Emergency Control Procedure: Lockout-Tagout

Scope

To initiate a campus-wide policy for the purpose of establishing performance procedures for the protection of University personnel (outside contractors, students and visitors where applicable) in, on, or around machinery or equipment during repair, maintenance, operation and associated activities, from injury due to unexpected energization, start-up or release of stored energy from the equipment.

Purpose

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

The energy control program (Lockout/Tagout program) will be audited at least annually to ensure that the procedure and requirements of the OSHA standard are being followed. Included in the audit is a session in which management and employees review the results of this procedure.

Basic Rules for Using Lockout or Tagout System Procedures:

All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation, which could cause injury to personnel during repair or maintenance. Do not attempt to operate any switch, valve or other energy isolating device which is locked or tagged out.

Responsibility

Supervisors are to ensure that employees responsible for servicing and/or maintaining equipment shall be instructed in the safety significance of the lockout/tagout procedure. Each new or transferred employee affected by this rule shall be instructed in the purpose and use of the lockout/tagout procedure. Other employees whose work operations are or may be in the area shall also be instructed in the purpose and use

of the lockout/tagout procedure.

New or transferred employees must receive training on the lockout/tagout procedures prior to assignment. Lockout/Tagout devices must be provided by the employer. Lockout and tagout devices must be standardized and singularly identifiable.

Tagout device attachment means shall be of a non-reusable type, attachable by band, and non-releasing. Attachment means shall have the same general design and basic characteristics of being at least equivalent to a one piece, all environment-tolerant nylon cable tie.

Each authorized person must be assigned his/her individual lockout device. Locks must be individually keyed.

It shall be the responsibility of the supervisors and employees performing the maintenance or repair to implement the lockout/tagout procedure before the work begins.

Disciplinary action required for bypassing lockout or tagout devices:

The only person(s) authorized to remove lockout/tagout devices is the person(s) who installed those devices or his/her supervisor. The purpose of the lockout/tagout procedure is to prevent injuries caused by a machine being activated while someone is servicing or repairing it. Therefore, unauthorized removal or bypassing the lockout/tagout devices compromises the worker's safety.

Any person who bypasses a lockout or tagout device and energizes, starts or otherwise activates a machine or who removes a lockout/tagout device without authorization shall be disciplined according to University policies and procedures. Disciplinary action shall be taken whether or not injury or property damage results from bypassing the lockout/tagout devices.

Preparation for lockout or tagout:

1. Notify all affected employees that a lockout or tagout system is being put into effect and the reason. The employees authorized to initiate the lockout/tagout procedure must know the type of energy that the machine or equipment uses, its magnitude and the hazards posed by that energy source.

2. If the machine or equipment is operating, shut it down by the normal stopping procedure.
3. To verify shut down, operate all the switches, valves or other energy isolating devices so that the machine is isolated from its energy sources. Always be alert to the presence of stored energy (such as breakers, switches, springs, elevated parts, hydraulic pressure, air pressure, rotating flywheels, etc.). Stored energy must be dissipated or secured by methods such as repositioning, blocking, bleeding, braking, etc.
4. Lockout and/or Tagout the energy isolating devices with the assigned individual locks and/or tags. Lockouts must be used unless the energy isolation devices cannot accept a lockout device. In these cases a tagout procedure must be followed and the employer must demonstrate that the tagout procedure provides the same level of protection provided by a lockout procedure.
5. Ensure that no personnel are exposed to danger and then, as a check to be sure all energy sources are isolated, operate the machine's normal operating controls make certain the machine will not operate. CAUTION: Always return the controls to the "neutral" or "OFF" position after test.
6. The equipment is now locked or tagged out and service or maintenance can proceed.

Restoring machines or equipment to normal operation:

1. Remove all tools, parts, etc. from the machine.
2. Replace all guards and shields
3. Check the area around the machine or equipment to ensure that no one is exposed to danger after servicing or repair is complete and that the equipment is ready for normal operation.
4. Remove all lockout and/or tagout devices. Supervisor or his delegate will verify that the equipment can be returned to service.
5. Operate the energy isolating devices to restore energy to the machine or equipment.

Procedure involving more than one person:

If more than one person is involved in the service or repair of a machine, each supervisor and/or employee shall place his/her own personal lockout or tagout device(s) on all energy isolating devices. When and

energy isolating device cannot accept multiple locks or tags, a multiple lockout device (hasp) will be used.

If lockout is used, a single lock may be used to lockout the machine or equipment, but the key to that lock must be placed in a lockout box or cabinet which allows the use of multiple locks to secure it. Each employee will then use his/her own lock to secure the box or cabinet.

As each person no longer needs to maintain his/her lockout protection, that person will remove his/her own lock from the lockout device.

Supervisors will verify that all work is completed prior to returning equipment to service.

Procedure involving more than one shift or group of workers:

There may be times when a lockout or tagout must remain in place for more than one work shift or after other personnel changes. The procedure depends on whether or not employees on the incoming shifts will be working on the affected equipment.

1. Service or repair work will be continued by the new shift. Employees leaving the workplace will remove their locks and incoming employees will install their locks under the direct observation of the supervisors. The supervisors for both shifts will be present for the transfer of the lockout.
2. Employees on other shifts will not be working on the machines. The lockout and tagout devices will remain in place and the incoming personnel will be notified that a lockout/tagout is in effect. The supervisors of both shifts will be responsible for ensuring that the information is made available to the incoming personnel.

Work involving private contractors:

Any private contractor working for the University of Tennessee at Chattanooga is bound by *29 CFR 1910. 147* to have in place its own Lockout-Tagout procedure and will be expected to adhere to same. Should a private contractor be working in conjunction with University personnel, the University Lockout-Tagout procedure will be used by all parties involved.

Upgrade of energy isolation devices required:

Energy isolation devices designed to accept lockout devices must be installed when:

1. any major replacement, repair, renovation, or modification of machines or equipment is performed
2. new machines or equipment is installed.

Cord and plug connected electric equipment:

Electric equipment connected by a cord and plug is not covered by the lockout/tagout rules when the cord is under the exclusive control of the person performing the repair or maintenance and is unplugged during servicing.

Agricultural field equipment:

Agricultural equipment must be shut down and secured to prevent inadvertent activation during repair and maintenance. The following procedure should be followed to comply with the lockout/tagout requirement. Additional precautions may be necessary with some machines. Refer to the operator's manual or service manual for recommendations and precautions.

1. Lock the parking brake and/or place the transmission in PARK. Place the PTO in NEUTRAL. Shut off the engine and remove the key before leaving the operator's seat. Additional safety can be affected by chocking the wheels of the tractor and/or equipment.
2. Lower all raised implements or attachments to the ground or the lowest possible position. Raised implements or attachments may be secured in a raised position using blocks or safety devices provided by the manufacturer.
3. Relieve hydraulic pressure on all lines. Secure springs by relieving tension or by blocking to prevent release of stored energy.
4. Disconnect the ground terminal(s) from the batter(s) if the work will involve the electrical system or if there is any risk of accidental activation of the starter or other electrical components.
5. Place a warning tag over the tractor's or machine's ignition switch warning that the machine is being serviced or repaired. This requirement is included because a single key will often fit a number of machines.

Hot tap operations:

Work involving transmission and distribution systems for substances such as gas, steam, water, or petroleum products can be performed on pressurized pipeline systems if:

1. the employer can demonstrate that the continuity of service is essential
2. shutdown of the system is impractical and that documented procedures are followed
3. special equipment is used that will provide effective protection for employees

Work involving exposure to electrical distribution systems:

work involving exposure to electrical distribution systems is covered under *29 CFR 1910 Subpart S*.

Lockout or Tagout Procedure:

If a situation exists which cannot be covered by the lockout/tagout procedure above, a unite may develop site- or machine-specific procedures using the following outline. This may be the case with machines which possess uinque hazards or which are part of and will affect a processing system.

1. Name of workplace/machine
2. Types and magnitudes of energy and hazards
3. Names and job titles of employees authorized to lockout or tagout
4. Names and job titles of affected employees and how to identify
5. Types and locations of energy isolation devices
6. Types of stored energy and how to dissipate or restrain
7. Methods selected - locks, tags, additional safety measures
8. Types of equipment checked to ensure disconnections
9. Names and job titles of employees authorized for group lockout/tagout

References:

29 CFR 1910.147. The control of hazardous energy. Federal Register, Vol.54, No. 169, September 1, 1989. pp 36687 - 36696