

Clarksville-Montgomery County School System

CONFINED SPACE PROGRAM

OSHA Standard - [29 CFR 1910.146](#)

1.0 **SUMMARY**

In compliance with the permit-required confined space entry standards, the CMCSS Maintenance Department shall identify all permit-required confined spaces in the workplace; prevent unauthorized entry into them, protect authorized workers from hazards; establish entry procedures; establish appropriate training for authorized entrants; entry supervisors and attendants; and document compliance.

The policy is intended to protect confined space workers from toxic, explosive or asphyxiating atmospheres and from possible engulfment from small particles such as liquids, grain or sawdust. Those high-risk occupations include but are not limited to:

- Designated Maintenance Employees
- Any other employee deemed to be at high risk per the permit-required confined space determination.

The Maintenance Department shall administer its permit-required confined space program in accordance with this plan. This Department shall be responsible for coordinating all activities surrounding confined space work within the scope of their activities. The department head or his/her designee shall be responsible for coordinating activities between a department and outside contractors. The department head or his/her designee shall also be responsible for evaluating the workplace to determine if any spaces are permit-required confined spaces. There shall be an entry designated person for each confined space site. The entry designated person shall be responsible for determining if acceptable entry conditions are present at a permit-required confined space where entry is planned, for authorizing entry, for overseeing entry operation, and for terminating entry as required.

Each confined space entry site shall have attendants and authorized entrants. The attendant is an individual stationed outside one permit-required confined space who monitors the authorized entrants and who performs all attendant's duties assigned in the permit-required confined space program. The authorized entrant is the employee who is authorized to enter a permit-required confined space.

2.0 **PURPOSE**

In compliance with the permit-required confined space entry standards, the CMCSS Maintenance department shall identify all permit-required confined spaces in the workplace, prevent unauthorized entry into them, protect authorized workers from hazards, establish entry procedures, establish appropriate training for authorized entrants, entry supervisors, and attendants, and document compliance.

3.0 **APPLICABILITY**

The policy is intended to protect confined space workers from toxic, explosive or asphyxiating atmospheres and from possible engulfment from small particles such as liquids, grain or sawdust. Those high-risk occupations include but are not limited to:

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4.0 **ADMINISTRATION**

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5.0 **DEFINITIONS**

Acceptable entry conditions - the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Confined space - a space that: is large enough and so configured that an employee can bodily enter and perform assigned work; and has a limited or restricted means for entry or exit; and is not designed for continuous employee occupancy.

Engulfment - the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction or crushing.

Entry - the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the body breaks the plane of an opening into the space.

Entry Permit - the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified by the standard.

Hazardous atmosphere - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from:

- Either flammable gas, vapor or mist in excess of 10 percent of its lower flammable limit (LFL)
- Airborne combustible dust at a concentration that meets or exceeds it is LFL or obscures visibility at five (5) feet.
- Atmospheric oxygen concentration below 19.5% or above 23.5%

- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is considered toxic and hazardous by OSHA
- Or any other atmospheric condition that is immediately dangerous to life or health

Non-permit confined space - 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.

Permit-required confined space - a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- 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
- Contains any other recognized serious health or safety hazard.

Permit-required confined space program - the employer's overall program for controlling and, where appropriate, for protecting employees from permit space hazards and for regulating employee entry into permit spaces.

Permit system - the employer's written procedures for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Testing - the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space. (Testing allows the employer to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.)

6.0 **SAFE ENTRY EQUIPMENT**

Each department conducting confined space work shall provide the following equipment as needed at no cost to employees, shall maintain the equipment properly, and shall ensure that employees use the equipment properly. This includes:

- Testing and monitoring equipment
- Ventilating equipment needed to obtain acceptable entry conditions
- Communications equipment necessary for compliance
- Personal protective equipment
- Lighting equipment needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency
- Barriers and shields
- Equipment such as ladders, needed for safe entry and exit

- Rescue and emergency equipment
- Any other equipment necessary for safe entry into and rescue from permit spaces

7.0 POLICY AND PROCEDURE GUIDELINES

Where permit-required confined spaces are located, notice of danger shall be posted where appropriate. Signs reading "Danger - Permit-Required Confined Space, Do Not Enter" will be posted. Since posting manhole entrances is impractical, departments will inform employees who may enter a manhole of the dangers.

It shall be a violation of the Clarksville-Montgomery County School System (CMCSS) safety procedures for employees to enter permit-required confined spaces without completing the permitting process. Failure to follow the permit process shall result in disciplinary action up to and including possible termination of employment.

The permit-required confined space conditions shall be evaluated before entry operations begin by:

- Testing conditions in the permit-required confined space to determine if acceptable entry condition exists before entry is authorized to begin.
- Testing or monitoring the permit-required confined space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
- When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

If it can be demonstrated that the only hazard posed by the permit space is an actual or potential hazardous atmosphere and if it can be demonstrated that continuous forced air ventilation alone is sufficient to maintain the permit-required confined space safe for entry and if monitoring and inspection data supports such conditions, then entry can be made according to the following requirements:

- Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed;
- When entrance covers are removed, a railing, temporary cover, or other temporary barrier 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 shall immediately guard the opening.
- Before an employee enters the space, the internal atmosphere shall be tested with a calibrated, direct reading instrument for oxygen content, flammable gases and vapors, and potential toxic air contaminants.
- There may be no hazardous atmosphere within the space whenever any employee is inside the space.
- Continuous forced air ventilation shall be used and the atmosphere within the space shall be periodically tested as necessary to ensure the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere or the forced air ventilation is 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, or the air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

- If a hazardous atmosphere is detected during entry, each employee shall leave the space immediately, the space shall be evaluated to determine how the hazardous atmosphere developed, and the measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
- The department shall verify that the space is safe for entry and that the measures have been taken through a Confined Space Entry Permit that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space. (ref. [RSK-F003](#)) The permit should be provided to the department head and to the Safety and Health Department.

The department shall provide at least one attendant outside the permit-required confined space into which entry is authorized for the duration of entry operations.

A single attendant may only monitor one permit-required confined space at a time. The appropriate communication equipment shall be available to enable the attendant to respond to an emergency affecting the permit-required confined space being monitored.

If at any time there is any questionable action or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be removed immediately.

***Exception:** If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life.

A full body harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening.

The attendant shall attempt to remove a disabled entrant via the full-body harness with attached lifeline. The attendant is not permitted to enter the space to perform rescue.

In any situation where the use of harness equipment may endanger the worker, use of a hoisting device or safety belt and attached lifeline may be discontinued.

When practical, confined spaces shall be entered through side openings - those within 3-1/2 feet of the bottom. When entry must be made through a top opening, the safety belt shall be of the approved harness type that suspends a person upright and an approved hoisting device or similar apparatus shall be available for lifting workers out of the space.

When air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division I rated per the National Electrical Code and no ignition sources shall be introduced into the area.

Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.

8.0 SPACE RECLASSIFICATION

A space classified by the department as a permit-required confined space may be reclassified as a non-permit confined space if the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space. The permit-required confined space may be reclassified as a non-permit confined space if testing and inspection during the entry demonstrates that the hazards within the space have been eliminated. The space may remain classified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the employer shall reevaluate that space and if necessary, reclassify it as a permit-required confined space.

9.0 CONTRACTORS

When CMCSS arranges to have employees of another employer (contractor) perform work involving confined space entry, the host department shall:

- Inform the contractor that the workplace contains permit-required confined spaces and that permit space entry is allowed only through compliance with this permit space entry program.
- Make safety data sheets available to the contractor should chemicals be involved.

10.0 PRE-ENTRY GUIDELINES

Before entry is authorized, the site designated person shall document the completion of measures to ensure safe permit-required confined space entry operations by specifying acceptable entry conditions, isolating the space, ventilating the space to eliminate or control atmospheric hazards, providing barriers as necessary and verifying that conditions in the space are acceptable for entry.

Equipment preparation prior to isolation of the equipment requiring an entry is required. Every effort must be made to clean and purge the area of any hazardous contents. This should be done until atmospheric testing indicates levels are below any concentration that could cause a physical or health hazard.

Equipment isolation is to be accomplished by utilization of appropriate lockout/tagout and line-blanking procedures.

Testing before entry for oxygen levels, flammability, and/or any contaminants that have a potential to be present is required. Personnel using equipment that has been checked for proper function must perform the test.

Testing must be performed throughout the entire portion of the space that workers will occupy during the entry. This testing shall be done without the use of ventilation systems. The atmosphere must be tested at various levels since some gases and vapors are lighter or heavier than air, which can result in a layering effect.

The following conditions must be met before the atmosphere is considered safe:

- An "LFL" reading of 0 through 10%
- An oxygen level between 19.5% and 23.5%
- An airborne combustible dust at a concentration that does not obscure vision at a distance of greater than five (5) feet

- An atmospheric concentration of a substance less than the permissible exposure limit.
 1. Carbon Monoxide – 35 PPM
 2. Hydrogen Sulfide – 10 PPM

Entry into the confined space is prohibited until these conditions are all met, or until special protective measures are provided.

Testing must be performed just prior to commencement of the entry and before re-entry if workers have left the site for an extended time period (15-20 minutes).

11.0 **PERMIT ENTRY GUIDELINES**

- Before entry into a confined space is authorized, a Confined Space Entry Permit (ref. [RSK-F003](#)) must be completed documenting compliance with the standard and authorizing entry into the space.
- Before entry is authorized, the appropriate supervisor must document the completion of an entry permit. Before entry begins, the entry supervisor identified on the permit must sign the entry permit to authorize entry. The completed Entry Permit should be provided to the department head and to the Safety and Health Department.
- A mechanical retrieval device shall be available to retrieve personnel from vertical permit-required confined spaces more than five (5) feet deep. Entrants to vertical spaces will also wear a full body harness.
- The completed permit shall be made available at the time of entry to all authorized entrants, by posting it at the entry portal.
- Only employees who are trained in confined space procedures will be named entrants.
- The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit. In no event shall a permit exceed the duration of a work shift.
- The entry supervisor shall terminate entry and cancel the entry permit when:
 1. The entry operations covered by the entry permit have been completed; or
 2. A condition that is not allowed under the entry permit arises in or near the permit space.
- Upon terminating the entry, a copy of the permit and reason for termination shall be forwarded to the department head and the Safety and Health Department.

12.0 **ADDITIONAL GUIDELINES FOR SEWER ENTRY**

- Only employees who are trained in confined space procedures will be named entrants.
- The entry supervisor, before permitting entry into a sewer, shall consider events such as rainstorms and fire suppression activities.
- Because conditions are subject to change, employees who enter sewer systems must conduct continuous atmospheric monitoring of the space at the employees work location.

13.0 TRAINING

The Maintenance department shall provide annual training so that all appropriate employees acquire the understanding, knowledge and skills necessary for the safe performance of the duties assigned them related to confined space entry. Training shall include:

- Hazard recognition
- Use of personal protective equipment
- Self-rescue techniques
- Any special work practices or procedures needed to perform work in the confined space safely
- Lockout/tagout procedures for equipment
- Use of atmospheric equipment.

Training shall be provided to each affected employee before the employee is first assigned duties under this program, whenever there is a change in the assigned duties, whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained, whenever CMCSS has reason to believe either that there are deviations from the permit-required confined space entry procedures, or if there are inadequacies in the employee's knowledge or use of the procedures.

Training shall establish employee proficiency in the duties required and shall introduce new and revised procedures as necessary for compliance with this program.

The Maintenance department will verify that training has been accomplished.

Any employee required or permitted to pre-check or enter a confined space shall have successfully completed, as a minimum, the training as required by the sections of these procedures.

Employees may not perform any entry space tasks until the employee has demonstrated possession of the appropriate skills.

Authorized entrants must be trained to recognize confined space hazards, including information on the mode of exposure, signs or symptoms, and consequences of exposure, proper use of personal protective equipment; use of communication equipment; and procedures for exiting a permit space.

Attendants must be trained to remain outside entry spaces during operations, perform non-entry rescue, recognize existing and potential hazards, use of communication devices, understand when to order evacuation of a permit space, and understand when to summon rescue and other emergency services.

Site supervisors must be trained to recognize space hazards, verification of emergency plans, tests, permits, procedures and equipment, when to terminate entry and when to cancel permits.

14.0 RESCUE AND EMERGENCY GUIDELINES

- Non-entry rescue is the primary rescue method.
- If necessary, the attendant shall perform non-entry rescue only.
- In the event of a situation requiring emergency medical attention or rescue other than a non-entry rescue, CMCSS will utilize the Montgomery County Emergency Medical Service and the Clarksville Fire Department.

- The designated attendant shall be the individual responsible for monitoring activities inside and outside the confined space and summoning rescue and other emergency services.
- Safety Data Sheets (SDS) maintained by CMCSS shall be made available to emergency responders and medical facilities treating entrants exposed to hazardous materials.

Associated Documents: [RSK-F003](#) Confined Space Entry Permit