

# Department of Chemistry Safety Policy, Sept 2019

The Department of Chemistry recognizes its responsibility to undertake teaching and research activities in a safe and environmentally responsible fashion. Responsibilities of the University, departmental chairs, laboratory supervisors, staff, and students are defined in the Occupational Health and Safety Act of Nova Scotia and Dalhousie policy manuals made available by the Office of Environmental Health and Safety at <http://safety.dal.ca>. Dalhousie safety manuals include the Chemical Laboratory Safety Manual, Biosafety Manual and Radiation Safety Manual. To further ensure the safety of students, members of the public, and Department of Chemistry members in the Chemistry Building, the Department of Chemistry has additional safety policies.

## 1. Responsibilities

### 1.1 The Chair

The Chair's responsibilities include taking every precaution that is reasonable in the circumstances to:

- a. act in accordance with Dalhousie policy and the duties and precautions of an employee as described in the Occupational Health and Safety Act of Nova Scotia (Appendix I)
- b. ensure that laboratory supervisors are aware of and adequately discharge their responsibilities for laboratory safety and provide support and assistance that supervisors require.
- c. keep records of safety training of Chemistry Department faculty and staff working in the Chemistry Building
- d. ensure that the Chemistry Building is a safe workplace with safe common areas for the public
- e. ensure that a Chemistry Building emergency response plan is in place
- f. maintain an active Chemistry Safety Committee
- g. ensure that an active group of Fire Wardens is maintained and trained.
- h. ensure all accidents or serious incidents are appropriately reported

### 1.2 The Chemistry Safety Committee

The Chemistry Safety Committee (CSC) membership is appointed by the Chair and should at least comprise a professor, a Chemistry Department Administrator, an instructor, a member of the technical staff, a member from Chemistry Stores, and a student representative (non-voting). The CSC is responsible for:

- a. working with Dalhousie Environmental Health and Safety to ensure that safety practices are up to date
- b. conducting safety audits within the Chemistry Building
- c. recommending changes to policy and safety procedures for approval by the Chair
- d. assisting the Chair in safety related matters in the Chemistry Building.

### 1.3 Supervisors

Supervisors (including research supervisors, laboratory instructors, technical staff, machinists, glassblowers, storage facility managers, etc. who work in the Chemistry Building, excluding Facilities Management (FM) personnel, who are regulated by FM policies) are responsible for the

safe operation of the activities being undertaken in their Laboratories (here Laboratory includes research laboratories, undergraduate laboratories, storage facilities, workshops and other workspaces). It is the responsibility of Supervisors to take every precaution that is reasonable in the circumstances to:

- a. act in accordance with the duties and precautions of an employee as described in the Occupational Health and Safety Act of Nova Scotia (Appendix I)
- b. be aware of their right to refuse work (Appendix II)
- c. ensure their Laboratories meet the safety requirements according to Dalhousie University and the Department of Chemistry safety policies
- d. participate in Dalhousie University and departmental safety audits
- e. ensure all Laboratory personnel are Dalhousie WHMIS trained every three years
- f. ensure all Laboratory personnel are trained in the general and protocol specific procedures undertaken in the Laboratory
- g. ensure all Laboratory personnel are trained in safe practices related to the transport of chemicals
- h. ensure all Laboratory personnel have received appropriate emergency response training
- i. ensure all Laboratory personnel complete the Dalhousie Laboratory Safety Module
- j. keep records of training for Laboratory members
- k. ensure all Laboratory personnel are familiar with the location of exits, fire extinguishers, safety showers, eye wash stations, and spill kits
- l. ensure that the Laboratory has an emergency response plan
- m. ensure all safety policies are followed by Laboratory personnel
- n. maintain an up-to-date chemical inventory and SDS database (hard-copy, electronic/online or a combination) for the chemicals used in their Laboratories
- o. provide Standard Operating Procedures (SOPs) and training for any procedures involving potential hazards in the Laboratory
- p. ensure that chemical inventory, SOP, and SDS databases are readily available to all personnel working in the Laboratory
- q. ensure all accidents or dangerous incidents are appropriately reported
- r. notify the Chair and the Safety Office prior to using any radioactive or biohazardous materials, prior to undertaking any especially potentially hazardous procedure or prior to installing any potentially hazardous equipment.

#### **1.4 Chemistry Department Laboratory Personnel**

Chemistry Department Laboratory Personnel (including post-doctoral, graduate and undergraduate researchers, research associates, visiting researchers, volunteers, undergraduate students in teaching labs, and any other personnel working in a laboratory in the Chemistry Building under the direction of a Supervisor) have a responsibility to perform their work in a safe manner in compliance with the Dalhousie University and Chemistry Department safety policies, any Laboratory SOPs, and any safety directions provided by their Supervisor. It is the responsibility of Chemistry Department Laboratory Personnel to:

- a. act in accordance with the duties and precautions of an employee under the Occupational Health and Safety Act of Nova Scotia (Appendix I)
- b. be aware of their right to refuse work (Appendix II)
- c. be Dalhousie WHMIS trained every 3 years, be familiar with Dalhousie University laboratory safety policy and Laboratory SOPs, and to undertake any special safety training or safety precautions as required by their Supervisor

- d. review laboratory SOPs as needed to ensure safe practices are maintained
- e. contact a Supervisor or a more experienced lab member when encountered with any potential hazards that are unfamiliar
- f. notify other workers in the laboratory about unattended operations, e.g. by filling out an Unattended Reaction Form and posting the form in the area where the experiments are occurring
- g. notify the Chemistry Department about the use of noxious chemicals (for example, thiols and lachrymatory substances) being used on a daily basis
- h. ensure that waste is properly segregated, labelled, and disposed of
- i. ensure that new chemicals are reported to the Supervisor or a designate of the Supervisor, and entered in the chemical inventory
- j. ensure that chemical samples are labelled and stored properly.

## **2. Chemistry Department Policies and Procedures**

### **2.1 Training**

#### **2.1.1 WHMIS Training**

All persons taking Chemistry lab courses in the Chemistry Building, conducting research in the Chemistry Building and all Chemistry Department faculty and staff working in the Chemistry Building must be Dalhousie WHMIS trained at least every three years.

#### **2.1.2 On-line Laboratory Training Courses**

All persons conducting laboratory research in the Chemistry Building must complete the following Dalhousie Environmental Health and Safety courses: Lab Safety Course, Chemical Spill Response, Fire Safety Course.

### **2.2 Use of Personal Protective Equipment**

Personal Protective Equipment (PPE) should be used in accordance with Dalhousie Laboratory procedures, and any laboratory SOPs. In addition, the Chemistry Department requires that lab coats, safety glasses, shoes (no sandals, bare feet, open toed shoes, etc.) and long pants (no shorts or skirts) are to be worn at all times in Chemical Laboratories or when transporting chemicals in common areas. Lab coats may only be worn in common areas while transporting chemicals or when walking from one lab to another. The use of laboratory gloves or chemical respirators in common areas is not permitted, excepting in the case of an emergency.

### **2.3 Transportation of Chemicals in the Chemistry Building**

The transportation of chemicals should be done in accordance with Dalhousie Laboratory safety procedures. All carts used to move chemicals in the Chemistry Building must have raised edges and must be approved for this use. All carts in the Chemistry Building that are not meant for the transportation of chemicals must be clearly labelled with the notice: "NOT TO BE USED FOR TRANSPORTING CHEMICALS". When transporting chemicals in the elevator, a barricade must be used to exclude anyone not wearing the proper PPE from occupying or entering the elevator. No one should ride with cryogenic or compressed gases in the elevator. To transport cryogenic or compressed gases in the elevator, a barrier should be put in place to stop anyone from entering the elevator, a lab member should be waiting at the appropriate floor for the arrival of the elevator, and then the elevator should then be sent to the appropriate floor.

## **2.4 Chemistry Department Safety Audits**

Departmental safety audits are to be conducted annually for every research laboratory, undergraduate laboratory, storage facility, and workshop (excluding FM workshops) in the Chemistry Building. Safety audits will be conducted jointly by the safety committee and the Supervisor. The results will be reported to the Supervisor, the Chair, and the Chemistry Department Administrator.

## **2.5 Chemistry Department Safety Notices**

A web form and site will be used to facilitate dissemination of Chemistry Department safety information, including this policy and the name and location of any noxious chemicals in use (for example, thiols and lachrymatory substances) in the Chemistry Building.

## **2.6 Chemistry Laboratory Safety Notices**

Chemistry Laboratories shall have the following information posted:

1. Outside every laboratory entrance:
  - a. a lab plan that indicates the locations of
    - i. all hazards
    - ii. chemical storage areas
    - iii. compressed or cryogenic gases
    - iv. fire extinguishers
    - v. safety showers and eyewash stations
  - b. emergency contact information
  - c. a description of any unattended experiments and associated emergency response procedures
2. Inside the laboratory
  - a. emergency response procedures
  - b. the location of the nearest spill kit
  - c. a notice should be placed near any unattended experiments indicating
    - i. the name and contact information of the person responsible
    - ii. the experiment start and end dates
    - iii. a list of any hazards present
    - iv. any emergency response procedures.

## **2.7 Working Alone in Chemical Laboratories**

Laboratory Personnel should not work alone in the laboratory whenever possible. Laboratory Personnel are permitted to work alone only with the permission of their Supervisor and only doing tasks that are approved by their Supervisor. In addition, any Laboratory Personnel working alone in the Laboratory must have a buddy who knows they are working in the lab, how long they are expected to work in the lab, and who will check in on them if this time is exceeded. It is encouraged that Laboratory Personnel working alone also use the WorkAlone feature of the DalSafe app.

# **APPENDIX I: EMPLOYEES' PRECAUTIONS AND DUTIES**

## **Section 17 of the Nova Scotia Occupational Health and Safety Act**

### **DUTIES AND PRECAUTIONS**

#### **Employees' precautions and duties**

1. Every employee, while at work, shall
  - (a) take every reasonable precaution in the circumstances to protect the employee's own health and safety and that of other persons at or near the workplace;
  - (b) co-operate with the employer and with the employee's fellow employees to protect the employee's own health and safety and that of other persons at or near the workplace;
  - (c) take every reasonable precaution in the circumstances to ensure that protective devices, equipment or clothing required by the employer, this Act or the regulations are used or worn;
  - (d) consult and co-operate with the joint occupational health and safety committee<sup>1</sup>, where such a committee has been established at the workplace, or the health and safety representative<sup>2</sup>, where one has been selected at the workplace;
  - (e) co-operate with any person performing a duty or exercising a power conferred by this Act or the regulations; and
  - (f) comply with this Act and the regulations.
2. Where an employee believes that any condition, device, equipment, machine, material or thing or any aspect of the workplace is or may be dangerous to the employee's health or safety or that of any other person at the workplace, the employee shall
  - (a) immediately report it to a supervisor;
  - (b) where the matter is not remedied to the employee's satisfaction, report it to the committee<sup>1</sup> or the representative<sup>2</sup>, if any; and
  - (c) where the matter is not remedied to the employee's satisfaction after the employee reports in accordance with clauses (a) and (b), report it to the Division<sup>3</sup>.

<sup>1</sup>The Dalhousie Environmental Health and Safety Committee and the Chemistry Safety Committee.

<sup>2</sup>This includes the Executive Director of the Dalhousie Environmental Health and Safety Office, the Dalhousie Chemical, Biological, and Radiation Safety Officers, and the Chair of the Chemistry Safety Committee.

<sup>3</sup>Occupational Health and Safety Division of the Department of Labour and Advanced Education.

## **APPENDIX II: RIGHT TO REFUSE WORK**

### **Portions of Section 43 of the Nova Scotia Occupational Health and Safety Act<sup>1</sup>**

#### **Right to refuse work and consequences of refusal**

1. Any employee may refuse to do any act at the employee's place of employment where the employee has reasonable grounds for believing that the act is likely to endanger the employee's health or safety or the health or safety of any other person until
  - (a) the employer has taken remedial action to the satisfaction of the employee;
  - (b) the committee<sup>2</sup>, if any, has investigated the matter and unanimously advised the employee to return to work; or
  - (d) an officer<sup>3</sup> has investigated the matter and has advised the employee to return to work.
2. Where an employee exercises the employee's right to refuse to work pursuant to subsection (1), the employee shall
  - (a) immediately report it to a supervisor;
  - (b) where the matter is not remedied to the employee's satisfaction, report it to the committee<sup>2</sup> or the representative<sup>3</sup>, if any; and
  - (c) where the matter is not remedied to the employee's satisfaction after the employee has reported pursuant to clauses (a) and (b), report it to the Division<sup>4</sup>.
7. Where an employee has refused to work pursuant to subsection (1) and has not been reassigned to other work pursuant to subsection (5), the employer shall, until clause (1)(a), (b) or (c) is met, pay the employee the same wages or salary and grant the employee the same benefits as would have been received had the employee continued to work.
8. An employee may not, pursuant to this Section, refuse to use or operate a machine or thing or to work in a place where
  - (a) the refusal puts the life, health or safety of another person directly in danger; or
  - (b) the danger referred to in subsection (1) is inherent in the work of the employee.

<sup>1</sup>Please consult the Nova Scotia Occupational Health and Safety Act for additional information regarding the right to refuse work.

<sup>2</sup>The Dalhousie Environmental Health and Safety Committee and the Chemistry Safety Committee.

<sup>3</sup>This includes the Executive Director of the Dalhousie Environmental Health and Safety Office, the Dalhousie Chemical, Biological, and Radiation Safety Officers, and the Chair of the Chemistry Safety Committee.

<sup>4</sup>Occupational Health and Safety Division of the Department of Labour and Advanced Education

### **APPENDIX III: PROCEDURES FOR NEW FACULTY HIRES**

Prior to new faculty working in the Chemistry Building, the Chair shall:

1. Ensure that the new faculty member reads and understands this policy and any Dalhousie policies applicable to their work (e.g. Chemical Laboratory, Radiation, Biological Safety Policies, etc.).
2. Ensure that the new faculty member is Dalhousie WHMIS trained prior to working in a laboratory and renews their WHMIS training every three years.
3. Ensure that the new faculty member is trained in emergency response procedures.
4. Ensure that the new faculty member is familiar with the locations of exits, fire extinguishers, emergency showers, eyewash stations and any other safety equipment.
5. Maintain a record of the new faculty member's training.

## **APPENDIX IV: PROCEDURES FOR NEW CHEMISTRY LABORATORY PERSONNEL**

Prior to new Chemistry Laboratory Personnel working in Laboratories, Supervisors shall:

1. Ensure that the new Laboratory member reads and understands this policy, any Dalhousie policies applicable to their work (e.g. Chemical Laboratory, Radiation, Biological Safety Policies, etc.), and any Laboratory SOPs that are needed for them to work safely in the Laboratory.
2. Ensure that the new Laboratory member is Dalhousie WHMIS trained prior to working in a laboratory and renews their WHMIS training every three years.
3. Ensure that the new Laboratory member is trained in emergency response procedures.
4. Ensure that the new Laboratory member is familiar with the locations of exits, fire extinguishers, emergency showers, eyewash stations and any other safety equipment.
5. Maintain a record of the new Laboratory member's safety training.