



CONFINED SPACE ENTRY Construction

OSHA 29 CFR 1926.1201

Heritage Group Safety
317-875-4672

Gery Giannini, CET
Director of Safety/Sales and Training



1926.1201 OVERVIEW

- ❖ Final Rule Expected
- ❖ Define 4 Classes of Confined Spaces
- ❖ How to Perform Hazard Classifications
- ❖ Define Responsibilities for Assessments of Hazards
- ❖ Prepare for OSHA Requirements for Emergency Rescue



OSHA Anticipates Final Rule

- ❖ Confined Spaces in Construction
Final Rule Expected
Early 2014



Construction Work Excluded

- ❖ Construction work regulated by 29 CFR part 1926 subpart Y (Diving),
- ❖ Non-sewer construction work regulated by 29 CFR part 1926 subpart P (Excavation), and
- ❖ Non-sewer construction work regulated by 29 CFR part 1926 subpart S (Underground Construction, Caissons, Cofferdams and Compressed Air).

Employers operating under these exemptions are excluded to follow work within a confined space.

Employers who hire contractors to perform work under these exemptions are excluded from coverage under this proposed standard.

Confined Space Definition

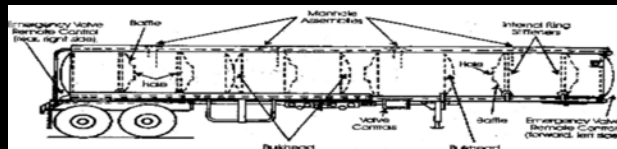
29 CFR 1926.1203

Confined Space

"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.

1926.1203



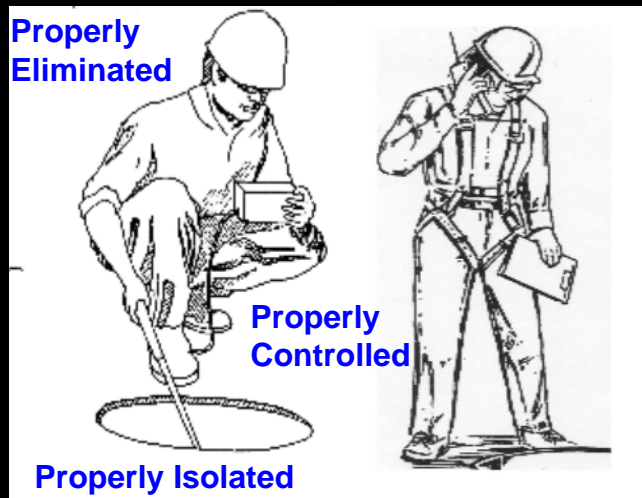
First Classification (IHCS)

- ❖ Isolation-Hazard Confined Space (IHCS) means:

A Confined Space that has all Physical and Atmospheric Hazards.....

1926.1201 (b)(1)(iv)

(IHCS)



All Checks and Verifications Performed Without
Having to Enter into the Space

Controlled-Atmosphere Confined Space (CACS)

Controlled-Atmosphere Confined Space (CACS)
means:

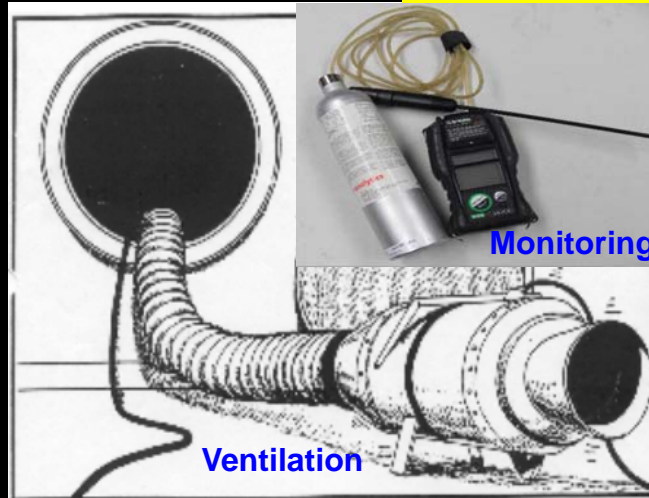
Each **physical hazards** identified was able to be:

1926.120 (b)(1)(iii)

(CACS)

Isolated Hazards from Outside of the Space and

Verifiable
from
Outside
the Space



Ventilation Alone will Control the Atmospheric
Hazards Inside at Safe Levels During Entry

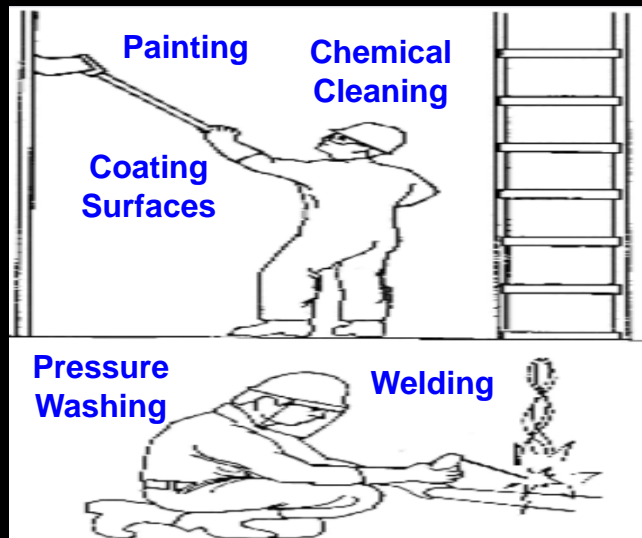
Permit Required Confined Space (PRCS)

Permit Required Confined Space (PRCS) means:

It has **one or more** of the following Characteristics.....

1926.1201(b)(1)(ii)

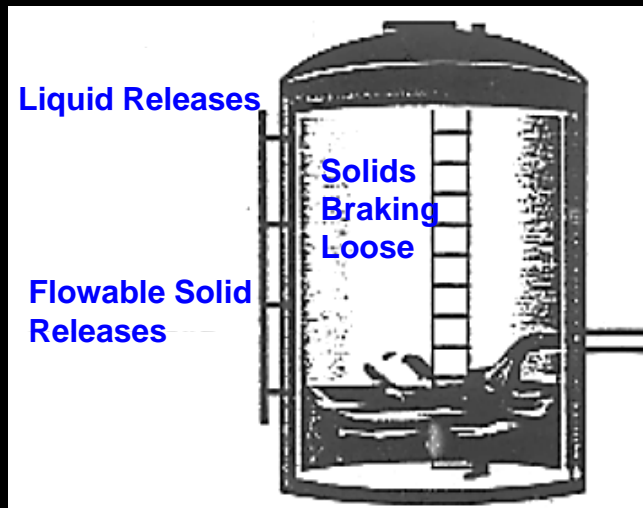
(PRCS)



Shoveling
Through
Crusted
Materials

Contains or has a Potential to Contain a Hazardous Atmosphere where **Ventilation** will not reduce to or maintain safe levels

(PRCS)

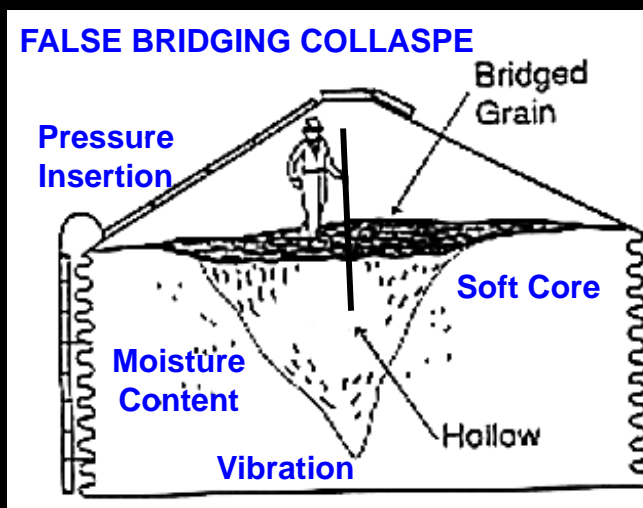


Causing:

Aspiration,
Strangulation,
Constriction,
or Crushing.

Has the Potential Engulfing Hazards
that could Entrap an Entrant

(PRCS)

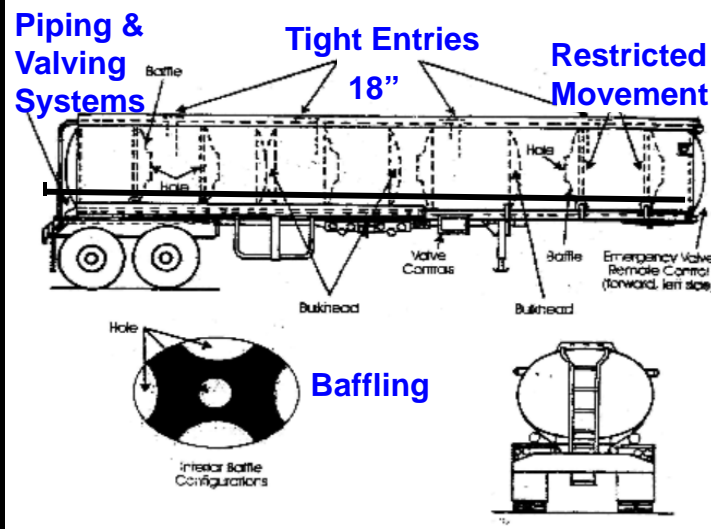


Causing:

Asphyxiation,
Blood
Restriction

Inwardly Converging Walls, Sloping Floors or
Tapering Surfaces that could Trap or Asphyxiate
an Entrant.

(PRCS)

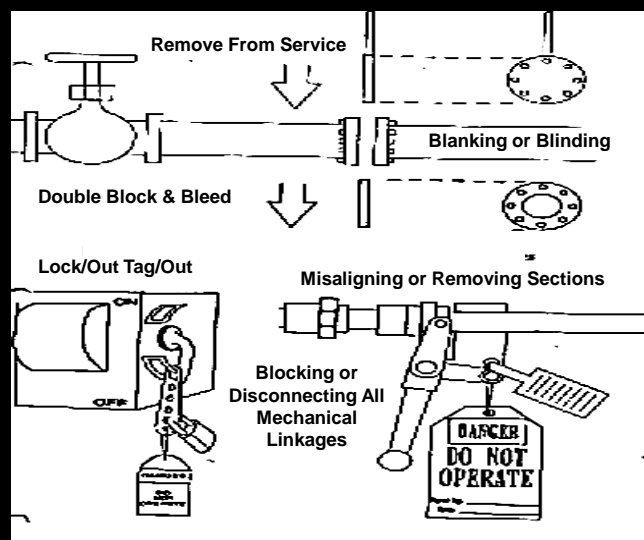


Tight Turns

Multiple Turns and/or Drops

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

(PRCS)



- 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

Work Site Evaluations

- ❖ Host Employer Exchange of Information with Controlling Contractor for Operating in Confined Spaces, if Available.
- ❖ Controlling Contractors and Host Employers Sharing 4 Pieces of Information:
 - ❖ Location of Space
 - ❖ Hazardous Conditions Effecting the Space
 - ❖ Precautions taken to Control the Hazards
 - ❖ Classification of the Space

1926.1204

1

Confined Space
"Hazard Classification" Type Review

<p>2. Controlled-Atmosphere Confined Space (CACS) Does this Space have all of the following Characteristics?</p> <ul style="list-style-type: none"> Contains no physical hazards or physical Hazards can be properly eliminated, isolated or controlled and The use of ventilation alone will control atmospheric hazards at safe levels to prevent exposure. 	<p>Either Questions No; Proceed to Question 3 All Yes; Classify Space as Controlled - Atmosphere "Permit Required" Confined Space</p> <p>RECORD RETENTION: Suggested 1 Year</p>
<p>3. Permit-Required Confined Space (PRCS) Does this Confined Space have <u>One or More</u> of the following?</p> <ul style="list-style-type: none"> A hazardous atmosphere where ventilation will not reduce to and maintain safe atmospheric hazardous levels <u>or</u> Inwardly converging, sloping, or tapering surfaces that could trap or asphyxiate an employee <u>or</u> An engulfment hazard or other physical hazard? <p><small>Physical hazard means - an existing hazard or chemicals that can affect lungs, skin or eyes; electrical shock; steam or serious physical harm; or near a confined space or a hazard that has a reasonable probability of occurring in or near confined spaces. See additional hazards to the right.</small></p>	<p>ALL Questions No; Proceed to Question 4 Yes to One or More; Classify Space as "Permit Required" Confined Space</p> <p>Additional Physical Hazards Include but not limited to: Explosives; Mechanical Radiation; Equipment; Noise; Electrical; Hydraulic; Temperature extremes; Pneumatic snap; Inwardly converging surfaces.</p> <p>Converging means but not limited to: A Space between walls that narrows towards the base including tunnels and hoppers.</p> <p>RECORD RETENTION: 1 Calendar Year</p>
<p>4. Continuous System-Permit-Required Confined Space (CS-PRCS) With this Space being identified as "Permit Required" Confined Space, does this Space also <u>have all</u> of the following characteristics?</p> <ul style="list-style-type: none"> is part of and contiguous with a larger confined space (example, sewers); <u>AND</u> The employer cannot isolate it from the larger confined space; <u>AND</u> is subject to a potential hazard release from the larger confined space that would overwhelm personal protective equipment and/or hazard controls, resulting in a hazard that is immediately dangerous to life and health? 	<p>If Any No; Space Is PRCS - Use Question 3 All Yes; Classify Space as Continuous - System "Permit Required" Confined Space</p> <p>RECORD RETENTION: 1 Calendar Year</p>

Isolated-Hazard Confined Space (IHC S): If a Space meets the Hazard Classification (IHC S) requirement, then "No-Permit" is required for entry. However, the Project Manager/Supervisor or Entry Supervisor who performs a Confined Space "Hazard Classification Assessment" shall document required Atmospheric Testing and Physical Hazard verifications with a properly Calibrated and Functioning Air Monitor equipment and ensure all Hazard Controls are in place. Additional documentation shall be performed when a change in space Hazards has been detected, encountered, or suspected and work shall be suspended until a "Reassessment" of the space is performed. Additional atmospheric monitoring's shall take place after breaks, lunch, prolonged work stoppage etc. and verified limits recorded before re-entries allowed.

Isolated-Hazard Confined Space (IHCS)

Isolated-Hazard Confined Space (IHCS): If a Space meets this Hazard Classification (IHCS) requirement, than “No-Permit is required for entry. However, the Project Manager/Supervisor or Entry Supervisor who performs a Confined Space “Hazard Classification Assessment” shall document required Atmospheric Testing and Physical Hazard verifications with a properly Calibrated and Functioning Air Monitor equipment and ensure all Hazard Controls are in place. Additional documentation shall be performed when a change in space Hazards has been detected, encountered, or suspected and work shall be suspended until a “Reassessment” of the space is performed. Additional atmospheric monitoring’s shall take place after breaks, lunch, prolonged work stoppage etc. and acceptable verified limits recorded before re-entries allowed.

Controlled-Atmosphere Confined Space (CACS)

2. Controlled-Atmosphere Confined Space (CACS)

Does this Space have all of the following Characteristics?

- Contains no physical hazards or physical Hazards can be properly eliminated, Isolated or controlled and
- The use of ventilation alone will control atmospheric hazards at safe levels to prevent exposure.

Either Questions No; Proceed to Question 3

All Yes; Classify Space as
Controlled – Atmosphere “Permit Required”
Confined Space

RECORD RETENTION: Suggested 1 Year

Permit-Required Confined Space (PRCS)

3. Permit-Required Confined Space (PRCS)

Does this Confined Space have One or More of the following?

- A hazardous atmosphere where ventilation will not reduce to and maintain safe atmospheric hazardous levels or
- Inwardly converging, sloping, or tapering surfaces that Could trap or asphyxiate an employee or
- An engulfment hazard or other physical hazards?

Physical hazard means - an existing hazard or chemicals (that can affect lungs, skin or eyes) that can cause death Or serious **physical harm** in or near a confined space or a hazard that has a reasonable probability of occurring in or near confined spaces. **See additional hazards to the right.**

ALL Questions No; Proceed to Question 4

Yes to One or More; **Classify Space as "Permit Required" Confined Space**

Additional Physical Hazards include but not limited to:

Explosives; Mechanical Radiation;
Engulfment; Noise; Electrical; Hydraulic;
Temperature extremes; Pneumatic energy;
Inwardly converging surfaces.

Converging means but not limited to:

A Space between walls that narrows towards the base including funnels and hoppers.

RECORD RETENTION: 1 Calendar Year

Continuous System-Permit Required Confined Space (CS-PRCS)

4. Continuous System-Permit-Required Confined Space (CS-PRCS)

If Any No; Space is PRCS - Use Question 3

With this Space being identified as "Permit Required" Confined Space, does this Space also have all of the following characteristics?

All Yes: **Classify Space as Continuous - System "Permit Required" Confined Space**

- Is part of and contiguous with a larger confined space (example, sewers); and
The employer cannot isolate it from the larger confined space; and
- Is subject to a potential hazard release from the larger confined space that would overwhelm personal protective equipment and/or hazard controls, resulting in a hazard that Is immediately dangerous to life and health?

RECORD RETENTION: 1 Calendar Year



Atmospheric Testing and Air Monitoring

29 CFR 1926.1205



Atmospheric Testing and Air Monitoring

- ❖ Employers Required to **Perform** Adequate **Assessments** on the **Atmospheric Conditions** inside of the Space Before Entry
- ❖ Testing must be performed **without** using **mechanical** ventilation **or** **altering** the **natural ventilation** in the space.

Air Monitoring Use

Are you in clean air?

Zero Unit

Bump Test Unit

Unit Calibration



Follow Manufactures Specifications for Maintaining Units

Properly Functioning Air Monitors

Acceptable
Sensor
Set Points

Oxy: 19.5% to 23.5%

LEL: < 10%

CO: < 35ppm

H2S: < 1ppm

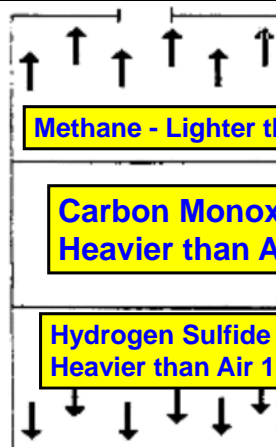


Typically Follow ACGIH (TLV) Recommendations

Checks
Every
4 Feet



From the Outside, Top to Bottom



Methane - Lighter than Air .55

Carbon Monoxide –
Heavier than Air .97

Hydrogen Sulfide –
Heavier than Air 1.19

Atmospheric Hazards – Vapor Densities of Gases/Vapors

LIGHTER OR HEAVIER THAN AIR? - Where AIR = 1

Classifying Spaces

- ❖ Using Information Based on Work Site Evaluations from 1926.1204



Classification (CS-PRCS)

Meets All Below:

- ❖ Is part of, and contiguous with, a larger confined space (for example, sewers).
- ❖ Is not isolated from the larger confined space.
- ❖ Is subject to a potential hazard release from the larger confined space that would overwhelm PPE Equipment and/or Hazard Controls

1926.1206



Classification (PRCS)

For each Physical Hazard that was identified

- ❖ Must determine an Isolation Method or
- ❖ A method of protecting employees from the Physical Hazard that meets OSHA Requirements

1926.1208

(PRCS)

For Each Atmospheric Hazard that was identified

- ❖ Employer must determine an isolation method or
- ❖ A method for controlling the hazard at a safe level or
- ❖ Protecting employees from the atmospheric hazard with personal protective equipment.

Worker Safety in (PRCS)

- ❖ Employer must **define the conditions** under which **authorized entrants can work safely** in the PRCS and,
- ❖ Employer must determine that, in the **event of ventilation stoppage**, the **monitoring will detect atmospheric hazard levels** in sufficient time for the entrants **to safely exit** the PRCS.

1926.1208



Initial Task in (PRCS)

- ❖ Notification and Posting of Danger Signs near the PRCS Location

Postings Reading:

"**Danger** - Permit-Required Confined Space - Authorized Employees Only" or

"**Danger** - Do Not Enter Without a Permit," or similar language

1926.1209



Prohibiting Entries in (PRCS)

- ❖ Use Barriers to Permanently close the PRCS
- ❖ Posting Danger Signs
- ❖ Inform the employees and the controlling contractor of PRCS steps used to prevent entry.



Training for Personnel Entering PRCS

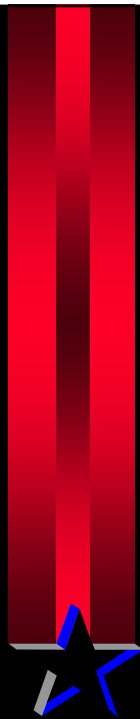
- ❖ The Employer must ensure that employees in or near PRCS (i.e., Entry Supervisors, Attendants, Authorized entrants, and Rescue-Service employees) acquire knowledge and skills necessary for Safe Performance of their Duties

1926.1209 (d)



Training for Personnel Entering PRCS

- ❖ Employer must ensure employees understand the hazards in the PRCS and methods used to:
 - Isolate,
 - Control, otherwise,
 - Protect employees from these hazards.



Training of Hazards Associated with Rescues in (PRCS)

- ❖ The employer must train employees they anticipates will be in or near a PRCS who are **not authorized to perform entry rescues** about **the dangers of attempting such rescues**.



Re - Training (PRCS)

- ❖ There is a Change in Assigned Duties
- ❖ New Hazards Introduced in PRCS that Entrant has not been previously Trained
- ❖ Failure to Perform Proficiently or Deviation from Assigned Duties
- ❖ Changes in Policy, Procedures or Permit Requirements
- ❖ Lacks Adequate Knowledge and Skills



Training Records

- ❖ The employer must maintain training records for each employee
 - ❖ Shows Accomplished the training requirements
 - ❖ Employee's name, names of the trainers, and dates of the training
 - ❖ Show Re – Training of Employees as Needed



Training Records

- ❖ Employer must make Rescue Preparations before any authorized entrant can enter PRCS
- ❖ The employer must complete arrangements for providing for Rescue
 - ❖ Internal Employer Team or
 - ❖ Service Contracted for Rescue

1926.1209 (e)



Preparing For Entry

- ❖ Prepare and post an entry permit where the authorized entrants enter the PRCS
- ❖ Prior to removing an entrance cover eliminate any condition (for example, high pressure in the PRCS) that makes it unsafe to remove the cover
- ❖ Guarding holes and openings

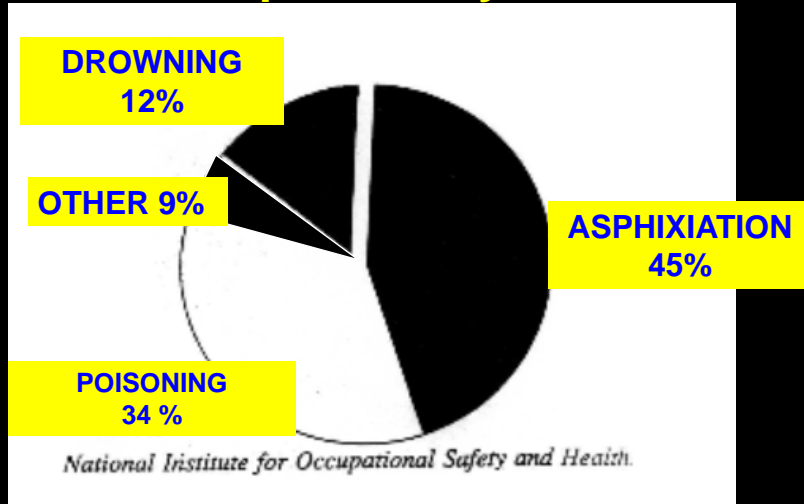
1926.1210



Preparing For Entry

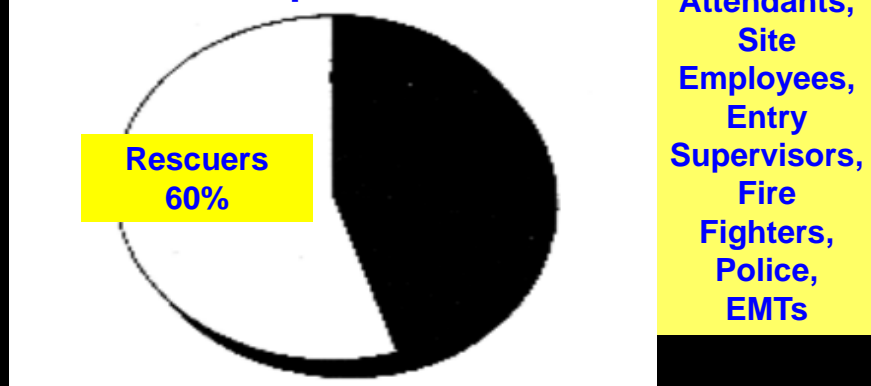
- ❖ institute measures to control pedestrian and vehicle traffic (signs, signals, and barricades)
- ❖ Entering and exiting a PRCS you shall use stairways or ladders when required
- ❖ Hoisting system shall be when required and must be designed and manufactured for personnel hoisting

Confined Space Entry Fatalities



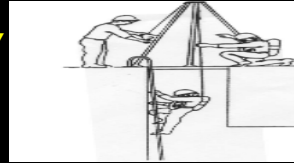
ASPHYXIATIONS – POISONINGS & DROWNINGS

Deaths Caused by Confined Space Accidents



**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 Engines on Site = 5 Minutes

Average Arrival Times for Technical Rescue on Site = 7 Minutes

Actual Rescue Times Averaging 48 to 123 Minutes

Chemical Rescue Response 70 to 173 Minutes

Rescue & Emergency Services

- ❖ Ensure an Employer Team or Rescue Service can respond to a rescue summons in a timely manner.
- ❖ Timeliness depends on how quickly serious physical harm may result from the physical or atmospheric hazards in the PRCS.



1926.1213



Rescue & Emergency Services

- ❖ Prior to beginning entry operations, Employer Rescue Team or Rescue Service shall have access to the PRCS so authorized entrants can enter or Simulated PRCS so the entry Employer Rescue Team or Rescue Service can:
- ❖ **Develop appropriate rescue plans for each space** they may be required to enter and practice rescue operations.



Rescue & Emergency Services

- ❖ Prior to the Employer Rescue Team or Rescue Service enters a PRCS for any purpose, the employer must:
 - **Inform the Employer Rescue Team or Rescue Service of the physical and atmospheric hazards** they are likely to encounter when performing rescue operations in the PRCS, and
 - **Other relevant information** actually known by the employer.



Rescue & Emergency Services

- ❖ Protecting and Training the Employer Rescue Team or Rescue Service Employees
 - Provide them with the personal protective (PPE) and
 - Rescue equipment (including retrieval lines if necessary) required to make safe rescues
 - Train them in the proper use of the PPE and rescue equipment



Rescue & Emergency Services

- Train them to perform assigned rescue duties.
- Train them in basic first aid and in cardiopulmonary resuscitation (CPR)
- Ensure that at least one member of the entry rescue service who participates in the onsite rescue operations holds current certification in first aid (including CPR).



Rescue & Emergency Services

- Ensure that the Employer Rescue Team or Rescue Service employees **practice rescue operations at least once prior to beginning** entry operations and
- **At least once every 12 months** thereafter.



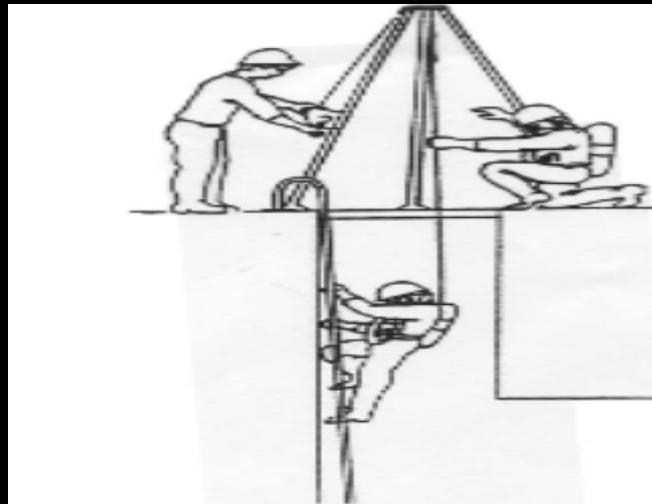
Rescue & Emergency Services

- ❖ This **practice must involve**:
 - **Removing** dummies/mannequins or
 - **Individuals** from the PRCS the authorized entrants will enter, **or**
 - From a **Simulated PRCS**
- ❖ In doing so, comply with the requirements of this standard that apply to the confined space used for this purpose.

Rescue & Emergency Services

- ❖ The Employer Rescue Team or Rescue Service should be using the same PPE, retrieval, and rescue equipment they would use to perform retrieval or
- ❖ Rescue operations in the PRCS.

Before Personnel Perform PRCS Entries



Rescue Team or Rescue Services
VERIFIED – AVAILABLE -- TIMELY



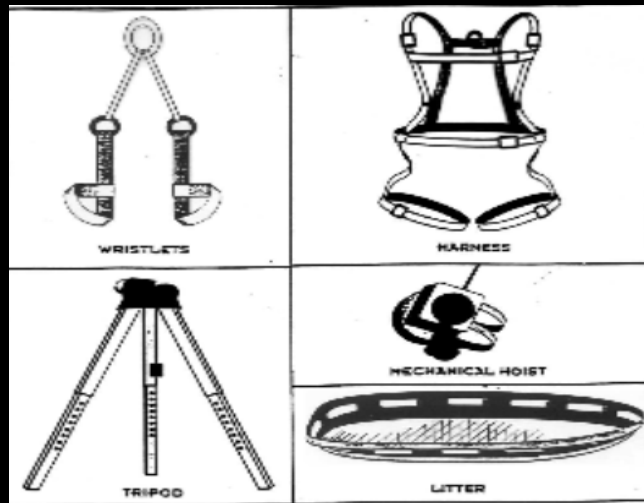
Exempt From Annual Practices

- ❖ An Employer Rescue Team or Rescue Service is exempt from the requirements to practice rescue operations if the Employer Rescue Team or Rescue Service has:
 - Employees who have properly performed a rescue operation during the last 12 months in the same PRCS or
 - Similar PRCS that an authorized entrant will enter



Rescue & Emergency Services

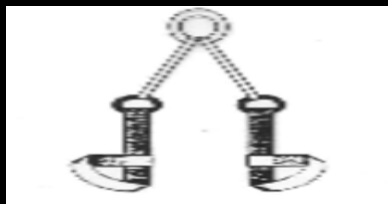
- ❖ Each authorized Entrant or Entry Rescue Personnel shall use a chest or full body harness, with a retrieval line attached at:
 - ❖ The center of the entrant's back near shoulder level,
 - ❖ Above the entrant's head off Shoulders of harness or
 - ❖ Another point which the employer can establish or present a profile small enough for the successful removal of the entrant.



Minimal Confined Space Entry Equipment
FULL BODY HARNESS & LIFELINE

Rescue & Emergency Services

- ❖ **Wristlets or Ankle Straps may still be used** in lieu of the chest or full body harness if the employer **can demonstrate** that the use of a chest or full body harness **is infeasible or creates a greater hazard** and that the use of wristlets or ankle straps is the safest and most effective alternative
 - ❖ **Example (Restricted Horizontal Retrieval)**





Rescue & Emergency Services

- ❖ The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary
- ❖ A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep



Rescue & Emergency Services

- ❖ If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite
- ❖ That SDS or written information shall be made available to the medical facility treating the exposed entrant

1926.1214

FIBERGLAS											
CONFINED SPACE ENTRY PERMIT											
Return this permit to the plant safety supervisor or other designated person at the conclusion of the entry.											
										initials	
13. Have tests of the atmosphere been completed?											
sampling equipment used:											
type		serial number				date of last calibration					
test results oxygen		flammability				toxicity					
below	%	below	LEL	% LEL	ppm	ppm	ppm	ppm	ppm	ppm	ppm
14. Have standbys been assigned and trained in emergency protection?											
										initials	
1st		2nd		3rd		4th		5th		6th	
position & equipment		position & equipment		position & equipment		position & equipment		position & equipment		position & equipment	
signature for site safety supervisor											
signature for entry supervisor											
signature for entry supervisor											

Hazard Identification and Assessments

Permit Information

- ❖ **Identification of the PRCS to be entered.**
- ❖ The **purpose** (including the tasks/job) of entering the PRCS
- ❖ The **effective date and the authorized duration** of the entry permit.
- ❖ The duration of the permit is **prohibited from exceeding the time required to complete the tasks/job** identified on permits

Permit Information

- ❖ **Conditions for entry--(i) Hazard Information**
- ❖ Identify the **physical and atmospheric hazards** the PRCS is subject to:
 - ❖ That is, all physical and
 - ❖ Atmospheric hazards,
 - ❖ Regardless of how they **have been isolated or controlled**, or
 - ❖ **How authorized entrants are protected** from them

Permit Information

- ❖ **Methods used to isolate or control hazards**
- ❖ **Type of personal protective equipment provided,**
- ❖ **The methods used to monitor each hazard including the use of early-warning systems**
- ❖ **Atmospheric-testing and air-monitoring results**

Permit Information

- ❖ **Requirements for continuous atmospheric monitoring of CS-PRCS**
- ❖ **Type and brand of the equipment used**
- ❖ **Names and signature/initials of the individuals who performed these test**
- ❖ **Date and time testing was performed**



Permit Information

- ❖ **Conditions under which authorized entrants can work safely in the PRCS,**
- ❖ **Hazard levels and methods of employee protection**
- ❖ **Personnel, equipment, and procedures. Identify by name each authorized entrant**



Permit Information

- ❖ **Names of the current attendants**
- ❖ **Name of the current entry supervisor**
- ❖ **In addition, include the signatures or initials**
- ❖ **Communications methods used during entry operations to maintain contact between authorized entrants and attendants.**



Permit Information

- ❖ Rescue service that will rescue workers during emergencies, and
- ❖ The methods for summoning this service,
- ❖ Communication equipment to use and the telephone numbers to call
- ❖ Identify additional permits issued such as HOT WORK
- ❖ Cancellation of Permits when jobs are complete or terminated or any other information necessary



Annual (PRCS) Review

- ❖ Must review, at least Annually,
- ❖ PRCS entries made during the previous 12 months to determine if there are deficiencies in operation procedures

Duties of Entry Supervisor

- ❖ Knows the hazards that may be faced during entry,
- ❖ Understand information on the mode, signs or symptoms, and consequences of the employee exposure,
- ❖ Verifies, by checking that the appropriate entries have been made on the permit,

196.1211



Permit Approvals



Duties of Entry Supervisor

- ❖ All tests specified by the permit have been conducted and
- ❖ That all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry
- ❖ Terminates the entry and cancels the permit



Duties of Entry Supervisor

- ❖ Verifies that rescue services are available and that the means for summoning them are operable,
- ❖ Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations and
- ❖ that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.



Duties of Entry Supervisor

- ❖ Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space,
- ❖ Assign an attendant to be stationed outside the PRCs for the duration of the entry operation



DUTIES OF ATTENDANTS

- ❖ Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- ❖ Is aware of possible behavioral effects of hazard exposure in authorized entrants

1926.1211



DUTIES OF ATTENDANTS

- ❖ Continuously maintains an accurate count of authorized entrants in the permit space and has the means to identify authorized entrants
- ❖ Remains outside the permit space during entry operations until relieved by another attendant
- ❖ Communicates with authorized entrants as necessary to monitor entrant status



DUTIES OF ATTENDANTS

- ❖ Monitors activities inside and outside the space
- ❖ Orders the entrant to exit the space if:
 - If the attendant detects a prohibited condition
 - If the attendant detects the behavioral effects of hazards are affecting exposure to the authorized entrant



DUTIES OF ATTENDANTS

- If the attendant detects a situation outside the space that could endanger the authorized entrants or
- If the attendant cannot effectively and safely perform all the duties required as an Attendant



DUTIES OF ATTENDANTS

- ❖ Warn the unauthorized persons that they must stay away from the permit space
- ❖ Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space
- ❖ Performs non-entry rescues as specified by the employer's rescue procedure **unless trained and authorized**; and

DUTIES OF ATTENDANTS

- ❖ Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of Authorized Entrants

- ❖ Know the hazards that may be faced during entry, including information on:
 - ❖ The mode, signs or symptoms, and
 - ❖ consequences of the exposure
- ❖ Establish a Communication Method with the Attendant before entry
- ❖ Properly use equipment as required

1926.1211



Duties of Authorized Entrants

- ❖ **Establish a Communication Method with the attendant before entry is allowed**
- ❖ If the attendant recognizes a problem with the entry they shall order the Entrant to Exit from the PRCS as quickly as possible if
 - The entry supervisor or the attendant orders the authorized entrant to evacuate the PRCS; or



Duties of Authorized Entrants

- The authorized entrant detects or learns of any of the following:
 - An unplanned condition (for example, a new hazard) in or near the PRCS.
 - Any sign, symptom, unusual behavior or other effect of a hazard
 - An evacuation alarm is sounded.



Air Ventilation (CACS)

1926.1216



Air Ventilation (CACS)

- ❖ **Ventilation must consist of continuous forced-air mechanical systems that meet the requirements of 29 CFR 1926.57**
- ❖ **Determine that, in the event the Ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time to allow entrants to safely exit the CACS.**

Air Ventilation (CACS)

- ❖ Document that all physical hazards have been isolated and
- ❖ That ventilation alone is sufficient to control the atmospheric hazards
- ❖ **Documentation must contain:**
 - ❖ The location of the CACS,
 - ❖ Identity of the physical hazards,
 - ❖ Date and time the physical hazards were isolated

Air Ventilation (CACS)

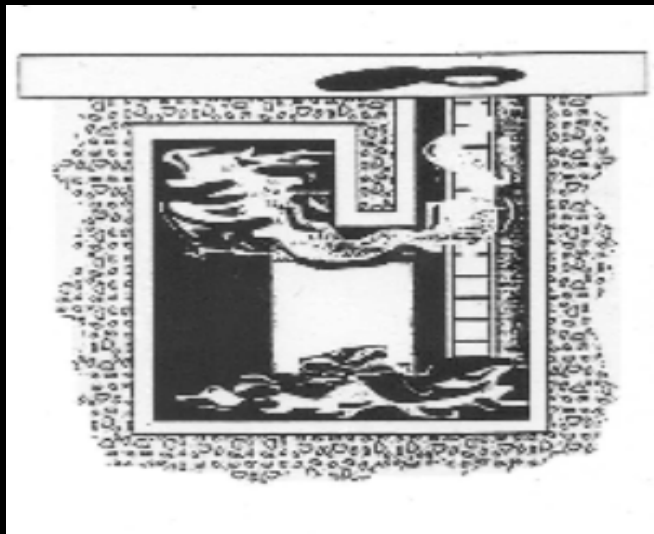
- ❖ **Name and signature/initials of the individual who completed the isolation work,**
- ❖ **The identity and safe levels of the atmospheric hazards,**
- ❖ **Methods for controlling the atmospheric hazards,**

Air Ventilation (CACS)

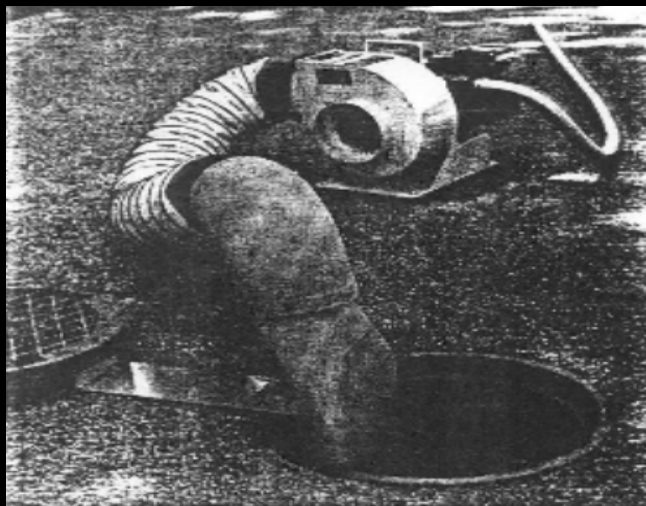
- ❖ Atmospheric-testing results, date and time of atmospheric testing and the name and signature/initials of the individual who completed the atmospheric testing, and determinations made
- ❖ Name and signature/initials of the person who completed this document, and the date and time the document was completed.

Air Ventilation (CACS)

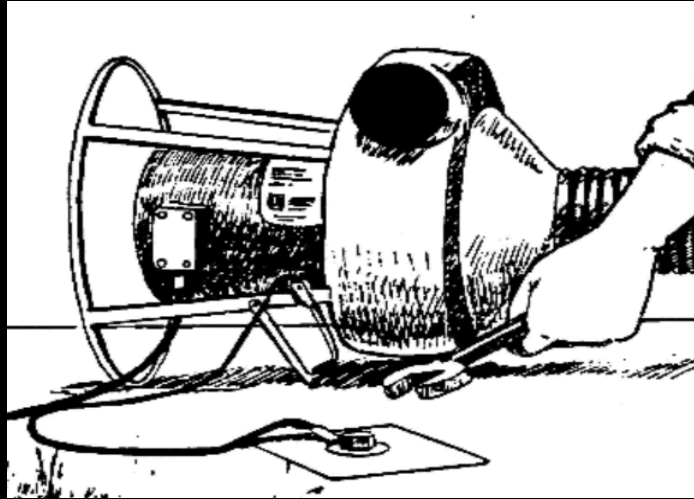
- ❖ The documentation shall be made available by posting or other methods to each employee entering the space and to that employee's authorized representative.



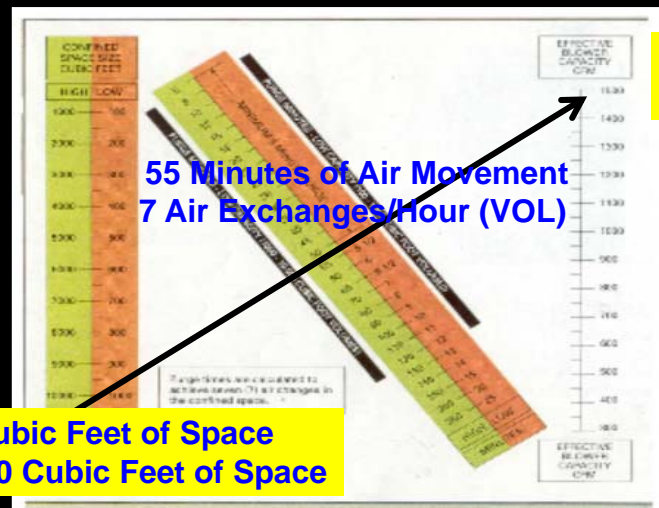
Trapped Air Hazards
Gases – Vapors - Stale Air - Heat



Restricted Opening
AIR HOSE REDUCTION SOLUTION



**Flammable/Combustible Atmospheric Hazards
BONDING/GROUNDING or EXPLOSION PROOF**



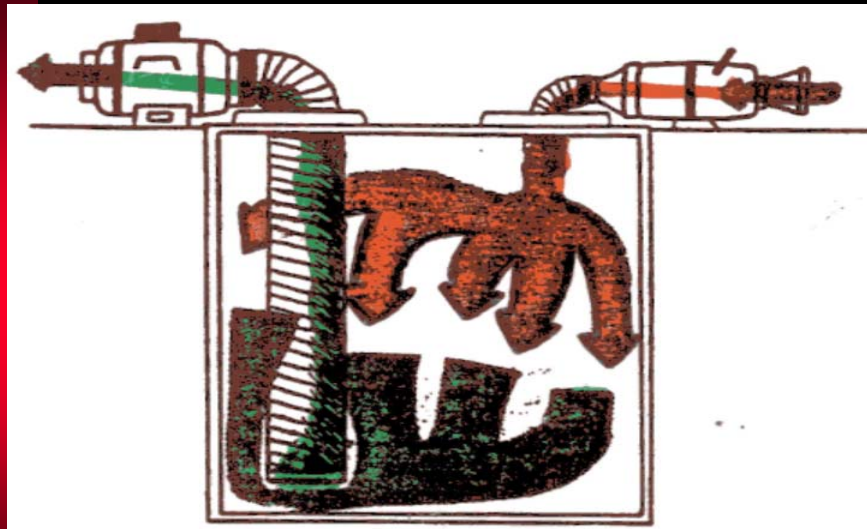
**Air Ventilation Concerns
AIR VOLUME – AIR SPACE - TIME**



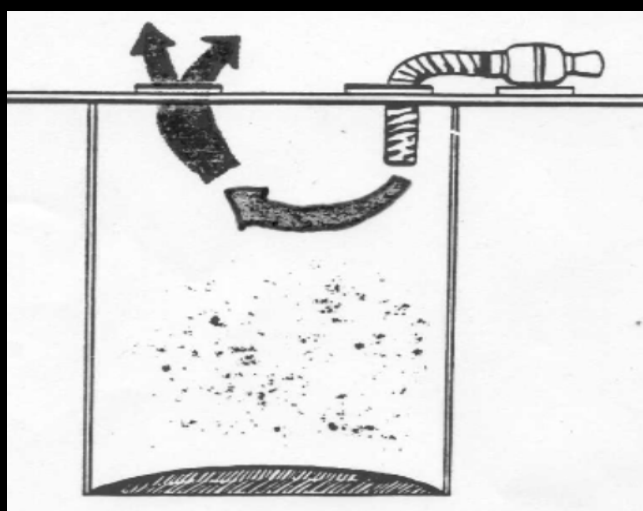
**Best Practice - Blowing Air
DEEP VENTILATION METHOD**



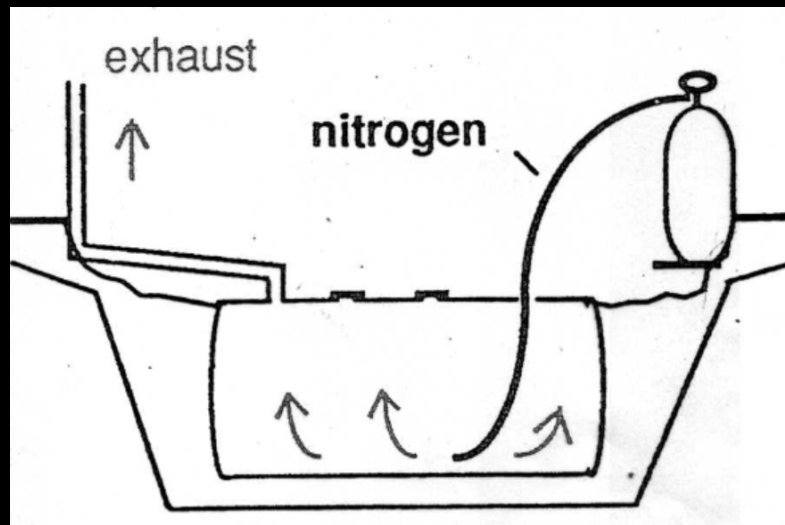
**Solutions for Short Circuiting
AIR MOVER PLACEMENT CONSIDERATIONS**



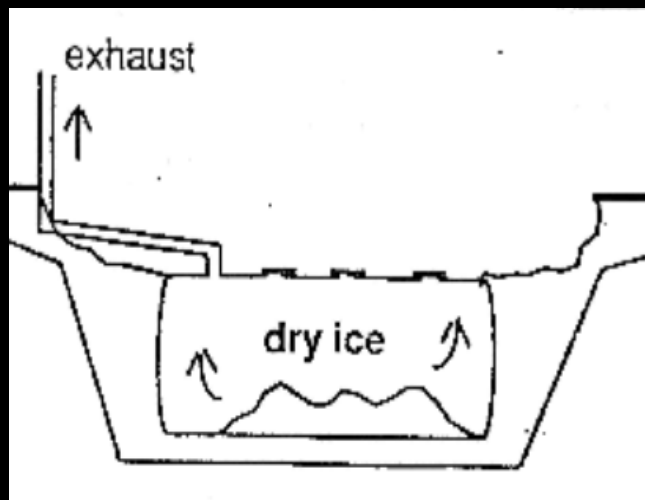
Deep Pit Below – Best Practice
AIR BLOWER LOW – AIR INTAKE HIGH



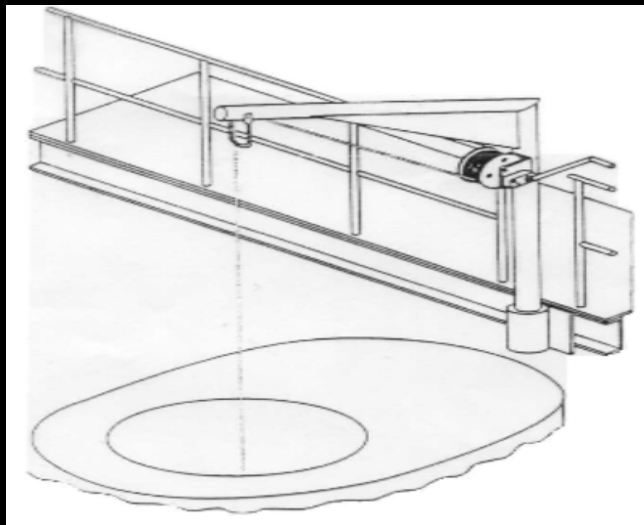
Improper Ventilation Practices
SHORT CIRCUITING



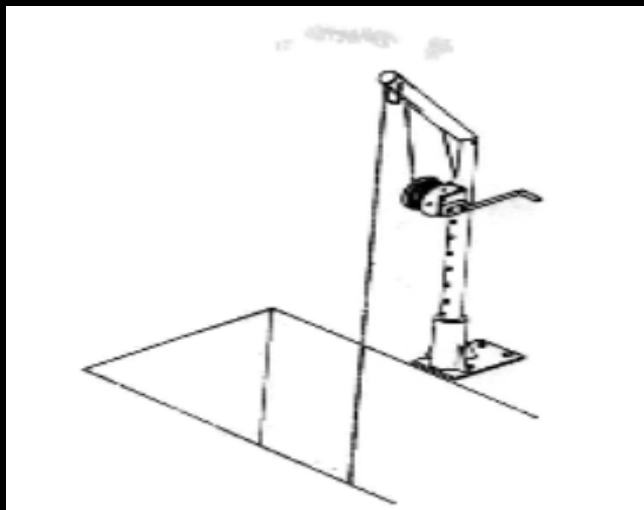
**Hazard Elimination or Control
PURGING**



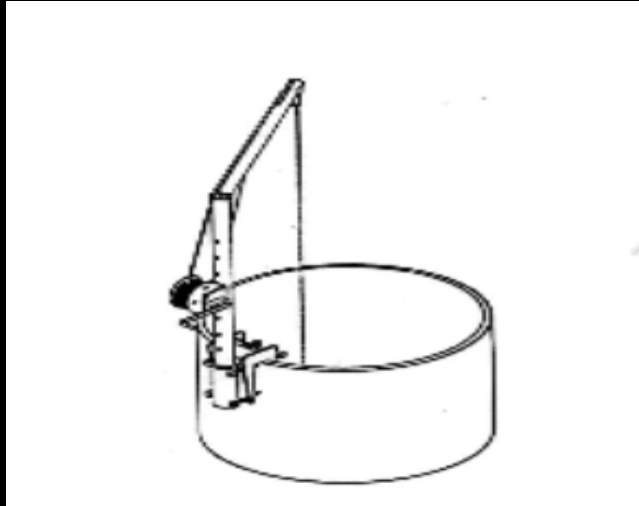
**Hazard Elimination or Control
PURGING**



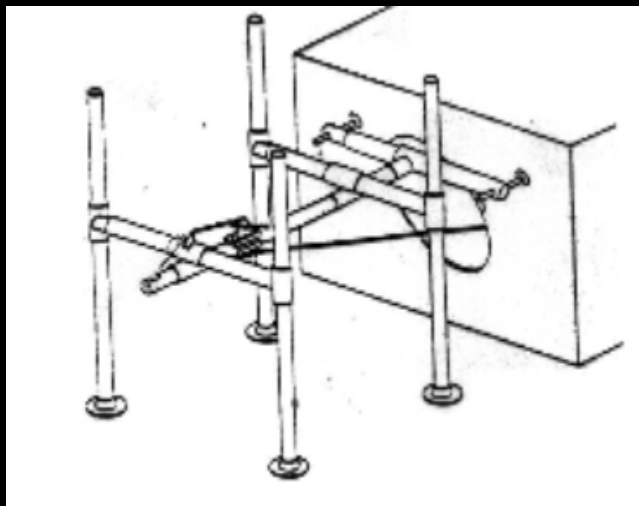
Confined Space Entry Solutions
BOOM UNIT WITH BEAM OR KICK PLATE



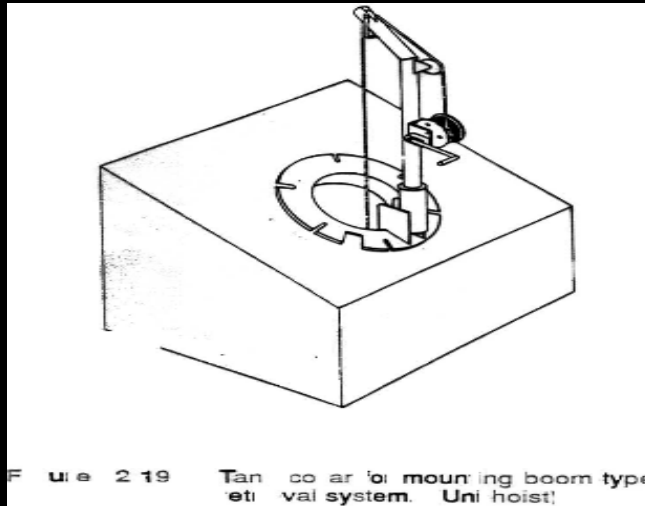
Confined Space Entry Solutions
BOOM UNIT FLOOR PLATE MOUNT



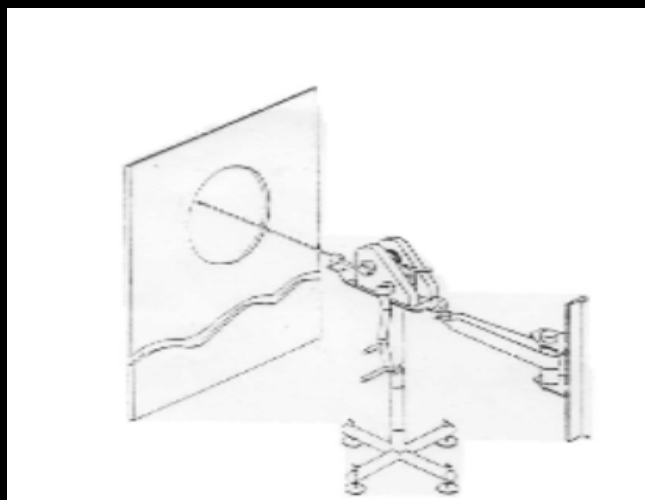
Confined Space Entry Solutions
EDGE BOOM MOUNTING



Confined Space Entry Solutions
HORIZONTAL RETRIEVAL



Confined Space Entry Solutions
MANWAY SUPPORT SYSTEMS



Confined Space Entry Solutions
HORIZONTAL RETRIEVAL



PRCS WRITTEN PLAN OUTLINE

- ✎ Introduction - Company Policy
- ✎ Definitions
- ✎ Identification of Confined Spaces
- ✎ Notification and Warning
- ✎ Hazard Identification
- ✎ **Equipment for Entry & Rescue**
- ✎ Evaluation of Confined Spaces
- ✎ Permits
- ✎ Authorized Entrants
- ✎ Authorized Attendants



PRCS WRITTEN PLAN OUTLINE (cont'd)

- ✎ Entry Supervisors
- ✎ Entry Procedures
- ✎ Communications Procedures
- ✎ **Rescue Procedures**
- ✎ Closure Procedures
- ✎ Coordination of Work With Contractors
- ✎ Program Review and Update (Annually Required)
- ✎ Training Requirements and Documentation