

University of Hawaii EHSO Safe Handling Practices For Moving Chemicals

This fact sheet provides guidance and explains basic considerations for chemical handling and storage precautions when moving chemicals between labs and buildings at UH Manoa. As a key reminder, ensure that everyone involved is trained in the safe handling of chemicals. Never move chemicals alone. Utilizing at least two people will make this process much safer and easier!

- 1. First, perform a pre-move visual inspection and inventory of the chemicals that will be moved.**
 - a. Make a list of the chemicals and note the type (e.g. Acid, Base, Reactive, Toxic), and their respective amounts to be moved.
 - b. Make sure that each container is correctly labeled as to its contents.
 - c. Observe the general condition of each chemical container.
 - d. Observe each container's cap or closure seal for the formation of crystals. CAUTION: DO NOT TIGHTEN, OPEN OR MOVE CONTAINERS THAT HAVE CRYSTALS FORMING ON THE CAPS AND SEALS. Observe whether crystals, which could be the sign of decomposition, have formed INSIDE the container. Ethers and other classes of organic peroxides can decompose and produce potentially dangerous and explosive crystals.
 - e. Identify the specific areas in the new location where chemicals will be stored and ensure necessary storage containment equipment are on site.
- 2. Locate the Safety Data Sheet (SDS) for each chemical to be moved.** Each SDS has chemical specific handling and safety information that must be properly followed in order to move the chemical safely. The SDS should be readily available to those moving chemicals or responding to spills.
- 3. Plan the move - Choose the best route to take from point A to point B.** Do not take containers up and down stairs if possible and do not allow personnel not actively involved with moving chemicals to ride in elevators. Use of a freight elevator is recommended if available.
- 4. Prepare the chemicals for the move.**
 - a. Remember to use the proper goggles, gloves, and other personal protective equipment before handling any chemicals.
 - b. Group the containers for the move by Hazard Class. Do not move acids with toxics, or oxidizers with organic solvents. Make a separate move for each Hazard Class.
 - c. Transfer salvageable chemicals from deteriorating or contaminated containers to new containers with new labels. Properly dispose of unsalvageable and excess chemicals as Hazardous Waste.
 - d. Box chemical containers if possible, using the correct packing materials (e.g. Vermiculite, original packaging boxes). Ensure the bottoms of boxes used are secured PRIOR to loading with chemical bottles.

- e. If you use a cart to move containers make sure it has rails so the containers don't slip off. Place heavy containers on the bottom rack of the cart. Do not overload the cart and make several trips if necessary.
 - f. Take a chemical spill kit with you in the event you have a spill along the move. This can be a coffee can filled with Vermiculite or the Acid/Base neutralizer kit found in many labs.
 - g. Ensure the receiving location is accessible before leaving the point of origin.
 - h. Keep a cell phone with you to provide a means of communicating emergencies during the entire process.
- 5. Compressed cylinder handling.**
- a. Always remove regulators from the cylinders before moving.
 - b. Always replace the metal valve cover on the cylinder before moving.
 - c. Move the cylinder with a cylinder dolly made especially for moving cylinders. Make sure the cylinder is securely chained or strapped to the dolly.
 - d. DO NOT lay cylinders on their sides. Laying a cylinder on its side can cause condensed liquids in the cylinder to enter the valve. When the valve is opened the liquid can rapidly volatilize and expand. This can produce potentially explosive conditions.
- 6. Cold storage transport.**
- a. Determine your requirements for transportation of temperature sensitive materials.
 - b. Plan to have dry ice and liquid nitrogen on hand for your transportation needs. Consult with UH Biosafety for transportation of biological samples. Have a refrigerator/freezer at your destination to quickly transfer items into cold storage.
- 7. Before the move think about your storage system and where you are moving.** The best way to store and segregate reactive chemicals is by family groups, making sure that you do not put certain groups right next to each other. For example, store phenols and amines well away from acid chlorides. Inorganics should be separated from organics. The inert or low-reactive materials can be stored in alphabetical order. This "mixed" system can work well and will help you comply with chemical storage requirements. Guidelines for chemical storage with emphasis on secondary containment can be found here: <http://www.hawaii.edu/ehso/wp-content/uploads/2016/07/Chemstorage.pdf>
- 8. During the move be prepared for unexpected events!**
- a. Stay with the containers. Do not let them out of your sight while you are moving them between points "A" and "B."
 - b. Be aware of the surroundings. Watch for doors opening in your way. Warn people of the hazard before they get close to you.
 - c. If it begins to rain while you are outside of a building you will need to find safe cover for the containers.
 - d. Have your spill kit available as well as the phone numbers to call in the event you have a spill along the move. Familiarize yourself with UH chemical hygiene plan "Spill Clean-Up Procedures."

Emergency contacts:

- UH Environmental Health and Safety Office - 808-956-8660, labsafe@hawaii.edu
- Department of Public Safety (DPS) - 808-956-6911