

North Dakota State University

Lockout/Tagout Guidelines

I. Introduction

The diversity of the job functions at NDSU requires the use of extra precautions to de-energize all sources to prevent injury from potentially hazardous energy. NDSU has outlined the guidelines and recommendations necessary to prevent death or serious injury to its employees by identifying methods of controlling hazardous energy.

II. Goals

The Lockout/Tagout Procedure is to prevent or limit occupational injury and/or death by ensuring the machine or equipment is isolated from all potentially hazardous energy, and is locked out or tagged out before employees perform any servicing or maintenance activities where the unexpected energization, start-up, or release of stored energy could cause injury.

The policy applies to all employees and outside contractors. The following are minimum requirements only and are not to be construed as all encompassing.

III. Purpose

The Lockout/Tagout Program was designed to establish minimum safety requirements in an attempt to prevent accidental energizing or starting of equipment or machines while employees are working on them or before they are mechanically ready and released for service.

There are many forms of energy which supervisors and employees should be familiar with in the work place. These include hydraulic, pneumatic, steam, gas, and stored energy in suspended weights, springs, air pressure, electrical, or others.

IV. Lockout/Tagout Definitions

A. Lockout –

The locking and tagging of equipment in such a way that it cannot be energized without the lock being removed.

B. Tagout Device

Tag to indicate that the energy isolation device and the equipment being controlled may not be operated until the tagout device is removed. Tagout devices and locks shall be used together; locks shall NOT be used without tags.

1. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

V. Two types of energy

Energy can come from many sources but is only one of two types:

- A. **Kinetic** - the force caused by the motion of an object. i.e. spinning wheel
- B. **Potential** - the force stored in an object that isn't moving. i.e. springs

VI. Procedures

Lockout and tagout procedures are mandatory for the following systems:

A. Systems energized by electricity, hydraulics, air or steam.

1. Combustible and/or explosive gas lines
2. When removing or bypassing a guard or the safety device
3. When placing any part of your body where you can get caught by moving machinery
4. Cleaning or oiling machinery with moving parts or jammed mechanisms
5. The operation of a piece of equipment may cause damage to that equipment
6. When it is to prevent the unauthorized use of equipment

B. Lockout/Tagout

The authorized employee shall know the type and magnitude of energy that the machine or equipment uses and shall understand the hazards involved.

1. Electrical lockout shall mean physically disconnecting the conductors of a circuit from the “source” of electric current by pulling a disconnect switch and attaching a lock and/or tag.
2. Lockout and tagout shall be performed only by the authorized employees who are performing the servicing or the maintenance.
3. Notify all affected employees that a lockout or tagout system is going to be utilized and the reason.
4. Turn off the equipment by the normal stopping procedure, and disconnect all energy sources by pulling the plug, breaking the circuit, closing the valve, pulling the fuse or flipping the main switch.
5. Equipment powered by hydraulics, air, gas or steam shall be physically locked and/or tagged in the following manner:
 - a. Close the supply valve, chain and lock.
 - b. Bleed the line(s) and leave the vent valves open.
6. Stored energy (such as springs, elevated machine members, rotating flywheels) must be relieved, disconnected, or restrained by methods such as repositioning, blocking, grounding circuits, discharging capacitors, etc.
7. The lockout shall be made at the energy source by the employee performing the job. Isolate the primary and secondary energy sources.
8. Each person who works on a “Locked Out” piece of equipment shall place his/her lock and tag on the equipment. No individual or department shall work under another individual/department’s lock and tag.
9. When there is doubt as to the location of the proper disconnect switch or valve to lock out, the *Electrician/ Department Supervisor* shall be contacted to oversee the proper de-energizing of the system or equipment.
10. If it is **not** possible to “physically” lockout equipment due to age or design, one of the following will apply:
 - a. A security device will be attached to the system to lock it out.
 - b. The energy supply will be physically disconnected and danger tags placed in strategic locations to notify all people in the area that the equipment is being worked on.

- c. An employee of the same department, who is properly instructed in lockout/tagout safety, will ensure the equipment is not inadvertently energized.
- d. Information Required on all tagout devices:
 1. Where used
 2. Tag Attached by (name and department)
 3. Date and Time
 4. Requesting person/department
 5. Reason for tag

C. Individual Lock

Lock and key issued to an employee for their own use and personal protection.

1. Standardized lockout/tagout equipment shall be used. They will be issued by the specific department.
2. Each maintenance and/or production employee, who, during the course of their work, has a cause to lock out equipment, shall be issued a lock by their supervisor.
3. The supervisor shall control lock issuance, maintain records and assure each lock can be identified with the receiving employee.

D. Tryout

After locking out and tagging out the switch or switches, the individual or department performing the work shall attempt to operate the equipment before beginning work on the equipment.

1. The person trying the equipment will test it by pushing the start buttons or other controls to make certain the equipment will not run.
2. Return the operating control(s) to “neutral” or “off” position after the test.
3. The equipment is now locked out and tagged out.
4. If the equipment **DOES** energize, push the stop button and contact your supervisor immediately for further instruction.
 - a. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

VII. Restoring Normal Operation - Removal of Locks/Tags

Prior to restoring normal operations, prepare and check the area around the machine or equipment to ensure that no one is exposed to hazards or injury.

- A. After all tools have been removed from the machine or equipment, guards reinstalled and employees notified, remove all lockout or tagout devices.
- B. Each person shall remove his/her own lock and tag. It is a safety violation to remove another person’s lock and tag.
- C. Disengage the energy isolating devices to restore energy to the machine or equipment.
- D. When an employee has left his/her lock and tag on for an unknown reason, and it has to be removed, the following shall be applied:
 1. If the employee is in the building, he/she shall remove the lock and tag.

2. If the employee has left the building, every effort shall be made to contact the employee for reasons of leaving the lock and tag in place.
3. If the employee cannot be located, their department supervisor, along with a member of the same department, must check out the equipment and make sure it is safe to remove the lock and tag.

IX. Contractors

The contractor assigned to the project shall follow the procedures outlined in the lockout and tagout guidelines.

- A. The contractor will use the locks and tags specific to their company.
 1. The contractor shall be responsible for removing their own locks and tags when the work is completed.

X. Training

Training will be provided for the purpose and function of the energy control guidelines.

- A. Appropriate employees will be provided training by their departmental supervisors in the safety procedures used for lockout/tagout.
- B. Each new or transferred employee or those, whose work operations are or may be in the area, shall be instructed in the purpose and use of the lockout/tagout procedures.
- C. Retraining will be provided for all authorized and affected employees whenever there is a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
- D. Comply with all other University training requirements.