LOCKOUT/TAGOUT

■ What is Lockout/Tagout?

The Occupational Safety and Health Administration (OSHA) refers to Lockout/Tagout *as: the procedures established for control of hazardous energy. It ensures employee safety during inspection, maintenance or service of equipment. To achieve system* ***lockout****, all energy sources are turned off or disconnected and stored energy is released.* ***Tagout*** *refers to application of warning tags to energy sources to ensure the equipment is not restarted until service. OSHA's standard; CFR 1910.147 outlines measures for controlling hazardous energies - electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy sources.*

In **1998-1999** the **Bureau of Labor statistics** reported **189** workplace deaths and serious violations. In spite of these statistics, lockout/tagout is still perceived by many as an onerous or a burden to their workday. Examples of cases:

- *A 25 year-old worker died while cleaning a ribbon-type mixer. The procedure was to shut off the power at the breaker panel, push the toggle switch to be sure the power was off, then enter the mixer. Instead of turning the motor off, he instead activated the breaker switch and energized the mixer.*

- *A 38 year-old worker at a sanitary landfill died after falling into a trash compactor used to bale cardboard for recycling. The cardboard jammed at the conveyor discharge opening. Without stopping, de-energizing, or locking out the equipment, the victim rode the conveyor up to the opening to clear the jam. He fell into the hopper and the baling cycle was automatically activated, amputating his legs. His death was due to extreme blood loss.*

■ Does the OSHA standard apply to me?

If your employees service or maintain machines where the unexpected startup, energization or the release of stored energy could cause injury, the standard likely applies to you. The standard applies to all sources of energy, including, but not limited to: mechanical, electrical, hydraulic, pneumatic, chemical, and thermal energy.

■ When does the standard <u>not</u> <u>apply</u> to services and maintenance activities?

The standard does not apply to general industry service and maintenance activities in the following situations, when:

exposure to hazardous energy is controlled completely by unplugging the equipment from an electric outlet and where the employee doing the service or maintenance has exclusive use of the plug.

An employee performs hot-tap operations on pressurized pipelines that distribute gas, steam, water or petroleum products, for which the employer shows the following:

⇒ continuity of service is essential

⇒ shutdown of the system is impractical

The employee follows documented procedures and uses special equipment that provides proven, effective employee protection.

The employee is performing minor tool changes or other minor servicing activities that are routine, repetitive, and integral to production that occur during normal production. In these cases, employees must have effective, alternative protection.

■ What must employers do to protect employees? A few requirements…

- *Develop, implement, and enforce an energy control program*
- *Identify and label all hazardous energy sources*
- *De-energize, isolate, block and/or dissipate all forms of hazardous energy before work begins.*
- *Establish programs that:*

⇒ *Require workers to secure energy control devices with their own locks and keys*

⇒ *Require that each lock be clearly labeled with durable tags to identify the worker assigned*

⇒ *Require worker who installs the lock be the one who removes it after completion of work*

⇒ *If work incomplete when shift changes, arriving workers should apply their locks before removing departing workers' clocks*

- *Inspect repair work before activating the equipment*
- *Make sure all workers are clear of danger points*
- *Train workers about basic hazardous energy control*
- *Include program with any confined-space program*

■ What must be done prior to removing the lockout/tagout device and reenergizing the equipment?

Employees who work on deenergized machinery may be seriously injured or killed if the lockout/tagout devices are removed and the machinery reenergizes without their knowledge. It is critical that ***only*** *the person(s) who applied these devices remove them. Before removing lockout or tagout devices, the employees must:*

- *inspect machines or their components to assure that they are operationally intact and that nonessential items are removed from the area*
- *Check to assure that everyone is positioned safely from machines. In the event the employee who placed the lockout/tagout device is unable to remove that device, another person may remove it under the direction of the employer, provided that the employer strictly adheres to the specific procedures outlined in the standard; CFR 1910.147 (e)(3).*

■ Lockout/Tagout Procedures

⇒ *Are the appropriate electrical enclosures identified?*

⇒ *Is means provided to assure the control circuit can also be disconnected and locked out?*

⇒ *Is the locking-out of control circuits in lieu of locking out main power disconnects prohibited?*

⇒ *Are all equipment control valve handles provided with a means for locking-out?*

⇒ *Does the lock-out procedure require that stored energy be released or blocked before equipment is locked-out for repairs?*

⇒ *Are appropriate employees provided with individually keyed personal safety locks?*

⇒ *Are employees required to keep personal control of their key(s) while they have safety locks in use?*

⇒ *Is it required that only the employees exposed to the hazard, place or remove the safety lock?*

⇒ *Is it required that employees check the safety of the lock-out by attempting a start-up after making sure no one is exposed?*

⇒ *Are employees instructed to always push the control circuit stop button immediately after checking the lock-out?*

⇒ *Is there a means provided to identify any or all employees who work on locked-out equipment by locks or accompanying tags?*

⇒ *Are a sufficient number of accident preventive signs or tags and safety padlocks provided for any reason foreseeable repair emergency?*

⇒ *When machine operations, configuration or size requires the operator to leave his or her control station, install tools or perform other operations, and that part of the machine could move if accidentally activated; is such element required to be separately locked or blocked out?*

⇒ *In the event that equipment or lines cannot be shut down, locked out and tagged, is a safe job procedure established and rigidly followed?*

■ Additional examples ...

- ♦ *At a chemical plant, there are two lines carrying "sour water". Employees are charged with the duty of replacing orifice plates in two lines. Because there is no written procedure, the operator issuing the work permit prepares a supplemental list. When the employees opened a flange at the site of the orifice plate, they were exposed to a stream of sour water*

- ♦ *A worker is assigned to a servicing and maintaining task on an overhead crane. He initiates the prescribed energy control procedure. The disconnect switch is corroded. As a result, when he places the lock on the lever in the 'off' position, the stub remains in the 'on' position.*

The following related factors may have contributed to the accident scenarios mentioned in this brochure:

- *Failure to completely de-energize, isolate, block, and/or dissipate the hazardous energy source*
- *Failure to lockout/tagout energy control devices and isolation points after the hazardous energy source has been de-energized*
- *Failure to verify that the hazardous energy source was de-energized before beginning the work*

■ What do employees need to know?

Employees need to be trained to ensure that they know, understand, and follow the applicable provisions of the hazardous energy control procedures. The training must cover at least three areas:

- *Aspects of the employer's energy control program*
- *Elements of the energy control procedure relevant to the employee's duties or assignment*
- *The various requirements of the OSHA standard*

Please Note:

This brochure is not a complete summary of your obligations, nor is the information provided intended to determine full compliance with any state or federal law concerning this health and safety issue or as a substitute for medical or legal advice.

■ Why do I need to be concerned about lockout/tagout?

Employees can be seriously or fatally injured if machinery they service or maintain unexpectedly energizes, starts up, or releases stored energy. OSHA's standard on the Control of Hazardous Energy (Lockout/ Tagout), found in Title 29 of the Code of Federal Regulations (CFR) Part 1910.147, spells out the steps employers must take to prevent accidents associated with hazardous energy.

■ What are the OSHA requirements?

OSHA's standard establishes minimum performance requirements for controlling hazardous energy. The standard specifies that employers must establish an energy-control program to ensure that employees isolate machines from their energy sources and render them inoperative before any employee services or maintains them.

As part of an energy-control program, employers **must**: *Establish energy-control procedures for removing the energy supply from machines and for putting appropriate lockout or tagout devices on the energy isolating devices to prevent unexpected reenergization. When appropriate, the procedure also must address stored or potentially reaccumulated energy.*

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