

Faculty Responsibilities for Decommissioning Labs

When a principal investigator (PI) leaves or retires from Purdue University, there are several items that need to be addressed during the decommissioning of laboratory space prior to their departure. Most importantly, the evacuated laboratory space must be left in a condition without legacy chemicals or hazardous waste that future occupants are not equipped to handle. The PI is also responsible for the proper and safe removal of all research equipment in that lab space, including the dismantling of large instruments to enable their safe transfer or disposal. Below are steps that should be taken during the decommissioning of laboratory space within the Chemistry Department.

1. Identify PI's who can support capital equipment and instruments. Equipment that was purchased under a Purdue account will need to remain at the University. Once a faculty member has been chosen to receive capital equipment, a transfer of property needs to be submitted to the University, so that the equipment location can be properly recorded by Property Accounting. On occasion, the Department may preemptively acquire and support equipment through the Research Instrumentation Center (RIC).

2. Work with Department to reduce chemical waste. Useful chemicals can be distributed by the following routes:

- (a) Donations to PI's or their group members (to be arranged on an individual basis).
- (b) Chemical giveaway to all members of the department. The PI is responsible for separating salvageable chemicals from those requiring disposal through REM, and setting up a time for an open-house clearance (2–3 hour window). Our Chemistry Safety Coordinator (Paul Bower) can help organize this event.
- (c) Transfer of select chemicals to the Departmental Chemical Archive. This warehousing system is intended for medium-term storage (up to 5 years) of still-useful chemicals and reagents, to be made available to members of the department through an online database. Selections will be determined by available storage space, pre-organized listing of chemicals on personal database, and other criteria for reuse. Transfers should be arranged with the Chemistry Safety Chair (Alex Wei).

3. Shut down chemically reactive systems.

- For decommissioning of refrigerated systems, see Section 5.
- Unhook all power, gas, and water lines, and arrange for return of gas cylinders to Chem. Stores.
- Solvent stills with unquenched metals or drying agents must be dismantled, but still pots that can fit inside a 5-gallon container can be capped and disposed of as a special waste through REM (see Section 4). They should be left in the fume hood.
- Solvent purification and chromatography systems and circulating baths should be flushed dry with proper disposal of residual solvents.
- Equipment handling biohazards (incubators, laminar flow hoods, etc.) must be decontaminated in accord with University Biosafety protocols.

4. Arrange Waste Pick-Up (and forms) for remaining laboratory chemicals. All remaining chemicals must be treated as Hazardous Waste (or Biohazard Waste). REM recommends the following procedure:

- (a) Assign laboratory fume hoods according to waste categories, such as: (i) Organic (non-halo.), (ii) Aqueous and Halo., (iii) Inorganic solids (main-group elements, alumina and silica); (iv) Transition-Metal species (non-pyrophoric), (v) Pyrophoric Materials, Gases and Special Hazards (e.g., HF).
- (b) Transfer all chemical reagents (non-refrigerated) into assigned fume hoods. Solvents can remain in flammable storage cabinets. Labels and contents should be clearly visible. No orange labels are necessary, unless the original label is illegible.
- (c) Transfer all research intermediates into appropriately assigned hoods. Research intermediates should be grouped in sub-categories whenever possible to expedite the waste disposal process. Solid and liquid unknowns should be kept separate. Items can be kept in secondary containers as appropriate, but all labels and contents should be clearly visible-- remove foil and opaque packaging. Sorted groups should be clearly marked with orange hazard labels, and reported as bulk waste for disposal purposes. Solutions can be treated as solvent waste if the solvent can be identified (solutions containing toxic metals, etc. should be reported separately).
- (d) Transfer all contents from refrigerators and freezers to fume hoods in the manner above. All items must be at room temperature for waste disposal; if item must be kept cold for hazard reasons, contact REM to arrange a special waste disposal pickup.
- (e) Fill out standard "Hazardous Material Pickup Request" forms (HMM-001) provided by REM. For solvent and chemical reagents, record each item individually (same chemicals can be grouped). For research intermediates, the minimum request is to fill out one form per category listed in Section 4. Especially hazardous materials (pyrophorics, compressed gases, HF and other extremely corrosive agents) should always be written up as individual items, as they require special disposal methods.
- (f) Coordinate with Paul Bower and REM contact (Eric Johnson, johns371@purdue.edu) for waste inspection.

Important reminders to co-workers helping with the cleanup process:

- Labeled containers must be written up individually. This includes:
 - Original manufacturer's containers
 - Containers that are labeled and not considered research samples
- Solid and liquid unknowns should be separated.
- Amounts and container size must be listed. Unknown samples are the exception, an approximate count of the number of containers is helpful.
- **Original manufacturer's containers DO NOT require an orange disposal tag.**
 - **Never cover up an original label unless the contents are changed.**
 - **Never cover up the label on a cylinder.**
- Bottles should be kept upright whenever possible and not stacked in boxes.

5. Decommissioning of refrigerators and freezers. Refrigerators and freezers that require defrosting should be unplugged for 24 hours with doors kept shut. The drain line should be guided to the nearest drain port on the floor, or a container (tied-on garbage bag) to catch the melt. Standard freezers can then be defrosted using mallets to remove the bulk of the ice; the melt and ice should be treated as aqueous waste and disposed through REM. Residual water can be absorbed with pig mats and disposed accordingly (as solid waste).

6. Final clean-up steps

- **Verify that all hoods and benches are clear, clean, and free of chemicals.**
Everything inside of a hood needs to be removed, and all spills and residues need to be cleaned up.
- **Empty all lab drawers.** The lab must be in sufficient good condition for a new research group to move in. Like chemical reagents, minor equipment can be available to members of the Department through donations and giveaways. The remaining items will be disposed of as glass waste or trash.