

TEXAS WOMAN'S UNIVERSITY LABORATORY INSPECTION GUIDE

This document is designed to assist lab inspectors with interpretation of the items to be inspected on the Laboratory Inspection Form.

A. GENERAL ADMINISTRATIVE

1. Doors should be posted with faculty members' name.
2. Laboratory members are prohibited from by themselves after hours when doing laboratory work involving any hazards.
3. Windows on laboratory doors should not be covered. Doors with windows should be clear to allow passersby to note any dangerous events or trouble in the lab.
4. Children are not allowed in the laboratory. Lab doors should be kept locked when unoccupied to maintain security of hazardous materials such as radioactive, biological, and chemical materials.
5. Laboratories should have a chemical inventory established and keep a binder with MSDSs sheets for these materials in the lab. Labs using biological materials must also have an inventory.
6. All members of the lab must have Right-to-Know (Hazard Communications) and Chemical Hygiene training verified and on file in the department office. This includes faculty members.
7. Job Hazard Analysis should be conducted on all laboratory procedures and whenever there is a change in procedure or a new procedure added. Please refer to the Chemical Hygiene Plan.
8. Personal Protective Equipment (PPE) must be made available to all lab employees at no charge. Designated PPE must be worn. Students must be told that they are required to purchase and wear those items.
9. Smoking, Eating, Drinking, and the application of cosmetics are prohibited from University laboratories.
10. Laboratory members should know the procedures to follow for a laboratory accident; ie: to pick up a red phone or dial 911 on the Denton/Dallas and Houston Campus, where first aid kits are located.
11. Lab doors should remain closed at all times to assure optimum laboratory ventilation. Keeping lab doors closed also helps prevent the spread of smoke in the event of a fire.

B. ELECTRICAL

1. Adequate electrical service is necessary in the lab to avoid the use of unsafe practices such as permanent use of extension cords.
2. Circuit breakers that service laboratory equipment should be identified as such.
3. Outlets located near sinks or other sources of water should be on a ground fault circuit or otherwise ground fault protected.
4. Extension cords are allowed for temporary use provided the weight of the cord is adequate for the load applied, contact Facilities Management. Check to be sure the extension cord is three pronged and that no cords are frayed..
5. Multi-plug devices are allowed provided they are UL listed with a built-in circuit breaker and used in accordance with their intended use.

C. GENERAL SAFETY

1. Housekeeping must be maintained so that the aisles are clear to allow for emergency egress. Could a person exit the lab quickly without tripping over movable or permanently located objects? Storage is not permitted in exit ways (hallways).
2. Floors should be in good repair, ie: no tripping hazards caused by cracks, holes, protrusions, missing tiles, etc.
3. Excess or surplus equipment should be disposed of or relocated to a storage location. When transferring equipment for disposal, be sure hazardous materials are removed prior to transfer.
4. Hot surfaces or equipment should be posted with an appropriate warning sign.
5. Laboratory refrigerators and freezers are not allowed to be used for the storage of food or drink. Make sure they are signed as such. Ice machines and microwave ovens must be treated likewise.
6. Safety showers and eyewash units should be located in the lab or nearby. They should be kept accessible at all times. They should bear a tag indicating an inspection within the last year by the Safety Office.
7. Caution should be taken to prevent contamination of the potable water supply. Hoses connected to sink faucets should not extend below the plane of the sink surface or back flow preventers should be installed.
8. There should be a first aid kit available in case of minor injuries that is accessible during the hours of operation of the lab..
9. Needles and/or syringes must be kept secured at all times. This means kept in a locked drawer or cabinet or in a locked laboratory and under surveillance of lab personnel when the lab is unlocked.
10. Is there adequate emergency lighting? Any problems should be reported to Facilities Management

D. FIRE SAFETY CONCERNS

1. Fire extinguishers should be located nearby and visible from the hallway. Check to make sure the extinguisher is charged and is not damaged. Report any deficiencies to the Safety Office.
2. If there are smoke detectors or sprinklers in the lab, make sure that nothing is stored near them that would interfere with their intended operation. No storage within 18 inches of sprinkler heads or ceiling.
3. Check for storage of combustibles near any hot surfaces or equipment. Maintain at least 18 inches from hot surfaces or equipment. Manufacture's recommendations must be followed.
4. If drying operations are performed in the lab, are procedures written for safe operation; ie: are lab personnel instructed not to use combustible trays for holding materials to be dried?
5. All fires must be reported to the Public Safety (at 911) even if they are extinguished without incident.
6. Some labs have automatic extinguishing systems such as wet sprinklers, carbon dioxide, dry chemical or FM200 total flooding. Report any deficiencies to Facilities Management.

E. CHEMICAL CONCERNS

1. Chemical spill kits should be readily available during the hours of operation of the laboratory. They must be kept stocked at all times.

2. Chemicals need to be stored by hazard class, not alphabetical, ie: Reactives, Flammables, Poisons, Oxidizers, Corrosives etc. Chemicals should be removed via the hazardous waste program before the expiration date is reached. Pay close attention to special storage requirements such as refrigeration, dry atmospheres created by desiccants, inert atmospheres, etc
3. Flammable/combustibles may not be stored in refrigerators or freezers that are not lab safe or explosion proof. Regular refrigerators and freezers should bear the caution statement prohibiting storage of these materials.
4. All chemical containers must be labeled and the labels must be securely affixed to the container. Reaction flasks must be labeled as well. Abbreviations or trade names should not be used to label containers. Common chemical or IUPAC nomenclature should be used.
5. Quantities of chemicals kept in the lab should not be excessive. Outdated chemicals should be disposed of using proper disposal methods outlined in the flow chart for waste management procedures.
6. Flammables should be stored in flammable storage cabinets wherever possible and always kept away from ignition sources.
7. Chemicals should not be stored above eye level and liquids should be stored in secondary containers.
8. Whenever possible all shelves used to store liquid chemicals should have a lip.
9. All work with chemicals that are highly toxic or carcinogenic require a Standard Operating Procedure to be developed.

F. WASTE MANAGEMENT

1. Chemical waste should be removed from the laboratory in a timely manner. Do not allow too much chemical waste to accumulate. A chemical waste collection can be arranged by using the Contacting the Safety Office.
2. The DOHS has a laboratory waste flow chart available for persons not familiar with waste management procedures. This poster should be displayed near the chemical waste storage area.
4. Laboratory glass is to be collected in "glass only" boxes, closed up and removed by custodial personnel. Chemical bottles must be triple rinsed and the labels defaced prior to disposal as laboratory glass. All Chemically contaminated glassware must be disposed of as hazardous waste. Solid waste should be kept in a properly labeled sturdy cardboard box lined with a heavy plastic bag.
4. All wastes must be labeled with tags or labels provided by the Safety Office and stored according to the hazards associated with the waste. A supply of chemical waste labels should be readily available in the lab. Abbreviations or trade names must not be used to identify contents. Common chemical or IUPAC nomenclature must be used. Label every constituent added to the container, especially with heavy metals in the parts per million ranges. Unknowns are forbidden and if discovered will be disposed of at the department's expense.
5. Waste containers must be capped or sealed at all times unless material is being added.
6. Waste containers must be compatible with contents. For example do not use metal containers to store acids or glass containers for hydrofluoric acid mixtures.
7. All liquid waste must be stored in a secondary container. Solid waste should be kept in a properly labeled sturdy cardboard box lined with a heavy plastic bag.
8. Do not fill liquid waste containers over 90% full.
9. All waste should be disposed of through the Chemical Waste Program. Normal trash cans or recycle bins should not contain inappropriate materials, i.e. used PPE or materials that can be

construed as chemical waste. Sinks should be free of stains and waste containers should not be stored in close proximity unless they are secondary containers.

G. PHYSICAL/ENVIRONMENTAL

1. Laboratory lighting should be adequate for the tasks being performed. Special task light may need to be provided.
2. Some operations or equipment may produce noise at a level of concern. The Safety Office has equipment to evaluate noise concerns.
3. Temperature ranges in the labs should be approximately between 65 and 75 degrees Fahrenheit.
4. All belts, blades or other moving parts on equipment should be guarded or otherwise protected.
5. If operations cause floors to be wet or slippery, mats to help prevent slippage should be used.
6. Check for sharp edges or points sticking out on equipment, furniture etc. that could cause struck by hazards.
7. Shields should be used when conducting experiments that could explode.
8. All lab equipment should be clean and in good working order.

H. PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. In general, proper lab attire should consist of: safety glasses, lab coats, gloves, and closed toed shoes. Sandals and shorts are not appropriate for the lab.
2. Departments are responsible for providing PPE to employees at no charge. Students may be required to obtain their own.
3. Safety glasses are mandatory in all University laboratories except laboratories used exclusively for computers and Nursing.
4. PPE contaminated with chemicals must be stored, labeled and disposed of as chemical waste.

I. VENTILATION

1. If operations in the lab involve chemicals which present an inhalation exposure hazard, a fume hood must be available for use.
2. Fume hoods are inspected by the Facilities Management for proper operation twice per year. An inspection tag should be present to verify this. The acceptable flow rate is averages approximately 100 linear feet per minute.
3. Fume hood work should be placed approximately six inches into the hood, ie: not right at the front edge. The sashes should be positioned to produce the flow rate indicated in #2. Fume hoods should not be strictly used for storage of chemicals.
4. Biosafety cabinets should not be used in place of a fume hood. These cabinets should hold a certification issued within the last year. Check to be sure the cabinet is free from clutter.

J. COMPRESSED GASES.

1. Gas cylinders should not be stored in laboratories unless they are being used.
2. Caps should be kept on the cylinders when not in use.
3. Cylinders need to be individually restrained by chains at approximately two thirds height from the floor.
4. Regulators should be replaced or recertified on a regular basis. Regulator types are matched to the type of cylinder and gas being used. Contact the gas supplier with questions.

5. Gas cylinders must be labeled with the contents. Unknown gas cylinders are very hazardous and expensive to dispose of.
6. Gas supply lines need to be compatible with the gas being used. The suppliers can provide information about proper line material. The lines also must be rated to handle the pressures used.
7. Some gas companies will accept their cylinders back empty or partially full. Companies such as this should be used to minimize chemical waste.

K. SPECIAL CONSIDERATIONS

1. The following areas require special approvals or involvement in specialized programs offered through the qualifying departments.
 - a. Radioactive materials.
 - b. Bloodborne Pathogens.
 - c. Infectious materials, Recombinant DNA, or Select Agents.
 - d. Lasers
 - e. PCBs.
 - f. Heavy Metals.
 - g. Pesticides.
 - h. Animals.
 - i. Acutely toxic chemicals.
 - j. Reproductive hazards.
 - k. Carcinogens.
 - l. Hydrofluoric acid.
 - m. Controlled substances.

2. Strict requirements exist for the shipment of Biological, Chemical or Radiological materials off campus. The regulatory agency is DOT and depending on the materials shipped may also be regulated by CDC, USDA, USNRC, etc. Contact the Safety Office if any of these materials are shipped off campus. Violations of DOT requirements carry heavy monetary penalties and in some cases criminal charges.

L. CORRECTIVE ACTIONS & FOLLOW UP

This section is intended to ensure communication of and follow up for the items found unsatisfactory during the lab inspection. All deficient items must be corrected in a timely manner and a follow up survey should be conducted by the department. A copy of each inspection form is filed with the department.

For further information regarding laboratory inspections Vick Byrd at vbyrd@twu.edu or call 81-2924.