

LOCKOUT / TAGOUT PROGRAM

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1.0 PURPOSE

To establish requirements for a lockout/tagout program that covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury.

2.0 SCOPE

This program applies to all individuals servicing or performing maintenance activities where the unexpected energization, start up or release of stored energy can occur and cause injury. Prior to starting service work, all energy inputs to a machine, piece of equipment or process shall be locked out and all stored energy shall be relieved, released or blocked. This program also applies to individuals whose job requires him/her to operate a machine or piece of equipment which lockout/tagout is being performed or in an area where lockout/tagout is being performed.

3.0 APPLICABILITY

This program applies to the control of energy during servicing and/or maintenance of equipment and machines.

4.0 DEFINITIONS

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

Authorized employee - A person who locks out or tags out machines or equipment to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing maintenance or service on a machine or equipment that must be locked or tagged out.

Capable of being locked out - An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices will be considered capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild or replace the energy isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy including but not limited to the following: a manually operated switch by which conductors of a circuit can be disconnected from all ungrounded supply connectors where no pole can be operated independently. Other examples include a slide gate, a slip blind, a line valve, a block, or any similar device used to block or isolate energy. This term does not include a push button, selector switch and other control circuit type devices.

Energy source - Any source of electrical, mechanical, pneumatic, hydraulic, chemical, nuclear, thermal, or other energy.

Lockout - The placement of a lockout device on an energy isolating device, ensuring that the energy isolating device and the 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 a safe position and prevent the energizing of a machine or equipment.

Normal production operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance - Workplace activities such as setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities may include, but not limited to the removal of fixed guards, equipment or parts lubrication, cleaning or un-jamming of 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 hazardous release of energy.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a tagout device on an energy isolating mechanism to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag which can be securely fastened to an energy isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed. The tagout device will include the employee's name and date applied.

Exceptions to Lockout Tagout During Setup – Minor tool changes, adjustments and minor servicing activities which take place during normal production operations, do not necessarily require lockout if they are routine, repetitive, and integral to the use of the equipment for production. **Extra care must be taken in these cases.**

5.0 RESPONSIBILITIES

The site will establish energy control procedures predicated in the OSHA requirements. The Operations Manager shall ensure persons tasked to service equipment or machines are trained to perform lockout/tagout and in doing so, are trained to recognize the sources of hazardous energy in their work area and the methods to isolate and control that energy.

The Operations Manager or the designated Safety Coordinator is responsible for providing general training for all authorized and/or affected employees.

The Operations Manager or the designated Safety Coordinator will be responsible for periodically reviewing, updating, and communicating changes made to the program & procedures. The communication of changes will be made to all affected & authorized personnel.

6.0 PROGRAM

6.1 Machine/Equipment Survey (Applicable If Procedures Do Not Exist)

Machines will be surveyed using the form included in **APPENDIX A** (*or a similar technique*) if acceptable written LOTO procedures are not available. Written procedures will be created from the information obtained from the survey. The Operations Manager or the Safety Coordinator is responsible for ensuring that all new or modified equipment is surveyed before performing maintenance on it.

6.2 Written LOTO Procedures

The development and maintenance of written procedures for locking out each machine or piece of equipment shall be the responsibility of the Operations Manager or the Safety Coordinator.

6.3 Written Procedures Exemption

Lockout/Tagout procedures need not be written for a particular machine or equipment, when all of the following elements exist:

- The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
- The machine or equipment has a single energy source which can be readily identified and isolated.
- The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
- The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.
- A single lockout device will achieve a lock-out condition.
- The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- The servicing or maintenance does not create hazards for other employees.
- There is no prior history of injury connected with servicing the equipment.

6.4 Authorized Employees

The training record, which shows the names of persons who received Authorized Training, shall serve as the list of persons authorized by the company to perform maintenance activities where Lockout/Tagout is required.

7.0 LOCKOUT/TAGOUT DEVICES

Lockout and tagout devices shall be standardized and will indicate the identity of the employee, date, and a brief hazard warning. A set of locks will be issued to all authorized employees upon completion of training.

The Operations Manager or the Safety Coordinator shall maintain an accounting of the locks issued to each authorized person. An authorized employee shall notify the Operations Manager or the Safety Coordinator if they lose the key to their lock. The old lock must be recovered and discarded along with any remaining key and a new lock and key issued to the employee.

All sources of hazardous energy shall be capable of being locked out. Control of hazardous energy by tagout alone is not accepted.

7.1 Protective Material and Hardware

Radial will provide the tools and hardware necessary to isolate and secure the hazardous energy of the machines or equipment to be serviced. These tools may include locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, and lockable plugs or preventers.

8.0 LOCKOUT PROCEDURE

Written lockout procedures will be available for each machine or group of machines or equipment where lockout/tagout is required. The procedures must specify how to identify and isolate all energy supply sources and relieve or restrain stored energy on the machinery to be serviced.

8.1 Procedural Steps for Machine Shutdown

The following steps must be included in the written LOTO procedure.

1. Notify affected employees that the machine is about to be shut down and locked out. Notification can be verbal, by use of sign, barricade, etc.
2. Shut down the machine using normal stopping procedure (i.e. activate the stop button, etc.). *Note: Shutting a machine off will not automatically de-energize the entire machine; additional actions may be required to block or drain energy sources.*
3. Isolate all energy sources by closing, blanking and blinding, or otherwise turning switches/disconnects to the "OFF" or "CLOSED" position.
4. Apply locks, tags, and/or devices to the energy disconnects for each energy source present.

Refer to the machine specific procedure to identify and locate all energy sources and their associated disconnects. If a machine specific procedure does not exist, notify the Operations Manager that a machine specific procedure is missing and/or one needs to be developed.

5. Check that all moving parts have stopped. Relieve or disconnect any residual hazardous energy that could be present. Bleed-off all trapped pressure. Blank pipe flanges. Install ground wires to discharge electrical capacitors. Block or support elevated equipment. The following is a list of some of the common stored energy sources and methods to dissipate or restrain these stored energy sources.

Stored Energy Source	Method to Relieve or Restrain
Capacitors - small	Ground out
1 Hydraulic	Bleed down
Air	Bleed down, disconnect
Steam	Bleed down
Springs	Clamp
Thermal	Let cool down
Gas	Bleed down
Water	Bleed down
Elevated machine member	Block and secure
HVAC fans	Block

6. Verify zero energy state. Attempt to restart at all activating controls, start buttons, etc. and return them to the “off” position.

8.2 Procedural Steps for Restoring Energy

The following steps must be included in the written LOTO procedure.

1. Check for others. When the assigned repair or servicing task is completed and the machine is ready for testing or returns to service, check the area surrounding the shut off unit to assure that no one will be exposed to danger when that machine is started up. Replace all guards and reactivate all interlocks.
2. Notify all affected employees that locks/tags are going to be removed and the machine is ready for operation.
3. Remove LOTO equipment. When the area is clear, remove all locks and de-activate all the energy isolating devices to restore energy and material to the machine. The same worker who installed the energy isolating devices and installed the locks must de-activate and remove them.
4. Test the machine. Perform any necessary testing of the restored machine to ensure it is in operable condition.
5. Notify the management that work is completed and the area has been returned to operational condition.

8.3 Removing Another Persons Lock

If an authorized employee who applied the lockout is not available, the following procedure will be followed:

1. Upon inspecting the machinery and determining it is ready for safe operation the Supervisor of the authorized employee who utilized the energy control procedure will be notified.
2. The employee's Supervisor will make the final decision as to whether the lock should be removed. If the employee cannot be located at work, the Supervisor will attempt to contact the employee at home.

8.4 Testing and Positioning

When power must be temporarily restored to a machine to test or position the machine, equipment or components, the following sequence of actions shall be followed:

1. Clear the machine or equipment of tools and materials.
2. Notify all affected employees that you are removing lockout/tagout device(s) and ensure that they are safely positioned or cleared from the area.
3. Remove the lockout device as specified in the lockout removal section of this procedure.
4. Energize and proceed with testing or positioning.
5. When testing or positioning is completed, de-energize all systems and reapply the energy control measures in this procedure.

8.5 Group Lockout

Group Lockout must be performed when more than one employee is working on a piece of machinery.

1. When servicing and/or maintenance are performed by a crew they will utilize a procedure that provides the employees with a level of protection equivalent to that provided by the implementation of a personal lockout device.
2. Each authorized employee will affix a personal lockout device to the group hasp when they begin work, and will remove those devices when they have finished working on the machine or equipment being serviced.
3. Shift or personnel changes:
 - The authorized employees involved in the changes will meet and discuss the condition of the machine or equipment where the energy control procedure is in progress.
 - The authorized employees involved in the change will inspect the area, communicate the status of the operation and make sure all employees are safely positioned or cleared from the area.
 - The current authorized employee(s) will remove their lockout devices and oncoming authorized employee(s) will apply their lockout devices simultaneously.

9.0 PERIODIC INSPECTIONS/CERTIFICATIONS

Periodic inspections will be conducted by the Operations Manager or the Safety Coordinator to ensure the procedures are accurate and performed correctly by the authorized employees. The following guidelines must be used when performing the review.

- The inspection needs to include a representative sample for each energy source.

- The inspection shall include a review, between the inspector and EACH AUTHORIZED EMPLOYEE, of that employee's responsibilities under the energy control procedure being inspected.
- The inspection must be documented, at least annually, using the periodic inspection form in **APPENDIX B**, or something equivalent. Any deviations or inadequacies will be noted and corrected.
- The Operations Manager or the Safety Coordinator will retain the inspection forms and make them available for review.

10.0 TRAINING

Each employee will be trained in lockout/tagout and the methods for identifying and controlling hazardous energy before he or she is tasked to service or repair machines or equipment where lockout/tagout may be necessary. The Operations Manager or the Safety Coordinator will provide the training. The contents of the training will be preserved with a record of who was trained.

Each affected employee will be trained on the general purpose of the lockout/tagout program during new employee orientation and refresher sessions.

Refresher training will occur as follows:

- Whenever there is a change in their job assignments, machine, equipment or process that present a new hazard or when there is a change in the energy control procedures
- Annually.

11.0 OUTSIDE PERSONNEL (CONTRACTORS, SUBCONTRACTORS, ETC.)

Whenever contract personnel are to be engaged in activities covered by the scope and purpose of this program, Radial and the contractor's contacts will inform each other of their respective lockout/tagout procedures. The contractor's lockout/tagout procedure shall meet or exceed the level of safety provided by the customer's lockout/tagout procedures. In the absence of a customer procedure, the contractor's procedure must ensure full protection to his employees, the customer's employees, and ATS employees.

12.0 ENFORCEMENT

Constant awareness of and respect of the lockout/tagout program, and compliance with all safety rules are considered conditions of employment. Failure to follow the guideline of this program can lead to disciplinary warning up to and including termination.

APPENDIX A: MACHINE SURVEY

MACHINE/EQUIPMENT SURVEY

Location: _____

Machine Name: _____

Room Number/Location: _____

Circle all sources where the magnitude of energy is sufficient to cause injury.

Supplied Energy Source (check all that apply)

- | | | | |
|-----------------------------------------|--------------------------------------|---------------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Electric | <input type="checkbox"/> Fuel Oil | <input type="checkbox"/> Natural Gas | <input type="checkbox"/> Steam |
| <input type="checkbox"/> Capacitors | <input type="checkbox"/> Gasoline | <input type="checkbox"/> Radiation | <input type="checkbox"/> Suspended Weight |
| <input type="checkbox"/> Chemical | <input type="checkbox"/> Hydraulic | <input type="checkbox"/> Springs | <input type="checkbox"/> Vacuum |
| <input type="checkbox"/> Compressed Air | <input type="checkbox"/> Hot Surface | <input type="checkbox"/> Static Electricity | <input type="checkbox"/> Water |

Compressed Gas: (specify type) _____

Other Supplied Source: (specify) _____

Stored Energy Source (check all that apply)

- | | | | |
|-----------------------------------------|--------------------------------------|---------------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Electric | <input type="checkbox"/> Fuel Oil | <input type="checkbox"/> Natural Gas | <input type="checkbox"/> Steam |
| <input type="checkbox"/> Capacitors | <input type="checkbox"/> Gasoline | <input type="checkbox"/> Radiation | <input type="checkbox"/> Suspended Weight |
| <input type="checkbox"/> Chemical | <input type="checkbox"/> Hydraulic | <input type="checkbox"/> Springs | <input type="checkbox"/> Vacuum |
| <input type="checkbox"/> Compressed Air | <input type="checkbox"/> Hot Surface | <input type="checkbox"/> Static Electricity | <input type="checkbox"/> Water |

Compressed Gas: (specify type) _____

Other Stored Energy Source :(specify) _____

Submitted by: (name) _____ Date: _____

Operations Manager/Safety Coordinator Review

This machine is designated for: (check one)

- Lockout and Tagout Tagout Only

Reviewer: (name) _____ Date: _____

LOCKOUT / TAGOUT PROGRAM

Appendix B: Periodic Inspection

**PERIODIC INSPECTION FORM
ENERGY CONTROL PROCEDURE
(LOCKOUT/TAGOUT)**

Facility: _____ Department: _____ Machine ID: _____

Inspectors Name: _____ Date: _____

Employees Included in the Inspection: _____

Lockout/Tagout Procedure Reviewed? **YES** **NO**

COMMENTS:

Tagout Procedure Reviewed? **YES** **NO**

COMMENTS:

Inspectors Signature: _____ Date: _____