9.0 INDUSTRIAL SAFETY RULES AND INFORMATION

9.1 General Information

Safety is especially important for employees and students who work in industrial environments because of the higher number of risks in these areas. University departments that utilize industrial machinery, large amounts of mechanical equipment, devices that operate under high voltage (208 v. or higher), radiation and hazardous materials, and/or heavy off-road equipment also qualify as industrial areas and should follow these guidelines.

9.2 Industrial Safety Guidelines

Information in this section addresses specific hazards and other areas of safety that pertain to persons who work in industrial environments as described in section 9.1. These guidelines and policies are to be followed in addition to those given in the previous section on general safety rules and information.

9.21 Personal Protective Equipment

> *Note: Information in this section is based on regulations set forth in OSHA 1910.132 through 1919.138. To review more details on this matter, consult:* http://www.osha-slc.gov/OshStd_data/1910_0132.html.

Personal Protective Equipment (PPE) is anything that is used to protect the human body from the dangers of hazards. PPE is used to protect a person's eyes, face, ears, head, extremities, respiratory system, and other parts of his or her body. Statistics and other data show that failure to use PPE is a leading cause of accidents.

Every employee and student is responsible for using PPE whenever a task or job requires it. Supervisors and Departmental Safety Coordinators are responsible for making sure that PPE is available and in good working condition. Whenever necessary, departments are required to provide PPE to its employees and students. Departmental supervisors must ensure that all employees and students know how to use PPE properly. Whenever an employee or student provides their own PPE, then supervisors are responsible for inspecting it and assuring its adequacy and sanitation.

Anyone who knowingly fails to use PPE is a subject to disciplinary action.

Eye and Face Protection – OSHA 1919.133

The University shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

The University shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors

(e.g. clip-on or slide-on side shields) meeting the pertinent requirements of this section are acceptable.

The University shall ensure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or wears eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

- Eye and face PPE is required for all persons that are exposed to hazards that include flying objects, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation, or dust.
- All eye PPE purchased before July 5, 1994 must conform to ANSI z87.1-1968.
- All eye PPE purchased after July 5, 1994 must conform to ANSI z87.1-1989.
- Whenever hazards from flying objects exist, eye and face PPE must provide side protection to prevent these objects from entering the eye indirectly.
- Persons who wear prescription eyeglasses must use PPE that can be worn over these prescription glasses without disturbing the proper position of the prescription glasses.
- Persons who use contact lenses must also use proper eye and face PPE. Contact lenses are not a form of PPE.
- Persons who are exposed to injurious light radiation shall use eye and face PPE that incorporates filter lenses with an appropriate shading capability necessary to remove the danger of light radiation.
- Eye and face PPE shall be inspected regularly and, if inadequate, disposed and replaced.
- Any modification of eye and face PPE is prohibited.

Hearing Protection – ANSI 53.19

The University shall ensure that each employee exposed to noise levels that exceed 85 decibels for an extended period must wear approved ear plugs or ear muffs while working with that equipment. Examples include chainsaws, power blowers, gas powered line trimmer or edger, etc.

- Hearing PPE shall be worn by persons whenever they are exposed to noises above 90 decibels as measured on the A-scale of a standard sound meter.
- All hearing PPE must conform to ANSI 53.19.
- Disposable hearing PPE may not be shared and must be replaced or cleaned daily to ensure sanitation.
- Permanent hearing PPE must be inspected regularly and, if inadequate, disposed and replaced.
- Any modification of hearing PPE is prohibited.

Hand and Foot Protection - OSHA 1919.138, OSHA 1919.136

Note: More information on Hand PPE can be found in the Blood Borne Pathogens section (section 12).

- Hand PPE shall be worn by persons who are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, and harmful temperature extremes.
- Hand PPE shall be worn by persons while working on moving machinery such as drills, saws, grinders, or other rotating equipment.
- Hand PPE must be inspected regularly and, if inadequate, disposed and replaced.
- Foot PPE or appropriate shoes shall be worn by persons who are exposed to hazards such as falling objects, rolling objects, piercing objects, and electrical hazards. Open toe shoes are not acceptable in any of these applications.
- Any modification of hand or foot PPE is prohibited.

Protective Clothing and Personal Hygiene

- Protective clothing shall be worn by those persons who are exposed to hazards such as solid and liquid chemicals, high or low temperatures, open flames, and large amount of ultraviolet light.
- When persons are exposed to moving or rotating equipment or machinery, protective clothing must fit snugly.

- Shirttails shall be tucked in and long sleeves shall be buttoned or otherwise secured to prevent being caught in moving or rotating machinery.
- Long Hair shall be kept in a fashion that does not allow it to become caught in moving or rotating machinery.
- Jewelry should not be worn when operating industrial equipment.

Torso Protection

University employees who face possible bodily injury of any kind that cannot be eliminated through engineering, work practice or administrative controls, must wear appropriate body protection while performing their jobs. In addition to cuts and radiation, the following are examples of workplace hazards that could cause bodily injury: Temperature extremes; hot splashes from molten metals and other hot liquids; Potential impacts from tools, machinery and materials; Hazardous chemicals.

There are many varieties of protective clothing available for specific hazards. The University is required to ensure that their employees wear personal protective equipment only for the parts of the body exposed to possible injury. Examples of body protection include laboratory coats, coveralls, vests, jackets, aprons, surgical gowns and full body suits.

If a hazard assessment indicates a need for full body protection against toxic substances or harmful physical agents, the clothing should be carefully inspected before each use, it must fit each worker properly and it must function properly and for the purpose for which it is intended.

9.22 Hazard Energy Control – Lock Out/Tag Out

Note: Information in this section is based on regulations set forth in OSHA 1910.147. To review more details on this matter, consult: http://www.osha-slc.gov/OshStd_data/1910_0147.html.

The purpose of hazard energy control is to provide a systematic method of isolating electrical energy emitted from devices before they are worked on, repaired, adjusted, or removed. These procedures are mainly directed to Facility Management employees. However, employees who work on industrial equipment should also follow these procedures to protect themselves from electrical shock and other energy-based hazards.

Some electrical panels on the University's campus do not have the ability to be locked by conventional means. In these cases, the panels have been safely modified to accept a locking device that will hold a tag for Lock Out/Tag Out purposes. Contractors and sub-contractors working on at University facilities are responsible for the safety of their job site and their workers, and must incorporate their own Lock Out/Tag procedures.

Lock Out/Tag Out training will be reviewed by the University's electricians at least once yearly. Basic Lock Out/Tag Out information will be given to all employees at least once every three years.

Eight Steps to Lockout/Tagout Safety

Note: Training for these procedures shall be provided to all employees who must use the Lockout/Tagout procedure. All applicable contractors working on University equipment shall follow the above procedures using their own lockout devices.

1. **Announce The Shutdown**: All effected employees should be notified of the ensuing power shutdown. This will give them time to secure work and finish tasks.
2. **Turn Off The Equipment:** Next, the equipment is shut down using normal procedures.
3. **Disconnect The Energy Source**: This involves removing the possibility of re-energizing the device. For example, opening the safety disconnect or circuit breaker from the supply box renders the equipment of its energy source – even if someone else unknowingly tries to flip the power switch.
4. **Make Sure The Equipment Is Isolated:** Go back to the controls and test the on/off switch to make sure the device will not work. If necessary, verify that there is no voltage to the device with a meter.
5. **Release Stored Energy:** Occasionally, devices like capacitors or other devices that may contain stored energy that should be release before working on equipment. Additionally, any springs, belts, cables, etc that may store energy should be released before work on the device begins.
6. **Lockout:** Return to the source of the energy and install a suitable lock. This lock should contain a unique key or combination. Doing this will ensure that no one else can restore the energy to the device while you are working on it.
7. **Tagout:** At the proper disconnect points, tag the device with an appropriate tag that includes the date of lockout, the shop number, and the name of the technician who has locked out the device.
8. **Retest:** Retest all on/off controls and return them to the "off" position. When there is no sign of energy in the system, it is now safe to go to work.

9.23 Hand Tool and Portable Power Tool Safety

All employees and students who use tools as part of their job duties are required to follow these guidelines. This is necessary in order to prevent accidents and injuries due to improper or abusive tool use. Supervisors are responsible for training employees and students on how to use tools properly, monitoring tool use, and ensuring its safe operation. Facility Management foremen and department technicians shall perform yearly inspections on these tools to ensure their safe operation.

- All persons are required to use applicable personal protective equipment (PPE) while using any tools. (See section 9.21)
- Check for working safety guards, shields, warning labels, and other devices.
- Always choose the right tool for the job. Screwdrivers are not designed to be punches, chisels, or pry bars.
- When using cutting tools such as chisels, axes, knives, and saws, ensure that the cutting device is sharp. Dull tools are more dangerous than sharp ones.
- Visually inspect tools before using them. Cracked, bent, chipped, and otherwise broken tools shall be repaired or discarded.
- When working with electrical equipment, ensure that all metal hand tools are insulated to prevent electrical shock.
- Check portable electrical tools for frayed or broken cords and proper grounding (or double insulation).
- Never use pipe extensions (cheater bars) on wrenches or ratchets to loosen or tighten fasteners. Try penetrating oil or a longer wrench.
- When using portable power saws and grinders, start the motor outside of the work to prevent the device from "kicking back" and causing an accident.
- When using pneumatic devices, always shut off the source of air and bleed the air line before disconnecting it from a tool or other connection.
- Never use compressed air to remove dust and debris from clothing.

9.24 Compressed Gas Cylinders, Welding and Cutting Tools

Compressed Gas Cylinders

- All persons are required to use proper personal protective equipment (PPE) while using compressed gas cylinders. (See section 9.21)
- Use only cylinders that are approved for interstate transportation and commerce

- Use the following guidelines for moving compressed gas cylinders:
    - ✓ Close the cylinder main valve and bleed the lines
    - ✓ Remove any regulators
    - ✓ Tighten the cylinder valve cap
    - ✓ Cylinders may be rolled for moving purposes, but not dragged
    - ✓ When using hand trucks for transporting cylinders, secure the cylinder to the hand truck using a chain, rope, strap, or similar before you begin.
    - ✓ Once the cylinder has been moved, secure it (i.e. chain) to the building to prevent it from falling within its designated location.
- When in doubt about the use or handling of a gas cylinder, the user shall contact the supplier of the cylinder for consultation.
- Do not use the main cylinder valve, located at the top of the cylinder tank, as a pressure-reducing regulator.
- Regulators and pressure gauges are to be used only with gases for which they are designed.
- Cylinders with leaks that cannot be fixed shall be taken out of use and removed from the building. The supplier shall be contacted immediately to replace the leaking cylinder.
- Cylinders may not be stored near elevators, stairwells, or hallways.
- Acetylene and liquefied fuel gas cylinders must be used and stored in accordance with NFPA 51.

Welding and Cutting Tools

- All welders or cutters shall use proper personal protective equipment (PPE) while using any welding or cutting tools. (See section 9.21)
- Button sleeves at the wrist. Button collars as well.
- Use fire resistant gloves or cuffs when working with metals.
- When working on materials that are overhead, use a leather cape (or similar) to prevent hot sparks or metal that is falling from injuring someone.
- Hardhats shall be worn when there is a hazard of falling objects.
- Goggles, helmets, and shields shall be used as needed for all types of welding or cutting operations.
- Welders shall provide additional protection from flashes or similar light hazards for people who are within 75 feet of the source of welding.

9.25 Woodworking Equipment and Tools

Note: For portable wood working tools, see section 9.23. Information in this section supplements, but does not supersede OSHA 1910.213. To review more details on this matter, consult:
http://www.osha-slc.gov/OshStd_data/1910_0213.html.

- All persons are required to use proper personal protective equipment (PPE) when applicable while using any woodworking tools. (See section 9.21)
- Secure machines to the floor and ensure that they are level.
- Do not remove or tamper with any safety devices such as guarding, shielding, warning labels, etc.
- All electrical equipment must be properly grounded and in compliance with NFPA-70.
- Do not crowd equipment in the shop. Make sure there is adequate workspace surrounding this equipment.
- Equipment shall have appropriate electrical cut off switching that is readily available to the operator without requiring him or her to leave the normal working location.
- Before working or cleaning equipment, use the proper lock out/tag out procedures. (see section 9.22)
- Inspect equipment before each use. Broken equipment can be dangerous
- Sharpen blades regularly. Dull cutting tools are dangerous
- Start the motor before feeding stock into any cutting equipment to prevent "kickbacks".

9.27 Grounds Maintenance and Gasoline Safety

Tools and machinery used for maintaining the university grounds can be hazardous if not used properly. Grounds supervisors and foremen are responsible for assuring that all employees who use these tools and machinery are properly trained to do so.

- All persons are required to use proper personal protective equipment (PPE) while using grounds tools or machinery. (See section 9.21)
- Do not modify or tamper with any safety devices on tools or machinery.

- Workers shall survey the land to be worked first to remove any hazardous objects that could be propelled from tools or machinery.
- Workers should be able to recognize poisonous or hazardous vines, shrubs, and insects.
- Workers should understand the hazards of working with herbicides, insecticides, and pesticides before they attempt to use them. Workers must read and understand the specific information included on the warning label of each of these products. If they are unable to understand the warning label, a Grounds Supervisor shall provide additional assistance.
- Smoking is not permitted in areas that contain gasoline.
- Gasoline shall be stored properly in a ventilated area and never used for anything other than a source of fuel.
- Machinery shall be refueled in a well-ventilated area with the engine not running.
- Gasoline spills shall be cleaned up immediately and electrical switches shall not be moved in the spilled area until there is no sign of gasoline vapors.
- Keep cutting blades sharp. Dull cutting blades are dangerous.
- Before using power mowers of any kind, inspect this equipment and ensure tight fasteners and operating safety guards or other devices.
- Operators of push-type lawn mowers shall do so by pushing the mower forward and not pulling the mower backward.
- Power mower operators shall mow grass on hills by going up and down the hill, and not across the hill.
- While mowing, be alert for holes in the terrain or other hidden hazards in tall grass.
- The engine shall be turned off on all types of power mowers before performing maintenance, repairs, or adjustments of any kind. If possible, disconnect the spark plug wire before performing any repairs as well.
- Power mowers and tractors are designed to seat only the driver.

9.26 Forklift, Earth Moving, and other Heavy Equipment

The university maintains a forklift, backhoe, and other heavy equipment. This equipment can be dangerous if not properly operated. All heavy equipment operators must by properly trained in the use of these devices before they are allowed to operate them. The EH&S Department is qualified to train forklift and bucket truck operators. Supervisors and foremen are responsible for assuring that all employees who use this equipment are properly trained to do so. Because of the technical nature of this equipment, no specific procedures shall be listed here. Operators shall be given this information at their regular training session. A Forklift training class is offered by the Louisiana Office of Risk Management (see section 7 for more information).

9.3 Safety In Confined Spaces

In February 2009, UL Lafayette conducted an assessment for confined spaces. Only one OSHA defined non-permit required confined space was identified. Forced fresh air ventilation for this space is maintained at all times. University employees who are required to enter this confined space do so only after they have received extensive training on safety, procedures, PPE, rescue, testing, permits, etc. Additionally, air-monitoring equipment is utilized to ensure safe entry environments.

Whenever employees or students are required to work in relatively small or restricted areas, their exposure to risk can be high. This is especially pertinent in areas such as tanks, boilers, manholes, or any other place where entry or exit is limited or ventilation is poor. A confined space is normally not intended for human occupancy, but must be occupied by humans for repairs or maintenance. University employees and students are not allowed to enter any of these spaces (if discovered). However, the following is offered for informational purposes only:

- Hazards that exist in confined spaces include:
  - ✓ Lack of oxygen in a space that could cause immediate respiratory failure
  - ✓ Toxic gases or vapors the can poison or suffocate workers
  - ✓ The threat of combustion or other explosive hazards within a space
  - ✓ High heat in the confined space that could prematurely exhaust the worker
  - ✓ Excessive noise that could damage hearing and impair communication
  - ✓ Slipping, tripping, and fall hazards within the confined space.
- Identify the potential hazards that exist within the confined space before entering it.
- All persons are required to use proper personal protective equipment (PPE) while working in confined spaces. (See section 9.21)
- Make sure that adequate ventilation exist within the confined space. Use external blowers or fans if necessary.

- When working in confined spaces that may contain flammables or combustible materials, use extreme caution and have portable fire extinguishers ready at the site.
- University employees should not remove asbestos insulation from a confined space.
- Never enter a confined space unless there is a partner or observer posted near the entrance.
- Never smoke in confined areas.