



# **Lunch Box Safety Webinar**

## ***Safety Over Sandwiches***

**Nov. 7 • Lockout Tagout**  
**“Isolating the Energy”**

---

*Presented by Joe Mlynec, Progressive Safety Services LLC*

# Discussion Outline

---

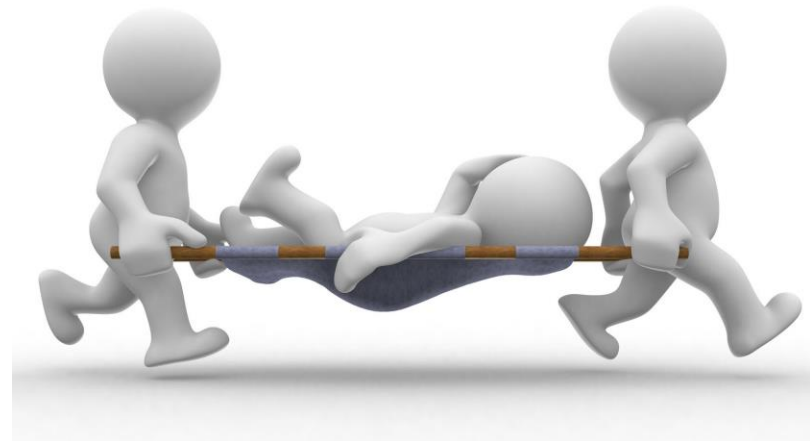
- ✓ Scope of 1910.147 The Control Of Hazardous Energy
- ✓ Definitions
- ✓ Exceptions
- ✓ Training Requirements
- ✓ General Procedure (Appendix A)
- ✓ Additional Requirements
  - Lock Removal
  - Group Lockout
  - Shift Changes
- ✓ Questions

# Why be concerned?

---

Employees can be seriously injured or killed if machinery they service unexpectedly energizes, starts up, or releases stored energy:

- Fatalities
- Amputations
- Electrical shock/electrocution





# OSHA Standards

---

## Control of Hazardous Energy (Lockout/Tagout) -1910.147

The standard covers the servicing and maintenance of machines and equipment in which the unexpected start up of the machine or equipment, or release of stored energy could harm employees.

Establishes minimum performance requirements for the control of hazardous energy

# Speaking the Language

---

LOCKOUT TAGOUT DEFINITIONS

# Definitions

---

Affected employee – An employee whose job requires him or her to operate or use a machine or equipment in which servicing or maintenance is being performed under lockout tagout, or whose job requires him/her to work in an area in which servicing or maintenance is being performed.

Authorized employee – A person who locks or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment.

# Definitions

---

Energized - connected to an energy source or containing residual or stored energy

Energy source - any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, spring tension, steam, or other energy



# Definitions

---

Energy Isolating Device – A mechanical device that physically prevents the transmission or release of energy





# Examples of Energy Isolating Devices

---

- Manually operated circuit breaker
- Disconnect switch
- A manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and in addition, no pole can be operated independently
- A line valve
- A block



*Note: Push buttons, selector switches and any other control circuit type devices are not energy isolating devices.*

# Definitions

---

Lockout - placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and equipment being controlled cannot be operated until the lockout device is removed.

Lockout device – A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

# Definitions

---

Servicing and/or Maintenance – Activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintenance and/or servicing machines or equipment.

*Activities may include: lubrication, cleaning or unjamming machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start up of the equipment or the release of hazardous energy.*

# Definitions

---

Tagout – the placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

## Tagout device

- Prominent warning device such as a tag and means of attachment
- Fastened to an energy isolating device to indicate that the energy isolating device may not be operated until the lockout/tagout devices are removed

# Lockout Tagout Devices

---



# Locks And Keys

Ensure system in place  
for securing second key

- Manager secures duplicate keys



# Program Requirements

---

REQUIREMENTS AND EXCEPTIONS

# Lockout Tagout Requirements

---

Servicing or maintenance, which takes place during normal production operations is covered by the standard.

Lockout tagout required when:

- An employee is required to remove or bypass a guard or other safety device, or
- An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon a piece of material being processed or where an associated danger zone exists during the machine operating cycle.



# Lockout Tagout Exception

---

Minor tool changes and adjustments and other minor servicing activities, which take place during normal production operations are not covered by standard if they are:

- Routine
- Repetitive
- Integral to the use of equipment for production

Provided that the work is performed using alternative measures which provide effective protection.

# Lockout Tagout Exception

---

Work on cord and plug connected electrical equipment for which exposure to hazards of unexpected energization or start-up of equipment is controlled by unplugging the equipment from the energy source and by the plug being under exclusive control of the employee performing the servicing or maintenance.



# Lockout Tagout Exception

---

Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that:

- Continuity is essential
- Shutdown of the system is impractical
- Documented procedures are followed, and special equipment is used which will provide proven effective protection for employees

# Energy Control Program

The Standard requires employers to establish a program.

Utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices

Otherwise disable machines or equipment to prevent unexpected energization, start-up or release of stored energy in order to prevent injury to employees

<b>Lockout/Tagout</b>
<b>Policy Overview</b> This policy establishes the practices and procedures for safeguarding employees and contractors from the unexpected energizing or start-up of machinery and equipment and the release of hazardous energy during service or maintenance activities including cleaning, repair, inspection, or other related work. Only trained authorized persons are permitted to perform lockout/tagout. For additional information concerning lockout/tagout, consult OSHA's Lockout/Tagout Standard 1910.147.
<b>Policy Requirements</b> <b>Training:</b> All authorized and affected employees will be trained in accordance with this policy. <b>Procedural:</b> Persons performing lockout/tagout must follow the documented written procedure for the deenergizing and isolating equipment. Failure to do so will result in disciplinary action. Managers and supervisors are responsible for implementing and monitoring lockout/tagout activities to ensure that equipment is safely deenergized and locked and tagout prior to servicing or maintenance activities. <b>Documentation:</b> All training required by this policy must be documented. New employee orientation training must also include reference to this policy and its requirements.
<b>General Policy</b>
<b>Definitions</b> <b>Affected employee:</b> An employee whose job requires him/her to operate or use machinery or equipment on which servicing or maintenance is being performed under lockout/tagout or whose job requires them to work in an area where servicing or maintenance is being performed. <b>Authorized Employee:</b> A person who locks out and tags out machines or equipment in order to perform servicing or maintenance. <b>Energized equipment:</b> Connected to an energy source or containing residual or stored energy. <b>Energy Isolating Device:</b> A mechanical device that physically prevents the transmission or release of energy. Examples include manually operated electrical circuit breakers; disconnect switches; line valves; blocks, and any similar device used to block or isolate energy.
Company Name: _____ Policy #: _____ Date of Last Revision: _____

# Energy Control Procedures

Procedures required to be developed and utilized for the control of potentially hazardous energy.

Exception: The employer need not document the required procedure for a particular machine or equipment when all of the following exist:

### Controlling Hazardous Energy Sources Equipment Safety

Lockout/Tagout Instructions for:  
ENTER EQUIPMENT NAME

+
-

Micro-Switch
Reset Pin

Start Switch
Emergency Stop

☐

PRINTED PICTURE OF LOCKOUT POINTS

#	Lockout Point	Lockout Method
1	Motor	
2	Emergency Stop	
3	Start Switch	
4	Reset Pin	
5	Micro-Switch	
6	Emergency Stop	
7	Start Switch	
8	Reset Pin	
9	Micro-Switch	
10	Emergency Stop	
11	Start Switch	
12	Reset Pin	
13	Micro-Switch	
14	Emergency Stop	
15	Start Switch	
16	Reset Pin	
17	Micro-Switch	
18	Emergency Stop	
19	Start Switch	
20	Reset Pin	
21	Micro-Switch	
22	Emergency Stop	
23	Start Switch	
24	Reset Pin	
25	Micro-Switch	
26	Emergency Stop	
27	Start Switch	
28	Reset Pin	
29	Micro-Switch	
30	Emergency Stop	
31	Start Switch	
32	Reset Pin	
33	Micro-Switch	
34	Emergency Stop	
35	Start Switch	
36	Reset Pin	
37	Micro-Switch	
38	Emergency Stop	
39	Start Switch	
40	Reset Pin	
41	Micro-Switch	
42	Emergency Stop	
43	Start Switch	
44	Reset Pin	
45	Micro-Switch	
46	Emergency Stop	
47	Start Switch	
48	Reset Pin	
49	Micro-Switch	
50	Emergency Stop	
51	Start Switch	
52	Reset Pin	
53	Micro-Switch	
54	Emergency Stop	
55	Start Switch	
56	Reset Pin	
57	Micro-Switch	
58	Emergency Stop	
59	Start Switch	
60	Reset Pin	
61	Micro-Switch	
62	Emergency Stop	
63	Start Switch	
64	Reset Pin	
65	Micro-Switch	
66	Emergency Stop	
67	Start Switch	
68	Reset Pin	
69	Micro-Switch	
70	Emergency Stop	
71	Start Switch	
72	Reset Pin	
73	Micro-Switch	
74	Emergency Stop	
75	Start Switch	
76	Reset Pin	
77	Micro-Switch	
78	Emergency Stop	
79	Start Switch	
80	Reset Pin	
81	Micro-Switch	
82	Emergency Stop	
83	Start Switch	
84	Reset Pin	
85	Micro-Switch	
86	Emergency Stop	
87	Start Switch	
88	Reset Pin	
89	Micro-Switch	
90	Emergency Stop	
91	Start Switch	
92	Reset Pin	
93	Micro-Switch	
94	Emergency Stop	
95	Start Switch	
96	Reset Pin	
97	Micro-Switch	
98	Emergency Stop	
99	Start Switch	
100	Reset Pin	

THE LOCKOUT PROCESS

**Identify** the work to be done and review the written LOTO instruction

**Notify** all affected individuals that a lockout/tagout is being implemented

**Shutdown** the equipment using the normal stopping procedure  
[Insert normal stopping procedure here]

**Isolate** (inserting tag(s) here]

**Lockout** and tag the equipment's energy source. Isolate all hazardous energy sources by moving each energy-isolating device into the "dis-energize" or "safe" position and inserting a personal lock and completed tag in its energy-isolating device. If one or more persons will perform the work, each must apply their own lock in a multiple-lock device (MUST)

**Note:** This equipment requires **N** number of locks and tags per individual.

**Verify** that the equipment or system will NOT OPERATE by trying to starting the equipment's system using the operator's controls.

**Note:** If test shows no response, resolve the problem and then try the operator controls again.

**Restore the Equipment to Service** when the servicing or maintenance of the

### Controlling Hazardous Energy Sources Equipment Safety

Lockout/Tagout Instructions for:  
ENTER EQUIPMENT NAME

equipment is completed the following steps shall be taken:

- Remove all tools and parts.
- Re-assess all hazards and energy.
- Notify all affected associates that the equipment/system is returning to service.
- Remove all locks and tags from the energy-isolating device.
- Re-energize the energy-isolating device.
- Restart and check the equipment or system.
- When appropriate: When the equipment or system is running properly, tell the manager that it is ready for operation.

Company Name

1 of 2

Date Printed

Company Name

2 of 2

Date Printed

# Energy Control Procedure

---

1. The machine or equipment has no potential for stored or residual energy, or accumulation of stored energy after shut down which could endanger employees
2. The machine or equipment has a single energy source which can be readily identified and isolated
3. The isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment
4. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance
5. A single lockout device will achieve a locked condition
6. The lockout device is under the exclusive control of the authorized employee performing servicing or maintenance
7. The servicing or maintenance does not create hazards for other employees
8. The employer in utilizing the exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

# Energy Control Procedure

---

Procedures shall clearly and specifically outline the scope, purpose, authorization, rules and techniques utilized for the control of hazardous energy and the means to enforce compliance including but not limited to:

- A specific statement of the intended use of the procedure
- Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.

# Energy Control Procedure Continued

Specific procedural steps for the placement, removal, and transfer of lockout tagout devices and the responsibility for them

Specific requirements for testing a machine or equipment to determine and verify the effectiveness of the lockout devices, tagout devices, and other energy control measures.

**Lockout-Tagout Procedure**  
Form: 10-2000  
Approved: John Smith  
Baler B-531  
Main Building, Section 2

**LOCKOUT APPLICATION PROCESS**

1. Lockout devices (locks, tags, keys) must be placed on all energy sources.  
2. Apply lockout devices (locks, tags, keys) to all energy sources.

Lockout Point	Name	Lockout Authority
4		

**ENERGY SOURCE**   **DEVICE**   **METHOD**   **PRELIM**

GRAVITY	1. Remove Press Arm	Remove Press Arm & ground the motor. Machine must be locked. Press Arm	
CONTROL PANEL	Control Panel Off	Power off and remove key.	
ELECTRICAL 480V	Disconnect Circuit Breaker Lock (Theoretical photo)	Remove all disconnect locks.	
ELECTRICAL 480V	Electrical Disconnect (Theoretical photo) Lock (Theoretical photo)	Remove all disconnect locks.	

**LOCKOUT REMOVAL PROCESS**

1. Remove all locks and tags from the equipment. 2. Confirm that all energy sources are locked out. 3. Verify that locks are in place. 4. Remove all lockout devices and verify that all affected employees full awareness is complete.

Revised: 10/2000 (John Smith) - www.PSSTools.com



# Periodic Inspection

---

Employer shall conduct periodic inspection of the energy control procedure at least annually to ensure procedures are being followed

Periodic inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected

Periodic inspection conducted to correct and deviations or inadequacies

# Periodic Inspection

The employer shall certify that periodic inspections have been performed.

Certification shall identify:

- The machine or equipment on which the energy control procedure was being utilized
- The date of the inspection
- Employee(s) included in the inspection
- Person Performing the inspection

## Lockout/Tagout Inspection Form

General Information	
Inspection Performed By:	
Date:	
Description of Equipment/Procedure:	

Indicate Yes or No (Y/N) or Not Applicable (N/A):	
<input type="checkbox"/>	All employees involved in the lockout/tagout have been adequately trained.
<input type="checkbox"/>	Authorized employees are knowledgeable of the shutdown procedure for equipment or electrical systems.
<input type="checkbox"/>	All affected employees have been notified.
<input type="checkbox"/>	All energy sources have been identified and isolated.
<input type="checkbox"/>	Group lockout/tagout utilized when multiple persons are performing servicing or maintenance on equipment.
<input type="checkbox"/>	All employees involved in the lockout/tagout have both their lock and tag on the energy-isolating device.
<input type="checkbox"/>	All stored or residual energy released, restrained, or otherwise rendered safe.
<input type="checkbox"/>	Authorized employees verified that the machine or equipment is de-energized using established procedures.
<input type="checkbox"/>	Equipment inspected to ensure that it is operationally intact and that all guards, covers, etc. are secured prior to restart.
<input type="checkbox"/>	All affected personnel notified prior to re-energizing of the equipment.
<input type="checkbox"/>	Both locks and tags utilized by all authorized persons involved in the lockout/tagout.
<input type="checkbox"/>	Lockout devices easily identifiable, durable, standardized by color shape or size and substantial enough to minimize premature or accidental removal.
<input type="checkbox"/>	Contractors/subcontractors involved in the lockout/tagout comply with the Company's Lockout/Tagout policy.

Comments/Follow Up Activities:

Company Name

Date of Last Revision

# Protective Materials and Hardware

---

## REQUIREMENTS

# Protective Materials and Hardware

---

Includes: locks, tags, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for isolating, securing, or blocking of machines or equipment from energy sources.

Lockout and tagout devices shall be singularly identified, shall be the only devices used for controlling energy and not used for other purposes.



# Lockout and Tagout Devices

---

Shall meet the following requirements:

- Capable of withstanding the environment for which they are exposed for the maximum period of time that exposure is expected
- Constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible
- Tags shall not deteriorate when used in corrosive environments such as areas where acid or alkali chemicals are handled or stored

# Lockout Devices

---

Standardized within the facility in at least one of the following criteria:

- Color
- Shape
- Size
- Tagout devices – print and format shall be standardized



Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques (i.e. bolt cutters, metal cutting tools, etc.)

# Tagout Devices

---

Tagout devices including their means of attachment shall be substantial enough to prevent inadvertent or accidental removal.

Lockout and tagout devices shall indicate the identity of the employee applying the devices



Tagout devices shall warn against hazardous conditions

- Do Not Start
- Do Not Operate
- Do Not Energize

# Labeling – Best Practice

---

## Labeling

- Energy Isolating Devices
- Main Disconnects

Energy isolating device labeling correspond with labeling on motors, equipment, etc.







# Training Requirements

---

Employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees

That the knowledge and skills required for safe application, usage and removal of energy controls are acquired by employees



# Training Requirements

---

Training shall include the following:

- Each authorized employee shall receive training in:
  - The recognition of applicable hazardous energy sources
  - The type and magnitude of energy available in the workplace
  - The methods and means necessary for energy isolation and control
- Each affected employee shall be instructed in the purpose and use of energy control procedures.



# Training Requirements

---

All other employees whose work operations are or may be in an area where energy control procedures may be utilized shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked and tagged out.



# Training Requirements

---

## Retraining:

- Shall be provided for all authorized and affected employees whenever there is
  - A change in job assignments;
  - A change in machines, equipment or processes that present a new hazard; or
  - When there is a change in energy control procedures.
- Additional retraining shall also be conducted whenever a periodic inspection reveals , or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

# Training Requirements

---

Retraining shall establish employee proficiency and introduce new or revised control methods and procedures as necessary

The employer shall certify that employee training has been accomplished and is being kept up to date. The certification will include:

- Employee's name
- Date(s) of training

*Best practice – summary of info covered, reference to videos, materials, etc., signature of trainer, etc.*

# Minimum Procedure

---

LOCKOUT/TAGOUT



# The Lockout/Tagout Procedure (1910.147 Appendix A)

---

## Seven Steps of Lockout/Tagout:

1. Notify Affected Employees
2. Identify Type and Magnitude of Energy
3. Shut Down Equipment
4. Deactivate the Energy Isolating Devices
5. Lock and Tag Energy Isolating Devices
6. Dissipate or Restrain Stored Energy
7. Verify that Equipment is Disconnected From Energy Source(s)

# Step 1: Notify Affected 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 servicing or maintenance.



## Step 2: Identify Type and Magnitude of the Energy

---

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.



# Step 3: Shut Down the Equipment

---

If the machine or equipment is operating, shut it down by the normal stopping procedures:

- Depress stop button
- Open switch
- Close valve



# Step 4: Deactivate Energy Isolating Device(s)

---

De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s)

*Note: Proper employee positioning when throwing disconnects*



# Step 5: Lock and Tag Energy Isolating Devices

---

Lock and tag individual energy isolating (device(s) with assigned individual locks



# Step 6: Dissipate or Restrain Stored Energy

---

Stored or residual energy must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.



# Step 7: Verify that Equipment is De-energized

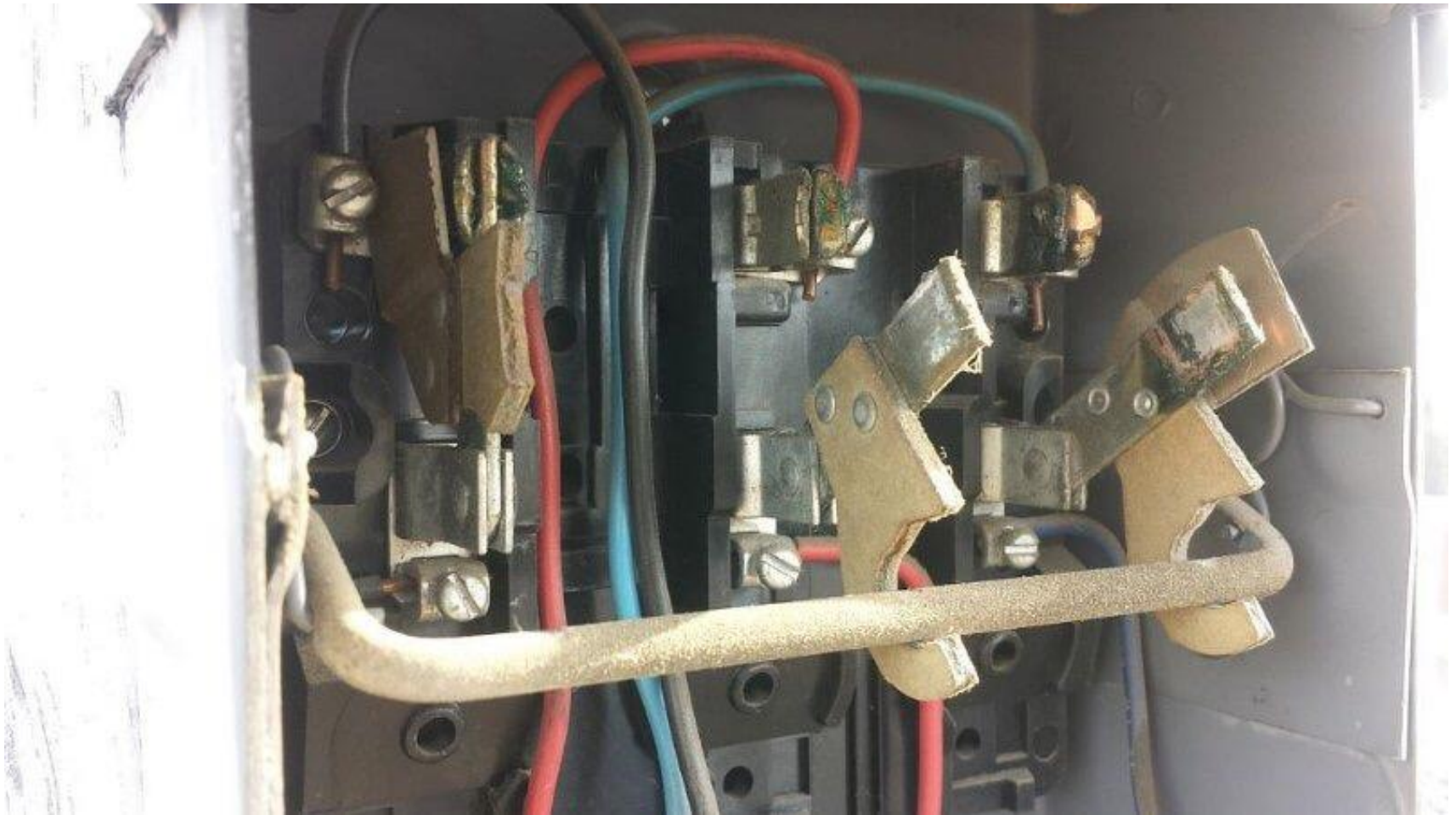
---

Ensure that the equipment is disconnected from the energy source(s)

Check to ensure no personnel are exposed

Verify 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







# Restoring Equipment to Service

---

## Five Steps

1. Ensure Operationally Intact
2. Check Work Area
3. Verify Controls in Neutral
4. Remove Lockout/Tagout Devices
5. Notify Affected Employees

# Step 1: Ensure Machine is Operationally Intact

---

Check the machine or equipment and the immediate area around the machine to ensure that non-essential items have been removed and that the machine or equipment components are operationally intact



# Step 2: Check the Work Area

---

Check the work area to ensure that all employees have been safely positioned or removed from the area



# Step 3: Verify that Controls are in Neutral

---

Avoid hard start if possible

Hard starts can be tough on equipment





# Step 4: Remove Lockout Tagout Devices

---

Remove lockout tagout devices and re-energize equipment.

Removed by persons who placed the lockout tagout devices



# Step 5: Notify Affected Employees

---

Notify affected employees that servicing and maintenance is complete and machine/equipment is ready for use





# Outside Personnel/Contractors

---

The on-site and outside employer shall inform each other of their lockout/tagout procedures

Ensure contractor lockout/tagout program is adequate and contractor employees trained

Best Practice: use company lock and tag in addition to contractor lockout tagout

# Group Lockout

---



Multiple persons (crew, group, department)

Must use procedure that provides all employees a level of protection equal to a personal lockout/tagout device:

- Each person affixes lockout/tagout device to a hasp
- Use of a group lock box

Assign an authorized employee to coordinate the lockout/tagout operation



# Shift/Personnel Changes

---

Equipment must be locked/tagged out at all times during servicing or maintenance

Orderly transfer of lockout/tagout between off- going and on-coming employees

Hand-Off Procedure – Between Authorized Employees

Supervisor Locks Out Equipment in Between Transfer

# Lock Removal

---

Each lockout and or tagout device shall be removed from each energy isolating device by the employee who applied the device

When the authorized employee who applied the lockout and or tagout device is not available to remove it, the device may be removed under the direction of the employer provided that:



# Lock Removal

---

Specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program

The employer shall demonstrate that the procedure provides equivalent safety to the removal of the device by the authorized employee who applied it

Best Practice: Lockout Tagout Removal Permit

# Lock Removal

---



The specific procedure should include at least the following:

- Verification by the employer that the authorized employee who applied the device is not at the facility
- Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout and/or tagout device has been removed
- Ensuring that the authorized employee has this knowledge before he/she resumes work

# Additional Resources

---

Supervisor Talking Points

Lockout Tagout Quiz

[www.osha.gov](http://www.osha.gov) - search lockout tagout for case studies, letters of interpretation, etc.



**SAFETY** MADE **SIMPLE**



Questions?

[Joe.Mlynek@progressivesafety.us](mailto:Joe.Mlynek@progressivesafety.us)

or

[joe@safetymadesimple.com](mailto:joe@safetymadesimple.com)