

# Safety Lecture

Graduate Orientation

SEPTEMBER 1, 2023

# Safety Expectations

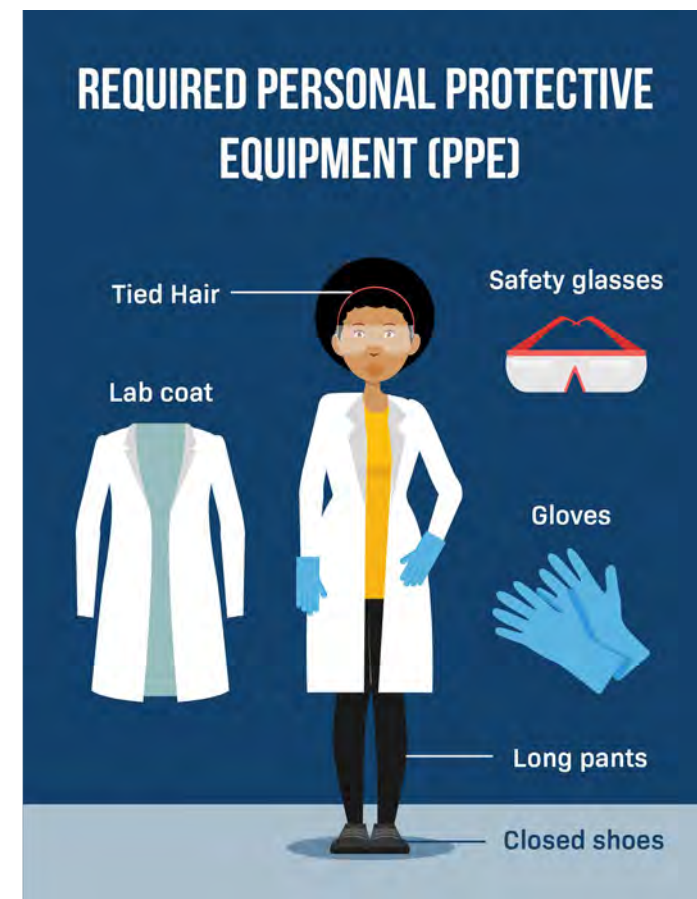
- *Occupational Health and Safety Act (OHSA)*
- The OHSA provides legislation for health and safety in the workplace, and these regulations must be followed in all the Chemical engineering laboratories.
- By law, your employer is responsible for your workplace health and safety, including making sure you know about the hazards in your job. You also have a legal requirement to notify your supervisor of any hazards you are aware of.
- The duties of a worker (OH&S Act & Regulations, Section 28) are:
  - A worker shall,
    - a) work in compliance with the provisions of this Act and the regulations;
    - b) use or wear the equipment, protective devices or clothing that their employer requires to be used or worn;

## Safety Expectations (continued)

- c) report to their employer or supervisor the absence of or defect in any equipment or protective device of which they are aware, and which may endanger themselves or another worker; and
- d) report to their employer or supervisor any contravention of this Act or the regulations or the existence of any hazard of which they know.
- e) not remove or make ineffective any protective device required by the regulations or by their employer, without providing an adequate temporary protective device and when the need for removing or making ineffective the protective device has ceased, the protective device shall be replaced immediately;
- b) not use or operate any equipment, machine, device or thing or work in a manner that may endanger himself/herself or any other worker; or
- c) not engage in any prank, contest, feat of strength, unnecessary running or rough and boisterous conduct

# Laboratory safety regulations

- **Personal Protective Equipment (PPE)**
  - Always wear safety goggles (even if you are working on a computer inside labs)
  - Wear Lab Coats
  - Appropriate gloves
  - Closed-toed shoes
  - Clothing completely covering your legs
- Read the **Safety data sheet (SDS)** before working with any chemicals
- **Wash hands** thoroughly with soap and water before leaving the Laboratory



# Laboratory safety regulations

- DO NOT!!
  - Smoke, eat, drink, or chew gum, use cell phones, ear-buds/phone or pipette by mouth
  - Store food, dishes or drinks
  - Wear: Contact lenses, sandals or open-toed shoes, high heels
  - Items that could become entangled in moving equipment, such as unconfined long hair, loose jewelry and ties or loose clothing
- Do not engage in horseplay / practical jokes / rough housing / pranks in laboratories



**VIOLATION OF ANY SAFETY REGULATION IS GROUNDS FOR REMOVAL OF ACCESS FOR THE USER AND/OR SUSPENSION FROM THE LABORATORY.**

## Safe handling of needles

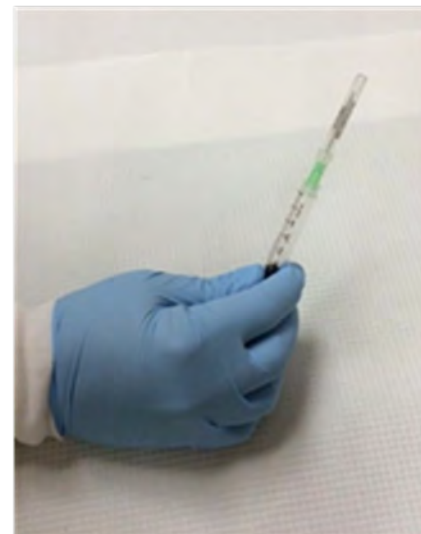
- Most common source of injury and incident reports
- Always use the “One-hand scoop technique”
- Dispose the needle (with the cap attached) in appropriate sharps container



1

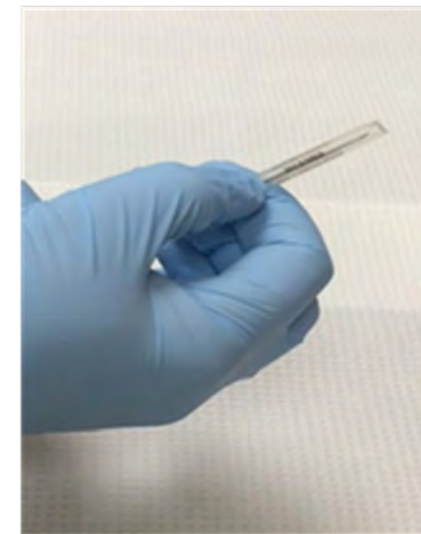
Place cap on flat surface while sharp is in use.

Slide sharp end into the empty cap opening.



2

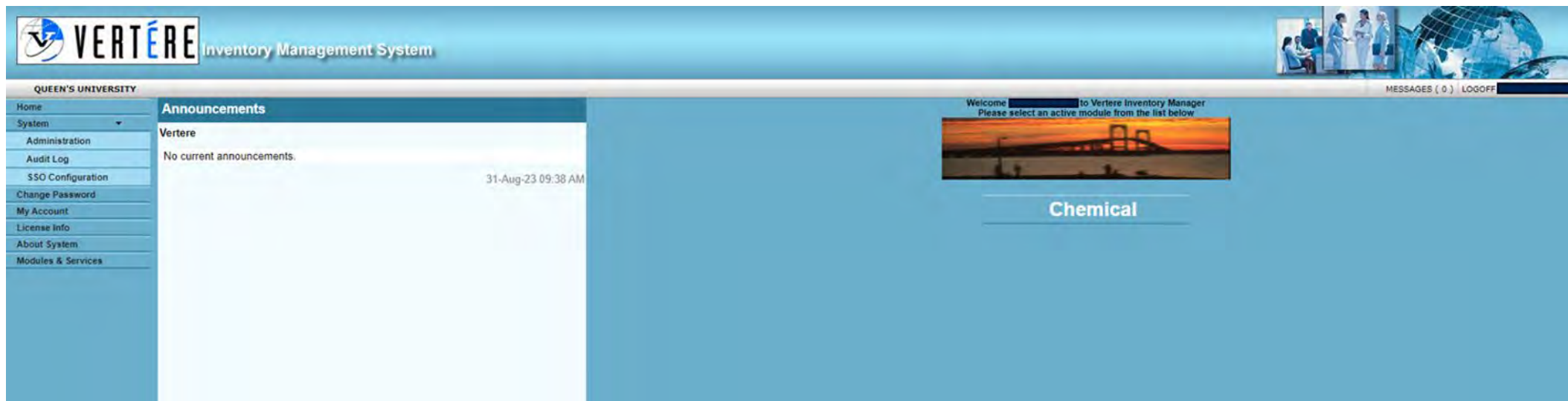
“Scoop” the cap up and over the sharp end.



3

Secure the cap using your thumb.

# Chemical Inventory

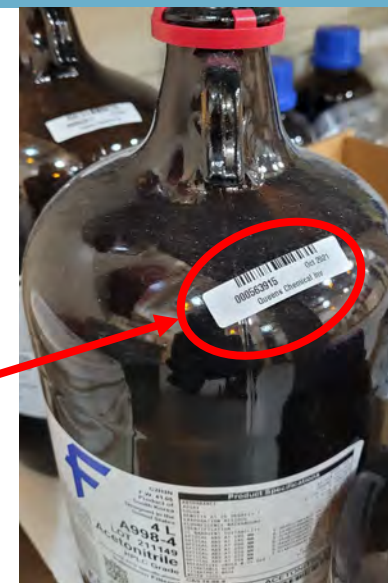


The screenshot shows the Vertère Inventory Management System interface. At the top left is the logo for Queen's University and the text "VERTÈRE Inventory Management System". Below the logo is a navigation menu with options: Home, System, Administration, Audit Log, SSO Configuration, Change Password, My Account, License Info, About System, and Modules & Services. The main content area is titled "Announcements" and shows "Vertère" with the message "No current announcements." dated "31-Aug-23 09:38 AM". On the right side, there is a welcome message: "Welcome [redacted] to Vertère Inventory Manager. Please select an active module from the list below." Below this message is a button labeled "Chemical".

[Chemical Inventory System Login](#)

[Vertère Inventory Management System - User Guide](#)

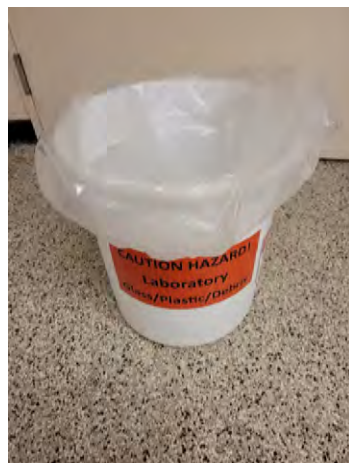
Barcode



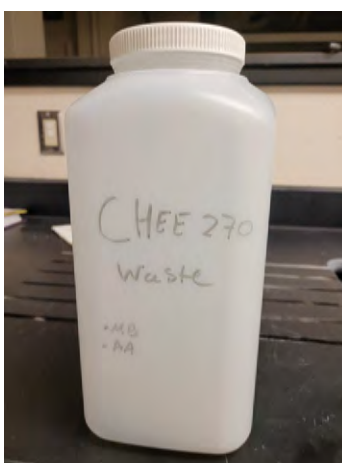
# Waste Disposal



General waste



Chemically  
(non-volatile)  
contaminated  
waste



Aq. Waste or  
chemically  
(volatile)  
contaminated  
solid waste



Flammable  
waste



Sharps  
(needles etc.)  
waste



Biohazard  
waste



# Waste Disposal

[Environmental Health and Safety \(EH&S\) – Queen’s University](#)



Search type ▾ | Search this site  Q

→ Sign-in links

## Risk and Safety Services

[Office of Risk & Safety Home](#)

[Office of Risk & Safety](#) ▾

[Campus Security & Emergency Services](#) ▾

[Environmental Health & Safety](#) ▾

[Insurance & Risk Management](#) ▾

[Emergency Management](#) ▾

[Resource Index](#)

[Contact Us](#) ▾

## Environmental Health & Safety (EHS)

[EHS Training](#)

[Off-Campus Activity Safety Policy \(OCASP\)](#)

[Waste Disposal](#)

[Forms, Policies & Procedures](#)

[Fire Safety](#)

[Biohazard Safety](#)

[Radiation Safety](#)

[Chemical Safety](#)

# Waste Disposal

- Absolutely **NO** disposal of any chemicals (liquid, solid) down the drain.
- Locate appropriate waste-disposal containers in your labs
- Contact supervisor and/or coworkers to assist with waste disposal
- Solvent-waste containers should **not** be filled to the brim/overflow.
- Barcoded empty chemical bottles should **not** be discarded in hazardous waste bin
- Timely disposal of lab chemical waste is the responsibility of the **lab users (including external users)**



# Lab access

To gain physical key/fob access to the labs, researchers/students should:

1. Complete **WHIMS 2015/ WHIMS Refresher 2015** Quiz (details on EH&S website)
2. Request for the **Fumehood safe use video** and write down the 10 rules
3. Complete the following forms (found on chemical engineering website) with your supervisor:
  - [Safety Expectations Form](#)
  - [Orientation Checklist Form](#)
  - [Experimental Procedures Form](#)
4. Setup a meeting for quiz with the available chemical technologist (safety quiz ~15 mins)

**NOTE:** For researchers/students working in **Biosafety Level 1/Level 2** labs, appropriate Biosafety training needs to be completed before providing access (details on EH&S website)

## Working Alone

- **Hazardous work** performed after hours on normal workdays, on weekends, or holidays should be kept to a minimum. If these activities are necessary, the following procedure must be followed:
  - After hours, laboratory work must have your supervisor's approval.
  - Call Security at **36733** to tell them who you are, what you are doing, your location and phone number, how long you expect to be, and who to contact in case of emergency. They will then set up a check-in routine with you.
  - Call Security when you have completed your work.
- Walk-home Service **39255** (on campus), **613-533-9255** (off campus)
- Campus Security Escort Service **36080** (on campus), **613-533-6080** (off campus)

## Contacts in case of an Emergency

Your supervisor or the supervisor's designate is your main contact. You should have their contact information before you start the experiment. Otherwise, assistance can be obtained from:

Srijit Nair (Chemical Technologist)

Internal: 77114

Dani Sanderson (Chemical Technologist)

Internal: 36679

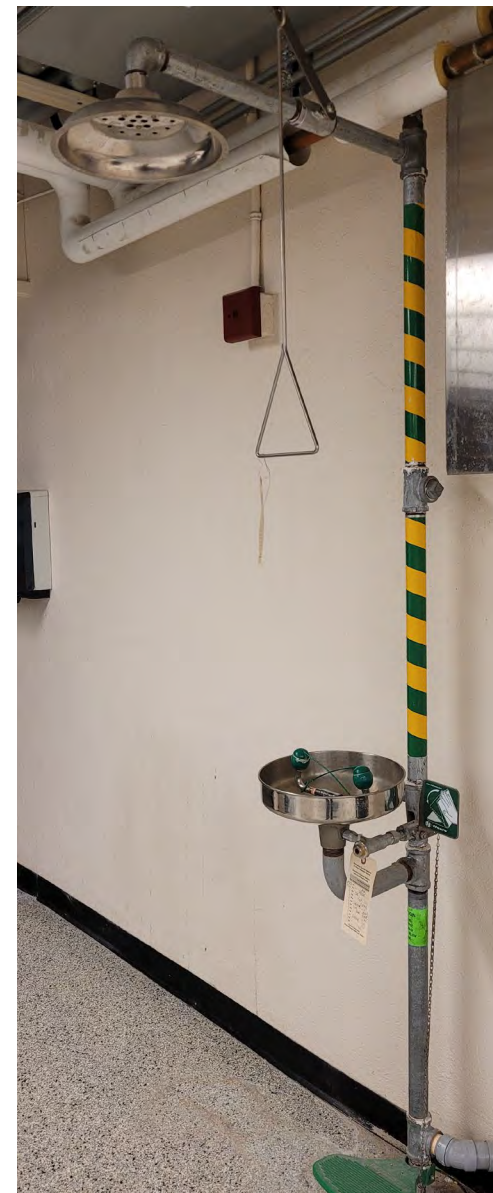
(currently on leave till Sept. 2023)

In the case of a medical or security emergency, **call Security 36111 and your supervisor.**

In case of a spill that exits the room/lab (*i.e., out the door or down the drain*) **call Security 36111 and your supervisor immediately.**

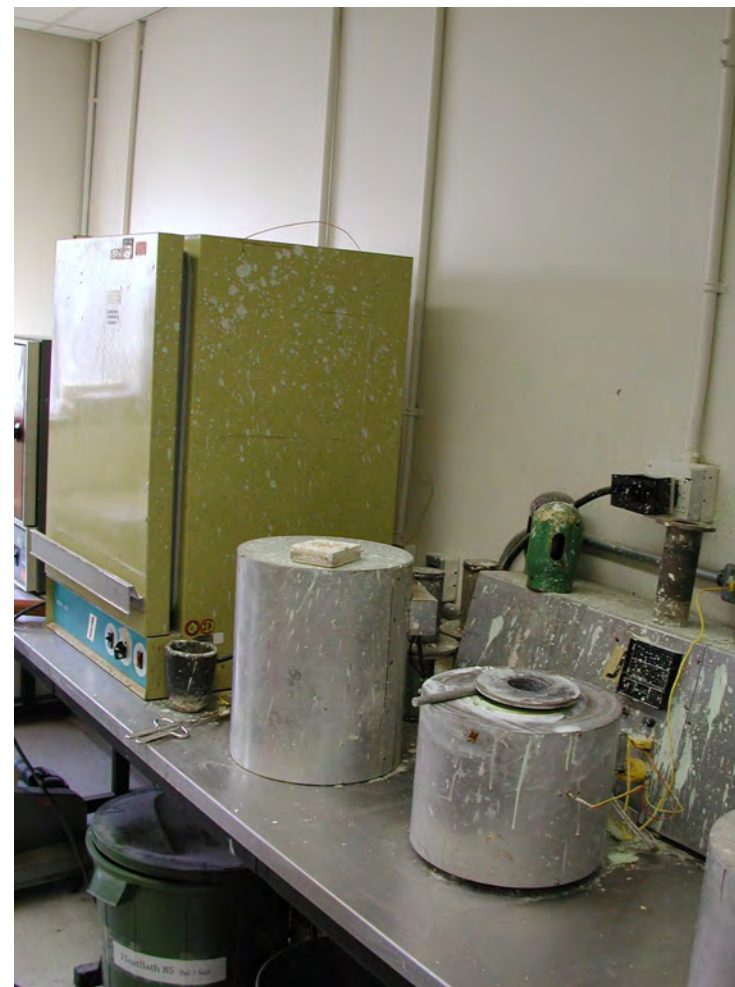
# Chemical exposure

- Refer to the **SDS** before using the chemicals, give specific attention to **First Aid measures**
- Be informed about the location of the nearest **safety shower** and **eye wash station**, in the event of chemical exposure to eyes and/or exposed skin,
- First Aid Kit Locations (Dupuis Hall)
  - **Basement** (Outside entrance of the Pilot Plant – B22)
  - **2<sup>nd</sup> Floor Laboratory Wing** (Outside of the 227 laboratory)
  - **3<sup>rd</sup> Floor Laboratory Wing** (Beside door of the 332 laboratory)
- First Aid Kit Locations (Biosciences)
  - **1<sup>st</sup> Floor Laboratory Wing** (Across from the 1443 graduate office)
  - **4<sup>th</sup> Floor Laboratory Wing** (Beside the door of the 4617 laboratory)



# Nicol Hall Incident

- Researcher working alone on a weekend
- Investigating a new approach for creating a compound without consulting with the supervisor
- No standard operating procedure (SOP) written/approved
- 3 temperature chambers – 350° C 450° C, 550° C
- Explosion upon introduction of the chemical mixture at 550° C chamber
- Severe burn damage



# Nicol Hall Incident





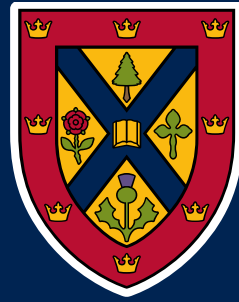
## Nicol hall Incident (recommendations)

- That all student/workers upon being hired be given an orientation which will include the recommendations of the **Engineering Applied Science orientation** check list.
- That a **record** shall be kept of student/worker orientation and any subsequent training of the worker.
- Supervisors give **written authorization** for students/workers to have access only after applicable Policies and Procedures have been read and understood.
- Student/workers, who are given access to workshops or laboratories, be required to review the **departmental safety manual** and it be recorded that they have read and understood the manual.
- When hazardous work is to be performed, procedures or protocols pertaining to the work shall be reviewed by the supervisor with the student/worker before such work is undertaken. A written **Standard Operating Procedure (SOP)** may be referenced in this event.

## Nicol hall Incident (recommendations)

- That workers performing hazardous work be trained in **First Aid**.
- Hazardous work **not to be permitted** when working alone.
- That the **Work Alone policy** of Queens University be strictly enforced when hazardous work is being performed.
- Workers wear the **Personal Protective Equipment (PPE)** prescribed by the supervisor and not render it ineffective.
- Workers **notify** the employer of equipment that is not in good order

Be Safe 😊



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