



## **Guidance Note: Preparing Chemical Reagents for Shipment to Fitzsimons**

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*This information is for your internal use and as a way of providing consistent information. There is no response required.*

### **Preparing Chemical Reagents for Shipment to Fitzsimons**

#### **Introduction**

Many chemical reagents are regulated by the Department of Transportation (DOT) as “hazardous materials”. Special training and licenses are required to transport hazardous materials on public roads. Researchers and staff will not be authorized to ship chemical reagents in their personal vehicles to Fitzsimons for insurance and liability related reasons. A qualified and insured hazardous materials Lab Packing Contractor (LPC) will be hired to properly segregate, pack and document the chemical reagents that will be shipped to Fitzsimons according to the DOT shipping regulations.

Researchers will offer only useful chemical reagents to the LPC to be packaged and shipped to Fitzsimons. Both hazardous and non-hazardous chemical reagents will be handled and shipped by the LPC to Fitzsimons. The researchers will sort through all their chemicals in the laboratory and discard all the outdated or expired reagents through UCHSC Health & Safety.

The UCHSC Health & Safety Division is providing guidance to researchers in this memo so that they will understand their role in moving the chemical reagents to Fitzsimons.

#### **Sorting Expired, Outdated and Surplus Chemical Reagents for Disposal**

To minimize the cost and risks of moving hazardous materials to Fitzsimons, the Health and Safety Division is requesting that the researchers discard all of their expired, outdated or surplus chemical reagents through the Health & Safety Division (HSD) prior to the move. It will be the researcher’s responsibility to properly segregate their useful chemical reagents from the expired or outdated ones. Since chemical waste cannot be shipped to Fitzsimons, it must be properly disposed through HSD prior to the move. It is important that the personnel read the HSD guidance note called “Potentially Explosive Compounds” prior to sorting through chemical reagents in the laboratory since some chemicals reagents may become unstable or potentially explosive when stored for extended periods of time,.

Do not underestimate the amount of time and labor it will take to properly segregate all the outdated or expired chemical reagents stored in the research laboratory. HSD recommends that laboratories start sorting through all their chemicals at least 60 days prior to move date. Do not forget to check every storage cabinet, shelf, drawer, walk-in cold room, refrigerators and freezers for chemical reagents.



Most expired or outdated chemical reagents should be segregated in a separate area within the laboratory so that Health & Safety personnel may remove these materials for proper disposal (flammable solvents should not be removed from flammable rated storage cabinets).

Researchers should place incompatible chemicals into secondary containers (plastic tubs or pails) so that if a reagent container leaks a dangerous chemical reaction will not occur (please read Health & Safety guidance note “Unpacking Chemicals & Chemical Storage Guidelines”).

Surplus chemical reagents that are in good condition may be given away to other researchers working at the UCHSC campus. Make sure that the surplus chemicals are placed inside a secondary container (plastic pail) prior to being transported in hallways or on the UCHSC campus. If you intend to recycle any chemical reagents to an unknown individual make sure that they are wearing their UCHSC Identification badge before providing them the chemical reagent.

It will not be necessary to submit a “UCHSC Chemical Waste Disposal Form” to Health & Safety to request large stocks (more than 25 containers) of chemical reagents to be removed from the laboratory. Call the UCHSC Hazardous Waste Assistant at (303 724-0127) to set up an appointment to have the outdated chemical reagents picked up.

All chemical reagent containers that are going to be shipped to Fitzsimons must be in good condition, (no cracks or corrosion) be properly labeled, and have a proper fitting lid. If a chemical reagent container is in poor condition, has a cracked lid or is missing its label, it will not be shipped (dispose as waste or transfer to another properly labeled container in good condition).

### **Chemical Unknowns**

Unlabeled or improperly labeled chemical containers are considered “unknowns” and these materials may be discovered while sorting through the chemical reagents in the laboratory. Whenever chemical unknowns are discovered in the laboratory, researchers should attempt to properly identify the contents of the container by employee knowledge. Whenever an unknown cannot be properly identified it must be placed into its own separate plastic secondary container (plastic cup, bucket, pail). It is very important that unknowns have secondary containment to prevent incompatible chemicals from mixing together due to leaking or broken containers.

The Health & Safety Division will characterize the chemical unknowns so that these materials may be properly disposed, however the individual departments will be assessed a fee to cover the cost of characterization and laboratory testing.

### **Flammable Solvents and Potentially Explosive Compounds**

Flammable solvents (alcohols, acetonitrile, acetone, ethyl ether, hexane, many organic solvents) should be stored inside an approved flammable rated storage cabinet prior to offsite shipment or disposal through Health & Safety. Laboratories located at the 4200 E. 9<sup>th</sup> avenue campus are not allowed to store more than ten gallons of flammable solvents (including flammable wastes) outside of an approved flammable storage cabinet.

Because of the lack of fire separations inherent in the building design, each Fitzsimons laboratory module in the open laboratory buildings will be limited to storing a maximum of two gallons of



flammable solvents (including flammable solvent waste) outside of an approved flammable storage cabinet. In addition, the total amount of flammable liquids permitted on an entire floor of an open laboratory building is limited to 450 gallons. Typically, 3-4 laboratory modules may be sharing a single chemical fume hood, therefore flammable storage space under the hood will be limited. Researchers should plan on moving existing flammable storage cabinets and purchasing additional flammable storage cabinets as needed.

It is important that the researchers assigned the duty of sorting through the chemical reagents in the laboratory are familiar with Health & Safety's guidance note "Potentially Explosive Compounds" regarding the proper handling of potentially explosive compounds. Expired peroxidizable solvents (isopropyl ether, ethyl ether, furan, etc.) and potentially explosive compounds (dry picric acid, 2,4-dinitrophenylhydrazine, 2,4,6-trinitrosulfonic acid, etc.) will not be shipped to Fitzsimons. If you discover potentially explosive compounds that are in good condition, submit the UCHSC chemical waste disposal form to Health & Safety so that these materials may be removed in a timely fashion. Whenever unstable, explosive compounds (crystals present, discoloration etc.) are discovered, call the UCHSC Hazardous Waste Manager immediately x40294 for assistance.

### **RNase/DNase & Protease Free Molecular Biology Grade Chemicals**

It will be the researcher's responsibility to properly prepare (wear gloves) all of their RNase/DNase and protease free chemical reagents for shipment by placing them inside sealed clear plastic bags. Clean disposal gloves are worn whenever handling containers holding RNase/DNase and protease free chemical reagents to prevent contaminating the ultra pure contents with enzymes removed from the skin. These molecular grade chemicals are very expensive and it not unusual for a single container to cost at least several hundred dollars.

The Lab Packing Contractors will be responsible for properly segregating, packing, and shipping the RNase/DNase and protease free chemicals, therefore they must be able to read the container's label through the plastic bag. One gallon "zip lock" bags are available at Target, Wal-Mart or grocery stores should be adequate for most containers. The clear plastic bags should be sealed tightly (attempt to force most of the air out of the plastic bag prior to sealing. The seal may fail and the molecular biology grade chemicals may become contaminated if too many reagents are packed into a single plastic bag.

### **Compressed Gas Cylinders (General Air)**

Large compressed gas cylinders will not be shipped to Fitzsimons. All large compressed gas cylinders will be returned to General Air through UCHSC Materials Management. Submit an electronic request form to UCHSC Materials Management [,http://www.uchsc.edu/materials/cylinder.htm](http://www.uchsc.edu/materials/cylinder.htm), to have your large compressed gas cylinders removed from the laboratory. If the compressed gas cylinders have not been removed within three days after submitting the electronic request form, call UCHSC Materials Management at (303 315-0175). Researchers are responsible for removing the regulators from the gas cylinders and replacing the protective cylinder cap. Compressed gas cylinders must be secured from falling over by use of a stand or chain mounted to the wall.



Researchers will be responsible for ordering <http://www.uchsc.edu/materials/mmgas.htm> replacement compressed gas cylinders through General Air and having them delivered to Fitzsimons. Do not order replacement compressed gas cylinders through General Air until the research laboratory has been physically relocated to Fitzsimons.

If you have purchased very costly specialty compressed gases contact Health & Safety's Hazardous Waste Manager (303 724-0294) to determine whether these gases should be shipped to Fitzsimons.

Small compressed gas cylinders or lecture bottles that were obtained from other gas suppliers that are old or outdated will be disposed through Health & Safety as waste. Small compressed gas cylinders or lecture bottles that are new or have a legitimate use will be shipped to Fitzsimons by the hazardous materials moving contractor.

### **Chemical Stock Solutions**

Chemical stock solutions that are useful for further research will be shipped to Fitzsimons by the Lab Packing Contractor. Make sure that all the outdated or expired chemical stock solutions are properly disposed through Health & Safety as waste prior to the move. Researchers also need to submit the inventory for their hazardous chemical stock solutions (hydrochloric acid, sodium hydroxide, ethanol -flammable, 2% sodium azide – toxic, etc.). Chemical stock solutions that are going to be shipped must be properly labeled with a complete chemical name and concentration. In addition, insure that your chemical stock solutions have a proper fitting lid (no cracked lids).

### **Mercury Thermometers, Sphygmomanometer, Blood Pressure Cuffs, Barometers & Other Equipment**

Mercury is a potentially toxic and regulated material. Researchers are responsible for properly segregating all of their mercury containing thermometers, sphygmomanometers, blood pressure cuffs, barometers and other equipment prior to the move. The Lab Packing Contractor (LPC) will be responsible for shipping all mercury containing equipment to Fitzsimons. Discard all expired or outdated mercury containing equipment through Health & Safety as waste.

The Health and Safety Division has a limited exchange program for replacing mercury thermometers with non-mercury thermometers. Contact the UCHSC Compliance Assistant [Debbie.Witt@UCHSC.edu](mailto:Debbie.Witt@UCHSC.edu) for more information regarding the program.

Make sure that mercury thermometers have been removed from heating blocks, ovens, incubators, water baths, refrigerators and freezers prior to the move. Place mercury thermometers in their protective shipping tubes. All useful mercury containing equipment will be packaged and shipped by the LPC.

If you spill any metallic mercury call the Health & Safety Division (303 724-0345) to clean up the spill with a special mercury vacuum cleaner. Keep people out of the spill area to prevent the mercury beads from spreading over a larger area.



### **Tax Free Ethanol (200 proof & 190 proof) Cannot be Shipped to Fitzsimons**

All 200 and 190 proof ethanol purchased at this campus has been obtained through an ATF Alcohol permit issued to University of Colorado Hospital (researchers purchase ethanol at School of Pharmacy loading dock) and cannot be shipped to Fitzsimons. The terms of the University of Colorado Hospital's ATF permit require that all 200 & 190 proof ethanol purchased by UCHSC researchers remain at the 4200 E. 9<sup>th</sup> avenue campus. No 200 proof or 190 proof ethanol (including formulations) may be shipped to the Fitzsimons campus. All 200 proof or 190 proof ethanol remaining in laboratories prior to the final move date must be transferred to other 9<sup>th</sup> and Colorado laboratories or submitted to the Health & Safety Division as chemical waste.

The UCHSC Health & Safety Division will be responsible for distributing tax free ethanol (200 & 190 proof) to researchers at the RC1 research building. A fee will be charged for this ethanol.

### **CDC Select Agents (Exempt Toxins)**

Segregate your exempt Center for Disease Control (CDC) select agent toxins (abrin conotoxin, ricin, saxitoxin, shigatoxin, staphylococcal enterotoxins, tetrodotoxin, T-2 toxin, etc.) from all other chemical reagents to be shipped to Fitzsimons. The Lab Packing Contractor will package and transport your exempt select agent toxins in separate shipping containers.

### **DEA Controlled Substances**

A Drug Enforcement Agency (DEA) license is necessary to purchase controlled substances. Refer to the Health & Safety guidance note "DEA Controlled Substance" for information on this subject.

### **Refrigerated Chemical Reagents and other Supplies**

Refrigerators must be moved empty. All chemical reagents and other related supplies currently stored inside refrigerators must be removed by the researchers prior to the move. All hazardous chemical reagents (flammable, oxidizing, corrosive, reactive, or toxic) that have been refrigerated must be prepared for shipment to Fitzsimons by the Lab Packing Contractors.

All non-hazardous reagents and supplies (agar, bovine serum, cell culture media, etc.) will be removed by the researchers and placed into reusable rigid plastic coolers for shipment to Fitzsimons. It is imperative that the researchers do not place any hazardous chemical reagents (phenol, chloroform, TEMED, acrylamide, hydrogen peroxide, etc.) in the plastic coolers. There are very large penalties for improperly shipping hazardous chemicals. The researchers will be responsible for adding packing material (Styrofoam beads) between the glass containers in the coolers along with the frozen cooling packs to prevent breakage. An outside general moving contractor will transport the plastic coolers to Fitzsimons.

If your refrigerator has been used to store radioactive materials you must also perform smear surveys according to the guidance provided by UCHSC Radiation Safety.



**Health and Safety Division**

If your refrigerator has been used to store infectious agents you must wipe down your refrigerator with an appropriate disinfectant.

Researchers will be responsible for unpacking the contents of the rigid plastic coolers. In addition, the researchers will be responsible for removing the packing materials from the coolers and cleaning up any non-hazardous reagents that may have leaked during shipment.

**Freezer Guidelines (frozen chemicals)**

All hazardous chemical reagents currently stored inside freezers (-20 or -70) must be removed by the researchers prior to the move. All hazardous chemical reagents (flammable, oxidizing, corrosive, reactive, or toxic) that must remain frozen must be prepared for shipment by the Lab Packing Contractors. Frozen tissues and samples may be shipped intact inside the freezer (see the Health & Safety guidance note for the procedure for moving freezers).