



Lockout/Tagout

The lockout/tagout (LOTO) OSHA standard for control of hazardous energy addresses the maintenance and servicing of equipment in which the equipment can unexpectedly energize, start, or release stored energy, potentially harming employees.

To lockout equipment:

- Turn off the equipment
- Operate energy-isolation devices on all hazardous energy sources
- Apply a lockout device to the appropriate energy-isolation devices

To tagout equipment, an authorized employee attaches warning tags to the energy-isolation devices (for the deactivated energy sources) to indicate that the energy-isolation devices and the equipment being controlled may not be activated until the tags are removed. Tagout should be used in combination with lockout. The standard applies to all sources of potentially hazardous energy, such as electrical, mechanical, hydraulic, pneumatic, chemical, thermal energy, and other sources.

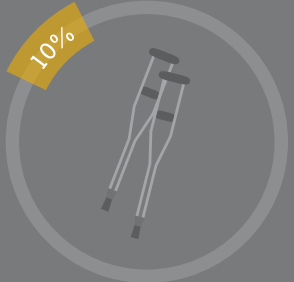
What must be done prior to removing the lockout device and energizing equipment?

Authorized employees who are working on de-energized machines may be seriously injured if the device is removed without their knowledge.

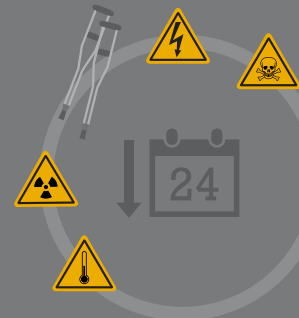
LOTO devices should only be removed

by the authorized employee who applied the device. Before removing the device, the authorized employee should inspect the machine to make sure it is intact and nonessential items are removed. All employees should maintain clear distance from the machine.

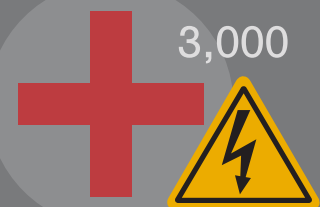
“LOTO applies to all sources of potentially hazardous energy.”



Failure to control **hazardous energy** accounts for nearly **10%** of the serious accidents in many industries.¹



Workers **injured on the job** from exposure to hazardous energy lose an average of **24 workdays for recuperation.**¹



Approximately **3,000 patients** who survive electrical shock are admitted to **specialized burn units** each year.²

Employee Training

The OSHA standard states that employers should provide training for all employees covered by the LOTO standard. This helps make the purpose and function of the energy-control program understood by employees, and communicates the knowledge and skills required for the safe application, usage, and removal of the energy controls.

According to OSHA, the content of an organization's training program depends on which employee is being trained. There are two types of employees who need to receive training: authorized and affected.

Authorized employees are those locking out the equipment and performing service and maintenance. Training for authorized employees includes:

- Details about the types of hazards
- The magnitude of hazardous energy sources
- Methods to isolate and control energy sources

Affected employees include those whose job requires them to operate a machine on which servicing is being performed under LOTO. Affected employees do not perform LOTO, but they should have an



awareness level of LOTO and be able to recognize when lockout procedures are being used. An understanding of why the affected employee should not start up the equipment that is locked out is important to cover.

Complimentary Customer Training

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Training sessions are for policyholders only.

Takeaways

1. Typical situations where LOTO is needed include, but are not limited to, system repair, maintenance, cleaning, and setup changes.
2. LOTO devices should be removed by the authorized employee that applied the device and only after inspecting the machine to ensure it is intact, making sure nonessential items have been removed, and all employees are safely positioned.
3. The OSHA standard states that training programs should cover the types of energy sources, the magnitude of the energy available, and energy isolation and control.
4. Refer to Liberty Mutual reference notes RC 5057 and RC 121 for more information on establishing a written LOTO program.
5. Refer to Liberty Mutual reference note RC 6205 for more information on understanding the risks of a systematic energy control program, impact on the workforce, and what can happen.

1. Occupational Safety and Health Administration. (n.d.). *Control of hazardous energy (lockout/tagout)*, retrieved from <https://www.osha.gov/>
2. Spies, C., and Trohman, R. (2006). Narrative review: Electrocution and life-threatening electrical injuries. *Annals of Internal Medicine*, 145, 531–537.

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