EMERGENCY PREPAREDNESS
Emergency preparedness measures appropriate to the hazards in the laboratory must be in place and all laboratory personnel need to be familiar with these measures.

In case of a fire, injury or illness requiring emergency assistance, dial 416-287-7333 (local 7333) or when necessary 9-911. A list of emergency contact numbers must be posted in the laboratory near the telephone.

EMERGENCY CONTACT CARD
Each laboratory or chemical storage room must complete an emergency contact card and post it on the inside and outside of the laboratory door. The laboratory supervisor is responsible for completing the information on the card and updating it when necessary (i.e. changes are made to the laboratory).

The purpose of the emergency contact card is to provide an easily recognizable and consistent means of displaying essential information to emergency response personnel about the hazards in the laboratory. The information must be complete and accurate; otherwise it may lead to a delayed emergency response.

LABORATORY EMERGENCY PROCEDURES
Written procedures for emergencies such as a fire, medical emergency, chemical contact, chemical spill, and fume hood malfunction must be posted in the laboratory (see attached templates). Each laboratory is responsible for completing the information and updating it when necessary. All laboratory personnel must be trained in these procedures.

UNIVERSITY OF TORONTO SCARBOROUGH EMERGENCY RESPONSE GUIDELINES
Review the Emergency Response & Guidelines booklet provided in this manual, as it is designed to assist individuals in an emergency situation by providing basic information on what to do and how to proceed before Campus Police Services or emergency responders arrive.
FIRE SAFETY

Fire Triangle
A fire is a chemical reaction that takes place when a material oxidizes (reacts with oxygen) rapidly. In order for a fire to occur, the three elements of the fire triangle must be present: heat, fuel and air.

In order to prevent or extinguish a fire, one of the elements of the fire triangle must be eliminated. Laboratory personnel should be adequately trained regarding the fire hazards associated with their work.

Fire Classes
Fires are grouped into classes, according to the fuel that is involved. A fire extinguisher is specific to the fire class. There are four classifications of fire:

Class A - Ordinary Combustibles
Examples: paper, wood, rubber, many plastics.

Class B - Flammable Liquids
Examples: flammable and combustible liquids, oils, greases, tars, oil based paints, flammable gases, lacquer.

Class C - Energized Electrical Equipment
Examples: wiring, fuse boxes, circuit breakers, plugged-in electrical equipment.

Class D - Combustible Metals
Examples: sodium, lithium, aluminum, titanium.

Fire Extinguisher
The type of fire extinguisher needed depends on the fire class. Extinguishers are rated A, B, C and D or combinations thereof. Each laboratory should have an ABC rated extinguisher. All laboratories using combustible metals should have a D rated extinguisher.

Fire extinguishers should be located near the exit(s) of the laboratory, be unobstructed, and easily accessible at all times. Signage should be posted to prominently display the location of the extinguisher.
FIRES

All staff and students must participate in emergency drills and respond to all fire alarms by promptly following emergency procedures and evacuating the building.

If there is a fire in the workplace, the first action should always be to send for help. Activate the nearest fire alarm, or send another individual to do it. Call UTSC Campus Police Services (416-287-7333) and 911 if necessary. Only after the fire alarm is sounding should you consider using a fire extinguisher.

You should NOT try to fight a fire if:
- It is generating a substantial amount of smoke
- It is in close proximity to other flammable or combustible materials (often the case in laboratories)
- It is too large to handle with one extinguisher
- It could cut off your exit
- You are unsure about using the extinguisher.

If your clothing catches on fire:
- STOP.
- DROP to the floor.
- ROLL to smother the flames.
- Get to the safety shower and rinse with water.
- Seek medical attention.

If another person’s clothing catches on fire:
- Assist them in the STOP, DROP and ROLL.
- Use a safety shower to rinse the individual with water.
Use of a Fire Extinguisher
Act quickly in order to be successful in extinguishing the fire, while minimizing your own risk.
- First, determine the Class of fire (A, B, C or D) and then locate the fire extinguisher for that Class.
- Position yourself at least 6 feet away from the fire and keep the EXIT at your back so you always have an exit route out of the area.
- Now, think of the word PASS, which will prompt each of the following steps:

Pull the pin of the extinguisher. The pin normally prevents accidental discharge, and its removal unlocks the trigger mechanism. Do not squeeze the lever as you remove the pin, but hold the extinguisher by the lower handle only.

Aim the nozzle of the extinguisher at the BASE of the fire. This is where the fuel is actually burning.

Squeeze the handle lever. This allows the pressurized extinguishing agent to be discharged onto the target area.

Sweep from side to side. Work the extinguishing agent over the entire surface of the fire, starting at the closest point and forcing the fire BACK and out. Watch out for possible re-ignition. It is better to use too much extinguishing agent than too little.

- If you run out of extinguishing agent before the fire is put out, GET OUT.
- If possible, shut down any equipment which may add fuel to the fire. Do not turn off any hoods in the immediate area, as they will tend to keep the area free from smoke and fumes. Close the door behind you to prevent the fire from spreading.
- DO NOT re-enter the building until you are advised to by UTSC Campus Police Services or the municipal fire official.

Maintenance and Inspection of Fire Extinguishers
The laboratory supervisor is responsible for ensuring that monthly checks are performed. Documented monthly checks are required to ensure that:
- the location of the fire extinguisher is conspicuous;
- the unit does not appear or feel empty;
- the locking pin is intact and sealed;
- the pressure is within the correct range, if a pressure gauge is present;
- there is no obvious physical damage, corrosion or leakage;
- the nozzle is not clogged; and
- the area around the fire extinguisher is clear of obstructions.
MEDICAL EMERGENCIES

First Aid Equipment and Services
The Department is responsible for providing equipment, supplies, facilities, first aid attendants, and services to provide prompt first aid to workers if they suffer an injury at work. Each laboratory should have a first aid kit stocked with sufficient supplies for the type of laboratory work being performed and the number of laboratory personnel. Laboratory personnel should know the location and contact information of the closest trained first aider within the Department. The contents of the first aid box should be inspected on a regular basis and supplies replenished if necessary.

In case of a medical emergency:
1. A trained individual should give any necessary first aid to the injured person until help arrives. Do not attempt to move the injured person unless he/she is in imminent danger of further injury.
2. For a serious injury or illness, immediately call Campus Police Services 416-287-7333 (Local 7333) or when necessary 9-911. Give your name, location, and describe the nature and severity of the medical problem.
3. If there is a life or death situation, call 9-911 and then Campus Police Services at 416-287-7333.
4. Report the incident to your supervisor immediately.

CHEMICAL EXPOSURES
The following procedures should be followed in the event of a chemical exposure. In all cases, the incident should be reported to the laboratory supervisor and proper reporting procedures must be followed.

Chemicals on skin or clothing
- Proceed to the nearest sink
- Immediately flush with water for at least 15 minutes. For larger spills, the safety shower should be used.
- While rinsing, quickly remove all contaminated clothing or jewellery.
- Use caution when removing pullover shirts or sweaters to prevent contamination of the eyes.
- Check the Material Safety Data Sheet (MSDS) to determine if any delayed effects may be expected.
- Seek medical attention if required. Provide applicable MSDS to medical personnel.
- Discard contaminated clothing or launder them separately from other clothing.

Chemical contact with the eyes
- Proceed to nearest eyewash station. If necessary, use a portable eyewash unit as an interim wash until the injured person can reach a plumbed fixture.
- If wearing contact lenses, remove them as quickly as possible, while continuing to flush.
- Immediately flush eye(s) with water for at least 15 minutes.
- Hold your eyelids open with your fingers. Ask for assistance from a second person if needed.
- Roll your eyeballs, so that water can flow over the entire surface of the eye.
- Lift your eyelids frequently to ensure complete flushing.
- Cover the injured eye with dry sterile gauze pads.
- Seek medical attention. Provide applicable MSDS to medical personnel.

**Chemical Inhalation**
1. Close containers, open windows or otherwise increase ventilation, and move to fresh air.
2. If symptoms, such as headaches, nose or throat irritation, dizziness, or drowsiness persist, seek medical attention by calling Campus Police or going to UTSC Health & Counselling Centre. Provide applicable MSDS to medical personnel.

**Accidental Ingestion of Chemicals**
1. For serious poisoning, call 9-911 from a University phone or 911 from an external phone.
2. If safe to do so, move the victim away from the contaminated area and provide first aid as required or go to UTSC Health & Counselling Centre.
3. Contact the Poison Control Centre at 1-800-268-9017 for further instructions.
4. **Do not** induce vomiting unless directed to do so by a health care provider.
5. Provide applicable MSDS to medical personnel.
6. Always ensure that the individual receives medical attention, even if the exposure seems minor.

**Cuts and Accidental Injection**
First aid treatment for minor cuts and scrapes include the following:
- Apply gentle, direct pressure with a clean cloth or bandage to stop the bleeding. If bleeding profusely, elevate injury above heart level.
- Clean the wound with soap and water.
- Cover with a bandage or gauze and attach on all sides with adhesive tape. Avoid removing blood soaked bandages as this could damage a fresh clot – add additional bandages on top of the originals if necessary.

If the individual has been exposed to blood or bodily fluids, infectious or communicable disease agents, or zoonotic agents, the following procedures shall be followed:
- The exposed site must be washed immediately.
- If needlestick, cut, puncture wound, animal bite or scratch, wash with soap and water after allowing the wound to bleed freely.
If mucous (eyes, nose, mouth) membrane or non-intact (rash, acne, or dermatitis) skin contact, flush with water at the nearest sink or eye wash station. Seek additional medical attention for:

- Deep cuts that may require stitches.
- Wounds caused by dirty or soiled objects to determine whether or not immunization is necessary.
- Wounds caused by an object that has contacted blood or bodily fluids to determine if immunization or post-exposure prophylaxis is required.
- An injury that does not show signs of healing or you notice redness, swelling, warmth or drainage.

**LABORATORY EMERGENCY EQUIPMENT**

The University of Toronto standards for laboratory emergency equipment are provided in the Appendices of this manual. Laboratory personnel should be familiar with any applicable standards. Emergency equipment should be inspected and maintained on a regular basis. The Laboratory Emergency Equipment Inspection Form shall be used to document these inspections.

**Safety Showers**

If there is a potential for a laboratory worker to suffer a chemical splash to the skin, a safety shower must be provided in the laboratory for immediate and thorough drenching of the entire body.

- Every laboratory worker should know the location of the nearest safety shower.
- Showers must be located within 10 seconds of any potential hazard location and access to the showers must be unobstructed.
- All laboratory workers must be familiar with the operation of the safety shower. Laboratory supervisors are responsible for providing this training.
- Safety showers are designed to flood the entire body in the event of a clothing fire or a major spill of a chemical. The affected person should stand under the shower and activate it.
- In the case of a corrosive liquid spill, remove the affected portion of clothing to reduce potential contact. Removal of this clothing should be done while the individual is under the activated shower.
- Each shower should be tested monthly (where drains are installed) to flush the line and to verify proper operation. In laboratories without drains under the safety shower, a 20 L bucket can be hung over the shower head to catch the water when it is tested. Water from the safety showers should not create a slip hazard; any spills generated during testing must be mopped up immediately.
- Other than testing, the use of safety showers must be reported using the appropriate incident form.
Eyewash Stations
An eyewash station must be provided where a laboratory worker is exposed to any potential hazard or injury to the eye due to contact with a biological or chemical substance. Portable eyewash units are only to be used in situations where no plumbed eyewash is available or as an interim wash until the individual is able to proceed to a plumbed eyewash unit. Portable eyewash units should not be used as the primary eyewash in the laboratory.

- Every laboratory worker must be familiar with the location and operation of the emergency eyewash nearest to his/her work area. Laboratory supervisors are responsible for instructing laboratory workers in their proper use.
- Eyewash stations must be readily accessible and kept clear of obstructions. It should be identified with a highly visible sign.
- Eyewash stations must be reachable within 10 seconds from any location in the laboratory.
- Eyewash stations should be flushed weekly by laboratory personnel to test for proper operation and to discourage the growth of microorganisms.
- Malfunctioning eyewash stations should be reported immediately to Facilities Management at 416-287-7579.
- Other than testing, the use of eyewash stations must be reported using the appropriate incident form.

CHEMICAL SPILL PREVENTION AND PREPAREDNESS

Training
It is the responsibility of the laboratory supervisor to ensure all laboratory personnel are trained in appropriate chemical spill response procedures specific to the chemicals contained within their laboratory.

Cleaning Chemical Spills
The clean-up of chemical spills must be performed by workers who are aware of the hazards associated with the chemical(s) involved and have been trained in safe clean-up procedures. Before attempting to clean-up a spill, workers must consult the MSDS for information on specific spill clean-up procedures and required personal protective equipment.

Chemical Spill Kits and Equipment
If a particular chemical is used extensively in a laboratory, a spill kit is required. Appropriate protective equipment and cleanup materials (e.g. neutralizers, absorbent, etc.) must
be used. Spill kits should contain instructions, cleanup materials and protective equipment required to safely and effectively decontaminates a minor chemical spill. The chemical spill kit should be prominently located, readily visible and identifiable. A spill kit may be shared between laboratories provided that all personnel are aware of its location and it is easily accessible at all times. Exact contents of a spill kit should be based on the hazardous properties of the materials present in the laboratory. Spill kits are available through Campus Safety & Security – EHS at 416-208-5141.

Chemical Spill Response Procedures
Prompt action is necessary to minimize and eliminate hazards created by a chemical spill. If proper equipment is not available to safely contain and decontaminate a spill, evacuate the area(s) and contact the appropriate personnel.

Major Chemical Spill Indoors
1. Evacuate immediate area.
2. Attend to any persons who may have been contaminated. Consult the Material Safety Data Sheet (MSDS) for First Aid information.
3. Call Environmental Protection Services (EPS) at 416-978-7000 and UTSC Campus Police Services at 416-287-7333.
4. State your name, location, chemical(s) involved, and the amount spilled.
5. If unable to control and clean up spill as directed by EPS, wait in a safe area for the response team. Your knowledge of the area will assist the team.
6. Do not allow unauthorized personnel to enter the contaminated area.
7. Report the incident to your supervisor and to the Office of Environmental Health and Safety.

Minor Chemical Spill Indoors
1. **STOP! THINK!** Do not rush. Carefully plan the clean-up. Get the Material Safety Data Sheet (MSDS) and determine the appropriate clean-up procedures for the material. The effects of a spill can be minimized with proper emergency planning, which is integral to preparing for any experimental work. The required precautions during a spill response are dependent on the size of the spill and the hazards involved.
2. Decide if you can safely handle the spill; IF UNSURE, CALL 416-978-7000 FOR ASSISTANCE.
3. If hazardous vapours are generated from the chemical spill which can spread outside the local area contact Environmental Protection Services at 416-978-7000 and Facilities Management 416-287-7579.
4. Wear proper personal protective equipment (e.g. gloves, respirator), as specified in the MSDS.
5. Eliminate all ignition sources if a flammable material is involved.
6. Turn on fume hoods to capture or direct the flow of vapours.
7. Confine the spill to a small area. Do not allow the material to spread. Block or contain the spill from spreading by using appropriate absorbing material (vermiculite, commercial absorbent, etc).
8. Carefully remove other materials, containers, equipment from path of the spill.
9. Sweep solids of low toxicity into a dust pan and place into a container for proper disposal.
10. Dispose of all cleanup materials, including absorbing liquids, as hazardous waste. Waste must be properly packaged in a leak proof container, sealed and labeled with a hazardous waste label. See SECTION 7: Hazardous Chemical Waste Disposal.
11. After removal of spilled material, if the chemical is soluble in water, the area should be washed with warm, soapy water to remove any remaining residue.
12. Report the incident to the supervisor and the Office Environmental Health and Safety.

Chemical Spill Outdoors
1. Contain or block spill quickly with suitable material (e.g. kitty litter, vermiculite, etc.). Attempt to prevent chemical from contaminating the ground water and sewer systems. If possible, cover any opening to the sewer system.
2. Immediately call Environmental Protection Services at 416-978-7000 and call UTSC Campus Police Services at 416-287-7333.
3. Do not leave the spill site unattended. Wait until assistance arrives.
4. Report the incident to the supervisor and the Office of Environmental Health and Safety.