

GENERAL GUIDANCE FOR CHEMICAL STORAGE

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

Due to the diverse individual properties of chemicals that may be located in a chemical use area, proper storage may be complicated. General considerations for chemical storage are provided below. Specific instructions on chemical storage may be obtained from the MSDS, container label, EHS SOPs that are specific to the class of chemical (see the EHS web site), or by contacting EHS.

- An inventory of all chemicals must be maintained. Inventories must include the full chemical name, location of storage, and associated hazard (e.g., corrosive, flammable, toxic, etc.). Inventories must be reviewed at least annually and updated as necessary to remain current. The inventory should include a review/revision date. Chemicals purchased throughout the year must be added to the inventory as soon as they are brought into the work area. Chemical inventories should be readily available.
- If using short hand names or acronyms on any solutions, reagents, or aliquots of chemicals, maintain a cross-reference sheet that defines the short hand name or acronym in use. For example, EtOH = ethanol or PBS=phosphate buffered saline. Do not use acronyms or short-hand names to label containers of unwanted or spent chemicals. Review the acronym list at least annually to ensure that all short hand names or acronyms in use are recorded.
- Ensure that all containers are in good condition and labeled. Refer to the EHS SOP, **Chemical Container Labeling** for specific labeling requirements. To prevent unnecessary exposures, keep storage containers capped.
- Store temperature sensitive chemicals in freezers or refrigerators that are set at the appropriate storage temperature, as determined by the chemical manufacturer. If used to store items that are usually considered “food stuffs” (but are actually used for research or testing purposes), the freezer or refrigerator should be labeled to indicate “Not for storage of food for human consumption.” In addition, the refrigerator or freezer must be specifically designed for the storage of flammable materials if the chemical(s) stored within possess this property.
- Observe other special storage considerations, such as protecting water reactive materials by observing EHS specific procedures such as those contained in the EHS SOP, **Water Reactive Chemicals**. Protect pyrophoric or other air-sensitive materials from contact with air. Store flammable liquids that do not require refrigeration in manufactured flammable liquids cabinets and away from ignition sources. See the EHS SOP, **Storage and Use of Flammable Chemicals** for specific storage information pertaining to flammable materials.
- Segregate and store chemicals according to hazard class. For example, provide physical segregation between acids and bases, as well as oxidizers and flammables. Refer to the

specific chemical Material Safety Data Sheets or the chemical compatibility chart at http://ehs.unl.edu/chemicalinfo/chemical_compchrt.pdf for guidance on potential incompatibilities.

- Avoid storing chemicals above eye level. Select low shelves or cabinets for heavy containers. Never store chemicals or any other items closer than 18" to the ceiling. Storing items close to the ceiling will impede the effectiveness of automatic fire suppression systems.
- Do not store chemicals on the floor. Chemical containers could present a tripping hazard or could be knocked over causing a spill.
- Storage shelves are safer when equipped with doors or lips to prevent containers from accidentally falling from the unit.
- All potentially hazardous liquids should be stored in secondary containment trays to capture leaks, spills, or other releases. Secondary containment also provides physical segregation of incompatible chemicals.
- Venting of flammable and corrosive liquids cabinets is generally not recommended. However, ventilated cabinets may be appropriate in cases where vapors can reasonably be expected to reach explosive or toxic concentrations, and when storing malodorous chemicals, lachrymators (chemicals that cause tearing of the eyes), or other chemicals with similar hazards. Specific design requirements apply when venting flammable and corrosive cabinets. Therefore, consult with UNL Facilities Management and Planning (FMP) prior to venting these types of cabinets.
- Secure gas cylinders away from heat sources, and segregate incompatible gases. Specialized ventilated cabinets may be required when storing or using toxic or flammable gases. See EHS SOPs, ***Use of Compressed Gas Cylinders in Laboratories*** and ***Handling Cryogenic Material*** for additional information.
- Routinely inspect chemical storage areas and cabinets for hazardous conditions (i.e., leaked or spilled chemicals, misplaced and incompatible chemicals, loss of container integrity, lack of secondary containment devices, faded labels, etc.).
- Some chemicals present multiple hazards. For example, glacial acetic acid is both acidic and combustible. In these cases, consult the MSDS to determine the "primary" hazard class of the material. In the case of glacial acetic acid, its primary hazard is its acidity. Therefore, the best selection for storage classification would be organic acids, rather than flammable liquids.