

Laboratory Inspection Program

Audience: All University laboratories
Campus Covered: All
EHS Contact: Mitchel Colgan (860)486-2691
Reg. Citations: OSHA Laboratory Standard
Last Revised: 04/03/2006

I. Applicability

The purpose of this University Policy is to ensure that annual laboratory inspections are performed to comply with health and safety guidelines; specifically that of the Chemical Hygiene Plan.

II. Scope

This policy applies to all University laboratories at the main and regional campuses.

III. Description

The following items are addressed by this policy:

1. Each laboratory will be inspected by the Department of Environmental Health and Safety (EH&S) at least once per year. Evaluation criteria can be accessed through the EH&S [Lab Inspection Program](#).
2. A copy of the inspection report will be sent to the laboratory Principal Investigator. The Principal Investigator must take corrective action and respond in writing to EH&S within 21 days of receipt of the inspection report.
3. Laboratories with violations will be re-inspected within 60 days. If progress is unsatisfactory, a second inspection report will be sent to the Principal Investigator and the department head.
4. Any Principal Investigator who oversees a laboratory with repeated violations will be requested to appear before the Laboratory Safety Committee to discuss the violation. If necessary, the Committee will refer the matter to the Office of the Provost for further action.
5. Each Principal Investigator of a laboratory is responsible for maintaining safety in the laboratory by implementation of internal safety inspections and follow-ups.

IV. 2006 Laboratory Inspection Criteria

1. Safety Resources / Documents

- A chemical inventory:

Each lab must have a complete, up-to-date (within the last year) inventory of all chemicals, with a copy placed in the laboratory. The inventory can include criteria such as locations of chemicals within the labs along with their quantities. The location of the inventory must be posted in each laboratory on a "Laboratory Safety Information card"; it should be filled out completely, and posted at the entrance of each laboratory. Call EH&S 6-2691 for new cards.

- Chemical Health & Safety Training:

New faculty and staff, new graduate students, new research assistants, visiting professors and researchers as well as all other laboratory personnel must attend Chemical Health & Safety training once every other year. This training is required for compliance under OSHA and EPA regulations for people working with chemicals. Please refer to the [Training Schedule](#) for more information on chemical training sessions.

- University Chemical Hygiene Plan (CHP):

Laboratory personnel must have access to (and be familiar with) the Chemical Hygiene Plan (CHP). A hard copy must be present in each laboratory or knowledge of how to access the plan via the EH&S website must be demonstrated. The (CHP) can be made available simply by book marking the EH&S website [Chemical Hygiene Plan](#) (Individual labs may prepare their own CHPs.)

- Material Safety Data Sheets (MSDSs):

Lab personnel must have access to all Material Safety Data Sheets (MSDSs). MSDSs can be made available simply by book marking the EH&S website's link for [MSDS's](#). Hard copies of MSDSs are also advisable.

2. Chemical Storage

- Alphabetical storage:

It should be noted here that alphabetical storage plans commonly do not segregate incompatibles, and are therefore inadvisable. Chemicals must be stored according to their hazard class: Flammables, Corrosives, Oxidizers, Poisons, Water Reactives, etc. See the University [Chemical Hygiene Plan](#) for assistance.

- Incompatibles storage:

Storage of incompatible chemicals could cause a dangerous situation for everyone on campus. Incompatibles stored near one another shall, at a minimum, be in secondary containment. ("Secondary Containment" / storage bins and trays must be compatible with all chemicals stored within the "bin." The bin must also be able to contain all contents of such storage.)

3. Flammable Storage

- Flammables stored near ignition sources, heat, flames:

Flammable liquids must be stored under appropriate conditions at all times. Flammables should not be stored near electrical outlets, vacuum pumps, and any other heat source. Storage in cabinets with electrical wiring shall be avoided.

- Storage areas of flammable material must be labeled:

The label can be either a red flammable diamond sticker or a sign stating flammable storage. These signs or labels are used by emergency personnel in the event of an emergency.

- Rated flammable cabinet:

It is strongly recommended that a flammable storage cabinet be purchased for "large flammable storage" (>5 gallons). (Storage of flammable materials outside a rated cabinet in excess of 5

gallons creates a fire hazard.) A storage unit can be used to accommodate a group of labs in an area.

- Flammables storage in an appropriate refrigerator:

Flammables must be stored in an appropriate refrigerator. Any refrigerator that is used for flammable storage must be designed and labeled for flammable or explosive storage (i.e. no ignition sources such as exposed electrical contacts) (Flammable liquid / solids are material with a flash point <140F.) (Note: small quantities may be accommodated by use of Secondary Containment, refer to Chemical Health & Safety.)

4. Acid Storage

- Corrosive liquid storage:

Corrosive liquids should be stored below eye level. These chemicals present an unnecessary splash hazard and should be stored at a lower level to avoid possible spillage.

- Acid storage areas must be labeled and kept separate:

At a minimum, acid storage areas should be labeled and kept separate from other chemical storage areas. Segregate incompatible acids by organic / inorganic / strong / weak acids.

- Acids and bases must be stored separately:

Be sure to store acids and bases separately. Segregate incompatibles with "Secondary Containment" storage bins and/or trays. The "bins" must be compatible with all chemicals stored within. The bin must also be able to contain all contents of such storage.

- Acetic acid storage:

Acetic acid is combustible and should be stored with flammables in secondary containment, or in its own cabinet. Protect acetic acid from freezing and store above 17C (63F).

- Perchloric acid storage:

Perchloric Acid should be stored ideally in its own cabinet. Perchloric acid can be dangerously reactive. At ordinary temperatures, perchloric acid solution reacts as a strong, non-oxidizing acid. At elevated temperatures, it is an exceedingly strong and active oxidizing agent, as well as a strong dehydrating reagent. Contact with combustible material at elevated temperatures may cause fire or explosion. A rated acid storage cabinet is best, or at a minimum placed in secondary containment (e.g. a non-degradable plastic basin). ("Secondary Containment" storage bins and/or trays)

- Nitric acid storage:

Nitric acid is an oxidizer and should be stored separately from other acids. Note: Nitric acid (oxidizer) shall never be stored with flammable organic liquids or organic solids material EX: WOOD! (Note: Nitric acid and Acetic acid should never be stored together)

5. Peroxidizable Stock

- Date all peroxidizable stocks:

This category of chemicals involve chemicals that cause either reaction or toxicity hazards upon long term storage and includes, but is not limited to, **ethers, picric acid, and THF**. Peroxidizable stocks should be managed / evaluated (Dated) every six months as to their stability and future use. These chemicals need to be dated upon opening. Containers that are being filled from a larger stock (i.e., from a stockroom supply) must be dated upon filling. Potentially unstable or peroxidizable chemicals shall be dated upon receipt to the lab and also when opened. If the chemical is unstable and/or is not needed, please notify EH&S for disposal. The EH&S [Peroxide Forming Agents Fact Sheet](#) may be consulted for a more complete list, but it is ultimately up to the investigator to identify and properly manage unstable/peroxidizable stocks.

- Stockpile of Peroxidizable stock chemicals:

Only the amount of peroxidizable chemicals that is needed should be kept on hand.

6. Laboratory Drains

- Floor storage is discouraged:

Chemical containers should not be stored on the lab floor. Containers stored on the floor are susceptible to breakage. Additional storage needs are to be found, or the containers must be placed in an appropriate secondary storage bin / tray. (Secondary storage bins and trays must be compatible with all chemicals stored within the "bin" and the bin must be able to contain all contents of such storage.)

- Do not keep or store hazardous chemicals near floor or sink drains:

Hazardous chemicals should not be stored on or near drains. Containers stored on the floor are susceptible to breakage. Additional storage needs are to be found, or the containers must be placed in an appropriate secondary storage bin or tray. (Secondary storage bins and trays must be compatible with all chemicals stored within the "bin" and the bin must be able to contain all contents of such storage.)

7. Container Labels

- Properly labeled containers:

Chemicals must be stored in containers with legible labels. It is strongly recommended that full chemical names be used for labeling, unless it can be shown that all laboratory personnel are familiar with the chemical abbreviations used in the lab.

- Unknown chemical contents of lab reagents / mixtures:

The laboratory must keep complete information on all chemical contents of lab reagents, mixtures etc. Lab reagent and mixture components must be filed for reference so that such chemicals can be fully identified at all times. All personnel should be aware of the contents of such reagents and/or mixtures in the laboratory.

8. Empty Containers

- Empty containers with labels in the laboratory:

When a container is empty, the label must be removed or defaced before reuse or disposal, and the cap must be removed.

- Empty containers with labels in the trash:

Empty chemical containers with intact labels cause a dangerous situation to all. Some empty containers fill with rainwater and end up at the landfill; this creates an unnecessary hazard and potentially dangerous situation. When a container is empty, the label must be removed or defaced before reuse or disposal. Once defaced, empty containers can be disposed of in the regular garbage.

9. Lab Glass

- Discarded lab glass:

Each laboratory must have a proper, puncture proof container, properly labeled for the disposal of laboratory glass. Glass should not go into red sharps containers unless contaminated with biological materials.

10. Chemical Spill Management

- Chemical spills in the laboratory:

Laboratory personnel must be aware of a chemical spill procedure for the laboratory. For MAJOR spills, or those involving extremely toxic substances, CALL 911. For manageable spills use appropriate supplies. Supplies may include sodium carbonate (for acids), or absorbents such as kitty litter, vermiculite, pads, or towels. For volatile solvents, evacuate the lab and ventilate through the fume hood. For major mercury spills (manometer), contact 911. Chemical spill cleanups are considered hazardous waste. Please follow all rules and regulations for hazardous waste disposal.

11. Personal Protective Equipment

- Lab coats, safety glasses / goggles and aprons:

Lab coats, safety glasses / goggles, and aprons must be made available to laboratory personnel. Appropriate laboratory PPE must be worn at all times while active research is under way in the laboratory. The laboratory supervisor shall offer training for proper PPE use, and point out clothing appropriate to specific procedures. At a minimum, open toed shoes and shorts are not permitted in the laboratory. Safety goggles that protect the top, bottom, front, and sides of the eye are mandatory for use around corrosives.

- Protective gloves:

Protective gloves must be made available to laboratory personnel (Appropriate chemical protective gloves). The lab supervisor shall offer training for proper glove use. Latex gloves are inadequate for the handling of hazardous chemicals, and should not be made available in a chemistry lab. Consult the EH&S [Chemical Glove Guide](#) for more information.

12. Shower / Eyewash Specifications

- Safety shower:

Showers should be within 100 feet of a laboratory, or within a 10-second walk. The safety shower should not be blocked in anyway. Annual testing by qualified personnel (Facilities) is required. If your safety shower has not been tested within the year, contact Facilities to have them test the safety shower immediately.

- Eyewash station:

Eyewash stations must be accessible for all employees where corrosive chemicals are present (pH < 2 and >12.5). They must be within 100 feet or 10-second walk. The eyewash station should be accessible at all times. Squeeze bottles are not acceptable. Daily testing of eyewash stations by laboratory personnel is recommended.

13. Personal Areas in a Laboratory

- No eating, drinking, applying cosmetics or smoking:

No eating, drinking, application of cosmetics or smoking is to be permitted in the laboratory.

- Laboratory Refrigerators:

Refrigerators used for laboratory purposes are not to be used for food storage. Signs shall be placed to designate laboratory refrigerators and personal refrigerators in all laboratories. Food should be stored in cabinets or refrigerators designated for this purpose only. Personal food storage should be labeled and located outside of the laboratory area.

- Laboratory microwaves:

Microwaves used for laboratory purposes are not to be used for personal food. Signs shall be placed to designate all ("laboratory use only" or "not for personal use") microwaves in all laboratories. Personal microwave use must be labeled and located outside of the laboratory area.

14. Electrical Safety

- Electrical cords:

Electrical cords cannot be frayed, in need of repair, and require proper installation. Extension cords are only to be used on a temporary basis. OSHA regulations require that all electrical outlets have a grounding connection only when using three-pronged plugs.

- Electrical cords grounded / overloaded:

Electrical cords should be grounded (Do not remove ground prongs). Electrical circuits must never be overloaded.

- Circuit breaker:

All laboratory personnel must know the location of circuit breakers and how to cut off all electrical service in case of fire or accident. All circuit breakers must be accessible at all times and be labeled properly.

15. Cylinders

- Cylinder in an upright position and labeled:

Compressed gas must be stored in an upright position and stored so that the label can be easily read.

- Cylinder must be attached to a solid support:

Tanks must be properly secured by a chain or strap that is attached to a solid support. Cylinders stored 3 or more are considered "ganged."

- Cylinders must not be kept near a combustion source:

Cylinders must be kept away from all combustion sources.

- Cylinders capped:

Cylinders not in use shall be capped at all times.

- Classification of compressed gases.

Compressed gases must also be taken into account when classifying chemicals. Cylinders must be stored according to their hazard class: Flammables, Corrosives, Oxidizers, Poisons, Water Reactives, etc. Refer to the University [Chemical Hygiene Plan](#) for assistance.

16. Satellite Accumulation Area

- Satellite accumulation area:

The satellite accumulation area for hazardous waste storage must be properly labeled with the green Satellite Accumulation Area sign from EH&S. There can be more than one area for waste collection and storage within the lab, but all areas must be properly labeled. Satellite accumulation areas should be separate from chemical storage areas as it is inadvisable for waste and chemicals to be mixed.

17. Hazardous Waste Management

- Hazardous waste containers:

Hazardous waste collection containers must be in sound condition, and have closed lids at all times unless making additions.

- Secondary containment:

It is good practice to place all Hazardous Waste in Secondary Containment. "Secondary Containment" storage bins and trays must be compatible with all chemicals stored within the "bin." The bin must also be able to contain all contents of such storage.

- Segregate incompatible waste:

Incompatible chemical waste must be segregated (e.g. cyanide waste and acids). Secondary containment should be used to segregate incompatible chemicals. "Secondary Containment" storage bins and trays must be compatible with all chemicals stored within the "bin." The bin must also be able to contain all contents of such storage.

- Label all hazardous waste:

While the hazardous waste container is in use, it must be labeled with the words "Hazardous Waste," and be labeled with chemical contents. Full chemical names must be used, abbreviations and chemical symbols and not acceptable. Hazardous Waste stickers are provided free of charge, call EH&S x-3613. (Stickers can be dropped off or mailed to you)

- Excessive amounts of hazardous waste:

Storage of excessive amounts of hazardous waste is not recommended. Prior to pick-up by EH&S, a properly completed hazardous waste tag including all components (fully written out, no abbreviations) and percentages of incompatible materials must be attached to the container. (**DO NOT DATE HAZARDOUS WASTE CONTAINERS UNTIL PICK-UP HAS BEEN ARRANGED WITH EH&S**) Environmental Health and Safety picks up all hazardous waste as a service on a weekly basis, Monday, Wednesday, and Friday mornings. Contact EH&S to request a [chemical pickup](#).

18. Fume Hoods

- Fume hoods storage:

Fume hoods cannot be used to store equipment and/or chemicals. Fume hoods are designed to protect the laboratory worker from exposure to hazardous vapors. When equipment and chemicals are stored in a fume hood, the fume hood does not function properly. Store chemicals and non-operating equipment in an appropriate area.

- Red fume hood sticker:

DO NOT USE THE HOOD until it has been repaired. Initiate a work order (through Facilities 6-3113) and have the hood repaired, followed by a call upon completion of repairs to EH&S for re-evaluation (6-2691).

- Yellow fume hood sticker:

Initiate a work order (through Facilities 6-3113) and have the hood repaired, followed by a call upon completion of repairs to EH&S for reevaluation.

- Green fume hood sticker:

The fume hood is in working order. An annual inspection is required. Contact EH&S for evaluation if the Laboratory supervisor feels the hood status has changed.