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UNC CHARLOTTE

Environmental Health and Safety

Laboratory Relocation Guidelines

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Table of Contents

This booklet provides chemical and radiation safety guidelines** for research groups relocating or closing laboratories. These guidelines will help you plan and execute an incident-free move of your precision instruments, equipment, and hazardous materials.

Planning and preparing for your move provides you with a perfect opportunity to update your chemical and equipment inventories, clean out unusable and outdated materials, and repair or discard broken equipment—in other words, start your new laboratory off on the right foot.

Think safety! If you have questions before, during, or after your move, please contact the Environmental Health and Safety Office at (704) 687-1111.

[1] ***Note**: For biohazard guidance please refer to: Research and Economic Development.*

Clearance checklist for moving from UNC Charlotte laboratories

Investigators vacating UNC Charlotte facilities or relocating within the University campus are responsible for leaving laboratories in a state suitable for re-occupancy or renovation. The following clearance checklist is to be completed by the laboratory and each applicable item initialed upon completion.

- **General Housekeeping**

Ensure new space is cleared properly for occupancy. Broken glassware and non- contaminated sharps removed from laboratory in rigid, puncture resistant containers. All laboratory equipment and supplies are to be decontaminated before removal from the laboratory (unless departmental arrangements have been made for storage or transfer to new occupants).

- **Radioactive Materials (RAM)**

Survey facility and equipment for contamination by Geiger counter meter, as appropriate, and then complete wipe test. Clean surfaces and equipment if contamination is detected above three times background on Liquid Scintillation Counter. Maintain printout and a completed copy of RAS Form #4 (radiation survey report) and place into the existing laboratory radiation safety records with a copy sent to EHS.

All unused, non-waste RAM must be properly documented on RAS Form #8 (transfer of radioactive materials). Appropriately package and document radioactive waste on RAS Form #7 and call EHS at 7-1111 for waste pickup. Please see the UNC Charlotte Laboratory Decommissioning Procedure for more details on required actions.

- **Chemical Safety**

All laboratory chemicals, including waste, shall be removed from laboratory. Remove all empty bottles and cans. The containers must be empty, the label defaced, and the cap removed before placing into the regular trash. Remove disposable liners/covers from work surfaces. Laboratory bench tops should be washed with soap and water. All debris must be removed from the fume hoods and the surface wiped down.

Run water into all sinks and floor drains to fill traps. It is recommended that several tablespoons of mineral oil be poured in each drain to inhibit evaporation from the trap.

New area checklist for moving into UNC-Charlotte Labs

Investigators moving into UNC - Charlotte lab space should make sure all of the following items have been addressed.

General Conditions

- Hazardous work areas and equipment posted for biohazards, carcinogens, radiation, lasers, sonicators, and UV light, and other potential hazards?
- Compressed gas cylinders secured?
- Is there a minimum of 28" clearance in the aisles?
- Heavy objects stored low? Overhead objects secured?
- Storage shelves and cabinets secured?
- Cabinets and shelves over 48" high secured?

Emergency Equipment

- Emergency eye wash and shower working and accessible within 100 feet of your lab? Are Fire extinguishers accessible within 75 feet (50 feet for labs with flammable liquids)?

Chemical Storage

- Chemical inventory submitted to EHS?
- Chemicals (including waste) segregated by hazard class?
- Corrosive materials stored in low cabinets or shelves below waist height?
- Are flammables correctly stored? Fire codes limit the quantity of flammable liquids stored and regulate the type of container used. In general, no more than 10 gallons of flammable liquids may be stored in the open lab. Quantities in excess of ten gallons must be stored in flammable liquid storage cabinets. Prudent laboratory practice dictates that flammable liquid storage in the lab should be kept to a minimum.
- Different containers labeled for radioactive, chemical, and biohazardous waste?
- Chemical storage shelves have lips or guards?

Fume Hoods

- Are the fume hoods clean and certified?

Radiation Safety

- Are Clean Areas posted properly?
- Are "Caution Radioactive Materials" signs posted on doors to radioisotope labs?
- Has the Radiation Use Authorization been amended to allow radioisotopes at the new location?
- Are waste storage areas appropriately shielded?
- Are all radioisotope work surfaces covered with plastic-backed absorbent paper labeled with radioactive materials caution tape?
- Are all appropriate refrigerators, freezers, fume hoods and equipment items labeled with radioactive materials caution tape?

Things to Consider Before You Move

Begin planning your move, review what you have on hand and dispose of all chemicals you no longer need. This will greatly simplify the moving process.

- Dispose of all hazardous waste. If you have questions or need more help, call the EHS Office at 7-1111.
- Make sure all chemicals you will be moving are properly labeled and that the containers are safe to handle. Repackage or dispose of any chemicals in broken or disintegrating containers.

Other things to consider:

- Some equipment needs to be professionally decontaminated prior to moving and re-certified after a move. Make arrangements for this work in advance to allow contractors sufficient time to meet your schedule.
- Have old or damaged equipment repaired or dispose of it to salvage prior to the move.
- Equipment that could possibly be contaminated with radioactive, chemical or biohazardous material needs to be checked and cleared before moving.
- Plan where equipment will go in your new laboratory. Identify any renovations, such as electrical outlets or seismic restraints, and have them addressed before the move, so you do not have to wait after the move. Contact your facility manager for assistance.
- Are you moving to an off-campus location? If so, special permits might be required. Contact EHS at 7-1111 for special assistance in determining which permits to obtain. Provisions will also need to be made for handling and disposal of hazardous wastes at off-campus locations.
- Contact the EHS at 7-1111 for instructions on packing and moving radioisotopes and radiation producing equipment (x-ray machines, etc.).
- Visit your new lab space to ensure that previous occupants (if any) have not abandoned any equipment or hazardous materials. Contact your facility manager for assistance.

As You Pack and Begin Moving:

- Have boxes, plastic bags, and containers for broken glass, etc., ready and available before you begin.
- Package and move lab items only during normal business hours (8:00 am –5:00pm) to allow for proper emergency response.
- Never transport hazardous materials alone.
- Never transport hazardous materials on public roads.
- Wear appropriate personal protection for the materials being handled (safety glasses or goggles, gloves, lab coat, closed-toed shoes, etc.).

Packing Chemicals to be Moved:

- Wear personal protection appropriate for the materials being handled (safety glasses, lab coat, gloves, closed-toed shoes, etc.). Make sure chemical containers are properly labeled and are not likely to leak in transport.
- Do not move unlabeled ("unknowns") or leaky containers. Unknowns cannot be disposed of until the contents are identified.
- Separate chemicals into compatible groups and provide separate, labeled boxes for each group. This is extremely important to prevent serious mishaps should boxes be dropped or damaged in transport.
- Keep an inventory as you pack. Minimum information should include chemical name, date received, date opened, and quantity.
- Plan for segregated storage in your new lab. See the section on Chemical Storage in the Chemical Hygiene Plan for more details on inventory and chemical segregation.
- Use sturdy, partitioned boxes or other suitable chemical containers. Leave enough room to completely close the box. Do not allow protruding bottle necks or stems. Limit box size to approximately 18" per side, and don't make any one box too heavy to lift.
- Liquid chemicals should be placed within secondary containment to prevent leaks and spills in the event of container breakage.
- Refrigerated materials should not necessarily be boxed together. Separate them into hazard class and handle according to their special requirements.
- Do not move peroxide-forming chemicals that are expired or have signs of crystallization. Peroxide-forming materials should be disposed of according to the manufacturer's requirements unless there is documented peroxide testing being conducted.
- See the Chemical Hygiene Plan for more information.

Moving the Packaged Chemicals:

- Please do not move chemicals outside of buildings, use an approved hazardous material moving company.
- Contact your laboratory director for assistance in setting up a move between University buildings or off campus.
- All liquid chemicals should be transported in secondary containment, whenever possible, to collect any spills or leaks from containers.
- It is illegal to use personal vehicles to transport hazardous chemicals.
- Use proper lifting techniques as described in the Back Injury Prevention section.

Radiation Safety

- Before packaging or moving any radioactive materials or radiation-generating equipment, call EHS at 7-1111 for information and instructions.

- Complete RAS Form #8 to register transfer of radioactive material from the old to new location.
- New lab areas must be properly posted before radioactive materials are placed in the lab. Proper postings include Radiation Contamination Decision Tree, Nuclide Safety Data Sheets and Radioactive Incident Response Guide in addition to warning signage.
- Immediately report all spills of radioactive materials on campus to EHS at 7-1111 during office hours (8:00 am to 5:00 pm), or after hours to the Campus Police at 7-2200.
- The PI is responsible for complete decontamination and removal of radioactive materials from the vacated lab. The PI is responsible for completing and submitting a radiation clearance survey to EHS only after all radioactive materials have been removed. This survey is required **before** any construction is done or anyone moves into the vacated lab space. To facilitate evaluation of your new installation and maintain an accurate inventory, compile and send a list of non-ionizing radiation producing equipment to EHS.

Compressed Gases

- Make sure the valve cap is securely in place before moving any cylinder.
- Transport cylinders on a wheeled cart, carefully secured in an upright position to prevent them from falling. Never move a cylinder by rolling it across the floor.
- Do not leave a cylinder unattended in the corridor. Never drop cylinders or bang them against each other or another object.
- Report all suspected leaks immediately to 7-2200 from a campus phone or 911 from a cellphone.
- If the material in the tank is highly toxic, evacuate everyone from the area.
- Leaking bottles should be put in the fume hood, if possible.
- Empty cylinders should be labeled "empty." Call the University Storeroom for disposal.
- Contact EHS if you have a cylinder with unknown contents.

Hazardous Materials in Laboratory Equipment

Certain laboratory equipment items may contain materials or chemicals which are potentially harmful to human health or the environment. These may include:

Asbestos and/or Mercury
Autoclaves, Ovens, Furnaces, Gloves, Curtains, Manometers, Thermometers, Barometers, Silent Switches

PCBs and Mineral Acids (generally Sulfuric)
Large Batteries, Power Supplies, High Voltage Systems, Capacitors, Transformers, Batteries

Solvents & Compressed Gases
Degreasing Equipment Internal Cylinders, Ampoules, Canisters

- Care must be exercised in preparing this equipment for transport. Items that contain or are connected to damaged asbestos products should not be moved. Report them to EHS at 7-1111.
- Suspect PCB items should also be reported to EHS. Equipment containing any hazardous material, such as large power supplies containing PCBs, should be clearly labeled by the owner prior to transport to the new facility.
- Fragile components, glassware or components which may spill if inverted must be carefully secured or chained.

Common Causes of Accidents

The most common acts that result in chemical spills or accidents during chemical transport are easily avoidable. They include:

- Knocking bottles against each other--the bottom of the containers often drop out.
- Attempting to lift containers or bottles by the cap. Caps may be loose or not fit correctly, causing the container to drop.
- Placing bottles in boxes without adequate packing.
- Trying to save trips by stacking boxes too high on carts or trying to move too much at once.
- Not supporting the bottom of the box while lifting.
- Using a makeshift cart. For instance, stacking boxes on chairs with wheels.

Back Injury Prevention

- Although you personally may not be moving your lab contents, you will be packing boxes, moving items out of your way, and stretching and bending over and around objects. To prevent back strain: **Never** twist, lift an object above shoulder height, stretch or reach to pick up an object. These are the main causes of back injuries.
- Get as close to the object as possible to prevent excessive back strain. Even a light object lifted at arm's length can strain your neck and back, particularly if it is done repeatedly.
- Face the object squarely, whether it is a book on a shelf, a reagent bottle, or glassware.
- Use a ladder or step-stool to bring high objects down below shoulder height and ask for help to safely hand down the object.
- If you must reach for an object in front of you, support your upper body weight by leaning on a desk or table. If possible, move the obstruction out of your way, climb up on it (if it is safe to do so), or ask for help.
- Lift with your leg muscles, not your back. For light objects below waist level, you can counterbalance rather than squat.
- If it is too heavy to move alone, get some help!

Reporting An Injury or Illness

In the event of an injury or illness, immediately notify the Environmental Health and Safety Office at 7-1111. All details of the incident must be fully documented on the accident reporting form and a treatment authorization form must be completed by the employee's immediate supervisor.

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