

Control of Hazardous Energy or Lockout/Tagout Program

Why?

- Lockout/Tagout is a result of injuries that have occurred – and continue to occur.
- Very few accidents that this program addresses are minor. Many are fatalities!
- 10% of all serious accidents in all industries.

I. General Policy

- A. The _____ of _____ will use the following Lockout/Tagout Program whenever maintenance or servicing is done on machines, equipment, or electrical service in which energization or start up of the machines, equipment or electrical service, or the release of stored energy can cause injury to employees. This program will also apply to outside contractors performing work in the entity.
- B. The program shall be used to ensure that machinery, equipment, and electrical service is stopped/isolated from all potentially hazardous energy sources and locked/tagged out before employees perform any servicing or maintenance or where the unexpected start-up of the machinery/equipment or release of stored energy could cause injury.
- C. All employees are required to comply with the restrictions and limitations imposed upon them during the use of the Lockout/Tagout procedures. The authorized employees are required to perform the Lockout/Tagout procedures in accordance with the program. Affected or other employees shall not attempt to start, energize, or use that machinery/equipment. Failure to comply with the program will result in disciplinary action.

II. Lockout/Tagout Requirements

- A. Lockout/Tagout is required whenever maintenance and/or servicing is performed on a machine, piece of equipment or electrical circuit. Maintenance and servicing are used interchangeably and apply to the following activities:
1. An employee is required to remove or bypass a guard or other safety device; or
 2. An employee is required to place any part of his/her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed or where an associated danger zone exists during a machine operating cycle.
- B. All of the activities in Section II, Lockout/Tagout Requirements, Part A, require a

Lockout/Tagout if the unexpected start up or release of stored energy could harm an employee. The only exceptions are as follows:

1. If testing or positioning of a machine requires power, the Lockout/Tagout device may be removed only for that period of time;
2. Minor adjustments that are routine, repetitive, and integral to the use of the equipment during normal production operations provided other effective protection is in place; or,
3. Work on cord and plug connected electrical equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

III. Tagout Requirements

- A. If the equipment is not capable of being locked out, the entity shall utilize a tagout system. Lockout is preferable and should be used exclusively, unless the district can demonstrate that the utilization of the tagout system will provide full employee protection.
- B. When major replacement, repair, renovation, or modification of machines or equipment is performed and when new equipment or machines are installed, energy isolating devices shall be designed to accept a lockout device.
- C. Full employee protection - When a tagout device is used on an energy isolating device that is capable of being locked out, the tagout device shall be attached at the same location that a lockout device would have been attached to, and the district shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.
- D. Additional means to consider shall include:
 1. The implementation of additional safety measures such as the removal of an isolation circuit element;
 2. Blocking of a controlling switch;
 3. Opening of an extra disconnecting device; or,
 4. The removal of a valve handle to reduce the likelihood of inadvertent energization.

IV. Energy Control Procedures

- A. Procedures shall be developed, documented, and utilized for the control of potentially hazardous energy when employees are engaged in activities where Lockout/Tagout is required.
- B. The procedures for the control of potentially hazardous energy shall include the following:

1. The scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy; and,
2. The means to enforce compliance including, but not limited to the following;
 - 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.
 - Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them; and,
 - Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

V. Protective Materials & Hardware

- A. The entity shall provide locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for isolating, securing, or blocking of machines or equipment from energy sources.
- B. Lockout/Tagout devices shall be assigned with individual identifiers to all employees who may be involved in maintenance or servicing of equipment or machines and shall not be used for any other purpose. Only the person assigned a lock will have a key to that lock. If an employee is issued multiple locks, they shall be like-keyed.
- C. Lockout and Tagout devices shall meet the following requirements;
 1. **Durable** - They should be able to withstand the environment that they will be used in, and tagout devices should be constructed and printed so that exposure to weather or damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
 2. **Standardized** - Lockout and Tagout devices shall be standardized in at least one of the following criteria;
 3. **Substantial** - Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques (bolt-cutters). Tagout devices shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds.
 4. **Identifiable** - Lockout and tagout devices shall indicate the identity of the employee applying the device(s). Tagout devices should warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following;

**DO NOT START
DO NOT OPEN
DO NOT CLOSE
DO NOT ENERGIZE
DO NOT OPERATE**

Periodic Inspections:

- 1. At least annually.**
- 2. Authorized employee other than users.**
- 3. Designed to correct deficiencies.**
- 4. A review between inspector & user.**
- 5. Certified (Form #6).**

V. Periodic Inspection

- A. The entity shall conduct a periodic inspection of the energy control procedures at least annually to insure that the procedures are being followed.
- B. The periodic inspection shall be performed by an authorized employee other than the ones utilizing the energy control procedure being inspected.
- C. The periodic inspection shall be designed to correct any deviations or inadequacies observed.
- D. If Lockout and/or Tagout is used for energy control, the periodic inspection shall include a review between the inspector and each authorized and affected employee. The review should include the employees' responsibilities under the energy control procedure being inspected. If Tagout is used for energy control, the review shall also include a discussion on the limitations of tags.
- E. The entity shall certify that a periodic inspection has been performed -
(See **Form PAIC - 6**). The certification shall include the following;
 1. The identity of the machine or equipment on which the energy control procedure was being utilized;
 2. The date of the inspection;
 3. The employee(s) included in the inspection; and,
 4. The person performing the inspection.

<p>EMPLOYEE TRAINING</p> <p>A. To ensure purpose & function of program.</p> <p>B. Authorized employee training to:</p> <p style="padding-left: 40px;"> Recognize energy sources Type of magnitude of energy Methods necessary for control </p> <p>C. Affected Employees</p> <p>D. All other employees</p>

VII. Employee Training

- A. The entity will provide appropriate training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls is provided to the employees.
- B. Authorized Employees - are employees who implement Lockout or Tagout system procedures on machines or equipment to perform the servicing or maintenance on that machine or equipment. Authorized employees shall be trained in the following areas;

Recognition of applicable hazardous energy sources;
The type and magnitude of the energy available in the workplace; and,
The methods and means necessary for energy isolation and control.

- C. Affected Employees - are employees 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. Affected employees will be trained in the purpose and use of energy control.
- D. All Other Employees - are employees whose work operations are or may be in an area where energy control procedures are being utilized. All other employees shall be instructed about Lockout/Tagout procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

If Tagout is used...

- 1. Additional training is needed in the limitations of tags in that they are essentially only warning devices.**
- 2. That they should not be removed, bypassed, ignored, or defeated.**
- 3. That they carry a false sense of security. Also train in the understanding of the messages they carry. Tags & Attachments must withstand environment in which they are placed & be securely placed.**

E. If a tagout system is used, employees shall also be trained in the following limitations of tages;

1. Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices provided by a lock;
2. When a tag is attached to an energy isolating means, it is not to be removed without the authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated;
3. Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations may be in the area in order to be effective;
4. Tags and their means of attachment must be made of materials, which will withstand the environmental conditions encountered in the workplace;
5. Tags may evoke a false sense of security and their meaning needs to be understood as part of the overall energy control program; and,
6. Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

TRAINING (Continued)

Retraining is needed for all authorized & affected employees when...

- 1. Change in jobs.**
- 2. Change in machines.**
- 3. Change in equipment.**
- 4. Change in process.**
- 5. Periodic inspection shows flaws.**

Must Certify all training (records)!

- F. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures. Retraining shall also be conducted whenever a periodic inspection reveals or whenever the Safety Coordinator has reason to believe that there are deviations from or inadequacies in the employees knowledge or use of the energy control procedures.
- G. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures as necessary.
- H. The entity shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain the employee's name and dates of training (See PAIC Forms 1, 2, & 3).

Energy Isolation

Done only by authorized employees!

VIII. Energy Isolation

Implementation of Lockout or Tagout systems shall be performed only by authorized employees.

Notification of Employees

The employee who is to perform the Lockout/Tagout shall notify all affected employees.

Notification shall be given...

**Before
&
After**

IX. Notification Of Employees

- A. The employee who is to perform the Lockout/Tagout shall 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/tagged out to perform the servicing or maintenance.

- B. Notification shall be given before the controls are applied and after the controls are removed from the machine or equipment.

APPLICATION OF CONTROL
Preparation For Shutdown
Machine/Equipment Shutdown
Machine/Equipment Isolation
Lockout/Tagout Device
Stored Energy
Verification
Machine/Equipment Locked/Tagged Out
Document
Fill Out Form #4

X. Application Of Control

The established procedures for the application of energy control shall cover the following elements and actions and shall be done in the following sequence;

1. **Preparation for shutdown.** The authorized employee shall be able 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.
2. **Machine or equipment shutdown.** The machine or equipment shall be turned off or shut down. If the machine or equipment is operating, the authorized employee will shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.). An orderly shutdown must be utilized to avoid additional or increased hazard(s) to employees as a result of deenergization.
3. **Machine or equipment isolation.** The authorized employee will then deactivate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
4. **Lockout or tagout device.** The authorized employee will next lockout/tagout the energy isolating device(s) with assigned individual lock(s)/Tag(s). If more than one authorized employee must perform maintenance or repair, each authorized employees must use their own lock/tag. Hasps will be used to accept more than one lock/tag (see Section XIV. Group Lockout or Tagout). Lockout devices

and/or Tagout devices shall be affixed in a manner to hold the energy isolating devices in a safe or off position. Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached. Where the tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

5. **Stored energy.** If there is any stored or residual energy (such as that in elevated machine members, hydraulic systems, air or water pressure, etc.), the authorized employee doing the Lockout/Tagout will dissipate or restrain it by methods such as grounding, repositioning, blocking, bleeding down, etc.. If there is the possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.
6. **Verification of isolation.** The authorized employee will ensure that the equipment is disconnected from the energy source(s) by first checking that no employees are exposed, then by verifying the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.
7. **The machine or equipment is now locked/tagged out.**
8. Complete and sign form **4, Shutdown/Isolation/Lockout Checklist**, when the Lockout is completed. The Safety Coordinator should have a supply of these forms.
9. The entity should attempt to maintain and repair equipment during hours of least exposure to the general public and/or other employees.

<p style="text-align: center;">RETURN TO SERVICE (Release from Lockout/Tagout)</p> <p>Check that all is clear</p> <p>Check the work area</p> <p>Reinstall guards & components</p> <p>Verify controls are in neutral</p> <p>Remove Lockout/Tagout</p> <p>Notify affected employees</p> <p>Complete second part of form #4</p>

XI. Release From Lockout or Tagout

A. When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the authorized employee shall take the steps indicated below.

1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all employees and the general public have been safely positioned or removed from the area.
3. Re-install all guards and equipment components.
4. Verify that the controls are in neutral.
5. Remove the Lockout/Tagout devices and re-energize the machine or equipment. Each Lockout or Tagout device shall be removed from each energy-isolating device by the employee who applied the device. If the employee who applied the device is not available to remove it, that device may be removed under the direction of the Safety Coordinator, provided that such specific procedures and training for such removal have been developed, documented, and incorporated into the entity's Lockout/Tagout Program. **See Section XII. Emergency Removal of Lockout or Tagout Device.**
6. Notify affected employees that the servicing or maintenance is completed, that Lockout or Tagout devices have been removed, and the machine or equipment is ready to use.
7. Complete and sign the second part of the **PAIC-4 Form, Shutdown/Isolation/Lockout Checklist**, when the machine or equipment is returned to an energized state. The form should then be returned to the Safety Coordinator.

<p style="text-align: center;">Emergency Removal of Lockout/Tagout</p> <p>First try and locate authorized employee</p> <p>Performed by Safety Coordinator</p> <p>Make sure authorized employee is told</p>
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XII. Emergency Removal Of Lockout Or Tagout Device

- A. Authorized employees are to remove their Lockout/Tagout devices upon completion of maintenance. There should be very few occasions where it is necessary for the Safety Coordinator to remove the Lockout/Tagout device.
- B. Emergency Lockout/Tagout removal can only be performed by the Safety Coordinator.
- C. Before emergency removal of the Lockout/Tagout device can be accomplished, it is necessary to make every effort to contact the authorized employee who originally placed the device. The entity must verify that the authorized employee who applied the device is not at the facility. If the employee cannot be contacted, then emergency removal of the device may proceed.
- D. After the Lockout/Tagout device has been removed, it is imperative that the employee who originally placed the device be warned of its removal before resuming work.

<p style="text-align: center;">ADDITIONAL REQUIREMENTS</p> <p style="text-align: center;">If testing...</p> <p>Clear the machine/Equipment</p> <p>Isolate machine/equipment</p> <p>Remove Lockout/Tagout</p> <p>Energize & Test</p> <p>Deenergize & apply control measures</p> <p>Continue service</p>
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This activity should only include the authorized employee. That employee has to warn the affected employees and make sure that the machine/equipment is still under their control.

XIII. Additional Requirements

In situations in which Lockout or Tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment, component, the following steps must be followed;

1. Clear the machine or equipment of tools and materials.

2. Remove employees from the machine or equipment area.
3. Remove the Lockout or Tagout devices.
4. Energize and proceed with testing or positioning; and,
5. Deenergize all systems and reapply energy control measures, and continue the servicing and/or maintenance.

GROUP LOCKOUT/TAGOUT

- 1. Anyone working on machine/equipment.**
- 2. Use a hasp for more than one.**
- 3. May transfer devices during shift change.**
- 4. At all times the devices must belong to the individual who is at the facility.**

XIV. Group Lockout Or Tagout

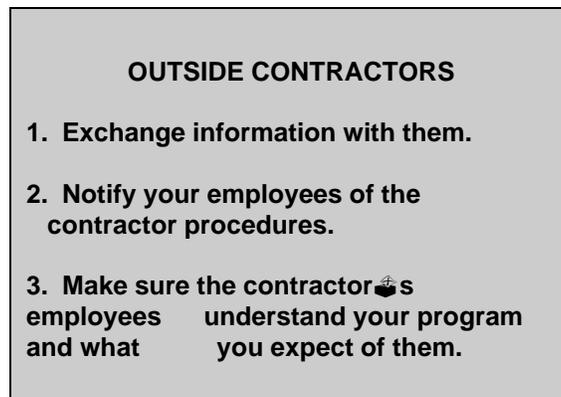
- A. Every authorized employee who performs maintenance or servicing on a machine/piece of equipment, must place their own lock or tag on the energy isolating device during the time that employee is involved in the work.
- B. This will require a hasp, which is capable of holding multiple, locks or tags at the energy-isolating device. The reason for this requirement is to assure that no one can energize a machine while someone is still working on it.
- C. To prevent the use of machines/equipment, which has not been completely serviced, employees may transfer locks/tags during shift changes. The authorized employee(s) that is leaving must fully brief the on coming authorized employee(s).
- D. At all times of operation, the Lockout/Tagout device in use shall belong to an employee who is in the facility at the same time

MACHINE SPECIFIC PROCEDURES

- 1. Inventory machines/equipment.**
- 2. Develop procedures for individual machines/equipment.**
- 3. Procedure for each form of energy.**
- 4. Utilize Form #5.**

XV. Machine-Specific Procedures

- A. In addition to the above general Lockout/Tagout procedures, authorized employees must follow the specific procedures, which have been developed for each machine or piece of equipment.
- B. These procedures explain how that specific machine is shut down, isolated from energy, Locked or Tagged out, and eventually restored to service.
- C. A procedure should be developed for each form of energy which powers each machine in the district.
- D. A list of all machines should be developed and maintained by the district, and kept by the Safety Coordinator in a central file. See the **#5 Form, Machine-Specific Procedures**.



XVI. Outside Personnel - Contractors

- A. Whenever outside servicing personnel are to be engaged in deenergization activities on your property, the entity and the outside servicing personnel shall inform each other of their respective Lockout/Tagout procedures.
- B. The Safety Coordinator will meet with the contractor to exchange information regarding their respective procedures for Lockout and/or Tagout.
- C. The Safety Coordinator will inform the entity employees of the restrictions and prohibitions of the contractor's program.
- E. The Safety Coordinator will later verify that the outside contractor's servicing personnel understand the district's program, its restrictions, and its prohibitions.

ANNUAL REVIEW OF PROGRAM

For the purpose of...

- 1. To assure that it is being followed & that It is meeting its objectives.**
- 2. So it can be revised if needed.**

XVII. Annual Lockout Program Review

- A. To assure that this written Lockout/Tagout program is being followed and to determine if the program is meeting its objectives, the Lockout/Tagout Program will be reviewed at least annually.
- B. Administration reviews written program & annual program review documentation. Changes will be made to increase the level of employee protection as required.

WHERE TO START

Affected areas are most likely...

Shops
Maintenance
Lighting Systems
Boiler Rooms
HVAC

...and more! You will determine them through your inventory.

XVIII. Affected Areas

Lockout/Tagout procedures will generally be used, but not limited to, the following areas/equipment.

- Shops - Wood, Metal, Agriculture, Electrical, Automotive;
- Vehicle Maintenance Areas including garage door openers;
- Lighting Systems;
- Boiler Rooms;
- Heating/Ventilating & Air Conditioning (HVAC).

SHUTDOWN/ISOLATION/LOCKOUT CHECKLIST

Equipment Worked On:	Date:
Person In Charge Of Lockout:	Time: _____ AM _____ PM

Check

1.	Contact operator to shut down equipment. Notify all "affected" personnel.
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2.	Energy Sources isolated/blocked and locked/tagged out.
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	Electrical		Hydraulic
	Pneumatic		Mechanical
	Steam		Stored Energy
	Chemicals		Thermal
	Gravitational		Radiation

Please indicate location and type of lockout used for each of the above energy sources checked. This information will be used to validate and help write site specific lockout procedures.

Electrical Checked By: _____

3.	Authorized employees apply personal locks and/or tags to isolate device or lock box.
4.	Try operational controls to insure equipment is isolated.
5.	Isolation complete.
6.	Lockout/Tagout complete.
7.	Equipment is ready to be worked on.

Signatures: _____

* Shift change procedure completed.

Signed: _____

REMOVAL OF LOCKOUT/START UP EQUIPMENT

1.	All personal locks removed as job and clean up are completed.
2.	Isolation devices removed.
3.	Equipment is clear and ready to be restarted.
4.	Operator (Affected Personnel) notified.
5.	Contact operator to restart equipment.
6.	Return completed form to Supervisor's office.

Signed: _____

Date: ____ / ____ / ____

PAIC-4

LOCKOUT/TAGOUT PROCEDURE PERIODIC INSPECTION

1. Name(s) of authorized employee(s) performing Lockout/Tagout:

2. Name(s) of affected or other employee in the area of the Lockout or Tagout:

3. Name of equipment/system being Locked/Tagged out:

4. Machine or equipment specific procedures that are being used:

5. Are Lockout or Tagout procedures being followed? (Circle One) YES NO

6. Are barricades and/or signs being used? (Circle One) YES NO

7. Comments:

Name of person performing inspection (Please Print)

Signature of person performing inspection

____/____/____
Date

PAIC-6