

Lockout/Tagout Safety Policy

Intent:

The purpose of this policy is to prevent injuries and accidents from occurring while servicing or maintaining machinery or equipment that is capable of sudden energy release and working with machinery or equipment that can store hazardous energy. This policy establishes the minimum requirements, policies, procedures, and practices for employees working with equipment or powered machinery with a potential for the unexpected start-up, or release of stored/residual hazardous energy. This policy is also to implement lockout/tagout “LO/TO” procedures for the control of hazardous energy sources exclusive to this facility and utilized for the purpose of generation, transmission and distribution of steam and electrical power.

Scope:

This policy covers the servicing and maintenance of machines and equipment including piping systems in which the unexpected start up or energizing of the equipment, or release of stored energy, has the potential to cause injury to University employees.

Definitions:

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Energy-Isolating Device: A mechanical device that physically prevents the transmission or release of energy including, but not limited to a manually operated electrical circuit breaker, a disconnect from all ungrounded supply conductors and a line valve.

Lockout/Tagout: A tagout system shall be used when an energy isolating device is **not** capable of being locked out. If an energy isolating device **is** capable of being locked out, lock the energy source.

Lockout: Placing a lockout device on an energy-isolating device in accordance with established procedures, ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

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Lockout Device: A device that uses positive means such as a key lock to hold an energy-isolation device in a safe position and prevent the energizing of a machine or equipment.

Servicing and/or maintenance: Work activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and or servicing machines or equipment.

Tagout: The placement of a tagout device or 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 is removed.

Tagout Device: A prominent warning device such as a tag and a means of attachment that 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 is removed.

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Procedures

This procedure may be used when there are limited numbers or types of machines or equipment or if there is a single power source. For more complex systems, a more comprehensive procedure will need to be developed, documented, and utilized.

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Responsibilities

Risk Management, Safety and Sustainability (RMSS)

Step	Responsibilities
1	Be responsible for ensuring the development & implementation of this policy.
2	Provide necessary resources as available to carry out the program.
3	Assist other affected departments in complying with this policy by serving as a source of information for regulatory and safety information.
4	Assist supervisor in developing specific energy control procedures for each type of equipment or machine that has hazardous energy source. <ul style="list-style-type: none"> a. Shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy. b. Placement, removal, and transfer of lockout devices & the responsibility for them. c. Testing a machine or equipment to determine and verify the effectiveness of lockout devices and other energy control measures.
5	Provide annual training resources of the LO/TO procedure for affected & authorized employees.
6	Conduct periodic inspections of work sites to ensure compliance with LO/TO procedures.

Supervisors

Step	Responsibilities
1	Maintain awareness of all aspects of the <i>LO/TO Policy</i> and its application.
2	Develop, document, implement, and enforce specific energy control procedures for each type of hazardous source as required by this policy (See Section 5.2).
3	Inspect energy control procedures and practices at least annually to ensure that general and specific LO/TO procedures are being followed.
4	Provide and maintain necessary equipment and resources, including accident prevention signs, tags, padlocks, seals and/or other similarly effective means.
5	Coordinate with outside contractors when servicing of equipment is done by them or will affect them.
6	Ensure that employees receive LO/TO training in the appropriate use of this program in their work areas.
7	Maintain a current list of employees authorized to perform LO/TO procedures on equipment.

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University Divisions, Department Managers and Laboratory Principal Investigators.

Step	Responsibilities
1	To implement this policy through the development of the necessary written procedures, training of staff, purchase of equipment and modification of machines and systems where necessary.

Authorized Employees

An employee who locks out/tags out machines or equipment to perform service or maintenance on that machine or equipment.

Step	Responsibilities
1	Understand the intended use of each type of LO/TO hardware and specific procedures for machinery, equipment, and processes, including the hazards involved with working on electrical circuit and/or machinery or equipment.
2	Use the proper procedure for locking/tagging out an electrical source or piece of machine and attend training as required by this policy.
3	Ensure that LO/TO devices are used only for this purpose and that the devices are kept in such a manner as to prevent use by other employees.
4	Notify any affected employees prior to the application of LO/TO devices, and after they are removed.

Affected Employees

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/tagout.

Step	Responsibilities
1	Receive awareness training on hazards associated with LO/TO process, hazard report system, and operational procedures.
2	Comply with restrictions and limitation imposed upon them during LO/TO of equipment or machinery.
3	Do not attempt to move locks, locking devices, start, energize, or use equipment that have been locked out or tagged.

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Contractors

Outside contractors or vendors performing service, maintenance, and/or construction work at UW-Eau Claire are required to have in place and follow their LO/TO Program.

Step	Responsibilities
1	Departments that hire and supervise contractors directly are responsible to verify compliance with this requirement (i.e., equipment or service maintenance contracts).
2	To coordinate with University departments as needed to control energy in areas where University and contract employees are both affected or areas where access is restricted to University employees.
3	To supply a written copy of their LO/TO program upon request.

Protective Equipment

Lockout and tagout devices shall be provided by Facilities and shall be the only authorized devices used for lockout/tagout of energy devices and shall not be used for other purpose.

Step	Action
1	Tagout systems are to be used if an energy isolating device is not capable of being locked out.
2	Lockout systems are to be used if an energy isolating device is capable of being locked out.
3	Each Padlock shall be color coded to indicate type of trade or craft and numbered to indicate the employee placing it. Note: See Appendix A. Multiple Lockout/Tagout Procedure Form

Identification of the Energy types or sources

Employees who are required to utilize the lockout/tagout procedure must be knowledgeable of:

Step	Action
1	The different energy sources which may power a machine or equipment (some equipment is powered by multiple sources; all energizing sources must be identified). a. Electrical b. Hydraulic or pneumatic c. Fluids and gases d. Mechanical

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2	How to determine where and how equipment is being energized.
3	The hazards of the energy to be controlled.
4	The methods or means to control the energy.
5	The proper sequence of shutting off or disconnecting energy sources.

Electrical Procedure

Step	Action
1	Shut off power at machine and disconnect.
2	Disconnecting sources must be locked or tagged.
3	Press start button to see that correct systems are locked out.
4	All controls must be returned to their safest position.
5	Points to remember: a. If a machine or piece of equipment contains capacitors, they must be drained of stored energy. b. Possible disconnecting sources include the power cord, power panels (look for primary and secondary voltage), breakers, the operator's station, motor circuit, relays, limit switches, electrical interlocks. c. If the electrical energy is disconnected by simply unplugging the power cord, it must be kept under the control of the authorized employee, or the plug end of the cord must be locked out/tagged out.

Hydraulic/Pneumatic Procedure

Step	Action
1	Shut off all energy sources (pumps and compressors).
2	If the pumps and compressors supply energy to more than one piece of equipment, LO/TO the valve supplying energy to this piece of equipment.
3	Stored pressure from hydraulic/pneumatic lines shall be drained/bled during lockout/tagout procedures.
4	Make sure controls are returned to their safest position (off, stop, standby, etc.).

Fluids and Gases Procedure

Step	Action
1	Identify the type of fluid or gas properly & close valves to prevent flow, LO/TO.
2	Determine the isolating device, close and lockout or tagout.
4	Drain and bleed lines to zero energy state.
5	Check for zero energy state at the equipment.

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Mechanical Energy Procedure

Step	Action
1	Block out or use die ram safety chain.
2	Lockout or tagout safety device.
3	Shut off, lockout or tagout electrical system.
4	Check for zero energy state.
5	Return controls to safest position.

Shutdown Procedure

The specific actions for applying LOTO will differ from equipment to equipment, and from facility to facility. The general LOTO procedure should follow process.

Step	Action
1	<p>Prepare for Shutdown</p> <p>Determine where and how equipment is being energized and powered by several sources such as electrical, mechanical, pneumatic, chemical, thermal, and hydraulic shall be identified.</p> <ol style="list-style-type: none"> Locate and identify all energy isolating devices that apply to the machine or equipment to be locked out. For complex equipment, refer to the manufacturer's control diagram detailing the location of all isolating points. Authorized Employee must determine the magnitude of the energy, the hazards of the energy to be controlled and the methods to control the energy. If authorized employees are unable to determine each form of energy, they must consult their supervisors before work is started.
2	<p>Notification</p> <p>Notify all affected employees that a lockout/tagout is about to take place, the reason for the LO/TO, and the specific machinery or equipment affected.</p>
	<p>Shut Down</p> <ol style="list-style-type: none"> Shut Off Equipment <ul style="list-style-type: none"> If the machine or equipment is operating, employees shall shut it down by the normal stopping procedures (depress the stop button, open the switch, close valve, etc.) Deactivate Energy <ul style="list-style-type: none"> Disconnect the device from all energy sources. Inspect the equipment to ensure all energy sources are disconnected.

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3	<p>c. Release of Stored or Residual Energy</p> <ul style="list-style-type: none"> • Release stored or residual energy, such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and pressurized systems such as air, gas, steam, or water. • If energy is incapable of being released, the employee shall reposition, block, or utilize some other protective measure to prevent the release of residual energy while service is in progress. <p>d. Attach Locking and Tagging Devices</p> <ul style="list-style-type: none"> • Attach a lock and tag of designated color, type, and descriptive warning, on each disconnecting means used to de-energize circuits and equipment on which work is to be performed. • The lock and tag shall be attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use. • If multiple employees are servicing the same equipment, each shall attach their own lock to a multiple lock plate. • No attempt shall be made to remove another employee's lock except as provided for in Section 4.1.3.4(g).
4	<p>Tryout</p> <p>a. After locking out/tagging out the switch or switches, the authorized employee performing the work shall attempt to operate the equipment before beginning work on the equipment.</p> <p>b. Test the deactivation of the equipment to ensure that equipment cannot be energized. This should be done by:</p> <ul style="list-style-type: none"> • Checking that no personnel are exposed. • Verifying the isolation of equipment by operating the push button or other normal operating controls (Secure). • Checking pressure gauges to ensure de-pressurization of lines. • Inspecting electrical circuits to confirm zero voltage. • Testing the equipment by pushing the start buttons or other controls to make certain the equipment will not run. • Returning the operating control(s) to "Neutral" or "Off" position after the test. • Ensuring the equipment is now locked out and tagged out. • If equipment DOES energize on tryout, push the stop button, and contact supervisor immediately for further instruction.

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Returning Equipment to Service

Step	Action
1	<p>Returning Equipment to Service</p> <ol style="list-style-type: none"> a. Inspect the machine and work area. b. Inspect the machine to insure those non-essential materials have been removed and the machine is in operating order. c. Visual inspections shall be conducted to ensure: <ul style="list-style-type: none"> • Tools and equipment are removed, and secured safeguards are in place. • Blocks, pins, and chain (used during the lockout) are removed. • Employees shall verify all equipment components are fully assembled and operational. • Employees shall inspect the work area to ensure that all employees have been safely positioned & removed from the area. d. Inspect the controls <ul style="list-style-type: none"> • Verify the controls are in neutral or “OFF” position. e. Remove all locking and tagging devices. <ul style="list-style-type: none"> • Each lock shall be removed by the authorized employee that applied it or under his/her direct supervision. (See Section (i) below for procedure to follow when authorized employee that applied the lock is unavailable to remove it). f. Re-energize the equipment <ul style="list-style-type: none"> • After completing the above steps, restore the energy to the machine. g. Notify affected employees when machine is back in service. h. Notify affected employees that the servicing or maintenance is completed, and the machine or equipment is ready for use. i. If the authorized employee who placed a LO/TO is absent from the workplace when necessary, the immediate supervisor of that employee may remove the lock/tag device after completing all the following specific procedures: <ul style="list-style-type: none"> • Verify that the employee is not present and therefore unable to remove the lock. • Obtain approval to remove the lock from one of the following: The Director and/or immediate supervisor. • With the assistance of one of the above, get the “Second Key” from the lock box in the vault. • Remove the lock/tag device (if supervisor is an authorized person) or supervise the removal by a person authorized to do so. • Make all reasonable efforts to inform the authorized employee that the LO/TO device has been removed. • Ensure that the authorized employee knows the LO/TO device has been removed before they resume work at the facility.

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Specific Energy Control Procedures

Specific procedures do not have to be documented for machines or equipment when **all** the following elements exist:

Step	Action
1	<p>The machine or equipment has no potential for stored or residual energy or re-accumulate of stored energy after shutting down which could endanger employees.</p> <ol style="list-style-type: none"> a. The machine or equipment has a single energy source that can be readily identified and isolated. b. The isolation or locking out of that energy source will completely de-energize and de-active the machine or equipment. c. The machine or equipment is isolated from that energy source during servicing or maintenance. d. A single lockout device will achieve a locked-out condition. e. The lockout machine or equipment is under the exclusive control of the authorized employee performing the servicing or maintenance. f. The servicing or maintenance does not create hazards for other employees. g. Employee has had no accidents using this exception involving the unexpected activation or re-energization of the machine/equipment during servicing. See Appendix C. Specific Equipment LO/TO Procedure Form & Appendix D. Boiler Lockout/Tagout Form.
2	<p>Except as noted in Section - Identification of the Energy types or Sources, specific written procedures shall clearly outline the purpose, authorization, rules, and techniques to be utilized for the control of the equipment's hazardous energy and shall include:</p> <ol style="list-style-type: none"> a. A Statement indicating <ul style="list-style-type: none"> • If the equipment or machine has the potential for stored or residual energy, or the re-accumulation of stored energy after shutting down, that may injure employees. • If the equipment or machine has more than a single energy source that is required to completely de-energize the unit (steam, electrical, pneumatic) b. Specific steps to shut down, isolate, block and secure the equipment or machine to control the hazardous energy. c. Steps for the placement, removal and transfer of the lockout devices and the responsibility for the devices. d. Specific requirements for testing the equipment or machine to ensure the effectiveness of the lockout devices and other energy control devices.

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Procedures for Group Lockout/Tagout

When servicing and/or maintenance are performed by a crew or department, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. This shall be accomplished by:

Step	Action
1	The application of a multi-lock accepting device by the primary authorized employee to the energy- isolating device.
2	The primary authorized employee attaching his/her lock to the multi-accepting device. See Appendix B. Group Lockout/Tagout Form
3	Allow one authorized employee in the group to be a coordinator of the lockout/tagout to ensure that all control methods are applied and that there is continuity of protection for the group.
4	Each authorized employee shall affix a personal lockout or tagout device to the multi-lock accepting device when they begin work and shall remove those devices when they stop work.
5	The primary authorized employee removing his/her lock and the multi-lock accepting device when all service or maintenance has been completed.

Procedures for Shift or Personnel Changes

Most work involving LO/TO is performed by Facilities employees during the regular day shift & the lockout device of the person(s) performing maintenance is to be left in place at the end of the shift unless work will be done by others on a later shift.

Step	Action
1	When work involving LO/TO is expected to be continued by others, either on the same shift or on the next shift, the following procedures should be followed to ensure the orderly transfer of LO/TO devices between off-going and on-coming employees and minimize exposure to hazards from unexpected energizing, start-up of the machine or equipment, or release of stored energy: <ol style="list-style-type: none"> a. The on-coming personnel shall notify the off-going personnel that they are ready to begin work on the machine or equipment. b. All LO/TO devices attached to the machine or equipment by the off-going personnel shall be removed and immediately replaced with like devices by the on-coming authorized personnel. c. The primary authorized employee shall ensure that all pertinent coordination between off-going and on-coming personnel has been completed before the on-coming authorized personnel begin work on the machine or equipment and that all necessary energy has been rendered safe.

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Outside Personnel (Contractors)

When outside servicing personnel are contracted to complete work activities covered by this policy:

Step	Action
1	Supervisor and the outside employer shall inform each other of their respective lockout/tagout procedures.
2	Supervisor shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.
3	Contractors failing to adhere to LO/TO procedures acceptable to Facilities will be asked to terminate their work until they employ acceptable energy control procedures.

Training Program

The department heads, supervisors, or their designated representatives are required to ensure training is provided for the purpose and function of the energy control program are understood by employees. Training shall include the following:

Step	Actions
1	Authorized Employees: a. Shall receive training in the recognition of the type and magnitude of hazardous energy sources available in the work area. b. LO/TO procedures to be followed to ensure energy isolation and control.
2	Affected Employees: a. Shall be trained to recognize when energy control procedures are being used and to understand the purpose and restrictions of LO/TO procedures.
3	Authorized and affected employees will receive retraining whenever: a. There is a change in their job assignments. b. There is a change in machines or processes that present a new hazard. c. There is a change in the energy control procedures. d. There is evidence that an employee is not following or does not fully understand the Lockout/Tagout procedures.

Appendixes

- A. [Multiple Lockout/Tagout Procedure Form](#)
- B. [Group Lockout/Tagout Form](#)
- C. [Specific Equipment Lockout/Tagout Procedures Form](#)
- D. [Boiler Lockout/Tagout](#)

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Related Information:

OSHA 29 CFR 1910.147, [The Control of Hazardous Energy \(Lockout/Tagout\)](#)

Bureau of Risk Management Dept. of Administration, [Lockout/Tagout Compliance Guide](#)

UWLX, [The Control of Hazardous Energy \(Lockout/Tagout\)](#)

Administration:

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Contact Person/Department

Contact Person:	Brian Drollinger, Director of Risk Management, Safety & Sustainability
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