

# Lockout Tagout (LOTO) Piping and Vessel Isolation



Course Outline

**Prerequisites:** This course shall have no formal pre-requisite.

**Course Length:** 2-3 hours – Course length shall vary depending on the number of delegates. Total course time includes breaks.

**Class Size:** The maximum number of delegates that may be trained and tested per instructor shall be thirty-five (35) in the classroom session.

### **Course Objective**

- Delegates will be able to define the purpose of lockout/tagout.
- Provide delegates with the understanding of when LOTO is required and its uses.
- Provide delegates with knowledge in proper isolation of process equipment and piping during repair, service or maintenance.
- Delegates should be able to identify situations where injury to employees or damage to property or the environment could occur.
- Demonstrate the steps required for safe and effective control of energy.

#### **Course Design**

- Power Point© / Lecture / Audio Video / Visual Aids
- Practical Assessment

#### **Successful Course Completion**

- Requires a minimum score of 75% or better.
- Delegates will have no more than thirty (30) minutes to complete the exam.
- Grades shall be calculated by dividing the number of questions answered correctly by the total number of exam questions.
- Successful completion of all practical sessions is mandatory

#### **Course Content Summary**

Classroom

**Breaks:** 10 minutes (approximately every hour)

**Lunch:** 1 Hour (if applicable)

#### **Course Outline**

#### LOTO Safety

- Why is Controlling Hazardous Energy Important
- The Fatal Five
- What is LOTO?



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Course Outline

- Definitions
- Zero Energy State
- The 4 E's to Energy Control
  - Energy
  - Engineering
  - Education
  - o Enforcement
- Energy
  - Kinetic
  - o Potential
- Hierarchy of Controls
  - o Elimination and Substitution
  - o Engineering
  - o Administrative
  - o Personal Protective Equipment
- Employer/Employee Responsibilities
- Training

### **Lockout Devices**

- Defined
- Requirements
- Circuit Breaker Lockout
- Valve Lockout
- Plug Lockout
- Pneumatic Plug Lockout
- Wall Switch Lockout
- Adjustable Cable Lockout
- Hasp Lockout
- Group Lock Box

#### Tagout

- Tagout Device
- Requirements
- Unlockable Devices
- Limitations of Tags
- General Rules

### **Lockout Tagout Procedures**

- Who can Lock Equipment?
- Group LOTO
- Outside Personnel
- Shift or Personnel Changes



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Course Outline

- How to Perform LOTO Safely
- Six Steps for Lockout/Tagout
  - Step 1 Prepare for Shut Down
  - Step 2 Shut Down the Equipment
  - Step 3 Operate All Isolating Devices
  - Step 4 Attach All LOTO Devices
  - Step 5 Release All Stored Energy
  - o Step 6 Verify That Equipment Energy Isolation Has Been Accomplished
- Restoring Equipment to service & Temporary Removal
- Start-up Guidelines

**Process Equipment and Piping Isolation Procedures** 

- Purpose/Scope
- Applications
- Hazards
- Responsibilities
- Isolation Procedures
  - Double Block and Bleed
  - Slip Blind or Spectacle Blind
  - o Blind Flange
- General Requirements

#### Summary

#### **Practical Session**

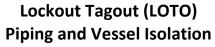
A practical assessment shall verify that the delegate has acquired the following skills:

- Prepare for shut down (identify sources of energy and their required locks.)
- Discuss the notification of all affected personnel.
- Identify and operate all shutoff switches, valves, buttons, etc.
- Operate all isolating devices
- Singularly identify (label) all required locks and tags.
- Properly attach each singularly identified lock and its tag, demonstrating at least one group LOTO process.
- Explain how to release stored energy and how to verify that energy isolation has been accomplished.
- Demonstrate and explain safe LOTO device removal.
- Store equipment and PPE properly.

#### **Training Center Provided Material**

Course Materials







**Course Outline** 

# **Delegate Requirements**

None

## **Reference Material / Documents**

- OSHA 29 CFR 1910.147
  - o The control of hazardous energy (lockout/tagout).