

EATING and DRINKING



Food and beverages (including water) are not allowed in laboratories (unless they are part of a research project). No one may consume vitamins or medicine in a laboratory. Cosmetics, such as lipstick or make-up, must not be applied in the laboratory.

Refrigerators and microwaves in the laboratory should not contain or be used for any material intended for human consumption. Laboratory refrigerators and microwaves should be labeled, "No Food or Drink Allowed."

EMERGENCY PROCEDURES

All personnel working in the laboratory should review the UNH Emergency Procedures Program: <http://www.unh.edu/ehs/emergencies.htm>. At a minimum, laboratory personnel should be aware of the following:

- Who to call in case of an emergency (*i.e.* laboratory supervisor, 911).
- What to do in the event of a chemical or biological spill, including appropriate clean-up steps.
- Where the spill kits are located.
- Where the first aid kit is located.

FIRE SAFETY

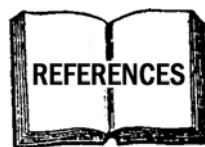
Storage of combustible materials (e.g., cardboard, paper, etc.) is prohibited within 18" of all sprinkler heads in "sprinkled" buildings and within 24" from the ceiling in "non-sprinkled" buildings. Storage of combustible material on the tops of cabinets, racks, bookcases, etc., may violate this rule. This space needs to be cleared off completely or reserved for non-combustible material.

Departmental protocols may require faculty, staff, and students to be trained to use a fire extinguisher. However, there is no requirement to use a fire extinguisher in the event of a fire. Please call a *Fire Inspector* at the Durham Fire Department at 862-1426 if you wish to schedule fire extinguisher training.



OEHS STAFF

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1. 29 CFR 1910.151, **Medical Services and First Aid**, Occupational Safety and Health Administration
2. 29 CFR 1910.1200, **Hazard Communication**, Occupational Safety and Health Administration.
3. 29 CFR 1910.1450, **Occupational Exposure to Hazardous Chemicals in Laboratories**, Occupational Safety and Health Administration.
4. American Chemical Society, **Safety in Academic Chemistry Laboratories**, 2003.
5. ANSI Z358.1, **Emergency Eye Wash and Shower Equipment**, International Safety Equipment Association, 1998.
6. CDC/NIH **Biosafety in Microbiological and Biomedical Laboratories**, 4th Edition, 1999.
7. International Fire Code, Section 315.2.1, **Ceiling Clearance**.
8. NFPA 10, **Standard for Portable Fire Extinguishers**.
9. NFPA 13, **Standard for the Installation of Sprinkler Systems**.
10. NFPA 45, **Standard on Fire Protection for Laboratories Using Chemicals**.
11. **Prudent Practices in the Laboratory: Handling and Disposal of Chemicals**, National Research Council, 1995.
12. State of New Hampshire Regulation Env-Wm 507.01, **Hazardous Waste Storage Requirements**.
13. **UNH Laboratory Safety Plan**.
14. **UNH Emergency Procedures Program**.
15. **UNH Fume Hood Program**.
16. **UNH Hazard Communication Program**.
17. **UNH Hazardous Waste Management Plan**.



The UNH Office of Environmental Health and Safety (OEHS) has developed this pamphlet to identify safety precautions for individuals working in labs at UNH. Laboratories require special safety considerations to ensure the safety of those working in the lab as well as the safety of anyone entering the lab. Additional safety information can be found in the "References" section of this pamphlet.

This pamphlet does not discuss certain basic safety issues, such as the proper storage of incompatible chemicals or good microbiological techniques. Safety information such as this can be found in the UNH Laboratory Safety Plan or the American Chemical Society's "Safety in Academic Chemistry Laboratories" at <http://www.chemistry.org/>.

SECURITY

Laboratory security is an integral part of an effective safety program. Follow these steps to ensure a secure working environment in your laboratory:

1. Keep laboratory doors locked when unoccupied.
2. Keep stocks of organisms locked during off hours.
3. Keep an accurate record of chemicals, stocks, cultures, project materials, growth media, and those items that support project activities.
4. Notify UNH police if materials are missing from laboratories.
5. Inspect all packages arriving at the work area.
6. When research is completed for the day, ensure that chemicals and biological materials have been stored properly and securely.
7. Ask strangers (someone you do not recognize as a co-worker or support staff person) to exit the room if they are not authorized to be there.

DOOR SIGNAGE

Outside the door of every UNH laboratory is a **Hazard and Emergency Information Sign**. This sign has images which graphically display the hazards present in the lab and has emergency contact information for those responsible for the activities that take place in the lab. All of this information is conveyed to individuals entering the lab through the use of this sign. Individuals who work in the laboratory are responsible for keeping the sign accurate and up-to-date. The **Hazard and Emergency Information Sign** can be updated by going to <http://www.cems.sr.unh.edu>.

CLEANLINESS

Clean and orderly laboratories are essential to providing a safe work environment for faculty, staff, students and visitors. In an effort to maintain a clean laboratory, please keep laboratory bench tops, fume hoods, floors, etc. as clean as possible. Please ensure that work areas are wiped down with an appropriate cleaner or disinfectant at the end of the day and after spills. Also, in order to maintain a safe means of egress, ensure that aisles, corridors, other pathways, and lab doorways remain free of obstructions.

FIRST AID KITS

Each laboratory is required to have a first-aid kit in the event of an emergency. The kit should be labeled "First Aid Kit" and should be easily accessible to laboratory personnel. At a minimum, each kit should contain the following:

Item and Minimum Size or Volume	Quantity
Absorbent compress, 32 square inches (No side smaller than 4")	1
Adhesive bandages, 1" x 3"	16
Adhesive tape, 5 yards	1
Antiseptic, 0.5 gram application	10
Burn treatment, 0.5 gram application	6
Medical exam gloves	2 pair
Sterile pads, 3" x 3"	4
Triangular bandage, 40" x 40" x 56"	1

HAZARDOUS WASTE

Laboratory personnel generating or handling hazardous waste are required to take the online Hazardous Waste Training, available on Blackboard at <http://blackboard.unh.edu/>.

Additional information about the safe handling and disposal of hazardous waste can be found in the UNH Hazardous Waste Management Plan at <http://www.unh.edu/ehs/waste-management.htm>.

BIOHAZARDOUS WASTE

All biohazardous waste at UNH must be disposed of in biological burn boxes. These boxes must be labeled with the building and room number of the originating lab. It is highly recommended that biohazardous waste be autoclaved or chemically deactivated prior to disposal into a burn box.

Rigid or semi rigid containers (such as a bucket, box, or carton lined with two biohazard bags) should be used to hold biohazardous waste before disposal into the biological burn box. Biological waste containers must be leak proof, labeled with the "Universal Biohazard Symbol," and covered when not in use.



CHEMICAL SAFETY

OSHA and the New Hampshire Department of Labor have several requirements for chemical handling and labeling. Here are a few of the requirements:

- All containers containing more than 1% of hazardous material must be labeled with the proper chemical name and the chemical's associated hazards. This rule applies to temporary (i.e., transfer) and secondary containers as well.
- Chemical containers, including chemical waste, should not be placed or stored on floor. If these containers must be placed on the floor then they must be stored in secondary containment.
- Chemical containers, including waste containers, must be closed and secured when not in use.

SHARPS and BROKEN GLASS

Sharps, such as razor blades, scalpels, syringes, needles, or chemically or biologically contaminated broken glass, need to be placed in impervious, puncture-resistant containers made of rigid plastic or metal (not broken glass containers). The container must be labeled with the words, "Sharps Container." If the sharps are contaminated with infectious material then the "International Biohazard Symbol" must be affixed to the container as well.



Broken glass containers are for *clean, broken glass only*. They are not sharps containers. Sharps and sharp items must not be placed in the trash, broken glass boxes, or biohazard bags.

If razor blades are used, it is recommended that these blades be pushed into a Styrofoam block to prevent accidental cuts.

SPILL KITS

If a laboratory contains hazardous chemicals or infectious agents, then a chemical and/or biological spill kit must be available. The spill kit container should be non-breakable, and should contain:

Chemical	Biological
<ul style="list-style-type: none"> • Broom (small) • Dustpan • Nitrile or latex gloves • Safety glasses • Tongs • Vermiculite 	<ul style="list-style-type: none"> • Absorbent • Disinfectant • Nitrile or latex gloves • Paper towels • Safety glasses • Tongs • Utility gloves

The kit should be properly labeled (e.g., "Chemical Spill Kit" or "Biological Spill Kit") and should be easily accessible to laboratory personnel.



CHEMICAL FUME HOODS

Before using a chemical fume hood, make sure air is entering the unit and it is functioning properly. Then, follow these steps to ensure safety while working in a chemical fume hood:

1. Check to ensure the baffle openings are not blocked and air is flowing properly.
2. Conduct work at least six inches from the edge of the hood.
3. Lower the sash to protect yourself from dangerous reactions.
4. Keep hood clean and uncluttered. Wipe up spills immediately.
5. Be aware that drafts from open windows, open doors, fans, air conditioners, high traffic walkways may interfere with normal hood exhaust.
6. Use perchloric acid only in a special perchloric acid hood.



BIOLOGICAL SAFETY CABINETS

To ensure safety, good microbiological techniques must be used when working in a biological safety cabinet (BSC). In addition, please follow these rules:

1. Certify BSC annually by an outside company.
2. Decontaminate BSC frequently and after work is complete.
3. Prohibit gas lines, open flames, and toxic chemicals in the re-circulating BSC.
4. Routinely check or replace ultraviolet lights.

VACUUM LINE PROTECTION

To prevent fluid and aerosol contamination of the central vacuum system in certain buildings, it is recommended that a high-efficiency particulate air (HEPA) filter cartridge be placed in any suction tubing immediately before the vacuum inlet (valves). This will help protect the central vacuum system from corrosion, rust, etc. These filters should be replaced whenever there is evidence of filter blockage, failure, wetness, and on a routine basis, no less than annually.

DISINFECTION

The table below lists common disinfectants found in research laboratories. Prior to beginning your research, be sure to determine which disinfectant is the most appropriate for the material you are studying.

Summary of Common Disinfectants

Disinfectant	Dilution-	Effective On:	Ineffective On:	Comments
Phenolics: <i>e.g.</i> Lysol™	1/20 (5%)	Bacteria, Most Viruses, TB, HIV	Spores, Polio, Coxsackie Viruses.	Relatively insensitive to high protein concentrations. Corrosive.
Chlorine Bleaches: <i>e.g.</i> Clorox™	1/10 (10%)	Bacteria, Some Spores, Viruses, TB†, HIV	Some Spores	Prepare once a week. It takes ~20 minutes to disinfect. Corrosive.
Iodophors: <i>e.g.</i> Wescodyne™	1/100 (1%)	Bacteria, Most Viruses, TB	Spores	A surface disinfectant. Not good in solutions. Corrosive.
Alcohols (Ethanol, Isopropanol)	70%	Bacteria, Most Viruses	Spores, TB	100% alcohol is a preservative!! Flammable.

- Concentration of named brands. † Use 1/5 dilution
Minimum contact time is 15 minutes.

PROTECTIVE EQUIPMENT

Proper personal protective equipment (*i.e.*, gloves, safety glasses, laboratory coats) should be worn when working with hazardous chemicals or biohazardous agents. Safety equipment should be readily available for visitors entering the laboratory.

Laboratory gowns, gloves, and other personal protective equipment must be taken off prior to leaving the laboratory (unless transporting hazardous material to or from the laboratory in secondary containment).



EYEWASH/DELUGE SHOWERS

Laboratories with hazardous materials must have suitable facilities available for quick drenching of the body or flushing of the eyes. Emergency eyewash stations should be flushed once a week for three minutes. Deluge showers are tested annually by Facilities Maintenance.