Energy Technologies Area

SAFETY ALERT

November 15, 2022

Storage of Hazardous Materials in Laboratories

Hazards: Chemical Spills, Fires, Hazardous Chemical Reactions

Proper storage of chemical and sample containers is important for the safety of lab personnel and preventing hazardous materials spills. The LBNL "Chemical Hygiene and Safety Plan" identifies requirements for storage of hazardous materials containers in laboratories: PUB-3000 Chapter 45 Work Process K

In summary, storage of chemical containers should meet the following requirements:

1. Store liquid hazardous materials, including squeeze bottles and samples, in secondary containment trays. Ensure that the containment trays are constructed of materials that are compatible with the chemicals being stored. Acids should not be stored in metal trays.
2. Segregate incompatible chemicals (e.g., store oxidizing acids and flammable solvents separately). This is to prevent inadvertent mixing of incompatible chemicals that can produce harmful gasses/vapors, heat, fire and explosions.
3. Use approved flammable storage cabinets with self-closing doors for storage of flammable and combustible liquid containers that are not in use.
4. Small quantities of flammable and combustible liquids kept in squeeze bottles and other secondary containers (<1 liter) may be kept on counter and bench tops. They must be stored in secondary containment trays.
5. Use corrosive storage cabinets for acids and bases (store in separate cabinets). These are constructed of corrosion resistant materials.
6. Refrigerators that are used for storage of flammable and combustible liquids must be designed specifically by the manufacturer for this purpose. They must be clearly labeled "Caution- Do Not Store Food or Beverages in This Refrigerator" on the door.
7. Limit the amount of chemicals stored in the fume hoods to only those items immediately needed for an activity. Return containers to the chemical storage cabinet when no longer in use.
8. Do not store chemicals (except cleaners) under sinks. They could come in contact with water leaks from the sink drain.

9. Ensure caps and lids are securely tightened on containers placed in containment trays. This prevents leaks and evaporation of contents.
10. Store hazardous materials away from sources of heat and direct sunlight.
11. When solid chemicals are stored on shelves, ensure there is a lip or equivalent means to prevent them from falling off during an earthquake. Keep storage cabinet sliding doors closed as well.
12. Purchase only what is needed. Avoid stockpiling excess chemicals.
13. All primary chemical containers must be entered into the Chemical Management System (CMS) inventory. Squeeze bottles, secondary containers, and samples are exempt though they should be clearly identified for contents.
14. Conduct periodic clean-outs of hazardous materials and samples to minimize the unwanted accumulations.

If you have questions regarding storage of chemicals in your lab area, contact your supervisor or the ETA Safety Manager, Ron Scholtz, at X8137.

Example Secondary Containment Trays

Figure 1- Chemicals Stored in Trays

Figure 2- Example Polyethylene Tray

Figure 3- Example "Palletote" Box for Large Containers