

## Discussion and Notes

*If using the notes for training, keep a copy of these safety training notes and a signed attendance sheet to verify regular safety training. Regulatory inspectors will usually request proof of safety training.*

*Flinn's suggested chemical disposal methods are now available online at [www.flinnsci.com/disposal-methods/](http://www.flinnsci.com/disposal-methods/).*

## Chemical Cleanout and Disposal

Chemicals, supplies and equipment tend to accumulate over time and can lead to hazardous situations. Effectively managing your chemical inventory will help you reduce the amount of chemical waste and the potential impact of chemical disposal on your budget and resources. The chemical storeroom should be cleaned and inventoried on a regular basis. Before you undertake chemical cleanout and disposal, enlist the active consent and participation of administrators and facilities or risk managers to provide adequate resources. Hasty responses to chemical disposal are often expensive, unsafe or harmful to the environment.

### Inspecting and Preparing the Inventory

Carry out a preliminary inspection to determine if cleanout and disposal are warranted. Look for the following:

- Bottles and containers that are broken, corroded or have crystals growing around the caps or liquid seeping out of closures.
- Inappropriate storage containers, such as beakers and flasks, buckets, plastic soda bottles or food jars.
- Poorly labeled containers used for storing solutions or transferring chemicals. Labels must have the chemical name, concentration, date and appropriate hazard information and warnings.

Prepare or update the annual chemical inventory and identify chemicals you want to keep. Laboratory chemicals and preserved materials that are no longer part of the curriculum should be removed, as should chemicals that are dangerously toxic, potentially explosive, contaminated or decomposed, mislabeled, out-of-date or present in surplus amounts. Assemble a list of chemicals requiring disposal. Include the full name of the chemical, the quantity printed on the bottle's label and the number of bottles of each size.

### Chemical Disposal

Research the properties of unneeded chemicals to determine any that may be neutralized, reduced, precipitated and/or disposed of in the trash or down the drain. The description for each chemical in your current *Flinn Scientific Catalog/Reference Manual* and at [flinnsci.com](http://flinnsci.com) includes a disposal number. This number refers to one of the generally allowed, suggested disposal methods listed in the reference section of the catalog and at [flinnsci.com](http://flinnsci.com). Please verify all state and local regulations that may apply before proceeding, as some methods may not be permitted in particular areas. Disposal options may also be limited by the building's septic system.

Review the following general guidelines and safety rules before attempting any disposal procedure.

- The quantity of material should be small—laboratory quantities only.
- Make sure you have read and understand the chemistry involved in the procedure.
- Never work alone!
- Always wear appropriate personal protective equipment.
- Perform all procedures in a laboratory environment with good ventilation.

## Hazardous Waste Disposal

Some chemicals, such as heavy metal salts (e.g. Cr, Pb, Ba) and halogenated solvents, will always require licensed hazardous waste disposal assistance.

For the collegiate level, the EPA has more information on hazardous waste generated at academic laboratories. These regulations can be found at <https://www.epa.gov/hwgenerators/regulations-hazardous-waste-generated-academic-laboratories>.

For the K–12 curriculum, the EPA has published a very thorough workbook to help you evaluate options with respect to chemical cleanout and hazardous waste disposal. “Building Successful Programs to Address Chemical Risks in Schools,” available online at <https://www.epa.gov/schools/building-successful-programs-address-chemical-risks-schools-summaries-state-tribal-and-local>, encourages schools to identify district and community stakeholders that are vested in safe chemical management in your school. District administrators and school board members, local fire and police departments, area colleges and universities, industry partners and trade and professional organizations may be able to provide advice and assist with packaging chemicals for removal, removing mismanaged or unnecessary chemicals and properly disposing of chemicals. The following options will help you identify potential partners and resources to investigate, plan and carry out chemical disposal.

**Option A**—Contact the district science coordinator or supervisor for information about ongoing chemical disposal programs.

**Option B**—Get in touch with your state science supervisor or department of education. Many states have implemented chemical clean-up campaigns in recent years. The state EPA may also have an existing program.

**Option C**—Work with the state science teachers association. Use the experience of other teachers who have faced similar issues to help your school comply with chemical disposal requirements.

**Option D**—Seek the advice of the chemistry department chair at a nearby college or university. Most colleges and universities have ongoing waste disposal programs and understand state and local requirements.

**Option E**—Contract with a licensed hazardous waste disposal firm for removing chemicals. Because the school has cradle-to-grave responsibility for its chemicals, even after they have been removed from the site, it is vital that you choose a licensed and reputable firm. Ask for and check references, and do not automatically choose the lowest bid. Request a certificate of disposal for the chemicals.

## Thank You for Your Support

On behalf of everyone at Flinn Scientific, thank you for your support during the school year. Your orders help us offer many free extras, including these vital safety notes every month. As you prepare your supply orders, please call or contact us to see how we can further help you. You have our promise that we will continue to provide top quality products at low prices as well as complimentary training and professional development, like our free online Flinn Scientific Laboratory Safety Course at <http://labsafety.flinnsci.com/home.aspx>.

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