

APPENDIX XIV: Confined Space Rescue – Awareness (Sample)

Course Description:

This course is designed to provide adequate education and training for personnel who have potential to be first responders to a confined space rescue incident. This course provides information on identification of confined spaces, common hazards associated with confined spaces, and operational limitations for the first responder.

Course Objectives

Terminal Objective:

To offer safe scene management and emergency operations during a confined space incident. This is designed to prevent injury or death to the rescue worker while operating within applicable laws and administrative policies.

Enabling Objectives:

Upon completion of this course, the firefighter shall demonstrate the ability to:

1. Define and identify a confined space including, but not limited to, trench rescue scenario.
2. Describe hazardous Atmospheres including O₂ concentration and IDLH.
3. Describe hazards associated with confined space rescue.
4. Identify training levels required for confined space entry.
5. Identify and describe safety practices and limitations placed on firefighters as it relates to confined space rescue.
6. Identify and discuss any department policies and procedures related to confined space rescue incidents.

Related Performance Standards:

- NFPA 1001: 4-4.2 (1997 edition)
- WAC 296-305-05003
- WAC 296-62-145, Part M

Course Materials

Suggested Materials:

- ❑ Essentials of Firefighting, IFSTA 4th Edition, chapter 7
- ❑ Applicable policies and procedures
- ❑ Video – Confined Space Rescue, First Due Rescue Company; American Safety Video Publishers
- ❑ Student handout – Confined space entry permit
- ❑ Confined space quiz and answer key

Course Overview

	Preparation	15 Minutes
	Introduction/Motivation	
I.	Presentation	175 Minutes
	Definitions/Training Levels	
	Types of Confined Space	
	Associated Hazards	
	Video-Confined Space Rescue	
	Roles and Responsibilities	
	Legal requirements	
	Conclusion	
II.	Application	30 Minutes
	Discussion Questions	
III.	Evaluation	20 Minutes
	Quiz (20 question)	

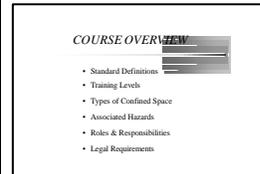
I - Preparation

15 Minutes

1. Introduction/Motivation

Introduce self, class, and any special concerns or conveniences.

Cover course objectives.



II - Presentation

90 Minutes

Explain

1. Define confined space and training levels

This tends to be a High risk / Low frequency type of incident, however, with the area growth and vast amount of construction the potential for an incident is much greater.

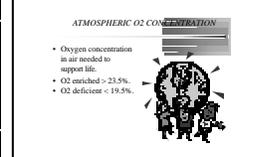
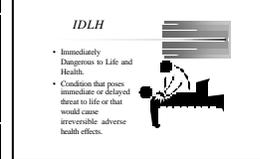
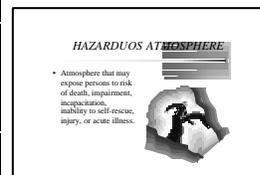
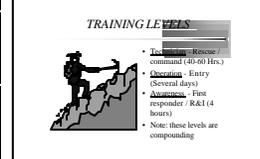
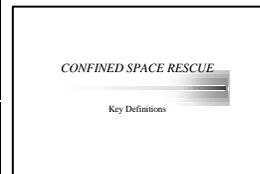
TECHNITIAN (40-60 hours training) - Special skills and retrieval systems, patient evacuation, communications and command, familiarity with various types of confined spaces, monitoring-assessment-ventilation techniques. **THIS IS NOT YOU!!!**

OPERATION (several days training) - Safe entry and rescue techniques, atmospheric monitoring, assess hazards and risks. **THIS IS NOT YOU!!!**

AWARNESS (few hours training) – Recognize, secure, and call for resources. **THIS WILL BE YOU!!!**

2. Other key definitions

These are not the only definitions associated with Confined space rescue, but are the critical ones you should know and understand.



II – Presentation, continued

3. Types of confined space

Trench / excavation: (Be sure to cover Trench in detail explaining to students that while considered by standards to be different from confined space techniques, Awareness level roles and responsibilities remain the same.)

- All soils considered unstable for rescuers concern; after all, rescuers are most likely there because of a previous collapse
- Trench defined as excavation deeper than it is wide
- $\geq 4'$ depth requires shoring, $>20'$ requires engineered shoring
- Means of exit required w/in 25' of work area
- Spoil pile must be $>2'$ from excavation
- Required shoring material is 6"x6" stock (Rescue argues 4"x4" is acceptable).

Vaults:

Most common vaults in our area are underground utility and mechanical Vaults.

Manholes:

Could be access to a vault but more common in our area to be access to sewer, water, and storm drain systems.

Storage tanks:

Above or below ground holding tanks for fuel, water, septic, or other.

Building collapse:

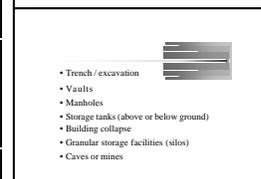
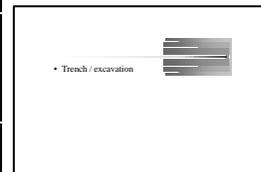
Being in an earthquake prone area and having older structures that have not been retrofitted, we have a good potential for structural collapse. Explain how voids can be created within a fallen structure.

Silos:

Luckily we don't have many, if any at all, within our area. These are death traps with special considerations. Used in grain and other such material storage.

Caves or mines:

Again, we don't have many to worry about. Keep in mind atmospheric and collapse problems.



II – Presentation, continued

4. Hazards associated with confined space

Atmospheric problems - This is the greatest reason for concern in most confined space situations and account for 60% of confined space deaths. In confined spaces, many gasses linger and present an IDLH condition both in the form of inhalation dangers as well as flammable / combustible (LEL) dangers. Many of these gasses, which displace the oxygen, are colorless, odorless, tasteless, and deadly. Discuss briefly some of the effects of gasses that may be present in a confined space such as CO, CO₂, Methane, and Hydrogen Sulfide.

Fall hazards - Most confined space configurations are below ground or elevated and are accessed by steep ladders. These ladders are usually slippery and are made with small foot surfaces (i.e. steps in a manhole)

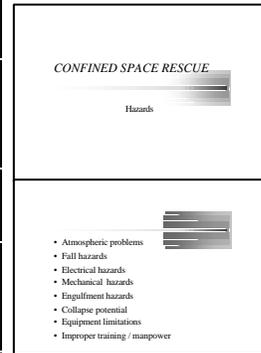
Electrical or mechanical hazards - Vaults that store these items will create an extra hazard inside a confined space. If possible secure power to reduce risk.

Engulfment danger - This is a special consideration in confined space where the area can be immediately Filled or flooded with gas, liquid, or fire with little or no warning.

Collapse potential - In trench rescue or building collapse scenarios where scene is already unstable (thus the reason for rescue), expect further deterioration of the area.

Equipment limitations - Bunker gear while being good heat protection is poor protection from chemical and/or corrosive agents. SCBA's are limited in confined space because of their bulkiness. Need proper tools and equipment to ensure safe operation, including fall protection, which we may not have.

Improper training / manpower- Rescuers do not plan to die when trying to help those in need. These are good people with good intentions that lack understanding of the situation. They are unable to recognize all hazards and lack knowledge on potential risks. Confined space emergencies are VERY labor intensive; make sure you have ample manpower.



II – Presentation, Video

25 Minutes

Show video – Confined Space Rescue

II – Presentation, continued

60 Minutes

5. Roles and responsibilities of the first responder

IMS

For a successful operation, it is imperative that command structure is developed early. Start IMS to handle the worst and downgrade as necessary for it is easier to reduce command structure than to expand it after operations begin.

Evaluate

Figure out if there is a confined space emergency to begin with, determine the number of patients (if any), and determine if it is rescue vs. recovery.

Hazards

Identify if any hazards are present, to what extent, and special considerations because of hazards. Is there any type of contamination present or possible (HazMat)? If so, figure type, extent, and problems it may create like where contaminants are going.

Points / persons of interest

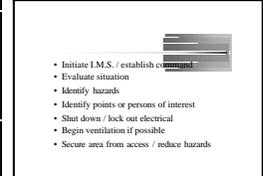
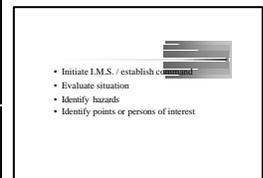
If possible, identify job foreman or someone else involved in incident prior to emergency and DO NOT let this person go. They are a valuable source of information. Identify MSDS, existing ventilation systems, points of entry, and if there is an entry permit. Fire department can use their entry permit if available. If not, department can produce their own. In any case, one must be present before entry is made.

Shut down / lock out

When performing shut down, be careful that it won't shut down or disable essential systems such as ventilation equipment.

Ventilation

Begin ventilation procedures if possible, the earlier the better. Do not ventilate with pure O2.



Hand out

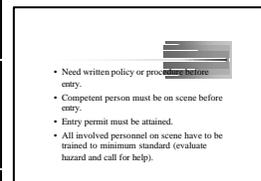
II – Presentation, continued

20 Minutes

Secure / reduce hazards
Establish hot, warm, and cold zones and stay out. Restrict access by everyone, evacuate necessary areas, and shut off, move, or stabilize equipment around site.

6. Legal requirements

These are in accordance with NFPA 1001 and WAC 296



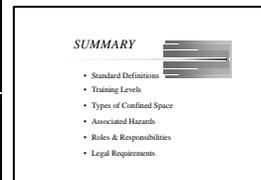
III – Application

20 Minutes

Review

1. Review / recap

Restate in summary the course objectives to confirm student understanding.



Discuss

2. Suggested Discussion Questions

Lead a guided discussion based on the following photographs:

1. Type = vault, manhole, tank; Hazards = IDLH atmosphere, fall, engulfment, mechanical; Actions = identify, set up command, isolate.
2. Type = trench; Hazards = IDLH atmosphere, fall, collapse; Actions = identify, set up command, isolate.
3. Type = well, manhole; Hazards = IDLH atmosphere, fall, engulfment; Actions = identify, set up command, isolate.



III – Application, continued

Lead a guided discussion based on safety systems in the following photographs:

1. Ventilation, equipment, training levels.
2. Shoring, equipment, training levels.

4. Conclusion

If you leave this class with anything, the most important thing to remember is, First responders must not enter confined spaces!!!
Even if there are victims that may be rescued.



III – Evaluation

20 Minutes

Evaluate

1. Performance Evaluation

Have each student complete quiz.