

<b>Volume E2:</b> Environment, Health, Safety and Security	<h2 style="margin: 0;">E2.14</h2> <h3 style="margin: 0;">Control of Hazardous Energy</h3> <p style="margin: 10px 0 0 0;"><b>Effective Date:</b> 03/01/2018</p>	<b>Responsible Office:</b> Facilities Management
		<b>Responsible Officer:</b> Safety Officer

## POLICY STATEMENT

All Northeastern Illinois University (the “University”) employees are required to comply with the restrictions and limitations imposed on them during the use of Lock Out/ Tag Out (LOTO). Authorized employees are required to perform LOTO in accordance with this policy whenever servicing, maintaining, or if modification is being performed on equipment in which the unexpected energization or startup of the equipment, or the release of stored energy, could cause injury to people or damage to equipment. 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. Violation of this policy may result in use of disciplinary procedures.

## PURPOSE OF THE POLICY

Northeastern Illinois University will comply with OSHA standard 29CFR 1910.147, “The control of hazardous energy (lock out/ tag out)”, in order to prevent an undesirable release of hazardous energy during any servicing, maintenance, or modification activity.

## WHO IS AFFECTED BY THIS POLICY

University Authorized and Affected Employees

## DEFINITIONS

**Affected employee** - An employee who performs the duties of his or her job in an area in which the energy control procedure is implemented and servicing or maintenance operations are performed.

**Authorized employee** - An employee who performs servicing and maintenance on equipment and is trained in and authorized to perform LOTO for their own protection.

**Energy isolating device** - A mechanical device that physically prevents the transmission or release of energy. Energy isolating devices include, but are not limited to:

- Manually operated electrical circuit breakers
- Valves
- Disconnect switches
- Similar devices that can block or isolate an energy source

**Lockout / Tag out (LOTO)** - The procedure used to control hazardous energies while performing service or maintenance on equipment.

**Zero energy state** - A condition that is reached when all energy sources to or within equipment is isolated, blocked, or otherwise relieved, with no possibility of re-accumulation. Equipment is not safe to work on until it is in a zero energy state.



## REGULATIONS

[Occupational Safety and Health Act of 1970 \(OSHA\)](#)  
[OSHA Safety and Health Standards: The control of hazardous energy 29CFR 1910.147](#)

## PROCEDURES

It is the policy of the University to comply with OSHA standard 29CFR 1910.147, "The control of hazardous energy (lockout/ tag out)" in order to prevent an undesirable release of hazardous energy during any servicing, maintenance, or modification activity.

### 1. EXCLUSIONS

LOTO procedures do not apply under the following conditions:

- Routine operations (e.g., minor tool changes, adjustments, and other minor servicing taking place during normal production operations), provided the operation is repetitive and integral to the use of the equipment. The work must be performed using alternative measures that provide effective protection.
- Work on cord and plug connected electrical equipment, if all of the energy is controlled by unplugging the equipment and the plug remains under the continuous control of the employee performing the servicing, maintenance, or modification.
- Operations on energized equipment (e.g., calibration), where continuity of service is essential or shutdown of the system is impractical. Documented safety procedures that provide an equivalent level of safety must be established and followed. Special safety equipment may be required.

### 2. TRAINING AND AUTHORIZATION

All authorized employees are required to be trained.

Some University employees may be near to or affected by equipment on which LOTO is performed; therefore, all employees as determined by the Safety Officer and/or their department heads will receive LOTO Policy training. All applicable employees must know how to recognize LOTO, why LOTO is implemented, and the importance of leaving LOTO devices in place. Employees are prohibited from tampering with LOTO devices or attempting to restart equipment to which LOTO is applied.

LOTO Training is provided by the Safety Officer or by a department head and consists of LOTO instruction limited to the employee's specific areas of responsibility. Authorized employees shall receive training in the 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.

Reauthorization is required when:

- An authorized employee's job changes or he or she is reassigned.
- New equipment is to be used.
- New energy control procedures are to be implemented.

Retraining and/or reauthorization may be required when:

- A supervisor has reason to believe that an employee has inadequate knowledge of LOTO procedures or policy.
- A periodic inspection shows a deficiency in the authorized employee's ability to implement LOTO policy correctly.

### 3. NEIU APPROVED LOTO LOCKS

Only NEIU approved personal locks may be used when performing LOTO. A LOTO lock must always be accompanied by a NEIU approved LOTO tag.



NEIU personal lock (color):	NEIU Authorized Employee:
Yellow	Operating Engineers, Electricians, and Laborers

Authorized employees may also elect to utilize a checkout system that allows use of additional LOTO shop locks. For this purpose, Facilities Management has a group of LOTO shop locks number stamped. Each has a single designated key. Locks from this group are used for equipment with multiple energy-isolation devices. In such cases, when the authorized employee checks out one of these locks, they must log the lock number used, identify it with a LOTO tag, and, as necessary, store the key in a designated lock box.

### 3.1 LABELS

Each personal LOTO lock must be clearly labeled with the authorized employee's name.

Plastic self-laminating adhesive labels may be used. Other means of identification (e.g., engraving, permanent marker) are also permissible.

### 3.2 TAGS

University approved LOTO tags may be used. The University approved LOTO tag has the wording "DANGER DO NOT OPERATE". The University approved LOTO tag must be attached either directly to the shackle of the lock or by means of a plastic locking tie, through the eye hole, or equivalent. A tag must always be used in conjunction with a lock unless the energy isolating device is not physically capable of being locked.

The authorized employee performing LOTO must complete all applicable tag sections.

## 4. GENERAL PROCEDURES

The LOTO General Procedure establishes the minimum requirements of the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment.

### 4.1 PREPARATION AND NOTIFICATION (USE WRITTEN PROCEDURE, IF APPLICABLE)

The authorized employee must determine if an Equipment-Specific Written Procedure is applicable to the task (see section 8, *Equipment-Specific Written Procedures*). If one is needed the authorized employee must obtain and follow the equipment-specific written procedure. If an Equipment-Specific Written Procedure is not required, the authorized employee must complete a LOTO checklist to document the LOTO procedures for the applicable equipment and task.

### 4.2 ASSESS ENERGY TYPE AND MAGNITUDE

The authorized employee must assess the type, magnitude, and hazards of the energy to be controlled.

### 4.3 DETERMINE METHODS OF CONTROL

The authorized employee must determine the appropriate methods of controlling the hazardous energy (e.g., disconnect switch or valve).

### 4.4 NOTIFY ALL AFFECTED PERSONNEL

The authorized employee must notify all affected employees of the impending shutdown and the reasons for it. The authorized employee must verify that it is safe to shut down the equipment.

### 4.5 SHUTDOWN

Verify that it is safe to shut down equipment. Perform normal equipment shutdown. The authorized employee must shut down the equipment using established methods for that equipment.

### 4.6 ISOLATE AND LOCK OUT ENERGY SOURCES

The authorized employee must operate the energy isolating device and affix his or her LOTO lock to this device. Use additional LOTO locks if necessary. The lock must be affixed so as to hold the energy isolating device in an off or safe position that physically prohibits normal operation of the energy isolating device.



#### **4.7 TAG ON IDENTIFICATION**

Place completed tag on lock shackle or use plastic tie. The authorized employee must complete all appropriate information on the section of the University approved tag. The tag is not considered completed without this information. If the placement of the tag would compromise safety by obscuring indicator lights or controls, the tag may be located as close as is safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

#### **4.8 RELEASE STORED ENERGY**

The authorized employee must completely release or otherwise control any stored energy. In the case of stored mechanical energy, vent valves, spring releases, blocking devices, or equipment repositioning (as appropriate) must be utilized. In the case of stored electrical energy, approved grounding wands or discharge devices must be used. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation must be continued until the servicing, maintenance, or modification is completed or until the possibility of such accumulations no longer exist. The equipment must be in a ZERO ENERGY STATE.

#### **4.9 ATTEMPT TO RESTART THE EQUIPMENT**

The authorized employee must physically attempt to operate the energy isolating device and attempt to restart the equipment using the normal equipment controls (e.g., start buttons or computer software controls).

#### **4.10 TEST EQUIPMENT FOR ZERO ENERGY STATE**

The authorized employee must test potential energy sources using appropriate instruments or testers. Any instrument used to test for voltage, pressure, or temperature must be checked for proper operation both before and after use. If the authorized employee is not qualified to test the energy being isolated, he or she must ensure that the energy is tested by a qualified person. The qualified tester, if other than the authorized employee, must be identified in the Comments section on the tag.

Before LOTO devices are removed and energy is restored to the equipment, the authorized employee must follow the procedures below:

- A. Verify that it is safe to reenergize.  
The authorized employee must verify that the work for which the LOTO was applied has been completed and that it is safe to reenergize equipment.
- B. Clear all tools and personnel.  
The authorized employee must check the work area to ensure that all tools and personnel are at a safe distance from the equipment.
- C. Remove all isolating devices.  
The authorized employee must remove any devices applied under Release Stored Energy section.
- D. Replace safety guards.  
The authorized employee must check the equipment to ensure that any removed guards are reinstalled. If safety is compromised by following the prescribed sequence of the General Procedure, the authorized employee may modify the sequence; however, all steps must be performed.

### **5. TEMPORARY REMOVAL OF LOTO DEVICES**

When LOTO devices must be temporarily removed from the energy isolating device so that the equipment or component can be energized for testing or positioning, the following sequence of actions must be taken:

- A. Notify the affected employees and area supervisor.
- B. Clear the equipment of tools and materials.
- C. Remove employees from the machine or equipment area and ensure that required tools are safely and properly positioned.



- D. Remove all repositioning and blocking devices and return all vents and valves to their normal operating positions.
- E. Remove all grounding/shorting conductors.
- F. Energize and proceed with testing or positioning.
- G. De-energize all systems and reapply lockout/tag out measures to continue the servicing, maintenance, or modification of the equipment.

The original tag may be reused.

## **6. EMERGENCY REMOVAL OF LOTO DEVICES**

When the authorized employee who applied a LOTO device is not available to remove it, that device may be removed by his or her supervisor, or by an individual authorized by the supervisor. This is considered to be an emergency procedure, only to be undertaken in extreme circumstances. Extreme care must be taken and the following steps must be performed:

- A. The supervisor must verify that the authorized employee is not at the facility.
- B. The supervisor must make every reasonable effort to contact the authorized employee. This may include a telephone call to the employee's home or other location.
- C. If the employee is contacted, the supervisor must inform the employee that his or her LOTO devices are being removed.
- D. The supervisor must verify that it is safe to remove the LOTO devices.
- E. The supervisor may then use the emergency key to remove the LOTO devices, or the lock may be cut off if the key is not available.
- F. The supervisor must ensure that the authorized employee is presented with the removed lock upon returning to work and is informed of the reasons for the emergency removal.
- G. The emergency procedure must be duly recorded in the department's lockout/tag out records and signed by both the supervisor and authorized employee.

## **7. TAG OUT ONLY**

If a device is incapable of being locked out, a "tag out only" procedure may be employed.

To conduct a tag out only procedure, the authorized employee must follow all of the steps outlined in the section 4, *General Procedures*. However, the placement of the lock, isolation and Lock Out of Energy Sources, under the *General Procedures* is omitted. Instead, the authorized employee must utilize a second means of isolating the hazardous energy. Removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnect device, or removal of a valve handle are all examples of secondary measures. The second means of isolation must be identified upon the tag, and the tag must be affixed with plastic tie or other device as required by Tag On Identification, section 4.G.

## **8. EQUIPMENT-SPECIFIC WRITTEN PROCEDURES**

If the equipment undergoing servicing, modification, or maintenance has a complex LOTO procedure as determined by the department head or Safety Officer (e.g. requires the operation of more than one device to isolate the hazardous energy, or has potential for stored, residual, or accumulated hazardous energy), an equipment-specific written procedure shall be written and must be used.

### **8.1. PREPARING AN EQUIPMENT-SPECIFIC WRITTEN PROCEDURE**

A written energy control procedure must be generated by the department, group, or authorized employee most familiar with the equipment. This procedure must be used by any authorized employee who will perform LOTO on the equipment. Supervisors must ensure that equipment which requires a written procedure is so identified and that the procedure is readily available to the employees authorized to perform LOTO on the equipment. Any equipment with an equipment-specific written LOTO procedure must be clearly labeled as such. The supervisor or employee responsible for the equipment may determine the appropriate format and content of the label, for example:



CAUTION: An equipment-specific written procedure exists for the locking and tagging of this equipment. This equipment-specific written procedure may be obtained from the Lock Out / Tag Out station or from your Supervisor.

## **8.2. ELEMENTS OF AN EQUIPMENT-SPECIFIC WRITTEN PROCEDURE**

The equipment-specific written procedure must incorporate each step in the *General Procedure*. It is essential that the specific application of each LOTO step be clearly explained in the context of the specific equipment.

## **9. GROUP LOTO PROCEDURE**

When servicing, maintenance, or modification is performed by a crew, the supervisor may determine that the use of a group LOTO procedure is appropriate. This determination must be made only if the size of the crew and the nature of the work preclude the feasibility of individual LOTOs and if the level of protection provided by the group LOTO procedure is equivalent to that of individual LOTO.

A group LOTO procedure is a special procedure wherein the responsibility for applying and removing the lockout devices of a group of authorized employees is vested in a single designated authorized employee.

### **9.1. PROCEDURE/APPLICATION OF GROUP LOTO**

The department head, senior engineer, or electrician must determine that group LOTO is appropriate.

- A. The department head, senior engineer, or electrician must assume primary responsibility or delegate authority to an authorized employee for a specified group of employees working under the protection of the group's LOTO.
- B. The names of all group members, the designated authorized employee and each step of the general or equipment-specific written procedure must be documented on or attached to each applicable LOTO checklist. Each member of the specified group must be trained and authorized, as described in Section 2. Training and Authorization. The designated authorized employee has primary responsibility for ensuring that each step of the general or equipment-specific written procedure is documented and completed. Each group member shall sign the LOTO checklist to document that they understand and have verified all checklist entries.
- C. Each authorized employee shall affix a personal lockout or tag out 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.

If the makeup of the crew changes while work is in progress, the designated authorized employee must inform any new group member that a group lockout is in place and communicate to them all information relating to the group lockout. The names of the new group members must be added to the LOTO checklist.

Anyone leaving the group before the servicing, maintenance, or modification is completed must notify the designated authorized employee. The group member leaving must communicate the status of his or her activities to the designated authorized employee. The designated authorized employee must ensure a LOTO checklist entry is made indicating the date and time of each group membership change.

### **9.2. RELEASE FROM GROUP LOTO**

When the work is completed, the designated authorized employee must communicate to each group member that the group LOTO is being considered for removal and:

- A. Must verify with each member that all tasks performed in conjunction with the specific job are complete.
- B. Must verify that the equipment has been returned to a safe restart condition. After positive verification is received from all crew members, the designated authorized employee may remove the group LOTO devices and perform equipment restart. If any group member is not present to provide the verification, the designated authorized employee must follow all of the procedures as outlined in Emergency Removal of LOTO Devices.



The designated authorized employee is responsible for ensuring all appropriate LOTO checklist entries are made.

## **10. SHIFT CHANGES**

To ensure the continuity of LOTO protection during shift or personnel changes, if work is to be continued by an oncoming shift, an orderly transfer of LOTO devices and LOTO checklist entries between authorized employees from the offgoing and oncoming shifts must be performed. If the orderly transfer of LOTO devices is not possible because of a gap in shifts, this procedure must be implemented to provide continuity of LOTO protection.

Because there is a gap between shifts, the authorized employee of the offgoing shift may acknowledge by written LOTO checklist entry use of shop lock devices by the offgoing shift. The authorized employee must make a corresponding checklist entry.

- A. The LOTO checklist entries must include the authorized employee's printed names, the equipment identification, maintenance procedure being performed, and all other pertinent safety information regarding the equipment and/or procedure.
- B. The oncoming shift must read and understand the checklist entries. The authorized employee of the oncoming shift must apply his or her LOTO devices and is authorized to remove the shop lock device when the job is complete.
- C. The oncoming authorized employee must make checklist entries acknowledging the performance of this procedure.

All subsequent LOTO actions must conform with the standard LOTO policy and procedures.

This authorized employee must make confirming LOTO checklist entries and must return the shop lock devices to the storage area.

## **11. NEIU CONTRACTORS AND SUBCONTRACTORS**

The Project Manager is responsible for ensuring that all construction contractors and/or subcontractors are required to comply with, "The control of hazardous energy" standard, OSHA 29CFR 1910.147, when applicable. The Project Manager is responsible for authorizing the contractor and/or subcontractor to perform LOTO under NEIU LOTO policy or an equivalent OSHA compliant policy.

Construction contractors and/or subcontractors will be required, when applicable, to include the NEIU LOTO procedures or an equivalent OSHA compliant policy in their construction safety plans. Contractors and subcontractors are responsible for ensuring that their employees have been properly trained in and comply with, "The control of hazardous energy" standard, OSHA 29CFR 1910.147.

The Project Manager will assure the contractor and/or subcontractor provides an appropriate supply of locks, tags, and other hardware or may approve the use of alternate equipment that conforms to the intent of the NEIU LOTO policy. The Project Manager must monitor contractor and subcontractor activities to ensure proper implementation of this policy.

## **12. PERIODIC INSPECTIONS**

Each department is responsible for ensuring that a periodic inspection and certification of its energy control procedures be conducted at least annually.

- A. The periodic inspection must be performed and documented by an authorized employee other than the one(s) utilizing the energy control procedures being inspected.
- B. The periodic inspection must be designed to correct any deviations or inadequacies observed.

The periodic inspection must identify the machine(s) or equipment on which the energy control procedure was utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.



### **13. TAG ON EMERGENCY & CRITICAL EQUIPMENT**

Fire alarm systems, sump pumps, emergency lights, refrigerators, lab hoods, or equipment that must be shut down in a controlled manner fall into a class of equipment that should not be accidentally de-energized. When a circuit breaker, disconnect switch, or energy securing device is readily accessible to any employee, the circuit breaker or disconnect switch may be tagged to indicate that it is not to be turned off. The energy securing device must not be locked by any means that would prevent the device from being used as an emergency disconnect.

### **14. RECORDKEEPING REQUIREMENTS**

Each LOTO event must be fully documented on a LOTO checklist.

The following information must be documented:

- A. Name of authorized employee performing LOTO.
- B. Date and time LOTO was applied and equipment used.
- C. Equipment and circuit identification.
- D. Reason for LOTO.
- E. Schematic drawing or print numbers, when available.
- F. Date and time of LOTO removal.
- G. Name of authorized employee removing LOTO if different from authorized employee who initiated LOTO (see the section 6, *Emergency Removal of LOTO Devices*).

## APPENDIX

- A. NEIU Equipment-Specific Lockout Procedure
- B. Lockout Tagout checklist

## RELATED POLICIES AND OTHER INFORMATIONAL MATERIAL

[OSHA Fact Sheet](#)

## CONTACT INFORMATION

Please direct questions or concerns about this policy to:

Contact	Phone	E-Mail
Safety Officer	(773) 442-5215	<a href="mailto:R-Matus@neiu.edu">R-Matus@neiu.edu</a>

## DISCLAIMER

The University reserves the right to modify or amend sections of this policy at any time at its sole discretion. This policy remains in effect until such time as the Responsible Officer calls for review. Requests for exception to any portion of this policy, but not to the policy statement, must be presented in writing to the Responsible Officer.





**APPENDIX A: NEIU EQUIPMENT-SPECIFIC LOCKOUT PROCEDURE**

**NEIU Equipment-Specific Lockout Procedure**

**Effective date:** \_\_\_\_\_

**Reviewed by:** \_\_\_\_\_

**Lockout Procedure for equipment (list):**

\_\_\_\_\_  
\_\_\_\_\_

**Purpose**

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

**Compliance with This Program**

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. Violation of this policy is subject to the NEIU disciplinary process.

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.

**Sequence of Lockout**

(1) Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

\_\_\_\_\_  
Name(s)/Job Title(s) of affected employees and how to notify.

(2) The authorized employee shall identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

\_\_\_\_\_  
\_\_\_\_\_  
Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.



## NEIU Equipment-Specific Lockout Procedure

(3) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Type(s) and location(s) of machine or equipment operating controls.

(4) De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Type(s) and location(s) of energy isolating devices.

(5) Lock out the energy isolating device(s) with assigned individual lock(s).

(6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Type(s) of stored energy - methods to dissipate or restrain.

(7) Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

\_\_\_\_\_  
Method of verifying the isolation of the equipment.



## NEIU Equipment-Specific Lockout Procedure

(8) The machine or equipment is now locked out.

"Restoring Equipment to Service." When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken.

- (1) Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
- (2) Check the work area to ensure that all employees have been safely positioned or removed from the area.
- (3) Verify that the controls are in neutral.
- (4) Remove the lockout devices and reenergize the machine or equipment. Note: The removal of some forms of blocking may require reenergization of of the machine before safe removal.
- (5) Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for used.



