

**LOCKOUT/TAGOUT PLAN**

**FOR**

**Dunsmuir Joint Union High School District**

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## **PURPOSE**

The procedures identified in this plan establish the minimum requirements for the lockout of energy whenever maintenance or servicing is done on machines or equipment. The procedures shall be used to ensure machines or equipment are stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury.

## **COMPLIANCE**

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. Authorized employees are required to perform the lockout in accordance with the procedures identified in this plan. All employees, upon observing machine(s) or equipment, which are locked out for the performance of servicing or maintenance, shall not attempt to start, energize or use the machine(s) or equipment.

## SECTION I - ENERGY CONTROL PROCEDURES

Energy control procedures consist of:

- Lockout/Tagout
- Periodic inspections
- Employee Training

### **LOCKOUT/TAGOUT:**

If an energy-isolating device is not capable of being locked out, a tagout system shall be implemented.

If an energy-isolating device is capable of being locked out, then the following procedures will apply prior to any maintenance or servicing:

- Each employee working on equipment places his/her own lock and tag on the lockout mechanism and maintains key in a visible position on their person. (This can be on a belt loop, key ring, or other visible location but not in an area which would interfere with job safety).
- Will keep a master key to open any lock.
- Each employee is responsible for removing his/her lock upon completion of their assigned function.
- If equipment operations continue across shifts, then the equipment lockout remains in place. Others working on equipment continue placing their lock in addition to the locks present.

### **PERIODIC INSPECTIONS:**

To assure the energy control procedures remain viable and effective, and to assure the procedures are being followed, the District will provide for an annual inspection of the program and procedures. The inspection will be carried out by the Superintendent or other authorized District employee who does not actually utilize the energy control procedure.

The periodic inspection will be conducted in a manner to identify and correct any variations or inadequacies identified. The inspection will include a review of procedures and a review with each authorized employee of his/her responsibilities under energy control procedures.

## **EMPLOYEE TRAINING:**

Each employee authorized to work on equipment for set-up, maintenance, installation or other reason, shall receive training on lockout and tagout (energy control) procedures. Training will consist of the following:

- Purpose and use of energy control procedures
- Review of District energy control procedures
- Recognition of applicable hazardous energy sources
- Identification of types and magnitude of energy sources in the workplace
- Methods & means of energy isolation and control
- Limitations of tagout
- Emergency information

All training will be documented in accordance with the District's Injury & Illness Prevention Program.

## SECTION II - APPLICATION OF CONTROL

The identified procedures for the application of energy control shall include the following elements and actions to be done in the following sequence:

1. **Preparation for shutdown.** Before an authorized employee shuts down equipment, the authorized employee shall have knowledge of:
  - the type and magnitude of the energy;
  - the hazards of the energy to be controlled; and,
  - the methods or means to control the energy.
2. **Notification of affected employees.** The authorized employee will notify the site administrator and other "affected" employees of the intention to lockout and identify the equipment to be locked and/or tagged.
3. **Machine or equipment shutdown.** Machine(s) or equipment shall be shut down or turned off using established procedures for the given machine or equipment.
4. **Machine or equipment isolation.** All energy isolating devices, which are needed to control the energy to the machine or equipment, shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.
5. **Lockout or tagout device application.**
  - Lockout and/or tagout devices shall be applied only by authorized employees.
  - Lockout devices, where used, shall be applied in a manner which holds the energy isolating device in a "safe" or "off" position.
  - Tagout devices, where used solely, shall be applied in a manner which clearly indicates that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
6. **Stored energy.** Following the application of energy control devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained or otherwise rendered safe.
7. **Verification of isolation.** The authorized employee shall verify that isolation and de-energization of the intended equipment has been accomplished prior to commencing any work on the equipment.

### **SECTION III - RELEASE FROM LOCKOUT OR TAGOUT**

Before lockout or tagout devices are removed and energy restored to the isolated machinery or equipment, the following procedures shall be followed:

1. The authorized employee shall inspect the authorized work to ensure than nonessential items have been removed and that the machine or equipment is operationally intact, assembled properly and is safe to operate for its intended use.
2. Check the work area to ensure all employees have been safely positioned or removed.
3. Each lockout and/or tagout device shall be removed from each energy isolating device only by the employee who applied the device.
4. Affected employees shall be notified that the lockout or tagout device(s) have been removed before the machine or equipment is to be started.
5. Start Equipment.

## SECTION IV - ADDITIONAL REQUIREMENTS

### **SPECIAL APPLICATIONS:**

On occasion, a new and/or special application may arise and not be covered in procedures by this policy. If this occurs, Superintendent and the Lead Maintenance Employee will determine the safest method for performing the task and facilitating lockout/tagout.

### **TESTING OR POSITIONING OF MACHINES OR EQUIPMENT:**

If energy control devices must be temporarily removed for testing or positioning of the machinery or equipment, the following shall apply:

1. Clear the machine or equipment of tools and materials
2. Remove employees from the machine or equipment area
3. Remove lockout or tagout devices as specified in Section III of this plan
4. Energize and proceed with the testing or positioning
5. De-energize all systems and reapply energy control measures in accordance with the provisions of this plan
6. Continue maintenance or servicing as scheduled

### **SHIFT OR PERSONNEL CHANGES:**

Lead Maintenance Employee shall be responsible for ensuring the continuity of protection and an orderly transfer of energy control devices between off-going and incoming employees.

### **OUTSIDE PERSONNEL:**

When outside service personnel are engaged in activities covered by the scope of this program, the outside employer shall communicate with Lead Maintenance Employee for an exchange of information regarding each other's lockout or tagout procedures.

The Superintendent will be responsible for ensuring all District employees understand and comply with the restrictions of the outside service provider's energy control program.

### **2015-2016 Employee Roster**

Ray Kellar      Superintendent/Principal  
Jeff Ogden      Lead Maintenance Employee  
Kim Vardanega    Adm.Asst./CBO



**APPENDIX A**

**EXAMPLES OF LOCKOUT/TAGOUT MATERIALS**

**Brady** Model # 99302 | Internet # 202203267  
**120/277 Volt Breaker Lockout Pouch With Safety Padlocks & Tags**



**\$105.76** /each

PRODUCT NOT SOLD IN STORES

Open Expanded View

Click Image to Zoom



**PRODUCT OVERVIEW** Model # 99302 | Internet # 202203267

Brady's Lockout Tagout Kits give you the popular lockout devices and lockout tools you need to create a safe, effective and OSHA-compliant lockout program. By using the Lockout Tagout Kit, your workers will have the essentials to lock out electrical panels and machines from operation while the machines are de-energized or under maintenance or service. Brady's Lockout Tagout Kits include an array of safety padlocks, lockout tools, tags, breaker lockouts and much more.

- Contains all the devices you need to lockout most 120/277 Volt breakers
- Components include: 2-120V Snap-On Breaker Lockouts (85387), 2-120/277V Clamp-On Breaker Lockouts (65396), 2-Universal Multi-Pole Breaker Lockouts (66321), 2-Cleats for 120/277V Clamp-On Lockout (85404), 1-Lockout Bell Pouch (51172), 2-Brady Safety Padlocks (99552) and 2-Lockout Tags (85520).
- Heavy duty nylon pouch
- Durable and portable

**SPECIFICATIONS**

**DIMENSIONS**

Product Depth (in.)	5.4	Product Width (in.)	5.5
Product Height (in.)	3.2		

[http://www.homedepot.com/p/Brady-120-277-Volt-Breaker-Lockout-Pouch-With-Safety-Padlocks-Tags-89302/202203267?MERCH=REC\\_-PIPHorizontal1\\_r...](http://www.homedepot.com/p/Brady-120-277-Volt-Breaker-Lockout-Pouch-With-Safety-Padlocks-Tags-89302/202203267?MERCH=REC_-PIPHorizontal1_r...) 1/2

**APPENDIX B**  
**CALIFORNIA CODE OF REGULATIONS TITLE 8,**  
**SECTION 3314**

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Subchapter 7. General Industry Safety Orders  
Group 2. Safe Practices and Personal Protection  
Article 7. Miscellaneous Safe Practices

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**§3314. The Control of Hazardous Energy for the Cleaning, Repairing, Servicing, Setting-Up, and Adjusting Operations of Prime Movers, Machinery and Equipment, Including Lockout/Tagout.**

- [Lockout/Blockout Methods and Sample Procedures](#) (*English*)
  - [Cierre con Candado y Etiqueta Métodos y Muestras de Procedimientos](#) (*Spanish*)
- 

(a) Application.

(1) This Section applies to the cleaning, repairing, servicing, setting-up and adjusting 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 to employees.

(2) For the purposes of this Section, cleaning, repairing, servicing and adjusting activities shall include unjamming prime movers, machinery and equipment.

(3) Requirements for working on energized electrical systems are prescribed in Sections 2320.1 through 2320.9 or 2940 through 2945.

(b) Definitions:

**Affected employee.** For the purpose of this section, an employee whose job requires them to operate or use a machine or equipment on which cleaning, repairing, servicing, setting-up or adjusting operations are being performed under lockout or tagout, or whose job requires the employee to work in an area in which such activities are being performed under lockout or tagout.

**Authorized employee or person.** For the purposes of this section, a qualified person who locks out or tags out specific machines or equipment in order to perform cleaning, repairing, servicing, setting-up, and adjusting operations on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties including performing cleaning, repairing, servicing, setting-up and adjusting operations covered under this section.

Locked out. The use of devices, positive methods and procedures, which will result in the effective isolation or securing of prime movers, machinery and equipment from mechanical, hydraulic, pneumatic, chemical, electrical, thermal or other hazardous energy sources.

Normal Production Operations. The utilization of a machine or equipment to perform its intended production function.

Prime Mover. The source of mechanical power for a machine.

(c) Cleaning, Servicing and Adjusting Operations.

Machinery or equipment capable of movement shall be stopped and the power source de-energized or disengaged, and, if necessary, the moveable parts shall be mechanically blocked or locked out to prevent inadvertent movement, or release of stored energy during cleaning, servicing and adjusting operations. Accident prevention signs or tags or both shall be placed on the controls of the power source of the machinery or equipment.

(1) If the machinery or equipment must be capable of movement during this period in order to perform the specific task, the employer shall minimize the hazard by providing and requiring the use of extension tools (eg., extended swabs, brushes, scrapers) or other methods or means to protect employees from injury due to such movement. Employees shall be made familiar with the safe use and maintenance of such tools, methods or means, by thorough training.

(d) Repair Work and Setting-Up Operations.

Prime movers, equipment, or power-driven machines equipped with lockable controls or readily adaptable to lockable controls shall be locked out or positively sealed in the "off" position during repair work and setting-up operations. Machines, equipment, or prime movers not equipped with lockable controls or readily adaptable to lockable controls shall be considered in compliance with Section 3314 when positive means are taken, such as de-energizing or disconnecting the equipment from its source of power, or other action which will effectively prevent the equipment, prime mover or machine from inadvertent movement or release of stored energy. In all cases, accident prevention signs or tags or both shall be placed on the controls of the equipment, machines and prime movers during repair work and setting-up operations.

EXCEPTIONS to subsections (c) and (d):

1. Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations are not covered by the requirements of Section 3314 if they are routine, repetitive, and integral to the use of the equipment or machinery for production, provided that the work is performed using alternative measures which provide effective protection.
2. Work on cord and plug-connected electric 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 work.
3. Where an employer has a uniform system with unique and personally identifiable locks designed for lockout, that are placed on the source of energy, accident prevention signs or tags are not required.

(e) Materials and Hardware. The employer shall provide accident prevention signs, tags, padlocks, seals or other similarly effective means which may be required for cleaning, servicing, adjusting, repair work or setting-up operations. Signs, tags, padlocks, and seals shall have means by which they can be readily

secured to the controls. 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.

(f) Repetitive Process Machines. On repetitive process machines, such as numerical control machines, which require power or current continuance to maintain indexing and where repair, adjustment, testing, or setting-up operations cannot be accomplished with the prime mover or hazardous energy source disconnected, such operations may be performed under the following conditions:

- (1) The operating station where the machine may be activated must at all times be under the control of a qualified operator or craftsman.
- (2) All participants must be in clear view of the operator or in positive communication with each other.
- (3) All participants must be beyond the reach of machine elements which may move rapidly and present a hazard to them.
- (4) Where machine configuration or size requires that the operator leave his control station to install tools, and where machine elements exist which may move rapidly if activated, such elements must be separately locked out by positive means.
- (5) During repair procedures where mechanical components are being adjusted or replaced, the machine shall be de-energized or disconnected from its power source.

NOTE: "Participant" shall mean any other person(s) engaged in the repair, adjustment, testing, or setting up operation in addition to the qualified operator or craftsman having control of the machine operating station.

(g) Hazardous Energy Control Procedures. A hazardous energy control procedure shall be developed and utilized by the employer when employees are engaged in the cleaning, repairing, servicing, setting-up or adjusting of prime movers, machinery and equipment.

(1) The procedure shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance, including but not limited to, the following:

- (A) A statement of the intended use of the procedure;
- (B) The procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;
- (C) The procedural steps for the placement, removal and transfer of lockout devices and tagout devices and responsibilities; and,
- (D) The requirements for testing a machine or equipment, to determine and verify the effectiveness of lockout devices, tagout devices and other hazardous energy control devices.

(2) The employer's hazardous energy control procedures shall be documented in writing.

(A) The employer's hazardous energy control procedure shall include separate procedural steps for the safe lockout/tagout of each machine or piece of equipment affected by the hazardous energy control procedure.

EXCEPTION to subsection (g)(2)(A): The procedural steps for the safe lockout/tagout of prime movers, machinery or equipment may be used for a group or type of machinery or equipment, when either of the following two conditions exist:

(1) Condition 1:

- (A) The operational controls named in the procedural steps are configured in a similar manner, and
- (B) The locations of disconnect points (energy isolating devices) are identified, and
- (C) The sequence of steps to safely lockout or tagout the machinery or equipment are similar.

(2) Condition 2: The machinery or equipment has a single energy supply that is readily identified and isolated and has no stored or residual hazardous energy.

(h) Group Lockout or Tagout.

(1) When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the utilization of a personal lockout or tagout device.

(2) Group lockout or tagout devices shall be used in accordance with the procedures required by subsection (g) and also in accordance with requirements that include, but are not necessarily limited to, the following:

(A) Primary responsibility shall be vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

(B) Provision shall be made for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment;

(C) When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(D) Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

(i) Shift or Personnel Changes.

Specific hazardous energy control procedures (i.e. lock-out/tag-out) shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including, but not necessarily limited to, provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, in order to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

(j) Periodic Inspection.

The employer shall conduct a periodic inspection of the energy control procedure(s) at least annually to evaluate their continued effectiveness and determine necessity for updating the written procedure(s).

(1) The periodic inspection shall be performed by an authorized employee or person other than the one(s) utilizing the hazardous energy control procedures being inspected.

(2) Where lockout and/or tagout is used for hazardous energy control, the periodic inspection shall include a review between the inspector and authorized employees of their responsibilities under the hazardous energy control procedure being inspected.

(3) The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the hazardous energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

(k) Whenever outside servicing personnel are to be engaged in activities covered by this section, the on-site employer's lockout or tagout procedures shall be followed.

(l) Training.

(1) Authorized employees shall be trained on hazardous energy control procedures and on the hazards related to performing activities required for cleaning, repairing, servicing, setting-up and adjusting prime movers, machinery and equipment.

(2) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

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

(4) Such training shall be documented as required by Section 3203.

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

## HISTORY

1. Amendment filed 10-25-74; effective thirtieth day thereafter (Register 74, No. 43).

2. Repealer and new subsections (a), (b) and (c) and amendment of subsection (d) filed 5-12-77; effective thirtieth day thereafter (Register 77, No. 20).

3. Amendment of subsection (c) and adoption of subsections (f)-(i) filed 12-23-91; operative 1-22-92 (Register 92, No. 12).

4. Amendment of subsections (a) and (b) filed 3-24-94; operative 4-25-94 (Register 94, No. 12).

5. Amendment of section heading and section filed 12-7-2004; operative 1-6-2005 (Register 2004, No. 50).

6. New subsections (h)-(i), subsection relettering and amendment of newly designated subsection (j) filed 8-25-2014; operative 10-1-2014 (Register 2014, No. 35)



## **APPENDIX C**

### **29 CODE OF REGULATIONS, SECTION 1910.147**

## Regulations (Standards - 29 CFR) - Table of Contents

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• Part Number:	1910
• Part Title:	Occupational Safety and Health Standards
• Subpart:	J
• Subpart Title:	General Environmental Controls
• Standard Number:	<a href="#">1910.147</a>
• Title:	The control of hazardous energy (lockout/tagout).
• Appendix:	<a href="#">A</a>
• GPO Source:	<a href="#">e-CFR</a>

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### [1910.147\(a\)](#)

*Scope, application, and purpose—*

1910.147(a)(1)

*Scope*

#### [1910.147\(a\)\(1\)\(i\)](#)

This standard 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 harm employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

1910.147(a)(1)(ii)

This standard does not cover the following:

1910.147(a)(1)(ii)(A)

Construction and agriculture employment;

1910.147(a)(1)(ii)(B)

Employment covered by parts 1915, 1917, and 1918 of this title;

1910.147(a)(1)(ii)(C)

Installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering;

1910.147(a)(1)(ii)(D)

Exposure to electrical hazards from work on, near, or with conductors or equipment in electric-utilization installations, which is covered by subpart S of this part; and

1910.147(a)(1)(ii)(E)

Oil and gas well drilling and servicing.

1910.147(a)(2)

*Application.*

1910.147(a)(2)(i)

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

#### [1910.147\(a\)\(2\)\(ii\)](#)

Normal production operations are not covered by this standard (See Subpart O of this Part). Servicing and/or maintenance which takes place during normal production operations is covered by this standard only if:

[1910.147\(a\)\(2\)\(ii\)\(A\)](#)

An employee is required to remove or bypass a guard or other safety device; or

[1910.147\(a\)\(2\)\(ii\)\(B\)](#)

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 the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

**Note:** *Exception to paragraph (a)(2)(ii):* Minor tool changes and adjustments, and other minor servicing

activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection (See Subpart O of this Part).

1910.147(a)(2)(iii)

This standard does not apply to the following:

[1910.147\(a\)\(2\)\(iii\)\(A\)](#)

Work on cord and plug connected electric 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.

1910.147(a)(2)(iii)(B)

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 the employer demonstrates that-

1910.147(a)(2)(iii)(B)(1)

continuity of service is essential;

1910.147(a)(2)(iii)(B)(2)

shutdown of the system is impractical; and

1910.147(a)(2)(iii)(B)(3)

documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

1910.147(a)(3)

*Purpose.*

1910.147(a)(3)(i)

This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start up or release of stored energy in order to prevent injury to employees.

[1910.147\(a\)\(3\)\(ii\)](#)

When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

[1910.147\(b\)](#)

*Definitions applicable to this section.*

*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 in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

*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 are 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 electrical circuit breaker; a 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; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

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

**Hot tap.** A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

**Lockout.** The placement of a lockout device on an energy isolating device, in accordance with an established procedure, 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 the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

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

**Servicing and/or maintenance.** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the *unexpected* energization or startup of the equipment or release of hazardous 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 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.** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to 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.

1910.147(c)

General -

[1910.147\(c\)\(1\)](#)

**Energy control program.** The employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

[1910.147\(c\)\(2\)](#)

**Lockout/tagout.**

1910.147(c)(2)(i)

If an energy isolating device is not capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize a tagout system.

1910.147(c)(2)(ii)

If an energy isolating device is capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in paragraph (c)(3) of this section.

[1910.147\(c\)\(2\)\(iii\)](#)

After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or

equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

[1910.147\(c\)\(3\)](#)

*Full employee protection.*

1910.147(c)(3)(i)

When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.

1910.147(c)(3)(ii)

In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

[1910.147\(c\)\(4\)](#)

*Energy control procedure.*

[1910.147\(c\)\(4\)\(i\)](#)

Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Note: *Exception:* The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist: (1) The machine or equipment has no potential for stored or residual energy or reaccumulation 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-out condition; (6) the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance; (7) the servicing or maintenance does not create hazards for other employees; and (8) the employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

[1910.147\(c\)\(4\)\(ii\)](#)

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

1910.147(c)(4)(ii)(A)

A specific statement of the intended use of the procedure;

1910.147(c)(4)(ii)(B)

Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

1910.147(c)(4)(ii)(C)

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

1910.147(c)(4)(ii)(D)

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

[1910.147\(c\)\(5\)](#)

*Protective materials and hardware.*

1910.147(c)(5)(i)

Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.

[1910.147\(c\)\(5\)\(ii\)](#)

Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

1910.147(c)(5)(ii)(A)

*Durable.*

1910.147(c)(5)(ii)(A)(1)

Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

1910.147(c)(5)(ii)(A)(2)

Tagout devices shall be 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.

1910.147(c)(5)(ii)(A)(3)

Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

1910.147(c)(5)(ii)(B)

*Standardized.* Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.

1910.147(c)(5)(ii)(C)

*Substantial -*

1910.147(c)(5)(ii)(C)(1)

*Lockout devices.* Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

1910.147(c)(5)(ii)(C)(2)

*Tagout devices.* Tagout devices, including their means of attachment, 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 and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

1910.147(c)(5)(ii)(D)

*Identifiable.* Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

1910.147(c)(5)(iii)

Tagout devices shall 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.*

1910.147(c)(6)

*Periodic inspection.*

1910.147(c)(6)(i)

The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.

1910.147(c)(6)(i)(A)

The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected.

1910.147(c)(6)(i)(B)

The periodic inspection shall be conducted to correct any deviations or inadequacies identified.

1910.147(c)(6)(i)(C)

Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.

1910.147(c)(6)(i)(D)

Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (c)(7)(ii) of this section.

1910.147(c)(6)(ii)

The employer shall certify that the periodic inspections have been performed. The certification shall identify

the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

[1910.147\(c\)\(7\)](#)

*Training and communication.*

[1910.147\(c\)\(7\)\(i\)](#)

The employer shall provide 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 the energy controls are acquired by employees. The training shall include the following:

[1910.147\(c\)\(7\)\(i\)\(A\)](#)

Each authorized employee shall receive training in the 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.

[1910.147\(c\)\(7\)\(i\)\(B\)](#)

Each affected employee shall be instructed in the purpose and use of the energy control procedure.

[1910.147\(c\)\(7\)\(i\)\(C\)](#)

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 out or tagged out.

[1910.147\(c\)\(7\)\(ii\)](#)

When tagout systems are used, employees shall also be trained in the following limitations of tags:

[1910.147\(c\)\(7\)\(ii\)\(A\)](#)

Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

[1910.147\(c\)\(7\)\(ii\)\(B\)](#)

When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

[1910.147\(c\)\(7\)\(ii\)\(C\)](#)

Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

[1910.147\(c\)\(7\)\(ii\)\(D\)](#)

Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

[1910.147\(c\)\(7\)\(ii\)\(E\)](#)

Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

[1910.147\(c\)\(7\)\(ii\)\(F\)](#)

Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

[1910.147\(c\)\(7\)\(iii\)](#)

*Employee retraining.*

[1910.147\(c\)\(7\)\(iii\)\(A\)](#)

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.

[1910.147\(c\)\(7\)\(iii\)\(B\)](#)

Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section 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.

[1910.147\(c\)\(7\)\(iii\)\(C\)](#)

The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

[1910.147\(c\)\(7\)\(iv\)](#)

The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

[1910.147\(c\)\(8\)](#)

*Energy isolation.* Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

1910.147(c)(9)

*Notification of employees.* Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.

[1910.147\(d\)](#)

*Application of control.* The established procedures for the application of energy control (the lockout or tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:

1910.147(d)(1)

*Preparation for shutdown.* Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

1910.147(d)(2)

*Machine or equipment shutdown.* The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

1910.147(d)(3)

*Machine or equipment isolation.* All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

1910.147(d)(4)

*Lockout or tagout device application.*

[1910.147\(d\)\(4\)\(i\)](#)

Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.

[1910.147\(d\)\(4\)\(ii\)](#)

Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.

1910.147(d)(4)(iii)

Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

1910.147(d)(4)(iii)(A)

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.

1910.147(d)(4)(iii)(B)

Where a 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.

1910.147(d)(5)

*Stored energy.*

1910.147(d)(5)(i)

Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

[1910.147\(d\)\(5\)\(ii\)](#)

If there is a 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.

1910.147(d)(6)

*Verification of isolation.* Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergization of the machine or equipment have been accomplished.

1910.147(e)

*Release from lockout or tagout.* Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:



1910.147(e)(1)

*The machine or equipment.* The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

1910.147(e)(2)

*Employees.*

1910.147(e)(2)(i)

The work area shall be checked to ensure that all employees have been safely positioned or removed.

1910.147(e)(2)(ii)

After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.

[1910.147\(e\)\(3\)](#)

*Lockout or tagout devices removal.* Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. *Exception to paragraph (e)(3):* When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that 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 specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:

1910.147(e)(3)(i)

Verification by the employer that the authorized employee who applied the device is not at the facility:

1910.147(e)(3)(ii)

Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and

1910.147(e)(3)(iii)

Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

1910.147(f)

*Additional requirements.*

[1910.147\(f\)\(1\)](#)

*Testing or positioning of machines, equipment or components thereof.* 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 or component thereof, the following sequence of actions shall be followed:

1910.147(f)(1)(i)

Clear the machine or equipment of tools and materials in accordance with paragraph (e)(1) of this section;

1910.147(f)(1)(ii)

Remove employees from the machine or equipment area in accordance with paragraph (e)(2) of this section;

1910.147(f)(1)(iii)

Remove the lockout or tagout devices as specified in paragraph (e)(3) of this section;

1910.147(f)(1)(iv)

Energize and proceed with testing or positioning;

1910.147(f)(1)(v)

Deenergize all systems and reapply energy control measures in accordance with paragraph (d) of this section to continue the servicing and/or maintenance.

1910.147(f)(2)

*Outside personnel (contractors, etc.).*

[1910.147\(f\)\(2\)\(i\)](#)

Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.

1910.147(f)(2)(ii)

The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

[1910.147\(f\)\(3\)](#)

*Group lockout or tagout.*

1910.147(f)(3)(i)

When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

1910.147(f)(3)(ii)

Group lockout or tagout devices shall be used in accordance with the procedures required by paragraph (c)(4) of this section including, but not necessarily limited to, the following specific requirements:

1910.147(f)(3)(ii)(A)

Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

1910.147(f)(3)(ii)(B)

Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment and

1910.147(f)(3)(ii)(C)

When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

1910.147(f)(3)(ii)(D)

Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

1910.147(f)(4)

*Shift or personnel changes.* Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

Note: The following appendix to §1910.147 services as a non-mandatory guideline to assist employers and employees in complying with the requirements of this section, as well as to provide other helpful information. Nothing in the appendix adds to or detracts from any of the requirements of this section.

[54 FR 36687, Sept. 1, 1989, as amended at 54 FR 42498, Oct. 17, 1989; 55 FR 38685, 38686, Sept. 20, 1990; 61 FR 5507, Feb. 13, 1996; 76 24698, May 2, 2011]

## **APPENDIX D**

# **LOCKOUT TAGOUT METHODS AND SAMPLE PROCEDURES**

**State of CA Cal/OSHA  
(see copy in main office)**