; essential basic procedures, precautions and guidelines are discussed.

This template should be used by the laboratory director in developing a standard Biosafety Manual appropriate to their laboratory operation. It has been designed for easy download and completing the various sections. Note that in many forms of research the granting agency will inspect your manual and make it a part of the requirements for receiving grant money.

It is essential that laboratory personnel maintain good, sound laboratory work practices and precautions. An awareness and respect for the dangerous nature of certain pathogens should always be maintained. Extensive guidelines to biosafety and agent summary statements can be obtained from HHS publication entitled *Biosafety in Microbiological and Biomedical Laboratories*. A copy should be available from the laboratory's PI.

The laboratory director or project director of a BL2 or BL3 laboratory must ensure that a working [Biosafety Manual](#) is available for the research project and that all staff has completed training. Laboratories planning BL2 or BL3 work must be inspected by EHS **before work can begin**.

## Chemical Hygiene Plan (CHP)

The purpose of this document is to educate research investigators about consensus standards of good laboratory practice, and to promote conformance with MIOSHA PART 431. HAZARDOUS WORK IN LABORATORIES [http://www.michigan.gov/documents/CIS\\_WSH\\_part431\\_35623\\_7.pdf](http://www.michigan.gov/documents/CIS_WSH_part431_35623_7.pdf) Most research labs at U-M are covered by this safety standard. According to the regulation, a Chemical Hygiene Plan (CHP) applies to all employers engaged in the laboratory use of hazardous chemicals. A "laboratory" is defined as a facility where the laboratory use of hazardous chemicals occurs. A "hazardous chemical" is defined as a chemical for which there is evidence that acute or chronic health effects may occur in exposed employees. Such chemicals include carcinogens, toxic agents, irritants, and agents which damage the lungs, skin, eyes or mucous membranes.

The intent of the CHP is to protect employees from health hazards associated with hazardous chemicals in laboratories and to keep exposures below specified limits. The CHP includes information to ensure that employees have working knowledge about the hazardous chemicals they use. It is also intended to provide guidance on safety and compliance with additional regulations dealing with chemical, biological, radiological, and other hazards.

It is to be used and supplemented, as needed, by each laboratory director at the University of Michigan. It is the responsibility of the laboratory director to review this general CHP and to use it in the development of a complete plan specific to their laboratories. Each laboratory director is responsible for the implementation and documentation of their Chemical Hygiene Plan and for providing safety information and training to their employees.

All laboratory personnel must complete training.

Click [here](#) to view and download the full CHP.

## Exposure Control Plan (ECP)

The Federal Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen (BBP) Standard and the Michigan Occupational Safety and Health Administration (MIOSHA) Standard R



325.70001 – 325.70018 “Bloodborne Infectious Diseases,” requires the following for all employees who may have occupational exposure to human blood, body fluids, or unfixed tissue; human cells or cell lines; or HIV or Hepatitis B Virus:

- Initial and annual Bloodborne Pathogen Training. Employees who have been classified as occupationally-exposed must attend an initial training session that will discuss BBP in addition to other laboratory safety topics.
- Complete the University of Michigan Occupational Exposure to Bloodborne Pathogens /Hepatitis B Vaccination Acceptance/Declination Form. This form must be completed even if the person declines to be vaccinated. The form is available in Appendix A (Declination Form) or Appendix C (Vaccination Request) of the Exposure Control Plan – Bloodborne Pathogens Guideline.
- A written Exposure Control Plan (ECP) available to employees.

This policy applies to all non-hospital University of Michigan departments whose employees may reasonably anticipate contact with blood or other potentially infectious materials (OPIM) during the performance of their duties.

In compliance with the Bloodborne Pathogens Standard, the University requires all departments that fall within the scope of this policy to minimize employee risk from exposure and infection by implementing Exposure Control Plans (ECP) in the form of departmental policy.

Responsibility for compliance rests with individual departments and includes:

- Developing a written unit specific Exposure Control Plan
- Providing and ensuring the hepatitis B vaccination available to workers with exposure potential
- Ensuring Initial and Annual training
- Post Exposure Evaluation and Follow-up
- Recordkeeping

Click [here](#) to view the full ECP.

## **Safety Showers and Eyewash Stations**

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick-drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

Provide and document training for all new lab employees concerning the location and how to operate your specific lab safety shower & eyewash station. Some labs are equipped with these facilities in the lab while others may be located in the service corridor. There are different types of units and various ways to initiate water flow.

REMEMBER YOUR VISION MAY BE IMPAIRED AND YOU MAY BE PANICKED WHEN YOU NEED THESE FACILITIES. KEEP THIS IN MIND WHEN LEARNING THE LOCATION AND USE OF THE SAFETY SHOWER AND EYEWASH.

Time is of the essence and a few seconds may mean the difference between permanent injury and full recovery. For a chemical splash to the eyes, immediately flush with water while holding your eyelids open. Continue drenching the eyes for at least 15 minutes. Contact lenses should be washed from the eyes under flushing conditions, but if not, remove the lenses as soon as possible.

For a chemical spill on the body, immediately remove any contaminated clothing and begin drenching the area with water as soon as possible. Continue drenching for at least 15 minutes.

Do not block or store any items in front of, or under, a safety shower or eyewash station. Tape off an area on the floor under the safety shower (approximately 3-sq. ft.) to remain clear at all times. Do not block or stack glassware or other items around drench hoses and eyewash stations located at sinks.

**Have a bystander call 9-1-1 whenever an eyewash or shower is activated for emergency use. This will ensure that appropriate emergency medical personnel are dispatched to the scene.**

## Spill Preparedness

The variety and quantity of hazardous substances used in laboratories require pre-planning to respond safely to chemical spills. The cleanup of a chemical spill only should be done by knowledgeable and experienced personnel who have received appropriate training. Spill kits with instructions, absorbents, reactants and protective equipment should be available to clean up minor spills. A minor chemical spill is one that the laboratory staff is capable of handling safely without the assistance of safety and emergency personnel. A major chemical spill requires active assistance from emergency personnel.

Before working with chemicals, assess potential spill hazards. Each laboratory worker should be familiar with general spill response procedures and the location of appropriate chemical spill kits. Written protocols should be developed when extremely hazardous or large quantities of chemicals are used.

Each lab group should have readily available spill clean-up materials specific to the various classes of chemicals that are used or stored in the lab. This may entail the purchase of acid, base and flammable kits; a universal spill kit or specialty spill kits for chemicals like hydrofluoric acid, formaldehyde and some concentrated acids.

## Unattended Experiments

If operations involving hazardous substances are carried out with no one present, procedures MUST be designed by the lab staff and laboratory director to prevent the release of hazardous substances in the

event of an incident (i.e., power interruption, water leak, change in water pressure, etc.). Lights in the lab should be left on, and signs should be posted identifying the nature of the operation, the hazardous substances in use and emergency contact phone numbers for people familiar with the experiment. If appropriate, arrangements should be made for other workers to periodically inspect the operation.

## Visitors and Volunteers to U-M Laboratories

Unsupervised volunteers and visitors create a risk for injury and additional liability for the University. EHS recommends that a responsible person appointed by the laboratory director should supervise all visitors or volunteers when they enter a laboratory to work or for a visit. Departmental policy to this effect will reduce or eliminate the risk of personal injury to visitors/volunteers in research laboratories, and the risk of damage to projects and property.

The EHS [Guideline](#) applies to all academic, clinical and service units involved in laboratory operations.

In addition, there are requirements and permissions that need to be met for [Minors in Research](#). If this topic applies to your lab, please become familiar with the requirements.

## Working Alone

It is not prudent to work alone in a laboratory with hazardous materials or procedures. Refer to the U-M [Chemical Hygiene Plan](#) for additional guidance and recommendations.