UNIVERSITY OF TORONTO SCARBOROUGH

CAMPUS SAFETY & SECURITY

UTSC Hazardous Spill Control Procedures

Last Revision: January 2018

Contact	Number
Department Head/Chair	
Area Manager/Principal Investigator	
Fire/Police/Ambulance	911
UTSC Campus Police	416-978-2222 (Emergency)
Environmental Protection Services	416-978-7000
Radiation Protection Services	416-978-2028
Biosafety	416-978-3981
UTSC Environmental Health & Safety (EHS) Services	416-208-8187
Spill Kit Supplies & Inquiries	416-208-4834

SECTION 1 - INTRODUCTION

To fulfill the requirements of the general duty clause of the Ontario Occupational Health & Safety Act, the requirements of the Ontario Fire Code and the University of Toronto Laboratory Safety Standards:

All University faculty, staff and students are responsible for:

- Following safety guidelines and procedures while working with hazardous chemical, biological & radioactive agents to minimize spills;
- Receiving training and following safety procedures on responding to spills.

Area Managers/Principal Investigators are responsible for:

- Ensuring spill kits are made readily available and spill response procedures are prominently posted in areas where hazardous agents are handled or stored;
- Ensuring employees are trained on spill response, Personal Protective Equipment (PPE) and spill kit locations, contents and use;
- Ensuring spill kits are routinely inspected and used spill kit supplies are promptly replenished.

UTSC Campus Safety & Security, Environmental Health & Safety (EHS) Services is responsible for:

- Establishing the spill control program and conducting periodic review of the program;
- Working with Human Resources to ensure spill response training and respiratory protection training courses are provided on a regular basis;
- Facilitating and supporting laboratories' ongoing compliance by:
    - Notifying labs on a quarterly basis to inspect the contents of their spill kit and take the necessary steps to replenish stock;
    - Providing labs the option to order any spill kit supplies at a discounted price through EHS Services.

Minor vs. Major spills

A **minor spill** is one that usually presents little or no hazard to person or property, and is small enough to be safely cleaned up using the emergency spill kit located in the vicinity. If the minor leak or spill is in an open area and the vapours are being dispersed, it will not be considered a significant hazard. If the vapours from the minor leak or spill can collect in the area sufficiently to form a hazardous atmosphere, it will be considered a significant hazard and an evacuation must take place immediately.

Note for spills in elevators: If any hazardous agent is spilled or accidently released inside the elevator, evacuate the elevator immediately and contact Campus Police (416-978-2222). Once the elevator is taken out of service, decide if you can safely handle the spill. If so, locate the nearest spill cart and clean up the spill following standard procedures.

A **major spill** is one that cannot be contained safely with the area spill kit and/or threatens to enter the sewer system or travel beyond the boundaries of building/property to endanger the environment. Major spills must be handled by evacuating the area, restricting access to the area, notifying persons in the vicinity and the appropriate emergency contacts.

SECTION 2 - SPILL KITS

As a general rule of thumb, each area that handles hazardous agents should have their own spill kit and dedicated employee(s) trained on spill response.

There are three different sizes of laboratory spill kits: **basic**, **small** and **large**.

Large spill kits can be shared where multiple laboratories share a common open lab space:

- It is the responsibility of the Principal Investigators / Area Managers to make appropriate arrangements for sharing the responsibilities and cost for spill kit maintenance.
- Spill kits should be placed in an accessible area for all shared departments (e.g. common rooms).
- Each lab should have trained employee(s) to respond to spills in their respective areas.

Special spill kit requirements will be assessed by EHS Services individually for laboratories using extremely hazardous or large quantities of hazardous chemicals.

Please keep in mind that the spill kits located in the laboratories are intended to handle common spills that would occur during typical laboratory operations. Bulk spill response equipment and agents for handling accidental large spills are kept on **spill carts** in two locations:

- Science Wing, **SW111K**, Hazardous Waste Storage Facility
- Environmental Science & Chemistry Building (ESCB), **EV313**, hallway leading to freight elevator

Contents for Laboratory Spill Kits:

Item Description	Item Quantity or Volume		
	Basic Spill Kit	**Small Spill Kit**	**Large Spill Kit**
Absorbent sheets	3	3	3
Plastic bags	3	3	3
Dustpan	1	1	1
Small brush	1	1	
Broom			1
Activated charcoal / clay absorbent mix	250 mL	250 mL	10 L
Absorbent sock (4' x 3") to contain spill			1
Drain cover			1
Nitrile chemical resistant gloves	1 pair	1 pair	
Neoprene chemical resistant gloves			1 pair
Safety goggles		1	1
Disposable coveralls (KleenGuard A60 suit)			1
Hazmat boot / shoe covers			1 pair
Full face respirator (North 54001 M/L)			1
Multi-purpose respirator cartridges			1 pair
Mercury respirator cartridges			1 pair
Acid neutralizer		250 mL	1 L
Base neutralizer		250 mL	1 L
pH indicator		10	10
Mersorb powder			10 g
Mercury bulb			5
Warning sign	1	1	1
Caution tape		16 feet	16 feet
Waste label	2	2	2

SECTION 3 - SPILL RESPONSE PROCEDURES

1. If spilled material is flammable / combustible, eliminate all ignition sources if feasible.
2. If feasible, turn on fume hoods to capture or direct flow of vapours.
3. Notify Principal Investigator / Area Manager / supervisor and people in the immediate area. Evacuate immediate area. Post warning sign(s) to identify the hazard and limit access to the area. Use caution tape to establish a barrier if necessary.
4. STOP - THINK! Do not rush. Carefully plan the cleanup.
5. GET SAFETY DATA SHEET (SDS) AND DETERMINE APPROPRIATE INFORMATION, FIRST AID MEASURES & CLEANUP PROCEDURES FOR THE MATERIAL.
6. Attend to any persons who may have been contaminated following **Worker Exposure / Personal Decontamination Procedures** (refer to **Section 5** below). Ensure first aid measures are followed and appropriate medical attention is sought.
7. Decide if you can safely handle the spill. If so, proceed to steps outlined in **Spill Cleanup Procedures** (refer to **Section 4** below) to clean up the spill.

If:

a. Unsure how to handle spill, or
b. Spill is too large to handle, or
c. Spill or gas/vapour release can be spread outdoors or into the environment (e.g. spill into drain / sewer, significant amount vented into fume hood, etc.)

Then call **Environmental Protection Services (416-978-7000)** and **Campus Police (416-978-2222)** for assistance**.** Call 911 in case of emergency. Wait in a safe area for the response team. Your knowledge of the area will assist the team. EPS will contact the Ministry of Environment to notify them of the release.

SECTION 4 - SPILL CLEANUP PROCEDURES

Chemical Spills

1. Wear appropriate personal protective equipment (PPE).
2. Contain spill rapidly by diking with suitable materials (e.g. socks, absorbent sheets). Attempt to prevent chemical from contaminating groundwater and sewer system. Cover opening using drain cover to sewer if able to do so.
3. Confine the spill to a small area. Do not allow the material to spread. Dike, block or contain the size and spread of the liquid spill by using the appropriate absorbent material in the spill kit.
4. Carefully remove other materials, containers and equipment from the spill area.
5. Spill kits contain cleanup materials and protective equipment required to safely and effectively decontaminate a minor spill.
    a. For acid spills, cover spill with acid neutralizer. (**Note**: NEVER use general spill kits to clean up extremely hazardous spills such as hydrofluoric acid, or peroxy (per-) organic or other highly reactive acids or highly unstable organic compounds.)
    b. For basic/caustic spills, cover spill with base/caustic neutralizer.
    c. Use the pH indicator to determine if acid/basic/caustic spill has been effectively neutralized within a range of pH 6-8. Please note that neutralization reactions may produce heat and may require time to cool.
    d. For general/solvent spills, cover spill with general absorbent/activated charcoal mix.
    e. For mercury spills, use damp cloth or tissue to wipe mercury into disposal container or plastic dropper to vacuum up droplets. If mercury has broken up into smaller globules, sprinkle with sulphur powder or commercial product and leave for several hours before cleanup. Be careful of broken glass if a thermometer was involved. Put all mercury-contaminated waste in plastic containers.
6. Loose spill control materials should be distributed over the entire spill area, working from the outside and circling to the inside. This reduces the chance of splash or spread of the spilled chemical.
7. When spilled materials have been absorbed, use brush and scoop to place materials in an appropriate container. Polyethylene bags may be used for small spills. Pails may be appropriate for larger quantities.
8. Dispose of all cleanup materials as hazardous waste. Do NOT use BIO or RAD bags for disposal of chemical waste. Waste must be properly packaged in a leak-proof container, sealed and labeled with a hazardous waste label. Bring waste to Central Stores on the 1st floor of the Science Wing for disposal or CHMStores on the 1st floor of the ESCB, as appropriate.

9. After removal of spilled material, the area should be washed with warm, soapy water to remove any remaining residue. You may need to limit access to the area until the air has been sufficiently ventilated.
10. Report the incident to your supervisor and fill out the "Accident / Incident / Occupational Disease Report" available online at www.ehs.utoronto.ca.
11. Contact EHS Services at 416-208-4834 to replenish used spill kit supplies.

Radioactive Spills

A radioactive spill should be handled only by authorized radiation workers. The authorized radiation workers will clean the spill following the procedure from the Radiation Protection Training Manual (https://ehs.utoronto.ca/ionizing-radiation-safety-procedures-policies-manual/).

If no authorized radiation worker is available, remove all personnel from the vicinity of the spilled material, then call Radiation Protection Services (416-978-2028) and Campus Police (416-978-2222).

Biohazardous Spills

1. Evacuate the laboratory for a time sufficient for most aerosols to settle, be dispersed or removed by the ventilation system (~30 min.).
2. Check your lab's written Standard Operating Procedures (SOP) for spill cleanup and/or the Safety Data Sheet / Pathogen Safety Data Sheet (SDS / PSDS) for the bioagent spilled.
3. Cover spill area with paper towels or absorbent material.
4. Pour the appropriate disinfectant from the outside toward the centre of the spill. If using bleach, mix a FRESH dilution to give required % of sodium hypochlorite (usually 1%). Allow disinfectant to work for 20-30 minutes.
5. Remove broken glass with forceps or scoop.
6. Remove absorbent material and mop up.
7. Clean again with soap/water or alcohol.
8. Wipe down adjacent areas with disinfectant.
9. Properly dispose of materials in biohazard waste containers. Label containers: "Spill cleanup".
10. Report the incident to your supervisor / permit holder and fill out the "Accident / Incident / Occupational Disease Report" available online at www.ehs.utoronto.ca.

SECTION 5 - WORKER EXPOSURE / PERSONAL DECONTAMINATION PROCEDURES

1. Remove contaminated clothing to prevent further contact.
2. Flush contaminated area with water for **no less than** 15 minutes.
3. Seek immediate medical attention.

Chemical / Radioactive Spills on Body

1. Wash thoroughly (15 minutes) with water using nearest emergency / deluge shower or hand / spray unit. Remove any overlying clothing that may be contaminated or prevent thorough washing of the skin.
2. Depending on the chemical, additional medical treatment may be required. Consult the SDS and/or specific laboratory procedures.
3. If in doubt about further treatment, contact EHS Services and seek medical attention.

4. Report the incident to your supervisor and fill out the “Accident / Incident / Occupational Disease Report” available online at www.ehs.utoronto.ca.

Chemical / Radioactive Agents – Eye Contact

Note: **All wet chemical laboratories must have an eyewash station.**

1. Immediately proceed to the closest eyewash station. Remove contact lenses if possible / applicable.
2. Flush eyes with copious amounts of water for at least 15 minutes.
3. SEEK MEDICAL ATTENTION IMMEDIATELY. Go to the nearest hospital emergency department.
4. If possible, obtain the SDS and provide it to the treating physician.
5. Report the incident to your supervisor and fill out the “Accident / Incident / Occupational Disease Report” available online at www.ehs.utoronto.ca.

Biohazardous Material Exposure

The following applies if a worker is exposed to:

- Blood or body fluids (via a needle stick, cut or puncture wound; mucous membrane contact, or non-intact skin contact).
- Infectious or communicable disease agents (via inhalation; a needle stick, cut or puncture wound; ingestion or mucous membrane contact; or via non-intact skin contact).
- Zoonotic agents (via a needle stick, cut, animal bite or scratch; mucous membrane contact; or non-intact skin contact).

In the event of an exposure to biohazardous materials:

1. Wash the exposed site immediately.
    a) If needle stick, cut, puncture wound, animal bite or scratch: wash with soap and water after allowing the wound to bleed freely.
    b) If mucous (eyes, nose, or mouth) membrane or non-intact (cuts, rash, acne or dermatitis) skin contact: remove contaminated clothing and flush with water for 15 minutes at the nearest eyewash station or emergency shower.
2. Contact Campus Police (416-978-2222).
3. Inform the supervisor / Principal Investigator / permit holder of the exposure incident.
4. If possible, obtain the SDS / PSDS and provide it to the treating physician.
5. Seek prompt medical attention with the nearest hospital emergency department, emergency clinic or medical practitioner.
6. Report the incident to your supervisor and fill out the “Accident / Incident / Occupational Disease Report” available online at www.ehs.utoronto.ca.

SECTION 6 - TRAINING

The following training courses are applicable to employees who work in areas where hazardous agents are used or stored. It is recommended that lab-specific spill response procedures be reviewed and drilled on a regular basis.

WHMIS & Lab Safety Training (EHS101)

- Required before working with any hazardous / chemical agents
- Refresher training every 3 years

Radiation Safety Training (EHS701 / EHS705)

- Required before working with any radioactive materials
- Refresher training every 3 years

Biosafety Training (EHS601 / EHS602)

- Required before working with any biological agents
- Refresher training once a year

Respiratory Protection Training (EHS532)

- Required for cleanup of large spills, i.e. areas with large spill kits
- Within 3 months of hire (recommended)
- Refresher training and fit test on tight-fitting respirators (e.g. disposable N95, half / full face respirator) every 2 years

Waste Management (EHS803)

- Recommended for general awareness

More information can be found at: https://ehs.utoronto.ca/training/