

CHAPTER 27

LOCKOUT/TAGOUT PROCEDURES

LOCKOUT-TAGOUT PROCEDURES

I. PURPOSE

To establish a control system to prevent the unexpected operation/movement of equipment or machinery, or the unexpected flow or release of energy, liquids, or gases, in a process or facility.

II. OBJECTIVE

- A. To prevent inadvertent operation of the equipment/process in order to protect personnel.
- B. Comply with applicable regulatory standards.

III. SCOPE

- A. This policy applies to activities such as, but not limited to: erecting, installing, constructing, repairing, adjusting, inspecting, cleaning, operating, or maintaining the equipment/process.
- B. This policy applies to energy sources such as, but not limited to: electrical, mechanical, hydraulic, pneumatic, chemical, radiation, thermal, compressed air, energy stored in springs, and potential energy from suspended parts (gravity).

IV. POLICY

- A. Any employee who removes a red danger tag from the energy isolating device of any piece of equipment other than his/her own, and/or who operates any system or piece of equipment which is locked out/tagged out, shall be subjected to disciplinary action.
- B. Under certain conditions as outlined below, a supervisor may remove another person's lock and/or red danger tag.
- C. Standard Procedures:
 - 1. All personnel shall comply with provisions of the lockout/tagout system.

2. The locks/tags shall be the only authorized method used for the lockout/tagout of energy sources. Locks and Employee Red Danger Tags shall not be used for any purpose other than personnel protection.
3. Individual locks/tags shall be applied and removed by each person exposed to the unexpected release of energy, other than in those special situations where specific facility procedures have been developed.
4. Where equipment is lockable, use of a lock is required by all personnel.
5. Where equipment is not lockable, tagout application or special lockout/tagout procedures shall be utilized.
6. When locks are used in the lockout/tagout application, they shall always be accompanied by tags.
 - a. Locks used for personnel protection shall be accompanied by Employee Red Danger Tags.
 - b. Locks used to protect equipment shall be accompanied by White Tags.
7. Energy isolating devices shall be clearly labeled or identified to indicate their function unless located and arranged so the purpose is evident. Such identification is necessary to reduce possible errors in applying the lockout/tagout.
8. The lockout/tagout of electrical energy sources shall occur at the circuit disconnect switch. (Note: Section shall identify any situations where the circuit cannot be positively interrupted and develop procedures providing equivalent protection. Feasibility of effective circuit isolation shall be considered in future engineering improvements).
9. The use of electrical control circuitry to accomplish lockout/tagout is prohibited since it does not offer positive personnel protection. Examples:
 - a. Electrical shorts. (Water in lines and some types of dust can supply a path to close the control circuit.)
 - b. Vibration or switch component failure.

- c. Remote or interlocked switches not affected by control circuitry.
10. Locks shall be purchased specifically for lockout applications. They shall be of such design and durability that removal by other than normal means would require excessive force or unusual techniques. In addition, they shall possess individual keying/combination capability. They will be identified by each section. Shop locks keyed alike may be used with Section Head approval.
 11. Additional protective appliances. Some exposures may require additional protective techniques or mechanical safeguards, as follows:

<u>Exposure</u>	<u>Protection</u>
Flywheel/press rams	Blocks, pins, etc.
Chemicals, steam, etc.	Slip blinds, chained valves, etc.
Mixers, chemicals, etc.	Fuse, heater removal, drive shaft disconnect, etc.
Hydraulic/pneumatic Systems	Automatic bleeding blanking, etc

V. DEFINITIONS

- A. White Danger Tags - Marked "Danger, Do Not Operate/Valve Closed" or other wording as needed by sections concerned - System or Equipment "Owner's" Tag. Used by the "owner" to indicate that the particular equipment valve, de-energized switch, etc., shall not be operated. These tags can be removed only by a supervisor or designated employee of the section that tagged and only after all other danger tags have been removed.
- B. Red Danger Tags - Marked "Danger, Do Not Operate" - Personal Danger Tag. Used by all employees over other white danger tags to signify the presence of someone inside or working on the equipment. These tags can be removed only by the employee whose name is on the tag or (under certain conditions as noted below) a supervisor. All employees are to use these red danger tags for their own personal safety.
- C. Yellow Caution Tags - Marked "Caution." Used by employees to indicate a temporary or unusual operating condition exists. Yellow caution tags

must show the name of the maintenance section, a description of the condition, the steps to take to return to a normal operating condition, and be signed by the person who tagged the equipment. These tags can be removed by a supervisor of the tagging section assigned to the operation of the tagged equipment.

The caution tag provides a **WARNING OF HAZARD**. The use of caution tags is for equipment protection and shall **NEVER** be used for employee protection.

VI. PROCEDURE

A. Application Survey

1. Each section shall conduct a survey to determine if the equipment/process can be safely isolated.
2. The survey should determine if energy-isolating devices are available, adequate, and practically located for positive protection.
3. A plan shall be developed to correct the surveyed deficiencies or provide interim alternative protection in order to make the lockout/tagout system effective.

B. Procedures for Application of Lockout/Tagout

1. The equipment "owner" clears the equipment and sees that it is safe for necessary repairs. The equipment "owner" signifies this responsibility has been carried out when the White Danger Tag that he/she has signed is attached to the de-energized starter or disconnect switch and/or valves on pipelines under pressure.

The equipment "owners" must place their white tags first and remove them last.

2. The employees assigned to the repair or servicing of the equipment will sign and date their Red Danger Tags and place them over the equipment "owner's" White Danger Tag and/or padlock before starting repair of the equipment. The employee's limited immediate supervisor will be responsible for monitoring compliance of placement of Red Personal Danger Tags.

A multiple lock-out device will be utilized where more than one lock is to be placed on the energy-isolating device(s).

3. A group of employees may be represented by an individual delegated by its supervisor. This individual will remove his/her padlock and red danger tags only as directed by the supervisor. Any employee assigned to work on equipment may, at any time, request his/her supervisor to explain how the job is made safe or to show where to place Red Personal Danger Tags.
 - a. In the event the individual delegated by supervision is removed from the job (sickness, injury, leaving plant, etc.), this individual's tag shall be removed and another individual shall be designated to tag for the crew.
 - b. Crew tags will not remain on the equipment for those employees on the next shift. Tags shall be removed when one crew leaves the plant, and a designated member of the relieving crew shall tag for that crew.
 - c. Crew tags cannot be utilized by multi-craft jobs.
4. All energy-isolating devices involved with the system or equipment being worked on shall be locked/tagged.
5. Commencement of Work
 - a. After lockout/tagout application and prior to commencement of work, one or more of the following actions shall be taken:
 - (1) Operate the equipment/process controls (push buttons, switches, etc.) to verify that energy isolation has been accomplished. Controls must be deactivated or returned to operation mode after test.
 - (2) Check the equipment/process by use of test instruments and/or visual inspection to verify that energy isolation has been accomplished.
 - b. The equipment/process shall be examined to detect any residual energy. If detected, action must be taken to relieve or restrain the energy.
6. **IN THE EVENT A JOB IS INCOMPLETE BY THE END OF THE SHIFT, THE "TAGGER" WILL REMOVE HIS/HER RED PERSONAL DANGER TAG AND REPLACE IT WITH A WHITE "OWNER'S" TAG FOR PROTECTION OF THE EQUIPMENT. WHEN THE WORK IS RESUMED, THE**

WHITE TAG MUST BE REPLACED BY A RED PERSONAL DANGER TAG. WHITE "OWNER'S" TAG WILL REMAIN ON THE ENERGY ISOLATION DEVICE(S) UNTIL THE JOB IS COMPLETED.

7. All tags are to show section, first and last name of the "tagger," and the date.
8. As long as any white danger tag is in place, the equipment cannot be restarted. White danger tags can only be removed by the section which placed them.

C. Lock and Tag Removal

1. Each employee must pull his/her own Personal Locks and Red Danger Tags.
2. All tags, upon removal, must be destroyed and disposed of. No tag may be reused.
3. A supervisor may pull the tag if necessary only if he/she has made absolutely certain that the "tagger" is not in the workplace. Prior to pulling the tag, the supervisor MUST do the following:
 - a. Check to see if the employee has left the premises.
 - b. Inspect the equipment and surrounding area to make certain that no one will be in danger if the equipment is allowed to be operated.
4. The equipment owner shall be notified when the work is complete and overall lockout/tagout has been cleared.

Before equipment/process energization, a visual inspection of the work area shall be made to insure that all personnel are in the clear, and all non-essential items have been removed, and components are operationally intact.

D. Special Lockout/Tagout Applications

1. Lockout/Tagout Interruption (Energized Testing)

In situations where the energy-isolating device(s) is locked/tagged and there is a need for testing or positioning of the equipment/process, the following sequence shall apply:

- a. Clear equipment/process of tools and materials.
 - b. Clear personnel.
 - c. Clear the energy-isolation device(s) of locks/tags according to established procedure.
 - d. Proceed with test.
 - e. De-energize and relock/tag energy-isolating device(s) to continue the work.
 - f. Operate controls, etc., to verify energy isolation.
2. In situations where electrical testing or troubleshooting is required, the equipment "owner" may authorize the electrical section to take over ownership of the system or equipment. In this case, the electrical supervisor or crew leader will place white owner's tags on all energy-isolating devices involved. The electricians performing the work will then place their personal locks and tags in accordance with the standard procedure. All locks and tags will be cleared from the equipment before performing tests and re-applied before work is started again.
 3. In special cases involving lighting, small piping (instrument, air, or water), the supervisor will use his judgment to determine whether tagging and locking is necessary.

E. Exposure of Non-County Personnel

1. Established lockout/tagout procedures shall be utilized for the protection of non-County personnel such as contractors, service representatives, etc.
2. Appropriate individual shall be instructed in the applicable County lockout/tagout procedures.

F. Multiple Personnel Protection

For major process/equipment overhaul, turnarounds, etc., which require crew craft, section, or other group lockout/tagout, a system is required that affords employees a level of protection equivalent to that provided by personal lockout/tagout.

G. High Voltage Work

Special written procedures shall be developed to describe the lockout/tagout measures necessary when employees are required to work on high voltage circuits or equipment (above 600 volts).

H. Special Exceptions

In special instances where the lockout/tagout system cannot be practically applied, a "special lockout/tagout procedure" shall apply. Those procedures shall be in writing and must have prior approval of the section head concerned and the safety officer. Copies of these procedures will be issued as follows:

1. Copies to all personnel concerned with this procedure.
2. A copy posted on any applicable bulletin boards.
3. Copies to County management and the safety officer.

I. Education and Training

1. Lockout/tagout training shall be included in new employee orientation programs.
2. Employee lockout/tagout training shall be accomplished prior to assignment to ensure understanding and compliance.
3. Affected personnel shall receive periodic refresher lockout/tagout training.

J. Management Controls

Each section shall develop an audit plan/technique in order to assess the effectiveness of its lockout/tagout system. Management shall conduct periodic compliance audits of the lockout/tagout system. Audit results shall be reviewed by County management and retained for 3 years.