

UC Davis Policy and Procedure Manual

Chapter 290, Health and Safety Services

Section 65, Hazardous Chemical Use, Storage, Transportation, and Disposal

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Responsible Department: Environmental Health and Safety

Source Document: Policy on Management of Health, Safety, and the Environment

I. Purpose

This section outlines policies designed to limit the potential for illness or injury caused by hazardous chemicals. Additional regulations for the UCD Medical Center are available in UCDHS Hospital Policies and Procedures Sections [1670](#) and [1725](#).

II. Policy

- A. It is the policy of UC Davis to transport, use, and store chemicals in a manner that will not adversely affect:
 - 1. The health and safety of students, employees, visitors, and surrounding neighbors.
 - 2. Wild and domestic animals maintained on UC Davis properties or in surrounding areas.
 - 3. The environment.
- B. Emergencies involving chemicals must be immediately reported to the Davis campus Fire Department by dialing 9-1-1. At UCDHS, dial 9-1-1 for response by the Sacramento Fire Department for serious spills (see UCDHS Hospital Policies and Procedures Section [1725](#)).

III. Procedures and Responsibility

A. Office of Environmental Health & Safety

The Office of Environmental Health & Safety (EH&S) advocates a safe and healthful work environment for the campus and UCDHS and assists departments in developing injury/illness prevention programs and laboratory safety plans for the use, storage, transportation, and disposal of hazardous chemicals. EH&S will also:

- 1. Evaluate the use of hazardous chemicals and exposure controls and perform chemical exposure monitoring if appropriate.
- 2. Evaluate protective clothing and equipment used in working with hazardous chemicals. (See also Section [290-50](#).)
- 3. Provide information, in coordination with the Fire Department, on the safe storage of hazardous chemicals.
- 4. Assist departments and researchers in complying with the Campus Chemical Carcinogen Safety Program.
- 5. Assist departments and researchers in complying with the Chemical Facility Anti-Terrorism Standard (CFATS).
- 6. Maintain the campus Chemical Inventory System.
- 7. Pick up and dispose hazardous waste.
- 8. Provide health and safety information and training to campus users of hazardous chemicals. (See also Section [290-27](#).)
- 9. Obtain all hazardous waste treatment permits pertinent to the hazardous waste, storage, transportation, and disposal of hazardous chemicals.

B. Department heads and principal investigators

In addition to the requirements included in Section [290-56](#), department heads and principal investigators are responsible for the following:

1. Identification and labeling

All chemicals not stored in their original containers and all compounds produced by laboratory procedures must be identified and labeled.

- a. Labeling systems must clearly identify the chemical(s) in the container. Labels should include the chemical name in English (chemical formulas alone will not suffice), major hazards, date received and/or prepared, and the name of the person preparing the label.
- b. Labels must be legible, permanent, and impervious to damage by bottle contents.
- c. Containers for storage of hazardous chemicals must be compatible with the chemical and fitted with an appropriate tight-fitting lid.
- d. Departments must report their inventory of hazardous chemicals on the online Chemical Inventory System and update it at least annually. Contact EH&S or access the EH&S [website](#) for additional information or to set-up an inventory account.

2. Transportation of hazardous chemicals

- a. Transportation of hazardous chemicals on public roads must comply with all requirements of the U.S. Department of Transportation and the California Departments of Agriculture, Health, and Highway Patrol.
- b. Hazardous chemicals may not be transported in personal vehicles.
- c. Hazardous chemicals may not be transported within the passenger compartment of university vehicles with the exception of small quantities in original, unopened UN specified packing as shipped from the vendor. Packages must be secured to prevent movement and have an absorbent material to minimize leakage.

3. Shipping of hazardous chemicals

- a. Shipment of hazardous chemicals must conform to all requirements of the U.S. Department of Transportation and the International Air Transport Association (IATA).
- b. Campus Mail Services is available to assist with the shipment of hazardous chemicals.
- c. Shipment of all radiological materials must be coordinated through EH&S.

4. Disposal of hazardous chemicals

Materials must be properly packaged and labeled so they can be transported safely for disposal.

- a. Liquids must be in containers appropriate for liquids (i.e., corrosives in corrosion-resistant and solvent in approved solvent-resistant containers), and solids in containers intended for solids.
- b. All containers must be tightly and securely sealed with lids.
 - 1) Liquids in glass bottles will not be transported if the containers are not sealed and secured or are stacked.
 - 2) Paper or plastic bags are not acceptable for transporting any glass

containers.

- b. Containers must be clearly labeled, identifying contents, concentrations, and hazard warnings. Labels are available at the EH&S [website](#).
 - c. Request disposal of waste chemicals using the online request form at the EH&S [website](#) (Davis campus) or call 916-734-2740 (Sacramento campus).
 - d. Off-site hazardous waste disposal contractors must be approved by EH&S for all on-campus facilities.
 - 1) EH&S will manage all hazardous waste manifests for on-campus facilities and will maintain all records of shipment.
 - 2) Off-campus facilities may request assistance with waste disposal contracting by contacting EH&S.
5. Use of acids
- a. Proper precautions must be taken when using corrosive acids.
 - b. Perchloric acid digestions above room temperature must be performed in approved perchloric acid hoods with a wash-down system. Other inorganic acid digestions performed above room temperature must be in a wash-down hood or equivalent control system.
 - c. Hoods designated for perchloric acid use only may not be used for work with other organic solvents. Perchloric and other inorganic acids may be used in a standard chemical fume hood if used at room temperature.
6. Use of chemical carcinogens
- a. All uses of Cal/OSHA and campus-recognized chemical carcinogens must be reported in the Chemical Inventory System.
 - b. All use of campus-recognized chemical carcinogens must be in conformance with the [Campus Chemical Carcinogen Manual](#).
7. Use of flammable chemicals
- a. Departments must comply with the Fire Code, California Building Code, NFPA standards, and Fire Department regulations concerning storage of flammable and explosive chemicals (see Section [390-40](#)).
 - b. Flammable materials should be stored in flammable liquid storage cabinets or flammable materials storage (Lab-Safe) refrigerators and freezers. Storage cabinets and flammable materials storage (Lab-Safe) refrigerators/freezers must be listed by a recognized testing laboratory such as Underwriters' Laboratories (UL).
 - c. Where distillation of flammable solvents is required for purity, consideration must be given to using a Grubbs Apparatus ("push still") or column purification system.
 - d. Users must wear appropriate personal protective equipment (see Section [290-50](#)).
8. Highly reactive or explosive chemicals
- a. Departments must limit the explosion potential created by peroxide-forming chemicals by:
 - 1) Labeling all containers of peroxide-forming chemicals with date of purchase and disposing of them by the expiration date.
 - 2) Complying with all other EH&S procedures regarding the use of peroxide-forming chemicals [Safety Net #23](#).

- b. Chemicals that may react violently on contact with air must be stored in an inert atmosphere (e.g., argon gas) and used in a dry box or similar containment device.
 - c. Chemicals that may react violently with water must be stored in a moisture-free environment and protected from accidental contact with water. Use of moisture-sensitive chemicals should take into account moisture from the ambient air.
 - d. Chemicals that may react violently on contact with light or certain wavelength light (e.g., ultraviolet) must be stored in a manner that precludes light exposure. Use of light-sensitive chemicals should be carefully planned due to the dual hazard of working in reduced lighting conditions and the potentially violent reactivity of the chemicals upon accidental light exposure.
 - e. Chemical explosives must be used and stored in compliance with applicable Federal, State, and local laws and regulations, as well as UCD policies, procedures, and standards. Contact the Fire Department and EH&S for guidance.
9. Chemical Facility Anti-Terrorism Standard (CFATS)
- a. All Chemicals of Interest (COI) as defined in the standard must be included in the Chemical Inventory System, regardless of quantity.
 - 1) The inventory of all COI must be current at all times.
 - 2) The list of COI is available at the Safety Services [website](#).
 - b. The Screening Threshold Quantity (STQ) for any COI may not be exceeded in any campus facility without written authorization from EH&S. Departments are responsible for all control procedures required by the standard.
 - c. Theft or diversion of any amount of COI must be reported to the UC Davis Police Department and EH&S immediately.
10. Use of Chemical Fume Hoods and Biological Safety Cabinets
- a. When working with volatile, toxic or gaseous chemicals, a properly certified chemical fume hood must be used.
 - b. If volatile, toxic or gaseous chemicals need to be used in a bio-safety cabinet, the cabinet must be a Type II, Class B1, B2, or B3 where the exhaust from the cabinet is ducted to outside of the building.
 - c. Ductless hoods or re-circulating workstations are not to be used with volatile, toxic, or gaseous chemicals.
 - d. All employees using fume hoods must complete the e-learning module available in the [Learning Management System](#).
11. Storage of hazardous chemicals
- a. Hazardous chemicals must be stored on sturdy shelves with appropriate seismic bracing.
 - b. Storage must preclude accidental mixing of incompatible materials by segregating incompatible chemicals using secondary containment.
 - c. See EH&S [SafetyNet #4](#), Partial List of Incompatible Chemicals, for further information.
12. Eating and drinking in areas where hazardous chemicals are used or stored
- a. Storage, consumption, and use of food, beverage, medicines, tobacco, chewing gum, and the application of cosmetics or handling of contact lenses are prohibited

in areas where hazardous chemicals are used or stored.

- b. New laboratory buildings require employee eating areas to be incorporated in the building design.
- c. Departments in existing campus buildings must clearly identify suitable areas for employees to eat and store food outside of research and teaching laboratories where chemicals are used or stored.

IV. Further Information

For further information, contact EH&S (campus, 530-752-1493; UCDHS, 916-734-2740).

V. References and Related Policies

- A. University Policy on Management of Health, Safety, and the Environment.
- B. [UCD Policy and Procedure Manual](#):
 - 1. Section [290-27](#), Hazardous Substances Communication Program.
 - 2. Section [290-50](#), Protective Clothing and Equipment.
 - 3. Section [290-56](#), Chemical Safety.
 - 4. Section [290-60](#), Occupational and Preventive Medicine.
 - 5. Section [290-95](#), Pesticide Applications.
 - 6. Section [350-20](#), Procurement and Use of Ethyl Alcohol.
 - 7. Section [390-40](#), Fire Safety.
- C. Environmental Health and Safety, [SafetyNets](#).
- D. [Chemical Facility Anti-Terrorism Standard](#).