

## Guidelines for Laboratory Moves

To achieve a safe and orderly transfer of laboratory space from one faculty member or facility to another, the transfer of hazardous chemicals, etiologic agents and radioactive materials must be conducted in accordance with the following procedures.

### General

- ◇ Review the Chemical/Biological Laboratory Decommissioning Policy, UIC-EHSO-Policy 3.6, available at [www.uic.edu/depts/envh](http://www.uic.edu/depts/envh)
- ◇ Transporting hazardous materials in personal vehicles is prohibited.
- ◇ Hazardous waste may only be moved by the appropriate UIC waste removal service.
- ◇ Vacated laboratories must be decontaminated.
  - Wash chemical contamination with 5% calcium or sodium bicarbonate wash or soap water, as appropriate.
  - Wash biohazard contamination with 10% household bleach solution.
  - Biosafety cabinets must be decontaminated by an NSF 49 Certified Technician. A list of Certified Technician is at [www.uic.edu/depts./envh](http://www.uic.edu/depts./envh) Biosafety Section.
  - Decontaminate and survey for radioactive contaminants.
- ◇ Reduce items to be moved by limiting purchases before the move.
- ◇ Beakers, bottles and flasks covered with foil, parafilm or ground glass stoppers must be repackaged into containers with sealable tops.
- ◇ When transporting within UIC buildings and tunnel system, you may transport hazardous materials on carts.
  - If cart has leakproof sides, materials may be arranged directly on cart.
  - If cart is not leakproof, place materials into secondary containers, i.e. original shipping boxes, dishpans, buckets or tubs.
  - Appropriate spill kit in sufficient quantities must be included on cart during every transport.
- ◇ When transporting by vehicle, surround bottles and jars with packing material. Fasten tops while placing jars in container.
  - Fill shipping container with vermiculite.
  - Minimize spills and breakage by covering at least one half of the tallest bottle and jar.
  - If the vermiculite becomes contaminated, dispose as hazardous waste.
- ◇ Affix packing list (pg. 8) to each shipping container.
- ◇ Private moving companies may have additional packing requirements. Contact the moving companies to review their requirements. Contract with movers that have a Hazardous Materials Security Plan.
- ◇ Corridors must not be used as holding areas or temporary storage; they must be maintained free and clear of obstructions.
- ◇ Compressed gas cylinders may only be moved in gas cylinder carts.

### Potentially Hazardous Chemicals

- ◇ Chemicals may be transferred to incoming researchers if they have signed a Chemical Inventory - CHEMICAL TRANSFER FORM (pg 7). This form must be presented to EHSO during the close-out survey.
- ◇ Only stable chemicals may be transported. Unstable and potentially explosive chemicals, such as dry picric acid or ethers with peroxides, must be disposed through the UIC Chemical Waste Removal program.
- ◇ Chemical compatibility may require a bottle to be packed separately. When unsure, refer to:
  - Labels on chemical containers.
    - Newer chemical containers are color coded for storage and shipping.
    - Striped color codes indicate chemical is incompatible with others in its class and must be shipped separately.
  - Compatibility List, this document page 9
  - Material Safety Data Sheets (MSDSs), available at the manufacturer's website.
  - Bretherick, L, Handbook of Reactive Chemical Hazards; Butterworths: London, 1985.
  - Lewis, L., Hawley's Condensed Chemical Dictionary; Van Nostrand: New York 1993.
  - Contact EHSO when you are unable to locate or interpret the information.
- ◇ Use original DOT approved shipping containers or contact EHSO to borrow 20-gallon and 5-gallon shipping containers.
  - Standard 20-gallon containers are approximately 17-inches high with a 20-inch diameter. They hold six one-gallon bottles or a larger quantity of smaller bottles.
  - Standard 5-gallon containers are approximately 14-inches high with an 11-inch diameter. They are to be used for single gallon bottles or several smaller bottles.
- ◇ Waste solvent containers provided by EHSO will be delivered to new laboratories upon request.

### Etiologic Agents and Other Biohazards

- ◇ Etiologic agents and other biohazards must be packaged in securely closed, watertight containers designed to contain leakage, shock, pressure changes and other conditions incidental to normal handling in transportation.
- ◇ Requirements for packing etiologic agents for transport through the outside are volume-based:
  - Volume less than 50 mL:
    - Primary container (test tube, second vial, T-flask etc.), should be enclosed in a second durable, watertight container (secondary container). Several primary containers may be placed in one secondary container if the total volume does not exceed 50mL
    - The space at the top, bottom and sides between the primary and secondary containers must contain sufficient non-particulate absorbent material (e.g. paper towels) to absorb the content of the primary container(s) in case of breakage or leak.
    - Each set of primary and secondary containers must be enclosed in an outer shipping container constructed of corrugated fiberboard, cardboard, wood or other material of equivalent strength.
  - Volume equal to or greater than 50 mL: In addition to the above requirements,

- Include a shock absorbent material at the top, bottom and sides between the secondary and the outer shipping container. This layer must be equal to that of the layer between the primary and secondary container.
- A single primary container may not contain more than 1000mL of material.
- Two or more primary containers whose total volume does not exceed 1000mLs may be placed in a single secondary container.
- The maximum amount which may be shipped in an outer shipping container must not exceed 4000mLs.
- ◇ The outer shipping container must bear a Packing List (page 8).
- ◇ Shipping with dry ice:
  - Dry ice must be placed outside the secondary container(s).
  - Absorbent material must prevent the secondary container from becoming loose as the dry ice sublimates.
- ◇ Transporting within a refrigeration unit,
  - follow stated packaging requirements
    - Attach Packing List to refrigerating unit.
- ◇ **Recombinant DNA** materials contained in an organism or viral genome must be shipped in accordance with the above regulations.
- ◇ **Select Agents** may not be transferred without approval from the UIC RO/ARO.
  - Documentation must be filed with Federal agencies.
  - A staff member that has received FBI clearance, as required in Title 42 CFR, Part 73, must accompany Select Agents transfers within campus to new secure storage.

### Radioactive Materials

- ◇ Prior to storing or using radioactive materials, the space must be inspected, approved and posted with the proper signs and labels by the Radiation Safety Section. Below mentioned forms are available at [www.uic.edu/depts/envh](http://www.uic.edu/depts/envh) , Radiation Safety Forms link.
- ◇ Submit Form 8.2.157, **Request To Add Lab(s) to a Radiation Project Authorization**, at least one week before relocating.
  - When construction within the lab is complete, a Health Physicist will inspect the lab and issue an authorization amendment that permits use in the new lab(s).
  - A Radiation Safety Technician will install the required signage.
- ◇ Prior to moving Potentially Contaminated Objects:
  - Identify objects to be moved that could be contaminated with radioactive material. Examples include refrigerators, freezers, incubators, centrifuges, bench-top shielding, pipetting devices, vacuum pumps, tabletop centrifuges, test tube racks.
  - Do not remove radiation warning labels without RSS approval. Qualified project personnel must perform a contamination survey. Refer to project authorization documents or consult a Health Physicist regarding survey procedures. If requested and available, a Radiation Safety Technician may assist.
  - Contaminated objects must be fully decontaminated, or at least decontaminated to the lowest possible levels.
  - Objects that cannot be successfully decontaminated must be packed in accordance with the DOT regulations.

- Remove radiation warning labels from uncontaminated objects or include an *Equipment Survey Sign* (form 8.2.214) to indicate to the movers that radioactive contaminants are not present.
- Radioactive materials may be moved in ultra low temperature freezers after packing in accordance with the DOT regulations. Other equipment may not contain radioactive materials.
- ◇ Packaging Radioactive Material
  - The Illinois Emergency Management Agency, (IEMA), requires radioactive materials to be packaged, marked, labeled and transported in accordance with DOT regulations. The DOT established relaxed requirements for limited quantities of radioactive materials that are packaged in such a way that very low radiation levels are detected on the outside of the package. Most radioactive material and contaminated equipment should qualify for the limited quantity rules.
    - Place liquid radioactive material in sealable spill resistant containers. Affix a *Caution Radioactive Material* label or tag to the container. If possible, wrap absorbent material around the container.
    - Place the labeled containers in a strong, leakproof container. Sturdy cardboard boxes with cushioning material will prevent shifting and spillage within the box.
    - Using moderate pressure, wipe a cotton swab or small filter paper over 100 cm<sup>2</sup> of the outside surface of the package. Count the wipe sample in a liquid scintillation counter or auto gamma counter set to detect the radionuclide being shipped. Acceptable limits are less than 100 DPM/100cm<sup>2</sup> (preferably 0 DPM above background).
    - Determine the highest dose rate on all 6 sides of the package using a calibrated geiger counter or ion chamber. The maximum exposure rate may not exceed 0.5 millirem per hour.
    - Complete a *Packing List for Radioactive Material Shipments form* (form 8.2.007) and affix to container. This form includes wording acceptable for limited quantity shipments. When shipping via a motorized vehicle, contact the Radiation Safety Representative to approve packages for shipping. When moving in a cart to another campus room or building, Radiation Safety Representative approval is not necessary.
- ◇ Radioactive Waste
  - Complete waste logs for dry solid radioactive waste containers. Package waste scintillation vials according to instructions on the *Liquid Scintillation Vial Disposal form*, (form RSOP5.1.2A). Dry solid and scintillation vial waste will be removed by RSS during the close-out survey.
  - Remove *Low-level Sewage Disposal Log(s)* from sink areas and place in three-ring Project Authorization Document binder. It must be available for the monthly inventory reports.
- ◇ Close-out Survey Requirements
  - Submit a *Request to Remove Individual(s) or Labs from a Radioactive Material Project Authorization* (form 7.2.130) several days before the close-out survey. The close-out survey will identify corrective actions to be completed before physical control of the laboratory may be leased by others.
  - **DO NOT** relinquish control of old lab space until RSO completes the close-out survey.
    - Project personnel should not remove radiation warning signs, labels or postings without RSS approval.
    - Survey absorbent paper used to cover lab benches and other work surfaces with a calibrated survey meter .
      - Place contaminated paper in the radioactive waste container.
      - Dispose of uncontaminated paper as ordinary waste..

- Only properly packaged radioactive waste may remain in the lab. Bench tops, floors, sinks, hoods and other working surfaces must be accessible.
- ◇ Do not exceed the package-limit quantities listed in the table below. These limits apply even when only one radionuclide is in the package. When several radionuclides are placed in the same package, calculate the fraction of the package-limit quantity for each radionuclide. The sum of the fractions may not be greater than one.

<b>Radionuclide</b>	<b>Liquid (mCi)</b>	<b>Solid (mCi)</b>	<b>Sealed Source (mCi)</b>
H-3 water	1000	NA	NA
H-3 other	2	20	NA
C-14	6	60	1000
P-32	3	30	30
P-33	0.3	3	1000
S-35	6	60	1000
Ca-45	2.5	25	1000
Ni-63	10	100	1000
I-125	7	70	1000
I-129	0.2	2	1000
U-Natural	unlimited	unlimited	unlimited
Th-Natural	unlimited	unlimited	unlimited

## FORMS

### Lab Move Checklist

- Chemical/Biological Lab Close-out checklist completed (Appendix A, Chemical/Biological Laboratory Decommissioning Policy)
- Materials identified for transport packaged by compatibility
- Hazard stickers and Packing Lists affixed to containers of hazardous materials
- Spill Kit identified for Movers
- Hazard labels removed after decontamination was completed
- Hallway outside of lab completely empty, except for fire extinguishers





## CHEMICAL COMPATIBILITY LIST

<b>HAZARD CLASS</b>	<b>MAY BE PLACED IN SAME CONTAINER</b>
INORGANIC ACIDS	sulfuric acid, nitric acid, phosphoric acid, perchloric acid, hydrochloric acid
INORGANIC BASES	ammonium hydroxide, sodium hydroxide, potassium hydroxide, barium hydroxide
FLAMMABLE LIQUIDS	acetone, ethanol, benzene, hexane, acetonitrile, toluene, xylene, methanol, ethyl acetate, ethyl ether, methyl ethyl ketone, pyridine, tetrahydrofuran
OXIDIZERS	potassium permanganate, bromine, ammonium nitrate, lead dioxide, bleach
TOXICS	sodium cyanide, benzidine, mercuric chloride, chloroform, dichlorobenzene, cadmium sulfate
WATER REACTIVES	sodium metal, lithium aluminum hydride, butyl lithium, dimethyldichlorosilane

NOTE: Segregating chemicals into the hazard classes listed above does **not** ensure compatibility. Researchers must be familiar with the characteristics of each chemical packed to ensure compatibility. The following is a list of chemical characteristics and commonly **incompatible** materials.

<b>CHARACTERISTIC</b>	<b>COMMONLY INCOMPATIBLE MATERIALS</b>
strong acid	bases, cyanides, sulfides, water reactives
strong bases (pH >9)	acids, water reactives
flammable liquids (flash pt <200F)	strong oxidizers, ignition sources (heat, fire, electricity)
organics	strong oxidizers
strong oxidizers	reducers, organics
strong reducers	oxidizers, water and aqueous solutions
toxics	strong acids, strong bases, strong oxidizers, strong reducers
water reactives	water and aqueous solutions, oxidizers