

Lockout Tagout

Control of Hazardous Energy



What is Lockout/Tagout?

- Procedures for safe shutdown and restart of equipment that is serviced or maintained
- Lockout/tagout protects employees who service and maintain vehicles/equipment by isolating its potential to harm (controlling its energy potential)

Lockout/tagout Prevents

- Equipment from unexpectedly starting up
- Co-workers from restarting equipment
- Injury or death during maintenance of equipment

How to comply with Lockout/Tagout

- Written Lockout/Tagout Program
 - ▣ Energy Control Procedures
 - Machines/equipment and vehicles
 - ▣ Application of Controls
- Provide lockout/tagout devices
- Employee communication and training
- Periodic inspections

Lockout/Tagout Injuries

- Leading causes of lockout/tagout injuries
 - ▣ Failure to shut off equipment
 - ▣ Failure to disconnect from power source
 - ▣ Unexpected restarting of equipment
 - ▣ Failure to clear work area before starting

- Two situations most likely to cause injuries
 - ▣ When an employee must place part of his/her body where it could be caught by moving machinery or in contact with electrical current
 - ▣ When it becomes necessary to remove or bypass guard or other safety device

Lockout/Tagout Personnel

Authorized Employees

- Services and applies lockout/tagout devices
 - ▣ Training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy that is available at the workplace, and the methods and means necessary for energy isolation and control

Affected Employees

- Uses the equipment or is in work area but does not service equipment
 - ▣ Instructed in the purpose and use of procedures

Lockout

Lockout is the method of keeping equipment from being set in motion and endangering workers

- A disconnect switch, circuit breaker, valve or other energy isolation mechanism is put in the safe or off position
- A device is often put over the energy isolating mechanism to hold it in the safe position and a lock is attached, so the mechanism cannot be moved out of the safe position without disengaging the lock

Written program should detail company specific lockout hardware and devices



Tagout

- The energy isolating mechanism is placed in a safe position and a written warning is attached to it



Written program should detail company specific tagout devices

Lockout/Tagout

- Use lockout/tagout whenever performing service or maintenance on any machine or vehicle where injury could occur by:
 - ▣ Unexpected startup of equipment or vehicle
 - ▣ Release of stored energy

- Jobs where lockout/tagout should be used:
 - ▣ Servicing or repairing vehicle engines
 - ▣ Repairing electrical circuits
 - ▣ Clearing jammed mechanisms
 - ▣ Cleaning, oiling or servicing machinery with moving parts

Lockout/Tagout

- It is the employee's responsibility to follow the system that has been chosen for their workplace
- Lockouts and tags do not de-energize equipment. They should only be attached after the machinery has been isolated from its energy source.
- All lockout/tagout materials are supplied by the employer and must be durable, substantial and capable of identifying the person who applied it.
 - Labeled devices or locks used with tags

Lockout/Tagout

Cord and Plug Equipment

- Equipment that can be unplugged from an outlet and has no other hazardous energy sources does not fall under the requirements of this program
 - ▣ As long as the plug is under exclusive control of the employee performing the maintenance

Lockout/Tagout

If servicing lasts more than one shift

- Lockout/tagout protection must not be interrupted
- The employee leaving work should not remove their lock or tag until the employee replacing them are ready to apply lockout/tagout device
- If the worker who placed a lock or tag is not available to remove it, the device can only be removed in an emergency by a supervisor
 - Only maintenance supervisor can remove lockout/tagout devices fro employee absenteeism/sickness

Lockout/Tagout

Group Lockout/Tagout

- If more than one person is required to lockout/tagout equipment or machinery, each person should place their own lockout/tagout device on equipment

Outside Contractors

- Adhere to company lockout/tagout procedures
- Consider specific lockout/tagout procedures for services being provided

General Procedures

Machine/Equipment Shutdown

- Shut the system down by using its operating controls (Standard Operating Procedures)
- Follow established procedures for the particular machine/equipment so you don't endanger anyone during shutdown
 - ▣ Machine/equipment specific procedures

General Procedures

Machine/Equipment Isolation

- Employees must:
 - ▣ Operate all energy isolating devices so that the equipment is isolated from its energy sources
 - ▣ Be sure to isolate all energy sources – this includes secondary power

General Procedures

Applying Lockout/Tagout Devices

- All energy isolating devices are to be locked, tagged or both according to company procedures
- Only the standardized devices provided by the company are to be used and are not to be used for anything else
- If tags are used instead of locks, they should be attached to a defined, specific area as instructed

General Procedures

Control of Stored Energy

- Guard against energy left in machine/equipment after it has been isolated from its energy source:
 - ▣ Ensure all parts have stopped moving
 - ▣ Relieve trapped pressure
 - ▣ Release the tension on springs or block the movement on spring driven parts
 - ▣ Block or brace parts that could fall because of gravity
 - ▣ Block, blank or bleed pressure in hydraulic or pneumatic systems that could lose pressure

General Procedures

Verify Isolation of Equipment

- Take any of the following steps that apply to equipment to verify isolation:
 - Verify that the main disconnect switch or circuit breaker cannot be moved to the on position
 - Use of voltmeter or other equipment to check for electrical activity
 - Press all start buttons and other activating controls on the equipment

General Procedures

Universal release of lockout/tagout procedures

- Replace all guards and critical equipment
- Inspect and remove all tools from the work area
- Ensure system is fully assembled & set for operation
- Ensure other employees are safely positioned
- Ensure controls are set to neutral
- Remove the lockout/tagout devices
- Equipment can then be energized
 - Place equipment back into service or if continued maintenance is needed follow LO/TO procedures

Vehicle Procedures

Shutdown Procedures

- ❑ Shift transmission to neutral and set parking brake
- ❑ Turn key “off” and remove. Place in the pocket of employee performing service for the duration of work
- ❑ Turn engine switch to “off” (If so equipped)
- ❑ If working on electrical components, generator switch is turned to the off position (If so equipped)
- ❑ Place tagout device on vehicle (steering wheel cover, tags, etc.)

Vehicle Procedures

Control of Stored Energy

- After assessing the scope of work, identify all stored energy sources and isolate by supporting necessary vehicle components and otherwise blocking, bleeding and disconnecting

Verification of Isolation

- Prior to servicing verify that isolation and de-energization has been accomplished

Vehicle Procedures

Testing equipment after servicing is complete

- Replace all guards and critical equipment
- Inspect work area and remove tools from vehicle
- Ensure employees are safely away from vehicle
- Turn engine stop switch to “On”, if necessary
- Turn generator switch to “On”, if necessary
- Ensure controls are set in the neutral position
- Start the vehicle

Vehicle Procedures

Testing equipment after servicing is complete

- Test equipment serviced
- If service is complete, restore to normal operations
- If vehicle needs further repair, de-energize and reapply control measures in shutdown procedures and control of stored energy
 - ▣ Notify the maintenance supervisor

Vehicle Procedures

Restoring vehicle to normal operations

- ❑ Ensure system or equipment is fully assembled
- ❑ Remove any tools from the work area
- ❑ Remove any remaining blocks, braces, jack stands, etc.
- ❑ Remove lockout/tagout steering wheel cover or other devices
- ❑ Resume use or move vehicle to normal parking area

Discussion

- Questions or comments?

