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STANDARD OPERATING PROCEDURE: CHEMICAL SPILLS

NOTE: refer to Appendix 1 for Mercury spills (page 6)





1. Purpose: This document describes the procedures used by Department of Chemistry, University of Toronto faculty, staff and students to respond to spills or releases of chemicals, petroleum oils, and radioactive materials.

2. Scope: Applies to all students, staff and faculty. Students, Faculty and employees are responsible for knowing which chemicals and oils are used or located in their laboratory or other workspace, as well as being familiar with the hazards posed by these materials

3. Prerequisites: EHS training. Hands on training during departmental/ laboratory on-boarding must have been completed. Locate the spill kit closest to your lab, spill kits occupy communal spaces in hallways.

4. Responsibilities: It is the responsibility of all Faculty, staff and students to follow the procedures described in the SOP.

5.

<i>Personal Protective Equipment (PPE)</i>	<i>Spill kit contents</i>
  <p>Chemical Resistant Gloves</p> 	 <p style="text-align: right;">+</p> <p>Containers with SpillFix & instructions + Chemical Spill SOP + spill use report form</p>

6. Procedure:

If personal exposure: Attend to any persons who may have been contaminated *. Consult the Material Safety Data Sheet for first aid information.

*Chemical Spills on Body

1. Wash thoroughly (15 minutes) with water using nearest deluge shower or hand/spray unit. Remove any overlying clothing that may retain the chemical and prevent thorough washing of the skin.
2. Depending on the chemical, additional medical treatment may be required. Consult the Safety Data Sheet and/or specific laboratory procedures.
3. If in doubt about further treatment, call the Office of Environmental Health & Safety at 416.978.4467.
4. Report the incident to your supervisor and fill out the [Accident/Incident Report form](#).

* Chemical in Eye

1. Immediately flush eyes with copious amounts of water for at least 15 minutes, removing contact lenses if possible. ****All wet chemical laboratories must have an eyewash facility.****
2. **Seek medical attention immediately.** Go to the nearest hospital emergency department.
3. If possible, obtain the Material Safety Data Sheet and provide it to the treating physician.
4. Report the incident to your supervisor and fill out the [Accident/Incident Report form](#).

5.1 - Spill inside a fume hood

- Stop all sources of ignition
- Close sash and place a note indicating “DO NOT OPEN: Spill Inside”
- Press the purge button located on the Fume hood alarm. (Davenport: Black panel, red button, Lash Miller: White panel, button indicated by red circle).
- Place sign indicating that there is spill inside (sign is available in the spill kit or you can make a hand-written sign)

Volatile Chemicals

- Allow volatile chemicals to vent.
- Wait until visible spill has evaporated.
- Open sash to working height and wipe down fume hood surface.
- Remove sign.
- Press FH purge button again to bring FH back to regular operating flow.

Corrosive Chemicals

- Bring spill kit to the lab (kit available in the corridor of every floor)
- Read SDS (spill cleaning section)
- Put on chemical resistant gloves.



- Retrieve necessary absorbent materials and disposal bag from the spill kit and bring items to fume hood.
- Open sash to proper working height and place absorbent materials around spill, let materials absorb spill. (Work spill from the periphery inwards).
- Place all soaked absorbents into waste the bag.
- Let bag vent in fume hood for 24 hours.
- Next day, seal bag and place in green waste container.
- Remove sign.
- Bring waste container to Chemical Stores for disposal.
- **Press FH purge bottom again** to bring FH back to regular operating flow.

5.2 - **Spill outside a fume hood**

Response procedures vary depending on whether the event is considered a “minor” or “major” spill. These terms are defined in Section 5.2.1 & 5.2.2. An individual discovering or causing a spill or release event must quickly assess the situation and determine if they are comfortable with performing the clean-up or if additional help is needed. In any event personal safety is paramount. Make sure there is no personal exposure

S.T.O.P.

S – Stop. Exit spill site and press emergency purge red button upon exiting lab (Lash Miller Wing Only). This will increase the lab-ventilation. **Inform others to evacuate immediate area.**



T – Think about the material that was spilled and what hazards are associated. Consult the SDS & reference hazards, especially sections 2 (Hazards), 6 (Accidental Release Measures) 4 L) spill (see sections below). Decide if you can safely handle the spill (**only applicable to minor spills**); **if unsure or if** malorourous/hazardous vapours are generated from the chemical spill which can be spread outside the local area **call Environmental Protection Services (Hazardous Materials) (EPS-HM) 416.978.7000** For major spill (over 4 L) Call Environmental Protection Services (Hazardous Materials) at: **416.978.7000 (8:00-4:00, Weekdays)**. After hours call Campus Emergency Control Centre: **416.978.2222-St. George Campus**

O – Observe what has spilled; chemical, sharps, potential sources of fire etc. Review spill SOP supplied in spill kit. If the spill is extensive or extremely hazardous wait for **EPS-HM assistance (8-7000)**

P – If safe to do so (**only applicable to minor spill**); proceed with spill cleanup

5.2.1 Minor Chemical Spill Definition

Minor, indoor spills that present no immediate, significant threat to personal health or safety, or of being released to the environment, are to be cleaned up by the person(s) responsible for the spill (unless they are not comfortable doing so).

Minor Spill or Release is one in which ALL of the following conditions are met:

- ✓ the responsible party is at the scene; and
- ✓ the material spilled is known; and
- ✓ the material spilled is not highly toxic; and
- ✓ the quantity spilled is small (less than approximately 4 L); and

- ✓ there is no fire hazard present; and
- ✓ the spill is completely contained inside a building; and
- ✓ the material has little or no potential to reach the environment (e.g., via a drain); and
- ✓ the spill is not in a common area (e.g., a hallway) or other area accessible to the general public; and
- ✓ medical attention is not required; and
- ✓ advanced personnel protective equipment (i.e., more than gloves and a half-face respirator) is not needed to respond to the spill; and
- ✓ on-site personnel are trained, equipped, and able to clean up spill

PROCEDURE, Minor Spill:

- Put on proper PPE (available in the spill kit)
- Place absorbent socks or pads around spill. Shake SpillFix over any liquid contained by sock/ pad absorbents. Let absorbents soak up spill and replace saturated socks or pads with new.
- Place all soaked material inside waste bag.
- If appropriate, let bag vent open inside a fume hood for 24 hours.
- Seal bag and place in green waste container. Remove spill signage.
- Bring waste container to Chemical Stores for disposal.
- Report the incident to Alex Morrissey (Chemical Stores) so the spill kit can be replenish

5.2.2 Major Chemical Spill Definition

Major Spill or Release is one in which ANY of the following conditions apply:

- ✓ The responsible party is unknown (it's an "orphan" spill); or 10.2.2 the material spilled is unknown; or
- ✓ the material spilled is highly toxic; or
- ✓ a large (or undetermined) quantity was spilled; or
- ✓ a significant fire hazard may be present; or
- ✓ someone has been exposed to/made contact with the material; or
- ✓ the spill occurred outside; or
- ✓ the material has the potential to reach the environment (e.g., via a drain); or
- ✓ the spill is in or affects a common area (e.g., hallway) or other area accessible to the general public; or
- ✓ advanced personnel protective equipment (more than gloves and a half-face respirator) is required to respond to the spill; or
- ✓ someone reports to Medical or requires first aid; or
- ✓ on-site personnel are not trained or not equipped to clean up spill; or
- ✓ a responder is unsure whether the spill should be considered "Minor" or "Major".

PROCEDURE, Major Spill

1. Evacuate immediate area. Call Environmental Protection Services (Hazardous Materials) at: **416.978.7000 (8:00-4:00, Weekdays)**. After hours call Campus Emergency Control Centre:
416.978.2222-St. George Campus
State your name, location, chemical(s) involved, and the amount spilled.
2. Wait in a safe area for the response team. Your knowledge of the area will assist the team.
3. Do not allow unauthorized personnel to enter the contaminated area.
4. Report the incident to your supervisor and the Office of Environmental Health & Safety and to the local joint health and safety committee. Use the [Accident/Incident Report form](#).

6. Reporting: this is very important in order to keep supplies up-to-date

Complete, using the dry erase marker (provided), the “spill kit usage” form (available within the spill kit drum). Take a picture and sent it to grace.flock@utoronto.ca

7. Resources:

- SOP-0004, MIT-EHS https://ehs.mit.edu/site/sites/default/files/sops/sop_0004.pdf
- Grace Flock @ Ryerson MaRS Research Facility SOPs manual
- Environmental Health & Safety, U of T.
<https://ehs.utoronto.ca/report-an-incident/emergency-procedures/chemical-spill-procedures/>

SOP-Prepared by Alexandra Morrissey (Supervisor, Chemical Stores) & Grace B. Flock (Director Operations and technical services)

Reviewed & Approved by EHS, University of Toronto, St George and Grace B. Flock (Director of Operations and Technical Services)

APPENDIX A:

Mercury Spill Procedures

Mercury vapours are toxic and Mercury is a designated substance under Ministry of Labour Regulations.

1. For a **Major spill** call:
416.978.7000 – Environmental Protection Services (Hazardous Materials) (8:00-4:00, Weekdays)
After hours call Campus Police: **St. George Campus: 416.978.2222**
2. Seal off the area until assistance arrives.
3. **Minor spills** (refer to minor spill definition on page 4) should be cleaned up immediately with an aspirator bulb, medicine dropper or a mercury sponge. **Do not use household or shop vacuum cleaner.**
4. Place the mercury in a container and seal it. Contaminated items (e.g. broken thermometer, gloves, suction bulbs, etc.) should also be placed into the container.
5. Commercial mercury spill kits may be used if available in the laboratory.
6. Once larger mercury droplets are removed, wash the surface with mercury neutralizing solution such as 20% sodium sulphide or sodium thiosulphate.
7. If mercury has broken up into smaller globules, sprinkle with sulphur powder or commercial product and leave for several hours before cleanup. **Attempt to prevent the spread of mercury outside of the contaminated area (can use items from the spill kit, available in the hallways)**
8. Dispose of all cleanup materials as hazardous waste. Waste must be properly packaged, sealed and labelled with hazardous waste label. Refer to Chemical Waste Disposal Procedures.
9. Call Environmental Protection Services (Hazardous Materials) at 416.946.3473 for collection and disposal of the waste.
10. Report the incident to supervisor and to Environmental Health & Safety using the [Accident/Incident Report form](#).