

**DEPARTMENT OF CHEMICAL ENGINEERING AND APPLIED CHEMISTRY
UNIVERSITY OF TORONTO
OCCUPATIONAL HEALTH AND SAFETY**

The Department, and other engineering and science departments, contain many hazardous materials and situations. These include flammable solvents, toxic chemicals, compressed gases and electrical apparatus. While steps have been, and are being taken to reduce the number of such hazards, many will continue to exist since they are an inherent part of our laboratory teaching and research. Every member of the Department, including all staff and all students, must work towards minimizing the number and scale of hazards and the probability of the occurrence of accidents. This document summarizes key points of policy and procedure with regard to occupational health and safety in the context of work and study in the Department.

Individual Responsibility

It is the common law that each individual owes a duty to work and study in a manner which does not jeopardize the health and safety of others.

The Occupational Health and Safety Act

In addition to the duties required under the common law, the Department, as a work place, is subject to the requirements of the Occupational Health and Safety Act (Ontario) 1978. It is Department policy that all members of the Department are subject to the procedures established in order to comply with the Act. Copies of the Act are available throughout the Department, and a copy is prominently displayed on the notice board beside Room WB216.

Occupational Health and Safety Committee

A requirement of the Act is the establishment of a Joint Occupational Health and Safety Committee. The membership of this Committee is as follows:

| | <u>Room</u> | <u>Telephone</u> |
|---|--------------------|-------------------------|
| B.A. Saville (Co-Chair-Certified Faculty) | 340 | 87745 |
| G. Bankian-Tabrizi (Co-Chair, certified Worker) | 207 | 63457 |
| G. Silva (Secretary) | 217 | 83063 |
| D. Tomchyshyn | 260 | 81144 |
| P. Jowlabar | 125A | 85623 |
| G. Norval | 216C | 67507 |
| P. Milczarek | 16 | 85504 |
| E. Susilawati | 311 | 87988 |
| R. Di Leo | 333 | 84046 |
| J.-A. Gandier (Grad. Rep.) | 311 | 81717 |
| N. Obaid (Grad. Rep) | 114/120 | 63378 |

Ex-Officio:

Geoff Shirliff-Hinds, Marc Drouin, Office of Environmental Health and Safety, 7th Floor, 215 Huron Street, Toronto, Ontario.

The Committee is concerned with the development of policies and procedures designed to reduce risks in the Department. If a student or staff member believes a situation to be unsafe, then he/she must report this to a member of the Committee, preferably the Chairman.

Training

All graduate students admitted to the Department are required to receive instruction in laboratory safety as part of their academic training.

Fourth Year undergraduate students are required to receive instruction in laboratory safety as part of their academic training for their thesis project. All other undergraduate students will also receive appropriate instruction in laboratory safety.

References

Researchers are encouraged to use the Safety Reference library established in Room WB216A. Information on safe laboratory practices, toxicity of chemicals, and flammability of solvents is available.

Safety Equipment

It is essential that you have a plan of action to follow in the event of an accident in your laboratory. Don't wait for an accident to decide what to do. Laboratories are equipped with protective and other equipment including fume hoods, fire extinguishers, fire blankets, showers and eye-wash fountains. Additional safety equipment, such as spill clean-up kits, are required to flammable or toxic materials. Students and staff must familiarize themselves with the locations and uses of these.

Personal protection is required in all laboratories. Please see section below outlining requirements for Personal Apparel.

Waste Disposal

Waste chemicals must be disposed of through Room WB16. All waste containers must be fully labelled using the Departmental Waste Labels available in WB16. No chemical may be disposed of down the drain.

Transportation of Gas Cylinders, Cryogenics and Containers of Toxic or Flammable Chemicals

Gas cylinders and glass containers of toxic and flammable chemicals must be labelled as to contents and may be moved around the building only using approved methods. On no occasion may a gas cylinder or any container of toxic, flammable or cryogenic material be carried in the passenger elevator.

Storage of Flammable Liquids

The Department has strict rules governing the sizes and types of containers used for flammable liquid storage, and rules governing the quantities of flammable that can be stored in a laboratory. Fires are a serious risk in the Department.

Smoking, Eating and Drinking

To prevent accidental ingestion of hazardous chemicals, the **storage and/or consumption of food and beverages in laboratories is strictly prohibited**. Please use offices, or the undergraduate or graduate lounges for this purpose.

Note that labs cannot be arbitrarily divided into a “lab area” and an “office area”. Only a solid wall with a door is deemed to be a proper partition. If there are chemicals present within the room, then entire room must be treated as a lab, even if it is primarily used as an office.

Restricted Areas

Admittance to certain areas, in which ionizing and non-ionizing radiation and other hazards exist and are clearly labelled, is banned except for those persons specifically authorized.

Research (formerly Experimental) Registration Form

Departmental policy requires that a Research Registration Form (formerly Experimental Registration Form) be carried out by a researcher when undertaking a new research project, whether it be lab work or computer work, or when making major changes to an existing procedure. Forms for this purpose are available in room WB217 and on the Chemical Engineering Website www.chem-eng.utoronto.ca/services/safety/ERFs.htm. The assessment must be discussed with one's supervisor and filed in room WB217.

Designated Substances

Certain substances have been designated as particularly hazardous by the Ministry of Labour. In addition, the Department has identified additional chemicals which require careful control. In order to ensure safe use of these substances, specific authorization must be obtained from the Chairman of the Safety Committee to use the following substances.

acrylonitrile
arsenic
asbestos
benzene
carbon disulfide
carbon tetrachloride
ethylene oxide
hydrofluoric acid
isocyanates
lead
mercury
silica
styrene
vinyl chloride monomer

Surveillance of Experiments

In normal circumstances, an experiment should not be left unattended. If the experimenter has to leave the laboratory temporarily, the experiment must be left in a safe condition (turn-off or adequate degree of turn-down). At the end of the day or at the termination of an experiment it must be shut-off. If it is required to run an experiment overnight, express permission must be obtained from the Supervisor and the Chairman of the Departmental Occupational Health and Safety Committee. Approval is in the form of a signed certificate to be posted prominently on the laboratory door.

Protective Apparel

Researchers are required to use appropriate protective equipment and apparel when working in a laboratory. The following basic guidelines must be adhered to:

- **Contact lenses** are not recommended in any laboratory. If contact lenses must be worn, safety goggles must also be worn.
- **Safety eyewear** is required when working in labs. This may consist of safety glasses with sideshields, safety goggles, or a full face shield, depending upon the degree of hazard.
- **Lab coats** are highly recommended, but not required unless specified by the lab supervisor. Lab coats provide an excellent barrier (both in terms of safety and cleanliness) between you and your experiment.
- **Shorts/skirts/dresses** may not be worn in any chemical laboratory, as they provide no protection to your legs in the event of a chemical spill.
- **Open toed shoes or sandals** may not be worn in laboratories.
- **Roller blades** may not be worn in any University building.
- **Hard hats** are required in WB25/125, and in any other lab where there is the potential for objects falling from overhead.
- **Oven mitts/gloves** are required when handling extremely hot or extremely cold substances.
- **Special gloves** may be required when handling dangerous chemicals. Note that **using the incorrect type of gloves may increase the danger**; please check with a member of the safety committee for up-to-date guidelines regarding the types of gloves to be used. The Fisher and Revere-Seton catalogs provide a comprehensive list of glove types and their compatibility with a range of chemicals.
- **Hearing protection** may be necessary if working for extended times near noisy equipment (>80dBa).
- **Dust masks** may be required if working with small particulates, etc.
- **Respirators** may be necessary if working with asphyxiants or other substances that are hazardous if inhaled.

Accidents/Incidents/Near Misses

Should an injury occur due to the incident/accident, an incident/accident report must be filed within 24 hours. More details on what report should be filled out as well as links to the online forms are given in the link below.

<http://www.ehs.utoronto.ca/resources/wcbproc.htm>

Procedures to be followed in the case of an accident/incident (potential for accident or injury):

1. Should anyone become aware of what appears to be unsafe working conditions, unsafe work habits, improper user of equipment, the use of malfunctioning equipment, or odour releases or detection, they are asked to complete the Department's online 'Potential Hazard Report' immediately. The form allows the person reporting to remain anonymous if they so choose. The form can be found online at <http://healthandsafety.chem-eng.utoronto.ca/potentialhazards/index.php>
2. It is everyone's responsibility to report and correct these potential accidents/incidents immediately.
3. When a report is submitted, it automatically sends an email to one of the H&S Committee's co-chairs, who can then determine the appropriate response required. If unavailable to respond themselves, they can quickly assign another member of the Committee to respond if immediate response is required.
4. Call 83000 if there is no response from a committee member within 10 minutes. We cannot fix the problem if we are not told about it and investigate it at the time of the incident/accident.
5. An official accident/incident report should be submitted only once the source of the odour has been determined by either a Safety Committee member or the building engineer, and if it is deemed to be a health hazard issue. The report should be submitted by the person causing the odour issue as per instructions below.
6. Should First Aid be required, please refer to the list of first-aid trained personnel (posted by the elevator on each floor of the Wallberg Building). Most of the Safety Committee members are certified First Aiders.
7. Should an incident/accident occur to a **UofT employee(s)**, please be aware that the employee should not be submitting the employee accident/incident form themselves, but must sit with their supervisor to discuss the incident and the supervisor then fills out the form with the employee present to provide additional information as needed. This ensures that the supervisor has been made fully aware of the incident/accident and can take appropriate action as needed. Should an injury have occurred due to the incident/accident, this report must be filed within 24 hours.
8. Should an incident or injury involve **students, contractors or other visitors (including visiting students conducting research)**, the accident/incident form for non-employees must be completed. In most cases, the student or visiting student/researcher must sit with their supervisor to discuss the incident and the supervisor then fills out the form with the employee present to provide additional information as needed. This ensures that the supervisor has been made fully aware of the incident/accident and can take appropriate action as needed.

9. The non-employee form may also be used to report incidents like near misses, where there was no injury, but the potential for injury existed.

10. Should an incident/accident occur to a **student in a classroom/teaching lab**, the incident/accident should be reported to the UofT professor or lecturer in charge of the class/lab and again, the student must sit with the professor/lecturer to discuss the incident and the professor/lecturer then fills out the form with the student present to provide additional information as needed. This ensures that the supervisor has been made fully aware of the incident/accident and can take appropriate action as needed.

All accidents/incident must also be reported within 24 hours after the accident/incident online. The forms can be found at: <http://www.ehs.utoronto.ca/resources/wcbproc.htm>

EMERGENCY PROCEDURES

In case of **FIRE**, the University policy is:

1. Actuate the nearest wall-mounted fire alarm.
2. Telephone the University Emergency Centre, Local 82222.
3. Evacuate the building.
4. Report to the fire inspector if anyone is suspected of being in the building after general evacuation, also location of fire if known.

When the fire alarm sounds, do the following:

1. Evacuate the building quickly even though alarm is suspected or known to be false.
(Note: It is mandatory for all University buildings to be evacuated upon sounding of the building fire alarm).
2. Do NOT use elevators.
3. Do NOT re-enter building until authorized by the Fire Officer. Cessation of the alarm does NOT mean that it is safe to re-enter. Only re-enter via the front doors of the building, irrespective of which door was used to exit the building
4. Keep clear of the building.

In case of **EXPLOSION or UNCONTROLLED RELEASE OF TOXIC CHEMICAL**, the above procedure will also be followed.

Access to locked rooms may be achieved by means of keys which can be obtained from WB217. When access to room WB217 is not possible, or after normal working hours, access can be obtained in **emergency** situations by dialling **extension 82222** and explaining the problem or in non-emergency by dialling extension 82323.

Information on Occupational Health and Safety

Further information may be obtained from:

- The University of Toronto, Office of Occupational Health and Safety, 7th Floor, 215 Huron Street, Telephone 84467
- Members of the Departmental Joint Occupational Health and Safety Committee

DEPARTMENT OF CHEMICAL ENGINEERING AND APPLIED CHEMISTRY

OCCUPATIONAL HEALTH AND SAFETY

Please complete and return to:

Gorette Silva, Secretary
Joint Occupational Health & Safety Committee
Room 217, Wallberg Building

I have received and read a copy of the Departmental Occupational Health and Safety Policy.

NAME: (please print) _____
(first name) (last name)

SIGNED: _____ DATE: _____

DEPARTMENT: _____

SUPERVISOR: _____

Faculty member

Staff member

Undergraduate student: **Year:** I / II / III / IV

Graduate student

PDF/Research Associate/Research Assistant/Technician /Other