

# Product Information Report

## Lockout/Tagout Hazardous Energy Control



### Overview

A properly implemented Lockout/Tagout (LOTO) program is designed to protect workers involved in the maintenance and servicing of equipment from the dangerous effects of hazardous energy caused by the unexpected startup or energizing of the equipment upon which they are working.

OSHA defines Lockout as, "The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed."

A Lockout Device is defined as, "A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds."

### Why is Lockout/Tagout Important?



SAFETY is the primary concern with a LOTO Program. And, it is the LAW.

The Occupational Safety and Health Administration (OSHA) has issued regulations requiring the use of locks and/or tags prior to performing service or maintenance on equipment or machinery. OSHA Regulation 29 CFR 1910.147(c)(1) – The employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

#### Additionally:

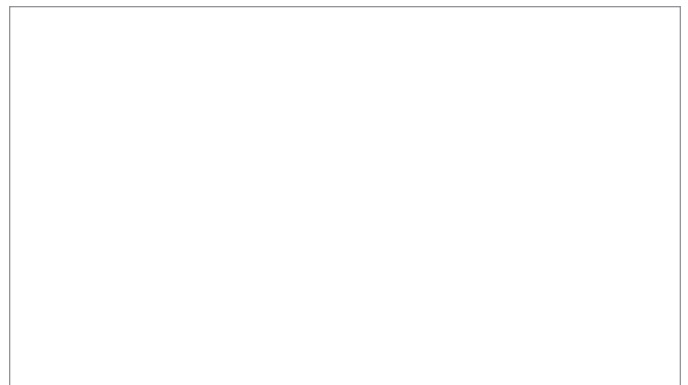
**10%** of all industrial accidents are LOTO-related

**250,000** LOTO-related accidents each year, resulting in approximately:

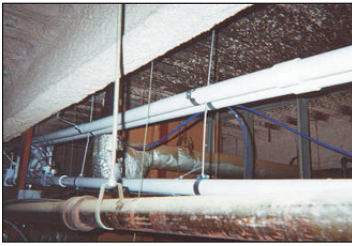
**120** fatalities

**60,000** injuries

Average number of lost workdays: **24**



### Common Hazardous Energy Sources



- Electricity
- Pneumatic (air)
- Chemical
- Steam
- Gas
- Thermal
- Electricity
- Mechanical
- Nuclear
- Springs
- Falling
- Water pressure
- Hydraulic



### When is Lockout/Tagout Required?



As a general rule, lockout/tagout procedures should be followed whenever a worker performing service or maintenance may be exposed to any form of hazardous energy. Contact your local OSHA office for further details on exemption, as local regulations may differ.

#### Possible Exceptions:

- Plug-connected equipment
- Minor servicing (routine, repetitive, integral)
- Work on electrical systems
- Hot-tap operations

The only possible exclusions are companies in the construction, agriculture, maritime industries, electric utilities, and oil/gas drilling operations.

## **Lockout/Tagout Procedure Program Outline**

The following outline is provided as a guide to establishing a written and practicable LOTO program in a facility. For further details, please contact Lawson's Engineering Department or your local OSHA office. Further information can also be obtained from OSHA's website: [www.osha.gov](http://www.osha.gov).

### **A. Purpose**

The purpose of this program is to establish lockout/tagout procedures to prevent the unintended release of stored energy, which may energize a machine or equipment, causing injury to an employee.

### **B. Responsibility**

\_\_\_\_\_ shall be responsible for the establishment and implementation of this program.

### **C. Establish a Written Program**

1. Conduct a survey of the entire facility to determine locations of all hazardous energy sources. These sources may include the following:
  - a. Electricity
  - b. Pneumatic (air)
  - c. Hydraulic
  - d. Elevated-machine members
  - e. Gas
  - f. Mechanical
  - g. Springs
  - h. Falling
  - i. Water pressure
  - j. Chemical
  - k. Steam
  - l. Thermal
  - m. Nuclear
2. Devise methods to control unintended operation of machines or equipment being serviced or maintained.
3. Establish procedures for affixing appropriate lockout or tagout devices, and to otherwise disable machines or equipment to prevent unexpected energization, startup, or release of stored energy in order to prevent injury to employees. This may also include blocking of movable parts which may create a hazard.

### **D. Energy-Control Devices**

1. Protective material and devices
  - a. Locks
  - b. Self-locking fasteners
  - c. Chains
  - e. Key blocks
  - f. Adapter pins
  - g. Tags
2. All lockout/tagout devices shall be identified and used only for the purpose for which they are intended.
  - a. Durable lockout/tagout devices shall be capable of withstanding the environment in which they are used.
  - b. Tags shall be capable of withstanding weather, damp locations and corrosive environments.
3. All lockout/tagout devices shall be uniform in color, shape or size.
4. Lockout devices shall only be removed by the installer.
5. Lockout devices shall be substantial enough to prevent inadvertent or accidental removal and shall indicate the identity of the employee using the device and a warning of what precautions to take.
6. Lockout procedures shall be used in preference to tagout procedures where possible.

### **E. Periodic Inspections**

1. Inspection of the energy-control procedures shall be conducted annually.
2. The annual inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected.
3. The annual inspection shall be designed to correct any deviations or inadequacies observed.
4. Where lockout is used for energy control, the annual inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy-control procedure being inspected.

**Lockout/Tagout Procedure  
Program Outline (cont.)****F. Training**

1. Essential elements
  - a. Each affected employee shall be instructed in the purpose and use of the energy control procedure.
  - b. 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 re-energize machines or equipment that are locked out or tagged out.
2. Tagging limitations
  - a. Inform employees that tags do not afford the same protection as a lock.
  - b. Tags are not to be removed without the authorization of the installer.
  - c. Tags must be legible and familiar to all employees who work in or may be present in affected areas.
  - d. Tags and means of attachments must be capable of withstanding environmental conditions in the workplace.
  - e. Tagout attachments shall be non-reusable and self-locking with a minimum unlocking strength of no less than 50 lbs.
  - f. Tags often evoke a false sense of security and their importance needs to be clearly understood by employees.
3. A record of employee training, including employee name and date of training, should be kept.

**G. Retraining**

1. Should be established under the following conditions:
  - a. There is a change in job assignments
  - b. A change in machines or equipment
  - c. Equipment or processes present a new hazard
  - d. A change in the energy-control procedures
  - e. There are deviations or inadequacies detected in the procedures
  - f. New or revised control methods are used

**H. Control**

1. Elements and actions
  - a. Make employees aware of the type and magnitude of hazardous energy.
  - b. All affected employees shall be informed of the physical locations of energy-isolating device.
2. Lockout/tagout of energy-isolating devices
  - a. Only trained and authorized employees shall affix energy-isolating devices.
  - b. Devices are to be affixed in such a manner that they will hold the energy-isolating devices in a "safe" or "off" position.
  - c. Where tagout devices are used, the energy-isolating device is to be fastened at the same point at which a lock would have been attached.
  - d. If a tag cannot be affixed directly to the energy-isolating device, it should be located where it will be immediately obvious to potential operators.
  - e. Whenever major replacement, repair, renovation or modification of machines or equipment is performed and whenever new machines or equipment are installed, energy-isolating devices shall be designed to accept a lockout device.
3. Stored energy
  - a. After lockout or tagout devices have been applied, stored energy or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe whenever possible.
  - b. If re-accumulation of stored energy to a hazardous level can take place, verification or isolation shall continue when service or maintenance is being performed until work is completed.
  - c. Prior to servicing or maintaining machines or equipment, employees must verify that energy isolation and de-energization of the machines or equipment have been accomplished.

## **Lockout/Tagout Procedure Program Outline (cont.)**

### **I. Release from lockout or tagout**

1. Before removing lockout or tagout devices from machines and equipment, authorized employees must take certain precautions:
  - a. Inspect the work area to ensure non-essential items have been removed.
  - b. Check the work area to see that all employees have been safely positioned or removed.
  - c. Before removing lockout or tagout devices, notify all affected employees.
2. Before lockout and tagout devices are removed and energy is restored, procedures shall be taken by authorized employees to ensure the following:
  - a. If the employee who applied the lockout or tagout device is unavailable, the device may only be removed under the direction of management.
  - b. Management will verify that the employee who applied the device is not at the facility.
  - c. Management has made all reasonable efforts to contact the employee to inform them that their device has been removed.
  - d. Management will inform the employee the device has been removed before they return to work.

### **J. Outside contractors**

1. Management and contractors will inform each other of their respective lockout or tagout procedures.
2. Management will train all affected employees on restrictions and prohibitions of contractors' energy-control procedures.

### **K. Group lockout or tagout**

1. When servicing or maintenance of equipment or machinery is performed by more than one employee, a procedure shall be utilized to afford each employee a level of protection equivalent to that provided by personal lockout or tagout.
2. Group requirements shall include, but are not limited to, the following:
  - a. Primary responsibility shall be vested in one authorized employee for a number of employees under a group program with one employee having an operations lock.
  - b. The authorized employee must ascertain the exposure level of individual group members.
  - c. If more than one group of employees is involved in a job-associated assignment, one authorized employee shall be designated to coordinate the affected workers.
  - d. Each involved employee shall affix a lockout or tagout device to the group lockout device when beginning work and remove it when work is completed on the machine or equipment being serviced or maintained.

### **L. Shift or personnel changes**

1. When a shift or personnel change occurs, a designated employee should ensure the continuity of lockout or tagout protection.
2. The designated employee shall provide for the orderly transfer of lockout or tagout devices between outgoing and incoming employees to minimize risk to employees from stored energy.

### **M. Exclusions**

1. Normal production operations, including repetitive, routine minor adjustments and adjustments and maintenance, which would be covered under OSHA's machine-guarding standards.
2. Work on cord- and plug-connected electric equipment when it is unplugged, and the employee working on the equipment has complete control over the plug.
3. Hot-tap operations involving gas, steam, water or petroleum products when the employer shows that continuity of service is essential, shutdown is impractical and documented procedures are followed to provide proven effective protection for the employees.

### **N. Review**

This entire program shall be reviewed on an annual basis and upgraded where necessary.