

Control of Hazardous Energy Program (Lock out / Tag out)

Purpose

This program has been developed to provide EMA employee's with information on OSHA's Control of Hazardous Energy Standard, 29 CFR 1910.147, which we normally call Lockout/Tagout. This program will inform when lockout/tagout procedures are required, different employees involved in the procedure, the lockout/tagout procedures to be used, electrical safety related work practices, and employees responsibilities under company policy. The Project Manager has overall responsibility for the administration and enforcement of this Program.

Scope

The following procedure(s) shall be followed by all employees (authorized employees) during the maintenance, installation, and upkeep of equipment and facilities. All other Employees and (affected employees) shall adhere to the rules and regulations of the procedure.

Key Elements

Responsibility & Procedures

The energy that runs industrial equipment can be hazardous if it is not carefully controlled during servicing or maintenance. The lockout/tagout standard covers procedures for shutting down, releasing energy types (including stored energy in capacitors or elevated machine parts), the actual lockout/tagout procedures, verifying lockout, release of locks and tags, and re-energizing equipment. The standard requires that each affected, authorized, and qualified employee be trained in specific requirements under the standard. This program has been developed to meet OSHA's training requirements under Lockout/Tagout.

Lockout/tagout procedures are required to be used when:

1. Maintenance or servicing equipment
2. An employee is required to remove or bypass a guard
3. An employee is required to place any part of his/her body into an area of a machine or equipment where work is performed upon the material being processed (point of operation) or where a danger zone exists during the machine's operating cycle.

Minor tool changes and adjustments, and other minor servicing activities, which take place during normal operations, are not covered by lockout/tagout procedures. These activities must be routine, repetitive, and integral to the use of the equipment. However, this work must be performed using alternate measures to provide effective employee protection such as machine guarding.

Lockout/tagout does not apply to work on cord and plug connected electrical equipment, which the exposure to a hazard is the unexpected start up of the equipment will be controlled by unplugging the equipment from its energy source. The plug must be under the control of the employee performing the maintenance on the machine.

When an employee locks or tags equipment, that employee must be familiar with the types of

energy the equipment uses (electrical; hydraulic; mechanical; pneumatic; air, steam, or water pressure; thermal; spring loaded; gravity; chemical; or nuclear) including types of stored energy that the machine uses. Each energy source must be isolated by closing valves, relieving trapped pressure, disconnecting circuits, or blocking/bleeding down lines.

TERMINOLOGY

What is Lockout?

Lockout is placing a lockout device on an energy-isolating device according to an established procedure after an energy source has been relieved. The lockout device insures accidental re-energizing does not occur.

What is a Lockout Device?

A device that utilizes a lock, either key or combination, to hold an energy isolating device in a safe position. If an energy source can not be locked out, a tagout system shall be utilized.

What is Tagout?

Tagout is placing a tag on an energy source according to an established procedure. The tag is only a warning device indicating that the equipment must not be operated until the tags have been removed by the authorized employee. Tags do not provide the same level of protection that locks do. When only tagout procedure is used, additional safety precautions must be taken — removing of a fuse or a valve control handle.

What is a Tagout Device?

A weather and chemical resistant warning tag standardized in size and color with wording warning of hazardous energy. Examples would be “Do Not Start”, “Do Not Open”, “Do Not Close”, “Do Not Energize”, and “Do Not Operate”.

What is an Affected Employee?

An affected employee is an employee whose job requires him to operate or use a machine or piece of equipment on which servicing/maintenance is being performed under lockout/tagout, or whose job duties require the employee to work in an area in which such lockout/tagout is being performed. All affected employees who work in an area where lockout/tagout is used will be trained in the purpose, identification, and the use of the energy control procedure (Lockout/Tagout Procedure) and that they are prohibited from tampering with or attempting to restart any locked out or tagged out machinery or equipment.

What is an Authorized Employee?

An Authorized employee is defined as-"An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment." All authorized mechanical Lockout/Tagout employees will be trained in the following:

1. General Rules for Lockout/Tagout
2. Specific rules for Locks and Tags
3. Mechanical Lockout/Tagout Procedures
4. Groups Lockout/Tagout Procedures
5. Shift Changes
6. General Electrical Safety Rules and Work Practices
7. The location and contents of the "Energy Control Procedures" (ECP) for each type of machine and equipment including: recognition of hazardous energy sources; the type(s) of the energy; the methods and means necessary for energy isolation and control.

What is a Qualified Employee⁷

A Qualified employee is defined as-"An employee who locks out or tags out machines or equipment in order to perform electrical work on that machine or equipment. A qualified employee is one who is familiar with the construction and operation of the equipment and the hazards involved." All qualified electrical Lockout/Tagout employees will be trained in the above Authorized Employee training program along with the following:

1. Qualified-Electrical Safety Rules and Work Practices
2. Specific Electrical Lockout/Tagout procedures
3. The skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment.
4. The skills and techniques necessary to determine the nominal voltage of exposed live pads.
5. The specific clearance distance and the corresponding voltages to which the employee will be exposed
6. The proper use of precautionary techniques, PPE, insulating shielding materials, and insulating tools.

GENERAL RULES FOR LOCKOUT/TAGOUT:

1. A machine shut down for repair, cleaning, or inspection must have all power switched and locked in the "OFF" position by each employee working on that equipment.
2. If the equipment cannot be locked out, it is permissible to pull the fuses in the motor control center to render the equipment inoperable. A "Do Not Operate" tag is to be placed at the equipment controls.
3. Note: Only electrically qualified employees can remove fuses. After May of 1998, energy isolating devices designed to accept a lockout device shall be required for all new machines and equipment that are installed and when replacement, major repair, renovation, or modification of equipment is performed.
4. If an employee will be exposed to the servicing or maintenance activities of an outside contractor/repair personnel, the employee must be informed of and comply with the contractor's/repair personnel's energy control procedures. The outside personnel must also be

informed and given a copy of the EMA Lockout/Tagout program and will use these procedures if they do not have their own.

SPECIFIC RULES FOR LOCKS AND TAGS:

1. Each authorized and qualified employee who services or maintains machinery and equipment shall be issued a lock and a tag prior to starting each job.
2. Locks and tags will be assigned by number for the purpose of identification and either kept in a central area or distributed to only one specific employee for that employee's specific use.
3. The lock or tag must identify the name of the employee applying the lock or tag. These locks and tags may not be used for any other purpose other than lockout or tagout.
4. The lockout and tagout devices must be durable and constructed and printed to withstand wet and corrosive locations. The lockout devices must be substantial enough to prevent removal without the use of excessive force (such as bolt cutters). Only one form of lock and tag (of the same color, shape, size, print, and format) shall be used at the facility.
5. During lockout, employees must keep their keys in their immediate possession. Master keys are not permitted. The maintenance department may keep a duplicate key in a secure location.
6. The tag and its means of attachment shall be substantial enough to prevent inadvertent or accidental removal. The attachment means shall be of a non-reusable type, attached by hand and self locking-such as one-piece, all-environment-tolerant nylon cable tie.
7. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a statement such as: *Do Not Start; Do Not Open; Do Not Close; Do Not Energize; Do Not Operate.*

MECHANICAL LOCKOUT/TAGOUT PROCEDURE:

Before servicing or performing maintenance on machinery or equipment, the authorized employee must follow this written procedure.

Preparation for Shutdown

1. Notify affected employee that lockout/tagout procedures are going to be used and the reason for procedure use.
2. The authorized employee will know the type(s) and magnitude(s) of energy; the hazards of the energy; and the method(s) to control the energy. If the authorized employee is uncertain of any of this information, the employee must review the energy control procedure for that piece of machinery or equipment.
3. Shut down the machine or equipment by normal stopping procedures (depress stop button, open toggle switch, etc.).
4. Tagout cannot be used if the machine or equipment is capable of being locked out. If the lockout is not possible, a tag must be securely fastened to each energy-isolating device to indicate that the machine or equipment may not be operated until the tag is removed. The employee who attaches the tag must verify that the machine or equipment has been turned off before starting work.
5. If tagout is used, additional methods of preventing accidental energization must be used if feasible (removal of an isolating circuit element, blocking of a controlling switch, opening of an

extra disconnecting device, removal of valve handle).

Applying Lockout/Tagout

6. Apply locks and tags to each energy-isolating device, isolating energy sources. Tags must note the employee's name and the service date. Each employee must install a lock and tag on the equipment to be serviced.
7. All stored and residual energy must be relieved, disconnected, restrained, and otherwise rendered safe.
8. Verify that the main disconnect or circuit breaker cannot be moved. Press all start buttons and activating controls on equipment to make sure all power is disconnected.
9. If it is possible that stored energy will re-accumulate to a hazardous level, the authorized employee will repeat the certification process until servicing or maintenance is completed.

Perform Work

10. Avoid tasks that could reactivate the equipment.
11. Do not bypass locks or tags when putting in new piping or wiring.

Removing Lockout/Tagout

12. Remove all tools from the work area, reattach guards taken off, and make sure the machine or equipment is safe to operate.
13. Inform all affected employees that lock(s) and tag(s) are being removed. Check to ensure all Employees are safely positioned or removed from the area.
14. Verify controls are in neutral.
15. Remove lock(s) and tag(s) and re-energize equipment.
16. Notify affected employees that the servicing is completed and the machine or equipment is ready for use.

ELECTRICAL LOCKOUT/TAGOUT PROCEDURES:

All mechanical Lockout/Tagout procedures still apply plus the following:

Shutdown of Machines or Equipment

1. All sources of energy must be completely disconnected, including auxiliary power supplies (batteries, generators, etc.). Also dissipate any stored energy present (capacitors).
2. Push button selector switches, interlocks, and other control devices may not be used as the sole means for isolating energy.
3. Clear the work area of all unqualified personnel.

Applying Lockout/Tagout

4. Lockout/Tagout every point where the equipment could be re-energized.
5. If a lock cannot be used, use a tag, providing at least one safety precaution equivalent to a lock (removal of fuses, blocking switches, and removal of circuit breakers.)
6. A qualified employee must verify that equipment is inoperable by attempting to restart it using equipment's on/off controls or by using test equipment (voltmeters, circuit testers, etc.).

Removing Lockout/Tagout

7. After electrical work is completed and before re-energizing equipment, a qualified employee must conduct tests, using test equipment, and make visual inspection to verify the following:
 - a) That work is completed properly
 - b) That there are no shorts or grounds
 - c) That all tools, electrical jumpers and other such devices have been removed, so that the equipment may safely re-energized.
8. Only the worker who applies the lock/tag is permitted to remove it. In an emergency, locks may be removed with the consent of a supervisor. The Supervisor must then inform the worker that the lock was removed before the worker comes back to work.
9. After lockout/tagout is removed a qualified employee must conduct a thorough safety inspection of the work area, warn others to stay clear, and then energize the machine according to the prescribed sequence under the proper lockout/tagout procedures.

SPECIAL SITUATIONS

Temporarily reactivating machinery/equipment

When reactivating equipment, you must remove unnecessary tools from the work area, make sure personnel is clear of equipment, remove lock(s)/tag(s), and energize & proceed with testing. As soon as energy is not needed, isolate equipment and reapply lock(s)/tag(s) following Applying Lockout/Tagout sequence (step 6-9).

Servicing lasting more than one shift

Only the person who applies the lock tag is permitted to remove it. In emergencies, locks may be removed with the consent of a Supervisor. The supervisor must then inform the worker that the lock/tag was removed and the reason for removal before that worker goes back to work.

Servicing by outside contractors/repair personnel

If an employee will be exposed to the servicing or maintenance activities of an outside contractor or repair personnel, the employee must be informed of and comply with the outside contractor's/repair personnel's energy control procedures. The outside personnel must also be informed and given a copy of the EMA's Lockout/Tagout Program and will use these procedures if they do not have their own.

GROUP LOCKOUT/TAGOUT PROCEDURES:

1. If more than one person is servicing or maintaining a piece of equipment, each authorized employee will place a lock and tag on each energy-isolating device.
2. A hasp will be used if the energy-isolating device cannot accept multiple locks and tags.
3. The department supervisor will be responsible for ensuring compliance with this procedure.

SHIFT CHANGES:

1. During shift or personnel changes, the departing employee servicing the equipment must notify the supervisor of such change.
2. The departing employee will follow the Removing Lockout/Tagout sequence (step 12-14)
3. The new employee will follow steps 1-11 (Preparation for Shutdown, Applying Lockout/Tagout, and Perform Work) of the lockout/tagout procedure.

COMPLIANCE WITH PROGRAM:

Regulations

1. All Employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout/tagout. Non-compliance would be considered a serious violation in the discipline system.
2. The authorized employees are required to perform the lockout/tagout in accordance with this procedure.
3. In no case shall any employee remove another employee's lockout/tagout device.
4. All employees, upon observing a machine or piece of equipment which is locked out or tagged out to perform servicing or maintenance shall not attempt to start, energize, or use that machine or equipment.

Verification/Inspection

1. EMA shall conduct a periodic inspection of this energy control procedure at least annually to ensure that the procedure and the requirements of the Standard are being followed.
2. An authorized employee other than the one(s) utilizing the energy control procedure being inspected shall perform the periodic inspection.
3. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
4. Where lockout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized employee of that employee's responsibilities under the energy control procedure being inspected.
5. Where tagout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized and affected employee of that employee's responsibilities under the energy control procedure being inspected and the elements set forth in Section "Training and Communication" of this Plan.
6. The inspector shall certify that the periodic inspection has been performed. The written certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection. Copies of the certification shall be maintained by the inspector and the Human Resources Department.

TRAINING AND COMMUNICATION:

Training

EMA shall provide training to ensure that the purpose and function of the energy control program are understood by all Employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:

1. Each authorized employee shall 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.
2. Each affected employee shall be instructed in the purpose and use of the energy control procedure.
3. All other Employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.
4. Where tagout systems are used, employees shall be trained in the following limitations of tags:
 - a) Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by lock.
 - b) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.
 - c) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area in order to be effective.
 - d) Tags and their means of attachment must be made of materials, which will withstand the environmental conditions encountered in the workplace.
 - e) Tags may evoke a false sense of security and their meaning needs to be understood as part of the overall energy control program.
 - f) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

Retraining

Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedure.

Additional retraining shall be conducted whenever a periodic inspection under Section "Compliance with Program" of this Plan reveals, or whenever EMA has reason to believe, that there are deviations from, or inadequacies in the employee's knowledge, or use of the energy control procedures.

The training shall reestablish employee proficiency and introduce new or revised control methods

