

## Transportation of Chemicals

Personnel who move chemicals from one campus location to another need to be aware that chemicals and other hazardous materials should only be handled or transported by trained personnel who are familiar with the specific hazards and safety precautions associated with the particular products. For large amounts of chemicals or for transport of acutely toxic chemicals, personnel must always work in teams. Use the following guidance when transporting chemicals or any hazardous material on University property.

Know where the chemical spill kits are stored. Be ready for emergencies. If there is a spill that has the potential to endanger human health, immediate action must be taken. Call 911 and take appropriate steps to ensure the safety of those in the immediate area. If a spill has the potential to impact storm drains, take immediate action to protect the storm drain (dirt dike) and contact EH&S. In the event of a spill, notify a supervisor and EH&S at 644-6895 regardless of the perceived extent of the spill.

Move chemicals during regular working hours.

Only trained laboratory personnel may move chemicals and other hazardous materials. Commercial movers or departmental staff can move lab supplies but NOT hazardous materials.

Inventory chemicals - discard expired, outdated or unwanted chemicals through the Chemical Safety Office by calling 644-7682 or 644-0971 or using the [online hazardous waste pickup form](#)-(FSUID Required)

Do not attempt to move outdated ethers or other potentially unstable/reactive compounds. Chemicals that are outdated and potentially unstable; in corroded containers; having cracked or missing lids; unknown/unlabeled should be properly disposed of through EH&S and NOT relocated to a new lab facility.

Do not move [chemical waste](#). Leave it in the old lab location and notify the Chemical Safety Office. All waste must be labeled for contents. New waste containers will be delivered to the new lab location. Contact the Chemical safety office for new waste containers by calling 644-0971 or 644-7682. Waste may not be left in a lab from which all lab workers have moved. If a laboratory continues to store chemicals in the old lab and is sorting those chemicals into waste streams, EH&S must pick up waste within 2 weeks from the time of generation in the lab. Labs must closely coordinate with The Chemical Safety Office to ensure that wastes are not left in empty labs in violation of Florida Statute.

Use proper protective equipment. At minimum, this includes a laboratory coat, safety glasses, closed toed shoes and proper hand protection. Additional PPE and supplies for handling or cleaning up the hazardous material in the event of a release must be available.

Where possible, heavy or bulky quantities of hazardous materials should be transported by elevator, preferably one reserved exclusively for freight. The transport of hazardous materials in any quantity on an elevator should be accompanied by the minimum number of persons necessary to ensure safety. All other unnecessary personnel should be excluded from an elevator while hazardous materials are present. Use of stairways should also be minimized.

A sturdy cart with raised edges and a low center of gravity should be used to transport multiple, large, or heavy containers, and chemicals should not be stacked. Larger, heavier containers should be placed on a low shelf of the cart.

Pack hazardous chemicals (solvents, corrosives, toxic chemicals) and all liquids with compatible chemicals. Make sure that all chemicals are securely capped. Place in a secondary container like a tub or

bin that could adequately contain the entire contents if the primary container failed. Contact EH&S for bins for moves between laboratories on the FSU campuses. Label all chemicals, and label the bins.

Individual chemical containers must be placed in a secondary plastic container when transporting. For ease of move, it is permitted to put compatible chemicals together in cardboard boxes (except oxidizers) before setting the cardboard box into the plastic secondary container.

Do not place incompatible chemicals together in the same bin. This will prevent unwanted chemical reactions in the event of leaks or spills. Examples of incompatible chemicals include: acids/bases, oxidizers/organic solvents, acids/cyanides, acids/sulfides, aqueous materials/water reactive materials, etc.

Glass bottles containing hazardous chemicals should be packed in vermiculite or other absorbent materials. Sufficient cushioning should be provided to prevent breakage or damage to the primary container.

Relatively non-hazardous dry chemicals may be packed in boxes. Make sure all chemicals are securely capped. Label the boxes.

DO NOT MOVE chemicals in personal vehicles. Use departmental vehicles or contact EH&S for assistance.

Do not put chemicals in the trash. Empty bottles, if rinsed, may be marked "empty" and placed in the regular trash.

Hazardous chemicals must not be left unattended or stored in corridors, departmental offices, or other non-laboratory locations.

If chemicals are to be shipped off-campus, contact the Chemical Safety Office at 644-7682 or EH&S at 644-6895 for guidance on packaging and shipping regulations.

### **Specific Hazards**

- Compressed gas cylinders should only be transported with the protective cap in place and on approved carts. Cylinders must always be secured to these carts using chains or straps.
- Cryogenics - Personnel should never occupy an elevator being used for the transportation of cryogenics; a release of cryogenic material will displace oxygen and can create an asphyxiating environment – 1L of liquid N<sub>2</sub>, if completely sublimated where there is no air exchange, will displace 700L of air. In an elevator that is 4' x 4' x 8', 700L of air displaced by gaseous N<sub>2</sub> would lower the oxygen content of the elevator air from 21% to 17%, a potentially fatal level. This type of transport should be accomplished by securing the material in the elevator and using a coordinated team positioned outside the elevator doors on each floor to send and receive the material while ensuring that other individuals do not unknowingly get on the elevator (on other floors) while it is being used for this purpose.
- Solvents – Special consideration should be made of the potential for an accident when transporting solvents as these may be highly toxic and have other hazardous properties. Like cryogenics, release of these chemicals may create a hazardous atmosphere. Careful planning must be made regarding packing and transport. Emergency response procedures must be well known to all personnel.
- Corrosives – Concentrated acids are usually transported in rubber protective sleeves. It is unsafe to carry concentrated acids for long distances, even if protected by rubber sleeves, without a cart and secondary containment (tub).

- Reactive, old or potentially unstable chemicals - Do not attempt to move outdated ethers or other potentially unstable/reactive compounds. Chemicals that are outdated and potentially unstable; in corroded containers; having cracked or missing lids; unknown/unlabeled should be properly disposed of through EH&S and NOT relocated to a new lab facility.
- 

#### Additional Information and Resources

- Chemical Carts for storage and transportation  
Below are listed several links to vendors who sell chemical transport carts. EH&S does not endorse any vendor or product. For guidance on the type of cart to purchase for a specific purpose, please contact the Chemical Safety Office at 644-7682.
  - [Cole-Parmer Flexibin cart with recessed bins for chemical containment](#)
  - [Fisher Scientific](#)
- Disposable glove selection and facts
  - [Bestglove](#)
  - [Mapaglove](#)
  - [Microflex](#)
- [Spill Kits](#)-can be purchased from most laboratory supply vendors.