

A Guide to Relocating Hazardous Materials



**University of Georgia
Environmental Safety Division
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The following manual contains safety guidelines and reference information for the physical relocation of hazardous materials and is primarily written for laboratory relocations. These guidelines are based on established policies and procedures drawn from the Chemical and Laboratory Safety Manual, the Responsible Management of Hazardous Waste Manual, the Radiation Safety Procedures Manual and the Biosafety Manual. The concept for this guide was taken from the University of California at Berkeley's relocation guide.

Planning and preparing for your move is the perfect time to update your chemical and equipment inventories, clean out unusable and outdated materials, repair or discard broken equipment, and ensure that a safe work space is created in your new location. The time you spend preparing and organizing may save you time and money by preventing accidents.

If you have questions before, during, or after your move, call the Environmental Safety Division (ESD) at 542-0113. You can also ask ESD staff to work with you during the move. Additionally, many information resources can be found on the ESD web site at www.esd.uga.edu. Information on chemical waste can be obtained on the hazardous material program's web site at www.esd.uga.edu/hazmat/index.htm. Biological safety policies and procedures are available at <http://www.ovpr.uga.edu/biosafety/index.html>.

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Planning Your Move

Who to Notify of the Move

In the planning stages, the following groups should be notified as early as possible:

- Environmental Safety Division (ESD) at 542-0113 – all lab closures must go through ESD.
- Physical Plant Work Order Section (for furniture and equipment) at 542-7456
- the Building Supervisor of the new building
- the Biosafety Office (if biological hazards are involved) at 542-7265
- Central Research Stores at 542-2411

For moves off campus, contact the Environmental Safety Division (ESD) to determine what permits, regulations, and requirements must be adhered to in order to insure a proper move.

Who Will Move Your Hazardous Materials and How

If the move is within the same building or to an adjacent building on campus, you can move properly packaged chemicals and hazardous materials using a good hand-truck, dolly, or cart. ESD should be consulted during the packing process and prior to moves. The Physical Plants' labor pool can be employed to move furniture and heavy equipment. University vehicles must be employed for moves to non-adjacent buildings on campus. The use of private vehicles to transport hazardous materials is prohibited. Central Research Stores will assist in moving chemicals on a case-by-case basis.

All persons handling and transporting hazardous materials must have completed the required chemical specific right to know training. This training is available online at: <http://www.esd.uga.edu/rtk> and is also offered regularly at Training and Development.

Contact ESD Hazardous Material Treatment Facility for information concerning the transportation or shipment of any hazardous material to an off-site location which will require the services of any common carrier by ground or air. Please reference the [Hazardous Materials Shipping procedure](#) found on the ESD website.

The transportation of reportable quantities (RQs) of chemicals as defined by 49 CFR 172.101 (Code of Federal Regulations) requires the use of proper placards on all vehicles used to move the RQs. Tables which list RQs of hazardous chemicals can be accessed at: http://www.access.gpo.gov/nara/cfr/waisidx_00/49cfr172_00.html. Any move of radioactive materials must be arranged through the Radiation Safety Office at 542-0113. Once again, only University vehicles can be used to accomplish the move.

Deciding What Items to Move

At least four weeks (preferably two months) before the move:

- Inspect existing chemicals and equipment in your laboratory.
- Evaluate your relocation site and move only those items that will be of use at the new laboratory. A move is a perfect time to “clean out the attic.”
- Unwanted chemicals that have not been opened can be relocated through the University’s chemical surplus program operated by Central Research Stores.
- Prepare to dispose of opened containers of chemicals that you no longer want, unusable chemicals, and waste chemicals. Prepare these chemicals for disposal as soon as possible because it may take three to four weeks from the time of the initial request for the hazardous materials program to perform a pickup. If a complete lab clean-out is required, contact the hazardous materials program at 369-5706 as soon as possible so that proper arrangements can be made.
- Arrange to give unserviceable equipment and items that are broken or that will not be used to the unassigned property unit (surplus properties) at 542-6983.
- Schedule equipment repair before you move so that only properly functioning equipment is moved.
- Check all equipment for chemical or radioactive contamination.
- Arrange to have radioactive waste removed.
- Assess whether the equipment needs decontamination before moving and/or re-certification after moving (e.g., radioactive contamination of liquid scintillation counters, gas chromatographs or centrifuges, refrigerators with an accumulation of contaminated ice, pathogenic work in a biological safety cabinet).
- Check all those out-of-the-way places chemicals might have been left. Most laboratories have relics from times past that should be identified and disposed of before moving.
- Check storage areas shared by more than one laboratory group to make sure that you have removed all chemicals and equipment.

Radiation Sources

Prior to moving radiation sources to other on-campus locations, your approval needs to be amended in order to add the new location(s) and delete the old location(s). An amendment form is located in the Radiation Safety Procedures manual. This form can be mailed to the radiation control officer at the campus mail building or faxed to him at 542-0108. **No move of radio-active materials can take place without prior permission and checkout inspections.** Contact the Environmental Safety Division’s Radiation Safety Office at 542-0113 to arrange a checkout inspection. To move materials off campus, arrangements must also be made through the radiation control office.

Evaluating the New Facility

- Plan where you will place large items.
- Determine if there are enough electrical outlets and, if not, where they are needed. Extension cords and power strips are not substitutes for properly wired receptacles.
- If hazardous chemicals are to be used, make sure there is a safety shower and eyewash in the laboratory.
- Plan a storage area for your chemicals.
- Plan a designated area for collecting unwanted hazardous materials until their pickup by the hazardous materials program.
- Set aside a safety restraint area (i.e., chains) for gas cylinders.

Moving supplies

Check to see if you have all the supplies and equipment you need to pack. At a minimum, you will need:

- boxes
- absorbent materials (newspaper, vermiculite, etc.)
- magic markers
- a gas cylinder cart
- hand trucks
- bungee cords
- packing tape
- proper personal protection equipment for the chemicals that will be packed
- proper spill cleanup materials in the event of a spill

Preparing Your Move

Mishaps can occur if boxes are dropped and incompatible chemicals interact. Since compatibility requirements are similar for moving and storing chemicals, packing chemicals for the move is a good time to lay the groundwork for segregated storage in your new lab. Check the chemical storage guidelines in the Laboratory Safety Manual for more details (also available online at:

www.esd.uga.edu/chem/chemstorage.htm. Environmental safety specialists at ESD are available to advise you in properly segregating chemicals for packaging. **No chemicals or radioactive materials may be left behind once the move is complete. The use of personal vehicles is prohibited for moving hazardous materials.**

Preparing for Packing

- Wear personal protection equipment appropriate for the materials being handled (splash goggles, lab coat, gloves, closed-toed shoes, aprons, etc.) when packing.
- Label chemical containers with the full chemical names and hazard warnings. Make sure that containers are not likely to leak during transport. Replace containers that are in poor condition. The use of damaged containers is one of the major causes of accidental spills. Move only labeled and non-leaky containers to your new location.
- Make sure that all caps and lids are in good condition. Secure glass stoppers to their containers with tape and provide secondary containment for the containers.

Packing Your Chemicals

- Use sturdy boxes or deep trays to pack chemical containers. Using compatible absorbent materials, cushion the containers to prevent breakage and contain spills. Newspaper is often a good cushion since it is absorbent and does not react with most chemicals, but it is not recommended for oxidizers or organic peroxides.
- Keep appropriate spill control supplies on hand at all times during the packing process.
- Pack boxes so they can be completely closed and taped shut. Boxes should be light enough to be picked up by one person. Do not allow bottle necks or stems to protrude. Boxes that cannot be stacked are not suitable for transport. Boxes must be placed in an upright position. Keep boxes of incompatible materials separated from one another before and during transportation.
- Label each box as you pack. This will make unpacking easier and keep the box from being misplaced. Label all boxes according to general hazard class (e.g., flammable, solid, acid, base, etc.).
- Refrigerated materials don't have to be boxed together but should be separated into hazard classes and handled according to their own special requirements.

Special Materials

Equipment Containing Mercury

Take extra precautions to keep mercury from spilling or leaking during the move. Use secondary containment if possible. Mercury spills can be an expensive hassle to clean up. Notify ESD immediately if a mercury spill should occur.

Radioactive Materials

Radioactive materials must be properly packaged and labeled before the move begins. Arrangements should be made through the radiation control office for packaging and transporting radioisotopes. **No radioactive materials are to be left behind once the move is complete.** Be sure that your new location is properly licensed prior to your move.

Biological Materials

The University Biosafety Office must be contacted prior to the relocation of any biologically hazardous materials. Biohazardous materials must be properly packaged prior to the move. Consult with the Biosafety Office regarding proper preparations.

Biosafety Cabinets

Disinfect the work surfaces of biosafety cabinets prior to their movement. Cabinets used for work involving pathogenic organisms may require paraformaldehyde decontamination prior to being moved. Otherwise, use appropriate surface disinfectants for the agents employed in the cabinet. All biological safety cabinets should be tested and certified for air flow and filter integrity after being moved. Note: biosafety cabinets have a specially designed HEPA filter system and should not be confused with a chemical fume hood. For further information and appointments for certification, consult with the campus Biosafety Office at 542-7265.

Gas Cylinders

Remove the gauge and regulator and secure the valve cap before moving a cylinder. Transport cylinders on a wheeled cart, carefully securing them in an upright position. Secure the label with packaging tape to prevent it from falling off. Never move a cylinder by rolling it across the floor; always use a cart. Never drop cylinders or allow them to strike other objects.

Inventory

- Update your chemical inventory as you pack. If you do not have a written inventory, develop one as you pack. Make an inventory sheet that includes the chemical name and quantity. Contact CRS for more information on the chemical inventory system. Keep an extra copy of the inventory in a safe location outside the lab (e.g., department office) for reference in case of an emergency.
- Use an ID system so that the box can be matched with the inventory should they become separated.

- Check containers for expiration date and signs of corrosion or crystallization. If such degradation has occurred, arrange for disposal of the material through the hazardous materials program.

Unwanted Equipment and Chemicals

Equipment

Recycle, salvage, or dispose of unwanted equipment when possible. Old refrigerators must be emptied, decontaminated, and labeled "FOR LAB USE ONLY."

Decontaminated equipment may be given to the unassigned property unit. Call 542-6983 for information. Liquid scintillation counters and gas chromatographs being surplus must have the radioactive source removed by the Radiation Safety Office prior to transportation. A free release survey must be performed in all licensed laboratories. The final results must be sent to the radiation control office which must also be notified of the intent to transfer or dispose of any radioactive materials.

Chemicals

Label and identify hazards of all known chemicals and compounds. Put new labels on containers with illegible or deteriorating labels. To surplus unopened bottles of chemicals, call the CRS chemical inventory clerk at 542-2411 for assistance in locating others who may want your surplus. For disposal, contact the hazardous materials program at 369-5706. Follow the requirements for labeling, manifesting, and tagging waste as outlined in your UGA Hazardous Waste Manual.

Gas Cylinders

Empty cylinders should be labeled empty. Call the supplier for pick-up. Because of the very high cost of disposal of most toxic gases, these gases should be returned to the vendor whenever possible. Contact the vendor for guidelines on preparing the cylinder for return. Contact ESD at 542-0113 if you have a cylinder with unknown contents or if the manufacturer will not take the cylinder back.

Radioactive Waste

Radioactive waste should be packaged, prepared for disposal, and stored according to the Radiation Safety Procedures manual. If you have any questions regarding radiation safety, or need information on waste packaging or pickup, call the Radiation Safety Office at 542-5801.

Disposal in the Common Trash

Be careful about what you put in the trash.

- Dispose of only non-hazardous materials in the trash. Some non-hazardous items that may go into the trash are sugars and some salts, powdered detergent, protein mixes, etc.
- Do not put broken glass in the trash if it is contaminated by an acutely hazardous or

bio-hazardous material. Seal non-contaminated broken glass in a puncture-resistant container such as a sturdy box to prevent custodians from being injured and label the containers as "Broken Glass." To have broken glass containers disposed of, contact Physical Plant Support Services at 542-7584.

- Do not place clean hypodermic needles and syringes in the common trash. Place them in a sharps container and contact the University Biosafety Office at 542-7265.
- Fully decontaminate empty chemical bottles, remove the caps, and fully deface the label prior to disposal in the trash.
- **DO NOT** dispose of biological waste, hazardous waste, radioactive waste or containers labeled with the international biohazard or radioactive symbol or the words "medical waste," "biohazard," "infectious," or "sharps waste" in the regular trash.

Handling Hazardous Materials During the Move

Most chemical spills and accidents that happen during chemical packaging and transport are preventable. Taking the following precautions can help you to avoid mishaps.

- Keep from knocking bottles against each other by using plenty of packing material.
- Don't lift containers or bottles by the cap.
- Don't try to save trips by stacking boxes too high on carts.
- Don't lift too much.
- When you lift boxes, support them from underneath. Don't lift them up by the sides or the box bottoms may split open.
- Use a cart designed to carry loads.
- Hurrying, not looking where you are going, or acting without thinking can waste time, not save it.
- Use the elevator when carrying containers, not the stairs.

Back Injury Prevention

Although you may not be moving your lab contents personally, you will be packing boxes, moving items out of the way, and stretching over and around objects. To prevent back strain:

- Do not twist while you lift, carry, or deposit a load. Twisting when reaching, lifting, or depositing an object is the main cause of back injuries. Make certain that you are facing the object squarely, whether it is a book on a shelf, a reagent bottle, or a box.
- Do not lift or lower an object above shoulder height. Use a ladder or step stool to position yourself so that high objects are below shoulder height. Ask someone to help you so you can safely hand down the object.
- Do not stretch to pick up or deposit an object. If you must stretch to reach an object in front of you, support your upper body weight by leaning on a desk or table.
- Get as close as possible to the object you are lifting to prevent back strain. Even a light object lifted at arm's length can strain your neck and back, particularly if it is done repeatedly.
- Lift with your leg muscles, not with your back. As you lift, keep the load as close to the body as possible. Keep your back straight as you lift, bending at the knees instead.

Hazardous Materials in Laboratory Equipment

Some laboratory items may contain materials or chemicals that are potentially harmful to human health or the environment. Preparing this equipment for transport requires special handling. Care must also be taken to avoid damaging or disturbing asbestos-containing materials. ESD will inspect items suspected of containing

asbestos. If it is necessary to disturb asbestos-containing materials, contact the ESD asbestos coordinator at 542-0113 before beginning work. Fragile components or components containing materials that may spill if inverted (e.g., a 2-foot glass manometer) must be emptied before moving or specially secured and placed inside of double containment. Any instrument or piece of unsealed equipment containing significant quantities of a hazardous material in liquid form must be drained prior to move. Report to ESD any items you suspect may contain polychlorinated biphenyls (PCBs). The following equipment should be given particular attention during your move due to the hazardous materials that they may contain:

Acid

Large batteries
Power supplies

Mercury

Manometers
Thermometers
Barometers

Solvents

Degreasing equipment
Vacuum pumps

Asbestos

Autoclaves
Ovens
Furnaces
Gloves
Curtains
Incubators

Radioactive Materials

Electron capture detectors
Liq. scintillation sources

PCBs

Hydraulic fluids
Transformers
Capacitors
Immersion oils
High voltage systems
Power supplies

Compressed Gas

Canisters
Internal cylinders and ampules

Moving into the New Location

Chemical Storage Plan For Laboratories

Incompatible materials need to be segregated and stored separately in compatible groups. The UGA Chemical and Laboratory Safety Manual outlines some basics of chemical storage. These guidelines can also be accessed from the ESD website at: www.esd.uga.edu/chem/. Hazard classification information helps in identifying storage groups; however, be aware that there are many materials in the same basic class that have specific incompatibilities. For instance, calcium carbide is listed as a flammable solid yet is incompatible with many other flammable materials. It should therefore be stored separately from other flammables.

Biohazard Storage

Biohazard users must update the Biosafety Office with regard to the location of their new laboratory. Contact the campus Biosafety office at 542-7265 with this information. Biosafety inspections should be performed by the biosafety officer once you have moved into your new laboratory.

Access doors to regulated areas containing biohazards or carcinogens must be posted with warning signs. Contact the biosafety officer if you need a warning sign or are not certain about the type of sign to request.

Radioactive Source Locations

All areas where radioisotopes are to be used must be delineated with a "Radioactive Materials" sticker or sign. New laboratories must be approved via the amendment process prior to placing radiation sources therein.

Closing the Old Facility

Once you have moved out of the old facility, the following must be done:

- Check the entire facility for containers of chemicals. No chemicals or wastes are to be left behind in the old facility once the move has taken place. Any remaining containers must be moved to the new laboratory. Be sure to check common storage areas in the old facility for chemicals and equipment.
- CRS should be contacted regarding the surplus of unwanted, unopened chemicals.
- All work surfaces are to be decontaminated. Areas of heavy discoloration or contamination should be left until ESD can examine them.
- All bench coat covering must be taken up and properly disposed.
- Bench tops must be wiped down with warm soapy water.
- Areas used for research employing biological agents must be wiped down with either alcohol or dilute (1:10 dilution with water) bleach solution. Please consult the UGA Biosafety at 542-7265.
- Freezers must be defrosted and appropriate precautions taken if they were used to store biological agents.
- Yellow caution door signs must be taken down. The laminated caution signs should be cleaned with alcohol and reused or returned to ESD.
- Radiation symbols on all signs must be defaced prior to disposal.
- All radioactive materials, tape, notices, and symbols must be removed.
- Extensive swipes and surveys must be conducted to assure that there is no remaining radioactive contamination.
- If radioactive contamination is found in your lab, contact the radiation control officer for decontamination procedures.
- All storage areas outside the laboratory (including attics and basements) are to be examined for chemicals and property belonging to the principle investigator that is moving. Any property found should be moved into an appropriate location.

Checklist for Opening or Closing a Laboratory

Contacts to be made one month before the move. Check all items that apply.

- The Environmental Safety Division (542-0113) and the building supervisor have been notified.
- The Physical Plant labor pool has been contacted to move large items (542-7456).
- The UGA Biosafety Office has been notified (542-7265) with regard to biological hazards.
- Radiation control has been notified concerning radioisotopes, x-ray machines, and sealed sources.

Closing a laboratory

- The entire laboratory has been transferred to a new user or the department head (see the Chemical and Laboratory Safety Manual, section 2-XIII).
- Ownership of useable unwanted chemicals has been transferred to another party.
- Chemicals destined for waste have been blue tagged and removed from laboratory. This should be done 30 days in advance.
- Radioactive waste has been removed from laboratory (radioisotope users only).
- All equipment and furniture has been decontaminated (please see "Closing the Old Facility")

in “A Guide to Relocating Hazardous Materials” located at <http://www.esd.uga.edu/chem>.

- All equipment that is not to be moved has been scheduled for surplus pickup prior to the move.
- Special arrangements have been made for moving heavy, delicate, or hazardous equipment.
- All chemicals and equipment have been removed from common storage areas or assigned to another user.
- The laboratory has been properly cleaned and is ready for the next user.
- Radiation safety has inspected and decommissioned the laboratory (radioisotope users only). Call 542-0113 to schedule an inspection.
- The laboratory safety group has inspected the laboratory. Call 542-0113 to schedule an inspection.
- The Biosafety Office has inspected the laboratory. Call 542-7265 to schedule an inspection.

Safety tips for moving

- A sufficient amount of spill control supplies are available and accessible during the move.
- Proper personal protective equipment is available, accessible, and being used.
- All packing supplies (boxes, absorbent, markers, carts, hand trucks, tape) are on hand.
- Cylinders are only moved with cylinder dollies designed specifically for this purpose.
- Mercury-containing equipment has been packaged to prevent the release of mercury.
- No personnel will accompany hazardous chemicals in confined spaces (the back of a truck, etc.).

Packing and moving

- Call Environmental Safety at 542-0113 to request the presence of a representative to help with the move.
- All chemicals have been properly labeled as to the contents and primary hazard(s).
- Chemicals are properly packaged (please see “A Guide to Relocating Hazardous Materials” located at <http://www.esd.uga.edu/chem/pub/hcrelocation.pdf>).
- The regulators of all gas cylinders have been removed and cylinders are capped before the move.

Opening a new laboratory

- Call Environmental Safety at 542-0113 and request a laboratory inspection.
- Emergency safety showers are working and accessible within 100 feet of each potential hazard. There should be a green test record attached indicating last year tested.
- Emergency eye washes are working and accessible within 10 seconds of any point in the laboratory. There should be a green test record attached indicating last year tested.
- Fire extinguishers are accessible and have been inspected (yellow tag) within the last year.
- Spill control materials and a first aid kit are present in lab. Flammable storage cabinets are available for volumes in excess of 10 gallons.
- Chemicals are stored according to class and compatibility and not alphabetically.
- All primary and secondary reagents are properly labeled.
- Acids and bases are in chemical resistant secondary containers in approved locations such as corrosives storage cabinets.
- The fume hood(s) has been certified by ESD within the past year.
- All gas cylinders are properly secured (one individual, secure anchor per cylinder). It's recommend that the cylinders be tag “empty, full, or in use”.
- All outlets have ground fault circuit interrupters.
- Power cords on all computers and equipment are not frayed.
- Only UL 1449 or TVSS rated power strips are employed in lab.

- ___ Power strips are used only with computers and computerized equipment.
- ___ Emergency phone numbers (police, fire, poison control, etc.) are posted in laboratory.
- ___ Laboratory postings are in place (door signs, emergency numbers, refrigerator stickers, safety shower and eye wash locations).
- ___ Required training completed and located in the laboratory (Right to Know, Hazardous Waste, Radiation, and Biosafety).
- ___ Chemical inventory and Material Safety Data Sheet (MSDS) located in the laboratory for all hazardous chemicals.