



Control of Hazardous Energy (Lockout/Tagout) Compliance Program

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CONTROL OF HAZARDOUS ENERGY SOURCE AND ELECTRICAL HAZARDS LOCKOUT AND TAGOUT

PURPOSE

The purpose of these instructions are to ensure that before any employee performs any servicing or maintenance on machinery or equipment, where the unexpected energizing, start up or release of any type of energy could occur and cause injury, the machinery or equipment will be rendered safe to work on by being locked out or tagged out.

GENERAL INFORMATION

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation during any servicing or maintenance activity. Anyone operating or attempting to operate any switch, valve, or other energy isolating device that is locked or tagged out will be disciplined.

OSHA has promulgated two standards that require lockout/tagout of machinery and equipment. They are:

- 1) Control of Hazardous Energy (Lockout/Tagout) - 29 CFR 1910.147.
- 2) Lockout/Tagout Electrical Safe Workpractice Standard - 29 CFR 1910.333.

Lockout is preferred method of isolating machines or equipment from energy sources and shall be used whenever possible. (See pages 6 and 7 for additional requirements for working on electrical circuits.)

If tags are used additional steps shall be taken as may be necessary to provide the equivalent safety available from the use of a lockout device. (See pages 6 and 7 for additional requirements for working on electrical circuits.)

Equipment obtained or modified after January 2, 1990, will be equipped with lockout capability.

The terminology used in this instruction is derived from the OSHA standards.

LOCKOUT/TAGOUT PROCEDURES

This procedure establishes the minimum requirements for the lockout or tagout of energy isolating devices. Note Specific Procedures for control of hazardous energy sources must be developed for any equipment or machinery before any maintenance or servicing is performed on it. Machines and equipment shall be evaluated using Appendix D - The Energy Source Determination Checklist. The procedures developed shall be documented in Appendices E-H.



RESPONSIBILITY

Any employees who could be exposed to hazardous energy sources shall be instructed in the safety significance of the lockout or tagout procedure.

Employees authorized to perform lockout or tagout shall receive training commensurate with their responsibilities and as per the OSHA requirements.

Appendix A is a list of names and job titles of employees authorized to lockout and tagout. Each new or transferred "affected" employee and "other" employees who work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedure. The job titles of the affected employees are contained in Appendix B. Prior to lockout/tagout, the senior authorized individual will brief all affected employees in person. In the event of tagout system only, the authorized individual will also brief all other personnel potentially exposed to the hazard in person. The procedures noted in the LOCKOUT OR TAGOUT SYSTEM PROCEDURE will be followed.

PREPARATION FOR LOCKOUT OR TAGOUT

The "authorized" employee shall make a survey using Appendix D to locate and identify all isolating devices to be certain which switch(s), valve(s), or other energy isolating devices apply to the equipment to be locked or tagged out. More than one hazardous energy source and/or means of disconnect (electrical, mechanical, or others) may be involved. Consult the appendices E-H for specific procedures and then follow the specified procedure. If specific procedures have not been developed and documented in Appendices E-H they shall be developed and documented before work is begun. No work can proceed until _____ writes and provides the authorized person with a specific procedure.

LOCKOUT OR TAGOUT SYSTEM PROCEDURE

- (1) Notify all affected employees that a lockout or tagout system is going to be utilized and the reason thereof. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
- (2) If the machine or equipment is operating, shut it down by the normal stopping procedure. This is usually done by depressing stop button, open toggle switch, etc. In addition, ensure that all stored energy is dissipated or properly restrained.
- (3) Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s).
- (4) Lockout/tagout device application.
 - (a) Locks or tags shall be affixed to each energy isolating device only by an "authorized" employee.
 - (b) Locks and tags shall be singularly identified.

(c) Locks shall be affixed in a manner that will hold the energy isolating devices in a safe or off position.

(d) Tags, when used, shall be affixed in a manner that will clearly indicate that the operation or movement of the energy isolating device from the "safe" or "off" position is prohibited.

(e) Tags that cannot be affixed directly to the energy isolating device 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.

(f) All potentially hazardous stored or residual energy shall be relieved, disconnected, restrained or otherwise rendered safe. (If there is a possibility of re-accumulation of stored energy to a hazardous level verification of isolation shall continue until the possibility of accumulation no long exists).

(g) After ensuring that no personnel are exposed, as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. (See Appendices E-H for procedures for specific machinery and equipment.)

CAUTION: RETURN OPERATING CONTROL(S) TO "NEUTRAL" OR "OFF" POSITION AFTER THE TEST.

(5) The equipment is now locked out or tagged out.

TESTING OR POSITIONING OF MACHINES, EQUIPMENT, OR COMPONENTS THEREOF

In situations 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 or component thereof, the following sequence of actions shall be followed:

(a) Clear the machine or equipment of tools and materials.

(b) Remove employees from the machine or equipment area.

(c) Remove the lockout or tagout devices.

(d) Energize and proceed with testing or positioning.

(e) Deenergize all systems and reapply energy control measures in accordance with the requirements set forth in this instruction.



RESTORING MACHINES OR EQUIPMENT TO NORMAL PRODUCTION OPERATIONS

- (1) After the servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.
- (2) After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices and notify the "affected" employees of their removal.
- (3) Operate the energy isolating the devices to restore energy to the machine or equipment.

PROCEDURE INVOLVING MORE THAN ONE PERSON

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own assigned lockout device or tagout device on the energy isolating device(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee will then use his/her own assigned lock secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet.

REMOVAL OF LOCKOUT/TAGOUT DEVICES BY OTHER THAN THE AUTHORIZED EMPLOYEE

Lockout/Tagout Devices shall be removed from each energy isolating device by the employee who applied it, EXCEPT:

1. Lockout/tagout devices may be removed by _____ or _____ if the authorized employee who applied it is not available and:
 - (a) it is verified that the authorized employee who applied the device is not at the facility;
 - (b) all reasonable efforts were made to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed and;
 - (c) the authorized employee has this knowledge before he/she resumes work at that facility.

INFORMING OUTSIDE CONTRACTORS

_____ will inform all outside contractors of the elements of this program and obtain information regarding their lockout/tagout programs. This information shall be conveyed to our employees in an understandable manner. The work efforts covered by the procedure shall be fully coordinated and complied with.



SHIFT OR PERSONNEL CHANGES

In the case of shift or personnel changes, a change over period will be established so that the authorized employees may exchange their assigned locks/tags. Authorized personnel assuming control of lockout of equipment shall be fully briefed in the scope and stage of the work by those whom are being relieved.

PERIODIC INSPECTIONS

Periodically (at least annually) the effectiveness of the entire program will be evaluated by an authorized employee(s) other than the one(s) utilizing the energy control procedure being inspected. Any deviations or inadequacies shall be documented and corrected. These annual evaluations will be conducted during the month of _____ each year.

The date of the inspection/evaluation will be documented on the Annual Inspection Report (Appendix C) and maintained as a part of this program until the next annual evaluation replaces it.

TRAINING

Training shall be given to all authorized, affected and other personnel as required by 29 CFR 1910.147(c)(7) and 29 CFR 1910.332. Appendix J provides Key Points for Lockout/Tagout Training Program and shall be used as a training outline along with the appropriate sections of the standard.

In addition, a copy of the illustrated overview of the standard is provided in Appendix J, copies can be made and handed out at the training session or transparencies can be made and projected by an overhead projector.

_____ will conduct training and prepare a record and certify that the employee training has been accomplished. The certification will be made on Appendix K (Training Record). _____ will conduct retraining whenever there is:

- (a) a change in their job assignments,
- (b) a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or
- (c) when there is a change in the energy control procedures,
- (d) additional retraining shall also be conducted whenever the periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

ELECTRICAL LOCKOUT/TAGOUT (29 CFR 1910.333(b))

Electrical work requires a lock and a tag to be used together. However, a tag can be used by itself only if the electrical disconnecting source does not have lockout capabilities.

Locks can be placed without a tag only under the following conditions:

- (1) Only one circuit or piece of equipment is de-energized.
- (2) The lockout period does not extend beyond the work shift.
- (3) Employees exposed to the hazards associated with re-energizing the circuit or equipment are familiar with this procedure.

ELECTRICAL TEST VERIFICATION OF DEENERGIZED CIRCUITS (29 CFR 1910.333(b)(iv)(B))

A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

WORK ON ENERGIZED CIRCUITS

Approval must be obtained from _____ prior to any work on energized circuits.

_____ will verify that by deenergizing circuits that it will create additional or increased hazards or it is infeasible due to equipment design or operational limitations.

NOTE: Working on energized parts requires the wearing of appropriate personal protective equipment. _____ will be responsible for specifying appropriate personnel equipment to be used, to ensure compliance with 29 CFR 1910.335.

Personnel protective equipment for electrical hazards shall meet, be used and maintained in accordance with ANSI J6.1 through J6.7.

ACCIDENTS CONCERNING LOCKOUT/TAGOUT

_____ will be responsible for fully investigating all lockout/tagout accidents, and reporting the cause of such accident to _____. If the accident involved the control of hazardous energy with a single lockout source, a specific procedure will be written and included in Appendix F before work is continued.

If the accident involved a specific procedure for a piece of equipment, the lockout/tagout specific procedure will be evaluated and modified (if necessary) prior to authorizing work to continue.



APPENDIX A

LIST OF AUTHORIZED LOCKOUT AND TAGOUT INDIVIDUALS



WORK CENTER	LOCK #	NAME	MECHANICAL YES/NO	ELECTRICAL YES/NO

NOTE: AUTHORIZED ELECTRICAL LOCKOUT/TAGOUT REQUIRES QUALIFIED WORKER IN ACCORDANCE WITH SUBPART "S" 29 CFR PART 1910.



**APPENDIX C
ANNUAL EVALUATION REPORT**

Date(s) of Evaluation _____

Evaluation was made by _____
(PRINT)

General policy has been reviewed: YES/NO (Circle one)

COMMENTS ON GENERAL POLICY:

THE FOLLOWING SPECIFIC PROCEDURES HAVE BEEN REVIEWED (LIST BELOW):

THE FOLLOWING SPECIFIC PROCEDURES WERE MODIFIED (LIST BELOW):

THE FOLLOWING SPECIFIC PROCEDURES WERE ADDED (LIST BELOW):

A REVIEW OF THE LOG OF OCCUPATIONAL INJURIES AND ILLNESSES (OSHA FORM 200 OR EQUIVALENT) AND THE ASSOCIATED ACCIDENT REPORTS AND INJURY/ILLNESS REPORTS (OSHA FORM 101 OR EQUIVALENT): **YES/NO**
(CIRCLE ONE)

THE FOLLOWING INJURIES RESULTED FROM LOCKOUT/TAGOUT (LIST BELOW):



**APPENDIX D
LOCKOUT/TAGOUT PROCEDURES/CHECKLIST
ENERGY SOURCE DETERMINATION**

DATE: _____ CONDUCTED BY: _____

In order to determine all energy sources for each piece of equipment, all questions must be answered. Both actual and potential sources of energy need to be considered when responding to the questions. If the question does not apply, write N/A in the blank. Circle "yes" or "no" or fill in the blank.

Location: _____ Work Center: _____

Line: _____ Equipment No.: _____

Equipment Name: _____ Serial No.: _____

Lockout/Tagout Procedure No. Assigned: _____

1. Does this equipment have:

- a. Electric power (including battery)? YES/NO
if yes, Motor Control Center (MCC) or power panel and breaker number

Does it have a lockout device? YES/NO

Battery location: _____

- b. Mechanical power? YES/NO

Mark each type of energy source that applies:

1. Engine driven? YES/NO

If yes, switch or key location: _____

Is lockout device installed? YES/NO

If no, method of preventing operation: _____

2. Spring loaded? YES/NO

If yes, is there a method of preventing spring activation? YES/NO



If no, how can spring tension be safely released or Secured?

3. Counter weight(s)? YES/NO

If yes, does it have a method of preventing movement? YES/NO

If yes, can it be locked? YES/NO

If no, how can it be secured?

4. Flywheel? YES/NO

If yes, does it have a method of preventing movement? YES/NO

If no, how can it be secured?

c. Hydraulic power? YES/NO

If yes, location of main control/shut off valve.

Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shutoff valve. _____

Does manual shutoff valve have lockout device? YES/NO

If no, what is needed to lock valve closed? _____

Is there a bleed or drain valve to reduce pressure to zero? YES/NO

If no, what will be required to bleed of pressure? _____

d. Pneumatic energy? YES/NO

If yes, location of main control/shut off valve. _____

Can control/shut off valve be locked in "off" position? YES/NO

If no, location of closest manual shutoff valve. _____

Does manual shutoff valve have lockout device? YES/NO

If no, what is needed to lock valve closed? _____

Is there a bleed or drain valve to reduce pressure to zero? YES/NO

If no, what will be required to bleed off pressure? _____

e. Chemical system? YES/NO

If yes, location of main control/shutoff valve. _____

Can control/shutoff valve be locked in off/closed position? YES/NO

If no, location of closest manual shutoff valve. _____

Does manual shutoff valve have lockout device? YES/NO

If no, what is needed to lock valve closed? _____

Is there a bleed or drain valve to safety reduce system pressure and drain system of chemicals? YES/NO

If no, how can system be drained and neutralized? _____

What personal protective clothing or equipment is needed for this equipment? _____

f. Thermal energy? YES/NO

If yes, location of main control/shutoff valve. _____

Can control/shutoff valve be locked in "off" or closed position? YES/NO

If no, location of closest manual shutoff valve. _____



- Does manual shutoff valve have lockout device? YES/NO
- g. Gravitational Energy? YES/NO
- If yes, location of main control/shutoff device. _____
- Is there a device to restrain or control the gravitational energy? YES/NO
- If no, what will be required to control or restrain the gravitational energy? _____
- Can the device used to restrain or control the gravitational energy be locked in a position that will prevent the gravitational energy from being released? YES/NO
- h. Other Sources of Energy?
- Are there any other actual or potential energy sources? YES/NO
- If yes, location of main control/shutoff valve. _____
- Can control/shutoff valve be locked in an off or closed position? YES/NO
- Is there a way to drain or bleed of pressure? YES/NO
- If no, how can energy be controlled or neutralized? _____

- Is personal protective clothing or equipment needed to protect employees from the energy source? YES/NO
- If yes, what equipment is needed? _____

- If no, what is needed to lock valve closed? _____
- Is there a bleed or drain valve to safely reduce system pressure and temperature and drain system? YES/NO
- If yes, what is the location of the valve? _____

If no, how can system pressure and temperature be reduced and drained? _____

What personal protective clothing or equipment is needed for this equipment? _____

Special precautions not noted in the preceding (i.e., fire hazards, chemical reactions, required cool down periods, etc.): _____

Recommendations or Comments: _____

Completed by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____



**APPENDIX F
SPECIFIC LOCKOUT PROCEDURE**

EQUIPMENT, MACHINERY, OR PROCESS:

LOCKOUT PROCEDURE NO.: L/O-___-____

DATE: _____

APPROVED/IMPLEMENTED: _____

SPECIFIC LOCKOUT PROCEDURE

NOTE: Required for all equipment, machinery and/or processes that fails to meet the exceptions noted in 29 CFR 1910.147(c)(4)(i).

1. The purpose of these specific procedures is to protect the life and limb of the employees of _____.

NOTE: Failure to comply with these procedures will result in disciplinary action and may result in employee discharge.

2. TYPE(S) AND MAGNITUDE(S) OF ENERGY AND HAZARDS:

3. NAME(S)/JOB TITLE(S) OF EMPLOYEES AUTHORIZED TO LOCKOUT/TAGOUT:

4. NAME(S)/JOB TITLE(S) OF AFFECTED EMPLOYEES AND HOW TO NOTIFY:

5. TYPE(S) AND LOCATION OF ENERGY ISOLATING MEANS:

6. TYPE(S) OF STORED ENERGY - METHODS TO DISSIPATE OR RESTRAIN:



APPENDIX H

SPECIFIC TAGOUT PROCEDURES

EQUIPMENT, MACHINERY, OR
PROCESS: _____

LOCKOUT PROCEDURE NO.: T/O-____-____

DATE APPROVED/IMPLEMENTED: _____

SPECIFIC TAGOUT PROCEDURE

NOTE: Required for all equipment, machinery and/or processes that fail to have lockout capabilities. Failure to comply with these procedures will result in disciplinary action and may result in employee discharge

1. The purpose of these specific procedures is to protect the life and limb of the employees of _____.
2. TYPE(S) AND MAGNITUDE(S) OF ENERGY AND HAZARDS:

3. NAME(S)/JOB TITLE(S) OF EMPLOYEES AUTHORIZED TO LOCKOUT/TAGOUT:

4. NAME(S)/JOB TITLE(S) OF AFFECTED EMPLOYEES AND HOW TO NOTIFY:

5. NAME(S)/JOB TITLE(S) OF OTHER EMPLOYEES:

6. TYPE(S) AND LOCATION OF ENERGY ISOLATING MEANS:



APPENDIX I

METHODS OF TAG AND LOCK IDENTIFICATION

NUMBER LOCK SEQUENTIALLY (1,2,3 ETC.). LOCKS WILL BE COLOR CODED BY DEPARTMENT AND THE NUMBERS AND COLORS WILL BE LISTED ON APPENDIX A TO IDENTIFY THE EMPLOYEE ASSIGNED.

ALL LOCKS WILL BE OF _____ BRAND.

TAGS WILL ALWAYS BE SECURED BY A NYLON SELF-LOCKING TIE, WHICH WILL REQUIRE CUTTING THE NYLON SELF-LOCKING TIE TO REMOVE IT.

NOTE: OTHER METHODS OF IDENTIFYING LOCKS AND TAGS ARE ACCEPTABLE. THESE OTHER METHODS ARE SPECIFIED IN 29 CFR 1910.147(c)(5).



APPENDIX J

KEY POINTS FOR LOCKOUT/TAGOUT TRAINING PROGRAM

GENERAL RULES

- * Procedures developed, documented and utilized for control of potentially hazardous energy.
- * Employer has provided locks, tags, chains, wedges, key blocks adapter pins, self locking fasteners, or other hardware to isolating, securing or blocking machines or equipment.
- * Lockout/Tagout devices singularly identified.
- * Lockout/Tagout devices are used only for controlling energy.
- * Lockout/Tagout devices are not used for other purposes.
- * Durable lockout/tagout devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- * Standardized lockout/tagout devices must be standardized with each facility in at least color, shape, or size.
- * For tagout devices, also standardized print and format.
- * Must be legible and understandable.
- * Identifiable lockout/tagout devices must indicate the identify of the employee applying the devices.
- * When major modifications are made to machinery electrical systems or when new machinery is installed, the energy source must be designed to accept a lockout device.
- * Inspection conducted at least annually.
- * Performed by authorized employee other than those utilized energy control procedure under inspection.
- * Designed to correct any deviations or inadequacies observed.
- * Include review of each authorized employee's responsibilities under the procedure(s). If tagout used, than include review of limitations of tags.

APPENDIX K

**TRAINING RECORD/CERTIFICATION FOR AUTHORIZED EMPLOYEES
LOCKOUT/TAGOUT**

This is to certify that the undersigned conducted training in accordance with 29 CFR 1910.147(c)(7) and the provisions of this lockout/tagout program. The following individuals receive training on this company's energy control program.

NOTE: This is not a certification for the training required for those exposed to electrical shock hazards as required in 29 CFR 1910.332.

PRINT NAME	SIGNATURE	AUTHORIZED EMPLOYEE TRAINING
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

_____ INSTRUCTOR'S NAME	_____ TITLE	_____ INSTRUCTOR'S SIGNATURE (PRINT)
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