

Confined Space Rescue Awareness



An Overview of Confined Space Rescue

Course Objectives

- Provide the attendee with the basic understanding of the requirements of Confined Space Rescue so that the attendee can go to the next step of becoming fully trained in Confined Space Rescue.
- Review of why Confined Spaces can be dangerous.
- Review of the 3 rescue techniques
 1. Non-entry
 2. Entry by Others
 3. Entry by Trained employees from the company
- Review the PPE – Personal Protective Equipment that may be required for Confined Space Entry.
- Look at Response Time and importance of Response time.
- Become familiar with some of the Rescue Equipment that may be required in a CS Rescue.
- Review the importance of Lockout Tagout or elimination and removal of potential hazards.
- Review key points associated with a Confined Space Rescue Plan.

This Presentation

- This presentation is not designed to certify or train you on Confined Space Rescue.
- Confined Space Rescue training and certification should only be completed by the authorization of your company.
- This program is designed as an Awareness Training session.

Technical Rescue Awareness

**The biggest difference
between a hero and a
fool is training.**

City of Anderson, SC - Fire Department

Let's Review for a Moment



Are Confined Spaces Dangerous?

- **According to a report from the Canadian Centre for Occupational Health and Safety (www.ccohs.ca):**
 - Many workers are injured and killed each year while working in confined spaces. An estimated 60% of the fatalities have been among the would-be rescuers.



Emergency Rescue

- ❑ Emergency rescue teams must be available while authorized entrants are in the confined space.
- ❑ Deaths often occur during rescue. Employees attempt to rescue an entrant without the proper training and then get caught themselves in the confined space.



Rescue Techniques

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

Rescue Techniques

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.



Rescue Techniques

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.



Rescue Techniques

2. **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.

Rescue Techniques

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.



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.



Personal Protective Equipment

- One of the most important components of PPE in a confined space is a respirator.
- All respirators must be fit tested prior to use.
- Cleaning the respirator after each use will help disinfect it.
- Before each use of the respirator, it must be inspected to make sure that there are no cracks, holes, signs of wear or loose connections.



Personal Protective Equipment

- Other forms of PPE can include hard hats, safety glasses, clothing that protects the torso against chemicals, fires and other hazards, as well as gloves and safety shoes that protect the hands and feet from various hazards.



Let's Take a Look at Response Time



Defining Response Time

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



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.

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.

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.

Ropes



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



Harness

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



Tripods

- Used for
 - Access to vertical entry
- Most common in Rescue:
 - 9-foot height or greater



Winches

- **Used for**
 - **Assist with tripods**
- **Most common:**
 - **Retractable designated for non-entry rescue**
 - **Certified as a primary lowering device**



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**



Lockout Tagout

- **Remember, you have to be authorized to perform lockout tagout, according to MIOSHA regulations.**



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.



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.



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

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.*

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

Incident Commander 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**

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



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?

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



3. Assessment of the Situation

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

https://www.youtube.com/watch?feature=player_embedded&v=BeaX0IRjyd8

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



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



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.



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



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
- **When entrance covers are removed, guard the opening immediately**



Rapid Intervention Team

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



After the Rescue

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



What Creates 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

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

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.
 - 1910.146(k)(2)(iv) – Ensure that affected employees practice at least once every 12 months--Practice, practice, practice & more practice
 - Retrain when new confined spaces are added or when something regarding an existing confined space changes.

Conclusion

- The entry supervisor needs to ensure that the confined space operations conform to the permit. They should remove unauthorized personnel from the area and keep them from entering the space. The entry supervisor terminates and cancels the permit at the right time.
- Make sure each hazard is identified and controlled before entering a confined space.
- Fully understand the requirements of a confined space rescue:, including commanding the confined space rescue and control of the area.
- Always report any concerns you may have regarding confined spaces.
- **Emergency rescues should only be made by trained personnel or a rescue service.**