Lockout/Tagout
for Today’s Safety Professional

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Purpose of a LOTO Program

To protect workers involved in the **maintenance and servicing of equipment** from the dangerous effects of hazardous energy. This is achieved by **isolating and locking or tagging** out all hazardous energy sources.

**NOTE:** **Normal production operations** are not covered under the LOTO standard. Those activities are covered under the OSHA 1910 Subpart O, Machine Guarding Standard. CSAZ460 Canadian standard plus whatever provincial legislation is applied for example work comp
10% of all industrial accidents are LOTO-related

250,000 LOTO-related accidents each year, resulting in approximately:
- 200 fatalities
- 60,000 injuries

Lockout accidents also damage equipment, requiring repairs, replacement, downtime. Most of these accidents are preventable with a proper LOTO procedure. No value in the loto devices if there is no procedure.
Why Lockout/Tagout?

- In 2015, Lockout/Tagout was the 5th most cited regulation by OSHA
  - 3rd most cited in General Industry (without Construction)

- OSHA citations run from several thousand to several hundred thousand dollars and beyond!

<table>
<thead>
<tr>
<th>Top Sections Cited</th>
<th>Number of Violations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 1910.147(c)(4)</td>
<td>Requirements in energy control procedures</td>
</tr>
<tr>
<td>2) 1910.147(c)(6)</td>
<td>Requirements to periodically inspect the energy control procedure</td>
</tr>
<tr>
<td>3) 1910.147(c)(7)</td>
<td>Training and communication requirements</td>
</tr>
<tr>
<td>4) 1910.147(c)(1)</td>
<td>Energy control program requirements</td>
</tr>
<tr>
<td>5) 1910.147(d)(4)</td>
<td>Requirements for the application of lockout/tagout devices</td>
</tr>
</tbody>
</table>
Isolating Hazardous Energy

- De-energize electrical circuits
- Drain and blank pipes
- Release pressure from pneumatic and hydraulic lines
- Block gas transmission
- Block moving parts
- Bring hot or cold components to safe temperature
Lockout or Tagout?

**LOCKOUT**

Placing a lock on an energy isolating device so that it is physically impossible for anyone to operate the energy isolating device or the equipment being controlled until the lock is removed.

**TAGOUT**

Placing a tag on an energy isolating device to warn others that the energy isolating device and the equipment being controlled should not be operated.
When is Lockout required?

Whenever a worker performing service or maintenance may be exposed to any form of hazardous energy.

**Rule of thumb is to use LOTO whenever:**

- A machine guard must be bypassed.
- A worker must place any part of his body in a danger zone or point of operation.
- Any maintenance being done on moving parts
Who Performs Lockout/Tagout?

- Only authorized employees may perform lockout / tagout
- Training should cover hazards associated with the equipment and the proper methods for controlling those hazards.
- Authorized employees must undergo a review to ensure they understand the proper lockout techniques and procedures at least once each year.
- Most companies will have written declaration that the employee understands what was taught to them.
Basic steps for locking out equipment:

- Communicate planned activity
- Shutdown the equipment
- De-energize the equipment
- Lock or tag out energy isolating devices
- Release or block any stored energy
- Verify zero energy state
Special Situations

- **Group lockout** – each employee must have “exclusive control”
- Complex group lockout
- **Shift changes** – ensure lockout continuity
- **Emergency lock removal** – requires mgmt approval, document procedure
- Working with outside contractors – must communicate and coordinate
- Absent of worker.

**ALL of these situations require explicit plans in your overall company program**
Padlocks

- Employees must have **exclusive control** over their padlocks for lockout/tagout use
- Locks must be **standardized** and **distinguishable**
- Lock must identify the person using it.
LOTO: A lot more than just padlocks!

The 5-Step Plan for Creating an Effective Lockout Program:

1. Create company-wide energy control policy
2. Create machine-specific lockout procedures
3. Identify and mark all energy control points
4. Train employees and promote awareness of safe work practices
5. Equip employees with the proper lockout tools and warning devices
Why Focus on Machine-Specific Lockout Procedures?

More than 50,000 instances of lockout accidents annually
More than 120 fatal events annually machine specific.

OSHA mandates lockout procedures:

- OSHA requires machine specific lockout / tagout procedures for equipment with more than one energy source

  ✓ Procedures must be documented and identify the equipment covered

  ✓ The procedure must include specific steps for shutting down, isolating, blocking and securing equipment to control hazardous energy

  ✓ The employer shall conduct and certify annual inspections (an audit) of the lockout procedures
Non-Regulatory Reasons to Create Machine-Specific Lockout Procedures

- **Help Keep Employees Safe**
  - Studies have shown that an effective lockout/tagout program can reduce accidents by 30 – 50%
    - Average cost of a non-fatal disabling injury: $38,000*
    - Average cost of a fatal injury: $1,190,000*
    - Work-related injuries in the U.S. cost more than $50 billion annually

- **Limit Corporate Liability**
  - Cost of potential lawsuits is in the millions

- **Lead to lower insurance premiums**
  - Some insurance companies offer lower premiums to companies with demonstrated, effective lockout programs.

- **Increase productivity & reduce equipment downtime**
  - Downtime costs can range from $500 / hour to $1,000’s / minute
  - Worker morale suffers

Sources: *National Safety Council  #Liberty Mutual*
Intuitive Visual Output

**LOCKOUT TAGOUT PROCEDURE SAMPLE**

- **Description:** Boiler #1
- **Equipment #** 1
- **Tagged/Tagger:** Brady
- **Tagged/Tagger ID:** Brady
- **Equipment ID:** 1
- **Tagged/Tagger Date:** May 2012
- **Tagged/Tagger ID:** Brady
- **Equipment ID:** 2
- **Tagged/Tagger Date:** Sep 2011
- **Tagged/Tagger ID:** Brady
- **Equipment ID:** 3
- **Tagged/Tagger Date:** Sep 2012

**LOCKS & TAGS NEEDED**

**DANGER**

Steam pressure and burn hazard. Be sure steam and hot water have dissipated before proceeding.

**ALWAYS PERFORM A MACHINE STOP BEFORE LOCKING OUT DISCONNECTS**

<table>
<thead>
<tr>
<th>ID</th>
<th>Source</th>
<th>Location</th>
<th>Method</th>
<th>Check</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-1</td>
<td>Electrical</td>
<td>Discussed at the NEC Transfer Switch</td>
<td>Move E-1 e-stop to off Lock out</td>
<td>Attempt resistant at 12-V-1</td>
<td>Lockout Hoses and Lock</td>
</tr>
<tr>
<td>E-2</td>
<td>Hot Water Supply</td>
<td>Discussed above the Boiler valves or Fire Sprinkler System</td>
<td>Turn W-1 valve off. Lock out</td>
<td>Verify pressures bled off</td>
<td>Valve Lockout</td>
</tr>
<tr>
<td>E-3</td>
<td>Hot Water Return</td>
<td>Discussed above the Boiler valves or Fire Sprinkler System</td>
<td>Turn W-2 valve off. Lock out</td>
<td>Verify pressures bled off</td>
<td>Valves Lockout</td>
</tr>
<tr>
<td>E-4</td>
<td>Gas</td>
<td>Discussed above the Boiler valves or Fire Sprinkler System</td>
<td>Turn G-1 valve off. Lock out</td>
<td>Verify pressures bled off</td>
<td>Universal Valve Lockout</td>
</tr>
</tbody>
</table>

**OPENING A GUARD DOES NOT CONSTITUTE A LOCKOUT!**

- Any visible information must be removed in procedure.
- Confirm facility for unsafe pressure.

**Safety Is Your Responsibility!**

www.BradyID.com
Solutions for Energy Control Point ID

Tags, Signs & Labels:
- A variety of materials, sizes and messages

Energy Source ID Messages:
- Stock messages help you comply with OSHA
- Custom messages to meet your specific needs

Industrial Label Makers:
- Designed to help you satisfy your OSHA Lockout, HazCom, Arc Flash and General Equipment Identification Requirements
- Produce the energy source ID tags that you create with Lockout Pro™
Solutions for Training Requirement

Training & Communication:
- Training Kit & Videos
- eLearning Courses
- LOTO Poster
- Procedure Station
- Warning Signs
- Floor Stands
- Barricades
Lockout Tool & Warning Devices

**Typical Usage Concerns**

- Versatility (Right device for the job?)
- Durability (Able to withstand the elements its in?)
- Ease of use (Will your employee still do it?)
- Portability / compact storage
- Security (positive restraint)

Look for products that are designed with these in mind!
Safety Padlocks

The *Ultimate* Lockout Lock!

- Compact & lightweight
- Superior rust resistance
- Enhanced shock protection; nonconductive body
- More rugged, durable
- Keyed differently (KD)
- KA sets for individual employees
- Enables exclusive control
- Key charting
- Laser engraving available
- Proprietary key way.
Safety Hasps

Labeled Lockout Hasp:
- Combination Lockout Tag and Safety Lockout
- Constructed from tough anodized aluminum alloy
- Write-on label accepts pencil, pen and marker

Steel Lockout Hasps:
- Vinyl-coated high tensile steel with rust-resistant plating
Lockout/Tagout Tags

- Three standard materials:
  - Heavy duty (encapsulated, erasable)
  - Polyester
  - Cardstock
- HD and Poly tags meet OSHA’s 50 lb. pull test for use as Tagout devices
- Various legends, bilingual available
- Photo ID tags are also available
Electrical Lockouts

Circuit Breaker Lockouts:
- Fit a wide range of breaker sizes
- Easy application – thumbwheel operation
- More secure – feature a serrated blade & foot
- The broadest line available
- Patented features
- Field tested; Helpful circuit breaker reference guide
Valve Lockouts

**Gate Valve Lockouts:**
- Distinct fit & universal versions
- Rugged construction
- Withstand chemicals and temperature extremes

**Ball Valve Lockouts:**
- Single piece triangular design – two sizes fit valves to 3” diameter
- Versatile 2-piece design – two sizes fit valves to 8”
- Patented designs; assured fit lockouts
Universal Valve Lockout:
• One device locks out most valve types & sizes

Butterfly valves

Gate valves

Ball valves
Multi-Purpose Cable Lockouts:

- Great flexibility for use on gate valves, electrical disconnect switches, panels and more
- Push button self-winding mechanism on mini-cable lockout retracts into body; cinches cable tight
Lockout Kits

Kits are available by lockout application:
- Circuit Breaker
- Electrical
- Valve
- Combination valve & electrical
Complete LOTO Solution

Step 1: Lockout Procedure Development

Step 2: Energy Control Identification Products

Step 3: Proper Lockout Tools & Warning Devices

Step 4: Employee Training & Awareness

Plus: Expert Consultation & Training
Remember… Lockout/Tagout Saves Lives