



Lockout/Tagout for Today's Safety Professional

Anthony Savella
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Territory Manager Atlantic

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



Frequency of LOTO Accidents

- **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!***

Top Sections Cited		Number of Violations
1) 1910.147(c)(4)	Requirements in energy control procedures	1,023
2) 1910.147(c)(6)	Requirements to periodically inspect the energy control procedure	741
3) 1910.147(c)(7)	Training and communication requirements	587
4) 1910.147(c)(1)	Energy control program requirements	548
5) 1910.147(d)(4)	Requirements for the application of lockout/tagout devices	203

Isolating Hazardous Energy

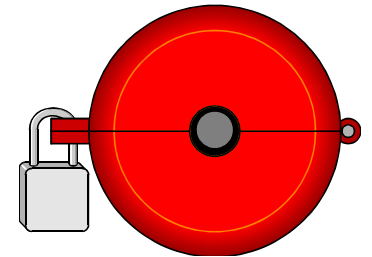
- De-energize electrical circuits
- Drain and blank pipes
- Release pressure from pneumatic and hydraulic lines
- Block gas transmission
- Block moving parts
- Bring hot or cold components to safe temperature



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

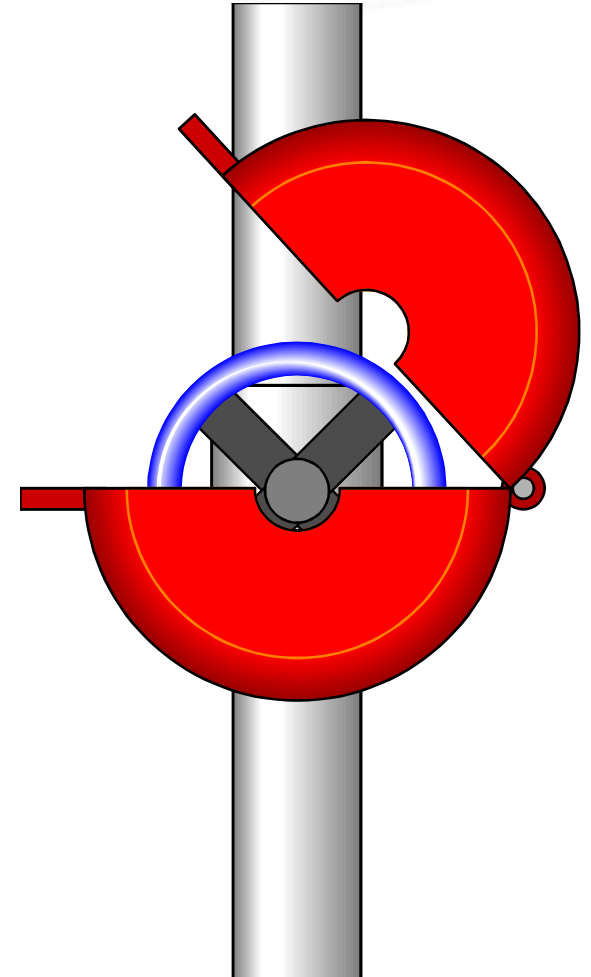
Who Performs Lockout/Tagout?

- **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.



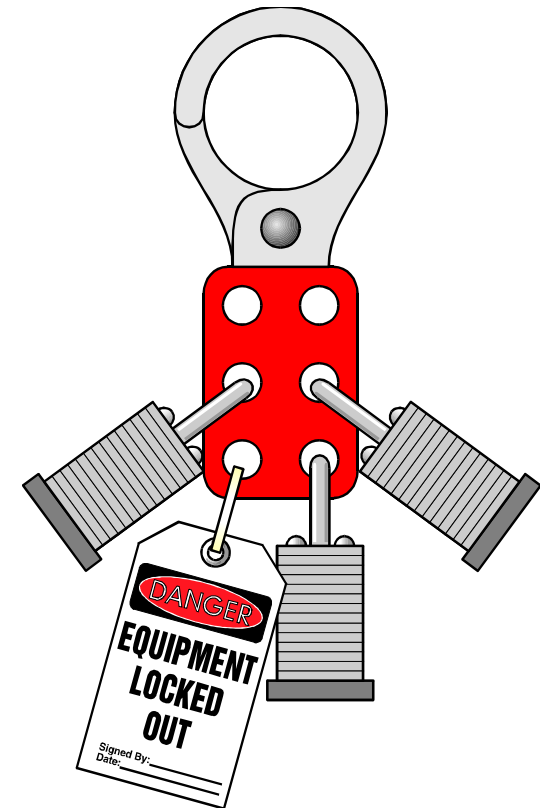
Basic steps for locking out equipment:

- 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.

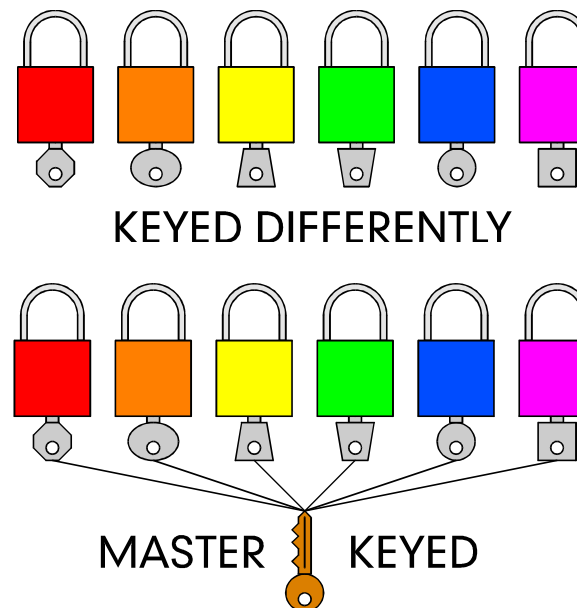
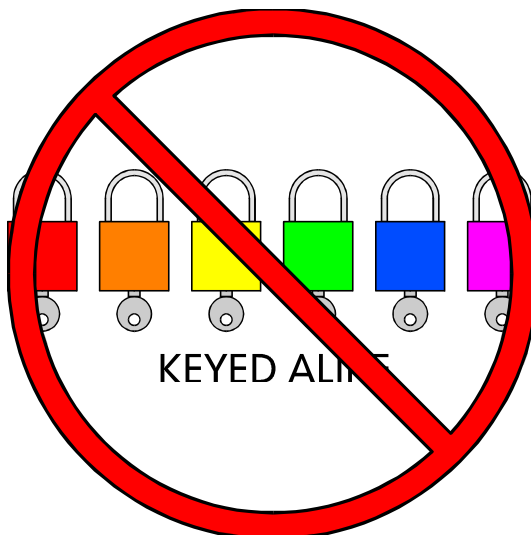


ALL of these situations require explicit plans in your overall

company program

Padlocks

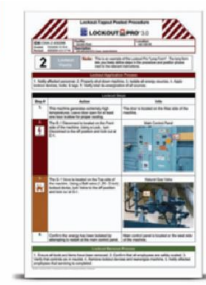
- Employees must have **exclusive control** over their padlocks for lockout/tagout use
- Locks must be **standardized** and **distinguishable**
- Lock must identify the person using it.



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



Intuitive Visual Output



LOCKOUT TAGOUT PROCEDURE SAMPLE

Developed by:	Revised by:	Reviewed by:
BRADY	BRADY	

Description: Boiler #1	Equipment #	150 0012
Location: Boiler Room	Proj: G110	Rev: 3
	Date: N/A	Origin Date: 8/3/08

4 **LOCKS & TAGS NEEDED**

DANGER
Steam pressure and burn hazard. Ensure steam and heat have dissipated before proceeding.

NEXT AUDIT DUE SEP 2009	NEXT AUDIT DUE SEP 2010	NEXT AUDIT DUE SEP 2011	NEXT AUDIT DUE SEP 2012
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ALWAYS PERFORM A MACHINE STOP BEFORE LOCKING OUT DISCONNECTS

ID	Source	Location	Method	Check	Device
E-1	Electrical 480V	Disconnected located at the MCC located on North Wall	Move E-1 disconnect to off. Lock out.	Attempt restart at CP-1.	Lockout Haso and Lock
W-1	Hot Water Supply	Disconnected Above the Boiler. Valves on West Side.	Turn W-1 valve off. Lock out.	Verify pressure has bled off	Cable Lockout
W-2	Hot Water Return	Disconnected Above the Boiler. Valves on West Side	Turn W-2 valve off. Lock out.	Verify pressure has bled off.	Cable Lockout
G-1	Gas Natural Gas	Disconnected on West side of Boiler unit.	Turn G-1 valve off. Lock out.	Verify pressure has bled off.	Universal Ball Valve Lockout

CP = CONTROL PANEL | E = ELECTRICAL | W = WATER | D = PNEUMATIC | C = CHEMICAL | V = VALVE | G = GAS | S = STEAM

DANGER OPENING A GUARD DOES NOT CONSTITUTE A LOCKOUT!
Any machine modifications must be shown in procedure. Contact facilities to update procedure. **DANGER**

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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™

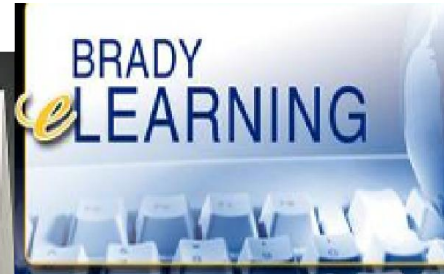
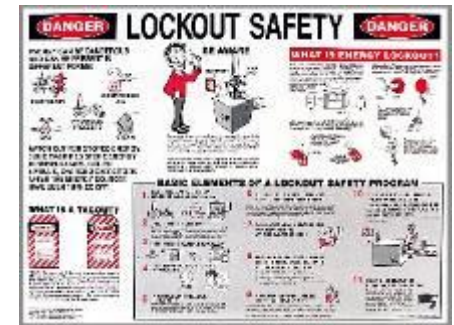
LOCKOUT POINT	
EQUIPMENT ID	ENERGY TYPE/MAGNITUDE
SERVICE PROVIDED TO	
LOCKOUT POSITION	



Solutions for Training Requirement

Training & Communication:

- Training Kit & Videos
- eLearning Courses
- LOTO Poster
- Procedure Station
- Warning Signs
- Floor Stands
- Barricades

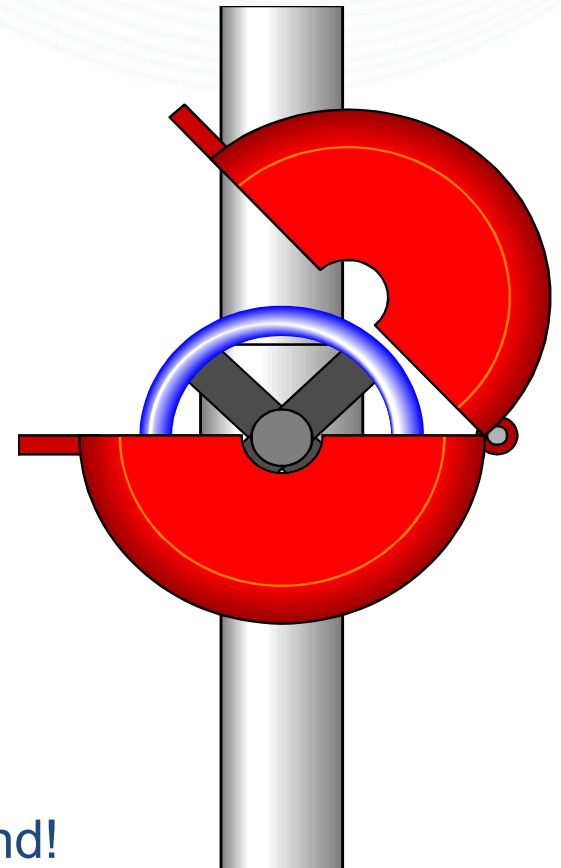


Lockout Tool & Warning Devices

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

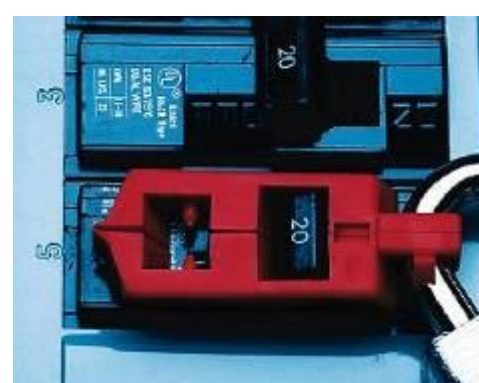
- Three standard materials:
 - Heavy duty (encapsulated, erasable)
 - Polyester
 - Cardstock
- HD and Poly tags meet OSHA's 50 lb. pull test for use as Tagout devices
- Various legends, bilingual available
- Photo ID tags are also available



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



Valve Lockouts

Universal Valve Lockout:

- One device locks out most valve types & sizes



Gate valves



Butterfly valves



Ball valves



Cable Lockouts

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



All Purpose Cable Lockout



Mini Cable Lockout



Lockout Kits

Kits are available by lockout application:

- Circuit Breaker
- Electrical
- Valve
- Combination valve & electrical



Complete LOTO Solution

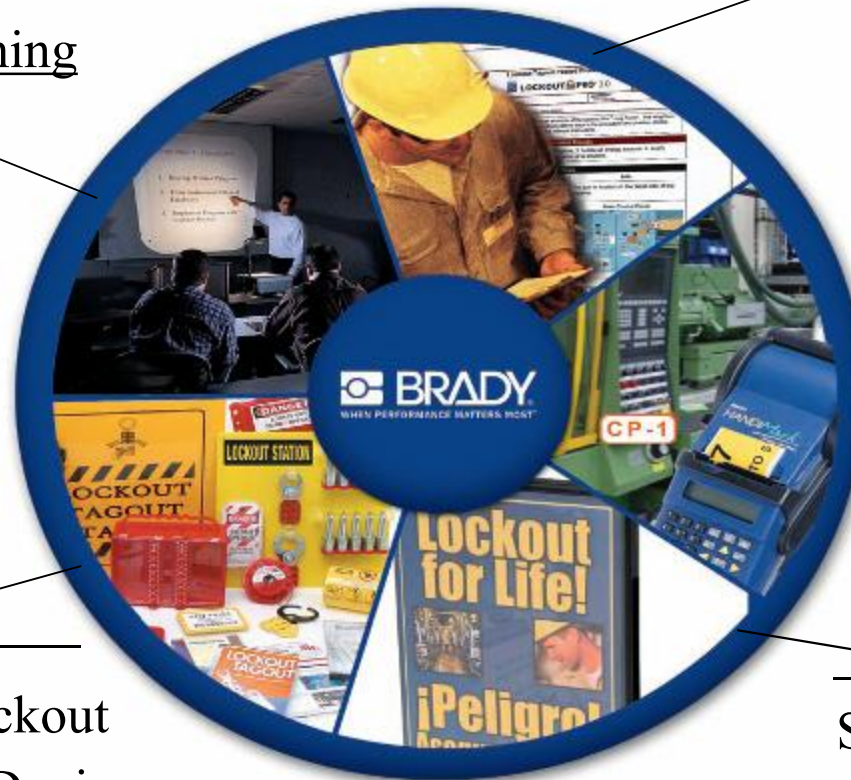
Step 1: Lockout Procedure Development

Plus: Expert
Consultation & Training

Step 2: Energy Control
Identification Products

Step 3: Proper Lockout
Tools & Warning Devices

Step 4: Employee
Training & Awareness



Remember... Lockout/Tagout Saves Lives

