University Occupational & Environmental Safety Program Manual

LOUISIANA STATE UNIVERSITY
OF ALEXANDRIA

Revised
May 2020
UNIVERSITY OCCUPATIONAL & ENVIRONMENTAL SAFETY POLICY

PURPOSE

To establish a comprehensive occupational and environmental safety policy that facilitates the protection of life and property by providing a campus work and learning environment that is free of recognized hazards that can cause injury, illness or property damage.

To set forth safety and environmental responsibilities, to provide support for safety rules and procedures, and to establish activities/programs which are necessary for the successful implementation of the University’s occupational and environmental safety program.

GENERAL POLICY

The University has a strong commitment to the health and safety of all employees, students, and visitors at LSU A. In keeping with this commitment, the University Occupational and Environmental Safety Policy is as follows:

1. In the interest of providing the safest environment possible for employees, students and visitors, University activities will be conducted in accordance with the applicable safety codes, and by all governmental, safety and environmental standards and other similar agencies, during the design, construction, operation, and maintenance of University facilities, even though in some cases these standards may not be legally binding on the University because it is a State institution. Guidelines of the State Office of Risk Management will form the foundation for the University Safety Program.

2. Safety and environmental rules and procedures in the University Safety Manual are very important to our safety program, and shall be vigorously enforced by supervision, using disciplinary action where appropriate. In addition to enforcement activities, supervisors are responsible for planning and assigning work that is within the training, capability, and skills of the workers.

3. Critical program elements such as periodic safety inspections, safety training, accident investigations, and safety meetings shall be implemented for all work groups as outlined in the Occupational and Environmental Safety Program Manual.

4. Recognizing that proper training is critical to employee safety, the University will provide safety and skills training to achieve a highly skilled and safe work force.

5. Each and every employee is responsible for his/her own safety, and for promoting the safety of their co-workers. Employees are encouraged to report all safety concerns related to facilities or procedures. Failure to follow appropriate safety standards may result in disciplinary action, up to and including termination of employment.

6. Vice Chancellors, Directors, and Division/Department Heads shall implement the program in their areas of administrative responsibility and shall be accountable through their respective administrative channels for the control of accidents and hazardous exposures in the work environment.

7. The Occupational Health and Safety Director is the principal provider/coordinator of all University safety and environmental requirements. This includes providing resources for the identification, evaluation, and control of hazardous situations; developing and issuing rules and procedures; management of driver safety program; consulting with employees and management; and providing safety training, hazardous waste disposal, and occupational safety and health exposure evaluations.

8. The University Safety Committee shall provide recommendations to the administration that will enhance the University Occupational and Environmental Safety Program.

Paul Goroll, Ph.D., LSU A Chancellor Date
PREFACE

Louisiana State University of Alexandria is committed to providing a safe work and learning environment. Employees and students have a right to know about health and safety hazards associated with their work and academic studies. This Safety Manual is designed to provide pertinent health and safety information so that employees and students can make knowledgeable decisions about any personal risks associated with employment or educational procedures.

Subject-specific information is available in the University Occupational and Environmental Safety Program Manual. When safety concerns arise, students are encouraged to contact their instructors. Employees should contact the immediate supervisor, Division Head, Building Supervisor and/or Campus Safety Officer. It is important that supervisors, employees, and students know their rights and responsibilities in maintaining a safe work/learning environment.
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UNIVERSITY OCCUPATIONAL & ENVIRONMENTAL SAFETY POLICY

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GENERAL SAFETY RULES FOR THE LSUA CAMPUS

The following are the most commonly used safety rules for state facilities. Rules may be modified and added in order to fit the needs of our campus.

1. No smoking in University facilities.
2. Horseplay and fighting will not be tolerated in the workplace.
3. Possession of unauthorized firearms, alcoholic beverages, illegal drugs, or unauthorized medically prescribed drugs will not be tolerated in the workplace. Inform your immediate supervisor if you are required to take medication during work hours. Written medical evidence stating that the medication will not adversely affect your decision-making or physical ability may be required.
4. Before beginning work, notify your supervisor of any permanent or temporary impairment that may reduce your ability to perform in a safe manner.
5. Use personal protective equipment to protect yourself from potential hazards that cannot be eliminated.
6. Operate equipment only if you are trained and authorized.
7. Inspect the workstation for potential hazards and ensure that the equipment or vehicle is in safe operating condition before using it.
8. Immediately report any recognized potentially unsafe condition or act to your supervisor.
9. If there is any doubt about the safe work method to be used, consult that supervisor before beginning work.
10. Immediately report accidents, near misses, and property damage to a supervisor regardless of severity.
11. Supervisors should obtain special safety permits when required. Examples of conditions requiring special safety permits are working with hot objects and working in confined spaces.
12. Follow recommended work procedures outlined for the job.
14. Report any smoke, sure or unusual odors to your supervisor.
15. Use proper lifting techniques. For objects exceeding 50 pounds in weight, the immediate supervisor must determine specific methods for safe lifting.
16. Never attempt to catch a falling object.
17. If your work creates a potential slip or trip hazard, correct the hazard immediately or use safety tape to tag the area before leaving it unattended.
18. Fasten restraint belts before starting any motor vehicle.
19. Obey all driver safety instructions.

20. Comply with all traffic signs, signals, markers, and persons designated to direct traffic.


22. Adhere to departmental rules and procedures specific to departmental operations.

23. Assist and cooperate with all safety investigations and inspections and assist in implementing safety procedures as requested.

Violations of these safety rules will result in employee disciplinary action, including possible termination of employment.
EMERGENCY FIRST AID PROCEDURES

First Aid
Emergency is defined as an unexpected, serious occurrence resulting in injury or illness requiring immediate attention. To care for such emergencies, a First Aid Team, chaired by a designated “Emergency First Aid Person In-Charge”, is appointed by the Chancellor. The First Aid Team includes individuals from the faculty, administration, and staff.

The following general procedures should be followed:

1. A campus first aid room is located in Hugh Coughlin Hall (Nursing Education Building). Access to this room is controlled by the First Aid Team. The Department of Nursing is responsible for insuring that an adequate supply of first aid materials is in the First Aid Room.

2. The “First Aid Person in Charge” or in his/her absence, a member of the First Aid Team, is to be notified regarding the need of any individual (student, visitor, faculty, or staff) for first aid. This can be accomplished by calling 911 or 9911 from a campus phone as the central location for reporting accidents and coordinating attention relating to it. After 4:30 p.m. call University Police (473-6427), or 911.

EMERGENCY NUMBERS
Campus Medical Emergency Number.........................911
University Police.......................................................473-6427 or 911
Ambulance.................................................................911
Rapides Regional Medical Center...............................473-3000
St. Francis Cabrini Hospital........................................448-6750
Utility Plant ..............................................................473-6476 or 473-6475

3. The First Aid Team is responsible for developing and posting in the first aid room a procedure to be followed in responding to the administration of first aid. This should include hospital emergency room telephone numbers and ambulance information. An immediate report should be made to the Campus Safety Coordinator, who will then be responsible for 1) contacting the family, and 2) completing any appropriate report(s) for files and future use. The First Aid Person in Charge or a team member will also file a brief report.
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NATURAL GAS EMERGENCY PLAN

A. Emergency Notification Plans

1. The procedure for notification for all threats/emergencies will be followed for gas leaks also.

B. Responding to Gas Leak Reports and Interruption of Service

1. Guidelines for emergencies will be followed for gas leaks. Refer to Page 9.

2. Gas Leak Inside of a Building
   a. Anyone discovering a gas leak should contact the Maintenance Department immediately. The Director of Physical Plant will determine concentrations of gas and source of leak. If necessary, the Chancellor or his representative will issue orders to evacuate the building using the emergency evacuation plan.
   b. Director of the Physical Plant or his/her designee will shut off building gas valve.
   c. No one is to operate any electrical switches or other source of ignition such as a phone. It may be necessary to cut building power at vacuum reclosure bank at the Physical Plant.
   d. Director of Physical Plant or his/her designee will ventilate building as necessary. Evacuated personnel will be allowed to return after ventilation.
   e. Director of Physical Plant will arrange for the repair of leaks.
   f. Director of Physical Plant or his/her designee will implement check list for major emergency if required.
   g. The following buildings have gas service: The Science Building, Student Center, Conference Center, Fine Arts Building, HPRE Building, Utility Plant, The Baptist Student Union, Short Courses and Conference Center, and the residences on campus.
   h. Refer to Guidelines for Emergencies on Page 9 for notification purposes.

3. Gas Leak Outside of Building
   a. Anyone discovering an outside gas leak should contact the Maintenance Department immediately. Director of Physical Plant will determine concentration of gas and source of leak. If necessary, areas and buildings will be evacuated immediately using fire evacuation plan.
   b. Director of the Physical Plant or his/her designee will receive sources of ignition, such as open flame, smokers, and vehicles.
   c. Director of Physical Plant or his/her designee will shut off key gas valve for affected area of campus system.
   d. The appropriate gas supplier will be notified if leak is on its lines and, if necessary, evacuate the affected area.
   e. Director of the Physical Plant or his/her designee will repair leak if on campus system.
f. Director of the Physical Plant will implement check list for major emergency if required.

g. Refer to Guidelines for Emergencies for notification purposes.

4. Interruption in Gas Supply

a. Maintenance will be contacted immediately to determine the extent and source of interruption.

b. Gas supplier will be contacted if the supplier is the source of interruption.

c. Key valves at Physical Plant and building valves will be closed.

d. Upon restoration of supply, all air from lines at Physical Plant bleed tap will be purged.

e. Each building's regulator valve will be opened and all gas pilots on gas hot water heaters, stoves, and other gas appliances will be reignited immediately.

f. Gas at regulator is never to be turned on unless appliances are accessible. If appliances are not accessible, the valve at building regulator must be left shut and the Director of Physical Plant must be notified.

g. The main shutoff valve for gas supply to the entire campus is located 33 feet west of Garry Tisdale Drive, 45 ½ feet south, southeast of LSUA sign and flag pole foundation.

C. Major Emergency Check List to be Used at the Scene

1. ___ Has fire department been called?

2. ___ Have persons been evacuated and area isolated?

3. ___ Has police department been notified?

4. ___ Has Physical Plant repair crew been notified?

5. ___ Have persons on the campus call list been notified?

6. ___ Has leak been shut off or brought under control?

7. ___ Have emergency valves or proper valves to shut down or reroute gas been identified and located?

8. ___ Is the situation under control and has the possibility of recurrence been eliminated?

9. ___ Has telephone report to the State of Louisiana been made (if necessary)?

10. ___ Has telephone report to Mineral Transportation Board (Phone Number (504) 342-4615)/DOT been made (if necessary)?
D. **Reporting Requirements: Campus Safety Officer/Director of Physical Plant**

A telephone call must be made to federal and state governmental agencies for any leak that:

1. Caused a death or injury requiring hospitalization.
2. Required the taking a segment of transmission pipeline out of service.
3. Resulted in gas ignition.
4. Caused total damage in excess of $5,000.00
5. In the judgment of the Campus Safety Officer/Director of Physical Plant, there was a significant event though it did not meet the above requirement.

The telephone report, if required, should be made at the earliest practical moment following discovery (within 2 hours). Call (202) 267-2675 or (800) 424-8802--the Department of Transportation National Response Center (NRS)--and the Emergency Response Commission via Office of State Police, Transportation and Environmental Safety Section using the Hazardous Materials Hotline phone number (225) 925-6595, and the Office of Risk Management at (225) 342-8500.

E. **Education and Training of Campus Safety Officer/Director of Physical Plant**

Campus Safety Officer and Director of Physical Plant will be periodically trained in emergency procedures, including but not limited to:

1. Emergency Plan and updates
2. Review of employee responsibilities in an emergency.
3. Maintaining records of training sessions and attendance.
4. Recognition of gas leaks or problems:
   a. **Odor**--Gas is intentionally odorized so that the average person can perceive it at a concentration well below the explosive range--generally between ½ to 1 percent volume. Gas odors are the most common and effective indication of a leak.
   b. **Vegetation**--In an area of gas leakage, vegetation may deteriorate, depending on the soil, the type of vegetation, the environment, the climate, and volume and duration of the leak. A patch of dead grass on top of a gas line can be an indication of a gas leak.
   c. **Insects (flies, roaches, spiders)**--Migrate to points of leakage due to microbial breakdown of some components of gas. Heavy insect activities, particularly near the rises, gas meter, and regulator, may be an indication of a leak.
   d. **Fungus Like Growth**--Such growth indicates gas leakage. The color of the growth is generally white or grayish--white and looks like a coating of frost.
   e. **Sound**--Listen for leaks. Usual indications of a gas leak are a hissing sound at a bad connection, a fractured pipe, or a corrosion pit hole.
F. **Accident Investigation**

In the event of serious accident, the Campus Safety Officer should:

1. Obtain a list of persons on the scene.

2. Select samples of the failed facility or equipment for laboratory examination for the purpose of determining the causes of the failure and minimizing the possibility of recurrence.

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SAFETY AND ENVIRONMENTAL RESPONSIBILITIES

A. Chancellor

As chief administrator, the Chancellor is responsible for overall direction of the campus safety and environmental program. The chancellor is responsible for establishing policies, assuring that implementation of the policies are facilitated through appropriated resources, and that rules and procedures therein are adhered to by all university personnel and students. The chancellor may delegate certain safety and environmental responsibilities to appropriate levels within the university community.

B. Vice-Chancellors, Directors, and Division/Department Heads

As key administrative elements in the organization of the campus community, Vice-Chancellors, Directors, and Division/Department Heads implement safety and environmental programs within their respective organizations and assure that implementation and enforcement is in place for all such programs. Other responsibilities include:

1. Provide for the conduct of periodic self-inspections in their areas of responsibility utilizing the appropriate inspection form.

2. Provide for the immediate investigation of all accidents resulting in personal injury to personnel for whom they are responsible and submit a report of the findings, utilizing the “DA 2000 and DA 3000” form.

3. Cooperate with the University Safety Committee when called upon to do so.

C. Faculty and Other Supervisors

As the key figures in the safety and occupational program, the immediate faculty/supervisors shall carry out instructions from their superiors and assure that safety and environmental procedures are followed in everyday operations on campus. The following responsibilities are also required:

1. Have a working knowledge of all safety principles and safety rules applicable to their area of responsibility.

2. Conduct periodic self-inspections of their area of responsibility and submit appropriate inspection reports.

3. Investigate all accidents or incidents that could have resulted in injury and/or property damage to determine cause and prevent recurrence.


5. Insure that students/employees are schooled in the proper use and maintenance of supplied safety equipment, including personal protective equipment and supplied with same.
6. Insure that the proper tools and equipment are selected for the job and are used correctly.

7. Develop efficient material handling procedures to facilitate safe lifting, carrying, and storage of same.

D. Employees, Students and Visitors

1. Obey safety and environmental rules and regulations

2. Report to appropriate authorities any unsafe conditions and procedures.

3. Refrain from actions which could cause injury or damage to property due to their lack of training, their condition, or the condition of the equipment.

4. Look out for their coworkers and others to warn/stop actions on their part which could cause injury or property damage.

E. Campus Safety Officer

1. Directs the implementation of the University Occupational and Environmental Safety Program.

2. Develops and/or makes recommendations for safety/environmental policies as needed.

3. Serves as Chair of the University Safety Committee.

4. Serves as the coordinator for federal, state, and local agencies regarding occupational and environmental safety matters.

5. Serves as the coordinator for insurance carriers regarding occupational and environmental safety matters.

6. Make safety/environmental inspections when deemed necessary by virtue of accident frequency and/or obvious hazards.

7. Coordinates, along with Superintendent of Physical Plant, Fire Marshal interface for the campus.

8. Coordinates the campus safety and environmental training program.

9. Participates as a member of the Emergency Response Team.

F. University Safety Committee

The University Safety Committee shall assist the Safety Officer in reviewing safety problems, developing means and methods for resolving the problems and in developing the necessary procedures for placing the acceptable means into effect. Specifically, the Safety Committee shall:

1. Assist in developing safety education/training programs designed to create and maintain an interest in job safety.

2. Review reports of serious accidents or fires.

3. Provide suggestions and recommendations to correct hazardous conditions and/or unsafe work practices.
4. Recommend those changes to existing practices or new practices to maximize protection for campus safety and environment.

5. Recommend physical or structural alterations required to eliminate or control hazards.

6. Assist Facilities Management with quarterly Building Inspections.

STANDARDS

Presently, political subdivisions are not included in the Occupational Safety and Health Act of 1970. Consequently, LSUA does not labor under the Act's requirements (with the possible exception of federally funded research or grant programs).

OSHA standards incorporate by reference other standards adopted by standards-producing organizations. It is, therefore, reasonable for LSUA to endorse those standards applicable to its operations. Some standards-producing organizations that are of considerable importance to us include:

1. American Chemical Society (ACS)
2. American Conference of Governmental Industrial Hygiene (ACGIH)
3. American National Standards Institute (ANSI)
4. American Society of Agriculture Engineers (ASAE)
5. American Society of Mechanical Engineers (ASME)
6. American Society of Safety Engineers (ASSE)
7. American Welding Society (AWS)
8. Compressed Gas Association (CGA)
9. Environmental Protection Agency (EPA)
10. National Fire Protection Association (NFPA)
11. National Institute for Occupational Safety and Health (NIOSH)
12. Southern Building Code (SBC)

However, LSUA is required to comply with local regulations promulgated and enforced by such agencies as the State Fire Marshal Office and the Department of Environmental Quality (DEQ).

A good case could probably be made of the over-regulation of society generally, and academia specifically; however, in view of the never-ending stream of new products, processes, and procedures placed before us, what is the alternative to assuring a safe and healthy environment in which to live, work, and study?

With that in mind, we have judiciously tried to apply generally accepted safety standards as set forth in our safety program.
LOUISIANA BUILDING CODE FOR STATE OWNED BUILDINGS

Any new construction, alteration, addition, or renovation plans for state buildings shall be endorsed by and follow rules and regulations promulgated by Facility Planning and Control.

Additionally, the plans shall be reviewed by the Office of the State Fire Marshal to assure compliance with the National Fire Protection Association Life Safety Code 101 among other codes, local or otherwise.

In order to evaluate the state of an existing building, Facilities Management shall inspect, or have inspected, the building on a quarterly basis using inspection report forms available. A copy of the inspection report shall be filed with the Campus Safety Director.

Areas of considerable concern include exits and means of egress, panic hardware, locking or obstructing exits and passageways, exit signs and exit ways, fire alarms, fire extinguishers, emergency lightings, sprinkler systems, housekeeping and evacuation diagrams.

EXITS AND MEANS OF EGRESS

Exits shall be so located and exit access shall be so arranged that exits are readily accessible at all times. Where exits are not immediately accessible from an open floor area, safe and continuous passageway, aisles or corridors shall be maintained leading directly to every exit and shall be so arranged as to provide convenient access for each occupant to at least two exits by separate ways of travel.

In no case shall access to an exit be through kitchens, storerooms, restrooms, closets, or similar spaces or other rooms subject to locking.

Ways of exit access and the doors to the exits to which they lead shall be clearly recognizable. Hangings of draperies shall not be placed over exit doors or otherwise located so as to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed so as to confuse the direction of exit.

PANIC HARDWARE FOR REQUIRED EXITS

Panic hardware is required in some instances by code, and consists of a door latching assembly device which releases the latch upon the application of a force in the direction of exit travel. Only approved panic hardware shall be used.

Required panic hardware shall not be equipped with any locking or dogging device, set screw, or other arrangement which can be used to prevent the release of the latch when pressure is applied to the release bar.

LOCKING OR OBSTRUCTING EXITS AND PASSAGEWAYS

A door shall be so arranged as to be readily opened by the occupant to provide egress at all times when the building is occupied. A latch or other fastening device on a door shall be provided with a knob, handle, panic bar, or other simple type of releasing device; the method of operation shall be obvious even in darkness.

The minimum width of any corridor shall normally be 44 inches in the clear. (Passageways, door, and exits shall be free from obstruction.) IT IS STRICTLY PROHIBITED TO CHAIN AN EXIT DOOR CLOSED IF A BUILDING IS OCCUPIED.
EXIT SIGNS

Every required sign designating an exit of way of exit access shall be so located and of such size, distinctive color, and design as to be readily visible and shall provide contrast with decorations, furnishings, or equipment which impair visibility of an exit sign. There shall not be any brightly illuminated sign, display, or objects in or near the line of vision to the required exit sign of such a character as to detract attention from the exit sign.

Every exit sign shall be suitable illuminated by a reliable light source. Externally and internally, illuminated signs shall be visible in the normal and emergency lighting mode.

A sign reading “EXIT” or similar designation with an arrow indicating the direction of the nearest approved exit shall be placed in every location where the direction of travel to reach the nearest exit is not immediately apparent.

EMERGENCY LIGHTING

Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use. Artificial lighting shall be employed at such places and for such periods of time required to maintain the illumination. For the purposes of this requirement, exit access hall include only designated stairs, aisles, corridors, ramps, escalators, and passageway leading to an exit.

FIRE ALARMS

Activation of the protective system shall occur by any or all of the following means but not limited thereto:

- Manual fire alarm initiation
- Automatic heat detection
- Automatic smoke detection
- Extinguishing system operations

Each manual fire alarm station on a system shall be accessible, unobstructed, visible, and of the same general type.

The general evacuation alarm shall operate throughout the entire building.

Audible alarm indicating devices shall be of such character and so distributed as to be effectively heard above the ambient noise level obtained under normal conditions of occupancy.

The fire alarm and heat/smoke detection system shall be tested periodically and the results of the test recorded.

PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers shall be chosen for the class of fire expected. Class of fire refers to the nature of the fuel involved as follows:

Class A—Fires involving ordinary combustible materials such as wood, cloth, rubber, and many plastics.

Class B—Fires involving flammable or combustible liquids, flammable gases, and similar
materials.

Class C—Fires involving electrical energy.

Class D—Fires involving certain combustible metals such as magnesium, titanium, sodium, potassium, etc.
NOTE: The fire class shall be designated on the extinguisher itself.

Extinguishers mounted in cabinets, wall recesses, or brackets shall be placed in such a manner that the operating instructions shall face outward. Extinguishers shall not be obstructed or obscured from view, and cabinets housing extinguishers shall not be locked.

Extinguishers shall be periodically checked and/or maintained, tagged and dated.
In general, fire extinguishers must be mounted such that travel distance to an extinguisher does not exceed 75 feet.

STORAGE OF FLAMMABLES IN STATE BUILDINGS

Storage of flammable material shall be made in fireproof containers. State buildings and public places of assembly shall be regularly policed to clean up and place in fireproof containers all flammable materials. All places of storage shall be arranged and maintained in such a manner that exit from said places and access to said places for the purpose of firefighting is not in any way impeded.

NOTE: Gasoline, paint, or other flammable liquids shall not be stored under stairwells or in halls, aisles, corridors, or passageways.

EVACUATION DIAGRAMS

Evacuation diagrams shall be placed on each floor on bulletin boards or areas where persons gather.

Diagrams shall indicate where those individuals are and the safest and most direct route out of the building.
INSPECTION PROCESS

1. Locate each component of each category listed within your area of authority. (Listing this information may help to facilitate future inspections.

2. Identify from the categories listed those items that require regular inspection. Consider the hazards; results of the loss of item use; parts and components likely to develop unsafe conditions; heat; misuse; abuse; theft; etc.

3. Use the appropriate word to describe hazard or condition found; i.e. "broken," "loose," "missing," "holes," etc. Give a more precise description of the unsafe condition when called for. Give a quantitative description when called for.

4. List: (1) the general area, (2) specific item(s) and location(s), (3) hazard or unsafe condition. Examples: Fire Protection--Emergency light B6 Smith Hall--Unit vandalized. Atmospheric Conditions--General illumination SE corridor Jones Hall--Bulb burned in ceiling fixture.

INSPECTION CATEGORIES

1. **FIRE PROTECTION**
   - Extinguishing Equipment
   - Standpipes, Hoses
   - Exits, Stairs, and Signs
   - Evacuation Plans
   - Sprinkler Systems
   - Manual Alarms
   - Emergency Lights
   - Heat/Smoke Detection System
   - Fire Doors
   - Fire Escapes, Handicap Ramps
   - Hydrants

2. **ACCESSIBILITY EXTENSIONS**
   - Visual Alarms
   - Audible Alarms
   - Restrooms
   - Fountains

3. **ELECTRICAL EQUIPMENT**
   - Bonding
   - Grounding
   - Plugs
   - Cords
   - Extension Cords and Multiple Receptacles
   - Connectors
   - Switches
   - Outlets
   - Fuse Boxes

4. **BUILDINGS AND STRUCTURES**
   - Floor Surfaces
   - Grounds
   - Windows
   - Stairs
   - Roofs/Drains
   - Walls and Partitions

5. **HOUSEKEEPING**
   - Aisles, Stairs, and Floors
   - Storage and Piling of Materials
   - Janitors' Closets

6. **ENVIRONMENTAL CONDITIONS**
   - Dusts and Sprays
   - Vapors and Fumes
   - General Illumination

7. **FIRST AID**
   - Kits
   - Stretchers and Fire Blankets
   - Emergency Showers
   - Eye Wash Stations

8. **MISCELLANEOUS**
   - Acids and Caustics
   - New Processes, Chemicals, and Solvents
   - Combustible Decorations
   - Emergency Phone Numbers
GUIDE TO BUILDING INSPECTION

The categories below correspond to those listed on the Building Inspection Report. Items to be inspected within each category are listed separately, along with guidelines for inspecting each.

1. **FIRE PROTECTION**

   Extinguishing Equipment (fire extinguishers)
   - Gauges shall read “charged”
   - Mounted with top edge no more than 5’ above floor
   - Proper kind for location

   Standpipes, Hoses
   - Hoses present in all boxes
   - Condition of hoses

   Exits, Stairs, and Signs
   - Panic hardware gives easily
   - Exit access blocked by storage or other
   - Exit door blocked, locked, chained, broken
   - Exit discharge area blocked
   - Railings secure
   - Storage under stairwells
   - Slippery stair tread surfaces
   - Exit lights illuminated
   - Emergency exit signs correspond with emergency exits
   - All emergency exits lead to the outside
   - All emergency exit doors swing in direction of exit

   Evacuation Plans
   - Plans posted
   - Plans torn, worn, missing
   - Plans in need of updating

   Sprinkler Systems
   - Full, partial, none
   - Heads broken off, leaking
   - Sufficient vertical clearance for sprinkler activation (18”)

   Manual Alarms
   - Broken, vandalized, missing

   Emergency Lights
   - Battery pack operable (push button to test)
   - Inverter system
   - Power generator

   Heat/Smoke Detection System
   - Heat/smoke detectors broken, missing
GUIDE TO BUILDING INSPECTION (continued)

FIRE PROTECTION (continued)
Fire Doors
   Stairway doors properly self-closing
   Secured in "open" position
   Wedged open

Fire Escapes, Handicap Ramps
   Ramp surfaces and hand rails adequate
   Fire escapes and handicapped routes free and clear
   Fire escape surfaces, handrails, securing adequate

Hydrants
   Condition of surrounding ground, i.e. eroded, flooded, etc.
   Easily visible and accessible

2. ACCESSIBILITY EXTENSIONS
Visual Alarms
   *

Audible Alarms
   *

Restrooms
   *

Fountains
   *

3. ELECTRICAL EQUIPMENT
Bonding
   *

Grounding
   Metal drums properly grounded to earth
   Electrical installation grounded to earth

Plugs
   Electrical equipment so designed has 3 prongs intact and utilized
   Double insulated where indicated by cord tag; has appropriate housing (plastic)

Cords
   Condition of cord and area where cord meets plug
   Secured to floor in aisles

Extension Cords and Multiple Receptacles
   Circumstances prompting extension cords and locations of same
   Circumstances prompting multiple receptacles and locations of same
   Condition
GUIDE TO BUILDING INSPECTION (continued)

ELECTRICAL EQUIPMENT (continued)

Connectors
   Condition

Switches
   Condition

Outlets
   Condition
   Location

Fuse Boxes
   Labeled
   Door closes properly
   No fuse "substitutions"

4. BUILDINGS AND STRUCTURES

Floor Surfaces
   Loose/broken tiles
   Always damp/wet
   Uneven surface
   Slippery

Grounds
   Broken/uneven pavement
   Holes in ground
   Ground protrusions (metal rods, etc.)
   Drainage
   Storm drains clogged

Windows
   Operate easily
   Designated fire windows unblocked; path clear
   Panes broken/out

Stairs
   Condition of treads
   Landings used as storage

Roofs/Drains
   Roof in need of repair; repairs scheduled
   Drains clogged
   Drain pipes broken off or cracked

Walls and Partitions
   Constrict free movement of people
   Interfere with emergency exits or exit access
   Need to be reflected on posted evacuation plans
5. **HOUSEKEEPING**  
Aisles, Stairs, and Floors  
- Storage/debris, etc. in aisles, under or on stairs  
- Water/grease/oil on floors  

Storage and Piling of Materials  
- Flammable and combustibles properly stored  
- Chemicals stockpiled  
- Stacked material in danger of falling/being overloaded  

Janitors' Closets  
- Chemical storage overload  
- Junk accumulation  
- Oily/greasy rags  

6. **ENVIRONMENTAL CONDITIONS**  
Dusts and Sprays  
- Airborne dust or mist from an operation  
- Concentration  
- Cause (probable or actual)  
- Exact location  

Vapors and Fumes  
- Cause (probable or actual)  
- Exact location  
- Area ventilation  

General Illumination  
- Fixtures/bulbs missing or broken  
- Lighting appears adequate  

7. **FIRST AID**  
Kits  
- Availability  

Stretchers and Fire Blankets  
- Availability  

Emergency Showers  
- Availability  

Eye Wash Stations  
- Availability
8. MISCELLANEOUS
   Combustible Decorations
   Plastics & paperware, trees, etc., used in decorating (i.e. Christmas)
   Check decorative lighting locations

   Emergency Phone Numbers
   Posted on or near each phone in building
   Phone number correctness
INSERT BUILDING INSPECTION FORM HERE
ADMINISTRATIVE ELEMENTS

A. WORK ORDER/HAZARD CONTROL

The Executive Director of Facility Services is responsible for LSUA’s Work Order System/Hazard Control Policy. Identified hazards shall be corrected or made safe in the most expedient method available at the time. Reporting of hazards by all members of the university community, including visitors shall be encouraged. Where a hazard has been identified, a means of tracking the corrective action to completion shall be employed.

Hazards reported to Facility Services are tracked through the work order process. They are treated with appropriate priority to assure that the hazards are corrected in a timely manner. Any workplace hazard can be reported by either calling 473-6475, or emailing cundyd@lsua.edu. The information is immediately entered into LSUA’s work order system.

Hazards reported to others in the administration shall result in an active response to check out the report hazard, and to follow up with corrective action within the means of the recipient of the report. Where the recipient cannot correct the hazard, the information shall be forwarded to Facility Services or to the Campus Safety Officer where action shall be initiated and tracking employed to assure the condition is corrected. Any hazards not corrected within 30 days are forwarded to the ORM Loss Prevention Unit. Copies shall be made to the ORM Loss Prevention Unit upon request.

Where temporary measures must be taken to guard against the hazardous condition, the person receiving the report should assure that these measures are taken, or request Facility Services to follow up on the report to get these protective measures in place. LSUA Police should be notified in any emergency hazardous situation or in the event immediate assistance is required to control access to hazardous locations by others.

Building inspections are conducted on a quarterly basis. Any deficiencies found in quarterly building inspections or inspections done by the State Fire Marshal are also immediately entered into LSUA’s work order system.

LSU Alexandria Facility Services utilizes MicroMain XM, a complete computerized maintenance management system. This system is used to address issues of both preventive and routine maintenance.

Routine maintenance is any unscheduled task that arises on campus. Work orders for routine maintenance are created as they are needed. Each are assigned a priority number and completed according to this number.

Preventive maintenance is scheduled tasks that are completed on a daily, monthly, bi-monthly, quarterly, semi-annual, and annual basis. On the last day of each month, tasks are scheduled for the next month. MicroMain XM keeps track of which tasks are to be scheduled for the month. Once the tasks are scheduled, work orders are created for each one and the work is then completed. The frequency of tasks can be altered if deemed necessary. New tasks are easily added at any time.

Work order requests are sent to the Facility Services office. The request is reviewed and prioritized by office personnel. A work order is made and assigned based on the priority given. Each work order is issued a number that can be used for tracking by MicroMain XM. The status of each work order is displayed when the work order number is entered into the MicroMain XM database. If a work order has to remain open for an extended period of time, the person that reported the problem should be notified. Once a work order is completed it is closed out in the system. This is done by entering all time used for all labor assigned to that particular work order.
MicroMain XM stores the records on all completed work orders. A copy is kept in the work order files in Facility Services.

All employees shall be informed on the work order/hazard communication procedures for reporting problems during the initial employee orientation.

B. SAFETY MEETINGS

Safety meetings on a regular basis can be effective accident prevention tools. Meetings are appropriate prior to and after the start of a new process/procedure—particularly if such process/procedure deals with hazardous materials and/or equipment. All campus wide safety meetings are the responsibility of the Campus Safety Officer. Documentation for campus wide safety meetings are kept for a minimum of 3 years by the Campus Safety Officer. Campus wide safety rules are reviewed annually at the Safety Committee meeting.

Safety meetings should be on topics that are safety related, and have effect on the group involved. They should provide for input from attendees with notes taken on suggestions. Ideally, meetings for Facility Services employees should be held on a monthly basis with a presentation on a particular subject followed by adequate discussion. It is generally accepted that short, to-the-point meetings are best; it does not preclude that meetings directed toward a complex process/procedure cannot be considerably longer. Additionally, safety training is presented to any employee upon a new assignment, task, or position with different/additional safety responsibilities or whose safety performance is unsatisfactory.

Safety meetings for faculty, academic units, and other administrative units shall be held quarterly. Campus wide safety meetings will be conducted by email. Each employee will acknowledge they read the material by forwarding a read receipt to the Campus Safety Director. The first quarter’s safety meeting will be on the University drug and alcohol policy and return to work policy, with copies of both policies attached. The fourth quarter’s safety meeting topic will be a low-risk blood-borne pathogens training with the University blood-borne pathogen policy and general safety rules attached. This procedure will fulfill safety meeting requirements as well as annual policy reviews.

C. INCIDENT AND ACCIDENT REPORTS

Any incident or accident should be immediately reported to Campus Police and the Campus Safety Officer. An incident/accident reporting form will be completed for each incident/accident that occurs whether or not it requires medical expense or lost time.

ORM DA 2000 is to be used as the basic form for reporting the incidents and accidents of employees. This report is mandatory; it is required by the State and serves as the link between LSUA and The Office of Risk Management.

All employee incidents/accidents are investigated and the DA 2000 is completed by the Campus Safety Officer or another trained staff member. The Vice Chancellor for Finance and Administrative Services serves as a back-up investigator if the Campus Safety Officer is unavailable.

The completed DA 2000 should be immediately sent to the Human Resources Management Office with a copy of the LSUA Emergency Response Report. Any employee incident or accident is entered into the STARS system by the Director of Human Resources. The Director of Human Resources also serves as a final reviewer for completeness and accuracy. The DA 2000 should be signed and dated by the final reviewer. All DA 2000s are kept on file for a minimum of 3 years.
ORM DA 2041 is to be used when the incident or accident is involving operating a motor vehicle. This applies to both a university owned or leased vehicle and all personal vehicles while on state business. The Campus Safety Officer shall be immediately notified of the incident or accident. The Campus Safety Officer will notify the Office of Risk Management by either fax or email and shall also keep copies of both forms. The DA 2041 form is due within 48 hours after the accident. It is either faxed to ORM at 225-342-4470 or emailed to DA2041-ORM@la.gov. Copies of the current DA 2041 should be kept in all university vehicles.

If a third party contacts LSUA on a state auto claim, they should be instructed to call the ORM office at 1-225-342-6031.

ORM DA 3000 shall be completed by the Campus Safety Officer or another trained staff member in the event any visitor is injured on the Campus or in a University building. The Vice Chancellor for Finance and Administrative Services serves as a back-up investigator if the Campus Safety Officer is unavailable. The Director of Human Resources also serves as a final reviewer for completeness and accuracy. The Campus Safety Director will keep completed DA 3000s on file for a minimum of 3 years.

LSUA POLICE REPORTS are made for incidents such as fire, explosions, chemical spills, and other similar incidents where property damages are involved. Copies of these reports are forwarded to the Campus Safety Officer. They provide notifications and information that can be used in accident investigations.

VERBAL REPORTS are provided to various safety and environmental groups, such as the LSUA Police, Campus Safety Committee Members and Campus Safety Officer.

D. ACCIDENT INVESTIGATIONS

An accident is defined as "an unplanned event(s) that caused personal injury or property damage." An incident is defined as "an unplanned event(s) that could have caused personal injury or property damage." All incidents/accidents, including those occurring to non-employees, should be reported to the campus police and the campus safety Director no later than the end of the work day and then be investigated by personnel responsible for the area in which the incident/accident occurred and the Campus Safety Director.

Incident/ Accident Reporting Form (DA2000-WC Only; DA3000-GL Only)
Incidents/accidents do not just happen; they are caused. The Incident/Accident Reporting Forms are used to assist in determining the causes and procedures to prevent the recurrence of similar incidents.

All spaces on the forms shall be completed. Notations such as N/A (not applicable) are not acceptable.

These forms are available online in the Loss Prevention portion of the ORM website. They appear under the section called “Forms Available.” To access the Loss Prevention portion of the ORM website use the following address: http://www.doa.la.gov/orm/lpforms.htm. These forms are also available on the LSUA website.
NOTE: When an accident involves an injury that results in employee medical expenses or workers’ compensation related loss the HRM Office shall also complete the Employer's Report of Injury/Illness, (LDOL-WC-1007) in a timely manner. This form is also known as the DA1973 (E1) and is available on-line at: http://doa.louisiana.gov/orm/formsCR.htm

AFTER ACQUIRING NECESSARY MEDICAL AID FOR INJURED PERSONS, the supervisor and Campus Safety Officer should follow these steps in investigating the accident.

1. If possible, ask the person or persons involved to describe what happened. Do not assign blame or fault; just get the facts.
2. Secure the accident scene; Survey the accident scene for information. Gather information; if a camera is available, document the scene with photographs as necessary. Assemble and secure any objects that may have contributed to the incident/accident.
3. Determine if there were any witnesses to the incident/accident and get their written description of the incident/accident.
4. Take whatever steps are necessary to prevent recurrences until the condition can be permanently corrected.
5. Once the Campus Safety Director completes the Incident/Accident Reporting Form (DA2000), it should be immediately forward to the Director of Human Resources for review and inputted into STARS. JSAs are used to investigate incidents and accidents if in currently used.

E. JOB SAFETY ANALYSIS

When to Perform a Job Safety Analysis- A job safety analysis shall be performed on all jobs that have resulted in an incident/accident trend, death, or a change in a job procedure/equipment.

Job Safety Analysis Procedures

Step 1: Select the Job- In selecting jobs to be analyzed and in establishing the order of analysis, the following factors should be considered. They are listed in order of importance.

1. Occurrence of Injuries: Jobs that have produced an incident or accident trend, or death, during the past three years shall be analyzed.
2. Frequency of Accidents: Jobs that repeatedly produce accidents (trends) are candidates for a job safety analysis. The greater the number of accidents associated with the job, the greater its priority for a job safety analysis. Subsequent injuries indicate that preventive action taken prior to their occurrence was not successful.
3. Potential Severity: Some jobs may not have a history of accidents but may have the potential for severe injury or property damage. The greater the potential severity, the greater its priority is for a job safety analysis.
4. New Jobs or a Change in a Job: New operations created by changes in equipment or processes obviously have no history of accidents, but their accident potential should be fully
appreciated. A job safety analysis shall be made on every new job with potential hazards. Analysis should not be delayed until an accident or incident occurs.

5. Death: Any accident that caused the death of an employee shall have a job safety analysis made as part of the investigation.

**Step 2: Perform the Analysis** - The supervisor responsible for the task shall perform the job safety analysis using the Job Safety Analysis Worksheet (JSA-1-00). Operator manuals from the manufactures of machines can be used as JSA’s. The supervisor or Campus Safety Officer shall conduct the job safety analysis with the help of employees who regularly perform the task. The job being analyzed shall be broken down into a sequence of steps that describe the process in detail. Avoid two common errors:

1. Making the breakdown too detailed so that an unnecessarily large number of steps result; or
2. Making the job breakdown so general that the basic steps are not distinguishable.

**As a rule, the job safety analysis should contain less than 12 steps. If more steps are needed, the job should be broken into separate tasks.**

Job safety analysis involves the following steps:

1. Selecting a qualified person to perform the analysis.
2. Briefing the employee demonstrating the task on the purpose of the analysis.
3. Observing the performance of the job, and breaking it into basic steps.
4. Recording and describing each step in the breakdown.
5. Reviewing the breakdown and description with the person who performed the task.

Select an experienced, capable, and cooperative person who is willing to share ideas. They should be familiar with the purpose and method of a job safety analysis. Sometimes it is difficult for someone who is intimately familiar with a job to describe it in detail; therefore, reviewing a completed job safety analysis before conducting one may help illustrate the terminology and procedure to be followed.

Review the breakdown and analysis with the person who performed the job to ensure agreement of the sequence and description of the steps. Variations of routine procedure should be analyzed also.

The wording for each step should begin with an action word such as "remove," "open," or "lift."

**Step 3: Identify Hazards** - Hazards associated with each step are identified. To ensure a thorough analysis, answer the following questions about each step of the operation:

1. Is there a danger of striking against, being struck by, or otherwise making injurious contact with an object?
2. Can the employee be caught in, by, or between the objects?
3. Is there a potential for a slip or trip? Can someone fall on the same level or to another?

4. Can employees strain themselves by pushing, pulling, lifting, bending, or twisting?

5. Is the environment hazardous to one's health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)?

Using the Job Safety Analysis Form (JSA-1-00), document hazards associated with each step. Check with the employee who performed the job and others experienced in performing the job for additional ideas. A reliable list may be developed through observation and discussion.

**Step 4: Develop Solutions** The final step in job safety analysis is to develop a safe, efficient job procedure to prevent accidents. The principal solutions for minimizing hazards that are identified in the analysis are as follows:

1. Find a new way to do the job. To find an entirely new way to perform a task, determine the goal of the operation and analyze the various ways of reaching this goal. Select the safest method. Consider work saving tools and equipment.

2. Change the physical conditions that create the hazard. If a new way to perform the job cannot be developed, change the physical conditions (such as tools, materials, equipment, layout, location) to eliminate or control the hazard.

3. Change the work procedure to eliminate the hazard. Investigate changes in the job procedure that would enable employees to perform the task without being exposed to the hazard.

4. Reduce the frequency of its performance. Often a repair or service job has to be repeated frequently because of another condition that needs correction. This is particularly true in maintenance and material handling. To reduce the frequency of a repetitive job, eliminate the condition or practice that results in excessive repairs or service. If the condition cannot be eliminated, attempt to minimize the effect of the condition.

Reducing the number of times a job is performed contributes to safer operations only because the frequency of exposure to the hazard is reduced. It is, of course, preferable to eliminate hazards and prevent exposure by changing physical conditions or revising the job procedure or both.

In developing solutions, general precautions such as "be alert," "use caution," or "be careful" are useless. Solutions shall precisely state what to do and how to do it. For example, "make certain the wrench does not slip or cause loss of balance" does not tell how to prevent the wrench from slipping. A good recommendation explains both "what" and "how." For example, "set wrench jaws securely on the bolt. Test its grip by exerting slight pressure on it. Brace yourself against something immovable, or take a solid stance with feet wide apart, before exerting slow steady pressure." This recommendation reduces the possibility of a loss of balance if the wrench slips.

If a job or process is changed dramatically, it should be discussed with all personnel involved to determine the possible consequences of the changes. Such discussions check the accuracy of the job safety analysis and involve personnel in an effort to reduce job hazards.

**Step 5: Conduct a Follow-up Analysis** No less than once per month, each supervisor should observe employees as they perform at least one job for which a job safety analysis has been developed. The purpose of these observations is to determine whether or not the employees are doing the jobs in accordance with the safety procedures developed. The supervisor should review the job safety analysis before doing the follow-up review to reinforce the proper procedures that are to be followed.
Step 6: Use of the Job Safety Analysis - The job safety analysis provides a learning opportunity for the supervisor and employee. Copies of the job safety analysis should be distributed to all employees who perform that job. The supervisor should explain the analysis to the employees and, if necessary, provide additional training.

New employees or employees asked to perform new tasks must be trained to use the safe and efficient procedures developed in the job safety analysis. New employees should be taught the correct method to perform a task before dangerous habits develop, to recognize the hazards associated with each job step, and to use the necessary precautions to avoid injury or accidents.

Jobs that are performed infrequently require additional effort to minimize accident potential. Pre-job instruction addressing the points listed on the job safety analysis, will serve as a refresher to employees who may have forgotten some of the hazards in performing the task and the proper procedure to be used to avoid these hazards.

Finally, the job safety analysis is an incident/accident investigation tool. When incidents/accidents occur involving a job for which a job safety analysis has been performed, the analysis should be reviewed to determine if proper procedures were followed or if the procedures should be revised. When available, owner’s and operator’s manuals can be used in place of JSAs.

Step 7: Record Keeping - Job safety analysis forms should be maintained in the department creating the documents and should be readily accessible to all employees. An index naming the task, date the job safety analysis was completed, and date the analysis was revised should be maintained. If manuals are used as JSA’s, they must be kept in the department office and be accessible to all employees.
F. SAFETY AND HEALTH INSPECTIONS AND REPORTS

1. Safety and Health Inspections

   a. Building inspection forms must be completed by Facility Services personnel along with the Campus Safety Officer quarterly in each work unit following a general building and safety inspection. Building inspection forms are kept on file at Facility Services for a minimum of 3 years and shall be made available to the Campus Safety Officer, agency head, and the Office of Risk Management’s Loss Prevention Unit upon request.

   b. Inspections performed by individual laboratory and/or shop instructors/supervisors in their specific area of responsibility should be performed at least once per semester. Laboratory and shop supervisors should be constantly on the lookout for safety rules and unsafe workplace conditions.

   c. Inspections made by Facility Services personnel include fire extinguishers, fire alarms, sprinkler systems, smoke/heat detection systems, emergency lights, and sentronic door closing systems. The inspection frequencies vary, depending on regulatory requirements.

   d. Inspections by outside agencies such as DEQ, ORM, or the Office of the State Fire Marshal are conducted at their discretion, or upon request from individuals inside and outside of the university. All records are kept at Facility Services for a minimum of 3 years.

   e. Elevator Inspections and Certificates are kept on file at Facility Services. Each elevator has posted information on where certificates are kept.

   NOTE: Inspectors who, in the normal course of inspection, find empty extinguishers, leaking sprinkler heads/valves, broke smoke/heat detectors, etc., shall report same to Facility Services as soon as possible to be entered into the work order system for repair or replacement.
USE OF COLOR

Interiors and Equipment

Perception and visibility are improved by the use of suitable colors on walls, ceilings, floors, and equipment. The light reflecting qualities of surfaces contribute to fuller utilization of available light, and properly chosen colors help eliminate sharp contrasts in brightness in the worker’s field of vision, thus contributing to good vision.

White ceilings give maximum brightness. If floors and equipment are rather dark, reflecting 25-40% of the light, then upper walls should have a reflectance of 50-60%.

By judicious use of color, an interior can be made attractive, and thus have a good psychological effect on employees. Light shades are appropriate for most parts of a plant. Green and blue tints give a cool effect and are psychologically valuable where temperatures are relatively high. A soft blue-green color is commonly used on walls. Ivory and cream are warm colors. Rose shades are suitable for female rest rooms, while blue is preferred by men. Light gray is effective for machinery; parts at the point of operation should be painted orange to highlight any dangerous parts.

Color-Coding

Color is used extensively for safety purposes. While never intended as a substitute for good safety measures and the use of mechanical safeguards, standard colors are used to identify specific hazards. Standards have been developed and are given in American National Standard Z53.1, “Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment.” In summary, they are as follows:

RED identifies fire protection equipment, danger, and emergency stops on machines.

YELLOW is the standard color for (a) marking hazards that may result in accidents from slipping, falling, striking against, etc.; (b) flammable liquid storage cabinets; (c) a band on red safety cans; (d) materials handling equipment such as lift trucks and gantry cranes; and e) radiation hazard areas or containers (with purple). Black stripes or “checkerboard” patterns are often used with yellow.

GREEN designates the location of first aid and safety equipment (other than firefighting equipment). (Also, see “BLUE” below.)

BLACK AND WHITE and combinations of these in stripes or checks are used for housekeeping and traffic markings. They are also permitted as contrast colors.

ORANGE is the standard color for highlighting dangerous parts of machines or energized equipment such as exposed edges of cutting devices and the inside of (a) movable guards and enclosure doors, and (b) transmission guards.
BLUE is used on informational signs and bulletin boards not of a safety nature. (If of a safety nature, use green.) Also has railroad uses.

REDDISH-PURPLE identifies radiation hazards; check Nuclear Regulatory Commission (NRC) regulations.

The piping in a plant may carry harmless, valuable, or dangerous contents; therefore, it is highly desirable to identify different piping systems. The American National Standard A13.1, "Scheme for Identification of Piping Systems," specifies standard colors for identifying pipelines and describes methods of applying these colors to the lines. The contents of pipelines are classified as such:

- Fire Protection--Red
- Dangerous--Yellow
- Safe--Green
- Protective Materials--Bright Blue (i.e., inert gases)

The proper color may be applied to the entire length of the pipe or in bands 8-10" (20-25 cm) wide near valves, pumps and at repeated intervals along the line. The name of the specific material is stenciled in black at readily visible locations such as valves and pumps.

Piping less than 3/4" in diameter is identified by enamel-on-metal tags.

The code also recommends highly resistant colored substances for use where acids and other chemicals may affect paints.

**PLUMBING**

Plumbers are subjected to many safety hazards; especially when working in the University environment.

Plumbing involves facing those exposures most trades are subjected to, plus the additional dangers associated with the removal/repair of science laboratory equipment.

Before dismantling such equipment as lab sinks, drains, pipes, fume hoods, glove boxes, etc., the plumber shall exercise great care.

A check with the professor or researcher in charge shall be made to try to ascertain what the equipment has generally been used for.

Example: If a fume hood which has been used mostly for work involving perchloric acid is to be repaired or removed, a complete wash down, inside and outside, is crucial to doing the job safely. A copious amount of water is the best practical prevention available to combat perchloric acid.

Sinks and pipes might contain residual acids which need neutralizing; again, a check with the professor or researcher in charge is vital to safely completing the job.

Through circumstances beyond his/her control, a plumber is sometimes required to perform a task without benefit of information relative to safety. In the event this happens, the Office of Campus Safety shall be contacted.

Additionally, plumbers shall consult the following items in the manual for other safety rules that
SAFE USE OF HAND AND PORTABLE POWER TOOLS
ELECTRICAL SAFETY
EQUIPMENT LOCKOUT PROCEDURES
SAFETY IN WELDING AND CUTTING OPERATIONS
HOT WORK CUTTING/WELDING PERMIT
PROPER USE OF LADDERS
THE EMERGENCY RESPONSE UNIT
ASBESTOS
MATERIALS HANDLING
PERSONAL PROTECTION PROGRAM

SAFETY IN WELDING AND CUTTING OPERATIONS

General

Before starting welding operations outside shop areas, see Item, Hot Work Cutting/Welding Permit.

Protective Clothing and Equipment

1. Protective clothing and equipment shall be suitable for the type of work to be performed, kept in good repair, and kept free of oil and grease.

2. Sleeves shall be kept buttoned at the wrist.

3. Collars shall be kept buttoned.

4. Fire resistant gauntlet gloves, aprons of leather or asbestos, and leggings shall be used as protection against radiated heat or sparks.

5. Front pockets on overalls and aprons, and cuffs on pants shall be eliminated.

6. Capes or shoulder covers made of leather or other flame and heat-resistant material shall be worn during overhead welding or cutting operations. Leather skull caps worn under helmet provide protection against head burns. When working in a confined space or an overhead location, ear plugs shall be worn or the ears covered with wire screen protectors.

7. Hard hats or other types of head protectors shall be used where there is exposure to falling objects.

8. Low cut shoes shall not be worn unless the ankles are covered with protective leggings.

9. Employees required to wear respirators shall keep them clean and sterilized. When not in use, such equipment shall be stored in closed containers.

10. The air line to supplied-air respirators shall be provided with a filter which will remove pipe scale, water, oil, mist, and noxious vapors. It shall also be equipped with a pressure reducing valve to prevent the supplied-air pressure from exceeding 25Psi.

11. Shock from electric arc welding can and does kill. Insulating mats of sufficient size shall be used when sitting on the same metal which is being welded. Rubber gloves shall be worn under welding gloves when welding in wet or damp locations, or when the operator is perspiring excessively.

12. After a welding job is completed, the material shall be chalkmarked “HOT,” or a warning sign
shall be posted to caution other employees.

Eye Protection

1. Goggles, helmets, hand shields, or other suitable eye protection having the proper lens shade for the work being done shall be worn during all welding or cutting operations. (See attached tables.)

2. Goggles, helmets, and hand shields shall be checked frequently. Equipment with light leaks shall not be worn, as radiation burns will result. Cracked, broken, or loose filter plates must be replaced immediately.

3. Protective colored flash goggles with side shields shall be worn under a hood for protection against harmful rays, flying chips, and sparks when an arc is struck prematurely before the helmet is lowered. The lenses shall be No. 1 or No. 3 shade. Inert gas metal-arc welding by nearby welders requires goggles under the helmet with lens shade as per table. NOTE: Momentary observation of an arc without protective lenses can cause a retinal burn, which, in turn, may result in a permanent dark area in the field of vision.

4. When arc welding operations are performed in an area that is not enclosed or isolated, workers or other persons near the welding area (generally within 75’ of the arc) shall wear appropriate goggles.

5. Flash shields shall be carried on portable welding carts as standard equipment and shall be used when necessary.

Work in Confined Spaces

1. All confined spaces such as tanks, boilers, and compartments shall be ventilated when welding operations are being performed within. When impracticable to provide such ventilation, supplied-air respirators shall be used.

2. When welding, cutting, or burning is performed in confined spaces, the cylinders shall be left outside. When welding operations are interrupted for coffee breaks, lunch, or at the end of the day, the cylinder valves shall be closed to prevent gas leaks into the confined space as this may cause oxygen depletion or an explosion hazard. Before re-entry, the tank atmosphere shall be checked for signs that oxygen depletion, flammable gases, or toxic vapors are not present.

3. In confined spaces where the means of exit is a manhole or other small opening, a means for quickly removing workers in an emergency should be provided, such as a life belt and life line. An attendant shall be stationed outside the exit at times while work is in progress. See Item, “Work In Confined Spaces.”

Ventilation

1. Mechanical ventilation shall be used as a precaution against breathing welding fumes and dust. When this is not provided, a metal frame respirator or supplied air respirator shall be used.

2. When welding on brass, bronze, galvanized iron, or cadmium plated metals, adequate ventilation shall be provided to carry off vapors. Metals containing or coated with lead, cadmium, zinc, mercury, beryllium, and similar materials produce toxic fumes when welded or cut; the latter evolving into deadly phosgene gas. Chlorinated solvent vapors <200’ from inert gas metal-arc welding shall be shielded from the arc.

3. For local exhaust suction devices to be effective, the exhaust hood entrance shall be within 9’
of the weld or cut.

Fire Prevention

1. When practicable, the object to be welded shall be moved to a safe location designated for welding. If the object to be welded cannot be moved to a safe location, all movable fire hazards in the vicinity shall be taken to a safe place.

2. Welding and cutting operations shall not be done in rooms, compartments, or confined places containing flammable vapors or dusts, nor on containers that have held flammable liquids or gases until all fire and explosion hazards have been eliminated. This is in accordance with recommendations of the American Welding Society, “Standard A6.0--Welding and Cutting Containers Which Have Held Combustibles.” For petroleum storage tanks, the recommendations of the American Petroleum Institute contained in their Manual No. RP2015, “Cleaning Petroleum Storage Tanks,” shall be followed. Also see Section, “Recycling of Used Steel Drums and Containers.”

3. Welding and cutting operations shall be performed only in areas that have been freed of fire hazards.

4. Welding shall not be performed on the outside or inside of tanks that contain flammable liquids until all explosion or fire hazards have been removed.

5. Before starting welding or cutting operations on tanks or similar surfaces, an inspection shall be made to see that no combustible material is present on either side of the surface.

6. Approved fire extinguishing equipment in good operating condition shall be kept close to all welding or cutting operations.

7. Sheet metal guards, asbestos blankets, or other similar protection shall be used to prevent sparks (which can travel up to 35’) from falling on wooden floors, partitions, or on flammable materials that cannot be moved. A fire watcher with fire extinguishing equipment shall be in attendance where combustible materials may be ignited by welding sparks. After the job is done careful inspection of these areas shall be made to ascertain that no sparks are left in flammable materials. The watcher shall be assigned to inspect the area for at least a half hour after work has been completed.

8. To prevent explosions, welding or other burning torches shall not be taken into confined spaces until pressures have been regulated and unless they are to be used immediately. Remove torches as soon as the work is finished.

9. When required, welding permits shall be made available for review by interested parties.

Gas Welding and Cutting

Storage, Handling, and Use of Cylinders:

1. Special care shall be used in the identification and selection of cylinders to insure that the proper type of gas is used. Identification shall be made from the cylinder tag instead of depending on the cylinder color code.

2. Cylinders shall be handled carefully. They shall not be dropped or jarred.

3. The loading and storage platform shall be used for outdoor storage of cylinders so that they can be transferred between delivery trucks and the platform without being dropped or jarred. Full and empty cylinders of each type of gas shall be stored separately.
4. Cylinders shall be stored so that they will not be knocked over or damaged by falling objects, passing vehicles, or persons.

5. Cylinders shall not be stored near radiators, stoves, or any other sources of heat.

6. Oxygen cylinders in shall be stored 20’ away from fuel gas cylinders and combustible materials, or if closer, separated by a non-combustible barrier (at least 5’ high) with a fire resistance rating of one-half hour.

7. All cylinder storage rooms shall be well ventilated.

8. Unless other suitable provisions have been made to prevent cylinders from upsetting during use, they shall be securely tied to a substantial stationary object.

9. Cylinder valves shall be closed and valve protection caps replaced before cylinders are moved or placed into storage.

10. Special cylinder carts shall be used for moving cylinders.

11. All cylinders shall be placed in an upright position whether in use or in storage. This prevents fuel gas liquids in LP-Gas or MAPP Gas (Methylacetylene-Propadiene) cylinders or acetone liquid in acetylene cylinders from being discharged through the regulator.

12. Cylinders shall be used in the order they are received from the supplier. When empty, their valves shall be closed, caps replaced, and the cylinders marked “MT Storage” to indicate that they are empty. Also see Section, “Handling, Using, and Storage of Compressed Gas Cylinders.”

13. Cylinders shall not be permitted to come in contact with electrical wires.

14. Cylinders shall be placed in locations where they will not come in contact with sparks or flames from welding or cutting work.

15. When cylinders are to be hoisted or lowered by derrick, they shall be securely placed on a suitably designed carrier or platform and attached to the derrick hook by means of a choker sling. Cylinders shall not be lifted by their value or caps. Electric magnets shall never be used.

16. Oxygen or acetylene cylinders shall be used only when equipped with proper regulators or reducing valves.

17. Regulators or automatic reducing valves shall be used only with the gas for which they are intended and at pressures for which they are intended.

18. While acetylene cylinders are in use, the valve key wrench shall be kept in place. It shall be removed after closing the valve.

19. The fusible safety plug on acetylene cylinders shall not be tampered with.

20. Warm water, never a flame or boiling water, shall be used to remove ice from around the outlet valve of an acetylene cylinder.

21. Leaking acetylene cylinders shall not be placed in service. When uncontrollable leaks are present, the cylinder shall be moved to a well ventilated open area, and the valve shall be opened slightly to permit the acetylene to escape slowly. Warning signs shall be displayed to keep persons with cigarettes or other sources of ignition at a safe distance.
22. The tops of acetylene cylinders shall be kept free of tools or other objects.

23. Fuel gas and acetylene cylinders shall be stored and used valve end up.

24. Fuel gas cylinders shall not be used as a substitute for compressed air, as a source of pressure, nor used for ventilation or dusting operations.

25. Oxygen cylinders shall not be stored near highly combustible material, especially oil and grease, or near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or near any other substance likely to cause or accelerate fire, or in an acetylene generator compartment.

26. Acetylene shall not be used at a pressure >15psi.

Hose Lines and Connections

1. Only hose in good condition shall be used. At regular intervals, examine pressurized hose while it is immersed in water to detect leaks.

2. Only hose designated to be used with a specific gas shall be used. In general, hoses can be identified by their color: red=fuel gas, green=oxygen, and black=inert gas.

3. Hose shall be protected from damage by trucks, falling objects, sharp edges, sparks, slag, and open flame.

4. Hose shall be placed so that it will not create a tripping hazard. Excess hose shall be coiled to prevent kinks and tangles.

5. Standard oxygen hose or regulator outlet connections have right-hand threads; fuel gas connections have left-hand threads with a grooved hex on the nut or shank. Connections shall never be forced.

6. Oil or grease shall not be used in making up connections.

7. Tape shall not be used to repair hose. Hose may be spliced using standard brass fittings (not copper tubing) and ferrules or hose clamps designed for this purpose.

8. Welders shall not stand in front of the gauges on the regulator when opening the discharge valve of the tank. Sudden pressure may destroy the gauge, blowing out the glass and parts.

Torches

1. Torches shall not be lighted by sparklighters, pilot lights, or matches. Torches shall not be relighted from hot work, especially when operating in a small confined space--if gases do not light instantly, ignition could be violent.

2. Purge oxygen and fuel gas lines individually to remove air and other contaminants before using each day. Do not purge in a confined space.

3. When torches are changed or welding is discontinued for longer than five minutes, all cylinder valves shall be closed.

4. A clear, unobstructed space shall be maintained between the work and the cylinders so that pressure reducing regulators can be reached quickly in an emergency.

5. If a flashback occurs because of combustible gas mixtures burning inside the tip, torch or
hose, faulty equipment or misuse is generally the cause. In an oxy-fuel torch, when hissing or squealing is heard, flame has passed the mixer and the torch and cylinder valves shall be shut off and the area vacated for about five minutes. If the torch, regulator, arid cylinder are cool, inspect the torch and regulator for inner damage. Discard the hose unless it will pass a pressure test—the greater of either 300psi or twice the operating pressure.

**Electric Arc Welding**

**Equipment and Cables:**

1. Before starting operations, all electrical connections shall be checked to determine that they are securely made and firmly attached to the work.

2. Work leads shall be kept as short as possible.

3. Equipment shall be examined frequently to determine that all electrical connections and insulations on holders and cables are in good condition. Loose cable connections may overheat or arc and cause a fire.

4. Be careful not to connect, the equipment ground lead of single phase units to the 3rd wire (hot) of a 3-phase power source.

5. Line cords with 3-prong plugs shall be connected to a grounded switch box or a grounded mating receptacle respectively. Three-prong plugs with a broken ground prong shall not be used.

6. Safety devices such as circuit breakers and interlocks shall not be shunted or disconnected. Power sources or line fuses shall be locked out or removed when equipment is being installed, inspected, or serviced.

7. Report any missing enclosures or defects in the motor or generator to your supervisor.

8. Terminals of the welding generator shall not contact the frame of the welder. This produces an electrical ground.

9. Only electrode holders designed to safely handle the maximum rated current required shall be used.

10. Electrode holders that are not fully insulated shall be replaced. Holders with protruding screws shall not be used.

11. Electrodes shall be removed from the holder when not in use.

12. An arc shall not be stricken on a gas cylinder or any pressure vessel as it may seriously weaken the vessel.

13. Only welding cables that are completely insulated, flexible, and of proper size for the maximum current requirements of the work shall be used. Cables shall be regularly inspected for cracks, wear, or damage and repair or replace if necessary.

14. Lengths of cable shall be connected by fully insulated lock-type connectors having a capacity equal to that of the cable.

15. Cable lugs shall be soldered to the cable and shall be securely fastened to give full electrical contact.

16. The exposed metal parts of lugs shall be completely covered with rubber tape and protected
with friction tape. Exposed parts of electrical units shall have insulating covers in place before the power is turned on.

17. Proper electrical contact shall exist at all joints when a building structure or pipeline is used temporarily as a ground-return circuit.

18. When a structure or pipe is continuously used as a ground for the machine, all joints shall be electrically bonded to establish a good ground.

19. Pipe containing gases, flammable liquids, or conduits carrying electrical conductors shall not be used as a ground-return circuit.

20. Welders shall make every effort to keep welding cables dry, grease and oil-free, and protected from sparks or hot metal.

21. Cables shall be supported from overhead when practical.

22. Cables laid on the floor or ground shall be protected so they will not be damaged or cause a tripping hazard.

23. Welding cables shall not be located close to other power supply cables or other high-tension leads.

24. When discontinuing work, the power supply switch in the equipment shall be opened and the unit disconnected from the source of power.

25. Welding rods shall be stored in the container on the welding machine; not thrown on floors or staging.

26. Welding shall never take place in damp areas without insulation to protect workers against electrical shock. Dry duckboard or a mat shall be used if necessary.

27. Gas or diesel electric generators shall have the exhaust gases vented to the outside to avoid the toxic effects of carbon monoxide and other gaseous byproducts.

NOTE: The hazards connected with atomic hydrogen and heli-arc welding are essentially the same as described herein for arc welding.

**Spot Welding**

The use of this type of welding presents certain hazards inherent to the nature of spot welding equipment.

1. Prior to spot welding, the material is usually cleaned in a caustic or slightly acid bath. Employees performing these wash operations shall be protected from splashing liquid.

2. Under no circumstances shall the operator of a spot welding machine adjust the contactors. This shall be done by a trained electrician.

3. In hand spot welding installations, eye protection shall be required to protect the operator from the spattering metal.

4. Operators shall exercise extreme care when cleaning the tips of the contactors to prevent having their fingers crushed between tips.

5. Welding of materials such as stainless and high carbon steels causes excessive spattering of metal. Operators shall be cautioned to protect against the possible penetration of the metal into the tips of the fingers. See Item, "Hot Work Permits."
FILTER LENS SHADE NUMBERS FOR PROTECTION AGAINST
RADIANT ENERGY

<table>
<thead>
<tr>
<th>Gas Welding Operation</th>
<th>Shade Number</th>
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<tbody>
<tr>
<td>Soldering</td>
<td>2</td>
</tr>
<tr>
<td>Torch brazing</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Light cutting, up to 1”</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Medium cutting, 1” to 6”</td>
<td>4 or 5</td>
</tr>
<tr>
<td>Heavy cutting, over 6”</td>
<td>5 or 6</td>
</tr>
<tr>
<td>Gas welding (light), up to 1/8”</td>
<td>4 or 5</td>
</tr>
<tr>
<td>Gas welding (medium), 1/8” to 1/2”</td>
<td>5 or 6</td>
</tr>
<tr>
<td>Gas welding (heavy), over 1/2”</td>
<td>6 or 8</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Electric Arc Welding Operation</th>
<th>Shade Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shielded metal-arc welding 1/16, 3/32, 1/8, 5/32 inch diameter electrodes</td>
<td>10</td>
</tr>
<tr>
<td>Gas-shielded arc welding (nonferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes</td>
<td>11</td>
</tr>
<tr>
<td>Gas-shielded arc welding (ferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes</td>
<td>12</td>
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<tr>
<td>Shielded metal-arc welding 3/16, 7/32, 1/4 inch diameter electrodes</td>
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<tr>
<td>Atomic hydrogen welding</td>
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<td>Carbon-arc welding</td>
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</table>
HANDLING, USING, AND STORING OF COMPRRESSED GAS CYLINDERS

NOTE: Also see SAFETY IN WELDING AND CUTTING OPERATIONS

Handling Cylinders

1. Only cylinders approved for use in interstate commerce for transportation of compressed gases shall be accepted.

2. Numbers or marks stamped on cylinders shall not be removed or changed.

3. Because of their shape, smooth surface, and weight, cylinders are difficult to carry by hand. Cylinders may be rolled on their bottom edge but never dragged. Cylinders weighing more than 40 pounds (18.2 kg total) shall be transported on a hand motorized truck and suitably secured to keep them from falling.

4. Cylinders shall be protected from cuts or scratches.

5. Compressed gas cylinders shall not be lifted with an electro magnet. Where cylinders must be handled by a crane or derrick as on construction jobs, they shall be carried in a cradle or suitable platform and extreme care shall be taken to see that they are not dropped or bumped. Slings shall not be used.

6. Cylinders shall not be dropped or be allowed to strike each other violently.

7. Cylinders shall not be used for rollers, supports, or any purpose other than to contain gas.

8. Safety devices in valves or on cylinders shall not be tampered with.

9. When in doubt about the proper handling of a compressed gas cylinder or its contents, the supplier of the gas shall be consulted.

10. When empty cylinders are to be returned to vendor, they shall be marked EMPTY or NT with chalk. Close the valves and replace the valve protection caps if the cylinders are designed to accept caps.

11. Cylinders to be transported shall be loaded to allow as little movement as possible. Secure them to prevent violent contact or upsetting.

12. Cylinders shall always be considered full and shall be handled carefully. Accidents have resulted when containers under partial pressure were thought to be empty.

13. The fusible safety plugs on acetylene cylinders melt at about the boiling point of water. If an outlet becomes frozen or clogged with ice, it shall be thawed with warm (not boiling) water applied to the valve only. A flame shall never be used.

Using Cylinders

1. Cylinders, particularly those containing liquefied gases and acetylene, shall be used in a secured upright position to prevent them from being accidentally knocked over.

2. Unless the cylinder valve is protected by a recess in the head, the metal cap shall be kept in place to protect the valve when the cylinder is not connected for use. A blow on an unprotected valve might cause high pressure gas to escape.

3. The threads on a regulator or union shall correspond to those on the cylinder valve outlet.
Connections that do not fit shall not be forced.

4. Cylinder valves shall be opened slowly. Cylinders without handwheel valves shall be opened with a spindle key, special wrench, or other tool provided or approved by the gas supplier.

5. Cylinders of compressed gas shall not be used without a pressure-reducing regulator attached to the cylinder valve except where cylinders are attached to a manifold—in which case the regulator shall be attached to the manifold header.

6. Before making connection to a cylinder valve outlet, the valve shall be “cracked” for an instant to clear the opening of particles of dust or dirt. The valve and opening shall always be pointed away from the body and not toward anyone else. Fuel gas cylinder valves shall not be cracked near other welding work, sparks, open flames, or other possible sources of ignition.

7. Regulators and pressure gauges shall be used only with gases for which they are designed and intended. Make no attempt to repair or alter cylinders, valves, or attachments. This shall be done by the manufacturer.

8. Unless the cylinder valve has first been closed tightly, no attempt shall be made to stop a leak between the cylinder and the regulator by tightening the union nut.

9. Fuel gas cylinders in which leaks occur shall be taken out of use immediately and handled as follows:
   a. The valve shall be closed and the cylinder taken outdoors well away from any ignition source. The cylinder shall be properly tagged and the supplier notified.

   A regulator attached to the valve may be used temporarily to stop a leak through the valve seat.

   b. If the leak occurs at a fuse plug or other safety device, the cylinder shall be taken outdoors well away from any ignition source, the cylinder valve opened slightly, and permit the fuel gas permitted to escape slowly. The cylinder shall be plainly tagged. NO SMOKING or IGNITION SOURCE signs shall be POSTED. A responsible person shall stay in the area until the cylinder is depressurized to make sure that no fire occurs. The supplier shall be promptly notified and follow his instructions for returning the cylinder.

10. Sparks, molten metal, electric currents, excessive heat, or flames shall not be permitted to come in contact with the cylinder or attachments.

11. Oil or grease shall never be used as a lubricant on valves or attachments of oxygen cylinders. Oxygen cylinders and fittings shall be kept away from oil and grease such cylinders or apparatus shall not be handled with oily hands, gloves, or clothing.

12. Never use oxygen as a substitute for compressed air in pneumatic tools, in oil pre—heating burners, to start internal combustion engines, or to dust clothing. It shall be used only for the purpose for which it is intended.

13. Cylinders shall never be brought into tanks or unventilated rooms or other closed quarters.

14. Cylinders shall not be filled except with the consent of the owner and then only in accordance with DOT (or other applicable) regulations. No attempt to mix gases in a compressed gas cylinder or to use it for purposes other than those intended by the supplier shall be made.

15. Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.
**Storing Cylinders**

1. Cylinders shall be stored in a safe, dry, well-ventilated place prepared and reserved for the purpose.

2. Cylinders shall not be stored near elevators, gangways, stairwells, or other places where they can be knocked down or damaged.

3. Oxygen cylinders shall not be stored within 20’ (Gm) of gas cylinders or highly combustible materials.

   If closer, cylinders shall be separated by a fire-resistive partition at least 5’ (1.6 in) having a fire resistive rating of at least 1/2 hour.

4. Acetylene and liquefied fuel gas cylinders shall be stored with the valve end up. If storage areas are within 100’ (30.5 in) distance of each other and not protected by automatic sprinklers, the total capacity of acetylene cylinders stored and used inside the building shall be limited to 2000 ft (57 in of gas, exclusive of cylinders in use or connected for use. Quantities exceeding this total shall be stored in a special room built in accordance with the specifications of NFPA 51, “Oxygen-Fuel Gas Systems for Welding and Cutting,” either in a separate building or outdoors.

5. Acetylene storage rooms and buildings shall be well ventilated. Open flames shall be prohibited. Storage rooms shall have no other occupancy.

6. Cylinders shall be stored on a level, fire resistive floor.

7. To prevent rusting, cylinders stored in the open shall be protected from contact with the ground and against weather extremes such as ice and snow accumulations in winter and continuous direct rays of the sun in the summer.

8. Cylinders are not designed for temperatures in excess of 130°F (54°C). Accordingly, they shall not be stored near sources of heat such as radiators or furnaces, or near highly flammable substances like gasoline, oil or volatile liquids.

9. Cylinder storage shall be planned so that cylinders will be used in the order in which they are received from the supplier.

10. Empty and full cylinders shall be stored separately with empty cylinders plainly identified as such so as to avoid confusion. Cylinders having held the same contents shall be grouped together.

11. A flame or electric arc shall never be permitted to contact any part of a compressed gas cylinder.

12. Storage rooms for cylinders containing flammable gases shall be well ventilated to prevent the accumulation of explosive concentrations of gas; no source of ignition shall be permitted; smoking shall be prohibited; wiring shall be in conduit; electric lights shall be in fixed position, enclosed in glass or other transparent material to prevent gas from contacting lighted sockets or lamps, and they shall be equipped with guards to prevent breakage; electric switches shall be located outside the room.

**PAINTING**
Painters are subjected to many safety hazards and exposures including: fire, poisoning, falls, eye injury, strains, and dermatitis.

A. Fire

After use, cans of paint, thinners, or lacquers shall be closed. This is particularly important when working inside a building or other enclosed area where a heat source or sparks could be present or when moving paints, thinners, or lacquers in a truck or van.

All rags or towels soaked with paint, thinners, or lacquers shall be disposed of in approved containers after each shift. All paints, thinners, or lacquers shall be returned to the shop. Stock shall be kept in appropriate cabinets or bins. The shop shall be kept clean and as free as possible of flammable materials. The shop shall be equipped with at least one 2 C Class B or ABC fire extinguisher. NO SMOKING signs shall be posted in the shop.

B. Poisoning

Employees using a spray painter shall be protected from harmful mists as a result of overspray. Protection shall meet at least NIOSH/MSHA approved dual cartridge respirator requirements. There are, a number of disposable face masks meeting the above requirements. Such protection is vital due to the possible effects of oil and/or lead based or other harmful mists from paints, thinners, and lacquers that could damage the respiratory system. It is also important that a spray paint booth maintain sufficient air velocity to carry overspray and fumes away from the operator’s face. Good maintenance and housekeeping of the system is a must for proper operation. (Air ducts shall be kept open, fan belts tight, and paint accumulations removed.) Also see TABLE OF RESPIRATORS.

C. Eye Injury

When introduced into the eye, paints, thinners, lacquers, or other solvents could produce painful and dangerous results. Painters painting overhead shall wear appropriate eye protection to prevent paint or other materials from dropping into the eyes. When surfaces are prepared for painting by wire brushing, sanding, or scraping, eye protection shall be used. Also see EYE AND FACE PROTECTION CHART.

D. Falls

See LADDERS AND SCAFFOLDS.

NOTE: It is permissible for painters to use metal ladders, provided the work does not involve removing electrical appliances and/or working around energized equipment or lines.)

E. Strains

Moving ladders can and has caused back and muscle strains to many painters. Ladders are heavy and odd-shaped; they present quite a challenge to move, lift, or position. Large ladders shall be handled by two persons to prevent possible strain.

F. Dermatitis

Some individuals are susceptible to dermatitis, an inflammation of the skin (usually the hands, arms, or neck) caused by paints, thinners, or lacquers. To help prevent dermatitis, employees shall wear long sleeves, gloves, and keep the top button of their shirt buttoned while painting. Painters shall give consideration to wearing a hat when working. Also see HAND PROTECTION.
SAFETY RULES FOR WOODWORKING MACHINES

General

1. All machines shall be constructed and maintained so that they are free of excessive noise and harmful vibration.
2. All machines, except portable or mobile ones, shall be level and shall be securely fastened to the floor or other suitable foundation.
3. Small units shall be secured to benches or stands of adequate strength and design.
4. Tools shall be used only on machines for which they were designed.
5. All safety devices shall be regularly checked for proper adjustment.
6. Machines shall be securely locked and tagged out before cleaning.
7. Loose clothing, long hair, jewelry, and gloves shall not be worn around rotating parts of machinery.
8. Adjustments shall not be made while machines are running.
9. All metal framework on electrically driven machines shall be grounded and shall comply with the National Electrical Code (NFPA-70) and applicable local codes.
10. All machines shall have a cutoff device within reach of the normal operating position.
11. Power controls and operating controls shall be located within easy reach and away from a hazardous area. They shall be positioned so the operator can remain at the regular work location.
12. Each operating control shall be protected against unexpected or accidental activation.
13. There shall be ample marked work space around each machine.

Housekeeping

1. Good housekeeping shall be maintained to prevent buildup of dust, chips, sawdust, and scraps.
2. The working surface of machines shall be kept clear of scrap and waste materials.

Guards

1. All belts, shafts, gears, and other moving parts shall be fully enclosed or be grounded in accordance with American National Standard B15.1, “Safety Standards for Mechanical Power Transmission Apparatus”.

NOTE: See MACHINE SAFEGUARDING REQUIREMENTS for more information.

Illumination

1. The machines and the adjacent stock areas shall be adequately illuminated.

General work areas - 50 foot-candles;
Fine work - 100 or more foot-candles.
There should be no shadows or reflected glare.

NOTE: See ILLUMINATION FOR OCCUPATIONAL TASKS for more information.

**Inspection**

1. Machines shall be inspected before each use. Areas of inspection include operating controls, safety control, power drives and sharpness of cutting edges, and other parts to be used.
2. Cutting edges and tools shall be kept sharp at all times. They shall also be properly adjusted and secured.
3. All shops and machines shall be inspected on a regular basis. See INSPECTION SCHEDULES AND REPORTS for information on frequencies and inspection forms to use.

**Personal Protective Equipment**

1. Individuals in the work area shall wear eye protection times
2. All workers shall wear close-fitting apparel and avoid loose clothing, neck ties, gloves, and jewelry.
3. Hair nets or caps shall be worn over long hair to keep it away from moving parts. Beards shall be kept trimmed close to the face.
4. Safety shoes shall be worn when handling heavy material or when there is potential for foot injury.

   NOTE: See PERSONAL PROTECTIVE EQUIPMENT for more information.

**Code References for Woodworking Machines**

1. OSHA 1910.213.
2. American National Standard 01.1 and 0.1.a, “Safety Requirements for Woodworking Machinery”.


GUIDE TO WOODWORKING

Table Saw

1. Feed with body to side of stock.
2. Adjust blade to appropriate height.
3. Use guard with splitter and anti-kickback fingers.
4. Keep stock firm against fence.
5. When crosscutting, remove ripfence.
6. Make sure blade is guarded by approved guard.

Circular Saw

1. Make sure blade is guarded by approved guard.
2. Make sure stock does not bind.
3. Use correct type blade. See “Circular Saw Blade” chart this section.
4. Keep blade tight in arbor.
5. Make sure work is firmly supported.
6. Make sure there are no obstructions to work.
7. Use manufacturer’s recommended speed for materials being cut.

Radial Arm Saw

1. Rip sawing--direction of (cut) feed and anti-kick fingers.
2. Use blade guards.
3. Pull for cross cuts except 3” - 4” thickness.
4. Make sure end plates on track-arm tight.
5. Clamp handles tight.
6. Make sure material tight to fence.
7. Return cutter to rear of track.

Band Saw

1. Feed with body to side of stock.
2. Guard height shall allow 1/2” clearance of material.
3. A band saw should have a tension control device to indicate proper blade tension.
4. Release cuts before long curves.
5. Stop machine to remove scrap or pull out incomplete cut.

Jointer/Planer

1. Make sure knife projection which extend beyond this body of the head is not more than 1/3”.
2. Use long length stock.
3. Use sharp cutters.
4. Do not pass hands over cutters.
5. Use push stick for small stock.
6. Guard should adjust itself to the moving stock (swinging guard).

Wood Shaper

1. The stock should be clamped securely in place.
2. Use correct guard.
3. Feed into knives--do not back off.
4. No feeding between fence and cutter.
5. Collar and starting pin work for irregular work-stock of sufficient weight.
6. Make sure fence opening is only enough to clear cutters.
7. Use stock as guard by shaping the underside of stock.
8. Make sure spindle nut is tight.
9. Shape only pieces 10” or longer.
Sander

1. Keep hand from abrasive surface.
2. Adequate exhaust system available.
3. Belt or disk in good condition.
4. Sand on downward side of disk.

Lathe

1. Stock without defects; glued joints dry. (When using V-Belt, power should be off when changing speeds.)
2. Make sure tool rest is close to stock.
3. Hold tools firmly in both hands.
4. Remove tool rest when sanding or polishing.

CIRCULAR SAW BLADES FOR CUTTING WOOD

HOLLOW GROUND PLANER BLADES are for precision cross cutting, mitering, and ripping on all woods, plywood, and laminates where the smoothest of cuts are desired.

MASTER COMBINATIO BLADES are used for use on all woods, plywood, and wood base materials, such as fiberboard and chipboard. This type blade is better for cross cut and mitering than for ripping in solid woods. The teeth are set, and deep gullets are provided for cool and free sawing.

RIP BLADES are primarily intended for rip cuts in solid woods. The teeth are set and deep
gullets are provided for cool and free cutting.

PLYWOOD BLADES are fine tooth cross cut type blades intended for cross cutting of all woods, plywood, veneers, and chipboard. It is especially recommended for cutting plywood where minimum of splintering is desired. The teeth are set and sharpened to give a smooth but free-cutting blade.

CHISEL TOOTH COMBINATION BLADES are all-purpose blades for fast cutting of all wood where the best of finish is not required. Ideal for use in cutting of heavy rough timbers, in framing of buildings, etc. It crosscuts, rips, and miters equally well.

CABINET COMBINATION BLADES are for general cabinet and trim work in solid wood. It will cross cut, rip, and miter hard and soft wood to give good accurate cuts for moldings, trim, cabinet work.

STANDARD COMBINATION BLADES are used for all hard and soft wood for crosscut, rip, or miter cut. It is especially recommended for use on power miter boxes and for accurate molding and framing work.

METAL-CUTTING BLADES

NONFERROUS METAL CUTTING BLADES are for cutting brass, aluminum, copper, zinc, lead, bronze, etc. Blades are taper—ground and need no set. Use wax or lubricant on the blades, for best results.

STEEL SLICER BLADES are for cutting thin steel and sheet iron up to 3/32-inch (2.4 mm) thickness. Not for use on nonferrous metals, wood, or plastic. This blade will give off sparks.
when cutting steel because it cuts by friction. Always keep sawdust chips free of machine to prevent fires.

FLOORING BLADES are tungsten carbide-tipped blades especially designed for rough cutting where occasional nails, metal lathe, etc. will be cut. It is especially recommended for the professional carpenter or installer of air conditioning or heating ducts where it is necessary to cut through old walls and floors. Always wear safety goggles when cutting metal.

MACHINE SAFEGUARDING REQUIREMENTS

Flywheels

1. All parts of flywheels which are 7’ or less above the floor or working platform shall be guarded.

2. Screens shall be placed in front of all flywheel spokes to protect against accidental contact by pipe, bars, rods, and similar materials.

3. Flywheel pits shall be surrounded with a standard railing and a toeboard not less than 6” high with standard railing, toeboard, and spoke guard showing.

Machine Guards

1. Where guard or enclosure is within 2” of moving parts, openings through the guard shall not be >3/8”.

2. If guards are >4” and less than <15” from moving parts, then the largest opening shall not be >2”. Where slatted guards are used, the opening shall not be >1”.

3. Inclined belt guards shall be installed so that the vertical clearance between the lower run of the belt and the floor shall not be <7” at any point outside of the guard.

4. Any panel in a guard exceeding 6 ft or 42” in either dimension shall be supported by an additional frame member.

5. A standard railing placed not <15” nor >20” from a flywheel, is acceptable; but a railing shall not be used where other types of guards are specifically required such as guards for gears, sprockets, and V-belts.

6. When frequent oiling must be done inside the guard, openings with hinged or sliding self-
closing covers shall be provided. All points not readily accessible shall have oil fed tubes or grease gun connections outside the guard if lubricant is to be added while machinery is in motion.

7. Self-lubricating bearings are recommended.

Gears, Sprockets, Friction Drives

1. All gears or sprockets shall be completely enclosed or shall be guarded with side flanges extending inward beyond the roots of the teeth.

2. All spokes on open web gears, sprockets, or friction drives shall be guarded to prevent accidental contact.

3. The contact points of all friction drives must be enclosed.

Belt, Chain or Rope Drives

1. Single or multiple V-belts, located 7’ or less from the floor or working platform shall be completely enclosed.

2. Belt, chain, or rope drives 7’ or less above the floor or platform shall be guarded. The guard shall extend to at least 15” above the belt or to a height of 7’; however, where both runs of a horizontal belt are 42” or less from the floor, the belt shall be fully enclosed.

3. Overhead horizontal drives with a lower run of 7’ or less from the floor or platform shall be guarded on the bottom and sides to a height of not <7’, or 15” above the lower run.

4. Horizontal flat belts and chain or rope drives, regardless of height above the floor or platform, shall be guarded for the entire length if located over passageways or workplaces. The guards shall follow the line of the pulley to the ceiling or to the nearest wall, thus enclosing the belt effectively. Where this is impractical, the guard shall enclose the top and bottom runs of the belt and the faces of the pulleys. The guards shall be of sufficient strength to restrain broken belts or drives.

Shafting

1. All horizontal shafting 7’ or less from the floor, working platforms, or runways shall be guarded.

2. All vertical or inclined shafting 7’ or less from the floor, working platforms, or runways shall be guarded.

3. Shafting under benches or tables shall (1) be completely enclosed, or (2) be guarded by a trough which shall extend at least 2” above or below the shafting; open space is not to exceed 6” below the table or above the floor, or (3) be protected with a rigid guard from the underside of the bench to 2” below the bottom line of shafting.

4. Projecting shaft ends lower than 7’ from the ceiling or story base shall either be cut off smoothly within one-half the diameter of the shaft or shall be guarded by a non-rotating guard.

5. Unused keyways shall be filled, covered, or guarded.

Belt Conveyors

1. Means for stopping the motor or engine shall be provided at the operator’s station and also at
the motor or engine.

2. Conveyor systems shall be equipped with an audible warning system to be sounded immediately before starting up the conveyor.

3. Emergency stop switches shall be arranged so that the conveyor cannot be started again until the actuating loop switch has been reset to running or "ON" position.

4. All conveyors passing over occupied locations shall be guarded so as to prevent material from falling.

5. All belt conveyor head, tail, tension, and dip take-up pulleys shall be guarded to cover the entire sides of the pulleys and along the run of the belt a sufficient distance so that a person cannot reach behind the guard and become caught in the nip point between the belt and pulley.

NOTE: See attached DRAWINGS:
- Typical Examples of Guard Construction
- Totally Enclosed Guard, Split, and Hinged for Either Top or Side Opening
- Combination Belt and Pulley Guard
- Shafting Guards

**TYPICAL EXAMPLES OF GUARD CONSTRUCTION**

Iron Pipe Guard with wire cloth filler.  
Wire Mesh in " round rod frames.

Protection of rough edges--Sheet Metal  
No. 24 or heavier.  
Expanded Metal in " round rod frames.
Totally Enclosed Guard, split and hinged for either top or side opening.

COMBINATION BELT AND PULLEY GUARD

HINGE

HASP
SHAFTING GUARDS

GUARDING CUTTING ACTIONS BY BARRIER GUARDS

The cutting of each wood shaper should be enclosed by an adjustable guard so designed as to keep the operator’s hand away from the cutting edge. Patterns or jigs for holding stock while shaping are also desirable.
Shaper guards.

**GUARDING CUTTING ACTIONS BY ENCLOSURE GUARDS**

Tilting table saw guard.

Circular saws should be provided with a hood that covers the saw at all times to the depth of the teeth. Hood should adjust itself automatically to thickness of, and remain in contact with, material being cut. A spreader and anti-kickback device should be provided. The exposed part of the saw underneath the table should be guarded.
Rip saw guard.

Radial saw.

In addition to hood enclosing the blade, an adjustable stop should be provided to limit forward travel and head should automatically return to starting position. When used for ripping, a spreader and anti-kickback device should be provided.
In addition to the hood enclosing the blade, the swing should be provided with a limit chain or other device to limit forward travel and a device to automatically return the head to starting position. Hood should enclose saw.

GUARDING CUTTING ACTIONS WITH ENCLOSURE GUARDS

The saws of the edger should be enclosed and there should be pressure rolls on both the feed and take-off sides. Non-kickback teeth should be provided on at least the feed side of the saws. All belts, pulleys, and gears should be enclosed.
Self feed rip saw.

Saw and feed rolls should be completely enclosed.

GUARDING CUTTING ACTIONS BY BARRIER GUARDS

Jointer guards should automatically adjust themselves to cover all sections of the head on the working side of the fence or gage and should remain in contact with the material at all times. The section of the cutting head back of the fence of gage should also be guarded.
Jointer guards.

Lathes.
A clear plastic shield held in place by a magnet will protect against flying particles.

A metal bank around the face plate prevents contact with the lathe dog.

Milling machine. Mesh guard over cutter to protect against contact and flying particles.

Band or band resaw wheels should be completely enclosed and all portions of the blade should be guarded, except that portion between the guide rolls and the table.
Abrasive wheel guard.

Guard should be strong enough to withstand the shock of a bursting wheel and be adjustable to the wear of the wheel, tempered or laminated glass with protective glass on the underside should be used. Work rests should be kept adjusted close to the wheel with a maximum distance of ".

Portable abrasive wheel should also be guarded by as complete an enclosure as practical.
GUARDING CUTTING ACTIONS BY POSITION

Food grinders.

Hopper of such size and neck so small that operator’s fingers cannot come in contact with the worm.

Distance from front of hopper to opening over worm is such that operator cannot reach into the worm.

The roll feed of the candy cutter is guarded by an adjustable barrier.
PROPER USE OF LADDERS

NOTE: Adapted from Physical Plant Operating Instructions Manual Introduction
Because of the potential for personal injury and property damage due to the improper use and handling of ladders, there is a need to communicate safe handling procedures for handling this equipment.

A. Responsibilities

1. Supervision
Supervisors are responsible for having all employees under their supervision who use ladders read and understand this and any other safety policies/procedures pertaining to ladders.

2. Employees
Employees are responsible for reading, understanding, and complying with this instruction. Employees are also responsible for asking questions of their supervisors if they do not understand this instruction. Any employee who is aware of any safety problem is responsible for correcting the problem or reporting it to a higher authority. Violation of any safety policy, procedure, or instruction may result in disciplinary action.

B. Ladders (General)

The following practices shall be promoted to avoid mishaps:

1. The base of each ladder shall be set firm and level on the floor or ground.

2. Walkways for access to and from ladders, as well as areas at the base and top, shall be kept clear of ice, mud, materials, equipment, or debris. Ladder rungs or steps shall be free of ice or mud.

3. Ladders shall not be used as support for scaffolds. While ladder jack scaffolds are acceptable under certain federal regulation, they are for light duty use only.

4. Ladders shall be long enough so that workers can perform their functions without climbing higher than the third step from the top. Refer to Figure L-1 for proper signage.

5. Never use two ladders spliced together.

6. Manufactured ladders used on floors or other set surfaces shall be equipped with safety feet.

7. A ladder shall never be set up in a driveway or in front of a door where the, swing of the worker stationed at the foot of the ladder to keep the ladder from being struck.

8. When using a ladder in a walkway, barricade the work area.

9. Workers shall face the ladder and use both hands when ascending or descending. Tools and materials shall be raised and lowered by hand lines or other means; they shall not be carried by the worker except via use of a tool belt, etc.

10. Workers shall never attempt to move a ladder while they are on it and they shall avoid overreaching. Both actions can cause a ladder to fall.

11. The length of straight manufactured ladders shall not exceed 30' for a single ladder or 60' for an extension ladder.
12. The length of job-made ladders shall not exceed 24' for a double cleat ladder or 30' for a single cleat ladder. Refer to attached, "Ladders Made on the Job," for more information.

C. Step Ladders

Step ladders shall be used only in a fully opened position with spreader bars locked. The top two steps shall never be used for standing purposes. Refer to Figure Li for proper signage.

D. Straight Ladders/Extension Ladders

Straight ladders and extension ladders (except fixed ladders) shall be placed so that the base of the ladder is horizontally approximately 1/4 the distance from the base to the upper point of support away from the base of the wall or structure. Refer to Figure 2.

E. Wood Ladders

Standard manufactured ladders shall be of proper size and construction, well cared for, and unpainted. While they shall not be painted, a clear coat of shellac or varnish on a ladder shall protect the wood but not cover up defects. They shall be discarded when cracked or split.

Job-built ladders shall be made of good stock, free from knots, and according to accepted standards. The cleats shall be recessed into the side rails, or filler blocks shall be attached to the side rails between the cleats. The cleats shall be secured with three (3) nails at each end. When cracked or split, the ladder shall be destroyed and discarded. Refer to attached "Ladder Made on the Job" for more information.

F. Metal Ladders

Metal ladders shall not be used when working on electric circuits. Refer to Figure L-3 for proper signage.

G. When working above second floor level:

1. When a scaffold or mechanical lift is available and appropriate for the work, do not use a ladder.

2. When working from a ladder, the base of the ladder shall be stabilized by sandbags or an employee shall stabilize the ladder by holding it. When sandbags are used, two fifty pound sandbags shall be placed behind each leg of the ladder to brace it from slipping backwards.

3. Ladders shall be fastened securely to a stable support at the tip, if possible, with a rope of sufficient strength to prevent side to side movement. Refer to Figure L-2.

4. The employee shall wear a safety belt or harness when there is a safe place to anchor it. The line used to connect the belt/harness to a stable support of a building shall have a maximum length of 5'.

Ladder Checklist

Use the attached "Ladder Inspection Checklist" when inspecting ladders.
# Ladder Inspection Checklist

<table>
<thead>
<tr>
<th>General</th>
<th>Needs Condition</th>
<th>Repair</th>
<th>O.K.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose steps or rungs (considered loose if they can be moved at all with the hand)</td>
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<td></td>
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<tr>
<td>Loose nails, screws, bolts, or other metal parts</td>
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<td></td>
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<tr>
<td>Cracked, split, or broken uprights, braces, steps, or rungs</td>
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<tr>
<td>Slivers on uprights, rungs, or steps</td>
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<tr>
<td>Damaged or worn non-slip bases</td>
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<tr>
<td>Stepladders</td>
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<td></td>
<td></td>
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<tr>
<td>Wobbly (from side strain)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Loose or bent hinge spreaders</td>
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<tr>
<td>Stop on hinge spreaders broken</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Broken, split, or worn steps</td>
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<tr>
<td>Extension Ladders</td>
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<tr>
<td>Loose, broken, or missing extension locks</td>
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<tr>
<td>Defective locks that do not seat properly when the ladder is extended</td>
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<tr>
<td>Deterioration of rope, from exposure to acid or other destructive agents</td>
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<tr>
<td>Trolley Ladders</td>
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<tr>
<td>Worn or missing tires</td>
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<tr>
<td>Wheels that bind</td>
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<tr>
<td>Floor wheel brackets broken or loose</td>
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<tr>
<td>Floor wheels and brackets missing</td>
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<tr>
<td>Ladder and rail stops broken, loose, or missing</td>
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<tr>
<td>Rail supports broken or section of rail missing</td>
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<tr>
<td>Trolley wheels out of adjustment</td>
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<tr>
<td>Trestle Ladders</td>
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<tr>
<td>Loose hinges</td>
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<tr>
<td>Wobbly</td>
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<tr>
<td>Loose or bent hinge spreaders</td>
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<tr>
<td>Stop on hinge spreader broken</td>
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<tr>
<td>Center section guide for extension out of alignment</td>
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<tr>
<td>Defective locks for extension</td>
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<tr>
<td>Sectional Ladders</td>
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<tr>
<td>Worn or loose metal parts</td>
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<tr>
<td>Wobbly</td>
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<tr>
<td>Fixed Ladders</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Loose, worn or damaged rungs or side rails</td>
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<tr>
<td>Damaged or corroded parts of cage</td>
<td></td>
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<tr>
<td>Corroded bolts and rivet heads on inside of metal stacks</td>
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<tr>
<td>Damaged or corroded handrails or brackets on platforms</td>
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<tr>
<td>Weakened or damaged rungs on brick or concrete slabs</td>
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<tr>
<td>Base of ladder obstructed</td>
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<tr>
<td>Fire Ladders</td>
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<tr>
<td>Markings illegible</td>
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</tr>
</tbody>
</table>

71
LADDERS

L-1: Signage indicating top two steps shall not be used for standing or sitting.

L-2: Caution sign for metal ladders.

L-3: Safe procedure in setting up a ladder. The base shall be ¼ the ladder length from the vertical plane of the top support. Where the rails extend above the top landing, ladder length to the top support is only considered.
LADDERS MADE ON THE JOB

Manufactured ladders ("code" ladders) shall comply with the state and federal safety codes and standards. Metal or other conductive ladders shall be prohibited where the ladder or a worker using the ladder might come within 4’ of electrical wiring or equipment. Ladders placed where they could be moved or knocked over shall be protected by barriers or guards.

Light Trades Ladders

<table>
<thead>
<tr>
<th>Requirements for:</th>
</tr>
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<tbody>
<tr>
<td>Length (feet)</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>up to 12</td>
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<td>12-20</td>
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<tr>
<td>20-26</td>
</tr>
</tbody>
</table>

Maximum Single Cleat
Maximum length – 30 feet
Width at top - 15” minimum, 20” maximum.

Mason’s or Hodcarriers Ladders

<table>
<thead>
<tr>
<th>Requirements for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (feet)</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>10-12</td>
</tr>
<tr>
<td>12-16</td>
</tr>
<tr>
<td>16-20</td>
</tr>
</tbody>
</table>

Maximum length – 20 feet
Width at top - 17” minimum.
Maximum length – 24 feet
Rails - 2" X 6" minimum
Rungs - 1" X 4" minimum

Recommended safe angle for portable ladders.

SCAFFOLDS

A scaffold is a temporary, elevated working platform for supporting employees and materials.

**General Requirements**

1. The footings or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose bricks, or concrete blocks shall not be used to support scaffolds or planks (OSHA 1926.451(2)).

2. A scaffold shall support four times its maximum load (employees and material).

3. Scaffold planking shall be of scaffold grade or equivalent with a maximum width of 2” X 10”. Planking shall extend over the end supports not less than 6” nor more than 12”.

4. Scaffolds 10’ or more off the ground require the use of guardrails and toeboards.
   a. Toeboards shall be a minimum of 4” in height.
   b. Guardrails shall be 2” X 4”. Toprail height shall be 42” with a centered midrail. Guardrail supports (minimum of 2” X 4”) shall be at maximum intervals of 8’.
   c. Midrails shall be 1” X 6” or wider, centered between the guardrail and toeboard. The midrail shall be nailed to the inside of the support post.

5. If the scaffold is erected in an area where workers or other persons will pass under it, a screen of #18 gauge U.S. standard wire of 1/2” mesh or equivalent shall be erected between the toeboard and toprail of the guardrail.

6. A safe access ladder shall be provided to all scaffolds.

7. Overhead protection shall be provided for scaffold workers when overhead hazards exist.

8. The use of lean-to-scaffolds or shore scaffolds is prohibited.

9. When suspended scaffolds (or equivalent) are to be used, the Office of Campus Safety should be contacted for consultation.

10. Damaged scaffolding or components shall be replaced before the scaffold is used.

11. All rented scaffolds shall be examined thoroughly for condition of the scaffold (structural damage) and lack of or non-matching components (no guardrails, toeboards, etc.).

12. For wooden-pole, portable, tubular, horse, outrigger, etc., type scaffold requirements, refer to OSHA 1926.451(a) through .451(y) and the attached Requirements for Various Scaffolds, Safety Engineering Standards, U.S. Insurance Group.

**Scaffold Checklist**

Use the attached "Stationary Scaffold Safety Check List" when inspecting stationary scaffolds.

**Platforms and Stairways**
For platform and stairway requirements, see “Platforms and Stairways” and “Runs and Risers for Stairs” attachments.

**Floor and Wall Openings**

Temporary, emergency, or permanent floor and wall openings shall be protected by a top rail, intermediate rail, and toeboard (if required) when there is danger of an employee or material falling to a lower level. Refer to attached “Floor, Roof, Wall, and Elevator Openings” for standard rail requirements.

**PLANKING**

Only lumber inspected and graded as scaffold planking shall be used.

Planks shall overlap by at least 12". They shall extend 6" to 12" beyond the center of the supports. Planks shall be secured to the scaffold.

The working surface of a scaffold shall be no less than 20" wide. If the scaffold base is more than 30" wide, additional planking shall be used.

<table>
<thead>
<tr>
<th>Planking 2&quot; x 10&quot;</th>
<th>Full thickness Undressed Lumber</th>
<th>Nominal* Thickness Lumber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working load (p.s.f.)</td>
<td>25 50 75</td>
<td>25 50</td>
</tr>
<tr>
<td>Permissible scan (ft.)</td>
<td>10 8 6</td>
<td>8 6</td>
</tr>
</tbody>
</table>

*Nominal thickness lumber not recommended for heavy duty use.

Footblocks and Sills, Ties and Braces: Same as for heavy trades’ scaffolds.
LIGHT TRADES WOODEN-POLE SCAFFOLDS

For scaffolds up to 20' high, uprights shall be made of 2" X 4" or heavier lumber and spaced no more than 3' apart at right angles to the wall, and no more than 10' center-to-center parallel to the wall. For scaffolds over 20' high, at least 3" X 4" uprights shall be planked with 2" scaffold-grade planking in good condition.

Light trades wooden-pole scaffolds are suitable for carpenters, lathers, shinglers, painters, sheet—metal workers and other workers who do not use heavy tools or store heavy materials on scaffolds.

Minimum Size and Maximum Spacing of Members for Lights Trades' Wooden Pole Scaffolds

<table>
<thead>
<tr>
<th>Uniformly distributed load</th>
<th>Not to exceed 25 p.s.i.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum height</td>
<td>20 ft.</td>
</tr>
<tr>
<td>Poles or uprights</td>
<td>2 x 4 in.</td>
</tr>
<tr>
<td>Pole spacing (longitudinal)</td>
<td>10 ft. maximum</td>
</tr>
<tr>
<td>Pole spacing (transverse)</td>
<td>6 ft. maximum</td>
</tr>
<tr>
<td>Ledgers</td>
<td>(2) 1 x 6 in.</td>
</tr>
<tr>
<td>Bearers to 3 ft. span</td>
<td>2 x 4 in.</td>
</tr>
<tr>
<td>Bearers to 10 ft. span</td>
<td>2 x 6 or 3 x 4 in.</td>
</tr>
<tr>
<td>Planking</td>
<td>2 x 10 in.</td>
</tr>
<tr>
<td>Vertical spacing of horizontal members</td>
<td>7 ft.</td>
</tr>
<tr>
<td>Bracing, horizontal and diagonal</td>
<td>1 x 6 in.</td>
</tr>
<tr>
<td>Tie-ins</td>
<td>1 x 4 in.</td>
</tr>
<tr>
<td>Toeboards</td>
<td>4-in, high maximum, 2 x 4 in.</td>
</tr>
<tr>
<td>Handrails and midrails</td>
<td>2 x 4 in.</td>
</tr>
<tr>
<td>Ribbons</td>
<td>1 x 6 in.</td>
</tr>
<tr>
<td>Anchors</td>
<td>No. 12 double-wrapped wire or stronger</td>
</tr>
</tbody>
</table>

All members except planking are used on edge.
Use spacer blocks when necessary.

HEAVY TRADES WOODEN-POLE SCAFFOLDS

Heavy trades wooden-pole scaffolds are recommended for use by bricklayers, stone masons, concrete workers and other workers who use heavy equipment or store heavy material on scaffolds.

Open sides and ends of intermediate working levels 7½’ or more above the grade shall be guarded with a 2” X 4” top rail nailed to the uprights so that the top edge is 42” to 45” above the platform. Midrails of at least 2” X 4” lumber shall be provided.

Platforms shall be within 14” of the structure wall. They shall be at least 20” wide and constructed of planks at least 2” X 10” laid close together. Planks that are butt-ended (not over lapped) shall be nailed together to supporting ledgers of 2” X 6” or heavier material. If the planks are not nailed, they shall overlap the ledgers at each end by at least 6”. No plank shall overlap an unsupported end of another plank.

The scaffold shall be rigidly tied to the structure with double-wrapped No. 12 wire or a stronger binding used in combination with spacer blocks between inside uprights and the structure. Ties shall connect to inside uprights, and be spaced no more than 15’ apart, horizontally and vertically. There shall be at least one row of ties.

Shore scaffolds, lean-to scaffolds, boxes, barrels, loose tile, loose brick, loose blocks, or other unstable objects shall never be used unless they are bolted through a wall, welded to a tank, or securely hooked over the top of a supporting wall.

Scaffolds that shall support buggies loaded with concrete need to be strong enough at every point on girders, ledgers, beams, and planking to bear the load.

Material at least 2” X 6” shall be used for footblocks and sills. Sills shall be continuous when uprights rest on sidewalks or other pavement.

If material on a platform is piled higher than the toeboard, one or more intermediate backrails shall be added between handrail and toeboard. One-half inch wire rope or an equivalent shall be used.

For heavy trades wooden-pole scaffolds more than 20’ high, 4” X 6” uprights shall be used.
HEAVY TRADES WOODEN-POLE SCAFFOLDS

Minimum Size and Maximum Spacing of Members for Heavy Duty Wooden Pole Scaffolds

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniformly distributed load</td>
<td>Not to exceed 75 p.s.i.</td>
</tr>
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<td>Maximum height</td>
<td>20 ft.</td>
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<tr>
<td>Poles or uprights</td>
<td>4 x 4 in.</td>
</tr>
<tr>
<td>Pole spacing (longitudinal)</td>
<td>7 ft.</td>
</tr>
<tr>
<td>Pole spacing (transverse)</td>
<td>7 ft.</td>
</tr>
<tr>
<td>Ledgers</td>
<td>(2) 1 x 6 in. or (1) 2 x 6 in.</td>
</tr>
<tr>
<td>Vertical spacing of horizontal members</td>
<td>7 ft.</td>
</tr>
<tr>
<td>Planking</td>
<td>2 x 10 in.</td>
</tr>
<tr>
<td>Bearers</td>
<td>2 x 10 in. (rough)</td>
</tr>
<tr>
<td>Bracing, horizontal and diagonal</td>
<td>1 x 6 in.</td>
</tr>
<tr>
<td>Tie-ins</td>
<td>1 x 4 in.</td>
</tr>
<tr>
<td>Toeboards</td>
<td>6-in, high minimum, 1 x 6 in.</td>
</tr>
<tr>
<td>Handrails and midrails</td>
<td>2 x 4 in.</td>
</tr>
<tr>
<td>Cross bracing</td>
<td>1 x 6 in. or larger</td>
</tr>
<tr>
<td>Ribbons</td>
<td>1 x 6 in.</td>
</tr>
<tr>
<td>Anchors</td>
<td>No. 12 double-wrapped wire or stronger</td>
</tr>
</tbody>
</table>

All members except planking are used on edge.
Use spacer blocks when necessary.

WOODEN BRACKETS SCAFFOLDS

Bracket scaffolds can be prefabricated for attachment to wall forms at various positions, or they can be made permanent parts of movable form panels. Follow construction specifications for light or heavy trade scaffolds.
METAL BRACKETS SCAFFOLDS (WALER JACK)

Brackets shall not be used on walers held by wire ties unless there are at least three ties fairly close to each jack. Bolted walers are preferred where brackets are used.

RAMP FOR MOTOR-DRIVEN CONCRETE BUGGIES
LIGHT-DUTY METAL SCAFFOLDS

Metal scaffolds need to be built to support all live, dead, and wind loads they are likely to be subjected to.

Material used in metal scaffolds shall be of standard manufacture to meet strength, size and weight specifications. Never use material that is broken, structurally weak, or deteriorated.

All scaffold legs shall rest on base plates. Each base plate needs support adequate to sustain the load and prevent horizontal movement. When the scaffold is resting on earth or other such material, each base plate shall rest on the equivalent of a 2” X 10” X 10” wooden block. A 1” X 10” X 10” piece of exterior-grade plywood may be used as a base.

All scaffolds shall be plumbed and leveled as erection proceeds. Braces shall not be forced to fit; it is better to level the scaffold until a proper fit is easy.

Adjusting screws shall be used instead of blocking to level scaffolds on uneven grades. Not more than 12” of adjusting screw thread shall be exposed.

Metal scaffolds shall be tied securely to buildings or other structures with durable no. 12 wire or the equivalent. Ties shall be placed no more than 26’ apart, vertically and horizontally.

Railings are suggested for all open sides and ends of work platforms more than 7½’ high. Platform planks shall be 2” X 10” or wider and long enough to overlap the ledgers at each end by at least 6”.

Workers shall use ladders, not scaffold cross-braces, to climb scaffolds.
ROLLING METAL SCAFFOLDS

Rolling scaffolds, when securely tied or guyed, shall be at least one-third as wide at the bottom as they are high.

Screwjacks shall extend into scaffold legs for at least one-third of their length. In no case shall more than 12" of thread be exposed.

The uprights or legs of rolling scaffolds more than 24' high shall be braced according to the manufacturer's specifications.

Wheels or casters of rolling scaffolds shall have effective locking devices and shall be kept locked when workers are climbing or working on the scaffold. At least two of the four wheels or casters shall swivel. All wheels and casters shall support at least four times the maximum intended load.

Joints of metal scaffolds, including caster joints, shall have positive-locking pins, bolts, or equivalent fasteners.

Platform planks on rolling scaffolds shall not project more than 18" beyond the support at the edges of the scaffolds. Planks can be prevented from slipping by nailing dents of 1" material on the undersides of projecting ends, or by some equally effective means. Platforms shall be tightly planked to the full width of the scaffold except for necessary openings.

Workers shall not place platform planks on guard rails to climb higher. Workers may ride on rolling scaffolds moved by others if the floor or surface is within 30 of level and free of pits, holes,
or obstructions, and if the smallest dimension of the scaffold’s base is at least one-half its height. If outriggers are used, they shall be installed on both sides of the staging.

Ladders or stairways shall provide access to all platforms and rolling scaffolds. Ladder rails shall extend at least 36” above the platform unless other suitable handrails are provided. If stairs are used, rails shall be put on both sides.

Ladders or other unstable objects shall not be put on top of rolling scaffolds to climb higher. Aluminum scaffolding shall have a greater base-to-height ratio. Except when the scaffold is being moved, casters shall be locked as illustrated below.

HORSE SCAFFOLDS
Top horizontal ledgers for light trades scaffolds between 4' and 8' in span shall be made of 2” X 6” lumber. Proportionately heavier material shall be used for spans exceeding 8’. Horses more than 16' high, or tiers of horses with a total height of more than 16', shall not be used to support scaffold platforms.
Approved safety belt and lifeline required for each employee on suspended scaffold.
Approved safety belt and lifeline required for each employee on suspended scaffold.

STAGE LADDERS

<table>
<thead>
<tr>
<th>Length (ft.)</th>
<th>Minimum Cross Section of Rails (inches)</th>
<th>Minimum Cross Section of Rungs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Round</td>
<td>Oblong</td>
</tr>
<tr>
<td>Up to 16</td>
<td>1 x 4 1/2</td>
<td>1</td>
</tr>
<tr>
<td>10 to 16</td>
<td>1 x 5</td>
<td>1</td>
</tr>
<tr>
<td>may be tapered to 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 to 24</td>
<td>1 x 5 1/2</td>
<td>1</td>
</tr>
<tr>
<td>may be tapered to 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum length 24'.
Minimum distance between ladder rails 14".
NOTE: When ladders are constructed with truss rods, the above rails may be reduced in size.

HEAVY TRADES SUSPENDED SCAFFOLDS
Heavy trades suspended scaffolds shall have thrustouts equal or greater in length to a standard 7”, 15.3 pound steel I-beam that is at least 15' long. Bolsters and thrustouts shall be no more than 8’ apart.

The platform shall be suspended by wire ropes capable of supporting at least six times the intended load. The ropes can be secured to the thrustout, to each end of the bolster, or to the hoisting machines.

The scaffold shall be able to sustain a working load of 50 pounds per square foot. Platforms shall be 2” thick and at least 4’ wide; 2” X 4” handrails and midrails shall be provided and toeboards added, if needed.

If material on the platform is piled higher than the toeboard, one or more intermediate backrails shall be added and 1/2” wire mesh or the equivalent shall be put between the top rail and the toeboard.

Suspended scaffolds shall be and tested as often as necessary inspected daily before being used for good maintenance.

Limit Plank Spans to 8 Feet
HEAVY TRADES AND MASON'S OUTRIGGER SCAFFOLDS

Limit spans to 7’6”. For multiple scaffolds, use at least 3 x 16” outriggers.

NEEDLE BEAM PLATFORM

Needle beams shall be at least 4” X 6” in cross-section, and made from one piece of material without splices or laminated joints. Needle beam platforms shall have a safety factor of 4 or more. Beams shall not be painted to hide the grain.

Needle beams shall be supported with 1¼” manila rope (or the equivalent) which is free from flaws, deterioration, chemical damage, or other imperfections.

The rope shall be attached to the needle beam by a scaffold hitch at least 1’ from the end of the beam. Planks for needle beam platforms shall be at least 2” X 10”, and no more than 10’ long. Cleats or drop bolts can be used to keep planks from moving horizontally.

Platforms used for riveting and similar work shall be at least 36” wide outdoors and 30 inches wide indoors.

All employees working on needle beam scaffolds shall wear safety belts and lifelines tied to the structure.
BOATSWAIN’S CHAIR

Employers shall permit a worker to use a boatswain’s chair only after adequate training, and only if the worker is wearing a safety belt and life line.

Barricades or an attendant are recommended to keep the area beneath a suspended boatswain’s chair clear of workers, pedestrians and vehicles. Warning signs also shall be posted. Thimble and splice shall be used to attach the rope to the block. Properly sized blocks and rope equivalent in strength to at least ‘ of first-grade manila shall be used.

Rope slings shall be used to suspend the chair from its four corners. The seat shall be at least 24” X 10” and made of soft wood 2” thick (1” if oak or ash) or the equivalent. A chair with fiber rope shall not be used to support a worker who is welding or using a burning torch, sandblasting equipment or chemicals.

A boatswain’s chair shall be able to support at least four times the heaviest load intended for it.
### SAFE LOADS FOR TIMBER PLANKS

**Douglas Fir "Structural Planks" Especially Suited for Scaffolds**

<table>
<thead>
<tr>
<th>Plank Span in feet</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>2 1/8</th>
<th>2 1/8</th>
<th>2 1/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>7 1/2</td>
<td>662</td>
<td>534</td>
<td>470</td>
<td>692</td>
<td>576</td>
<td>697</td>
<td>819</td>
</tr>
<tr>
<td>9 1/2</td>
<td>800</td>
<td>626</td>
<td>865</td>
<td>1,046</td>
<td>940</td>
<td>1,150</td>
<td>1,395</td>
</tr>
<tr>
<td>11 1/2</td>
<td>940</td>
<td>1,150</td>
<td>1,395</td>
<td>1,637</td>
<td>1,730</td>
<td>2,092</td>
<td>2,456</td>
</tr>
<tr>
<td>13 1/2</td>
<td>1,730</td>
<td>2,092</td>
<td>2,456</td>
<td>2,815</td>
<td>3,176</td>
<td>3,537</td>
<td>3,898</td>
</tr>
</tbody>
</table>

*Surfaced Lumber graded for 1900 psi Bending Stress*

**Suggested Maximum Loads in Pounds Concentrated at Center of Span**

<table>
<thead>
<tr>
<th>Plank Span in feet</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>2 1/8</th>
<th>2 1/8</th>
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</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>7 1/2</td>
<td>275</td>
<td>349</td>
<td>422</td>
<td>495</td>
<td>910</td>
<td>1,097</td>
<td>1,290</td>
</tr>
<tr>
<td>9 1/2</td>
<td>206</td>
<td>261</td>
<td>316</td>
<td>371</td>
<td>682</td>
<td>823</td>
<td>968</td>
</tr>
<tr>
<td>11 1/2</td>
<td>209</td>
<td>253</td>
<td>297</td>
<td>546</td>
<td>658</td>
<td>774</td>
<td></td>
</tr>
<tr>
<td>13 1/2</td>
<td>390</td>
<td>470</td>
<td>553</td>
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</tr>
</tbody>
</table>

**Douglas Fir "Selected Lumber" For Ordinary Scaffold Plank Service**

<table>
<thead>
<tr>
<th>Plank Span in feet</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>1 1/8</th>
<th>2 1/8</th>
<th>2 1/8</th>
<th>2 1/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>7 1/2</td>
<td>413</td>
<td>523</td>
<td>633</td>
<td>743</td>
<td>1,360</td>
<td>1,645</td>
<td>1,936</td>
</tr>
<tr>
<td>9 1/2</td>
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<td>495</td>
<td>682</td>
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</tr>
<tr>
<td>11 1/2</td>
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<tr>
<td>13 1/2</td>
<td>209</td>
<td>253</td>
<td>297</td>
<td>546</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Surfaced Lumber graded for 1500 psi Bending Stress*

**Suggested Maximum Loads in Pounds Concentrated at Center of Span**
**WOODEN COLUMNS**

Square Columns--Unbraced/Rough Lumber--Not Surfaced

<table>
<thead>
<tr>
<th>Length in feet</th>
<th>Size of Column cross section in inches</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>x</td>
<td>15.300</td>
<td>36.000</td>
<td>64.000</td>
<td>100.000</td>
<td>144.000</td>
<td>196.000</td>
<td>256.000</td>
</tr>
<tr>
<td>6</td>
<td>x</td>
<td>14.600</td>
<td>35.400</td>
<td>64.000</td>
<td>100.000</td>
<td>144.000</td>
<td>196.000</td>
<td>256.000</td>
</tr>
<tr>
<td>7</td>
<td>x</td>
<td>13.500</td>
<td>34.900</td>
<td>63.400</td>
<td>100.000</td>
<td>144.000</td>
<td>196.000</td>
<td>256.000</td>
</tr>
<tr>
<td>8</td>
<td>x</td>
<td>11.800</td>
<td>34.100</td>
<td>62.900</td>
<td>100.000</td>
<td>144.000</td>
<td>196.000</td>
<td>256.000</td>
</tr>
<tr>
<td>9</td>
<td>x</td>
<td>9.600</td>
<td>33.000</td>
<td>62.300</td>
<td>98.900</td>
<td>144.000</td>
<td>196.000</td>
<td>256.000</td>
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<tr>
<td>10</td>
<td>x</td>
<td>7.800</td>
<td>31.500</td>
<td>61.500</td>
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<td>196.000</td>
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<td>x</td>
<td>6.400</td>
<td>29.400</td>
<td>60.200</td>
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<td>141.700</td>
<td>194.200</td>
<td>256.000</td>
</tr>
<tr>
<td>14</td>
<td>x</td>
<td>20.100</td>
<td>54.300</td>
<td>93.800</td>
<td>139.600</td>
<td>192.800</td>
<td>253.700</td>
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<td>16</td>
<td>x</td>
<td>15.400</td>
<td>47.400</td>
<td>89.400</td>
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<td>190.700</td>
<td>251.900</td>
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<tr>
<td>18</td>
<td>x</td>
<td>38.400</td>
<td>83.100</td>
<td>132.200</td>
<td>187.300</td>
<td>249.300</td>
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</tr>
<tr>
<td>20</td>
<td>x</td>
<td>31.100</td>
<td>74.200</td>
<td>126.100</td>
<td>183.000</td>
<td>246.000</td>
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<td></td>
</tr>
</tbody>
</table>

Suggested Maximum Loads in Pounds--1000 Pounds per Square inch Douglas Fir
SAFE LOADS FOR TIMBER BEAMS

Stress Grade Douglas Fir 500 pounds per square inch

<table>
<thead>
<tr>
<th>Beam Span in feet</th>
<th>Size in inches</th>
<th>4 x 4</th>
<th>4 x 6</th>
<th>4 x 6</th>
<th>6 x 6</th>
<th>6 x 8</th>
<th>6 x 8</th>
<th>8 x 8</th>
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<tbody>
<tr>
<td>4</td>
<td>990</td>
<td>1,530</td>
<td>2,280</td>
<td>3,460</td>
<td>4,710</td>
<td>6,400</td>
<td>8,540</td>
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<tr>
<td>6</td>
<td>660</td>
<td>1,000</td>
<td>1,520</td>
<td>2,310</td>
<td>3,140</td>
<td>4,290</td>
<td>5,870</td>
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<tr>
<td>8</td>
<td>500</td>
<td>750</td>
<td>1,140</td>
<td>1,730</td>
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<tr>
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<td>390</td>
<td>600</td>
<td>910</td>
<td>1,380</td>
<td>1,880</td>
<td>2,580</td>
<td>3,520</td>
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<tr>
<td>12</td>
<td>330</td>
<td>500</td>
<td>760</td>
<td>1,150</td>
<td>1,570</td>
<td>2,150</td>
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<td>14</td>
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<td>430</td>
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<td>990</td>
<td>1,340</td>
<td>1,840</td>
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<tr>
<td>16</td>
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<td>570</td>
<td>860</td>
<td>1,170</td>
<td>1,610</td>
<td>2,200</td>
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<td></td>
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<tr>
<td>18</td>
<td>330</td>
<td>510</td>
<td>770</td>
<td>1,040</td>
<td>1,430</td>
<td>1,950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>455</td>
<td>690</td>
<td>940</td>
<td>1,290</td>
<td>1,750</td>
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<td>24</td>
<td></td>
<td>380</td>
<td>570</td>
<td>780</td>
<td>1,070</td>
<td>1,400</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Beam Span in feet</th>
<th>Size in inches</th>
<th>8 x 12</th>
<th>8 x 14</th>
<th>8 x 16</th>
<th>10 x 10</th>
<th>10 x 12</th>
<th>10 x 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>12,820</td>
<td>14,920</td>
<td>17,070</td>
<td>13,330</td>
<td>16,000</td>
<td>18,660</td>
<td>18,660</td>
</tr>
<tr>
<td>6</td>
<td>12,820</td>
<td>14,920</td>
<td>17,070</td>
<td>11,900</td>
<td>16,000</td>
<td>18,660</td>
<td>18,660</td>
</tr>
<tr>
<td>8</td>
<td>10,330</td>
<td>14,260</td>
<td>17,070</td>
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<td>18,020</td>
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</tr>
<tr>
<td>10</td>
<td>8,270</td>
<td>11,400</td>
<td>15,020</td>
<td>7,140</td>
<td>10,470</td>
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<td>6,890</td>
<td>9,500</td>
<td>12,510</td>
<td>5,950</td>
<td>8,720</td>
<td>12,020</td>
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</tr>
<tr>
<td>14</td>
<td>5,910</td>
<td>8,150</td>
<td>10,700</td>
<td>5,100</td>
<td>7,480</td>
<td>10,300</td>
<td>10,300</td>
</tr>
<tr>
<td>16</td>
<td>5,170</td>
<td>7,120</td>
<td>9,390</td>
<td>4,470</td>
<td>6,540</td>
<td>9,020</td>
<td>9,020</td>
</tr>
<tr>
<td>18</td>
<td>4,590</td>
<td>6,330</td>
<td>8,340</td>
<td>3,970</td>
<td>5,820</td>
<td>8,010</td>
<td>8,010</td>
</tr>
<tr>
<td>20</td>
<td>4,130</td>
<td>5,700</td>
<td>7,500</td>
<td>3,570</td>
<td>5,230</td>
<td>7,210</td>
<td>7,210</td>
</tr>
<tr>
<td>24</td>
<td>3,440</td>
<td>4,750</td>
<td>6,260</td>
<td>2,970</td>
<td>4,360</td>
<td>6,010</td>
<td>6,010</td>
</tr>
</tbody>
</table>

Loads are in pounds concentrated at center of span.
Reduce listed loads to allow for beam heights.
The loads given are for dressed beams which are slightly smaller than normal size listed.
### STATIONARY SCAFFOLD SAFETY CHECK LIST

**PROJECT:**

**ADDRESS:**

**CONTRACTOR:**

**DATE OF INSPECTION:**

**INSPECTOR:**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Action/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are scaffold components and planking in safe condition for use and is plank graded for scaffold use?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is the frame spacing and sill size capable of carrying intended loadings?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Have competent persons been in charge of erection of scaffold?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are sills properly placed and adequate size?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Have screw jacks been used to level and plumb scaffold instead of unstable objects such as concrete blocks, loose bricks, etc.?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Are base plates and/or screw jacks in firm contact with sills and frame?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Is scaffold level and plumb?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Are all scaffold legs braced with braces properly attached?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Is guard railing in place on all open sides and ends above 10' (4' in height if less than 45&quot;)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Has proper access been provided?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Has overhead protection or wire screening been provided where necessary?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Has scaffold been tied to structure at least every 30' in length and 26' in height?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Have free standing towers been guyed or tied every 26' in height?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Have brackets and accessories been properly placed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brackets?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Putlogs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube &amp; Clamp?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All nuts &amp; bolts tightened?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
<td>No</td>
<td>Action/Comments</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>-----------------</td>
</tr>
<tr>
<td>15. Is scaffold free of makeshift devices or ladders to increase height?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Are working level platforms fully planked between guard rails?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Does plank have minimum 12” overlap and extend 6” beyond supports?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Are toeboards installed properly?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Have hazardous conditions been provided for:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power lines?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind loading?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible wash out of footings?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uplift and overturning moments due to placement of brackets, putlogs, or other causes?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Have personnel been instructed in the safe use of the equipment?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments:
Handrails shall be made of 2" X 4 or 1" X 4" material, nailed at right angles.

Platform handrails shall be at least 42" and not more than 45" above the platform.

Stairway handrails shall be 30" to 40" above the nose of the tread. Posts shall be 2" X 4" or heavier, and spaced not more than 8' apart.

Midrails shall be at least 1" X 6". They shall be spaced midway between platform and top rail on platforms, and midway between the nose of the tread and the top rail on stairs. Midrails shall be nailed to the insides of posts.

Toeboards at least 1" X 6" shall be placed along the floor of the platform and nailed to the insides of posts.
RUNS AND RISERS FOR STAIRS

<table>
<thead>
<tr>
<th>Angle with Horizontal</th>
<th>Riser inches</th>
<th>Run inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°-35°</td>
<td>6 1/4</td>
<td></td>
</tr>
<tr>
<td>32°-08°</td>
<td>6 3/4</td>
<td>10 1/4</td>
</tr>
<tr>
<td>33°-44°</td>
<td>7</td>
<td>10 1/4</td>
</tr>
<tr>
<td>35°-16°</td>
<td>7 7/8</td>
<td>10 1/4</td>
</tr>
<tr>
<td>36°-52°</td>
<td>7 3/4</td>
<td>10</td>
</tr>
<tr>
<td>38°-29°</td>
<td>7 7/8</td>
<td>9 3/4</td>
</tr>
<tr>
<td>40°-08°</td>
<td>8</td>
<td>9 3/4</td>
</tr>
<tr>
<td>41°-44°</td>
<td>8 1/4</td>
<td>9 3/4</td>
</tr>
<tr>
<td>43°-22°</td>
<td>8 3/4</td>
<td>9</td>
</tr>
<tr>
<td>45°-00°</td>
<td>8 1/2</td>
<td>8 3/4</td>
</tr>
<tr>
<td>46°-38°</td>
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<td>8 1/2</td>
</tr>
<tr>
<td>48°-16°</td>
<td>9 1/4</td>
<td>8</td>
</tr>
<tr>
<td>49°-54°</td>
<td>9 1/2</td>
<td>8</td>
</tr>
</tbody>
</table>

SAFE ANGLES FOR LADDERS, STAIRS AND RAMPS
FLOOR, ROOF, WALL, AND ELEVATOR OPENINGS

If sheathing or any other surface provides passageways to any side of a floor or roof opening that a worker or material might fall through, the opening shall be covered with planks or other material strong enough to support any load placed on it, or fenced on all sides with standard guard railings. The cover shall be secured to prevent accidental removal or displacement. A pressure sensitive sign or equivalent shall be posted on this protective covering with letters at least 1” high, reading “Floor (Roof) Opening. Do Not Remove.” Openings in concrete forms need similar safeguards.

If any part of a runway or scaffold platform is directly above or adjacent to a floor or roof opening, the entire opening shall be covered with planking or railings, with toeboards on the runway or scaffold.

All temporary protection shall be left in place until permanent protection has been provided or the hazard has been eliminated.

Ladder-way openings in floors and platforms shall be guarded by standard railings and toeboards on all sides.

Elevator shafts shall be guarded on all open sides with standard railings and toeboards.

Overhead protection shall be provided when employees are in the shaft while other employees are working above them.

Standard Rail

![Standard Rail Diagram]

Posts to be placed not over 8’ apart. Pipe or angle iron may be substituted for wood. Minimum inside diameter for pipe 1”. Minimum size for angle iron 1 ½” x 1 ½” x 3/16”.

NOTE: All drawings and corresponding information obtained from: Safety Engineering Standards, U.S. Insurance Group.
SAFE USE OF HAND AND PORTABLE POWER TOOLS

Screwdrivers

A screwdriver is the most commonly used and abused tool. The practice of using screwdrivers as punches, wedges, pinch bars, or pry pars shall be discouraged as this practice dulls blades and causes employee injury.

Screwdriver tips shall be selected to fit the screw. Sharp-edged bits will not slip as easily as ones that are dull. Redress tips to original shape and keep them clean.

Always hold work in a vise or lay it on a flat surface to lessen the chance of injury if the screwdriver should slip.

When working near electrical equipment, screwdrivers shall be equipped with insulated handles (some also come with insulated blades). Current shall be cut off.

Hammers

Wooden handles shall be straight grained and free of slivers or splinters. Once split, handles shall be replaced. Make sure handles are tightly wedged.

1. Never strike a hammer with another hammer.
2. Discard any hammer that shows chips, dents, etc. Redressing is not recommended.
3. Safety glasses shall be worn while using a hammer or any other striking tool.
4. Never use a common nail hammer to strike other metal objects such as cold chisels.

Punches

Never use a punch with a mushroomed struck face or with a dull, chipped, or deformed point. Punches that are bent, cracked, or chipped shall be discarded. Safety glasses shall be worn while using a punch.

Chisels

Choose a chisel only large enough for the job so the blade is used, rather than only the point or corner. Never use chisels with dull blades—the sharper the tool, the better the performance. Chisels that are bent, cracked, or chipped shall be discarded. Redress cutting edge or struck end to original contour as needed. When chipping or shearing with a cold chisel, the tool shall be held at an angle that permits one level of the cutting edge to be flat against the shearing plane.

Hacksaws

Hacksaws shall be adjusted and tightened in the frame to prevent buckling and breaking, but shall not be tight enough to break off the pins that support the blade. Install blade with teeth pointing forward.

Pressure shall be applied on the forward stroke only. Lift the saw slightly, pulling back lightly in the cut to protect the teeth. Do not bend and twist the blade. Never continue an old cut with a new blade.

Files

Select the right file for the job, making sure that it has a secure handle. Files shall be cleaned only with file-cleaning cards; never by striking. Never use a file as a pry or
hammer, as chipping and breaking could result in user injury. Grasp the file firmly in one hand and use the thumb and forefinger of the other to guide the point.

**Axes and Hatchets**

The cutting edges are designed for cutting wood and equally soft metal. Never strike against metal, stone, or concrete.

Never use an axe or hatchet as a wedge or maul, never strike with the sides, and never use them with loose or damaged handles.

Proper axe grip for a right-handed person is to have the left hand about 3” from the end of the handle and the right hand about 3/4 of the way up.

Sharp, well-honed axes and hatchets are much safer to use because “glancing” is minimized.

Safety glasses and safety shoes shall be worn and clear swinging checked before using axes and hatchets. Axes and hatchets shall be carried with the covers on.

**Knives**

Knives cause more disabling injuries than any other hand tool. The hazards are that the hands may slip from the handle onto the blade or that the knife may strike the body or the free hand. Use knives with handle guards if possible. Knives shall be kept sharp and in their holders, cabinets, or sheaths when not in use; the cutting stroke shall be away from the body.

Do not wipe dirty or oily knives on clothing. To clean, the blade shall be wiped with a towel or cloth with the sharp edge turned away from the wiping hand. Horseplay of any kind (throwing, “fencing,” etc.) shall be prohibited.

**Crowbars**

Use the proper kind and size for the job. Never use makeshifts such as pieces of pipe, as they may slip and cause injury. Crowbars shall have a point or toe of such shape that it will grip the object to be moved and a heel to act as a pivot or fulcrum. A block of wood under the heel may prevent slippage and help reduce injuries.

**Shovels**

Shovel edges shall be kept trimmed and handles checked for splinters and cracks. Workers shall wear safety shoes with sturdy soles. They shall have feet well separated to get good balance and spring in the knees. The leg muscle will take much of the load. To reduce the chance of injury, the ball of the foot (not the arch) shall be used to press the shovel into the ground or other material.

Dipping the shovel in water or greasing or waxing the shovel will prevent some materials from sticking.

When not in use, hang up shovels, stand them against the wall, or keep them in racks or boxes.

**Box and Socket Wrenches**

The use of box and socket wrenches is indicated where a heavy pull is necessary and safety is a consideration. Box and socket wrenches completely encircle the nut, bolt or fitting and grip it at all corners as opposed to two corners gripped by an open end wrench. They will not slip off laterally, and they eliminate the dangers of sprung jaws.
Never overload the capacity of a wrench by using a pipe extension on the handle or strike the handle of a wrench with a hammer. Hammer abuse weakens the metal of a wrench and causes the tool to break. Special heavy duty wrenches are available with handles as long as 3'. Where possible, special penetrating oil shall be used to first loosen tight nuts.

Electric Saws

Electric saws shall be equipped with guards above and below the face plate. The lower guard shall be checked frequently to be sure it operates freely and encloses the teeth completely when not cutting. Circular saws shall not be crowded into the work. The motor shall be started and stopped outside the work. At the beginning and end of the stroke or when the teeth are exposed, the operator shall use extra care to keep the body out of the line-of-cut. Saws shall be equipped with "dead man" controls or a trigger switch that shuts off the power when pressure is released.

Portable Grinder

Grinding wheels shall be guarded as completely as possible. They shall never be used at greater than their rated speed. To do so may result in the wheel breaking apart due to excessive centrifugal force. Guards shall be adjustable so the operator will be inclined to make the adjustments rather than remove the guard. However, the guard shall be easily removable to facilitate replacement of the wheel. In addition to mechanical guarding, the operator shall wear safety glasses at all times.

Care shall be exercised to protect the grinder from damage.

Since part of the wheel is exposed, it is important the employee hold the wheel so it does not touch his clothes or body.

Air Hoses

Workers shall be warned against disconnecting the air hose from the tool and using it to clean machines or remove dust from clothing. Air used for cleaning shall not exceed 30 psi and workers shall wear safety glasses at all times when using air hoses. Brushing or vacuuming equipment is recommended for removing dust from clothing.

Air shall be shut off before attempting to disconnect the air hose from the air line. Any air pressure inside the line shall be released before disconnecting.

ELECTRICAL SAFETY/HIGH VOLTAGE

Electric Codes

The National Electric Code, NFPA 70-1984, and ANSI C1-1971 are the nationally adopted requirements for safeguarding of any persons and buildings and their contents from hazards arising from the use of electricity. The code contains basic minimum provisions considered necessary for safety. All electricians shall be familiar with these requirements.

Use of Electrically Powered Equipment and Tools

1. All electrically powered equipment or hand tools, except double insulated hand tools, shall be grounded.

2. Portable hand tools and electrically powered equipment shall be used with a ground fault circuit interrupter (GFCI) or an assured equipment grounding program (AEGP) (see "Ground Fault Circuit Protection" this section) shall be in effect.
3. Electrical equipment shall be disconnected or the current otherwise interrupted while it is being adjusted or repaired.

4. Permanent wiring shall be put in conduits.

5. All breakers, motors, and appliance disconnects shall be labeled.

6. Framing of electrical motors shall be grounded.

7. Outlets, switching, junction boxes, etc., shall be covered.

8. Exposed noncurrent-carrying metal parts of fixed equipment that may become energized under abnormal conditions shall be grounded when in wet or damp locations; if electrical contact with metal, if operated in excess of 150 volts to ground, or in a hazardous location (see “Hazardous Locations” this section).

NOTE: Consider all exposed wires “hot” until verified otherwise.

Ground Fault Circuit Protection

When using extension cords, portable electrically powered hand tools, appliances, or other electrically powered equipment outdoors or in an area under construction, they shall be of the 3-wire type (except double insulated tools) and shall be connected to a GFCI or an AEGP shall be in effect.

The GFCI does not have to be used if the receptacles being used are part of a building's permanent wiring. The GFCI trips a circuit when current outleakage occurs.

The AEGP requires regular inspections of all tools, cords, and electric devices. Appropriate documentation shall be maintained. Components of an AEGP are:

1. A written description of the program including specific procedures.

2. Qualified employees appointed to run the program. More than one person shall be appointed.

3. All equipment, cords, etc., to be used shall be inspected for external defects each day. All defective equipment shall be tagged out until repairs are made. All defects, repairs, inspections, etc., shall be documented.

Extension Cords

1. Cords shall not be hung over nails, bolts, or sharp edges.

2. Cords shall not be laid in aisles unless protected from damage; they shall be so placed so as not to create a tripping hazard.

3. Cords shall not be used as a substitute for fixed wiring.

4. Cords shall not be run through holes in walls, ceiling, floors, doors, windows, or hung from light fixtures or attached to building surfaces.

Hazardous Locations

Standard electrical apparatus cannot be used in locations where flammable gases, vapors, dusts, and other easily ignitable materials are present.

Before electrical equipment and its associated wiring is selected for a hazardous location, the
exact nature of the flammable materials present should be determined.

The National Electric Code, NFPA-70, Articles 500-503, shall be consulted before any use or installation of electrical equipment and associated wiring is selected. Listed below is a guideline for classifying hazardous locations. This guideline shall not be used as a substitute for NFPA-70, Article 500-503.

GUIDELINES FOR CLASSIFYING HAZARDOUS AREAS

Determining the Need for Classification

A need for classification is indicated by an affirmative answer to any of the following questions.

Class I
Are flammable liquids, vapors, or gases likely to be present?
Are liquids having flash points at or above 100°F likely to be handled, processed, or stored at temperatures above their flash points?

Class II
Are combustible dusts likely to be present?
Are combustible dusts likely to ignite as a result of storage, handling, or other causes?

Class III
Are easily ignitable fibers or flyings present, but not likely to be in suspension in the air in sufficient quantities to produce an ignitable mixture in the atmosphere?

Assignment of Classification

Classification is determined as indicated by an affirmative answer to any question.

Class I - Division 1
Is a flammable mixture likely to be present under normal operating conditions?
Is a flammable mixture likely to be present frequently because of repair, maintenance, or leaks?
Would a failure of process, storage, handling, or other equipment be likely to cause an electrical failure coinciding with the release of flammable gas or liquid?
Is the flammable liquid, vapor, or gas piping system in an inadequately ventilated location, and does the piping system contain valves, meters, or screwed or flanged fittings that are likely to leak?
Is the zone below the surrounding elevation or grade such that flammable liquids or vapors may accumulate?

Class II – Division 1
Is combustible dust likely to exist in suspension in air, under normal operations conditions, in sufficient quantities to produce explosive or ignitable mixtures?
Is combustible dust likely to exist in suspension in the air, because of maintenance or repair operations, in sufficient quantities to cause explosive or ignitable mixtures?
Would failure of equipment be likely to cause an electrical system failure coinciding with the release of combustible dust in the air?
Is combustible dust of an electrically conductive nature likely to be present?

Class III – Division 1
Are easily ignitable fibers or materials producing combustible flyings handled, manufactured, or used?

Class I – Division 2
Is the flammable liquid, vapor, or gas piping system in an inadequately ventilated location, but not likely to leak?

Is the flammable liquid, vapor, or gas handled in an adequately ventilated location, and can the flammable substance escape only in the course of some abnormality such as failure of a gasket packing?

Is the location adjacent to a Division 1 location, or can the flammable substance be conducted to the location through trenches, pipes, or ducts?

If positive mechanical ventilation is used, could failure or improper operation of ventilating equipment permit mixtures to build up to flammable concentrations?

**Class II – Division 2**

Is the combustible dust likely to exist in suspension in air only under abnormal conditions, but can accumulations of dust be ignited by heat developed by electrical equipment, or by arcs, sparks, or burning materials expelled from electrical equipment?

Are dangerous concentrations of ignitable dusts normally prevented by reliable dust-control equipment such as fans or filters?

**Class III – Division 2**

Are easily ignitable fibers or flyings only handled and stored, and not processed?

Is the location adjacent to a Class III, Division 1 location?

**Wet Locations**

A switch or circuit breaker in a wet location or outside of a building shall be enclosed in a weatherproof enclosure.

In damp or wet locations, cabinets and cutout boxes of the surface type shall be weatherproof, be so placed or so equipped so as to prevent moisture or water from entering and accumulating within the cabinet or cutout box, and shall be mounted so there is at least 1/4” space between the enclosure and the wall or other supporting surface. It is recommended that boxes of nonconductive material be used with nonmetallic-sheathed cable.

In locations where walls are frequently washed or where there are surfaces of absorbent materials such as damp paper or wood, the entire wiring system, including all boxes, fittings, conduits, and cables used, shall be mounted so that there is at least 1/4” air space between it and the wall or supporting surface.

**Lock Out/Tag Out Procedures**

Refer to “Equipment Lockout Procedures” section.

This procedure shall be used whenever the need for de-energizing electrical or mechanical equipment (to include fume hoods and other scientific equipment) arises.

**Transportation or Movement of Equipment or Materials**

Vehicles, equipment, or materials shall not be placed closer to any high-voltage lines than the minimum clearances specified below.

### Recommended Clearances from Energized High Voltage Conductors (While In Transit)

<table>
<thead>
<tr>
<th>Voltage (Phase to Phase)</th>
<th>Minimum Clearance (Feet)</th>
</tr>
</thead>
</table>

105
Inspection and Repair

1. Periodic inspections, essential to the maintenance of power tools, shall be performed.
2. Employees shall be instructed and trained to inspect tools and recognize and report defects.
3. All defective equipment shall be taken out of service and tagged or locked out until repairs or maintenance is completed.
4. Employees shall not be allowed to make make-shi repairs.
5. Power tools shall be cleaned with a recommended flammable and non-toxic cleaner. Air drying shall be used in place of blow drying with compressed air.

EQUIPMENT MANAGEMENT & LOCKOUT PROCEDURES

PURPOSE: The goal of LSU-Alexandria’s equipment management program is to ultimately decrease repairs to equipment by increasing the efficiency in managing the scheduled equipment maintenance. LSUA is committed to a continuing, aggressive program for maintenance of mechanical and electrical equipment in its facilities.

GENERAL POLICY

A. Responsibilities
LSUA has implemented a viable equipment management program using computer based software. This program shall be made available and accessible to all maintenance or other designated personnel. The program shall include designating personnel who are responsible for specific maintenance areas. Policies outline the roles and responsibilities of managers, supervisors and employees within the maintenance program.

B. Specific Inventory
A specific inventory of all mechanical and electrical equipment in the program has been established including the name of the equipment, location, model number and serial number. This is a “living” document. Equipment may be added, deleted and/or modified at any time as equipment and its needs change. The inventory is part of the computer based program.
**C. Preventive Maintenance Procedures**

LSUA has developed preventive maintenance procedures for each piece of mechanical and electrical equipment included in the program. These procedures are included on each work order that is generated through the computer-based program. These procedures include but are not limited to the following:

- Tasks to be completed
- Trade skills needed to accomplish the task
- Estimated time required to complete task

LSUA maintenance contracts electronics, all confined spaces, chillers, cooling towers and boilers. The contract specifies the work to be performed and a copy of the contract shall be available for review.

**D. Preventive Maintenance Schedule**

LSUA has developed a preventive maintenance schedule(s) for each piece of equipment included in the program. LSUA has used the suggested manufacturer’s preventive maintenance (PM) on its equipment and ORM’s suggested schedules to develop its maintenance schedules.

**E. Testing Procedures**

LSUA has contracted with Storer for testing procedures for each piece of equipment that requires testing. LSUA conducts semi-annual testing on its chillers using oil analysis and Eddie current test. The electrical equipment is subjected to periodic infrared sensor temperature checks. The frequency of these test are included in the maintenance schedule. LSUA follows the suggested manufacturer’s testing procedures on its equipment and some of ORM’s suggested tests and schedules.

**F. Documentation**

All documentation is kept at Facility Services. The documentation provides LSUA with an equipment history and the following shall be included, if applicable:

- What work was performed on the equipment
- Who performed the work
- How long did it take to perform
- What replacement parts were used and their costs
- Whether the work was billed to a tenant
- If the agency is using a contractor to perform preventive maintenance, repairs, testing, etc. the agency shall require the contractor to provide clear, concise documentation of the work performed
- Date work was performed/completed

The Facility Services office shall forward a summary report of all preventative maintenance to the campus Loss Prevention Coordinator annually.

**G. Training**

LSUA shall provide documented training for all employees trained in areas related to the program, whether formal or on-the-job training, to include training
on:
- The written Equipment Management Program
- The Operation of equipment included in the program
- The preventive maintenance of the equipment included in the program
- The testing procedures for equipment and the operation of testing equipment
- The safety precautions to be aware of when performing the preventive maintenance as well as the PPE needed before starting the procedure

Documentation of training shall be forwarded to the Loss Prevention Coordinator annually.

**Communication and Organization**

The ORM Loss Prevention Officer shall cite maintenance program deficiencies during their inspections at state facilities. These deficiencies, along with any recommendations for corrective action, shall be reported in writing to the Office of Risk Management. All correspondence shall then be forwarded to LSUA for a response to and/or corrective action plans addressing the recommendations. LSUA will provide all relevant documentation to the ORM Loss Prevention Officer upon request and will administer a timely response and facilitate all corrective actions plans that are mutually agreed upon.

**Audits and Record Keeping**

Records will be maintained for the life of the equipment on all program equipment including, but not limited to: preventive maintenance schedules, testing results, repair documents, replacement documents and all completed service documents. The documentation may be listed on the work order comments if using a computer based maintenance management program designed specifically for maintenance management such as work orders, inventory, preventive maintenance and time management. Loss prevention audits shall be conducted on the program every three years. Recertification/compliance reviews shall be conducted in subsequent years.

**Lockout / Tagout Program**

This procedure is to cover locking out, tagging out, or otherwise preventing the operation of electrical or mechanical equipment, fume hoods, and other scientific equipment from operating.

In this procedure, when the term “lock” is used, it is intended to cover any means of prevention required to prohibit equipment operation. It covers the use of padlocks, tags, or other physical restriction of equipment such as racking-out of switchgear or blocking fan blades.

**Procedure**
1. Alert operator of intention to lock out or perform work on equipment.

2. Before starting work, make sure equipment cannot be set into motion without your activation.

3. Attach proper lockout device, signed and dated.

4. If additional operations shall be performed on the same equipment, those shall also use lockout/tagout procedures.

NOTE: When more than one craft is working on the same equipment, it is recommended that a multiple locking device be used.

5. When your work is completed, remove your tag/lock. Only the person attaching the tag/lock shall remove it.

6. Equipment shall not be operated until all work is completed and the last tag/lock is removed.

7. Transfer of lock out tag out procedure for shift work employees: The first shift employee shall remove his lock and tag and the second employee will replace with their own lock and tag and document.

NOTE: For scientific equipment, a lockout tag/lock shall be affixed by the person in charge and be removed only after a technician or service person has rendered such equipment safe and operable.

Training

1. All employees that will use LSUA’s lock-out/tag-out system (Authorized Employees) will be trained initially and every re-trained annually.

2. All other employees of LSUA (Affected Employees) will receive training during orientation and every 3 years thereafter.

Contractors

Any contractor that performs any maintenance or repair on any equipment at Louisiana State University at Alexandria must utilize their own lock-out/tag-out program.
DANGER

Working on
MACHINES
DO NOT START

SIGHTY FIRST

DANGER

DO NOT REMOVE THIS TAG
TO DO SO WITHOUT
AUTHORITY WILL MEAN
IMMEDIATE DISCHARGE.
IT IS HERE FOR A PURPOSE

SEE OTHER SIDE.
RE-USING STEEL DRUMS AND CONTAINERS

A steel drum and/or container shall not be re-used until it has been rinsed three to four times with water unless it will be refilled with a compatible substance. A steel drum and/or container having contained a water-reactive substance shall not be rinsed out with water under any circumstances. The Office of Campus Safety shall be contacted if a suitable rinse cannot be found.

Under no circumstances shall the top, bottom, or side of a steel drum and/or container having contained a flammable or toxic substance be removed with a cutting torch.

MATERIAL HANDLING

Material handling is done by every person in every department on campus. It is done as either his/her sole duty or as part of his/her regular duties. Material handling can either be done by hand or with mechanical help (fork lift, hoist, hand trucks, etc.).

The following are general safety rules and requirements regarding material handling and material handling equipment regularly used on campus.

A. LIFTING BY HAND

Lifting and carrying can be done without injury by using the following criteria:

1. Personal Protection

   NOTE: Minor office material lifting is exempt from Personal Protection section of “Lifting By Hand.”

   a. Hand protection shall be used when lifting; however, gloves or loose clothing shall not be worn around moving equipment.

      (1) Leather gloves and aprons shall be worn when handling rough or sharp objects.

      (2) Chemical gloves, splash suits, and eye protection shall be worn when handling chemicals of any nature (corrosives, flammables, etc.).

   b. Eye protection shall be worn at all times.

   c. Warehousing, trades, and other occupations involving lifting of heavy objects shall wear steel-toed shoes and/or shin guards.

2. Body Condition

   How much should you lift? Lifting capacity depends on body condition; that is, flexibility and strength, and physical make-up. To help your condition, build up your strength by a regular exercise program and stretch your body before doing any lifting.

3. Sizing Up The Load Questions to ask:

   a. Is it too big for you to handle?
   b. What about the shape? Is it irregular, square, rectangular, etc.?
   c. Can you get a firm, comfortable grip?
   d. How many loads are there and where are they going?
4. Lifting It Right

There are six steps to proper lifting:

a. Keep feet parted--one alongside the object and one behind the object. Comfortably spread feet give greater stability; the rear foot is in position for the upward thrust of the lift.

b. Keep back straight, nearly vertical. Use the sit-down position to do so, but remember that “straight” does not mean absolutely “vertical”. A straight back keeps the spine, back muscles, and organs of the body in correct alignment. It minimizes the compression of the guts that can cause hernia.

c. Tuck in chin so the neck and head continue the straight back line and keep spine straight and firm.

d. Grasp the object with the whole hand. The palm grip is one of the, most important elements of correct lifting. The fingers and hand are extended around the object to be lifted. Use the full palm; fingers alone have very little power. Wearing gloves is recommended.

e. Tuck elbows and arms in and hold load close to body. When the arms are held away from the body, they lose much of their strength and power. Keeping the arms tucked in also helps keep body weight centered. See attached diagrams.

f. Keep body weight directly over feet. This provides a more powerful line of thrust and ensures better balance. Start the lift with a thrust of the rear foot.

NOTE: Taken from The National Safety Council “Accident Prevention Manual”.
SIX STEPS TO PROPER LIFTING

1. Correct position of feet.
2. Straight back and knees.
3. Chin in.
5. Load held close to the body (for lifting and carrying)

When setting the load down, the same six proper lifting steps shall be used in reverse.
To place an object on a bench or table, the worker shall first set it on edge and push it far enough onto the support to be sure it will not fall. The object shall be released gradually as it is set down. It shall be moved in place by pushing with the hands and body from in front of the object. This method prevents fingers from being pinched. It is especially important that an object placed on a bench or other support be securely positioned so that it will not fall, tip over, or roll off. Supports shall be correctly placed and strong enough to carry the load. Heavy objects like lathe chucks, dies, and other jigs and fixtures shall be stored at approximately waist height.

To raise an object above shoulder height, the worker shall lift it first to waist height. He/she shall rest the edge of the object on a ledge, stand, or hip. He/she shall then shift hand position so the object can be boosted after the knees are bent. The knees shall be straightened out as the object is lifted.

To change direction, the worker shall lift the object to the carrying position and turn the entire body including the feet. He/she shall avoid twisting the body. In repetitive work, the person and the material both shall be positioned to prevent twisting of the body when moving the material.

5. Team Lifting
   a. When two or more people carry one object, they shall adjust the load so that it rides level.
   b. When long sections of material (pipe, lumber) are carried, the load shall be carried on the same shoulder and both persons shall walk in step.
   c. When team lifting, one person shall be designated to give the signal when to lift.

6. Handling of Specific Shapes
   a. Barrels and drums
      (1) It is recommended that a hand truck or other type of material handling equipment be used for lifting and transporting barrels and/or drums.
      (2) If it is necessary to roll a barrel or drum, the worker shall push against the sides with both hands. To change directions, the drum or barrel shall be stopped, the direction changed by grabbing the upper and lower rim seams, and movement started.
      (3) When uprighting a full drum, the six steps to safe lifting shall be adhered to.
   b. Long Objects (Pipe, Lumber, Barsteel, etc.)
      There are two schools of thought on this. The method chosen shall be determined by the obstructions to be encountered.
      (1) The item shall be carried on the shoulders with the front end held as high as possible to avoid striking other employees—especially when going around corners.
      (2) The item shall be carried on the shoulders with the front end low so it does not catch overhead objects.
   c. Compressed gas cylinders
      (1) Compressed gas cylinders may be rolled on the bottom edge for short distances. They shall never be dragged.
      (2) Because of their shape, smooth surface, and weight, cylinders are difficult to carry by hand. Cylinders weighing more than 40 pounds total shall be transported on a hand or motorized truck, suitably secured to keep them from falling.

7. Items to remember when lifting by hand:
a. Avoid twisting while turning with a load.
b. Watch for narrow places when moving materials.
c. Avoid high reaching and lifting. A suitable ladder or platform shall be used to get up to load.
d. Do not jump with a load.
e. Do not catch or throw loads.
f. Check the materials to be lifted for nails, splinters, rough strapping, or other things that might injure hands.
g. Ascertain good visibility—especially on stairs.

B. HANDTRUCKS

1. General
   a. Keep truck under control at all times.
   b. Trucks shall be stored in designated areas—not in aisles.
   c. Housekeeping—all aisles and loading areas shall be kept clear.
   d. Always move the truck at a safe speed. Do not run.
   e. Loads shall be packed securely; avoid overhanging.
   f. No riders or horseplay.
   g. Hands shall be kept inside to protect them in narrow areas if the truck does not have knuckle guards or handles.

2. One Axle Handtrucks
   a. Keep the center of gravity of the load as low as possible. Place heavy objects below higher objects.
   b. Place the load so it is carried by the axle, not the handles.
   c. Load only to a height that will allow a clear view ahead.
   d. When lifting from a horizontal position, have a straight back and lift with the legs. The load shall be put down the same way.
   e. Let the truck carry the load. The operator shall balance and push only.
   f. Never walk backwards with a handtruck.
   g. For extremely bulky or pressurized items, such as gas cylinders, strap or chain the item to the truck. Valve caps shall be on valves.
   h. Always move the truck at a safe speed. Do not run.

3. Two Axle Trucks
   NOTE: Many one axle handtruck rules apply here also.

   a. Load evenly to prevent tipping.
   b. Push. Do not pull.
   c. The truck shall not be loaded so high that the operator cannot see where in the direction of travel. If the load is high, two persons are needed; one to push and one to guide.
   d. Truck contents shall be arranged so they will not fall if accidentally bumped.
   e. When entering elevators or tight areas, enter with the load forward. Make sure load is bound to truck.
C. SOME REQUIREMENTS FOR HEAVY CONSTRUCTION EQUIPMENT (Rollers, Compactors, Front-end Loaders, Bulldozers, Trucks, etc.)

1. General
   a. All vehicles of these types shall have a suitable horn available which is tested before the vehicle is used.
   b. Operators shall wear seat belts at all times when machinery is in operation.
   c. All controls (brakes, steering, etc.) shall be tested each shift before the vehicle is used.
   d. No riders shall be allowed on machines unless the machine is designed to carry riders.
   e. Blades, buckets, and shovels on earth-moving machines shall be lowered to the ground when the equipment is parked or unattended.
   f. All earth-moving equipment shall have a roll-over protection structure (ROPS) and seat belts.
   g. Trucks that are loaded by a crane, power shovel, loader, or similar equipment shall have a cab shield and/or canopy strong enough to protect the operator from shifting or falling materials. Operators shall be out of the vehicles while they are being loaded. Brakes shall be set.
   h. All trucks, excluding pickup trucks and earth-moving equipment, shall have an audible warning device that sounds automatically when they are backing up. The sound shall be able to be heard at least 200' away.
   i. Smoking during vehicle refueling is prohibited.
   j. All vehicles shall be operated in a safe manner. Earth-moving equipment shall not exceed 15 mph.
   k. All vehicles shall be inspected before each use and thoroughly on a regular basis.

E. FORK TRUCKS

Fork trucks are used to carry, push, pull, lift, stack, and tier materials.

1. Training

   Only trained and authorized operators shall be permitted to operate a powered industrial truck.

2. Guarding

   a. Hazardous moving parts such as chain and sprocket drives and exposed gears shall be guarded to protect the operator in his normal operating position.
   b. All fork trucks shall have an overhead guard in accordance with ANSI B 56.1.
   c. Exposed tires shall have guards that will stop particles from being thrown at the operator.
   d. Hydraulically-driven lifting systems shall have a relief valve installed and suitable stops shall be provided to prevent travel over of the carriage.
   e. A load backrest extension shall always be used when the type of load presents a hazard to the operator. The top of a load shall not exceed the height of the backrest.

3. Loading

   a. If the material being handled is obstructing the view, the operator is required to travel backwards. The operator shall face the direction of travel at all times.
   b. Only loads within the rated capacity of the truck shall be handled. No counter weights shall be allowed. A nameplate showing the weight of the truck and its rated capacity
shall be located in plain view of the truck.

(c) Backwards tilt shall be used to stabilize the load.

d. Loads shall be checked for overloading and for loose material before making the lift.

e. Extreme care shall be taken when handling long items, i.e., bar stock and lumber.

f. The load shall never be driven in an upward position, nor raised or lowered while moving.

g. Forks shall be locked to the carriage, and the fork extension designed so as to prevent unintentional lifting of the toe or displacement of the fork extension.

h. Bridge plates and dock boards shall be strong enough to support the intended load. They shall also have side boards, anti-slip surfaces, and be secured to the dock.

(i) Chocks shall be used on truck wheels when unloading. See attached diagram.

4. Inspections

All fork trucks shall be inspected before each use and thoroughly on a regular basis.

5. Miscellaneous

(a) Powered industrial trucks shall be equipped with horns.

(b) Steering wheel knobs are prohibited.

(c) All trucks shall be equipped with an ABC fire extinguisher.

d. Fork trucks shall not be used on upper level floors unless the floors are designed for that load capacity.

e. Diesel or gasoline fork trucks shall be used in adequately vented areas only.

f. Never give rides on a fork truck unless the truck is designed for it.

6. General Operating Requirements

(a) No excessive speed or reckless driving.

(b) When the operator will be farther than 25' from the truck, the forks shall be down, motor cut off, and emergency brake applied.

(c) No one shall be allowed to pass under the elevated portion of any truck--loaded or empty.

d. The operator shall come to a stop at blind corners and before passing through doorways.

(e) Extreme caution shall be taken when operating on turns, ramps, grades, or inclines.

(f) Reverse control shall never be used for braking.

g. Always drive with the load pointing upgrade unless a bulky load permits poor visibility.

(h) Trucks shall not be used for any purpose other than the one for which they never designed, i.e., bumping skids, pushing piles of material out of the way, using forks as a hoist, etc.

(i) Trucks shall ascend or descend grades slowly. When ascending or descending grades in excess of 10%, loaded trucks should be driven with the load upgrade. Unloaded trucks should be operated on all grades with the load-engaging means downgrade.

(j) When standard forks are used to pick up round objects such as rolls or drums, care shall be taken to see that the tips do not damage the load or push it against workers.

(k) Operators of lift trucks shall not move improperly loaded skids or pallets, broken pallets, or loads too heavy for the truck.

NOTE: Using a lift truck as an elevator for employees shall only be done if the work platform is securely seated on the forks, fastened to the vertical face, and provided with handrails and toeboards. The truck shall also have an overhead guard for the operator’s protection. The operator shall not leave the controls while the truck is being used as a man lift.
F. HOISTS

1. General

Hoists are used to raise, lower, and transport heavy loads for limited distances.

   a. Hoists shall not be used to lift, support, or otherwise transport people unless designed for that purpose.
   b. The load capacity of each hoist shall be shown in conspicuous figures on the hoist body. Lifts shall not be made beyond the rated capacity of the hoist, slings, chains, ropes, straps, etc.
   c. All hoists shall have, safe operating procedures affixed to them.
   d. Hoists operating on rails, tracks, or trolleys shall have positive stops or limiting devices on the equipment, rails, tracks, or trolleys to prevent overrunning of safe limits.
   e. Pick up loads only when they are directly under the hoist.
   f. Unless they are grounded, rope-operated electric hoists shall have non-conducting control cords.
   g. Control cords shall be clearly marked “hoist” or “lower” or a similar combination.
   h. The block shall not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.
   i. When lifting and moving material, the area should be clear. No one shall be allowed to walk under the load.
   j. No load shall be left suspended without an operator at the controls.
   k. When not in use, the hoist shall be lifted in the upward position.

2. Inspections

   a. Hoists shall be inspected before each use. Regularly scheduled detailed inspections shall pay special attention to load hooks, ropes, brakes, limit switches, wear damage, and rail stops.
   b. During inspection and/or repair, the power shall be disconnected. A warning sign stating such shall be posted.

G. AERIAL BASKETS

1. Aerial baskets shall be of the proper design and construction for the intended work.
2. The design limits of the equipment must be thoroughly understood and the baskets operated within the limits of their capabilities.
3. Daily inspections are necessary to uncover defects before they become serious in nature. (Note and report holes in the basket.)
4. All maintenance, both preventive and corrective, shall be performed by qualified personnel.
5. It is not safe to assume that an operator familiar with one type of aerial basket or equipment can operate other types.
6. Adequate clearances shall be observed. The ability to judge distances is essential.
7. Sufficient rubber protective equipment is as necessary in working from aerial baskets as in working from a pole.
8. When jobs involving both “bare-hand” work from a basket and work from a structure are performed, coordination and teamwork between the two methods is of primary importance.
9. Job briefing and follow-up on training are essential for safe operation.

H. HAND SIGNALS
Following are basic hand signals that all operators and riggers of cranes, hoists, boom trucks, aerial baskets, etc., shall use.

**HAND SIGNALS**

- **Use Main Hoist Tap** — Fist on head, then use regular signals.
- **Use Whip Line (auxiliary hoist)** — Tap elbow with one hand, then use regular signals.
- **Dog Everything** — Clasp hands in front of body.
- **Raise Boom and Lower Load With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.**
- **Lower Boom and Raise Load With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.**
- **Open Clamshell Bucket Arm** — Extended, open hand slowly.
- **Travel (both tracks, crawler cranes only)** — Use both fists in front of body, making a circular motion about each other to indicate the direction of travel — forward or backward.
- **Bridge Travel Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.**
- **Close Clamshell Bucket Arm** — Extended, close hand slowly.
I. SLINGS

1. Materials Used

a. The type of sling to be used is determined by the load to be lifted.
b. Fiber rope is particularly suitable for the handling of loads that may be damaged by contact with metal slings. Fiber rope is generally made from manila, sisal, benequen, nylon (2.5 x breaking strength & 4 x elasticity of manila), polyester, and polypropylene (special applications). Manila and nylon ropes give the best uniform strength and service.
c. Wire rope is used widely instead of fiber rope because:
   (1) It has a greater strength and durability under severe working conditions.
   (2) Its physical characteristics do not change when used in varying environments.
   (3) It has controlled and predictable stretch characteristics.
   (4) Where mechanical type loop endings are employed or where swayed or pressed on terminations are used.

   NOTE: See attached diagrams, "Manila Rope Knots" and "Wire Rope Connections."
d. Chain slings are used when a high resistance to abrasion and corrosive substances is needed. Chain slings are generally made from alloy steels such as stainless steel, monel metal, bronze, etc.
e. Web slings are used when lifting loads in need of surface protection; used on tubular, nonferrous, ceramic, painted, polished, highly machined, and other products with a fine or delicate surface.

f. Two types of web slings:
   (1) synthetic web--nylon or polyester
   (2) metal mesh web--alloy steel = sharp edges, concrete, high temperature
2. Rated Capacity
   a. As the sling is used, factors such as abrasion, nicking, distortion, corrosion, and other factors affect the load rating.
   b. Slings can be used at various angles, but stress increases rapidly with the angle of lift. All slings shall be ordered with this in mind.

   NOTE: Most slings have catalogs and rating tables for load rating worked out--consult them.

   c. Each sling shall bear a tag indicating its rated load capacity. Rated capacity is based on newly manufactured slings.
   d. Allowances shall be made when hitches are used.
   e. If loads having sharp edges or corners are to be lifted, pads or saddles shall be used to protect the ropes and chains.

   NOTE: See attached diagram, “Rated Capacity.”

3. Inspection
   a. Slings shall be checked daily by trained employees.
   b. Any damaged or suspected damaged slings shall be removed immediately from service and made unusable.
   c. Fiber ropes shall be inspected every 30 days and more often if used in critical applications. Rope shall be examined over the length of the rope for wear, abrasions, powdered fibers between strands, variations in size or roundness of strands, dislocation, and rotting.
   d. Wire rope shall be inspected when installed, weekly during use, and regularly by a trained inspector. Wear of crown wires, broken wires, kinking, high strands, corrosion, loose wires, nicking, and lubrication shall be checked. (See attached wire rope wear and damage chart.) Experience and judgment of all factors, combined with the length of time in service and the tonnage hoisted by the rope, determines when it should be discarded.
   e. Chain slings shall be inspected daily by personnel using the chain and semiannually or more often by persons qualified by experience or training. A link-by-link inspection shall be made to detect bent links, cracks in welded areas, transverse nicks and gouges, corrosion pits and elongation (stretching by overloading).

   NOTE: See attached, “Wire Rope Wear and Damage.”

   f. Web slings shall be inspected by the user it each time they is used. Also, periodic inspections shall be made by a person experienced in the inspection of web slings. Web slings shall be checked for abrasive wear, cuts, tears, snags, punctures, etc.

   NOTE: See following diagram, "Maximum Allowable Wear at Any Point of Link."
RATED CAPACITY

500 lb.  500 lb.
1000 lbs.

707 lb.  707 lb.
45°
1,000 lbs.

1,000 lb.  1,000 lb.
60°
1,000 lbs.

1,932 lb.  1,932 lb.
75°
1,000 lbs.
WIRE ROPE CONNECTIONS

Percentages shown equal the connection’s efficiency as compared to unaltered wire rope. For example, a smooth clamp on wire rope is 80% as strong as unaltered wire rope.
WIRE ROPE KNOTS

Percentages shown equal the knot’s efficiency as compared to unknotted new manila rope. For example, a clove hitch is 75% as strong as unknotted new manila rope.
A wire rope which has been kinked. A kink is caused by pulling down a loop in a slack line during improper handling, installation, or operation. Note the distortion of the strands and individual wires. Early rope failure will undoubtedly occur at this point.

A typical failure of a rotary drill line with a poor cut-off practice. These wires have been subjected to excessive peening causing fatigue-type failures. A predetermined, regularly scheduled, cut-off practice will go far toward eliminating this type of break.

Localized wear over an equalizing sheave. The danger of this type wear is that it is not visible during operation of the rope. This emphasizes the need of regular inspection of this portion of an operating rope.

A single strand removed from a wire rope subjected to "strand nicking." This condition is the result of adjacent strands rubbing against one another and is usually caused by core failure due to continued operation of a rope under high tensile load. The ultimate result will be individual wire breaks in the valleys of the strands.

An example of a wire rope with high strand — a condition in which one or two strands are worn before adjoining strands. This is caused by improper socketing or seizing, kinks, or dog legs. Picture A is a close-up of the concentration of wear and B shows how it recurs in every sixth strand (in a six-strand rope).

An illustration of a wire which has broken under tensile load in excess of its strength. It is typically recognized by the "cup and cone" appearance at the point of fracture. The necking down of the wire at the point of failure to form the cup and cone indicates that failure occurred while the wire retained its ductility.
A wire rope which has jumped a sheave. The rope itself is deformed into a "curl" as if around a round shaft. Close examination of the wires show two types of breaks -- normal tensile "cup and cone" breaks shear breaks which give the appearance of having been cut on an angle with a cold chisel.

A illustration of a wire which shows a fatigue break. It is recognized by the bent squared off ends perpendicular to the wire. This break was produced by a torsion machine, which is used to measure the ductility. This break is similar to wire failures in the field caused by excessive bending.

A "bird cage." Caused by sudden release of tension and resultant rebound of rope from overloaded condition. These strands and wires will not return to their original positions.

A wire rope which has been subjected to repeated bending over sheaves under normal loads. This results in "fatigue" breaks in individual wires -- these breaks are square and usually in the crown of the strands.

An example of a wire rope that has provided maximum service and is ready for replacement.

A fatigue break in a cable tool drill line caused by a tight kink developed in the rope during operation.

An example of "fatigue" failure of a wire rope which has been subjected to heavy loads over small sheaves. The usual crown breaks are accompanied by breaks in the valleys of the strands -- these breaks are caused by "strand nicking" resulting from the heavy loads.

A close-up of a rope subjected to drum crushing. Note the distortion of the individual wires and displacement from their normal position. This is usually caused by the rope scrubbing on itself.
MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK

<table>
<thead>
<tr>
<th>Chain Size (inches)</th>
<th>Maximum Allowable Wear (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>3/64</td>
</tr>
<tr>
<td></td>
<td>5/64</td>
</tr>
<tr>
<td>1/2</td>
<td>7/64</td>
</tr>
<tr>
<td></td>
<td>9/64</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32</td>
</tr>
<tr>
<td></td>
<td>11/64</td>
</tr>
<tr>
<td>1</td>
<td>3/16</td>
</tr>
<tr>
<td>1</td>
<td>7/32</td>
</tr>
<tr>
<td>1 1/4</td>
<td>1/4</td>
</tr>
<tr>
<td>1</td>
<td>9/32</td>
</tr>
<tr>
<td>1 1/2</td>
<td>5/16</td>
</tr>
<tr>
<td>1 3/4</td>
<td>11/32</td>
</tr>
</tbody>
</table>
GOOD AND BAD RIGGING PRACTICES

Eye Splices

Good--Use of thimble in eye splice.

Bad--Wire rope knot with clip. Efficiency: ± 50%.

Good--Use of thimble in eye splice.

Bad--Thimble should be used to increase strength of eye and reduce wear on rope.

Use of Chokers

Good--No cutting action on running lines.

Bad--Because of cutting action of eye splice on running line.

Bad--Bolt on running line can work loose.

Hoisting Structural Steel

Good--Use space blocks and pad corners.

Bad--Can bend flanges and cut rope.

Good--Vertical lift on choker sling.

Bad--Lifting on eye bolts from an angle reduces safe loads as much as 90%.
A correct method of attaching U-bolt wire rope clips to rope ends is shown in the illustration below. The base of the clip bears against the live end of the rope, while the "U" of the bolt presses against the dead end.

The clips are usually spaced about six rope diameters apart to give adequate holding power. Before ropes are placed under tension, the nuts on the clips shall be tightened. It is advisable to
tightly them again after the load is on the rope to take care of any reduction in the rope’s
diameter caused by the weight or tension of the load.

A wire rope thimble shall be used in the loop eye to prevent kinking when wire rope clips are
used. The correct number of clips for safe application, and spacing distances, are shown in the
table below.

### Number of Clips and Spacing for Safe Application

<table>
<thead>
<tr>
<th>Rope Diameter (in)</th>
<th>Approximate Weight (lbs)</th>
<th>Minimum No. Clips for Each Rope End</th>
<th>Spacing of Drop Forged Clips (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/16</td>
<td>0.10</td>
<td>2</td>
<td>1 1/8</td>
</tr>
<tr>
<td>1/4</td>
<td>0.19</td>
<td>2</td>
<td>1 1/2</td>
</tr>
<tr>
<td>5/16</td>
<td>0.29</td>
<td>2</td>
<td>1 7/8</td>
</tr>
<tr>
<td>3/8</td>
<td>0.47</td>
<td>2</td>
<td>2 1/4</td>
</tr>
<tr>
<td>7/16</td>
<td>0.70</td>
<td>2</td>
<td>2 5/8</td>
</tr>
<tr>
<td>1/2</td>
<td>0.78</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5/8</td>
<td>1.06</td>
<td>3</td>
<td>3 3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>1.59</td>
<td>4</td>
<td>4 1/2</td>
</tr>
<tr>
<td>7/8</td>
<td>2.40</td>
<td>4</td>
<td>5 1/4</td>
</tr>
<tr>
<td>1</td>
<td>2.72</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>1 1/8</td>
<td>3.20</td>
<td>6</td>
<td>6 3/4</td>
</tr>
<tr>
<td>1 1/4</td>
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<td>6</td>
<td>7 1/2</td>
</tr>
<tr>
<td>1 3/8</td>
<td>4.60</td>
<td>7</td>
<td>8 1/4</td>
</tr>
<tr>
<td>1 5/8</td>
<td>5.80</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>1 3/4</td>
<td>7.20</td>
<td>7</td>
<td>9 1/4</td>
</tr>
<tr>
<td>1 3/4</td>
<td>9.50</td>
<td>8</td>
<td>10 1/2</td>
</tr>
<tr>
<td>2</td>
<td>12.50</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>2 1/4</td>
<td>15.50</td>
<td>9</td>
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<tr>
<td>2 1/2</td>
<td>18.00</td>
<td>9</td>
<td>15</td>
</tr>
</tbody>
</table>

**SHACKLES**

All shackle pins shall be straight and all pins of screw pin type shall be screwed in all the way. If
width between the eyes is greater than listed below, the shackle has been overstrained and shall not
be used.
### Safe Load in Pounds -- Drop Forged Steel, Weldless

<table>
<thead>
<tr>
<th>Diameter of Pin (in)</th>
<th>Maximum Width Between Eyes (in)</th>
<th>Safe Working Load (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>3/8</td>
<td>560</td>
</tr>
<tr>
<td>3/8</td>
<td>9/16</td>
<td>1,400</td>
</tr>
<tr>
<td>1/2</td>
<td>11/16</td>
<td>2,700</td>
</tr>
<tr>
<td>5/8</td>
<td>13/16</td>
<td>3,600</td>
</tr>
<tr>
<td>3/4</td>
<td>1 1/16</td>
<td>5,600</td>
</tr>
<tr>
<td>7/8</td>
<td>1 1/4</td>
<td>7,800</td>
</tr>
<tr>
<td>1</td>
<td>1 1/2</td>
<td>10,400</td>
</tr>
<tr>
<td>1 1/8</td>
<td>1 5/8</td>
<td>13,200</td>
</tr>
<tr>
<td>1 1/14</td>
<td>1 7/8</td>
<td>16,000</td>
</tr>
<tr>
<td>1 3/8</td>
<td>2</td>
<td>20,000</td>
</tr>
<tr>
<td>1 1/2</td>
<td>2 1/8</td>
<td>24,000</td>
</tr>
<tr>
<td>1 5/8</td>
<td>2 1/4</td>
<td>28,000</td>
</tr>
<tr>
<td>1 3/4</td>
<td>2 3/4</td>
<td>32,000</td>
</tr>
<tr>
<td>2</td>
<td>2 3/4</td>
<td>36,000</td>
</tr>
<tr>
<td>2 1/4</td>
<td>3 1/4</td>
<td>46,000</td>
</tr>
<tr>
<td>2 1/2</td>
<td>4</td>
<td>56,000</td>
</tr>
</tbody>
</table>

### EYE HOOKS

If the throat opening of any hook exceeds the dimension given below for the corresponding diameter of the eye, the hook has been overstrained and shall not be used.

### Strength of Manufactured Eye Hooks -- Drop Forged Steel, Weldless

<table>
<thead>
<tr>
<th>Inside Diameter of Eye (in)</th>
<th>Throat Opening</th>
<th>Safe Working Load (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>1</td>
<td>1,000</td>
</tr>
<tr>
<td>7/8</td>
<td>1 1/16</td>
<td>1,200</td>
</tr>
<tr>
<td>1</td>
<td>1 3/16</td>
<td>1,400</td>
</tr>
<tr>
<td>1 1/8</td>
<td>1 1/14</td>
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<td>1 1/2</td>
<td>4,100</td>
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<tr>
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<td>1 3/4</td>
<td>5,000</td>
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<tr>
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<td>2</td>
<td>6,000</td>
</tr>
<tr>
<td>1 3/4</td>
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<tr>
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<td>9,400</td>
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<tr>
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<td>11,000</td>
</tr>
<tr>
<td>2 3/4</td>
<td>3</td>
<td>13,600</td>
</tr>
<tr>
<td>3 1/8</td>
<td>3 3/8</td>
<td>16,000</td>
</tr>
<tr>
<td>3 1/2</td>
<td>4</td>
<td>22,000</td>
</tr>
</tbody>
</table>
# MATERIAL HANDLING GEAR

## Recommended Minimum Sizes of Gear to be Used With Various Sizes of Rope

<table>
<thead>
<tr>
<th>Improved Plow Steel Wire Rope</th>
<th>Round Pin or Screw Shackle</th>
<th>New Wrought Iron Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Strand: 19 Wire Hemp Center</td>
<td>Diameter of Pin (in)</td>
<td>Diameter of Link Stock (in)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameter (in)</th>
<th>Safe Load (lbs)</th>
<th>Screw Pin</th>
<th>Round Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>4,300</td>
<td>3/4</td>
<td>5/8</td>
</tr>
<tr>
<td>9/16</td>
<td>5,400</td>
<td>3/4</td>
<td>3/4</td>
</tr>
<tr>
<td>5/8</td>
<td>6,600</td>
<td>7/8</td>
<td>3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>9,400</td>
<td>1</td>
<td>7/8</td>
</tr>
<tr>
<td>7/8</td>
<td>12,800</td>
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<td>1</td>
</tr>
<tr>
<td>1</td>
<td>16,000</td>
<td>1 1/4</td>
<td>1 1/8</td>
</tr>
<tr>
<td>1 1/8</td>
<td>21,200</td>
<td>1 1/2</td>
<td>1 3/8</td>
</tr>
<tr>
<td>1 1/4</td>
<td>26,000</td>
<td>1 5/8</td>
<td>1 1/2</td>
</tr>
<tr>
<td>1 3/8</td>
<td>31,400</td>
<td>1 3/4</td>
<td>1 5/8</td>
</tr>
<tr>
<td>1 1/2</td>
<td>37,000</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Improved Plow Steel Wire Rope</th>
<th>Steel Rings and Links</th>
<th>Dropped Forged Steel Hooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Strand: 19 Wire Hemp Center</td>
<td>Diameter (in)</td>
<td>Diameter (in)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameter (in)</th>
<th>Safe Load (lbs)</th>
<th>Circle</th>
<th>Oblong</th>
<th>Triangle</th>
<th>Eye</th>
<th>Throat</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4,300</td>
<td>1</td>
<td>9/16</td>
<td>3/4</td>
<td>1 1/2</td>
<td>1 3/8</td>
</tr>
<tr>
<td>9/16</td>
<td>5,400</td>
<td>1 1/4</td>
<td>5/8</td>
<td>7/8</td>
<td>1 1/8</td>
<td>1 1/2</td>
</tr>
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<td>5/8</td>
<td>6,600</td>
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<td>7/8</td>
<td>1 1/2</td>
<td>1 3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>9,400</td>
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<td>1</td>
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</tr>
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</tr>
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<td>16,000</td>
<td>2</td>
<td>1 1/4</td>
<td>1 1/2</td>
<td>2 3/4</td>
<td>3</td>
</tr>
<tr>
<td>1 1/8</td>
<td>21,200</td>
<td>2 1/4</td>
<td>1 1/8</td>
<td>1 3/4</td>
<td>3 1/8</td>
<td>3 1/8</td>
</tr>
<tr>
<td>1 1/4</td>
<td>26,000</td>
<td>2 1/4</td>
<td>1 1/2</td>
<td>1 3/4</td>
<td>3 1/2</td>
<td>4</td>
</tr>
<tr>
<td>1 3/8</td>
<td>31,400</td>
<td>2 1/2</td>
<td>1 3/4</td>
<td>2</td>
<td>3 1/2</td>
<td>4</td>
</tr>
<tr>
<td>1 1/2</td>
<td>37,000</td>
<td>2 3/4</td>
<td>1 3/4</td>
<td>2 1/4</td>
<td>4</td>
<td>4 1/2</td>
</tr>
</tbody>
</table>
ILLUMINATION FOR OCCUPATIONAL TASKS

Glare, diffusion, direction, uniformity, brightness, color, and brightness ratios affect visibility and the ability to see easily, accurately, and quickly. Poor lighting is uncomfortable and possibly hazardous.

The desirable quantity of light for any particular installation depends primarily upon the work that is being done. As the illumination of the task is increased, the ease, speed, and accuracy of accomplishing it are also increased. Following are two tables of levels of illumination for industrial areas as recommended by the American National Standard A11.1 “Practice for Industrial Lighting.”

Quantity of illumination is stated in foot-candles (1 foot candle equals approximately 10.8Lux) and is measured with a light meter. The Office of Campus Safety will measure this upon request.

MAXIMUM LUMINANCE RATIOS

<table>
<thead>
<tr>
<th>Environmental Classification</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between task and adjacent darker surroundings</td>
<td>3 to 1</td>
<td>3 to 1</td>
<td>5 to 1</td>
</tr>
<tr>
<td>Between task and adjacent lighter surroundings</td>
<td>1 to 3</td>
<td>1 to 3</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Between tasks and more remote darker surfaces</td>
<td>10 to 1</td>
<td>20 to 1</td>
<td>*</td>
</tr>
<tr>
<td>Between tasks and more remote lighter surfaces</td>
<td>1 to 10</td>
<td>1 to 20</td>
<td>*</td>
</tr>
<tr>
<td>Between luminaires (or windows, skylights, etc.) and surfaces adjacent to them</td>
<td>20 to 1</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Anywhere within normal field of view</td>
<td>40 to 1</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

*Brightness Ratio control not practical.

A -- Interior Areas where reflectances of entire space can be controlled in line with recommendations for optimum seeing conditions.

B -- Areas where reflectances of immediate work area can be controlled, but control of remote surroundings is limited.

C -- Areas (indoor and outdoor) where it is completely impractical to control reflectances and difficult to alter environmental conditions.

NOTE: From the normal viewpoint, brightness ratios of areas of appreciable size in industrial areas shall not exceed those in the above table.

LEVELS OF ILLUMINATION RECOMMENDED FOR SAMPLE OCCUPATIONAL TASKS

<table>
<thead>
<tr>
<th>Area</th>
<th>Foot—Candles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly-rough, easy seeing</td>
<td>30</td>
</tr>
<tr>
<td>Assembly-medium</td>
<td>100</td>
</tr>
<tr>
<td>Building construction-general</td>
<td>10</td>
</tr>
<tr>
<td>Corridors</td>
<td>20</td>
</tr>
<tr>
<td>Drafting Rooms-detailed</td>
<td>200</td>
</tr>
<tr>
<td>Electrical equipment, testing</td>
<td>100</td>
</tr>
<tr>
<td>Elevators</td>
<td>20</td>
</tr>
<tr>
<td>Garages--repair areas</td>
<td>100</td>
</tr>
<tr>
<td>Garages--traffic areas</td>
<td>20</td>
</tr>
<tr>
<td>Inspection, ordinary</td>
<td>50</td>
</tr>
<tr>
<td>Inspection, highly difficult</td>
<td>200</td>
</tr>
<tr>
<td>Loading platforms</td>
<td>20</td>
</tr>
<tr>
<td>Machine shops--medium work</td>
<td>100</td>
</tr>
<tr>
<td>Materials--loading, trucking</td>
<td>20</td>
</tr>
<tr>
<td>Offices--general areas</td>
<td>100</td>
</tr>
<tr>
<td>Paint dipping, spraying</td>
<td>50</td>
</tr>
<tr>
<td>Service spaces--wash rooms, etc.</td>
<td>30</td>
</tr>
<tr>
<td>Sheet metal--presses, shears</td>
<td>50</td>
</tr>
<tr>
<td>Storage rooms--inactive</td>
<td>5</td>
</tr>
<tr>
<td>Storage rooms--active, medium</td>
<td>20</td>
</tr>
<tr>
<td>Welding-general</td>
<td>50</td>
</tr>
<tr>
<td>Woodworking--rough sawing</td>
<td>30</td>
</tr>
</tbody>
</table>

1 foot-candle = 10.76 lux.
HOT ENVIRONMENTS

When the rate of heat transfer from the body by convection, radiation, and sweat evaporation is not adequate, then warming of the body occurs.

Excessive warming of the body can lead to heat stroke which can be fatal unless treated promptly and properly. Other consequences of heat stress include heat exhaustion, heat cramps, and a rash called "prickly heat."

All employees who work in hot environments shall be trained in the recognition of heat stress warning signs and the appropriate emergency treatments should symptoms occur.

Symptoms

1. Heat Cramps--Painful intermittent spasms of the voluntary muscles following hard physical work in a hot environment. Cramps usually occur after sweating and often begin at the end of a work shift.
2. Heat Exhaustion--Profuse sweating, weakness, rapid pulse, dizziness, nausea, and headache. The skin is cool and sometimes pale and clammy with sweat. Body temperature is normal or subnormal. Nausea, vomiting, and unconsciousness may occur.
3. Heat Stroke--Sweating is diminished or absent. The skin is hot, dry, and flushed. Increased body temperature, which if uncontrolled, may lead to delirium, convulsions, coma, and even death. Medical care is urgently needed.

Evaluation and Control

1. Measurement of the Environment

   A dry-bulb, a natural wet-bulb, a globe thermometer, and a stand are required instruments for the simplest and most suitable technique to measure the environmental factors.

   The Office of Campus Safety uses these instruments, along with work load tables and Wet-Bulb Globe Temperature values to calculate an index which is used to compare to Permissible Heat Exposure Threshold Limit Values to determine the worker's exposure.

2. Prevention Measures

   Prevention measures fall into three categories: engineering, administrative, and use of personal protective equipment.

   a. Engineering methods--mechanical procedures used to reduce the stress of hot environments, i.e., increasing general ventilation, use of local exhaust, cooling fans, shielding, isolation, relocation, redesign or substitution of equipment and/or processes.

   b. Administrative methods--work practice controls used to limit duration of heat stress or rest areas for rapid body cooling such as acclimatization to heat, a work-rest regimen, distribution of work load, and doing hot work in the coolest part of the day.

   c. Personal protective equipment--used only when a person must remain in a hot environment long enough to cause unacceptably high heat strain without protection. This varies in the amount and type of clothing, from short-sleeved cottons to body cooling suits.
NOTE: All these methods of prevention shall incorporate increased high electrolyte fluid and water intake. If an evaluation is necessary, contact Campus Safety.

HEAT-RELATED DISORDERS

It is important for the employer to provide training in the symptoms and effects of heat stress and heat stroke. It is also important to stress the importance of drinking fluids and maintaining proper electrolyte levels.

HEAT EXHAUSTION

Symptoms: Fatigue; weakness; profuse sweating; normal temperature; pale clammy skin; headache; cramps; vomiting; fainting.

Treatment:
1. Medical Alert
2. Remove worker from hot area
3. Have worker lie down and raise feet
4. Apply cool, wet cloths
5. Loosen or remove clothing
6. Allow small sips of water or electrolyte beverage if victim is not vomiting, then encourage victim to drink as much as possible
7. Instruct victim to stay out of heat for the remainder of the day

Prevention:
1. Take frequent breaks
2. Increase fluid intake
3. Allow workers to become acclimatized to heat

Causes:
1. High air temperature
2. High humidity
3. Low air movement
4. Hard work
5. Not enough breaks
6. Insufficient fluid intake
7. Full body clothing
8. Workers not acclimated to heat

HEAT STROKE

Symptoms: Dizziness; nausea; severe headache; hot and dry skin; confusion; collapse; delirium; coma; death.

Treatment:
1. Medical emergency alert--life-threatening situation
2. Remove worker from hot area
3. Remove clothing
4. Have victim lay down
5. Cool body by any means available--cold water, chemical cooling ice packs, ice rubbed vigorously over body
6. Do not give stimulants
7. Give cold drinks if patient can cooperate
8. Transport victim immediately to nearest medical facility

Causes:
1. High air temperature
2. High humidity
3. Low air movement
4. Hard work
5. Not enough breaks
6. Insufficient fluid intake
7. Full body clothing
8. Not acclimatized

Telephone numbers of physicians, hospitals, or ambulances shall be conspicuously posted. Before beginning the project, provisions shall be made for prompt medical attention in case of serious injury.

Personnel trained in basic first-aid shall always be on the project.

For prompt transport of an injured person to a physician or hospital, provide proper equipment or available telephone with emergency phone numbers.

When air line respiratory protection is used, it is important that the outside monitor be familiar with the system and any problems associated with breathing air. Carbon monoxide poisoning is perhaps the most important of these problems.

**EXCAVATIONS, TRENCHING, AND SHORING**

All excavations over 5’ deep shall be sloped, shored, sheeted, braced, or otherwise supported. When soil conditions are unstable, excavations more shallow than 5’ shall be sloped, supported, or shored.

**Methods of Excavations, Trenching and Shoring**

1. One method is to slope the sides of the cut to the “angle of repose”. This varies with different types of soil and shall be determined on each individual project. (See ANGLE OF REPOSE FOR SLOPING SIDES OF EXCAVATIONS.)

2. A second method of support is shoring, i.e., sheeting, tightly placed timber shores, bracing, trench jacks, piles or other materials installed in a manner strong enough to resist the pressure surrounding the excavation. (See SHORING SYSTEMS FOR TRENCHES.)

3. A third method is to use a trench box. A trench box is a pre fabricated movable trench shield, composed of steel plates welded to a heavy steel frame. (See TRENCH SHIELD.)

**Factors for Adequate Protection**

1. Soil Structure
   
   Carefully identify soil structure. Wet soil, sandy soil, or areas that have been backfilled are relatively unstable and need strong support.

2. Weather Conditions
Changing weather conditions shall be taken into consideration. Excess rain water loosens the soil and increases the pressure of the shoring system.

3. Superimposed Loads

Heavy equipment and materials such as pipes or timbers shall be kept as far back from the excavation as possible. If this cannot be done, these added pressures are to be taken into consideration.

4. Any additional vibration, in the surrounding area shall be taken into consideration.

Installation

1. Support systems shall be installed starting at the top and working to the bottom. Care shall be taken to place cross beams or trench jacks in true horizontal position and to space them vertically at appropriate intervals. Braces shall be secured to prevent sliding, falling, or kickouts. (See TRENCH JACKS IN TRUE HORIZONTAL POSITION AND SPACED VERTICALLY.)

2. All material used shall be in good condition.

3. Shoring shall closely follow excavation work.

4. Unstable excavation bottoms below the water line shall be guarded. (See EXCAVATION BOTTOM BELOW WATER LINE.) Adequate drainage is required to prevent surface water from entering the excavation.

5. Barricades shall be placed around all excavated openings. Signage stating "DANGER: EXCAVATION" shall be placed around the opening.

6. When employees are in a trench of 4’ or more, a ladder or steps shall be provided and located for quick exit. There shall not be more than 25’ lateral travel to ladder or steps.

7. Ladders used in excavations shall be in good condition, secured, and they shall extend 3’ above the excavation.

Removing the Material

After the trench has been cleared, workers shall remove the shoring from the bottom up taking care to release jacks or braces slowly. In unstable soil, ropes shall be used to pull out the jacks or braces from above.

Inspection

Shoring shall be inspected daily by a competent person.

NOTE: See attached for load-bearing value of soil, size of cross braces, and size of spacing of members of trench shoring.

ANGLE OF REPONSE FOR SLOPING SIDES OF EXCAVATIONS
<table>
<thead>
<tr>
<th>Angle (Ratio)</th>
<th>Kind of Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>Solid rock, shale or cemented sand and gravels.</td>
</tr>
<tr>
<td>63° (1/2:1)</td>
<td>Compacted angular gravels.</td>
</tr>
<tr>
<td>45° (1:1)</td>
<td>Recommended slopes for average soils.</td>
</tr>
<tr>
<td>33° (1:1)</td>
<td>Compacted sharp sand.</td>
</tr>
<tr>
<td>26° (2:1)</td>
<td>Well—rounded loose sand.</td>
</tr>
</tbody>
</table>

NOTE: Clays, silts, loams, or non-homogenous soils require shoring and bracing. The presence of ground water requires special treatment.
SHORING SYSTEMS FOR TRENCHES

Trenches in Running Material

- Sheet piling
- Cleats
- Stringers 4" x 4" minimum
- Braces 4" x 4" minimum
- 5' maximum

Trenches in Hard Compact Material (5' or more in depth)

- Sheet piling
- Cleats
- Bracing: Screw jacks or timbers spaced never greater than 5' on center (one brace required for each 4' of trench depth—never fewer than two braces).
- 5' maximum
- 2' clear
- Spoil tank
- 6' maximum

TRENCH SHIELD

TRENCH JACKS IN TRUE HORIZONTAL AND SPACED VERTICALLY SHOULD BE DRIVEN BELOW BOTTOM.
SHOULD BE DRIVEN BELOW BOTTOM.

EXCAVATION BOTTOM POSITION BELOW WATER LINE;
SHEETING

140
Shores and similar members that rest on earth usually require foot blocks or sills to distribute the load. If the load-bearing capacity of the soil is unknown, the table below may help in determining the size of the sill.

<table>
<thead>
<tr>
<th>Tons Allowable (per square ft.)</th>
<th>Soil Type and Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Soft clay</td>
</tr>
<tr>
<td>2</td>
<td>Wet clay</td>
</tr>
<tr>
<td>2</td>
<td>Sand and clay, mixed in layers</td>
</tr>
<tr>
<td>3</td>
<td>Fine dry sand</td>
</tr>
<tr>
<td>4</td>
<td>Hard dry clay</td>
</tr>
<tr>
<td>4</td>
<td>Coarse compact dry sand</td>
</tr>
</tbody>
</table>

### TRENCH SHORING -- SIZE OF CROSS BRACES

<table>
<thead>
<tr>
<th>Depth of Trench</th>
<th>Kind or Condition of Earth</th>
<th>Up to 3 ft. x</th>
<th>3 to 6 ft. x</th>
<th>6 to 9 ft. x</th>
<th>9 to 12 ft. x</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 10 feet</td>
<td>Hard, Compact</td>
<td>2 x 6</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
</tr>
<tr>
<td></td>
<td>Likely to Crack</td>
<td>2 x 6</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
</tr>
<tr>
<td></td>
<td>Soft, sandy or filled</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
</tr>
<tr>
<td></td>
<td>Hydrostatic Pressure</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
</tr>
<tr>
<td>10 to 15 feet</td>
<td>Hard</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
</tr>
<tr>
<td></td>
<td>Likely to Crack</td>
<td>4 x 4</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
</tr>
<tr>
<td></td>
<td>Soft, sandy or filled</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
<td>8 x 8</td>
</tr>
<tr>
<td></td>
<td>Hydrostatic Pressure</td>
<td>4 x 6</td>
<td>6 x 6</td>
<td>6 x 8</td>
<td>8 x 8</td>
</tr>
<tr>
<td>15 to 20 feet</td>
<td>All kinds or conditions</td>
<td>4 x 12</td>
<td>6 x 8</td>
<td>8 x 8</td>
<td>8 x 10</td>
</tr>
<tr>
<td>Over 20 feet</td>
<td>All kinds or conditions</td>
<td>4 x 12</td>
<td>6 x 8</td>
<td>8 x 10</td>
<td>10 x 10</td>
</tr>
</tbody>
</table>

Maximum spacing of members is 4' vertically and 6' horizontally for all trenches more than 5'.
Trench jacks may be used in lieu of, or in combination with, cross braces. Shoring is not required in solid rock, hard shale, or hard slag. Where desirable, steel piling and bracing of equal strength may be substituted for wood.

<table>
<thead>
<tr>
<th>Depth of Trench</th>
<th>Kind or Condition of Earth</th>
<th>Upright Stringers Min. Size</th>
<th>Max. Size</th>
<th>Stringers Min. Size</th>
<th>Max. Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 10 feet</td>
<td>Hard, Compact</td>
<td>3 x 4 or 2 x 6</td>
<td>48 (6')</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Likely to Crack</td>
<td>3 x 4 or 2 x 6</td>
<td>36 (3')</td>
<td>4 x 6</td>
<td>48 (4')</td>
</tr>
<tr>
<td></td>
<td>Soft, sandy or filled</td>
<td>3 x 4 or 2 x 6</td>
<td>4 x 6</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydrostatic Pressure</td>
<td>3 x 4 or 2 x 6</td>
<td>4 x 6</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>10 to 15 feet</td>
<td>Hard</td>
<td>3 x 4 or 2 x 6</td>
<td>48 (4')</td>
<td>4 x 6</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Likely to Crack</td>
<td>3 x 4 or 2 x 6</td>
<td>24 (2')</td>
<td>4 x 6</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Soft, sandy or filled</td>
<td>3 x 4 or 2 x 6</td>
<td>4 x 6</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydrostatic Pressure</td>
<td>3 x 4 or 2 x 6</td>
<td>8 x 10</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>15 to 20 feet</td>
<td>All kinds or conditions</td>
<td>4 x 6</td>
<td>Close Sheathing</td>
<td>4 x 12</td>
<td>48</td>
</tr>
<tr>
<td>Over 20 feet</td>
<td>All kinds or conditions</td>
<td>3 x 6</td>
<td>Close Sheathing</td>
<td>6 x 8</td>
<td>48</td>
</tr>
</tbody>
</table>

Maximum spacing of members is 4' vertically and 6' horizontally for all trenches more than 5' deep. Shoring is not required in solid rock, hard shale, or hard slag. Where desirable, steel piling and bracing of equal strength may be substituted for wood.
CONFINED SPACES

"Confined space" means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work;
- Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- Is not designed for continuous employee occupancy.

Currently LSUA contracts out all confined space work. No employee of LSUA is allowed to enter any of the designated confined spaces at any time. Proper signage is affixed to all areas that have been considered confined spaces.

GROUNDs MAINTENANCE

Prevention of accidents and injuries from tools and machines used in grounds maintenance requires that equipment be chosen for a specific purpose and that it be used and maintained properly. Fuel and chemicals shall be stored and used properly. Workers shall be thoroughly trained and shall wear proper clothing and use protective equipment as required. (See “Personal Protective Equipment.”)

It is important that maintenance workers be able to recognize poisonous vines, shrubs, fruits, and insects. (See “Poison Ivy and Oak”.) They shall avoid contact with poison oak and ivy and permanently destroy all poisonous growths. They shall guard against insects and infections, and scrub hands thoroughly after working outdoors. All cuts and scratches received outdoors shall be treated with proper antiseptic covering. All foreign matter such as glass, metal, and wire shall be removed from the grounds to be maintained. Gloves, sturdy shoes, and appropriate garments for protection shall be worn at all times.

Hand Tools:

See “Safe Use of Hand and Portable Power Tools.”

Gasoline Powered Equipment

The following points shall be followed when handling gasoline:

1. Gasoline shall never be used for cleaning floors, tools, clothes, or hands. Gasoline is to be used in engines as a source of fuel only.

2. Gasoline shall only be stored in approved closed containers. Never use an open container, glass, or other breakable container.
3. Pouring gasoline from one container to another may generate a charge of static electricity. A metal-to-metal contact shall be maintained.

4. Gasoline spills shall be cleaned up immediately to prevent accumulation of vapors. Do not allow electrical switches to be turned on until the gasoline vapors have dispersed. Electrical devices that start automatically such as cold water fountains may have to be shut off at the main switch if the main switch can be pulled safely.

5. If gasoline is spilled on a person, the saturated clothing shall be removed immediately and the person kept away from sources of ignition. The affected area of the skin shall be washed with soap and water to avoid a skin rash or irritation. If the eyes are involved, they shall be flushed with water and get the person to a doctor.

6. Gasoline tanks or equipment parts that are likely to contaminate gasoline shall be drained or dismantled only out-of-doors or in a well-ventilated area free from sources of ignition.

7. Smoking shall be allowed in approved areas only. Smoking shall not be allowed in fueling areas, fuel system servicing areas, maintenance areas, bulk fuel delivery areas, etc.

8. Gasoline shall not be dispensed into a fuel tank while the engine is running or the motor is hot.

9. Equipment with fuel in the tank shall not be stored inside a building where vapors could reach an open flame or spark. Allow the engine to cool before storing in any enclosure.


Lawn Trimmers:

Edgers and trimmers shall be treated with the same caution as mowers because they, too, have a heavy metal cutting blade that can throw debris or cut a finger.

Guards shall be kept in place and in working order. Keep the blades sharp. Do not put hands near the working area unless the machine is turned off and unplugged.

Nylon-cord weed trimmers cannot hurt as seriously as metal-blade trimmers-edgers, but getting hit by the line can sting. The operator shall disconnect the power cord when adjusting the cutter cord length or changing the reel, applying the same precautions as with any electrical appliance. Care shall be taken in wet areas and the cord checked periodically for cracks or breaks in the insulation.


Power Lawn Mowers:

Before starting, supervisors shall make sure the operator is well trained in using the mower. If it is the first time the mower will be used that season, the operator shall review the instruction manual. Before starting to mow, the operator shall pick up rocks, glass, tree branches and twigs, and any other objects that could become lethal missiles if thrown out by the mower blade and observe the location of fixed objects such as pipes, lawn sprinkler heads, and curbs that could damage the mower or break off and become missiles. Any wheel height adjustment shall be made prior to starting the mower; disconnect the spark plug wire when cleaning, repairing, or inspecting the mower. Unauthorized persons shall not be allowed to be in the mowing area. The operator shall
make a quick inspection for loose nuts and bolts, check the engine oil level (if the mower has a separate oil reservoir), and fill the fuel tank before starting. Using a vented can with a flex spout. The operator shall wear work shoes and safety glasses. A brimmed hat, long pants and a long-sleeved shirt will protect against sunburn.

The operator shall be instructed to mow in daylight or good artificial light and to push the mower forward as much as possible because feet can be injured when pulling a mower backward. When mowing on a slope or terrace, a series of horizontal passes along the incline shall be used. If the operator pushes up the incline, he/she runs the risk of having the mower drift back onto his/her foot. If he pushes down, he/she could lose his footing and fall into the mower.

The mower shall not be used when the grass is wet and slippery. If the grass is damp or high, cut at a slower speed, if possible, and set the cutting height higher than for dry grass; otherwise, the discharge chute may clog up.

Rotary blades can also pick up stones, pieces of wire, nails, or other objects hiding in the grass, and throw them out of the discharge chute at high speeds. Guards shall be in place every time the catcher is not used.

The operator shall shut off the engine and make certain that the blade has stopped completely before taking off the grass catcher to empty it, attempting to free obstructions from the discharge chute, adjusting the cutting height or performing any operation requiring him/her to put his/her hands or feet near the blade.

Riding Mowers:

Suggested safe practices for riding mowers include the following:

1. The operator shall be fully instructed in handling riding mowers. He/she shall know the controls, know how to stop the machine quickly, and shall read the owner’s manual--especially at the beginning of each mowing season.

2. The work area shall be cleared of objects that might be picked up and thrown. Fixed objects that might damage the mower shall be identified. All areas cannot be reached by a riding mower; some corners or sharp slopes will have to be mowed by a power mower. When planning landscaping, leave enough space around new plantings for easy mower access and allow for future growth.

3. Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor). Disengage power to attachments and stop the engine before making any repairs or adjustments. Disengage the power to attachments when transporting them or when they are not in use. All possible precautions shall be taken when leaving the vehicle unattended such as disengaging the power takeoff, lowering the attachments, shifting into neutral, setting the parking brake, stopping the engine, and removing the ignition key.

4. When mowing, the operator shall stay alert for holes in the terrain and for other hidden hazards. Do not start or stop suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never mow across as the wheelbase is longer than the thread so the unit is more stable that way. Reduce speed on slopes and on sharp turns to prevent tipping or loss of control. Extreme caution shall be used when changing direction, especially on slopes. Do not back up without looking to make certain it is safe to do so. Watch for traffic when crossing or near roadways. When using attachments, direct discharge of materials away from anything that could be hurt or damaged by it.

5. Maintain vehicle and attachments in good operating condition and keep safety devices in place. Keep all nuts, bolts, and screws tight, and make sure the equipment is in safe working
condition; check especially blade mounting bolts. If the vehicle or its attachments strike a solid object, stop and inspect for damage; the damage shall be repaired before restarting and operating the equipment. The engine governor settings shall not be changed; the engine shall not be over speeded; discharge guards shall always be in the down position.

**Garden Tractors:**

1. Garden tractors shall have safeguards for all moving parts to reduce the hazard of contacting belts, chains, pulleys, and gears.
2. Garden tractors shall have a throttle, gears, and brakes that are accessible and can be operated smoothly with minimum effort.
3. Safety instructions shall be provided with the garden tractor. There shall be warning labels on the machine itself.
4. The operator shall read the owner’s manual and shall reread its recommendations before each use of the garden tractor.
5. Never allow children or unauthorized persons to operate the tractor and keep them away from these areas during operation.
6. The operator shall wear sturdy, rough-soled work shoes, and close-fitting slacks and shirts to avoid entanglement in the moving parts. He/she shall never operate a garden tractor in bare feet, sandals, or sneakers.
7. The machine shall be turned off and the spark plug wire disconnected when the machine is to be adjusted.
8. The operator shall always drive up and down the slopes--rather than across when using a garden tractor on a hill for greater stability. (This instruction is different than that for power lawn mowers.)
9. Garden tractors shall be started outdoors, not in a garage where carbon monoxide gas can collect.
10. No smoking shall be allowed near the garden tractor or gasoline storage can.
11. Unauthorized persons shall be kept away from the machines and the fuel.
12. All loose or broken parts, especially blades shall be tightened or replaced.
13. Get expert servicing regularly; it may prevent serious injuries.
14. Bypass starting of tractors shall not be allowed. (See Section, “Bypass Starting of Tractors.”)

**Pesticides:**

Insecticides, herbicides, fungicides, disinfectants, rodenticides, and animal repellents are all pesticides. The safe use of pesticides is everyone’s responsibility. The user, however, has the major responsibility which begins the day a pesticide is selected and purchased and continues until the empty container has been disposed of properly.

All labels shall include a list of what the product will control, directions on how to apply the pesticide, a warning of potential hazards, and safety measures to follow.
Before using any pesticide poison, read the label carefully. The label states the hazards involved, antidotes, and first aid instructions. Those poisons that have DANGER-POISON on the label are highly toxic. If inhaled, eaten, or allowed to frequently remain on skin, they could kill. Poisons that have WARNING on the label are moderately toxic and can be quite hazardous. Poisons that have CAUTION on the label have low toxicity, but could cause harm if the poison is eaten or grossly misused. Label instructions for mixing, handling, and applying shall be followed. BE SURE--DO NOT GUESS.

1. **Application:** Any restricted-use pesticide used around a plant shall be applied by a certified handler according to law (Public Law 92.516).

   The least toxic pesticide shall be used for the job in order to reduce hazards.

   Only enough pesticide to last one season shall be purchased. This cuts down on storage and disposal problems. The following precautions shall be observed:

   a. Use pesticide poisons only for the purposes stated on the label.
   b. Keep pesticide poisons in the original labeled container. Check for leaks or container damage.
   c. Mix pesticide poisons carefully (outdoors if possible), keep off skin, and avoid breathing dust or vapors. Use protective clothing and equipment including respirators for toxic chemicals. See "Personal Protective Equipment."
   d. Set aside a special set of mixing tools (measuring spoons and a graduated measuring cup) for use with sprays and dusts only. Keep them with the chemicals.
   e. Avoid spilling. Set aside a level shelf or bench in a well-ventilated area, preferably outside, for mixing chemicals. A level, uncluttered surface helps avoid spills. If chemicals do spill, wash hands at once with soap and water. Then hose down the mixing area and contact the Office of Campus Safety.
   f. Never smoke or eat while spraying or dusting.
   g. Someone shall always be "in attendance" when pesticides are being used.
   h. During application, stay out of the spray drift. Avoid outside application on a windy day.
   i. If pesticide poison gets on skin or clothing, immediately remove clothing and take an all-over bath or shower; be sure to shampoo and use plenty of soap and water. Wash clothing before reuse and contact Campus Safety.
   j. When finished, wash immediately with soap and water. Do not smoke, eat, or drink without washing first.
   k. Never allow unauthorized personnel around treated areas or pesticide poison mixing, storage, and disposal area.

2. **Safe Storage:**

   a. Pesticide poisons shall be stored in a well—ventilated, locked area or building. Packages that are likely to be damaged by dampness shall be kept off the floor.
   b. Poisons shall be kept in tightly closed, original containers. The label gives information needed in case of accidents. Do not store pesticides in other containers.
   c. Do not store clothing, respirators, lunches, cigarettes, or drinks with pesticide poisons. They may pick up poisonous vapors or dusts or soak up spilled poisons.
   d. Keep soap and plenty of water handy. Seconds count when washing poisons from the skin.

3. **Disposal:** Dispose of pesticides through the LSUA Hazardous Waste Program only. See "Hazardous Waste Program."

**Emergency Information:**

If an emergency occurs, additional advice and information on antidotes for specific pesticides may be obtained from the Student Health Center or a local hospital. Telephone numbers shall be
conspicuously posted.

**Poison Ivy and Poison Oak:**

All maintenance workers shall be trained to recognize poison ivy and poison oak.

1. Poison Ivy grows as a vine up to 50' long or as a small plant. The leaves of this plant always grow in groups of three. The leaves of poison ivy are green in late spring and summer; reddish in the early spring, late summer, and fall.

2. Poison Oak is most commonly a bush, although it sometimes grows as a vine up to 30' long. The leaves always grow in groups of three and are green in late spring and summer; reddish in early spring, late summer, and fall.

Exposure to poison ivy or oak can be acute (short-term) or chronic (long-term). Acute exposure is received by touching the plant, swallowing parts of the plant, or inhaling smoke of the burning plant. Local signs and symptoms begin 12 hours to 7 days after exposure. Chronic exposure (repeated exposure) increases the severity of the symptoms which could lead to severe poisoning.

Symptoms include itching, swelling, blister formation, oozing, and crusting. Generalized signs and symptoms include fluid accumulation, weakness, malaise, and fever.

**Prevention:**

1. Employees shall be able to recognize these poisonous plants and know how to avoid them.

2. If exposure is possible, heavy clothes and leather gloves shall be used.

3. Upon exposure, the employee shall wash thoroughly with soap and water, and remove all contaminated clothing for washing.

**NOTE:** Ingesting of poisonous plants does not help achieve immunity.

**Treatment:**

Upon exposure, the employee shall wash thoroughly with soap and water and be brought to the Student Health Center for evaluation.
FOOD PREPARATION, DINING AREAS, AND STORAGE

Sanitation

Levels of sanitation shall conform to all state and local health codes.

Lifting

1. Place heavy stock on lower shelves.
2. Use hand carts for heavy objects.
3. Use proper lifting procedures when lifting. See “Material Handling.”
4. Do not overload garbage cans.
5. Do not overload hand trucks. Keep load balanced. Allow for clear view when moving loaded hand trucks. Keep load trimmed so it will pass through aisles and doorways easily.
6. For forklift use, see “Fork Trucks.”

Handtools

1. When using knives, cut downward and away from hand. Knives shall be returned to storage after use.
2. Do not catch falling knives, sharp tools, or glass objects.
3. When cleaning blades, wipe away from sharp edges. Use patience and proper care.
4. Use proper tools for opening merchandise.
5. All knives and cutting tools shall be kept sharp.
6. Knives and cutting tools shall be stored with blades protected and placed so that they do not protrude into walkways, working areas, and aisles.
7. Obey all warning tags and signs.
8. See “Safe Use of Hand and Portable Power Tools.”

Electrically Operated Food Processing Equipment

1. Machine guards shall be kept in place at all times. Avoid using hands.
2. Pay attention at all times.
3. Turn machine off after each job or when not in use.
4. When cleaning, repairing, or moving machines, they shall be locked out. See “Trades Safety, Equipment Lock Out Procedure”.
5. All warning tags and signs shall be obeyed.

Slips and Spills

1. Prevent slips by cleaning up spills immediately.
2. Do not overload carts, trays, counters, or yourself.
3. Extra care shall be taken when serving.
4. Use caution on and around wet floors; take shorter steps, and do not hurry.
5. Slip resistant shoes shall be worn at all times.
6. Cover full food trays when moving from location to location.
7. Areas which are constantly wet shall have a non-slick surface.
8. Broken, worn, and defective mats are to be replaced or repaired immediately.

Fire Protection

1. Clean grease screens, filters, and greasy areas regularly.
2. Obey all fire prevention signs and posters.
3. Maintain automatic extinguishment systems on a regular basis.
4. All fire extinguishers shall be inspected regularly.
5. All fire extinguishers shall be field-tested and ready for operation.
6. Learn location of fire extinguishers.
7. Keep aisles and areas around fire extinguishers and other fire protection equipment clear at all times.

**Housekeeping**

1. Keep cooking and working areas clear and clean.
2. Never let pot handles overhang stove or counters.
3. Place food carts close to walls and away from corridors, corners, or doorways.
4. Detergents and insecticides shall be properly marked and stored away from food.
5. Aisles and stairways shall be kept clean and unobstructed.
6. Broken, worn, and defective mats are to be replaced or repaired immediately.

**Hot Areas and Pots**

1. Use potholders when moving hot pots or suspected hot pots.
2. Shield face and arms when lifting pot lids or reaching near steam tables.
3. When moving large, hot loads, get help; use potholders or gloves, clear space for load, and warn others.
4. Avoid placing hands or arms into the oven baking chamber.
5. Before emptying hot grease, be sure container to receive grease is absolutely dry (free of water).

**Electrical**

1. Report any defective electrical and/or mechanical equipment to your supervisor.
2. All electrical equipment shall conform with the National Electric Code.

**Clothing and Personal Protection**

1. Do not wear loose clothing or accessories (neckties, loose or open sleeves, cuffed pants, open jackets, broken shoe soles, high heels, jewelry, etc.) that can get caught in moving machinery.
2. Long hair shall be kept in hair nets.
3. Eye protection shall be worn when there is a possibility of injury from caustic cleaning materials, flying particles, hot grease spatters, chips, etc.
4. Appropriate hearing protection shall be worn when exposed to noise levels in excess of 90 dB.
5. When handling caustic cleaning materials, employees shall wear gloves which are impervious to such materials. The gloves shall be long enough to protect the forearms.
6. Non-skid shoes shall be worn in all areas of restaurants and bars where floors may become wet or greasy.
7. Leather hand gloves shall be used when loading or unloading supplies having sharp or rough surfaces.
8. See “Personal Protection Equipment.”

**Oil and Gas Fire Ovens**

1. Before lighting an oven, check the following:
   a. If oven is cold, see that it is thoroughly ventilated to remove any accumulation of gas.
   b. Be sure pilot light shows a strong blue flame before turning on any of the main valves.
   c. See that all flues are open.
   d. Follow manufacturer’s instructions carefully.
2. All gas pipes shall be identified.

**Gas Cylinders**

See “Handling, Using, and Storage of Compressed Gas Cylinders.”

**Cooling Fans**

All fans less than 7’ from the floor shall be protected by guards with openings no larger than 1/2”.

**Accident Reporting**

1. Report any and all accidents immediately to your supervisor.
2. Supervisors are then responsible for contacting the Campus Safety Director to handle the investigation.

**General**

1. All warning tags and signs shall be obeyed.
2. All injuries shall be reported to your supervisor.
3. Always work at a safe speed.
4. No practical jokes or horseplay shall be tolerated.
5. A first aid kit shall be made available.
6. All steam, gas, and water pipes shall be identified.
CUSTODIAL SAFETY

General

1. Use fresh cleaning supplies or sanitary disposal supplies. Wash hands often.
2. Obey all hazard warning signs. If there are any questions, ask the supervisor first.
3. Never reach into or pack down trash with bare hands.
4. Don’t let trash pile up. Empty it regularly.
5. Keep storage places neat and equipment clean.
6. Any equipment showing signs of electrical trouble shall be removed from use, then reported immediately to the supervisor.
7. Keep machine guards in place. When work requires, wear protective equipment.
8. Don’t risk it. If repairing--unplug, use lock out tag out procedures.
9. To unplug: grip at plug (do not yank on cord), dry hands before handling electrical equipment.
11. Report “booby traps” (ripped carpets, loose, missing, or broken tiles) in flooring.
12. Move equipment slowly. Park equipment away from doorways or corners.
13. Do not block aisles, stairs, and exits.

Cleaning

1. Alkaline cleaners shall not be used on terrazzo.
2. Mild alkaline cleaners may be used on asphalt tile.
3. Oils are unsuitable for rubber tile. When applied to wood floors, the fire hazard increases.
4. To keep floor clean, safe, and sanitary, the recommendations of the flooring manufacturer shall be followed. Procedures shall be standardized and detailed.
5. In general, the routine maintenance procedure for linoleum, marble, terrazzo, asphalt tile, and other types of flooring is to clean the floors with a soft floor brush or vacuum cleaner. When necessary, damp-mop with clean, cold water.
6. Floor shall be cleaned one section at a time. If traffic in the area is heavy, that section shall be roped off. When soap is used, any soapy film shall be removed by thorough rinsing to avoid a slippery condition.
7. Ordinary wash for polishing wood, tile, and similar floor surfaces is unsuitable because of its inherently slippery nature.
8. Soft floors such as asphalt, vinyl, and linoleum shall be cleaned four times a year. Hard floors such as concrete and terrazzo shall be cleaned and sealed once a year.
9. Slippery materials spilled on floors shall be cleaned promptly. Clean all spills as soon as possible.
10. To remove grease and oils, the area can be covered with slaked lime to a depth of 1/4” (5mm). After two or three hours, the lime is then removed with a scraper or stiff brush. Various sand commercial cleaners can also be used.
11. Protection shall be used when handling strong chemicals. Wear gloves if using steel wool.
12. Ventilate area if painting, spraying insecticide, or using toxic cleaners. Do not mix ammonia and chlorine products.
13. Avoid leaving floor too wet, using too much wax, and not buffing enough.

Aisles

Aisles shall be kept clear at all times.

Fire Protection


Ladders
See “Proper Use of Ladders”
Personal Protective Equipment Policy

Introduction
The purpose of the Personal Protective Equipment Policy is to protect the employees of Louisiana State University at Alexandria from exposure to workplace hazards and the risk of injury through the use of personal protective equipment (PPE). PPE is not a substitute for more effective control methods and its use will be considered only when other means of protection against hazards are not adequate or feasible. It will be used in conjunction with other controls unless no other means of hazard control exist.

Personal protective equipment will be provided, used, and maintained when it has been determined that its use is required to ensure the safety and health of our employees and that such use will lessen the likelihood of occupational injury and/or illness.

This section addresses general PPE requirements, including eye and face, head, foot and leg, hand and arm, body (torso) protection, respiratory protection, and protection from drowning.

The Louisiana State University at Alexandria Personal Protective Equipment Policies includes:

- Responsibilities of supervisors and employees
- Hazard assessment and PPE selection
- Employee training
- Cleaning and Maintenance of PPE
- PPE Disciplinary Policy

Responsibilities

Campus Safety Director
The Campus Safety Director is responsible for the development, implementation, and administration of Louisiana State University at Alexandria’s PPE policies. This involves

- Conducting workplace hazard assessments to determine the presence of hazards which necessitate the use of PPE.

Selecting and purchasing PPE.

Reviewing, updating, and conducting PPE hazard assessments whenever

- a job changes
- new equipment is used
- there has been an accident
- a supervisor or employee requests it
- or at least every year

Maintaining records on hazard assessments.

Maintaining records on PPE assignments and training.
Providing training, guidance, and assistance to supervisors and employees on the proper use, care, and cleaning of approved PPE.

Periodically re-evaluating the suitability of previously selected PPE.

Reviewing, updating, and evaluating the overall effectiveness of PPE use, training, and policies.

**Maintenance Foreman / Custodial Supervisor / Utility Plant Superintendent**

The Maintenance Foreman, the Custodial Supervisor, and the Utility Plant Supervisor have the primary responsibility for implementing and enforcing PPE use and policies in their work area. This involves

- Providing appropriate PPE and making it available to employees.
- Ensuring that employees are trained on the proper use, care, and cleaning of PPE.
- Ensuring that PPE training certification and evaluation forms are signed and given to the Campus Safety Director.
- Ensuring that employees properly use and maintain their PPE, and follow Louisiana State University at Alexandria’s PPE policies and rules.
- Notifying Louisiana State University at Alexandria’s management and the Campus Safety Director when new hazards are introduced or when processes are added or changed.
- Ensuring that defective or damaged PPE is immediately disposed of and replaced.

**Employees**

The PPE user is responsible for following the requirements of the PPE policies. This involves

- Properly wearing PPE as required.
- Attending required training sessions.
- Properly caring for, cleaning, maintaining, and inspecting PPE as required.
- Following Louisiana State University at Alexandria’s PPE policies and rules.
- Informing the supervisor of the need to repair or replace PPE.

Employees who repeatedly disregard and do not follow PPE policies and rules will be disciplined according to the PPE Disciplinary Policy.
GENERAL PPE PROCEDURES

Hazard Assessment for PPE

The Campus Safety Director in conjunction with the Maintenance Foreman, Utility Plant Superintendent, and the Custodial Supervisor will conduct a walk-through survey of each work area to identify sources of work hazards. Each survey will be documented using the Hazard Assessment Certification Form, which identifies the work area surveyed, the person conducting the survey, findings of potential hazards, and date of the survey. The Administrative Assistant of Facility Services will keep these forms in her office on file.

The Campus Safety Director will conduct, review, and update the hazard assessment for PPE whenever

- a job changes
- new equipment or process is installed
- there has been an accident
- whenever a supervisor or employee requests it
- or at least every year

Any new PPE requirements that are developed will be added to Louisiana State University at Alexandria’s written loss prevention program.

Selection of PPE

Once the hazards of a workplace have been identified, the Campus Safety Director in conjunction with the Maintenance Foreman, the Utility Plant Supervisor, and/or the Custodial Supervisor will determine if the hazards can first be eliminated or reduced by methods other than PPE, i.e., methods that do not rely on employee behavior, such as engineering controls. If such methods are not adequate or feasible, then Maintenance Foreman, the Utility Plant Supervisor, and/or the Custodial Supervisor will determine the suitability of the PPE presently available; and as necessary, will select new or additional equipment which ensures a level of protection greater than the minimum required to protect our employees from the hazards. Care will be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards will be recommended for purchase.

All personal protective clothing and equipment will be of safe design and construction for the work to be performed and will be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet NIOSH or ANSI (American National Standards Institute) standards will be procured or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the PPE regulations, as follows:

- Eye and Face Protection ANSI Z87.1-1989
- Head Protection ANSI Z9.1-1986
- Foot Protection ANSI Z41.1-1991
- Hand Protection (There are no ANSI standards for gloves, however, selection must be based on the performance characteristics of the glove in relation to the tasks to be performed.)

Affected employees whose jobs require the use of PPE will be informed of the PPE selection and will be provided PPE by Louisiana State University at Alexandria at no charge. Careful consideration will be given to the comfort and proper fit of PPE in order to ensure that the right size is selected and that it will be used.
Training

Any worker required to wear PPE will receive training in the proper use, maintenance, and disposal of PPE before being allowed to perform work requiring the use of PPE. Periodic retraining will be offered to PPE users as needed. The training will include, but not necessarily be limited to, the following subjects:

- When PPE is necessary to be worn
- What PPE is necessary
- How to properly don, doff, adjust, and wear PPE
- The limitations of the PPE
- The proper care, maintenance, useful life, and disposal of the PPE

After the training, the employees will demonstrate that they understand how to use PPE properly, or they will be retrained.

Training of each employee will be documented using the Louisiana State University at Alexandria Safety Meeting/Training Form and kept on file. The document certifies that the employee has received and understood the required training on the specific PPE he/she will be using. A copy of the completed training form should be forwarded to The Campus Safety Director.

Retraining

The need for retraining will be indicated when

- an employee’s work habits or knowledge indicates a lack of the necessary understanding, motivation, and skills required to use the PPE (i.e., uses PPE improperly)
- new equipment is installed
- changes in the work place make previous training out-of-date
- changes in the types of PPE to be used make previous training out-of-date

Cleaning and Maintenance of PPE

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

Employees must inspect, clean, and maintain their PPE according to the manufacturers’ instructions before and after each use. Supervisors are responsible for ensuring that users properly maintain their PPE in good condition.

Personal protective equipment must not be shared between employees until it has been properly cleaned and sanitized. PPE will be distributed for individual use whenever possible.

If employees provide their own PPE, make sure that it is adequate for the work place hazards, and that it is maintained in a clean and reliable condition.

Defective or damaged PPE will not be used and will be immediately discarded and replaced.

NOTE: Defective equipment can be worse than no PPE at all. Employees would avoid a hazardous situation if they knew they were not protected; but they would get closer to the hazard if they erroneously believed they were protected, and therefore would be at greater risk.

It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.
SPECIFIC PPE PROCEDURES

This section applies to employees, students, or visitors on campus construed to be in need of personal protective equipment by virtue of their exposure to hazards in the working, teaching, or research environment.

Protective equipment, including personal protective equipment for eyes, face, hands and extremities; protective clothing; respirator devices; and protective shields and barriers, shall be used and maintained in sanitary and reliable condition whenever it is necessary by reason of hazards of process or environment, chemical hazards, radiological hazards, biological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact. (1. OSHA 1910.132(a).)

Under no circumstances shall a person knowingly be subjected to a hazardous condition without appropriate personal protective equipment.

Persons who are exposed to hazards requiring personal protective equipment shall be properly instructed in the use of such equipment by the individual in charge of the activity or his/her designee.

It is the responsibility of the individual in charge of the activity to assure that safety practices are adhered to.

If those individuals required to wear personal protective equipment fail to do so, they will be subject to disciplinary action.

EYE PROTECTION

General

Persons working in or studying occupations such as painting, carpentry, construction, labor, landscape, general maintenance, metal trades, chemistry, other sciences and engineering, or any work/study activity which involves hazards such as flying objects, dust and/or vapors, hot metals, chemicals, or light radiation shall be required to wear approved safety eyewear/goggles at all times while exposed.

Custodial workers shall be required to wear approved safety eyewear/goggles when cleaning bathroom appliances or mopping floors with caustic or abrasive cleaners.

Food service personnel must wear approved eyewear/goggles when there is a possibility of eye injury from caustic materials, hot fat splatters, or associated hazards.

Management level employees, students, or visitors who make occasional visits to machine, welding, and carpentry shops, boiler rooms, equipment rooms, power houses, construction areas, chemistry labs, or other areas in which eye injury is a possibility shall wear approved eyewear.

Prescription Lens Wearers
If required to wear eye protection, such persons shall wear an approved face shield, goggles that fit over glasses, prescription glasses with protective optical lenses fitted with side shields, or goggles that incorporate prescription lenses.

Contact Lens Wearers

Contact lenses shall never be considered as a substitute for eye protection; eye protection shall be worn over them. “Contact lens, of themselves, does not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.” (ANSI Z87.1-1989).

Approval and Selection

Eye protection shall meet the ANSI Z87.1-1989 standard and the eyewear shall indicate such on the lens or the frame.

Visitors shall be provided protective eyewear meeting ANSI Z87.1 protection factors for visitor’s eyewear. Employees shall not substitute ANSI Z87.1 visitor’s eyewear for other approved eyewear while on duty.

Refer to the attached “Selection Chart for Eye and Face Protection for Use in Industry, Schools, and Colleges” to determine appropriate eye and/or face protection.

Fitting

Fitting shall be done by a department member knowledgeable of the procedure, or in case of prescription lenses, by an ophthalmic specialist.

Purchase

Purchase of eye protection shall be made through an authorized department representative to assure compliance.

Inspection and Maintenance

All eye and face protection shall be kept clean and inspected daily before each use. Badly scratched or damaged items are to be replaced immediately.

Other

It is recommended that all employees required to wear eye and face protection shall have their own and be required to inspect and maintain them in accordance with this section.

FALL PROTECTION

Employees/Students Covered

Fall protection shall be utilized by those employees/students for the specific purpose of securing, suspending, or retrieving the employee/student in or from a hazardous work area, and/or when work exposes them to the risk of falling more than 15’ whether outdoors or inside buildings.
Approval and Selection

Fall protection and devices and equipment shall meet ANSI A 10.14, and employees/students shall only be allowed to purchase or receive them through an authorized department representative to insure compliance.

Selection of fall protection shall be based on the attached, “Classification of Safety Belts, Harnesses, and Lanyards.”

Fitting

The appropriate safety belt shall be chosen for the hazard. It shall be securely buckled and worn tightly enough to prevent any possibility of the wearer slipping out.

Inspection and Maintenance

Safety belts and associated equipment shall be inspected before each use. Every one to three months they shall be inspected by a trained inspector. Cut, worn, or damaged belts, lifelines, lanyards, etc., shall be discarded and replaced. Safety belts in service shall not be tested for maximum impact loading.

NOTE: After an accidental freefall, the safety belt and lanyard shall be discarded.

FOOT PROTECTION

Employees/Students Covered

For all non-office personnel, “Footwear such as sandals, open-toed shoes, platforms, high heels, cloth-bodied tennis shoes, or sneakers is not considered safe and is prohibited for use as a good work shoe. Well-built safety shoes, leather-bodied shoes, or boots in good condition with low heels and hard soles are to be used.” (Physical Plant Operations Manual)

Approval and Selection

Foot protection used shall meet ANSI Z41.1 “Men’s Safety-Toe Footwear.” Employees/students shall only be allowed to purchase or receive them through an authorized department representative to insure compliance.

Refer to the attached, “Foot Protection Classification and Protection Factors” to determine appropriate foot protection.

Fitting

Each employee/student shall be individually fitted by someone skilled in the procedure.

Inspection and Maintenance

All foot protection shall be kept reasonably clean and in good repair. Shoes shall be repaired or replaced periodically.

HAND PROTECTION

Employees/Students Covered

Hand protection shall be worn by employees when handling hot work, chemicals, electrical, material handling of rough and/or sharp items, doing landscaping work, welding, and “wherever it
is necessary by reason of hazards of processes of environmental, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or “ (OSHA 1910 Standards).

Hand protection shall not be worn while working on moving machinery such as drill saws, grinders, or other rotating and moving equipment that might catch the hand protection and pull the worker's hand into a hazardous area.

Approval and Selection

Hand protection used will meet the criteria for its particular use. Employees/students shall only be allowed to purchase or receive hand protection through an authorized department representative to insure compliance.

Refer to the attached, “Glove Materials” and “Chemical Resistance” charts to determine appropriate hand protection.

Fitting

Fitting shall be done by hazard and size of employee’s hand.

Inspection and Maintenance

All hand protection shall be kept clean and inspected daily before each use. Badly worn or damaged items are to be replaced.

**HEAD PROTECTION**

Employees/Students Covered

Employees/Students in areas such as painting, carpentry, construction, plumbing, labor, landscape, maintenance, metal trade, and any occupations that involve hazards from falling objects and/or overhead shall be covered.

Approval and Selection

Head protection used shall bear the ANSI Z89.1 or Z89.2 approval, manufacturer's name, and ANSI class designation (A, B, C, or D). Employees shall only be allowed to purchase or receive them through an authorized department representative to insure compliance. Refer to the attached, “Selection Chart for Head Protection for University Employees” to determine appropriate head protection.

Fitting

Each employee shall be individually fitted. The hard hat shall fit firmly by comfortably on the employee’s head.

Inspection and Maintenance

Painting: If the hard hat is to be painted, the manufacturer shall be contacted to see if the paint will affect the properties of the hat.

Cleaning: Hard hats shall be washed every thirty days. If worn by more than one employee, it
shall be washed daily.

Inspection: Before each wearing of the hard hat, it shall be checked for wear and damages, especially the suspension system.

Other

Hard hats shall not be stored or carried on the rear window shelf of a vehicle. Sunlight and extreme heat can affect the degree of protection offered. Also, the hard hat can become a projectile in an accident.

HEARING PROTECTION

Employees/Students Covered

Hearing protection shall be worn by employees/students when noise exposure is above that of the 85dB (action level) when measured on the A-scale of the standard sound level meter at slow response.

Approval and Selection

Personal hearing protection devices shall meet ANSI 53.19 and employees/students shall only be allowed to purchase or receive them through an authorized representative to insure compliance.

Selection of hearing protection shall take into consideration durability, ease of fit, noise calculations in area, and length of time to be worn.

There are many types of disposable and permanent hearing protection. Listed below are three:

1. **Earmuffs**: fluid or foam-filled cushions connected by a plastic or metal band that fits over the head. They reduce noise levels by 35-40dB depending on type and fit. In order for them to be effective, a perfect seal must be formed. Glasses, long side burns, and facial movements can reduce protection.

2. **Ear Plugs**: the most commonly used ear protection device. They come in many different shapes, sizes, and materials. Ear plugs can be purchased as disposables, preformed, or molded (professionally fitted). They reduce noise levels by 25-30dB depending on type and fit. Cotton is ineffective as ear plugs.

3. **Ear Caps**: a cross between ear muffs and ear plugs--ear plugs connected to a plastic (usually) band which can be worn under the chin, over the top of the head, or behind the neck. They reduce noise levels by 25 - 35dB depending on type and fit.

NOTE: Combinations or ear plugs and ear muffs can reduce noise level be an additional 3 - 5dB depending on type and fit.

Fitting

Preformed ear plugs have to be professionally fitted. All others are fitted according to need.

Inspection and Maintenance

All ear protection, if not disposable, shall be inspected and cleaned before each use. All damaged ear protection shall be discarded and replaced. No unauthorized modifications shall be allowed.
Other

Attached are three tables dealing with decibel values for typical sounds and various activities, as well as threshold limit values for continuous and intermittent noise.

“Sound Pressure and Decibel Values for Some Typical Sounds”
“Typical Sound Levels Associated with Various Activities”
“Threshold Limit Values for Noise”

Noise measurements shall be performed by the Office of Campus Safety personnel. Noise studies shall be authorized by the Office of Campus Safety.

**PROTECTIVE CLOTHING**

**Employees/Students Covered**

Protective clothing shall be worn by employees/students when the potential of an employee/student being exposed or coming in contact with harmful substance is evident. i.e., chemicals, high heat (radiant), dust, open flame, etc.

**Approval and Selection**

There are many different standards for approval of protective clothing (ANSI, ASTN, CAL-OSHA, etc.). Protective clothing shall be selected for specified hazard, degree of protection, comfort, and ease of use.

Once the specific or multi-hazards have been identified, contact a reputable vendor or Campus Safety personnel for recommendation of proper protective clothing and/or equipment needed.

**Fitting**

Protective clothing shall fit the wearer comfortably with a minimum of undo play.

**Inspection and Maintenance**

Protective clothing shall be routinely cleaned unless disposable. Disposable clothing shall be disposed of after use. Damaged, torn, ripped, etc., clothing shall be replaced before use.

**SELECTION CHART FOR EYE AND FACE PROTECTORS FOR USE IN INDUSTRY, SCHOOLS, AND COLLEGES**

This selection chart offers general recommendations only. Final selection of eye and face protective devices is the responsibility of management and safety specialists. (For laser protection, refer to American National Standard for Safe Use of Lasers, ANSI Z136.1-1976.)
1. GOGGLES—Flexible fitting, regular ventilation.
2. GOGGLES—Flexible fitting, hooded ventilation.
3. GOGGLES—Cushioned fitting, rigid body.
4. SPECTACLES*—Without side shields.
5. SPECTACLES—Eyecup type side shields.
6. SPECTACLES—Semi-/Flat-fold side shields.
7. WELDING GOGGLES—Eyecup type, tinted lenses (illustrated).
7A. CHIPPING GOGGLES—Eyecup type, clear safety lenses (not illustrated).
8. WELDING GOGGLES—Coverspec type, tinted lenses (illustrated).
8A. CHIPPING GOGGLES—Coverspec type, clear safety lenses (not illustrated).
9. WELDING GOGGLES—Coverspec type, tinted plate lens.
10. FACE SHIELD—Plastic or mesh window (see caution note).
11. WELDING HELMET*

*Non spectacles are available for limited hazard use requiring only frontal protection.

**APPLICATIONS**

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<td>Flying particles</td>
<td>1, 3, 5, 6 (for severe exposure, add 10)</td>
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<tr>
<td>Grinding-Heavy</td>
<td>Flying particles</td>
<td>1, 3, 7A, 8A (for severe exposure, add 10)</td>
</tr>
</tbody>
</table>
Laboratory  Chemical splash, glass breakage  2 (10 when in combination with 5, 6)
Machining  Flying particles  1, 3, 5, 6 (for severe exposure, add 10)
Molten Metals  Heat, glare, sparks,  7, 8 (10 in combination with 5, 6, in tinted lenses)
Spot Welding  Flying particles, sparks  1, 3, 4, 5, 6 (tinted lenses advisable; for severe exposure add 10)

CAUTION:
- Face shields alone do not provide adequate protection.
- Plastic lenses are advised for protection against molten metal splash.
- Contact lenses, of themselves, do not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.

GLOVE MATERIALS

Features: Benefits:

Liquid Proof Styles

Butyl (cement*)  Highest resistance to permeation by most gases and water vapor.
Viton (cement*)  Exceptional performance when subjected to chlorinated and aromatic solvents, coupled with excellent resistance to permeation by many vapors.
Nitrile (latex*) Superior puncture and abrasion resistance. Recommended as a general duty glove. Excellent resistance to the degrading effects of fats, petroleum products, and a wide array of chemicals.
Natural Rubber (cement*) Excellent resistance to the degrading (cement*) effects of alcohols and caustics. Ideal for use in sand blasting.
PVC Coated Excellent abrasion resistance in a liquid-proof glove. Also provides cushioning.

*Cement and Latex refer to two basic manufacturing processes of unsupported liquid proof gloves. As a general rule, cement dip gloves exhibit greater resistance to liquid and vapor permeation than do Latex dipped gloves. Therefore, where a permeation barrier is required, a cement dip glove shall be selected.

General Purpose: Fabrics and Coatings
Worknit® combines the toughness of a nitrile coating with the softness and stretchy comfort of jersey.

Worknit HD™

Developed and designed to replace leather and/or heavy cotton gloves, the HD fabric has a heavier cotton liner than the regular Worknit. This glove is best used where a tough job requires a product which provides protection, excellent wear, comfort, and value.

**Coated Machine Knits:**

A. **Grip-N, Grip-N® Hot Mill, Double Grip-N®**
   - (1) Reversibility
   - (2) N-tread PVC coating

B. **Clean Grip™**
   - (1) Reversible
   - (2) Large Soft PVC Dots

Impregnated Wovens and Jerseys:

A. **Newtex**

B. **PVC Dotted Canton**

The original coated glove. Cool, comfortable cotton, Canton and Jersey permanently “dotted” for longer wear and better grip.

Uncoated Knit Fabrics

100% cotton. They are cool, comfortable, and the lowest-priced Machine Knit (string glove) glove on the market.

**General Purpose: Leather**

**Side Split Leather**

Superior combination of strength, thickness and suppleness in split cowhide leather. A minimum of flaws, scars, and weaknesses, provides longer wear and comfort.

**Shoulder Split Leather**

Provides cushioning and abrasion resistance in a more economical grade of leather.

**Grain Leather**

Better flexibility, finger dexterity and fit than split leather. Generally more comfortable, but less durable than split leather.
| Chemical [Breakthrough Time in Hours] | Glove | Acetone | Acetone | Acetic Acid (5%) | Acetic Acid (9%) | Alkaline | Ammonia | Benzene | Chlorine | Chloroform | Coke Tar | Ether | Ethanol | Ether Alcohol | Formic Acid | Glacial Alcohol | Glacial Methanol | Glacial Acetic Acid | Hydrogen Peroxide | Hydrazine | Isopropyl Alcohol | Isopropanol | Methyl Alcohol | Methyl Alcohol | Methyl Alcohol |
|-------------------------------------|-------|---------|---------|----------------|----------------|----------|---------|---------|----------|----------|-----------|--------|--------|--------|------------|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| VTON® (Perox. 10 min)               | 0     | NT      | NT      | NR            | NT            | NT       | NT      | < 4     | > 8      | > 8      | > 8       | > 8     | NR      | > 12    | > 12       | > 12        | > 12          | > 12          | > 12          | > 12          | > 12          | > 12          | > 12          | > 12          |
| BUTYL (Perox. 17 min)               | > 1   | NT      | NT      | > 8           | > 8           | NT       | > 8     | > 8     | > 8      | > 8      | > 8       | > 8     | NT      | > 8     | > 8        | > 8         | > 8          | > 8          | > 8          | > 8           | > 8           | > 8           | > 8           | > 8           |
| SILVER SHIELD® (Perox. 4 min)      | > 1   | N/R     | N/R     | > 8           | > 8           | NT       | > 8     | > 8     | > 8      | > 8      | > 8       | > 8     | NT      | > 8     | > 8        | > 8         | > 8          | > 8          | > 8          | > 8           | > 8           | > 8           | > 8           | > 8           |
| FVA™ (Ammoni/Untack)                | NR    | NR      | NR      | 60            | 90            | 7        | ND      | ND      | ND       | ND       | ND       | ND      | NT      | NT      | NT         | ND          | ND           | ND           | ND           | ND           | ND           | ND           | ND           | ND           |
| NEOPRENE (Perox. 22 min)            | 34    | NT      | > 400   | > 400         | 18            | > 400    | > 400   | > 400   | > 400    | > 400    | > 400    | > 400   | NT      | > 400   | > 400      | > 400       | > 400        | > 400        | > 400        | > 400        | > 400        | > 400        | > 400        |
| NITRILE (Perox. 11 min)              | 118   | NT      | > 400   | > 400         | > 400         | 72       | > 400   | > 400   | > 400    | > 400    | > 400    | > 400   | NT      | > 20    | > 400      | > 400       | > 400        | > 400        | > 400        | > 400        | > 400        | > 400        | > 400        |
| PVC (Perox. 22 min)                  | 65    | NT      | < 4     | NT            | NT            | 2        | NT      | NT      | NT       | NT       | NT       | NT      | NT      | NT      | NT         | NT          | NT           | NT           | NT           | NT           | NT           | NT           | NT           | NT           |
| NITRILE (Perox. 11 min)              | 2     | NT      | NT      | > 11          | > 11          | 1        | NT      | NT      | NT       | NT       | NT       | NT      | NT      | NT      | NT         | NT          | NT           | NT           | NT           | NT           | NT           | NT           | NT           | NT           |
| NITRILE (Ammoni/Untack, 2 min)       | 279   | NT      | NT      | > 30          | > 30          | > 30     | NT      | NT      | NT       | NT       | NT       | NT      | NT      | NT      | NT         | NT          | NT           | NT           | NT           | NT           | NT           | NT           | NT           | NT           |

NO = None Detected
NT = Not Tested
NR = Not Recommended
> = Greater Than
< = Less Than
1. **Hard Hat**: A rigid head gear of varying materials used to protect the worker’s head from impact, penetration, electrical shock, or a combination of these.

2. **Composition**: Special plastics, fiberglass and plastics combination, cloth and resin, and aluminum alloy.

3. **Types**: 

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**SELECTION CHART FOR HEAD PROTECTION FOR UNIVERSITY EMPLOYEES**

<table>
<thead>
<tr>
<th>Edge/Sharp/Pkg Edg</th>
<th>Rail/Rail</th>
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</tbody>
</table>

**ND** = None Detected  
**NT** = Not Tested  
**NR** = Not Recommended  

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167
a. Type 1--Helmet (hard hat), full brim. Allows for complete protection of head, face, and back of neck.
b. Type 2--Helmet (hard hat), brimless with beak. This type is most commonly used and can accommodate various types of face shields and ear protection.

4. Classes: There are four different voltage classes of head protection. University personnel covered under this section shall only be allowed to wear class A and B.
   a. Class A--Limited voltage protection. Used by employees or students in general service (non-electrical) occupations, i.e., construction, landscape, etc.
   b. Class B--High voltage protection. Used by employees in electrical occupations, i.e., electricians.
   c. Class C--Metal helmets. Under no circumstances shall metal helmets be used by University employees or students.
   d. Class D--Firefighters’ helmet.

5. Other Forms of Protective Head Gear:
   a. Bump Hats--Shall not be used unless approved by the Office of Campus Safety.
   b. Hair Protection--All employees/students with long hair or beards who work around chains, belts, or other machines with moving parts shall be required to wear protective hair coverings. Hair nets, bandannas, and turbans shall not be considered satisfactory. Contact local vendors for information on the type of protective hair coverings available. Those who work around sparks, hot metals, flames, etc., shall use flame-resistant protective hair coverings.

**FOOT PROTECTION CLASSIFICATION AND PROTECTION FACTORS**

Classification of Safety Shoes

1. **Safety-toe Shoes:** Steel toes and metal reinforced sole.
   Usage: Areas where heavy, protruding on falling objects presents a threat.

2. **Conductive Shoes:** Reduces the possibility of generating a spark.
   Usage: Areas where fire and explosive hazards exist.

3. **Foundry Shoes:** Contains no fasteners and is easily removed.
   Usage: Areas where exposure to splashes of molten metal is likely.

4. **Explosive Operation Shoes:** A shoe with non-conductive and grounding properties.
   Usage: Areas where explosive compounds are present when cleaning tanks with volatile hydrocarbons.

5. **Electrical Hazard Shoes:** A shoe which minimizes the hazard of conducting electricity (no metal in shoes).
   Usage: Areas where electrical hazards exist.

Listed below are seven types of shoe protection which are available. These shall be considered in determining the type or types of protection needed.

1. **Toe Protection from Impact and Compression:** Shoes for this type of protection shall meet
the rated factors. These factors are rated as Class 30, Class 50, and Class 75. The following table indicates the characteristics of each class:

<table>
<thead>
<tr>
<th>CLASS</th>
<th>Weight (W) (pounds)</th>
<th>IMPACT*</th>
<th>Impact Energy (E) (feet/pounds)</th>
<th>COMPRESSION (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>50</td>
<td>1.5</td>
<td>75</td>
<td>2,500</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>1.0</td>
<td>50</td>
<td>1,750</td>
</tr>
<tr>
<td>30</td>
<td>50</td>
<td>0.6</td>
<td>30</td>
<td>1,000</td>
</tr>
</tbody>
</table>

*Impact Energy (E) = Weight (W) x Height (H)

2. **Metatarsal Protection**: If the top of the foot or ankle is likely to be struck by a heavy object, a metatarsal guard is needed. This type of protection can be added to the shoe or may be built into the shoe. Metatarsal protection is classified MT3O, MT5O, and MT75 to correspond with the protective potential of toe protection.

3. **Puncture Protection**: The purpose of puncture resistance is to reduce the hazards of puncture wounds caused by sharp objects which could penetrate the sole of the footwear. Puncture resistant footwear shall have a rating designation of PR.

4. **Sole Slip Resistance**: The purpose of slip resistant footwear is simply to prevent injury due to failure of footwear to resist slipping on slippery surfaces. Most safety shoe manufacturers do not provide a slip resistance rating at this time. This rating is referred to as “Dynamic Coefficient of Adherence.” For example:

   0.0  There is no grip at all between the two surfaces.
   0.15 Accepted as a minimum.
   0.20 Very good coefficient.
   0.30 Indicates an outstanding grip.

5. **Electrical Hazard Protection**: The purpose of this requirement is to reduce hazards due to contact with electrically energized parts. Electrical hazard shoes are not intended for use in explosive or hazardous locations in which conductive footwear is required. Footwear with this protection may be rated as EH.

6. **Conductive Protection**: The purpose of this requirement is to protect against the hazards of static electricity buildup or to facilitate the equalization of electrical potential of personnel (lineman) and energized high voltage lines. Footwear with this protection may be rated CD Type 1 or Type 2.

7. **Upper Shoe Protection**: The purpose of this requirement is protection from substances which may be harmful or hazardous penetrating the upper shoe covering and causing discomfort or injury to the foot. The rule of thumb here is that the upper shoe covering shall be able to resist whatever harmful substances the worker may spill or contaminate his/her shoes with.
CLASSIFICATION OF SAFETY BELTS AND HARNESSSES

**Class I:** Body belt (work belts), used to restrain a person in a hazardous work position and to reduce the probability of falls.

**Class II:** Chest harness, used where there are only limited fall hazards (no vertical free-fall hazard) and for retrieval purposes, such as removal of a person from a tank, bin, or other enclosed place.
Class III: Body harness, used to arrest the most severe free-falls. This harness is ideal for workers on elevated sites. During a fall, it distributes the fall impact over the body.

Class IV: Suspension belts, independent work supports used to suspend or support the worker.

Lifeline: A horizontal line between two fixed anchorages.
- Support capacity: 5400 lbs.
- Line diameter: ½ inch.
- Personal Lifeline: This system is usually a rope system that provides flexibility for worker freedom of movement yet will arrest a fall and help absorb the shock. These systems always have some type of belt or harness that is worn around the waist to which a lanyard or rope-grabbing device is attached.

Lanyard: A short piece of flexible line used to secure wearer of safety belt to a lifeline or dropline, or fixed anchorage.
- Support capacity: 5400 lbs.

### THRESHOLD LIMIT VALUES FOR NOISE

<table>
<thead>
<tr>
<th>Duration per Day (hrs)</th>
<th>Sound Level (dBA*)</th>
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</thead>
<tbody>
<tr>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>85</td>
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<tr>
<td>4</td>
<td>90</td>
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<tr>
<td>2</td>
<td>95</td>
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<tr>
<td>1</td>
<td>100</td>
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<td>½</td>
<td>105</td>
</tr>
<tr>
<td>¼</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>115**</td>
</tr>
</tbody>
</table>

* Sound level in decibels are measured on a sound level meter, conforming as a minimum to the requirements of the American National Standard Specification for Sound Level Meters, S1.4(1971) Type S2A, and set to use the A-weighted network with slow meter response.

** No exposure to continuous or intermittent in excess of 115 dBA.

Impulsive or Impact
It is recommended that exposure to impulsive or impact noise shall not exceed the limits listed in the table below. No exposures in excess of 140 decibels peak sound pressure level are permitted. Impulsive or impact noise is considered to be those variations in noise levels that involve maxima at intervals of >1 per second. Where the intervals are <1 second, it should be considered continuous.

**THRESHOLD LIMIT VALUES IMPULSIVE OR IMPACT NOISE**

<table>
<thead>
<tr>
<th>Sound Level (dB*)</th>
<th>Permitted # of Impulses or Impacts per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>140</td>
<td>100</td>
</tr>
<tr>
<td>130</td>
<td>1,000</td>
</tr>
<tr>
<td>120</td>
<td>10,000</td>
</tr>
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</table>

*Decibels peak sound pressure level; re 20 µPa.

**LEVELS OF SOME COMMON SOUNDS**

<table>
<thead>
<tr>
<th>Sound Pressure, P N/m² (Pascal)</th>
<th>Sound Pressure Level, L_p dB re 20 µN/m² (µPascal)</th>
<th>Sound Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000 (1 bar)</td>
<td>194</td>
<td>Saturn rocket</td>
</tr>
<tr>
<td>20,000.0</td>
<td>180</td>
<td>Ram jet</td>
</tr>
<tr>
<td>2,000.0</td>
<td>160</td>
<td>Turbo jet</td>
</tr>
<tr>
<td>200.0</td>
<td>140</td>
<td>Threshold of pain</td>
</tr>
<tr>
<td>20.0</td>
<td>120</td>
<td>Riveter, chipper</td>
</tr>
<tr>
<td>2.0</td>
<td>100</td>
<td>Passing truck</td>
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<td>0.2</td>
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<td>Noisy office</td>
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<td>0.02</td>
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<td>Conversational speech</td>
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<td>0.002</td>
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<td>Average residence</td>
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<td>Threshold of good hearing</td>
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<td>Threshold of excellent youthful</td>
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RESPIRATORY PROTECTIVE EQUIPMENT

Toxic materials can enter the body in three ways: (1) through the gastrointestinal tract, (2) through the skin, and (3) through the lungs. The human respiratory system presents the quickest and most direct avenue of entry because of its association with the circulatory system and the constant need to oxygenate the tissue cells.

The following information provides background information on different types of respirators and the hazards associated with their use.

When respirators are to be used, the Office of Campus Safety shall be consulted before said use starts. All respirators used on the Louisiana State University campus shall be NIOSH/MSHA approved. No exceptions.

Rules for the Respirator Program

1. If a respirator is required by an OSHA standard or due to overexposure to a contaminant in the workplace, all of the requirements of the respirator program must be met, including medical evaluation, fit testing, maintenance, and program management.

2. If a respirator is required by the organization (i.e., director, manager, supervisor, principle investigator), all of the requirements of the respirator program must be met, including medical evaluation, fit testing, maintenance, and program management.

3. If respirator use is voluntary, LSUA recommends having a medical evaluation, fit testing, and maintenance. Dust masks do not require a medical evaluation or fit testing.

Note: Voluntary respirator use applies if the employees are not exposed to hazardous agents above the permissible exposure limits, they are not emergency responders, or they are not required by the organization. Voluntary use of respirators is encouraged by Louisiana State University at Alexandria to prevent inhalation of small amounts of potentially harmful agents that are not considered to be at hazardous levels as defined by OSHA.

4. If a respirator is required use as a member of an emergency team, all of the requirements of the respirator program must be met, including medical evaluation, fit testing, maintenance, and program management.

Rules for Maintenance, Care and Use of Respirators

(Does not apply to dust masks)

1. Change filter cartridges or dispose of respirator in accordance with breakthrough times recommended by the manufacturer.

2. Clean facepieces periodically to maintain hygienic conditions using the manufacturer's recommended cleaning product (or isopropyl alcohol, or suitable disinfectant). Emergency use respirators, respirators used by more than one person, and fit test respirators are to be cleaned after each use.

3. Perform field fit check before each use (see appendix for procedure).
4. Facial hair and glasses shall not interfere with respirator fit.

5. Inspect respirators before each use and replace if defective.

6. Store respirators to prevent contamination, moisture, or damage.

Classification of Respiratory Hazards

1. Oxygen deficiency

2. Gas and vapor contaminants
   a. Immediately dangerous to life or health
   b. Not immediately dangerous to life or health

3. Particulate contaminants (aerosols including dust, fog, fume, mist, smoke, and spray)

4. Combination of gas, vapor, and particulate contaminants
   a. Immediately dangerous to life or health
   b. Not immediately dangerous to life or health

Classification of Respiratory Protection Devices (Respirators)

Respiratory protection devices fall into three classes: (1) air purifying, (2) air supplied, and (3) self-contained breathing apparatus.

1. Air Purifying Devices (Respirators) remove contaminants from the atmosphere and can be used only in atmospheres containing sufficient oxygen to sustain life (at least 16 percent by volume at sea level) and within specified concentration limitations of the specific device. Various chemicals remove specific gases and vapors, and mechanical filters remove particulate matter. The useful life of an air purifying device is dependent upon the concentration of the contaminants, the breathing volume of the wearer, and the capacity of the air purifying medium.

The basic types of air purifying devices are:

a. Mechanical filter respirators: provides respiratory protection against particulate matter such as non volatile dusts, mists, or metal fumes. Selection of the appropriate respirator is based on the type, toxicity, and particle size of the particulate matter. Specific types of mechanical filter respirators are approved under USBM Approval Schedule 21 and its revisions.

b. Chemical cartridge respirators: provides respiratory protection against certain gases and vapors in concentrations not in excess of 0.1% (by volume). Specific types of chemical cartridge respirators are approved under USBM Approval Schedule 23 and its revisions.

c. Combinations of chemical cartridge and mechanical filter respirators: provides respiratory protection where exposure is both gaseous and particulate.

d. Gas masks: provides respiratory protection against certain specific gases and vapors in concentrations up to 2% (by volume) or as specified on the canister label and against particulate matter. Specific gas masks are approved USBM Approval Schedule 14 and its revisions.

NOTE: See chart “Color Coding for Air Purifying Respirators.”
2. Air Supplied Respirators deliver air through a supply hose connected to the wearer’s face piece. These devices shall be used only in atmospheres not immediately dangerous to life or health, unless an auxiliary ingress or egress cylinder is incorporated into the system.
   
a. Air line respirators are available with or without auxiliary ingress or egress cylinders. The air line respirator is connected to a suitable compressed air source (a purified air compressor and/or cylinder supply system) by a hose and air is delivered in sufficient volume to meet the wearer’s breathing requirements.
   
b. All air supplied respirator systems shall meet OSHA 1910.134 criteria, and no air supplied system shall be used on the LSUA campus without approval from the Campus Safety Director.
   
3. Self-Contained Breathing Apparatus (SCBA) provides respiratory protection against toxic gases and oxygen deficient atmospheres. SCBA’s are not for underwater use.
   
   Most SCBA’s used on campus consists of a high-pressure air cylinder (15-20 minute air supply), a demand regulator connected by a high-pressure tube to the cylinder, a face piece and tube assembly with an exhalation valve or valves, and a method of mounting the apparatus on the body.
   
   All users of SCBA’s shall be trained in its use by a competent instructor.
   
   For more information on training, monitoring, inspection, fit testing, maintenance, and repair requirements, contact the Office of Campus Safety.

COLOR CODING FOR AIR PURIFYING RESPIRATORS

<table>
<thead>
<tr>
<th>Atmospheric Contaminants to be Protected Against</th>
<th>Colors Assigned*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid gases</td>
<td>White</td>
</tr>
<tr>
<td>Hydrocyanic acid gas</td>
<td>White with ½” <strong>green</strong> stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Chlorine gas</td>
<td>White with ½” <strong>yellow</strong> stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Organic vapors</td>
<td>Black</td>
</tr>
<tr>
<td>Ammonia gas</td>
<td>Green</td>
</tr>
<tr>
<td>Acid gases and ammonia gas</td>
<td>Green with ½” white stripe completely around the canister near the bottom</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>Blue</td>
</tr>
<tr>
<td>Acid gases and organic vapors</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Atmospheric Contaminants to be Protected Against</th>
<th>Colors Assigned*</th>
</tr>
</thead>
</table>

175
Hydrocyanic acid gas and chloropicrin vapor | Yellow with ½” blue stripe completely around the canister near the bottom

Acid gases, organic vapors, and ammonia gases | Brown

Radioactive materials, excepting tritium and noble gases | Purple (magenta)

Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors | Canister color for contaminant, as designated above, with ½” gray stripe completely around the canister near the top

All of the above atmospheric contaminants | Red with ½” gray stripe completely around the canister near the top

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body or stripe color to represent gases not included in this table. The user shall refer to the canister label to determine the degree of protection the canister will afford.

**GUIDE SELECTION OF RESPIRATORS**

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen Deficiency</td>
<td>Self-contained breathing apparatus. Hose mask with blower. Combination airline respirator with auxiliary self-contained air supply or an air-storage receiver alarm.</td>
</tr>
<tr>
<td>Gas and Vapor Contaminants:</td>
<td>Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full face piece respirator with chemical canister (gas mask). Self-rescue mouthpiece respirator (for escape only). Combination airline respirator with auxiliary self-contained air supply or an air storage receiver with alarm.</td>
</tr>
<tr>
<td>-Immediately dangerous to life or health (See Note 2)</td>
<td></td>
</tr>
<tr>
<td>-Not immediately dangerous to life or health</td>
<td>Airline respirator. Hose mask without blower. Air-purifying, half-mask or mouth piece respirator with chemical cartridge.</td>
</tr>
<tr>
<td>Particulate Contaminants:</td>
<td>Self-Contained breathing apparatus. Hose mask with blower. Air-purifying, full face piece respirator with appropriate filter. Self-rescue mouthpiece respirator (for escape only).</td>
</tr>
<tr>
<td>-Immediately dangerous to life or health (See Note 2)</td>
<td></td>
</tr>
<tr>
<td>Hazard</td>
<td>Respirator</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Combination airline respirator with auxiliary self-contained air supply or an air storage receiver with alarm.</td>
<td><code>-Not immediately dangerous to life or health</code> Air-purifying, half-mask or mouth piece respirator with filter pad or cartridge. Airline respirator. Airline abrasive-blasting respirator. Hose mask without blower.</td>
</tr>
<tr>
<td>Combination gas, vapor, and particulate contaminants</td>
<td><code>-Immediately dangerous to life or health (see Note 2).</code> Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full face piece respirator with chemical canister and appropriate filter (gas mask with filter). Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.</td>
</tr>
<tr>
<td><code>-Not immediately dangerous to life or health</code></td>
<td>Airline respirator. Hose mask without blower. Air-purifying, half-mask or mouth piece respirator with chemical cartridge and appropriate filter.</td>
</tr>
</tbody>
</table>

(P.P.E.) Disciplinary Policy

Louisiana State University at Alexandria believes that a safety and health Accident Prevention Program is unenforceable without some type of disciplinary policy. Our Agency believes that in order to maintain a safe and healthful workplace, the employees must be cognizant and aware of all Agency, State, and Federal safety and health regulations as they apply to the specific job duties required. The following disciplinary policy is in effect and will be applied to all P.P.E. Violations.

The following steps will be followed unless the seriousness of the violation would dictate going directly to Step 2 or Step 3.

1. A first time violation will be discussed orally between company supervision and the employee. This will be done as soon as possible.

2. A second time offense will be followed up in written form and a copy of this written documentation will be entered into the employee’s personnel folder.

3. A third time violation will result in time off or possible termination, depending on the seriousness of the violation.
FIRE EXTINGUISHERS

Types of Fires:

Class A--Ordinary combustibles such as wood, paper, cloth, some rubbers, and plastics.

Class B--Flammable liquids such as gasoline, oils, grease, tars, lacquer, and oil-based paints.

Class C--Energized, electrical equipment such as fuse boxes, electrical outlets, circuit breakers, wiring, appliances, and other machinery.

Class D--Combustible metals such as fires involving titanium, magnesium, lithium, potassium, or sodium.

Types of Fire Extinguishers:

Fire extinguishers come in various shapes, sizes, colors, and types. They shall only be used on the type of fire they are rated for. Before an emergency arises, it is recommended that all employees/students read and understand the directions on the fire extinguisher(s) in their area.

A water extinguisher is designated by an “A inside a green triangle on the label easily recognized by its silver container. This extinguisher is only to be used on A type fires. CAUTION: Do not use on electrical fires.

A CO₂ extinguisher is designated by a “B” in a red square and a “C” in a blue the label and is easily recognized by the large black discharge horn. This type of extinguisher is only to be used on Class B and/or C type fires. CAUTION: Do not in a confined space.

Multi-Purpose and Ordinary Dry Chemical extinguishers are designated by an “A” inside a green triangle, a “B” inside a red square, and a “C” inside a blue circle on label respectively. It is easily recognized by its red container and/or piggy back cartridge. This type of extinguisher is only to be used on Class B and/or C type while multi-purpose dry chemical can also be used on Class A type fires.

Respiratory irritant, if inhaled.

Halon 1211 extinguishers are labeled by the same designations as a multi-dry chemical extinguisher, “ABC.” Halon is usually packaged in a red container similar to a dry chemical extinguisher, but it is usually not recognizable until label read. This extinguisher is for use on Class A, B, and C type fires. CAUTION: Do not use in a confined space.
NOTE: A Halon 1211 or CO2 fire extinguisher is recommended for use in computer rooms or in areas where electronic equipment is located. Dry chemical and water extinguishers are not.

A Combustible Metal fire extinguisher is designated by a “D” inside a yellow star the label. This extinguisher is only for use on Class D type fires.

How to Use a Fire Extinguisher:

The method described below is a standard application for how to use a fire extinguisher; however, it is highly recommended that all employees/students read and understand the directions on the fire extinguisher(s) in their area. This method does not apply to all portable extinguishers.

To use extinguisher, remember P A S S.

Pull the pin. (Some may require pressing a puncture lever or releasing a lock hatch.)
Aim the extinguisher nozzle or cone at the base of the fire.
Squeeze or press the handle.
Sweep from side to side at the base of the fire until it appears to be out. With a water extinguisher, place your finger over the nozzle to create a mist. Stop the extinguisher, check the fire area, and (if necessary) continue your extinguishment efforts. Always back away from a fire so you will not be caught off guard.
VEHICLE OPERATION AND MAINTENANCE

USE OF VEHICLE OCCUPANT RESTRAINT SYSTEM

In accordance with the mandate by the Governor of the State of Louisiana in Executive Order No. EWE 85-6 and Systems Safety Policy SSP-18-85.

Each Louisiana State University at Alexandria employee who rides in a University vehicle or a privately owned vehicle on official travel status shall utilize the complete occupant restraint system provided in those vehicles.

For information on transporting of personnel in open bed trucks and trailers, see section by same heading.

It shall be the responsibility of each department head to take what actions they deem necessary to assure that employees utilize the occupant restraint system while on official travel status.

In the 1988 legislative session, a bill was passed on the use of occupant restraint systems. House bill No. 1158 requires that "Each driver of a passenger car, van, or truck having a gross weight of six thousand pounds or less...in this state shall have a safety belt properly fastened about his or her body at all times when the vehicle is in forward motion. The provisions of this section shall not apply to those cars, vans, or pickups manufactured prior to January 1, 1981.

The Office of Campus Safety recommends that all employees and their families wear vehicle occupant restraint system whenever they are in a vehicle, not because it is the law, but because it could save yours or a member of your family's life.

TRANSPORTING OF PERSONNEL IN OPEN BED TRUCKS AND TRAILERS

1. All employees shall remain entirely within the confines of the sides and tailgates of open bed vehicles. No extending of arms or legs over, on, or through sideboards or tailgates. Employees shall be seated on fixed seating provided in the bed of the truck or on the bed itself.

2. Any truck which is moving cargo as well as individuals in the truck bed shall have all cargo forward of the passengers and securely fastened to the truck.

BY PASS STARTING OF TRACTORS*

Bypass starting occurs when an operator “bypasses” the normal safety or starting system. One way is shorting across the starter terminals with a screwdriver. Another occurs is the neutral start switch is not functioning and the key or starter button is used to start the tractor from the ground. If the tractor is in gear when this is done, it will start and anyone in its path may be injured or killed.

This situation is even more serious if the tractor is equipped with the hydraulic clutch. These tractors, if bypass starter is in gear, will not move immediately but will lurch quickly after a brief delay when hydraulic pressure builds up.

The following safety rules shall be observed by all operators:

1. Never start a tractor by shorting across the starter terminals.
2. Keep your tractor’s starting system in good working order so you can start it from the operator’s station.
3. If the tractor has a neutral start switch and will start in gear with the key or starter button, something is wrong; it shall be fixed.
4. Never wire around or defeat the neutral start switch.
5. Always make sure the tractor is in park before getting off.
6. Never start the tractor from the ground.

*From a John Deere safety memo.

**SLOW MOVING VEHICLE SIGNS**

All vehicles and/or trailers pulled by vehicles which are designed to move 25 mph or less and travel public and/or University roads shall have a slow moving vehicle emblem affixed to the rear of the vehicle as determined by ANSI B114.1-1971.

**SLOW-MOVING VEHICLE EMBLEM:**

NOTE: All dimensions are in inches.

![SLOW MOVING VEHICLE EMBLEM]

- Dark red reflective border.
- Fluorescent yellow-orange triangle.

**VEHICLE REPAIR AND MAINTENANCE SHOPS**

Safe vehicles, trucks, and autos (and other rolling stock) are a must for transportation of University personnel and materials.

Ironically, the maintenance and repair of motorized equipment can be almost as dangerous as the vehicles themselves unless the shop is run by a supervisor who takes an active interest in shop safety.

Items that bear considerable attention include but are not confined to the following:

**Ventilation:** The shop shall be equipped with a well maintained and workable ventilation system capable of exhausting carbon monoxide fumes to the outside.
**Floor Fans**: Floor fans, if used, shall be guarded front and back with a metal mesh guard with openings no more than ½”.

**Tire Airing**: Tires, particularly truck tires, with locking rims shall be inflated in a steel airing cage. Tires shall never be over-inflated. Defective locking rings shall be replaced. Rings shall be seated properly.

**Locking Chains**: If a tire must be mounted outside the shop, a chain shall be placed around the locking ring and locked.

**Jacks**: If a jack must be used to raise a vehicle, the raised vehicle shall be blocked up (blocks of metal stands). The jack shall be in good mechanical condition.

**Battery Charger**: Employees shall be furnished and required to use protective equipment (glasses, gloves and aprons) when charging batteries with acid. Floors shall be protected against electrical shock. Manufacturer’s recommendations for charging rate shall be carefully followed to prevent buildup of potentially explosive quantities of oxygen and hydrogen. Metal tools, chains, etc., shall be kept well away from batteries to prevent possible short circuit which could result in burns and explosion.

**Spark Plug Cleaners**: Cleaners in good condition (sand blast), goggles, or face shield shall be available for mechanics.

**Parts Cleaning**: Dip tank with fusible link in cover shall be available for parts cleaning. Gasoline shall never be used as a cleaning solvent. Solvents with flash points higher than gasoline are readily available and shall be used for cleaning.


**Chain hoist/Floor Crane**: Chains and/or cable shall be inspected frequently for breaks or severely worn spots. Electrical controls shall operate smoothly and hoist or crane capacity shall be visible to operator. See “Hoist” section.

**Bench Grinder**: Bench grinder shall be securely fastened to stand or work bench to prevent “walking.” Grinder wheel must be guarded, and spindle and nut shall be covered. Grinder work rest shall be adjusted to no more than 1/8” to wheel.

**Air Pressure**: Air pressure used for cleaning shall not exceed 30 psi at discharge nozzle.

**Floors**: Floors shall be free of oil and grease. Absorbent compound shall be available for covering oil and grease spots.

**Work Benches**: Work benches shall be neat and clear of removed parts and tools not in use.

**Fire Protection**: Shop shall be equipped with B-C type extinguishers; they shall be properly tagged and inspected. Approved safety cans shall be available for disposing of oily rags and towels.
LAB SAFETY

SAFETY RULES FOR THE SCIENCE LABORATORIES

Safety Rules for the Teaching Laboratory

There shall be only a limited number of rules for the laboratory, but they shall be rigidly and impartially enforced and willful noncompliance shall result in dismissal or suspension from the laboratory.

The following are suggested rules for students in Science laboratories where appropriate:

1. Eye protection is required at all times in the chemistry laboratory and where chemicals are stored and handled.
2. Horseplay, pranks, or other acts of mischief are especially dangerous and shall be absolutely prohibited.
3. Work with materials only when the flammability, reactivity, corrosiveness, and toxicity properties are known.
4. Laboratory areas shall not be used as waiting or drinking places.
5. Unauthorized experiments are prohibited.
6. Mouth suction shall never be used to fill pipettes, to start siphons, or for any other purposes.
7. Never perform experimental work in the laboratory alone. Students at the entry level such as college freshman or first year organic chemistry students shall never be permitted to work alone.

Responsibility for Safety

The faculty and staff of the Department of Biological Science and the Department of Mathematics and Physical Sciences are responsible for the administration of the safety program. Each individual is responsible for performing his/her job safely. Untrained students or outsiders shall not be permitted to work with chemicals except under adequate supervision. An instructor shall be responsible for no more than 24 students in a laboratory at one time; he shall be in the laboratory for the entire laboratory period for college entry level courses.

Every instructor or laboratory supervisor shall:

1. Set a good example by:
   a. Observing all rules and recommendations.
   b. Wearing protective equipment where recommended.
   c. Being enthusiastic about safety.
2. Be alert for unsafe conditions.
3. Inspect often and intelligently.
4. Take effective corrective action promptly.
5. Maintain discipline and enforce rules.
6. Prohibit use of laboratory glassware as a food or beverage container.
7. Assume responsibility for visitors and require that they follow the same rules as students and other laboratory workers.
8. Carefully review all laboratory experiments for possible safety problems before the experiments are assigned to students. Use your MSDS to find this information!
9. Maintain a file on laboratory safety information which is readily available to students, visitors, and others.
SAFETY PRACTICES AND FACILITIES FOR CHEMISTRY

General

All chemistry laboratories shall have access to safety showers, eyewash fountains, dry chemical powder, and/or carbon dioxide fire extinguishers, fume hoods, numerous laboratory wash sinks and an evacuation route from the laboratory. These facilities shall be conveniently located and shall be tested frequently. A local alarm system for the Science Building is provided. Police shall also be provided. Automatic smoke and fire alarms are installed in many laboratories.

All items of the proper safety equipment such as showers, fire extinguishers shall be readily available, operable, and known to all persons in the laboratory.

The laboratory shall be equipped with properly functioning, adequately designed facilities and with safety shields.

Before using an open flame or spark-producing equipment such as motors and open heaters, all laboratory personnel shall assure that no flammable vapors are in the area.

Suitable temporary signs shall be posted in areas where hazardous operations are being carried out or where toxic or highly flammable chemicals are being used.

Chemical Hygiene Plan

A Chemical Hygiene Plan is in place. This plan includes policies, procedures and responsibilities designed to develop in employees/students an awareness of potentially hazardous chemicals in the workplace/learning environment and train employees/students in appropriate, safe working conditions. It is important that employers assume responsibility for laboratory safety. All employees/students will have access to pertinent safety information through supervisory staff and the Lab Safety Committee. When safety concerns arise, employees and students are encouraged to contact a Lab Safety Committee member or lab instructor.

First Aid

A First Aid Room has been designated in Hugh Coughlin Hall. Access to this room shall be controlled by First Aid Team. An emergency first aid procedure is in place and shall be posted in the laboratory.

Protective Clothing

Aprons, lab coats, gloves, or other protective clothing shall be readily available during certain types of chemical experimentation. Exposure of corrosive materials such as strong acids or bases requires use of goggles or face shields. Gloves shall provide arm protection which will minimize the chance for spilled chemicals to make contact with the skin. Protection for legs and feet shall be provided by lab coat and shoes. Foot covering which exposes toes or any portion of the foot shall not be worn when working with or handling chemicals.

Fume Hoods

Laboratory fume hoods shall be operating properly and operations where flammable gas, toxic vapors, or noxious odors are given off shall be performed in these hoods. The specifications of flow of air through a fume hood shall be monitored on the basis of the substances and amounts being used. Flow varies markedly near the surface. Increased flow can be achieved by use of a restriction in front of the hood such as a window or safety shield. Fans shall be located on the roof.
so that all ductwork in the building is under negative pressure. There shall be no recirculation of the air from fume hoods into the laboratory.

**Safety Shower**

The valve handle of safety showers shall be rigidly fixed and plainly labeled. Water flow pressure shall be sufficient to drench the subject rapidly. The shower area shall be kept clear of obstructions. Water of drinking purity shall be used in safety showers. The shower shall be tested on a regular basis and a record kept of such tests.

**Storage**

Safe storage and transport of chemicals, particularly liquid glass bottles of one liter or more, shall be provided, and incompatible chemicals shall not be stored in close proximity to each other or allowed to react accidentally.

**Disposal**

A carefully planned disposal procedure for chemicals shall be set up. Usually small quantities of water soluble, neutral substances may be flushed down the drain with relatively large quantities of running water. Water immiscible materials require special handling. Some may be recoverable in adequate purity for reuse by distillation, extraction, etc. Disposal shall follow EPA rules or other generally accepted practices.

**Electrical Outlets**

All electrical outlets shall carry a grounding connection requiring a three-pronged plug. The National Electrical Code shall be followed in all installations. This includes proper grounding as well as proper equipment for hazardous areas.

**Eye Protection**

All chemical laboratories shall require eye protection to prevent injuries or blindness from accidents. The type of eye protection needed depends on the particular operation to be performed. For most laboratory work, safety glasses with clear side shields are adequate as long as safety showers or eyewash facilities are near at hand. Where there is danger of splashing chemicals or flying particles, goggles are recommended. Contact lenses shall not be worn in the laboratory.

Prior to any work in the chemical laboratory, plans and facilities shall be established for action to be taken in the event of splashing of chemicals in or near the eye. For chemical splashes, immediately flush the eye with clean water from a gently glowing source for fifteen minutes. Hold the eye open to wash thoroughly behind the eyelids. An eyewash fountain shall be used, but if one is not available, injured persons shall be placed on their backs and water gently poured into the eye. The Emergency First Aid person-in-charge will be contacted. The emergency procedures of the First Aid Team are then followed.

**References:**

1. "Guide for Safety in the Chemistry Laboratory, Manufacturing Chemists Association."
2. "Safe Storage of Laboratory Chemicals" by David A. Pipitone.
BIOHAZARD SAFETY

Reasons for this Guide

This section presents certain safety requirements for handling specific hazardous microorganisms. These requirements are based on present knowledge and shall change as research continues and new standards are developed. The operational requirements serve, in part, to indicate what facilities and resources should be made available to minimize hazards in work with specific microorganisms.

General Requirements

Authorized Personnel

Only authorized employees, students, and visitors shall be allowed to enter microbiology laboratories or utility rooms.

Autoclaving

1. All infectious or toxic materials, equipment, or apparatus shall be autoclaved or otherwise disinfected before being washed or disposed of. Each individual working with infectious material shall be responsible for its disinfection before disposal.
2. Infectious or toxic materials shall not be placed in autoclaves overnight in anticipation of autoclaving the next day.
3. Autoclaves shall be checked for operating efficiency.

Centrifuging, Sonication, Separation--Aerosol Precautions

1. Before centrifuging, inspect tubes for cracks; inspect the inside of the trunnion cup for rough walls caused by erosion of adhering matter; and carefully remove bits of glass from the rubber cushion. A germicidal solution added between the tube and trunnion cup not only disinfects the outer surface of both of these but also provides an excellent cushion against shocks that might otherwise break the tube.
2. Avoid decanting centrifuge tubes. If you must do so, wipe of f the outer rim with a disinfectant afterwards; otherwise, the infectious fluid will spin of f as an aerosol. Avoid filling the tube to the point that the rim becomes wet with culture.

Containers--Protective

1. Ensure that all virulent fluid cultures or viable powdered infectious materials in glass vessels are transported, incubated, and stored in easily-handled, non-breakable, leak-proof containers that are large enough to contain all fluid or powder in case of leakage or breakage of the glass vessel.
2. All inoculated Petri plates or other inoculated solid media shall be transported and incubated in leak-proof pans or other leak-proof containers.

Emergencies

1. Prepared solutions of suitable disinfectants, along with instructions for use, shall be maintained in the microbiology laboratory in a conspicuous location.
2. An Emergency First Aid Team list with phone numbers is available and posted on the bulletin board. Student instructions shall emphasize precautionary measures.

Floors and Other Surfaces
1. Floors, laboratory benches, and other surfaces in the microbiology laboratory shall be disinfected with a suitable germicide as often as deemed necessary by the supervisors. After completion of operations involving pipetting, centrifuging, lyophilizing, and similar procedures with infectious agents, the surroundings shall be disinfected.

2. Floor drains throughout the microbiology laboratory shall be flooded with water, glycol, or a safe disinfectant at least once a month in order to fill traps and prevent back up of sewer gases.

Hygiene

1. Develop the habit of keeping your hands away from your mouth, nose, eyes, and face. This may prevent self-inoculation.
2. Refrigerators and incubators shall be cleaned out periodically.
3. Library books and journals shall not be taken into rooms where work with infectious agents is in progress.
4. According to the level of risk, the wearing of laboratory or protective clothing may be required for persons entering microbiology laboratories. Likewise, a germicidal soap is provided for hand washing before exit.
5. Contaminated laboratory clothing shall not be worn in clean areas or outside the building.

Labeling

All microbiology areas containing infectious substances shall designate. All infectious disease work areas including cabinetry shall be prominently marked with the Biohazard Warning Control. Cultures shall be labeled with the name of the agent. A biohazard control codes will be posted on bulletin board for quick reference.

Personal Protective Equipment

Personal protective equipment consisting of latex gloves, lab coats and protective eyewear shall be used according to the nature of the experiment or stated lab rules.

Pipettes

1. No infectious materials shall be pipetted by mouth or blown out of a pipette. Do not use a pipette for mixing or for bubbling air through an infectious mixture. Hand pipetting devices shall be used to pipette all microorganisms, tissue, cell cultures, caustic or corrosive chemicals, poisons, organic solvents, radioactive materials, mutagens, carcinogens, or tetragens.
2. Contaminated pipettes shall be placed back in original wrapper filled with a bactericide prior to disposal.

Smoking, Eating, and Drinking

Food, candy, gum, or beverages for human consumption shall not be taken into microbiology laboratories. Smoking shall not be permitted in any area in which work with infectious or toxic substances is performed. Employees who have been working with infectious materials shall wash and disinfect their hands thoroughly before smoking, eating, or drinking.

Wastes

No infectious substances shall be allowed to enter a building drainage or refuse disposal system without proper sterilization.
Water Baths

Water baths used to inactivate, incubate, or test infectious substances shall contain a suitable disinfectant.

Sterilization and Disinfection Procedures

General criteria for sterilization of typical materials are presented below. Supervisors are encouraged to review the type of materials being handled and to establish standard conditions for sterilization. Treatment conditions to achieve sterility will vary in relation to the volume of material treated, its contamination level, the moisture content, and other factors.

A. Steam Autoclave

1. Trash--250°F (121°C) for 1 hour with 15 minutes pre-vacuum of 27” Hg.
2. Glassware—250°F (121°C) for 1 hour with 15 minutes pre-vacuum of 27” Hg for filled NTH Glassware can.
3. Liquids--250°F (121°C) for 1 hour for each gallon.

B. Disinfectants

1. Mercurials are not recommended for general use because they have poor activity against vegetative bacteria and are useless as sporicides. Although the mercurials exhibit good activity against viruses (1:500 to 1:1000 concentration), they are toxic and not recommended.
2. Quantitary Ammonium Compounds are acceptable as general-use disinfectants to control vegetative bacteria and non-lipid-containing viruses. However, they are not active against bacterial spores at the usual-use concentrations (1.750).
3. Phenolic Compounds are recommended for killing vegetative bacteria, including Mycobacterium tuberculosis, fungi, and lipid-containing viruses.
4. Chlorine Compounds are recommended for certain disinfecting procedures, provided the available chlorine needed is considered. Low concentrations of available chlorine (50 to 500 ppm) are active against vegetative bacteria and most viruses. For bacterial spores, concentrations of approximately 2500 ppm are needed. The corrosive nature of these compounds, their decay rates, and lack of residuals are such that they are recommended only in special situations.
5. Iodophors show poor activity against bacterial spores, but they are recommended for general use (75 to 150 ppm). They are effective against vegetative bacteria and viruses. Their advantages are:
   a. Iodophors possess a wide spectrum of antimicrobial and antiviral activity.
   b. Iodophors have a built-in indicator. If the solution is brown or yellow, it is still active.
   c. Iodophors are relatively harmless to man.
   d. Iodophors can be readily inactivated and iodophor stains can be readily removed with solutions of Na₂S₂O₃ (Sodium Thiosulfate).
6. Alcohols, in concentrations of 70 to 95 percent are good general-use disinfectants, but they exhibit no activity against bacterial spores.
7. Formaldehyde Solutions, in concentrations of 8 percent, exhibit good activity against vegetative bacteria, spores, and viruses.
8. Activated Glutaraldehyde, in two percent solutions, exhibit good activity against vegetative bacteria, spores, and viruses. Its use, however, shall be limited and controlled because of its toxic proper ties and the damage to the eyes.
9. Formaldehyde-Alcohol, in solutions of 8 percent in 70 percent alcohol are
considered very good for disinfection purposes because of their effectiveness against vegetative bacteria, spores, and viruses. For many applications, this is the disinfectant of choice.

Use of Class I Biological Safety Cabinet

The Class I cabinet is a ventilated cabinet with a full-width open front used as a specific culture transfer area with properly labeled designations.
LAB SAFETY RULES FOR INORGANIC CHEMISTRY

SAFETY RULES AND REGULATIONS: CHECKING IN

Safety in a chemistry laboratory is considered an integral part of your training. Students are expected to follow all safety instructions, rules and regulations. These laboratory safety instructions, rules and regulations will be thoroughly explained and demonstrated to you. You will be required to sign a form stating that you understand these safety instructions, rules and regulations and that you will follow them. Failure to sign the release form will exclude you from working in the Chemistry 1212 Laboratory and will cause you to be dropped from the course.

The Chemistry 1212 Syllabus explains some of the laboratory safety rules. Most of those rules are repeated here.

In the course of instruction, we will use many different rooms on the second floor of the Science Building. All rooms used will be considered part of the chemistry laboratory. No matter where you are working, the safety rules apply.

General rules of a Chemistry Laboratory are:
- Protect your eyes. Wear safety glasses.
- Protect your skin. Wear clothes and laboratory coats.
- Protect your feet. Wear shoes.
- Protect your hair. Tie it back if it is long.
- Protect your health. Don't taste of chemicals. Most of them are poisonous.

SAFETY RULES AND REGULATIONS

1. You must wear safety glasses at all times in the laboratory. This rule is a state law. If you wear prescription glasses, you are exempt from this regulation. Seeing eye dogs are expensive and they don't mind too well. Sun glasses are not allowed.

2. No contact lenses are allowed in the laboratory. Solvents such as acetone and benzene can soften the natural plastic material that covers your eye. These materials can also soften contact lenses. When the solvent evaporates in a few seconds, the contact lens will be glued to your eyeball and you will be permanently blind.

3. You must wear shoes while in the laboratory. These shoes must protect your feet from glass and spilled chemicals. Open-toed shoes and high heels are not allowed. Flip-flops are not allowed. The shoes you wear must completely cover your feet and have a flat heel. If you wear other type shoes to the laboratory, you will not be allowed to work. Boots are considered satisfactory shoes.

4. No food or drink is allowed in the laboratory. If you have something to eat or drink, you may sit outside the laboratory and eat or drink it.

5. There are no excused laboratory absences. You must complete every assigned experiment. You will not be allowed to work alone in the laboratory. Every missed laboratory must be made up on your own time. Another person must accompany you while you are making up a laboratory. This person does not have to be a Chemistry 1212 student.

6. Your laboratory bench must be kept clean, neat and orderly. You must sponge your
laboratory bench with a wet sponge before you leave every day.

7. A fire blanket is located on the wall of the laboratory. This blanket is obtained by opening the can that holds it. If a person catches on fire, they will panic and run. Such a person should be tripped or knocked down and wrapped in the fire blanket.

8. Carbon dioxide and dry chemical fire extinguishers are located throughout the laboratory. These are operated by pulling out the pin and gripping the release handle.

9. Containers of sodium bicarbonate are located throughout the laboratory. These containers are for acid/base spills. Place a handful of sodium bicarbonate on and acid/base spill before watering it down.

10. Long hair must be tied back so that it is not a hazard. Burning hair smells bad.

11. You must wear a laboratory coat while in the laboratory. Inexpensive fireproof paper lab coats are available in the bookstore.

12. You must report all injuries to the instructor. A first aid kit is kept in the laboratory. We will send you to the hospital if your injury is bad enough.

13. Do not taste of any chemicals or solutions. Most chemicals are poisonous.

14. An eye-wash fountain is located in the laboratory. In order to use the fountain look directly into the fountain and turn on the water.

15. A safety shower is located in the laboratory. Pull the handle to operate the shower. A person on fire should not be placed in the shower.

16. Acids, bases or other chemicals that are spilled on the body should be flushed off immediately with a large quantity of water, followed by sodium bicarbonate.

17. Dishes are washed in large crocks. All of the people on one side of a bench use the same crock. The soap solution in the crock will clean dishes but will not harm your skin. Do not dump the soap solution. It is an alconox solution and is very expensive.

18. Broken glass should be placed in crocks located on the floor. Do not attempt to pick up very small pieces of glass.

19. Concentrated acids are kept in the fume hood. They are also handled in the fume hoods. A volatile acid, such as hydrochloric, will remove the inside lining of your nose if you sniff it. One drop of concentrated acid in the pupil of your eye will blind you in that eye. Acids are dangerous materials and we will treat them as such.

20. You should label all containers that are used.

21. Check labels on bottles of chemicals before using. Mixing the wrong chemicals can be dangerous.

22. Do not return used chemicals to stock bottles. Containers for used chemicals will be provided.

23. Waste solids that do not dissolve in water are placed in the waste crocks. The instructors can clean sinks but that cleaning will cost you points on your grade.

24. Take good care of analytical balances. They cost $2,000 each and cannot be replaced. We cannot afford any new balances.
25. When you weigh out chemicals the balance should not look like a snow stork struck it. In most cases we weigh by difference using a container to hold the material being weighed.

26. Do not heat glass directly on a burner. Place the beaker or flask on a wire gauze. This gauze disperses the heat and prevents cracking the glass.

27. When placing glass tubing or a thermometer through a cork or rubber stopper protect your hand with a towel. Apply glycerin to the glass for lubrication. Hold the glass very close to the stopper.

28. When handling volatile solvents be sure that a flame does not come close to the solvent. Many solvents such as acetone have very low flash points.

29. The ovens are kept at 110 degrees centigrade, ten degrees above the boiling point of water. Never remove materials from the oven with your bare hand. Use gloves or tongs.

30. Mercury is extremely poisonous. If you break a thermometer, inform the instructor immediately so that the mercury can be cleaned up.

31. Observe the voltage rating on equipment. Do not exceed the recommended voltage. Do not heat an empty heating mantle.

32. When boiling a liquid use boileezers to avoid bumping. The boileezers give the bubbles of boiling liquid a place to form. Do not place boileezers in a hot liquid.

33. In case of fire RLH. After you are safe see if you can do something about the fire.

34. Never work in a laboratory if the fume hoods are not operating.

35. Always add acid to water. Never add water to acid.

36. When doing a distillation made certain that all connections are tight and strain free.

37. Acid on clothing should be neutralized with dilute ammonia.

38. Do not spread cloth or paper towels beneath the work that you are doing. Cloth burns with many chemicals.

39. Never heat a closed system.

40. Keep your face away from all heating and mixing operations as much as possible.

41. Crystallization is carried out in an erlenmeyer flask. Do not use a beaker to do crystallization unless directed to do so.

42. Many combinations of substances burn spontaneously. These include:
   a. Filter paper soaked with nitrophenol.
   b. Laboratory clothing soaked with potassium permanganate.
   c. Cotton rags or filter paper with concentrated sulfuric acid.
   d. Potassium permanganate with glycerin.
   e. Laboratory clothing with concentrated nitric acid.
   f. Light metals with halogenated hydrocarbons.

43. An empty flask filled with flammable liquid is more dangerous than if full.

44. Chemical spills or glass breakage on the floor should be reported immediately so that they can be cleaned up.
45. Laboratory data should be recorded on a laboratory report form and not on sheets of paper.

46. Thick walled flasks such as filter flasks should not be heated. Do not make up solutions in glass bottles.

47. Inspect rubber tubing on burners for hole and splitting.

48. Electrically heated heating mantles are used for distillation. If the heating mantle breaks, a fire may be started. Be sure to leave enough space below the mantle to lower the flask if necessary.

49. Do not eat crushed ice.

50. Be extremely careful when using a hot plate. Do not place materials on the hot plate and do not burn off the electric cord.

51. Touch electrical apparatus with the back of your hand, not the palm.

52. Do not place flammable liquids in the drying ovens.

53. Do not sit on laboratory benches. Chemical residues on the bench may eat holes in the seat of your pants and in your seat.

54. Flimsy garments are a serious fire hazard. Do not work in the laboratory with your shirttail out.

55. Rubber tubing attached to a condenser should be fastened with copper wire.

56. To sharpen a cork borer perfectly it is necessary to use a round file after the cork borer sharpener is used.

57. Do not use rubber stoppers to stopper glass containers that contain organic solvents.

58. Do not work in the laboratory if you are sick or under medication that causes drowsiness.

59. Anger can cause laboratory accidents. Consult with your instructor if you have a disagreement.

60. Wash your hands immediately after leaving the chemical laboratory. Chemist washes his (her) hands before using the bathroom.
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GLOSSARY OF TERMS AND REFERENCES

1. **Accident**: An unplanned, usually injurious or damaging event, which interrupts the completion of an activity and is invariably preceded by an unsafe act, an unsafe condition, or some combination of both.

2. **Accident Analysis**: Involves reviewing accident reports to determine trends in accident occurrence and to apply remedial measures to reduce and/or eliminate these trends.

3. **Accident Investigation and Reporting**: Accurately recording and assessing the conditions and action concerning an individual accident and the recording of these facts accurately and clearly to prevent the accident from recurring.

4. **Administration (Management)**: Chancellors, Vice Chancellors, Deans, Directors, Department Heads, and Supervisors.

5. **Asbestosis**: A disease of the lungs caused by the inhalation of fine airborne fibers of asbestos.

6. **Auto-Ignition Temperatures**: The lowest temperature at which a flammable gas, vapor, or air mixture will ignite from its own heat source or a contacted heated surface without the necessity of spark or flame. Vapors and gases will spontaneously ignite at a lower temperature in oxygen than in air and their auto-ignition temperature may be influenced by the presence of a catalytic substance.

7. **Boiling Point**: The temperature at which the vapor pressure of a liquid equals atmospheric pressure.

8. **Building Coordinators**: Individuals designated by appropriate University administrators who are responsible for safety, maintenance, and security of public areas of a specific building.

9. **Carcinogenic**: Carcinogen—cancer producing.

10. **Combustible Liquids**: Combustible liquids are those having a flashpoint at or above 140°F. They are known as Class III liquids. Class IIIA includes those having a flash point at or above 140°F but below 200°F. Class IIIB includes those having flash points at or above 200°F.

11. **Decibel (dB)**: A unit to express the ratio of two amounts of electric or acoustic signal power. The decibel is equal to ten times the logarithm of the signal power ratio as expressed by the following equation:

\[ n(dB) = 10 \log \left( \frac{P_1}{P_2} \right) \]

NOTE: The standard sound level meter will register noise on three weighting networks (A, B, and C). A--less sensitive to low frequencies; B--intermediate range; C--flat response and used for everything above 85 dB.

12. **Dermatitis**: Inflammation of the skin from any cause. There are two general types of skin reaction--primary dermatitis and sensitization dermatitis.

13. **Exposure**: Proximity to a condition which may produce injury, death, or damage from dusts, chemicals, high pressure explosives, etc.

14. **Hazard**: That dangerous condition, potential or inherent, which can bring about an interruption or interference with the expected orderly progress of an activity.

15. **Industrial Hygiene**: The science and art devoted to the recognition, evaluation, and control of
those environmental factors or stresses arising in or from work situations which may cause
sickness, impaired health and well-being, or significant discomfort and inefficiency among
workers or among the citizens of the community.
16. **Loss Time Injury**: A work injury (which may result in death or disability) in which the injured
person is unable to report for duty on his/her next regularly scheduled shift.

17. **Lower Explosive Limit (LEL)**: The minimum concentration of combustible gas or vapor in air
of flammable liquids or gases below which propagation of flame does not occur on contact
with a source of ignition.

18. **Major Activity**: A major administrative department of the University, i.e., Physical Plant, Food
Services Department, Athletic Department, Police Department, etc.

19. **Mechanical Hazards**: Unsafe conditions involving machinery, equipment, tools, etc.

20. **Mg/m³**: Milligrams of contaminant per cubic meter of air.

21. **Nip Point**: The point of intersection or contact of two opposed circular surfaces, or a plane
and a circular surface.

22. **Nuclear Energy**: The energy released in a nuclear reaction such as fission or fusion. Nuclear
energy is popularly, though mistakenly, called atomic energy.

23. **Occupational Illness**: Any abnormal physical condition or disorder of an employee, other than
one resulting from an occupational injury, caused by exposure to environmental factors
associated with his/her employment.

24. **Occupational Injury**: Any injury which results from a work connected accident or from
exposure in the work environment.

25. **Personal Protective Equipment**: Any material or device worn to protect the worker from
exposure to, or contact with, any harmful material or force.

26. **Pinch Point**: Any point at which it is possible to be caught between the moving parts of a
machine, or between moving or stationary parts of a machine, or between the material and
the moving parts of a machine.

27. **Potential Hazard Analysis**: Recording and appraising “near miss” occurrences which, except
for lack of unusual skill and circumstances, might become accidents. Such appraisal should
lead to developing measures to prevent potential accidents.

28. **Proper Job Instruction (PJI)**: The instructing of an employee by presentation and
demonstration in the performance of his/her tasks to insure safety and quality.

29. **Radiation**: The emission and propagation of energy in the form of waves through space or
through a material medium. Usually refers to electromagnetic radiation such as gamma rays,
ultraviolet rays, heat waves, etc.

30. **Safety Education**: The teaching of the need to use wisely and at appropriate times, the skills
and habits developed through training.

31. **Safety Inspection**: Evaluation of structures, equipment, grounds, and program and personnel
performance to eliminate hazardous conditions and correct unsafe behavior.

32. **Safety Management**: The planning, organizing, directing, and controlling the accident
prevention effort at each level of management to include the lowest supervisory level, and
employee and student levels.
33. **Safety Promotion:** Maintaining safety awareness through the use of mass communication, i.e., safety meetings, group discussion sessions, news releases, bulletin board notices, posters, safety drives, etc.

34. **Safety Standards and Codes:** Minimum specifications required to maintain safe equipment, procedures, and performance.

35. **Safety Training:** The process through which attitudes, knowledge, and skills, as they relate to safe practices, are developed.

36. **Silica:** Silicon Dioxide (SiO$_2$) which occurs in nature as quartz, sand, flint, etc., and is used in the manufacture of glass, and ceramic products, and also is found in the sand used in foundry operations.

37. **Supervisor:** The person exercising direct supervision over an individual or group of employees in the performance of assigned jobs or work tasks. This applies also to professors in their relationship to students in their classes.

38. **Threshold Limit Value (TLV):** Referenced to airborne concentrations of substances and representing conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect.

39. **µ:** The abbreviation of micron. (1 µ = 1/10,000 cm - 1/25,000 inch)

40. **Work Area Factors:**
   a. **Apparatus:** An assemblage of instruments, machinery, material, etc., for a particular use.
   b. **Buildings and Structures:** Anything built or constructed.
   c. **Conditions:** Housekeeping, lighting, temperature, noise, fire protection, dust, sprays, gases, fumes.
   d. **Devices:** Inventions or contrivances.
   e. **Equipment:** Anything used or provided for any task such as tools, protective clothing, etc.
   f. **Machines:** Any mechanical contrivance used in the performance of some kind of work.
   g. **Materials:** Anything found in the work area such as chemicals, containers, raw stock, flammables, acids, explosives, etc.
REFERENCES

2. National Fire Protection Association (NFPA) Volume 1
3. American Chemical Society, Safety in Academic Chemistry Laboratories
4. David A. Pepitone, ed., Safe Storage of Laboratory Chemicals
9. American Conference of Governmental Industrial Hygienists, Industrial Ventilation
10. CFR 29, Part 1900 (OSHA General Industry)
11. CFR 29, Part 1926 (OSHA Construction)
13. U.S. Insurance Group, Safety Engineering Standards
Driver Safety Program/Fleet Vehicle Policy

PURPOSE: To establish a policy for usage of personal vehicle or issuing state fleet vehicles to be used for business purposes. Monitoring and reservation requests will be handled by the Facility Services Department. A Fleet Vehicle is identified as a licensed vehicle owned, leased and/or rented by the State of Louisiana/LSU-Alexandria. Facility Services has been authorized by the Chancellor to monitor the vehicle reservation system and the Campus Safety Director has been authorized to sign as the Agency Head for all DA2054 forms.

GENERAL POLICY

1. Keys for university vehicles can only be issued to authorized drivers. Authorized drivers are those faculty, staff, and student workers who have completed the “Authorization and Driving History” form (DA 2054), travel authorization, and driver’s safety course. It is the responsibility of the employee to:
   - Completed Authorization and Driving History Form (DA 2054)
   - Employee information and signature
   - Supervisor signature
   - Driver Safety Course completion information

   Authorization is not complete until all forms have been completed, signed by a supervisor, and signed by the Chancellor or the Campus Safety Director.

   The DA2054 and travel authorization form must be renewed each fiscal year. The driver’s safety course must be re-taken every three years. When the form is complete it is routed to Facility Services who then reviews for completion of information and request an Official Driving Record (ODR) from the Office of Motor Vehicles. Once the ODR is received it is verified and routed to the Campus Safety Director for approval.

   All required forms and driver’s safety course information can be obtained by contacting the Facility Services office.

2. If a vehicle is reserved by a person who has not completed the authorization process, the reservation will be flagged in the motorpool schedule and is considered tentative until all forms have been completed, signed, and processed. Non-authorized drivers will be notified of their status when a vehicle request is made. The DA2054, travel authorization, and the safety course certification must be completed, signed, and submitted to Facility Services no less than five (5) days prior to the first day of the vehicle request. This provides adequate time for the Official Driving Record (ODR) to be obtained from the Department of Public Safety in order to complete the DA 2054. The ODR must be obtained before the forms can be signed by the Chancellor or his designee.

   *Authorization is not guaranteed if the DA 2054, travel authorization, and safety course certificate are received with less than five days left before the reservation date.
The reservation will be cancelled and a $25.00 fee charged to the reserving department if the “Authorization and Driving History” form, travel authorization, and safety course certificate have not been received by the day before the reservation date.

A completed DA 2054 and Driver Safety Training certificate must be on file prior to driving for any university related business. This includes any state or privately owned vehicle and whether or not you request reimbursement.

**REGULATIONS**

High-risk drivers shall not be authorized to drive personal or state vehicles on state business from the date of discovery for a minimum of twelve (12) months. Annual ODR reports will be reviewed and will identify high risk drivers. High risk drivers and their supervisors will be notified when placed in the high risk category. High risk drivers are defined as follows:

Having three or more convictions, guilty pleas, and/or “no contest” for moving violations within the previous 12 (twelve) month period or
Having a single conviction, guilty pleas, and/or “no contest” for operating a vehicle while intoxicated, hit and run driving, vehicular negligent injury, reckless operation of a vehicle, or similar violation within the previous twelve (12) month period.

Authorized drivers with recurring conviction/violations must attend refresher course within 90 days to continue to drive on state business.

**CLAIMS REPORTING/ACCIDENT INVESTIGATION**

In the event of an accident while in a state owned vehicle or in a personal vehicle on official state business, the following procedures will be followed:

Driver must notify their immediate supervisor and Facility Services and/or the Loss Prevention Coordinator/Campus Safety Director on the day of the accident. The employee will then complete the Louisiana State Driver’s Accident Report Form (DA 2041) and submit with a copy of the police report (if one is issued) to the Loss Prevention Coordinator/Campus Safety Director. The Loss Prevention Coordinator/Campus Safety Director will then review the DA 2041 and after investigating submit to the ORM Claim Unit within 48 hours of the accident.

Failure to report any vehicular accident may be cause for suspension of Driver Authorization. Depending upon the outcome of the investigation an employee may be placed into the high-risk category. In addition, any authorized driver must report receiving a traffic violation, whether on state or personal business, to their supervisor the next working day.

*Copies of the DA2041 can be found in the glove compartment of all state vehicles.*

**ROUTINE VEHICLE MAINTENANCE/INSPECTION**

The Facility Services department will be responsible for maintaining all state owned vehicles and performing monthly inspections and routine minor maintenance. Corrective action is immediately taken on any deficiencies found to prevent further damage or accidents. All inspection checklists and routine maintenance will be recorded and filed in the Facility Services Office.
**DRIVER TRAINING**

Driver Safety Training is required of any State employee driving on university business or a State vehicle.

All authorized drivers shall successfully complete an ORM recognized defensive driving course within ninety (90) days of entering the program and shall complete a refresher course at least once every three years unless their class of license requires other additional training or testing. Drivers who have convictions on their motor vehicle records shall be required to retake a recognized driving course within ninety (90) days of notification of a conviction.

Driver Safety Training is online by accessing the LSUA website at: http://budget.lsua.edu/safety/drivertraining/

Go to http://budget.lsua.edu/safety/drivertraining/
Click on the link to On-line Safe Drivers Course Information
Click on the purple “defensivedriving” link.
A login box pops up. In the username box type: lsu\userid (i.e., lsu\jdoe).
The userid is your PAWS Logon ID.
In the password box, type your PAWS Password and click “OK”.
A box saying “No LMS found! Running in offline mode.” will come up. Click “OK”.
A box may pop up asking do you want to display the nonsecure items? Click “yes”. It may take a minute for the first page to load.
You should see a screen with this header:

**PROCEDURES FOR ISSUANCE OF FLEET VEHICLE**

The vehicle reservation form can be accessed by accessing the faculty/staff page of the LSUA website (www.lsua.edu). Use of the online reservation form is preferred over making a reservation over the phone.

The university has a limited number of motorpool vehicles available for use. In order to ensure everyone’s needs are met the following policies will be followed:

1. Motorpool vehicles will be assigned based upon the number of passengers, destination, duration of the trip, and vehicle availability.

   *Vans are reserved for large groups (five or more passengers). They will be assigned to groups with less than five passengers only when there are no smaller cars available. Special consideration will be made when needed.*

2. Vehicles are reserved on a first come, first served basis. If all vehicles are already reserved for a requested date, Facility Services will assist the requestor with renting a vehicle from Enterprise Rent-A-Car. Under these circumstances, the total cost of the rental will be charged to the requestor’s department.

3. Cancellation of a reservation must be made as soon as it is known that the vehicle is no longer needed. Advance notice is preferred, but cancellations can be made as late as the morning of the reservation. Cancelled vehicles can be reassigned to another faculty/staff member.

   *If a cancellation is not made and the vehicle is simply not picked up, the reserving department will be charged a $25.00 fee.*
4. Keys are to be picked up at the time and date specified on the reservation. The online reservation form has been updated for a pickup time to be specified. If the pickup time must be changed (running late, date change, etc.), the Facility Services office must be contacted as soon as possible. A reasonable effort will be made to contact the person named on the reservation when the keys are not picked up on time. If this person can not be contacted, the reservation will be cancelled and the vehicle will go to the next person on the waiting list.

*A $25.00 fee will be charged to the reserving department if Facility Services staff cancels a reservation under these circumstances.

5. Vehicles are to be returned to the Motorpool parking lot at the time and date specified on the reservation. The online reservation form has been updated for a return time to be specified. The keys must be returned to the Facility Services office at this time as well. The vehicle is not officially returned until the keys are returned. This allows the vehicle to be readied for the next reservation which could be on the same day. If the return time must be changed (running late, date change, etc.), the Facility Services office must be contacted as soon as possible.

* A $25.00 fee will be charged to the reserving department if the vehicle and keys are not returned at the specified time and the Facility Services office is not contacted.

6. Roadside assistance is available through Paragon Motor Club if needed. The membership card and contact phone number are both located in the glove box.

Facility Services office hours are 7:00 am-4:00 pm Monday through Friday. Keys and mileage forms can be returned after office hours by dropping them in the mail slot located to the left of the front door at the Facility Services building. Use of this feature is encouraged. This allows for the vehicle to be checked back in and readied for the next driver as soon as possible.

Complete Authorization and Driving History Form (DA 2054), Travel Authorization form, and Driver’s Safety Course. Send to Facility Services/Motorpool ASAP. Forms must be received no less than five (5) days prior to the first day of the vehicle reservation.

2. Completed Authorization and Driving History Form (DA 2054)
   □ Employee information and signature
   □ Supervisor signature
   □ Driver Safety Course completion information

   Send to Facility Services Motor Pool so they can obtain:
   □ Official Driving Record
   □ Chancellor/designee signature

3. Complete online vehicle reservation form (http://auxiliary.lsua.edu/motorpool/reserve/).

4. Pick-up keys at Facility Services at time/date specified on reservation to avoid $25 fee.

5. Begin completing mileage log.

6. Turn in keys and log to Facility Services by specified date/time to avoid $25 fee.

Note:
These steps do not include additional requirements if students or other individuals are riding in the State-owned vehicle.
Authorization and Driving History Form

Name: ___________________________  Drivers License No: __________________
Address: ___________________________  License Office No.: __________________
City: ___________________________  Expiration Date: __________________
Class License: ___________________________  Date of Birth: __________________
Issue Date: ___________________________  Date of Hire (current job): __________________

*******************************************************************************************

Employed By: ___________________________  Section: ___________________________
Job Title: ___________________________  Immediate Supervisor’s Name: ___________________________

Is it this employee’s primary purpose to drive vehicles? ___________________________
Is a current Official Driving Record attached? ___________________________
Will this driver be authorized to operate his or her privately owned vehicle in the course and scope of employment?

Date of last Driver Training Course?  Month ______ Day ______ Year ______

****************************************************************************************************

Class of License: Endorsements: Restrictions:
A: Combinations Vehicle : ( )  T: Double Trailer : ( )  L: Airbrakes : ( )
B: Heavy Straight Vehicle: ( )  P: Passenger Vehicle : ( )  Others : ( )
C: Light Vehicle : ( )  N: Tank Vehicle : ( )
D: Commercial Vehicle : ( )  H: Hazardous Material : ( )
E: Personal Vehicle : ( )  X: Combination N+H : ( )

****************************************************************************************************

USE OF PRIVATE VEHICLE FOR STATE BUSINESS

This is to certify that as a condition of driving my personal vehicle on state business, I have and will maintain at least the minimum liability coverage as required by LA. R.S. 32:900 (B) (2). I also understand that the use of my vehicle on state business requires prior written authorization from my supervisor or agency head.

Employee Signature ___________________________  Date ___________________________

AGENCY HEAD OR DESIGNEE STATEMENT

I have reviewed this individual’s genuine need to drive a State Vehicle. In conducting this review, I have considered his/her driving experience, type of vehicle to be operated, and one year driving record. The attached operator’s record has been verified as accurate and dated as necessary. I authorize this individual to operate the vehicles approved by the type of license above. This authorization must be reviewed one year from this date.

Agency Head ___________________________  Date of Authorization ___________________________
(or designated individual)

07/12/2007
DA 2054
SEXUAL HARASSMENT POLICY
LOUISIANA STATE UNIVERSITY AT ALEXANDRIA
EFFECTIVE AUGUST 1, 1994

PURPOSE: To assure all employees and students of an environment free from sexual harassment.

GENERAL POLICY

It is the policy of LSUA to provide an environment that is free from sexual harassment because such conduct seriously undermines the atmosphere of trust and respect that is essential to a healthy work and academic environment. No employee or student (either male or female) should be subject to unsolicited and unwelcome sexual overtures or conduct, either verbal or physical.

This policy applies to all members of the university community including faculty, staff, and students. Members of the university community who are subjected to sexual harassment are encouraged to report their complaints promptly. Persons who violate this sexual harassment policy shall be subject to disciplinary action that may include but is not limited to: written warning, demotion, transfer, suspension, or dismissal. Persons accused of violating this policy shall be accorded due process of the law.

Legal Authority

Sexual harassment, a form of discrimination, is prohibited by Title VII of the Civil Rights Act of 1964 and by Title IX of the Education Amendments of 1972. Louisiana’s Fair Employment Practices Law prohibits discrimination in employment by employers, employment agencies and labor organizations based on sex. LSUA’s Equal Opportunity/Affirmative Action Policy (PS 222) also prohibits sexual discrimination.

Definition

Sexual harassment may involve the behavior of a person of either sex against a person of the opposite or same sex, and occurs when such behavior constitutes unwelcome sexual advances, unwelcome requests for sexual favors, and other unwelcome verbal or physical behavior of a sexual nature where:

1. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual’s educations or employment;

2. Submission to or rejection of such conduct by an individual is used as the basis for academic or employment decisions affecting the individual’s welfare; or

3. Such conduct has the purpose or effect of substantially interfering with an individual’s welfare, academic or work performance, or creates an intimidating, hostile, offensive, or demeaning education or work environment.

Examples of Prohibited Behavior

Prohibited acts that constitute sexual harassment may take a variety of forms. Examples of the kinds of conduct that may constitute sexual harassment include but are not limited to:

1. Unwelcome sexual propositions, invitations, solicitations, and flirtations.
2. Threats or insinuations that a person’s employment, wages, academic grade, promotional opportunities, classroom or work assignments, or other conditions of employment or academic life may be adversely affected by not submitting to sexual advances.¹

3. Unwelcome verbal expressions of a sexual nature, including graphic sexual commentaries about a person’s body, dress, appearance, or sexual activities; the unwelcome use of sexually degrading language, jokes, or innuendoes; unwelcome suggestive or insulting sounds; obscene phone calls.

4. Sexually suggestive objects, pictures, videotapes, audio recordings or literature placed in the work, study, or recreation area that may embarrass or offend individuals. Such material must clearly relate to educational purposes if used in an educational setting.

5. Obscene gestures or unwelcome and inappropriate touching.

Responsibility

Individuals who are aware of or have experienced an incident of sexual harassment should promptly report the matter to an official designated to receive informal or formal complaints. These officials are listed under Procedures.

Non-Reprisal

No administrator, faculty or staff member, applicant for employment, student, or member of the public may be subjected to restraint, interference, coercion or reprisal for action taken in good faith to seek advice concerning a sexual harassment matter, to file a sexual harassment complaint, or to serve as a witness or a panel member in the investigation of a sexual harassment complaint.

Malicious, False Accusations

A complainant whose allegations are found to be both false and brought with malicious intent will be subject to disciplinary action that may include but is not limited to: written warning, demotion, transfer, suspensions, or dismissal.

PROCEDURES

An initial course of action for any faculty member, staff member, or student who feels that he or she is being sexually harassed is for that person to tell or otherwise inform the harasser that the conduct is unwelcome and must stop. However, in some circumstances this course of action may not be feasible, may be unsuccessful, or the individual may be uncomfortable dealing with the matter in this manner. To encourage persons experiencing possible sexual harassment to come forward, the University provides several channels of communication and both information and formal complaint resolution procedures.

Information, Counseling, and Information Resolution

Anyone may seek advice, information, or counseling on matters related to sexual harassment without having to lodge a formal complaint. Persons who feel they are being harassed, or are uncertain about whether what they are experiencing is sexual harassment, are encouraged to talk with confidential advisors. A list of confidential advisors can be found on the University’s Title IX page.
At this stage of the informal resolution process, the person seeking information and advice will be counseled as to the options for action available under this policy. Information revealed through this advising process will be held in confidence unless the initiating individual agrees that additional people must be informed to facilitate a solution. The aim of informal complaint resolution is not to determine whether there was intent to harass but to ensure that the alleged offending behavior ceases and that the matter is resolved promptly at the lowest possible level. No disciplinary action is taken in resolving informal complaints.

Formal Complaint Resolution

The filing of a written complaint is required for the matter to be formally investigated so a determination can be made whether a violation of the University policy prohibiting sexual harassment has occurred.

Formal complaints of sexual harassment against members of the faculty or staff are filed with the Title IX Coordinator or Human Resources. Those wishing to bring a formal complaint of sexual harassment against a student should inform the Title IX Coordinator or Vice Chancellor of Student Engagement, who will handle the case under the rules set forth in the Code of Student Conduct (PS 228). The Title IX Coordinator or Vice Chancellor of Student Engagement will begin the process for conducting a full and impartial investigation in a timely manner. The next higher administrative level will begin the process in the event that the Vice Chancellor or Coordinator is directly involved in the case.

Complaints Against a Student

The Title IX Coordinator will provide the accused with a written statement of the allegations, to which that individual will be required to respond in a timely manner. During the course of the investigation, Title IX staff in accordance with PM 73 will hear the complainant, the accused, the witnesses identified by each party. Complaints will be handled confidentially, with the facts made available only to those who have a compelling need to know for purposes of investigation or resolution.

When the investigation of a complaint against a student is completed, the Title IX Coordinator will present to the appropriate administrative official(s) a written report including the allegations, the investigatory process, the evidence in the case, the persuasiveness of the evidence, the consistency of the testimony, and the credibility of the witnesses. If the accused is found to have violated PM 73, Student Conduct and the Vice Chancellor for Student Engagement will be responsible for taking the appropriate administrative action and will inform the complainant and the accused of the final disposition of the complaint.

Complaints Against an Employee

Formal complaints of sexual harassment against a member of the faculty or staff are filed with the EEO/Human Resource Management Office. The Director of the EEO/Human Resource Management Office will provide the accused with a written statement of the allegations, to which that individual will be required to respond in a timely manner. The Director will provide the Chancellor with all information about the allegations. The Chancellor will appoint a Sexual Harassment Panel of Inquiry on an "as needed" basis. This panel will consist of a chair and four members. The four members will consist of two males and two females. The chair will normally be non-voting but will cast the tie-breaking vote when necessary. Panel composition will be dependent on the status of the parties involved in the complaint as follows:

1. When both parties are members of the faculty, the panel will be made up of faculty
2. When both parties are members of staff, the panel will be made up of members of staff.

3. When one party is a faculty member and one a staff member, the panel will have 3 faculty members and two members from the staff.

4. When a student is the accuser and the accused is a staff or faculty member, the panel will be made up of two students and three members representing faculty or staff.

The purpose of the panel of inquiry is to determine, to the best of its ability, the facts regarding the alleged sexual harassment. Prior to the hearing, the panel will meet with the parties involved to determine procedures for the conduct of the hearing. The panel will hear the complainant, the accused, and witnesses identified by each party and will examine all evidence it deems necessary. The rights of both parties will be observed and privacy and confidentiality will be protected.

At the conclusion of its investigation, the panel will issue a written report to the appropriate administrator(s). The panel’s report will detail the allegations, the evidence in the case, the persuasiveness of the evidence, the consistency of the testimony, and the credibility of the witnesses. The appropriate administrator(s) will determine whether there has been a violation of the University’s policy prohibiting sexual harassment and will take whatever disciplinary action is indicated.

\[1\]

PERSONAL RELATIONSHIPS IN HIGH EDUCATION: The National Education Association recognizes that in institutions of higher education adult students and educators may establish personal relationships. However, such relationships should be voluntary and not be used to coerce or influence other for personal advantage. Thus, the Association believes that sexual relationships between a faculty member and a student currently enrolled in the faculty member’s course, or under the supervision or direction of the faculty member, are unprofessional. The Association urges its affiliates in institutions of higher education to establish strong policies declaring such relations unprofessional (Resolution I-20, 1989).
A. INTRODUCTION
1. Employees are the State’s most valuable resource and their safety and security are essential to carrying out their responsibilities. Every employee has a reasonable expectation to perform his/her assigned duties in an atmosphere free of threats and assaults.

2. Recognizing the increasing incidence of violence in the workplace, the Governor of the State of Louisiana issued an executive order committing the Governor and the State of Louisiana to work toward a violence free workplace for state employees.

3. Louisiana State University at Alexandria fully supports this effort and is committed to a violence free workplace.

B. PURPOSES
The purposes of this plan are to:

1. Direct implementation of effective security measures and administrative work practices to minimize exposure to conditions that could result in harm to state workers;

2. Promote a positive, respectful and safe work environment that fosters employees’ security, safety and health; and

3. Require ongoing analysis of the workforce and each work site for hazard prevention and control.

C. DEFINITIONS
1. Assault
   Assault is an attempt to commit a battery, or the intentional placing of another in reasonable apprehension of receiving a battery. (Example: I may have a stick raised and know that I have no intention of striking you, but, based on the circumstances, you have a reasonable apprehension that I plan to strike you.)

2. Battery
   Battery is the intentional use of force or violence upon another; or the intentional administration of a poison or other noxious liquid or substance to another.

3. Credible Threat
   A credible threat is a statement or action that would cause a reasonable person to fear for the safety of him/herself or that of another person and does, in fact, cause such fear.

4. Intentional
   Intentional refers to conduct when the circumstances indicate that the offender, in the ordinary course of human experience, must have considered the criminal consequences as reasonably certain to result from his act or failure to act.
5. **Violence**
   Violence is the commission of an assault or battery or the making of a credible threat.

6. **Workplace**
   The workplace is any site where an employee is placed for the purpose of completing job assignments.

7. **Workplace Violence**
   Workplace violence is violence that takes place in the workplace.

D. **MANAGEMENT RESPONSIBILITIES**

Louisiana State University at Alexandria shall comply with federal and state statutes, rules, regulations and or guidelines in making reasonable efforts to:

1. Hire, train, supervise and discipline employees;

2. Intervene in situations of harassment in the workplace where the employer is aware of the harassment;

3. Ensure employees and/or independent contractors are fit for duty, and do not pose unnecessary risk to others;

4. Provide security precautions and other measures to minimize the risk of foreseeable criminal intrusion based upon prior experience or location in dangerous area;

5. Maintain an adequate level of security;

6. Establish and implement a written policy and plan dealing with violence in the workplace;

7. Provide employee training on the agency plan, warning signs of potential for violent behavior, and precautions which may enhance the personal safety of the employee at work;

8. Warn an employee of a credible threat made by another to do harm to that employee;

9. Support the application of sanctions and/or prosecution of offenders, as appropriate;

10. Accommodate, after appropriate evaluation, employees who require special assistance following incident(s) of workplace violence;

11. Cooperate with law enforcement agencies;

12. Establish a uniform violence reporting a system with regular review of submitted reports;

13. Initiate procedures to protect from retaliation employees who report credible threats; and

14. Keep up-to-date records to evaluate the effectiveness of administrative and work practice changes initiated to prevent workplace violence.
E. MANAGEMENT COMMITMENT

1. At Louisiana State University at Alexandria, management commitment, including the endorsement and visible involvement of top levels of supervision, provides the motivation and resources to deal effectively with workplace violence, and includes:
   a. Organizational concern for employee emotional and physical safety and health
   b. Commitment to the safety and security of all persons at the workplace;
   c. Assigned responsibility for the various aspects of the workplace violence prevention program to ensure that all supervisors and employees understand their roles and responsibilities;
   d. Allocation of authority and resources to all responsible parties;
   e. Accountability for involved supervisors and employees;
   f. Debriefing/counseling for employees experiencing or witnessing assaults and other violent incidents;
   g. Support and implementation of appropriate recommendations from violence prevention committees; and
   h. Treatment of workplace violence, incidents, complaints and concerns with seriousness, keeping confidential all reports and the identification of parties, except to those who have a legitimate need to know and to the extent required by law.

F. EMPLOYEE RESPONSIBILITIES

At Louisiana State University at Alexandria:

1. Employees are required to report to the Human Resource Management Office all threats or incidents of violent behavior in the workplace which they observe or of which they are informed. Examples of inappropriate behavior which shall be reported include:
   a. Unwelcome name-calling, obscene language, and other abusive behavior;
   b. Intimidation through direct or veiled verbal threats;
   c. Physically touching another employee in an intimidating, malicious, or sexually harassing manner, including such acts as hitting, slapping, poking, kicking, pinching, grabbing, and pushing, and
   d. Physically intimidating others including such acts as obscene gestures, “getting in your face”, fist-shaking, throwing any object.

2. Employee involvement and feedback enable workers to develop and express their own commitment to safety and security and provide useful information to design, implement, and evaluate the program. At Louisiana State University at Alexandria, employee involvement includes, but is not limited to:
   a. Understanding and complying with the workplace violence prevention program and other safety and security measures;
b. Participating in employee complaint or suggestion procedures covering safety and security concerns;

c. Providing prompt and accurate reporting of violent incidents;

d. Cooperating with the safety and security committee that reviews violent incidents and security problems and makes security inspections; and

e. Participating in continuing education covering techniques to recognize and abate escalating agitation, assultive behavior or criminal intent.

G. WORKPLACE ANALYSIS

1. The process of workplace analysis involves a step-by-step, common-sense look at the workplace to find existing or potential hazards for the occurrence of workplace violence. The workplace analysis entails reviewing specific procedures or operations that contribute to hazards and specific locales where hazards may develop. The workplace analysis program includes, but is not limited to:

   a. Analyzing and tracking records;

   b. Monitoring trends;

   c. Analyzing incidents; and

   d. Analyzing workplace security.

2. At Louisiana State University at Alexandria, the responsibility for conducting and maintaining workplace analyses is assigned to Human Resource Management.

3. The initial workplace analysis for Louisiana State University at Alexandria shall be performed by Human Resource Management within sixty days of the publication of this policy.

4. Additional information concerning the performance of a workplace analysis can be found in Attachment 1, “Workplace Analysis.”

H. HAZARD PREVENTION AND CONTROL

1. After the completed workplace analysis is reviewed and approved, workplace adaptations, engineering controls, and work practice controls shall be implemented by LSUA, to prevent or control, to the extent possible, any discovered hazards. If workplace violence does occur, the post-incident response and evaluation section of this policy shall be implemented.

2. Engineering controls and workplace adaptations remove the hazard from the workplace or create a barrier between the worker and the hazard. Examples of engineering controls and workplace adaptations can be found in Attachment 2, “Hazard Prevention and Control.”

3. Administrative and work practice controls affect the way jobs or tasks are performed and, therefore, affect the security of the workplace. Examples of administrative and work practice controls can also be found in Attachment 2.

4. At Louisiana State University at Alexandria, the responsibility for hazard prevention and controls is assigned to Human Resource Management and the Campus Safety Committee.
I. INCIDENT RESPONSE AND EVALUATION

1. Assistance for victimized employees and employees who may be affected by witnessing a workplace violence incident will be provided. Whenever an incident takes place, injured employees will receive appropriate medical treatment and psychological evaluation as necessary, in accordance with existing statutes. At Louisiana State University at Alexandria, this assistance is provided through Human Resource Management and Student Services (Counseling Center).

2. An employee who has been threatened or assaulted by another at the workplace will immediately report the situation to his/her supervisor. The supervisor to whom the incident is reported will immediately notify the Human Resource Management Office.

3. Written statements shall be obtained from all involved, including those who witnessed the incident. A statement form which may be used is found in Attachment 3, “Violence Incident Statement.” The form is designed to answer the WHO, WHAT, WHEN, WHERE, HOW, and WHY of the incident while the event is still fresh. Concurrent with obtaining the written statements or as soon as possible thereafter, Human Resource Management shall interview all parties to the incident, including victims, subjects and witnesses, and prepare written summaries of the interview. The summaries shall be the bases on which to determine the facts of the event.

4. The following actions should be taken in accordance with the severity of the incident:
   a. The situation is not dangerous:
      • separate employees involved and isolate until they are interviewed and their statements are taken;
      • separate witnesses until they are interviewed and their statements are taken; and
      • document all actions and statements.
   b. The situation is dangerous:
      • contact the Rapides Parish Sheriff’s Department at (318) 473-6700 or University Police at (318) 473-6427 or (318) 473-6424;
      • order all those presenting the danger to leave the facility immediately (unless this action must be taken by police);
      • do not attempt to physically remove an individual (leave it to the police); and
      • document all actions and statement.

5. Additional information concerning post incident response and evaluation can be found in Attachment 4, “Incident Response.”

J. RECORDS

1. Records associated with violence in the workplace need to be kept in a permanent, secure, and confidential manner. It shall be the responsibility of Human Resource Management to help evaluate security, methods of hazard control, and identify training needs. The following records are important and shall
be maintained in accordance with pertinent statutes as part of the violence prevention program:

a. Reports of work injury, including workers’ compensation injuries, if necessary;

b. Report for each reported assault, incidents of abuse, verbal attack, or aggressive behavior occurring between persons in the workplace;

c. Police reports of incidents occurring in the workplace;

d. Minutes of safety meetings, records of hazards’ analysis, and corrective actions recommended;

e. Violence in the workplace training, including subjects covered, attendees, and qualifications of trainers; and

f. Other appropriate reports.

K. EVALUATION

1. Regular evaluation of safety and security measures affecting the violence prevention program shall be conducted at least annually. At LSUA this evaluation shall be the responsibility of Human Resource Management.

2. The evaluation program consists of:

a. Reviewing reports and minutes from staff meetings on safety and security issues;

b. Analyzing trends in illness/injury or fatalities caused by violence;

c. Measuring improvement based on lowering the frequency and severity of workplace violence;

d. Surveying employees before and after making job or workplace changes or installing security measures or new systems to determine their effectiveness.

e. Requesting periodic outside review of the workplace for recommendations on improving employee safety; and

f. Interviewing employees who experience hostile situations about the medical treatment received (initially, several weeks later, and several months later).

L. COMMUNICATION

1. At Louisiana State University at Alexandria, we recognize that to maintain a safe, healthy and secure workplace, we must have open communication among employees, including all levels of supervision, on these issues. The open communication process includes, but is not limited to:

a. Periodic review of this policy with all employees;

b. Discussions of violence in the workplace during scheduled safety meetings;

c. Posting or distributing information on violence in the workplace; and

d. Procedures to inform supervisors about violence in the workplace,
hazards, or threats of violence.

2. Human Resource Management shall provide an appropriate place for employees to discuss security concerns with assurance that necessary confidences will be maintained.

M. TRAINING AND EDUCATION

1. At Louisiana State University at Alexandria,
   a. All employees, including all levels of supervision, shall have training and instruction on general, job-specific, and work site-specific safety and security practices every three (3) years;
   b. Training and instruction shall be provided within one year of policy implementation and regularly every three (3) years thereafter; and
   c. Training shall begin with orientation of new employees within three months of employment and regularly every three (3) years thereafter.

2. At Louisiana State University at Alexandria, workplace violence training shall be the responsibility of Human Resource Management.

3. General violence in the workplace training and instruction address, but are not limited to the following areas:
   a. Explanation of the violence in the workplace policy as established by LSUA;
   b. Measures for reporting any violent acts or threats of violence;
   c. Recognition of hazards including associated risk factors;
   d. Measures to prevent workplace violence, including procedures for reporting workplace hazards or threats to appropriate supervision;
   e. Ways to defuse hostile or threatening situations;
   f. Measures to summon others for assistance;
   g. Routes of escapes available to employees;
   h. Procedures for notification of law enforcement authorities when a criminal act may have occurred;
   i. Procedures for obtaining emergency medical care in the event of a violent act upon an employee; and
   j. Information on securing post-event trauma counseling for those employees desiring or needing such assistance.

N. ADDITIONAL INFORMATION CONCERNING WORKPLACE VIOLENCE

1. Attachment 5, “Workplace Violence Checklist,” may be used in identifying present or potential workplace violence problems.

2. Attachment 6, “Recognizing Inappropriate Behavior,” may be helpful in identifying the types of behavior this policy forbids.

3. Attachment 7, “Personal Conduct To Minimize Violence,” may be helpful to an individual in understanding what he/she might do to prevent violence.
0. LIST OF ATTACHMENTS

ATTACHMENT 1 - WORKPLACE ANALYSIS

1. GENERAL
   a. Workplace analysis involves a step-by-step, common-sense look at the workplace to find existing or potential hazards for workplace violence. This entails reviewing specific procedures or operations that contribute to hazards and specific locales where hazards may develop.
   b. A “Threat Assessment Team,” “Patient Assault Team”, similar task force, or coordinator may assess the vulnerability to workplace violence and determine the appropriate preventive actions to be taken. Implementing the workplace violence prevention program then may be assigned to this group. The team should include representatives from senior management, operations, employee assistance, security, occupational safety and health, legal, and human resources staff.
   c. The team or coordinator can review injury and illness records and workers’ compensation claims to identify patterns of assaults that could be prevented by workplace adaptation, procedural changes, or employee training. As the team or coordinator identifies appropriate controls, these should be instituted.
   d. The recommended program for workplace analysis includes, but is not limited to, analyzing and tracking records, monitoring trends and analyzing incidents, screening surveys, and analyzing workplace security.

2. WORKPLACE ANALYSIS PROGRAM
   a. Records Analysis and Tracking
      This activity includes reviewing medical (in as far as permitted), safety, workers’ compensation, and insurance records to pinpoint instances of workplace violence. Scan unit logs and employee and police reports of incidents or near-incidents of assaultive behavior to identify and analyze trends in assaults relative to particular departments, units, job titles, unit activities, work stations, and/or time of day. Tabulate these data to target the frequency and severity of incidents to establish a baseline for measuring improvement.
   b. Monitoring Trends and Analyzing Incidents
      Contacting similar local businesses, trade associations, and community and civic groups is one way to learn about their experiences with workplace violence and to help identify trends. Use several years of data, if possible, to track trends of injuries and incidents of actual or potential workplace violence.
   c. Workplace Security Analysis
      (1) The team or coordinator should periodically inspect the workplace and evaluate employee tasks to identify hazards, conditions, operations, and situations that could lead to violence. The periodic review process should also include employee feedback and follow-up.
      (2) To find areas requiring further evaluation, the team or coordinator should:
          • Analyze incidents, including the characteristics of assailants and victims, an account of what happened before and during the incident, and the relevant details of the situation and its outcome. When
possible, obtain police reports and recommendations.

- Identify jobs or locations with the greatest risk of violence as well as processes and procedures that put employees at risk of assault, including frequency and time/day/date.

- Note high-risk factors such as types of clients or patients (e.g., psychiatric conditions or patients disoriented by drugs, alcohol, or stress); physical risk factors of the building; isolated locations/job activities; lighting problems; lack of phones and other communication devices; areas of easy, unsecured access; and areas with previous security problems.

- Evaluate the effectiveness of existing security measures, including engineering control measures. Determine if risk factors have been reduced or eliminated, and take appropriate action.

d. Independent reviewers, such as safety and health professionals, law enforcement or security specialists, insurance safety auditors, and other qualified persons may offer advice to strengthen programs. These experts also can provide fresh perspectives to improve a violence prevention program.
ATTACHMENT 2 - HAZARD PREVENTION AND CONTROL

1. GENERAL
After hazards of violence are identified through the systematic workplace analysis, the next step is to design measures through engineering or administrative and work practices to prevent or control these hazards. If violence does occur, incident response can be an important tool in preventing future incidents.

2. ENGINEERING CONTROLS AND WORKPLACE ADAPTATION
   a. Engineering controls, for example, remove the hazard from the workplace or create a barrier between the worker and the hazard. There are several measures that can effectively prevent or control workplace hazards, such as those actions presented in the following paragraphs. The selection of any measure should be based upon the hazards identified in the workplace security analysis of each facility.

(1) Assess any plans for new construction or physical changes to the facility or workplace to eliminate or reduce security hazards.

(2) Install and regularly maintain alarm systems and other security devices, panic buttons, hand-held alarms or noise devices, cellular phones, and private channel radios where risk is apparent or may be anticipated; and arrange for a reliable response system when an alarm is triggered.

(3) Provide metal detectors--installed or hand-held, where appropriate--to identify guns, knives or other weapons, according to the recommendations of security consultants.

(4) Use a closed-circuit video recording for high-risk areas on a 24-hour basis. Public safety is a greater concern than privacy in these situations.

(5) Place curved mirrors at hallway intersections or concealed areas.

(6) Enclose public service areas, such as nurses’ stations and drivers’ license centers, and install deep service counters or bullet-resistant, shatter-proof glass.

(7) Provide employee “safe rooms” for use during emergencies.

(8) Provide waiting areas designed to maximize comfort and minimize stress.

(9) Arrange furniture to prevent entrapment areas, furniture should be minimal, lightweight, without sharp corners or edges, and/or affixed to the floor. Limit the number of pictures, vases, ashtrays, or other items that can be used as weapons.

(10) Provide lockable and secure bathrooms for staff members separate from patient-client and visitor facilities.

(11) Lock all unused doors to limit access in accordance with fire codes.

(12) Install bright, effective lighting indoors and outdoors.

(13) Replace burned-out lights, broken windows, and locks.

(14) Keep automobiles well-maintained. Always lock automobiles.
3. **ADMINISTRATIVE AND WORK PRACTICE CONTROLS**

   a. Administrative and work practice controls affect the way jobs or tasks are performed. The following examples illustrate how changes in work practices and administrative procedures can help prevent violent incidents.

   1. State clearly to patients, clients, and employees that violence is not permitted or tolerated.

   2. Establish liaisons with local police and state prosecutors. Report all incidents of violence. Provide police with physical layouts of facilities to expedite investigations.

   3. Require employees to report all assaults or threats to a supervisor or manager (e.g., can be confidential interview). Keep log book and reports of such incidents to help in determining any necessary actions to prevent further occurrences.

   4. If needed, advise and assist employees of procedures for requesting police assistance or filing charges when assaulted.

   5. Provide management support during emergencies. Respond promptly to all complaints.

   6. Set up a trained response team to respond to emergencies.

   7. Use properly trained security/police officers, when necessary, to deal with aggressive behavior, or dial 911 or 9-9-11, as appropriate. Follow written security procedures.

   8. Ensure adequate and properly trained staff for restraining patients or clients.

   9. Provide sensitive and timely information to persons waiting in line or in waiting rooms. Adopt measures to decrease waiting time.

   10. Ensure adequate and qualified staff coverage at all times, taking into account the times of greatest risk at each facility.

   11. Institute a sign-in procedure with passes for visitors. Enforce visitor hours and procedures.

   12. Control access to facilities other than waiting rooms or other public access rooms.

   13. Prohibit employees from working alone in areas of substantial risk, particularly at night or when assistance is unavailable.

   14. Establish policies and procedures for secured areas and emergency evacuations.

   15. Ascertain the behavioral history of new and transferred patients and clients to learn about any past violent or assaultive behaviors. Establish a system—such as chart tags, log books, or verbal census reports—to identify patients and clients with assaultive behavior problems, keeping in mind patient confidentiality and worker safety issues. Update as needed.

   16. Treat and/or interview aggressive or agitated individuals in relatively open areas that still maintain privacy and confidentiality (e.g., rooms with removable partitions).

   17. Use case management conferences with co-workers and supervisors to
discuss ways to effectively treat potentially violent individuals.

(18) Prepare contingency plans to deal with individuals who are “acting out” or making verbal or physical attacks or threats.

(19) Transfer assaultive clients to “acute care units,” “criminal units,” or other more restrictive settings.

(20) Periodically survey the facility to remove tools or possessions left by visitors or maintenance staff which could be used inappropriately.

(21) Provide staff with identification badges, preferably without last names, to readily verify employment.

(22) Provide staff members with security escorts to parking areas in evening or late hours. Parking areas should be highly visible, well-lighted, and safely accessible to the building.

(23) Use the “buddy system,” especially when personal safety may be threatened. Encourage employees to avoid threatening situations. Staff should exercise extra care in elevators, stairwells, and unfamiliar surroundings; immediately leave premises if there is a hazardous situation; request security/police escort if needed.

(24) Develop policies and procedures covering how off-site visits will be conducted, the presence of others during the visits, and the refusal to provide services in a clearly hazardous situation.

(25) Establish a daily work plan for field staff to keep a designated contact person informed about workers’ whereabouts throughout the workday. If an employee does not report in, the contact person should follow up.

(26) Conduct a comprehensive post-incident evaluation, including psychological as well as medical treatment, for employees who have been subjected to abusive behavior.
**ATTACHMENT 3 - VIOLENCE INCIDENT STATEMENT**

NOTE: The contents of this document shall be kept confidential with its contents released only to individuals with a legitimate need to know or unless it becomes public record by virtue of an appeal to a court or other adjudicative body.

**VIOLENCE INCIDENT STATEMENT**

<table>
<thead>
<tr>
<th>Date of Incident</th>
<th>Place of Incident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Incident Began</td>
<td>Time Incident Ended</td>
</tr>
<tr>
<td>Name of Person Making Statement</td>
<td>Phone Number</td>
</tr>
<tr>
<td>Title</td>
<td>Work Location</td>
</tr>
</tbody>
</table>

Detail description of incident. Answer the questions WHO, WHAT, WHEN, WHERE, HOW, and WHY. (If necessary, continue on plain paper; attach sheets.) Completed statement should be forwarded to appropriate personnel.

Report completed by: ___________________________ Date: ________________
ATTACHMENT 4 - INCIDENT RESPONSE

Incident response and evaluation are essential to an effective violence prevention program. In accordance with existing statutes, all workplace violence programs should provide comprehensive assistance for victimized employees and employees who may be affected by witnessing a workplace violence incident.

Victims of workplace violence may suffer a variety of consequences in addition to their actual physical injuries. These could include short and long-term psychological trauma, fear of returning to work, changes in relationships with co-workers and family, feelings of incompetence, guilt, powerlessness, and fear of criticism. Consequently, a strong follow-up program for these employees will help them to deal with these problems.

There are several types of assistance that could be incorporated into the post-incident response. For example, trauma-crisis counseling, critical incident stress debriefing, or employee assistance programs may be provided to assist victims. Certified employee assistance professionals, psychologists, psychiatrists, clinical nurse specialists, or social workers could provide this counseling; or the employer can refer staff victims to an outside expert. In addition, an employee counseling service, peer counseling, or support groups may be established.

In any case, persons assigned to respond to incidents of violence must be well trained and have a good understanding of the issues and consequences of assaults and other aggressive, violent behavior. Appropriate and promptly rendered incident debriefings and counseling should reduce psychological trauma and general stress levels among victims and witnesses. In addition, appropriate response educates staff about workplace violence and positively influences the workplace.
ATTACHMENT 5 - WORKPLACE VIOLENCE CHECKLIST

The following items serve merely as an example of what might be used or modified by employers to help prevent workplace violence.

This checklist helps identify present or potential workplace violence problems. Employers also may be aware of other serious hazards not listed here.

Designated competent and responsible observers can readily make periodic inspections to identify and evaluate workplace security hazards and threats of workplace violence. These inspections should be scheduled on a regular basis; when new, previously unidentified security hazards are recognized; when occupational deaths, injuries, or threats of injury occur; when a safety, health and security program is established; and whenever workplace security conditions warrant an inspection.

Periodic inspections for security hazards identifying and evaluating a potential workplace security hazards and changes in employee work practices which may lead to compromising security. Please use the following checklist to identify and evaluate workplace security hazards. **TRUE** notations indicate a potential risk for serious security hazards:

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>T</td>
<td>F</td>
<td>This industry frequently confronts violent behavior and assaults of staff.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Violence occurs regularly where this facility is located.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Violence has occurred on the premises or in conducting business.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Customers, clients, or coworkers assault, threaten, yell, push, or verbally abuse employees or use racial or sexual remarks.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Employees are NOT required to report to the employer incidents or threats of violence, regardless of injury or severity.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Employees have NOT been trained by the employer to recognize and handle threatening, aggressive, or violent behavior.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Violence is accepted as “part of the job” by some managers, supervisors, and/or employees.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Access and freedom of movement within the workplace are NOT restricted to those persons who have a legitimate reason for being here.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>The workplace security system is inadequate -- i.e., door locks malfunction, windows are not secure, and there are no physical barriers or containment systems.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Medical and counseling services have NOT been made available to employees who have been assaulted.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Alarm systems such as panic alarm buttons, silent alarms, or personal electronic alarm systems are NOT being used for prompt security assistance.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>There is no regular training provided on correct response to alarm sounding.</td>
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<tr>
<td>T</td>
<td>F</td>
<td>Alarm systems are NOT tested on a monthly basis to assure correct function.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Security guards are NOT employed at the workplace.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Closed circuit cameras and mirrors are NOT used to monitor dangerous areas.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Metal detectors are NOT available or NOT used in the facility.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Employees have NOT been trained to recognize and control hostile and escalating aggressive behaviors, and to manage assaultive behavior.</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>Employees CANNOT adjust work schedules to use the “Buddy system” for visits to clients in areas where they feel threatened.</td>
</tr>
</tbody>
</table>
Cellular phones or other communication devices are NOT made available to field staff to enable them to request aid.

Vehicles are NOT maintained on a regular basis to ensure reliability and safety.

Employees work where assistance is NOT quickly available.
Inappropriate behavior is often a warning sign of potential hostility or violence. When left unchecked it can escalate to higher levels. Employees who exhibit the following behaviors should be reported and disciplined in accordance with the organization’s policies:

- Unwelcome name-calling, obscene language, and other abusive behavior.
- Intimidation through direct or veiled threats.
- Throwing objects in the workplace regardless of the size or type of object being thrown or whether a person is the target of a thrown object.
- Physically touching another employee in an intimidating, malicious, or sexually harassing manner. That includes such acts as hitting, slapping, poking, kicking, pinching, grabbing, and pushing.
- Physically intimidating others including such acts as obscene gestures, “getting in your face,” and fist-shaking.
ATTACHMENT 7 - PERSONAL CONDUCT TO MINIMIZE VIOLENCE

Follow these suggestions in your daily interactions with people to defuse potentially violent situations. If at any time a person’s behavior starts to escalate beyond your comfort zone, withdraw from the situation.

**DO**

- Project calmness; move and speak slowly, quietly, and confidently.
- Be a good listener; encourage the person to talk, and listen patiently.
- Focus your attention on the other person to demonstrate your interest in what he/she has to say.
- Maintain a relaxed yet attentive posture and position yourself at an angle rather than directly in front of the other person.
- Acknowledge the person’s feelings by gestures such as nodding your head.
- Ask the person to move to a less public, quiet area, if appropriate.
- Establish ground rules if unreasonable behavior persists. Calmly describe the consequences of any violent behavior.
- Use delaying tactics which will give the person time to calm down. For example, offer a drink of water (in a disposable cup).
- Be reassuring and point out choices. Identify and deal with specific issues.
- Accept criticism in a professional manner.
- Ask for his/her recommendations. Repeat back to him/her what you feel he/she is requesting of you.
- Position yourself so that a visitor cannot block your access to an exit.

**DO NOT**

- Make false statements or promises you cannot keep.
- Try to impart a lot of technical or complicated information when emotions are high.
- Take sides or agree with distortions.
- Invade the individual’s personal space. Make sure there is a space of 3’ to 6’ between you and the person.
- Use styles of communication which generate hostility such as apathy, brush off, coldness, condescension, robotism, going strictly by the rules, or giving the run-around.
- Reject all of an individual’s demands from the start.
- Pose in challenging stances such as standing directly opposite someone, hands on hips or crossing your arms. Avoid any physical contact, finger-pointing, or long periods of fixed eye contact.
- Make sudden movements which can be seen as threatening. Notice the tone, volume, and rate of your speech.
- Challenge, threaten, or dare the individual. Never belittle the person or make him/her feel foolish.
- Criticize or act impatiently toward the agitated individual.
• Attempt to bargain with a threatening individual.
• Try to make the situation seem less serious than it is.
BLOOD BORNE PATHOGEN EXPOSURE CONTROL PLAN

On December 6, 1991, the Occupational Safety and Health Administration (OSHA) issued its final regulation on Occupational Exposure to Bloodborne Pathogens (29 CFR 1910.1030). The OSHA standard was subsequently updated in January 2001 (effective April 18, 2001) with a new title: “Occupational Exposure to Bloodborne Pathogens; Needlesticks and Other Sharps Injuries, Final Rule” (the “Standard”). OSHA determined that employees face a significant health risk as the result of occupational exposure to blood and other potentially infectious materials because they may contain bloodborne pathogens. The agency concluded that these hazards could be minimized or eliminated by using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical surveillance, hepatitis B vaccinations, signs and labels, and other provisions.

The purpose of this program is to reduce or eliminate occupational exposure to blood and other potentially infectious materials and to establish the appropriate response to a situation on campus requiring the administration of first aid for all employees, students, and visitors of Louisiana State University at Alexandria.

All bodily fluids will be considered infectious regardless of the perceived status of the source individual. Procedures for providing first aid and decontaminating/sanitizing contaminated areas will duplicate those developed and used by the health industry. This exposure control plan can minimize or eliminate exposure through the use of protective equipment, training, clean up procedures and medical protocol involving post exposure evaluation.

Examples of Blood Borne Diseases:
- HIV: Human Immunodeficiency Virus causes AIDS
- Hepatitis B and C
- Syphilis
- Malaria

Preventive Measures –Universal Precautions

Use universal precautions at all times: TREAT ALL BLOOD AND BODY FLUIDS AS THEY ARE POTENTIALLY INFECTIOUS.

1. Gloves shall be worn when contact with bodily fluids can reasonably be expected.
2. Gloves should be changed after each occurrence.
3. Hand washing with soap and water is mandatory after each occurrence.
4. Hand cleaner and antiseptic towelettes may also be used.
5. Wear personal protective equipment (PPE) (examples: latex gloves, safety glasses, goggles, face shields, aprons, boots) whenever blood or body fluids are present.
6. Utilize engineering techniques (examples: tongs, recognized work practices, specialized equipment) whenever possible.
7. Contaminated sharp objects must not be bent, broken, or recapped by hand.

8. All contaminated sharps must be disposed of in a rigid, leak proof, puncture resistant container. The sharps container must be located as close as practical to the use area and identified as biohazardous.

Decontamination Procedures
1. Call a professional for proper decontamination and disposal.

2. “Spill Kits” are maintained at each building and either require employees to follow the manufacturer’s instructions that are provided with the kits or train employees on their use and disposal.

The following are the general guidelines for decontamination:
   . After an accident, the contaminated area must be cleaned with the proper recommended decontamination solution
   . Cleaning equipment must be properly decontaminated
   . Wear required PPE
   . Restrict access to the area
   . Use disposable supplies whenever possible and dispose of properly

Disposal: Disposal of all regulated waste shall be in accordance with applicable federal, state, and local regulations.

All waste with the possibility of contamination of BBP shall be placed in containers that are closeable, constructed to contain all contents and prevent leakage of fluids during handling, storage, transportation or shipping. The waste must be labeled or color-coded prior to removal to prevent spillage or protrusion of contents during handling, storage, transportation or shipping.

Post-exposure Procedures
   . Wash hands with antibacterial soap after contact
   . Flush eyes and face with fresh water for several minutes after contact
   . Immediately notify supervisor, who will contact the University Police and the Campus Safety/Loss Prevention Officer.

Other Exposure Hazards
   . Cleaning surfaces contaminated with blood, vomit, feces
   . ALWAYS wear gloves and protective apron or clothing
   . Be alert for sharp objects, broken glassware, used syringes in trash
   . Do not pick up broken glass – use brush or broom & dustpan
   . Dispose of glass, sharp objects safely
   . Laundry – bloody or contaminated linens or sharp objects

TRAINING: The training schedule shall be contingent upon the level of exposure to BBP:

High Risk: Kitchen staff, police officers, custodial worker, plumbers, child care employees, lab technicians, and public safety workers.
Workers with high risk of occupational exposure shall receive training within three months of
being hired and at least once per year afterwards. The training must be given during working hours and at no cost to the employee and training records shall be maintained for five years.

**Low Risk: General office staff, classroom personnel, faculty**

All employees shall participate in a training program within 12 months of employment. If there are no BBP events, the training shall be required every five years thereafter. If an agency’s unit experiences a BBP event, the employees of that unit shall be required to retrain within the following 60 days. Low risk employees will be trained online or at the yearly staff/faculty meeting.

**Work Practice Controls**

When there is a potential for occupational exposure, the department shall provide and ensure use, at no cost to the employee, appropriate Personal Protective Equipment (PPE). Each employee in the high risk category shall have immediate access to an unexpired, complete spill kit. Supervisors are responsible for maintaining the kits in accordance with departmental procedures. Warning labels must be affixed to containers of regulated waste, or any that contain potentially infectious material.

**Responsibilities**

The areas of responsibility listed below are pertinent to the implementation of the Exposure Control Plan at LSUA:

- **Vice-Chancellors, Directors, and Division/Department Heads** are to ensure compliance with the provisions of this plan by all employees within their areas who have a potential for occupational exposure. This includes providing a copy of this exposure control plan to employees, enforcing compliance with this plan, ensuring new employees are properly trained if they are at risk of exposure, ensuring that those employees attend an annual training session, and performing follow-up procedures for all exposure incidents.

- **Employees** are to perform tasks and procedures in a manner that minimizes or eliminates employee exposure and perform duties as established in this exposure control plan and as trained. At-risk employees are to attend the blood borne pathogens training sessions and annual retraining sessions. Employees are to report exposure incidents to their immediate supervisor as soon as possible.

**Methods of Compliance**

1. **General**

   “Universal precautions” or “infection control” is the practice of assuming that anything that could be potentially infectious / is infectious, such that all such samples/fluids are treated with the same regard. Universal precautions are observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between infected and non-infected body fluid types is difficult or impossible, all body fluids are considered potentially infectious materials.

2. **Engineering Controls**

   Engineering controls are to be used to eliminate or minimize employee exposure for each task within the work area. Where occupational exposure remains after institution of these controls and work practice controls, personal protective equipment is used. Engineering controls are used where there is a reasonable likelihood of occupational exposure. Engineering controls, when
possible to implement, are the preferred control measures over work practice controls and personal protective equipment.

LSUA utilizes the following types of engineering controls to reduce the possibility of exposure:

- sharps puncture proof containers
- medical waste containers with locking lids
- retractable lancets
- handwashing facilities
- eye wash stations
- ventilating laboratory hoods
- autoclaves

3. **Work Practice Controls**

- Gloves will be worn when administering hygienic care and when handling all body substances.
- Wash hands each time prior to all patient contact and immediately after.
- Following contact with blood or other potentially infectious materials, hands and any other skin will be washed with soap and water. Mucous membranes (mouth, nose, and eyes) are flushed with water. If soap and water are not available, the employee will be provided with antiseptic towelettes or hand cleaner that can be used as an interim measure.
- Contaminated needles and other contaminated sharps are not to be bent, sheared or broken.
- Recapping needles by hand is prohibited.
- Eating, drinking, smoking, applying cosmetics or lip balm is prohibited in areas where there is a likelihood of occupational exposure.
- Food and drink are prohibited in lab or work areas, (i.e., refrigerators, freezers, shelves, cabinets, and on counter tops or bench tops where blood or other potentially infectious materials are present).
- Ambu or resuscitation bags shall be used in administering CPR. An oral airway with a protective face shield should be used if an ambu bag is unavailable.
- Sharp items are handled with extraordinary care to prevent accidental injuries.
- For convenience, small medical waste containers containing a biohazard bag are located at each station in the Clinical Lab. These containers are emptied into a larger medical waste container once reaching full capacity.
- Mouth pipetting/suctioning is prohibited
- All procedures involving blood or other potentially infectious materials are performed in a manner that minimizes splashing, spraying, spattering, and generation of droplets of these substances.
- Specimens taken from test kits and blood samples are labeled immediately with a biohazard sticker and placed in a container that prevents leakage. These kits and samples are stored in a refrigerator in the Clinical Lab.
- Follow department procedures for specific tasks to minimize exposure.
4. **Personal Protective Equipment**

Use of proper personal protective equipment is required. Personal protective equipment is provided by LSUA at no cost to an employee with a potential occupational exposure to blood or potentially infectious material. This equipment may include:

- gloves
- gowns
- face shields/masks
- goggles
- ambu or resuscitation bags
- shoe covers
- plastic shields

5. **Housekeeping & Decontamination**

- Bloodborne Pathogen clean up kits are available for custodial personnel to address significant bodily fluid spills. These kits are kept in each of the custodian closets in each building. This kit includes the following: absorbent powder, protective exam gloves, protective face shield, shoe covers, apron, isolation mask, scoops/scrapers, absorbent towel, antiseptic towelettes, red biohazard bags with twist ties, and spray disinfectant.
- Glass and chemical clean up kits are available for such spills.
- Properly dispose of materials, using sharps containers or red biohazard labeled bags. (Contaminated laundry which is handled using universal precautions does not need to be labeled).
- Clothing contaminated with unknown blood should be discarded and not reused.
- When a spill has occurred, wear personal protective equipment (gloves, goggles, etc.) and treat with a 1:10 dilution of household bleach (i.e., a 10% solution). Allow to stand for at least 10-15 minutes prior to clean up or disposal. In the event that the area around a broken glass clean-up is contaminated, then the area is to be flooded with the bleach solution prior to clean up.
- Contaminated sharps are discarded immediately or as soon as feasible in covered, puncture-resistant, leak proof, labeled containers. When sharps containers and medical waste containers reach full capacity (¾ full), American 3CI--a medical waste disposal company, disposes of the containers. All containers are appropriately labeled indicating contents.
- Non-contaminated laundry, such as a lab coat, is washed by the individual--all other contaminated laundry is disposed of in a medical waste container.
- Contaminated glassware is put into biohazard bags which are placed in the medical waste containers for disposal.

6. **Hepatitis B Post-Exposure Evaluation/Follow-up**

All medical evaluations and procedures including the post-exposure evaluation and follow-up are made available at no cost to the employee.
a. **Post-Exposure Evaluation and Follow-up**

Employees with an exposure incident are to report the incident to their immediate supervisor and the Campus Safety Director. The Campus Safety Director will make arrangements for a confidential medical evaluation and follow-up. For all exposure incidents, the route(s) of exposure and the circumstances under which the exposure incident occurred (to include details of the use or non-use of engineering controls, work practice controls or PPE) are documented. The source individual is identified and documented, unless identification is not feasible or prohibited by state or local law.

After consent is obtained, the source individual's blood is tested for HBV and HIV status. If the exposed employee gives consent, a baseline blood sample is collected immediately following the incident with subsequent periodic samples taken at a later date. When the source individual is known to be infected with HBV or HIV, testing of the source individual is not needed.

Results of the source individual's testing will be made available to the exposed employee and the employee will be informed of laws/regulations regarding the privacy rights of the source individual. The results of the source individual's blood test and employee's blood test are confidential and will be known only to the exposure nurse/physician and the exposed employee. Counseling and other features of post exposure evaluation will be offered whether or not the employee elects to have baseline HIV/HBV serological testing.

The healthcare professional evaluating an employee after an exposure incident will be provided with a copy of the bloodborne pathogen regulation, a description of the exposed person's duties as they relate to the incident, documentation of the route(s) of exposure and the circumstances concerning it, results of the source individual's blood testing, if available, and all medical records relevant to the appropriate treatment including vaccination status.

b. **Healthcare Professional's Written Opinion**

The attending healthcare professional will forward a written opinion to the Campus Safety Director within 15 days of the completion of the evaluation. The written opinion will be limited to whether HBV vaccination or booster is indicated for the employee and if the employee received such treatment.

The written opinion for post-exposure evaluation and follow-up will be limited to the following:

1. the employee has been informed of the results of the evaluation, and/or
2. the employee has been informed of the medical status and to whether conditions will require further evaluation or treatment.

All other findings or diagnoses will remain confidential and will not be included in the written report.

7. **Communication of Hazards to Employees**

    a. **Information and Training**

        Supervisors are to ensure that employees with occupational exposure to bloodborne pathogens participate in a training program. Employees are to
complete training at the time of initial assignment to tasks where occupational exposure may take place and at least annually thereafter. Training aids utilized by LSUA include videotapes and written materials.

b. Labels and Signs

There are labeling requirements for specimens and samples, the equipment used to store and process the samples, medical waste, containers, etc. All bottles, containers, tubes, etc. in the Clinical Lab are labeled with contents, date, and initials of person who filled the container.

8. Recordkeeping

a. Training Records

Training records are kept by the Campus Safety Director. All training sessions are documented in writing. The training record includes:

- dates of training sessions
- contents of training sessions
- names of persons conducting training
- names of all persons attending training sessions

b. Medical Records

Confidential medical records for some individuals with occupational exposure are kept by the Human Resource Department and/or The Campus Safety Director. The medical records may include:

- employee's name, address, telephone number and social security number
- any medical records related to the employee's ability to receive vaccinations
- health history, allergies and immunizations
- results of examinations, medical testing, post-exposure evaluation and follow-up procedures.

Common Sense Rules

- Wash hands & remove protective clothing before eating, drinking, smoking, handling contact lenses, applying lip balm or cosmetics
- Keep hands away from eyes, nose, mouth while cleaning
- Frequent hand washing is best defense against spreading infection

Summary

- Protect yourself on and off the job; know the facts
- Practice good personal hygiene
- Follow work rules, use gloves and protective clothing
- Wash your hands often, after work or exposure
  *Keep areas clean – report problems immediately to supervisors
Terms and Definitions

Blood - Human blood, human blood components (plasma, platelets, and serosanguineous fluids), and products made from human blood (immune globulins, albumin, and factors 8 and 9).

Bloodborne Pathogens - Pathogenic microorganisms that are present in human blood or other potentially infectious material and can infect and cause disease in persons exposed to blood containing the pathogen. These pathogens include but are not limited to human immunodeficiency virus (HIV) and hepatitis B virus (HBV).

Contaminated - The presence or reasonably anticipated presence of blood or other potentially infectious materials on any item or surface.

Decontamination - The use of physical or chemical means to remove, inactivate or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use or disposal.

Employee - Any permanent or temporary employee, graduate or undergraduate student that receives a university paycheck and could potentially be exposed to bloodborne pathogens in the course of their work.

Engineering Controls - Controls (e.g. sharps with engineered sharp injury protection, needleless systems, use of sharps disposal containers) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Incident - A specific eye, mouth, other mucous membrane, non-intact skin (skin with dermatitis, hangnails, cuts, abrasions, chafing, acne, etc.) or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Handwashing Facilities - A facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.

Occupational Exposure - Reasonably anticipated contact with blood or other potentially infectious materials as well as incidents of needlesticks that may result from the performance of an employee's duties.

Other Potentially Infectious Materials (OPIM) – (1) The following human body fluids other than blood: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures and HIV- or HBV-containing culture medium or other solutions; and blood, organs or other tissues from experimental animals infected with HIV or HBV.

Parenteral - The piercing of mucous membranes or the skin through such occurrences as human bites, needlesticks, cuts and abrasions.

Personal Protective Equipment - Specialized clothing or equipment worn by an employee for protection against a hazard.
Regulated Waste - Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; pathological and microbiological wastes containing blood or other potentially infectious materials.

Source Individual – An individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee.

Sterilize - The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions - An approach to infection control in which all human blood and certain human body fluids are treated as if they are infected with HIV, HBV and other bloodborne pathogens.

Work Practice Controls - Controls that reduce the likelihood of exposure by altering the manner in which a task is performed.
FIRST AID POLICY

Emergency is defined as an unexpected, serious occurrence resulting in injury or illness, requiring immediate attention. To care for such emergencies, an Emergency Response Team, chaired by a designated "Emergency Response Person In-Charge," is appointed by the Chancellor. This Response Team includes individuals from the faculty, administration and staff. Each member is certified as Heartsaver AED/Healthcare Provider through the American Heart Association. They will be appointed to rotating terms to assure that there are experienced people on the team at all times. A list of the current members shall be posted in all work areas. This list is updated every year and sent out through campus mail to each employee.

The following general procedures should be followed:

1. A room for campus medical emergencies is located in F. Hugh Coughlin Hall (Nursing Education Building). Access to this room is controlled by any member of the Emergency Response Team. There is a locked cabinet that contains a maintained first-aid kit. The first aid supply kit shall be maintained and inventoried periodically. Expiration dates on kit contents must be checked as well. LSU has an AED in one of the police units that responds to all emergency calls. A member of the campus police is responsible for keeping a monthly log to see that the AED shows “OK”. If any problem occurs with the AED, it is immediately reported to the Campus Safety Director.

2. The "Emergency Response Person In-Charge," or in his/her absence a member of the Emergency Response Team, should be called to the scene. This can be accomplished by calling Extension 5555, 6427, or “0”, or 473-6427 from an outside line, as the central location for reporting accidents and coordinating attention relating to it. In the event of a serious medical emergency, all employees are urged to call 911 first. *After 4:30 p.m. call Campus Police (Extension 6427 or 5555) or 473-6427. If you cannot reach them, dial 9 (for an off-campus line) and 911. The 911 operator will contact Campus Police at that time. All LSU campus police officers are certified in the Heartsaver AED class by the American Heart Association.

3. Following any emergency, a report should be immediately submitted to the campus safety Director, who will then be responsible for contacting family members, and completing the report for filing and future reference.

4. All employees shall report any injury to the appropriate personnel (immediate supervisor, safety Director, etc.) as soon as possible, at least before the end of the shift. A member of the Emergency response team will be called to evaluate the injury and if minor, will treat the injuries and the employee will be returned to work. If further medical evaluation or treatment is needed, the employee will be transported to Rapides Industrial. The immediate supervisor shall be required to complete an Accident/Incident Report (DA2000). Human Resources is notified of the situation at this time. The employee will provide the agency with the treating physician’s diagnosis and the length of time he or she is expected to be unable to work.

5. In the event of an injury to a student or visitor, the same procedures should be followed and a DA 3000 will be completed by the Campus Safety Director.

6. Any medical emergencies occurring at either the Alexandria Museum of Art, the Allied Health Education building, or any site away from our main campus are to call 911 first. The Campus Safety Director should then be notified as soon as time permits.
EVALUATION PROCEDURE FOR THE CAMPUS SAFETY PLAN

The Campus Safety Officer will keep annual records of accidents and emergencies, near misses, safety violations, and any complaints or suggestions regarding campus safety.

The Campus Safety Officer will compile data on distribution of safety materials, implementation of safety procedures, and display of appropriate safety signage in classrooms and laboratories.

There will be an annual survey of students, faculty, and staff to assess their perception of their exposure to campus safety information and of the safety of the campus. This survey will be part of a larger survey to gather information on satisfaction with various aspects of the campus. This survey will be conducted by the Office of Institutional Research. Survey data pertinent to campus safety will be given to the Campus Safety Officer.

There will be unscheduled safety inspections throughout the campus. These inspections will be conducted by the Campus Safety Officer or his/her designee. Documentation on the results of these inspections will be kept by the Campus Safety Officer.

Periodic drills (e.g., fire drills) will be held to assess emergency response procedures. The Campus Safety Officer will compile data on the response to these drills.

The Campus Safety Officer will prepare annually a report of all data collected relative to assessment of campus safety. There will be an annual meeting of the campus safety committee to review these data and to propose changes in the campus safety plan and procedures accordingly. The committee will produce a report on how the assessment data were used to correct problems with campus safety.