

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

Course Length: 8 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 and twenty (20) in the practical session. A second instructor shall be added for the practical session once the participation exceeds twenty (20) and exercises will be divided into groups.

Course Objectives

- To define confined space criteria.
- To provide delegates with an understanding of the hazards of operations within an oxygen deficient, toxic or flammable environment.
- Delegates will be able to carry out a suitable and sufficient risk assessment.
- Delegates will be able to reference regulatory requirements for gas testing.
- Delegates will gain the knowledge to select, use, and care for PPE and RPE.
- Delegates will gain an understanding of the strengths and weaknesses of gas detection equipment.
- Delegates will demonstrate an ability to calibrate the instruments used in atmospheric testing, select the appropriate gas detection equipment, perform gas tests in sequence, and interpret and document the results.

Course Design

- Power Point© / Lecture / Audio Video / Visual Aids
- Demonstrations
- Practical Exercises

Successful Course Completion

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

Course Content Summary

- Classroom
- Practicals

Breaks: 10 minutes (approximately every hour)

Lunch: 1 Hour (if applicable)

Course Outline

Testing in Confined Spaces

- Confined Space Criteria
 - What is a Confined Space?
 - Limited Openings for Entry and Exit
 - Large Enough to Enter and Perform Work
 - Not Designed for Continuous Occupancy
 - What Is a Permit Required Confined Space?
 - Supervisor Role and Responsibilities
 - Attendant Role and Responsibilities
 - Raising the Alarm and Initiating Emergency Response
- Unfavorable Natural Ventilation
- Confined Space Hazards
 - Atmospheric Hazards
 - Physical Hazards
- Oxygen Levels
 - Deficient
 - Enriched
- Breathing Air Composition
- Common Hazardous Air Contaminants and Gasses
- Acute Symptoms
- Chronic Symptoms
- Flammability
 - UEL/LEL
 - Causes of Flammable Atmospheres
 - Fire Tetrahedron

Safety Data Sheets

- Sections
- Content
- Terminology

Risk Assessments

- Hazard Analysis
- Risk Assessment
- How to Identify Hazards
- Hazard Scenarios
- Risk Assessment Matrix

Confined Space Permitting

- Supervisor Responsibilities
- Entry Permits Communication
- Sections
- Completion
- Entry Permit Example Hand-out

Ventilation

- Requirements
- Natural
- Mechanical
 - Positive Pressure
 - Negative Pressure
 - Air Exchange Calculations

Atmosphere Measuring and Monitoring Equipment

- Principles of Atmosphere Monitoring
- Types of Monitoring Equipment – Strengths and Weaknesses
 - Fixed Detectors
 - Portable Detectors
 - Personal Detectors
 - Colorimetric Tubes
 - Catalytic Gas Detectors
 - Infrared Gas Detectors
- How to correctly select between aspirating and non-aspirating detectors
- Gas Detector Pre-Start Checks
- Gas Detector General Function
- Gas Detector Calibration

Atmospheric Hazard Protection

- Control Measures
 - Engineering Controls
 - Administrative Controls
 - Personal Protective Equipment (PPE)
- Types of Respirators
 - Air Purifying Respirator (APR)
 - Supplied Air Respirator (SAR)
 - Self-Contained Breathing Apparatus (SCBA)
 - Atmospheric Supplied
 - Cascade Systems
 - Escape Packs
- Respirator Fit Testing
 - Quantitative

- Qualitative
- Respirator Usage
- Respirator Inspection
- Respirator Maintenance
- Respirator Donning/Doffing
- Respirator Storage

Gas Testing in Confined Spaces

- Air Monitoring Techniques
- Gas Stratification and the Importance of Testing All Levels of a Space
- Performing Gas Tests in Sequence
 - Oxygen Deficient or Enriched Atmospheres
 - Ensure That Proper Oxygen Levels Are Present
 - Flammable Atmospheres
 - Ensure That Combustible Gases Are Not Present
 - Toxic Atmospheres
 - Ensure That Toxic Gases Are Below the Exposure Limit
- Continuous Monitoring
- Testing Flammable Gases in Inert Atmospheres
- Monitoring and Retesting After the Initial Entry

Interpreting and Documenting the Results

- How to Interpret the Results
 - To Include Normal and Abnormal
- How to Document the Results

Practical Session

Practical training shall utilize a gas detector, confined space simulator and other safety equipment.

Practical shall verify the following:

- Properly select and wear appropriate PPE during practical training
- Conduct proper pre-use inspection of PPE and equipment
- Use effective communication
- Conduct pre-use Inspection
- Perform bump/span test
- Perform battery check
- Complete instrument calibration
- Effectively monitor and control air quality
- Test and monitor a confined space
- Document gas readings



Gas Tester Competent Person Course Outline



- Properly store equipment and PPE

Training Center Provided Material

- PPE
- Gas Detection Equipment

Delegate Requirements

- Must possess good physical health as the practical training is physical demanding.

Reference Material / Documents

OPITO Standard – Authorized Gas Tester

OSHA 29 CFR 1910.146 – Permit-Required Confined Spaces

OSHA 29 CFR 1926 Subpart Z – Toxic and Hazardous Substances

OSHA 29 CFR 1926 Subpart AA – Confined Spaces in Construction