

Louisiana State University

Facility Services

Operating Instruction 4111

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SUBJECT: CONTROL OF HAZARDOUS ENERGY: LOCKOUT/TAGOUT

General

This Operating Instruction (OI) covers the services and maintenance of machines and equipment in which the unexpected energization or start-up of the machines or equipment, or release of stored energy could cause injury to employees.

I. Circumstances-This OI applies in the following circumstances:

- a. The control of energy during servicing and/or maintenance of machines and equipment.
- b. An employee is required to remove or bypass a guard or other safety device
- c. An employee is required to place any part of their body into an area on a machine or piece of equipment where work is actually being performed upon the material being processed (point of operation) or where an associated danger zone exists during the machine operating cycle.
- d. Work is being performed on a hazardous utility i.e., steam

II. Circumstances-This OI does not apply to the following circumstances:

- a. Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start-up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- b. Minor tool changes and adjustments, and other minor servicing activities, which take place during normal operations if they are routine, repetitive, and integral to the use of the equipment for production.

- c. Hot tap operations involving transmission and distribution systems for substances such as gas, steam, or water products when they are performed on pressurized pipelines, provided that:
 - i. Continuity of service is essential
 - ii. Shutdown of the system is impractical
 - iii. Procedures are followed and special equipment is used that will provide protection for employees.
- d. Shutdown of the system is impractical and documented procedures are followed, and special equipment is used which will provide protection for employees.

III. Definitions

- a. **Affected Employee-** An employee whose job requires them to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires the employee to work in an area in which such servicing or maintenance is being performed.
- b. **Authorized Employee-** A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when the employee's duties include performing servicing or maintenance covered under this section.
- c. **Energized-** Connected to an energy source or containing residual or stored energy
- d. **Energy Isolating Device-** A mechanical device that physically prevents the transmission or release of energy.
- e. **Energy Source-** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- f. **Hot Tap-** A procedure used in the repair, maintenance, and service activities which involves welding on a piece of equipment under pressure in order to install connections or appurtenances. This is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, or steam.
- g. **Lockout-** The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring the energy isolating device and equipment being controlled cannot be operated until the lockout device is removed.
- h. **Lockout Device-** A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

- i. **Normal Production Operations-** The utilization of a machine or equipment to perform its normal production operation.
- j. **Servicing and/or Maintenance-** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubricating, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
- k. **Setting Up-** Any work performed to prepare a machine or equipment to perform its normal production operation.
- l. **Tagout-** The placement of a tagout device on an energy isolation device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.
- m. **Tagout Device-** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.
- n. **LOTO Logbook-** A tool used to keep full records of lockout/tagout applications, including info such as LOTO devices/hardware used, who applied LOTO, time LOTO was applied, time LOTO was removed, purpose of LOTO, and specific location the LOTO was applied.

IV. Lockout/Tagout

- a. If an energy isolating device is capable of being locked out, a lock and tag will be utilized.
- b. If an energy isolating device is not capable of being locked out, a tagout device will be utilized.
 - i. The tagout device will be attached at the same location that the lockout device would have been attached.
- c. Locks, chains, wedges, key blocks, adapter pins, self-locking fasteners or other hardware may be used in a lockout for isolating, securing, or blocking of machines or equipment from energy sources.
- d. Locks and tags shall be singularly identified and shall only be used for controlling of energy. They shall not be used for any other purpose.

V. Energy Control Procedures

- a. Procedures shall be developed, documented, and utilized for control of potentially hazardous energy when employees are engaged in LOTO activities.
 - i. Exception: Written and documented procedures are not required for machines or equipment when all of the following conditions exist.
 - 1. The machine or equipment has no potential for stored or residual energy or the re-accumulation of stored energy after shut down.
 - 2. The machine or equipment has a single energy source which can be readily identified and isolated.
 - 3. The isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment
 - 4. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance
 - 5. A single lock out device will achieve this condition.
 - 6. The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
 - 7. The servicing or maintenance does not create hazards for other employees.
- b. The procedure shall clearly and specifically outline the following:
 - i. A specific statement of the intended use of the procedure
 - ii. Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
 - iii. Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and responsibility for each of them
 - iv. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.
- c. LOTO procedures must be approved and signed by:
 - i. The director of the department developing the procedure
 - ii. LSU Environment Health & Safety (EHS) department

VI. LOTO Materials and Hardware

- a. Locks, tags, chains, and other devices are provided for isolating, securing, or blocking of machines or equipment from energy sources.
- b. LOTO materials and hardware shall be singularly identified and shall only be used for controlling energy.
- c. LOTO materials and hardware shall not be used for any other purpose.
- d. LOTO materials and hardware shall meet the following requirements.
 - i. Durable- LOTO devices shall be capable of withstanding the environment to which they are exposed.
 - ii. Substantial- LOTO devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as bolt cutters.
 - iii. Identifiable- LOTO devices shall indicate the identity of the employee and the department he works for.
- e. Locks shall be color coded as follows:
 - i. Plumbers: Blue
 - ii. Electricians: Red
 - iii. HVAC: Brown
 - iv. Fire & Security: Orange
 - v. Facility Maintenance: Purple
 - vi. Night & Weekend Crew: Black
 - vii. Environmental Services: Yellow
 - viii. Landscape Services: Green
 - ix. Vet Medicine: White
- f. Each department will be responsible for providing and maintaining their LOTO materials and hardware.

VII. Training and Communication

- a. Training for Lockout Tagout can be found on the LSU EHS Training portal www.lsu.edu/ehs/

- b. Each employee shall receive training in the recognition of hazardous energy sources, the type and magnitude of the energy available, and the methods and means necessary for energy isolation and control.
- c. Lockout Tagout training is good for three (3) years from the date of the training.
- d. Retraining shall be provided anytime there is a change in job assignment, machines, equipment, or process.

VIII. Energy Isolation

- a. Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance
- b. Employees affected by the application and removal of lockout devices or tagout devices shall be notified before the controls are applied and after they are removed from the machine or equipment.
- c. The machine or equipment shall be turned off or shut down using the procedure established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazards.
- d. All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy sources(s).

IX. Lockout or Tagout Device Application

- a. Lockout or tagout devices shall be affixed to each energy isolating device by the authorized employees.
- b. Lockout devices shall be affixed in a manner that will hold the energy isolating devices in a "safe" or "off" position. Lockout devices shall also include a tag with information in Section d below.
- c. Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
- d. Tagout devices shall have the following information on them:
 - i. The employee's name that applied the LOTO.
 - ii. The department of the employee who applied the LOTO.
 - iii. The date and time the employee applied the LOTO.
 - iv. The reason for applying the LOTO.

- v. Contact information for the employee who applied the LOTO.
- e. LOTO application must be logged in the LOTO logbook with the following:
 - i. Name of the employee who applied the LOTO.
 - ii. Department of the employee who applied the LOTO.
 - iii. Location the LOTO was applied.
 - iv. Lock number
 - v. Time and date the LOTO was applied.
 - vi. Reason for the LOTO.
 - vii. Energy source that was isolated using the LOTO.
- X. Stored Energy**
 - a. Following the application of lockout or tagout device to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe. Safety toe and puncture resistant shoes are required.
 - b. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.
- XI. Verification of Isolation**
 - a. Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energization of the machine or equipment has been accomplished.
- XII. Release from Lockout or Tagout**
 - a. Before lockout or tagout devices are removed and energy is restored to the machine or equipment the authorized employee will take the following actions:
 - i. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact
 - ii. The work shall be checked to ensure that all employees have been safely positioned or removed.
 - b. Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

- c. Affected employees shall be notified that the lockout or tagout devices have been removed.
- d. After releasing the LOTO, the LOTO logbook must be updated with the date and time of the LOTO release.

XIII. Emergency Lock Removal Procedure

- a. An emergency lock removal should only be used if the person who initiated the LOTO is **NOT** able to remove their lock
- b. Before removing the lock, the following actions must be taken:
 - i. The employee who owns the lock must be contacted.
 - ii. The employee must verify they are absent from the workplace.
 - iii. The employee must be notified that their lock will be removed prior to their return to work.
 - iv. The Emergency Lock Removal Form must be completed.
- c. The Emergency Lock Removal Form is found at the end of this OI.
- d. The completed Emergency Lock Removal form must be turned in with the removed lock to the LSU EHS department (225-578-5640).

IV. Contractors

- a. Contractors shall follow all requirements of this Lockout Tagout OI.
- b. Contractors shall notify and coordinate with Facility Services or Planning, Design, & Construction (PDC) on any Lockout Tagout needed for their job scope.
- c. Contractors shall provide their own lockout equipment.