



McGill

Facilities Safety Manual

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Facilities Safety Manual

1. MISSION STATEMENT

Prevention of injuries and losses is part of everyday operation. No aspect of the operation should take precedence over the safety of its employees or the well-being of the University community. It is expected that all employees, workers and managers alike, strive to create and maintain a safe working environment for all by following established safety procedures and by actively participating in the identification, reporting, and correction of hazardous situations.

1.1 Introduction

The Facilities Safety Manual was prepared by the Facilities Safety Committee to address the occupational health and safety concerns of personnel who manage and care for facilities at McGill University. The manual provides a uniform safety standard across all University facilities and contains useful safety information and procedures necessary to perform work tasks safely. Comments and suggestions regarding this manual should be forwarded to ehs@mcgill.ca. Note the manual will be reviewed annually.

2. RESPONSIBILITIES

2.1 The Internal Responsibility System

Safety begins with you and our first recourse when dealing with safety matters is always your immediate supervisor. <http://www.mcgill.ca/ehs/training/internalresponsibility>

2.2 Your Responsibilities

- To conduct work in a manner which will not endanger you, your coworkers, or other members of the University community.
- To follow safety procedures and instructions, including those described in this manual.
- To cooperate with the Safety Committee and its members.
- To participate in the identification, reporting and correction of hazards by alerting your supervisor to any accidents, injuries, or hazardous situations you may encounter.

2.3 Supervisor's Responsibilities

- To inform workers of the safe work methods and protective equipment available.
- To inspect work areas.
- To report accidents, dangerous incidents, and hazardous situations.
- To take the necessary steps to correct hazards.
- To bring unresolved safety issues to their superiors.

2.4 Facilities Safety Committee

- To develop safety standards and procedures for Facilities Management & Ancillary Services, Athletics, Gault Reserve, Macdonald Campus Farm, and Residences.
- To receive and review reports of important accidents and dangerous incidents and situations.
- To promote safety awareness.
- To serve as a problem-solving forum for addressing safety issues affecting operations, as well as maintenance issues as they relate to the safety of the University community.
- To recommend and participate in the implementation of safety activities such as education and training, inspections, and safety reviews.

2.5 Facilities Management & Ancillary Services

Facilities Management & Ancillary Services includes Environmental Health & Safety (EHS), Hazardous Waste Management and Campus Public Safety (CPS), which is composed of the following services: Security Services, Emergency Management & Preparedness, Fire Prevention, and Parking & Transportation Services.

2.5.1 Environmental Health & Safety (3610 McTavish, 4th Floor, Tel. local 4563)

- Provides advice, information and training related to safety in the workplace.
- Performs measurement and evaluation of work related hazards.
- Conducts laboratory inspections.
- Acts as liaison between McGill University and government agencies responsible for health and safety.

2.5.1.1 Hazardous Waste Management (McIntyre Medical Sciences Building, local 5066)

- Collects and disposes of hazardous wastes (oils, solvents, acids, bases, radioactive materials, laboratory chemicals, etc.) as well as e-waste and scrap metal.
- Provides assistance in the event of accidental releases of hazardous materials.
- Supervises decommissioning projects, including underground fuel tank removal.



2.5.2 Campus Public Safety

2.5.2.1 Security Services

Downtown: Burnside Hall, 805 Sherbrooke Street West, Room 120, Tel. local 4556.
Macdonald: Laird Hall, 2111 Lakeshore Road, room 101, Tel. local 7770

- Protects people and property at McGill University 24 hours a day.
- Patrols both campuses, liaises with outside police forces, provides consulting services, runs crime prevention programs and holds a wide variety of workshops and lectures for McGill's students, staff and faculty members.

2.5.2.2 Emergency Management & Preparedness (Burnside Hall, room 120)

- Plans for emergency situations, crises and disasters: maintains a current emergency measures plan; performs exercises of various types to verify and improve the University's response to emergencies and; provides the tools to save lives, reduce damage and return to normal operations

2.5.2.3 Fire Prevention (3610 McTavish, 3rd Floor, Tel. local 3473)

- Provides fire safety advice and rulings for University activities, events and operations, including building construction/renovations code and standard compliance. Promotes fire safety: conducts fire drills, provides fire safety training, conducts inspections and runs fire safety programs
- Ensures fire protection equipment is maintained, inspected, current and adequate for the risks it protects.

2.5.2.4 Parking & Transportation Services (3465 Durocher, room 116, Tel. local 4557)

- Provides parking and mobility services.

3. GENERAL WORK HABITS AND SAFETY PRACTICES

Following the correct safety procedures and using the right protective equipment are professional obligations — failing to do so not only jeopardizes your safety and the safety of others but also reflects negatively upon the image of the University.

- Before commencing any job, take the time to look at the layout and condition of the work area to determine if you are able to do the job safely — if there is any doubt about safety, consult with your supervisor before commencing.
- Always report unsafe conditions or activities to your supervisor as soon as possible.

Report any accident or injury to your supervisor without delay and get the necessary first aid or medical treatment immediately.

4. PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment is provided for your safety and must be kept in good condition. Loss, damage, or malfunction should be reported and corrected. Different work situations will dictate different uses of protective equipment. If there is any doubt as to the right equipment for the job, first verify with your supervisor. The use of the right equipment is part of your job — make sure you and your coworkers are suitably equipped before starting any tasks.

4.1 Foot Protection

Approved steel-toed foot shoes or boots are required for all trades. Further,

- Specialized foot protection may be required according to the job demands and the risks identified by the employee and supervisor, or when otherwise specified by the Facilities Safety Committee.
- Good traction soles are recommended for icy, greasy, or wet situations.
- Any other designated areas, e.g., where signs are posted.
- Only safety boots, not shoes, are permitted on a construction site



4.2 Eye Protection

Approved safety glasses are required:

- For all tasks presenting a risk of flying objects or dust particles, splashes of hazardous materials or harmful rays. Grinding, cutting, jack hammering, operating shop machines, transferring chemicals, welding, drilling, demolishing, are but a few examples of where eye protection is required, and the use of eye protection should not be limited to these areas.
- Sunglasses used for outdoor work should be rated for UV protection.
- Any other designated areas, e.g., where signs are posted.



4.3 Hard Hats

Hard hats are required:

- In all construction sites and in abandoned buildings.
- When performing maintenance work involving overhead hazards, for example, under scaffolding or extension ladders, tree-pruning activities, etc.
- Any other designated areas, e.g., where signs are posted.



4.4 Gloves

Gloves shall be worn where there is a risk of cuts, abrasions, burns, or exposure to hazardous materials. For most applications, standard leather work gloves are recommended.



For special applications, such as working with chemicals, make sure that the type of glove you wear is resistant to penetration. In such cases, refer to the type of gloves recommended on the product's Safety Data Sheet or check with your supervisor.

4.5 Respiratory protection



Respirators may be required in certain situations involving the release of hazardous materials into the air that cannot readily be controlled by way of ventilation.

- Before performing any work requiring a respirator, you must first ascertain that the type of respirator you are using is the correct one and that you have been properly fit tested to make sure it works efficiently. Persons using respirators must be trained in the proper use and maintenance of respirators.
- Simple disposable dust respirators may be used without specialized training provided the dusts in the atmosphere are not considered to be at hazardous levels. These are recommended in highly dusty areas, such as demolition sites or while performing dust generating activities like cutting, sanding, grinding and dry sweeping.
- For respiratory protection, training and respirator fit testing contact EHS.

4.6 Hearing protection

- Exposure to high noise levels can cause some loss of hearing, especially if you are exposed for long periods of time. Ear muffs, ear plugs or both should be worn when working with or near certain noisy tools or machinery like gasoline powered tools, emergency power generators, routers, leaf blowers, mowers, chainsaws, or other high speed cutting and grinding tools.



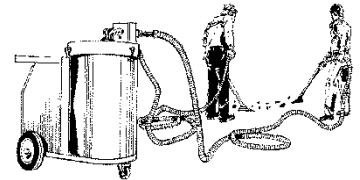
4.7 Protective clothing



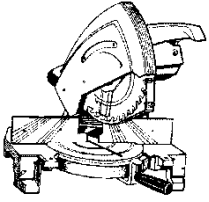
- Work pants and shirt, or coveralls, comprise the basic protective work clothing required on the job.
- Specialized protective clothing may be required, such as arc-flash clothing for electricians, cold weather gear for outdoor winter work, or disposable coveralls for work around hazardous materials such as asbestos.
- Clothing which may have been contaminated with hazardous materials should never be brought home.

5. HOUSEKEEPING

- Good housekeeping is an essential part of every job. Work areas, aisles, walkways, and equipment shall be kept clear of loose materials, tools, refuse, and scrap material.
- No equipment or materials of any kind, combustible or not, should be kept in a stairwell. Doors to stairwells must be kept normally closed.
- Materials such as lumber and pipe shall be stored in an orderly and secure manner away from high pedestrian traffic areas.
- Compressed gases, chemical products, or other hazardous materials shall not be left unattended in public areas. Gas cylinders, whether full or empty, should always be chained to a wall, bench, or rack and they should never be kept in the path of travel to an exit or obstructing any emergency equipment.
- Spills such as grease, water, or oil shall be cleaned up as soon as possible; a delay could result in an accident to you or a fellow worker. If assistance from hazardous materials technicians is required, call Security Services local 3000 or 7777 at Macdonald Campus.
- A safe access shall be maintained to work areas. Shortcuts, such as through construction areas should be avoided. Never block aisles, traffic lanes, corridors or fire exits with equipment or materials, and make sure members of the public are kept out of hazardous work areas, by way of barricades and signage.
- Restore work areas to their normal condition prior to leaving by replacing ceiling tiles and access panels which may have been removed during the course of your work.



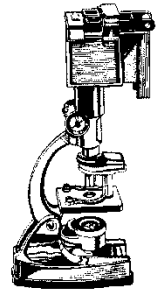
6. HAND & POWER TOOLS



- Before using any tool, first find out how to properly use it according to the operating instructions. If you need more information seek the advice of your supervisor.
- Tools are to be used for no other purpose than their intended uses i.e., use the right tool for the job.
- Modification of tools or removal of safety devices is not permitted.
- Examine the condition of your tools before using them and before returning them to their place of storage. Never use defective tools, and make sure nobody else uses them. Report faulty tools either to your supervisor or to the appropriate department for repair.
- Make sure you assume a comfortable position and use a firm grip when applying force to a tool, in order to avoid injuring yourself.
- Keep cutting tools sharp.
- Loose clothing, jewelry, or long hair should be restrained while operating power tools.
- When using noisy tools wear hearing protection.

7. EQUIPMENT, MACHINERY & LOCKOUT TAGOUT

- Only properly trained individuals should operate power equipment or machinery.
- All electrical equipment and machinery shall be properly grounded.
- Control switches shall be located at the point of operations best suited to control the equipment.
- You should never adjust, repair, clean, or oil machinery or equipment while any of its parts are in motion. All persons working on such equipment must be aware of the new Lockout Tagout (LOTO) policy and receive Lockout Tagout Training. Use lockout devices to prevent accidental start-ups and make sure that someone else cannot energize the equipment while the repair work is in progress. Lockout procedures should be approved by the supervisor prior to commencement of the repair work. To be sure the equipment is effectively locked out, do a test to be sure the equipment cannot be activated. All guards must be replaced after completing repairs.
- At the end of the Lockout procedure, the Lockout form or the used Lockout tag should be returned to the supervisor for record-keeping purposes.
- All moving pulleys, shafts, gears or other machine components presenting shear, nip, or pinch points should be adequately guarded to prevent accidental contact with parts of the body.
- Loose clothing, jewelry, or long hair should be restrained before working on moving machinery.
- Always perform proper maintenance on all machinery and equipment to prevent premature failure or possible accident. Have all safety guards in place while testing repaired equipment.
- You should regularly inspect for cracks, stretching, spreading, crimps, or other forms of damage on cables, chains, clamps, hooks, and other warning signs of danger on equipment that are frequently placed under stress. If you feel the equipment is damaged or creating a possible hazard, report this to your supervisor immediately.
- Shop machines, including drill presses and bench grinders, should be securely anchored to the floor or bench.
- The tool rest on a bench or pedestal grinder should be no further than 3 mm (1/8 inch) away from the grinding stone.
- Compressed air should not be used for cleaning clothing or equipment.
- Compressed air guns should have a maximum pressure of 200 kiloPascals (kPa) (29 psi).



- Machines and machinery should be inspected on a regular basis to ensure they are in good working order and that all guards and safety devices are in place. Supervisors are required to verify that inspections are done and corrective actions are taken on a timely basis.



8. FIRE PROTECTION

8.1 Equipment

- Request an equipment shutdown permit for fire protection that needs to be deactivated (sprinklers, Fire alarm detection) so you can do work that produces smoke or dust without causing unfounded fire alarms (Fines: \$ 3000.00). Requests must be made to your Sector Supervisor, to your Project Manager or to Fire Prevention at least 48 hours in advance,
- Be aware that sprinkler heads that have been painted must be replaced with new ones. They cannot be cleaned.
- Familiarize yourself with the location of fire extinguishing equipment and fire alarms in your work areas, as well as the emergency exit route and an alternate route.
- Do not cover or hide fire protection equipment and fire alarms from view.
- Bring a fire extinguisher with you any time you will be performing hot work and the equipment necessary to protect the site where you will be working. See the section on [Hot Work](#).
- If you encounter a fire, only attempt to extinguish it if you can do so safely. Maintain a safe escape route behind you as you fight a fire.

8.2 General

- The fire department must be able to reach all McGill buildings and fire hydrants at any time. Blocking access to streets and laneways must be prevented so make sure that delivery trucks and McGill vehicles are not left unattended in unauthorized zones.
- Fire exits must be kept clear of any obstructions, inside and outside of the building at all times. No storage is permitted inside staircases.
- Sources of ignition, such as ordinary flashlights, cell phones, pagers, portable heating equipment, ordinary electrical tools, unguarded light bulbs, etc., are prohibited in areas where explosives, flammable liquids or gases are located. (i.e., in flammable liquid storage areas, near chemical exhaust outlets, in refueling areas and other areas where you may have high concentrations of hazardous materials)
- Flammable liquids are recommended for use in small amounts and for transportation. These containers shall be clearly labeled and stored in a separate, protected area.
- Refueling a small engine that is running or is hot can be dangerous and should be avoided. Always clean up spills that occur during refueling before re-starting engines.
- Rags that contain oils or solvents shall be kept in covered metal containers until they can be safely disposed of.
- Propane bottles for BBQs or otherwise, must never be stored inside buildings.
- Any openings created in walls or floors to add conduits, run wires or other, must be sealed off with an approved material at the end of the job. Ceiling tiles must be reinstalled. The fire resistance of walls, floors or doors must be maintained in a building to ensure the safety of the building occupants during emergencies.
- Smoking is not permitted inside McGill buildings, or within 9 meters (30 feet) of windows and doors.

9. HOT WORK POLICY

9.1 Authorization for Hot Work

Definition: Hot work is defined as any welding, cutting, grinding or any other activity involving sparks, molten metal, heat, open flames, or other ignition sources which may cause smoke or fire.

Because of the important risks involved with Hot Work, safer **alternatives** must always be considered first, such as: mechanically fastening instead of welding, manual hydraulic shears versus saw or torch cutting, mechanical work instead of a propane torch, cold roofing process instead of one requiring hot work, etc. If this is not possible, the hot work procedure and permit will have to be used.

Trades performing hot work must bring a portable fire extinguisher and FM approved pads, blankets, curtains and screens to protect combustible materials and the building within the workspace (15 meter radius). In some instances, smoke filtering equipment may be needed to prevent occupants from triggering an unfounded fire alarm because of heavy smoke.

9.2 Exemptions

There are no approved, designated workshops on campus at this time; any interest should be brought to Fire Prevention. Designated workshops equipped with appropriate fire prevention and suppression facilities would be exempt from the requirement for Hot Work Permits because these sites would consistently meet hot work safety parameters.

9.3 Obtaining a Hot Work Permit

Hot Work permits for construction or renovation projects are issued by the Project Manager or Assistant Project Manager at Facilities Development. Facilities Operations supervisors issue permits for their maintenance work. The permit form and procedure can be found on the [McGill Website](#).

To perform small repairs on equipment in McGill buildings, the hot work permit is issued by Fire Prevention. Please write to Fireprevention@mcgill.ca with the job details if you need hot work done.

9.4 Authorization for Hot Work to proceed:

- The person responsible for the site's safety must only sign the issued permit when;
 - The preparation of the work site is completed; safety requirements are listed on the hot work permit.
 - The fire watch has been established as indicated on the permit and is on site. The work cannot proceed without a designated fire watch on site. (section 9.6)
 - The hot work warning sign is posted on site.
- The actual person doing the hot work must sign the permit to confirm the safety instructions have been read and understood.

9.5 Displaying the Hot Work Permit

The Hot Work Permit and warning signage must be displayed in a visible location any time hot work is in progress. Failure to display this permit will result in an immediate stoppage of work. The Permit is valid only for the time period and location displayed on the Hot Work Permit. .

9.6 Site Surveillance

Hot Work is not authorized without a fire watch of the work, of the work area and of adjacent areas at risk. The person(s) must be dedicated to this task. In some cases, more than one fire watch may be required to watch adjoining spaces or floors at risk.

The fire watch must be done continuously during the work, during breaks and during the hour that follows it, as prescribed on the Hot Work Permit.

In many instances, site monitoring will also be required for up to three hours following the fire watch, as prescribed by the Permit Issuer, person responsible for site safety and/or Fire Prevention. For example, site monitoring will always be required for Hot Work on roofs or in vertical service shafts. In these cases, the site surveillance would be done for a total of 4 hours. Site monitoring is defined as a periodic tour of the site to verify that there are no traces of fire from the work.

9.7 Completion of Work

Upon completion of hot work and final fire check, return the used permit and signage to the Project Manager or McGill Supervisor that has issued it. The permit must then be returned to Fire Prevention.

10. NATURAL GAS

10.1 Properties



Natural gas is an invisible gas consisting mainly of methane. It is extremely flammable and potentially explosive. Its explosive limit ranges from 4 to 15% in air. The vapor density of natural gas is 0.6% relative to air i.e., it is lighter than air. The smell of natural gas comes from isopropyl mercaptan, a chemical that is added to give natural gas a distinctive foul smelling odour. On the average, individuals are able to detect the smell of natural gas at a concentration of 0.2% in air.

Detection instruments, or "explosion meters", are available for measuring the concentration of natural gas in air, usually expressed in units of "% of lower explosion limit" (L.E.L.), thus a reading of 100% L.E.L. is equivalent to approximately 4% in air, 0.2% (the odor threshold) in air would register on the meter as approximately 5% L.E.L.

10.2 Natural Gas Prevention Measures

- Ensure that natural gas appliances are in good working order and inspected regularly.
- Get to know the location of the shut off valve(s) for natural gas appliances before using them.
- Natural gas lines or appliances that are no longer used should be capped or taken out of service.
- Natural gas lines which are used infrequently, such as in some teaching labs, should be equipped with a secondary shut off valve which should be closed when the line is not in use.

10.3 In the event of a gas leak

- Inform Security Services at local **(514) 398-3000** (Downtown) or **(514) 398-7777** (Macdonald), who will contact the Facilities Call Centre. Someone from the area workshop will be dispatched to investigate smells and minor leaks. If a major leak is involved, they will call 911 for assistance.

- Turn off gas if location of valve is known and it is safe to do so.
- Do not turn electric switches on or off.
- Do not use the telephone in the area of the leak - go to another area.
- Do not attempt to locate a leak by using a match or lighter.
- Ventilate the area by opening windows where possible.
- If leak is significant (strong or intensifying) evacuate area without using the fire alarm panel equipment (Manual Pull Station or fire department phone) and keep people out.

10.4 Protocol for Security Services Operations Centre

In the event of a smell or suspected leak of natural gas:

1. Call the Facilities Call Centre.
2. If after hours, the controller will call 911, who in turn will call **Energir** (previously called **Gaz Metropolitan**).
3. Dispatch a patroller to the location.

For a known major gas leak, e.g. a broken or severed gas pipe or an extremely strong smell affecting a large area:

1. The controller will call 911, who in turn will call **Energir** (previously called **Gaz Metropolitan**).
2. Dispatch a patroller who will co-ordinate with emergency services and assist evacuation efforts.
3. Call the Facilities Call Centre.
4. Inform Fire Prevention Officer to standby during the day.

10.5 Protocol for Maintenance Shop

In the event of a smell or suspected leak of natural gas:

1. Once contacted by your Supervisor, collect the explosion meter from the shop. If you are off site or on another part of campus, someone else from the shop will be assigned to deliver the meter to save time.
2. If you are called at home, request that Security Services deliver the backup meter to the leak area.
3. Proceed to the area in question and attempt to locate and isolate the leak.
4. If you are unable to correct the situation quickly, OR if the natural gas odor is rapidly intensifying, OR if the explosion test meter is reading higher than 50%, call 3000 (Downtown) or 7777 (Macdonald) or 55-5555 (MNI) and advise Security Services to call **Energir**. Proceed to the main shut off valve and close it. Do not reopen the valve until **Energir** evaluates whether it is safe for the resumption of gas flow.

11. ELECTRICAL

It takes very little electric current to kill--less than one-tenth of an ampere. There have been fatal electric shocks where voltage as low as 60 to 70 volts was involved. All modifications and verifications to electrical equipment greater than 24 volts need to be performed by a licensed electrician.

- No work should be performed "hot" unless performing measurements. Equipment or tools with known electrical defects, such as frayed wires or open contacts, shall be taken out of service and repaired before being put into operation.
- All electrical outlets should carry a grounding connection requiring a three-pronged plug.



- Never remove the ground pin of a three-pronged plug.
- Any electrical equipment that has been wetted should be disconnected at the main switch or breaker before being handled. Familiarize yourself with the location of such devices.
- Ensure that all wires are dry before plugging into circuits.
- Be sure that all electrical potential has been discharged before commencing repair work on any equipment containing high voltage power supplies or capacitors.
- Minimize the use of extension cords, avoid placing them across areas of pedestrian traffic and do not extend them from room to room, through doorways or walls.
- For fires involving live electrical equipment or wires, only use a portable extinguisher approved for class C fire. Ground fault circuit interrupters are required for all electrical tools used in wet areas.
- Arc flash PPE and clothing should be worn when working on live power.

12. LADDERS, SCAFFOLDING AND FALL PROTECTION

Falling from ladders and scaffolds is a common cause of serious injuries and accidental fatalities both on and off the job. Preventing these accidents requires a combination of choosing the right equipment, keeping it well maintained, and following the right procedures.

First, choose the right device for the job, whether it is a step stool, step, stepladder, extension ladder or scaffold. Do not stand on chairs, boxes, stools or other items not intended for ascending.

When working at heights on rooftops and in other situations where ladders or scaffolds are insufficient, appropriate fall-restraint devices should be used.

Extension ladder can be no more than 15 meters (49 feet) according the Quebec Occupational Health and Safety regulation, but McGill recommends that ladders greater than 9 meters (30 feet), requires 2 persons, with one or more people holding the bottom of the ladder.

12.1 Ladders

- Fixed ladders are far safer than portable ones and should be installed in locations where frequent access is a requirement.
- Extension ladders should be tied off at the top and anchored or braced at the bottom or held by a helper.
- Extension ladders should project at least 1 meter (3 feet) above the roof or landing.
- The base of the extension ladder should be placed $\frac{1}{3}$ (one-third) to $\frac{1}{4}$ (one-fourth) of the ladder's length away from the base of the structure (minus the 3 feet protection).
- Stepladders should be high enough to enable you to abide by the "belt rule" which means that your belt should never be higher than the top of the ladder. In other words if you have to step on one of the top two steps of the ladder, then the ladder is too small. Stepping on the last 2 runs is forbidden.
- Always inspect your ladder prior to use — defective ladders should be tagged, taken out of service, and replaced or repaired.
- Use footwear with good grip treads and before ascending the ladder make sure your shoe soles are dry.
- Face the ladder when ascending or descending.
- Step down from a ladder gradually and avoid bouncing or other movements that can cause instability.



- Maintain 3-point contact when climbing up or down. This means that 2 feet and 1 hand or 2 hands and 1 foot must be in contact with the ladder at all times.
- Establish barricades and warning signs when using a ladder over a doorway or passageway.
- Do not place loose tools on your ladder — use a tool belt.
- Take the time to position and reposition your ladder in order to avoid reaching so far as to place your center of gravity outside of the side rails. Never reposition your ladder while on it, always descend and do it properly.
- Use only Grade 1 (Construction/Industrial Use) CSA approved ladders. Ladders for electrical work should be certified as non-conductive. Note: Grade 2 ladders are accepted on campus. Grade 3 is strictly forbidden. Wooden ladders?

12.2 Scaffolds

- Where scaffolding is required, all components must be CSA certified.
- Makeshift scaffolds or interchanging parts from one type of scaffold to another are not permitted.
- Scaffold assemblies should be inspected by the supervisor prior to the commencement of work.
- Scaffolds must conform to the 3:1 height rule: the height of the scaffold must never exceed 3 times the smallest dimension of the base. Otherwise the assembly has to be securely anchored or equipped with outriggers to increase the size of the base.
- Scaffolds higher than 3 meters (10 feet) must be equipped with a guardrail, intermediate guardrail and toe board.
- Top guardrails have to be 1 m to 1.2 meters (4 feet) high and the intermediate guardrails have to be installed halfway in between.
- Vertical safety links or ‘‘Banana clips’’ have to be installed between each sections of the scaffolds.
- People working around or under a scaffold must wear a hard hat.
- A barricade must be placed around scaffold assemblies in public areas to ensure pedestrians stay at least 1 meter (3 feet) away.
- All scaffolding components must be secured when left unattended outdoors because of the risk of high winds dislodging materials onto passersby.
- Scaffolding cannot be used during silent hours by unauthorized personnel.
- X-braces should be present on each side of all sections.
- If equipped with wheels, they should be locked after each movement of the scaffold.
- To access the work platform on a scaffold, use a ladder properly attached. Climbing on the scaffold is prohibited.



12.3 Hoisting Operations

There are various hoisting apparatus being used by workers and they include hoisting platforms (i.e. scissor lifts and cherry pickers), suspended platform, vehicle aerial devices, and boatswain’s chairs. Safety measures need to be integrated for each type of apparatus so that it can be constructed, installed and used safely and according to the terms of the *Safety Code for the Construction Industry*.

The main risks associated with their use include falling from a height, overturning or collapsing, objects falling from hoisting apparatus onto people below, and electrocution. These risks can potentially happen if the following practices or sources of danger arise:

- 1) Overloading the apparatus,
- 2) Poor condition or maintenance of the apparatus,
- 3) Tools or other objects hanging loosely from the apparatus while in motion,
- 4) Working on a platform which is poorly balanced,
- 5) Absence of a toe-board at the bottom of the platform guardrail,
- 6) Work done close to high voltage lines,
- 7) Absence of a guardrail,
- 8) Platform floor covered in ice or oil,
- 9) Using ladders, or other such equipment on the platform to reach higher levels,
- 10) Not using a safety harness (where required),
- 11) Poorly marked danger zone,
- 12) Inadequate understanding of the controls and handling of the apparatus,
- 13) Inadequate assembling of the apparatus,
- 14) Improper repair or modification of the apparatus,
- 15) Climbing the up or down from the hoisting apparatus by way the way of the framework, masts, etc.,
- 16) Using the hoisting apparatus in bad weather conditions (i.e. violent winds, rainstorm, blizzard, fog, etc.)

In general, the protection against risks associated with hoisting apparatus cannot be guaranteed simply by keeping the equipment in good working order. It must also be assigned to competent workers who have been trained on that type of hoisting apparatus.

13. PREVENTING SLIPS, TRIPS, AND FALLS

The factors which make for a higher risk of slips, trips, and falls are mostly irregularities — for example irregularities in elevation, stepping pattern, illumination, contrast, visibility, surface friction, as well as the physical and psychological differences between people themselves. Many of these factors can be controlled, thereby reducing the risk of injuries.

- Make sure walkways are free of obstructions.
- Walking surfaces should be even — holes, ruts, weakened surfaces should be repaired.
- Remove snow, ice, water, oil or any liquid spills from walkways promptly.
- Avoid over waxing floors.
- Install and maintain stairs and steps with standard and uniform dimensions.
- Repair worn or weakened stairs or any defective grip edges.
- Provide adequate illumination to stairs, entrances, access ladders as well as walkways — use contrasting markings to indicate unexpected changes in elevation.
- Slope walkways should have a rise-to-run ratio of 1 to 12, no steeper.
- Use non-skid surfaces in key areas, such as outdoor stair entrances or areas that can frequently become wet, such as shower change areas.
- Use appropriate footwear (clean and in good condition).
- Install temporary barriers to protect from wet floors and other tripping and fall hazards.



14. ROOFTOP WORK

- Roof construction, repair, and other maintenance operations often require manual labor at dangerous heights and on steeply pitched working surfaces. The possibility of lost footing, decreased stability, and objects falling from such heights can be great and the consequences can be grave - 50% of falls to a hard surface from 3.4 meters (11 feet) are fatal.
- Most roof equipment has been installed in such a way as to provide safe access for maintenance work without any special fall protection requirements. However there may be certain situations, such as sloped roofs, work close to unguarded roof edges, or icy conditions where there is an enhanced risk of a fall. In these instances do not attempt to access the area until you have ascertained it is safe to do so — if there is any doubt, report the situation to your supervisor.
- A number of McGill buildings have laboratory exhaust stacks atop the roof. Working downwind from exhaust stacks, especially those that terminate below head level, presents the highest risk of being exposed to the emissions from the stacks. Before working in such a situation it should be first verified that it is safe to work there. The use of PPE might be required.
- This requires certain co-ordination with laboratory users to give them the time needed to shut down their experiments and remove dangerous chemicals from the hoods, which should be organized by your supervisor in conjunction with the Building Director.
- As soon as one is within 2 m of a 3 m fall, there should be a guardrail or personal (harness) protection. Two meters is the minimum, however if there is wind or ice the distance should be increased.

15. TUNNELS

Underground steam/service tunnel found on campus are not risk-free and should be considered as potentially dangerous spaces. As any such spaces, risk should be assessed based on both the specific location and the type of work. Utilities Services has established an occupancy risk level for all tunnels. As such, any access should be done through this service in all events. This applies to McGill University employees and contractors. Depending on the activities taking place in those tunnels (maintenance, monitoring, welding, etc.) the risk level can be different and safety measures should be taken accordingly. Since every tunnel is different (some have dead ends, other crawl spaces), sections of those tunnels are considered as confined spaces, - see section 16 for safety measures.

- Never enter a tunnel alone and without the authorization of your supervisor.
- Though some tunnel sections are not defined as confined spaces, they still represent a restricted space. Whenever entering a restricted space, make sure you have a reliable means of communication, such as the "buddy system" to maintain visual or verbal contact, or the use of portable communication devices. Before relying on such a device, test it to make sure it picks up a reliable signal in the location where you are working.
- Whenever entering a restricted space like a tunnel you must contact FCC or Security Services: just prior to entry, when changing location (to another tunnel), at a minimum of once every hour, and immediately after exiting.
- Equip yourself with the appropriate protective equipment. This includes but is not limited to: hardhat, safety boots/shoes, safety glasses, respiratory protection and flashlight.
- Before starting any repair work, do a visual inspection of the work area to determine whether there are any hazards of concern and plan your escape route(s) in case of an emergency. Under normal conditions, the air in the tunnel system is of breathing quality, however because it is a small space, certain operations like welding can produce a hazardous environment very quickly. Thus, welding and other pollution

generating activities like the use of internal combustion motorized equipment cannot be performed inside restricted spaces without specialized ventilation equipment, respiratory protection and a portable fire extinguisher, if needed.

16. CONFINED SPACES

The definition of a “confined space” is any area that is completely or partially enclosed. For example a reservoir, a silo, a vat, a hopper, a chamber, a vault, a tank, a sewer including a ditch and a temporary manure storage ditch, a pipe, a chimney, an access shaft, a truck or freight car tank, which has the following inherent conditions:



1. Not designed for human occupation, nor intended to be, but may occasionally be occupied for the performance of work;
2. Access or exit is restricted;
3. This can represent a risk for the health and safety of anyone who enters. Risks may be atmospheric (presence of a toxic gas or a deficiency in oxygen) or otherwise (electricity, drowning, burial, mechanical, etc.)

Every confined space must be properly identified. A warning sign must be installed at the entrance of a confined space.

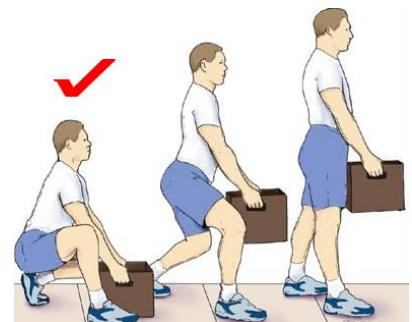
Access must be pre-authorized

Each confined space has a specific protocol to respect before entering.

Only trained persons may enter a confined space

Procedures to be applied rigorously include:

- Procedure,
- Air quality tests,
- Signalization,
- Lockout procedure,
- Organization of the working space,
- Ventilation,
- Personal protective equipment,
- Communications,
- Hot works procedure,
- Presence of an attendant
- Rescue plan. At a minimum, all confined space entries should have in place a “Non-entry rescue plan”, i.e. a way of extracting someone from a confined space without going inside, for example the use of a tripod, winch and harness assembly.



17. LIFTING AND MATERIALS HANDLING

Lifting, repetitive work and materials handling are responsible for many back and other musculoskeletal injuries which make up the most costly category of work related injuries. Preventing such injuries requires planning and good technique.

- A lot of lifting can be avoided altogether by good design of work areas — storing heavy and frequently used materials at waist height makes good sense.
- Use lifting and conveying devices like forklifts and trolleys where feasible, to avoid manual lifting.
- Plan your lift — if you have to carry something first make sure your route is unobstructed to ensure you do not have to step over things or open doors while carrying a heavy item.
- Get help when needed, rather than trying to lift and carry heavy items on your own. Before lifting something, be sure you are warmed up by loosening and stretching your muscles.
- To prepare for a lift first position yourself as close to the object as possible. Bend at the knees and assume a comfortable grip and posture i.e., keep your head and back erect.
- Before actually lifting test the weight slightly to get a feel for how heavy it is and whether you are capable of doing the lift.
- Lift the object gradually — do not jerk as this can cause strains. Lower gradually too.
- Lift with your legs, not your back. Lower with your legs too.
- Keep the weight as close to your body as possible. Extending your arms while holding even a small object can exert tremendous strain on you back due to leverage.
- Never turn or twist your body at the waist when carrying heavy objects — always turn with your legs and feet in conjunction with your whole body.
- Only professional movers should do lifts beyond normal capacity.



18. WORKING WITH CHEMICALS

18.1 The Hazardous Materials Information System (WHMIS)

WHMIS 2015 (previously called WHMIS) is a government regulation designed to ensure that everyone who works with or around hazardous materials has access to information on their harmful properties and how to safely work with these products. There are 2 ways this information is provided:

1. Labels, the contents of which are specified under WHMIS and produced by suppliers or, in some cases in the workplace.
2. Safety Data Sheets (SDS) which provide more detail than the labels must be readily accessible at all work times, and training, which explains the various hazard warning symbols used on containers, as well as instructions in the safe handling and storage of hazardous materials, and the procedures for dealing with spills or accidental exposures.

Whether you are using a chemical product or working in areas where they are used, you have the right to review the information in the safety data sheet. Those responsible for buying chemical products must make sure the safety data sheet is acquired for each product and kept in an accessible location. This also applies to contractors who work with chemicals — they are required to deposit the safety data sheets with the project manager.

18.2 Chemical Disposal

Many chemicals used in maintenance work are classified as hazardous waste and cannot be poured down the drain or placed in regular garbage. Examples include solvents, oils, solvent-based adhesives, degreasers, strong cleaning agents and batteries. The Hazardous Waste Management (HWM) Program handles collection and disposal of hazardous wastes. To arrange for waste collection, use the [HWM form](#) or prepare a list of the chemicals you wish to dispose, the container type, and approximate quantity of the material, and then send it to

hwm@mcgill.ca. All containers must be properly closed and identified with its content. A FOAPAL is required to cover the costs of pickup and disposal. For more information, contact Hazardous Waste Management at 5066.

19. ASBESTOS

- Work involving asbestos-containing materials is strictly regulated.
- Persons supervising or working on asbestos-containing materials must complete an asbestos training course to be renewed every 3 years and be fit-tested with an appropriate mask (i.e. P100 cartridges half mask or full-face).



- A variety of building materials are known to contain asbestos fibers, most commonly in pipe insulation (especially elbows), furnace insulation, as well as in sprayed-on insulation. It is also found in some types of acoustic tiles, plaster, floor tiles, mortar, roof shingles and membrane.
- Asbestos fibers are harmful if inhaled and can result in diseases of the lungs like asbestosis and cancer many years after exposure. They are not harmful if the fibers are not disturbed, thus the worst type of asbestos-containing materials is "friable", in other words easily broken up or pulverized. Examples of friable asbestos containing materials are sprayed on insulation, or uncovered and deteriorated pipe and furnace insulation. Friable asbestos can result in release of fibers into the air when disturbed.
- The non-friable asbestos, such as in acoustic tiles, floor tile, fume hood liner pose very little risk of release of fibers, unless they are subject to more aggressive treatment such as cutting, grinding or drilling activities.
- If you are to do some work liable to generate dust, you first want to make sure that the material you are handling does not contain asbestos. Your supervisor is responsible for informing you of the presence of asbestos, either in the form of a list, or on your actual work order. Your supervisor has access to a database of known asbestos-containing building materials on campus to see if the materials in question have ever been tested. If materials have not been tested and there is suspicion they may contain asbestos, arrange with your supervisor to have the material tested, before initiating the work
- Detailed information on the regulations and procedures for working around asbestos are found in the asbestos training manual that is provided to all participants in the asbestos training course.
- Areas where asbestos is known to be present and potentially disturbed (such as mechanical rooms and tunnels) should be inspected annually for signs of deterioration or disrepair and reported to the maintenance operations center for correction. Any suspected releases of asbestos should be reported to your supervisor immediately so that it can be handled on a priority basis

If you discover or know that asbestos containing building materials have been disturbed, report it immediately to your supervisor.

20. COMPRESSED GASES

- All gas cylinders, full or empty, should be securely supported using suitable racks, chains or stands. Straps or belts are not recommended as they will fail in a fire.
- When cylinders are not in use or are being transported, remove the regulator and attach the protective cap.
- An appropriate cylinder cart should be used for transporting cylinders. Chain or strap the cylinder to the cart.
- Verify that the regulator is appropriate for the gas cylinder being used and the pressure being delivered. Do not rely upon the pressure gauge to indicate the maximum pressure ratings; check the regulator's specifications.
- Do not use adapters or Teflon tape to attach regulators to gas cylinders.
- Never bleed a cylinder completely empty, but leave a residual pressure.
- Do not lubricate the high-pressure side of an oxygen regulator.
- N.B. Propane cylinders for barbeques cannot be stored indoors.



21. WORKING IN LABORATORIES AND ANIMAL QUARTERS

The first thing to do when assigned to maintenance work in a laboratory or animal facility is to present yourself to the person in charge and explain the work you are going to do and ask what precautions or protective gear are required in this lab. With this person, verify that there are no hazardous materials in the immediate work area or deposited on anything you may come into contact with.

- Certain surfaces, such as fume hood interiors, bench tops, or sink areas may first have to be decontaminated before it is safe to do your work. This is the responsibility of the laboratory personnel.
- If there are any containers of chemicals or other hazardous materials nearby make sure they are at a safe distance away. For example, containers should be removed by the laboratory staff before you work inside a fume hood or under a sink.
- If you have any doubts as to whether the work area has been rendered clean and safe, it is better to advise your supervisor and request an assessment by Environmental Health & Safety than to debate the issue with the lab personnel.
- Employees assigned to work in laboratories where radiation is used are required to undergo a radiation safety awareness training session organized by Environmental Health & Safety. These labs are identified by the radiation symbol placed on the lab entry door and on a radiation permit posted on the wall inside the lab. If you have not taken this training, advise your supervisor in order to make the necessary arrangements.
- For work on fume hoods designated for radioactive materials, always contact the Radiation Safety Officer, Environmental Health & Safety, at local 4563 for a radiation safety assessment.



22. VEHICLE SAFETY

It is your responsibility to closely follow the laws set forth in the Highway Safety Code. This includes respecting speed limits, safe following distances, signaling turns, and the use of seat belts.



- The speed limit on campus is 10 km/hr (6.3 ml/hr) unless otherwise posted.
- Full stops are required at campus stop signs.
- It is also your responsibility to ensure any vehicle you use is regularly inspected. This means notifying your supervisor of braking or steering problems, lights or horns that are out of service, or any defective safety devices such as seat belts, as soon as the problem is discovered.
- Motor vehicles, pedestrians and bicycle traffic using the same route are a concern in Montreal. Even though cyclists are required to follow the rules of the road, (the same as motor vehicles) many bicycle operators fail to obey stop signs or signal when making turns. Likewise, pedestrians are apt to step off a curb and cross the street at any location. Always be on the lookout for them.
- Materials or equipment to be moved on trucks shall be strapped or held down by ropes - not by people.
- Passengers are not permitted in the cargo areas of trucks. They must ride in the passenger compartment with their seat belts secured.
- Red flags measuring 0.1 square meter (1 square foot) must be placed on the end of loads that extend 1.2 meters (4 feet) or more past the end of the truck.
- Industrial equipment, such as service vehicles including tractors and backhoes, are required to have an audible back-up signal.
- Smoking is not permitted inside McGill owned vehicles.
- Communicating devices like mobile telephones are not permitted to be used inside McGill owned vehicles.
- Idling is not permitted; the engine should be turned off when a vehicle is stopped.
- According to the Quebec's Highway Safety Code, no driver may allow any substance to fall from the vehicle. Example: snow and ice must be removed from the vehicle before departure. For large vehicles such as cube trucks, a snow removal platform is available at the McIntyre Building loading dock. Contact HWM (5066) for use and access.

23. ACCIDENT AND INCIDENT REPORTING

There are 2 principal reasons why accidents and incidents (including near misses) should be reported. The most important reason is to learn from the experience and identify how a repeat incident can be avoided. This explains why all accidents, not just those resulting in injuries and lost time, should be reported.

The other reason is to meet legal requirements. When time loss is potentially involved, the law requires that a report be filed with the "*Commission des Normes, de l'équité, de la Santé et de la Sécurité du Travail*" (CNESST) immediately. Otherwise, there is the possibility that a compensation claim for work related injuries could be refused.

The procedure:

In the event of an injury, the first thing to do is get the necessary first aid or treatment. In the event of a serious injury call 911 for an ambulance, and call Security at **3000** (Downtown) or **7777** (Macdonald) or **55-555** (MNI). Security will monitor the call, will send a trained patroller and will provide the necessary escort. If you have to

leave campus because of a medical emergency, Security Services will advise your supervisor, who will take care of making the preliminary accident declaration. Otherwise, follow this procedure:

1. Call your supervisor immediately.
2. Complete the McGill Accident/Incident/Occupational Disease Report form together with your supervisor, if possible. Fax the form to EHS at 8047 in all instances and to Benefits at 6889, if there is time lost (i.e. if you are absent from work following the event).
3. See a physician or go to a hospital or clinic, if you deem it necessary.
4. Ensure that you obtain a CNESST medical certificate from your doctor and that he completes the Temporary Work Assignment forms if you have been provided with one.
5. Contact your supervisor immediately after you have seen a doctor to give him an update.

Provide the CNESST medical certificate and the Temporary Work Assignment form to your supervisor or your HR Representative on the day of your appointment or on the next business day.

24. EMERGENCY PROCEDURES

24.1 Emergency Numbers



**If external help is required
(police, ambulance, fire department):**

Call Emergency Services: **911**

Security monitors and records all 911 calls placed from McGill landlines on the Downtown campus.

If you are calling from a cell phone, public pay phone or from Macdonald campus:

Call 911 AND Security
514-398-3000 (Downtown) or
514-398-7777 (Macdonald).

**If internal help only
is required:**

Call Security at
514-398-3000
(Downtown) or at
514-398-7777
(Macdonald).

*Accidents, hazardous spills,
critical breakdowns, plumbing
or electrical services and
gas smells are examples of
incidents that can be handled
by Security.*

Emergency Phones

Located throughout both campuses, inside the main entrance of most major McGill buildings and in every elevator on campus. Look for the blue night light.

Simply press the **red button** to connect to Security.

A mobile patrol will be dispatched to provide required assistance.



24.2 Ammonia

The ice-making plant at the McConnell arena (Downtown Campus) and the Glenfinnan arena (Macdonald Campus) are ammonia-based systems. Each of these plants contains enough ammonia to pose a serious, life-threatening risk to the occupants of the arena in the event of an indoor leak and to neighbors in the event of a leak to the outdoors. Both of these ammonia systems are equipped with monitors designed to sound an audible alarm locally and to relay an alarm signal to CIMCO Security Company and Security Services. The only personnel permitted to routinely enter the ammonia plant areas are those who have undergone specialized training in ammonia plant operation, maintenance and emergency procedures. These personnel are guided by a detailed ammonia emergency response plan.

- In the event of a smell of ammonia, leave the area at once and advise Security Services (local **3000** downtown, and **7777** at Macdonald Campus) immediately.
- Do not attempt to enter the ammonia plant alone. Only those trained in ammonia emergency response procedures are permitted to enter.
- If others in the building appear to be at risk, do not hesitate to activate the fire alarm on your way out.
- There are 2 levels of alarm: 35 ppm and 100 ppm. At 35 ppm, CIMCO Security Company gets called as well as Security Services. At 100 ppm, you need to evacuate.
- Evacuation directives for both arenas:
 - Use the nearest emergency exit
 - No re-entry
 - Always try to go upwind (direction from where the wind is coming from). A wind sock is located on the roof of both arenas to help you with this
- Remain in a safe location and await the arrival of emergency responders.
- For further details, consult the McConnell and Glenfinnan Ammonia Leak Response Plans prepared by Emergency Management & Preparedness.

24.3 Fire

If you detect fire or smoke

1. Pull the fire alarm.
2. If safe to do so, use a **fire extinguisher** on the fire.
3. **Exit** the building calmly by only using the emergency exits. Do not use elevators or escalators.
4. Once outside call **911** and Security at
5. **3000** (Downtown) or **7777** (Macdonald) or **55-555** (MNI). Inform the authorities on site (they will be located near the main entrance of the building) of the following:
 - a. the **location** and **nature** of the fire,
 - b. the unsafe **exits**,
 - c. persons requiring **assistance** and their location,
 - d. other pertinent details.
6. Wait for authorization from emergency personnel before re-entering the building.



24.4 Fire Alarm

When a fire alarm sounds

1. Evacuate the building immediately by using the closest safe exit.
2. Follow the instructions of the evacuation team.

3. Once outside call **911** and Security at **3000** (Downtown) **7777** (Macdonald Campus) or **55-555** (MNI).
4. Move away from the building and go to the meeting site as directed by the evacuation team.

25. CONSTRUCTION SAFETY

Contractors are obligated to respect the prevention program as specified by the McGill Construction Safety Manager. To consult the program go to the link below:

https://secureweb.mcgill.ca/buildings/files/buildings/programme_cadre_mcgill_v2.4.1_2014-02.pdf

Approved by the Facilities Safety Committee: Version 2.2 on December 12, 2017.