



Lockout/Tagout – The First and Last Steps to Working Safely

Lockout/Tagout procedures, designed to protect workers from accidentally restarting dangerous machinery, are an essential safety precaution for electrical, mechanical, hydraulic, pneumatic, chemical and thermal equipment. Unexpected start-up or release of stored energy accounts for nearly 10 percent of the serious accidents in many industries. These types of injuries often include electrocution, burns, crushing, cutting, lacerating, amputating or fracturing body parts.

Citations for improper safety procedures regarding dangerous machinery can include violations such as improperly securing gas cylinders, failure to reduce the pressure in a compressed air device during cleaning and failure to ensure workers follow safety procedures to prevent accidental machine startup.

According to OSHA, craft workers, electricians, machine operators, and laborers are among the 3 million workers who service equipment routinely and face the greatest risk of injury. Workers injured on the job from exposure to hazardous energy lose an average of 24 workdays for recuperation.

Lockout/Tagout procedures are especially important when it comes to the maintenance of heavy machinery. Cleaning or repairing equipment that is connected to a power source, such as steam valves, conveyor systems and electrical factory equipment, requires vigilant safety precautions.

Sequence of Lockout

For proper lockout/tagout procedures, it is important to train employees, not just on the procedures, but the sequence of procedures. A general lockout/tagout procedure should include the following steps:

- An authorized employee should be identified to understand the types, hazards and methods to control the energy for individual machinery.
- Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

- After normal stopping procedures, the energy isolating devices should be de-activated so that the machine or equipment is isolated from the energy source.
- Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down,
- Test and verify that the machinery has been properly deactivated.

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating conditions, safety professionals recommend the following steps:

- Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
- Check the work area to ensure that all employees have been safely positioned or removed from the area.
- Verify that the controls are in neutral.
- Remove the lockout devices and reenergize the machine or equipment.

As with all safety policies, the key to a successful lockout/tagout procedure begins with a solid a training plan and clear communications with all workers who are in contact with potentially dangerous machinery.

OSHA maintains a fact sheet that describes the practices and procedures necessary to disable machinery or equipment to prevent the release of hazardous energy. The OSHA standard for The Control of Hazardous Energy (Lockout/Tagout) 29 CFR 1910.147 for general industry outlines measures for controlling different types of hazardous energy. Employers are also required to train each worker to ensure that they know, understand, and are able to follow the applicable provisions of the hazardous energy control procedures. Be sure you have the resources necessary to do this critical safety program right.