Lockout and Tagout

Potential Hazard Review

Chemical Hazards

- Inhalation: Inflammation of the lungs, respiratory failure, death

Physical Hazards

- Fire/explosion: Burns, death
- Flying object/struck by: Laceration, cut, puncture, foreign object in eye, abrasion
- Striking against: Laceration, puncture, abrasion
- Caught in/on/between; pinch points: Crush, amputation
- Electrical: Shock, burn, cardiac arrest, death

Related Safe Work Practices

- Electrical Safety

Personal Protective Equipment

- Lockout device with padlock, hasp, chain, etc. as appropriate
- Tags
- Blockout device if appropriate

Authority

- CCR Title 8 Part 2299-2989, 2320.4, 3314,

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This SWP is dedicated to helping you avoid an injury or illness from known hazards. You are advised to follow these recommendations, read and follow this SWP and any related SWPs, complete any required or recommended training, and to obtain advice from a Qualified Person if you have any questions.

A Qualified Person is a person **designated** by the employer; and by reason of **training**, experience, or instruction who has demonstrated the ability to perform safely all assigned duties; and, when required is properly licensed in accordance with federal, state, or local laws and regulations.

All tasks require that you:

- Use the equipment in accordance with the guidelines set forth by the manufacturer. This includes following all signs and labels, and reviewing any manufacturer's operating manuals.
  - If the instructions provided in the operating manual conflict with this SWP, then follow the instructions in the manual. The manufacturer's instructions prevail over this SWP.
- Review the safety data sheets (SDSs) for each chemical.
- Be trained on this SWP and those listed above as related. Training on SWPs must be completed before initial assignment. It is also recommended that you complete refresher training every two years.

1. The following definitions are essential to understanding this SWP:
   a. Affected Employee. 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.
   b. Authorized Employee. A qualified person who locks out or tags out specific machines or equipment 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
   c. Lockout. 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.
   d. Lockout device. Lock out devices fit over plugs, switches, valves, etc. Most lockout devices are designed to accept a padlock. A lockout device is generally applied when the energy-isolating device does not have a built-in lock or is not designed to accommodate a lock or hasp. The use of the lockout device and the padlock prevents inadvertent opening or switching on.
   e. Normal Production Operations. The utilization of a machine or equipment to perform its intended production function.
   f. Prime Mover. The source of mechanical power for a machine

2. Employees working in an area requiring lockout procedures must be trained before engaging in a lockout and tagout procedure. Training must be documented and must be as follows:
      a. 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.

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

3. Identify the hazards
   a. A variety of tasks in construction, facility maintenance, and equipment repair can involve an unexpected energy release. Carefully consider all potential energy sources, and then develop a written inventory of energy release hazards specific to your job or work site. Example of situations that require lockout, tag, and testing include:
      - Adjusting or repairing power tools and equipment
      - Working on wiring
      - Working on pressurized pipes and tanks
      - Working in or near empty pipes, passages or tanks that might unexpectedly fill with liquid or gas
      - Maintaining or servicing any equipment that may release energy
   b. Realize that more than one energy source (electrical, mechanical, or others) may be involved.

4. A hazardous energy control procedure shall be developed and utilized when employees are engaged in the cleaning, repairing, servicing, setting-up or adjusting prime movers, machinery and equipment.
   a. The hazardous energy control procedures shall be documented on the Hazardous Energy Control Procedure form.
      i. The 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.
      ii. 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 prime mover, machinery or equipment are similar.

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

5. There are specific lockout and tagout requirements depending on your task:
   a. Cleaning, Servicing and Adjusting Operations.
      i. A prime mover, 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.
      ii. Tagout shall be accomplished by accident prevention signs or tags or both shall be placed on the controls of the prime mover, power source, of the machinery or equipment.
      iii. If the prime mover, machinery or equipment must be capable of movement during this period in order to perform the specific task, the hazard shall be minimized by providing and requiring the use of extension tools (e.g., extended swabs, brushes, scrapers) or other methods or means to protect employees from injury due to such movement.
      iv. Employees shall be made familiar with the safe use and maintenance of such tools, methods or means, by thorough training.
   b. Repair Work and Setting-Up Operations.
      i. 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.
      ii. Machines, equipment, or prime movers not equipped with lockable controls or readily adaptable to lockable controls shall be considered in compliance 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.
      iii. In all cases, tagout, 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.
   c. Exceptions to these procedures include:
      i. Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations do not need to follow these procedures 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.

i. Alternative methods can only be used after the hazards have been assessed and the risks documented. Contact EHS for further assistance.

ii. Work on cord and plug-connected electric equipment for which exposure to the hazards of unexpected energization or startup 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.

iii. If there is 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.

6. 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 will be provided.
   a. Signs, tags, padlocks, and seals shall have means by which they can be readily secured to the controls.
      i. Tagout device attachment 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.
   b. Lock out devices fit over plugs, switches, valves, etc. Most lockout devices are designed to accept a padlock. The use of the lockout device and the padlock prevents inadvertent opening or switching on. If you work around energy, you will be assigned your own individual padlock and key or be able to check out a padlock and key for the duration of the task. That way, only you can open the lock.
   c. Blocks are another important safety device to make a piece of equipment safe. Blocks must be placed under raised dies, lifts, or any equipment that might inadvertently move by sliding, falling, or rolling. Another form of blocking is the placement of a blind. A blind is a disk of metal placed in a pipe to ensure that no air, steam, or other substances will pass through that point if the system is accidentally activated.
   d. When preparing to use a lock on a switch, valve, etc., prepare a tag that explains why you are using the lock. DO NOT USE A TAG WITHOUT ALSO USING A LOCK. The following requirements apply to all tags:
      i. Tags must have a “signal word” (Caution, Warning, or Danger) and a message, such as “DO NOT START.” Use “Danger” tags only in situations where an immediate hazard presents a threat of death or serious injury.
      ii. The tag shall be readable at a minimum distance of five feet (or farther if necessary).
      iii. The tag’s major message shall be presented in pictographs, written text or both.
      iv. The “signal word” and the major message shall be understandable to all employees who may be exposed to an energy release hazard.

v. The tag shall include the name of the employee who is working on the equipment and how they may be reached.
vi. The tag shall include the date and time when the tag was put in place.
vii. Use string, wire, or adhesive to prevent the loss or unintentional removal of tags.

7. Whenever outside servicing personnel are to be engaged in activities covered by this section, they shall be required to follow this lockout or tagout procedure.
   a. EHS advises you to document you have completed this responsibility by providing theoutside servicing personnel a copy of this SWP and having them sign a Training Documentation form. Keep a copy of the Training Documentation form for your records.

8. All personnel affected by the intended lockout or tagout shall be notified by the supervisor or authorized employee before commencing any work

9. Use appropriate equipment/process shutdown procedure(s) to deactivate operating controls or return them to the neutral mode.

10. All involved energy-isolating devices or controls shall be operated or positioned in such a manner as to isolate the equipment or process from hazardous energy source(s).

11. Lock and tag shall be applied to each energy-isolating device or control by authorized employee
    a. Lockout fixtures and locks shall be attached in such a manner as to hold the energy-isolating device(s) in an isolation position
    b. Employee tags shall be completed by the applier and attached to the energy-isolating device(s) when required.

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

13. Group lockout or tagout devices shall be used in accordance with the procedures required by the Hazardous Energy Control Procedure for the operation, 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
    i. 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.

14. After lockout or tagout application and prior to commencement of work, one or more of the following actions shall be taken:
    a. Operate the equipment or process controls (push buttons, switches, etc..) to verify that energy isolation has been accomplished. Controls must be deactivated or returned to the neutral mode after test.
    b. Check the equipment or process by use of test instruments and/or visual inspection to verify that energy isolation has been accomplished.
    c. The equipment or process shall be examined to detect any residual energy. If detected, action must be taken to relieve or restrain the hazardous stored energy.

15. 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.

16. Each lock or tag shall be removed by the authorized person who applied it prior to leaving the job.

17. The person responsible for the equipment or process (affected employee) shall be notified when the work is complete and the overall lockout or tagout has been cleared.

18. Before equipment or process energization, visual inspection of the work area should be made to ensure that all personnel are in the clear and that all nonessential items, including tools, have been removed and components are operationally intact.

19. Periodic inspections of the energy control procedures shall be done at least annually to evaluate their continued effectiveness and determine necessity for updating the written procedure(s).

a. 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.
b. 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.
c. Documentation that the periodic inspections have been performed is required. The documentation 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

20. Electricians should comply with the Cal OSHA Electrical Safety Orders (Title 8 CCR, Sections 2299-2989). This includes, but is not limited to:
    a. All electrical equipment and systems shall be treated as energized until tested or otherwise proven to be de-energized.
    b. An authorized person shall be responsible for the following before working on de-energized electrical equipment or systems unless the equipment is physically removed from the wiring system:
        i. Notifying all involved personnel.
        ii. Locking the disconnecting means in the “open” position with the use of lockable devices, such as padlocks, combination locks or disconnecting of the conductor(s) or other positive methods or procedures which will effectively prevent unexpected or inadvertent energizing of a designated circuit, equipment or appliance. Additionally, see above for lock-out requirements pertaining to the cleaning, repairing, servicing and adjusting of prime movers, machinery and equipment.
            1. Locking is not required under the following conditions:
            2. Where tagging procedures are used as specified below, and
            3. Where the disconnecting means is accessible only to personnel instructed in these tagging procedures.
        iii. Tagging the disconnecting means with suitable accident prevention.
        iv. Effectively blocking the operation or dissipating the energy of all stored energy devices which present a hazard, such as capacitors or pneumatic, spring-loaded and like mechanisms.
    c. Suitable accident prevention tags shall be used to control a specific hazard. Such tags shall provide the following minimum information:
        i. Reason for placing tag
        ii. Name of person placing the tag and how that person may be contacted
        iii. Date tag was place.

For any questions, please contact EHS at 415-831-2780.

References:

1. Bean, Dr. Thomas L. and Lawrence, Timothy J. "OSHA's Lockout/Tagout Standard", Electronic Library of Construction Occupational Health and Safety, eLCOSH, http://www.cdc.gov/ elcosh/docs/ d0100/d000166/ d000 166. html.
2. ANSI/ASSE Z244.1 - 2016 The Control of Hazardous Energy Lockout, Tagout and Alternative Methods