



SAFE WORK PROCEDURE	UBC-RMS-OHS-SWP-17-001
Department of Risk Management Services www.rms.ubc.ca	Effective date: November 27, 2017 Review date: NA Supersedes: NA

Chemical Spill Clean-up Procedure

1. SCOPE

Laboratory-specific safe work procedures must be written, trained and adhered to for hazardous operations, including chemicals usage, storage and spill response. This procedure is to be followed by any employees involved in a spill clean-up. It is the supervisor's responsibility to provide personal protective equipment required during emergency cleanup.

2. PURPOSE

Accidental release or spills of chemicals must be immediately contained, reported and cleaned up by persons knowledgeable in the hazards involved and the precautions to be taken during the cleanup operations. ([WorkSafe BC Regulations](#)).

The purpose of protocol is to ensure any chemical spills are cleaned up appropriately. There are various actions that laboratory personnel can take in response to a laboratory spill. Laboratory workers should never put themselves in at risk during an emergency or cleanup operation. If there is any doubt about the safety of the individual in the lab, immediately call 911. Vancouver Fire and Rescue Services will notify the Hazmat Team. A trained laboratory worker may be able to respond to a small chemical spill depending upon the hazardous nature of the chemical.

3. BACKGROUND

Provide relevant background history or other information that impacts the above two sections

4. RESPONSIBILITY

Employer

- Provide personal protective equipment required during emergency clean-up
- Provide written safe work procedures for spill clean-up
- Provide material or equipment necessary for the control and disposal of the hazardous substance
- Notify other agencies – when necessary



Employee

- In the event of a spill follow the instruction in the safe work procedure
- Report all spills on the online reporting system [UBC CAIRS](#)

5. TRAINING REQUIRED

Chemical Safety Training offered by Risk Management Services

If appropriate equipment and trained personnel are not available on site, the area must be evacuated and emergency services called. Contact the Vancouver Fire and Rescue Services and Risk Management Services for support.

6. MATERIALS/EQUIPMENT

The basic items to be included in a spill kit are:

- Spill control pillows or damming material (unreactive absorbent such as vermiculite)
- Acid neutralizer shaker (Spill X - A)
- Caustic neutralizer shaker (Spill X - C)
- Solvent absorber shaker (Spill X - S)
- pH paper
- Dust pan
- Brush
- PPE: safety goggles and heavy duty nitrile gloves

Depending on the amount and identity of chemical compounds routinely handled, there are additional items that might be required in the spill kit. Separate safe work procedures were developed for cleaning up spills of hydrofluoric acid and mercury.

7. HAZARDS

For spills greater than 1 L, and for highly flammable solvents, reactive highly toxic or corrosive materials, Vancouver Fire and Rescue Services should be called (911) for stand-by support.

8. PROCEDURE

8.1. General Procedure

Once the risk of injuries has been mitigated, the spill may be cleaned up and the area decontaminated using the following general procedures:

- 1) Notify all personnel and the supervisor in the vicinity of the spill, of any flammable, highly toxic or volatile material is spilled. Evacuate and post warnings in the area as necessary to cordon off the area and prevent harmful exposure.
- 2) PROVIDED THE CHEMICAL SPILLED IS NOT WATER REACTIVE. If clothing has become contaminated, remove and enter emergency shower, if eyes have been affected, flush eyes for 15 minutes.



- 3) Before responding to any spill the following information must be verified:
 - Name of the chemical(s) involved.
 - Approximate quantity.
 - Hazards of the chemical (review SDS if available):
 - Flammability: flash point; vapor pressure
 - Toxicity – TLV
 - Corrosiveness – pH
- 4) Perform clean-up procedures only if:
 - The appropriate spill control material, equipment and protective clothing are available.
 - Personnel are familiar with equipment and clean-up procedures.
 - More than one person is in the lab and available to participate. Work in teams. One person cleans the spill; the other should remain outside of the contaminated area and hand supplies to person cleaning.
 - There are no ignition sources present.
- 5) After reviewing the SDS and assessing the hazards posed by the spill, establish the appropriate clean-up procedure and supplies are on hand.
- 6) Determine the extent of evacuation required.
- 7) Gather the required equipment and materials. If the appropriate materials are not available, call Vancouver Fire and Rescue Services (VFRS) for assistance.
- 8) Put on appropriate protective clothing. Minimum PPE includes lab coat, long loose fitting pants, and fully covering liquid resistant shoes. In addition, for performing a spill clean-up, medium or heavy duty rubber or nitrile gloves and safety goggles must be worn. Toxic, corrosive or irritating volatile materials will require the use of a respirator. Respirators must not be used without a model-specific fit test, and spill appropriate cartridges. A full-face respirator is the minimum requirement for volatile irritating, toxic or corrosive materials; if Self Contained Breathing Apparatus (SCBA) is required, call VFRS at 911.
- 9) Use a spill control material (unreactive, neutral, compatible material) to make a 360 degree barrier around the spill and prevent it from seeping into a drain or under furniture or equipment.
- 10) Wait for any neutralizing/absorbent reactions to be complete, mix the spill control compound with the spill, and scoop the material into an impervious container (see specific instructions below).
- 11) Wash the affected area and PPE with an appropriate cleaning solution (soap and water).
- 12) Arrange for pick-up of the waste material by the Environmental Services Facility (ESF) at 604-822-1285 or 604-323-4420



13) Report the incident on the online reporting system [UBC CAIRS](#).

8.2. Cleaning a flammable solvent spill

Note: Never attempt to clean up a solvent spill if an ignition source is present

- 1) Contain the spill to prevent it from spreading by using unreactive, neutral, compatible material (e.g. kitty litter, absorbent socks, or pads etc.) to create a barrier around the spill.
- 2) Apply solvent absorbent (Spill X-S, Solusorb or equivalent product) from the perimeter inward, covering the total spill area.
- 3) Mix thoroughly with plastic spatulas until material is dry and free flowing, and no evidence of free liquid remains.
- 4) Transfer the absorbed solvent to an appropriate disposal container that is not soluble in the solvent, and seal the container.
- 5) Contact the ESF at 604-822-1285 or 604-323-4420 for directions concerning disposal of the container and its contents.

Procedure is complete, method of disposal and expectation of general housekeeping is detailed

8.3. Cleaning an acid spill

Except hydrofluoric acid and perchloric acid – these acids require specialized handling practices

- 1) Contain the spill to prevent it from spreading by using an unreactive, neutral, compatible material (e.g. kitty litter, absorbent socks, or pads etc.) to create a barrier around the spill.
- 2) Apply acid neutralizer (Spill X-A, Neutrasorb or equivalent product) gently to the spill.
- 3) Carefully mix with a plastic spatula or other tool, working towards the spill center to minimize spread.
- 4) When foaming subsides, check pH with pH paper (e.g. E.M. Quant Company available from BDH or Anachemia Science).
- 5) If pH is less than pH 6, add more neutralizer to any free acid and repeat step 3 and 4; if spill pH is greater than pH 8 add a caustic neutralizer (Spill X-C or equivalent). The target range is pH 6 to 8.
- 6) When the spill has been sufficiently neutralized, pick up treated material with scoops, dust pan, broom, and transfer to a disposal container.
- 7) Seal and label container.
- 8) Decontaminate and wash spill site surfaces with soapy water and wet sponge.
- 9) Contact the ESF at 604-822-1285 or 604-323-4420 for directions concerning disposal of the bag and its contents.



8.4. Caustic

- 1) Contain the spill to prevent it from spreading by using unreactive, neutral, compatible material (eg. kitty litter, absorbent socks, or pads etc.) to create a barrier around the spill.
- 2) Gently apply neutralizer for caustics (Spill X-C, Neutracid-2 or equivalent product) to the spill, working inwards.
- 3) Carefully mix with a plastic spatula or other tool;
- 4) When foaming subsides, check pH with pH paper (e.g. E.M. Quant Company available from BDH or Anachemia Science).
- 5) If pH is greater than 8, add more neutralizer to any free base and repeat step 3 and 4; if pH is less than 6, add acid neutralizer and repeat step 3 and 4. The target range is pH 6 to 8.
- 6) When the spill has been sufficiently neutralized, pick up treated material with scoops, dust pan, broom and transfer to a disposal container.
- 7) Seal and label container.
- 8) Decontaminate and wash spill area surfaces with water and wet sponge.
- 9) Check with the ESF at 604-822-1285 or 604-323-4420 for directions concerning disposal of the bag and contents.

9. OTHER IMPORTANT INFORMATION – CALLING FOR ASSISTANCE

When placing a call to 911 or the Hazmat Team, provide the operator with:

- a) Your name and phone extension.
- b) Exact location of spill (building and room number).
- c) Name of material spilled.
- d) Quantity of material spilled.
- e) Information on injuries to personnel

Off-campus locations, such as hospital sites, may have different phone numbers and protocols.

10. REVIEW AND RETENTION

This SWP is reviewed annually or whenever deemed necessary by the responsible departmental representative in Risk Management Services.

11. DOCUMENT INFORMATION

Written / Reviewed by: RMS Advisor, Chemical Safety
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