

XV. Common Problems

Safety should be your number one concern. Not anticipating and preparing for possible emergencies is the main fault in most chemistry programs. Once you have decided which experiments and demonstrations you will present for the upcoming year, you need to break them down to determine necessary safety procedures and physical protection measures. Good planning and constant maintenance of your program is a must throughout the whole year.

One of the many important words found throughout this handbook is “proactive.” In being proactive, you need to plan for contingencies, including possible accidents. As careful as you may be, and as many precautions as you take, the potential of an accident is always there. If an accident occurs, what are you going to do? Do you have the proper procedure in place? Are you going to evacuate? Who do you contact? Are you qualified to clean up a spill? Do you have the proper equipment and materials to clean up a spill? How do you dispose of the residue? Know this information and have the right materials in place to properly react. Many simple accidents in the chemistry classroom or laboratory have turned into major disasters because precautionary measures were not taken—personnel were not proactive.

One way to be proactive is to fully understand any chemicals, and their inherent hazards, before you and your students use them. Safety Data Sheets (SDS's) provide chemical- or mixture-specific hazards and emergency response information. Read the SDS and teach the students how to read it as well. Do not wait for an exposure or accident to find how to respond. Read, understand, and prepare.

A good teacher is a good communicator. As part of teaching the students about chemicals, you must also teach the importance of hazard awareness and safety. If students do not understand every detail of the information, there could be an accident in the making. When presenting an experiment, review the applicable SDS or SDS's and completely walk through the experiment, step by step, before students perform the experiment themselves. Many students comprehend a concept more fully if it is shown rather than explained. As some students will not ask clarifying questions, be sure to confirm their comprehension by asking them questions yourself. Ultimately, their safety is your responsibility.

Facilities vary greatly in size and suitability for the purpose of chemistry education. Purchase chemicals appropriate to the safety features of the room, and your available budget. Limit overstock and subsequent waste of chemicals for both safety and economical reasons. Dispose of chemicals you have on-hand but have no foreseeable use for. This helps to keep storage areas clear and safe. In storage areas, shelves are adequate for most chemicals (excluding highly flammables, combustibles, and acids), but safety cabinets are better. For laboratories with limited storage space, safety cabinets are all the more important. Keep chemicals locked up.

Teaching chemistry is an area of expertise. You have got to know your subject matter, what to look for, and what to expect, because common problems in the chemistry laboratory are not necessarily common sense issues. Be diligent, because many problems arise from complacency. With a little work, proactive planning, and safety initiatives, you can provide an accident free educational experience for your students.

