Moving Your Laboratory Safely

Contents

Moving a laboratory and its contents is a complex operation. The Division of Occupational Health and Safety (DOHS), Division of Radiation Safety (DRS), and Division of Environmental Protection (DEP) developed this guide to help you plan to pack and move your lab safely. During the moving process, our staff can help you minimize delays, protect property against damage or loss, and reduce the potential or injuries.

Large moves may involve a contracted relocation service provider, or move coordinator. If your move involves a move coordinator, they will help ensure appropriate coordination of all events. Although decontamination and laboratory clearances remain the same regardless of the scale of the move, details such as chemical relocations or the type of boxes or totes to use will depend on the move contracts.

The first step in preparing for a move is to contact the following **at least 6-8 weeks prior to your move:**

Safety and Occupational Health Specialist
Division of Environmental Protection
Area Health Physicist

Planning and preparing for your move is the ideal time to update your chemical and equipment inventories, clean out unnecessary or outdated materials, make repairs, and ensure that effective safety measures are set in place for your new space.

The recommended schedule to prepare for your move and obtain the necessary clearances is summarized in the moving timeline on Page 6. If you have any questions before, during, or after your move, please call DOHS, DEP, and DRS for further assistance and guidance or visit us on the web:

Division of Environmental Protection (DEP)
301-496-7990
http://orf.od.nih.gov/EnvironmentalProtection/Pages/default.aspx

Division of Occupational Health and Safety (DOHS)
301-496-2346
http://www.ors.od.nih.gov/sr/dohs/Pages/default.aspx

Division of Radiation Safety
301-496-5774
http://drs.ors.od.nih.gov

Important Phone Numbers and Resources

Call:	*Important Phone Numbers*
301-496-5774	Division of Radiation Safety
301-496-7990	Division of Environmental Protection
301-496-5711	Division of Personal Property Services
301-496-2346	DOHS Safety Operations & Support Branch
301-496-4294	DOHS Community Health Branch
301-496-3457	DOHS Technical Assistance Branch

Call:	***For Information about:***
301-496-2346	Biological/chemical/physical hazards
301-496-3457	Biological safety cabinets
301-496-2346	Chemical safety cabinets
301-496-4710	Chemical Waste Pickup
301-496-7990	Chemical moving service
301-496-2346	Decontamination-biological and chemical
301-496-5774	Decontamination-radiological
301-496-3457	Ergonomic evaluations
301-496-7990	Hazardous, solid and mixed waste management
301-496-2346	Human pathogen registration information and updates
301-496-4294	Pest control services
301-435-8000	Maintenance Engineering Services Help Desk
301-496-2346	Medical pathological waste (MPW)
301-496-5774	Radiation Safety
301-496-4451	Radioactive Waste Pickup
301-496-3277	Radioactive Materials Moving Services
301-496-2346	Recombinant DNA registration information and updates
301-496-7990	Recycling
301-277-3300	Relocation Services*****
301-496-2960	Select Agent Information
301-496-5711	Surplus Equipment

*** Contact your relocation coordinator for specific relocation service contact.**

Website:	***Shared Resources***
https://stuff.nih.gov/Home.aspx	Posting excess laboratory equipment, glassware, offices supplies for use by another NIH office or lab
www.niaid.nih.gov/labsandresources/resources/Pages/default.aspx	Repository for biological materials

Necessary Forms	**Website/Location**
NIH Form 649 Report of Property Transfer	http://forms.nih.gov
DEP Chemical Move Services Form	Building 13, Room 2S11
NIH Form 2683 *Certification that Equipment is Free From Hazards*	Available at NIH Self-Service Stores

General Guidelines for Any Move

Less is more: Minimize the amount of materials to be moved!
Don't move more than you need! This includes outdated or broken equipment, chemical, biological, or radioactive supplies and materials. Now is a good time to take stock and pare down. Properly dispose of your decontaminated surplus equipment through the Division of Personal Property Services.

Consider using shared resources databases. These online databases facilitate the exchange of research and office resources among intramural research labs and other NIH offices. Items such as laboratory equipment, chemicals, plastic ware, glassware, and office supplies may be listed and made available through https://Stuff.nih.gov/Home.aspx. To locate repositories for biological materials, visit: http://www.niaid.nih.gov/labsandresources/resources/pages/default.aspx .

Don't take pests along when you move!
Prior to your move, contact the Community Health Branch (CHB) of DOHS to arrange for a pest management survey of your laboratory or office space. The CHB staff will perform any necessary pest management services.

Don't move waste materials!

All waste must be properly disposed of prior to the move. Never dispose of hazardous chemical, biological, or radioactive wastes down the sink, in regular trash, or in the disposable labware or broken glass containers. Also, do not take any waste containers, even empty ones, to your new location.

Consult the NIH Waste Disposal Guide which provides guidance on safe packaging and disposal procedures for chemical, radioactive, medical pathological waste (MPW), multi-hazardous waste, and general wastes. This is available online at:
http://orf.od.nih.gov/EnvironmentalProtection/WasteDisposal/Pages/default.aspx

Pack safely!

- Read the *Moving Your Lab Safely Guide* before you begin to pack and move.
- Budget your time. Rushing often leads to injuries or property damage, so leave enough time to accomplish all the tasks needed.
- Cardboard boxes for packaging equipment, books, and supplies are available in several sizes from the NIH Self-Service store and recycled boxes are located in numerous locations which can be reassembled.
- Only use filament reinforced tape to assemble boxes. Other types of tape (cellophane, masking, or autoclave tape) are not strong enough to properly secure boxes.
- Always wear your personal protective equipment and appropriate protective clothing.
- Work with a buddy. Do not work alone!
- Do not store in the hallways or other public areas any materials, boxes, or equipment associated with your move. This creates a fire hazard.
- If you are unsure about anything, ASK! Call your Safety Specialist at DOHS.

Basic Equipment

Prior to relocation, all large pieces of equipment must be appropriately decontaminated and labeled with a "Certificate that Property is Free from Hazards" (Appendix 4) label completed by a person qualified to safely decontaminate the equipment. Some equipment must be serviced and packed by the manufacturer or manufacturer's representative prior to relocation, such as HPLC equipment and ultracentrifuges.

Incubators and refrigerators need to be emptied prior to being moved. The packing of the refrigerator will be coordinated by the chemical move vendor. The material will have to be moved to a temporary refrigerator prior to the move so that the refrigerator can be thoroughly cleaned. All water jacked incubators will need to be drained. Consult the manufacturer's instructions for your incubator for details on how to do this.

Freezer moves will be coordinated based on whether the final destination is your lab, High-density storage or Freezer farm.

1. If the contents of your freezer are moving to the high-density freezer farm, the transfer of the contents will coordinated by the vendor of the new storage units.

2. All other freezers moving will be prepared so that the contents remain in place and the move will be coordinated by the move vendor.

3. If your freezer is part of a combo refrigerator/freezer the contents of the freezer compartment will have to be transferred to dedicated freezer unit that is moving.

The oil in **vacuum pumps** will need to be drained and disposed of through NIH DEP prior to your move.

Make sure that all surplus equipment is removed prior to your move. Utilize the down time of your move to repair damaged equipment (i.e. frayed wires, missing guard). All bench top equipment will need to be disconnected, unless it is being handled by a specialty vendor. Cords and other small items that are disconnected can be placed in plastic bags and labeled. These items would then go into a plastic crate. Place larger pieces of equipment on the bench top where they will be protected. They will then be loaded onto equipment carts by the move vendor. Small items of equipment can be wrapped and placed into crates.

Consult the Chemical, Biological, and Radioactive Materials sections of this manual, respectively, for further guidance or contact your Safety Specialist.

Supplies

Supplies that are already in boxes larger than 8" square should be labeled with their new destination and placed on shelves. These items will be packed by the move vendor during the move. Smaller items should be packed into crates, commercial bins, or onto carts.

All glassware will be packed by the move vendor the week prior to your move date. It is critical to identify what is moving and its new destination.

It is important to make sure that all drawers and cabinets are emptied and clean. ***NIH Safety will not clear a lab that has any supplies remaining in it.***

Tracking what you pack

As you pack your crates and label boxes, you should keep a running inventory of the crate number and what is packed in the crate along with a running number of crates used. When the crates are moved across, we have the ability to track all items that are listed on your inventory and moved.

Tips for after you move

- Store heavy items low to the ground
- Do not store hazardous materials above eye level
- Properly segregate and store hazards to avoid unhappy surprises

Moving on campus and moving off campus
Department of Transportation (DOT) regulates off-campus transport of chemical, biological, and radiological materials. Work with the moving contractor (Refer to the Relocation Services contact) to ensure adherence to the appropriate regulations.

All outdated, unlabeled or unwanted chemicals should be removed from your lab prior to the start of your move. Refer to the moving timeline in this guide. Material in unmarked/ unlabeled containers or material in compromised containers will NOT be moved. Place a clear and visible note on the container with the word "Unlabeled" and contact the Chemical Waste Pickup contact prior to your move date for pick up.

Ergonomics: Back injury prevention
Back pain, such as from heavy lifting, is one of the most common work-related injuries. Applying ergonomic principles can help prevent work-related back pains, injuries and help to maintain a health back. Know how to protect your back when lifting!

- ✓ Maintain the natural curves in your back.
  - These curves provide strength and support for your back. This is especially important when lifting for long periods. Keep your head up.
- ✓ Tighten your abdominal muscles before you lift.
  - They help support he spine. Don't hold your breath while tightening your muscles!
- ✓ Plan ahead before lifting and test the weight you are lifting.
  - Test the weight first. Many injuries result from poor planning and overexertion.
  - Use dollies or appropriate cards for heavier loads.
- ✓ Share the load! If a load is too heavy, ask for help.
  - Pick one person to coach the lift – this way, you lift and lower at the same time.
- ✓ Keep objects close!
  - A 10-pound bag of groceries can put 100 pounds of pressure on your lower back. Holding things away from your body greatly increases this pressure.
- ✓ Pivot with your feet when lifting and moving objects – DON'T TWIST!
  - Turn your whole body instead of twisting your back – especially if you are holding something heavy. Your nose should always be in line with your toes.
- ✓ Lift with your legs by keeping your back in a neutral position.
- ✓ For overhead loads, use a step stool until the load is at least chest level (preferably waist height).
  - Pull the object close to your body and then lift. Remember to maintain those curves in your back – use your arms and legs to do the work.

There are several necessary steps which need to be carried out at different times prior to your move in order to address chemicals, biological materials, and radioactive materials that may be in your laboratory. This guide will provide general information pertaining to the packing and moving of these materials. Clearances are necessary for *all laboratories* regardless of types of materials being moved. The following timeline and checklist provide a recommended schedule for contacting the appropriate people to obtain clearances and to ensure a smoother moving process:

Moving Your Lab Safely Timeline

Found out you're moving

- Call Relocation Sevices (301) 496-9156
- Contact the following groups:
- DOHS Safety Specialist (301) 496-2346
- DEP Chemical Move Services (301) 496-7900
- DRS Area Health Physicist (301) 496-5774

8 Weeks Prior to Move

- Pest Management Services (301) 496-4294

6 Weeks Prior to Move

- Consult DOHS for decontamination procedures
- Complete NIH 2683 Form for all items that need to be tagged (See page 21)

4 Weeks Prior to Move

- Divide Chemical Inventory (See Page 22).

2 Weeks Prior to Move

- Contact DOHS/TAB to schedule decontamination/ recertification for BSCs

1 Week Prior to Move

- Contact DEP for Lab Clearance Chemical Waste Pickup
- Call DRS Moving Services

48 Hours Prior to Move

- Call DRS for Final Lab and equipment pre-move inspection
- Contact DOHS for Final Lab Clearance

After Move

- Call DOHS to recertify your BSCs

Events for Your Move

Before you start

____ Contact Safety Specialist at DOHS
____ Contact area health physicist (if you use radioactive materials in your laboratory)
____ Contact Division of Environmental Protection
____ Create a timeline (see Page 6 for recommended timeline)

6-8 Weeks prior

____ Contact Relocation Services
____ Call Chemical Move Services (DEP) and complete Chemical Move Request Form
____ Call Pest Management Services (Community Health Branch, DOHS)
____ Begin to sort and dispose of unwanted materials – see sections on each type of waste
____ If the lab is used as a satellite lab for animal work, file an amendment with ACUC

4 Weeks prior

____ Consult your Safety Specialist for decontamination procedures for your lab

1-2 Weeks prior

____ Divide your chemical inventory
____ Schedule your radiation safety lab clearance with Division of Radiation Safety
____ Decontaminate your chemical fume hood(s)
____ Call DOHS Technical Assistance Branch to schedule biological safety cabinet decontamination
____ Complete and attach NIH 2683 Forms to the appropriate equipment

48 Hours prior

____ Contact Maintenance Engineer Services to disconnect biological safety cabinet
____ Schedule your final lab clearances with DOHS, DEP and DRS. (See below)

Final Clearances

At least 48 hours before your move, schedule the final clearance to certify that your lab is free of all radioactive hazards. Note that each lab director, PI, or other person in authority is responsible to ensure that all biological, chemical, and physical hazards have been properly decontaminated, packed, and/or secured to prevent exposure of hazards to anyone involved in the move.

Final laboratory clearance for radioactive materials:

- Contact your area health physicist at DRS

Final laboratory clearance for all physical, biological, and chemical hazards

- Contact DEP and your DOHS representative

Moving your Chemicals Safely

If you have chemicals in your laboratory, contact the Division of Environmental Protection (DEP) **at least six weeks prior to a scheduled move.** At this time, you must fill out and submit a *Chemical Move Request Form* to DEP. The steps for a safe laboratory move for chemicals are as follows:

- Contact DEP for chemical move services
- Divide your chemical inventory properly
- Properly dispose of excess or unwanted chemicals with Chemical Waste Pickup
- Decontaminate your chemical fume hood(s) and storage cabinets
- Establish proper storage of chemicals in your new laboratory

Dividing your chemical Inventory

Six weeks prior to the move, divide your chemical inventory into two categories:

1. Chemicals necessary in the new laboratory, and
2. Chemicals which can be discarded as waste.

For materials that you plan on moving to your new location, it is important to properly segregate these chemicals. Physically sort both categories into compatible groups such as listed below. *See* the *Chemical Storage and Segregation* guidelines for additional details at:
http://www.ors.od.nih.gov/sr/dohs/Documents/General_Chemical_Storage_Compatibility_Chart.pdf

- Flammable and combustible liquids
  - Look for labels on bottles, or if unsure, contact DEP
  - Do not store hazards in a refrigerator/freezer unless it is rated safe for safe storage of flammables as standard equipment can generate sparks inside the unit.
- Corrosive acids
  - pH less than 3
- Corrosive bases
  - pH greater than 12
- Flammable solids
  - Desensitized explosives
  - Self-reactive materials
  - Combustible solids
  - May catch fire due to friction during transportation
- Oxidizers
  - May cause or enhance the combustion of other materials
- Poisons
  - Toxic but not flammable, corrosive, oxidizing, or reactive
- Cyanides
  - May generate cyanide gas if in contact with corrosives
- Peroxide formers
  - Form explosive peroxides upon storage
  - E.g., aldehydes, ethers
  - Water reactive chemicals such as alkaline earth materials (sodium, potassium)
  - Emit toxic fumes or catch fire when in contact with water
- Organic peroxides
  - Low power explosives, sensitive to shock, sparks, heat
  - Ex. Benzoyl peroxide, methyl ethyl ketone peroxide, etc.
- Explosives
  - Dry picric acid, out of the date peroxide formers, heat and shock sensitive materials

- Carcinogens
  - Require specific labeling, common examples at NIH include Xylene, Toluene, Benzene
- Mercury/Mercury containing devices
  - Contact DEP to remove Hg thermometers, barometers, manometers, etc.

Are there any chemicals you no longer need?
If you see any crust or crystallization on any chemical bottles, call Chemical Waste immediately to collect these as chemical waste. Old chemicals can be very dangerous sources of explosions and exposures. Moving is a time to take stock of your inventory and determine if there are any unnecessary or unwanted chemicals. **Always contact DEP to pick up chemical waste.**

Proper waste disposal
Do not pour chemicals down the drain! Check with DEP to determine and obtain the proper waste containers. Obtain tags from the chemical Waste group and complete them as waste is added to a container. Remember that any container used to collect waste must be tagged with the following information:

1. List of contents
2. Accumulation start date (must be collected within 60 days of start date)
3. Approximate concentration

In addition, keep in mind that waste containers must be kept in corrosion-resistant, secondary containment, such as a trough or tray, to retain materials if the primary containment leaks. These can be provided by DEP as well.

When disposing of large numbers of containers, it is acceptable to segregate the materials by hazard class and put compatible hazards into a box labeled for waste disposal. Contact DEP for details.

Chemical fume hoods and storage cabinets
Laboratory personnel are responsible for removing all chemicals and equipment from the hoods and the chemical storage cabinets. For cleaning and decontamination procedures, wear personal protective equipment to protect you during this potentially hazardous activity. Wear appropriate chemical-resistant gloves, lab coat, and eye protection!

Gloves are protective depending on the materials they are made from and the materials you are using. Wearing the wrong type of gloves can be even more hazardous than wearing no gloves at all. Once a chemical or material seeps through the protective barrier, a glove can prolong contact with the skin. Always visually inspect gloves for tears or holes before use, and always remove gloves before touching telephones, door knobs, computers, etc., to prevent contamination. Remember that all gloves are permeable. Permeation times vary with the chemical and the gloves so consult with your Safety Specialist and change gloves often! Refer to the Chemical Hygiene Plan at http://www.ors.od.nih.gov/sr/dohs/Documents/NIH%20Chemical%20Hygiene%20Plan.pdf (Appendix D, Pg. 32)

Glove Type	Use
Butyl Rubber	**Good** for highly-corrosive acids, ketones, esters, gases; **Poor** for aliphatic, aromatic hydrocarbons, halogenated hydrocarbons, gasoline
Natural Rubber	**Good** for very dilute acids and bases; **Poor** for organics.
Neoprene	**Good** for acids and bases, peroxides, fuels, hydrocarbons, alcohols, phenols;

Glove Type	Use
	Poor for halogenated and aromatic hydrocarbons
Polyvinyl chloride (PVC)	**Good** for acids and bases, some organics, amines, and peroxides; **Poor** for most organics
Polyvinyl alcohol (PVA)	**Good** for aromatic and chlorinated solvents; **Poor** for water based solutions – *water destroys the gloves!*
Silver Shield™	**Good** for wide variety of toxic and hazardous chemicals; provides the highest level of chemical resistance with flexible laminate glove; **Poor fit** – Comes in small, medium and large
4H™	**Good** resistance to many chemicals; better dexterity than Silver Shield™
Nitrile	**Good** for wide variety of solvents, oils, greases, some acids and bases
Viton™	**Exceptional** resistance to chlorinated and aromatic solvents; **Good** resistance to cuts and abrasions

Consult with your Safety Specialist about the specific chemicals and processes used in your hood. Some uses, such as with large volumes or heated perchloric acid, must be carefully reviewed and special decontamination may be warranted. If you use radiological and biological materials, see the other sections of this guide and contact you Safety Specialist. Otherwise, a standard decontamination consists of a thorough wipe down of all hood surfaces, including the window, with a detergent and water solution; rinse with water as necessary. *Note that water should not be used if the chemical fume hood is used extensively for water reactive chemicals.* Once the chemical fume hood has been decontaminated by laboratory personnel, you may contact your Safety Specialist at DOHS for clearance of the hood. **This is a required clearance!**

Gas cylinders
Do not take compressed gas cylinders with you when you move! Purchase new cylinders and arrange with the vendor to have them delivered to your new location. For pick-up and delivery of cylinders, first remove regulators from all cylinders and attach the safety caps. Then, move the cylinders to the designated area in your building using a wheeled cylinder cart with restraining straps or chains. Notify vendor or supplier as appropriate to arrange a pick up.

Liquid nitrogen
Your Safety Specialist can provide technical assistance to laboratory personnel concerning relocation of liquid nitrogen freezers. Most often, contractors are used in moving liquid nitrogen.

When moving biological samples stored in liquid nitrogen, the guidelines for moving biological samples in liquid nitrogen are as follows:

- Allow liquid nitrogen to go down to the lowest acceptable levels
- Ensure that the storage container remains level
- Disconnect container from the fill and move the two units separately
- Connect immediately when you get to the new location
- Contractors are **required** for moves off campus
    - Contact DEP (301-496-7990) or your relocation coordinator

Once in your new location

- Preventative purchasing – Buy only what you need as you need it!
- Obtaining new chemical waste containers is as simple as calling DEP.
- Maintain proper chemical segregation for storage. If you have any questions, contact your Safety Specialist.

Moving Your Biological Materials Safely

If you have biological materials in your laboratory, contact your Safety Specialist in the Division of Occupational Health and Safety **at least four (4) weeks before** your scheduled move to discuss the decontamination procedures appropriate for the biosafety level of your laboratory. If you have Select Agents, you must also contact the Select Agent program at 301-496-2960.

Document your biological inventory

The inventory of biological materials and potentially bio-hazardous materials (including all etiologic agents, microbial agents, toxins, human blood/tissue/body fluids, and potentially-infectious animal tissues, blood and body fluids, etc.) **must** be documented and registered with the NIH Institutional Biosafety Committee (IBC), which will determine the biosafety level (BSL) of the laboratory. If during your move you discover unregistered biological materials, please contact your Safety Specialist to determine how to proceed.

Packing biological materials

All biological materials being moved must be documented and packed by laboratory staff. The materials must be properly labeled and packed to prevent spills or damage during transport. Please consult with your Safety Specialist to determine proper packing and labeling for various biological materials. All containers must be closed and packed inside secondary containers. At least one of the two containers must be puncture-resistant and leak-resistant.

Decontamination

All biological materials must be removed and secured in another laboratory that is properly posted for the correct BSL and organism.

Proper personal protective equipment (PPE) should be worn at all times when removing biological contamination. This generally includes nitrile or latex gloves, lab coat, and eye protection, as well as long pants and close-toed shoes. Please contact your Safety Specialist to address specific concerns with PPE.

Decontamination procedures include a thorough wipe down of surfaces with an appropriate disinfectant followed by a detergent and water solution. Contact your Safety Specialist to determine the most effective disinfectant for the materials being used in your laboratory. Rinse with water as necessary. Paper towels used during the process may be disposed of as Medical Pathological Waste (MPW).

Biological safety cabinets (BSC)

In addition to a thorough surface decontamination, a BSC currently in service must be decontaminated further before moving. At least one to two weeks prior to your move, contact the Technical Assistance Branch of the DOHS to schedule gas decontamination. The users of the BSC are responsible to clean and disinfect the catch tray under the grill. After the DOHS decontamination is completed, fill out and attach NIH form 2683, *Certification that Equipment is Free from Hazards*, to the cabinet (available at NIH Self-Service Stores). Leave the BSC wrapped in the plastic sheeting used in the gas decontamination to help prevent dust accumulation. During the move and to remind users to not initiate work until the BSC has been recertified. Recertification of a BSC after your move is required before resuming any work within the BSC, for the protection of the workers and of the research work itself. Call DOHS to schedule this recertification.

If you are located on the NIH campus, you are not taking your BSC to WO, and the NIH contractor cannot decontaminate your BSC(s) by the time you are ready to move, then you will need to affix an NIH Form 2683 to it as well as the sign, "Has been surface decontaminated only. Do not remove until gas decontamination is completed".

Shipping biological materials
Contact your Safety Specialist concerning shipment of biological materials to ensure compliance with all DOT regulations. A summary of regulations and more specific packing instructions are available in Appendix C of the 5th edition of *Biosafety in Microbiological and Biomedical Laboratories*.
http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf or
http://www.cdc.gov/biosafety/publications/bmbl5/

Medical pathological waste "Burn Boxes"
Medical, pathological, and biological waste should be packaged into MPW boxes and delivered to the appropriate collection point. Contact your Safety Specialist for more detailed information on proper waste disposal.

Do not use MPW cardboard boxes for moving!
MPW boxes must not be used for storing or moving equipment or personal property. Movers will not transport MPW boxes, and you risk loss of valuable or irreplaceable records as MPW boxes are treated as regulated medical waste to be incinerated.

Freezers and Refrigerators
Freezers and refrigerators containing biological materials must be emptied prior to move. The biological materials must be packaged and shipped according to DOT regulations. Contact your SOH Specialist for technical assistance concerning the relocation of biological materials.

Once in your new lab

- If you have registered an HPRD and RD document, the specified laboratory space must be annually surveyed and your registration information must be updated. Work with your Safety Specialist to ensure that HPRD and RD records have accurate lists of personnel and locations. Once this is complete, your Safety Specialist will conduct a safety survey for the new space and, once acceptable, post the new laboratory with proper signage for your work.
- Recertify your biological safety cabinet – this must be completed before the BSC may be used.

Moving your Radioactive Materials Safely

What you need to do before your area health physicist arrives
Rooms in which radioactive equipment and materials have been stored must be cleared of all radioactive materials and fully surveyed for radioactive contamination. Secure radioactive materials in another properly posted location by transferring them (add details here) or have them stored by Radioactive Material Moving Services.

Move Inspection
Before your area health physicist can complete a pre-move inspection of rooms and equipment in which radioactive materials have been used or stored, you must:

- Clear the space of all radioactive material
- Fully survey for radioactive contamination using swipe tests
- Decontaminate as necessary
- Follow with further swipe tests

Schedule your inspection and clearance at least 48 hours prior to your move with your area health physicist. During this inspection, the area health physicist reviews the lab survey and removes the *Caution Radioactive Materials* sign from the door and replaces it with a Radiation Clearance sticker.

Packing and Moving Services
Items potentially contaminated with radioactive materials must not be packed by movers. If such items cannot be decontaminated, please consult with your area health physicist. **DRS provide free radioactive material moving services, which must be used to move source vials between buildings.**

- DRS can store your radioactive materials and arrange for redelivery.
- Moving services must be scheduled 1 week prior to the move.
- Note that ALL forms of radioactive materials MUST be shipped by DRS if moving to an off-campus location.

Equipment/Devices which contain radioactive sources
For decontamination of the chemical fume hood and biological safety cabinet, follow the same procedures as previously stated. This includes clearing the space of radioactive materials, surveying for radiation, decontaminating if necessary, and surveying, again. Repeat this process as needed. Contact your area health physicist if you are unable to effectively decontaminate the area.

Notify DRS before relocation or sending to surplus any of the following equipment:

- Irradiators, certain mass spectrometers or gas chromatographs
- Static charge eliminators, Liquid Scintillation/Gamma counters
- Electron microscopes
- X-ray diffraction units, cabinet x-ray units

Visit the DRS website for more information. http://drs.ors.od.nih.gov/Pages/default.aspx

Proper disposal
Radioactive materials to be discarded must be collected by the Radioactive Disposal Service. Radioactive waste must remain secured and under control for the Authorized User at all times.

In your new lab space
Before the move, and before radioactive materials can be used or stored in the new lab space, you area health physicist must post a sign stating *Caution Radioactive Materials*. Only an area health physicist with DRS can post a lab for radioactivity.

After Your Move Checklist

Emergency equipment

____ Are the emergency eyewash and safety shower available and unobstructed?
____ Flush eyewashes weekly and document the flush using an eyewash inspection tag available from your Safety Specialist.
____ Are fire extinguishers available and accessible?
____ Do you know all available exits and where to meet in case of evacuation?
____ Are appropriate spill kits and decontaminating materials available (e.g., bleach or Wesco dyne)?

Chemical storage and waste

____ Are flammable materials stored in flammable storage cabinets?
____ Are corrosives segregated and stored properly and storage areas labeled?
____ Are chemicals properly segregated by hazard class?
____ Are all solutions properly labeled?
____ Are chemical waste containers kept in secondary containment? Does each waste container have a proper waste tag to document date of accumulation, chemical and concentration?
____ Has your chemical fume hood(s) been inspected and certified?

Biological materials and waste

____ Has your biological safety cabinet been inspected and certified?
____ Do the vacuum lines have in-line filters and disinfectant traps?
____ Do you have the appropriate personal protective equipment for your lab?
____ Do you have sharps and medical pathological waste (MPW) boxes for disposal?

Radioactive material storage and waste

____ Are the materials properly stored?
____ Are radioactive labels properly posted where materials are located?
____ Are the laboratory doors properly labeled?
____ Are the materials properly secured when not attended (locked cabinet or room)?

General laboratory practices and procedures

____ Are appropriate signage posted on the lab doors (radioactive, biohazard, laser, UV)?
____ Are compressed gas cylinders properly secured?
____ Are there overloaded outlets or electrical strips?
____ Is there nothing stored within 18 inches of the ceiling?
____ Is there a minimum of 36 inches of passage widths in the lab?
____ Are tall pieces of equipment secured?
____ Check that no items are stored underneath a chemical shower, in front of electrical panels, or where they would block access to a door or an eye wash?

Laboratory animals

____ Is there appropriate signage that animals are present in the lab?
____ Is appropriate personal protective equipment available?
____ Are transport containers, animal waste, and carcasses properly contained?

Frequently Asked Questions

1) *Who do I call in case of a spill or an emergency while I am moving?*

In case of fire, spills of hazardous materials, etc., call 911 on campus or 9-911 off campus (or as directed by local DOHS).

2) *What if I have to move my laboratory on very short notice?*

Contact your Safety Specialist to customize your moving schedule. Ideally, your laboratory will have plenty of notice before the day of the move and you can follow the recommended schedule of this guide. If, however, you have only a few days' notice, contact your Safety Specialist, area health physicist, and DEP immediately. Lab clearances and decontamination procedures for BSCs and chemical fume hoods must be done before the lab will be cleared for the move. DOHS, DRS, and DEP will do their best to accommodate the accelerated schedule.

3) *I have a lot of extra chemical waste and some empty Chemical Waste bins. Can I move this to my new location and then call Chemical Waste Services?*

No. You must never transport chemical waste. Call Chemical Waste Services to pick up your waste. They will provide you with new waste bins in your new location.

4) *Does it matter how far I am moving? Is there a difference if I am moving off campus?*

If you are moving off campus, then Department of Transportation regulations apply to relocation of hazardous materials. Your Safety Specialist and representatives from DEP and DRS can work with the relocation coordinators to ensure compliance as well as a safe move.

5) *What if materials are lost or damaged during the move?*

Contact your relocation coordinator. Contact DOHS, DEP or DRS if the material is biological or chemical in nature or radioactive, respectively.

6) *What do I do if my move is cancelled after all of my clearances have been obtained?*

Notify each department (DOHS, DEP, and DRS as applicable) of the new schedule and determine if you need to have your areas re-posted to allow you to work until the move is rescheduled.

7) *What constitutes general trash?*

Refer to the waste disposal guide website at
http://orf.od.nih.gov/EnvironmentalProtection/WasteDisposal/Pages/default.aspx

8) *Do I need to contact my Safety Specialist if only part of my lab is being renovated?*

Yes. You are required to have even a partial room clearance of a room in order to have any renovations done. Safety Specialists and Radiation Safety conduct partial clearances.

APPENDIX 1

Division of Radiation Safety (DRS) Required Checklist Guideline for Clearances

DRS Contact Phone Numbers:

Area Health Physicists: 301-496-5774
Radioactive material moving and storage service: 301-496-3277
Radioactive waste disposal service: 301-496-4451

I. Inactivations, moves, and complete laboratory renovations:

All radioactive materials, waste containers, and potentially contaminated items must be removed prior to lab inactivations, moves, and complete renovations. Source vials must either be disposed of or collected and stored by DRS until the move or renovation has been completed. Radioactive waste and waste containers must be picked up by the radioactive waste disposal service.

☐ **Survey** and decontaminate all labeled and potentially contaminated items/equipment whereby radioactive material was used or stored. Surplus or dispose as radioactive waste all equipment, supplies or samples no longer needed, or not used for a long time.

☐ **Remove** or deface all Caution Radioactive Material warning signs (i.e. labels and tape) after successful decontamination, but do not remove lab (door) posting.

☐ **Certify** that all equipment is free from radiological hazard (see section III). Affix a completed NIH Form 2683 (Certification that Equipment is Free from Hazards) to the equipment. The NIH Form 2683 must be purchased at self-service stores since only the original form is presently accepted. Note that this form is also used to certify that the equipment is free from chemical and biological hazards.

☐ **Pack** safely. Cardboard boxes are available in several sizes from the self-service stores and should be used to pack equipment, books, and supplies. Contaminated, and potentially contaminated, items or equipment must not be packed by the movers. If these items cannot be appropriately decontaminated, consult with your Area Health Physicist. Contact DRS for specific information on packaging and transport of radioactive material, including the *free radioactive material moving service*, which must be utilized to move source vials.

☐ **Contact** your Area Health Physicist **at least two business days prior** to inactivations, moves, and complete lab renovations to schedule a **pre-move inspection**. The purpose of the pre-move inspection is to address issues related to mover safety, residual contamination, and security. If necessary, the Area Health Physicist will issue suggestions on how to complete the clearance process.

☐ **Contact** your Area Health Physicist **within two business days after** the laboratory is vacated to initiate a **final clearance**.

☐ **Contact** your Area Health Physicist when the renovation is complete and before using or storing radioactive material or labeled items in a new laboratory. The Area Health Physicist will post and activate the laboratory with a Caution Radioactive Material sign.

☐ **Update** your contact information by calling the DRS.

II. Partial (area-specific) laboratory renovations:

NOTE: Renovation/maintenance personnel have delayed renovations without proper DRS clearance!

☐ **Remove** all radioactive material, radioactive waste including waste containers, and potentially contaminated and labeled items from the renovation area. If moving such items to a new location, ensure it is posted with a Caution Radioactive Material sign.
☐ **Secure** all radioactive material and radioactive waste from unauthorized access or removal during the renovation process. It is recommended that all radioactive material and radioactive waste be temporarily moved to another posted laboratory. Contact DRS for specific information on packaging and transport of radioactive material, including the *free radioactive material moving service*, which must be utilized to move source vials.
☐ Perform a thorough **survey** (portable survey meter and swipes) of the entire renovation area to demonstrate compliance with applicable contamination limits. This survey should include a minimum of 10 swipes (two on the floor) per module. Large equipment must also be surveyed for contamination and decontaminated, if necessary. This survey must include monitoring with a portable survey instrument and at least two swipes (interior and exterior) per item. Removable contamination limits are 220 dpm/100cm2 for betas and gammas, and 22 dpm/100cm2 for alphas. If detectable contamination remains (i.e. fixed contamination) after a *reasonable* decontamination effort, contact your Area Health Physicist.
☐ Contact your Area Health Physicist *at least two business days prior* to the anticipated start of renovations to schedule a **pre-inspection**. The purpose of the pre-move inspection is to address issues related to mover safety, residual contamination, and security. If necessary, the Area Health Physicist will issue suggestions on how to complete the clearance process.
☐ Contact your Area Health Physicist *immediately after completing the pre-inspection suggestions* to perform a **partial clearance**.
☐ Remember to continue performing monthly surveys of the affected area during and after the renovation, if the lab remains posted.

III. Equipment Clearances:

NOTE: Official DRS clearance is *typically* not required for lab equipment, except for liquid scintillation counters, gamma counters, and hoods in which volatile radioactive materials have been used!

☐ **Remove** all radioactive material and potentially contaminated and labeled items from the equipment. Radioactive material may not be transported in lab equipment.
☐ **Survey** and decontaminate all equipment in which radioactive material was used or stored *before* it is surplused, repaired, or moved by transportation personnel.

Monitor with a portable survey instrument and collect a minimum of two swipes (interior and exterior) to verify the absence of contamination. For items that are internally contaminated (e.g. HPLC's, harvesters, etc.) or when detectable contamination (i.e. fixed contamination) remains after a *reasonable* decontamination effort, contact your Area Health Physicist. Additionally, if the usage history of the item is unknown, assume it is contaminated.

Freezers, refrigerators, and incubators:
☐ **Contact** DRS for specific information on packaging and transport of radioactive material, including the *free radioactive material moving service*, which must be utilized to move source vials.

Liquid scintillation counters (LSCs), gamma counters, and hoods used with volatile radioactive materials:

☐ **Contact** the manufacturer to remove the internal radioactive source (applicable if it exists) only if the unit will be surplused. Internal radioactive sources do not need to be removed if the counter will be moved to a new location on the NIH campus. However, it *is* prudent to contact the manufacturer for recommendations on securing lead shielding within the counter (to avoid damaging the sensitive electronic components).

☐ **Contact** your Area Health Physicist to schedule an official DRS counter clearance and properly track the internal source.

Radiation-producing machines (e.g. electron microscopes, x-ray diffraction units, and cabinet x-ray units):

☐ **Notify** DRS when these units are procured, moved, or surplused. Periodic safety inspections are performed by DRS on these machines. Special DRS clearance is not required due to the absence of contamination potential.

Devices containing radioactive sources (e.g. self-shielded irradiators, mass spectrometers, gas chromatographs, and radioactive static charge eliminators):

☐ **Notify** DRS prior to the procurement, relocation, surplus, or repair of these items. Additionally, **contact** your Area Health Physicist for guidance on the proper clearance procedures for these devices. These devices are controlled and subject to Federal regulation, so proper accounting is required.

☐ **Remove** or deface all Caution Radioactive Material warning signs (i.e. labels or tape) after successful decontamination.

☐ **Certify** that the equipment is free from radiological hazard. Affix a completed NIH Form 2683 (Certification that Equipment is Free from Hazards), whether or not radioactive material was involved. The NIH Form 2683 must be purchased at self-service stores since only the original form is presently accepted. Note that this form is also used to certify that the equipment is free from chemical and biological hazards

Appendix 2

Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

APPENDIX 3

SAMPLE GHS LABEL

PRODUCT IDENTIFIER

CODE
Product Name

SUPPLIER IDENTIFICATION

Company Name
Street Address
City State
Postal Code Country
Emergency Phone Number

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD

Danger

HAZARD STATEMENT

Highly flammable liquid and vapor.
May cause liver and kidney damage.

SUPPLEMENTAL INFORMATION

Directions for use
Fill weight: Lot Number
Gross weight: Fill Date:
Expiration Date:

Appendix 4

NIH Form 2683

Certification that Property is Free from Hazards

NIH Decal No. *(Serial no. if no decal no.)*	Description

1. Check each type of hazardous material that has been used with or is contained in this property. If there is no hazardous material, check "none" for each hazard.
2. Decontaminate the property according to the procedures referenced below.
3. Complete the certification at the bottom.

Contains Hazard	Decontaminated or removed	None	Hazard Type
☐	☐	☐	**BIOLOGICAL** *Reference:* Occupational Safety and Health Branch policy memo, "Biological Decontamination of Scientific Equipment." Call 301-496-2346 for assistance.
☐	☐	☐	**CHEMICAL** *Reference:* Occupational Safety and Health Branch policy memo, "Chemical Decontamination of Scientific Equipment." Call 301-496-2346 for assistance.
☐	☐	☐	**RADIOLOGICAL** *Reference:* Radiation Safety Branch policy memo, "Clearance Procedures for Surplus Equipment." Call 301-496-5774 for assistance.
☐	☐	☐	**OIL, HEAVY METAL** *(e.g., lead, mercury)* or other hazardous material. Call 301-496-7990 for assistance.

Property used with radioactive materials requires clearance by the Radiation Safety Authorized Investigator. Phone RSB to obtain a copy of clearance procedures or for the name of the designated Authorized Investigator for a radioactive materials laboratory. If the item is a LIQUID SCINTILLATION or GAMMA COUNTER, a final clearance by RSB is *MANDATORY!* Call your RSB Area Health Physicist at 301-496- 5774 to obtain this clearance.

I HEREBY CERTIFY that this property is free of hazardous materials or has been decontaminated in accordance with the appropriate procedures referenced above (or that the property has not been used with any of the materials listed above).

Signature of last user or lab/branch/clinic supervisor

Name *(please print)*	Date
Title	**IC**
Building/Room	**Phone No.**

NIH 2683 (Rev. 01/13)

APPENDIX 5

Name:

New Room:

INVENTORY CHECKOUT FORM

This **INVENTORY CHECK-OUT FORM** will be used in your work area to verify that all the items you designated for moving arrive at the correct location. **As you pack, complete this form. Make a copy of the completed form for yourself and place this form on your desk in plain sight**. When you return to your office, use your copy to verify that all items designed for the space arrived.

Record the descriptions of labeled items next to their label number. Leave blank or cross off any unused, damaged or destroyed labels.

Label #	Description
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	