

Confined Space Operations

A-020

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Incidents, which require Fire Department personnel to enter confined spaces to fight fires or to rescue and remove persons in need of assistance, present very serious potential dangers. In order to operate safely in these situations, special precautions must be taken and rigidly enforced.

Confined spaces include caverns, trenches, pipes, tanks, and any other locations where ventilation and access are restricted by the configuration of the space. These factors may also apply to basements. Confined space incidents may involve injured persons, persons asphyxiated or overcome by toxic substances, cave-ins, or fires occurring within the space. Pre-incident planning is an important factor in dealing with these situations.

Operations within confined spaces shall be approached with extreme caution. Direct supervision is required and all safety precautions and procedures shall be rigidly enforced. Operations shall be conducted in a manner that avoids premature commitment to unknown risks.

In order to provide adequate support for confined space incidents, Command shall provide a minimum 2:1 ratio of personnel outside the confined space to support personnel working within. This shall include a stand-by rescue team with a 1:1 ratio to provide emergency assistance to the personnel in the confined space. This team shall be equipped with breathing apparatus and standing by to enter if needed. An EMS Sector (with ALS capability if possible) shall also be provided near the entrance/exit point.

In order to provide this capability, the Union Vale Rescue Squad shall be dispatched on any incident where confined space operations are indicated. A Safety Officer shall also be assigned.

Before allowing personnel to enter a confined space, the officer in command must attempt to gather any available information about the nature of the situation or hazard, particularly as it pertains to the atmosphere inside the space. **THIS IS CRITICAL WHEN THE SITUATION INVOLVES UNCONSCIOUS VICTIMS OR PERSONS WHO MAY HAVE BEEN OVERCOME BY THE ATMOSPHERE INSIDE THE SPACE.** Command must assume that an unsafe atmosphere exists within the confined space until/unless testing establishes it is safe.

When test instruments are available, readings of oxygen concentration, explosive gas or vapor concentrations, carbon monoxide and hydrogen sulfide shall be taken before entering.

ALL PERSONNEL entering confined spaces SHALL use breathing apparatus. Command must evaluate the need for extended duration or airline supplied breathing apparatus and provide for the response of this equipment when necessary.

Breathing apparatus shall be used without exception in confined spaces until or unless analysis of the atmosphere confirms that it is safe to breath. Personnel shall not remove facepieces or take any other action to compromise the effectiveness of their breathing apparatus while inside the confined space atmosphere.

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.

When feasible, 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.

The Safety Officer will consult with Command on the safety measures and precautions to be taken in each case. Command will assign a Safety Officer to assume these responsibilities from the initial stages of the incident until (Department Safety Officer) arrives at the scene. The Safety Officer shall evaluate the risks and enforce all safety requirements associated with the particular situation. If the Safety Officer judges that an operation is unsafe, the operation shall be suspended, and the Tactical Plan revised.

Command shall assure that personnel entering a confined space do not commit themselves to travel within the space beyond a point that provides sufficient air reserve to return and exit safely, with at least a 5-minute safety margin. The time available for operations inside shall be estimated based on air supply and monitored by personnel outside, as well as the entry team. Where feasible, lifelines shall be used by personnel entering the confined space.

An "Entry Sector" shall be established at the entrance/exit to control access to the confined space. Entry Sector personnel shall record the names, assignments, entry times, and SCBA cylinder pressures of all personnel entering the confined space. The Entry Sector will maintain a time awareness of the expected exit time for each individual based on air supply at the time of entry and provide a warning at the predetermined time to begin exit procedures. Warning will be provided by radio or other communications system.

When working in confined spaces with very restricted access, personnel shall wear appropriate attachment device to provide for extrication by rope.

A primary function of the Entry Sector is to control the number of personnel and prevent crowding at the entrance to the confined space.