

Section 17

Lockout/Tagout Program For Control of Hazardous Energy And Department or Area Energy Control Plans

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Lockout/Tagout Program For Control of Hazardous Energy

A. Introduction

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. The unexpected release of energy from devices which may store energy (such as springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) has the potential to cause harm to individuals working on the device. All such devices must be constrained from unexpected releases (locked out) or must be tagged with appropriate warnings (tagged out). The procedures are based on the Washington Administrative Code, Part 296-24-1100.

The following procedures are exempt from lockout/tagout:

- **Normal production operation**, where no personnel exposure exists;
- **Work on cord and plug-connected electric equipment** when the hazard of unexpected energization is controlled by the unplugging of equipment and the plug is under the exclusive control of the employee performing the maintenance or service;
- **Work on direct-wired electric equipment** when the hazard of unexpected energization is controlled by the operation of a switch or circuit breaker on the equipment itself, and the operation of the switch or circuit breaker is under the exclusive control of the employee performing the maintenance or service;
- **Hot tap operations involving transmission/distribution systems** for gas, steam, or water provided continuity of service is essential; shutdown is impractical; documented procedures are followed; and protective equipment is used.

The term, department head, shall be used to include center directors whenever used. The term, shall, indicates a mandated practice, while the terms, must or should, indicate a desired practice.

B. Purpose

The purpose of this procedure is to protect the lives and health of individuals who work on or with electrical or other equipment which might release energy. It is established to reduce the likelihood of worker injuries or fatalities during servicing or maintenance operations.

This procedure shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

C. Responsibility

Department Head. It is the responsibility of the department head or center director to ensure that energy control plans are available for equipment, devices, and procedures under their purview. The department head shall also ensure that appropriate lockout/tagout equipment is available, that staff are trained, and that compliance with lockout/tagout procedures is enforced.

Supervisor. Supervisors shall be responsible to the department head for implementing the lockout/tagout program for employees and work under their purview.

Employees. All employees shall comply with the restrictions and limitations imposed upon them during the use of lockout/tagout. Authorized employees are the only employees designated to perform lockout/tagout. They are required to comply with written procedures.

All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, shall not attempt to start, energize, or use that machine or equipment. Disciplinary action for non-compliance with the lockout/tagout procedures shall be at the discretion of the department head.

Environmental Health and Safety (EHS). The Environmental Health and Safety staff shall be responsible for providing and updating University-wide procedures and assisting departments with implementation of the program. During inspections, EHS staff shall note deficiencies in a department's program and bring them to the attention of the appropriate department member.

D. Energy Control Plan

An energy control plan (refer to form) shall be prepared for all procedures, equipment, or machines with hazardous energy. One plan may be prepared for a group of devices or procedures to the extent practicable. Documented plans are not required under any or all of the following conditions:

- 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.
- The machine or equipment has a single energy source which can be readily identified and isolated.
- The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
- A single lockout device will achieve a locked-out condition.
- The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance.
- The servicing or maintenance does not create hazards for other employees or students.
- The University, in utilizing this exception, has no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

E. Lockout/Tagout Equipment and Materials

The University shall supply locks, tags, chains, wedges, key blocks, and other hardware. Lockout and tagout devices shall be the only means for controlling energy. They shall be standardized, substantial, and shall indicate the identity of the person applying the device. Tagouts shall warn against hazardous conditions if the equipment is energized, including a legend such as, "*Do Not Operate*".

F. Sequence of Lockout

The Energy Management Center of the Physical Plant Department (Control) shall be notified of work to be performed on any device related to Energy Management Center operation. The energy source is switched to the "off" position at both the hand operated automatic (HOA) and the local disconnect prior to the lockout. Equipment shutdown is verified prior to starting work. The procedure is reversed when work is complete.

1. Notify all effected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked or tagged out to perform the servicing or maintenance. The Energy Management Center is notified as described above. Physical Plant staff contact the radio base station to effect notification.
2. The authorized employee shall refer to the energy control plan and other departmental information, as appropriate, to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
3. If the machine or equipment is operating, it is shut down by the normal stopping procedure (depress the stop button, open the switch, close the valve, call the Energy Management Center, etc.). Orderly shut down must be used to avoid additional hazard.

4. Locate all energy isolating devices, so that the machine or equipment may be isolated from its energy source(s).
5. Apply a lockout or tagout device to the energy isolating device(s). Attach locks to hold the energy isolating device in the "off" position. Attach tagout devices to indicate that movement from the safe position is prohibited. Include information or a telephone number to call for information on the tag, or attach a separate information tag.
6. Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated, restrained, or rendered safe by methods such as grounding, repositioning, blocking, bleeding down, etc.
7. Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate. **CAUTION: Return the operating control(s) to the neutral or "off" position after verifying the isolation of the equipment.**
8. The machine or equipment is now locked out.

G. Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1. Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all employees have been safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. The authorized employee who applied the lockout or tagout device removes it and re-energizes the machine or equipment. Energy Management is notified of the restart, as appropriate. When the authorized employee is not available, the lockout/tagout device may be removed by the immediate supervisor, if: 1. verification is made that the employee is not present at the University; 2. that a reasonable effort is made to contact him or her; 3. the supervisor ensures that the employee has knowledge of the situation upon returning to work; and 4. that the Energy Management supervisor is aware of and approves the re-energization of all devices related to that system. **Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.**
5. Notify effected employees that the servicing or maintenance is completed and the machine or equipment is ready for use. In the Physical Plant, the radio base station is contacted and announces to all employees that equipment is ready for use.

In case of accident or injury during a lockout/tagout procedure, the equipment involved shall remain locked out until it has been inspected and released for service by the appropriate technician(s).

H. Group Lockout/Tagout Procedure

Group Lockout/tagout has not been used at Western Washington University, and departments implementing lockout/tagout procedures do not anticipate its implementation in the future.

If a group lockout/tagout procedure should be required in the future, the involved department head or his or her designate shall contact the Environmental Health and Safety office for the group lockout/tagout procedure, and shall perform training in the procedure, implement it, and provide documentation as appropriate.

I. Employee Training

Training shall be provided for all affected personnel. Training shall ensure that the purpose and function of the energy control program is understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired.

Each authorized employee shall receive training in the recognition of hazardous energy sources, the types and magnitudes of energy available in the workplace, and in 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 procedure.

All other employees whose work operations are or may be in the area where energy control procedures may be utilized shall be instructed about the procedures, including prohibitions relating to attempts to re-start or re-energize machines or equipment that are locked out or tagged out.

Tagout System Training. Employees shall be trained in the following limitations of tags whenever tag systems are used:

- Tags are essentially warning devices affixed to energy-isolating devices that do not provide the physical restraints provided by a lock.
- When a tag is attached to an energy-isolating device, it is not to be removed without authorization from the person who placed the tag on the device. It is never to be ignored, bypassed, or removed.
- In order to be effective, tags must be legible and understandable by all authorized employees, affected employees, and other employees whose work operations are or may be in the area.
- Tags and their means of attachment must be made of material that will withstand the environmental conditions encountered in the workplace.
- Tags must be securely attached to energy-isolating devices so that they cannot be inadvertently or accidentally detached during use.

Employee Retraining. Retraining shall be provided for all authorized and effected employees whenever there is a change in their job assignments, in machines, equipment or processes that presents a new hazard, or in the energy control procedures.

Additional training shall be conducted whenever a periodic inspection reveals, or whenever the University has reason to believe, that there are inadequacies in the employee's knowledge or use of the energy control procedure.

The re-training shall establish employees' proficiency and introduce new or revised control methods and procedures as necessary

J. Contractors

Contractors' employees must comply fully with all procedures of the University's lockout/tagout control program. If outside personnel engage in activities covered by the lockout/tagout program, these activities shall be approved in advance by the appropriate University personnel.

The contractor must provide all the necessary equipment and tools to comply with the University's lockout/tagout procedures. The contractor must also provide the necessary training to his/her employees to be in compliance with the lockout/tagout program.

In the event of noted or reported inadequacies or violations by the contractor of the lockout/tagout program, the inadequacies or violations shall be reported to the project manager for action. The contractor shall discontinue all operations until violations are corrected.

K. Inspection of Lockout/Tagout Program

The lockout/tagout procedure shall be strictly enforced by all University personnel. Compliance with the program shall be monitored through periodic inspection, at least annually. An authorized employee, usually with the EHS office, shall perform inspections in accordance with the Washington Administrative Code (refer to attached form).

L. Definitions

- **Affected employees.** A person, other than the authorized employee, whose job requires him or her to operate or use a machine or equipment being serviced or maintained under the lockout/tagout program.
- **Authorized employee.** A qualified employee, by training, to whom the authority and responsibility to perform a specific lockout and tagout assignment has been given by the employer.
- **Energized.** Connected to an energy source (mechanical, electrical, hydraulic, etc.).
- **Energy isolating device.** A device that physically prevents the transmission or release of energy.
- **Energy source.** Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy source that is capable of causing injury.
- **Hot tap.** A procedure used to repair maintenance and service devices that involves welding a piece of equipment (pipelines, vessels, or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipelines without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.
- **Lockout device.** A device that utilizes a lock and a key to hold an energy-isolating device in the safe position.
- **Lockout.** The placement of a lock on an energy-isolating device in accordance with an established procedure, indicating that the energy-isolating device or equipment being controlled must not and cannot be operated until removal of the lock.
- **Normal operations.** Operations and activities that enable a machine or equipment to perform its intended functions, which are carried out by employees with the machine or equipment energized.
- **Qualified person.** A person who can demonstrate by experience or training the ability to recognize potentially hazardous energy and its potential impact on work-place conditions, and who has the ability and knowledge to implement adequate procedures for the control and isolation of such energy.
- **Servicing or maintenance.** Workplace activities such as installing, constructing, adjusting, setting up, inspecting, maintaining, or repairing machines or equipment.
- **Setting up.** Any work that must be performed to place a machine or equipment in an operational mode.
- **Tagout.** The placement of a tagout device on an energy isolating device, in accordance with established procedures.
- **Tagout device.** A prominent warning tag securely attached to an energy-isolating device.

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Lockout/Tagout Program Energy Control Plan

Procedure, Equipment, or Machine Description _____

Identify employees affected by a shutdown. Use name or position:

Describe who will notify them: _____

Describe how they will be notified: _____

List the type(s) and magnitude(s) of energy, hazards, and means to control:

List the type(s) and location(s) of machine or equipment operating controls:

List the location(s) of energy isolating devices:

List the type(s) of stored energy (for example, capacitors, flywheels, hydraulic systems, air, gas, steam, or water pressure) and the methods to dissipate or restrain them.

Stored Energy	Method Of Restraint

Describe the method of verifying the isolation of the equipment:

Lockout/Tagout Program Periodic Inspection

- PROCEDURE: 1. Perform inspections annually.
2. An authorized employee, not involved in the lockout/tagout, performs inspections.
3. An inspection includes:
- A. Verification of the energy control procedure through random audit and planned visual observation.
 - B. For lockout, it includes a review of each authorized employee's responsibilities at a group meeting
 - C. For tagout, responsibilities are reviewed individually.
4. Note any deficiencies and the date and manner of correction.
5. Sign and date the inspection.

Department Inspected _____ Area Inspected _____
Referenced Energy Control Plan: _____ Inspection Date _____
Inspector Name _____
Type of Program: Lockout Tagout Group Lockout

Deficiencies Noted:

Date(s) Corrected _____

Corrective Action:

Inspector Reviewed Responsibilities with Authorized Employees Listed below:

Date of Review _____

Authorized Employees	

Inspector Signature _____ Date Completed _____
Copy to EHS office.