CONFINED SPACE Rescue

Presented by:

Safety Management Group

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Confined Space Rescue

Please Sign In

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WELCOME!

INTRODUCTIONS

Craig Clark CHST

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Safety First!

Lets cover our Emergency Evacuation Route for this facility

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CLASS OVERVIEW

- **How to prepare for a confined space**
- **Training requirements for a CSR team**
- **Familiarization with available CSR gear**
- **Hands on rescue evolutions**

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KEYS TO SUCCESS

- Actively Participate
- Ask Questions
- Have Fun

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FIRST!
LETS ALL DO AN EXERCISE

- Lets see who????????????
- Can hold BREATH the longest
- Everyone Stand Up
- Vince will time you
- Sit Down when your out!
- Last man standing wins a prize!

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Why Did we do this exercise you ask ?

According to 29 CFR 1910.146

(k)(1) An employer who designates rescue and emergency services, pursuant to paragraph (d)(9) of this section, shall:

(k)(1)(i) Evaluate a prospective rescuer's ability to respond to a rescue summons in a **TIMELY MANNER,** considering the hazard(s).

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Scenario

You have a permit required confined space that is active. You are the Entry Supervisor and your Attendant just notified you that your Entrant is unconscious and not responding.

What have you done to prepare for this situation?

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How long can You or the Victim hold your breath?

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QUESTIONS?

- Who do you normally list as your rescue team on your permit?
- How long would it take the rescue team to reach your confined space?
- Is the rescue team familiar with your facility and confined spaces?

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Questions?

- What protocol do you use if the rescue team (i.e.) fire department is out on a call?
- Is the rescue team equipped for the types of rescues required at your facility?
- Has the rescue team practiced rescues on your spaces?

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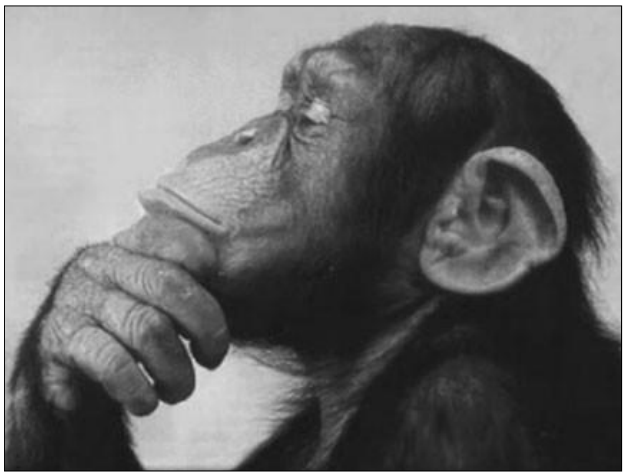
What is the best Confined Space Rescue?



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THE ONE THAT NEVER HAPPENED!

- ***We achieve this by training planning and practice!***

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HOW DO WE PREPARE FOR A CONFINED SPACE RESCUE?

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Confined Space

THE 10 COMMANDMENTS of CONFINED SPACE RESCUE

1. PLANNING /DOCUMENTING RESCUE PROTOCOL BY QUALIFIED PERSONS
2. TRAINING & VERIFICATION OF THE RESCUE PERSONNEL
3. IDENTIFYING THE HAZARDS OF SPACE
4. HAVING THE PROPER RESCUE EQUIPMENT
5. PRACTICE RECUES ON THOSE SPACES
6. CONTINUOUS MONITORING/TESTING OF ATMOSPHERE
7. STANDBY PEOPLE / COMMUNICATION
8. PROPER TOOLS AND EQUIPMENT
9. PROPER VENTILATION
10. PROPER LOCKOUT / TAGOUT PROCEDURES

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Confined Space

Common Mistakes

- Failure to recognize a confined space
- Trusting your senses
- Underestimating the dangers/known hazards
- Forgetting a hazard may develop while inside
- Making unprepared rescue attempts

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Confined Space

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Before Confined Space Entry

- Know what a Confined Space is?
- Be prepared for the Confined Space
- Verify the Safety of the Confined Space
- Preparing for a Rescue

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Confined Space

WHATS IN IT FOR ME?

- It may save your life, or a co-workers life
- OSHA requires confined space training {29CFR1926.21(b)(6)(i) & 1926.1200-1213 & 29CFR1910.146}
- Many Companies require training on CSE before working at their site. Not including CSR training

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PREPARATION

"If you fail to Prepare then Prepare to Fail"

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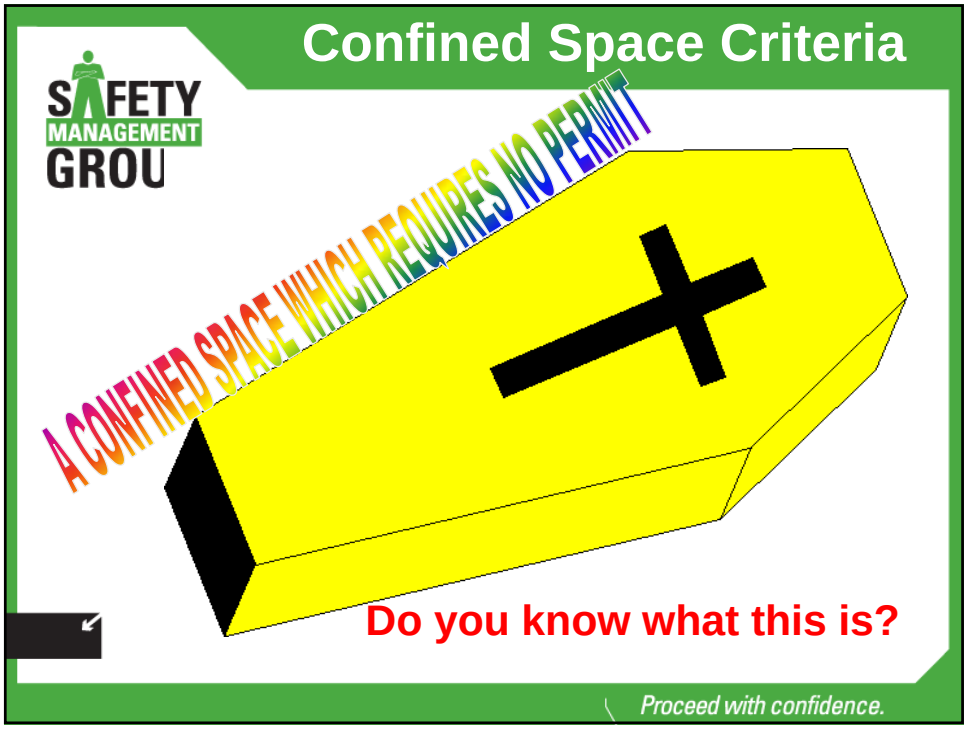
Confined Space Criteria
SAFETY
MANAGEMENT
GROU
A CONFINED SPACE WHICH REQUIRES NO PERMIT
Do you know what this is?
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CSR PREPARATION

- **Identify Space**
  - **Appendix A Flow Chart is an aid**
  - **Permit Non Permit?**
- **Identify Hazard Types**
- **Identify employee or emergency rescue needs**
- **Identify Rescue equipment**
- **Identify What training will be needed for each**

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CSR NOTIFICATION

- **IF** using Emergency Rescue Services, the following must be done.
  - Contact must be made with Rescue team.
    - Do you have their permission to list them on your permit?
    - What is their response time if not on site?

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Lost in Translation

- Take, for example, the case of a welder who entered a confined space from a small opening some 20 feet off the ground via a scaffold. As far as the crew was concerned, the requirements for this permit-required confined space had been met: they had an attendant, an entrant and a supervisor; the space was clearly marked as a confined space; the air was being monitored; the welder was wearing a harness;

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Lost in Translation

- a tag line, tripod and winch were in place; and the crew had completed a confined space permit. The only remaining requirement was the rescue plan. The crew fulfilled this requirement as they were trained to do, and as they'd always done in the past: They wrote down “Call 9-1-1."
- **Ultimately, it was a rescue plan that proved unable to save a life.**

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Lost in Translation

- You see the welder was electrocuted in the confined space and went into cardiac arrest. There was no way to remove him from the pipe chase – the crew couldn't drag the large welder over the elevated, horizontal pipes. They called 9-1-1, but a rescue couldn't be performed in a **Timely Manner**. As a result, the welder perished.

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They Failed to Prepare so they Prepared to Fail!

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Let's Take a Look at Response Time

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Defining Response Time

- Reaction Time
- Contact Time
- Response Time
- Assessment Time
- Preparation Time
- Rescue Time

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Defining Response Time

- Reaction Time
  - Time between the entrant having a problem requiring rescue and the safety attendant's recognition that the entrant has problem
- Contact Time
  - The time taken by the attendant to contact the rescue team.
- Response Time
  - The time taken by the rescuers to arrive at the scene of the rescue after contact.

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Defining Response Time

- Assessment Time
  - The time taken by a rescue team to size up the problem and determine the strategy to perform a safe, efficient rescue.
- Preparation Time
  - The time taken by a rescue team to set up for the rescue.
- Rescue Time
  - The time taken for the team to reach, treat, package, and evacuate the victim from the confined space.

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How long can You hold your breath?

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PRACTICE TIME!

- The time a company should take to practice and evaluate recue times and issues at their project or facility.
- This time is used to evaluate the rescue team and inefficiencies‘.

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On May 4, 2015, OSHA issued a new standard for construction work in confined spaces, which went into effective starting August 3, 2015. Confined spaces can present physical and atmospheric hazards that can be avoided if they are recognized and addressed prior to entering these spaces to perform work. The new standard, Subpart AA of 29 CFR 1926 will help prevent construction workers from being hurt or killed by eliminating and isolating hazards in confined spaces at construction sites similar to the way workers in other industries are already protected.

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When in doubt use a checklist.

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The SMG Check List

Safety Management Group has developed this handout for teams preparing for confined spaces. This ensures that all identified confined spaces are planned prior to entry.

This is not all inclusive of items to cover but does serve as a great preparation tool.

This does not take place of your PERMIT!

This is pre permit planning.

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Training Requirements for your Rescue Team

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Training Requirements

- CSE
- Respirator/Fit Test
- Air Monitor
- Fall protection
- Supplied Air
- PPE
- HAZCOM
- LOTO

- CSR
  - Rescue Gear
    - Tripods
    - Davit
    - Rope access
    - Harness
    - Sked/Half Sked
    - Rescue Harness
    - Ventilators
    - Manlift

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Training Requirements

- **Recommend -** creating a confined space training matrix to ensure that all persons that are entering a confined space; receive the proper training.
- Companies fail because all they see is the CSE&CSR requirement for training and lose sight of the big picture.

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HINT

- Create a solid CSE & CSR training class that encompasses all of this training into one package.
- **IF** they had some of the training it is always good to refresh.
- Just because it is your fire department, it does not exempt them from training.

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Recommend doing training annually

Recommend practice and evaluation every six months

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CSR Types

- **There are 3 types of rescue techniques:**
- Non-entry
- Entry by others
- Entry by Trained employees from the company

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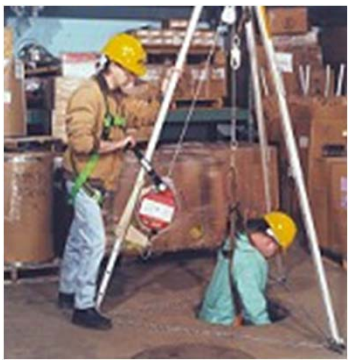
NON ENTRY

1. Non-entry – Rescue that is conducted without entry into the confined space. This can be conducted by such means as a rope or winch.



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CSR TYPES

2. Entry by others – some companies do not have trained personnel for emergency rescue. They depend on others to conduct emergency rescues such as the Fire Department or Standby contract rescue companies.

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CSR TYPES

- Entry by others continued – in this case the Fire Department would need:

- To be familiar with the types of confined spaces located in the facility,
- the hazards they may encounter,
- the entry means into the confined spaces,
- the types of rescue equipment to effect a rescue and
- the types of PPE required for any potential rescue.

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CSR TYPES

- **Fire Department would also need to be notified when an entry is taking place.**
- **You should exit if they call and have a fire or another emergency call.**
- This should be part of your CSE/CSR written plan.

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CSR TYPES

3. Entry by Trained employees from the company – some companies have trained personnel within the company to conduct rescues. In this case:
   - All members of the team must be specially trained in confined space rescue work,
   - The team must have at least one member certified in CPR and first aid,
   - All members of the team must be trained in the techniques and equipment for specific confined spaces.

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Emergency Rescue

- If a rescue is required, the rescue service must close off the area, get authorized entrants out of the space and perform first aid when needed.
- It is best to use a retrieval system to bring the employee out of the space. Never enter the space without proper training and unless it is necessary.
- Authorized entrants should wear harnesses connected to the retrieval line. The retrieval equipment must be in place before employees enter the permit space.

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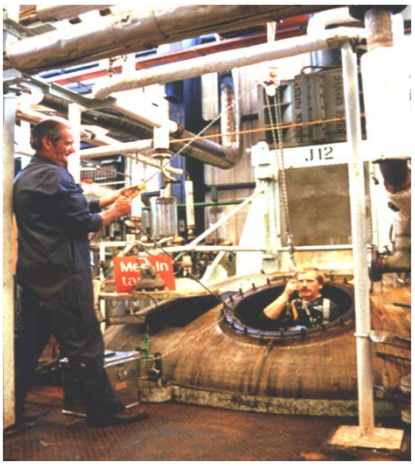
TYPES of GEAR SET UP



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Rescue Equipment

- Confined Space Rescue can require a number of types of equipment to effectively and safely perform a rescue.
- Let's take a look at some of the equipment that can be used in confined space rescues.

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Ropes

- Used for
  - Primary tool in technical rescue
- Vary in construction, material and size
- Most common in C.S.
  - ½ inch, strength 9,000 lbs.
  - Static kernmantle (low stretch)
  - Dynamic kernmantle (high stretch)

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Harness

- Used for
  - Fall protection
  - Confined space rescue
- Most common in C.S.
  - Flat nylon webbing
  - Full body
  - Point of attachment in the center of the back at shoulder level

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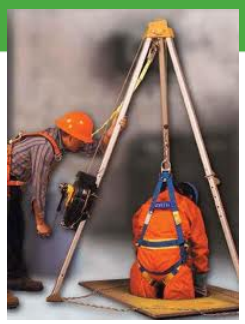
Tripods



- Used for
  - Access to vertical entry
- Most common in C.S.
  - 9-foot height or greater

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Winches

- Used for
  - Assist with tripods
- Most common in C.S.
  - Retractable designated for non-entry rescue
  - Certified as a primary lowering device

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Ventilation Systems

- Ventilate, eliminate, or control the space's atmospheric hazards
- Blind or disconnect and cap all input lines so that no hazardous materials can enter the space

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Lockout Tagout

- When entrance covers are removed, guard the opening immediately
- Remember, you may have to be authorized to perform lockout tagout, depending on company policy.

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SCBA Units

- SCBA (Self Contained Breathing Apparatus) – may be required to enter some confined spaces or to perform a rescue.
- There are special guidelines that must be followed prior to wearing an SCBA.

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SCBA Wearer Requirements

- In order to wear a SCBA a rescuer would have to provide a Respirator Clearance or Physician Approval prior to wearing a SCBA.
- After the Respirator Clearance the Rescuer would have to be Fit Tested for the SCBA Unit.

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Rescue Equipment

- As you can see, there are numerous types of rescue equipment that is available to assist with rescues.
- Each confined space must be evaluated to determine what type of equipment is required to perform a rescue should it become necessary.
- If outside resources, such as the Fire Department, are utilized to perform confined space rescues, the agency should be given access to your facility to enable them to:
  - Be aware of the types of confined spaces you have
  - Determine the types of equipment and rescue techniques they will need to perform a rescue

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Confined Space

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Davit Arm

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Confined Space

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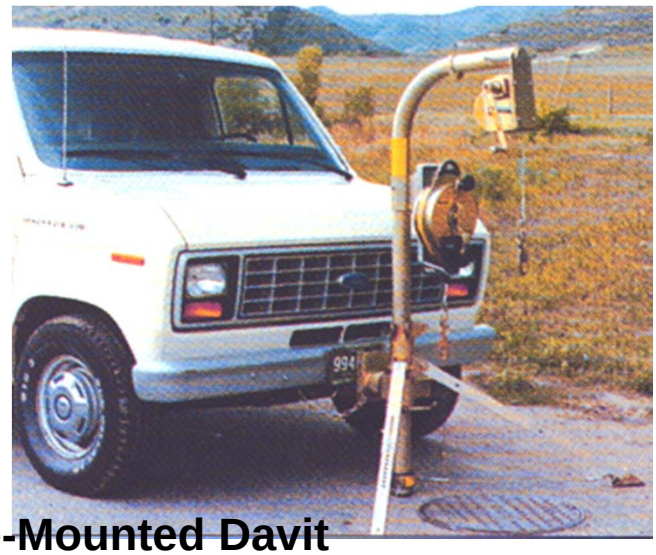

Vehicle-Mounted Davit

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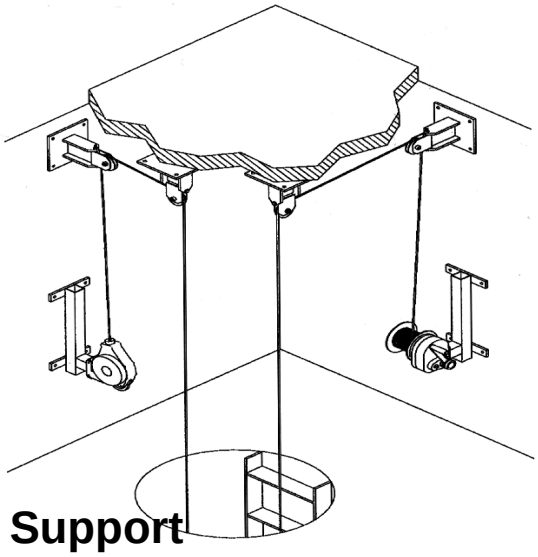
Confined Space



Wall Mount Support

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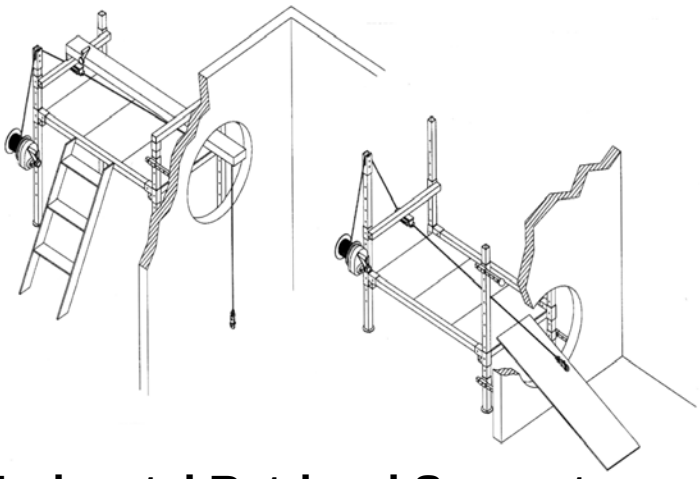
Confined Space



Horizontal Retrieval Support

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Combination of rescue gear that creates a rescue device that utilized multi anchor point systems.

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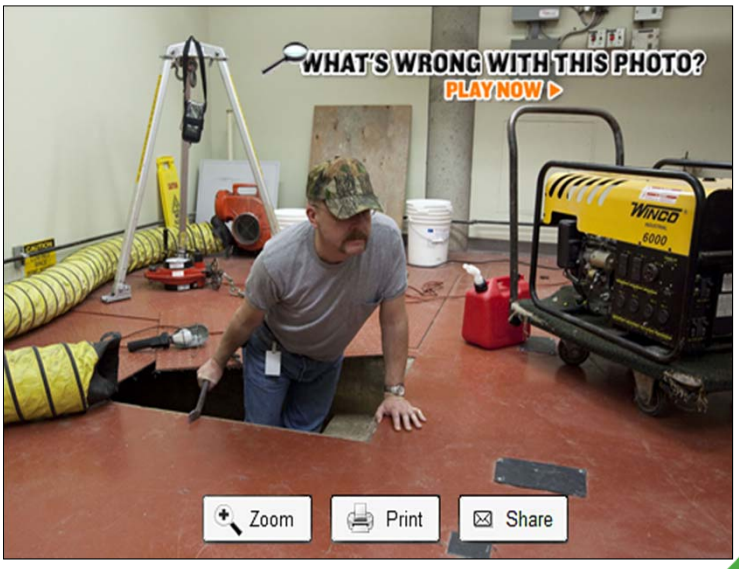

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Confined Space

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GENERAL REQUIREMENTS – EMPLOYER

- Employer must identify confined spaces
- Post warnings to prevent unauthorized entry (such as "Danger – PRCS – Do Not Enter" per 1926.1203(b)(1)
- Develop a written program for entry per 1926.1204
- Develop alternative procedures for permit spaces that cannot be entered
- Re-evaluate / reclassify spaces as necessary
- Establish provisions for contractors, including notification of hazards

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This new standard has some affect on the following.

- Crawl Space and Attics
- Pits
- Sewer systems

See OSHA fact sheets defining these changes

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Meat and Potatoes

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Confined Space

Stay out of Space

Summon Help

Provide Air

Did person fall/have broken bones?

No

Yes

Usen controlled descent device to rescue from outside

Wait for ERT

Lay person flat

Wait for ERT

RESCUE PROCEDURE CHART

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Commanding the Confined Space Rescue

If you are part of a rescue team at your facility, you must be familiar with your rescue plan. Let's discuss some key points associated with a rescue plan and points that need to be considered to keep rescuers safe.

- ***A confined space rescue will still have roles that must be filled during the rescue.***
- ***A Rescue Team will have an Incident Command Supervisor.***

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Roles

- Remember that the same roles apply in a confined space rescue that apply to a normal confined space entry.
  - Entry Supervisor
  - Attendant
  - Entrant, Primary
  - Entrant, Standby
- With a confined space rescue, there is an additional role that is assigned -
  - Incident Commander

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(Incident Commander)

IC Priorities

- A Confined Space Rescue Scene will have a Incident Commander. The priorities of the IC are mainly:
  1. Responder safety
  2. Safety of the victim
  3. Assessment of the situation
  4. Type of Rescue
  5. Development of the rescue plan
  6. General public control and safety

Must keep in mind that 60% of fatalities are would be rescuers

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1. Responder Safety

- Assessment of the situation and confined space
  - What PPE will be required
  - Obtain air monitoring samples
  - Assess hazards
  - Characteristics of space
- Hazard Mitigation
  - Avoid the hazard
  - Remove the hazard
  - Control the hazard
  - Use personal protective equipment

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2. Safety of the Victim

- Is the victim conscious?
- Is the Victim unconscious?
- Will medical attention be required?
- Will medical personnel need to be notified?
- What type of rescue equipment will be required to safely remove the victim?
- Is there a timeline associated with the rescue because of the condition of the victim?

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3. Assessment of the Situation

- Hazards Present
  - Atmospheric
  - Energy Sources
  - Entrapment
  - Fall
  - Fire / Explosion
  - Hazardous Material
- Hazard Mitigation
  - Risks associated with the rescue
  - Length of time to implement any hazard controls

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3. Assessment of the Situation

- Distance required for rescue
- Rescue Problem within Capabilities of the Department / Team

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4. Type of Rescue

- Offensive (rescue)
  1. Are lives at risk
  2. Complexity of the rescue
  3. Hazards are known and controllable
  4. Resources are available for the rescue
  5. Incident stabilization prompt and probable
- Defensive (body recovery)
  1. No life probability of victim
  2. Complexity of the rescue
  3. Hazardous conditions still exist
  4. Resources available or unavailable
  5. Stabilization unlikely

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5. Development of the Rescue Plan

- Survival time of the victim
- Confined Space Characteristics
  - Type
  - Function
  - Configuration
  - Construction
  - Size
  - Entry Points (size, number, location)
- Assignment of roles
- Sufficient Personnel (numbers, experience, training)
- Appropriate equipment, Apparatus, Material
- Communication & Communication Equipment
- Interagency Coordination

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5. Development of the Rescue Plan

- Ventilation of space
- Monitoring of space
- Air supply for rescuer's if required
- Control of all sources of energy and engulfment hazards - Including LOTO, Blocking, etc.

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5. Development of the Rescue Plan

- Rigging - will need to determine the types of rescue equipment needed.
  - ✓Slings
  - ✓Rescue Basket
  - ✓Ropes
  - ✓Victim Stabilizers
  - ✓Winche/s

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6. General Public Control and Safety

- Perimeter Control – Depending on type of situation:
  - May need police
  - Barrier tape, ropes, barricades
  - Controlling traffic
  - Limiting access to the rescue area to assigned personnel

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Rapid Intervention Team

- Provides safety backup
- Dressed in same PPE as entry, ready to go
- Cannot be assigned to another task during the rescue

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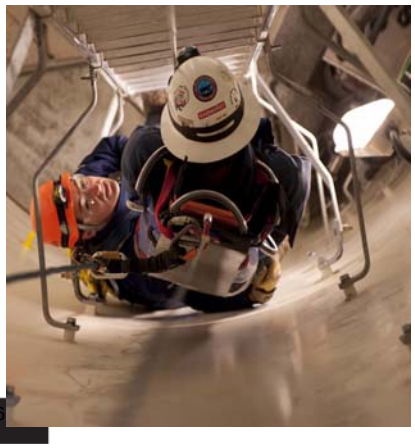
Patient Handling During Training



- Elaborate patient packaging techniques are outside the scope of this course.
  - Each site should design and practice an approach as part of their overall rescue plan.
  - Our primary focus will be on extrication skills.
- For safety reasons, we will seek to minimize the amount of manual patient handling.

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After the Rescue

- Debrief
- Re-supply
- Documentation
- Post incident analysis

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F-A-I-L-U-R-E

- **F**ailure to understand the environment
- **A**dditional medical issues not considered
- **I**nadequate rescue skills
- **L**ack of teamwork or training and experience
- **U**nderestimating the logistics of the incident
- **R**escue verse recovery mode not considered
- **E**quipment not mastered

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What's Next?
What do you need to do once you get back to your facility?

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Next Steps

- If you are part of a rescue Team:
  - Obtain a physician's approval or clearance to wear a SCBA.
  - Get fit tested.
  - Know your rescue plan.
  - Become familiar with the confined spaces that you have in your facility.
  - Know what equipment will be necessary for each Confined Space, should a rescue be necessary.
  - Know the hazards associated with each confined space.
  - Know how to eliminate the hazards associated with the confined spaces.
  - Practice, practice, practice
  - Retrain when new confined spaces are added or when something regarding an existing confined space changes.

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Confined Space

Entry Rescue

- Most difficult and risky
- Requires training, equipment and coordination of efforts

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Rescue Review

Let's look at some CSR equipment set ups and rescue scenarios

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