



## MANUFACTURING

## EMPLOYER GUIDE

### LOCKOUT/TAGOUT

Employees can suffer severe injuries or be killed if machinery they service and/or maintain unexpectedly energizes, starts up, or releases stored energy. OSHA's general industry standard on the Control of Hazardous Energy (Lockout/Tagout – 1910.147), outlines the steps employers must follow to prevent accidents associated with hazardous energy.

The standard covers the practices and procedures necessary to disable machinery and prevent the release of hazardous energy. Employers should document all of their program's policies, procedures and training.

A separate Lockout/ Tagout standard exists for construction. (1926.417).



#### Hazardous Energy

Energy is hazardous in any form when it grows to a dangerous level or is released in an amount that can injure you. It is not just the workers that service or maintain equipment who are at risk of a serious injury or fatality. Employees working near equipment being serviced, or who supervise workers that are maintaining them, are also in danger.

#### What is Lockout/Tagout?

Lockout/tagout refers to the specific practices and procedures used by the employer to protect employees from the unexpected startup of machinery and equipment, or the release of hazardous energy during service and maintenance activities.



A designated employee is responsible for turning off and disconnecting the machinery or equipment from its energy sources prior to performing service or maintenance. This trained, authorized employee locks and/or tags the energy-isolating device and takes any additional steps needed to prevent the release of hazardous energy.

#### Lockout Devices

Lockout devices include locks, tags, chains, wedges, self-locking fasteners, and other protective hardware. They must be durable, and be able to withstand the wear and tear from the environment where machinery and equipment is located. Lockout devices can only be used for controlling energy, and have no other purposes. These devices must be standardized throughout the workplace by color, shape and size.



## Tagout Devices

Tags provide a warning that a hazardous condition may occur if a machine or piece of equipment is energized. Tags display key information about the lockout condition and must provide photo or other identification of the worker performing the maintenance.

If an energy-isolating device is unable to be locked out, or the employer can demonstrate that the tagout system, subject to conditions outlined in the standard, will provide full employee protection, a tagout-only system may be utilized. Whenever a tag is used, OSHA mandates that it:

- Be able to withstand the work environment they are exposed to
- Be standardized and distinguishable from other tags
- Contain clear warnings and instructions
- Be attached with a non-reusable, self-locking device that can withstand 50 pounds of pull force



## Seven Steps to De-Energize Equipment

- Step One - Prepare for shutdown. Identify all energy sources to be locked out, location of each lockout point, and the specific type of lockout device needed.
- Step Two – Notify affected employees that shutdown and lockout/tagout is starting.
- Step Three – Shut down the machine and/or equipment. Turn off energy points in the correct sequence.
- Step Four – Isolate units from their energy sources by deactivating valves, switches, circuit breakers, and other devices that energize machinery or equipment.
- Step Five – Apply the lockout and/or tagout devices to keep switches and valves in the safe or off position. Ensure all power sources are secured.
- Step Six – Release any additional stored energy. Bleed off pressure, drain lines, valves, etc., to release any residual air, gas, steam, water pressure, and other hazardous energy.
- Step Seven – Verify lockout. Test electrical circuits, machine controls and other energy sources to confirm a zero energy state. Make certain that no employees are exposed to hazardous conditions.

## Reactivation

Inspect machinery and equipment to ensure it is correctly assembled and all non-essential items have been removed. Then, notify and confirm all workers are safely positioned. Ensure all controls are in neutral, and then remove lockout devices. The final step is to carefully reenergize the equipment.

