

LABORATORY SAFETY PLAN sample

Name
Department:
Lab: `\
OFFICE #
HOME #

Emergency information

MUN St. John's Emergency: 864-4100
Other Emergency #: 9-911 (911 if using a cell)
Health and safety: 864-3659

Student responsibilities

- 1) Complete the appropriate training and orientation programs provided by Envr, Health and Safety Dept such as Safety 1000 and WHMIS plus any additional training required for your research.
- 2) Adhere to the no food or drink policy at ALL TIMES.
- 3) Study your Laboratory Safety Plan and "Working After Hours Guidelines" (Appendix A)
- 4) Study the chapters of the Laboratory Safety Manual that are relevant to your research
http://www.mun.ca/health_safety/Laboratory_Safety_Manual_Nov25_2013.pdf
- 5) Participate in your lab's monthly safety check list (Appendix B)
- 6) Sign the attached sheet (Appendix C) indicating that you understand all the regulations required of you for working in the research laboratory

1. Safety Equipment

The following equipment should be available and functional:

Safety glasses/goggles must be worn at all times for experimental work.

Lab coats must be worn at all times when performing laboratory experiments.

Long/loose hair must be tied back at all times.

Disposable gloves must be worn when using any chemicals. **NOTE:** Wet glassware is difficult to handle with disposable gloves, care must be taken when cleaning glassware. Also, do not touch door handles, keyboards etc. with gloves as you will contaminate these surfaces with chemicals.

Oven gloves are to be worn when handling a hot or cold apparatus. **NOTE:** thick gloves may compromise your grip.

Fume hood - the sash should be raised no higher than the level indicated on side of the hood (18 inches). When you leave the hood the sash must be closed leaving only a small gap to improve efficiency and encourage the 'chimney effect' in case of a power failure.. Read section 6.2.1.1 in the LSM for more detailed information.

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Fire extinguishers: All lab members should have an understanding of how to handle a fire extinguisher and know the whereabouts of the nearest fire safety equipment and alarm. Read section 12.3 in the LSM for more details.

Eyewash and shower: All lab members should know of their location and proper use. Read section 2.5.1 of the LSM. **Flush the eyewash out regularly (ie once a week as per Appendix B.)**

All accidents resulting in injury, major spills or explosion/fires must be promptly reported to your supervisor and to departmental administration. A lab accident/ incident report must be completed.

Spill kits - locate where they are and read the instructions

2. First Aid Kits and First Aid Responders

Know how to handle emergency situations before they occur:

Become familiar with the first aid responders in your area.

Become familiar with the properties of the hazardous products used.

- READ MSDS OF ALL CHEMICALS YOU WILL USE BEFORE USE.
- MSDS are in binders in each lab.

Familiarize yourself with the location and contents of the first aid kit.

Look for names of First Aid responders for your floor (*needs to be done*)

3. Housekeeping

No food or drink – anywhere (cupboards, personal bags and internal rooms). This will be viewed as a serious breach of laboratory practice.

Keep lab clean and tidy at all times.

Store solutions and samples appropriately

Avoid build-up of dirty glassware in sinks

Ensure sink drains are clear of obstructions.

Floor must be kept clear of trip hazards.

Dispose of broken glassware immediately in the designated container.

Dispose of sharps in appropriate container.

Stored chemical solutions must be correctly and fully labeled, wherever they are located (e.g. on benches, in hoods, in cupboards and draws, in fridges/freezers). Include your name.

Before leaving turn off faucets, flames and instruments. Close windows and lock lab doors.

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4. Records

Lab notebooks must contain an accurate record of what you have done and what you plan to do. Include comments on hazards where appropriate. Undergraduate students and other new students must not carry out new experiments without authorization from their supervisor.

The inventory and MSDS binders for your lab must be kept up-to-date and chemicals must not be used before they have been entered in the inventory.

Servicing - record faults and servicing in a dedicated instrument book.

5. Transportation of chemicals

Anyone moving chemicals through public spaces such as corridors must take care to avoid spills. If possible consider picking up chemicals from stores at times when corridors are least packed (eg half past the hour in the morning/afternoon and not at lunch time)

Chemicals must be transported in break-resistant or approved secondary containers that are capable of containing all materials in the event of breakage or spill.

6. General Chemicals

Read sections 5.5 and 5.6 in the LSM dealing with dangerous chemicals that your lab may be working with. Eliminate all distractions (put the cell phone on silent mode).

New chemicals - add to inventory, add notes on hazards and make sure MSDS sheet is available in the lab and is up to date.

Storage - store chemicals appropriately (in freezer, fridge, fire-proof solvent cupboard etc.). Solvents and chemicals must not be kept in fume hoods without good reason.

Labeling should be done clearly and indelibly following WHMIS guidelines.

Corrosive materials, acids, alkalis, etc. must be handled with the appropriate safety equipment and protection as indicated in the chemical's MSDS. Concentrated acids and alkalis should only be used in a fume hood.

Flammable materials must be handled away from all sources of ignition, this includes sparks caused by electrical equipment such as electric motors, light switches, thermostats and vacuum pump switches. Diethyl ether must be handled with special care and always handled in a fume hood.

Disposal (solvents in waste bottles, etc.). Label what is put into each solvent waste container.

Liquid nitrogen to be handled with the appropriate insulating gloves and eye protection. Air or oxygen must not be pumped through a trap cooled by liquid nitrogen.

Dry ice (solid carbon dioxide) to be handled with insulating gloves or scoopula.

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7. Specific Hazards in Laboratory of PI/Lab Manager

The following hazards are some that are commonly encountered in Laboratory of PI/Lab Manager.

General points

First discuss your experiment with your PI. Ask for assistance if you are unsure (*workers rights dictate that the worker has the right to refuse any type of work considered unsafe*).

Read the MSDS (last 3 yrs).

Plan by gathering the correct protective clothing.

You may require at least one of the following: bench covering, a tray, shielding or the fume hood. If applicable have an antidote and neutralization compounds ready.

Note the locations of the spill kit and first aid kit

Carefully consider the means of safe storage and safe disposal

Before actually carrying out the procedure, ensure that you are COMFORTABLE – that you can move and are not overly restricted. Practice with some dummy samples. If you are still concerned ask the PI/Lab manager for help.

Compressed gas cylinders. These must be fitted with an appropriate regulator. They MUST BE securely strapped or chained using appropriate cylinder clamps. They are extremely heavy. When a cylinder is empty remove the regulator and fit the safety cap. Empty cylinders are removed from a laboratory on a proper trolley by store room personnel.

ADD SPECIFIC Egs

Metabolic poisons

Neurotoxin

Carcinogens

Detergent powders

Radioisotope

Biohazard

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8. Use of flame

Remove all flammable solvents from the surrounding area beforehand.

Keep flame well clear of curtains!

If a fire is uncontrollable notify lab mates, exit lab, engage fire alarm and exit the building.

9. Overnight running

Consult your supervisor first. Leave a description of the reaction and contact information beside the apparatus.

10. Undergraduate students

Inform them of all laboratory and safety protocol. Ask them to carefully read your Lab Safety Plan and sign the Participation Agreement (Appendix C).

Ensure they are properly trained on new techniques and on new instruments.

No new experiments are to be attempted alone.

11. Visitors

(a) Must wear safety glasses and lab coat when in the lab.

(b) Non-university visitors must have permission to visit labs from your supervisor.

12. Evacuation from Building

In the event of an evacuation of either the Sciences Building or the BT Building (the most likely cause being a fire alarm going off):

* LEAVE IMMEDIATELY (and calmly).

* DO NOT UNDER ANY CIRCUMSTANCES USE AN ELEVATOR.

* DO NOT UNDER ANY CIRCUMSTANCES CONGREGATE INSIDE THE QUADRANGLE.

The reasons are: you may become trapped and the possibility of being showered with glass should any of the windows blow out.

Exit the building via the stairwells and external doors. The designated muster points are areas 15B and 17 (in the event of bad weather, the library and University Center are safe options).

* DO NOT REENTER THE BUILDING UNTIL SO AUTHORIZED (by Campus Enforcement).

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13. **Special Precautions** eg Pregnancy.

14. **Working in Laboratories after Regular Hours**

See Appendix A which outline guidelines for students / researchers who wish to work in Biochemistry laboratories after regular hours

15. **Individual Safety Assessment**

Safety is the TOP PRIORITY - you (the worker) have the right to refuse work which you do not feel is safe. You will need to identify and assess hazards in your own work and laboratory to ensure that you, your coworkers, and visitors to your laboratory are safe.

THIS SECTION ATTEMPTS TO ENFORCE THE CRITICAL DIFFERENCE BETWEEN MOST OF THE CHEMICALS IN A LAB AND THE FEW THAT ARE EXTREMELY DANGEROUS.

When using a chemical for the FIRST TIME assess the risks (along the lines suggested below). Consult with your PI or the lab manager if you are unsure about the accuracy of your assessment.

Hazard Level (potential harm) rating

* Slightly harmful (e.g., superficial injuries; minor cuts and bruises; eye irritation from dust; nuisance and irritation; ill-health leading to temporary discomfort)

* Harmful (e.g., lacerations; burns; fire; serious injury; dermatitis; asthma; ill-health)

* Extremely harmful (e.g., poisonings; severe/fatal injuries; major fire; occupational cancer; other severely life shortening diseases; acute fatal diseases)

Likelihood of Harm rating

* Very Likely - Typically experienced at least once every six months by an individual.

* Likely - Typically experienced once every five years by an individual.

* Unlikely - Typically experienced once during the working lifetime of an individual.

A good rule (when using a NEW CHEMICAL) is: do not carry out any work that is rated potentially extremely harmful or potentially harmful with a risk higher than unlikely. Consult with your PI or the lab manager before beginning any new procedure that you assess to be "Harmful" even if it is "Unlikely".

Your individual safety assessment should consider three kinds of work periods

- (i) working during regular hours;
- (ii) working on evenings and weekends and
- (iii) working on major holidays.

In all three instances, it is best to do the work when there are other people around (to assist if something goes awry). In the case of (i) it is always a good idea to start the experiment early in the day.

In cases (ii) and (iii) determine whether additional precautions need to be taken. These should include notifying your PI or the lab manager, having someone within clear shouting distance, being alert to your surroundings and again not undertaking work that could be "Harmful".

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Appendix A: WORKING IN LABORATORIES AFTER REGULAR HOURS

MUN Health and Safety states that no one should work alone in the laboratory after normal working hours (9 am to 5 pm). Accidents are unexpected by definition, and if a person is working alone when one occurs, his or her ability to respond appropriately could be severely impaired, which could result in personal injury or death and catastrophic facility damage.

Undergraduate students are not permitted to work outside of normal working hours (9am – 5pm) including the weekend.

You must use the buddy system if you work after hours and not work alone.

Buddy System: Your "buddy" must be nearby (within shouting distance) so that he/she can call for help in an emergency (fire, spill, contamination, illness, injury, etc.). Coordinate schedules. A "buddy" can be a fellow student graduate, faculty member or co-worker.

The Working Alone definition is when **both** of the following conditions exist:

1. A worker is working by themselves in an office, laboratory, instrument room or workshop.
2. Assistance, in the event of an injury, illness or emergency, is not readily available to the worker.

The following procedures should be followed when working after hours:

1. You must inform your PI if you plan to work after hours, and specify:
 - a. The time period.
 - b. The name and location of your "buddy".
 - c. The work that you plan to undertake.
2. Do NOT work after hours if your plan has not been approved by your PI or Lab Manager, or the scope of your planned work changes significantly and includes additional hazard.
3. Ensure that you have access to a first aid kit and appropriate spill kits
4. The following materials/procedures (*add / remove as needed*) should not be used after hours:
 - a. Concentrated acids
 - b. Metabolic poisons
 - c. Strong oxidizers such as nitric acid and permanganate.
 - d. Flammable solvents
 - e. Any procedure rated as HARMFUL (see section 15)
5. You and your "buddy" should communicate with each other at least every 30 min. Note the time of each contact. If your "buddy" is not available, you should shut-down your work, leave a note for your "buddy" and leave the lab.

Call MUN's Emergency number, **864-4100**, if you have any concerns

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Appendix B: INTERNAL INSPECTION

Monthly Safety Check List for Lab Room XXX

(add areas to suit individual application)

YEAR:	JAN	FEB	MAR	ARP	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Food & drink absent from all areas												
Safety clothing available/worn												
Work surfaces clear												
Sinks clear of glassware												
Aisles clear - no tripping hazards												
Gas cylinders clamped												
Fume hood tidy and functioning												
Fume hood sash at marked level												
Bottles of flammable solvents not left out												
Corrosives (eg strong acids) safely stored												
Chemical containers closed												
Chemical solutions properly labelled												
Compatible storage of chemicals												
Glass & Sharps container available												
Eyewashes flushed weekly Record date	W1											
	W2											
	W3											
	W4											
Fire extinguisher – freely accessible												
First Aid Kit stocked												
Checked by (initials)												

Comments/Actions:

Date (initials):

-
-
-

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Appendix C: Laboratory Personnel Participation Agreement for PI/Lab manager

I have read and understand this document, the “working in a laboratories after regular hours” and the appropriate chapters in the Laboratory Safety Manual and I agree to follow the practices described.

I acknowledge that repeated violations of these practices may result in suspension of laboratory privileges.

Name (Print)First, Last)	Signature	Date	Witness