

Preventing Chemical Spills



Introduction

No matter what precautions are taken, accidental chemical spills will occur in a science laboratory. Be a responsible science teacher and make sure proper safety equipment is available to contain and control a spill and understand how to use the safety equipment. Equally as important as knowing how to clean up spills is understanding how to prevent both minor and major chemical spills. Experiments, laboratories, and purchasing procedures should be designed to minimize the possibility of chemical spills. Experiments should use the minimal amount of chemicals whenever possible. The following guidelines will reduce the risk of chemical spills.

Purchase of Chemicals

1. Purchase, store, and dispense chemicals from the smallest bottle possible. For example, do not order or dispense from a 500-mL bottle if each student only needs 1 mL.
2. Purchase, store, and dispense chemicals in unbreakable plastic or PVC-coated glass bottles. Elemental mercury and volatile toxic chemicals must never be stored in uncoated glass bottles. Purchase all concentrated acids in PVC-coated glass bottles.
3. Purchase and store highly toxic or reactive materials in a secondary containment device, such as a Chem-Saf[®] bag (heavy-duty plastic bag) or a Saf-Stor[®] can (an unused metal paint can).

Storage of Chemicals

1. Store all flammable liquids in a flammable cabinet and all acids and bases in a wooden acid cabinet. Flammable and acid cabinets must have a 2"-high, liquid-tight trough to contain spills and provide secondary containment.
2. Do not store chemicals on the floor, in aisles, stairwells, fume hoods, or on laboratory benches, or anywhere the bottle can be knocked over.
3. Attach a two-inch shelf lip to all chemical storage shelves to prevent bottles from rolling off the shelf. Make your own shelf lips from wood molding or purchase chemical-resistant plastic shelf lips from Flinn.
4. Store chemicals at or below eye level.
5. Check chemical containers periodically for rust, corrosion, and leakage. Some chemicals absorb moisture and will expand until the container splits open.

Dispensing of Chemicals

1. Dispense chemicals from a central location (preferably a fume hood) and place all reagent bottles on a spill containment tray or absorbent chemical pads. Most plastic cafeteria trays are chemical-resistant and make good containment trays. A large demonstration tray (76 cm L × 51 cm W × 5 cm D) and chemical absorbent pads are available from Flinn.
2. Always use a spatula and weighing boat when weighing out chemicals.
3. Consider attaching a test tube to the side of chemical dispensing bottles to store the dispensing pipet.
4. Use microscale experiments whenever possible.
5. Always recap chemical bottles immediately after use to reduce spillage if the bottle is tipped over.
6. Perform all experiments using highly toxic or corrosive chemicals in work areas designed to contain accidental releases (e.g., use secondary containment trays in a fume hood.)

If the above suggestions are followed, the number of minor spills should decrease and the probability of a major spill will be greatly reduced. However, it is important to regularly review the proper procedures for cleaning up chemical spills and to maintain an adequate supply of spill control materials. For information on how to clean up chemical spills, please request *SafetyFax* #10312.

For more information on laboratory safety, chemical hazards, or the storage and disposal of chemicals, consult your current edition of the *Flinn Scientific Catalog/Reference Manual*.

Materials to help prevent chemical spills are available from Flinn Scientific, Inc.

Catalog No.	Description
SE121	Absorbent Chemical Pads
AP5429	Demonstration Tray, Large
AP1009	Narrow Mouth, PVC-Coated Glass Bottle, 120 mL
AP1011	Narrow Mouth, PVC-Coated Glass Bottle, 480 mL
AP9172	Narrow Mouth, PVC-Coated Glass Bottle, 960 mL
AP4380	Narrow Mouth, Polyethylene Bottle, 120 mL
AP8160	Narrow Mouth, Polyethylene Bottle, 480 mL
AP4381	Narrow Mouth, Polyethylene Bottle, 960 mL
SE040	Chem-Saf SM Bags, 4" x 6"
SE041	Chem-Saf SM Bags, 5" x 9"
SE262	Saf-Stor SM Can, Small
SE060	Saf-Stor SM Can, Medium
AP2044	Micro Action Chemistry, Teachers Edition, Vol. 1
AP8623	Micro Action Chemistry, Teachers Edition, Vol. 2

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.