6 Steps to an Effective Lockout Program

5/25/21 – Carlos Soria & Ben Caccese

Agenda

1. Develop and Document a Program or Policy
2. Write Machine/Task Specific Procedures
3. Identify and Mark Energy Isolation Points
4. Training and Periodic Inspections/Audits
5. Provide Proper Lockout Devices
6. Sustainability

Learning Objectives

1. Examine OSHA requirements for your lockout program and why it's important for healthcare labs and facilities.
2. Identify the 6 Steps to an Effective Lockout Program for Healthcare Labs and Facilities.
3. Discuss the common failures or complacency that may exist in a program's present state.
4. Review best practices for starting/refreshing a Lockout Tagout program through standardization.

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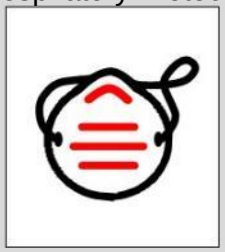
OSHA's 2020 Top 10 Most Frequently Cited Violations

Fall Protection

Hazard Comm

Respiratory Protection



Scaffolding

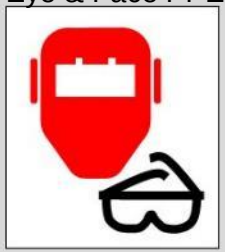
Ladders

LOTO

Industrial Trucks

Fall Protection

Eye & Face PPE



Machine Guarding

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What needs to be locked out?

Types of equipment	Hospitals / Healthcare	Schools/Colleges Universities	Food and Beverage	Pharma	Petroleum and Refining	Utilities	Pulp and Paper	Automotive	General Manuf.	Hotels / Resorts
Air compressors	X	X	X	X	X	X	X	X	X	X
Vacuum pumps	X									
Chillers	X	X		X						X
Boilers	X	X	X	X	X	X	X		X	X
Exhaust fans	X	X	X	X	X	X	X	X	X	X
Air dryers	X	X	X	X		X		X	X	
Air cond/air handlers	X	X	X	X	X	X	X	X	X	X
Dehumidifiers	X	X		X		X			X	X
Heaters	X	X	X	X	X	X	X	X	X	X
Pumps	X	X	X	X	X	X	X	X	X	X
Sterilizers	X			X						
Generators	X	X	X	X	X	X	X	X	X	X
Welders			X		X		X	X	X	
Cranes					X		X	X	X	
Jib hoists					X		X	X	X	
Battery chargers					X		X	X	X	
Automated equip			X	X			X	X	X	
Conveyors			X	X			X	X	X	
Glue pots			X	X			X	X	X	
Robotics			X	X	X		X	X	X	
Drill presses					X		X	X	X	
Freezers/refrigeration	X	X	X	X						X
Kitchen equipment	X	X	X						X	X
Printers			X	X			X		X	

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1. Program/policy
2. Machine/task specific procedures
3. Identify & mark energy isolation points
4. Training
5. Provide proper lockout devices
6. Sustainability

Why is a lockout program important?

- Roadmap for compliance
- Shared understanding of program
- Guidelines for implementation and sustainability

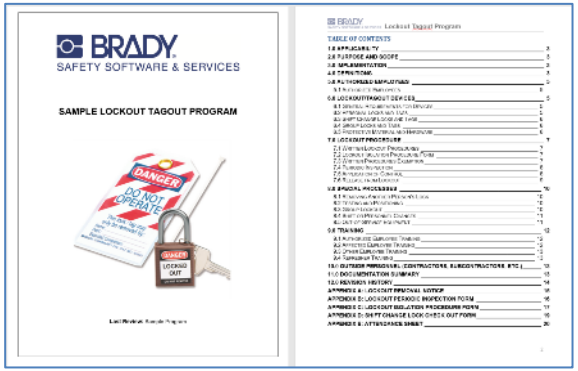
The written program needs to be:

- Company/site specific
- Aligned with operational practices
- Inclusive of the required elements
- Accepted, understood and followed

Written Program – Common Failures

- **Too Generic**
  - Documents are often not company or site-specific
- **Out-of-date**
  - Lack of rigor in upkeep
- **Lack of follow through**
  - Great written program, poor implementation
- **Lack of acceptance**
  - Employees aren’t involved in developing the program
- **Lack of awareness**
  - Lack of understanding of past efforts and what the current state is

Effective Program Creation



Start building your program

- Don’t recreate the wheel
- Use your current state analysis
- Understand what’s working, and what’s not
- Involve the employees you will expect to follow it
- And LISTEN to them

Programs are most effective when accepted and understood by your employees

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Effective Program Creation

Include the required elements…

- ✔ Applicability
- ✔ Purpose and Scope
- ✔ Implementation
- ✔ Definitions
- ✔ Authorized Employees
- ✔ Lockout Tagout Devices
- ✔ Lockout Procedure
- ✔ Special Processes
- ✔ Training
- ✔ Outside Personnel
- ✔ Documentation Summary
- ✔ Revision History

Programs are company specific…not "One-Size-Fits-All"

Effective Program Creation

Key Processes might include:

- Group Lockout
- Shift/Personnel Changes
- Testing & Positioning
- Minor Servicing
- Contractors
- And more…

Written Program Solutions

- ❑ **Written Program Development**
- ❑ **Program Gap Analysis**
- ❑ **Padlock & Device Standardization**
  - Color Coding
  - Keying/Master Keying/GMK

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Summary of regulatory standard

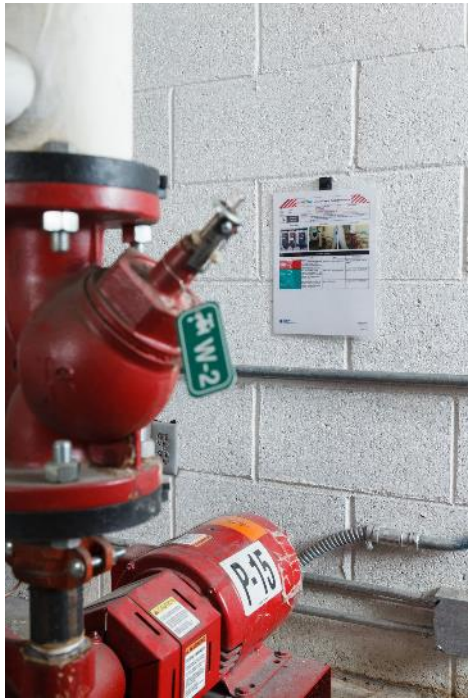
- Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in servicing or maintenance activities

Procedures must be:

- Machine specific
- Aligned with operational practices
- Inclusive of the required elements
- Accepted, understood and followed

Procedures – Common Failures

- **Too generic…or overly complicated:**
  - Energy sources
  - Verification steps
  - List of devices
- **Out-of-date**
  - Lack of rigor in upkeep
- **Lack of follow through**
  - Not clearly posted or advertised to employees
- **No visuals**



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Effective Procedure Creation

- Standardize the procedure template
- Make them visual & specific
- Clearly identify the lockout points
- SME Involvement
  - Safety
  - Maintenance
  - Engineering?
- Include the OSHA requirements…
- And the industry best practices

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Effective Procedure Creation

1 **Best practice:** Company logo

2 **Best practice:** Machine-specific equipment ID number

3 **Required:** Facility name, location, equipment name

4 **Best practice:** Number of lockout points

5 **Best practice:** The caution statement is where additional hazards and noteworthy information can be communicated

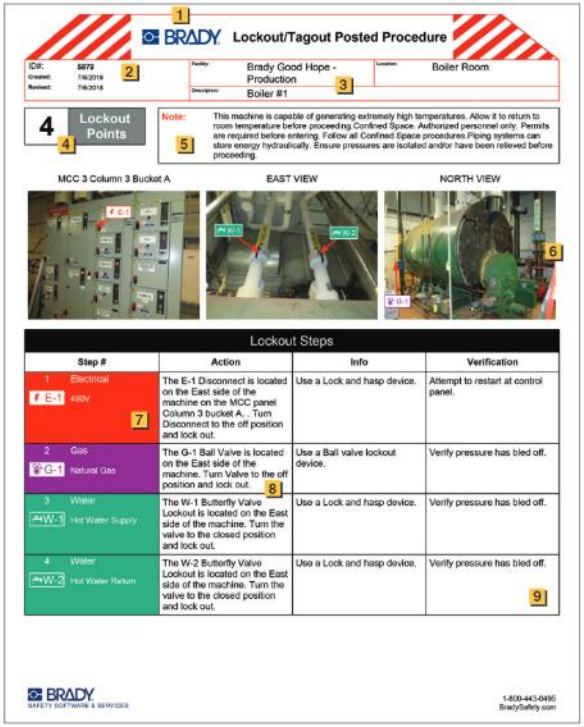
6 **Best practice:** Pictures of equipment

7 **Required:** While having corresponding energy source tags mounted on equipment and indicated on the lockout procedure is considered "best practice," lockout procedures are required to identify energy sources and magnitude. 1910.147(d)(1)

8 **Required:** Action steps to isolate energy and location of isolation points. These must include procedural steps for shutting down, isolating, blocking and securing equipment to control hazardous energy. They also must include steps for the use of lockout devices and their responsibility. 1910.147(c)(4)(ii)(B-C)

9 **Required:** Verification is required on every step of your lockout procedure. This is how your employees will know whether or not the energy source is truly isolated and at a zero-energy state. 1910.147(c)(4)(ii)(D)

10 **Required:** Purpose, scope and enforcement of lockout tagout procedure must be included on physical procedure. 1910.147(c)(4)(ii)



BRADY Lockout/Tagout Posted Procedure

ID#: 5879 Created: 7/6/2016 Revised: 7/6/2016

Facility: Brady Good Hope - Production

Location: Boiler Room

Description: Boiler #1

4 Lockout Points

Note: This machine is capable of generating extremely high temperatures. Allow it to return to room temperature before proceeding.Confined Space. Authorized personnel only. Permits are required before entering. Follow all Confined Space procedures.Piping systems can store energy hydraulically. Ensure pressures are isolated and/or have been relieved before proceeding.

MCC 3 Column 3 Bucket A | EAST VIEW | NORTH VIEW

Lockout Steps

Step #	Action	Info	Verification
1 Electrical E-1 480V	The E-1 Disconnect is located on the East side of the machine on the MCC panel Column 3 bucket A. Turn Disconnect to the off position and lock out.	Use a Lock and hasp device.	Attempt to restart at control panel.
2 Gas G-1 Natural Gas	The G-1 Ball Valve is located on the East side of the machine. Turn Valve to the off position and lock out.	Use a Ball valve lockout device.	Verify pressure has bled off.
3 Water W-1 Hot Water Supply	The W-1 Butterfly Valve Lockout is located on the East side of the machine. Turn the valve to the closed position and lock out.	Use a Lock and hasp device.	Verify pressure has bled off.
4 Water W-2 Hot Water Return	The W-2 Butterfly Valve Lockout is located on the East side of the machine. Turn the valve to the closed position and lock out.	Use a Lock and hasp device.	Verify pressure has bled off.

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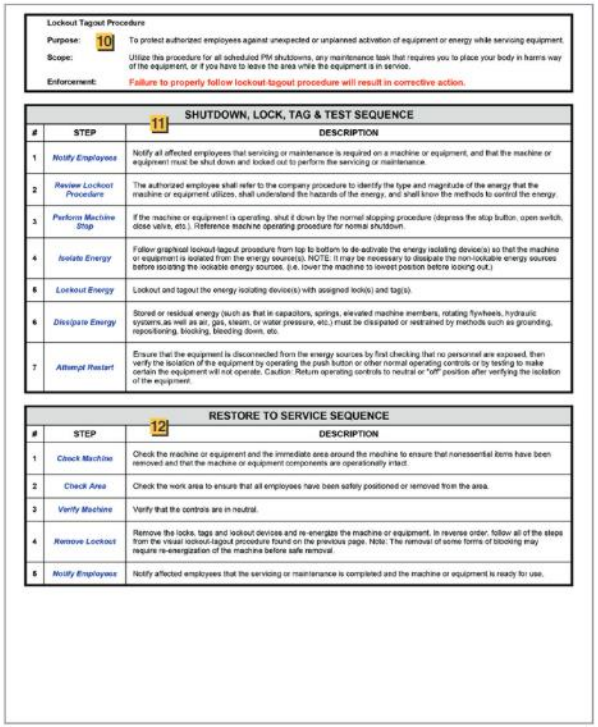

Lockout Tagout Procedure

Purpose: 10 To protect authorized employees against unexpected or unplanned activation of equipment or energy while servicing equipment.

Scope: Utilize this procedure for all scheduled PM shutdowns, any maintenance task that requires you to place your body in harms way of the equipment, or if you have to leave the area while the equipment is in service.

Enforcement: Failure to properly follow lockout tagout procedure will result in corrective action.

11 SHUTDOWN, LOCK, TAG & TEST SEQUENCE

#	STEP	DESCRIPTION
1	Notify Employees	Notify all affected employees that servicing or maintenance is required on a machine or equipment, and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2	Review Lockout Procedure	The authorized employee shall refer to the company procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3	Perform Machine Stop	If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.). Reference machine operating procedure for normal shutdown.
4	Isolate Energy	Follow graphical lockout tagout procedure from top to bottom to de-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s). NOTE: It may be necessary to dissipate the non-lockable energy sources before isolating the lockable energy sources. (i.e. lower the machine to lowest position before locking out.)
5	Lockout Energy	Lockout and tagout the energy isolating device(s) with assigned lock(s) and tag(s).
6	Dissipate Energy	Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems,as well as air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
7	Attempt Restart	Ensure that the equipment is disconnected from the energy sources by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating controls or by testing to make certain the equipment will not operate. Caution: Return operating controls to neutral or "off" position after verifying the isolation of the equipment.

12 RESTORE TO SERVICE SEQUENCE

#	STEP	DESCRIPTION
1	Clean Machine	Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2	Check Area	Check the work area to ensure that all employees have been safely positioned or removed from the area.
3	Verify Machine	Verify that the controls are in neutral.
4	Remove Lockout	Remove the locks, tags and lockout devices and re-energize the machine or equipment. In reverse order, follow all of the steps from the visual lockout-tagout procedure found on the previous page. Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.
5	Notify Employees	Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

11 **Required:** A sequential procedure for shutdown, locking / tagging and testing must be included on the lockout procedure. 1910.147 App A

12 **Required:** A sequential procedure to restore equipment to service must be included on the lockout procedure. 1910.147 App A

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Procedures – Solutions

Procedure Writing

- Provided in physical format, digitally, or with integrated barcodes

Software

- Ability to edit, maintain & route for approval
- Perform a lockout checklist and immediately have access to the checklist when it has been uploaded
- Perform periodic inspections to indicate if a person is qualified to work on a piece of equipment

1. Program/policy
2. Machine/task specific procedures
3. **Identify & mark energy isolation points**
4. Training
5. Provide proper lockout devices
6. Sustainability

Summary of regulatory standard

- Identify and label all isolation points and relate them back to your procedures
  - Electrical
  - Pneumatic
  - Gas
  - Hydraulic
  - Kinetic
  - Water
  - Steam
  - Chemical

Isolation Points – Common Failures

- **Not doing this step**

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Isolation Points – Solutions

- **Variety of Options**
  - Tags, labels, pipemarkers, and more!
  - Print isolation points on durable materials
  - Purchase pre-made isolation points
- **Software**
  - Maintain isolation points on each piece of equipment
  - Add images and label isolation points in procedures
- **Services**
  - Walk through facility to identify and label isolation points

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Summary of regulatory standard

- When OSHA looks at training performance they're looking for employee understanding.
- Training should be provided for the below categories:
  - Authorized
  - Affected
  - Other

Training – Common Failures

- **Not using the written program as the foundation**
- **Uneducated instructor**
- **Passive approach**
  - Only doing this for new hires
  - Spotty training schedule
  - Vague quizzes

Training – Solutions

- **Training Services**
  - Authorized
  - General/Affected
  - Train-the-Trainer
- **Software**
  - Video, guides and support staff can train how to use the system
- **Devices, Tags & Signage**
  - Visual reminders for training reinforcement
  - Ability to identify an isolation point and identifying *when* & *how* it's locked out

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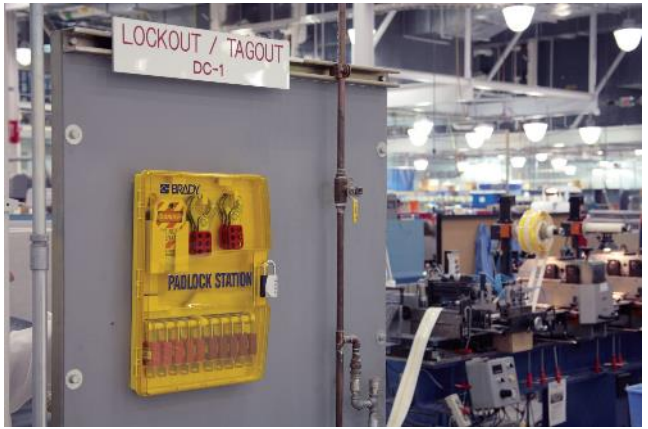
Summary of regulatory standard

- Locks, tags, and devices must:
  - Uniquely fit to a particular isolation point
  - Keep equipment at a zero energy state
  - Must be identified by its respective employee
- *Ensure the safety of each authorized worker involved in a lockout.*

Devices – Common Failures

- Insufficient inventory
- Wrong device for the job
- Tagout only
- Lost keys/locks
- Lack of device training



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Devices – Solutions

- **Customizable, identifiable, innovative, durable, efficient**
- **Lockout kits/stations**
- **Padlocks - 1 lock, 1 person, 1 key**
  - Custom systems with available charting, GMK & MK solutions
- **Tags**
- **Software**
  - Know what devices to use when locking out based on the isolation points on the procedure

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Sustainability should be a proactive practice.

- Pass audits and periodic inspections with flying colors
- Practice what you preach and hold your team accountable
- Ensures safety of each authorized worker involved in a lockout

Sustainability – Common Failures

- **Regulatory**
  - OSHA violations
  - Near misses
- **Company Review**
  - Never reviewing/updating LOTO program when equipment is changed or replaced
  - Not reviewing when central knowledge leaves or new employees are hired

Sustainability – Solutions

- **LOTO Procedure Audits**
- **Software**
  - Periodic inspections that insures a person has been observed and completed the lockout correctly
  - Audits coming due & performing audits with notes
  - Documentation & revision history
- **Consistent stock of devices**
- **Padlocks**
  - Mapping of padlock system
  - Ability to add to existing to avoid duplication and maintain lock access hierarchy

ADDITIONAL INFORMATION