

# Confined Space Rescue

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## 15.1700 Scope:

Historically, across our nation, many rescuers have lost their lives attempting to unsafely rescue other fatalities located in confined spaces. Facilities and businesses that have confined spaces are required to provide on-site rescue capabilities according to OSHA. Our department should only be called to assist private industry with rescue operations if they are performing their job properly. OSHA will likely thoroughly investigate all accidents in confined spaces so it is imperative that operations be safely conducted and recorded. As an example, companies are required to have a retrieval device set up prior to conducting work in a confined space.

## 15.1701 Definition:

Confined spaces include, caverns, pipes, tunnels, tanks, ventilation or exhaust shafts/vents, manholes, and other locations where ventilation and access are restricted by the configuration of the space. These factors may also apply to basements, cellars, crawl spaces, trenches or other similar areas.

## 15.1702 Operations:

Confined space operations shall comply with NFPA 1670 Chapter 7 Confined Space standards.

## 15.1703 First Arriving Unit:

The first arriving officer should establish command and begin a size-up. Command should then assess the situation and request assistance from either Appleton or Oshkosh Fire Departments to assist us with their confined space rescue teams.

Command shall request an ambulance to stand by on the scene.

## 15.1704 Size-up:

Command must make a careful size-up before deciding on an action plan. It may be necessary to take immediate action to make a rescue, but this should only be done if there is equipment available that limits the risk of Fire Department personnel.

## 15.1705 Action Plan:

Based on the initial size-up and any information available, Command will have to formulate an action plan to deal with the situation. Many times individuals will want action taken that could risk the live of the rescue personnel.

The Action Plan Should Include The Following:

- a. Isolate the scene and establish “Hot” (working), “Warm” and “Cold” zones
- b. Remove all “un-trained rescuers to the cold zone”. This may require assistance from a police agency
- c. Find a responsible party or a witness to the accident
- d. Locate the confined space entry permit or any other available information about the space
- e. Determine the number of victims and their potential location if possible
- f. Determine the length of time the victims have been down and their potential survivability.
- g. Determine if the situation is a rescue or recovery operation
- h. Determine what potential hazards are associated with the confined space involved (hazardous materials, low oxygen levels, engulfment hazards, etc.)
- i. Ensure that proper shutdown and lockout/tagout procedures are followed for the confined space involved. Assistance should be requested from plant personnel in an industrial situation. See 4.49 for lockout/tagout procedures.

Town of Menasha Fire personnel are only trained to the awareness level for confined space rescue and are not allowed into the confined space. If the victim is attached to a body harness and retrieval line, the rescuers may lift the victim from the confined space area. Caution must be used if it is determined that the victim is viable and further injury may occur during the rescue. Conditions may allow further medical treatment be provided to the victim before removal from the confined space. A body harness, seat harness, or wristlets may be lowered to an uninjured or slightly injured victim for removal from the space.

**15.1706 Safety:**

Specific hazards to be aware of in a confined space:

- a. Possible oxygen deficiency or enrichment
- b. Possible concentrations of flammable gas or vapors
- c. Deficiencies in lighting
- d. Very tight spaces
- e. Temperature – heat
- f. Unexpected ignition sources
- g. Engulfment hazards
- h. Energy sources (electric, steam, air, hydraulic)

To provide adequate support for confined space incidents, a minimum ratio of 2:1 personnel shall be provided. For every person working in the confined space, there shall be 2 personnel outside and available to assist.

A stand-by rescue team with a 1:1 ratio shall be provided for emergency assistance to the team working in the confined space. This team shall be assembled and equipped for emergency response. The team shall be equipped with SCBA and ready to enter the confined space if needed.

The officer in command shall appoint a safety officer.

All personnel entering confined spaces shall use breathing apparatus unless it is determined through recognized air monitoring procedures that the space is free of hazards and sufficient oxygen levels are present. Either self-contained or airline supplied breathing apparatus may be used, depending on the situation. Personnel shall not remove face-pieces or take any other action to compromise the effectiveness of their breathing apparatus while inside the confined space atmosphere. The firefighters rescue harness must be worn under the SCBA. The free end of the lifeline shall be affixed outside the confined space in a manner to prevent it from being pulled inside.

Protective clothing shall be worn as required by the situation, depending on an evaluation of the hazards and the products that may be inside the confined space atmosphere.

When feasible, the officer in command should establish a Ventilation Sector to begin operations directed at providing fresh air and/or exhausting contaminated air from the confined space. Any electrical or mechanical equipment taken inside the confined space, including lighting equipment, shall be an explosion proof type, when any flammable hazard is suspected. When ventilating a confined space containing flammable vapors or gases, ventilation must consider the concentration in relation to the flammable limits.

Time awareness shall be maintained for each member in the confined space. Awareness of the expected exit time for each individual based on air supply at the time of entry shall be kept. A warning at the predetermined time will be given to begin exit procedures. Warning will be provided by radio or other communication systems to team members.

Lifelines shall be used unless they can not be safely used. The lifeline shall be tied to the firefighter's rescue harness and not his breathing equipment.

**15.1707 Communications:**

The entry team(s) shall maintain constant radio communications with the officer in command. Should radio communications fail or not be used, communication shall be maintained with the lifeline. The following rope signals will be used to communicate basic messages:

- a. 1 pull on rope - Q OK
- b. 2 pulls on rope - A Allow slack
- c. 3 pulls on rope - T Take up slack
- d. 4 pulls on rope - H Help

When using rope to communicate, remember the word O-A-T-H.

**15.1708 Post-Incident Report:**

Have all personnel involved document their observations and actions on the fire report or a supplemental report.

