

Chemical Spill Planning and Response

(EHS Program Manual 4.3)



1.0 Overview

Environmental Health and Safety (EHS) at Weill Cornell Medicine (WCM) has developed the following guidelines to determine the appropriate response to a chemical spill, including how to clean up the spill, if appropriate. These guidelines constitute a portion of a document that the Environmental Protection Agency (EPA) calls a **Contingency Plan** for Hazardous Waste Generators.

Use this document to prepare **before** a chemical spill occurs.

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3.0 Applicability

The Chemical Spill Planning and Response Program applies to all WCM employees, students, and visitors in all departments and laboratories who handle chemicals or may respond to chemical spills and incidents.

4.0 Responsibilities

4.1 ENVIRONMENTAL HEALTH AND SAFETY (EHS)

Environmental Health and Safety responsibilities include:

- Providing technical assistance and guidance to WCM personnel.
- Deploying a Spill Response Team to clean up spills.
- Delivering training as required.

4.2 PRINCIPAL INVESTIGATORS AND SUPERVISORS

Principal Investigators and Supervisors must:

- Ensure that they and their personnel understand and comply with the procedures of this manual.
- Work with EHS to provide chemical spill training and to coordinate reporting and appropriate response for all spills.

4.3 PERSONNEL USING CHEMICALS

Employees using chemicals must complete training and review this plan, as well as the [Exposure and Spill Response Guide](#), to know the appropriate steps to take in case of a spill.

5.0 Planning for Chemical Spills Emergencies

Departments and laboratories working with chemicals must take the following steps to ensure they are prepared to address a spill.

Prior to working with High Hazard Substances as defined in the [High Hazard Operating Procedure \(HHOP\)](#) program, potential spills must be considered and a response plan prepared. Special handling and spill response procedures beyond the general guidelines of this program must be identified on the [HHOP form](#) and reviewed by users prior to starting work.

5.1 DESIGNATE AN ONSITE COORDINATOR

Each laboratory and service department should designate two people to help coordinate spill responses:

1. On-site emergency coordinator, and
2. Back-up emergency coordinator.

These coordinators should know what hazards exist in your area and how to implement the spill response. They will act as advisors to Police, Fire, and Environmental Health and Safety personnel.

5.2 POST AN EXPOSURE AND SPILL RESPONSE GUIDE

EHS staff will post the Exposure and Spill Response Guide at a conspicuous location in the work area, preferably near the telephone and exit way and near safety showers. See [Appendix A](#) for example.

The Laboratory Exposure and Spill Response Guide posters are also available on the WCM EHS website, for labs in [WCM](#) space and at [Burke-Cornell Medical Research Institute](#) space.

5.3 SAFETY TRAINING

5.3.1 Laboratory Safety Training

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All laboratory personnel must complete annual EHS Laboratory Safety training, which includes a review of spill response procedures. Information regarding [Lab Safety Training](#) and [registration information](#) are available on the EHS Website. Registration information can be used to complete the annual laboratory safety training as an online course in the Learning Management System (LMS).

Upon request, EHS is available to provide small group lab safety training. Contact ehs@med.cornell.edu to coordinate.

In addition, each PI or their designee must train personnel in chemical spill procedures specific to the area upon their hiring and yearly thereafter.

5.3.2 Service Departments Safety Training

Service Department personnel must attend the annual EHS Safety Training. EHS schedules training sessions for each qualifying department.

5.4 SPILL CLEANUP SUPPLIES

Each lab and service department must purchase basic spill cleanup material and personal protective equipment (gloves, safety goggles) as needed. Employees must be trained on the location of the cleanup supplies, understand the limitations of the personal protective equipment (PPE), and contact EHS for assistance with PPE. Refer to [Section 8](#) below for details on kits.

6.0 Hazardous Chemical Spill Cleanup Guidelines

The basic steps to follow in a chemical spill or hazardous materials emergency are:

1. RESCUE
2. CONFINE
3. REPORT
4. SECURE
5. CLEANUP

This section provides details on each step.

6.1 RESCUE

Just as you are not to re-enter a burning building, DO NOT go back into an area where a chemical spill has occurred. In many documented cases, rescuers not wearing proper protective equipment have been overcome by toxic or asphyxiating contaminants trying to rescue other victims and have died as a result. *Do not make this mistake.*

6.1.1 Provide Assistance While Exiting Area

Assistance may include:

- Evacuate personnel from the spill area.
- Direct personnel to the nearest fire exit.
- Alert neighbors.
- Attend to victims.

6.1.2 First Aid

- Move victim from spill area to fresh air, if safe to do so.
- Immediately remove contaminated clothing.
- Wash skin with soap and water.
- Flush skin and/or eyes with water for at least 15 minutes. Flushing immediately is very important because some chemicals exhibit delayed effects, e.g., phenol.
- Get medical attention for victims.
- Supply medical provider with [SDS](#) and, if applicable, the appropriate [EHS Print-And-Go Sheet](#).

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6.1.3 Chemical Spills over Large Body Areas

- Have someone nearby contact emergency medical personnel for assistance.
- Remove contaminated clothing while under a safety shower.
- Flood the affected body area in cool water for at least 15 minutes.
- Wash off chemicals with mild detergent and water; do not use neutralizing chemicals, unguents, creams, lotions, or salves on the skin.
- Seek medical attention. Make sure medical personnel understand exactly what chemicals are involved.

6.1.4 Victims of Hydrogen Fluoride (HF) Spills

- Have someone nearby contact emergency medical personnel for assistance.
- Flush area with cool water until any whitening of tissue disappears.
- Apply and continuously massage 2.5% calcium gluconate (Calgonate®) or iced 0.13% benzalkonium chloride (Zephiran®) solution soaks/compresses. Reapply gel every 15 minutes until professional medical assistance is available. EHS carries a stock of calcium gluconate available on the main campus. Note: the individual applying the treatment must wear HFA protective gloves (nature latex/chloroprene).
- Avoid secondary HFA exposures. If the victim is capable, they should wash the area and apply the calcium gluconate gel themselves.
- Cover injured areas with soaking wet, iced cloths when moving the victim to seek medical attention.
- Get immediate medical help. Provide a SDS and the EHS [HF Print-And-Go Sheet](#) to medical personnel.
- Refer to [Section 8.2](#) for details on HF spill kits.

6.2 CONFINE

- Close fire doors.
- Isolate area.
- Establish exhaust ventilation, if possible, e.g., set the fume hood to purge.
- Vent fumes only to the outside of the building.
- If vapors and gasses are in a room that is not vented to the outside of the building, close the doors.
- Post signage to notify others that a spill has occurred and that they must not enter the area.

6.3 REPORT

6.3.1 Contact Security (212-476-0911)

- **Contact the Security Office first when:**
 - Spills involve injury requiring medical treatment.
 - Spills involve fire or explosion hazards.
 - Spills are potentially life-threatening.
- **Note: Contact Environmental Health and Safety after contacting Security.**

6.3.2 Contact EHS (646-962-7233)

Contact EHS when:

- One gallon or more of a chemical of low to moderate toxicity or any quantity of highly reactive or toxic material is spilled.
- An unknown chemical is spilled.
- You do not have proper training or proper protective equipment to perform the cleanup.
- You have any questions or doubts about your ability to clean up any spill.

After cleaning the spill, EHS will complete a report in [Salute](#) incident log. The person(s) in charge of the area where the chemical spill occurred will be notified of the response and when the area is cleared to reenter.

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6.3.3 Provide Spill Information

When contacting Security and EHS, indicate that a chemical spill has occurred and be prepared to provide the following information:

- The name, telephone number, and location of the reporter.
- Location of the incident.
- Time and type of incident.
- Name, concentration, and quantity of material(s) involved, to the extent known.
- The extent of injuries.
- The possible hazards to human health or the environment outside the facility.
- The safest route to approach the spill.

Warn emergency responders of any other hazards they may encounter, such as large quantities of stored chemicals (particularly flammables, oxidizers and airborne toxic or irritant materials), radioactive materials, or biohazards.

6.4 SECURE

Until Emergency Responders arrive on the scene, block off entrances to the spill site and prevent people from entering the contaminated area.

6.5 CLEANUP

Determine who will conduct the spill cleanup as follows:

6.5.1 Chemical Owner/Spiller Cleans up the Spill

For chemical spills that do not involve injury, do not represent a fire hazard, are less than one gallon, and for which you have the proper training, spill cleanup supplies, and proper protective equipment, you can clean the spill according to the procedures in Section 7 below.

6.5.2 EHS Cleans Up the Spill

For all other chemical spill situations, including those for which you have any questions or doubts about your ability to clean up the spill, contact Weill Cornell Medicine (WCM)'s EHS via phone, 646-962-7233.

Note: Contact EHS for spills that require special handling, e.g., Mercury.

7.0 How to Clean Up a Chemical Spill

If the cleanup assessment determines that you can clean up the chemical spill, take the steps below.

1. **Perform all the procedures in the RESCUE, CONFINE, REPORT, and SECURE as described above, except for calling Security.**
2. **Locate the spill kit.**
3. **Choose appropriate PPE:**
 - PPE is in addition to standard laboratory attire (e.g. covered legs, closed toe shoes, buttoned laboratory coat).
 - Always wear eye protection and protective, chemically compatible gloves.
 - If there is a chance of body contact, wear an apron and coveralls.
 - If the spill is on the floor, wear rubber or plastic boots (NOT leather).
4. **Remove ignition sources:**
 - Turn off hot plates, stirring motors, flame sources.
 - Shut down all equipment.
 - **If unable to shut off sources of ignition, secure the area and notify emergency responders.**
5. **Confine or contain the spill:**
 - Cover with absorbent pads or non-reactive absorbent material.
 - Clean up minor spills with paper towels or sponge if they will not react.

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- When cleaning small amounts of acid/base: first add a neutralizing agent (sodium bicarbonate for acids, sodium bisulfate for bases) then apply pads or other absorbent material.
- For cleanup of small amounts of other materials: absorb with non-reactive material (e.g., vermiculite, sand, towels, Floor-Dri).

6. Collect spill material:

- Gently sweep solid materials into a dustpan and place in a compatible sealed bag or container.
- Label container with hazardous waste label.
- **Contact Environmental Health and Safety to report the spill.**
- **Place a request via [Salute](#) for waste pick up and disposal.**

7. Wet mop the spill area.

8.0 Chemical Spill Cleanup Kit Requirements

Chemical spill cleanup kits are a must-have in the laboratory and other service areas that use chemicals. Chemical absorbent pads or neutralizing powder can be used to contain a spill quickly.

Use these items if your personal safety is not jeopardized.

Often the best use of such a kit is to put the absorbent on the spill to contain the material, then leave the room and secure the area until EHS arrives and finishes the cleanup.

Labs can put together their own spill kits or purchase a pre-packaged spill kit from a preferred vendor, such as this [kit](#) from Grainger.

8.1 SPILL KIT COMPONENTS

A chemical spill kit should contain:

- Splash resistant goggles.
- Chemical resistant gloves.
- Spill pads.
- Plastic bags.
- Multi-chemical absorbent (enough for a 2-gallon spill) and acid/caustic neutralizers.
- Plastic scoop and dustpan.

8.2 HYDROFLUORIC ACID SPILL KIT

Any area using hydrofluoric acid (HF) must have a spill kit specifically made for HF, including calcium gluconate, which helps neutralize the acid on the skin.

An example of an HF kit is the Calgonate® Emergency Hydrofluoric Acid Spill Kit, available from [VWR](#). Additional information on calcium gluconate is offered on the [Calgonate website](#).

9.0 Additional Spill Cleanup Information

9.1 LARGE SPILL CLARIFICATION

What constitutes a large spill requiring a chemical cleanup team? What are the limitations of the spill kits commonly purchased for laboratories?

The characteristics of the spill (material spilled, location, quantity, ventilation) and the contents of the spill kit on hand will determine the level of response. For example, even a few milliliters of a highly volatile or toxic compound spilled in a confined space requires a specialized cleanup response by EHS.

When in doubt, contact EHS for assistance.

9.2 KEEP IGNITION SOURCES AWAY FROM FLAMMABLE LIQUID SPILLS

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Even in a well-ventilated room, the Lower Explosive Limit (LEL) of a chemical may be reached at the surface of the spill. For this reason, **avoid any sparks of sources of ignition when doing the cleanup. The protective equipment in the spill kit will not protect you from a flash fire.**

If, in your professional judgment, there is a strong risk of a flash fire or explosion, pull the nearest fire alarm and evacuate the building. Then contact Environmental Health and Safety and Security (212-746-0911).

In most cases of a small bottle breaking in a laboratory, the fire department may not need to be called, as the lab ventilation system is designed to handle such situations.

9.3 VOLATILE COMPOUND SPILLS

Typically, the best way to handle the spill of a highly volatile compound such as diethyl ether or chloroform is to:

1. Leave the room,
2. Close the doors,
3. Contact EHS to request spill response.

9.4 RESPIRATORY PROTECTION PROGRAM

Any person who needs to wear a respirator must meet all requirements of the WCM Respiratory Protection Program, including an annual fit test. Contact EHS for more information on respirator use requirements.

10.0 Program Review

This program manual is reviewed on an annual basis and updated as needed. The most recent version is available on the EHS website.

11.0 References

[EHS Print-And-Go Sheets](#)

[EHS Laboratory Exposure and Spill Response Signs](#)

[EHS Program Manual, Section 7.1 – Respiratory Protection Program](#)

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Appendix A- Example of Exposure and Spill Response Guide

Exposure and Spill Response Guide

Exposure and Injury Responses

HELP

Get Help

For emergencies, seek assistance from a nearby coworker!

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First Aid and Decontamination

Remove ALL contaminated clothing, jewelry, shoes

- Chemical Exposure:** Flush with eyewash or safety shower for 15 minutes
- Inhalation or Ingestion:** Seek medical assistance immediately
- Biological or Radiological:**
 - **Skin Exposure:** Wash with soap and water for 5 minutes
 - **Eye Exposure:** Flush with eyewash for 15 minutes

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Seek Medical Assistance

- If you are seriously injured, incapacitated, or need onsite medical assistance, call **NYP EMS (212-472-2222)** and say:

"I work for Weill Cornell Medicine. I need onsite emergency medical assistance at a Weill Cornell Medicine laboratory."
- Provide lab location, hazardous material involved, and extent of exposure/injury
- Or, go directly to the NYP Emergency Room at 525 East 68th Street

For minor injury or exposures, go to one of the following as soon as possible:

- Workforce Health & Safety (212-746-4370)**, 1315 York Ave, Payson House Basement Level
- Weill Cornell Student Health Services (646-962-6942)**, 230 East 69th Street
- During off hours, go to the **NYP Emergency Room**, 525 East 68th Street
- Bring the material *Safety Data Sheet* for all contaminating agents when obtaining medical assistance for a chemical exposure

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Report

- Notify your supervisor and contact **EHS (646-962-7233)**

Spill Clean-up and Response

If the spill DOES NOT involve an injury or a fire/health hazard:

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Alert/Evacuate

Immediately alert area occupants and evacuate the area. Close all doors leading to affected area and do not re-enter. Restrict access to area.

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Report

Notify supervisor and EHS of the spill and be prepared to provide information on any exposure or injury, spill location, name of the material, and amount spilled.

Small Quantity (<1 gallon) spills can be cleaned up by lab staff, if you understand the hazards, have appropriate personal protective equipment, and are trained in spill clean-up procedures.

Weill Cornell Medicine

Environmental Health and Safety
 TEL 646-962-7233 WEB weill.cornell.edu/ehs EMAIL ehs@med.cornell.edu
 Weill Cornell Medicine | 402 East 67th Street, Room LA-0020 | New York, NY 10065

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