



## CONNECTICUT COLLEGE Environmental Health & Safety Policy

**DATE:** 21 April 2009

**SUBJECT:** Permit Required Confined Space Entry (General Industry)

**REGULATORY STATUTE:** OSHA - [29 CFR 1910.146](#)

**BACKGROUND:** Every year, over 1 1/2 million workers enter confined spaces in the workplace. Many confined spaces contain inherent risks and dangers, such as hazardous materials or gases, oxygen-deprived environments, or materials that could engulf and trap a worker. The Bureau of Labor Statistics (2002) reports an average of 20 fatalities a year from confined space hazards. More than half of the fatality victims are attendants who become would-be rescuers. The Occupational Safety and Health Administration (OSHA) estimates that 85 percent of these accidents can be prevented if proper safety precautions at job sites are followed. This poses a serious problem for exposed workers and their employer. The OSHA Confined Space Standard establishes uniform requirements, to ensure that the hazards of confined spaces in U.S. workplaces are evaluated safety procedures implemented, and that the proper hazard information is transmitted to all affected workers.

**GENERAL:** Connecticut College will ensure that all potential confined spaces on college property are evaluated for confined space hazards. This standard practice instruction is intended to address comprehensively the issues of evaluating and identifying potential confined spaces, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for employees.

**RESPONSIBILITY:** The *Director of Environmental Health & Safety (EH&S)* is responsible for all facets of this program, and has full authority to make necessary decisions to ensure success of the program. The Director of EH&S is the sole person authorized to amend these instructions and is authorized to halt any operation of the college where there is danger of serious personal injury. This policy includes respiratory hazards.

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### Connecticut College Confined Space Entry Program

#### 1. Written Program:

- 1.1. Connecticut College will review and evaluate this standard practice instruction on an annual basis, or when changes occur to 29 CFR 1910.146 that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Additionally, Connecticut College will review the permit-required confined space program using the canceled permits retained within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.
- 1.2. Availability. This policy will be available for inspection by employees, their authorized representatives and authorized government inspectors. Connecticut College will implement the permit-required confined space entry program as delineated within this policy document.

#### 2. Definition of a Confined Space:

- 2.1. Spaces that meet the following criteria will be designated as a confined space:
  - The space is large enough and so configured, that an employee can bodily enter and perform assigned work.
  - The space has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults and pits.)
  - The space is not designed for continuous employee occupancy.
  - The space contains, or has a potential to contain a hazardous atmosphere.
  - The space 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.

(1) The space contains any other recognized serious safety or health hazard.
- 2.2. Confined spaces are further classified, depending upon the potential hazards of the space:
  - 2.2.1. Non-Permit Confined Spaces. Those spaces meeting the criteria for a confined space, but does not contain, nor has the potential to contain, any hazard capable of causing death or serious physical harm. Examples of non-permit required confined

spaces might include the interiors of HVAC units, certain air plenums and pipe chases, attics, walk-in freezers or refrigerators, and some building crawl spaces. Non-permit required confined spaces will be designated where the atmosphere and safety conditions can be controlled. These types of confined spaces may be entered without the need for a written permit or attendant, provided that:

- The space is determined not to be a Permit-Required confined space.
- The space can be maintained in a safe condition for entry by mechanical or natural ventilation alone.
- Monitoring and inspection data supports these determinations

2.2.2. Permit-Required Confined Spaces. Those spaces meeting the criteria described above, and having a known potential to contain hazardous atmospheres will be designated as permit-required confined spaces. All spaces will be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Connecticut College will inform potentially exposed employees by posting warning signs, conducting awareness training (or by any other equally effective means) of the existence and location of and the danger posed by the permit confined spaces.

***NOTE:** Because of the lack of sufficient ventilation, any pit, vault or other confined space at Connecticut College which is accessed through a manhole, is considered to be a Permit-Required Confined Space.*

### **3. General Requirements:**

- 3.1. Facility Evaluation. The Director of EH&S will evaluate all college facilities to identify those spaces that meet the criteria of a confined space. The decision flow chart in Appendix A to 29 CFR 1910.146 will be used to facilitate compliance with this requirement.
- 3.2. Confined Space Inventory. The Director of EH&S will maintain a detailed listing of those locations meeting the criteria for a confined space.
- 3.3. Authorized Personnel. Only those employees who have completed appropriate confined space training will enter permitted spaces. Connecticut College will take all measures necessary to prevent non-trained employees from entering the permit-required confined spaces, to include disciplinary action.
- 3.4. Reclassification. A permit required space may be reclassified as a non-permit space if all hazards within the space have been permanently eliminated, and the safety of the space has been documented through testing and inspection. When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, the Director of EH&S will reevaluate that space, and if necessary, reclassify it as a permit-required confined space. All classification and reclassification testing and inspection data will be kept on file by the Director of EH&S.

*Note: Control of atmospheric hazards through forced air ventilation alone does not constitute elimination of the hazards. Periodic monitoring will be conducted to ensure forced air ventilation maintains a safe worker environment for reclassification to a non-permit confined space.*

#### **4. Entry Requirements:**

- 4.1. All conditions that could make it unsafe to remove an entrance cover must be eliminated before the cover is removed.
- 4.2. Entrance openings must be guarded by a railing, temporary cover or other temporary barrier that will prevent accidental fall-through, and will protect each employee working in the space from foreign objects entering the space.
- 4.3. The internal atmosphere must be tested with a calibrated direct-reading instrument for the following conditions, and found to be within acceptable limits:

(1) Oxygen (O <sub>2</sub> ) content	(Between 19.5% - 23.5%)
(2) Combustible gases and vapors. (LEL)	(Less than 10%)
(3) Hydrogen Sulfide (H <sub>2</sub> S)	(Less than 10 ppm)
(4) Carbon monoxide (CO)	(Less than 35 ppm)
Other site specific atmospheric hazards must be evaluated using appropriate testing equipment and procedures as necessary.	

- 4.4. There may be no hazardous atmosphere within the space whenever any employee is inside the space. Continuous forced air ventilation shall be used as follows:
  - 4.4.1. No employee may enter the space until testing confirms that the forced air ventilation has eliminated any hazardous atmosphere.
  - 4.4.2. The forced air ventilation shall be so directed as to ventilate the immediate area where an employee is or will be present within the space and shall continue until all employees have left the space.
  - 4.4.3. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
  - 4.4.4. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
  - 4.4.5. If a hazardous atmosphere is detected during entry:
    - All employees will evacuate.

- The space will be evaluated to determine how the hazardous atmosphere developed.
- Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.

4.5. Contractor Operations in Permitted Confined Spaces. When Connecticut College arranges to have employees of another employer (contractor) perform work that involves permit space entry, Connecticut College shall:

- 4.5.1. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with the Connecticut College permit space program.
- 4.5.2. Apprise the contractor of Connecticut College's experiences, and the hazards that makes the space in question a permit space.
- 4.5.3. Apprise the contractor of any precautions or procedures that the college has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
- 4.5.4. Coordinate entry operations with the contractor, when both college personnel and contractor personnel will be working in or near permit spaces.
- 4.5.5. Debrief the contractor at the conclusion of the entry operation regarding any hazards confronted or created in the concerned permit spaces during entry operations.

## **5. Permit-Required Confined Space Program:**

5.1. As required by the Permit Required Confined Space Program standard, 29 CFR 1910.146, Connecticut College will:

- 5.1.1. Implement the measures necessary to prevent unauthorized entry.
- 5.1.2. Identify and evaluate the hazards of permit spaces before employees enter them.
- 5.1.3. Develop and implement the means, procedures and practices necessary for safe permit space entry operations, including but not limited to the following:
  - Specifying acceptable entry conditions.
  - Isolating the permit space.
  - Purging, inerting, flushing or ventilating the permit space as necessary to eliminate or control atmospheric hazards.
  - Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.

- Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.

5.2. Develop and utilize checklists based on this standard practice instruction and 29 CFR 1910.146.

5.3. Provide the following equipment at no cost to employees, maintain that equipment properly, and ensure that employees are trained in the proper use of the equipment:

- Testing and monitoring equipment needed to determine if hazardous conditions exist, or to verify that they do not exist.
- Ventilating equipment needed to obtain acceptable air quality entry conditions.
- Communications equipment necessary for communication between personnel involved in the entry operation.
- Personal protective equipment insofar as feasible engineering and work practice controls do not adequately protect employees.
- 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 as required to protect workers from pedestrian and vehicular traffic.
- Ladders needed for safe ingress and egress by authorized entrants.
- Rescue Retrieval and Emergency equipment needed to extract or treat injured personnel, except to the extent that the equipment and or service is provided by rescue services that are immediately available.
- Any other equipment necessary for safe entry into and rescue from permitted spaces at our facility.

5.3.1. The following intrinsically safe equipment will be maintained and used where required for confined space operations.

- Multi-gas monitors
- Ventilation Equipment
- Rescue tripod/davit arm and winch system
- Body harness's
- Extraction cable and lanyards
- Air Compressors (as required)
- Air purifying respirators (as required)
- Radio communication system (as required)
- Signage (as required)
- Lock-out/Tag-out Equipment (as required)
- Intrinsically safe lighting equipment
- Personal protective clothing
- Hearing protection equipment
- Head protection equipment
- Eye Protection equipment
- First Aid kits

- Hand tools
- Escape ladders for depths of four feet or shoulder height

5.4. **Evaluation of Permitted Space Conditions.** Connecticut College will evaluate permit space conditions as follows when entry operations are conducted:

5.4.1. Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that if isolation of the space is infeasible because the space is large, or is part of a continuous system (such as a sewer) pre-entry testing shall be performed to the extent feasible before entry is authorized, and if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working.

5.4.2. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.

5.4.3. When testing for atmospheric hazards, use the following protocol; test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

*Note: Atmospheric testing conducted in accordance with the "procedures for atmospheric testing" section of this instruction or Appendix B to 29 CFR 1910.146 will be used to satisfy this requirement. This appendix can also be used develop procedures for permit space operations in sewers and other job sites when supplemented by Appendix C (Examples) to 29 CFR 1910.146.*

5.4.4. Attendants may be assigned to monitor more than one permit space provided their duties can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored as long as their duties can be effectively performed for each permit space that is monitored.

*Note: If multiple spaces are monitored by a single attendant, the permit will be annotated to provide the means and procedures by which the attendant is to respond to an emergency affecting one or more of the permit spaces being monitored.*

5.4.5. When a confined space entry is to take place, Connecticut College, as part of the pre-planning process, will designate in advance the persons who are to have active roles in the entry operation. Additionally the duties of each such employee will be identified, and provided with the required training required by the training section of this instruction. The confined space entry team will include but is not limited to the following:

- Authorized entrants
- Attendants
- Entry supervisors
- Atmospheric monitoring personnel

- Certifying personnel
- Rescue/Emergency services personnel

5.4.6. Connecticut College will develop procedures prior to the commencement of confined space operations for the following:

- Summoning rescue and emergency services
- Rescuing entrants from permit spaces
- Providing necessary emergency services for rescue
- Preventing unauthorized personnel from attempting a rescue

5.4.7. Issuance and cancellation of entry permits will be as follows:

5.4.7.1. When employees of contractor personnel or non-college employees are working simultaneously as authorized entrants in a permit space, the certifying supervisor of the permit (or pre-designated representative) will ensure that all parties concerned, are aware of the accepted entry procedures for the specific operation. This will ensure entry operations are properly coordinated.

5.4.7.2. The certifying supervisor of the permit (or pre-designated representative) will ensure that all parties concerned are aware of the accepted procedures necessary for concluding the entry after entry operations have been completed (such as closing a permit space and canceling the permit).

5.4.7.3. Connecticut College will immediately review, and as necessary halt and revise entry operations when there is reason to believe that the measures taken under the permit space program may not protect employees. The focus will be directed at the correction of deficiencies found to exist before subsequent entries are authorized. Examples of circumstances requiring the review of the permit-required confined space program are as a minimum:

- Any unauthorized entry of a permit space.
- The detection of a permit space hazard not covered by the permit.
- The detection of a condition prohibited by the permit.
- The occurrence of an injury or near-miss during entry.
- A change in the use or configuration of a permit space.
- Employee complaints about the effectiveness of the program.

5.4.8. Review of the permit-required confined space program using the canceled permits retained will be accomplished within 1 year after each entry and the program revised as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

## **6. Permit System:**

6.1. As required by 29 CFR 1910.146, before entry is authorized, the entry supervisor will document the completion of the following measures:

- Specifying acceptable entry conditions.
- Isolating the permit space.
- Purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.
- Provide pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards.
- Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry.
- Before entry begins, the entry supervisor identified on the permit shall sign the entry permit to authorize entry.
- The completed permit shall be conspicuously posted at the entrance to the confined space and be readily available to all authorized entrants, to confirm that pre-entry preparations have been completed.
- The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
- The entry supervisor shall terminate entry and cancel the entry permit when:
  - The entry operations covered by the entry permit have been completed.
  - A condition that is not allowed under the entry permit arises in or near the permit space.

6.2. Each canceled entry permit will be forwarded to the Director of Environmental Health & Safety, who will keep it on file for at least 1 year to facilitate the review of the permit-required confined space program. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

## **7. Entry Permit:**

7.1. Connecticut College will develop or use a standardized entry permit form (See Attachment (A)) that documents compliance with this section and authorizes entry to a permit space. As a minimum, the permit will include the following information:

- The permit space to be entered.
- The purpose of the entry.
- The date and the authorized duration of the entry permit.
- The name(s) of the authorized entrants of the permit space.
- The name(s) of personnel designated as attendants.
- The name and signature of the individual serving as entry supervisor, who originally authorized entry.
- The hazards of the permit space to be entered.

- The measures used to isolate the permit space and to eliminate or control permit space hazards before entry. (Lock Out/Tag Out of equipment, and procedures for purging, inerting, ventilating, and flushing permit spaces.)
- The acceptable entry conditions.
- The results of initial and periodic atmospheric 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 services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services.
- Personal Protective Equipment, testing equipment, communications equipment, alarm systems and rescue equipment to be provided for compliance with the permit requirement.
- Any other information whose inclusion is necessary given the circumstances of the particular confined space, in order to ensure employee safety.
- Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

7.2. Connecticut College shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.

## **8. Training:**

Connecticut College shall develop a standardized training format to meet the requirement for a safe confined space entry.

8.1. Training shall be provided to each affected employee:

8.1.1. Before the employee is first assigned duties that require a confined space entry.

8.1.2. Before there is a change in assigned duties.

8.1.3. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.

8.1.4. Whenever the Director of Environmental Health & Safety has reason to believe that there are deviations from the permit space entry procedures required by this instruction, or inadequacies in the employee's knowledge or use of these procedures.

8.2. The training shall establish employee proficiency in the duties required by this instruction and shall introduce new or revised procedures as necessary for compliance with this instruction, or when future revisions occur.

8.3. Connecticut College shall certify that the training required by this section has been accomplished. The certification shall contain each employee's name, the signatures or

initials of the trainer(s) and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

## **9. Duties of Authorized Entrants:**

9.1. Connecticut College shall ensure that all authorized entrants:

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

9.1.2. Properly use equipment as required by 29 CFR 1910.146 (d)(4).

9.1.3. Communicate with the attendant as necessary to enable the attendant to monitor entrant status, and to enable the attendant to alert entrants of the need to evacuate the space as required by this section.

9.1.4. Alert the attendant whenever:

- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
- The entrant detects a prohibited condition.

9.1.5. Exit from the permit space as quickly as possible whenever:

- An order to evacuate is given by the attendant or the entry supervisor.
- The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
- The entrant detects a prohibited condition.
- An evacuation alarm is activated.

## **10. Duties of authorized attendants:**

10.1. Connecticut College shall ensure that each attendant:

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

10.1.2. Is aware of possible behavioral effects of hazard exposure in authorized entrants.

10.1.3. Continuously maintains an accurate count of authorized entrants in the permit space.

10.1.4. Remains in a pre-designated location outside the permit space during entry operations until relieved by another attendant.

***Note:** Because employees are not trained or equipped with Self Contained Breathing Apparatus (SCBA) for entry retrieval, Connecticut College's permit entry program **DOES NOT** allow attendant entry for rescue. In the event of an emergency, and the attendant is unable to extricate the entrant by means of the safety harness and retrieval equipment, assistance from the New London Fire Department should be requested.*

10.1.5. Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.

10.1.6. Monitors activities inside and outside the space, to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:

- If the attendant detects a prohibited condition.
- If the attendant detects the behavioral effects of hazard exposure in an entrant.
- If the attendant detects a situation outside the space that could endanger the entrants.
- If the attendant cannot effectively and safely perform all the duties required under this section.

10.1.7. Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards.

10.1.8. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

- Warn the unauthorized persons that they must stay away from the permit space.
- Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
- Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

10.1.9. Performs non-entry rescues as specified by this employer's rescue procedure, described below.

10.1.10. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the entrants.

## **11. Duties of entry supervisors:**

11.1. Connecticut College shall ensure that each entry supervisor:

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

- 11.1.2. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- 11.1.3. Verifies that rescue services are available and that the means for summoning them are operable. Notifies the Gatehouse and the New London Fire Department (Designated Rescue Team) of the confined space entry, providing the exact location and expected duration of the entry. The phone number for the NLFD is listed on the Connecticut College Confined Space Entry Permit.
- 11.1.4. Terminates the entry and cancels the permit as required in accordance with the "permit section" this instruction. Notifies the Gatehouse and the New London Fire Department that the confined space entry has been completed.
- 11.1.5. Enforces the removal of unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
- 11.1.6. NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

## **12. Rescue and emergency services.**

- 12.1. **Connecticut College employees will only attempt non-entry rescues.**
- 12.2. Connecticut College shall ensure that all employees who are involved in confined space entry is trained to use properly, the personal protective equipment and rescue equipment necessary for making non-entry rescues from permit spaces.
- 12.3. Each employee who is involved in confined space entries shall practice making non-entry permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which anticipated rescues are to be performed.
- 12.4. Each employee who is involved in confined space entries shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR).
- 12.5. Off-campus emergency rescue personnel: When rescue personnel from the New London Fire Department are requested to perform permit space rescue, Connecticut College shall:

- (1) Inform the rescue service of the hazards they may confront when called on to perform rescue.
  - (2) Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
- 12.6. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an 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 used shall meet the following requirements.
- 12.7. 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, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness, if it is demonstrated 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.
- 12.8. 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. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
- 12.9. If an injured entrant is exposed to a substance for which a Material Safety Data Sheet (MSDS) or other similar written information is required to be kept at the worksite, that MSDS or written information shall be made available to the medical facility treating the exposed entrant.

### **13. Procedures for Atmospheric Testing.**

- 13.1 There are two GasAlertMax (GAMAX-4) four-gas meters maintained in the Office of Environmental Health and Safety. The Director of EH&S is responsible for maintaining these meters, and calibrating them on a regular basis.
- 13.2 Atmospheric testing for confined space entry is required for two distinct purposes:
- Evaluation of the hazards of the permit space
  - Verification that acceptable entry conditions for entry into that space exist.
- 13.2.1 Evaluation testing. Connecticut College will ensure that the atmosphere of a confined space is analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise. Evaluation and interpretation of this data, and development of the entry procedure, will be done by, or reviewed by the Director of Environmental Health & Safety. The internal atmosphere will be tested with a calibrated direct-reading instrument for the conditions listed in paragraph 4.3.

13.2.2 Verification testing. The atmosphere of a permit space which may contain a hazardous atmosphere will be tested for residues of all contaminants, to determine that residual concentrations at the time of testing and entry, are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration etc.) will be recorded on the permit in the space provided.

13.2 Duration of testing. Measurement of values for each atmospheric parameter will be made for at least the minimum response time of the test instrument specified by the manufacturer.

13.3 Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope will be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress will be slowed to accommodate the sampling speed and detector response. The stratified atmosphere will be tested with a calibrated direct-reading instrument for the conditions listed in paragraph 4.3.

**Attachment (a)**

**CONFINED SPACE PERMIT**



## Connecticut College Confined Space Entry Permit

Confined Space Location: \_\_\_\_\_ Confined Space ID Number: \_\_\_\_\_  
 Date: \_\_\_\_\_ Permit Validity Period: \_\_\_\_\_ : \_\_\_\_\_ am/pm, to \_\_\_\_\_ : \_\_\_\_\_ am/pm

**Description of Confined Space Work:**

\_\_\_\_\_

\_\_\_\_\_

<b>Authorized Personnel Entrant(s):</b>	<b>Attendant(s):</b>
1. _____ 2. _____	1. _____ 2. _____

**Known hazards** (indicate specific hazards with initials)

<input type="checkbox"/> Oxygen deficiency (less than 19.5%) <input type="checkbox"/> Oxygen enrichment (more than 23.5%) <input type="checkbox"/> Flammable gases or vapors (more than 10% of LEL) <input type="checkbox"/> Airborne hazardous dusts or fumes (exceeds PEL)	<input type="checkbox"/> Toxic gases or vapors (exceeds PEL) <input type="checkbox"/> Mechanical hazards <input type="checkbox"/> Electrical hazards <input type="checkbox"/> Engulfment hazards <input type="checkbox"/> Other: _____
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<p><b>Employee Training and Pre-Entry Briefing</b> (Indicate completed requirement by initialing)</p> <p>_____ Entrant(s) and Attendant(s) have Completed Confined Space Entry Training.</p> <p>_____ Gatehouse notified.</p> <p>_____ NLFD (Designated Rescue Team) notified: <b>(447-5252)</b></p> <p>_____ Mandatory Pre-Entry Briefing Conducted.</p> <p>_____ Special Training Required for Job. (Specify) _____</p>	<p><b>PPE Appropriate for Expected Hazards:</b></p> <p>_____ Respiratory Protection</p> <p>_____ Eye Protection</p> <p>_____ Hearing Protection</p> <p>_____ Hard Hat</p> <p>_____ Gloves</p> <p>_____ Other _____</p>
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<p><b>Tools and Equipment</b> (Indicate equipment is present and operational by initialing)</p> <p>_____ Communications (Radio) <b>(REQUIRED)</b></p> <p>_____ Calibrated Direct-Reading Meter <b>(REQUIRED)</b></p> <p>_____ Ventilation Blower <b>(REQUIRED)</b></p> <p>_____ Safety Harness/Retrieval Equipment <b>(REQUIRED)</b></p> <p>_____ Lighting</p> <p>_____ Ladder</p> <p>_____ Fire extinguisher(s)</p>	<p><b>Site Preparation</b> (Indicate all applicable preparations by initialing)</p> <p>_____ Work area isolated with signs and/or barriers.</p> <p>_____ All energy sources locked/tagged out.</p> <p>_____ All input lines capped/blinded.</p> <p>_____ Tank/vessels drained, flushed, or purged.</p> <p>_____ Ventilation initiated 30 min. before entry.</p> <p>_____ Hot work permit completed if welding.</p> <p>_____ Other. Provide details: _____</p>
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<p><b>Contractor Notification</b> (Indicate notifications by initialing)</p> <p>_____ Contractor(s) Notified of Permit Conditions.</p> <p>_____ Contractor(s) Notified of Potential Hazards.</p>	<p><b>Post Entry Actions</b> (Indicate notifications by initialing)</p> <p>_____ Gatehouse notified entry complete.</p> <p>_____ NLFD notified entry complete.</p>
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<b>Atmospheric Testing</b>	<b>Pre-entry</b>			<b>Follow-up #1</b>			<b>Follow-up #2</b>			<b>Follow-up #3</b>		
	Time	Result	Initial	Time	Result	Initial	Time	Result	Initial	Time	Result	Initial
(1) Oxygen level (O <sub>2</sub> ) (19.5% - 23.5%)												
(2) Comb. gases/vapors (LEL) (<10%)												
(3) Hydrogen Sulfide (H <sub>2</sub> S) (<10ppm)												
(4) Carbon monoxide (CO) (<35ppm)												

**Permit Authorization (Entry Supervisor):** I certify that I have inspected the work area for safety and reviewed all safety precautions recorded on this permit.

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Note: Send completed permits to the Director of EH&S for review and filing.**