Control of Hazardous Energy - Lockout/Tagout

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OBJECTIVES

1. Review the provisions of MIOSHA Part 85
2. Identify the (3) components of an energy control program
3. Examine what is required in a written lockout/tagout (LOTO) program

PART 85

Sets minimum requirements for the LOTO of energy sources for the protection of employees in, on, or around machines, equipment, or a process during repair, maintenance, & associated activities, from injury due to unexpected or unintended motion, startup, energization, or release of stored energy.
PART 85

This standard covers the servicing & maintenance of machines & equipment in which the unexpected energization or start-up of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.

DEFINITION: Servicing &/or Maintenance

Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying & maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment & making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start-up of the equipment or release of hazardous energy.

PART 85

Effective May 25, 1993
Adopts OSHA 1910.147 by reference
PART 85

- Specific lockout requirements set by other MIOSHA standards prevail over tagging options of 1910.147
- Procedural & training requirements of 1910.147 will still apply to MIOSHA standards which reference lockout

SELECTED LOTO REFERENCES

- Part 14, Conveyors
- Part 17, Refuse Packers
- Part 18, Overhead Cranes
- Part 20, Underhung Cranes
- Part 26, Metalworking
- Part 27, Woodworking

1910.47 CONTROL OF HAZARDOUS ENERGY

Sets minimum performance requirements for the control of hazardous energy.
1910.147

Requires machines & equipment be capable of being locked out after January 2, 1990 if machine or equipment was:
- installed
- modified
- renovated
- repaired (major)
- replaced

MIIOSHA STANDARDS REFERENCING DISCONNECTS

Part 14, Conveyors
Part 17, Refuse Packers
Part 18, Overhead Cranes
Part 26, Metalworking
Part 27, Woodworking
Part 72, Automotive Service

1910.147 REQUIRES EMPLOYERS TO:

1. Establish energy control program.
2. Establish specific energy control procedures.
3. Train employees.
4. Perform periodic inspections.
1910.147 DOES NOT APPLY TO:

Normal production operations.
Other safety standards cover production safeguards.

1910.147 DOES APPLY IF:

1. Employee is required to remove guard or bypass a safety device.
2. Employee is required to place part of body into point of operation or associated danger zone.

MINOR TOOL CHANGE EXEMPTION

Minor tool changes & adjustments, & other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, & integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.
1910.147 DOES NOT APPLY TO:

Work on cord & plug connected equipment IF unplugging controls all hazards

AND

plug is under exclusive control of the employee doing the work
  ▶ single employee
  ▶ direct control of plug
  ▶ plug in plain view

IF NOT, LOCKOUT REQUIRED!

ENERGY CONTROL PROGRAM

The employer shall establish a program consisting of:
1. Energy Control Procedures
2. Employee Training
3. Periodic Inspections

1910.147 DOES NOT APPLY TO:

Hot Tap Operations (gas, steam, water, etc...) where:
1. Continuity is essential,
2. Shutdown is impractical,
3. Documented procedures followed & special equipment used to provide proven effective protection.
1910.147 (c)(2)(i)

If an energy isolating device is not capable of being locked out, the employer’s energy control program shall utilize a tagout system.

1910.147 (c)(2)(ii)

If an energy isolating device is capable of being locked out, the employer’s energy control program shall use lockout unless the employer can demonstrate that the utilization of a tagout system will provide full protection as set forth in paragraph (c)(3).

1910.147 (c)(3)

FULL EMPLOYEE PROTECTION:

1. Tagout attached at same location lockout would be.
2. Employer to demonstrate tagout will provide a level of safety equivalent to using lockout.
3. Full compliance with all tagout provisions of 1910.147.
4. Additional safety measure used such as blocking control switch, removal of isolating circuit element, opening extra disconnect device, removal of valve handle, etc.
5. (c)(7)(ii) Tagout imitation training of all employees (6 elements).
1910.147 TAGOUT TRAINING ELEMENTS

1. Tags are warning devices & do not provide physical restraint.
2. Tags are not to be removed, bypassed, or defeated.
3. Tags must be legible & understandable by all employees.
4. Tags & means of attachment must withstand environment to which exposed.
5. Tags may evoke a false sense of security.
6. Tags must be securely attached to energy isolating devices so they cannot be inadvertently or accidentally detached during use.

SOME THOUGHTS ON TAGOUT

- The use of tagout in lieu of lockout is NOT recommended.
- The use of tagout will require a more complex energy control program & will require additional employee training.
- Any missing 1910.147 tagout requirement will be considered as a violation.

ENERGY SOURCES

Energy Sources:
- electrical
- mechanical
- hydraulic
- pneumatic
- chemical
- thermal
- Other

Are there any others?
1910.147 (c)(4)(i)

Procedures shall be developed, documented & utilized for the control of potentially hazardous energy when employees are engaged in activities covered by this section.

1910.147 (c)(4)(i)

Specific procedures are not required for machine/equipment if all the following 8 elements exist:
1. No potential for stored or residual energy or energy re-accumulation.
2. Single energy source readily identified & isolated.
3. Locking single source completely de-energizes.
4. Locked out during work.
5. Single lockout device used.
6. Lockout device under control of person doing work.
7. No hazards created for other personnel.
8. No previous accidents involving accidental activation or energization.
1910.147 (c)(4)(ii)

Procedures shall outline:
- scope/purpose
- authorization
- rules
- techniques
- compliance enforcement

1910.147 (c)(4)(ii)

MINIMUM PROCEDURES

1. LOTO overview
2. Procedural machine/equipment shutdown steps
3. Procedures for placement, removal, transfer of lockout
4. Specific requirements for testing machine/equipment to verify lockout/tagout effectiveness

1910.147 (c)(5)(i)

Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.
1910.147 (c)(5)(ii) LOCKOUT DEVICES

- Key or combination lock
- Singularly identified
- Durable
- Substantial
- Standardized
- Identifiable

1910.147 (c)(5)(ii) TAGOUT DEVICES

- Singularly identified
- Durable
- Will not deteriorate
- Standardized
- Substantial
- Identifiable
- Include printed legend (Do Not Start, Do Not Operate, etc...)

*Must comply with GI Part 37

1910.147(c)(6) PERIODIC INSPECTION PROCEDURES

1. Annual inspection—ensure that procedure & requirements of the standard are followed.
2. Performed by authorized employee other than the one(s) utilizing the procedure.
3. Review between the inspector & employees of their lockout or tagout responsibilities.
4. The employer shall certify the inspection (machine or equipment, date, employees involved, & the inspector).
1910.147(c)(7) TRAINING

The employer shall provide training to ensure that the purpose & function of the energy control program are understood by employees & that the knowledge & skills required for the safe application, usage, & removal of the energy controls are acquired by employees.

1910.147 AUTHORIZED EMPLOYEE

A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee’s duties include performing, servicing, or maintenance covered under this section.

1910.147 TRAINING AUTHORIZED EMPLOYEE

Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type & magnitude of the energy available in the workplace, & the methods & means necessary for energy isolation & control.
1910.147 AFFECTED EMPLOYEE

An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

1910.147 TRAINING AFFECTED EMPLOYEE

Each affected employee shall be instructed in the purpose & the use of the energy control procedure.

1910.147 TRAINING OTHER EMPLOYEE

All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, & about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.
1910.147 RETRAINING

- Shall reestablish employee proficiency or introduce new or revised control methods & procedures.
- Employer must certify any retraining.

1910.147 RETRAINING

1. Change in job assignment, machine, equipment, or process that presents new hazard.
2. Change in energy control procedure.
3. Inspection finds deficiencies.
4. Employer has reason to believe energy control procedures not followed.

1910.147 TRAINING CERTIFICATION

The employer shall certify that employee training has been accomplished & is being kept up to date.
The certification shall contain each employee’s name & the dates of the training.
1910.147 (c)(8)

LOTO shall be performed only by the authorized employees who are performing the servicing or maintenance operations.

1910.147 (d)

Application of Control

Procedures for:
1. Preparation for shutdown
2. Machine shutdown
3. Machine isolation
4. Lockout device application
5. Stored energy
6. Verification of isolation

1910.147 (e)

Release From Lockout

Procedures for:
1. Work area inspection
2. Employees clear
3. Employee notification
4. Lockout device removal
1910.147 (e)

(e)(3) Emergency Lock Removal Exemption

Procedures for:
1. Verifying employee not at facility
2. Making reasonable efforts to contact employee at home
3. Providing employee knowledge of lock removal prior to beginning work

1910.147 (f)

Additional Requirements

Procedures for:
1. Temporary energization
2. Outside contractors
3. Group lockout
4. Shift/personnel changes

PART 40

LOTO requirements for electrical work do not fall under 1910.147.

This activity is covered under MIOSHA GI Part 40, Electrical Safety-Related Work Practices.
QUESTIONS

Thank You for Attending this Presentation

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