



HAZARDOUS ENERGY CONTROL (LOCKOUT/TAGOUT) PROGRAM

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PURPOSE

The purpose of Hazardous Energy Control (Lockout/Tagout) Program is to establish the minimum requirements for the lockout of energy control devices whenever maintenance or servicing is performed on machines or equipment. It shall be used to ensure that the machine or equipment is de-energized, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energizing or start-up of the machine or equipment or release of stored energy could cause injury.

This program will be available to all employees for review and a copy will be located in the following areas:

1. Department of Environmental, Health, Safety and Risk Management
2. Electrician Supervisor’s Office

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AUTHORITY & REFERENCE - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.147

This standard covers the servicing and maintenance of machines and equipment in which the unexpected energizing or start up of the machines or equipment, or release of stored energy could cause injury to employees. This standard does not cover the following:

- Construction, agriculture and maritime employment.
- Installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering.
- Exposure to electrical hazards from work on, near, or with conductors or equipment in electrical utilization installations.
- Oil and gas well drilling and servicing.



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APPLICATION

This program applies to the control of energy during servicing and/or normal maintenance of machines and equipment if:

- An employee is required to remove or bypass a guard or other safety device.
- An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is being performed at or upon the point of operation, or when an associated danger zone exists during a machine operating cycle.

EXCEPTION: Minor tool changes and adjustments which take place during normal production operations are not covered by the OSHA Standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

NOTE: The OSHA Lockout/Tagout Standard (See 29 CFR 1910.147) does not apply to work on cord-and-plug-connected electrical equipment when the employee performing the service or maintenance controls energizing by unplugging the equipment from the energy source. The standard also does not apply to hot tap operations involving transmission systems from substances such as gas, steam, water, or petroleum, when they are performed on pressurized pipelines. However, it must be demonstrated that the continuity of service is essential, shut off of the system is impractical, and special equipment is used which provides effective protection.

Affected Employees

Job Classification(s) required to follow Lockout/Tagout procedures include:

1. xxx
2. XXX
3. XXX

Authorized Employees

Job classifications that have the authority and responsibility to perform lockout operations:

- 1.
- 2.
- 3.
- 4.
- 5.

Other Employees

Job classifications whose work operations are or may be in an area where energy control procedures may be utilized:

- 1.
- 2.
- 3.
- 4.

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Sources of Energy and Stored Energy Requiring Lockout

- Electrical: service panels, outlets, transformers, motors, capacitors
- Mechanical: spring-loaded equipment, tensioning devices
- Hydraulic: rams, oil-powered equipment
- Pneumatic: compressed-air equipment
- Kinetic/Gravity: counterweights, flywheels
- Fluids/Steam: heating pipes, steam lines

DEFINITIONS

Affected Employee

An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which servicing or maintenance is being performed.

Authorized Person

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 that employee's duties include performing servicing or maintenance covered under this section.

Energy Isolating Device

A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy Source

Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal or other potential energy source that could have potential to endanger personnel.

Entry Point of Power

The point at which energy enters the system, machine or unit, such as the main electrical disconnect. Changes in power routing at the entry point should be shown on the circuit diagrams for the machines.

Lockout:

The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.



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Other Employees

All other employees whose work operations are or may be in an area where control procedures may be utilized.

Power

Any type of energy that can operate equipment, cause movement, or cause injury directly from the energy source. Common types of power are electricity, air or gas under pressure, gravity, springs, oil or water under pressure and steam.

Residual Electrical Power

Electrical energy which is retained in a system, machine or unit when the supply line disconnect is placed on the "OFF" position. Power capacitors and electric or magnetic fields are examples that may have residual power if not properly dissipated.

Residual Pressure

The differential pressure remaining within a component after the pressure source is closed off.

Tagout

The placement of a tagout device on 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.

RESPONSIBILITY FOR COMPLIANCE

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout procedures. Employees authorized to lockout machines/equipment are required to perform the lockout in accordance with the specific procedures established for each machine or piece of equipment. Upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, employees shall not attempt to start, energize or use that machine or equipment. Failure to comply with this policy will result in disciplinary action.

Transfer of Lock/Tagout Responsibility

No employee shall remove a lockout or tagout device affixed by another employee unless authorized. Responsibility for lockout or tagout remains that of the authorized employee who affixes the lockout or tagout device subject to the following exception.

When an incoming authorized employee is to assume lock/tagout responsibilities on a piece of equipment from a departing employee due to shift or personnel changes, the incoming employee shall affix his/her properly labeled locks and/or tag devices to the equipment. If it is intended that the equipment remain securely locked out until the departing employee returns, responsibility does not need to be passed on to the incoming employee.

Environmental, Health, Safety and Risk Management will be responsible for the following:

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- A. Development of a facility-specific energy control policy.
- B. Definition and procurement of authorized lockout and tagout devices.
- C. Training of supervisors and employees on facility policy and procedures for hazardous energy control.
- D. Implementation of the Energy Control Policy and review of supervisory/employee performance.
- E. Assurance that newly acquired equipment or overload equipment can accommodate locks.
- F. Master file maintenance of specific policies, lockout procedures review and training records.

The Supervisor shall:

- A. Identify specific hazards and develop hazard isolation procedures within the facility.
- B. Assure that the facility's hazardous energy control policy and procedures are communicated to employees in the work unit.
- C. Monitor hazard isolation procedures for effectiveness.
- D. Enforce hazard isolation procedures within his/her work unit and between work units or employers in the case of outside contractors.
- E. Maintain work unit files documenting employee training.
- F. Specify controls capable of being locked out when replacing or updating equipment controls.

ENERGY CONTROL PROCEDURES

Procedures will be developed and documented when employees are engaged in activities that potentially could be hazardous, due to exposure from an energy source. The following exceptions to required documentation include:

- The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
- The machine or equipment has a single energy source which can be readily identified and isolated.
- The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
- The machine or equipment is isolated from that energy source and locked during servicing or maintenance.
- A single lockout device will achieve a locked-out condition.
- The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- The servicing or maintenance does not create hazards for other employees.
- The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

Energy control procedures shall clearly and specifically outline the purpose, rules and techniques to be utilized for the control of hazardous energy. (See Form #1) These procedures must include the



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following:

- A specific statement of the intended use of the procedures.
- Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
- Specific procedural steps for the placement, removal and transfer of lockout or tagout devices and the responsibility for them.
- Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

EQUIPMENT FOR LOCKOUT/TAGOUT

For the purpose of achieving lockout/tagout, employees will be provided with appropriate lockout equipment. Equipment shall include, but not be limited to:

- | | |
|-----------------|------------------------------------|
| 1. Padlocks | 3. Lockout hasps |
| 2. Lockout tags | 4. Circuit breaker lockout devices |

Padlocks: One or more padlocks will be issued to each authorized employee. Each employee will have an individual key. Only one key per lock shall be issued. These locks may be used only for lockout purposes. Locks will be identified by a number assigned to each employee and/or by the use of a name tag. Only the authorized person may apply and remove the lock, and the key may never be given to another person.

*A second or master key for each lock will be issued to designated supervisors to enable them to open and remove a padlock after taking the required precautions.

Lockout Clamps: These devices are designed to accommodate more than one lockout padlock when more than one person is working on de-activated equipment. Each person, to assure his or her safety, will apply a lock and warning tag and remove it when the task is completed.

Warning Tags: Authorized employees will be issued warning tags which must be used whenever a padlock cannot be applied. The tag must be affixed as closely as possible to the energy disconnect with a single purpose 50-pound strength plastic tie. Extra caution must be exercised since there is no physical restraint when only a tag is used and energy can be restored without removing a padlock. In addition, where possible, energy source components should be altered, removed, or obstructions should be placed to restrict access to energy disconnects.

Electricians may remove fuses but must attach a tag to the panel involved and remove it when the machine is ready for service and the fuse is replaced.

Tag legends may include, but are not limited to the following:



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- **DANGER** Do Not Start
- **DANGER** Do Not Energize
- **DANGER** Do Not Open
- **DANGER** Do Not Operate
- **DANGER** Do Not Close

Warning tags shall bear the name of the authorized person and the date of application. Tags must be durable, weatherproof and not easily damaged.

SEQUENCE OF LOCKOUT

1. The authorized employee shall notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2. The authorized employee shall identify the type and magnitude of the energy that the machine or equipment utilizes, understand the hazards of each energy source and shall know the methods to control the energy.
3. When the electrical disconnect is attached (or adjacent) to the equipment, the motor stop button shall be depressed and the disconnect handle placed in the "OFF" position. The disconnect handle should be operated while standing to one side of the disconnect rather than in front of the switch. This is a safety precaution in case the parts in the switch explode. The authorized employee should attach his/her lock to the handle of the disconnect and remove the key.
4. If a switch or disconnect cannot be locked out for any reason, an electrician must remove the fuses before any work is started.
5. Stored or residual energy such as that in capacitors, springs, rotating flywheels and hydraulic systems, and in air/gas, steam or water pressure lines must be dissipated or restrained by methods such as grounding, repositioning, blocking or venting. If there is a possibility of accumulation of stored energy, isolation must be verified continuously until servicing or maintenance is completed.
6. Equipment using hydraulic pressure shall be locked out by placing the hydraulic pump motor electrical disconnect switch in the "OFF" position, applying a lock to the disconnect and bleeding off residual pressure in the piping system if the energy could potentially endanger personnel.
7. The authorized employee shall ensure that the equipment is completely disconnected from all energy source(s) by operating the push button or other normal operating controls or by otherwise testing to make certain the machine/equipment will not operate.
8. Return operating control(s) to neutral or "OFF" position after verifying the isolation of the equipment.
9. The machine is now locked out and service or repairs can safely begin.
10. If there are any doubts about the above procedure, the authorized employee shall contact his/her supervisor before proceeding.



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PROCEDURES INVOLVING MORE THAN ONE PERSON (GROUP LOCKOUT)

In the preceding steps, if more than one individual is required to lock the energy-isolating device(s), they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. When an energy-isolating device cannot accept multiple locks, a multiple lockout or tagout device (hasp) may be used.

RESTORING EQUIPMENT TO SERVICE

When servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken by the authorized person:

1. Visually inspect the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Visually inspect the work area to ensure that all employees have been safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. Remove the lockout device(s) and re-energize the machine or equipment.

NOTE:The removal of some forms of blocking may require re-energization of the machine before safe removal.

Notify affected employees that the servicing or maintenance is completed, and the machine or equipment is ready to use.

ABANDONED LOCK REMOVAL PROCEDURES

If a safety lock has been left in place by an employee who has departed the building, it shall be removed only by adherence to the following procedure:

Before the lock is removed:

1. A thorough inspection of the equipment is to be made by the supervisor responsible for the area.
2. The supervisor must confirm that the authorized employee who applied the lock-out device is not at the facility.
3. The supervisor shall make all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed
4. The supervisor shall remove the lock providing he/she has determined starting up the equipment will not endanger other personnel.
5. Each time it is necessary to remove/cut a safety lock, a written report shall be prepared by the person authorized to remove the lock and a copy will be sent to EHS&RM.
6. The supervisor shall ensure that the authorized employee has knowledge of this release before he/she resumes work at the facility.



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TRAINING

1. Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. The training will be documented on Form #2.
2. Each affected employee will be instructed in the purpose and use of the energy control procedure. The training/instruction will be documented on Form #3.
3. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, will be instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out. The instruction will be documented on Form #4.
4. When employees are assigned to work in or on equipment that could potentially endanger personnel should it be activated, the supervisor assigning employees to this work is responsible for ensuring that these workers are provided with specific equipment and instructions to comply with this power lockout procedure.
5. Authorized and affected employees will be retrained whenever there is a change in their job assignments that could affect their lockout responsibilities, a change in the machines that presents a hazard or when there is a change in energy control procedures.
6. Additional retraining will be conducted whenever the periodic inspection reveals that there are deviations from or inadequacies in the employee's knowledge or use of energy control procedures.
7. The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

PERIODIC INSPECTION

A comprehensive inspection/audit of the energy control procedures will be conducted by (Position designated) at least annually to ensure that the facility is in compliance with the OSHA Power Lockout/Tagout Standard 29 CFR 1910.147 and the procedures outlined in this policy. The results of the annual inspection will be recorded on the Annual Power Lockout/Tagout Certified Inspection Worksheet. (See Form #5)

OUTSIDE PERSONNEL (CONTRACTORS, ETC.)

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures. The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program. The exchange of this information shall be documented on Form #6.

SHIFT OR PERSONNEL CHANGES

Supervisors shall ensure the continuity of lockout or tagout protection by the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.