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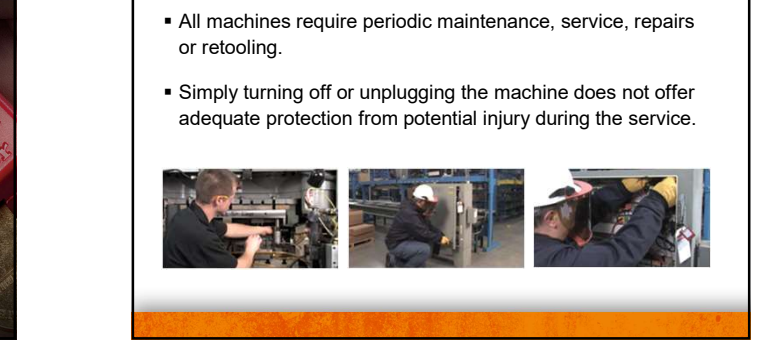
IDEAL®

The Control of Hazardous Energy

Lockout / Tagout



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LOCKOUT / TAGOUT

- All machines require periodic maintenance, service, repairs or retooling.
- Simply turning off or unplugging the machine does not offer adequate protection from potential injury during the service.

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LOCKOUT / TAGOUT

- Written procedures to control hazardous energy sources have been developed and must be used.
- Following proper procedures to isolate, disconnect, safely release stored energy and lock out the machine prior to service will control the energy sources associated with the machine and protect employees and maintenance technicians from the unexpected release of potentially hazardous energy.

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LOCKOUT / TAGOUT

ALL energy sources must be turned off, isolated or disconnected, and locked out prior to beginning the service on all equipment and the energy stored in the equipment must be released, and blocked out where necessary.

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LOCKOUT / TAGOUT

Major requirements of a Hazardous Energy Control Program:

- Written Procedures
- Training and Education
- Protective Materials and Hardware
- Periodic Inspections

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LOCKOUT / TAGOUT

A 1982–2006 study of lockout/tagout related accidents conducted by The National Institute of Occupational Safety and Health revealed:

Each year, there are an estimated 150 worker fatalities, 15,000 worker injuries and 40,000 lost workdays.

- **45%** of those injured were the operators
- **61%** were cleaning, servicing or adjusting the machine
- **78%** percent did not turn off the machine before starting service

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INDIVIDUALS AFFECTED BY LOTO

OSHA Standard 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout) describes three types of individuals involved and affected by the lockout/tagout procedures:

- **Authorized**
- **Affected**
- **Others**

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INDIVIDUALS AFFECTED BY LOTO

1. "Authorized" employee

- This is the individual who locks out equipment and will actually perform the service on the machine.
- Has had specialized training with various types of energy.
- Knows the features of the machine that is to be serviced.
- Has the skills and knowledge to isolate the various energy sources safely.

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INDIVIDUALS AFFECTED BY LOTO

2. "Affected" employee

- Machine operator(s).
- Individuals working in vicinity of equipment to be serviced.
- If the affected employee is requested to assist the service, and has been properly trained in the recognition and control of hazardous energy sources, the affected person is now authorized and required to apply their own lock and tag.

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INDIVIDUALS AFFECTED BY LOTO

3. "Others"

- All other individuals who are or may be in an area where a piece of equipment is being serviced.
- Staff from other areas of the plant, such as the office.
- As with affected employees, if requested to assist in the service "other" employees who have received training in the company's energy control procedures can be reclassified as "authorized" and must apply their own locks and tags.

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Maintenance and service functions requiring lockout/tagout procedures to protect workers from hazardous energy sources include:

- Adjusting
- Re-tooling
- Removing Jams
- Installation
- Constructing
- Setting Up
- Inspecting
- Lubricating
- Cleaning
- Modification
- Repairs
- Maintenance

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LOCKOUT / TAGOUT TRAINING

Sources of energy capable of causing serious injury include:

- Electrical
- Mechanical
- Hydraulic/Pneumatic
- Chemical
- Thermal
- Kinetic
- Gravity
- Potential (such as compressed springs)

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7 STEPS TO SAFE LOCKOUT / TAGOUT

1. Plan and notify affected employees
2. Turn off the machine
3. Isolate all energy sources and apply locks
4. Achieve zero energy state
5. Verify lockout by attempting to start machine
6. Determine service has been satisfactorily completed, check area and machine, and remove lockout device
7. Notify employer and affected employees that equipment is ready for use

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 1: PLAN

A. Review of the lockout procedure and determination of how many energy sources there are.

B. Assemble necessary tools including locks, tags, supplies and equipment.

C. Estimate time and manpower requirements.

D. Arrange additional personnel as needed before the service is scheduled.

E. Notify employees that lockout is going to occur. Employees MUST be advised that the machine will be shut down, locked-out and unavailable, and that they are not to interfere with the LOTO process.

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 2: TURN OFF THE MACHINE

A. Turn off the machine and identify, isolate and disconnect all sources of energy to the machine.

B. Employer shall provide locks, tags, wedges, self-locking fasteners and other hardware for the isolating, securing or blocking of machines from energy sources.

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 3: ISOLATE ALL ENERGY SOURCES AND APPLY LOCKS

A. Isolate all energy sources as close to the source as possible. *ENSURE THAT ENERGY CANNOT REACH OR BE RELEASED FROM THE EQUIPMENT BEING SERVICED.*

B. Electrical equipment must be tested by an individual trained and prequalified by the employer to perform such test to assure there is no electrical energy present.

C. Apply locks and tags. If an affected or other employee is to assist in the service, each employee participating must apply their own lock.

D. A best safety practice is to use a multi-lock hasp.

1. The authorized person applies his or her lock first and is the last to remove it.
2. Others involved in the service apply their own lock and tag.
3. Use of the multi-lock hasp facilitates energy control at shift change.

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 4: ACHIEVE ZERO ENERGY STATE

All downstream energy must be released until the system reaches a zero energy state. This can be achieved by:

- Blocking gravity or stored energy
- Relieving pressure
- Opening drains
- Blanking and bleeding lines

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 5: VERIFY LOCKOUT BY ATTEMPTING TO START THE MACHINE

- Verify all the steps have been followed and all energy has been locked out and/or dissipated.
- Verify that all personnel are clear.
- Attempt to start the machine to confirm all energy sources are locked out.
- The equipment is now locked out and work can begin. The authorized worker can now safely service the equipment.

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 6: DETERMINE SERVICE HAS BEEN SATISFACTORILY COMPLETED AND REMOVE LOCKOUT DEVICE

When the work is complete, the authorized person shall:

- Determine that all personnel involved in the service completed their assignments and removed their locks and tags.
- Remove all tools and debris from the machine.
- Install guards.
- Inspect and verify the equipment controls are in the neutral or off position.
- Make sure employees are in the clear.
- Remove lockout device.

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7 STEPS TO SAFE LOCKOUT / TAGOUT

STEP 7: NOTIFY EMPLOYER AND AFFECTED EMPLOYEES THAT EQUIPMENT IS READY FOR USE

The control of hazardous energy must be taken seriously. Thorough planning and proper adherence to effective lockout/tagout procedures are necessary to protect the health and safety of everyone involved.

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OUTSIDE CONTRACTORS

- Outside contractors and the employer representative will review each other's procedures.
- If the procedures of the outside contractor are to be followed, the company employees shall be advised that they must comply with the outside contractor's energy control procedures.

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OUTSIDE CONTRACTORS

An authorized employee will:

- Escort the outside contractor to the equipment requiring service.
- Provide a copy of the lockout procedures for that piece of equipment.
- Review the lockout procedures to be used.
- Remain with the contractor or provide a method for immediate contact.

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OUTSIDE CONTRACTORS

The contactor will apply his or her own locks.

When the work is complete, the authorized person will:

- Inspect the area.
- Notify affected employees in the area.
- Stand by while the equipment is reenergized and returned to service.

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TAGOUT

Tagout is only permitted when a device cannot be locked out.

A tag is a warning device and does not provide the physical restraint a lockout device will.

Tags:

- Must be legible and may not be removed except by the authorized person.
- Can never be bypassed, ignored or otherwise defeated.
- Must be securely fastened.
- Must be made of materials that will withstand environmental conditions.
- Tags must be securely attached to the energy-isolating device so they cannot be accidentally detached.

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INSPECTION

Energy control procedures must be inspected at least annually.

- Must include a demonstration of the steps.
- Must be conducted by an authorized person other than the one using the procedures being inspected.
- The purpose is to correct deviations or inadequacies related to the procedures.

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TRAINING

Training is required:

- Upon employment.
- Whenever there is a change in job assignment, machinery or equipment.
- A change in operating procedures.
- Whenever periodic inspection reveals deviations or inadequacies in procedures.

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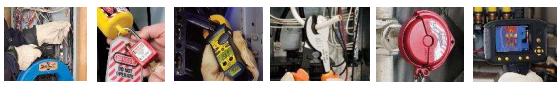
LOCKOUT / TAGOUT

- Lockout/tagout is intended to permit the safe servicing, maintenance and repair of the equipment we need to perform our assigned tasks.
- Thorough knowledge of comprehensive safety procedures and the use of specialized safety tools saves lives, protects personal health and safeguards the environment.



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