

LABORATORY SAFETY MANUAL (rev. April, 2015)

General Laboratory Safety: Information, Policies and Procedures (MNI)

http://www.mcgill.ca/neuro/files/neuro/laboratory_safety_manual.pdf

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PREAMBLE

The Laboratory Safety Website has been developed by the MNI Safety Committee to assist you in understanding and following safe laboratory practices. Working in or near a laboratory, the safety of yourself and your coworkers should always be paramount. It is the responsibility of you and your supervisor to ensure that you have the appropriate training for the experiments or other work you are conducting and the equipment you are using. Please read about the [internal responsibility system](#) and understand your role. You should be aware of the emergency plan for your laboratory and institution. Every laboratory or administrative unit should have an emergency plan, consistent with the overall institutional plan. The plan should be posted in a prominent place and emergency phone numbers (55-555) should be indicated on all telephones.

New investigators should consult the [PI Orientation web page](#) on the [McGill Environmental Health and Safety web site](#), and the [Lab Safety Orientation page](#) on the [MNI Lab Safety webpage](#). Contact the Chair of the MNI Safety Committee (currently heather.durham@mcgill.ca) for a personal training session. Note: MNI procedures are a combination of those of McGill and the MUHC.

All personnel should be aware of:

- Hazards of using any material, device or equipment.
- Proper technique in handling of material, devices or equipment, including procedures to follow if something should go wrong.
- Emergency telephone numbers.
- Location and use of eyewash fountains and emergency showers.
- Location and use of spill kits.
- Location and use of fire extinguishers.
- Emergency codes and proper response, exits and evacuation routes.

Principal Investigators are responsible for ensuring good occupational health and safety practices in their laboratories, including ensuring all personnel receive the proper training according to Environmental Health and Safety Policies.

Although ultimately responsible, a Principal Investigator at the MNI may designate a Laboratory Safety Representative to supervise safety procedures in the laboratory.

Laboratory Safety Representative: This individual is usually a senior technician or lab manager. Under special circumstances a senior postdoctoral fellow might perform these duties, but never a graduate or undergraduate student. The name, contact information and qualifications of the designated individual must be forwarded to the Lab Safety Committee's administrative assistant, Ms. Linda Michel (labsafety.mni@mcgill.ca x1972) to be registered and to obtain the necessary training and materials.

The duties of the Laboratory Safety Representatives are:

1. To monitor safety in the lab(s) under the responsibility of the Principal Investigator
2. To be familiar with the policies and procedures governing lab safety and emergency responses at the MNI and McGill as described in relevant safety manuals and on the [MNI Lab Safety](#) and [McGill Environmental Health and Safety](#) web sites
3. To attend training sessions
4. To monitor training requirements of personnel and under some circumstances to provide training [please use the [Lab safety self-assessment for PIs and Lab Supervisors](#) as a guide]
5. To serve as the contact person for the lab to receive information from the Safety Committee
6. To maintain the inventory of chemicals, compressed gases and radioactive materials in the lab(s) under the responsibility of the Principal Investigator
7. To supervise proper disposal of hazardous waste
8. To ensure compliance with WHMIS and other safety legislation
9. To conduct safety inspections and complete the [MNI Laboratory Safety Inspection Checklist](#)
10. To complete / update a lab info card and post it at the entrance to the laboratory [[Laboratory Information Card Generator](#) - See forms section for instructions].

NOTE: to reach some web links you may need to 'sign in' on the McGill home page with your McGill user ID and password.

HEALTH AND SAFETY MISSION AND ROLE OF SAFETY COMMITTEES

<http://www.mcgill.ca/ehs/safetycommittees/>

IMPORTANT LEGISLATION

[Canadian enviroOSH Legislation plus Standards](#) (CCOHS)

REPORTING A HAZARD OR REQUESTING REPAIRS

Everyone is responsible for identifying and reporting safety hazards and necessity for repairs. When a MNI staff person notices a deficiency requiring Building Services, the person should report the deficiency to their supervisor (PI, lab manager, senior technician or administrative assistant of the unit), who will in turn submit a request to Marie Lafontaine in Building Services marie.lafontaine@muhc.mcgill.ca. [Alternatively, a “Service Request Requisition” (yellow slip) can be submitted.]

EMERGENCY CONTACTS AT THE MNI: Unit Emergency Response Plan

The general number to call in case of any emergency is: 55-555.

From a safe distance, inform your supervisor(s) of the situation. Hazard-specific protocols are presented below.

Every unit (including administrative, service and laboratory spaces) should have an emergency response plan and everyone in the unit should be aware of that plan. The plan should include:

- The contact information for the Manager/Principal Investigator and all unit personnel
- A designated location outside of the building as a meeting place in case of emergency or evacuation of the building. Account for all members of your team.
- Relevant contact numbers including: .
Chair, MNI Safety Committee, Dr. Heather Durham (heather.durham@mcgill.ca; x8509 or 514-398-8509)

Radiation Safety Officer, Dr. Christian Janicki (christian.janicki@muhc.mcgill.ca; 8888-43866 from any McGill phone or (514) 934-1934 ext 43866)
Security desk (5542) *or* for emergency call 55-555
McGill Environmental Health and Safety [<http://www.mcgill.ca/ehs/staff> for staff list]
MUHC Occupational Health & Safety (8888- 42385 from any McGill phone)

EMERGENCY RESPONSE PROCEDURES AT THE MNI
ALL EMERGENCIES: call 55-555.

CODE RED (FIRE ALARM)

If you detect a fire in your area:

1. Remove all persons in immediate danger.
2. Activate the manual fire alarm.
3. Dial 55-555 and specify the exact location of the fire (building wing, floor and room number).
4. Close all doors, windows and turn off oxygen flow meters, natural gas and vacuum taps.
5. If possible without risk to yourself, attempt to extinguish or contain the flame with the appropriate fire extinguisher.
6. Pay attention to the instructions transmitted over the PA system.
7. Identify yourself to emergency personnel and remain available in a safe location until the situation has returned to normal (as announced: "*Code Rouge situation normale, Code Red all clear*").

When you hear the fire alarm and/or a code red is called:

1. ALERT:

- Listen carefully to the announcement.
- Return to your workplace without using elevators.
- Make sure everyone in your area is aware of the alarm (working in closed rooms near noisy equipment can obscure the sound of the alarm).

2. STAND BY: The code red is a standby alert, unless any staff member are concerned for their immediate safety. Use common sense. If you feel threatened, you may leave at any time, but all personnel from your immediate unit should move together to a safe location, as defined in your departmental plan (A code green would be called if an evacuation is ordered.)

- Do not start new work.
- Prepare to stop ongoing work if the "all clear" is not called within a few minutes. Turn off any source of flame (or any other potentially dangerous equipment).
- Close windows and doors.
- Be prepared for a possible evacuation or request for assistance.
- Listen for instructions. When the incident is over the "ALL CLEAR" will be announced.

Note: A Code Red is not a signal to evacuate, unless you feel in danger. Any order to evacuate will be a Code Green, with specific instructions provided over the PA.

EMERGENCY RESPONSE PROCEDURES AT THE MNI
CODE GREEN (EVACUATION)

If an evacuation order (code green) is called for your area (due to fire or other emergency), you **MUST FOLLOW THE DIRECTIONS IMMEDIATELY**. No excuses. Never use an elevator. Listen carefully to instructions.

- Return to your workplace without using the elevators.

- Clear one side of corridors to facilitate movement.
- Close all doors and windows.
- Prepare for possible evacuation of your area (any evacuation will be systematic, by floor or area, according to specific instructions).
- Wait for directions. Follow the evacuation route using the stairs. If you are not able to use stairs or have other disabilities, please discuss your particular situation with your supervisor and with security BEFORE an incident occurs to obtain specific instructions.
- Keep out of the way of emergency personnel.
- Have an evacuation plan for your area. Also designate a meeting place for your personnel outside of the evacuated area and make sure everyone is accounted for.

EMERGENCY RESPONSE PROCEDURES AT THE MNI: MEDICAL ATTENTION

Minor injuries

First aid kits should be available to all personnel and a notice indicating the location should be posted in each laboratory. This notice should include the names of individuals who have taken first aid or medical training, as well as emergency numbers. First aid kits must be inspected quarterly (January, April, July, October) and kept up to date. Fill in inspection checklist: http://www.mcgill.ca/ehs/files/ehs/EHS-FORM-012_v.1.2_First-aidKitInspectionForm.pdf and reorder supplies <http://www.mcgill.ca/ehs/forms/forms/first-aid/supplies-order-form>.

It is not necessary to have a first aid kit in every laboratory room as long as a kit is accessible 24/7 nearby and the location is posted.

Ambulatory, but requiring medical attention

After April 25, 2015 (closure of the RVH), go to the Emergency Department at the Montreal General Hospital. Be accompanied by a co-worker.

Onsite emergency care for conscious, non-ambulatory individual

- Call 911.
- Give precise location (Building, Pavilion, Floor, Room number), your name and a phone number to contact you.
- Then inform Security by calling 55-555. State that you have called 911 and ask them to notify MNI/MNH Security. Provide the information above.
- Make sure that someone will direct *Urgence Santé* to the appropriate location.

Medical emergency for unconscious individual (CODE BLUE)

- Call 55-555 and specify a "code blue".
- Give precise location (Building, Pavilion, Floor, Room number), your name and a phone number to contact you.
- The Code Blue team from the Neuro will respond.
- Make sure that someone will direct the Code Blue team to the appropriate location.

DOWNLOAD THIS INFORMATION AS A POSTER

http://www.mcgill.ca/neuro/files/neuro/mni_emergency_responses_-_medical_emergency_code_blue.pdf and post it in a visible location with the notice of first-aid kit location and list of first responders

EMERGENCY RESPONSE PROCEDURES AT THE MNI

CHEMICAL SPILL: (CODE BROWN) also see below CHEMICAL SAFETY SECTION

- Remove anyone in immediate danger without putting your own safety at risk.
- Ask yourself the following questions:
 - Do I have the adequate skills to manage the situation (adequate training, practice)?
 - Do I have access to the necessary materials to manage the situation (personal protective equipment, MSDS, ventilation, materials, etc.)?
 - Is the size of the spill manageable?
 - Is the spilled product too dangerous to manage without assistance?
- If the answer to any of these questions is "NO", call 55-555 and give the following information:
 - Code Brown
 - Product involved if known
 - Location of the spill or leak
 - Your name
 - Telephone numbers where you can be reached.
- Communicate promptly with the other occupants of the area in order to evacuate the premises.
- Notify your supervisor.
- Monitor the situation, remain available by phone and stay on site until the arrival of authorities and/or experts.
- The Call Center will announce the "ALL CLEAR".

SPILL OF BIOHAZARDOUS AGENT: see below BIOSAFETY SECTION

INCIDENT REPORTS (non-emergency):

Report any accident, incident, or occupational disease reports that do not involve emergency intervention or loss from work. Within 24 hrs, fill in the [Accident and Incident Report Form](#) and provide copies to your supervisor, to McGill EHS and to Linda Michel (labsafety@mcgill.ca, 398-1972) and to the MUHC Occupational Health and Safety Office (patricia.eigan@muhc.mcgill.ca, (514) 934-1934 /ext. 42385).

RADIATION SAFETY

The Neuro Radiation Safety Committee oversees all aspects related to training and usage of radioactive materials at the MNI.

Consult the Radiation Safety Officer: Christian Janicki christian.janicki@mcgill.ca Local: 8888-43866 for all procedures required.

Download the **MNI/MNH Radiation Safety Manual** from the [MNI Lab Safety website](#) and also information on the McGill Environmental Health and Safety site:

<http://www.mcgill.ca/ehs/laboratory/radiation>.

LASER SAFETY

This McGill program applies to all Class 3b and Class 4 laser and laser systems in controlled areas (indoors) under the jurisdiction of McGill University and to all those identified as

principal investigators, laser supervisors and laser workers. See the the McGill webpage <http://www.mcgill.ca/ehs/laboratory/laser-safety>, the [Laser Safety Manual](#) and, if using such lasers, register for **training** at [Laser Safety Training | Environmental Health and Safety - McGill University](#).

BIOSAFETY

TRAINING REQUIRED

All personnel utilizing biosafety cabinets or handling biohazardous materials must receive training in their use. Courses are offered by McGill University EHS - register online at [Biosafety Training | Environmental Health and Safety - McGill University](#). Lab supervisors should provide basic training in working with biohazardous materials before an individual begins work in the laboratory. The individual should read the appropriate sections of this MNI Laboratory Safety Manual and McGill Biosafety manual prior to working with biohazardous materials.

INTRODUCTION TO BIOSAFETY

(for personnel working with biohazardous materials; most appropriate for individuals without prior biosafety training or experience)

SAFE USE OF BIOLOGICAL SAFETY CABINETS

(required for anyone working in biosafety cabinets to process tissues or to culture organisms/cells)

BIOSAFETY MANUAL

[Biosafety Manual | Environmental Health and Safety - McGill University](#)

Definition: “Biohazardous/infectious material falls under Class D, Division 3 of the Workplace Hazardous Materials Information System (WHMIS), and includes microorganisms such as viruses, bacteria, fungi, and parasites and their toxic metabolites. Blood and body fluids, and certain types of nucleic acids such as DNA derived from pathogenic organisms, human oncogenes, and DNA from transformed cell lines are considered biohazards as well. Exposure to biohazardous agents may occur via puncture wounds or as a result of absorption through the respiratory tract, digestive system, skin and mucous membranes: such exposures may result while handling animals, cell cultures and tissues or diagnostic specimens.” (Biosafety Manual)

An [Application to Use Biohazardous Materials](#) must be completed by investigators who plan to work with potentially biohazardous/infectious materials including:

- mammalian bloods and body fluid
- unfixed tissue from humans and non-human primates
- cell lines and other tissue cultures
- genetically altered organisms (**including production and use of plasmid and viral expression vectors**), including plants and zoonotic agents

The form must be completed when starting new projects, changing a protocol (i.e., use of a new biohazardous material), upon expiry of a previously approved application. Forms are submitted to the McGill Environmental Safety Office.

"Research projects using biohazardous/infectious substances that involve animals and/or animal tissue, must be submitted to the MNI Animal Care Committee with an approved

biohazardous materials certificate attached (*see above*), before the project can begin". For further information refer to:

Public Health Agency of Canada Laboratory Biosafety Guidelines 3rd Edition - 2004

<http://www.phac-aspc.gc.ca/lab-bio/index-eng.php>

Laboratory Biosafety Manual, 3rd edition. World Health Organization. Geneva, 2004

http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/

CCAC Guide to the Care and Use of Experiment Animals Volume 1

http://www.ccac.ca/en/_standards/guidelines

Section 8 Occupational Health & Safety - Biological Hazards.

Canadian Council of Animal Care <http://www.ccac.ca/>. The telephone number for the local CCAC office number is 514-397-1046 or contact the MNI Animal Facility at 398-1403

DISPOSAL OF BIOHAZARDOUS MATERIAL

See Section Procedures for Disposal of Hazardous Waste at the MNI.

IMPORTATION OF BIOLOGICAL PRODUCTS

When importing Biological Products into Canada, additional information must be provided to Canada Customs. Please make sure that at the time of placing the order, you complete the form entitled "Declaration of Import for Biological Product" and fax it to 514-398-1885. Imported Biological Products arriving at customs without the required additional information may be refused entry into Canada. Required forms and instructions can be downloaded directly from: [Forms | Procurement Services - McGill University](#). For living organisms, semen, embryos, animal products and by-products, regulations are governed by CFIA (Canada Food Inspection Agency). [Complete Import Permit Application Form](#) and have signed by the McGill University Biosafety Officer, **Monni Begum** Tel: (514) 398-4818 | Fax: (514) 398-8047 | monni.begum@mcgill.ca |.

SHIPPING BIOHAZARDOUS MATERIAL

[McGill Biosafety Manual](#), section 11.3.

SPILL INVOLVING BIOLOGICAL AGENT

All individuals who work in a lab where pathogens are used must know how to handle these agents safely and what to do in case of a spill. Refer to [McGill Biosafety Manual](#) section 5 for how to:

- 1) Develop an emergency spill response protocol specific for the microorganisms in use. This should be posted in a visible location within the laboratory.
- 2) Assemble a spill response kit.
- 3) Safe handling of minor spills. For major spills, call 55-555 for 'code brown' (see above).

CHEMICAL SAFETY

LABORATORY SAFETY REPRESENTATIVES

Every Principal Investigator must nominate a Laboratory Safety Representative to liaise with the MNI Lab Safety Committee and perform the duties outlined in the document [Laboratory Safety Representatives - Duties](#).

TRAINING REQUIRED

WHMIS and Laboratory Safety training is required for all laboratory personnel every 3 years; the course is presented by McGill Environmental Health and Safety. Go to [WHMIS Training | Environmental Health and Safety - McGill University](#) for further information and registration. However, it is important for everyone to review the [MNI laboratory safety manual](#) (this document) and [emergency response procedures](#) specific to the MNI/MNH as **certain procedures follow MUHC protocols, which may differ from McGill's.**

[Hazardous waste management and disposal for lab personnel](#) (encouraged for all laboratory personnel; will be required for laboratory safety representatives. The MNI procedures for waste disposal differ from campus units, and are presented in this manual (see below).

Material Safety Data Sheets (MSDS)

All laboratory personnel must know how to access and interpret MSDS for chemicals with which they are working. The MSDS Database is accessed through the McGill chemical/radiation management software, [myLab](#). A link should be placed on the desk top of all laboratory computers and all personnel must receive training in and demonstrate facility in searching the database. The Principal Investigator of each research laboratories using chemicals is responsible for identifying an official Laboratory Safety Representative who will maintain the inventory of hazardous materials stored in the laboratory (using myLab) and ensure that all personnel have access. The myLab administrator will provide PIs and Lab Safety Reps access to myLab through their McGill username and ID and assign a username and password for read-only access of the chemical and MSDS databases. See next section for further information.

INVENTORY OF HAZARDOUS MATERIALS IN myLab

Please note that [myLab](#) can only be accessed from a **McGill IP address** (either from a McGill computer or through a remote desktop linked to a McGill computer). Use VPN (Cisco AnyConnect) to connect to McGill.

McGill's myLab is a software tool for safe and simple management of hazardous materials, from acquisition to disposal and is the portal for management of **chemical** and **radioactive** compounds across the McGill campus. Information is provided on the [myLab home page](#) of EHS (general information) (note you must be connected to McGill to open this page - see above) and in the [IT Knowledge Base](#) (specific instructions)

Each lab must keep their inventory up-to-date.

Required fields are:

- Chemical Name
- Vendor / Manufacturer Name
- Product Catalogue Number OR Chemical CAS Registry Number(s)
- Number of Containers
- Total Volume of all containers
- Container Size (optional if the total volume is provided)
- Room Number
- Building

Sharing: To facilitate sharing of chemicals, the search feature in myLab will allow you to identify other labs at the MNI who may have a particular chemical (read-only access).

Access to myLab and training:

Laboratory Safety Representatives, one designated by each Principal Investigator, must obtain access to myLab and will have the following responsibilities:

- 1) Maintain and keep up to date the inventory of chemicals located in the laboratory/ies under the PI's jurisdiction and link MSDS from the EHS database. Note, **this inventory is MANDATORY for compliance with government health and safety regulations**. Your inventory will be tested by EHS during lab inspections.
- 2) Place a link to myLab on the desktop of all lab computers.
- 3) Obtain read-only generic access to the database (chemical inventory and MSDS) for all individuals in the laboratory.
- 4) Train all individuals in the laboratory on how to access the database of chemicals and MSDS.

Chemical Safety module - authorization and access:

Principal Investigators [email the myLab Administrators](#) to request the necessary access for users in their lab. **PIs can request:**

- Full Access account - Each authorized user can view and modify the full inventory and MSDS documents (for the PI and Lab Safety Rep).
- Read Only account - These are generic user accounts, where multiple users use the same account to view the full inventory and MSDS documents (for all lab members).

All authorized users go to <https://mylab.mcgill.ca>. Full Access users log in with their own [McGill Username and Password](#). Read-Only users (generic account) log in with a single Username and Password communicated to them by the Principal Investigator.

Chemical Safety Module - Training:

No instructor-led training is necessary. Step-by-step instructions are provided in the [Chemical Safety User Guide](#) and the following online training videos:

- [Adding Requisitions](#)
- [Adding Chemicals](#)
- Adding an MSDS (see instructions in the [Chemical Safety User Guide](#))

Note: You can add chemicals to your inventory manually (see Adding Chemicals video) or through an order in McGill Market Place (MMP) (see Adding Requisitions video). If you opt to have your inventory linked to Market Place orders you will need to manually delete/modify old entries when you acquire new stock to maintain accurate amounts and current suppliers, and delete items that are not supposed to be in your inventory (gloves, etc).

Recording changed location of chemicals in myLab (to a different location already assigned to you and registered in myLab).

The location of the chemicals must be changed in your myLab inventory and the Laboratory Information Card updated if necessary. *If you are moving chemicals to a location not previously assigned to you, contact the Chair of the MNI Safety Committee to arrange.*

Recording disposal of chemicals in myLab: Chemicals to be discarded must be disposed of properly as chemical waste and removed from the myLab inventory.

Notify lab.safety@mcgill.ca and heather.durham@mcgill.ca if the chemical content in the laboratory is changed significantly (for updating the hard copy of the inventory held by Security to provide to emergency responders).

Radiation Safety Module in myLab

All radiation users at the MNI must be registered with the Radiation Safety Officer, Dr. Christian Janicki in order to obtain the appropriate training and procedures for the Neuro (christian.janicki@muhc.mcgill.ca; 8888-43866 from any McGill phone or (514) 934-1934 ext 43866)

Videos:

- [Add New Inventory Item - McGill](#)
- [Add New Inventory Item - MUHC](#)
- [Waste container disposal](#)
- [Creating an In Progress Item](#)
- [Removing an item from inventory](#)
- [Transfer procedure](#)
- [Recording Usage](#)

General Inquiries and Problems with myLab: Parisa Parang, *Hazardous Materials Officer, McGill EHS*
(514) 398-8778 parisa.parang@mcgill.ca

STORAGE OF HAZARDOUS CHEMICALS

Laboratory directors, managers and personnel are responsible for understanding the general principles governing storage of the various classes of chemicals and for complying with McGill's policy. This includes segregation of incompatible chemicals, proper storage conditions (e.g., safety cabinets) and limits on volumes of certain chemicals that may be stored in the laboratory (e.g., flammable liquids). Chemical-resistant trays and pans (polypropylene) are available from scientific suppliers (e.g., Fisher, VWR)

See the [McGill Laboratory Safety Manual](#)

- **Section 4.** Handling and Storage of Laboratory Chemicals
- **Section 7.** Laboratory Ventilation and Fume Hoods
- **Appendix 1:** Flammability Classification (NFPA) and Permissible Container Sizes (OSHA)

Rules of Thumb for Safe Storage:

Helpful hint: To segregate chemicals, you can use chemical-resistant trays such as polypropylene sterilization trays by Bel-Art or Nalgene. Improper storage of chemicals is considered A VERY HAZARDOUS SITUATION and will not be tolerated.

- Do not store more chemicals than you will need over a reasonable time.
- Always read the chemical's label and mark it with the date of receipt before storing.
- Never store highly reactive chemicals for longer than 6 months.
- Never store a chemical with an obscured or missing label.
- Separate chemicals into compatible groups and store alphabetically within the groups (see [McGill laboratory safety manual section 4](#)).
- Designate separate storage areas for highly toxic chemicals.

- Dry chemical storage: Dry chemicals can be stored together. To ensure compatibility, keep organic and inorganic chemicals segregated. Color-coded labels used by manufacturers are a handy reminder of compatible groups.
- Liquid chemical storage: The first step is to determine the major storage groups, such as acids, bases, flammables, oxidizers, and highly toxic chemicals.
 - *Acids*. Acids should be stored in trays that will catch any spill and provide adequate segregation. Many labs store only mineral acids, including nitric acid, in chemically resistant acid cabinets. Nonorganic acids are usually stored in the cabinet under the fume hood.
 - *Bases*: Bases should be stored in non-reactive trays that will catch any spills and provide adequate segregation. Typical place for storing inorganic acids and bases is under the fume hood, but in separate trays for segregation.
 - *Organic acids, organic bases, and flammables*. Organic acids and organic bases should be stored in flammable storage cabinets. They may be stored with other flammables, but acid resistant plastic trays must carefully segregate them.
 - *Oxidizers*. Oxidizers are highly reactive. They should be separated from other chemicals.
- Flammables: Store chemicals that can ignite at room temperature in a flammables' cabinet. **If flammable chemicals require cold storage, store only in refrigerators or freezers approved for such use.** Frost free refrigerator/freezers are not to be used – the defrost cycle can generate a spark, triggering an explosion!!!
- Highly toxic chemicals: Toxic materials like carcinogens and reproductive hazards should be stored in a separate cabinet.
- Volatile toxic chemicals should be stored in an enclosure.
- Storage areas for corrosive, toxic, flammable, and highly reactive chemicals should be near a laboratory chemical hood to encourage use of the hood when transferring chemicals.
- Store only cleaning materials directly under the sink.
Never store liquid hazardous chemicals above eye level.
Store heavy chemical containers on lower shelves, not on the floor.
Store chemicals on shelves with raised edges (edge guards).

Additional Storage for Flammable Liquids:

Make every attempt to purchase and store only volumes of chemicals that are really needed, particularly hazardous chemicals. Should additional storage be necessary, the MNI does provide an area in Room 045 for storage of flammables. Any chemical stored in Rm 045 must be listed in the inventory book inside the room, must retain the original label on the container, and must be labelled with the following additional information: laboratory name, room number, person responsible and the date deposited. Otherwise, the chemical will be disposed of through the waste management system.

DISPOSAL OF CHEMICAL WASTE:

See section: Procedures of Disposal of Hazardous Waste at the MNI, this manual.

CHEMICAL SPILL RESPONSE: The following is taken from the MNI Departmental Code Brown Plan:

Standard Procedures for Handling of Chemical Spills

DEFINITIONS

A MINOR SPILL, as defined under the MUHC “code brown” policy, is a small spill that can be readily handled by the user/generator of the product. Such an incident should not have widespread impact upon the Institute, Hospital, patients, staff and visitors, the environment or patient care. Should the spill become unmanageable, i.e. cannot be immediately and effectively contained using available spill kits in the area, designate as a major spill and call 55-555 Code Brown.

A MAJOR SPILL requiring a "code brown" is determined if the answer to one or more of the following questions is “NO”:

- Do I have the competence to manage the situation (adequate training, practice, etc.)?
- Do I have the necessary material to manage the situation (personal protective equipment, MSDS, ventilation etc.)?
- Does the quantity of the spilled product allow for a safe intervention?
- Does the inherent toxicity of the product allow for a safe intervention?

ALERT PROCESS

The person responsible for or discovering the spill should immediately inform everyone in the room, stop traffic to the area and designate the spill as major or minor.

Major spill:

- evacuate area, close door
- call 55-555 Code Brown, specifying the product involved if known; location of the spill (room, building and wing); the name of the person calling, and telephone number where they can be reached.
- communicate promptly with other people in the area;
- take charge of the situation until the arrival of authorities and /or experts;
- remain out of harm's way, but available to emergency responders by phone near the site;
- inform the Lab Safety Representative and Principal Investigator.

Minor, controlled spill: the Laboratory Safety Representative and/or Principal Investigator should be informed to assist in managing the incident.

INTERVENTION

Major Spill: The emergency responders will handle the intervention upon their response to the 55-555 call.

Minor Spill: If the Laboratory Safety Representative is on duty, he/she should coordinate the clean up of a minor spill. However, all personnel using hazardous materials should know the procedures for dealing with minor spills in case the Laboratory Safety Representative or Principal Investigator is not available. Other laboratory personnel present should offer backup assistance and keep the area isolated from traffic.

For cleanup of minor spills, follow the guidelines outlined for specific classes of chemicals in **section 3. Control of Chemical Hazards** of the [McGill Laboratory Safety Manual](#) published on

the web site of McGill University's [Environmental Health and Safety Office](#). Sample procedures according to chemical class, adapted from the MUHC "Code Brown" procedures, also are presented in the web version of the Code Brown Departmental Plan for the MNI on the [MNI Lab Safety web site](#). MNI-specific procedures for disposal of collected materials are described under "Recovery".

General Principles:

- **Avoid walking in spill, skin contact, or breathing vapours/aerosolized product.** If the clean up requires respiratory protection, call 55-555 Code Brown. [Note: If person or clothing is contaminated, immediately follow decontamination procedures appropriate to the product (identify from the Material Safety Data Sheet prior to working with the product) and seek medical attention as required.
- Consult the **Material Safety Data Sheet** (through your MyLab access) and [McGill EHS Laboratory Safety Manual](#).
- Get spill kit and don appropriate personal protective equipment including gloves, face shields and, shoe covers. Prevent contamination of person, shoes and clothing.
- Prevent spreading of the product. Control the source and confine the spill to a small area using spill kit supplies. Apply neutralizing products if appropriate and available.
- Collect product using spill kit supplies.
- Clean residual product from the spill area with water.
- Place all contaminated materials and debris in a polyethylene waste container or bag (note: polyethylene biohazard/autoclave bags are chemically resistant). Dispose of as hazardous waste (see recovery procedures).

Important: Do not ask housekeepers to clean the material. Housekeeping would mop the floor only after the spilled material is picked up completely. If you have doubts, call 55-555 Code Brown.

RECOVERY

Call the "all clear" and dispose of waste.

- **Major Spill:** Emergency responders will call the "all clear" and handle waste disposal.
- **Minor Spill:**
 - Following completion of the cleanup, announce "all clear" to other laboratory personnel.
 - Dispose of liquid/solid waste and contaminated materials in Rm 045:
 - Fill in and attach a McGill Waste Management Program (MWP) tag (available in Rm 045) and attach to the container.
- Fill in a "Chemical Waste Inventory Form" (download from the [MNI Lab Safety website](#)) to place in the binder in Rm 045.
- Notify Security and take waste to Rm 045 of the MNI for disposal.
- Report: The user/generator of the product should complete a McGill "[Accident and Incident Report form](#)" and submit it to the Laboratory Safety Representative or Principal Investigator for signature and immediate delivery to Linda Miller, Administrative Assistant for the MNI Lab Safety Committee, MNI Rm 778, who will transmit copies to:
 - the Chair of the MNI Safety Committee (heather.durham@mcgill.ca)
 - MUHC Occupational Health and Safety Officer (patricia.eigan@muhc.mcgill.ca)
 - McGill Environmental Health and Safety Office (ehs@mcgill.ca).

Debrief: The Laboratory Safety Representative/Principal Investigator should conduct a debriefing session on the incident and make any required adjustments to the departmental plan or training procedures.

Pharmaceutical Spills

Treat spill of research pharmaceuticals as chemical spills according to toxicity and chemical properties of the compound.

PROCEDURES FOR DISPOSAL OF HAZARDOUS WASTE AT THE MNI

(chemical, biological, sharps, mercury arc lamps, batteries, miscellaneous)

DISPOSAL OF CHEMICAL WASTE

The current protocol is: Chemical waste must be properly contained and labelled (see below). An area in room 045 of the MNI has been designated. The key must be obtained from the Information Desk upon presentation of your MNI ID badge. Disposal of any hazardous waste should be handled or supervised by designated laboratory safety representatives.

All deposits must be recorded in the ledger inside the room. You may write directly in the book or fill in the following form beforehand and insert the page in the three-ring binder. Download the "Chemical Waste Inventory Form" from the [MNI Lab Safety website](#).

All containers must be labelled with: Name of Principal Investigator; Room Number; exact composition and if mixture, approximate percentages; indicate if organic solvent or oil.

Segregate flammables, acids, bases, and corrosives by placing in the indicated bins on the shelving.

Bulk chemical waste, Spent solutions and / or liquid material discarded after use.

Plastic containers can be obtained from Rm 045. Obtain key from MNI Information Desk.

- Avoid mixing materials.
- Do not use for concentrated materials, only solutions.
- Use separate containers for different chemicals. Pre-label them to ensure compliance.
- Do not fill to more than 3/4 full. It need not be full for disposal.
- Fill out the label completely and legibly by indicating the name, dept., phone # and materials by a % indicator (approximate).
- Dispose of as chemical waste in Rm 045 (see above).

If you have any unstable or potentially explosive chemicals for disposal, please do not leave them in Rm 045. Contact the McGill Environmental and Safety Office for assistance at 398-5506.

DISPOSAL OF BIOHAZARDOUS WASTE

All non-liquid material consisting of or contacting biological material should be disposed of in biohazard boxes supplied by the Institute. This includes human anatomical waste (body parts/tissues), animal anatomical waste (carcasses, body parts, organs) and non-anatomical waste (sharps that have contacted animal or human blood, biological fluids, tissues; tissue or microbial cultures, material contaminated by such cultures (pipettes, culture dishes, etc.); live vaccines; containers or materials saturated with blood products. Human tissue should be disposed of in separate containers from animal waste.

Biohazardous Sharps

- Collect sharps in a plastic puncture proof container labeled biohazard (available through MNI/MNH stores).
- For disposal, place in the biohazard box supplied by the Institute.

Biohazard boxes are picked up and exchanged on a routine basis by housekeeping staff. Please fill to only 3/4 full so that it is not necessary to compress the contents to close and seal the box (this is a risk to personnel). If you require additional boxes or special pick ups please call: housekeeping ext. 36222. ***Regular garbage or chemical waste should never be placed in biohazard disposal!!***

Biohazardous Liquids (blood, culture media, etc.)

- Sterilize with 10% bleach (javel) solution.
- Dispose of via a dedicated sink.
- When done, sterilize / clean sink with a 5-10% bleach and water solution. Rinse well to remove bleach odor.

SHARPS: COLLECTION AND DISPOSAL

Biohazardous Sharps

- Collect sharps in a plastic puncture proof biohazard-labeled container (available from MNI/MNH stores).
- For disposal, place container in the biohazard box supplied by the Institute.

Non-contaminated Plastic and Glass Pipettes: Dispose of as biohazardous sharps (i.e., in biohazard boxes). This avoids confusion with contaminated items.

Glass bottles (intact, not broken)

- Ensure that bottle is empty.
- Triple rinse bottle.
- Obliterate label and / or write “rinsed bottle” on the label.
- Place near your garbage container.

Broken glass

- Find a regular but sturdy cardboard box or plastic pail.
- Place your broken glass inside.
- Seal box / pail using tape.
- Write “broken glass / garbage” on the cover and place near your garbage container.

MERCURY ARC LAMPS

- Dispose of in designated box in Rm 045.

BATTERIES

Spent alkaline batteries

- Dispose of in designated box in Rm 045.

Rechargeable batteries: nickel cadmium (Ni-Cd); nickel metal hydride (Ni-MH); lithium ion (Li-ion); small sealed lead (Pb) batteries weighing less than 2 lbs/1 kg.

- Place in the designated box in Rm 045.

MISCELLANEOUS ITEMS

Equipment must be properly decommissioned before disposal. For **computer equipment** contact [Neuro Information Technologies Services \(Help.mni@mcgill.ca\)](mailto:Help.mni@mcgill.ca). For **other equipment** contact the Building Manager (Fred.Pennell@mcgill.ca).

MOVING AND DECOMMISSIONING LABORATORIES

If you are moving your laboratory to a new room assignment in the MNI or closing your laboratory:

The Principal Investigator is responsible for maintaining an accurate chemical inventory and contact information, for proper movement, storage and cleanup of laboratory materials, and for leaving the space clean and ready for another investigator. Release of responsibility will only occur after EHS has inspected the space and declared it properly decommissioned.

The document "**Procedures for Decommissioning and Commissioning of Neuro Laboratories**" can be obtained from the Chair of the MNI Safety Committee (heather.durham@mcgill.ca).

The Building Director in communication with the Administrative Coordinator of the Director's Office will notify the Chair of the MNI Safety Committee, the administrative assistant for the Committee, the Radiation Safety Officer, and the Supervisor of the Centre for Neurological Disease Models of upcoming changes in laboratory assignments. The relevant officers will contact the Principal Investigator(s) involved to provide the detailed procedures to be followed and answer any questions. If you are moving and have not been contacted by the Chair of the MNI Safety Committee or would like information a priori, contact heather.durham@mcgill.ca.

FORMS

The Laboratory Safety Committee is providing the following forms to assist laboratories in being compliant with WHMIS legislation.

Chemicals and Radioactive Compounds Inventory Form. Each laboratory is required to maintain an inventory of hazardous chemicals. The designated representative in each laboratory (name supplied to the MNI Safety Committee) is responsible for establishing and maintaining the inventory as part of the online chemical inventory database of the MNI. This is accomplished using the online database accessible from the [MNI safety website](#). [For further information, contact the administrative assistant to the Committee, Linda Michel (labsafety.mni@mcgill.ca) or the Chair of the Lab Safety Committee, Dr. Heather Durham (heather.durham@mcgill.ca), or.]

Laboratory Safety Checklist The laboratory safety representative designated for each laboratory should perform routine checks (daily, weekly and monthly) to identify hazards. The following checklist must be completed monthly and reports stored in a binder for routine review by the Laboratory Safety Committee. Any hazards identified must be reported to the supervisor for action. Download the checklist "MNI Laboratory Safety Inspection Checklist" from the [MNI safety website](#).

Note that any individual who identifies a hazard in the work place is responsible for reporting this hazard to his/her superior for appropriate action. The supervisor in turn is responsible for ensuring that corrective action is taken. See section: Reporting a Hazard or Requesting Repairs on page 2.

Laboratory Information Card Generator This card identifies to laboratory and emergency personnel the general classes of hazards present in the laboratory. The safety rep for each laboratory should complete this card and post it just outside the entrance to each lab room.

Note: a copy of the card is automatically sent to McGill EHS office when generated. Helpful hint: Read printing instructions before generating and trying to print the card!

Instructions specific to MNI:

- For Description of the location of MSDS collection: type “**myLab**”

Chemical Waste Inventory for ledger in Room 045: Download the form "Chemical Waste Inventory Form" from the [MNI safety website](#).

Various Signs and Posters [Forms, Signs & Posters | Environmental Health and Safety - McGill University](#)

IMPORTANT LINKS FOR CHEMICAL AND BIOLOGICAL SAFETY

McGill Environmental Health and Safety (EHS) <http://www.mcgill.ca/ehs/>

Laboratory Safety Manual <http://www.mcgill.ca/ehs/laboratory/lab-safety-manual>

Biosafety Manual: <http://www.mcgill.ca/ehs/laboratory/biosafety/manual/>

Waste Management Program: <http://www.mcgill.ca/wmp/>

Accident and Incident Report Forms: <http://www.mcgill.ca/ehs/forms/forms/accidentincidentreport>

Other sources of Information

Important Links to regulations, etc. [References | Environmental Health and Safety - McGill University](#)

Canadian Centre for Occupational Health and Safety <http://www.ccohs.ca/>

WHMIS (Workplace Hazardous Materials Information System)

<http://www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simdut/index-eng.php>

WHMIS classifications http://www.ccohs.ca/oshanswers/legisl/whmis_classifi.html

Other Sources of MSDS data sheets

<http://ccinfoweb.ccohs.ca/default.html>

Supplier web sites

CSST (Commission de la santé et de la sécurité du travail) <http://www.reptox.csst.qc.ca/>

<http://www.reptox.csst.qc.ca/ToEnglishUsers.htm>

CANUTEC (Transport Canada) <http://www.tc.gc.ca/eng/canutec/menu.htm>

NIOSH (National Institute for Occupational Health and Safety USA) pocket guide

to chemical hazards <http://www.cdc.gov/niosh/npg/default.html>

TRAINING REFERENCE MATERIALS

- McGill Environmental Health and Safety has several training presentations on their web site. To view go to <http://www.mcgill.ca/ehs/search/local/training%20presentations> and sign in using your McGill username and password.