



THE UNIVERSITY OF  
ALABAMA IN HUNTSVILLE

# Lockout Tagout

# Objectives

- Review Regulations
  - Overview of the requirements of the UAH program
- Awareness of Responsibilities
- Enforcing LOTO Program

# What is covered?

- Servicing and maintenance
- Normal production operations where:
  - Employees by-pass guard(s)
  - Employees place any part of their body in a hazardous area

# What is not covered?

- Construction, agriculture, and maritime
- Normal production operations (subpart O)
- Cord-and-plug under the control of employee (written procedure still required)
- Hot tap operations
- Exposure to electrical conductors (subpart S and electrical safety-related work practices)

# Energy Types

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Chemical
- Thermal
- Other

# Lockout vs. Tagout

- If capable of being locked out:
  - Prefer lockout
  - Tags allowed, if employer can demonstrate  
**FULL EMPLOYEE PROTECTION**
- Machine Modifications

# Full employee protection?

- Tags attached at the same location as locks
- Full compliance with all tagout provisions in 29 CFR 1910.147
- Additional means when necessary (e.g. removal of a valve handle)

# Definitions

- Affected employee
- Authorized employee
- Capable of being locked out
- Energy isolating device
- Servicing and/or maintenance



# Servicing and maintenance includes:

- Setting up
- Adjusting
- Inspecting
- Modifying
- Constructing
- Installing

# Lockout/tagout requirements

- Written program which includes specific written procedures
- Training of employees (not just maintenance!)
- Periodic review of procedures

# Written lockout/tagout procedure

## Clearly and specifically outline:

- Scope
- Purpose
- Authorization
- Rules, techniques for control of energy

# Lockout Procedure (cont.)

Clearly and specifically outline:

Means to enforce compliance including:

- Intended use of procedure
- Specific procedural steps
- Specific testing requirements

# Documentation Exceptions:

- Machine has no potential for stored energy
- Machine has a single energy source
  - Isolation of that source will completely de-energize
- Machine is isolated and locked out during maintenance

# Documentation Exceptions: (cont.)

- A single lockout device will achieve locked-out condition
- Lockout device under exclusive control of employee
- Maintenance does not create hazard to others
- No previous accidents involving unexpected energization on this equipment

# Energy Control Procedure

- Notification of employees
- Preparation for shutdown
- Machine or equipment shutdown
- Machine or equipment isolation
- Lockout/tagout device application
- Check for and Release Stored energy
- Verification of isolation
- Release from lockout/tagout

# Lockout Procedure – Step 1

## NOTIFICATION OF EMPLOYEES

- Before controls are applied, and before they are removed



# Lockout Procedure – Step 2

## ➤ PREPARATION FOR SHUTDOWN

- Knowledge of the type and magnitude of energy and methods to control energy

# Lockout Procedure – Step 3

- **MACHINE OR EQUIPMENT SHUTDOWN**
  - Orderly shutdown to avoid increased hazard

# Lockout Procedure – Step 4

- MACHINE OR EQUIPMENT ISOLATION
  - All energy isolation devices located and operated to isolate machine

# Lockout Procedure – Step 5

## ➤ LOCKOUT OR TAGOUT DEVICE APPLICATION

- Affixed by authorized employee holding energy isolating device in the safe or off position

# Hardware requirements

- Durable
- Standardized
- Substantial
- Identifiable

# Hardware must be

- Durable – be able to withstand environment
- Standardized – color, size, etc.
  - Tags : print and format
- Substantial – no accidental removal
  - Tag attachment means:
    - Withstand at least 50 pounds of force
    - Not re-usable
    - Self locking
    - Attachable by hand

# Hardware must be (cont.):

- Identifiable - Identify the employee who applied
  - Tags must include legend such as DO NOT START

# Hardware must be:

- Provided by the employer
- Singularly identified
- Only devices used for control
- Not used for other purposes



# Lockout Devices

## ➤ Gate Valve Lockout



## ➤ Ball Valve Lockout



# Lockout Devices

➤ Circuit Breaker LO



➤ Lockout Padlocks

➤ Interlocking Hasp LO



# Lockout Tags (Tagout)



# Line breaking:

Means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury

# Line blanking or blinding:

Means the absolute closure of a pipe, line, or duct by fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

# Double block and bleed:

Means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

# Lockout Procedure – Step 6

## ➤ STORED ENERGY

- Relieve all stored energy and continue to verify if there is a chance of re-accumulation

# Stored Energy Examples

- Batteries and capacitors
- Pressure differential
  - Hydraulic
  - Pneumatic
  - Vacuum
- Springs
- Gravity



# Lockout procedure – Step 7

## ➤ VERIFICATION OF ISOLATION

- Prior to servicing or maintenance, authorized employee must verify machine has been de-energized

# Lockout procedure – Step 8

- **RELEASE FROM LOCKOUT OR TAGOUT**
  - Inspect work area to ensure removal of non-essentials
  - Employees safely positioned and notified
  - Lockout/tagout removal (by employee who applied)

# Lock/tag removal if authorized employee is not available?

- Verify that authorized employee is not at facility
- Make reasonable efforts to inform him or her
- Ensure that he/she knows of removal upon re-entering

***MUST INCLUDE THIS PROCEDURE IN WRITTEN PROGRAM***

# Periodic Inspection

- Performed at least annually
- Lockout – include review with authorized employees
- Tagout – include review with authorized and affected employees
- Certification record kept:
  - Identify machine or equipment
  - Date of inspection
  - Employees performing and included in inspection

# Training and re-training

- Authorized employees
  - Recognition of hazardous energy
  - Type and magnitude of hazardous energy
  - Methods of isolating energy
  - How to verify isolation
- Affected - Purpose and use of procedure
- Other – Procedure and Prohibition from tampering
- Tagout provisions

# Re-training is required when:

- Change in job assignment
- Change in machine or process
- Change in lockout/tagout procedure
- Inadequacies revealed in periodic review

# Training certification

- Certify that the training has been conducted and kept up to date:
  - Employee names
  - Date(s) of training

## **Other requirements:**

- Contractors?
- Personnel or shift changes?

# Testing or positioning machines

- Clear the machine of tools and materials
- Remove employees from the area
- Remove lockout/tagout devices
- Energize and proceed with testing/positioning
- De-energize and re-apply energy control measures



# Group lockout

- Personal lock or tag (usually)
- Lockbox or master tag system with principal authorized employee
- Work permit system

“Shall utilize a procedure which affords a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device”

# SUMMARY OF LOTO PROGRAM

- Written program including written procedures for each machine
- Training of employees
- Periodic review of program
- ENFORCEMENT

# Acknowledge Training

[Click here to acknowledge receipt of training](#)

**– If you have any questions contact:**

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