

Hazardous Energy Control

Texas Department of Insurance
Division of Workers' Compensation
Safety Education and Training Programs

HS95-065E (2-07)

Goal

This program provides assistance in the development of a lockout/tagout program.

Objective

The employee will be able to identify the six steps involved in proper lockout/tagout procedures.

Regulations/Standards

The Code of Federal Regulations 29 CFR 1910.147 Control of Hazardous Energy (Lockout/Tagout) provides information on proper procedures, applications, servicing and maintenance operations, provisions, requirements, inspections, removal, and other related issues. You can access this standard at www.osha.gov. The standard requires that you prepare a written energy control program to protect employees who must perform cleaning or maintenance of machinery. These are known as authorized employees. You must provide a personalized lock to each of them. These locks are to be used only for lock out operations and should be color-coded. You also have to provide all necessary energy-isolating devices such as circuit breaker locking devices or valve locks. Any employees who may be exposed to hazards caused by maintenance/cleaning operations are known as affected employees. Means for protecting them must also be a part of your written plan. A competent person must evaluate each piece of equipment in your workplace. All energy sources must be identified and the means to isolate them recorded. Prepare a specific lockout/tagout checklist for each piece of equipment. Although it is not required by the standard, we recommend that these checklists be printed, laminated and attached to the machines for which they were created. They will serve as ready references for the people locking out the machines and will make the process more efficient as well as safe.

Definitions

Lockout – the placement of a lockout device on an energy-isolating device, in accordance with an established procedure, which ensures that the isolating device and the equipment under control cannot be operated until the lockout device is removed.

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 has been removed.

Authorized employee – a person that locks out or tags out machines or equipment in order to perform maintenance or service on that machine or equipment.

Affected employee – an employee whose job requires him or her to operate or use a machine or piece of equipment on which service or maintenance is being performed under lockout or tagout, or whose



job requires him or her to work in an area in which such activities are being performed.

Energy isolating device – a mechanical device that physically prevents the transmission or release of energy (i.e., manually operated circuit breaker, disconnect switch, a block, a line valve, etc.)

Procedures for Lockout/Tagout

Follow these six simple steps to prevent accidents during repair or maintenance operations on equipment:

1. Preparation for shutdown. Plan the entire procedure before putting it into operation to ensure maximum safety. The employee authorized to turn off machinery or equipment must know:
 - a. The type and magnitude of the energy related to the equipment;
 - b. The hazards associated with the energy present; and
 - c. The method or means to control the energy.
2. Shut down the equipment. Use the manufacturer's or employer's established procedures only. Orderly shutdown prevents unexpected hazards.
3. Isolate the equipment. Locate all sources of energy and turn them off. These include:
 - a. Electrical;
 - b. Hydraulic;
 - c. Pneumatic;
 - d. Mechanical;
 - e. Chemical;
 - f. Thermal.

Any of these can cause serious injury or death when not properly locked out.

4. Apply lockout/tagout devices. Begin to physically lockout all identified power sources. Remember – pulling a fuse or flipping a circuit breaker is no substitute for locking out.

5. Control stored energy. Ensure that all stored energy has been eliminated from the system. The following actions can be taken:
 - a. Visually check that all moving parts have stopped;
 - b. Relieve trapped pressure;
 - c. Blank pipe flanges;
 - d. Install ground wires to discharge electrical capacitors; and
 - e. Block or support elevated equipment.
6. Verify isolation of equipment. Take the following measures to verify that all equipment is no longer functional:
 - a. Press all operating controls to ensure there is no power;
 - b. Return power switches to the "OFF" position;
 - c. Inform everyone in the area before working on equipment; and
 - d. Periodically re-verify the power is off while performing maintenance or repair. Once repair or maintenance is complete, release procedures can be taken.
4. Pulling a fuse provides as much protection as locking out a piece of equipment.
True/False
5. What should be done during the actual maintenance or repair to ensure that the work environment is still safe?
 - a. Routinely verifying that energy is turned off to machine.
 - b. Having plenty of coffee breaks.
 - c. Constant communication with plant manager.
 - d. Leaving tools throughout equipment while working.

Answers:

1. d; 2. c; 3. d; 4. False*; 5. a

*4. Pulling a fuse does not afford the same protection as having a lock on that energy source. Without a lock or tag, someone could still turn on the equipment without knowing that someone is working on that equipment. The best protection is a locking device with a tag identifying who is performing the work placed on the equipment.

Procedures for Release from Lockout/Tagout

Before removing any lockout or tagout devices, or restoring energy to machines, procedures to ensure the following must be in place.

1. Machine or equipment – inspect area to ensure that nonessential items have been removed and that the machinery is operationally intact with all guards in place.
2. Employees – ensure all employees have been safely positioned or removed from the area.
3. Only the person who applied the lockout/tagout device may remove it.

Review

1. The following are examples of energy that would need to be locked out:
 - a. Chemical.
 - b. Electrical.
 - c. Stored.
 - d. All of the above.
2. Who should be responsible for locking or tagging equipment for maintenance or repair?
 - a. The supervisor.
 - b. The equipment operator.
 - c. The person performing the maintenance or repair work.
 - d. An OSHA inspector.
3. Planning for the shutdown of equipment for repair or maintenance will ensure:
 - a. All energy sources are found and isolated.
 - b. The repair or maintenance will be done as efficiently as possible.
 - c. All affected persons are notified of the impending work.
 - d. All of the above.

The Texas Department of Insurance,
Division of Workers' Compensation (TDI/DWC)
E-mail resourcecenter@tdi.state.tx.us
or call 1-800-687-7080 for more information.



Resources

The Texas Department of Insurance, Division of Workers' Compensation (TDI/DWC) Resource Center offers a workers' health and safety video tape library. Call (512) 804-4620 for more information or visit our web site at www.tdi.state.tx.us.

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Safety Violations Hotline
1-800-452-9595
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