

Moving and Transporting Hazardous Materials

REFERENCE GUIDE

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Accidental release and exposure to hazardous materials is more likely when moving and transporting hazardous material containers. Therefore, it is important to transport hazardous materials with the same level of caution and care before and during transport as one would conducting experimental procedures. This guide provides safety guidelines and requirements for moving hazardous materials within and between buildings on the UCI campus, based on code requirements and best practices.

Planning and Preparation: Prepare, label, and pack all hazardous material containers appropriately and safely using the following guidelines.

Inventory and Classification

- Identify all hazardous materials to be moved.
- Classify and sort all hazardous material containers by hazard class (e.g., flammable, corrosive, toxic).

Labeling

- Ensure all containers are properly labeled with the chemical name, hazard warnings, and any necessary precautions.
- Ensure that every container has been barcoded and reconciled in your UC Chemical Inventory.

Packing

- Use sturdy, sealed containers with secondary containment (e.g., a tray or bucket).
 - Ensure secondary containment is made of material compatible w/ the chemicals being transported.
- Cushion containers with appropriate absorbent materials (e.g., vermiculite, newspaper) to prevent breakage and spills.
- Pack all containers upright.
- Secure boxes or trays to prevent shifting during transport.
- Ensure boxes can be closed and taped shut and are light enough for one person to lift.
- Do not pack incompatible chemicals together.
- Consider the need for climate-controlled transport for temperature-sensitive chemicals.
- For reactive materials (pyrophorics, explosives, and alike), use a day box for transport.
- If planning to move large quantities of hazardous materials or relocate labs, contact EHS for guidance.

Personal Protective Equipment (PPE)

- Wear appropriate PPE, including gloves, eye protection, lab coat, and any other necessary protection based on the specific materials being handled while organizing and packing within the lab.
- Except for eye protection, PPE should not be worn when transporting hazardous materials between floors, or outside a building.
- PPE may be left on when transporting hazardous material between labs in the same corridor.
- To prevent the possibility of contamination spreading, either use no gloves or leave one clean hand exposed while transporting. Have PPE available in case of a spill.

Emergency Plan

- Spill Response: Have a spill kit readily available and know the location of emergency equipment (e.g., eyewash station, fire extinguisher) on your route.
 - [Spill Response Guidelines](#)
- Call 911 if a spill or release occurs in large quantities, in a public area, the material is toxic, corrosive, or highly flammable, or if anyone in the area is exposed or injured.
- Report all incidents and near misses to EHS at 4x6200.

Transportation: The following section describes requirements, safe practices, and special circumstances related to movement of hazardous materials on campus.

Controlled Substances (CS)

- For large moves, controlled substances should be the last chemicals moved.
- For all controlled substance relocation, please contact occhlth@uci.edu to discuss new storage locations and to submit your updated CSUA Application listing the location change. Lab will need approval before moving CS and CS storage.

Radioactive Materials (RAM)

- Before relocating any RAM or radiation-producing equipment (x-ray machines), please note the following requirements:
 - Clearance Requirements: All RAM-related items, radiation-producing machines, and the current lab space must be properly surveyed and cleared by Radiation Safety before being moved or vacated. This includes ensuring that any equipment, containers, and surfaces meet contamination limits. Failure to do so may result in the spread of contamination or improper handling during the move.
 - Commissioning of New Room: The new lab must be formally commissioned and approved for RAM and/or x-ray use by Radiation Safety prior to the introduction of any radioactive materials or radiation-producing devices.
- To ensure a safe and compliant transition, please contact Radiation Safety at EHS as early as possible for coordination and support.

Secondary Containment

- Always use secondary containment, such as trays, buckets, or carriers, with at least a 2-inch lip, to contain any spills or leaks.

Appropriate Equipment

- Use sturdy hand carts with a liquid tight seal and at least 2-inch lips on all four sides for transporting solid and liquid chemicals.
- For compressed gas cylinders, use a proper gas cylinder cart with the cylinder strapped in place and the valve cap securely in place.
- For liquid nitrogen tanks, a special cart is needed and prior training in its usage is required. Contact EHS for assistance.
- Have a spill kit (absorbents compatible with materials being moved and bags to contain spilled materials), gloves, and eye protection readily available, and know the location of emergency equipment (e.g., safety eyewashes/showers, fire extinguishers) on your route.

Careful Handling

- Never carry an armful of bottle, jars, or other containers
- Do not overpack carts
- Place heavier containers on the bottom rack of a cart
- When transporting glass bottles between labs or floors, always use a bottle carrier, cart, or other means of secondary containment.

Safe Practices

- Do not transport hazardous materials in personal vehicles.
- Public roads must not be used under any circumstances.
- For larger transport or whole lab relocation, use a certified vendor (e.g., Clean Harbors). Contact EHS for assistance.
- Use freight elevators when available to move hazardous materials between floors.
 - Do not transport hazardous materials in elevators when other passengers are present. If a general traffic elevator must be used, ask other passengers to wait to board until the hazardous material transport is complete.
- Use a cart with lip (at least 2" tall) to contain spills. Cart trays and/or secondary containment should be large enough to contain the total volume of the largest container being transported.
- Never leave hazardous materials unattended during transport.
- Do not perform hazardous material transport alone.

Special Considerations

- Incompatible Chemicals: Be aware of chemicals that can react violently when combined and avoid transporting them together. Keep incompatible chemicals separate using appropriate secondary containment.
- Compressed Gas Cylinders: Always use a proper gas cylinder cart, secure the cylinder, and keep the valve cap in place. Never roll or drag a compressed gas cylinder.
 - If liquefied gas cylinders or cryogenics must be transported by elevator, there should be no occupants in the elevator with them. Never leave gas cylinders unattended during transport. Ensure that personnel are there to receive the cylinder when it arrives at the destination floor.
- Heat-Sensitive Chemicals: Package heat-sensitive chemicals in a box with a cold pack to maintain their quality during transport.
- Chemical Transfers: When transferring chemicals in the lab, always wear appropriate PPE and use a secondary containment system to prevent spills.
- For unusual circumstances or large lab moves, contact EHS for assistance.

References:

- [UCI Chemical Hygiene Plan](#)
- [2022 California Fire Code Section 5003.10: Handling and Transportation \(Hazardous Materials\)](#)
- [National Academies Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards \(2011\)](#)
- [UCI Spill Response Guidelines](#)