



PROGRAM: Permit-required Confined Space

Chapter 4

1. Purpose

This document establishes the Permit-Required Confined Space Entry Program for Tidewater Community College (TCC). It is designed to provide for the identification, evaluation, and control of confined space hazards, and ensure that employees and contractors who must enter such locations are trained and apprised of the program. The program provides criteria for identifying confined spaces, including permit-required confined spaces, and establishes the standard precautions and procedures that must be implemented to eliminate potential hazards during actual entries. The program addresses the requirements of the Occupational Safety and Health Administration (OSHA), Title 29 of the Code of Federal Regulations Part 1910.146 (permit-required confined spaces) and Part 1910.269(e) (enclosed spaces).

2. Scope

To provide practices and procedures to protect employees from the hazards associated with entry into permit-required confined spaces. The objectives of this program include:

- To comply with all state and federal regulations regarding confined spaces.
- To assess the feasibility of reducing the total number of confined spaces.
- To limit the number of confined space entries.
- To eliminate potential hazards within the confined spaces prior to entry.
- To establish and implement a permit system for entry into confined spaces.
- To train employees who may work in confined spaces on proper procedures and entry techniques

3. Responsibilities

Responsibilities for the development and implementation of all safety and health programs included in the Classroom, Occupational Safety & Health Plan are defined in the Classroom, Occupational Safety & Health Policy, No. 1300, dated April 18, 2016. Refer to Attachment F of a specific campus' Permit-required Space Program (PRCSP) for the employees responsible for the implementation of the PRCS Program at that location.

The campus Facilities Manager and/or Facilities Supervisor serve as the first contact for issues concerning the departmental confined space program, and is responsible for establishing a written Permit-Required Confined Space Program that includes evaluations of the confined spaces entered by the department and/or contractors. He/she is responsible for establishing and maintaining a training program that will provide exposed employees with the understanding, knowledge, and skills necessary for a safe and proper entry into confined spaces. The campus Facilities Manager or Facilities Forman shall review the Permit-Required Confined Space Program, using the completed permits or

certificates, at least once per year, and shall revise the program as necessary to ensure that employees participating in entry operations are protected from confined space hazards. The Facility Department is responsible for providing employees with the equipment required to properly enter confined spaces.

The campus Facility Manager and/or Facilities Supervisor will also be responsible for identifying workers that may be expected to enter confined spaces, ensuring that these workers receive required training before entering the spaces, and ensuring that their subordinates follow established entry procedures.

Entry Supervisors are the persons responsible for determining if acceptable entry conditions are present at a confined space where entry is planned, authorizing entry, overseeing entry operations, and terminating entry when required. Entry supervisors shall be familiar with 29 CFR 1910.146 (j). Entry supervisors are listed below by title:

- Facilities Manager
- Facilities Foreman
- Qualified Contractor's Entry Supervisor

4. Definitions

Alternate entry procedures: the use of continuous forced air ventilation and atmosphere monitoring in lieu of a permit to enter a permit-required confined space that:

- has an actual or potential hazardous atmosphere that can be demonstrably controlled by continuous forced air ventilation alone; and
- has no other hazards of any kind

Attendant: the trained individual stationed outside the permit space who monitors the authorized entrants and who performs all attendant duties.

Blanking, binding: absolute closure of a pipe, line, or duct by fastening a solid plate that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line or duct with no leakage beyond the plate.

Conditions of entry: the conditions that must exist in a permit space to allow employees to safely enter and perform duties within the space.

Confined space: Confined spaces are locations that meet all three of the following criteria:

- Large enough to enter and perform work
- Has limited or restricted means for entry and exit
- It is not designed for continuous occupancy

Common examples of confined spaces include tanks, vaults, manholes, boilers, tunnels, sewers, sump pits, large HVAC equipment, pipe chases, some crawlspaces, and ductwork interiors. A listing of recognized permit-required confined spaces is maintained and periodically updated (see Appendix A of a specific campus confined space program). Confined spaces are identified according to the confined space evaluation worksheet (see

Appendix B of a specific campus confined space program). Please note that this list is continually revised, and therefore should not be solely relied upon to determine if a location is a confined space.

Contract for work: contracts initiated by the employer.

Double block and bleed: the closure of a line, duct, or pipe by closing and locking/tagging out two in-line valves, and opening and locking/tagging out a drain or vent in the line between the two closed valves.

Emergency: any occurrence (including the failure of hazard control or monitoring equipment) or event, internal or external to the permit space, which could endanger entrants.

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.

Entrant: the trained individual who enters the permit space.

Entry: the action of breaking the plane of an opening of a permit space with any part of the body.

Entry supervisor: the trained individual with the responsibility to:

- Assure that acceptable entry conditions are present within a permit space under his/her jurisdiction
- Issue a permit authorizing entry
- Overseeing entry operations, and
- Terminating the entry and permit

Hazardous atmosphere: an atmosphere that may expose employees to the risk of death, incapacitation, impairment of the ability to escape unaided from a permit space, injury, or acute illness. Hazardous atmospheres may be created by conditions such as, but not limited to:

- Flammable gas, vapors, or mists in excess of the lower flammable limit (LFL)
- Airborne combustible dusts at a concentration that
 - Meets or exceeds the LFL; and/or
 - Obscures vision at a distance of five feet or less
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent
- Atmospheric concentrations at or above the Permissible Exposure Limit (PEL) of substances identified in 29 CFR 1910., Subpart Z, Toxic and Hazardous Substances
- Any other atmospheric conditions which are immediately dangerous to life and health (IDLH)

Immediately dangerous to life and health (IDLH): any condition that:

- Poses an immediate or delayed threat to life
- Would cause irreversible adverse health effects; and/or
- Would interfere with an individual's ability to escape unaided from a permit space

Inerting: the displacement of the atmosphere in a permit space by a noncombustible gas to such an extent that the resulting atmosphere is noncombustible, producing an IDLH oxygen-deficient atmosphere.

Isolation: the complete removal of a permit space from service and the complete protection of that space from the release of energy or material.

Line breaking: the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-permit space: a confined space that does not contain any actual or potential hazards capable of causing death or serious physical harm.

Permit: the written or printed document authorizing entry into a permit space and designating the requirements for entry.

Permit required confined space (permit space): are confined spaces that possess potential hazards that could result in serious injury or death and are therefore subject to all the provisions of this program before entry is allowed. A confined space that contains one or more of the following characteristics is considered a permit-required confined space:

- Contains or could contain a hazardous atmosphere, or
- Contains a material that could potentially engulf an entrant, or
- Possesses an internal configuration that could trap or asphyxiate an entrant such as inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section, or
- Contains any other recognized serious safety or health hazard.

Those spaces identified as entry permit-required confined spaces will be serviced by outside contractors only. The contractors will be responsible for providing an entry permit to the Facility Manager or the Facilities Supervisor prior to the start of work.

Prohibited condition: any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Testing (monitoring): the process by which the hazards that may confront entrants are identified and evaluated. This term includes the specification of tests that are to be performed in the permit space.

5. Procedures

A. Entry Permits and Classification of Spaces

Confined Space Evaluations

All confined spaces will be evaluated by the entry supervisor to determine their classification (non-permit, permit required) and to develop proper entry procedures. When performing confined space evaluations, air monitoring and inspections will be conducted from outside the space. If evaluations cannot be performed from outside the space, the space will be entered using permit-required procedures. A copy of the established confined space evaluation sheet is located in Appendix B.

Permit Required Spaces

If a confined space meets the definition of an entry permit required confined space (see definition, section 4), it will only be serviced by a qualified outside contractor. The contractor must work with the Facilities Manager to provide the appropriate entry permit (Appendix G). Entry procedures for all permit-required confined spaces at each campus are located in Appendix D of their specific program.

The TCC's entry permit request for contractors must include the following:

- The contractor's agreement to maintain all VOSH requested documents and testing
- Name of permit space to be entered, authorized entrant(s), eligible attendants and individuals authorized to be entry supervisors
- Test results
- Tester's initials or signature
- Name and signature of supervisor who authorizes entry
- Purpose of entry and known space hazards
- Measures to be taken to isolate permit spaces and to eliminate or control space hazards
- Name and telephone numbers of rescue and emergency services
- Date and authorized duration of entry
- Acceptable entry conditions
- Communication procedures and equipment to maintain contact during entry
- Special equipment and procedures, including personal protective equipment
- Any other information needed to ensure employee safety

A permitted confined space may be reviewed for use of alternate procedures, reclassified as a non-permit confined space, or entry permit required confined space under the conditions below.

Alternate entry procedures and/or reclassification of a permit-required space as a non-permit confined space may be used in place of a permit-required entry under the following conditions.

- The space poses no actual or potential atmospheric hazards, and
- All hazards within the space are eliminated without entry into the space, and
- Forced air ventilation alone can maintain a safe atmosphere during entry.

Certificates of entry (appendix E) will be required documenting the basis for determining that all hazards have been eliminated in the permit space.

Permit required confined spaces determined to be entry permit required refer to appendix D.

B. Prevention of Unauthorized entry

Posting of Confined Spaces

All confined spaces that can be readily labeled are posted in a manner designed to inform employees of the existence/location of the dangerous space. The sign must read as follows:



Some spaces, such as manholes, are difficult to label in the above-described manner. When labeling is not feasible, training and education will be used to inform employees of the location/classification of the confined space.

Other Necessary Precautions

If it is concluded that posting and training are inadequate to prevent unauthorized entry into permit spaces, fall protection, covers, guardrails, fences, locks or other methods of restricting access shall be considered and implemented.

C. Entry Procedures

Entry procedures have been developed for permitted confined space entered Facilities Department. Specific entry procedures are attached at the end of this program in Appendix D and E.

D. Rescue Procedures

Outside Rescue Services

The Facility Manager and or the Facilities Forman shall meet with a representative of the rescue service and informed them of the locations of confined spaces and the hazards rescuers may confront when called on to perform a rescue at TCC campuses.

Emergency Procedures

A method for summoning rescue and emergency services have been established for each TCC campus Facilities Department, and consists of notifying the 911 call center and Campus Security of the situation and the exact confined space location. The Entry Supervisory may delegate this responsibility if he/she deems it necessary to remain at the confined space.

Rescue Methods

OSHA encourages rescues through methods that do not involve entry by rescuers into a confined space. Attendants should only provide rescue services from outside the space and should not enter the space to offer rescue services. The Attendant and/or the Entry Supervisor are responsible for preventing unauthorized persons in attempting a rescue inside the confined space.

E. Entry Equipment

Available equipment for use in confined space entry at specific TCC campuses is listed in Appendix F.

6. Training

Trained and Qualified Entrants are responsible for working in confined spaces according to guidelines and work practices established by the Facilities Department Facility Manager. Qualified Entrants are also responsible for refusing to work in confined spaces until an Entry Supervisor or Contractor Entry Supervisor has deemed entry to be safe and has given approval for entry, or if a hazard is identified while working in the confined space. See Appendix C for a listing of Qualified Entrants for this facility.

Training Frequency

Confined Space training will occur:

- Before initial assignment to jobs that would require entry into confined spaces
- When there is a change in assigned duties
- When a change in permit space operations create a new hazard
- Whenever an employee deviates from established procedure
- When inadequacies in an employee's knowledge is identified

Confined space training will establish employee proficiency in the duties required by the confined space standard.

Training documents will include the employee's name, signature of the trainer, and the dates of the training. Appendix I

Training Content

Training should include:

- Permit-Required confined space identification
- Safe entry techniques
- Rescue procedures
- Ventilation techniques
- Locations of all permit-required confined spaces present at each campus.

APPENDIX A

LISTING OF PERMIT-REQUIRED CONFINED SPACES

TCC CAMPUSES

Permit Required Confined Space

(sample locations at the Virginia Beach Campus)

- 1) Chemical Pit behind Building J
- 2) All Manhole and sewers access points throughout Virginia Beach TCC campus
- 3) All elevator pits/hoist ways on campus
- 4) Air Handling Units – Roof of Science Building

APPENDIX B

CONFINED SPACE EVALUATION WORKSHEET:

**CONFINED SPACE – EVALUATION WORKSHEET
DOCUMENTATION OF CONFINED SPACE EVALUATION**

1. **Potential Confined Space and Specific Location:**

2. **Reasons for Entry and how frequent:**

3. **Is there a potential hazardous atmosphere? If not why?**

4. **List other potential hazards:**

5. **Who last entered and why? Any comments on possible problems during the entries?**

6. **Specific Conditions of the Space and Space Test Data:**

7. **SPACE CLASSIFICATION:** This space meets the following requirements:

Note if the space is classed as IDLH (immediately dangerous to life and health) then a permit must be issued.

NON-PERMIT _____

PERMIT _____

ALTERNATIVE PROCEDURES _____ RECLASSIFICATION _____ ENTRY PERMIT _____

Entry Supervisor _____

Date _____

The following information must be gathered and recorded. The evaluator must also sign the assessment sheet and make sure that this is available to employees entering the space.

The initial step in assessing a space is to determine if the space is a “confined space” then to assess the space as to whether it is permit-required or non-permit. It is critical that the assessor uses VOSHA’s definition for each of these types of spaces in making the determination:

Step 1: Confined Space Determination

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- 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
- Is not designed for continuous employee occupancy.

Step 2: Non-permit Space

Non-permit confined space – means a space where there is an extremely low likelihood that an IDLH (immediately dangerous to life and health) or engulfment hazard could be present, and where all other serious hazards have been controlled. The VOSH standard defines a non-permit space as:

“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.”

Step 3: Permit Required

Permit-Required Spaces: means an atmosphere which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes: flammable or combustible gases, oxygen deficient or enriched atmospheres, toxic atmospheres, engulfment, and other serious physical hazards.

These types of spaces will have limited or restricted means for entry or exit. These spaces are also not designed for continuous employee occupancy.

Step 4: Alternate Procedures, Reclassification, Entry Permit Required

Alternate entry procedures may be used in place of a permit-required entry under the following conditions:

- The only hazard in the confined space is an actual or potential hazardous atmosphere.
- Forced air ventilation alone can maintain a safe atmosphere during entry

Reclassified entry of a permit-required confined space to a non-permit confined space under the following conditions.

- The permit space poses no actual or potential atmospheric hazards.
- All hazards within the space are eliminated without entry into the space.

Certificates of entry (Appendix E) will be required documenting the basis for determining that all hazards have been eliminated in the permit space.

Entry permits are required for permit required confined spaces that are not subject to alternate procedures or reclassification. Outside contractors are to be engaged to perform the required work.

Step 5: Determining Need for Hot Work Permit

Hot Work Permit: Any welding or hot work being done in a confined space requires both a Confined Space Permit and Hot Work Permit even if the confined space is originally defined as Non-permit. Appendix H

APPENDIX C

LIST QUALIFIED ENTRANTS for FACILITIES DEPARTMENT

NAME	TITLE

APPENDIX D

CONTRACTOR SPECIFIC ENTRY PROCEDURES FOR PERMIT REQUIRED CONFINED SPACES

Step1 Permit

The Contractor is responsible for filling out the Entry Permit noting the specific requirements to be followed and is to provide a completed copy to the Department Facility Manager, Acting Facility Manager, or District Management. Those requirements will include the following steps.

Step2 Testing

Monitor the manhole or space atmosphere with the gas detector. Record the levels on the permit and continually monitor while the space is open. If the monitoring indicates an unacceptable atmosphere after either ventilating or waiting for a short time period the entry supervisor needs to be notified.

IF THE ATMOSPHERE IS NOT ACCEPTABLE, THEN CONTRACTORS ARE NOT PERMITTED TO ENTER THE SPACE AND THE PERMIT WOULD NOT BE VALID.

Step3 Ventilate

Ventilate with power ventilator of at least 750 CFM capacity or more. Ventilate until the atmosphere is safe to enter and continue to ventilate while the manhole is open.

Step4 Rescue Devices and Access

For Manholes and vaults with vertical entrance of more than 5 feet a personnel lift needs to be set up. Examine and inspect all the lines to ensure that they are functioning properly. For horizontal entrances have the contractor in a safety harness and life line. If the space requires portable ladders or other entrance devices those will be made available and be in proper working condition.

Step5 Communication

The contractors discuss and determine communication methods prior to manhole or vault/tank entry. Emergency rescue procedures need to be determined and communicated with the entrant(s) and standby personnel.

Step6 Respirator

If necessary*, set up the breathing air supply system and inspect air supply system components to ensure proper function. Place the system in an area readily available to the work space. Airline supply system is defined as: full face mask, 5-minute hip pack for emergency escape, and the remote air supply cylinder and hose line or a self-contained breathing apparatus (SCBA).

*NOTE: In most cases entries are only permitted if the space atmosphere is acceptable. There are conditions however, where the work will involve the use of paints, other chemicals, and welding that would require proper respiratory protection. This must be determined and stated on the permit based on the hazard.

Step7 PPE

The contractor entering puts on the safety harness, gloves, hard hat, and is secured to the personnel-lift. Don the respiratory protection if needed.

The contractor will generally wear the gas monitor if not; the standby personnel will monitor the atmosphere with a remote probe in the area where the entrant is working.

The contractor will use the Facilities Lock Out program whenever any electrical or mechanical hazards exist within the confined space there are working in at that time. The Lock Out program is located in the Facilities Department office and will be made available to all persons who have obtained the proper permits to work in the confined space on each campus.

Step8 Standby Duties

When the standby personnel topside is prepared, check gas monitor, and personnel-lift. After all the equipment is checked then the contractor can enter into the space. The topside personnel will continuously check the gas monitor if the contractor is not wearing the monitor or other personnel air monitors.

Step 9

Standby Duties

While the contractor is in the manhole, the standby personnel remain alert to his/her activity. Mobile radio source must be within 50 feet of the manhole work. If gas monitor alarm activates, contractor will signal the entrant and the entrant is to leave the space.

Step10
Exiting

When the work is completed the entrant contractor will signal topside observer(s) who will operate man-lift and life lines to ensure none become entangled with obstructions.

APPENDIX E

ALTERNATE ENTRY/RECLASSIFICATION CERTIFICATE

Alternate entry procedures may be used in place of a permit-required entry under the following conditions.

- The only hazard in the confined space is an actual or potential hazardous atmosphere.
- Forced air ventilation alone can maintain a safe atmosphere during entry.

Reclassified entry of a permit-required confined space to a non-permit confined space under the following conditions.

- The permit space poses no actual or potential atmospheric hazards.
- All hazards within the space are eliminated without entry into the space.

Certification shall be made available to each employee entering the space.

Location of permit required space: _____

Reason for entry:

Names of employee(s) entering space:

Potential hazardous atmosphere:

How hazardous atmosphere made safe:

Other hazards within the space:

How hazards eliminated: _____

Date of certificate: _____

Signature of person providing certification:

TITLE

APPENDIX F

EQUIPMENT AVAILABLE FOR NON-PERMIT/ALTERNATE ENTRY

Equipment list:

- 1) Eye protection**
- 2) Hearing protection**
- 3) Gloves**
- 4) Hard Hat**
- 5) Steel toed boots/shoes**
- 6) Lock out kits**
- 7) Fan/ventilation**

Name and Telephone #'s of Emergency Rescue Services:			
Fire Department	911		
Campus Security Office			
7.Dates and Authorized duration of entry:			
8.Communication Procedures and Equipment to maintain constant contact with entrants:			
9 Special Equipment/PPE	N/A	Yes	No
Direct reading gas monitor-tested:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety harnesses and lifelines for entry and standby persons:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoisting equipment:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Powered communications:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCBA's for entry and standby persons:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protective clothing: eyes, ears, head, face ,and body:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Any other information needed to ensure employee safety			

I have reviewed the work authorized by this permit and the information contained herein. Written instruction and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit not valid unless all appropriate items are completed.

Permit prepared by: _____

Contractor's Entry Supervisor

This permit is to be kept at the job site. Return this job site copy to the Facilities Department following job completion.

Entrants Name	Sign in	Sign out	Sign in	Sign out

**Appendix H
Hot Work Permit
CUTTING – WELDING – HOT WORKS**

Instructions: Fill out this form in its entirety.

Building where work will occur	
Enter Floor or Room where work will occur:	
Effective Date:	
Expiration Date:	
Enter the Estimated Start Time for work:	
Enter the Estimated Completion Time for the work:	
Description of work	
Person in charge of work:	
Person in Charge of Work's Phone Number.	
Your Department or Your Company's Name:	

You must agree to adhere to the following precautions by checking each item.

- All equipment to be used has been inspected and is in good repair.
- Floors and surrounding area are clear of combustible materials within 35 feet of the work area.
- Materials that cannot be moved are protected with noncombustible material or cover.
- Floor openings within 40 feet are tightly covered.
- A responsible fire watcher has been assigned to watch for dangerous sparks in area, as well as floors above and below and will remain on the job site for 30 minutes after completion of hot work.
- Appropriate fire extinguishing equipment is on site.
- The sprinkler system, where provided, is in service.
- Appropriate arrangements have been made with TCC Beach Facilities Dept. to prevent the accidental activation of fire detection and alarm systems.
- There are no flammable liquids, vapors, dusts, lint's OR equipment containing such materials in the work area.

FIRE – RESCUE DIAL 9-1-1

Signature: _____ **Date:** _____

Appendix I

DEPARTMENT: _____

Safety Training Attendance Sheet

Training Topic:

Date:

Department:

Name (Please Print)

Signature

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Instructor

Date
