



Department of Risk Management

ENERGY CONTROL POLICY - LOCKOUT/TAGOUT

1. Policy

The University of Denver Energy Control (Lockout/Tagout) Policy establishes the means to protect employees during machine and equipment servicing and maintenance where the unexpected energization, start up or release of any type of energy could occur and cause injury. In accordance with the Occupational Safety and Health Administration (OSHA) Standard, 29 CFR 1910.147, *Control of Hazardous Energy*, this Policy includes specific lockout/tagout (LOTO) procedures, training requirements, and periodic inspection requirements.

2. Description

Lockout is the process where individuals isolate and secure energy sources prior to maintenance or construction activities. The energy sources remain secured by locks during the work and are not removed until the work is completed. The lock is placed by the worker exposed to the hazard and is removed by the same worker. The key remains in the exposed worker's possession throughout the entire process. Tagout is a similar process where tags are used instead of locks. Tagout is only permitted on equipment or systems without lockout capability. Specific procedures are required for tagout because of the ease of defeating tagout systems. This policy does not apply to certain types of work. Section 6 below identifies what is exempted from the requirements for LOTO.

3. Definitions

Affected person – A person whose job requires operation or use of equipment on which maintenance is being performed under the lockout/tagout policy, or whose job requires work in an area where such work is being performed.

Authorized person – A knowledgeable individual to whom the supervisor has given the authority and responsibility to lock or implement a lockout/tagout procedure on machines or equipment to perform maintenance or repair. An authorized individual and an affected employee may be the same person when the affected employee's duties also include performing maintenance or repair of a machine or equipment, which must be locked and tagged out.

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, a slide gate, a slip blind, spectacle flange, a line valve, blocks, and similar devices with a visible indication of the position of the device. Check valves, push buttons, selector switches, and other control-circuit type devices are not energy isolating devices.



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Energy Source: Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy source that could cause injury to personnel.

Lockout Device: A device that utilizes a lock and key to hold an energy isolating device in the safe position and prevents a machine or equipment from being energized.

Personal Controlled Lock - Permanently issued lock with one key that shall not be duplicated, used specifically by workers who are going to work under an existing LO/TO. The worker SHALL affix this lock to a multi-lock hasp or lockbox. The worker controls the lock and key.

4. **Responsibilities** – Listed below are responsibilities for various personnel:

Supervisor

- identifying and labeling all work area hazardous energy sources or equipment that require LOTO
- developing, documenting, implementing, and enforcing specific energy control procedures for each hazardous energy source
- maintaining a LOTO record log that records the following: the date and time a LOTO was issued, the name of the AP performing the LOTO, the exact location of the LOTO, the name of the system being locked out, the reason for the LOTO, and the date and time the LOTO was removed
- providing the resources, including tags, locks, and keys, as appropriate, and direction necessary to ensure that an effective program is in place and followed
- ensuring that only authorized employees trained in LOTO procedures perform lockout work
- ensuring “affected employees” are notified before LOTO is applied and after the LO/TO is removed, but before the equipment is started.

Authorized employee

- providing persons in the affected area with the expected start date, start time, and duration of the project and a description of all the systems affected
- implementing the energy control procedure, including positioning the energy isolation device and physically testing the equipment to ensure the equipment is isolated



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Environmental Health & Safety Manager

- developing the institutional *Energy Control Program – Lockout/Tagout*
- performing an annual inspection of the department's LOTO program
- providing classroom training on this policy and in accordance with the OSHA Standard

Project Manager

- verifying sub-contractors who are engaged in activities covered by the scope of the OSHA Standard comply with their LOTO procedure
- verifying sub-contractors have read and understand this policy
- ensuring that applicable DU employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

5. Requirements

- All hazardous energy sources in the work area that need LOTO shall be identified and labeled.
- Specific energy control procedures for each hazardous energy source shall be written.
- A log shall be maintained that records the date and time a LOTO was issued, the name of the AP, the exact location of the LOTO, the name of the system being locked out, the reason for the LOTO, and the date and time the LOTO was removed.
- All employees that provide or support maintenance, utility distribution, construction and renovation services, shall be familiar with the significance and requirements of lockout/tagout procedures. Employees must be able to recognize locked/tagged equipment and must not attempt to defeat these controls.
- Only authorized persons are permitted to lockout and tagout systems and equipment.
- Notification must be given to people in areas affected by a shutdown that a loss of service will occur.
- No Authorized Employee shall install a lockout/tagout on any system without first notifying the responsible supervisor.
- Subcontractors who perform work on energized equipment on DU property must have an implemented lockout/tagout policy and perform work according to this policy.
- If an energy isolation device is capable of being locked out, then LO/TO shall be used.

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- Tagouts alone may only be used when it is not possible or feasible to use locks, and an additional safety measure has been implemented, that provides a level of safety equivalent to that obtained by the use of a lockout.
- If the equipment is operating, the equipment must be shut down by the applicable operations procedure before lockout or tagout is applied. Residual energy must be relieved, restrained and checked as described by the operating procedure. Appropriate means must be employed to prevent energy from being induced into the LOTO system.
- Departments shall verify the effectiveness of the program by annually

6. When Lockout/Tagout Is Not Required

- Unless required by the work control document(s), live electrical systems or components that operate at less than 50 volts to ground are not required to be LOTO if there will be no increased exposure to electrical hazards. An example of increased exposure to electrical hazards is working on equipment connected to a high amperage battery bank operating at less than 50 volts where severe and explosive arcing could occur in short circuit conditions.
- For work on cord and plug-connected electric equipment for which exposure to the hazards of unexpected energization, startup of the equipment, or release of hazardous energy is controlled by unplugging the equipment from the energy source. In addition, the plug is under the immediate control of the employee performing the servicing or maintenance.
- For work on domestic water or fire water lines operating at less than 140°F, if the isolation device is under the immediate control of the employee performing the servicing or maintenance, and no special hazards are identified.
- For minor tool changes or adjustments, when the on-off and/or isolation switch is within arms reach of and under the exclusive control of the operator. This exception is for machine shop tool operations only.
- For relamping activities.
- Change out of compressed gas cylinder(s), where the cylinder valve is closed, the manifold pressure has been bled to zero, and no other pressure sources feed the manifold.

7. Procedures

Listed below are steps that must be specifically addressed prior to initiation of a lockout or tagout. Specific procedures shall be written and maintained for each piece of equipment or process that identifies all energy sources and the energy isolation devices. The procedures must identify the type and magnitude of the hazardous energy, the means and methods that will be used to protect employees during servicing or



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maintenance operations, and the identity of the relevant machine or equipment.

1. **Preparation** - Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
2. **Machine or Equipment Shutdown** - If the machine or equipment is operating, shut it down by the normal stopping procedure.
3. **Machine or Equipment Isolation** - Operate the switch, valve, or other energy isolating device(s) so that the equipment is disconnected or isolated from its energy source(s).
4. **Release of Energy** - Ensure that all energy is dissipated or restrained (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) by methods such as grounding, repositioning, blocking, bleeding down, etc.
5. **Application of Lockout/Tagout** - Lock out the energy isolating device(s) with the assigned individual lock.
6. **Verification of Isolation** – After ensuring that no personnel can be exposed, operate the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.
7. **Removal of Lockout Devices** – Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the authorized person must take the following actions:
 - **Inspect** the work area to ensure that non-essential items have been removed and that machine or equipment components are intact and capable of operating properly.
 - **Check** the area around the machine or equipment to ensure that all employees have been safely positioned or removed.
 - **Notify** affected employees immediately *after* removing locks or tags and before starting equipment or machines.
 - **Ensure** that locks or tags are removed **ONLY** by those employees who attached them. (In the very few instances when this is not possible, the device may be removed under the direction of the employer, provided that he or she strictly adheres to the specific procedures outlined in the standard.)

Procedure involving more than one individual - If more than one individual is required to lockout or tagout equipment, each shall place his/her own personal lockout/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 lock to secure the box or cabinet.

Tagout - The tagout system includes all of the steps of this lockout policy except the actual use of a lockout



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device on that particular energy isolation device. Additional means to be considered as a part of the demonstration of full employee protection shall include the implementation of additional safety measure 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.

8. Training requirements

- Initial training shall be provided to any employee before starting service or maintenance activities that fall under the scope of this Policy.
- Each authorized person 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.
- Each affected employee shall be instructed in the purpose and use of the energy control procedures (lockout/tagout) and on the critical importance of not attempting to start up or use equipment that has been locked out or tagged out.
- Awareness training shall be given to other employees who have occasion to walk around equipment that is locked and tagged, but do not actually operate, service, or maintain the equipment.
- Retraining must be provided whenever there is a change in job assignments; a change in machines, equipment, or processes that presents a new hazard; or a change in energy control procedures.
- Additional retraining must be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employees' knowledge or use of the energy control procedure.

9. Annual inspections

Annual inspections must be performed to assure that the department's LOTO program is adequately implemented. The inspection will include the following:

- a review of the LOTO record log
- a review of the descriptive list of hazardous energy sources
- a review of written energy control procedures
- an interview with applicable personnel to verify their knowledge and use of LOTO
- an annual report, per OSHA, certifying that the inspection has been performed.