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**C-4 CONFINED SPACE PROCEDURES****PURPOSE**

The purpose of this policy is to establish the minimum standards and requirements needed for Central Zone Fire Departments to comply with all applicable regulations including Title 8, General industry safety orders (GISO), Article 108, Confined Spaces – 5156, 5157, and 5158 and OSHA 29 CFR 1910.146.

The intent is to provide minimum procedures and guidelines for responding personnel at confined space incidents in order to protect employees from life-threatening or other serious hazards posed by entry and work in confined spaces.

Nothing in this policy shall prevent a department from exceeding these guidelines.

**DEFINITIONS:**

A confined space shall be defined as:

- Large enough and so configured that an employee can enter and perform assigned work; and
- Has limited or restricted means of entry or exit i.e., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are types of spaces that may have limited means of entry; and
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is defined as a confined space that has one or more of the following:

- Contains or has a known potential to contain, a hazardous atmosphere; or
- Contains material with the potential for engulfment; or
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes and tapers to a smaller cross section; or
- Contains any other recognized serious safety or health hazard.

**POLICY/PROCEDURES**

It is the responsibility of all personnel to follow the guidelines in this policy at all times. Supervisors will ensure compliance with these procedures.

All Central Zone firefighting personnel shall be trained to a minimum of Confined Space Awareness Level and shall attend annual refresher training.

It shall be the responsibility of all Central Zone employees engaged in confined space related activities to thoroughly understand, adhere to, and enforce the procedures of this policy, included but not limited to:

- Confined Space Awareness procedures

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- Confined Space Rescue procedures
- Training Requirements for Confined Space

When entering a confined space for rescue purposes, the key word is recognition. Responders must be able to recognize that an incident is in a confined space and may need to request a specialized rescue team.

First Responder personnel shall perform an initial hazard assessment, secure the site and, if possible, establish victim contact. These responders can also perform rescues (retrievals) if circumstances allow within these stated guidelines and standards.

Rescues may be attempted, providing that the rescue team has the necessary protective equipment (PPE) and training. This equipment shall include SCBA appropriate respiratory protection when necessary. Rescue equipment needed is performance-based and is dependent upon what techniques are being utilized based upon sound judgement, properly trained personnel, and the necessary equipment.

**Immediate Victim Removal:**

A patient requires immediate removal from a space if his/her medical condition cannot be treated in the space due to the nature of the medical emergency, configuration or limitations of the space, or hazards.

**PROCEDURES**

Prior to any confined space entry, a hazard assessment of the space shall be completed. The assessment will be carried out by using a Confined Space Entry Permit. This permit will be used as a tool to determine if any IDLH atmosphere or other serious hazards exist or will be created in the workplace.

A hazard assessment will determine if the hazards can be eliminated or controlled by ventilation in the case of atmospheric hazards. If such hazards do exist, the space will be classified as an Permit Required Space. The HIRT team or other qualified specialized team shall be requested to respond to assist in determining if any hazards can be eliminated and what must be done to ensure safety. If it is determined that serious hazards do not exist or can be eliminated or controlled, once the hazards are controlled or eliminated, the space will be classified as a Non-Permit Required Space.

Prior to any Confined Space Entry, an Entry Permit shall be completed. A Confined space Entry Permit should be filled out for the time period required to accomplish the task. The permit may not exceed 24 hours. If personnel leave the space, then a new permit must be completed. An Entry Permit is a document, which complies and authorizes entry into a permit space and shall identify:

- The permit space to be entered
- The purpose of the entry
- The date and the authorized duration of the entry permit
- The authorized entrants within the permit space, by name or other approved means

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- The personnel, by name, currently serving as attendants
- The individuals, by name currently serving as entry supervisor, with a space for the signature or initials or the entry supervisor who originally authorized the entry
- The hazards of the permit space to be entered, if unknown write unknown
- The measures used to isolate the permit space and to eliminate or control permit space hazards before the entry
- The acceptable entry conditions
- The results of initial and periodic tests performed, accompanied by the names or initials of the testers and by an indication of when the tests were performed
- The rescue and emergency service that can be summoned and the means (such as the equipment to use and numbers to call the appropriate dispatch center) for summoning those services
- The communication procedures used by authorized entrants and attendants to maintain contact during entry
- Equipment such as personal protective equipment, testing equipment, communication equipment, alarm systems, and rescue equipment to be provided for compliance
- Any other information whose inclusion is necessary, given the circumstances of the particular confined space, in order to ensure employee safety
- List any other permits that may exist

Prior to any confined space entry including for rescues, the following tests shall be performed in this order:

1. Oxygen (min. 19.5% to max. 23.5%)
2. Flammable gases and vapors (gas or vapor at a concentration greater than 10 percent of its lower flammable limit (LEL))
3. Combustible gases and vapors (greater than 20 percent of the minimum explosive concentration of the particulate)
4. Toxic gases and vapors (Carbon Monoxide, Hydrogen Sulfide)

It is recommended that monitors utilized by the fire departments be calibrated at a minimum of every 30 days and labeled as per Cal OSHA regulation.

Avoid water contact with the monitoring device. Water may damage the monitoring device.

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**C-4 CONFINED SPACE PROCEDURES****ATMOSPHERE TESTING**

- A confined space must be tested initially and as often as necessary to ensure that changes in the atmosphere are identified
- Only personnel familiar and trained with the testing instrument shall be allowed to perform atmosphere testing and determine if the space contains a hazardous atmosphere
- Initial testing of the atmosphere must be made from outside the space. Testing of more remote areas in the space may be made only if the immediate area to be entered has been proven safe or SCBA or other approved respiratory protection and other personal protective equipment are worn. When the qualified tester enters the space, he/she must wear a safety harness and lifeline tended by an attendant and rescue team with extrication equipment to help in emergency removal. If configurations of the space prevents initial testing from the outside, or entry and rescue team would be unfeasible, the qualified tester must wear SCBA.

**HAZARD ASSESSMENT** – (Also see Title 8, Article 108 § 5157 Appendix A Through E.)

1. Evaluate, isolate and eliminate if possible any hazardous substance or energy.
2. Open the space if determined safe to do so.
3. Test atmosphere, assess hazardous conditions and determine measures needed.
4. Ventilate and implement other safety measures.
5. Retest space if hazardous atmosphere was present before ventilation.
6. Draft and post entry permit.
7. Assign personnel including any needed specialized personnel and conduct a pre-entry safety briefing.
8. Request appropriate resources dependent on the circumstances

**RESCUE**

Prior to entry for a rescue, the Incident Commander and other Rescuer(s) shall discuss an entry strategy including:

- Hazards
- Special space conditions
- Utilization of specialized personnel
- Patient handling strategy
- Work time allowed in the space
- Objectives

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The Incident Commander must stay at the scene and monitor rescue activities during the entire operation. The Incident Commander is responsible to ensure that the (1) necessary precautions are followed before, during, and after entry (2) a visual and verbal check of safety systems is made. However, each team member should check all personal safety equipment prior to entry.

Entry may be made only after hazards have been assessed and addressed and the entry strategy communicated. If one rescuer enters the space, another rescuer must be fully dressed with proper personal protective equipment (PPE) and prepared to enter or support the first rescuer if problems occur. In addition, the IRIC and Rapid Intervention Crew (RIC) shall also be in the appropriate PPE.

Each authorized entrant shall use an approved chest or full body harness, with a retrieval line attached at a suitable point so that when rescued, the entrant presents the smallest possible profile.

All entrant(s) shall have communications with the Attendant.

Once ventilation, air testing have been completed and before entry is made, a RIC must be in place. The RIC shall be, at a minimum, in the level of (PPE) as the initial rescuer(s) in case a problem would arise requiring a second rescue effort.

**Incident Commander**

The Incident Commander must control the entry and operation and may designate an assistant to:

- A. Document
- Permit is completed
  - Time for start of entry
  - Rescue team members entering the space
  - SCBA tank pressures before entry
  - Time working in the space.
- B. Confirm the necessary resources ordered and en-route:
- Examples include:
- If needed emergency medical/rescue services.
  - Additional SCBA and/or air tanks.
  - Retrieval equipment, if needed.

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**C-4 CONFINED SPACE PROCEDURES****PRE-ENTRY PROCEDURES AND TESTING**

Prior to opening the confined space, use the confined space entry permit to list any known physical or atmospheric hazards and indicate the pre-entry procedures.

**A. ISOLATION AND ELIMINATION OF HAZARDS**

- Make contact with the supervisor or property owner of a confined space.
- De-energize or remove all electrical and mechanical equipment from confined space that may cause injury or entrapment.

**B. VENTILATION**

- All confined spaces are required to have (4) air changes per hour. This requires knowledge of the volume of the space and capacity of the air moving equipment.
- To ensure a safe atmosphere confined spaces **MUST** be adequately ventilated with moving air. At least two man ways or covers **MUST BE** opened, when possible, to facilitate forced or natural air movement through the confined space.
- Spaces must only be naturally ventilated before **INITIAL** atmosphere testing.

**LOCK OUT TAG OUT**

- All fixed mechanical devices and equipment capable of causing injury should be placed in a zero mechanical state (ZMS).
- All electrical equipment (excluding lighting) should be locked out in the open (off) position a key type padlock or tagged out with a Confined Space Rescue lock out tag.
- All hydraulic lines or feed lines should be disconnected and blanked or blinded, locked and tagged.
- Any keys for locks used to make the entry safe should remain with the Entrants, or with Confined Space Safety Officer.
- In cases where only tag out is possible, equipment will be properly tagged and physical security should be assigned. This would mean a human resource to stand guard until the rescue has been completed or until relieved by another responsible resource.

All utilities should be locked with a **LOCKING DEVICE** and tagged with a Confined Space Rescue lock out tag.

APPROVED: 08/14/14  
REVISED: 02/06/18