

## Chemicals and Materials

### Spill Response - Chemicals

#### How can a workplace prepare for a chemical spill response?

Most workplaces have products that are used and stored on their premises. Some may have a small amount (only a few litres of cleaning products, for example), while others may have significant quantities of chemicals in different physical forms.

Each of these workplaces should develop and implement measures appropriate for the chemicals and quantity present.

- Perform and maintain an accurate [inventory of all chemicals](#) in your workplace.
- Use the information provided in safety data sheets (SDSs) and other technical data to identify the hazardous properties of the chemicals (e.g., flammable, corrosive, oxidant, reactivity with water, air toxicity).
- Conduct a risk assessment. Identify the amount or size of the potential spills and the potential and severity to workers' health, the workplace, and the environment.
- Based on the chemical's physical state (e.g., liquid or solid, including powders), determine the best methods to prevent, control, stabilize, and clean that spill.
- Identify the materials, equipment, and [personal protective equipment](#) needed. The respiratory protection and protective clothing must be compatible with the chemical. Not all personal protective equipment will be compatible with all chemicals.
- Develop a spill control procedure.
- Make a spill response kit that contains chemical- or process-specific materials, the corresponding personal protective equipment, and other needed equipment. Make sure the kits are available near the work area and well-stocked at all times.
- Train the workers to know the hazards of the chemicals they work with and how to respond to a spill.
- Establish a spill response team as needed.

Some useful standards to consult when developing a spill response plan include:

- National Fire Protection Association (NFPA) 400 Hazardous Materials Code (USA)
- National Fire Protection Association (NFPA) 470 Hazardous Materials/Weapons of Mass Destruction (WMD) Standard for Responders (USA)

- American Society for Testing and Materials (ASTM) Standard Guide for Using Aqueous Foams to Control the Vapor Hazard from Immiscible Volatile Liquids (USA)

## What should a chemical spill control procedure include?

A spill control procedure should define and establish the following:

- Definition of what that workplace considers to be small and large spills, including the types of spills that can be handled internally versus the spills that a specialized spill response team should handle. Generally speaking:
  - A small spill is one that is of a limited quantity, does not spread fast, and does not place workers, the workplace, or the environment in danger.
  - A specialized spill response should be used where there is a risk of fire or explosion or the chemical is highly toxic.
- Who is to respond to the spill and their contact information
- Spill prevention measures to be followed. These measures may include using double-wall tanks, secondary containment, and following safe handling and storing procedures.
- Instructions on how to control spills of specific chemicals, and when safe to do so.
- The appropriate method to reduce the hazard of the spilled chemical (e.g., stabilization, neutralization, dilution, etc.).
- Clean-up procedures.
- Area decontamination procedures.
- How to dispose of the contaminated materials. These materials should be disposed of according to local regulatory requirements for environmental protection.
- First aid procedures.
- List of appropriate personal protective equipment (PPE)
- Decontamination procedures for the personal protective equipment (PPE), as appropriate
- Reporting procedures for all spills and near-misses, such as to a specified person or department, or the health and safety committee.
- Determine which spills must be reported to local authorities, especially if the spill has leaked into the drains or the environment.

Remember, when establishing a spill response procedure, the safety of the responders and those persons exposed must come first.

## What are good practices when responding to a chemical spill?

Steps include:

- Sound any required alarm, and isolate or evacuate the area as needed
- Put on the appropriate personal protective equipment (PPE) (e.g., respirator, if there is an inhalation hazard, protective clothing, gloves, footwear, and eye and face protection)
- If safe to do so, try to stop the leak (e.g., close valves, upright the container, etc.)
- If safe to do so, control sources of ignition if flammable products are spilled. Make sure the area is well-ventilated
- Determine what level of response is required
- **Liquids:** If the chemical spill is a liquid, contain the spill by diking, using universal absorbent socks, boom, pillows, or other absorbent materials (e.g., activated charcoal, vermiculite, absorbent clay, sawdust) compatible with the spilled chemical.
  - If the spilled chemical is an oxidizer, do not use materials such as sawdust to absorb it because it can catch fire.
  - Do not allow the chemical to enter any drains or sewers. Cover floor openings if necessary, or direct the flow away from them
  - Neutralize acids or bases (alkaline) according to the manufacturer's or supplier's instructions.
  - Leave at least 20% air space in bottles of liquid waste. This space gives room for vapour expansion and will reduce spills that occur by overfilling
- **Solids:** If the spilled material is in solid form (such as granules or powder), determine if it is safe to dry sweep or vacuum, or if wet techniques are required. For example, do not sweep chemicals that are in fine powder form, as sweeping will make the powder airborne. Use appropriate vacuum cleaners and filters. If the product is toxic or contains asbestos, silica, or carcinogens, use industrial vacuum cleaners designed especially for such jobs
- Decontaminate or dispose of personal protective equipment
- Store the absorbent materials and the spilled chemical in labelled disposal containers made of compatible material. The label on the container should indicate the name of the spilled chemical
- Do not mix incompatible wastes together. Chemical reactions may occur

## What should be in a spill response kit?

Spill response kits should be kept in a clearly marked location and near where the chemicals are used. Make sure all workers know where the kit is located, are familiar with the contents, know how to use it safely, and understand the limitations.

A spill kit should include, at minimum, the following items:

- Personal protective equipment appropriate for the chemicals present
- Absorbent material or other methods to contain the spills (e.g., sand, absorbent socks, etc.)
- Neutralizing material
- Shovel, scoops, pans, containers, vacuum, broom, and dustpan, as needed, and made of appropriate material
- Heavy-duty trash bags or containers for the waste
- Labels for identification of the hazardous waste
- Caution tape to isolate the spill area
- First aid supplies, where appropriate
- Other equipment as needed, such as tongs or forceps to pick up broken glass
- Communication devices (e.g., radio, phone)

Specialty spill kits may be necessary for chemicals such as mercury, acids, bases, hydrofluoric acid, etc.

## What are some precautions to know when a spill occurs?

- Only attempt to clean a spill if you are adequately trained to do so and have the correct equipment
- Leave the area immediately if you are not trained to handle the spill or if it is clearly beyond your control
- If you are ever in doubt of your ability to clean a chemical spill safely, evacuate the area and call for help
- Alert other people in the area to the emergency
- If there is a risk to the area, pull the fire alarm (or use a designated alarm signal) and evacuate
- Report the problem to those responsible for handling spill response or emergencies
- If possible, and if safe to do so, contain the source of the spill or leak and turn off any sources of ignition (open flames, electrical equipment, etc.)
- First aid is always the top priority. If you spill a hazardous chemical on yourself, remove any potentially contaminated clothing immediately and use the emergency shower. If the chemical enters your eye, flush for at least 15 minutes at the eyewash station. For some chemicals, you may need to flush for up to 60 minutes – review the SDS beforehand and know the rinsing times.
- Only trained people equipped with the proper tools and protective equipment, should handle the emergency.

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