

Roger Williams University

Lockout/Tagout Program

(The Control of Hazardous Energy)



Roger Williams University
Department of Environmental Health and Safety
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I. PURPOSE

The Occupational Safety and Health Administration (OSHA) requires that employers 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. Roger Williams University (RWU) is adopting this Lockout/Tagout Program (Program) in compliance with OSHA standards.

II. SCOPE

This program is specific to the maintenance and service of machines and equipment where unexpected energization, start-up, or release of stored energy could cause injury to employees. Some examples of energy sources include: electrical, thermal, mechanical, hydraulic, pneumatic and chemical.

This program does not apply to:

- Servicing or maintenance during normal production operations, unless: an employee is required to remove or bypass a guard or other safety device, or 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.
- Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, 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.
- 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 servicing or maintenance.

Section IV of this program pertains to all machines and equipment with a single potential source of stored energy and meeting all of the following criteria:

- (1) The machine or equipment has no potential for stored or residual energy or re-accumulation 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 de-energize 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 re-energization of the machine or equipment during servicing or maintenance.

Section V of this program pertains to all machines and equipment with multiple potential sources of stored energy and any situation not meeting the Section IV criteria listed above.

III. DEFINITIONS

Affected Employee - An employee who operates or uses a machine or equipment on which servicing or maintenance is performed under Lockout/Tagout, or who works in an area in which such servicing or maintenance takes place.

Authorized Employee - An employee who is primarily responsible for his or her personal safety by locking and tagging out machines or equipment to service or maintain them.

Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy. Examples: electrical circuit breakers disconnect switches, line valves or blocks. Note: push buttons, selector switches and other control circuit-type devices are not energy-isolating devices.

Lockout/Tagout- The control of hazardous energy including but not limited to, electrical, thermal, mechanical, hydraulic, pneumatic and chemical

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. 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.

Tagout Device- 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. 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.*

IV. RWU LOCKOUT/TAGOUT PROCEDURES

(To be used for any machine or equipment with a single energy source that meets all of the criteria listed in Section II (Scope) above)

To conduct any service or maintenance work on machines or equipment which only has one energy source, **Authorized Employees** must follow the following Shutdown and Restart procedures:

Shutdown Procedures--Establishing Lockout/Tagout

1. **Locate and Identify.** Locate and identify all energy isolating devices that apply to the machine or equipment to be locked out.
2. **Notify.** Notify all **Affected Employees** that a Lockout/Tagout is about to take place, the reason for the Lockout/Tagout, and the specific machinery or equipment affected.
3. **Shut Down.** Shut down the machine or equipment by its normal stopping procedure.
4. **Isolate.** Operate the disconnect switch, circuit breaker, valve or other energy isolating device to isolate (disconnect) the machine or equipment from its energy source.
5. **Lockout and Tagout.** Apply individually assigned lockout and tagout devices to the energy isolating device.
6. **Relieve/Restrained Stored Energy.** Exhaust or restrain stored or residual energy in the machine or equipment by grounding, blocking, bleeding down, etc.
7. **Verify Isolation.** Clear the area around the machine or equipment of nonessential objects. Make sure that all personnel are safely positioned or removed from the area. Then test all the operating controls by putting them in the "on" position to ensure that the energy source has been successfully disconnected.

CAUTION: Return the operating control(s) to the neutral or off position before proceeding with servicing or maintenance work.

LOCKOUT/TAGOUT IS NOW COMPLETE - the **Authorized Employee** may proceed with servicing or maintenance work.

Restart Procedures -- Removal of Locks and Tags

1. **Check Machine/Equipment.** Check the machine/equipment and surrounding area to ensure that nonessential objects have been removed, guards have been reinstalled and that the machine/ equipment is operationally intact.
2. **Verify.** Verify controls on the machine/equipment are in the neutral or off position and that all employees are safely positioned or removed from the area.
3. **Remove Locks and Tags.** Remove lockout and tagout devices and reenergize.
4. **Notify Affected Employees.** Before restarting machinery/equipment, notify **Affected Employees** that the servicing or maintenance is complete and that locks and tags have been removed.

V. MACHINE-SPECIFIC LOCKOUT/TAGOUT PROCEDURES

(To be used when machinery or equipment has more than one energy source that must be controlled to perform service/maintenance work and for any situation not meeting the Section IV criteria)

A written Lockout/Tagout procedure must be developed for each specific machine or equipment with multiple energy sources, and only Authorized Employees may perform these procedures. If the methods to control energy sources are identical for a group of machines, then one set of procedures may be developed for the group. Environmental Health and Safety is available to assist in developing machine-specific procedures. All machine-specific written procedures must address the following items in the sequence specified here:

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

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.

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:

- ***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.
- ***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.
- ***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).
- ***Lockout or tagout device application.*** Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
 - Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.
 - 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.
 - 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.

- 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.
- **Stored energy.** 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. 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.
- **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.
- **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:
 - **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.
 - **Employees.** The work area shall be checked to ensure that all employees have been safely positioned or removed.
 - 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.
- **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.
 - 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 Supervisor, using the procedures and training for such removal listed in the Lockout/Tagout policy. The Supervisor 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:
 - Verification by the Supervisor that the authorized employee who applied the device is not at the facility; and
 - Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed.

Additional requirements.

- **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:
 - Clear the machine or equipment of tools and materials and remove employees from the machine or equipment area.
 - Remove the lockout or tagout devices.
 - Energize and proceed with testing or positioning;

- Deenergize all systems and reapply energy control measures to continue the servicing and/or maintenance.
- **Outside personnel (contractors).** Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site Supervisor and the outside employer shall inform each other of their respective lockout or tagout procedures. The on-site Supervisor shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.
- **Group lockout or tagout.** When servicing and/or maintenance is performed by a department or other group, they shall utilize a procedure which gives the employees a level of protection equal to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices shall be used in accordance with the following specific requirements:
 - 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);
 - 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
 - When more than one employee or 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
 - 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.

VI. SPECIAL SITUATIONS

- **Vehicles.** Vehicles determined to be in need of repair shall be tagged out by the Facilities Mechanic on the top of the steering wheel of the vehicle with a department issued tag. During off hours, the vehicle may be tagged out by the on duty supervisor of the Department that oversees the vehicle. Keys must also be tagged out with a similar tag.
- **Using Tagout Only.** Tagout without a lock is allowed ONLY when machinery or equipment is incapable of being locked out. Tagout may be implemented ONLY with the prior knowledge and approval of the appropriate supervisor, using the following procedures.
 - The **Authorized Employee** will advise the supervisor that lockout is not possible.
 - The **Authorized Employee** and supervisor will determine if other equally effective controls can be implemented, such as the removal of a valve stem, isolating a circuit element, or by blocking a controlling switch.
 - Supervisors must provide training to the **Authorized** and **Affected Employees** involved in the tagout operation at the time tagout is to be conducted.
 - The **Authorized Employee** will follow the applicable Lockout/Tagout Procedures outlined in this policy, omitting lockout.

- The **Authorized Employee** will securely attach his/her tagout device to the energy isolating device where a lockout device would have been attached, if possible.
- **Shift Changes.** When machines must be serviced by more than one shift, a procedure must be established for the orderly transfer of responsibility from one shift to another. In developing this procedure, the following must be taken into account:
 - Each **Authorized Employee** must ensure that equipment he/she is working on is locked and tagged out with his/her individually assigned lockout and tagout device. Employees must NEVER depend on someone else's lockout device for protection.
 - **Authorized Employees** must remove their individually assigned lockout and tagout devices once service or maintenance work is completed.
 - Lockout/Tagout devices must NEVER be left on beyond an **Authorized Employee's** work shift without supervisor approval. See **"Removing Lockout and Tagout Devices"** below.
- **Removing Lockout and Tagout Devices.** The key to each lockout device must be in the sole possession of the employee to which it was assigned. Only the **Authorized Employee** who applied the lockout or tagout device may remove it, except as noted below. **EXCEPTION:** When the **Authorized Employee** who applied a lockout or tagout device is not available to remove it, the device may be removed **ONLY** under the direction of TWO supervisors provided that:
 - Absolute verification has been made that the employee is not on University grounds or otherwise available.
 - Every reasonable effort has been made to contact the employee to notify him/her that his/her Lockout/Tagout device has been removed.
 - The employee is informed before returning to work that his/her Lockout/Tagout device has been removed.

VII. PERIODIC INSPECTIONS

Documented periodic inspections must be made at least **annually** by supervisors to verify that Lockout/Tagout procedures are understood by employees and are being followed properly. A form in **Appendix A** is provided for this purpose, a completed copy of which must be sent to Environmental Health & Safety. Environmental Health and Safety is available to assist in conducting periodic inspections.

VIII. OUTSIDE CONTRACTORS

The University's Lockout/Tagout policy must be made available for review to all prospective bidders of a contract involving activities subject to OSHA's Lockout/Tagout regulations (29 CFR 1910.147).

All concerned University employees must be effectively informed of the restrictions and prohibitions associated with the outside Contractor's Lockout/Tagout procedures.

IX. TRAINING REQUIREMENTS

Employees must be trained according to their assigned duties. The following training is required:

- **Authorized employees** will receive initial training in how to recognize hazardous energy sources, the type and magnitude of the energy available in the workplace, and the required Lockout/Tagout procedures to be followed to ensure energy isolation and control.
- **Affected employees** will be instructed in the purpose, use and restrictions of Lockout/Tagout and how to recognize that Lockout/Tagout is being implemented.
- **Authorized and affected employees** will receive retraining whenever:
 - their job assignments change;
 - a change in machines, equipment or processes creates a new hazard;
 - Lockout/Tagout procedures change; **or**
 - observations or inspections reveal that an employee is not following or does not fully understand the Lockout/Tagout procedures.

X. RESPONSIBILITIES

Supervisors will:

- Notify employees of the University's Lockout/Tagout Policy, and make the policy readily available to them.
- Identify and schedule all **authorized** and **affected employees** for initial training on Lockout/
- Schedule employees for retraining with Environmental Health & Safety, as required by this policy.
- Maintain copies of attendance records of training sessions.
- Develop Machine-Specific Lockout/Tagout procedures, as required by this policy.
- Conduct periodic Lockout/Tagout inspections, correcting any deviations or inadequacies observed, as required by this policy.
- Provide **authorized employees** with individually assigned lockout and tagout devices.

Employees will:

- Familiarize themselves and comply with the University's Lockout/Tagout Policy.
- Attend training sessions, as required by the policy.
- Notify supervisors of any change in their workplace or job duties which prevent them from following Lockout/Tagout procedures.
- Use only **approved** lockout and tagout devices for Lockout/Tagout. **Never** use lockout or tagout devices for any purpose other than to perform Lockout/Tagout.
- Remove their individually assigned lockout and tagout devices once service or maintenance work is completed. Lockout/Tagout devices may not be left on beyond an **authorized employee's** work shift without supervisor approval.

Environmental Health & Safety will:

- Provide a written program, develop, implement and maintain the University's Lockout/Tagout Policy.
- Inspections

- Assist supervisors in their annual and periodic Lockout/Tagout program inspections, when requested.
- Employee Training
 - Provide Lockout/Tagout training to employees.
- Recordkeeping
 - Maintain attendance records of training sessions.

RWU Lockout/Tagout Annual Inspection Form

Facilities Supervisors (with the help of EHS if requested) will annually conduct this inspection with their employees to ensure that the energy control procedures continue to be implemented properly, that the employees are familiar with their responsibilities, and that any deviations or procedural inadequacies that are observed are corrected.

Date, Building, and Location:

Name, Title, & Signature of Inspectors (Print & Sign):

Name of Employee(s) performing procedure:

Inspection Checklist

- ☐ Review each employee's responsibilities under LO/TO plan & procedure being used
- ☐ Observe as each employee performs LO/TO procedure
- ☐ Immediately identify & correct any procedural problems with each employee
- ☐ Note any LO/TO equipment needs or any deficiencies:
