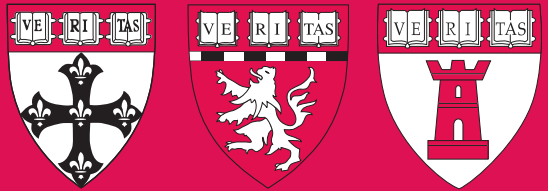
Harvard Longwood Campus Is a Smoke-Free Campus



EHS PROCEDURES & RESPONSE GUIDELINES

Emergency Phone Numbers

MEDICAL OR FIRE EMERGENCY **911**

If calling by cell phone, also call HUPD to report your campus location

HARVARD UNIVERSITY POLICE DEPT. (HUPD) ..... **(43) 2-1212**

SECURITY

- **HMS/HSDM** ..... **(43) 2-1379**
- **HSPH** ..... **(43) 2-1040**

FACILITY EMERGENCY (flood, leak, building damage, etc.)

- **HMS/HSDM buildings** ..... **(43) 2-1901**
- **HSPH buildings** ..... **(43) 2-1152**

POISON CONTROL CENTER **1-800-682-9211**

EMERGENCY INFORMATION LINE

- **HMS/HSDM** ..... **(43) 2-6666**
- **HSPH** ..... **(43) 2-NEWS**

CHEMICAL/BIOLOGICAL/RADIATION SPILL EMERGENCY ..... **(43) 2-1720**

Longwood Campus EH&S Office

4 Blackfan Street, HIM B84
Boston, MA 02115
www.uos.harvard.edu/ehs

ARCM OCCUPATIONAL HEALTH PROGRAM

- **Emergency Beeper** *Tell operator it's pager #42038* ..... **(617) 632-3352**
- **Emergency Veterinary Attention** ..... **(617) 736-8159**
  Enter your phone number and the vet will call you back.

FOR MEDICAL TREATMENT

For severe injuries, report immediately to the nearest emergency room or call 911 for transportation.

For all other injuries:

- **Harvard Employees/Students**
  - University Health Services, 275 Longwood Ave. ..... (43) 2-1370
    (work hours: M/TH 9–6:30; T/W/F 9–5)
  - University Health Services, Holyoke Center, Cambridge ..... (49) 5-5711
    (after hours and weekends)
- **Tenants** must contact their institution's health care center:
  - **BIDMC:** Lowry Building, West Campus, Suite 6C. ..... (617) 632-0710
  - **BWH:** Peter Brandt Brigham mid campus, ground floor. ..... (617) 732-8501
  - **Children's:** 333 Longwood Ave., 2nd floor ..... (617) 355-7580
  - **DFCI:** 44 Binney St., Dana 1A ..... (617) 632-3016
  - **IDI:** NEBH, 125 Parker Hill Ave., Converse Bldg, 6th floor ..... (617) 754-5620
  - **MGH:** 165 Charles River Plaza, Suite 404. ..... (617) 726-2217

Revised 2008

Injury/Medical Emergency/Animal Bite

REPORTING INSTRUCTIONS FOR INJURY/EXPOSURE

- Report all injuries, accidents, animal bites, and exposures to your supervisor and complete the Harvard Accident Report Form located at http://harvie.harvard.edu/benefits/pdf/accidentreport.pdf, or your institution's Accident Report Form if you are a tenant.
- In addition, report exposure incidents involving radiation, rDNA, or infectious substances to EH&S, which will notify the appropriate regulatory agency, if necessary.
- Report all animal bites to your supervisor and medical treatment provider who will notify the appropriate regulatory agency, as necessary.

OBTAINING MEDICAL ATTENTION

- For serious medical emergencies, go to Brigham and Women's emergency room or call 911.
- HUPD (43)2-1212 are trained in first aid and CPR/AED and can transport uncontaminated, ambulatory patients to medical treatment sites.

- Medical treatment during work hours:
  - Harvard employees/students, go to Harvard University Health Services (UHS) at 275 Longwood Avenue, Vanderbilt Hall: (43)2-1370. (M/Th 9–6:30; T/W/F 9–5)
  - Tenants in Harvard buildings, go to your institution's health care center. For more information, refer to Emergency Phone Numbers tab.
- Medical treatment after work hours:
  - Harvard employees/students, go to UHS at Holyoke Center, 75 Mount Auburn St., Cambridge (clinicians available 24 hours).
  - Tenants in Harvard buildings should contact their institution's health care center for instructions related to after work hour emergencies.
- Harvard employees/students with animal-related injuries, medical treatment is provided by the animal facility occupational health program at 617-632-3352 (pager # 42038).

HAZARDOUS MATERIAL ON SKIN OR SPLASHED IN EYE

- Remove contaminated clothing, shoes, jewelry, etc.
- Immediately flood exposed areas with lukewarm water from safety shower, eyewash, or faucet for at least 15 minutes (use soap on skin for biological/blood exposure). Hold eyes open to ensure effective rinsing behind both eyelids.
- Immediately after rinsing, obtain medical attention.
- Review MSDS(s) for hazards and report the incident (see above).

NEEDLESTICK OR CUT WITH CONTAMINATED SHARP ITEM

- Immediately wash the area with soap and water for at least 15 minutes.
- Immediately after rinsing, obtain medical attention.
- Report the incident (see above).

MONKEY-RELATED INJURIES/BITES

- Immediately stop what you are doing and secure the animal in its cage.

- EYE SPLASH: immediately rinse eye for 15 minutes.
- BITE/SCRATCH/CUT: go to nearest B Virus Bite Kit
  - Wash the wound with the Betadine scrub brush for 15 minutes.
  - Rinse the wound with sterile saline solution and bandage with sterile gauze.
- Immediately obtain medical attention for ANY exposure or possible exposure. Report the incident (see above).

INJURY INVOLVING RESEARCH ANIMAL

- If monkey-related, see above.
- BITE/SCRATCH/CUT: wash the area with soap and water for at least 15 minutes.
- Obtain medical attention and report incident to the animal facility.

ASSISTING IN MEDICAL EMERGENCY OR PERSONAL INJURY

- See above OBTAINING MEDICAL ATTENTION.
- Do not move injured person unless there is a danger of further harm from remaining in the location. If the area is unsafe, then evacuate, close doors to area, and prevent access. Provide information to emergency responders.
- Remain with the injured person until medical assistance arrives. Initiate life-saving measures if necessary and you are trained.

Fire or Evacuation/Shelter

ALL FIRES, EVEN EXTINGUISHED FIRES, MUST BE REPORTED.

Clothing on Fire

Stop moving.
Drop to the floor.
Roll on the floor to smother flames.
Drench with water from an emergency shower or sink hose.

Rescue

Rescue or relocate people in immediate danger if you can do so without endangering yourself. Exit via a safe fire exit. Do not use elevators.

Alarm

Sound the alarm by pulling a fire box, and call 911 from a safe distance to notify police of precise location of fire.

Confine

If practical, confine the fire by closing all doors, windows, and other openings, and shutting off the piped and compressed gas as you are EVACUATING.

Evacuate

Evacuate the building. (Extinguish the fire only if you have been trained. Only small fires are possible to extinguish, so always be prepared to evacuate.)

Shelter in place only if instructed by police, fire, or security personnel.

Responsibilities for the Building Evacuation Monitor:

- Ensure that **R.A.C.E.** is followed if smoke or flames are discovered in your work area.
- Survey every room in your area, if safe to do so, in order to make sure that everyone has evacuated.
- Be aware of impaired staff and visitors who need to be alerted or assisted or both.
- Ensure that people follow the appropriate evacuation route, and that they are directed to a safe, post-evacuation meeting place.
- Account for all staff and visitors at the post-evacuation site.
- Identify yourself to emergency responders as the Evacuation Monitor.
- Ensure that **before an emergency,** everyone in your work group knows the location of all emergency equipment and procedures, including:
  - 2 evacuation routes from the building
  - Designated post-evacuation meeting place (away from the building)
  - 2 exit stairwells
  - 2 fire alarm pull stations
  - 2 fire extinguishers
  - 2 drench hoses, emergency showers, and eye wash stations
  - Automated External Defibrillator

Evacuation Plan:

- In case of alarm, evacuate the building using the nearest exit. Go directly to your emergency evacuation meeting point. Identify a back-up exit.
- Small fires can be extinguished **only if you are trained to use a fire extinguisher or it is necessary for escape.**
- **Do not use elevators during a fire alarm.**
- **Do not enter a room if the door is warm to touch or if the room is smoke filled.**
- Make sure stairwell doors remain closed, latched, and unobstructed at all times.
- All fires, even those that have been extinguished, must be reported to the **Fire Department by calling 911.**
- When working with animals, secure animals in their cage or appropriate container and immediately evacuate the facility.
- Persons who need assistance during building evacuations should identify the building's area of refuge (e.g., exit stairwell) in advance of an emergency. Contact the Harvard Police (617-432-1212) or notify your Evacuation Monitor that you need assistance.
- Evacuation Monitors should report the names and locations of any individuals who are incapable of evacuating. Harvard University Police Department will be on-scene during building alarms (or call 617-432-1212).

Bomb Threat/Suspicious Mail

BOMB THREAT BY TELEPHONE

- Do not pull a fire alarm.
- Get number from caller ID.
- Keep the caller on the phone. Try to get as much specific information as possible including:
  - Where is the bomb right now?
  - The time it is going to explode.
  - The type of bomb.
  - How can it be stopped?
  - Take note of any background noises.
  - What does it look like?
- CALL HUPD at (43)2-1212. Seek guidance.
- Perform a quick search of your area to identify suspicious or unfamiliar packages or items.

IF YOU FIND A SUSPECTED BOMB

- Do not pull a fire alarm.
- Do not touch the suspected bomb.
- Leave the immediate area.
- Report the location of the suspected bomb to HUPD at (43)2-1212 and to your supervisor.
- Wait for further instructions from HUPD and building management.

IF YOU RECEIVE OR OPEN SUSPICIOUS MAIL

- Avoid unnecessary handling: Don't open, shake, taste, or smell.
- Don't attempt to clean up a suspicious substance.
- Cover the suspicious mail, package, or substance with paper, trash can, or other object, if possible.
- Alert others in immediate area and leave the room. Close door and prevent access by placing caution tape across the door or posting Do Not Enter.
- Wash your hands thoroughly with soap and water. If clothing was contaminated with a suspicious substance, remove it as soon as possible, place it in a plastic bag, and take a shower with soap and water, if available.
- Call HUPD at (43)2-1212.
- Proceed to a safe area and wait for HUPD personnel.

THINGS TO LOOK FOR WHEN IDENTIFYING SUSPICIOUS MAIL

- No return address
- Misspelled words
- Addressed to title only
- Wrong title or name
- Poorly typed or written
- Excessive postage
- Protruding wires
- Foreign postmark
- Oily stains, discoloration or crystallization, powder
- Lopsided or uneven
- Rigid or bulky
- Strange odor
- Excessive tape or string
- Ticking sound
- Restrictive markings such as "personal"

Biological or Blood Spill

BIOSAFETY LEVEL 1 (BL1) SPILL

- Alert others in the area.
- Remove contaminated clothing and wash exposed skin (see INJURY tab above).
- Wear gloves, lab coat, and face protection.
- Cover spill with paper towels and pour disinfectant, e.g., 10% bleach, around and over the spill. Allow suitable contact time, such as 20 minutes.
- Pick up sharp items, e.g., broken glass or needles, with forceps or dust pan and brush and place in a sharps container.
- Discard disposable materials used to clean up the spill in a biowaste bag. Disinfect any non-disposable materials used.

BIOSAFETY LEVEL 2 (BL2) SPILL

- Alert others in the area. Avoid inhaling airborne material while leaving the room.
- Close lab door and post Do Not Enter or place caution tape across door.
- Remove contaminated clothing and wash exposed skin with soap and water (see INJURY tab above).
- Allow aerosols to settle for at least 30 minutes before re-entering the lab.
- Wear gloves, lab coat, and face protection (depending on nature of spill HEPA N95 respirator may be advised—refer to your lab-specific spill SOP).
- Cover spill with paper towels and pour disinfectant, e.g., 10% bleach, around and over the spill. Allow suitable contact time, such as 20 minutes.
- Pick up sharp items, e.g., broken glass or needles, with forceps or dust pan and brush and place in a sharps container.
- Discard disposable materials used to clean up the spill in a biowaste bag.
- Wipe the surrounding area and the spill area again with disinfectant.
- Disinfect or autoclave any non-disposable materials used.

BIOSAFETY LEVEL 3 (BL3) SPILL

- Follow your laboratory-specific SOP for BL3 biological spills.
- See the CONTACTS AND SAFETY EQUIPMENT tab below for the location of your laboratory-specific SOP.

BLOOD SPILL

- Alert others in the area.
- Remove contaminated clothing and wash exposed skin with soap and water (see INJURY tab above).
- Wear gloves, lab coat, and face protection.
- Cover spill with paper towels and pour disinfectant, e.g., 10% bleach, around and over the spill. Allow suitable contact time, such as 20 minutes.
- Pick up sharp items, e.g., broken glass or needles, with forceps or dust pan and brush and place in a sharps container.
- Discard disposable materials used to clean up the spill in a biowaste bag.
- Wipe the surrounding area and the spill area again with disinfectant.
- Disinfect or autoclave any non-disposable materials used.

Radiation Spill

See INJURY tab for procedures for radiation contamination to skin or eye.

RADIATION SPILL

- Alert people in immediate area of spill.
- Attend to injured or contaminated persons.
- Prevent the spread of contamination by restricting access to the contaminated area and ensuring that peoples' shoes have been monitored and are not contaminated.
- Request assistance from the **Environmental Health and Safety Department Number** if:
  1) the spill involves more than 10 microCuries;
  2) has spread outside the immediate lab bench area; or
  3) involves personnel contamination.

Close and placard the door to prevent entry to the affected area.

Assign personnel familiar with the incident and the lab to assist emergency personnel.

- Attempt cleanup only if you have received appropriate training. If the spill is small enough for your lab to clean, wear safety goggles, disposable gloves, shoe covers, and long sleeve lab coat.
- Place absorbent paper towels over liquid spill. Place towels dampened with water over spills of solid materials.
- Handle soiled absorbent towels with forceps and place in plastic bag. Dispose in radioactive waste container.
- Clean area using standard cleaning agents. Dispose of cleaning materials in radioactive waste container.
- Monitor area, hands, and shoes for contamination with an appropriate survey meter. Repeat cleanup until contamination is no longer detected.

Chemical Spill or Gas Leak

See INJURY tab for information about chemical contamination of skin or eyes.

Notes and Precautions:

1. Do not work with or clean up a chemical until you are familiar with its hazards.
2. Material safety data sheets (MSDSs) are available online at www.uos.harvard.edu/ehs for many chemicals in laboratories.
3. **Attend to the injured or contaminated, and remove them from exposure.** Get medical attention, as necessary. See *Personal Injury* tab for information about chemical contamination of skin, eyes, more.
4. Call the spill emergency number to report the spill if: it's greater than you can handle; it's very toxic or corrosive; it poses a fire hazard; it's likely to enter a drain pipe or the environment beyond the building; or, simply, you need assistance.
5. Remove contaminated clothing immediately, shower, then don clean clothes.
6. **Evacuate the area when the probability of exposure to a spill poses an unnecessary risk.** Bar reentry, posting a sign or barrier tape that indicates a spill.
7. Cleanup. **Responsibility for spill cleanup rests with the laboratory causing the spill.** If the individual responsible for the spill is unknown, unaccountable, or unable to clean up the spill due to injury, then clean up rests with the department. Assistance by a contractor specializing in spill remediation will be charged to the responsible laboratory or department. **Custodians are not trained to clean up spills of hazardous materials.**
8. Spill Equipment & Supplies. **Emergency Spill Cabinets** in each research building are stocked with absorbent materials, neutralizers, and protective equipment. Specific procedures for cleaning up spills will vary depending on the location of the accident, the amount and physical properties of the spilled material (volatile liquid, solid, or toxic gas), and the degree and type of toxicity.
9. The EHS Department, HUPD, and Campus Security will provide technical or tactical support to the laboratory, as necessary.

MINOR OR MANAGEABLE CHEMICAL SPILL ("INCIDENTAL SPILL")

(Consider low toxicity, low combustibility, small amount, distinctive and tolerable odor, and weak or no acute symptoms of exposure.)

- Alert people in the immediate area of the spill. Isolate the area of contamination.
- Turn on or adjust (open sash fully) the chemical fume hood to increase exhaust ventilation. If the spill lies outside the hood, open the sash fully.
- Clean the spill only after familiarizing yourself with the chemical's physical and health hazards described on the product label, MSDS, certificate of analysis, etc.
- Find a spill kit in an emergency spill cabinet in your building.
  - Wear protective equipment, including safety goggles; gloves impervious to the chemical spilled; a long-sleeve lab coat; and, impervious shoes or latex overshoes, available in each spill cabinet.
- *Block* the release of hazardous chemicals and oil to floor, sink, sewer, or storm drains. If spilled material reaches an environmental receptor, call EHS.
- Control any spreading with a dike or with absorbent spill materials. *Absorb* spill with vermiculite, dry sand, diatomaceous earth, or "kitty litter," not with paper towels or incompatible materials. Avoid walking through the spill or breathing its vapors.
- Use an appropriate cleanup kit to *neutralize* inorganic acids and bases. Use a mercury spill kit for elemental mercury (thermometer) spills. Use activated charcoal for most organic solvent spills. Follow instructions on spill kit for the amount of chemicals that can be absorbed or neutralized by that particular kit.
- Discard broken glass and other contaminated objects using forceps or appropriate tools, not gloved hands alone.
- Collect residue, place in container, affix and complete a hazardous waste tag, and place waste in your hazardous waste satellite accumulation area.
- After the spill is thoroughly absorbed, neutralized, and cleaned up, wash the area with soap and water. Custodial Services may assist after this point to reclean area.
- Afterward, call the EHS Department to replenish all needed spill supplies.

MAJOR OR UNMANAGEABLE CHEMICAL SPILL

(Consider high toxicity, flammability, a large amount, a repelling odor or one without warning properties, acute symptoms of exposure, or a chemical that cannot be identified.)

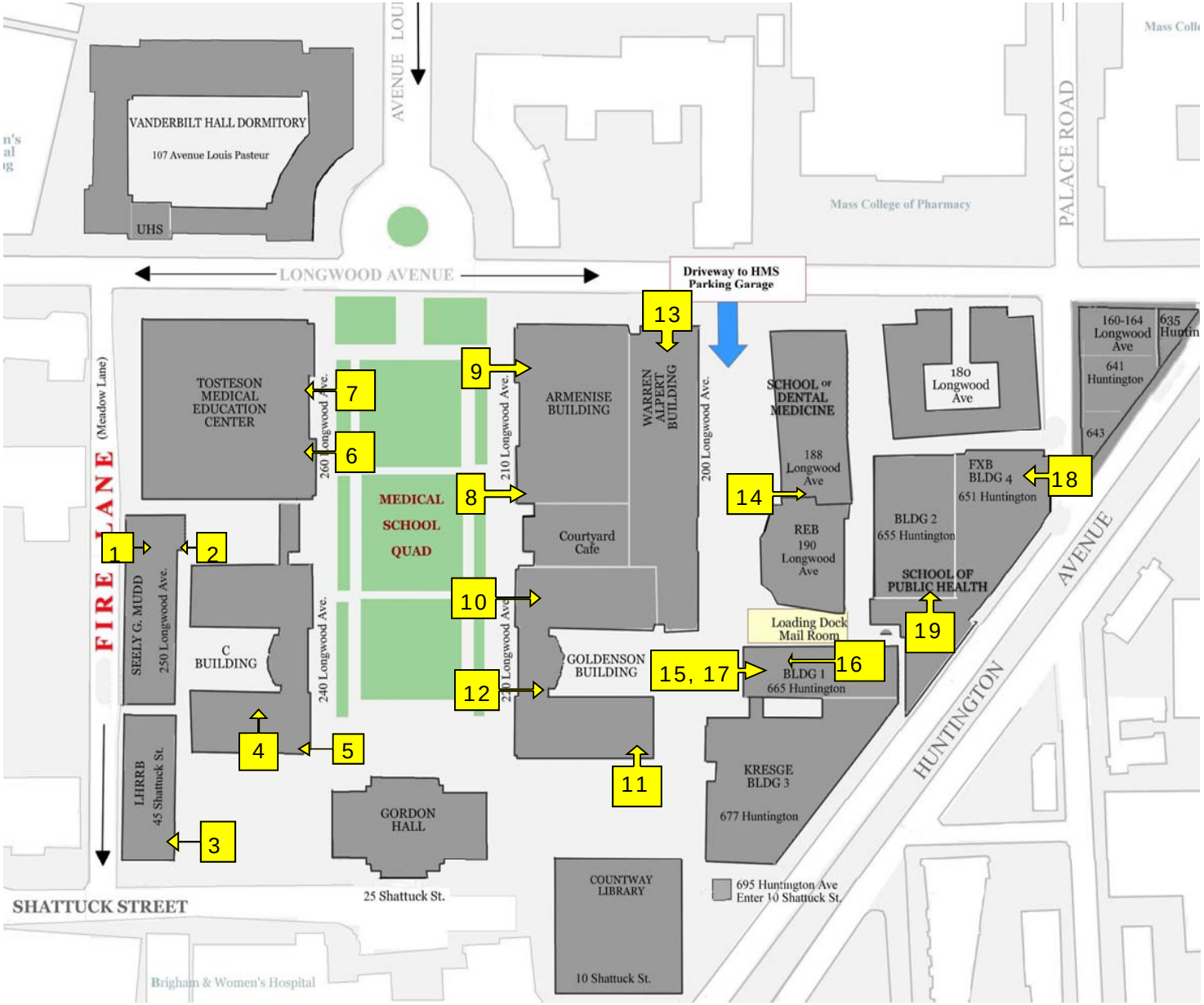
Do not attempt to clean up major, unmanageable chemical spills.

- Alert laboratory to evacuate to a safe distance or assigned assembly area.
- Raise the sash to the chemical fume hood (unless the spill occurred in the hood), while evacuating, if possible.
- Turn off open heat sources: GC, Bunsen burner, hot plate, heat gun, cauterizing furnace, etc.—if spilled material is flammable and in large quantity, and if this can be accomplished safely, with haste, as you exit the space.
- Close door(s) to affected area. Isolate area and prevent reentry. Post a "Do Not Enter" sign or place barrier tape across the door. (See emergency spill cabinets for barrier tape.)
- Relocate to a safe place and call the **Spill Emergency Response Number**. Have person familiar with the incident and laboratory available to provide information to emergency responders (fire department, medical technicians, EHS, etc.).

Do not reenter the area until you are instructed to do so by the fire department or other emergency responders.

GUIDELINES FOR CLEANING COMMON MINOR OR MANAGEABLE (INCIDENTAL) SPILLS

TYPE	EXAMPLES	ACTION TO BE TAKEN
Combustible/non-combustible Not volatile Low toxicity In small quantity	Dilute hydrochloric acid, dilute sulfuric acid, dilute sodium hydroxide	Wear appropriate PPE. Neutralize chemicals, absorb with inert clay or vermiculite, package, label with hazardous waste tag, place in SAA. Call Environmental Health and Safety for pick-up.
Flammables	Ethers Alcohols	Fast action is crucial. Extinguish all open flames. Soak up solvent with spill control pillows or solvent spill kit. Transfer to appropriate container, label with hazardous waste tag, place in SAA. Call Environmental Health and Safety for hazardous waste removal.
Highly toxic	Ammonium hydroxide Acetic anhydride	DO NOT ATTEMPT TO CLEAN UP! Alert lab personnel and PI of situation to prevent futher exposure. Alert Environmental Health and Safety and they may arrange for a chemical spill vendor to clean.
Elemental mercury		Clean small spill using a card, straight edge, aspirating bulb, and dampened amalran sponge, which can be found in the spill cabinet. For better visibility, hold flashlight almost parallel with the contaminated surface. Label and store waste in SAA. For a large spill, contact Environmental Health and Safety at 2-1720 after vacating the contaminated area.
Leaking gas cylinder or natural gas	Nitrogen (inert) Hydrogen (flammable) Oxygen (oxidizer)	For toxic and air reactive gas leaks, evacuate area and call 911. For flammable gases, shut off any open flames. Post a sign to warn others of the hazard. Alert Environmental Health and Safety and gas supplier immediately.



CHEMICAL SPILL CABINET LOCATIONS
HARVARD LONGWOOD CAMPUS

HSDM

DENTAL
- 1st floor south stairwell adjacent to REB, 14

HMS

ARMENISE
- 1st floor near D1 elevator, 8
- 4th floor near D2 elevator, 9

C BUILDING
- 1st floor near Gordon Hall, 5
- 4th floor near C1 restroom, 4

GOLDENSON
- 1st floor D1 stairwell, 12
- 2nd floor near Room 248, 11
- 4th floor near D2 stairwell, 10

LHRRB
- 1st floor lobby storage closet, 3

SEELEY G MUDD
- 1st floor entrance, 1
- 6th floor near elevators, 2

TMEC
- 1st floor near elevator on quad side near link entrance, 7
- 4th floor near elevator on quad side near link entrance, 6

WAB
- 4th floor D2 link, 13

HSPH

FXB
- 2nd floor elevator lobby, 18

SPH1
- Basement to left of exit to loading dock, 16
- 7th floor near double elevators, 15
- 8th floor near double elevators, 17

SPH2
- Ground floor link to SPH 1, 19

Updated 2/7/11

Research Animals

ARCM ..... (43) 2-1289

Research Animal Oversight:

All animal use at Harvard is under the strict control of the Standing Committee on Animals (Institutional Animal Care and Use Committee-IACUC), which assures that all animals receive humane care and are used only for valid scientific studies. Researchers are required to notify ARCM of all uses of hazardous materials within ARCM facilites.

Do you suspect mistreatment or misuse of laboratory animals?
Call the Director of the Center for Animal Resources and Comparative Medicine at (617) 432-1289. All calls will remain confidential and all allegations of animal misuse will be investigated.

Do you need training?
Email: ARCMTraining@hms.harvard.edu or call ARCM.

Do your animals need emergency veterinary attention?

- During work hours, call the **ARCM** to request consultation and training with a veterinarian or to report an animal-related emergency.
- After work hours, call the emergency veterinary number at (617) 746-8159. Enter your phone number and the vet will call you back.

Health Concerns Related to the Use of Research Animals:
Use of research animals may expose employees to several potential health risks. These risks include allergies, infectious agents, trauma from bites and scratches, and those inherent to the protocol. Exposure to the saliva or blood of infected primates and other animals may result in serious illness, or even death. For your safety and the health of the research animals, you must be trained by Animal Care staff before working with animals.

Medical Surveillance and Respirators
Tuberculosis testing is required for anyone who enters non-human primate facilities. If you have allergies, you may need to use an approved respirator. ("Comfort" or dust or surgical masks do not adequately filter hazardous agents, and may not be used for respiratory protection.) If you require a respirator, you must obtain medical clearance from the ARCM Occupational Health Program and respirator training and fit-testing from the Occupational Health Program or Environmental Health and Safety Department. Contact the ARCM if you have questions about medical surveillance related to working with animals.

Laboratory Safety Responsibilities

Roles and Responsibilities of Key Personnel: The Campus' Laboratory Safety Program is based on the premise that every member of the research community shares responsibility for safety.

Environmental and Safety Compliance Officer (ESCO): *Under the authority delegated by the Dean of each School or Faculty, ESCOs are responsible for promoting and maintaining a safe, healthy, and environmentally responsible workplace on the campus.*

Faculty/Principal Investigator (PI): *The PI is principally responsible for safety and environmental health in the laboratory and is responsible for identifying hazards associated with the job. S/he is responsible for modeling and reinforcing safe practices; ensuring that staff receive lab-specific and general training on hazards, protective procedures, and equipment; and ensuring that the lab follows pertinent regulations and prudent practices.*

Safety Coordinator: *A qualified laboratory employee (a "Safety Coordinator") may assist the PI. The PI's assignment of duties to such an assistant will not diminish the PI's responsibility for environmental compliance in the laboratory. With the support of the PI, the Safety Coordinator's responsibilities are to:*

- Serve as a liaison for environmental, safety, and compliance communications within the laboratory, and coordinate follow-up to identified compliance concerns.
- Conduct joint safety assessments with the Department Research Operations Manager (HMS/HSDM) and/or EHS Department.
- Ensure that all personnel have completed the Training and Risk Assessment Form and have attended the required training classes.
- Complete Personal Protective Equipment assessment forms for all activities within the laboratory. Monitor compliance status.
- Ensure that all required safety equipment is used properly, and required documentation is maintained and accessible to laboratory personnel.
- Coordinate laboratory participation in periodic safety activities.
- Notify Research Operations Managers of matters requiring the research department's attention.
- Advise PI, in writing, if appropriate, of any areas of non-compliance in the lab.

Department Administrator (DA): *The primary responsibility of the Department Administrator is to facilitate the compliance management program within his or her department and assist labs in remediating department-wide issues. The Department Administrator will typically be assisted by a Research Operations Manager (ROM).*

Research Operations Manager (ROM): *These managers communicate EHS programs to the labs, PIs, and their appointed Safety Coordinators. They serve as the primary liaison between the EHS Department and their basic science department, and they monitor compliance and safety issues within their department.*

Environmental Health and Safety Department: *The primary responsibility of the EHS Department is to provide technical support and guidance to laboratory personnel for the management of environmental and occupational safety compliance programs.*

Evacuation Monitor: *Walks through to verify that area has been vacated or to identify persons needing assistance during building evacuation alarms.*

Workplace Hazards

Workplace Hazard

Working in a research environment poses inherent risks associated with a variety of potential health and physical hazards. Animals, radiation, human blood and materials, and potentially infectious agents are necessary to investigate diseases and treatments of complex scientific questions. You may be working in an area where chemicals are used during laboratory procedures, procedures where animals may have been exposed to certain chemicals, or maintenance activities. Familiarize yourself with all the hazards before beginning work. Speak with your supervisor, your safety coordinator, or the Environmental Health and Safety Department. Refer to the Material Safety Data Sheet (MSDS) before working with any new chemical. MSDSs are available on the Environmental Health and Safety Department Web Page, or from the manufacturer. What follows are some hazards which may be found in the various worksites throughout Harvard University.

HEALTH HAZARDS

***NOTE**: According to the OSHA Laboratory Safety Standard, you must work with **highly and acutely toxic chemicals and gases, reproductive toxins,** and **select carcinogens** only in designated areas posted for the use of these chemicals. You must develop specific safety procedures for working with and disposing of the chemicals and decontaminating the area after use.*

Carcinogens are chemicals which cause cancer and meet specific criteria of the International Agency for Research on Cancer (IARC), the National Toxicology Program, or the Occupational Safety and Health Administration (OSHA). (Examples: acrylamide, formaldehyde, methylene chloride, ethylene oxide, benzene, antineoplastic drugs)

Corrosives cause visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. (Examples: hydrochloric, phosphoric, nitric, sulfuric, formic, trichloroacetic, and glacial acetic acid)

Irritants are chemicals which cause a reversible inflammatory effect on living tissue by chemical action at the site of contact. (Examples: acetonitrile formaldehyde, acetaldehyde, glutaraldehyde, dimethylformamide, methylene chloride, acetic acid)

Sensitizers are chemicals that cause a substantial proportion of exposed people to develop an allergic reaction in normal tissue after repeated exposure to the chemical. (Examples: formaldehyde, benzoyl chloride, phthalic anhydride)

Highly and acutely toxic chemicals and gases, according to OSHA, "may be fatal or cause damage to target organs as a result of a single exposure or exposure of short duration." (Examples: hydrogen flouride, sodium azide, cyanide salts, osmium textroxide)

PHYSICAL HAZARDS

Combustible liquids pose a physical hazard because they burn fairly easily. Although their flashpoint (>100°F) is higher than flammables, combustibles are prevalent in almost any work setting, and they can be just as dangerous. (Examples: phenol, acetic acid, dimethylformamide, vinyl toluene, aniline)

Compressed Gases are stored in cylinders under significant pressure and pose a physical hazard, because they can erupt if they are improperly stored or handled. (Examples: oxygen, nitrogen, nitrous oxide, hydrogen, argon, carbon dioxide, air)

Flammables are inherently hazardous because they readily burn. A flammable liquid has a flashpoint below 100°F. (Examples: acetone, acetic acid, pyridine, most alcohols, terahydrofuran, methylene chloride, diethyl ether, n-hexane). Flammable solids (picric example, benzoyl peroxide) and flammable gases (carbon monoxide, hydrogen, propane, acetylene) have specific flammable properties as well.

Organic Peroxides are powerful oxidizers than can react with many chemicals to cause fire and explosion. (Examples: diethyl ether, benzoyl peroxide, aldehydes)

Oxidizers initiate or promote combustion in other materials, thereby causing fire to itself or through the release of oxygen or other gases. They can cause other substances, like flammables, to burn more readily. (Examples: chromic acid, nitric acid, peroxides, many perchlorates, chlorine, fluorine, oxygen)

Pyrophoric chemicals ignite spontaneously in air at a temperature of 130°F (54.4°C) or below. (Examples: potassium metal, certain finely divided metals, organoaluminum compounds)

Unstable (Reactive) chemicals are dangerous chemicals that in a pure state, or as commonly produced or transported, will vigorously polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure or temperature. (Examples: benzoyl peroxide, isopropyl ether, ethyl ether, tetrahydrofuran, t-butyl hydroperoxide, isopropyl percarbonate)

Explosives are a specific type of reactive chemical that cause a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature. (Examples: organic azides, nitroso & diazo compounds, peroxides formed during storage of chemicals such as diethyl ether & dioxane)

Water Reactive chemicals react with water to release heat or flammable, toxic gas, or present another health hazard. (Examples: sodium metal, potassium hydride, acid anydrides)

Skin Hazards affect the dermal layer of the body. (Examples: hydrofluoric acid, acrylamide, formaldehyde, xylene)

Some agents are characterized by target organs affected:

Eye Hazards affect the eye or visual capacity. (Examples: formaldehyde, acrylamide, acetonitrile, peracetic acid)

Hematopoetic toxins affect blood formation, decrease hemoglobin function, and may deprive body tissues of oxygen. (Examples: benzene, xylene, inorganic lead, arsine, xylene)

Hepatotoxins produce liver damage. (Examples: phenol, chloroform, methylene chloride, xylene, carbon disulfide)

Lung Hazards irritate or damage pulmonary tissue. (Examples: nitric acid, acrolein, sulfuric acid, nitrogen dioxide)

Nephrotoxins produce kidney damage. (Examples: mercury compounds, xylene, chloroform)

Neurotoxins produce their primary toxic effects on the nervous system. (Examples: mercury compounds, acrylamide, n-hexane, benzene)

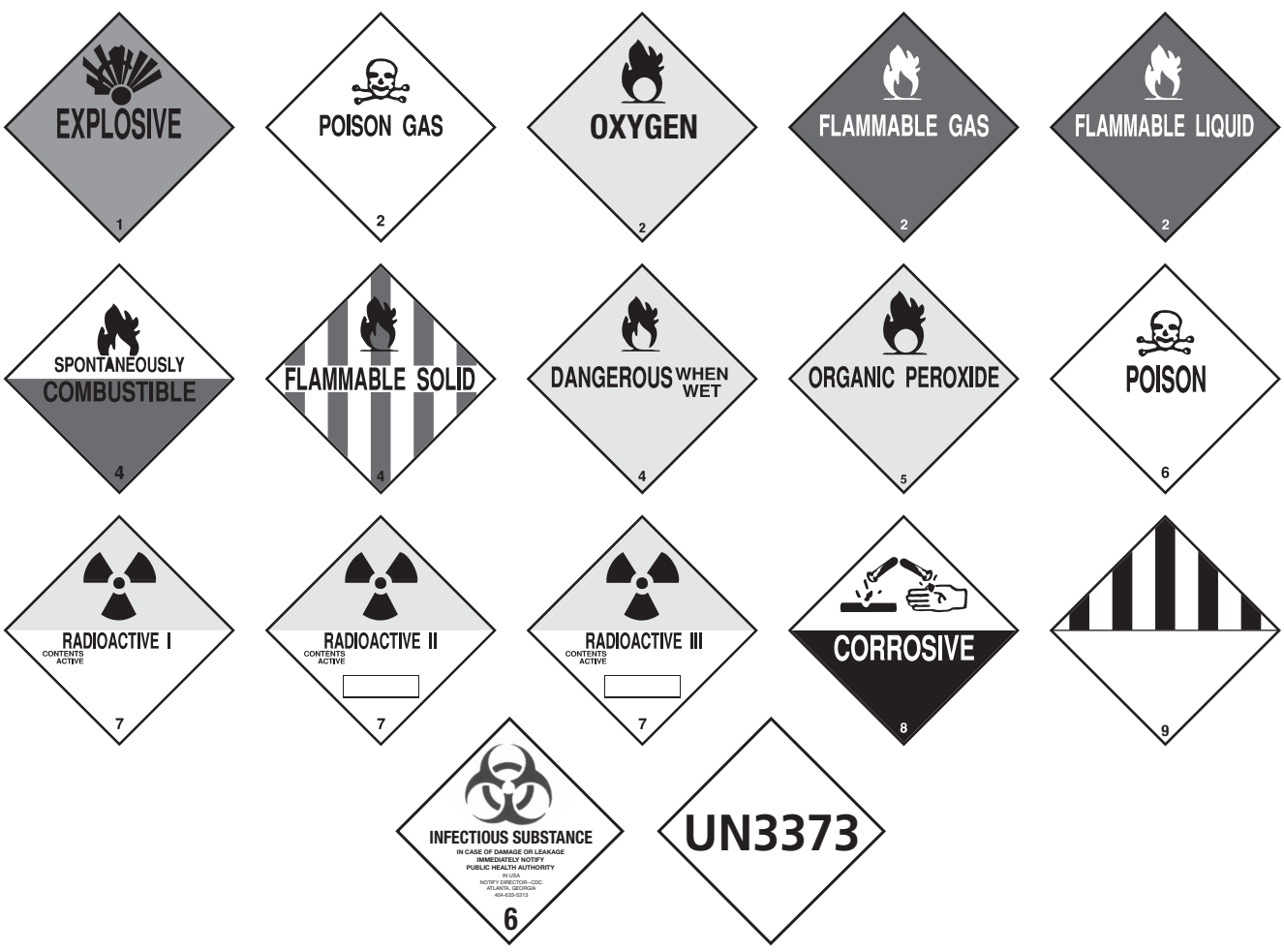
Reproductive toxins affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis). (Examples: acrylamide, dimethyl formamide, nitrous oxide)

HAZARDOUS MATERIALS TRANSPORTATION

You may receive packages containing the following hazard classes and bearing these labels:

You must be aware of the hazards associated with the material. **If you need to package, ship, or transport dry ice or any of these hazardous materials or dangerous goods, federal law requires that you receive training and that you ship according to national and international laws.**

Please contact the EHS Department for more information, training, or technical assistance.



Boston Lab Registration Regulations

CITY OF BOSTON LABORATORY REGISTRATION GUIDE

General:

Laboratory Definition: **Laboratory** shall mean a building, room, or workplace designed and/or used for the development, conduct, or observation of scientific, including but not limited to the medical, chemical, physical, or biological disciplines, experimentation or research, including non-routine testing, analysis, experimentation, or other similar activities that involve the use or storage of hazardous materials as defined by Section 20.02 (c) of the City of Boston Fire Department Fire Prevention Code. Specifically excluded from this definition are classroom laboratories, dark rooms, autoclave rooms, pharmacies, drug stores, physician's offices or the offices of other direct-care health providers, hospital or health care dispensaries, or other facilities providing medication directly to patients.

Clinical labs are not included in this registration ordinance.

Laboratory facilities shall register on or after January 1 but no later than April 1 of every calendar year.

As long as they are located within the same building and at the same physical address, an Owner/Operator may elect to aggregate Laboratories into a Laboratory Facility for purposes of registration.

In no event may an Owner/Operator aggregate Laboratories or Laboratory Facilities that are not in the same building and at the same physical address. Each building will require a separate registration.

Laboratory Square Footage: This is the summed square footage of all laboratory units within the facility (See section 3.3.36 and Annex D of NFPA 45).

"Licenses" referred to in the 4th check box is the License for Hazardous Materials and Operations. This is the land license needed for storage and use of flammable liquids, solids, and gasses over exempt amounts (these facilities also require the annual permit). "Certificates of registration" referred to in the 4th check box is the certificate issued by the Boston Fire Department after laboratory registration is complete.

The following information must be clearly marked on architectural floor plans: locations of Biosafety Level 3 and 4 labs, select agent locations, animal holding facilities, Gamma irradiators and any locations that required implementing increased controls by the DPH Radiation Control Program, main chemical storage or distribution rooms, main chemical waste accumulation areas, radiation waste processing and/or main accumulation areas, any lasers that under normal operation are categorized as Class 3b or 4, MRIs or NMRs, areas where inhabitants cannot self-evacuate, main storage and/or holding areas for compressed gases or liquid nitrogen, high voltage electrical vaults, or any other area(s) where entry during an emergency response would pose a significant hazard to response personnel.

Boston Repository Box vendors:

- L.W. Bills: (508) 352-6660
- Harold Roeder: (800) 892-0275
- Emergency Access Systems: (800) 566-9269
- Alloy Casting: (508) 378-2541

REFERENCES

- Boston Fire Prevention Code (www.cityofboston.gov/fire)
- Boston Fire Prevention Order 86-1 (Boston Fire Prevention Code beginning on page 123)
- National Fire Protection Association – NFPA (www.NFPA.org)
  1. NFPA 25 Standards for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems
  2. NFPA 30 Flammable and Combustible Liquids Code
  3. NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals
  4. NFPA 72 National Fire Alarm Code
- Massachusetts Board of Fire Regulations (www.mass.gov/dfs/osfm/boards/bfpr.htm)

COMMONLY CITED CODES, REGULATIONS, AND STANDARDS:

- Boston Fire Prevention Code-Sections: 11.06 (c), 11.06(d), 11.07 (a), 14.13, 19.04 (c), 19.06 (d), 20.04 (b), 20.04 (c), Boston Fire Prevention Order 72, Guidelines for Evacuation Planning.
- Massachusetts Board of Fire Regulations 527 CMR-sections: 1.06(1), 1.06(2), 10.02(1), 10.02(2), and 10.03(1) (2) (13-a).
- NFPA 45 Standard on Fire Protection for Laboratories Using Chemicals: Chapter 5-5.4.1, Chapter 6-6.1.1, Chapter 8-8.12.2, Chapter 11-11.1.5.1, 11.1.6, and Chapter 13-13.1.1.

REGISTRATION FEES AND PAYMENTS

Checks made payable to: *City of Boston*

1 square foot to 25,000 square feet = $500.00

25,001 square feet to 100,000 square feet = $650.00

100,001 square feet to 250,000 square feet = $750.00

250,001 square feet or more = $1000.00

No single Owner/Operator shall pay more than $5000.00 in total.

Additional registration forms and guides available on BFD website (www.cityofboston.gov/fire)

Note: This posting is required by the Boston Laboratory Registration Ordinance.

Contacts and Safety Equipment

ONLINE TEMPLATE

For your convenience, a template of this page can be downloaded from the EH&S website, completed electronically, printed, and taped to this page. The template is located under Emergency Response Guide in the Longwood Toolkit at www.uos.harvard.edu/ehs/longwood/toolkit.shtml.

HELPFUL CONTACTS AND EQUIPMENT

HUPD 432-1212
Animal Resources and Comparative Medicine (ARCM) 432-1285
HIV Benefit Plan Administrator 496-4001

- For needlesticks involving another person's blood. Contact by next day to protect your rights to potential HIV insurance benefit.

Who is your:
(Please include name and phone number.)
(Refer to Lab Safety Responsibilities tab for more information.)

Environmental Health & Safety Compliance Officer (ESCO):

HMS/HSDM _____

HSPH _____

Faculty/Principal Investigator _____

Safety Coordinator _____

Department Administrator _____

ROM _____

Evacuation Monitor _____

Radiation Permit Holder _____

Where is your emergency evacuation meeting point: _____

_____

Please refer to the Environmental Health & Safety website at: **www.uos.harvard.edu/ehs/** for information on chemical and workplace hazards, bloodborne pathogens, MSDSs, and the EH&S department.

Where is the nearest:

Disinfectant _____

Tongs or dustpan and brush _____

Spill cabinet _____
For a list of spill cabinet locations see website at www.uos.harvard.edu/ehs/longwood/SpillCabinets.pdf

Safety shower _____

Eyewash station _____

Sink drench hose _____

Special antidote _____
(For HF, use calcium gluconate gel.)

Automated External Defibrillator _____

Radioisotope hood location _____

Geiger-Mueller counter _____

Satellite accumulation area _____

Hazardous waste supplies _____

MSDS _____
(Also available on EHS website.)

Personal protective equipment (PPE) _____

Fire extinguisher _____

Chemical Hygiene Plan (CHP) _____

Exposure Control Plan (ECP) _____

Location of lab-specific SOPs:

_____