

Hazardous Waste Management

School Chemical Laboratory Waste

Many school classrooms and laboratories contain a wide variety of dangerous chemicals that are outdated, unneeded, inappropriate, toxic, reactive, explosive, or worse yet, unknown. These chemicals are often purchased in excessive amounts, stored incorrectly, and disposed of improperly; putting students, teachers, staff, and the environment at risk. In addition to these unused chemicals, many schools accumulate chemical waste from laboratory experiments for years. Following are some suggested practices to reduce the risks associated with school laboratories.

Chemical Purchasing - Don't buy more than you need

Purchase a one- to five-year supply of a chemical, depending on its shelf life and hazardous nature. Having excess chemicals on hand increases the storage risks and ties up valuable budget dollars. Purchasing smaller quantities also keeps "fresh" chemicals on the shelf which results in lower future disposal costs.

Chemical Storage - Know what you have

- At a bare minimum, include the chemical name, CAS number, concentration, NFPA diamond, shelf life, and date of purchase on chemical container labels. This information is critical when handling the chemical (during use or cleanup) and deciding when and how to dispose of any waste.
- Keep the school's chemical inventory up-to-date.
- Whenever possible, purchase and store chemicals in chemically-appropriate plastic containers. When dropped, plastic containers tend to bounce, not break. If glass containers must be used, make sure they are designed for safety, such as PVC-coated glass.
- **Keep safety data sheets on file for every chemical in storage or use.**

Waste Minimization - Avoid creating unnecessary waste

- Reduce the volume of chemicals needed, along with the amount of waste generated, by utilizing microscale chemistry. Occasional demonstration labs and instructional videos may also be used to reduce the amount of chemical waste generated.
- In the event that you have unwanted chemicals that are still usable, investigate the possibility of use by someone other than yourself. Check with other teachers within your own school or school system. Also, contact Alabama Science in Motion, a program that offers a range of resources and training to local high schools. Locating other users for a chemical is a preferable alternative to disposal.

Waste Disposal – Manage it right

- In the past, ADEM has been able to offer limited financial assistance to schools to help with disposal of unwanted chemicals and wastes. Since it is impossible to predict when additional monies may be available, schools should **NOT** continue to store unwanted chemicals or wastes in anticipation of additional assistance. Instead, wastes and unwanted chemicals should be properly disposed on a routine basis.
- Non-hazardous solids may be disposed in a municipal solid waste landfill. Non-hazardous liquids may be solidified, then disposed in a municipal solid waste landfill. For those schools connected to a municipal sewer system, some non-hazardous liquids may be diluted with large amounts of water then poured down a laboratory drain, with prior approval from the wastewater treatment plant operator.
- Dispose of hazardous wastes, both solid and liquid, at a permitted hazardous waste disposal facility. Contact ADEM's Hazardous Waste Branch to obtain a current list of permitted hazardous waste disposal facilities in the state.
- ADEM Admin. Code r. 335-14-3-.12 offers an optional set of streamlined requirements for managing unwanted materials generated in academic laboratories.

Getting Started

- ✓ Inventory the school laboratory and storage areas
- ✓ Dispose of all unlabeled, outdated, and high-hazard chemicals
- ✓ Eliminate the use of high-hazard chemicals

Flinn Scientific, Inc.: <http://www.flinnsci.com/>

Council of State Science Supervisors *Science & Safety: Making the Connection*: <http://www.csss-science.org/downloads/scisafe.pdf>

Additional Information

- ✓ Investigate curricula that emphasize microscale techniques
- ✓ Include hazardous waste disposal costs in your budget
- ✓ Share resources whenever possible

Alabama Science in Motion: <https://cws.auburn.edu/asim>