

# Laboratory Relocation Guidelines

*Environmental, Health and Safety Office, University of California-Irvine*

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move provides you with a perfect opportunity to update your chemical and equipment inventories, clean out unusable and outdated materials, and repair or discard broken equipment—in other words, start your new laboratory off on the right foot.

While it is not possible to cover every situation which might occur, we have tried to anticipate the most likely problems, and provide basic accident prevention guidelines.

**Think safety!** If you have questions before, during, or after your move, please contact your school's EH&S Coordinators or Environmental, Health & Safety at x45073.

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## **Clearance checklist for investigators moving from UCI laboratories**

Investigators vacating UCI facilities or relocating within the UCI 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**

- Notify EH&S of move (4-5073) and ensure new space is cleared 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 laboratory (unless departmental arrangements have been made for storage or transfer to new occupants).

### **Biohazardous Materials**

- Disinfect work surfaces that may be contaminated with biological agents.
- Disinfect all potentially biohazardous waste and dispose of according to procedures for your biosafety level.
- Remove all media and supplies from drawers, shelves, and cabinets.
- Biological Safety Cabinets require professional decontamination prior to moving and re-certification after the move. Contact EH&S (4-8342) for details.

### **Radioactive Materials**

- Survey facility and equipment for contamination by Geiger counter meter or radioiodine survey meter, as appropriate and then wipe test. LSC printout and corresponding map are to be placed into the existing laboratory radiation safety records.
- Clean surfaces and equipment if contamination is detected above three times background. If non-removable contamination is detected, contact the EH&S Radiation Safety Division at 4-6904.
- Appropriately package radioactive waste and call for waste pickup. Fax the waste pickup request form to 4-9180.

### **Chemical Safety**

- All laboratory chemicals, including waste, 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.
- Notify EH&S if chemical fume hoods will be removed.
- 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.
- If perchloric acid has been used in chemical fume hood, contact EH&S 4-5730 for testing.

**Final clearance and survey will be conducted by EH&S when all clearance requirements have been met. Contact EH&S at 4-5073.**

## **Checklist for investigators moving into UCI laboratories**

Investigators moving into UCI lab space should make sure all of the following items are 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?
- Fire extinguishers accessible within 75 feet?

### **Chemical Storage**

- Chemical inventory submitted to EH&S?
- 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?

### **Biosafety Issues**

- Sharps container for broken glass and needles available and labeled?
- Has Biological Use Authorization form (BUA) been amended?

### **Radiation Safety**

- Are Clean Areas posted and approved by EH&S?
- 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?

## **One Month 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.

- Contact your school's EH&S Coordinator to notify them of your move.
  - Biological Sciences- Hamid Arabzadeh, 42942
  - College of Medicine- Chris Younghans-Haug, 44660
  - Physical Sciences- Rama Singh, 42518
- Print the UCI Laboratory Clearance Checklist (attached) and follow the instructions
- Dispose of all hazardous waste. If you have questions or need more help, call the UCI Environmental Compliance Staff at 4-2183.
- 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 (such as biosafety cabinets) 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 by EH&S. Contact EH&S at 4-8342 to make an appointment for clearances. Broken refrigerators and freezers will be picked up by Environmental Compliance as hazardous waste, because of the freon in the units.
- 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 EH&S at 824-5073 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.

## **Three Weeks Before You Move**

- Contact EH&S at 4-5073 for boxes to move chemicals. EH&S will not supply single use supplies, such as packing tape.
- Contact the Radiation Safety Division at 824-6904 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 or EH&S Coordinator for assistance.
- Please notify EH&S of your move by contacting 824-5073. Doing this well in advance will allow the update of records required by granting and regulatory agencies and will permit continued use of materials such as radioisotopes without interruption.

## **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 – 5:00 pm) so EH&S staff will be readily available to help if there is a spill or accident.
- 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.).
- Make sure you remove all hazardous materials. EH&S will survey the vacated space to determine that it is free of hazards. Departments will be recharged to remove abandoned materials from a vacated lab.

**If you are unsure about anything, ask. Safety questions may be answered by a departmental contact your EH&S Coordinator or EH&S:**

- Biosafety – 824-8342
- Chemical Safety – 824-5730
- Fire Safety – 824-4077
- Radiation Safety – 824-6904
- Waste Disposal – 824-2183
- Spills: Radioactive, Chemical or Biological – 824-5073

## **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 your Chemical Hygiene Plan for more details on inventory and segregation.
- Use sturdy, partitioned boxes or other suitable chemical containers. Packing boxes may be borrowed from EH&S. 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.
- Refrigerated materials should not necessarily be boxed together. Separate them into hazard class and handle according to their special requirements.
- Check containers for expiration dates and signs of corrosion crystallization.
- Peroxide-forming materials should be disposed of and not moved to the new laboratory if the container has been opened and is more than six months old, or if it has not been opened and is more than one year old. Always dispose of by the expiration date listed by the supplier. See your Chemical Hygiene Plan for more information.

## **Moving the Packaged Chemicals**

- Please do not move chemicals outside of buildings.
- Contact EH&S 4-2183 for assistance with moving hazardous materials between UCI buildings or off campus.
- EH&S can provide a truck and a technician to assist you for a recharge fee. This fee is normally paid by your department. A carefully planned and well-organized move averages only one to two hours of EH&S time.
- It is illegal to use personal vehicles to transport hazardous chemicals.
- Use proper lifting techniques as described in the Back Injury Prevention section (page 8).

## Packing and Moving Biological Materials

- Biological materials including all etiologic agents, human and animal tissues, blood, blood products, and other body fluids, excreta, etc. must be packaged in both primary and secondary containers.
- Primary containers must be tightly sealed to prevent leakage. Take care to avoid contamination of the container's exterior. Examples of primary containers are test tubes, vacutainers, IV bags, or culture flasks. Surround the primary container with absorbent packing material.
- Use rigid, sealable and break-resistant containers, such as sealable pans, closed metal ice chests, or cardboard or plastic mailing tubes as secondary containers.
- Label primary and secondary containers with the international Biohazard symbol, the type of material and the name and phone number of the PI. Labels should be legible and indelible.
- If moving off-campus, consult with EH&S (x48342) for specific inter/intrastate or international shipping regulations.

## Radiation Safety

- Before packaging or moving any radioactive materials or radiation-generating equipment, call the EH&S Radiation Safety Division at 824-6904 for information and instructions.
- Contact EH&S at 4-6904 to have your **Radiation Use Authorization** amended to allow radioisotopes at the new location.
- New lab areas must be properly posted before radioactive materials are brought in. Call EH&S Radiation Safety Division at 824-6904 if postings are missing from your new lab.
- Immediately report all spills of radioactive materials on campus to EH&S at 4-5073 during office hours (8:00 am to 5:00 pm), or after hours to the Campus Police at 824-5222.
- The PI is responsible for complete decontamination and removal of radioactive materials from the vacated lab. EH&S will conduct a radiation clearance survey 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 (lasers and x-ray generators) to Rick Mannix of EH&S at Zot code 2725.

## **Biohazard Safety**

- Authorized users of biohazardous materials must update their Biological Use Authorization (via amendments) to include their new locations. For the most up to date information call 4-8342.
- Access doors to regulated areas must be posted with warning signs. Call EH&S at 4-8342 for assistance if new locations are not already posted.
- Biological safety cabinets require professional decontamination prior to moving and re-certification after the move. Make arrangements for this work well in advance to allow contractors to meet your schedule. Contact EH&S at 4-8342 for details.

## **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 EH&S at 824-5073 or 911 after hours. 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 UCI Storehouse for disposal.
- Contact EH&S at 824-5073 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**

Autoclaves, Ovens, Furnaces,  
Gloves, Curtains

### **PCBs**

Large Batteries, Power  
Supplies, High Voltage  
Systems, Capacitors,  
Transformers

### **Solvents**

Degreasing Equipment

### **Mercury**

Manometers, Thermometers,  
Barometers, Silent Switches

### **Acids**

Batteries

### **Compressed Gases**

Internal Cylinders, Ampules,  
Canisters

- Asbestos gloves and curtains should no longer be used. Substitute materials are available for most applications. Call EH&S at 824-4817 for more information.
- 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 EH&S at 824-4817.
- Suspect PCB items should also be reported to EH&S. 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.

### **Getting Your New Space Ready**

- Refer to the attached New Laboratory Checklist (page 3) to help get your new space ready.
- Required warning signs (radioactive materials, biohazard, etc.) must be posted in your new lab location. Call EH&S for assistance 4-5073.
- Review the location of safety showers, eyewashes, fire extinguishers, and all available means of exit from laboratories and the building.
- Document your review for inclusion in your “Laboratory Safety Program” training records.

### **Common Causes of Accidents**

EH&S handles and transports hundreds of containers of hazardous chemicals per month. In our experience, 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.

## **Handling Chemical Emergencies**

To get information on Handling Chemical Emergencies, go to your department's Chemical Hygiene Plan.

### **For Emergency Medical Assistance:**

**UCI Campus** - Call 911 or 824-5222

### **For Chemical Spills During Work Hours:**

**UCI Campus** - Call 824-5073

### **For Chemical Spills After Work Hours:**

**UCI Campus** - Call 911 or 824-5222

## **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 Injury or Illness**

In the event of an injury or illness, immediately notify Workers' Compensation at 4-4816 immediately.