

CHAPTER 20 LOCKOUT / TAGOUT (LOTO)

A. **PURPOSE and SCOPE:**

This Chapter establishes responsibilities, training requirements and procedures intended to reduce or eliminate injuries resulting from stored or residual energy and/or the sudden activation of equipment while CAHNRS personnel are engaged in maintenance activities.

B. **REFERENCES:**

[WAC 296-803 Lockout/Tagout](#)

[WSU SPPM 2.73 Control of Hazardous Energy Sources](#)

C. **APPENDICES:**

- a. Appendix A – LOTO Procedure
- b. Appendix B – Forcible Lock Removal Form
- c. Appendix C – LOTO Program Procedure Inspection Form

D. **RESPONSIBILITIES**

Supervisors: enforce the Control of Hazardous Energy/LOTO program and are responsible for the following:

- Understanding that failure to lockout hazardous energy constitutes a serious hazard.
- Ensuring affected employees receive appropriate training in LOTO procedures *prior to working on equipment requiring the control of hazardous energy.*
- Providing the necessary equipment for lockout procedures.
- Developing LOTO procedures for equipment in their areas of responsibility.
- Evaluating each affected employee's conformance to program requirements and documenting nonconformance at least annually.
- Requesting retraining for nonconforming employees and initiating disciplinary action when necessary.

Employees: adhere to all aspects of this program and are responsible for the following:

- Conforming to lock out procedures when working on equipment or in areas where hazardous energy is, or may be present.
- Removing locks whenever: 1) they (and others) are not working on the equipment, 2) at the end of the work shift, or 3) at the completion of the project. It is acceptable to leave personal locks in place on a job requiring more than one shift to complete, provided that practice does not interfere with equipment start up and re-commissioning.
- Informing their supervisor when equipment or facility components in their work areas requiring lockout procedures are identified.
- Reporting to their supervisor any near miss or incident resulting from inadequate lockout procedures.
- Attending and participating in lockout/tagout training.

Note: EHS' Occupational Health and Safety (OHS) unit provides assistance developing and implementing LOTO programs.

E. TRAINING

EHS' OHS unit provides basic LOTO training and consultation upon request. Supervisors are responsible for providing training to affected employees on specialized systems and equipment. All training must be documented. Retraining may be required when:

- There is a change in job assignment.
- An addition or modification of equipment or processes presents a new hazard.
- LOTO procedures are modified.
- Annual inspection of employee performance indicates the employee's knowledge and understanding of LOTO procedure is inadequate.

"Authorized" or "affected" employees are responsible for understanding the purpose and function of the LOTO program, have the knowledge and skills necessary to carry out the program, recognize hazards, methods and means to isolate hazardous energy, and following the LOTO program procedures.

F. GENERAL LOTO PROCEDURES

This section outlines various control procedures available to safely isolate, de-energize, secure and lockout equipment for routine maintenance and service. In all cases, these general steps shall be followed:

Cord and Plug Connected Equipment. Equipment powered by a cord and plug inserted into an electrical outlet must be disconnected before maintenance and service activities. The plug must be under the exclusive control of the authorized person performing the maintenance activity. If exclusive control cannot be maintained, then a plug lock shall be used. Additionally, any stored energy in the machine (e.g. hydraulic, pneumatic, electrical, potential, kinetic etc.) must be de-energized before starting work. Energy re-accumulation must also be prevented.

Single Source Lockout Procedure: This procedure applies to routine tasks using equipment that can be locked-out with a single lock only. Specific written procedures are not required under this condition.

1. The authorized employee completing the lockout must know the type and magnitude of the energy associated with the equipment, hazards associated with the energy, and the means or methods to control it.
2. Notify affected employees the equipment is under maintenance or service and will be in a locked-out condition and no one is to attempt to manipulate the controls unless done while verifying energy nullification.
3. Inspect and ensure the equipment is safe to shut down.
4. Shutdown the equipment. In some cases, Facilities Dispatch at 5-9000 or Housing Dispatch at 5-1541 must be notified that equipment is being shut down, if it is connected to the central computer control, or other remotely controlled system. (Note: for variable speed controlled equipment, the system must be shut down by an electrician to prevent starter and controller damage).
5. Identify and engage the energy isolating device needed to control the energy to the equipment. The equipment will now be physically isolated from the energy source. The authorized employee must make sure the lockout device(s) hold(s) the energy-isolating device in a "safe" or "off" position.
6. Verify the equipment is isolated from its energy source. Attempt to start the equipment using the control switch before work is started (if applicable). If the

equipment does not start, return the switch to the “off” position to ensure the equipment does not start-up when the equipment is re-energized. If the equipment does start up, then it is apparent that not all energy sources, or the wrong energy sources, have been de-energized and the correct lockout procedure must be identified before work can continue. Identify the correct isolation device(s) and repeat this step to verify isolation. Inform your supervisor of any mislabeled isolation devices.

Note: Remote isolation via the central computer system is a control switch and not considered a lockout condition.

7. The authorized employee(s) *applies their own personal lockout device*, locks and tags to the isolating device. Note: **DANGER Do Not Operate/Equipment Locked Out By Employee Name** tags must be completed in full before attachment to the lockout device. The name of the employee, their supervisor, and the date the tag was placed must be written on the front of the tag. The reason for the lockout is written on the back of the tag. For jobs where multiple employees cannot lock onto the lockout device, a lock box shall be utilized (see procedure below).
8. If the energy isolating device cannot accommodate multiple personal lockout devices and/or hasps, a crew lockout with a lock box or similar lockout device is required. If a box is used, then special procedures apply (see Section G) to clearly identify the lockout as specified in the equipment specific written procedures.
9. Any **stored energy**, such as that found in springs, rotating fans or fly wheels, hydraulic systems or compressed air or gas lines must be dissipated or restrained by either re-positioning, blocking or bleeding down. If a device (e.g. drain valve) is operated to remove stored energy then the device shall be tagged and left in the “open” position. The tag shall note the date, the authorized employee and job, stating the reason it was left open. **Note: Additional energy isolation controls or procedures apply when servicing equipment with the potential for energy re-accumulation.**
10. After completing maintenance and/or service, the authorized employee(s) inspects the area and notifies affected employee(s) that lockout devices are to be removed and the equipment reenergized. Notify Facilities dispatch at 5-9000 or Housing dispatch at 5-1541 that lockout devices are removed.
11. Lockout devices are only removed by authorized employees. A lock may be removed only by the person who applied it. See forcible lock removal procedure below for exceptions.

Tag-out Procedures:

Tag-outs are only allowed where lockout procedures cannot be completed. The following requirements must be met before tag-outs are allowed:

- The tag-out device must be attached where a lockout device would have been put and is shown clearly that the energy isolation device is in the off or safe position.
- Configuration of the equipment makes it impossible to use a lock.
- Tag-out tags must be durable and able to withstand environmental conditions.
- The means used to attach the tag to the energy isolating device isn't reusable, is self-locking, can be attached by hand, similar to a nylon cable tie.
- When tags are applied, they may be removed only by the person who applied it. See forcible lock removal procedure below for exceptions.
- Tags must never be bypassed, ignored or otherwise defeated.
- Tags must be legible and understandable by all authorized and affected employees.
- Additional safety measures for isolation with a tag-out will improve employee protection. These should be implemented wherever possible. Examples are; removing part of the isolating circuit, blocking a control switch, removing a valve handle, etc.

Equipment Testing Procedures – Working on Activated Systems: When locks must be temporarily removed from lockout devices and the equipment energized to test or position equipment components, the following sequence of steps must be followed:

- Clear the equipment of all tools and materials.
- Employees remove their locks and tags and go to a safe position.
- Affected employees thoroughly review the activation procedure to be used.
- Verify that no one has entered or is working in the area to be energized.
- Energize the equipment and proceed with testing or positioning.
- De-energize the equipment following the *General Lockout* or *Equipment Specific Lockout Procedures* before continuing maintenance or service activities.

Working on Energized Circuits: Exposed live parts may be worked on only by qualified persons and only when de-energizing the components increases the work hazard, or makes the work task infeasible due to equipment design or operating limitations. Some examples include alarm circuits, life support systems, electrical circuit testing and checkout, etc. This variance is to only be used as the last resort and must be approved in advance by the supervisor after review. Procedures and supervisor approval must be documented. Use of proper PPE is required.

Shift Changes and Extended Lockouts: For equipment requiring lockout for more than one day, or multiple shifts, personal locks may be left on equipment if there is no chance the equipment will be restarted until repairs are completed and the employee assigned the personal lock will be at the job site to commission the equipment for start-up. If this condition cannot be met, then a department lock shall be placed on the equipment with an identification tag stating the reason the equipment is locked out and who is authorized to start the equipment back up. For lockouts utilizing the lockbox, the department lock may be applied, before all personal locks are removed. The lockout is not to be modified during this time.

Forcible Lock Removal Procedure: If an employee leaves the work-site without removing his/her lock from a lockout device and the equipment must be returned to service, the procedure and form in Appendix B shall be used and documented by the Program Manager.

G. SPECIAL EQUIPMENT SPECIFIC LOCKOUT/TAGOUT PROCEDURES

These special procedures apply to equipment that meets one or more of the following conditions:

- Contains more than one energy source or more than one energy isolating device is required to achieve a lockout condition.
- Has potential for energy re-accumulation.
- Multiple personnel (crews) are locking out onto one device that cannot accommodate multiple personal locks.

NOTE: These procedures may be developed by supervisors and integrated permanently into this APP chapter and/or documented on each occurrence by completing the *Lockout Procedure Form* found in Appendix A. Instructions for completing the form follow.

Lockout Procedure Form - Instructions

1. Note and list the conditions requiring special LOTO procedures.
2. Provide equipment specific comments and instructions necessary to achieve a safe

lockout condition. This may include, but is not limited to any order of operations, specific lockout equipment, required safety devices and/or PPE.

3. Supervisors must review all special LOTO procedures and ensure the form is presented to all authorized and affected employees in writing, prior to implementation.
4. Follow the previously identified procedures for a single source lockout and document special procedures in the *Lockout Procedure Form*. Add additional pages for text, drawings and/or schematics as necessary.
5. Post the lockout form on the job site as mentioned above, preferably with the lock box.
6. The primary authorized employee locks out the equipment at all energy sources as required. More than one employee may assist with the lockout, but the primary authorized employee is responsible for the lockout overall.
7. The primary authorized employee places the keys used in the lockout procedure in the lockbox, affixes a hasp to the box and places the primary lockout lock on the box and retains the key.
8. Other, affected employees then place their personal locks on the lockbox. This secures the jobsite and equipment for all employees until the lockout activity is complete and all employees remove their personal locks. The authorized employee reverses the lock out steps as outlined directly above and in the single source lockout section of this chapter.

H. CONTRACTOR LOCKOUT AND INTERFACE

The WSU contract manager for service contracts or the WSU project manager and construction manager assigned to public works construction contracts, as applicable, are responsible for:

- Verifying the Contractor uses a properly designed written program for LOTO and hazardous energy control. Note: Do not dictate contractor means and methods for lockout, if conditions are deemed unsafe to proceed, stop work and contact the EHS Occupational Health and Safety Unit at 335-3041.
- Inform the contractor of applicable WSU LOTO procedures and inform affected WSU personnel of the Contractor's LOTO procedures. Ensure that all employees understand and will follow the restrictions of the other employer's energy control program.
- Verifying the contractor understands it is the contractor's responsibility to ensure the energy source is isolated and locked out completely and that all safety procedures are followed including the safe release of re-accumulated and/or residual system energy.
- Verifying the contractor's locks are labeled to differentiate the contractor's locks from WSU locks.
- Ensuring that energy conveyance systems related to contract work are identified in the contract documents.
- Ensuring the contractor provides a 14 day (or other agreed upon time period) notice, in writing prior to shut down of energy conveyance systems supplying occupied WSU facilities.
- Ensuring that WSU authorized employees conduct the work to initially isolate the energy conveyance system unless written approval is given allowing the contractor to perform the isolation work.
- Ensuring that WSU authorized employees conduct the work to re-energize the system and return it to normal service, unless written approval is given allowing the contractor to perform the isolation work.

I. NEW CONSTRUCTION AND MAJOR ALTERATIONS

The WSU contract manager and/or other WSU personnel assigned to project design must ensure that any new construction or major alterations to existing equipment are designed or modified to accept a lockable device for lockout compliance. In addition, new or modified lockout procedures shall be provided to the affected WSU Department(s) for the modified or new equipment and systems.

J. LOCKOUT EQUIPMENT

All equipment used in lockouts must be distinctive in appearance and not used for any other purpose. It must also be able to withstand environmental conditions and be standardized for the WSU Department/Unit applying the locks, with the same color, shape and size. Individual locks *must* identify the person applying the device.

K. PERIODIC INSPECTION

Annual (or more frequent) evaluation of all employees applying hazardous energy control devices is to be performed by supervisors, using the attached LOTO Procedure Inspection form (Appendix C) to evaluate the program's effectiveness. Key areas to cover during the review include:

- Verifying that employees understand and follow energy control procedures, including employee interview questions.
- Reviewing documentation for accuracy and adherence to established procedures.
- Observe devices used in LOTO procedures.

Complete Appendix C and provide the completed document to the EHS Occupational Health and Safety lockout/tagout program manager. A copy of the completed inspection form and summary of corrective actions must be submitted to all affected employees and the Program Manager in writing.

L. RECORDS RETENTION:

Completed lockout procedure (Appendix A), Forcible Lock Removal Form (Appendix B), periodic inspection forms (Appendix C) and associated communication documents must be retained by the Program Manager for at least one year [no specific retention requirements].

APPENDIX A

LOCKOUT PROCEDURE

THE FOLLOWING PROCEDURE MUST BE FOLLOWED WHENEVER EQUIPMENT IS TO BE REPAIRED OR SERVICED IN SUCH A MANNER THAT IF IT WAS TO START UP UNEXPECTEDLY THE WORKER REPAIRING OR SERVICING IT COULD BE INJURED.

BLDG NAME:		ROOM #:		LOCATION:					
WORK REQUEST #:			PROJECT #:						
PERMANENT LOCKOUT PROCEDURE NUMBER (if applicable):									
EQUIPMENT NAME:			EQUIPMENT #:						
MAINT/SERVICE TO BE PERFORMED:									
KEY CUSTOMER AND AFFECTED EMPLOYEES NOTIFIED?				<input type="checkbox"/> YES	<input type="checkbox"/> NO	DATE NOTIFIED:			
DATE	PRIMARY AUTHORIZED PERSON		SUPERVISOR			DEPT/CONTACT PERSON			
ISOLATION POINT OR DEVICE/ITEM DESCRIPTOR (BREAKER/VALVE/BLIND/ ETC)	DESCRIBE HAZ. ENERGY (STEAM, ELECTRICITY, HYDRAULIC, STORED ENERGY, ETC)		TYPE (CHAIN, LOCK, TAG, COVER, ETC)	LOCK ID # OR LOCK LOCATION	ISOLATED AND LOCKED BY (INITIAL)	ENERGY SOURCE DE-ENERGIZED?		VERIFI ED BY (INITIAL)	DATE
	TYPE	Magnitude				YES	INITIAL		
SPECIAL CONDITIONS:									
SPECIAL COMMENTS AND INSTRUCTIONS:									

**APPENDIX B FORCIBLE LOCK
REMOVAL FORM****PURPOSE:**

This form is to be used when an employee leaves the work-site without removing his/her lock from a lockout device and the equipment must be returned to service. This form is to be completed by a Unit Supervisor *only*.

Date of Action: _____

Time of Action: _____

Purpose/Explanation: _____

Affected Equipment and Location: _____

Employee Name (only one): _____

Employee's Supervisor: _____

EMPLOYEE CONTACT INFORMATION:

Supervisor Verified that Employee is not at worksite (Y/N): _____

Supervisor Verified that Employee is not at work (Y/N): _____

Supervisor attempted contact by phone (cell/home) (Y/N): _____

If contact was successful, employee authorized lock removal: (Y/N): _____

If contact was not successful, verified worksite is still vacated (Y/N): _____

Lock forcibly removed with cutters (Y/N): _____

Supervisor Signed Copy of this notice posted at jobsite (Y/N): _____

Employee notified next work day of action (Y/N): _____

Comments: _____

The supervisor has inspected the equipment/area and has determined it is safe to remove the lock.

Name of Supervisor Removing the Lock: _____

Supervisor Signature and Date: _____

Unit Director Signature (post event review): _____

EH&S Representative Signature (post event review and file): _____

APPENDIX C LOCKOUT TAGOUT PROGRAM PROCEDURE INSPECTION FORM

LOCKOUT INSPECTION

PROCEDURE

Equipment To Be Locked-Out		Location	
Supervisor	Date	Time	
List of Authorized Employees Involved			
Description of Maintenance / Repair			
In-Field Observation		Yes	No
1. Have all affected employees been notified?			
2. All energy sources de-energized and isolated?			
3. Lock, lockout device, and tags applied?			
4. System tested for shutdown prior to start of work?			
5. Is written lockout procedure in use?			
6. Are lockout devices removed and equipment returned to operation?			

Employee Interview

1. When should lockout procedures be used?
2. What is a lockout device?
3. What is the approved locking device?
4. What is an energy isolating procedure?
5. What is the procedure to remove lockout devices and return system to operation?
6. What is the procedure for lock removal when a person who applied the lock is unavailable?

Notes	
Supervisor	Date