



Indiana University Northwest
Environmental, Health & Safety

Title: Lockout / Tagout Program

Applies to:

Indiana University Northwest

Date Issued:

1996

Date Revised:

06/10/03

I. Overview

A. Purpose of This Program

This procedure establishes the minimum requirements for the lockout/tagout of energy isolating devices. It shall be used to ensure that the machines or equipment are isolated from all potentially hazardous energy, and locked-out or tagged-out before employees perform any service or maintenance activities where the unexpected energization, start-up or release of stored energy could cause injury.

B. General Description

Lockout is a method of isolating machines or equipment from energy sources. It is preferred to the tagout method. The Procedure presented herein may be used when there are limited number or types of machines or equipment or there is a single power source. For more complex systems, a more comprehensive procedure will need to be developed, documented, and utilized.

C. Regulatory Reference

29 CFR 1910.147, OSHA's Control of Hazardous (Lockout/Tagout) - Inspection Procedures and Interpretive Guidance

D. Limitations

This is not a definitive document and is intended to serve as a basic departmental program for Indiana University Northwest. Refer to **Section II, Departmental Responsibilities** for specific requirements and instructions.

E. Elements of This Program

This program contains the following elements:

- Overview
- Departmental Responsibility
- Establish A Department-Specific Written Program
- Energy Control Devices
- Energy Control
- Annual Inspections
- Training
- Retraining
- Exclusions
- Review Procedure

F. Definitions

This program contains the following terms:

Affected employee: An employee who is required to use machines or equipment on which servicing is performed under the Lockout/Tagout standard or who performs other job responsibilities in an area where such servicing is performed.

Authorized employee: An employee who locks or tags machines or equipment in order to perform servicing or maintenance.

Capable of being locked out: An energy-isolating device is considered capable of being locked out if it:

- Is designed with a hasp or other means of attachment to which a lock can be affixed.
- Has a locking mechanism built into it.
- Can be locked without dismantling, rebuilding, or replacing the energy-isolating device or permanently altering its energy control capability.

Energized: Machines and equipment are energized when they are connected to an energy source or they contain 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.

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: Any device that uses positive means, such as a lock, blank flanges and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment. Never remove a lockout that does not belong to you.

Normal production operations: Utilization of a machine or equipment to perform its intended production function.

Other employees: All employees who are or may be in an area where energy control procedures may be utilized.

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

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: Any prominent warning device, such as a tag and a means of attachment, that can be securely fastened to an energy-isolating device to indicate that the machine or equipment to which it is attached may not be operated until the tagout device is removed. Never remove a tagout that does not belong to you.

II. Departmental Responsibility

General Description of Departmental Responsibilities

Each affected department is required to develop their own specific written program that addresses each piece of machinery that falls under OSHA's LOTO Program regulations, 29 CFR 1910.147. Each affected department must establish an energy control program, consisting of energy control procedures, employee training, and periodic inspections to ensure that before service and maintenance is performed, machines and equipment that could unexpectedly startup, become energized, or release stored energy, are isolated from their energy source(s) and rendered safe.

Appropriate employees shall be instructed in the safety significance of the lockout (or tagout) procedure. Names/job titles of employees **authorized** to lockout or tagout will be kept on file in the Supervisor's office. Each new or transferred **affected** employee and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedure. (see Overview; section F for definitions of **authorized employee** and **affected employee**.)

III. Establish A Department-Specific Written Program

A. Survey

Conduct a survey of the entire facility to determine locations of all hazardous energy sources. These sources may include the following:

1. Electricity
2. Pneumatic (air)
3. Hydraulic
4. Elevated-machine members
5. Gas
6. Mechanical
7. Springs
8. Falling
9. Water pressure
10. Chemical
11. Steam
12. Thermal
13. Nuclear

B. Control Unintended Operation

Devise methods to control unintended operation of machines or equipment being serviced or maintained.

C. Establish Procedures

Establish procedures for affixing appropriate lockout or tagout devices, and to otherwise disable, machines or equipment to prevent unexpected energization, start-up, or release of stored energy in order to prevent injury to employees. This may also include blocking movable parts that may create a hazard.

IV. Energy Control Devices

A. Protective Materials and Devices

- Locks
- Self-locking fasteners
- Chains
- Wedges
- Key blocks
- Adapter pins
- Lockout devices: hasp, single pole breaker, multiple pole breaker, universal plug, ball valve, and gate valve
- Tags

B. Identification and Use of Devices

All lockout/tagout devices shall be identified and used only for the purposes they are intended for.

1. Durable lockout/tagout devices shall be capable of withstanding the environment in which they are used.
2. Tags shall be capable of withstanding weather, damp locations, and corrosive environments.

C. Uniformity

All lockout/tagout devices shall be uniform in color, shape, or size.

D. Removal

Only the installer shall remove lockout devices.

E. Lockout Devices

Lockout devices shall be substantial enough to prevent inadvertent or accidental removal and shall indicate the identity of the employee using the devices and a warning of what precautions to take.

F. Lockout Procedures Preference

Lockout procedures shall be used in preference to tagout procedures where possible.

V. Energy Control

A. Preparation for Lockout or Tagout

A survey of Indiana University Northwest was conducted to locate and identify all isolating devices to be certain which switch(s), valve(s) or other energy isolating devices apply to the equipment to be locked or tagged-out. More than one energy source (electrical, mechanical, or others) may be involved. A list of this equipment is kept in _____ office.

B. Basic Rules for Using Lockout or Tagout Procedure

1. Elements and Actions

- Make employees aware of the type and magnitude of hazardous energy.
- All effected employees shall be informed of the physical locations of energy isolating devices.
- All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device when it is locked or tagged out.

2. Lockout/Tagout of Energy Isolating Devices

- Only trained and authorized employees shall affix energy isolating devices.
- Devices are to be affixed in such a manner that it will hold the energy isolating devices in a “safe” or “off” position.
- Where tagout devices are used, the energy isolating devices is to be fastened at the same point at which a lock would have been attached.
- If a tag cannot be affixed directly to the energy-isolating device, it should be located where it will be immediately obvious to potential operators.
- Whenever major replacement, repair, renovation, or modification of machines or equipment is performed and whenever new machines or equipment are installed, energy isolating devices shall be designed to accept a lockout device.

3. Stored Energy

- After lockout or tagout devices have been applied, stored energy or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe whenever possible.
- If re-accumulation of stored energy to a hazardous level can take place, verification or isolation shall continue when service or maintenance is being performed until work is completed.
- Prior to servicing or maintaining machines or equipment, employees must verify that energy isolation and de-energization of the machines or equipment have been accomplished.

4. Lockout or Tagout System Procedure

- Notify all affected employees that a lockout or tagout system is going to be utilized and the reason for it.
- If the machine or equipment is operating, shut it down by normal stopping procedure (depress stop button, open toggle switch, etc.).
- Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy (such as that in 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 repositioning, blocking, bleeding down, etc. Specific details on how this stored energy is released will be provided to the employee during the training program.
- Lockout and/or tagout the energy isolating devices with assigned individual lock(s) or tag(s).

- After ensuring that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. If the equipment may be operated from a remote station or computer control system the authorized employee **MUST verify that the equipment will not start remotely.**
- **Caution:** Return operating control(s) to “neutral” or “off” position after the test.
- The equipment is now locked out or tagged out.

5. Restoring Machines or Equipment to Normal Production Operations

- Before removing lockout or tagout devices from machines and equipment, authorized employees must take certain precautions.
 - a. After the service and/or maintenance is completed and equipment is ready for normal production operations, inspect the area around the machines or equipment to ensure that non-essential items are removed.
 - b. Check the work area to verify that all persons have been safely positioned or removed.
 - c. Before removing lockout or tagout devices, notify all affected persons.
- Before lockout and tagout devices are removed and energy is restored, procedures shall be taken by authorized employees to ensure the following:
 - a. After all tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, remove all lockout or tagout devices. The locks or tags should be removed **only by the person who attached them.** Operate the energy isolating devices to restore energy to the machine or equipment.
 - b. If the person who owns the lock has left the plant and the equipment is locked out, the following procedures should be followed:
 - i. Management will verify that the employee who applied the device is not at the facility.
 - ii. If the person who owns the lock cannot be reached, the department manager must determine if it is safe to remove the lock. He/she must also inspect the machine or equipment and determine if it is safe to start-up.
 - iii. Management will inform the employee who owns the lock that it has been removed before they return to work.

C. Group Lockout and Tagout Procedure

This section of the Lockout/Tagout Program will be reviewed with all personnel **affected** or **authorized** by the group lockout/tagout before implementation of that job.

1. When servicing or maintenance of equipment or machinery is performed by more than one employee, a procedure shall be used to afford each employee a level of protection equivalent to that provided by personal lockout or tagout.
2. Group requirements shall include, but are not limited to, the following:

- a. One **authorized** employee will be designated as responsible for the lockout/tagout under a group program with one employee having an operations lock.
- b. The authorized employee must ascertain the exposure level of individual group members and coordinate the lockout-tagout to ensure that all control measures are applied and that they is a continuity of protection for the group.
- c. Each **authorized** employee will affix the lockout or tagout device to the group lockout. Each lock must have that person's name affixed to it. Each authorized employee will remove their lockout or tagout device when they stop working on the equipment or machine being serviced.
- d. If more than one individual is required to lockout or tagout equipment, **each** shall place his/her own personal lockout device or tagout device on the energy isolating device(s).
- e. When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used.

D. Shift Changes

1. When a shift or personnel change occurs, the designated (authorized) employee should ensure the continuity of lockout or tagout protection.
2. The designated authorized employee shall provide for the orderly transfer of lockout or tagout devices between leaving and oncoming employees to minimize the risk to employees from stored energy. The authorized employee in charge of group lockout/tagout, or an individuals lockout/tagout will coordinate the change in shift and personnel. At a minimum, the following procedures must be completed:
 - a. Change locks or tags
 - b. Retest to ensure deenergized state of equipment or machinery being serviced
 - c. Notify management of start-up and testing to be performed
 - d. Notify management of changes in the job that affects the lockout or tagout procedures

E. Outside Service or Contractor Personnel

1. Outside personnel or contractors involved in operations relating to equipment or machinery lockout that affect our employees must submit their energy control procedures to DEHS. Their procedures must be consistent with the OSHA Standard 29 CFR 1910.147 and the IUN written Program.
2. **Affected** employees must be trained and notified as outlined in this written program.
3. The responsible manager for the affected area will ensure that outside personnel are **affected** employees are informed of the proper procedures.

VI. Annual Inspections

A. General (see attached form)

1. An annual inspection of energy control procedures will be performed by an authorized employee other than the one(s) using the energy control procedure being inspected.

2. The annual inspection shall be designed to correct any observed deviations or inadequacies.
3. Where lockout is being used for energy control, the annual inspection shall include a review between the inspector and each authorized employee and of that employee's responsibilities under the energy control procedure being inspected.

B. Departmental

1. Each year the person responsible for a department's Lockout/Tagout Program will audit the program with the assistance of the appropriate department managers and employees. They will check on procedures used in each department to determine if the department's written program is being implemented. Any changes to the program that are needed will be made at that time.
2. They will also check the OSHA 200 log to determine if any injuries were related to the lockout/tagout program.
3. The auditor will report his/her findings to the department supervisor.

VII. Training

A. Essential Elements

1. Each affected employee shall be instructed in the purpose and use of the energy control procedure.
2. All other employees whose work operations are, or may, be in an area where energy control procedures may be used, shall be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

B. Tagging Limitations

1. Inform employees that tags do not afford the same protection as a lock.
2. Tags are not to be removed without the authorization from the installer.
3. Tags must be legible and be made familiar to all employees whose work is affected or who may be in the affected areas.
4. Tags and means of attachment must be capable of withstanding the environmental conditions of the workplace.
5. Tagout device attachments shall be non-reusable and self-locking with a minimum unlocking strength of no less than 50 pounds.
6. Tags often evoke a false sense of security and their importance needs to be clearly understood by employees.

C. Training Record Keeping

A record of employee training, including employee name and date of training, should be kept by the department supervisor and the Department of Environmental, Health & Safety.

VIII. Retraining

A. Retraining shall be established under the following conditions:

- There is a change in job assignments
- There is a change in machines or equipment

- Equipment or processes present a new hazard
- There is a change in the energy control procedures
- There are deviations or inadequacies detected in the procedures
- New or revised control methods are used

B. Retraining Record Keeping

A record of employee retraining, including employee name and date of retraining, shall be kept when any of the above conditions are present. Retraining records shall be kept by the department supervisor and the Department of Environmental, Health & Safety.

IX. Exclusions

Conditions for Possible Exclusions

1. Normal production operations including repetitive, routine minor adjustments, and adjustments and maintenance that would be covered under OSHA's machine guarding operations.
2. Work on cord or plug connected electric equipment when it is unplugged, and the employee working on the equipment has complete control over the plug.
3. Hot tap operations involving gas, steam, water, or petroleum products when the employer shows that continuity of service is essential, that shutdown is impractical, and documented procedures are followed to provide proven effective protection for employees.

X. Review

Review and Revision of This Program Document

This entire program shall be reviewed on an annual basis and upgraded where necessary.

LOTO Periodic Inspection

Date:	Time:	Equipment:
Authorized Employee(s):		Inspector(s):

- Employee must identify the types of energy sources, potential hazards, and all control devices that are related to the piece of machinery or equipment that is to be serviced. Energy source(s) identified:

If more than one energy source is present, is there an existing procedure, specific to the machinery, used to LOTO? If so, what is its title?

- Employee must notify all the affected employees that the machinery or equipment will be locked and tagged out while servicing and maintenance is being completed. Affected employees notified:

- Employee must turn-off all operating controls. Operating control(s):

- Employee must locate all energy sources. Location of energy source(s) requiring LOTO:

- Employee must lock and tagout the energy-isolating device in the “OFF” or “SAFE” position. If lockout device is not used, please indicate why.

(Ensure that the tagout device is filled out properly and is legible.)

- Employee must isolate all energy sources by blocking, bleeding and venting stored energy as found in springs, hydraulic systems, and pneumatic systems. Stored energy source(s):

- Employee must test the operating controls.
- Employee must return all operating controls to the “OFF” position after verifying the isolation of the equipment.
- Employee can now perform maintenance/service.
- Once the employee has completed maintenance and/or servicing to the machine or equipment, the machine or equipment has been fully assembled, tools are cleared away, and all affected employees have been notified, the employee may remove his/her lock and tag and reenergize the machine.

Inadequacies/Deviations:

Authorized Employee Signature	Inspector Signature
-------------------------------	---------------------

Please copy completed inspection form and forward it to EH&S, Tamarack Hall, IUN.

Record of Lockout/Tagout Program Review/Revision Changes

3/96	Section A(2): Added “contractors” to affected employees Section A(5)(d): Added ELECTRICAL SAFETY note Section A(7): Added ELECTRICAL SAFETY note	Manteuffel
4/97	IV (Overview) and Section A: Corrected some minor grammatical errors	Manteuffel
4/98	No changes to policy. Updated standards section.	Manteuffel
5/99	Minor wording changes to policy text. Updated standards section.	Manteuffel
5/00	No changes	Manteuffel
5/01	Title change-MEHS	Manteuffel
5/02	Inspection form added	Manteuffel
6/03	Format change	Manteuffel