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H2S Awareness & Mitigation (Specialized)

Duration: 5 Days

Introduction:

Hydrogen Sulfide, known also by its chemical compound formula H2S, is a gas that is created through a variety of processes. One of the most common in nature is through the breakdown of organic matter by bacteria when oxygen is not present. In addition, H2S is also one of many compounds present in volcanic gases. Because of its presence in volcanic gases, it is common to find hydrogen sulfide gas as a component of natural gas, in crude petroleum, as well as some sources of well water. Hydrogen Sulphide (H2S) is a highly toxic and flammable gas. Each year, workers are injured and killed by exposure to it. This course explains the properties of H2S, identifies control measures and provides a practical description of what to do in the event of exposure. It provides the information required to properly recognize, assess and control hazards associated with H2S gas. It

offers an overview of working safely with Hydrogen Sulphide (H2S). It discusses the background, health hazard summary and OSHA safe work practices for working with this chemical.

The course introduces the properties of H2S gas; the health hazards associated with exposure, detection, monitoring methods and acceptable exposure limits. It describes personal breathing apparatus, contingency planning and rescue methods used to assist victims of overexposure. The candidates will learn how to protect themselves first before they can help others. It is important that every oil and gas industry worker understands basic first aid measures including rescue breathing and cardiopulmonary resuscitation (CPR). The course reviews how and when to use Personal Protective Equipment (PPE) such as Self Contained Breathing Apparatus (SCBA) and Supplied Air Breathing Apparatus (SABA). This course provides information which is required to properly recognize, assess, control and mitigate hazards that are associated with the H2S gas. The main highlights are:

- Introduction to H2S
- Properties of H2S
- Health Hazards
- Initial Response Strategies
- Respiratory Protective Equipment
- Detection of H2S
- H2S Control and Mitigation
- Firefighting Techniques

- Standard Operating Procedures
- Safe Job Procedures

Who Should Attend?

Team Leaders, Managers, Line Managers, Supervisors, Team Leaders, Project Managers, Control Center Operators and Supervisors, Emergency Dispatchers, Security Personnel and CCTV Operators, HSE Officers, HSE Personnel, HSE Professionals, Emergency Response Team Members, HSE Managers and Auditors, Health & Safety and Environmental Professionals, Coordinators, Specialists and other full-time safety practitioners, Fire Officers, Loss Control Managers, Security Directors and Managers, Security Supervisors, Facilities Directors and Managers, HR and Administrative Managers with responsibility for security, Project Managers, Safety Inspectors, Plant Managers and Supervisors, Incident Control Point (Forward Control) Team Members, Supervisors, Advisors, Auditors, Laboratory Personnel, Emergency Personnel, Maintenance Personnel, Procurement and Supply Chain Managers, Engineers & Maintenance Personnel.

Course Objectives:

By the end of this course delegates will be able to:

- Recognize H2S as a highly toxic gas
- Describe the properties of H2S and workplace environments where H2S may be found
- Know how Hydrogen Supplied forms and some important properties such as: flammability, toxicity, odor thresholds and vapor density
- Know the possible symptoms of exposure to low concentrations and to higher concentrations
- Understand that exposure to high concentrations can lead to unconsciousness and death within minutes, or even seconds

- Identify potential long term effects associated with H2S exposure
- Understand protection measurement against H2S using equipment such as respirators, rescue packs and gas monitors
- Know the precautions to take to ensure your safety when entering an area which may contain H2S vapors
- Provide examples of engineering controls, administrative controls and PPE that can be used to protect workers from H2S exposure
- Identify various types of H2S monitoring devices and tools
- Know how to respond appropriate in a situation involving H2S exposure
- How to revive victims that have inhaled H2S using artificial respiration and CPR
- Work safely with Hydrogen Sulphide (H2S) – What to do and not to do

Course Outline:

Hydrogen Sulphide (H2S)

- Introduction to Hydrogen Sulfide (H2S)
- Origin of Hydrogen Sulfide
- Uses of Hydrogen Sulfide
- Properties of H2S
- H2S Health Hazards
- Environmental Effects

Hazard Detection & Exposure Limits

- Hazard Detection
- How H2S is Measured
- Worker Exposure Limits & Corresponding Health Effects
- Signs & Symptoms of Acute Toxicity
- Signs and Symptoms of Chronic Toxicity
- Common Testing Tools for Hydrogen Sulfide

Hydrogen Sulphide in the Oil & Gas Industry

- Locations of H2S (some examples)
- Perfect Conditions for a H2S Release
- Locations of H2S Leaks (some examples)
- Activities that Contribute to a Release
- Common Leak Locations

Personal Protective Measures

- Personal Protective Equipment (PPE)
- OSHA's Rules and guidelines
- Precautions to Take When Working with Hydrogen Sulfide (H2S)
- Precautions to Take to Ensure Your Safety When Entering an Area Which May Contain H2S Vapors

Contingency Plans & Rescue Response Including First Aid

- Contingency Plans & Emergency Response (Zone 1 & Zone 2)
- Emergency Response Strategy
- Unresponsive Worker Rescue Techniques
- Rescue Breathing
- CPR
- Requesting Emergency Medical Services

Safe Job Procedures

- Safe Job Procedures
- Recommended Materials for Hydrogen Systems
- Cleaning Hydrogen Service Systems
- Contamination Control
- Cleanliness Requirement
- Recommended Procedure
- Cleaning Filters
- Employer Responsibilities
- Workers Responsibilities
- Worksite Awareness

Firefighting Techniques

- Liquid Hydrogen Fire Scenario

- Gaseous hydrogen fire scenario

Standard Operating Procedures

- Confined Spaces
- Requirements for Personnel
- Startup Examination and Inspection
- Signals and Identification
- Checklists
- Allowable Hydrogen Leakage at Test Installations
- Clean Systems
- Purging
- Videos & Case Studies