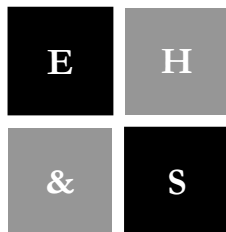


The University of Texas at Arlington

Lockout / Tagout Safety Manual



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Revised: 9/1/2014

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I. Lockout /Tagout Safety Program Management

A. Introduction

The University of Texas at Arlington (UT Arlington) recognizes that the prevention of unexpected start up or release of stored energy from equipment during maintenance is key to protecting employees from injury. To address this issue, and to comply with the Occupational Safety and Health Administration's (OSHA) Lockout/Tagout Standard (29 CFR 1910.147), the department of Environmental Health and Safety (EH&S) has developed the UT Arlington Lockout/Tagout Manual. This manual outlines the procedures for conducting a safe lockout and/or tag out of equipment when maintenance is necessary.

Lockout/Tagout (LOTO) is accomplished by placing a lockout and/or a tag out device on a switch, valve, breaker, etc. to prevent reactivation of the equipment and to warn that maintenance activities are in progress. Equipment is considered "locked out" when the flow of hazardous energy has been blocked and operation of the equipment is prevented until the lockout device is removed. Equipment is considered "tagged out" when a warning tag is placed on the equipment warning others that the equipment is being serviced and must not be operated. These safety measures should be used together to provide the maximum level of protection for those performing the service.

Before any UT Arlington personnel perform service/maintenance activities, they must understand the proper procedures for energy control as outlined in this manual and the OSHA Lockout/Tagout Standards. The procedures outlined in this manual should ensure that:

- Personnel can identify machinery-requiring LOTO.
- Effective LOTO procedures are used to isolate and control hazardous energies.
- Proper employee training is provided to both Authorized and Affected Employees (as defined in Appendix).
- Periodic reviews of LOTO procedures are performed to verify their effectiveness.

B. Program Responsibilities

1. University

UT Arlington is responsible for both ensuring the safety of its employees and compliance with all related requirements of state and federal regulations. The administration encourages employees at all levels to promote positive attitudes regarding safety, to incorporate safety into their work practices, and to cooperate fully in the implementation of safety-related programs.

2. Departments

Each UT Arlington department is responsible for evaluating areas under its administrative control to determine whether there are processes or equipment to which the Lockout/Tagout Program would apply. Departments that find LOTO requirements applicable are responsible for the adoption and implementation of the contents of the UT Arlington Lockout/Tagout Manual, and for providing all necessary equipment to control hazardous energies.

3. Managers and Supervisors

Managers and supervisors are responsible for the designation of Authorized Employees, ensuring that employees are properly trained, program records are maintained, and annual program reviews completed.

4. Employees

Employees are responsible for observing all practices and procedures contained in the UT Arlington Lockout/Tagout Program, for attending designated training and for reporting hazardous or unsafe conditions to their supervisor and/or EH&S.

5. Environmental Health and Safety

EH&S has prepared the UT Arlington Lockout/Tagout Program and will assist individual departments in the implementation of the requirements stated in this manual.

C. Application of the UT Arlington Lockout/Tagout Program

The application of this program is intended to prevent equipment from unexpectedly being set in motion and endangering workers. Potential hazardous energy sources must be identified and locked/or tagged out before starting a service/maintenance task. Typical tasks requiring LOTO procedures include:

1. A task requiring an employee to enter a machine's point of operation or any associated danger zone.
2. Repairing electrical circuits.
3. Cleaning, repairing and maintaining machinery with moving parts.
4. Cleaning jammed mechanisms.
5. Removing or bypassing a guard or other safety device.

D. Required Content of the UT Arlington Lockout/Tagout Program

To comply with OSHA's Lockout/Tagout Standard (29 CFR 1910.147) UT Arlington and all affected departments must meet the following minimum general requirements:

1. Develop written, equipment-specific lockout procedures for the control of potentially hazardous energies prior to service/maintenance activities. This can be accomplished by reviewing energy control procedures.
2. Ensure that LOTO device(s) are available to all employees as needed.
3. Ensure that when new equipment is purchased, or when existing equipment is modified, it has the ability to be locked out.
4. Enforce the proper use of LOTO equipment and establish control of energy sources.
5. Inform outside contractors of the UT Arlington Lockout/Tagout Program and its requirements.
6. Provide and/or coordinate employee LOTO training programs.
7. Perform at least annual reviews of LOTO procedures.
8. Maintain adequate records.

E. Exemptions to the UT Arlington Lockout/Tagout Program

1. Partial Exemptions

Equipment is exempt from written, equipment-specific procedures when all of the elements listed below exist. (**Note:** Equipment that is covered by the partial exemption must still be locked out following established procedures listed in Section IV of this manual).

- Equipment/machine has no potential for stored or residual energy.
- Equipment/machine has a single energy source that can be readily identified and isolated.
- Isolation and locking out of energy source completely de-energizes and deactivates equipment/machine.

- Equipment/machine is isolated from the energy source and locked out during the course of service/maintenance activities.
- A single lockout device will achieve a lockout condition.
- Lockout device is under the control of a single individual doing the service/maintenance.
- Service/maintenance does not create hazards for others.
- UT Arlington has had no incident involving the unexpected activation or re-energizing of the equipment/machine prior to being serviced.

2. Total Exemptions

None of the requirements of the UT Arlington Lockout/Tagout Program apply if all conditions of the exemptions are met. Total exemptions include:

Equipment that is completely de-energized by unplugging a power cord. The unplugged power cord must be under the exclusive control of the employee(s) conducting the service/maintenance activities. Plug lockouts are recommended as an added level of protection.

Hot tap operations involving gas, steam, water, or petroleum products. The employer must show that continuity of service is essential, shutdown is impractical, and proper protection of the employees has been provided. Any alternative approach used must be fully documented by the department choosing those methods.

II. Employee Training

A. General

Training on the purpose, content and function of the UT Arlington LOTO program is required for employees who participate in or are affected by the LOTO of equipment. Training can be achieved through department-specific training or by attending training offered by EH&S. Records must be kept showing training dates, attendance, items covered, and presenter.

B. Authorized Employees

Authorized Employees are those who have received proper training and been “authorized” by their department to apply LOTO devices when necessary. Training for Authorized Employees shall include:

1. The recognition of locations, types and magnitudes of potential hazardous energy sources in the area.
2. Proper LOTO procedures.
3. Proper use of LOTO devices (and any related equipment) used by the department.
4. Lockout or tagout device removal.
5. How to deal with special conditions.

C. Affected Employees

Affected Employees are those who may be affected by the shutdown or who work in areas where equipment is being serviced/maintained. Training for Affected Employees shall include:

1. Purpose and use of the LOTO procedures.
2. How to recognize LOTO equipment.
3. Prohibition on tampering with LOTO equipment

D. Retraining Employees

Retraining Authorized Employees is required whenever:

1. There is a new or revised energy control procedure.
2. An Authorized Employee's job duties or use of related equipment changes regarding LOTO.
3. The Lockout /Tagout Program is changed.
4. Additional LOTO hazards arise, such as new equipment, modified processes, or the use of different LOTO.
5. Periodic inspections show employee deficiencies in energy control techniques.

III. Lock out /Tagout Devices

A. General

Lockout/Tagout equipment consists of tags, hasps, chains, and other hardware to prevent the operation of equipment while being serviced or maintained. Lockout devices must be used whenever possible to ensure a positive means of energy control by holding equipment in a SAFE or OFF position. Tags should be used in conjunction with lockout devices to warn against operation.

Regardless of the device used, all LOTO devices must meet the following minimum criteria:

1. The device must be of durable construction and capable of withstanding the conditions in which it is placed.
2. The device must be identified as such and must only be used for the control of hazardous energy sources. **All other uses are prohibited.**
3. The device must identify the individual applying the device.
4. The device must not be bypassed, ignored, or otherwise defeated.
5. The device should be standardized within each department in color, size, shape, and format.
6. The device should be removed by the Authorized Employee who originally attached the device. Removal by anyone else must be performed by following the guidelines in Section VI (Removal of Lockout/Tagout Devices).

B. Use of Tags

Use of tags alone is only allowed when equipment cannot be physically altered to accept a lockout device. In this case, all other procedures consistent with the lockout program must be followed. The tags must be affixed as closely as possible to the isolation devices, immediately obvious to anyone attempting to restart the equipment/machine. Additional control measures must be taken to reinforce the tagout device (such as opening an extra disconnecting device, removal of a valve handle, or additional training).

Tags must be legible and understandable by all employees and must contain warnings against energizing the equipment such as DO NOT START, DO NOT OPEN, DO NOT CLOSE, DO NOT ENERGIZE, or DO NOT OPERATE. Tags must be in plain view, at the same location as the energy isolation devices and must be securely attached to prevent accidental removal.

IV. Lockout/ Tagout Procedures

A. General

Before service/maintenance activities begin, the following procedures **must** be implemented in the order listed below when locking or tagging out equipment:

1. **Prepare for Shutdown**

The Authorized Employee shall evaluate the equipment to be serviced and identify all sources of hazardous energies and the methods necessary to control them. This information shall be used to complete the "Energy Control Procedures" form (see Appendix).

2. **Notify all Affected Employees**

Before turning off the power, the Authorized Employee shall notify Affected Employees in the work area that power will be shut off, the reason for the shutdown, and that the equipment will be locked/tagged out.

3. **Shutdown Equipment**

The equipment/machine shall be shut down by the normal stopping procedure. When appropriate, a "DO NOT OPERATE" tag shall be affixed to the power switch.

4. **Isolate Equipment**

The equipment/machine shall be de-energized, secured and isolated from hazardous energy sources. An orderly shutdown must be utilized to avoid any increase of additional hazard(s) to employees.

5. **Lockout/Tagout**

The Authorized Employee shall place locks and/or tags in the appropriate energy isolating locations.

6. **Release Stored Energy**

After lockout devices have been placed on the equipment, all stored electrical, gravitational, mechanical, and/or thermal energy must be disconnected and drained to a zero-energy or otherwise made safe by blocking or repositioning of equipment. This can be accomplished by:

- Releasing pressure lines such as hydraulic, air, steam, gas, and water;
- Release spring-loaded equipment;
- Blocking mechanical equipment with moving, rotating, or elevated parts.

7. **Verify Isolation**

Before performing maintenance on the machine, the Authorized Employee verifies the system is isolated. This is generally accomplished by first establishing that no personnel are exposed and then turning the machine switch to the **ON** position using normal operating controls. Verification of isolation must be continued if there is a chance of the re-accumulation of stored energy during the service/maintenance activity.

8. **Perform the Service/maintenance Activity**

LOTO devices should be removed promptly following completion of service/maintenance activities. See "Removal of LOTO Devices" in Section VI.

V. Special Conditions

A. General

In order to provide continuity of LOTO protection, the following steps are required for the situations identified below:

B. Group Lockout/Tagout

A group LOTO is necessary when more than one individual performs service/maintenance. A procedure must be developed that outlines how group LOTO will occur. This information should be identified on the "Energy Control Procedures" form (see Appendix). Group LOTO can be accomplished through the use of a lockout device that accepts multiple locks or a group lock box (stores all keys to locks used and can only be opened by one individual). One person from the group should be selected to oversee the LOTO procedure. The group representative will be responsible for the following:

1. Affixing the group lockout device or maintaining control of the lock box.
2. Ensuring that lockout/tagout procedures are followed, including verifying that equipment is de-energized.
3. Continually monitoring the work to ensure that employees on the crew are not exposed to lockout/tagout hazards.
4. Verifying that all procedures for returning the equipment back into service are completed **before** lockout/tagout devices are removed.

C. Shift Changes

When equipment/machine maintenance extends beyond one shift, a procedure must be in place to transfer control of the equipment/machine to the arriving shift. This transfer is the responsibility of all departing and arriving shift supervisors involved with the maintenance project. Responsibilities include:

1. Overseeing the transfer of control over the existing LOTO device(s) or the attachment of a separate device(s).
2. Ensuring that the continuity of the energy control procedures is maintained until the oncoming shift supervisor arrives and takes control of the job.
3. Documenting the method used (original device or separate device) on the Energy Control Procedures form.

D. Exchange of Information with Contractors

When some or all maintenance work is to be performed by contractors, information exchange must occur to ensure that all parties know how LOTO of equipment/machines will take place. The department must:

1. Ensure that there is an appropriate exchange of information regarding LOTO procedures to be used by both the department and the contractor.
2. Use the "Exchange of Lockout/Tagout Program" form (see Appendix) for the exchange of information.
3. Inform Authorized Employees of any differences (such as restrictions and prohibitions) between the two programs.
4. Attach the Exchange of Lockout/Tagout form (if there are differences between the programs) to the Energy Control Procedures form for the specific equipment/machine until work is complete.
5. File all completed forms with the department's Lockout/Tagout Program.

VI. Removal of Lockout/Tagout Devices

A. General

Once the specific maintenance or service work has been completed, the person who attached the lock or tag is responsible for promptly removing that device. Removal of the devices will be accomplished by the steps below:

1. Inspect the work area.

Ensure that the equipment/machine is fully assembled and operational, all tools and non-essential items are removed, and all safety guards are reinstalled.

2. Ensure that all employees are clear of the equipment/machine.

3. Remove the LOTO device(s).

Each device must be removed by the person who attached it unless the conditions listed in the section "Removal of Another Person's Device" are met.

4. Reenergize the Equipment/Machine.

5. Notify Affected Employees that servicing has been completed and the machine is ready for use.

6. Complete the "Energy Control Procedures" form.

File with the department's Lockout/Tagout Program.

VII. Program Review and Recordkeeping

A. General

Departments must conduct an annual review of each LOTO procedure to evaluate its effectiveness in protecting employees from hazardous energies. The review should be performed by an employee other than the Authorized Employee who is using the LOTO procedure. A discussion between the reviewer, Authorized Employees, and any Affected Employees should occur as part of the review. Typical items reviewed would include:

1. An evaluation of current energy control methods.
2. Correct energy source identification.
3. Proper lockout device usage.
4. A review of employee responsibilities.
5. Availability of necessary recordkeeping.

B. Recordkeeping

All UT Arlington Lockout/Tagout Program records will be maintained by the individual departments. The records must include:

- Specific LOTO procedures for equipment/machines covered by the program.
- Any completed "Energy Control Procedures" forms.
- Employee attendance sheets and training summary.
- Any completed Exchange of Lockout/Tagout Program forms.
- The "Review of Energy Control Procedures" form, completed annually by EH&S and the department, for all equipment/machines in the program.

APPENDIX

LOTO Forms:

[Lockout/Tagout Authorized Employee Form](#)

[Energy Control Procedures](#)

[Exchange of Lockout/Tagout Program](#)

Definition of Acronyms

EH&S	Environmental Health & Safety
LOTO	Lockout/Tagout
OSHA	Occupational Safety and Health Administration
UT Arlington	The University of Texas at Arlington

Definitions

Affected Employee:

An employee whose job requires operation or use of equipment/maintenance on which service/maintenance activities are being performed under lockout/tagout, or who work in an area where such service/maintenance activities are being performed.

Authorized Employee:

An employee whose locks out or tags out equipment/machines in order to perform service/maintenance activities. An Affected Employee becomes the Authorized Employee when the employee's duties include service/maintenance activities covered under the UT Arlington Lockout/Tagout Program.

Energized:

Connected to an energy source or containing residual or stored energy.

Energy Isolation Device (Mechanism):

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.

Lockout:

The placement of a lockout device on an energy isolating mechanism in accordance with established procedures. The lockout device will ensure that 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 mechanism in a safe position and prevents the energizing of the equipment/machines. Included are blank flanges and bolted slip blinds.

Service/Maintenance:

Service and Maintenance includes workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, or service/maintenance of equipment or machines. These activities include lubrication, cleaning, and unjamming of equipment/machines, making adjustments, or tool changes in areas where employees may be exposed to the unexpected re-energizing or start up of the equipment or to the release of hazardous energy.

Tagout:

The placement of a tagout device on an energy isolating mechanism in accordance with established procedures. The tag should state that the energy isolating mechanism and the equipment being controlled may not be operated until the tagout is removed.