Chemical Spill Response Guide

CHEMICAL SPILL RESPONSE GUIDE
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In case of Emergency: Dial (206) 296-5911

EMERGENCY PHONE NUMBERS

Public Safety: (206) 296-5990 or 5911

Fire Department: (206) 296-5911

Ambulance: (206) 296-5911

Environmental Health and Safety Coordinator: J. Chip Romain(206) 296-6187 (7 a.m. – 3:30 p.m. Monday – Friday)

INTRODUCTION-CHEMICAL SPILL RESPONSE

Despite the best efforts of the Seattle University community to practice safe science in the laboratory, accidents resulting in the release of chemicals will occur. For this reason, it is essential that all laboratory personnel have a spill response plan that includes appropriate procedures and materials to adequately contain and clean up a chemical spill. The following procedures should be used as a guide to help laboratory personnel design an effective spill control plan for their laboratory. These procedures tell you how to prepare your own spill kit and give you step-by-step instructions for spill cleanup. They also outline when and who to call for assistance.

SPILL RESPONSE PROCEDURES--Major Spill

In the event of a spill which: 1) involves the release of a type or quantity of a chemical that poses an immediate risk to health; or 2) involves an uncontrolled fire or explosion:

- Evacuate the building by activating the nearest fire alarm.
- Call **5**911 and give details of the accident including location, types of hazardous materials involved, and whether there is personal injury.

If the accident involves personal injury or chemical contamination, follow the above steps as appropriate and at the same time:

- Move the victim from the immediate area of fire, explosion, or spill (if this can be done without further injury to the victim or you).
- Locate nearest emergency eyewash or safety shower. Remove any contaminated clothing from the victim and flush all areas of the body contacted by chemicals with copious amounts of water for 15 minutes.
- If you are First Aid/CPR Certified, administer first aid as appropriate and seek medical attention.

SPILL RESPONSE PROCEDURE--Minor Spill

In the event of a spill involving the release of a type or quantity of a chemical which does not pose an immediate risk to health and does not involve chemical contamination to the body:

1. Notify lab personnel and adjoining personnel of the accident.

2. Isolate the area. Close lab doors and evacuate the immediate area if necessary.

3. Remove ignition sources and unplug nearby electrical equipment.

4. Establish exhaust ventilation. Vent vapors to outside of building only (open windows and turn on fume hoods).

5. Locate spill kit.

6. Choose appropriate personal protective equipment (goggles, face shield, impervious gloves, lab coat, apron, etc.) Note: All lab personnel MUST be properly fit tested before using a respirator. Contact EH&S (296 6187) for more information.

7. Confine and contain spill. Cover with appropriate absorbent material. Acid and base spills should be neutralized prior to cleanup. Sweep solid material into a plastic dust pan and place in a sealable 5 gallon container.

8. Wet mop spill area. Be sure to decontaminate broom, dustpan, etc. Put all contaminated items (gloves, clothing, etc.) into a sealable 5 gallon container or plastic bag. Call EH&S if a special pickup is

necessary.

CALL EH&S (296-6187) IF SPILL IS:

- Greater than 1 gallon
- Very toxic
- Poses a fire hazard
- If you need assistance

SPILLS REQUIRING SPECIAL PROCEDURES

Acid Chlorides

- Use Oil-Dri, Zorb-All, or dry sand.
- Avoid water and avoid sodium bicarbonate.

Alkali Metals (lithium, sodium, magnesium, potassium)

- Smother with dry sand or cover with contents from a Class "D" fire extinguisher. Use of a Class "D" fire extinguisher is the preferred extinguishing method.
- Avoid contact with water.

White or Yellow Phosphorus

- Blanket with wet sand or wet absorbent.

Bromine

- Neutralize spill with a 5% solution of sodium thiosulfate.
- Absorb with inert absorbent material.

Hydrofluoric Acid

*See special emergency treatment, next page

- Neutralize with soda ash or lime (or absorb spill with special HF spill pillow).
- Absorb with inert absorbent material.

Mercury

- Use aspirator bulb or suction device to collect mercury beads (Do not use a vacuum cleaner).
- Mop up mercury with mercury decontaminating powder.

- Call EH&S (296 6187) and ask for assistance if you are unable to accomplish adequate clean up.

SPECIAL EMERGENCY TREATMENT Hydrofluoric Acid Contamination

Skin Contact

1. Immediately flush with copious amounts of water under an emergency shower.

2. Remove all clothing while under the shower. Flush skin for 5 minutes.

3. Apply calcium gluconate gel (2.5%) while wearing clean impervious gloves. (If calcium gluconate gel is not available continue to flush skin until medical personnel arrive).

4. Get medical attention immediately.

Eye Contact

1. Immediately flush eyes with water for 15 minutes.

2. Get medical attention immediately.

Inhalation

1. Remove victim to fresh air.

2. Get medical attention immediately.

Inform medical personnel that injury involves hydrofluoric acid and give them a copy of the material safety data sheet.

CHEMICAL SPILL KIT CONTENTS

Every laboratory that uses chemicals must have access to a spill control kit. The keys to an effective spill kit are location and content. Spill kits should be strategically located around work areas in fixed locations so they will be easily accessible. Although most spill kit
contents are common items which may be found throughout the lab, they must be
consolidated for emergency use.

Spill kits can be purchased through most supply vendors that sell chemicals or safety supplies. The following is a list of recommended items that should be contained in a chemical spill kit. However, it is important that spill kits be tailored to meet the specific spill control needs of each laboratory. Spill kits should be checked periodically, and restored after each use.

Absorbents:

- Universal Spill Absorbent - 1:1:1 mixture of Flor-Dri/Slik Wik (or unscented kitty litter), sodium bicarbonate, and sand. This all purpose absorbent is good for most chemical spills including solvents, acids (not good for hydrofluoric acid), and bases.
  C Acid Spill Neutralizer - sodium bicarbonate, sodium carbonate, or calcium carbonate. C Alkali (Base) Neutralizer - sodium bisulfate.
- Solvents/Organic Liquid Absorbent - Inert absorbents such as vermiculite, clay, sand, Flor-Dri, and Oil-Dri.
- Bromine Neutralizer - 5% solution of sodium thiosulfate and inert absorbent.
- Hydrofluoric Acid - HF compatible spill pillow or neutralize with lime and transfer to a polyethylene container.

Personal Protective Equipment (PPE)

- Goggles and Face Shield
- Heavy Nitrile Gloves
- Disposable Lab Coat and Corrosive Apron
- Plastic Vinyl Booties
- Dust Mask/Respirator (All lab personnel must be properly fit tested before using a respirator.)

Clean-Up Material

Other:

- Hydrofluoric Acid Antidote Gel - Calcium Gluconate Gel
- Mercury Spill Kit - Aspirator Bulb and Mercury Decontaminating Powder
- Alkali Metals - Dry sand or a Class “D” Fire Extinguisher
- Acid Chlorides - Oil Dri, Zorb-All, or dry sand

REPORTABLE QUANTITIES

The Reportable Quantity (RQ) of a spilled hazardous material is one (1) pound for many chemicals. The university is legally obligated to report certain spills to the Federal EPA and to the IDEM within twenty-four (24) hours of the spill. To comply with this requirement, always report any spill of a hazardous material over one (1) pound to EH&S (296 6187) or Campus Public Safety (296 5990)

There are no legal consequences for a person that spills a chemical or who reports the spill unless a Reportable Quantity is not reported.

APPENDIX A Respirators

The Washington Industrial Safety and Health Act (WISHA) requires that all employees be properly fit tested before wearing a respirator. Respirators that are not properly fitted are not effective. In addition,

failure to choose proper respirator cartridges can be very dangerous. Call EH&S at 296 6187 for more information about respirators.

In general, cartridge respirators should not be used in the following circumstances:

- The contaminant is a human carcinogen.
- The contaminant has poor warning properties (i.e. little or no odors).
- The contaminant exists at high concentrations perhaps above 10 or more times the Permissible Exposure Limit (PEL).
- A room is oxygen deficient.