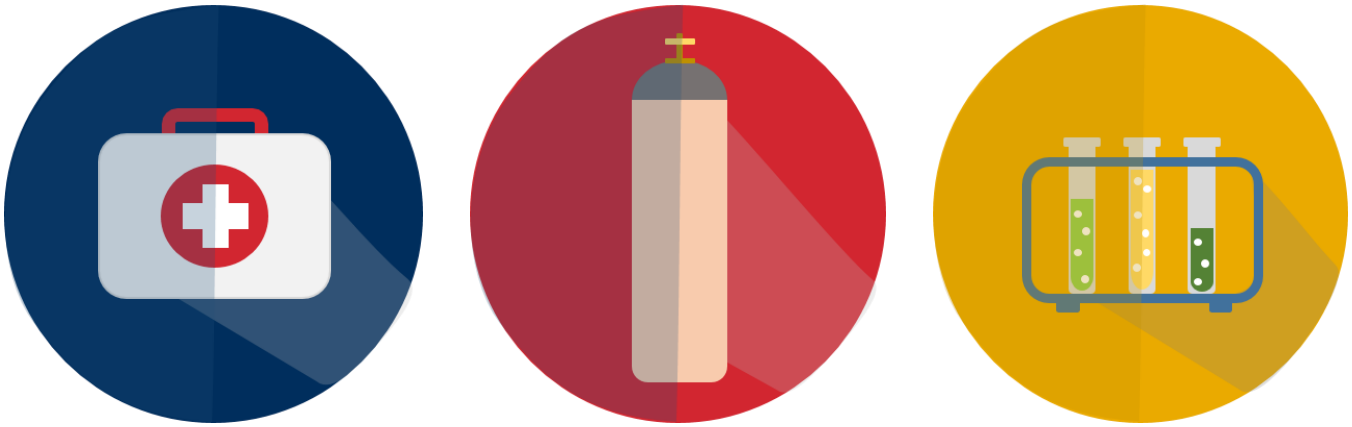

Lab safety for Non-Lab Workers

www.uvic.ca/ohse

V4 | May 2018

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Step 1: OBSERVE

This section will prepare employees to: recognize hazards; determine if an area is safe to enter; understand how chemicals and equipment are labelled; learn how chemicals are used, where they are stored, and how hazardous waste is labelled for disposal.

What are the types of hazards you might find in a lab space at UVic?

UVic's Labs contain a variety of different hazards. You may not see all of these hazards in every lab space, but this list provides an overview of the range of hazards present. Hazards to be aware of include:

Chemicals

- Chemicals include everything from non-hazardous materials such as salt to more dangerous life-threatening materials.
- Over 100 research and teaching labs that contain chemicals.
- The Red Diamond symbol indicates a chemical hazard

Biohazardous Materials

- Bacteria, viruses, fungi, insects, plants and animals.
- May cause infection or disease in humans or animals
- Currently approximately 60 labs on campus containing biohazardous materials
- Biohazard posters indicate where biohazards are present

Radioactive materials

- There are 12 radiation work areas on campus
- All radioactive materials and work areas are labeled with the radiation symbol.
- Radioactive work stations are labeled, rather than labs or rooms

X-Ray Hazards

- X-Rays may pose a radiation risk or hazard
- X-Rays will be marked with signage as well as an illuminated sign indicating when the X-Ray is in use

Powerful magnets

- Powerful magnets can affect medical devices including medical implants like Pacemakers, can delete or freeze electronic devices, magnetic strip cards, and can attract metallic objects

Physical Hazards

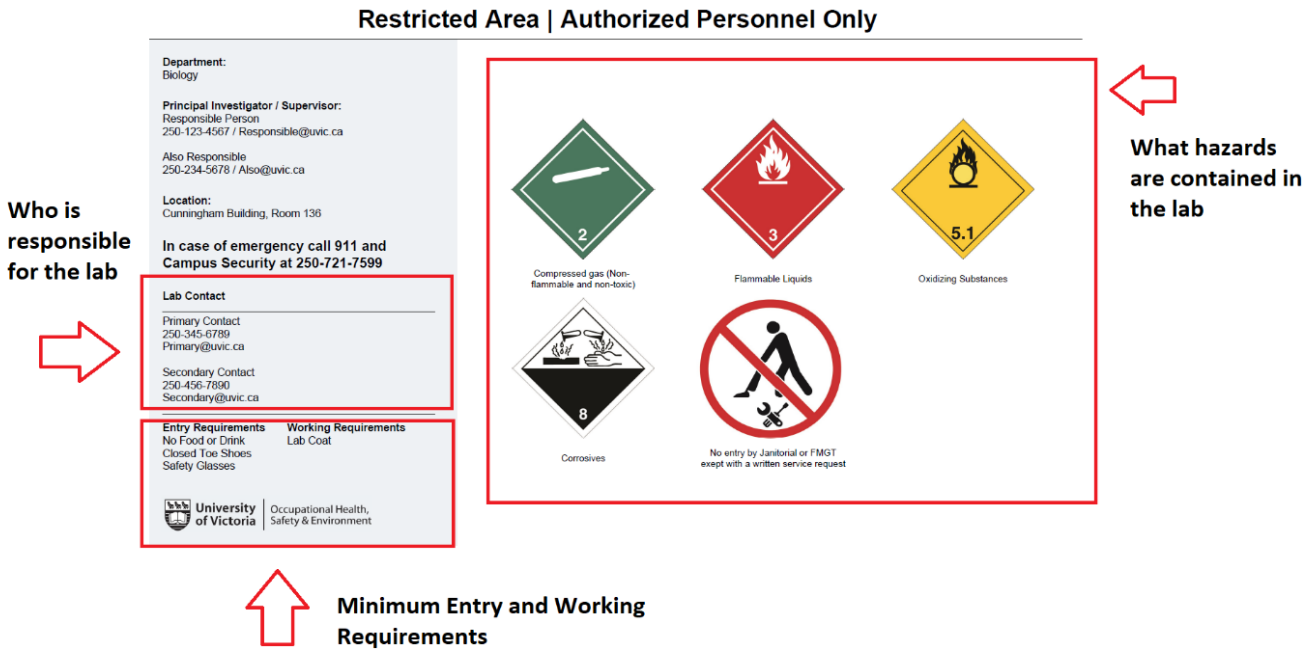
- Slipping hazards, tripping hazards, sharp objects/edges, burns, electrical hazards, compressed gas, UV Light

Laser hazards

- Lasers may seem relatively safe, but they can be incredibly dangerous. NEVER enter a lab containing a laser without the lab owners knowledge and consent – this can lead to injury to self, others and or damage to the equipment.
- Lasers are indicated by a Laser Warning symbol. All labs with lasers will be signed and a "Laser in Use" sign will be illuminated if the laser is on

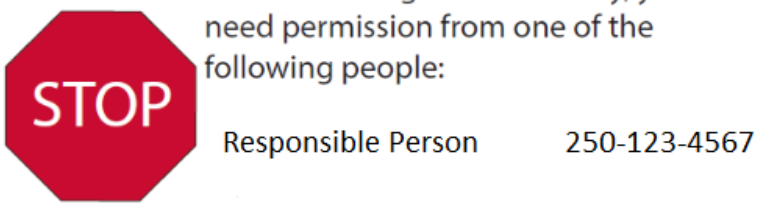
Laboratory Signage?

Laboratory door signage is being placed to increase the awareness of laboratory space on campus and provide first responders wit information on: what hazards are contained in the laboratory spaces, who is responsible for the space, and what the minimum entry requirements are.



As part of the laboratory signage, you may also see special hazard signage restricting entry to the lab. You may also see a Stop Sign with designated laboratory contacts.

No entry by Janitorial or FMGT Staff except with a written service request



Safety Data Sheets (SDS)?

A SDS provides additional product information and information on personal protective equipment. You have 3 options for retrieving SDS depending on the product: product supplier's website you can use any computer, or UVic OHSE subscription (https://www.uvic.ca/ohse/research/material-safety/index.php) for general chemicals by clicking through the OHSE link, or FMGT subscription to MSDS Online (https://www.msdsonline.com/) for products regularly used by FMGT. It is important to remember that if a WHMIS symbol is present then the product is dangerous. WHMIS symbols show both the degree and the type of hazard using a frame and a symbol.

WHMIS Symbols

Gas Cylinder

Flammable

Oxidizer

Acute Toxicity

Biohazard

Corrosive

Exclamation Mark

Environmental Hazard

Health Hazard

Explosive

**For a full listing of WHMIS and Consumer symbols, see the end of this Tip Sheet Package*

Conditions, equipment, and products that may be physical hazards

Lab areas contain a variety of different equipment, products, and conditions that may be physical hazards. It is important to be aware of the conditions and equipment around you to ensure that you are safe at all times in the labs. The following list covers some of the common hazards present in labs on a day-to-day basis.

Biological Safety Cabinets

Biological hazards may be used or stored in safety cabinets, such as the ones pictured below. These function to protect the operator and the room occupants by filtering out biological hazards before venting to the room or outside the building. These cabinets are tested annually or after they are moved to ensure they are providing the required protection and the exhaust filter on top of the cabinet has not been damaged.

Acid and Flammable Chemical Storage Cabinets

Some chemicals with specific hazards are stored in designated cabinets for compatibility and safety. Only lab workers are to handle the chemicals in the cabinets. If work duties require access through one of the cabinets arrangements to have the lab workers empty the cabinet prior to commencing any duties.

Chemical Waste

Hazardous waste disposals are not permitted in landfill garbage or into the sewer system. UVic labs collect these wastes in a variety of different containers for pick up and off-site disposal. If your work requires access to an area that would necessitate moving the containers then arrangements should be made to have the laboratory workers of that area move the containers to another location for the duration of your duties. If there is liquid around any container then the lab workers should be informed directly or alternately inform your supervisor that there is a spill so your supervisor can follow up with the laboratory.

Sharp Objects

When you enter lab spaces, be aware of sharp edges and objects, such as broken glass, exposed blades, needles and any pointy bits sticking out of equipment.

Physical Hazards

Labs may contain slipping hazards and tripping hazards. Be aware and mindful of obstacles that may block aisles and hallways, or other obstacles that may create a hazard.

Burn Hazards

Hot things that look the same hot or cold and should be given enough space to limit the risk of burns. The same goes for cold items that are cold enough to give you frostbite in a very short time.

Electrical Hazards

There is a wide variety of electrical equipment in each lab. You may find electrical outlets, powerbars, and other electrical hazards on lab tables, along walls, or elsewhere in the lab.

Cryogenic Liquid Dewars

Liquid nitrogen dewars are designed to vent. Dewars are a giant thermos keeping the cryogenic liquid from quickly evaporating into a gas. Each dewar is equipped with a pressure relief valve that opens at a preset pressure to relieve the gas pressure as the cryogenic liquid slowly turns into a gas. The pressure relief valve can vent loudly and suddenly. Tampering with the relief valve can cause pressure to build up in the dewar beyond what the dewar was designed to handle.

Compressed Gas Cylinders

Compressed gas cylinders contain gas that is being held under pressure and therefore they represent an explosion hazard. These cylinders should always be secured firmly when stored, and care should always be taken not to knock a cylinder over. These cylinders should also be kept away from heat sources, as this could expand the gas within.

Fume Hoods

Fume hoods in labs are used by faculty and students when they are working with chemicals that are dangerous if inhaled. Fumes are exhausted through the fume hoods directly out of the building through stacks on the roof.

UV Light

UV lights in biological safety cabinets are used for sterilization of the work surfaces. Reflected UV light can cause burns to skin or eye damage.

Step 2: DO

This section will assist employees in: understanding roles and rules for working within lab spaces, and identifying responsibilities in labs.

Personal Protective Equipment

In order to enter certain lab spaces, the minimum requirements may include wearing personal protective equipment. Personal protective equipment for working in Labs regularly includes:

Lab Coat

Gloves

Closed Toe Shoes

Safety Glasses

General Rules for Working in Labs

These rules apply to everyone who enters a lab at UVic.

- DO NOT move, touch, disturb or handle containers or materials belonging to a lab. If materials or equipment need to be moved to perform your duties, contact your supervisor or the lab supervisor to make arrangements.
- DO NOT eat, drink, apply cosmetics, store food, take medication or adjust contact lenses in a lab.
- DO always wear close-toed shoes when working in a lab.
- DO wash hands—before exiting lab and/or immediately if you think your hands might be contaminated. Hand washing with regular soap and warm water is a proven method for infection control.

Lab Worker and Supervisor Responsibilities

Responsibilities for lab safety – including the lab safety of non-lab workers -- are shared by different staff groups at UVic. These include lab workers, supervisors of non-lab workers, and non-lab workers like you! Clearly defined roles and responsibilities have been set out for each group.

University staff who work in labs have the following responsibilities with respect to lab safety:

- Maintain a safe work area.
- Establish and follow safety protocols with all hazardous materials.
- Segregate regulated hazardous waste from regular landfill waste.
- Make decisions on the proper handling of spills.

University staff who supervise non-lab workers have the following responsibilities with respect to lab safety before a worker starts working in a laboratory:

- Ensure employees have had WHMIS training. All UVic employees require WHMIS training.
- Ensure employees receive orientation to any area they may be asked to work in.
- Ensure employees KNOW:
    - Work procedures for labs
    - Emergency exits
    - Emergency washing facilities
    - Personal protective equipment requirements
    - Waste disposal procedures
    - Spill reporting and/or response procedures

Non-lab Worker Responsibilities

Non-lab workers have the following responsibilities with respect to lab safety:

- Notify lab prior to entry – preferably enter only when lab personnel are present.
- Explain the work that will be performed.
- Give advanced warning if utilities will be shut-off, or if equipment will generate heat or sparks.
- Wait for lab personnel to clear the work area of hazardous materials and contamination before starting work.
- Wear appropriate personal protective equipment.
- Look for hazard warning signage, and follow requirements.
- Review the assigned work area for potential hazards prior to starting work.
- Do not work near waste containers or work surfaces labeled with biohazard, radioactive, carcinogenic or other specific warning signs.
- Do not hesitate to ask questions or to notify lab staff of any concerns.
- Contact supervisor if in doubt about any aspect of assigned work.
- Wash hands before exiting lab

Lab Conduct for Non-Handlers

Non-Handlers are individuals within the Lab who will not be handling equipment. They include Campus Security, Administrative Officers, and Office Staff. As a Non-Handler, there are additional restrictions and responsibilities for you to be aware of:

- No manipulation of materials in the lab
- Walking down the center of the aisles with no contact with surfaces or equipment
- Recognize the general hazards in the lab
- Do not hesitate to ask questions or to notify lab staff of any concerns

Lab Conduct for Scheduled Routine Handlers

Scheduled Routine Handlers are individuals within the Lab who will be entering labs as part of their regular duties, including Janitorial Staff. As a Scheduled Routine Handler, there are additional restrictions and responsibilities for you to be aware of:

- Manipulate only those items required for your duties
- Walk down the center of the aisles to contact equipment or surfaces at specific location
- Recognize the general hazards in the lab and the specific hazards for your duties
- Do not hesitate to ask questions or to notify lab staff of any concerns

Lab Conduct for Reactive Handlers

Reactive Handlers are individuals within the Lab who will be handling equipment in Labs on an as-needed basis. They include FMGT Plumbing, Contractors, UVic Systems, FMGT Mechanical, and Science Technical Shops. As a Reactive Handler, there are additional restrictions and responsibilities for you to be aware of:

- Manipulate things based on a work order or emergency request
- Walking to unscheduled predetermined locations to contact equipment or surfaces
- Recognize the general hazards in the lab and the specific hazards for your duties
- Give advanced warning of if utilities will be shut-off, or if equipment will generate heat or sparks
- Wait for lab personnel to clear the work area of hazardous materials and contamination before starting work
- Do not hesitate to ask questions or to notify lab staff of any concerns

Exiting Labs

When you exit the lab, you should remember to:

- Wash your hands: If you believe your hands are contaminated, you should wash them immediately. You should also wash your hands as you exit the lab. Not only is hand-washing an important precaution, it is also a proven method for infection control.
- Remove personal protective clothing.

Step 3: REPORT

This section will provide employees with: rules for working in labs and approaching hazards; exposure procedures, and; incident and hazard reporting procedures.

Common Physical Hazards

Sharp Objects

When you enter lab spaces, be aware of sharp edges and objects, such as broken glass, exposed blades, needles and any pointy bits sticking out of equipment. Sharp objects may contain biological material and pose a physical risk. If you encounter a sharp object, remember:

- Do not touch or handle the sharp objects.
- Do not empty a garbage can containing a sharp object.
- Report to your supervisor so they can inform the supervisor of the lab.
- Trained lab personnel should remove the sharp objects.

Spills

You may encounter unknown liquids or other spills on the floor, counters, or other work areas. Spills can consist of hazardous materials and pose a physical risk. If you encounter a spill, remember:

- Do not touch or attempt to clean it up.
- If someone is in the lab, inform them of the spill.
- If no one is in the lab, close the lab door as you leave.
- Contact your supervisor or campus security (7599) to alert them about the spill.

General Emergency Procedures

In the event of the emergency, general emergency response procedures include the following steps:

- Dial 911 for ambulance, fire and police. Tell them where you are (Building & Room #).
- Call Campus Security at (250)721-7599.
- Notify others in the area.

Emergency Equipment

UVic's labs and lab areas are equipped with emergency stations for your protection. These include emergency eyewash stations and emergency showers. Labs also have sinks available where you can wash your hands.

Exposure Procedures

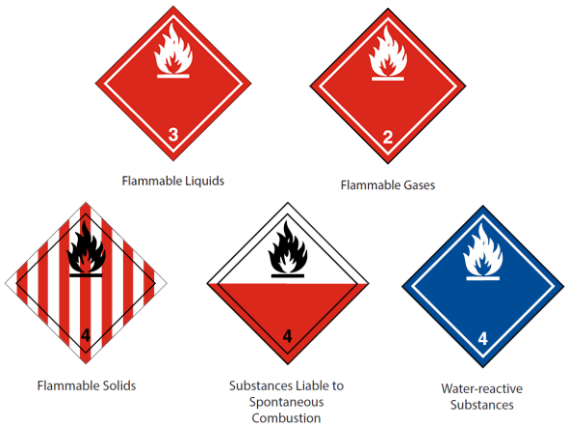
- **Skin:** If your skin comes into contact with hazardous lab materials, wash the affected area with soap and water.
- **Eyes:** If a splash of hazardous lab materials gets in your eye(s), flush using eyewash for 20 minutes.
- **Inhalation:** If you inhale any hazardous lab materials, move away from the area immediately and get into fresh air, THEN:
    - Notify other people in the area so they are not exposed to the same hazard. Someone may need to clean up a spill, or to call for emergency assistance.
    - Notify your supervisor. Record in your injury log book or seek additional medical attention if required.

Incident Reporting

If an incident does occur, you should report the incident as soon as possible. The information page below gives you instructions on Who, When, What, and How to report.

- **WHO* should report Incidents and Hazards?** (*when involved in or witness to the incident/hazard)
    - Faculty, Staff, Students
- **WHEN should they report the Incidents and Hazards?**
    - As soon as possible
- **WHAT should they report about the Incidents and Hazards?**
    - Injury, exposure or occupational disease
    - Time-loss from work
    - Medical treatment (by a Physician)
    - First Aid call-out (for work-related injury)
    - Equipment failure
    - Hazardous material spill/ environmental release
    - Property damage
    - Send the completed report form to your SUPERVISOR and/or your Coordinator, OHSE
- **HOW should Incidents and Hazards be reported?**
    - http://www.uvic.ca/ohse

Appendix A: WHMIS Symbols

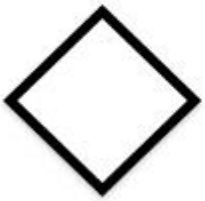
Door signage (Transportation of Dangerous Goods)	WHMIS 2015 / GHS Symbol	
		**Gas Cylinder** • Gas under pressure
		**Flame** • Flammable • Pyrophoric • Self-heating • In contact with water emits flammable gas • Self-reactive • Organic peroxide
		**Flame over circle** • Oxidizer
		**Skull and crossbones** • Acute toxicity (fatal or toxic)
		**Biohazardous Infectious** • Biolevel 2 and above

 Corrosives		**Corrosion** • Skin damage/burns • Eye damage
 Toxic Substances  Toxic Gases		**Exclamation mark** • Skin irritation • Eye irritation • Skin sensitization
		**Hazardous to the Environment**
 Toxic Substances  Toxic Gases		**Health Hazards** • Carcinogenicity • Mutagenicity • Respiratory sensitization • Reproductive toxicity • Specific target organ toxicity • Aspiration hazard
 Organic Peroxides		**Exploding bomb** • Self-reacting • Organic peroxide • *Explosive (not adopted)*

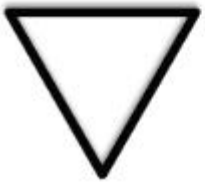
Appendix B: Consumer Symbols

Frame shows the degree of hazard

Danger



Warning



Caution

Symbol indicates type of hazard

Corrosive

Explosive

Flammable

Poison