Lockout/Tagout Guidelines

Related Policy

Lockout/Tagout Policy – 851.06.01 [1]

Introduction

Machinery and equipment are powered by and utilize various forms of energy including electrical, pneumatic, chemical, thermal, hydraulic, mechanical, and gravitational. Lockout/tagout procedures prevent energy from being released accidentally while electrical equipment, machinery, and pressure systems are being serviced or maintained. Lockout/tagout systems prevent the risk of workers being injured by energized equipment. Only authorized personnel shall install lockout/tagout systems and are responsible for removing these systems.

When establishing their own lockout/tagout procedures departments should consider the following factors:

- lockout/tagout planning
    - all energy sources to and within the equipment or machinery or pressure system must be identified by an authorized employee or supervisor
- notification procedure
    - affected employees (and other employees) must be notified about the planned lockout/tagout of equipment
- shutdown procedures
    - shutdown procedures must identify the steps to achieve a “zero energy state”
- energy isolation procedures
    - each energy source must be isolated to prevent controls from being re-energized. Blocks and blanks may be used to isolate energy sources
- lock and tag procedures for each isolating device
    - each authorized employee must apply a lockout/tagout device to each energy isolating device. Identification with the lockout should include the date, the equipment being serviced, the authorized employee’s name, and the supervisor’s name.
- procedures to dissipate stored or residual energy
    - the machine or equipment must be returned to a “zero energy state” by methods such as opening drains, relieving pressure, blocking, bleeding, or cycling the system
- verification of energy source isolation
    - a deliberate attempt to start the machine or equipment to ensure that all correct energy sources were successfully isolated
- removal of the lockout/tagout systems
    - describe the sequence of steps by authorized employees to re-energize the system for use by employees after service or maintenance is completed
- notification of operations restored
    - affected and other employees must be notified that safe operation of the system has been restored.

Guidelines

The following guidelines will promote safety:

Equipment and machinery shall be inspected by a competent person (as defined in the OH&S Act) to determine that it can be effectively isolated. (e.g. are several machines wired to one disconnect switch?)

1. Consider the need to lock out or bleed compressed air, and block moving parts from gravity, hydraulic pressure, or stored electrical or mechanical energy.
2. After equipment lockout, the key must be retained by the person to whom the padlock has been assigned.
3. Where more than one person or trade group is scheduled to work on the machine or system, a lockout bar will be used. This will allow for the use of more than one padlock.
4. The padlock placed by the operator or person responsible for the machine or system shall remain in place until all other padlocks have been removed and notification is received that all work has been completed.
5. If work is done on a system operating at a nominal voltage of 300 volts or more, a person (other than the worker doing the work) who is trained in the use of artificial respiration and how to obtain emergency assistance shall stand by while the work is being performed.
6. Work performed on electrical transmission systems or outdoor distribution systems rated at more than 750 volts shall be performed in accordance with:
    - the Rule Book, Electrical Utility Operations published in 1990 by the Electrical Utilities Association of Ontario, Incorporated; or
    - the Ontario Hydro Corporate Safety Rules, dated 1979. O.Reg. 630/94

General Lockout Guidelines according to Energy Form and Sources*

Energy Form	Energy Source	General Lockout Guideline
Electricity	power transmission lines; machine power cords; motors; solenoids; capacitors (stored electrical energy)	Turn off power at machine first (i.e. at point of operation switch) and then at the main disconnect switch for the machine; lock and tag main disconnect switch (or remove fuses from box, and then tag and lock box). Fully discharge all capacitive systems (eg. Cycle machine to drain power from capacitors) according to manufacturer's instructions.
Fluid Pressure	hydraulic systems (eg. Hydraulic presses, rams, cylinders, hammers)	Shut off, lock (with chains, built-in lock devices, or lockout attachments) and tag valves; bleed off and blank lines as necessary.
Air Pressure	pneumatic systems (eg. Lines, pressure, reservoirs, accumulators, air surge tanks, rams, cylinders)	Shut off, lock (with chains, built-in lock devices, or lockout attachments) and tag valves; bleed off excess air; if pressure cannot be relieved, block any possible movement of machinery.
Kinetic Energy (energy of a moving object or materials moving object may be powered or coasting)	blades; flywheels; materials in supply lines of bins or silos	Stop and block machine parts (eg. Stop flywheels and ensure that they do not recycle); review entire cycle of mechanical motion; ensure that all motions are stopped. Block material from moving into area of work; blank as required.
Potential Energy (stored energy that an object has the potential to release due to its position)	springs (eg. In air brake cylinders); actuators; counter weights; raised loads; top or movable part of a press or lifting device	If possible, lower all suspended parts and loads to the lowest (rest) position; block parts that might be moved by gravity; release or block spring energy.
Pressurized Liquids and Gases (including steam, chemicals)	supply lines; storage tanks and vessels	Shut off, lock (with chains, built-in lock devices or lockout attachments) and tag valves; bleed off excess liquids or gases; blank lines as necessary.

*IAPA – A Health and Safety Guide for your Workplace – Lockout – 2005

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Links
[1] https://www.uoguelph.ca/hr/lockouttagout-policy