



— BARKLEY'S —
WORKPLACE SAFETY SERIES
— WEBINAR —

**Lockout/Tagout
Procedures**

Tues, March 9th
9:00 AM PST - ENGLISH
10:00 AM - SPANISH

BARKLEY
RISK MANAGEMENT & INSURANCE
AN ALERA GROUP COMPANY

Importance of Lockout and Tagout Programs



Employees servicing equipment face severe injuries or even death.



Importance of Lockout and Tagout Programs

There are approximately

3,000 citations

for improper Lockout/Tagout **every year.**



Lockout/tagout is one of the top 10 most frequently cited standards in the United States.



Overview

1. Types of Hazardous Energy
2. Energy Control Procedure
3. Additional Lockout/Tagout Requirements

Learning Objectives

- Why lockout/tagout programs are necessary
- When a program must be developed
- The procedures and steps the program must contain
- Employer and employee roles and responsibilities
- Program training and audit requirements

Program Requirements

- A program is required if employees service or maintain machines or equipment that can start up unexpectedly or release stored energy.
- The program must:
 - Establish procedures for removing energy supplies and applying lockout/tagout devices.
 - Address stored or potentially accumulated energy, when appropriate.
 - Include training and program review requirements.
- Customize the program to each individual site.



Roles and Responsibilities

Affected employees



Authorized employees



Other employees



Definitions

- **Energy-isolating device:**
A mechanical device that physically prevents the transmission or release of energy
- **Hardware:**
A device that connects directly to the energy-isolating device
- **Zero energy state:**
The point at which all sources of energy are removed



1

Types of Hazardous Energy

What you need to know:

- Energy Sources that require a Hazard Assessment
 - Electrical
 - Mechanical
 - Chemical
 - Hydraulic
 - Pneumatic
 - Potential

Hazard Assessment

- Identify all the hazardous sources.
- Hazardous energy may include the following:
 - Electrical
 - Mechanical
 - Chemical
 - Hydraulic
 - Pneumatic
- Also consider the following:
 - Stored or potential energy
 - Thermal sources
 - Human factors



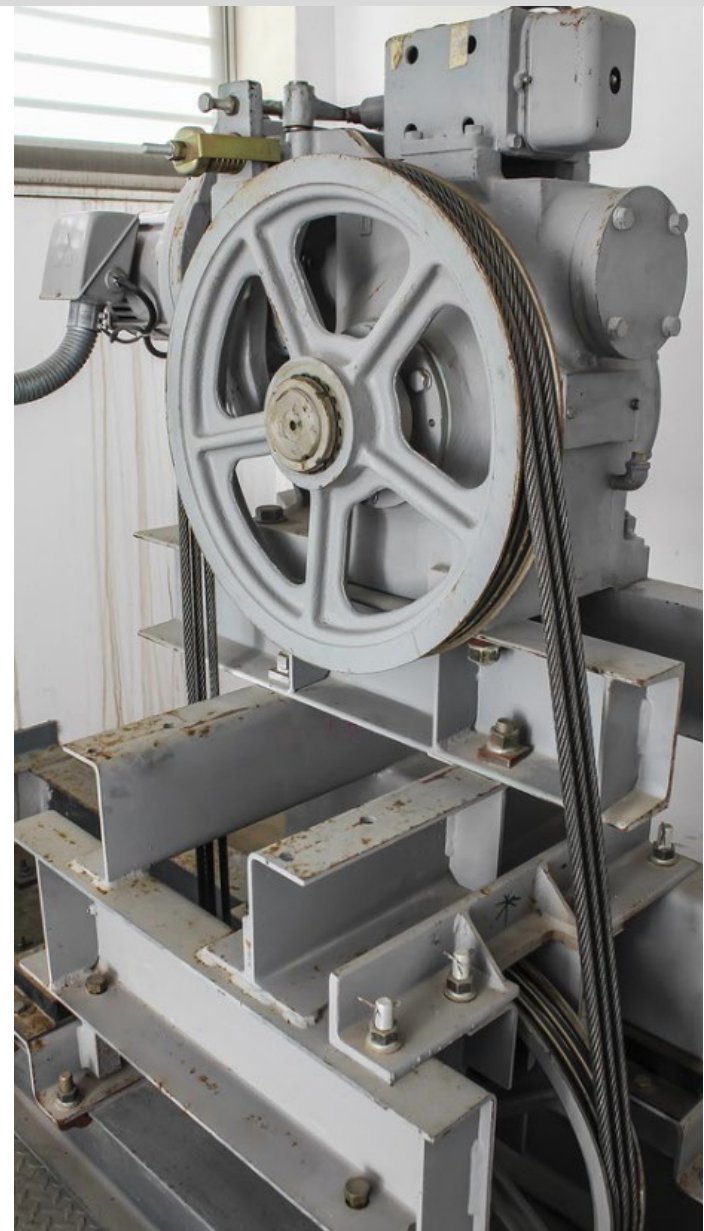
Electrical Energy

- This is the most common energy type.
- Sources include the following:
 - Electrical power
 - Static electricity
 - Electrical storage devices
- Results may include the following:
 - Electric shocks
 - Burns
 - Electrocution
 - Explosions



Mechanical Energy

- This energy is created by mechanical movement.
- It may be found in the following:
 - Power transmission apparatuses
 - Fly wheels
 - Belts
 - Pulleys
- Contact with moving parts can crush, fracture, cut, or amputate a body part.



Chemical Energy

- It is the energy produced by chemical reactions.
- It may cause splashes or splatters.
- It often needs to be controlled in pipes and other portions of equipment.
- Other chemical-related dangers include:
 - Gas or heat from chemical reactions.
 - Hazardous chemicals.



Pneumatic Energy

- It is the product of stored pressure from gas or air in pneumatic lines and vessels.
- Pressure must be relieved prior to servicing or maintenance.
- It may be encountered in the following:
 - Pressurized systems
 - Compressors
 - House air
 - Air powered tools
 - Gases



Hydraulic Energy

- This energy is derived from the motion and pressure of liquids.
- It is commonly found in the following:
 - Pistons
 - Hydraulic brakes
 - Piston motors
 - Hydraulic presses



Potential Energy

- It is stored energy that could be hazardous if released.
- Examples include the following:
 - Gravity
 - Springs
 - Thermal energy



2

Energy Control Procedures

Energy control procedures must outline the following:

1. The scope of the procedures
2. The purpose of the procedures
3. How to shut down equipment
4. How to isolate energy sources
5. How to secure equipment and machines
6. The placement, removal, and transfer of lockout-tagout devices
7. Testing procedures of equipment
8. Employee roles and responsibilities
9. The means to enforce compliance

Overview of Steps

1. Prepare for shutdown
2. Shutdown
3. Isolate energy sources
4. Apply locks & tags
5. Control residual energy
6. Verify energy control methods



Step 1—Prepare for Shutdown

- Notify affected employees of activities.
- Identify shutdown procedures.
- Identify energy sources.
- Identify energy isolation devices.
- Determine quantity and type of lockout/tagout devices required.



Step 2—Shutdown

- Shut equipment down by its normal start/stop method.



Step 3—Isolate Energy Sources

- Use energy-isolating devices appropriate for the energy source, such as:
 - Manually-operated circuit breakers or electrical disconnects for electrical energy.
 - Valves for pneumatic energy.
 - Blocking or bars for mechanical energy.
- All devices must be equipped with a place to attach a hasp or a lock or have a built-in locking mechanism.



Step 4—Apply Locks and Tags

- Locks are attached so that the device cannot be operated until locks are removed.
- Devices must be in the off position.
- Tags indicate that the device and equipment may not be operated.
- Locks, tags, signs, and seals must be securely attached.
- The name of the authorized employee must be included.



Tagout-only Programs

- Some energy-isolating devices may not allow locks.
- Tags are attached where a lockout device would be placed.
- Disadvantages include:
 - No physical protection.
 - A possible false sense of security.



Requirements

Requirements for all devices:

- Durable
- Standard in color, shape, and appearance
- Substantial enough to prevent accidental removal
 - Tags must have a minimum unlocking strength of 50 lbs.
- Labeled with the authorized employee's name



Additional Tag Requirements

- Readable and understandable by all employees
- Contains instructions not to operate or energize equipment
- Single-use
- Self-locking
- Non-releasable
- Applied by hand



*Best practice is to use **both** locks and tags.*

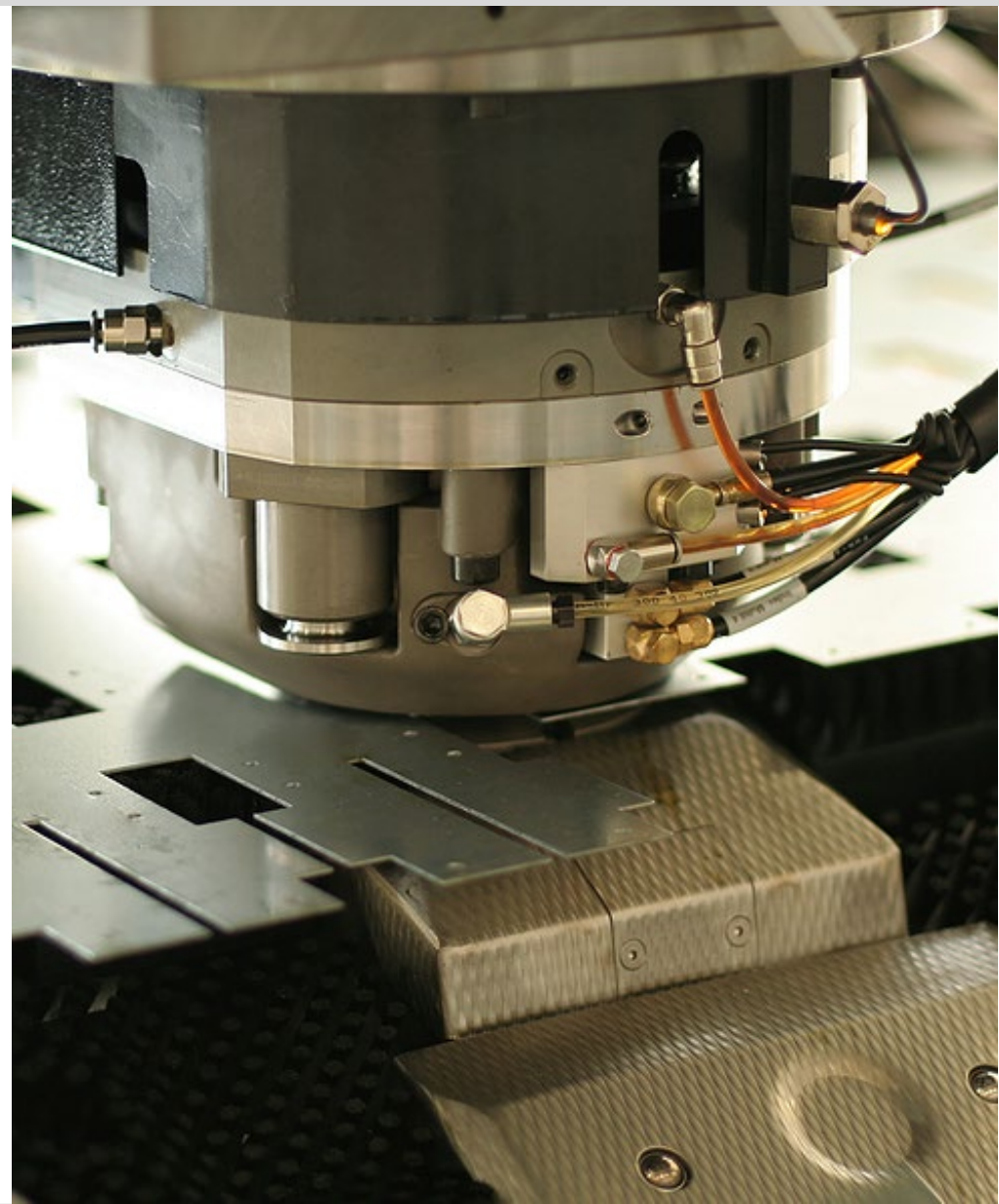
Group Lockout

- One employee has overall responsibility.
- Each person verifies the lockout.
- They attach personal devices to the group lockout box.
- It must provide the same level of protection.



Step 5—Control Residual Energy

- Release, restrain, or dissipate energy.
- Prevent the reaccumulation of energy.
- Isolate the space:
 - Blind the lines.
 - Disconnect and misalign the lines.
 - Double block the valves and bleed the residual materials.



Step 6—Verify Energy Control Methods

- Assure that switches, valves and other mechanisms cannot be turned on.
- Activate equipment control switches and levers, and depress start buttons to assure the power is isolated.
- Return switches, levers, and buttons to the off position.
- Use a meter to assure that electrical energy is not present.



Start-up Procedures

- Inspect area and remove all tools, rags, and other materials.
- Assure that equipment is operationally intact.
- All guards and other safety devices are replaced, if applicable.
- Notify affected employees that equipment will be restarting.
- Check work area to assure all employees are safely positioned.
- Verify all controls are in the neutral or off position.
- Remove lockout/tagout devices.
- Notify affected employees that lockout/tagout devices have been removed and the equipment or machinery is ready for use.



3

Additional Requirements

What you need to know:

1. Procedures covering multiple shifts
2. Training and retraining requirements for various employees
3. Procedures for audits and documentation
4. Communication requirements for outside contractors

Multiple Shifts

Lockout/tagout that occurs over multiple shifts:

- Protection must extend between shifts.
- Energy isolation devices must remain locked out from the previous shift.
- The incoming shift must verify the energy is isolated and correctly locked out.



Training Affected Employees

Training for affected employees:

- Purpose and use of energy control procedures
- Limitations of a tagout-only program
- How to recognize when a procedure is being used
- Who is authorized to perform work
- That restarting locked or tagged-out equipment is prohibited



Training Authorized Employees

Training for authorized employees:

- Policies and procedures of the energy control program
- Type and magnitude of hazardous energy sources
- The methods and means necessary for energy isolation and control
- Limitations of a tagout-only program



Retraining Requirements

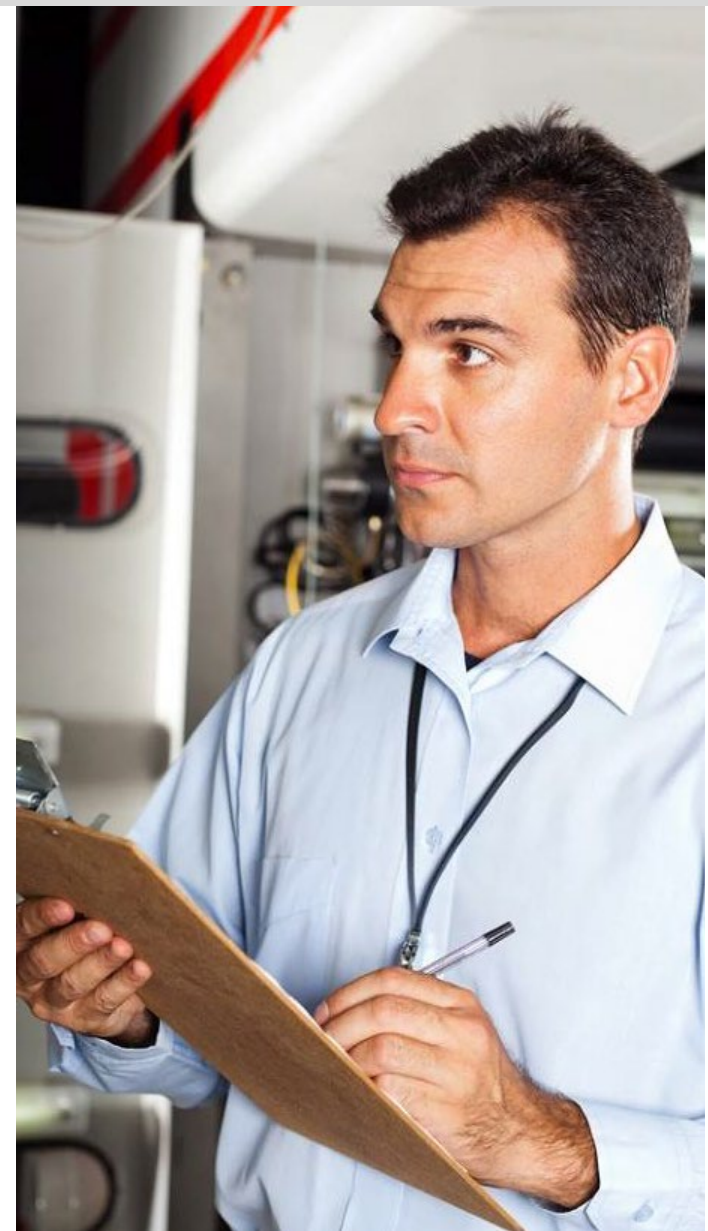
Retraining is required in the following circumstances:

- An employee's job assignment changes.
- Machines, equipment, or processes change.
- The energy control procedure is modified.
- There are inadequacies in an employee's knowledge.
- There are deviations from adherence to the procedures.



Audits

- The audit is conducted:
 - At least annually.
 - If a weakness or issue is noted.
- Audits are performed by authorized employees.
- Audits review the following:
 - Adherence to energy isolation procedures
 - Effectiveness of lockout/tagout procedures
 - Employee training
 - Assigned roles and responsibilities
 - The authorized person's responsibilities



Documentation

Documenting audits:

- Equipment being controlled
- Date of review
- Names of employees involved
- Name of auditor



Contractors

- Inform each other of respective procedures.
- Their procedures must be as effective as yours and in compliance with all codes.
- Inform all affected employees of the contractor's procedures.
- Audit contractors prior to working and periodically to assure their adherence to needed controls.



Ways Barkley Can Help

- Assist you in preparing your Lockout/Tagout Program and Procedures
- Train your staff on these procedures
- Run Audits on the effectiveness of your program

Have Questions?

Type them in the Q&A box at the bottom of your screen



THANK YOU FOR YOUR ATTENDANCE!

Join us next month for our next
Workplace Safety Series session:
Machine Safeguarding

View more upcoming events at:
www.barkleyrisk.com/training

BARKLEY
RISK MANAGEMENT & INSURANCE
AN ALERA GROUP COMPANY