

VIRGINIA DEPARTMENT OF PUBLIC UTILITIES
SAFETY PROGRAMS AND PROCEDURES

Title/Subject: WRITTEN CONFINED SPACE PROGRAM			Index: SAFETY	
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Effective Date: 2/19/2004	Supersedes: 1/21/2004	Page: 1 of 5	Prepared by: George Croft	Approved by: Safety Committee

1.0 **PURPOSE:** To protect our workers when entering confined spaces to perform maintenance and to comply with OSHA regulation (**Standard – 29 CFR**) **1910.146 Permit Required Confined Spaces**

2.0 **ORGANIZATIONS AFFECTED:** This standard applies to all Utility supervisors and their employees who may be required to enter a confined space.

3.0 **ATTACHMENTS:**

- 3.1 OSHA Regulation (Standard – 29 CFR) 1910.146 Permit Required Confined Spaces
- 3.2 Inventory of Confined Spaces
- 3.3 Confined Space Entry Permit
- 3.4 Hot work Permit
- 3.5 Confined Space Decision Flow Chart
- 3.6 Procedure for Meter Readers and Customer Servicemen to read or service meters at the high school

4.0 **DEFINITIONS:**

"Confined space" means a space that:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- (4) Contains any other recognized serious safety or health hazard.

"Non-permit Confined Space" means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

"Confined Space Entry" refers to any action resulting in any part of the entrants body breaking the plane of an opening into a confined space and includes ensuring work activities inside of the confined space are performed safely.

"Hazardous atmosphere" means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness.

"Entry permit (permit)" means the written or printed document that is provided by the employer to allow and control entry into a permit space.

"Hot Work Permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

"Entry supervisor" means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

"Authorized entrant" means an employee who is authorized by the employer to enter a permit space.

"Attendant" means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

"LEL" is Lower Explosive Limit.

“LFL” is Lower Flammable Limit.

“**Lockout-Tagout (LOTO)**” means placing locks or tags on the energy isolating device (e.g. breaker boxes, control switches, valves, etc.) to prevent the unauthorized re-energization of the device or circuit while work is being performed by personnel.

“**Oxygen deficient atmosphere**” means an atmosphere containing less than 19.5 percent oxygen by volume.

“**Oxygen enriched atmosphere**” means an atmosphere containing more than 23.5 percent oxygen by volume.

“**Rescue Service**” means the Virginia Fire Department.

5.0 RESPONSIBILITIES:

5.1 Safety Coordinator

- 5.1.1 Administers the Confined Space Entry Program
- 5.1.2 Updates the program and associated forms as needed
- 5.1.3 Trains employees on the Department’s Confined Space Entry Program
- 5.1.4 Keeps records of:
 - 5.1.4.1 Training
 - 5.1.4.2 Confined space entry permits
 - 5.1.4.3 Hot work permits
 - 5.1.4.4 Air quality monitoring results
- 5.1.5 Investigates possible confined spaces and adds them to the program

5.2 Management

- 5.2.1 Provides proper equipment for confined space entry
- 5.2.2 Ensure confined space assessments have been conducted
- 5.2.3 Confirm the Virginia Fire Department Rescue Personnel have been adequately trained and are prepared to conduct confined space rescue.

5.3 Entry Supervisor - Entry Supervisors are responsible for the overall permit space entry and must coordinate all entry procedures, test, permits, equipment and other relevant activities.

- 5.3.1 Determine that an entry must be made
- 5.3.2 Initiate the permit process and verify that the appropriate entries have been made on the permit.
- 5.3.3 Determine if “Hot Work” will be performed.
- 5.3.4 Ensure that LOTO is performed if needed
- 5.3.5 Ensure that Authorized Entrants and Attendants understand their duties.
- 5.3.6 Ensure that Authorized Entrants and Attendants have proper safety equipment.
- 5.3.7 Ensure that Authorized Entrants and Attendants have reviewed communication signals and that they have functional radios or know where phones are located for emergencies.
- 5.3.8 Confirm that the air quality monitor is working properly and fully functional.
- 5.3.9 Confirm that rescue services are available if required.
- 5.3.10 The Entry Supervisor will not enter the confined space for rescue purposes
- 5.3.11 Remove unauthorized persons who enter or attempt to enter the space during entry operations upon notification of the attendant.
- 5.3.12 Determine that entry operations remain consistent with the permit terms and that acceptable entry conditions are maintained whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space.
- 5.3.13 Conducts assessments as necessary to discover new or previously unidentified confined spaces.
- 5.3.14 When they or their employees discover possible confined spaces, notify the Safety Coordinator to investigate.

5.4 Employees

- 5.4.1 Follow program requirements
- 5.4.2 Report any previously unidentified hazards associated with confined spaces
- 5.4.3 Do not interfere with or distract Authorized Entrants or Attendants involved in confined space activities.

5.4.4 Report any newly discovered possible confined spaces to their supervisor or to the Safety Coordinator to investigate.

5.5 Attendants - At least one attendant is required outside the permit space into which entry is authorized for the duration of the entry operation.

5.5.1 Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of the exposure.

5.5.2 The Attendant will not enter the confined space for rescue purposes

5.5.3 Summon rescue and other emergency services as soon as the standby person determines the Entrant(s) need assistance to escape the permit space hazards and shall have communication equipment at the site of the confined space entry operation.

5.5.4 Maintain an accurate count of Entrants in to the permitted space.

5.5.5 Remain outside the permit space during entry operations until relieved by another Attendant.

5.5.6 Communicate with Entrants as necessary to monitor Entrant status and alert Entrants of the need to evacuate.

5.5.7 Monitor activities inside and outside the space to determine if the situation has changed in regard to the safety of the entry and terminate entry procedures if conditions warrant.

5.5.8 Perform non-entry rescues.

5.5.9 Do not perform any duties that may interfere with the primary duties of the Attendant (e.g. monitor and protect the Authorized Entrant(s)).

5.5.10 Warn unauthorized persons that they must stay away from the permitted space.

5.5.11 Advise unauthorized persons that they must exit immediately if they have entered the space.

5.5.12 Inform the authorized Entrants and the Entry Supervisor if unauthorized persons have entered the permitted space.

5.6 Authorized Entrant - All persons entering confined space must be authorized by the Entry Supervisor to enter the permit space, have received the required training, use the proper equipment, and observe the entry procedures and permit. The following Entrant duties are required:

5.6.1 Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of the exposure to the permitted space.

5.6.2 Properly use the equipment required for safe entry including proper fall protection and/or retrieval equipment.

5.6.3 Communicate with the attendant as necessary to enable the attendant to monitor the status of the Entrants and to enable the attendant to alert the Entrants of the need to evacuate the space if necessary.

5.6.4 Alert the attendant whenever the Entrant recognizes any warning signs or symptoms of exposure to a dangerous situation or whenever any prohibited condition is detected.

5.6.5 Exit the permit space as quickly as possible whenever the attendant or Entry Supervisor gives an order to evacuate the permitted space, the Entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or whenever the Entrant detects a prohibited condition.

6.0 GENERAL RULES - During all permit-required confined space entries, the following safety rules must be strictly enforced.

6.1 Only authorized and trained employees may enter a confined space or act as an attendant.

6.2 An attendant shall be present at all times a confined space is occupied

6.3 All confined spaces will be tested with an air quality monitor for oxygen content, carbon monoxide, flammable gases and potential toxic air before an entry is made.

6.4 Continuous monitoring will be done on all permit-required spaces while the space is occupied.

6.5 All confined spaces will be considered "Permit-Required Confined Spaces" until deregulated with proper documentation (45 air quality tests) that the confined space has shown no atmospheric hazards.

6.6 All deregulated spaces shall still be tested for hazardous atmosphere before entry.

6.7 Any deregulated space that fails an atmospheric hazard test will automatically be re-designated a Permit-Required Confined Space.

- 6.8 Personal protective equipment will be provided to employees as necessary for safe entry into the confined space.
- 6.9 Smoking is not permitted inside or near the entrance/exit or near any equipment that ventilated a confined space that is occupied.
- 6.10 No bottom or side entry will be made or work conducted below the level of any hanging material or material which could cause engulfment.
- 6.11 Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
- 6.12 Before an employee enters a confined space, the internal atmosphere shall be tested at three levels; top, middle, and bottom.
- 6.13 When entrance covers are removed, a railing, temporary cover or other temporary barrier shall promptly be positioned to guard the opening that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- 6.14 No employee shall be allowed to enter or to remain in the space if a hazardous atmosphere is present except during rescue operations conducted by the Virginia Fire Department rescue personnel that are trained and equipped.
- 6.15 Continuous forced air ventilation shall be used as follows
 - 6.15.1 An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
 - 6.15.2 The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space
 - 6.15.3 The air quality supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

7.0 PERMITS:

7.1 All Permits

- 7.1.1 The Entry Supervisor shall sign the permit prior to allowing entry and ensure that entry operations remain consistent with the terms on the permit.
- 7.1.2 The entry will be terminated if a potential hazardous situation occurs which exceed the conditions authorized on the permit.
- 7.1.3 Permits will expire before the completion of the shift or if any pre-entry conditions change.
- 7.1.4 The permit will be available at the work site outside the confined space.
- 7.1.5 All confined space entry permits will be turned in to the Safety Coordinator after the work is completed.
- 7.1.6 Permits and related information will be kept for a minimum of one year.
- 7.1.7 In the event of a chemical exposure during a confined space entry, records pertaining to that exposure will be kept for the duration of employment plus 30 years.
- 7.1.8 The permit will be terminated after the entry has been completed.

7.2 Confined Space Permits

- 7.2.1 Confined space entry permits must be completed before any employee enters a permit-required confined space.
- 7.2.2 The permit must be completed and signed by the Entry Supervisor before entry.
- 7.2.3 The Entry Supervisor will ensure that the permit specifies the location, type of work, personal protective measures, authorized Entrants, monitoring equipment, hazards of the permit space and control measures.
- 7.2.4 If rescue equipment is required, it will be so noted on the permit.
- 7.2.5 The procedure for contacting rescue services will also be included on the permit.

7.3 Hot Permits

- 7.3.1 Hot Permits are required if work in the confined space will entail welding, grinding or any other activity that may cause a spark.
- 7.3.2 Hot work requires additional considerations and must be discussed with the Entry Supervisor who will fill out the Hot Work Permit.

8.0 PROCEDURE –

- 8.1 Each employee who enters or is involved in the entry must:

- 8.1.1 Understand the procedures for confined space entry.
 - 8.1.2 Know the hazards of the specific space
 - 8.1.3 Review the specific procedures for each entry
 - 8.1.4 Understand how to use the air quality monitor
 - 8.1.5 Understand how to use entry and rescue equipment.
- 8.2 1910.146 **(k)(3)**. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements:
- 8.2.1 **(k)(3)(i)** Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets may be used in lieu of the chest or full body harness if the employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.
 - 8.2.2 **(k)(3)(ii)** The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.
 - 8.2.3 A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep

9.0 Training - Training shall be provided to each affected employee:

- 9.1 Prior to conducting confined space entry work
- 9.2 Prior to a change in the employee's duties
- 9.3 When there is a change in permit space operations that present a hazard about which an employee has been previously trained
- 9.4 Where there are deviations from the permit space entry procedures outlined by this program or when there are inadequacies in the employee's knowledge or use of these procedures
- 9.5 Employees shall be trained in the proper use of air monitoring equipment prior to conducting confined space entry work, including the use of any applicable safety equipment.