

# Confined Space Entry Program

## Introduction

Harford Community College is committed to providing a safe and healthful work environment for all employees and visitors and complies with Federal and State Occupational Health and Safety standards. Administrators, faculty and staff share the responsibility of ensuring protection of all employees from injury.

The Confined Space Entry Program is designed to identify confined spaces on campus and to eliminate or control hazards that may be present. Any entry into a confined space will be done in accordance with OSHA standards and other regulatory guidelines that may apply. No individual shall enter a confined space without following the Confined Space Entry Program. HCC has determined that some permit-required confined spaces exist on campus; no HCC employee is permitted to enter these spaces.

## Definitions

Employees who enter confined spaces should understand the terminology that may affect their safety in a confined space entry and confined space rescue.

**Alternate Entry Procedure:** A procedure that may be used to enter a confined space if the only hazard present in the space is atmospheric in nature and:

The atmospheric hazard can be controlled by mechanical ventilation alone; and

The permit space will not become immediately dangerous to life or health (IDLH) if the mechanical ventilation should fail.

**Attendant:** an individual stationed outside of one or more Confined Spaces to monitor the authorized entrants and perform specified duties as described under the Responsibilities section of this program.

**Authorized entrant:** An HCC employee who is authorized by the campus to enter a confined space.

**Confined Space:** a space that:

- a. Is large enough and so configured that an employee can enter and perform assigned work;
- b. Has limited or restricted means for entry or exit; and
- c. Is not designed for continuous employee occupancy. (See also, Permit-Required Confined Space and Non-Permit-Required Confined Space.)

**Entry:** the action by which any part of a person's body passes through an opening into a permit-required Confined Space. Entry includes ensuing work activities in that space.

**Entry Permit:** the written/printed document that is signed by the entry supervisor to allow and control entry into a regulated Confined Space. The permit contains the information required by regulation. (See the Confined Space Entry Permit in Appendix II of this plan.)

**Entry Supervisor:** the individual responsible for determining if acceptable entry conditions are present at a permit space where entry is planned.

**Hazardous Atmosphere:** an atmosphere that may expose employees to the risk of death, injury, impairment of ability to escape unaided or acute illness from one or more of the following causes:

- a. Flammable gas, vapor or mist in excess of 10% of its lower flammability limit (LFL);
- b. Airborne combustible dust at a concentration that meets or exceeds its LFL; (Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less);
- c. Atmospheric oxygen concentration below 19.5% or above 23.5%;
- d. Atmospheric concentrations of any substance for which a dose, permissible exposure limit (PEL) or threshold limit value (TLV) exists and which could result in employee exposure in excess of its limit; and
- e. Any other atmospheric condition that is immediately dangerous to life or health.

**Isolation:** a process of physically interrupting and/or disconnecting, pipes, lines and energy sources from the Confined Space.

**Lockout/Tagout:** the placement of a lock and/or tag on an energy-isolating device, indicating that the device shall not be operated until removal of the lock and/or tag in accordance with established procedure.

**Non-Permit Required Confined Space (as defined by OSHA standard):** a Confined Space that does not contain or have the potential to contain any atmospheric hazard capable of causing death or serious physical harm.

**Oxygen-Deficient Atmosphere:** an atmosphere containing less than 19.5% oxygen by volume.

**Oxygen-Enriched Atmosphere:** an atmosphere containing more than 23.5% oxygen by volume.

**Permit-Required Confined Space (as defined by OSHA standard):** a Confined Space that has one or more of the following characteristics:

- a. Contains or has the potential to contain a hazardous atmosphere; OR
- b. Contains a material that has the potential for entrapping, engulfing or suffocating an entrant; OR
- c. 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
- d. Contains any other recognized serious safety or health hazard.

## References

- Code of Maryland Regulations COMAR Title 9 Subtitle 12 Section 35 (9.12.35)
- Code of Federal Regulations Title 29 Part 1910.146

## Responsibilities

### Manager of Health and Safety

- a. Establish and update the written Confined Space Program.
- b. Arrange training as necessary.
- c. Review records of confined space entry operations.
- d. Provide information to departments that enter confined spaces.

### Facilities Maintenance Manager

- a. Ensure that all employees who are involved with a confined space entry (including Authorized Entrant, Attendant, and Entry Supervisor) have received training.
- b. Provide and maintain equipment that is needed for confined space entry including (but not limited to): atmospheric testing equipment, protective barriers, ventilation devices, and rescue equipment.

- c. Ensure that all confined space entries involving Facilities personnel are done so according to this procedure.
- d. Maintain records of all confined space entries as required.

**Confined Space Entry Supervisor**

- a. Ensure that all persons involved in a confined space entry are properly trained and follow the appropriate procedures.
- b. Evaluate and the confined space prior to entry.
- c. The Entry Supervisor does not need to be present during the entire confined space entry operation.

**Confined Space Authorized Entrant(s)**

- a. Must have completed training.
- b. Must stay in constant contact with the Attendant (i.e. sight, voice, radio).

**Entry Attendant**

- a. Must have completed training.
- b. Monitor pedestrian barriers to protect Authorized Entrants from external hazards.
- c. Monitor the atmosphere within the confined space during the entire entry operation.
- d. Must remain in position until relieved by another trained Attendant.
- e. Ensure that all lockout/tag-out measures (if implemented) remain in place.
- f. Responsible for ordering an evacuation if a situation develops that could endanger the Authorized Entrant.

**Confined Spaces on Campus**

The following areas have been determined to be confined spaces on the Harford Community College campus:

<b>Building</b>	<b>Space Name</b>	<b>Permit/Non Permit</b>	<b>Entry Type</b>
Aberdeen Hall	Neutralization/Dilution tank	Non Permit	Alternate Entry
Aberdeen Hall Edgewood Hall Fallston Hall Susquehanna Center	Septic Lift Stations	Non Permit	Alternate Entry with ventilation
Campus Wide	Boilers	Permit	No Entry by HCC employee will be permitted at anytime

The Mechanical Room at Joppa Hall is not considered a confined space; however, any entry by an HCC employee after activation of the refrigeration alarm is strictly prohibited.

**Space Evaluation**

1. All confined spaces are to be evaluated by an Entry Supervisor prior to authorizing an entry.
2. To be classified as an "Alternate Entry" space, the following conditions must exist:
  - a. The only hazard in the space is the potential for a hazardous atmosphere; and
  - b. The potential hazard can be eliminated through the use of continuous forced ventilation; and
  - c. Previous and current atmospheric monitoring data must demonstrate that (a) and (b) are true (i.e., there has never been a record of an atmospheric hazard during an entry).
3. If the above conditions (2a, 2b, and 2c) are true, and the gas test(s) indicate that the atmosphere is non-hazardous, the space may then be entered using "Alternate Entry Procedures."
4. If the potential for atmospheric hazard cannot be eliminated with ventilation, the space must not be entered by HCC personnel.

## Alternate Entry Procedures

1. Entry Supervisor shall ensure that the space has been classified as specified in the Space Evaluation section.
2. If an entrance cover must be removed, railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening, and will protect each employee working in the space from foreign objects entering the space shall immediately guard the opening.
3. All hazardous sources of energy shall be locked and/or tagged out.
4. Ensure that all air has been tested for hazardous air contaminants and that the tests were negative. Log the test results in the "Record Sheet" (only pre-entry readings need to be entered). The gas detector should be used during the entire entry procedure.
5. Set up adequate ventilation for the space that will be entered. Ensure that the supply air is taken from a clean source and that the ventilation is allowed to operate for at least five minutes prior to entering the space. If the ventilation ceases to operate, all Authorized Entrants must leave the space immediately.
  - a. The Authorized Entrant shall immediately evacuate the confined space if he/she becomes aware of a previously unrecognized hazard.
  - b. The Entry Supervisor may act as an Authorized Entrant during "Alternate Entry Procedure" entries.
  - c. Attendant must be present during all entries.
6. When the confined space entry has concluded, the completed Record Sheet shall be filed and kept on file for a minimum of one year.

## Monitoring Confined Space Air Quality

1. Prior to entering an Alternate Entry to a confined space, prepare the gas detector by ensuring the device has been recently calibrated.
2. **Conduct a "bump test." Breathe into the gas detector and look for a decrease in oxygen concentration--the detector should alarm due to the lack of oxygen.**
3. Before completely opening the space, sample the air quality of the space by slightly moving the lid, or by testing the space through the hole in the lid.
4. Lower the probe slowly, allowing time for the instrument to detect atmospheric changes at different vertical heights within the space. Record the levels of Oxygen in the Atmosphere as well as Methane when dealing with septic systems. Record the results on the "Confined Space Record Sheet."
5. The Attendant shall regularly inspect the gas detector that shall remain on during the entire entry operation. The Attendant shall also record the gas readings on the "Confined Space Record Sheet" at a minimum of once every hour.
6. Stop entry operation and remove entry personnel if the following concentrations are exceeded at any time:
  - a. Oxygen reading less than 19.5% or greater than 22.5%;
  - b. Combustible gas reading greater than 9% LEL;

## Ventilating a Confined Space

1. Set up one or more blowers to provide adequate ventilation for the space.
2. Ensure that the ventilation air supply is from a clean source.
3. Allow enough time for blowers to clear the space before entering.
4. Ensure that the blowers remain on during the entire entry operation. If the blower fails, the Authorized Entrant must leave the space immediately.

## Training

1. All HCC employees who participate in Confined Space Entries including Entry Supervisors, Attendants, and Authorized Entrants, must receive training in the requirements of this program.
2. All HCC employees who are designated as rescue personnel must be trained in proper rescue techniques as well as CPR and First Aid.

## **Contractors**

1. Contractors that enter confined spaces on the HCC campus must comply with the Confined Space Standard as defined in COMAR 09.12.35 and OSHA 1910.146.
2. HCC is not responsible for employees of contractors who enter the College's confined spaces.

## CONFINED SPACE RECORD SHEET

**General Information**

Confined Space Location: _____
Entry Supervisor: _____

Authorized Entrants	Attendants	Standby Person(s)

### 13. SAMPLING RESULTS

EVENT	TIME	PERCENT OXYGEN %O <sub>2</sub>	PERCENT LEL %LEL	Detectable Odors	
				Observed <small>Yes/No</small>	Describe <small>If Yes</small>
<b>Exit space if readings are:</b>		Greater than 22.5% Less than 19.5%	Greater than 500 ppm		
Pre-Entry Readings					
Ventilation Standard					
Entry into PR Space					
Atmospheric Testing Results					
Atmospheric Testing Results					
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<b>Note: Gas detection equipment must be operational during occupancy of any confined space entry</b>					

### 14. NOTES