



West Virginia University®

ENVIRONMENTAL HEALTH & SAFETY

**THE CONTROL OF
HAZARDOUS ENERGY
(LOCKOUT/TAGOUT)
PROGRAM**

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WEST VIRGINIA UNIVERSITY

THE CONTROL OF HAZARDOUS ENERGY
(LOCKOUT/TAGOUT) PROGRAM

29 CFR 1910.147

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1. Purpose

This document establishes the requirements, process, and administrative responsibilities for the West Virginia University (WVU) Control of Hazardous Energy (Lockout/Tagout) (LOTO) Program. The program adheres to the Occupational Safety and Health Administration (OSHA) Subpart J Control of Hazardous Energy (Lockout/Tagout) as stated in 29 CFR 1910.147, which applies to the control of energy during servicing and/or maintenance of machines and equipment. The program serves to provide safety requirements to prevent worker injury by isolating the machine or equipment from the energy source and rendering it inoperative during servicing or maintenance where the unexpected energizing, startup or release of stored energy could occur.

2. Scope

The LOTO Program applies to personnel (including WVU employees, students, contractors, and others) who are exposed to, work with, or supervise operations involving work with hazardous energies at the WVU main campuses, regional campuses, and related WVU facilities. To work on energized equipment the individual must be a qualified worker. The scope of the LOTO Program does not cover work on live electrical equipment.

3. Definitions

Affected employee – An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee – A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked out – An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

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

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 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.

Hot tap – A procedure used in the repair, maintenance and services activities which involves welding on 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 pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout – The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and 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 device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

LOTO – An acronym for “Lockout/Tagout”.

LOTO Procedure – also known as a LOTO procedure, which clearly and specifically outlines the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance.

Magnitude – An amount.

Normal production operations – The utilization of a machine or equipment to perform its intended production function.

Other Employees – Persons whose work activities are or may be in an area where LOTO procedures may be utilized.

Servicing and/or maintenance – Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up – Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout – The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device – A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

4. Roles and Responsibilities

4.1 WVU Administration

The WVU Administration is responsible for assuring the University is in compliance with applicable Federal and State Occupational Safety and Health regulations regarding the Control of Hazardous Energy as stated in 29 CFR 1910.147 and for providing necessary resources to assure the implementation and continuance of the LOTO Program.

4.2 WVU Department Deans/Directors/Managers/Supervisors (including supervisory staff in academic departments who oversee students)

- Supervisors and Leads of authorized employees must be authorized employees and participate in required training.
- Supervisory staff and academic personnel who oversee students performing service and maintenance activities within the scope of this program must
 - o be authorized employees,
 - o directly supervise students designated as authorized employees, and
 - o comply with all sections in this program.
- Communicate to individual departmental employees that may use or be impacted by LOTO operations that they must meet the requirements of the LOTO Program for their work areas, equipment, and processes.
- Identify departmental employees to receive the required classroom and on-the-job training to be designated as authorized employees. Only properly trained and identified authorized employees may utilize departmental LOTO procedures.
- Ensure authorized employees are provided effective information, resources and training on hazardous energies and methods for safe LOTO control in their work area at the time of initial assignment or upon addition or changes of new machine(s), equipment, processes, departmental procedures, or the LOTO Program.
- Designate an authorized employee to review and approve equipment specific LOTO procedures.

- Conduct and/or ensure that Periodic Inspections of LOTO procedures are conducted to assure compliance of LOTO activities. This may be completed during LOTO operations. (Refer to Appendix C)
- Provide on-the-job training to departmental authorized employees using the Employee On- The-Job-Training Checklist (refer to Appendix E) and specific LOTO procedures.
- Provide standardized energy isolating equipment, standardized locks, tags, and resources to control LOTO hazards.
- Provide authorization for abandoned lock/emergency removal. (Refer to Section 6.2 and Appendix D)
- Assure development of LOTO procedures utilizing the Lockout/Tagout Procedure Form (Refer to Appendix B-1)
- Maintain and make accessible all current LOTO procedures developed and utilized within your department.

4.3 WVU Project Managers/WVU Personnel Who Hire External Contractors or Vendors

WVU Project Managers or individuals responsible for external contractors or vendors that will be conducting LOTO procedures while on WVU property must comply with the following:

- Understand the role and responsibility of contractors or vendors according to Section 4.8 of the LOTO Program and communicate the requirements to the contractors or vendors.
- Communicate energy hazards that may not be evident to the contractor or vendor.
- Where LOTO activities conducted by contractors or vendors may or have the potential to create an exposure for WVU employees, assure:
 - o WVU affected employees are clearly notified of hazards, the intended LOTO operations of the contractor or vendor, methods to minimize exposures, and the equipment or processes that will be impacted during the LOTO activities.
 - o That all involved WVU Project Managers, authorized employees, contractors and vendors participate in a pre-planning meeting prior to performing the LOTO work.
 - o WVU authorized employees working with or alongside contractors must follow the requirements of this program.
 - o Coordination between WVU Project Managers, contractors and vendors on all LOTO projects.

4.4 Environmental Health and Safety (EHS)

- Develop and provide overall administrative support for the LOTO Program, including interpretation of the regulation.
- Review the LOTO Program on an annual basis or as needed.

- Provide guidance for equipment-specific LOTO procedures.
- Assist WVU department personnel with selecting appropriate LOTO equipment when requested.
- Manage and coordinate LOTO safety training.
- Periodically audit and update the LOTO Program as needed.
- Maintain a master file of documentation and records associated with the LOTO Program, including but not limited to:
 - Training records, and
 - Periodic Inspection Form audits.

4.5 Safety and Health Extension (SHE)

- Provide scheduled and requested LOTO training for WVU employees.
- Develop training materials related to this program.
- Assist WVU department personnel with evaluating and determining LOTO procedures in coordination with EHS.

4.6 Authorized Employees

- Participate in required training and comply with all sections of the LOTO Program.
- Know and understand the applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and methods and means necessary for energy isolation and control of the specific piece of equipment that will undergo service and/or maintenance.
- Authorized employees who are tasked with developing LOTO procedures must have procedures reviewed and approved by a responsible party identified per Section 4.2.
- Students designated as authorized employees per this program must
 - be supervised directly by an authorized employee (Refer to Section 4.2), and
 - comply with all sections in this program.
- Inform affected employees and other employees who work in the area that LOTO procedures will be utilized and not to attempt to restart or reenergize the affected equipment and/or machines.
- Per 29 CFR 1910 Subpart S and in all other applicable circumstances, wear appropriate Personnel Protective Equipment as required.
- Report injuries, incidents, and/or near misses to supervisor immediately.

4.7 Affected Employees

- Participate in training on the purpose and use of LOTO procedures.
- Attempting to restart or reenergize equipment or machines that have been locked or tagged out for LOTO purposes is strictly prohibited.

- Report incidents, conditions, or work practices relating to LOTO believed to be a health or safety hazard to the immediate supervisor.

4.8 Contractors or Vendors

- Must have a LOTO Program or written documentation that complies with the requirements of OSHA 29 CFR 1910.147.
- Shall Inform and provide WVU Project Manager or WVU personnel who hire external contractors of the following:
 - o LOTO procedures and/or LOTO Program,
 - o Actual and potential energy hazards of the planned work, and
 - o Anticipated dates and times of LOTO activities.
- Employees scheduled to perform LOTO activities must be trained to meet the requirements of OSHA 29 CFR 1910.147 and understand the hazards of WVU equipment scheduled for service and maintenance.
- Must notify all affected and other employees whose work operations are or may be in an area where LOTO procedures will be utilized.
- Conduct or participate in pre-planning meetings that include WVU and contracted authorized employees prior to conducting LOTO activities.
- When WVU employees are involved in LOTO activities where a contractor is involved:
 - o A designated lead person from WVU and the contractor must coordinate and communicate the LOTO procedures for the planned activities.
 - o The pre-planning meeting(s) must be clearly documented to address the details of the planned LOTO activities and provide guidance for notifying all impacted personnel.
 - o The documentation will be maintained by the WVU Project Manager or the WVU personnel responsible for the hired contractor.

5. Training

5.1 Classroom Training: Initial and Periodic

LOTO Training for Authorized Employees involves two components: initial classroom training and departmental on-the-job training. Classroom training provides the regulatory requirements and the LOTO Program elements and requirements. All employees impacted by this program must be trained on the location and availability of the WVU LOTO Program. WVU authorized employees are required to be trained initially and retraining shall occur at intervals as stated in Section 5.3. Documentation of authorized employee training is required according to Section 7.

Authorized employee initial training includes the following contents:

- Requirements of the WVU LOTO Program and OSHA 29 CFR 1910.147.
- 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 for maintenance and service.
- Types of energy isolating devices, locks, tags and other applicable LOTO equipment.
- Purpose and use of the LOTO procedure and related steps of the process.
- Tagout Systems (Refer to Section 6.6)
- How to develop and complete:
 - o Appendix A: Lockout/Tagout Procedure Determination
 - o Appendix B-1: Lockout/Tagout Procedure
 - o Appendix C: Periodic Inspection Form

Affected employees and other impacted personnel who will or may potentially be exposed to hazards associated with LOTO activities shall be instructed in the purpose and use of the LOTO procedure and be informed of the following:

- Requirements of the WVU LOTO Program and OSHA 29 CFR 1910.147 as it relates to affected employees and other impacted personnel.
- Prohibition requirements relating to attempts to restart or reenergize machines or equipment which are locked out and/or tagged out.

5.2 Departmental On-the-Job Training

Management and/or supervising departments shall provide on-the-job training to authorized employees responsible for performing service and/or maintenance to ensure understanding of the LOTO Program. Management shall ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage and removal, of the energy controls are acquired by employees.

Departmental on-the-job training for authorized employees shall include the following:

- Authorized employees performing service or maintenance within the scope of this program shall be instructed on the purpose and function of the WVU LOTO Program.
- Authorized employees shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy, equipment designated for energy isolation, methods and means of controlling energy sources, and verification of LOTO procedures.
- Authorized employees shall utilize and understand how to complete a LOTO procedure (Refer to Appendix B-1).

5.3 Employee Retraining

Employee retraining shall be provided for any of the following circumstances:

- Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the LOTO procedures.
- Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the LOTO procedures.
- Retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- Authorized employees must be retrained if there are changes to OSHA 29 CFR 1910.147 or the WVU LOTO Program.
- Authorized Employee retraining is recommended within every 3 years.

6. Control of Hazardous Energy Procedures and Application

LOTO procedures shall be developed, documented and utilized for the control of potentially hazardous energy when the employees are engaged in service or maintenance per the scope of this program.

An authorized employee most familiar with the machine or equipment should be assigned the task of developing LOTO procedures. The approval of these procedures is the responsibility of departmental supervision per Section 4.2 and shall be conducted prior to the service and/or maintenance of equipment or processes. When the need to update an existing LOTO procedure is identified or observed, a new one must be developed, reviewed, and approved according to this LOTO Program. The Lockout/Tagout Procedure Form (Refer Appendix B-1) must be used.

Documented LOTO procedures must include and are not limited to:

- A specific statement of the intended use/purpose of the procedure.
- Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.
- Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them; and
- Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.
- Additional elements as listed on the WVU Specific Energy Control Lockout Tagout Procedure Form. (Refer to Appendix B-1)

Exception: WVU need not document the required procedure for a particular machine or equipment when **all** of the following elements exist:

1. the machine or equipment has no potential for stored or residual energy or reaccumulation 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 deenergize 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 reenergization of the machine or equipment during servicing or maintenance.

Refer to Appendix A (optional).

6.1 Energy Sources and Equipment

Examples of energy sources that must be locked and tagged out include but are not limited to:

- Chemical
- Electrical
- Gravity
- Hydraulic
- Mechanical
- Pressurized systems
- Pneumatic
- Steam
- Thermal
- Water

Examples of equipment, machines or systems that must be locked and tagged out include but are not limited to:

- Automated Machinery
- Burner Motors
- Compressor Motors
- Dishwashers
- Elevators
- Electrical equipment/circuits
- Heating, ventilation and air conditioning equipment
- Hydraulic systems
- Pneumatic Lines
- Pumps
- Steam Valves/Lines
- Vehicles
- Water Lines / Piping

6.2 Lockout/Tagout Required Process

Whenever it is necessary for WVU employees to be involved in the service or maintenance of equipment or machines with a potential exposure to hazardous energy, these steps must be followed in order:

1. **Notify affected personnel:** Authorized employees must communicate to affected employees and other personnel of the equipment that will undergo service or maintenance. They shall be made aware of the energy source(s) being locked out or controlled and the anticipated duration of the shutdown. Authorized employees will advise affected employees on equipment that will or may be impacted by the shutdown, additional safety precautions to be considered, and the type of control device(s) being used.
2. **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.
3. **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.
4. **Machine or Equipment Isolation:** All energy isolating devices that are needed to control the energy to the machine, equipment or process shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
5. **Locking/Tagging:** Lockout or Tagout devices shall be affixed to each energy isolating device by each authorized employee performing service and maintenance of machines and equipment. 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.
6. **Stored or Residual 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 store 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.

7. **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 de-energization of the machine or equipment have been accomplished. Return the equipment to the “OFF” or “Neutral” position after verifying energy isolation.

Maintenance and service shall be performed only after all above steps have been completed.

Restoring Power: Before lockout or tagout devices are removed and energy is restored to the machine, equipment or process, per the documented LOTO procedure for re-energization by the authorized employee(s), ensure the following:

- 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.
- The work area shall be checked to ensure that all employees have been safely positioned or removed.
- After lockout and/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.
- Each lockout and/ or tagout device shall be removed from each energy isolating device by the employee who applied the device.
- If the authorized employee is not available or the lock has become abandoned, then complete the Authorized Abandoned Lock/Emergency Removal Form prior to removing the lock and/or tag. (Refer to Appendix D).

Temporary Removal of Lockout /Tagout devices:

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.
- Remove employees from the machine or equipment area.
- Remove the lockout or tagout devices.
- Energize and proceed with testing or positioning.
 - Ensure methods are implemented to protect authorized and affected employees from specific hazardous energy exposures prior to re-energizing equipment.
- De-energize all systems and reapply energy control measures per the documented LOTO procedure to continue the servicing and/or maintenance.

Abandoned Lock/Emergency Removal:

- If a lock is abandoned or an emergency situation arises, the supervisor of the authorized employee having a lock on equipment must make every attempt to contact the authorized employee and follow the steps on the Authorized Abandoned Lock/Emergency Removal Form (Refer to Appendix D).

6.3 Lockout

6.3.1 Locking Device Requirements:

- Durable: Lockout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- Standardized: Lockout devices shall be standardized within the department in at least one of the following criteria: color; shape; or size.
- Substantial: 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.
- Identifiable: Lockout devices shall indicate the identity of the employee applying the device(s).

6.3.2 Use of Locks

- Departmental Management and Authorized Employee shall maintain a supply of lockout devices specific for their trade and area of expertise.
- Locks that are used for lockout operations and specifically identified for lockout are to be kept at the department designated area(s) and used only for lockout operations.
- Locks shall remain on equipment during the duration of the service and maintenance operations. For guidelines on temporary removal, group lockout/tagout and shift or personnel changes refer to Sections 6.2 and 6.5.
- Locks are required to be removed by the authorized employee who applied the lock.

6.4 Group Lockout/Tagout:

When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the authorized employees a level of protection equivalent 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 established procedures including but not limited to the following:

- An authorized employee must take primary responsibility for the employees working under the protection of a group lockout or tagout device (such as an operations lock in conjunction with a lockout box or equivalent means);
- The primary authorized employee must ascertain through communications and procedures the exposure status of individual group members with regard to the lockout and/or tagout of the machine or equipment;
- When more than one crew, craft, department, etc. is involved, overall job-associated lockout and/or tagout control responsibility to an authorized employee must be assigned to an employee designated to coordinate affected work forces and ensure continuity of protection;
 - When contractors and WVU personnel collaborate on a project, each must assign a primary authorized employee who is responsible for providing communication and guidance for specific procedures and methods for protection from hazardous energy;
 - 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.
 - WVU employees and contractors must use separate locks for their respective designated authorized employees.

Shift or Personnel Changes:

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energizing or start-up of the machine or equipment, or the release of stored energy.

6.5 Tagout

6.5.1 Tag Equipment Requirements

- Tagout devices print and format shall be standardized for each department.
- Tags are to have the authorized employee's contact information identified on the tag.
- Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

- Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- 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.
- 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.

6.5.2 Tagout Operations Requirements

An approved tag must be applied to the hasp of each lockout device used for the lockout by the authorized employee performing LOTO activities. The tag serves to notify affected employees and other personnel of the inherent danger and include but are not limited to the following legible information:

- Authorized employee name
- Date(s) and time(s) of LOTO operations
- Phone number to reach authorized employee in case of emergency

Tagout Only Operation (When Equipment is Not Capable of Accepting a Lock)

NOTE: Where the equipment is capable of accepting a lock, a lock and tag must be utilized.

A tagout only operation must be approved by WVU Deans/Directors/Managers/Supervisors of the department and the following requirements shall be met:

- Procedure(s) are written, available, communicated, and used by the authorized employee that provide equal protection as a lockout operation against potential re-energization.
- The tagout device must be attached at the same location that the lockout device would have been attached.
- The authorized employee and supervisor must demonstrate that the tagout procedure will provide a level of safety equivalent to that obtained by using a lockout.
- The authorized employee and supervisor must demonstrate full compliance with all tagout-related provisions of OSHA 29 CFR 1910.147 and provide one of the following or other equivalent safety measures: 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 re-energization.

6.6 Periodic Inspections

When completing periodic inspections, the designated authorized employee(s) must comply with and complete the following:

- A periodic inspection of the LOTO procedure shall be conducted at least annually to ensure that the procedure and the requirements of 29 CFR 1910.147 are being followed.
- The periodic inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected.
- The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
- Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
- Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in the LOTO Program.
- WVU shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.
- Like equipment with similar energy sources can be grouped and counted as one inspection.
- Provide documented corrections or deviations to departmental administration for review and approval. Departmental administration must notify all authorized employees trained on the LOTO procedure of the changes made to the procedure through on-the-job retraining.
- Periodic inspections forms must be maintained by the individual department and a copy must be sent to Environmental Health and Safety.
- Refer to the Periodic Inspection Form (Appendix C).

7. Recordkeeping

- Records shall be maintained by individual departments that perform service or maintenance within the scope of this program.
- Records must be kept in a location that is secure and accessible to individuals who manage the records for the department.
- Records must be made available to EHS, internal auditors, and external agencies.
- Records that must be kept include:

Records to Maintain	Retention	Department
Departmental authorized employee training <ul style="list-style-type: none"> • Classroom 	Current active authorized employees for length of employment plus 3 years	Individual department and EHS
Departmental authorized employee training <ul style="list-style-type: none"> • On-The-Job Training (Appendix E) 	Current active authorized employees for length of employment plus 3 years	Individual department
Completed LOTO procedures (Appendix B-1) for all relevant departmental equipment	Length of Equipment operation	Individual department responsible for equipment
Completed Authorized Abandoned Lock/Emergency Removal Forms (Appendix D)	3 years	Individual department responsible for equipment
Completed Periodic Inspection Forms (Appendix C)	3 years	Individual department responsible for equipment

8. Program Enforcement

Failure to follow the West Virginia University Lockout/Tagout program may result in life threatening or serious injury situations. Failure to lockout or tagout or otherwise not follow LOTO procedures may result in disciplinary action up to and including termination.

9. References

29 CFR OSHA 1910.147, The Control of Hazardous Energy (Lockout/Tagout)
 29 CFR 1910.331-335, 399, Subpart S (Electrical)
 OSHA Directive CPL 02-00-147 2/11/08

10. Program Review

The Control of Hazardous Energy (Lockout/Tagout) Program will be periodically reviewed and updated by the WVU Environmental Safety and Health department and upon changes to WVU policies and/or external regulatory changes that impact its content.

11. Program Revisions

Revised 12/2017

Revised 3/2019 – Content and Formatting Updated

APPENDIX A: Lockout/Tagout Procedure Determination Form (Optional)

Equipment Name:		Date:	
Asset Tag #:		Department:	
Location:			

WVU need not document the required LOTO procedure for a specific piece of equipment or process, when **all** of the following elements exist:

(✓) All boxes must be checked in order to utilize the exception!

	1. The equipment or process has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;
	2. The equipment or process 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 equipment or process;
	4. The equipment or process is isolated from that energy source and locked out during servicing and 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 servicing or maintenance;
	7. The servicing or maintenance does not create hazards for other employees;
	8. WVU, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of equipment or process during servicing or maintenance.

I, along with the authorized employee, have confirmed that the equipment listed above meets the exception to document a LOTO procedure for the equipment listed above.

SUPERVISOR

Name (printed) _____ Signature _____ Date _____

AUTHORIZED EMPLOYEE

Name (printed) _____ Signature _____ Date _____



Lockout Points

Equipment Name: _____

Date: _____

Process Name: _____

Revision #: _____

Department: _____

Procedure Approved By: _____

Location: _____

Purpose: This procedure establishes minimum requirements for the lockout/tagout of the specific equipment/ process named above whenever maintenance or service work is performed. The procedure is used to ensure that the equipment or process is at a zero energy state, isolated from all potential hazardous energy sources, and locked out before employees perform any service and maintenance.

Compliance with this program: All West Virginia University employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. 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.

LOCKOUT APPLICATION PROCESS

1. Notify affected personnel
2. Properly shut down machine
3. Isolate all energy sources
4. Apply lockout devices, locks & tags
5. Verify total de-energization of all energy sources.

NOTE: If following the procedure does not result in a zero energy state, then stop work and notify immediate supervisor to have the procedure updated.

Lockout/Tagout Procedure

Order of shut down	Hazardous energy		Location (of energy source)	Procedure for locking out and/or releasing energies	Verifying Procedures
	Type	Magnitude			

Additional Notes:

Lockout/Tagout Removal Process

1. Ensure all tools and items have been removed.
2. Confirm that all employees are safely positioned or removed from the area.
3. Verify that equipment controls are in the "Neutral" or "Off" position.
4. Remove lockout/tagout device (Only authorized employee who applied lock/tag may remove it.)
5. Reenergize the machine or equipment.
6. Notify affected employees that servicing is completed and machine or equipment is ready for use.

APPENDIX B-2—Lockout/Tagout Procedure Assistance Form

Individually Identify Each Energy Source

Directions: **Step 1.** Complete the matrices below for EACH energy source. **Step 2.** Transfer specified information to the applicable Lockout/Tagout Procedure(s).

Hazardous energy		Location of Energy Isolating Device	Procedures for Application of Energy Control			Method to Verify Zero Energy State
Type	Magnitude		Shutdown (Equipment)	Isolate (Energy)	Release (Stored Energy)	
<input type="checkbox"/> Electrical	_____ Volts	<input type="checkbox"/> On Top	<input type="checkbox"/> Stop Button	<input type="checkbox"/> Switches	<input type="checkbox"/> Disconnect	<input type="checkbox"/> Start Button
<input type="checkbox"/> Pneumatic	_____ Amps	<input type="checkbox"/> On Bottom	<input type="checkbox"/> Operation Switch	<input type="checkbox"/> Breakers	<input type="checkbox"/> Bleed off	<input type="checkbox"/> Operation Switch
<input type="checkbox"/> Chemical	_____ Joules	<input type="checkbox"/> Front	<input type="checkbox"/> Close Valve	<input type="checkbox"/> Single Valve	<input type="checkbox"/> Restrain	<input type="checkbox"/> Open Valve
<input type="checkbox"/> Mechanical	_____ lb Force	<input type="checkbox"/> Behind	<input type="checkbox"/> Circuit Breaker	<input type="checkbox"/> Double Valve	Other:_____	Other:_____
<input type="checkbox"/> UV	_____ ft-lb	<input type="checkbox"/> Left (when facing front)	<input type="checkbox"/> Plug Control	<input type="checkbox"/> Fuse Blocks		
<input type="checkbox"/> Electromagnetic	_____ horsepower	<input type="checkbox"/> Right (when facing front)	Other:_____	<input type="checkbox"/> Shielding		
<input type="checkbox"/> Thermal	_____ psi	Describe: _____		<input type="checkbox"/> Flange Plate		
<input type="checkbox"/> Pressure	_____ °F			<input type="checkbox"/> Anti-motion Pin		
<input type="checkbox"/> Vacuum	_____ °C			<input type="checkbox"/> Blocking		
<input type="checkbox"/> Radiation	<input type="checkbox"/> Slight Hazard			Other:_____		
Other:_____	<input type="checkbox"/> Moderate Hazard					
	<input type="checkbox"/> High Hazard					
	Other:_____					
Notes:						

APPENDIX C: Periodic Inspection Form

Facility:	Equipment ID:
Building:	Designated Authorized Employee (Inspector):
Campus Location:	Date:
Authorized Employee Signature(s):	Affected Employee Signature(s):
1	1
2	2
3	3
4	4
5	5
<p>1. Were all affected employees notified of the work to be performed? Specify method of communication.</p> <p><i>For Tagout Only Operation:</i> If affected employees are present during this Periodic Inspection, did they understand their responsibilities?</p>	
<p>2. Following the steps in the documented LOTO procedure, did the LOTO procedure bring the energy level to a zero state?</p> <p><i>If the energy level was not brought to a zero energy state, then stop this inspection. Follow the established departmental process to have the procedure updated and required retraining provided.</i></p>	
<p>3. Did each authorized employee know which energy source(s) to isolate?</p>	
<p>4. Did each authorized employee test the energy isolating device (i.e. disconnect) to be sure it cannot be moved to the "ON" position?</p>	
<p>5. Prior to starting work on the machine or equipment that was locked out, did each authorized employee verify that the machine or equipment was de-energized? What method was used to verify?</p>	
<p>6. Was the energy isolating device returned to the "OFF" or "Neutral" position following the verification and prior to performing servicing and maintenance?</p>	
<p>7. Did each authorized employee affix his or her personal lock and tag to the energy isolating device(s)? If not, why not?</p>	
<p>8. Did each authorized employee maintain full possession of his or her key(s) for all personal lockout devices?</p>	
<p>9. Did each authorized employee understand his or her responsibilities under the LOTO procedure being inspected?</p>	
<p>10. Inspector's overall assessment:</p>	
<p>Action Items/Other Observations:</p>	

APPENDIX D: Authorized Abandoned Lock/Emergency Removal Form

Completed forms must be maintained with departmental records for a minimum of 3 Years.

Note: Only Supervisors of the authorized employee may remove abandoned locks.

Lock Owner Name:	Date:	
Machine Name & ID #:	Location:	
Attempted to contact employee by:	Email <input type="checkbox"/> Phone <input type="checkbox"/> Other <input type="checkbox"/>	
Dates/Times:	a.m./ p.m.	
Communication with (name):	Time:	a.m./ p.m.
Dean/Director Notified?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Initials:
Repair Completed?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Initials:
Equipment clear to be restarted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Initials:
Guards replace and functioning?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Initials:
Affected employees notified that equipment ready for restart?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Initials:
Supervisor / Lead must make contact with authorized employee and brief him/her on the status of the service or maintenance project upon the employee's return to work.	Initials:	

Verification of Employee Notification of Lock Removal

Supervisor/Lead Completing This Form

Name (printed) _____ Signature _____ Date _____

Dean, Director, Departmental Supervisor Authorizing Lock Removal

Name (printed) _____ Signature _____ Date _____

APPENDIX E: Employee On-the-Job Training Checklist

All employees must receive on-the-job training on the specific knowledge and steps required to safely and effectively follow a lockout/tagout procedure. Complete the checklist below during on-the-job training. Marking an item as complete certifies that the employee can explain the step in its entirety and perform it independently.

Employee:	Date:
Equipment Name:	Equipment Location:
Building and Campus Location:	Supervisor:

Step 1: Notification.

Task	Complete (✓)
Employee can identify Affected or Other employees that must be notified when piece of equipment is being serviced.	
Employee can describe the method used to inform these individuals.	

Steps 2-6: Individually Identify Each Energy Source and Applicable Shutdown, Isolation, Residual Energy Release, Lockout, and Verification Procedures.

Task	Complete (✓)
Step 2. Employee can identify all energy sources associated with equipment, the magnitude of each energy source, and explain the hazards associated with each source.	
Step 3. Employee can explain and perform the method to shut down each energy source, including the location of shutdown mechanisms.	
Step 4. Employee can explain and perform the method to isolate energy sources, including the equipment used and how to release residual energy(ies).	
Step 5. Employee can explain and perform the method to lockout energy sources.	
Step 6. Employee can explain and perform the method to verify the lockout of each energy source.	

Step 7: Neutralize.

Task	Complete (✓)
Employee can explain and perform the method of returning all controls to neutral following the verification of all energy sources.	

Step 8: Perform Service and/or Maintenance

Step 9: Release From Lockout/Tagout

Task	Complete (✓)
Employee can explain and perform the method to release equipment from lockout/tagout.	

Employee: I certify that I am able to describe and perform all of the tasks listed above in their entirety.

Name (printed) _____ Signature _____ Date _____

Supervisor: I certify that the employee is able to describe and perform all tasks listed above in their entirety.

Name (printed) _____ Signature _____ Date _____