



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?



Lockout Tagout (LOTO) Piping and Vessel Isolation Course Outline



- Definitions
- Zero Energy State
- The 4 E's to Energy Control
 - Energy
 - Engineering
 - Education
 - Enforcement
- Energy
 - Kinetic
 - Potential
- Hierarchy of Controls
 - Elimination and Substitution
 - Engineering
 - Administrative
 - 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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- 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
 - 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
 - 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



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Delegate Requirements

- None

Reference Material / Documents

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