# Procedures

## Laboratory Equipment and Supplies

### Laboratory Equipment

* Major equipment that is or may be contaminated with a [Chemical](#_Chemicals), [Biological](#_Biological_Materials), [Radioactive](#_Radioactive_Materials) or other hazardous materials must be decontaminated.
	+ Examples of major equipment include refrigerators, freezers, fume hoods, glove boxes, centrifuges, PCR workstations, microscopes, incubators, ovens, etc.
	+ Biosafety cabinets must be professional decontaminated. Please review the [Biological Materials](#_Biological_Contaminated_Laboratory) section for more information.
* Decontamination methods may include washing with soap and water followed by wiping down equipment with bleach solution (if biological materials were used).
* Submit a [Decontamination Form](https://www.ehs.ufl.edu/departments/research-safety-services/chemical-and-lab-safety/equipment-decontamination/) for each equipment to EH&S for approval. EH&S Equipment Decontamination Form requirements:
* The signature of the person decontaminating the equipment as well as the PI or supervisor. PIs/supervisors will be notified automatically via email.
* EH&S Research Safety will review and sign the form electronically confirming that the decontamination from is appropriate. Once approved by EH&S, your Department’s property custodian will receive a copy via email
* Proceed with repair, move, pick up, etc.
* For unwanted equipment (either broken or functioning), the department’s property custodian can submit a pickup request through *MyAssets*.

### Laboratory Supplies

Clean, non-contaminated laboratory supplies (lab glassware, plastic ware, unused gloves, etc.) should be offered to other researchers when possible. Unwanted items that have not been contaminated by chemical, biological, radiological, or other hazards may be disposed of in the trash. All supplies that may be potentially contaminated must be handled as either Chemical, Biological, or Radiological waste. Refer to the appropriate sections below on how to package and label your waste.

## Chemicals

### Moving Chemicals on UF Campus

Only chemical bottles in good condition with readable labels may be moved. Damaged containers and those without labels must be disposed of through EH&S Hazardous Waste Management. EH&S may be able to loan a limited number of DOT-approved containers and vermiculite. Contact hwm@ehs.ufl.edu.

Packing chemical bottles:

* Adequate personal protective equipment and spill control material must be available in the event of a spill. Staff must be trained in spill control procedures and proper use of PPE.
* Pack boxes by chemical compatibility. Non-compatible chemicals must be packaged in separate boxes.
* Dry and liquid chemicals must be packaged separately.
* Label all boxes with hazard class(es).
* Limit each box weight to 40 pounds.
* Liquid chemicals should be moved in a leak-proof container, or boxes filled with vermiculite.
* Plastic or unbreakable containers of non-liquid chemicals do not require absorbent material.
* Complete an inventory of all chemicals to be moved.
	+ Include chemical names, number of bottles, and volume/weight of each bottle.
	+ Complete a separate inventory sheet for each box; uniquely label the box and inventory sheet.
	+ Provide a copy of the inventory to the moving crew and in each box.

If vehicle transport is needed, chemicals may be moved in a state vehicle and within campus boundaries only with the written approval of a transport plan submitted to the EH&S Chemical and Radioactive Waste Disposal Program (HWM@ehs.ufl.edu).

EH&S must be notified of the movement of these chemicals prior to the start and at the completion of the move. Once notified, EH&S will complete the transfer of chemicals from the originating lab’s chemical inventory to the receiving lab’s chemical inventory.

### Compressed Gas Cylinders

* Close all gas valves, remove all gas connections, replace cylinder caps, and ensure the cylinder is secured with a bench holder, wall chain, or stand.
* Return all rented cylinders to suppliers, unless being transported to a new lab space on campus. If cylinders are non-returnable, consult the EH&S Chemical and Radioactive Waste Disposal Program for disposal.
* Any compressed gas cylinder being moved must be secured on a cart or rack. Please contact EH&S Chemical and Radioactive Waste Disposal Program for assistance if you will need to move cylinders by state vehicle at 352-392-8400.
* Small lecture bottles should be packed as chemical bottles.

### Unwanted Chemicals / Hazardous Waste

**Under no circumstances may any regulated chemical be disposed of through the sanitary sewer or regular trash.**

* Determine which chemicals are usable and if another party is willing to accept the materials. The accepting party must provide consent for receiving the chemicals. Chemicals cannot be left behind for an incoming PI that has not evaluated the materials and provided consent to receive it.
* If a recipient cannot be found, the chemicals must be disposed of properly through EH&S Chemical and Radioactive Waste Disposal Program.
	+ Submit a request for waste pick up through [Chemical Waste Pickup Form](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/) . **A complete inventory including number of bottles and their listed weights/volumes is required.** Only materials included on the list will be picked up.
	+ All chemical waste containers must be properly labeled, sealed, and handled per [EH&S Laboratory Chemical Waste Management guidelines](http://www.ehs.ufl.edu/programs/chemrad_waste/lab-chem-waste-mgmt/). Contact HWM@ehs.ufl.edu for waste containers and labels if needed.
	+ Place all properly packaged waste in an easily accessible, central location in the lab. Check all cabinets and drawers for stray chemicals.
	+ Update the Gator TRACS inventory to reflect disposal of the chemicals.
	+ Please allow at least 2 weeks for EH&S to pick up unwanted chemicals.

### Laboratory Chemical Storage

* Check all refrigerators, freezers, fume hoods, benchtops, and storage cabinets (above and below) for chemical containers and samples.
* Abandoned or unknown chemicals must be treated as described above (Unwanted Chemicals / Hazardous Waste).
* **Abandoned chemicals may result in fines from the EPA up to $71,000 per violation.**
* Wash down all surfaces with soap and water.

### Chemical Fume Hoods

* Remove and decontaminate all equipment stored in the fume hood.
* Remove all chemicals stored in the fume hood.
* Wash all fume hood surfaces and countertops with soap and water.
* If perchloric acid, hydrofluoric acid, or other acid digestions were performed in the hood, please contact EH&S Laboratory Safety Program for guidance on cleaning the fume hood.
* If Radioactive Materials were used in the hood, please contact Radiation Safety at rso@ehs.ufl.edu.
* Close fume hood sash.
	+ If the sash will not close completely, please submit a Work Order through Facility Services or IFAS Facility Planning & Operation.
* Submit [Decontamination Form](https://www.ehs.ufl.edu/departments/research-safety-services/chemical-and-lab-safety/equipment-decontamination/) to EH&S Research Safety.

## Biological Materials

### Biosafety/IBC registered projects

All registered projects must be closed out with the Biosafety Office, please contact Biosafety at BSO@ehs.ufl.edu.

Biological materials associated with your registered projects must be:

* Properly inactivated and disposed of before departure.
* Shipped to another institution; or
* Transferred to another UF PI who is, or can be, registered with the Biosafety/IBC for these materials.

### R**equirements for transport of Biohazardous materials within the UF campus**

Personnel transporting biological materials shall be appropriately trained, including spill handling, decontamination, and packaging of clean up materials. Bloodborne Pathogen training is mandatory for those transporting human blood/OPIM.

* All agents must be kept in sealed container(s), clearly labeled with the contents.
* Double contain the items in plastic leak-proof containers within sturdy outer packaging.
* Include absorbent material within the containers as well as padding to minimize movement of the container(s) within the outer packaging.
* Wipe the outer container with an appropriate disinfectant before removing it from the laboratory.
* Put your name and contact information on the package and apply a biohazard sticker.
* Limit transport through public or highly-traveled areas and use freight elevators when possible.
* If a vehicle must be used, please contact the EH&S Biosafety Office for instructions. Note that materials classified by the US Dept. of Transportation (DOT) as hazardous materials (“dangerous goods”) may not be transported in a personal vehicle or public transportation.

### Disposal of **Infectious or Potentially Infectious Waste**

Laboratory waste containing infectious, potentially infectious, or recombinant organisms must be inactivated PRIOR to leaving the facility. Note that chemically contaminated material (i.e. DNA extraction tubes contaminated with phenol/chloroform, specimen cups containing formalin, chemically contaminated gloves, etc.) must be handled as chemical waste.

For solid waste:

* Collect in leak-proof, covered container lined with a red autoclave bag.
* Label bag with the date put in use, PI name, location, and telephone number.
* Autoclave using appropriate vacuum/gravity cycle.
* Dispose lined biohazardous waste box (Stericycle box).
* Instructions for packaging biomedical waste can be [found here](http://webfiles.ehs.ufl.edu/packaging_bio_waste.pdf).
* Filled or partially filled biological waste containers and boxes must not be held for more than 30 days.
* **The preferred method is steam sterilization (autoclaving), but chemical inactivation (e.g. treatment with 1:10 solution of freshly prepared household bleach) may be appropriate in some cases.**

For liquid waste (void of chemical or radioactive hazards):

* Prepare solution containing 1 part bleach to 9 parts liquid waste.
* Allow mixture to sit for 30 minutes.
* Pour down the drain.

#### **Non-infectious Biological and Recombinant/Synthetic nucleic acid waste (BSL-1)**

* Collect in clear autoclavable bag.
* Autoclave using appropriate vacuum/gravity cycle.
* Once autoclaved, dispose of in regular trash.
* The preferred method is steam sterilization (autoclaving), but chemical inactivation (e.g. treatment with 1:10 solution of freshly prepared household bleach) may be appropriate in some cases.

#### **Sharps**

* Sharps are instruments that are intended to cut or penetrate the skin and include metal lancets, scalpel blades, needles, or syringe/needle combinations. These must be placed in red, hard plastic sharps boxes, even if unused.
* If these sharps are contaminated with infectious, potentially infectious, or rDNA materials, the sharps box must be steam sterilized before disposal.
* Close the sharps box when it is ¾ full. Do not store closed sharps boxes for more than 30 days. Sharps boxes must be placed in the red liner-protected, cardboard biohazardous/biomedical waste box. Off-campus UF facilities should contact the Biosafety Office at 352-392-1591 for guidance on this category of waste.
* Biological waste items that can cut, but are not intended to do so, should be disposed of in a manner that prevents harm; a bag does not provide adequate protection. Examples of these materials include fragile glass, glass slides and coverslips, razor blades, pipettes, and pipette tips.Options for their disposal include a pipette tip box or media bottle placed in a biohazard bag.
* A plastic sleeve that will hold serological pipettes together in a bundle may be placed in a biohazard bag.

Boxed, sleeved, or bagged items containing infectious, potentially infectious, or r-DNA material must be inactivated before disposal.

#### **Mixed radioactive/biological waste or Mixed Chemical/Biological Waste**

The infectious, potentially infectious, or r-DNA component(s) of mixed waste must be inactivated prior to its collection by the Hazardous Materials Management team.

* In general, steam sterilization must be avoided.
* Chemical inactivation requires confirmation of chemical compatibility of agents prior to use. Use extreme caution!Please contact Chemical and Radioactive Waste Disposal (392-8400) for guidance regarding particularly hazardous chemicals and inactivation of biohazardous waste in mixed waste.
* **Note that the chemical components of mixed waste may inactivate the biohazard components (e.g. as in the case of fixative solutions).**
* **Tissues/specimens in liquid preservatives require that the tissue and liquid be separated, and the liquid disposed of as a hazardous (chemical) waste through EH&S. The preservative may not be poured down the drain.**

#### **Animal Carcasses and Other Animal Material**

* Animal carcasses and other animal material that may contain infectious animal or human pathogens require containment (bags and sealed containers labeled with the biohazard symbol) before transport to Animal Care Services or the Veterinary Medicine disposal facilities.
* No animal carcasses or tissue pieces shall be disposed of as regular trash or through the biomedical/biological waste box.
* Material obtained from the Animal Science slaughter facility may be returned there for disposal if not contaminated with infectious, potentially infectious, or r-DNA material.
* The disposal of animal carcasses and other animal materials and tissue shall be through Animal Care Services or the Veterinary Medicine disposal devices only.

Please contact Animal Care Services (392-9210) or the EH&S Biosafety Office (392-1591) for further information.

### Biological Contaminated Laboratory EquiPment

Please contact the Biological Safety Office for guidance on moving refrigerators and freezers with biological materials still inside. Projects operating at BSL2+ or BSL3 must contact the Biosafety Office for specific requirements.

#### Refrigerators, Freezers, Centrifuges, and other BioHazard labEled equiPment

* Clear all equipment of biological materials and prepare for transportation to the new lab or disposal.
* Unplug all electrical equipment, and empty of any water.
* Prepare a 1:10 solution of household-grade bleach in either a spray bottle or bucket.
* Wear appropriate PPE for the Biological Safety Level of the material handled.
* Wipe or spray all surfaces, starting on the outside of the equipment and working towards interior surfaces.
* Allow appropriate contact time of at least 30 minutes.
	+ For non-bleach safe surfaces, remove excess bleach with 70% ethanol.
* Remove or deface all biohazard labels.
* Submit [EH&S Decontamination Form](https://www.ehs.ufl.edu/departments/research-safety-services/chemical-and-lab-safety/equipment-decontamination/) to EH&S Research Safety.

#### Biological Safety Cabinets

1. All Biological Safety Cabinets must be professionally decontaminated with an approved gas/vapor method before moving, surveying out/disposing of, or repairing contaminated plenums within the cabinet.
	1. Contact Precision Air Technologies at 352-332-4653
2. Submit [EH&S Decontamination Form](https://www.ehs.ufl.edu/departments/research-safety-services/chemical-and-lab-safety/equipment-decontamination/) to EH&S Research Safety.

## Radioactive Materials

### Transfer or Disposal of Radioactive Materials

* If the radioactive material is to be transferred to an approved user at UF, transferred to another licensee, or returned to the manufacturer:
	+ Contact the Radiation Safety Office (RSO@ehs.ufl.edu or 352-392-7359).
* All radioactive material must be disposed of as radioactive waste through EH&S Chemical and Radioactive Waste Disposal Program.
* EH&S Chemical Waste and [Radioactive Waste Pickup Request forms](https://www.ehs.ufl.edu/forms/hazardous-waste-forms/) are available online and require a GatorLink ID login.

### Radiation Producing Devices

Notify the Radiation Safety Office if any radiation producing devices or major components will be moved, sold, transferred, or disposed of. Failure to do so may qualify as a breach of registration requirements with the State of Florida Department of Health.

* **On-Campus Transfers:** Devices shall not be transferred from one area to another or to another individual without the prior approval of the Radiation Safety Office as all approvals for radiation-producing device are based on the supervising PI’s working area and proposed research.
* **Off-Campus Transfers:** Radiation producing devices shall not be shipped or transferred to, or from any University facility, or outside organization without prior approval of the Radiation Safety Office.
* **Disposal of Radiation-Producing Device:** Prior to the disposal of obsolete or irreparable equipment, the Radiation Safety Office must be notified to amend inventories.

### Decontamination Procedure

Do not decontaminate the lab until all radioactive materials have been removed from the lab through transfer or disposal.

* Perform a swipe survey (and if appropriate, a radiation level survey for gamma emitters) of all former storage and use areas within the laboratories.
* Decontaminate all areas measuring more than 100 dpm/100cm2.
	+ Equipment that cannot be decontaminated must be disposed of as radioactive waste.
* Perform a new swipe survey (and if appropriate, a radiation level survey for gamma emitters) for all decontaminated area.
	+ Continue decontamination and swipe survey cycle until all use and storage areas measure less than 100 dpm/100cm2.
* Schedule an official Closeout Survey with Radiation Safety.
	+ Radiation Safety Personnel will remove all radioactive materials posting.

## Controlled Substances

The U.S. Drug Enforcement Administration (DEA) issued controlled substance registrations for individual researchers, which prohibit both the abandonment and transfer of unwanted controlled substances.

**NOTE: Abandonment of a controlled substance can be a criminal violation of DEA regulations.**

### Lab relocating within the University of Florida campus

Labs are required to send an addendum to both the Florida Department of Business & Professional Regulation (DBPR) and DEA with the new locations and expected move date. Controlled Substances **CANNOT** be moved until the DEA Division Control Program has approved the new location.

### Principal Investigators moving from UF to another university

Since the DEA registration for research does not allow interstate or intrastate movement of controlled substances, all registered drug products must be disposed of prior to the lab’s move date. The Principal Investigator is responsible for notifying both the DEA and any relevant State regulatory program about their planned move.

### Disposal of controlled SubstanceS

* The PI disposing of the Controlled Substance must have a current DEA Registration in their name – this includes retiring Principal Investigators.
* Contact EH&S Lab Safety to obtain information on proper disposal methods. A list of reverse distributors can be found on our [website](https://www.ehs.ufl.edu/departments/research-safety-services/chemical-and-lab-safety/lab-safety/controlled-substances-pharmaceutical-products/).
* The PI **MUST** retain records of disposal for at least two years. The records will require the date, manner of disposal, and quantity of substance for disposal.

## Shared Areas

All shared space (laboratories, equipment rooms, storage areas, cold rooms, dark rooms, autoclave rooms, etc.) must be cleared of materials and cleaned by the departing staff. Otherwise, the Department Chair or another PI must assume responsibility for the space and its contents.

# Contact Information

* Gator TRACS: gatortracs@ehs.ufl.edu
* Chemical and Lab Safety: Labsafety@ehs.ufl.edu; 352-392-1591
* Biological Safety: BSO@ehs.ufl.edu; 325-392-1591
* Radiation Safety: RSO@ehs.ufl.edu; 352-392-7359 or 352-392-1589
* Chemical and Radioactive Waste Disposal: HWM@ehs.ufl.edu; 352-392-8400