

Control of Hazardous Energy (Lockout/Tagout)

"Lockout/Tagout (LOTO)" refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities. This requires that a designated individual turns off and disconnects the machinery or equipment from its energy source before performing service or maintenance and that the authorized employee either lock or tag the energy-isolating device to prevent the release of hazardous energy and take steps to verify that the energy has been isolated effectively.

When it is time for maintenance, repairs, or machine set up; simply unplugging the machine being worked on is not enough to ensure safety. Many serious accidents happen when someone "Thought" a machine or electricity was safely "off". The practice of "Lockout/Tagout" is a way to protect yourself and others.

The Lockout/Tagout procedures ensure that machines and electricity remain OFF. Without this protective procedure, there is the possibility that a machine will suddenly start up causing injuries where someone could be cut, hit, or crushed without warning. There is also a serious danger of electrocution or release of hazardous chemicals.

Take the following steps to protect yourself if you install or service equipment and systems:

*Follow OSHA regulations.

*Identify and label all sources of hazardous energy.

*Before beginning work, do the following:

1. De-energize all sources of hazardous energy: — Disconnect or shut down engines or motors. — De-energize electrical circuits. — Block fluid (gas or liquid) flow in hydraulic or pneumatic systems. — Block machine parts against motion.
2. Block or dissipate stored energy: — Discharge capacitors. — Release or block springs that are under compression or tension. — Vent fluids from pressure

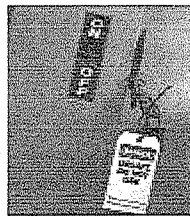
- vessels, tanks, or accumulators — but never vent toxic, flammable, or explosive substances directly into the atmosphere.
3. Lockout and tagout all forms of hazardous energy — including electrical breaker panels, control valves, etc.
 4. Make sure that only *one key* exists for each of your assigned locks and that only you hold that key.
 5. Verify by test and/or observation that all energy sources are de-energized.
 6. Inspect repair work before removing your lock and activating the equipment.
 7. Make sure that only you remove your assigned lock.
 8. Make sure that you and your coworkers are clear of danger points before re-energizing the system.

Participate in all training programs offered by your employers.

The employer shall provide training to ensure that the purpose and function of the energy control program are understood by 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:

- 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.
- Each affected employee shall be instructed in the purpose and use of the energy control procedure.
- 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 reenergize machines or equipment which are locked out or tagged out.

When tagout systems are used, employees shall also be trained in the following limitations of tags:



- Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
- 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.
- 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.
- Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
- Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
- Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

Employee 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 procedures.

Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

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.

NIOSH recommends that employers implement the following steps to prevent injuries and deaths of workers who must work with hazardous energy in their jobs:

1. Comply with OSHA regulations.
2. Develop and implement a hazardous energy control program.
3. Identify and label all hazardous energy sources.
4. De-energize, isolate, block, and/or dissipate all forms of hazardous energy before work begins.
5. Establish lockout/tagout programs that require workers to secure energy control devices with their own individually assigned locks and keys— only one key for each lock the worker controls.

NOTE: Use of master keys should be reserved for unusual circumstances when the worker is absent from the work place. However, if master keys are necessary, keep them under supervisory control. List the proper procedures for using them in the written program for controlling hazardous energy.