

CONFINED SPACE ENTRY

29 CFR 1910.146

General Industry

29 CFR 1926.1201

Construction Industry

Overview of OSHA Standards

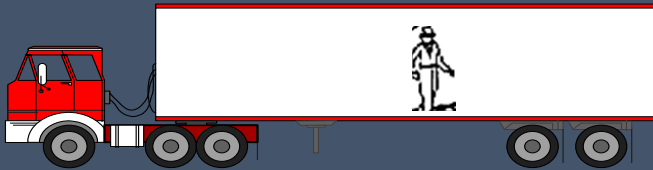
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OBJECTIVES

- Define a Confined Space
- Define a Permit-Required Confined Space
- Be Familiar with OSHA Standards and the elements for Emergency Rescue
- Understand the Preparation and Limitations to Emergency Rescue

Confined Space: Definition “Must meet all Three Below”

- 1. Is large enough and so configured that an employee can bodily enter and perform assigned work ; **and**
- 2. Has a limited or restricted means for entry or exit (For example: tanks, vessels, silos, pits, vaults, hoppers); **and**
- 3. Is not designed for continuous employee occupancy.



Permit Required Confined Space: Definition

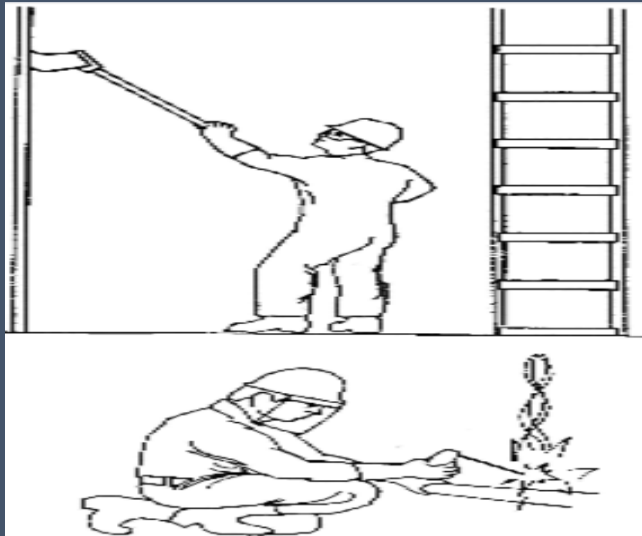
A Permit Required Confined Space means a confined space that has one or more of the following characteristics:

Key Definition – 1910.146(b)

- “Entry” **means** when any part of the entrant’s body **breaks the plane of the opening** who is entering a Permit Required Confined Space.

ATMOSPHERIC

Painting
Welding
Pressure
Washing
Chemical
Cleaning



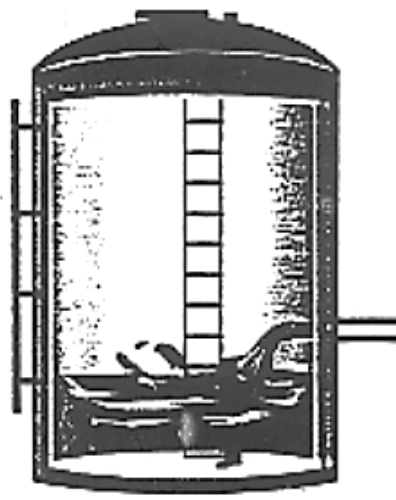
Coating
Surfaces

Shoveling
Through
Crusted
Materials

Contains or has a **Potential** to Contain a
Hazardous Atmosphere

ENGULFMENT

Being inadvertently trapped or surrounded by a liquid or a finely divided solid



Contains a Material that has the **Potential** for Engulfing an Entrant

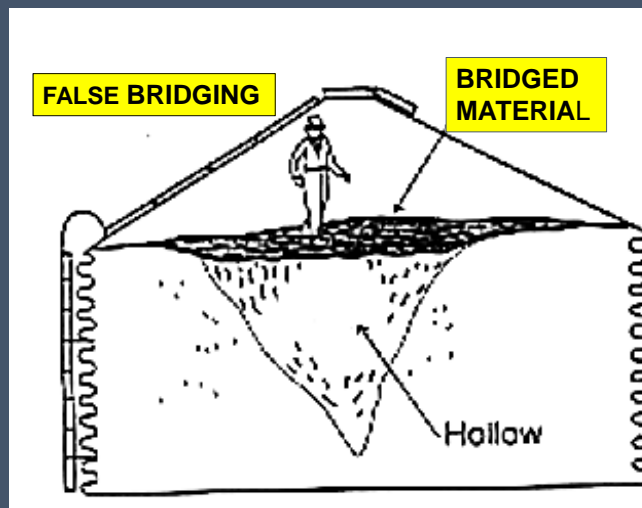
Liquid Releases

Flowable Solid Releases

Solids Breaking Loose from Surface Walls

Causing: Aspiration, Strangulation, Constriction, or Crushing.

COLLAPSE SLOPING



Inwardly Converging Walls or by a Floor which Slopes Downward and Tapers to a Smaller Cross-Section.

Soft Core Build-Up

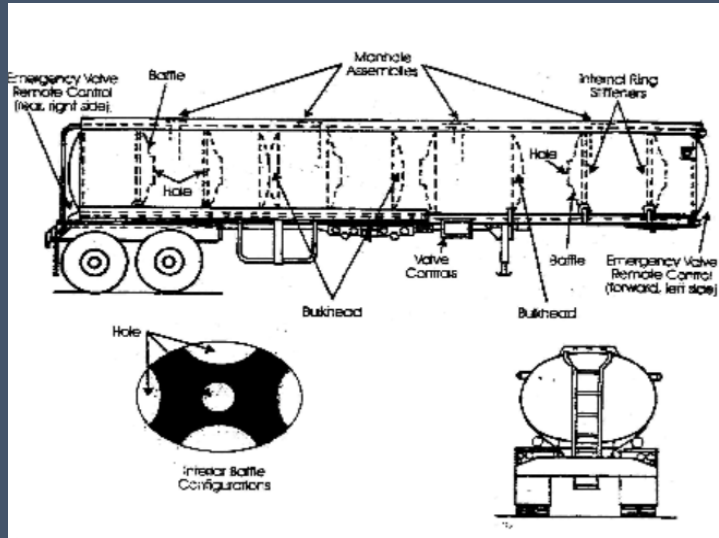
Moisture Content

Vibration

Weight

Pressure Insertion

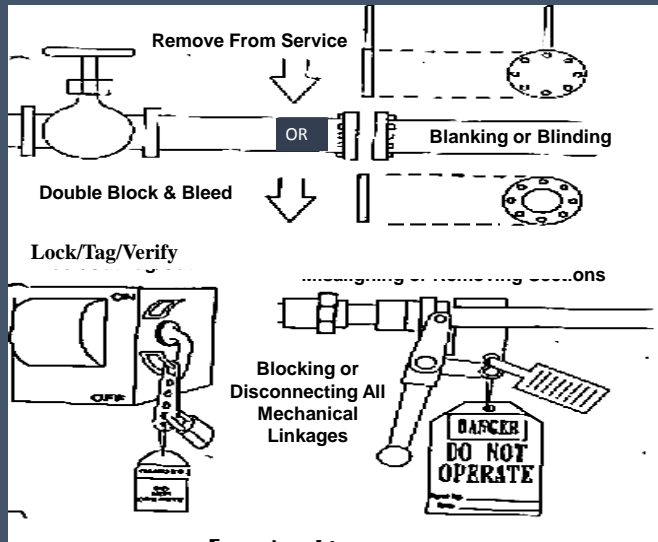
RESTRICTED



- Baffling
- Restricted Movement
- Piping Systems
- Valving Systems
- Tight Turns
- Multiple Turns and/or Drops

Has an Internal Configuration such that an Entrant Could Become Trapped or Asphyxiated

ISOLATION



- Heat > 120°
- Steam
- High Pressure > 60 psi.
- Highly Hazardous Materials
- Electrical
- Kinetic etc.

Contains any other Recognized Serious Safety or Health Hazards.

ISOLATE / ELIMINATE POTENTIAL

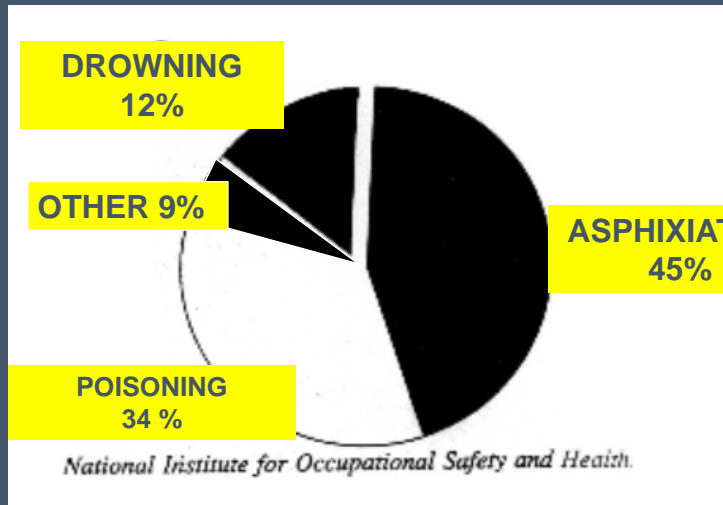
One by One, 3 Utility Workers Descended and Died.



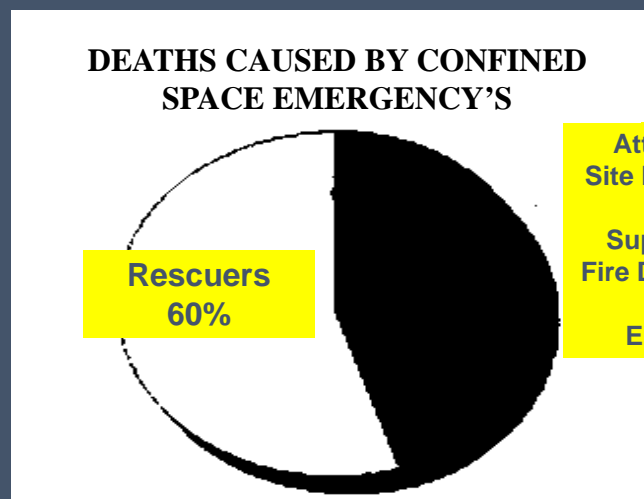
1. Utility workers in Key Largo, Fla., noticed that a paved street was not settling properly and **One** Utility Worker decided to remove a manhole cover and descend into the Sewer to investigate. Moments later, the 15-foot-deep hole went silent.
2. Sensing a man down, a **Second** Worker then descended to perform rescue and he also stopped responding.
3. A **Third** Worker then entered the same hole to perform rescue with the same results.
4. A Key Largo firefighter (**Fourth**) on scene made a desperate attempt to save the men but also became unconscious within seconds and was flown to a near by Hospital in **Critical Condition**.
The hole was just wide enough to fit a body and is why the firefighter did not use his breathing Apparatus.

The Sewer was filled with Hydrogen Sulfide and Methane Gas created from years of rotted vegetation.

What Was Not Used that Could Have Prevented These Deaths?

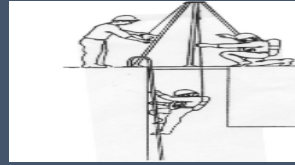


Confined Space Entry Fatalities
ASPHYXIATIONS – POISONINGS - DROWNINGS



Who are most often Victims of Death
WOULD BE RESCUERS

BERKELEY, CA University
Research Indicates



SURVEY OF LARGE FIRE DEPARTMENTS:

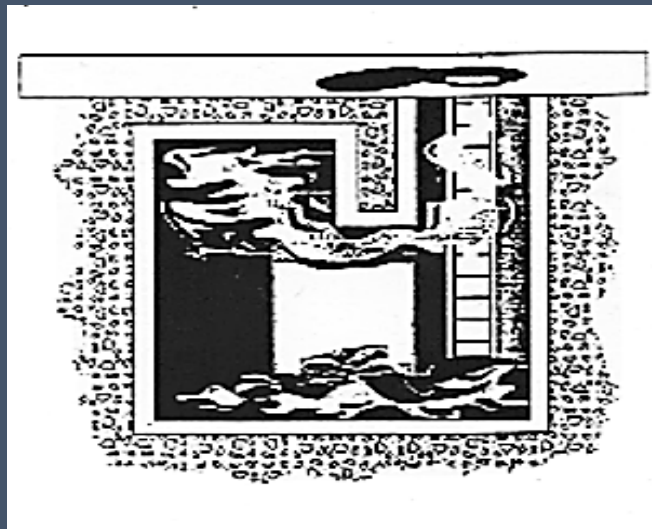
57% of Companies Depend on Fire Departments for
Rescue Services:

Average Arrival Times for Fire Department on Site = 5 Minutes

Average Arrival Times for Technical Rescue Units on Site = 7 Minutes

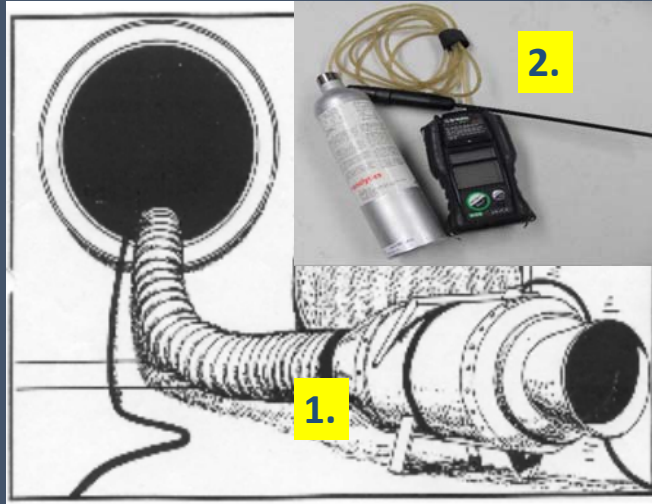
Actual Rescue Times Averaging 48 to 123 Minutes

However, Chemical Rescue Response 70 to 173 Minutes



**Trapped Air Hazards
Gases – Vapors - Stale Air**

TWO KEYS



Two Keys to Safe Confined Space Entry Activities
VENTILATION & AIR MONITORING

Air Monitoring

Display After Warm-Up

Checking For
Oxygen, LEL, CO, H2S

User Menu
Flammables
Calibration
Operator
Instrument
Safe link

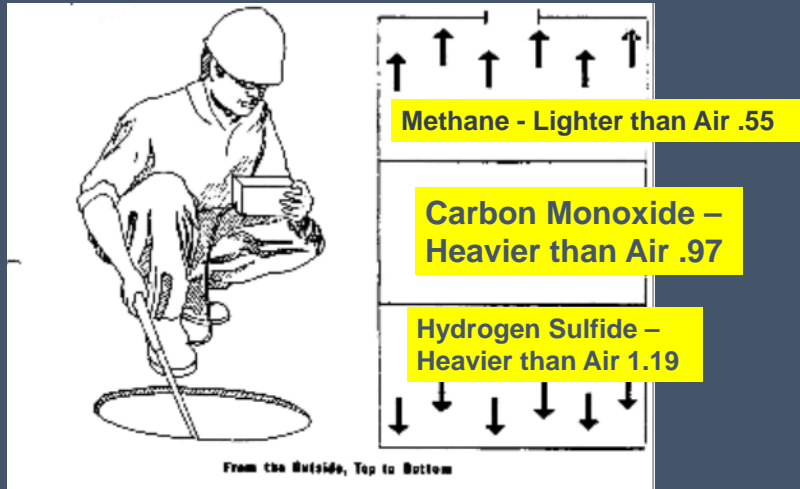
Fresh Air Set-Up



Calibration

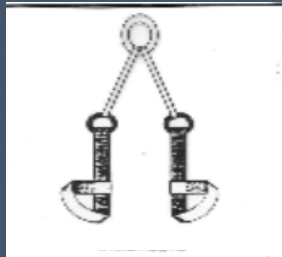


Bump Testing



**Atmospheric Hazards – Vapor Densities of Gases/ Vapors
LIGHTER OR HEAVIER THAN AIR - Where AIR = 1**

WRISLETS



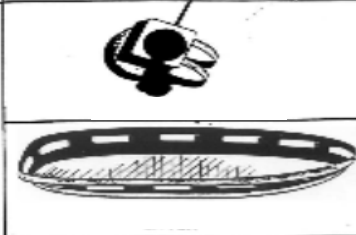
Harness & Lifelines



Vertical Tripod



Vertical Mechanic Device

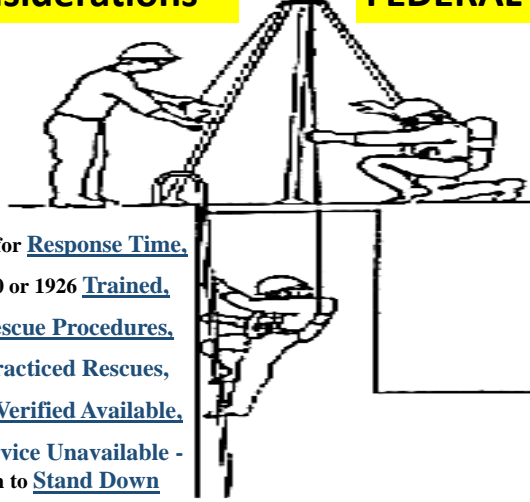


Packaging Device

**Minimal Confined Space Entry Equipment
*FULL BODY HARNESS & LIFELINE**

RESCUE Considerations

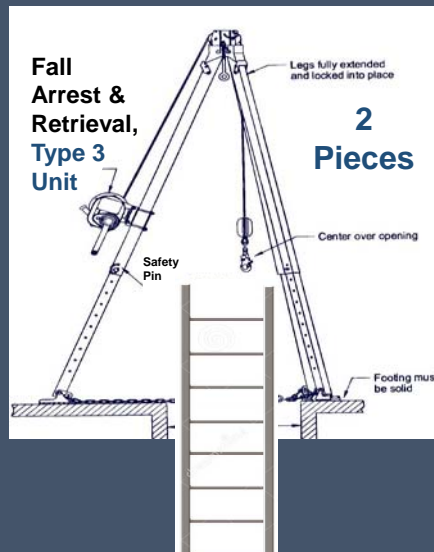
FEDERAL REQUIREMENTS



Evaluated for Response Time,
OSHA 1910 or 1926 Trained,
Written Rescue Procedures,
Annual Practiced Rescues,
Rescuers Verified Available,
Rescue Service Unavailable -
Notification to Stand Down

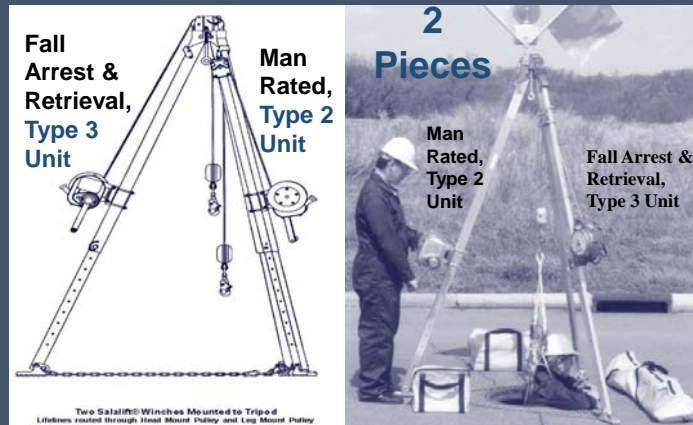
Rescue Services On-Site or Off-Site
TIMELY - VERIFIED - AVAILABLE

VERTICLE ENTRY – More than 5’ “When a Ladder is Used”



VERTICLE ENTRY – More than 5’

“When a Ladder is Not Used”



RESPONSIBLE DUTIES

Entry Supervisor:

Set-up
Recognition/Controls
Verifications

Approves Permit
Terminates Permit
Site Control

Rescue Availability
Communication

Attendant:

Know the Hazards & Effects
Stay Outside of Space/Monitor
Maintain Count of Entrants

Establish Communications/Sign Permit
Detect Changing Conditions for Exit
Summon Rescue if Needed

Entrant:

Know the Hazards & Effects
Properly Use Equipment
Communicate with Attendant

Detect and Initiate Self Rescue
Exit when Requested
Sign Permit

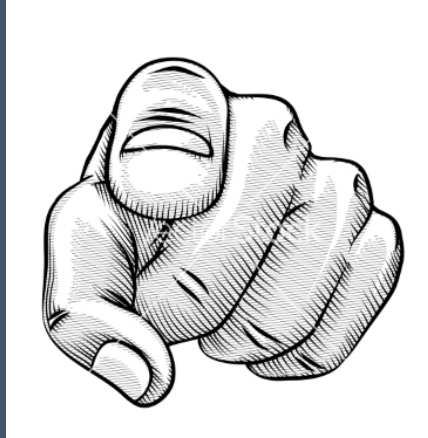
ENTRY PERMITS

- Identify "Permit Required" Space to be Entered
- **Purpose of Entry Documented**
- Date & Authorized Duration of Permit
- **Authorized Entrants – Sign Permit**
- Authorized Attendants – Sign Permit
- **Name & Signature of Authorized Entry Supervisor – Approves Permit**
- Hazards of the Permit Space to be Entered
- **Isolation and Verification of Hazard Control Measures**
- Acceptable Entry Conditions Verified
- **Results Recorded of Initial & Periodic Atmospheric Monitoring**
- Rescue & Emergency Services Identified & Verified Available
- **Communications Procedures Established**
- Equipment Required Set-Up and Ready for Entry & Rescue Operations
- **Other Necessary Information and Other Required Permits**

CONCLUSION – Be Prepared for *What If??*

- Evaluate All Confined Spaces for **Proper Classification**.
- Write **Written Entry Procedures** for Each Permit Required Confined Space.
- **Train Employees on Hazard Identification and Control** of Permit Required Confined Spaces.
- **Train** Employees on How to **Use PPE, Equipment and Tools**.
- **Train** Employees on How to **Perform Non-Entry Rescue Duties**.
- **Train** Employees on How to **Perform Entry Rescue Duties (Site Rescue)**.
- **Evaluate Programs** and Entries **for Consistency** of Written Procedures.
- Perform **Periodic Inspections** on **PPE, Equipment and Tools** as needed for Repair, Cleaning, or Replacement.

**WHO IS THE MOST IMPORTANT
PERSON IN THIS ROOM???**



AND DON'T FORGET IT!!!