

## Confined Space Entry Program

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**Applies To:** Employees, Faculty, Students, Others

**For More Information contact:** EHS Occupational Health and Safety at  
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## I. Purpose

This program has been developed to protect University of Connecticut employees from the serious hazards associated with entering and working within confined spaces, such as manholes, vaults, tunnels and tanks. As required by the Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.146, [Permit-required Confined Spaces](#), this program establishes procedures to regulate entry into confined spaces, and to ensure the safety of employees who enter or work in confined spaces. The Occupational Health and Safety Manager and Specialist in Environmental Health and Safety (EHS) are the designated Confined Space Entry Program Administrators for the University.

## II. Scope

This program applies to all faculty, staff, students and others working at the Storrs, regional and Law School campuses.

## III. Policy Statement

As stated in the University's [Health and Safety Policy](#), the University of Connecticut is committed to providing a healthful and safe environment for all activities under its jurisdiction and complying with federal and state health and safety standards. As such, all entries into a confined space at the University of Connecticut must be in accordance with the procedures and other requirements outlined in this program.

## IV. Enforcement

Violations of this program may result in appropriate disciplinary measures in accordance with University Laws and By-Laws, General Rules of Conduct for All University Employees, applicable collective bargaining agreements, and the University of Connecticut Student Conduct Code.

## V. Definitions

**Attendant.** A trained individual, as required by this program, stationed outside a permit- required confined space who monitors the Authorized Entrants inside the space. An Attendant has the authority to order an evacuation from a permit-required confined space.

**Authorized Entrant.** A trained individual, as required by this program, who is authorized by the entry permit to enter a permit-required confined space.

**Confined Space.** A space that:

1. is large enough and so configured that an employee can bodily enter and perform

- assigned work;
- 2. has limited or restricted means for entry or exit; and
- 3. is not designed for continuous employee occupancy.

[Note: Not all confined spaces require permits for entry. See definition of a permit-required confined space.]

**Entry.** The act by which any part of a person's body passes through the plane of an opening into a permit-required confined space.

**Entry Approver.** A trained individual, as required by this program, who is responsible for:

- 1. determining if acceptable entry conditions exist at a permit-required confined space;
- 2. authorizing entry and overseeing entry operations; and
- 3. terminating entry.

**Entry Permit.** The written document, contained in [Appendix A](#) and implemented according to this program, that allows and controls entry into a permit-required confined space.

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

- 1. flammable gas, vapor, or mist in excess of 10% of the lower explosive limit (LEL);
- 2. airborne combustible dust concentration that obscures vision at a distance of five (5) feet or less;
- 3. atmospheric oxygen concentration below 19.5% or above 23.5%;
- 4. atmospheric concentration of any substance that would result in employee exposure above the OSHA PEL, ACGIH TLV, or an exposure level considered unacceptable by the Department of Environmental Health and Safety (whichever is more protective); or
- 5. any other atmospheric condition immediately dangerous to life or health.

**Hot Work.** Work that could result in a source of ignition, such as welding, cutting, burning or heating. Such work in a permit-required confined space must be approved by the University of Connecticut Fire Department on-duty captain, or, in an emergency, by the senior University of Connecticut fire official on duty.

**Permit-Authorizing Official (PAO).** The representative authorized to issue an Entry Permit. Departments may appoint Supervisors, Managers, Assistant Directors, or Directors as Permit-Authorizing Official if they have completed confined space safety training within the last two years. **Permit-required Confined Space**

- 1. Definition

A confined space that has one or more of the following characteristics:

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

**[Note: Confined spaces that normally present no hazards can become permit-required if hazards are introduced into the space (e.g., painting or cleaning with solvent-based products, welding, etc.)]**

2. Identified Permit-required Confined Spaces

*a. Storrs Campus*

A survey at the University of Connecticut Storrs Campus has identified the following areas that, unless the hazards are eliminated, are considered permit-required confined spaces:

- 1) Sewer/Storm manholes
- 2) Electrical manholes
- 3) Steam pits
- 4) Central Utility Plant boilers and tanks
- 5) 6 Central Utility Plant oil tank sensor manholes
- 6) Tanks in Water Reclamation Facility
- 7) Steam Pit in Central Warehouse Mechanical Room #105
- 8) Telephone vaults
- 9) Several Water Pollution Control lift/pump stations
- 10) Water meter pits
- 11) Dairy Barn manure tank
- 12) Dairy Barn manure pit
- 13) Pomology Research Farm water pump pit
- 14) Depot Campus tunnels
- 15) Chemistry Administrative Wing Mechanical Room in Attic
- 16) North Campus Building crawl spaces
- 17) Ratcliffe Hicks Building crawl spaces
- 18) White Building crawl spaces
- 19) Atwater Building crawl spaces
- 20) Torrey Life Science Roof Penthouse HVAC Blower Plenum

*b. Regional Campuses*

- 1) Waterbury Campus – water retention tank under foundation
- 2) Stamford Campus – hot water retention pit in boiler room
- 3) Locations comparable to those listed above will be considered permit-

required confined spaces, unless determined otherwise through individual evaluation by the Permit-Authorizing Official or Occupational Health & Safety Manager or Specialist.

**Retrieval System.** The equipment used for the non-entry rescue of persons from permit-required confined spaces. The system includes a line or rope attached at one end to the back "D" ring (or 2 shoulder "D" rings) of a full-body harness worn by an Authorized Entrant, and with its other end attached to a mechanical lifting device or to a fixed point outside the permit-required confined space. A mechanical lifting device is required for all vertical entries greater than five (5) feet in depth. A harness and retrieval line is required in all permit-required confined space entries; unless an attachment increases the hazard potential to the entrant (however use of a body harness is still required).

## VI. Responsibilities

### A. University Departments

*will:*

1. Identify all known permit-required confined spaces for work areas in each shop, division or unit within their department. Contact EHS for assistance in identifying potential permit-required confined spaces.
2. Prevent unauthorized entry into permit-required confined spaces by ensuring that danger signs are posted at the entrance of every permit-required confined space which:
  - a. can be entered without the use of a special tool or key; or
  - b. can be entered by persons not authorized under this program to enter the space.

Danger signs will read:

**DANGER**

**PERMIT-REQUIRED CONFINED SPACE**

**DO NOT ENTER**

3. Conduct periodic surveys of work areas to determine if any new permit-required confined spaces have been discovered or created in their work areas. Departments must notify Environmental Health and Safety whenever new permit-required confined spaces are encountered and should request assistance in identifying and evaluating these spaces.
4. Ensure that all employees whose duties require them to work in or around permit-required confined spaces receive appropriate confined space training

- prior to engaging in the work.
5. Procure and ensure the use of the equipment necessary for safe entry into permit-required confined spaces including:
    - a. gas detection/monitoring equipment
    - b. appropriate personal protective equipment (e.g., protective clothing, gloves, boots, goggles, hearing protection, etc.)
    - c. ventilation equipment
    - d. communications equipment (e.g., two-way radios)
    - e. lighting
    - f. ladders or other equipment for safe ingress and egress
    - g. barricades, barriers and/or shields
    - h. emergency rescue/retrieval equipment (including full body harnesses and mechanical retrieval devices).
  6. When contracting with outside firms, comply with [Section IX](#) of this program.

**B. Supervisors**

*will:*

1. Notify employees of the University's Confined Space Entry Program, and make the program readily available to them.
2. Identify and schedule all affected employees for initial training in Confined Space Entry with Environmental Health and Safety.
3. Schedule employees for retraining with Environmental Health and Safety whenever retraining appears necessary due to changes in the workplace or whenever an observation or inspection indicates an employee is not following proper confined space entry procedures or lacks understanding of the proper procedures.
4. Maintain copies of attendance records of training sessions.

**C. Authorized Entrants, Attendants and Entry Approvers**

*will:*

1. Familiarize themselves and comply with the University's Confined Space Entry Program
2. Attend training sessions, as required by the program.
3. Notify supervisors of any change in their workplace or job duties which prevent or hinder safe entries into confined spaces.
4. Carry out their assigned duties during confined space entries, according to this program.

**D. Permit-Authorizing Officials**

*will:*

1. Issue confined space permits in accordance with this program.
2. Verify that proper training has been completed prior to entry for Entrants, Attendants, and the Entry Approver.
3. Attend training sessions, as required by this program.

**E. Environmental Health & Safety**

*will:*

1. Develop, implement and maintain the University's Confined Space Entry Program.
2. Perform annual reviews to evaluate the conformance to, and adequacy of, the confined space program.
3. Provide training for all aspects of confined space entry, as required by the Program.
4. Provide assistance in hazard identification, equipment selection, and other technical support related to confined space entries, as needed.
5. Maintain attendance records of training sessions.
6. Maintain copies of completed permits.

**F. The University Fire Department**

The University Fire Department is the authorized confined space rescue team for the Storrs campus.

**VII. Procedures**

**A. Entry Procedures**

**NOTE: These procedures apply to University of Connecticut employees. No University employee may participate in a permit-required confined space entry operation unless he or she has received the required training, as described in [Section VIII](#) of this program.**

1. An individual anticipating the need to enter a confined space must contact a Permit-Authorizing Official (PAO) that is cognizant of the hazards associated with the space and receive a completed written permit prior to such an entry.
2. The PAO, with the assistance of the assigned Entry Approver, will complete and approve the permit and verify that equipment, monitoring, training and other safety procedures (e.g., lockout/tagout) are adequate for safe entry and work tasks.
3. In an emergency, when such an entry cannot be scheduled in advance and a

PAO that is cognizant of the hazards associated with the space is not on site, the Entry Approver may contact the PAO via phone to complete the permit jointly over the phone. With the PAO's permission, the Entry Approver will sign for the PAO, initialing the signature and noting on the permit the time and that the PAO was contacted by phone. Prior to entry, the PAO will verify that the entrant, Attendant, and Entry Approver are aware of the following:

- a. The hazards of the permit-required confined space;
- b. The measures for isolation of the permit-required confined space;
- c. The measures (such as lockout/tagout, equipment and procedures for purging, inerting, ventilation and flushing, etc.) used to remove or control potential hazards;
- d. Acceptable environmental conditions which must be maintained during entry;
- e. Testing and monitoring equipment and procedures required to verify that acceptable environmental conditions are being maintained during entry;
- f. The rescue and other services which would be summoned in case of emergency and the means of communication with those services;
- g. Rescue equipment to be provided on-site, if necessary;
- h. The communication procedures and equipment used by Authorized Entrants and Attendants to maintain contact;
- i. The personal protective equipment, such as hard hats, clothing, harnesses and retrieval lines provided in order to ensure employee safety. Respirator use will be in accordance with the [University's Respirator Program](#). The need for non-sparking tools will be considered by the Permit-Authorizing Official;
- j. The fact that the PAO also has the authority to oversee activities during the entry.

## **B. Notifications**

### **1. Storrs Campus**

#### *a. Facilities Operations*

- 1) Prior to a permit-required confined space entry, the Attendant or entrant must notify Facilities Operation Center of the planned entry.
- 2) Notification to the Operation Center shall include the exact location of the space (e.g., NE corner of Storrs Hall), name of caller, and estimated duration of entry.
- 3) The Operations Center will document this information, and then contact



Public Safety Communication Center (6-4925) to notify of the planned entry, providing the pertinent information from item a.2. above.

- 4) Upon completion of the entry, the Attendant or Entrant must notify The Operations Center that entry operations have been completed in the confined space.
- 5) The Operations Center will log the “time” the entry was completed.
- 6) At the conclusion of entry operations, the cancelled permit must be kept on file at Facilities Operations and a copy must be sent to EHS (Fax 486-1106, [ehs@uconn.edu](mailto:ehs@uconn.edu) or Unit 4097).

*b. Other University Departments*

- 1) Prior to a permit-required confined space entry, the Public Safety Communication Center (486-4925) must be notified of the planned entry.
- 2) Notification to the Public Safety Communication Center shall include the exact location of the space (e.g., NE corner of Storrs Hall), name of caller, and estimated duration of entry.
- 3) Upon completion of the entry, the Public Safety Communication Center must be notified that entry operations have been completed in the confined space.
- 4) At the conclusion of entry operations, the cancelled permit must be kept on file with the Department conducting the entry and a copy must be sent to EHS (Fax 486-1106, [ehs@uconn.edu](mailto:ehs@uconn.edu) or Unit 4097).

**2. Regional Campuses**

*a. Avery Point Campus*

- 1) Prior to a permit-required confined space entry, the PAO must notify the Groton Fire Department of the planned entry and arrange for on-site rescue services.
- 2) At the conclusion of entry operations, the cancelled permit must be kept on file with the Department conducting the entry and a copy must be sent to EHS (Fax 486-1106, [ehs@uconn.edu](mailto:ehs@uconn.edu) or Unit 4097).

*b. Other Regional Campuses*

- 1) Prior to a permit-required confined space entry, the designated confined space rescue provider must be notified of the planned entry and arrange for on-site rescue services.
- 2) At the conclusion of entry operations, the cancelled permit must be kept on file with the Department conducting the entry and a copy must be sent to EHS (Fax 486-1106, [ehs@uconn.edu](mailto:ehs@uconn.edu) or Unit 4097).

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## **VIII. Duties and Training Requirements**

### **A. Authorized Entrants**

The person(s) authorized to enter a confined space will be responsible for, and receive training in, the following:

1. The knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
2. Proper use of equipment, which includes:
  - a. Atmospheric testing and monitoring equipment.
  - b. Ventilating equipment needed to obtain acceptable entry conditions.
  - c. Communication equipment necessary to maintain contact with the authorized Attendant.
  - d. Personal protective equipment, as needed.
  - e. Lighting equipment, as needed.
  - f. Barriers and shields, as needed.
  - g. Equipment, such as ladders, needed for safe ingress and egress.
  - h. Rescue and emergency equipment, as needed.
  - i. Any other equipment necessary for safe entry into, and rescue from, permit-required confined spaces.
3. Communication with the Attendant to enable the Attendant to monitor entrant status and to enable the Attendant to alert entrants of the need to evacuate the space if required.
4. Alerting the authorized Attendant whenever:
  - a. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
  - b. The entrant detects a condition prohibited by the permit.
5. Exiting the permit-required confined space as quickly as possible whenever:
  - a. An order to evacuate has been given by the Attendant or the Authorized Approver;
  - b. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation;
  - c. The entrant detects a prohibited condition; or
  - d. An evacuation alarm is activated.

### **B. Authorized Attendants**

Persons authorized to perform duties as authorized Attendants will be responsible for, and receive training in, the following:

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

2. Being aware of possible behavioral effects of hazard exposure in Authorized Entrants.
3. Continuously maintaining an accurate count of Authorized Entrants in the permit-required confined space and ensuring that the means used to identify Authorized Entrants accurately identifies who is in the permit-required confined space.
4. Remaining outside the permit-required confined space during entry operations until relieved by another Attendant.
5. Attempting non-entry rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or Attendant.
6. Communicating with Authorized Entrants to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant.
7. Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the Authorized Entrants to evacuate the permit-required confined space immediately under any of the following conditions:
  - a. If the Attendant detects a prohibited condition.
  - b. If the Attendant detects the behavioral effects of hazard exposure in an Authorized Entrant.
  - c. If the Attendant detects a situation outside the space that could endanger the Authorized Entrants.
  - d. If the Attendant cannot effectively and safely perform all the duties required by this program.
8. Summoning rescue services as soon as the Attendant determines that Authorized Entrants may need assistance to escape from permit-required confined space hazards.
9. Taking the following actions when unauthorized persons approach or enter a permit-required confined space while entry is underway:
  - a. Warn the unauthorized persons that they must stay away from the permit-required confined space.
  - b. Advise the unauthorized persons that they must exit immediately if they have entered the permit-required confined space.
  - c. Inform the Authorized Entrants and the Entry Approver if unauthorized persons have entered the permit-required confined space.
10. Performing no duties that might interfere with the Attendant's primary duty to monitor and protect the Authorized Entrants.

**C. Entry Approvers**

Persons authorized to perform duties as Entry Approvers will be responsible for, and receive training in, the following:

1. Determining that the entry permit contains the required information before authorizing or allowing entry.
2. Determining that the necessary procedures, practices, and equipment for safe entry, as indicated on the permit, are in effect before allowing entry.
3. Determining, at appropriate intervals, that entry operations remain consistent with the terms of the entry permit, and that acceptable entry conditions are present.
4. Canceling the entry authorization and terminating entry whenever acceptable entry conditions are not present.
5. Taking the necessary measures for concluding an entry operation, such as closing off a permit-required confined space and canceling the permit, once the work authorized by the permit has been completed.

**NOTE: Employees may alternate duties as entrants, Attendants and/or Authorized Approvers provided they have completed confined space training. Any permit-required confined space entry must have at least two individuals present: e.g., an Authorized Entrant and an authorized Attendant who serves as the Authorized Approver.**

**D. Rescue Team Members**

1. The University of Connecticut Fire Department is the designated rescue team for the Storrs campus. As a minimum, rescue team members shall be trained in accordance with OSHA regulations. . Hands-on practice rescues will be conducted by the rescue team members in simulated confined spaces representative of the permit-required confined spaces present on campus.
2. Regional campuses must ensure that a rescue team, trained and equipped for confined space rescues in accordance with OSHA regulations, is readily available prior to conducting permit-required confined space entries.

**E. Permit-Authorizing Officials**

Will complete confined space safety training every two years and is cognizant of the responsibilities of the Authorized Entrant, Attendant, Entry Approver as well as the Permit Authorizing Official .

**IX. Outside Contractors**

- A.** The University's Confined Space Entry Program must be made available for review to all prospective bidders of a contract involving activities subject to OSHA's confined space entry regulations (29 CFR 1910.146). In addition, contracting Departments will:
1. Inform the contractor that the workplace contains permit-required confined spaces and that entry is allowed only through compliance with a permit-required confined space program meeting the requirements of the OSHA Standard (29 CFR

1910.146).

2. Apprise the contractor of the potential hazards associated with the spaces that make them permit-required confined spaces.
3. Apprise the contractor of any precautions or procedures that will be used to protect employees in or near permit-required confined spaces where contractor personnel will be working.
4. Coordinate entry operations with the contractor, when both University personnel and contractor personnel will be working in or near permit-required confined spaces.
5. Debrief the contractor, at the conclusion of entry operations, on the procedures followed and any hazards confronted or created during entry.

A Pre- and Post-entry Review checklist is provided in [Appendix B](#) to document that these steps have been followed.

- B.** Contractors are expected to comply with the [OSHA Permit-required Confined Space Standards](#) and the Confined Space Entry requirements of the University's [Contractor EHS Manual](#). Therefore, they are expected to:
1. Have a permit space entry program in place that meets the OSHA standard.
  2. Ensure their employees are properly trained.
  3. Have and use the equipment and resources available to ensure a safe entry, including atmospheric testing equipment, protective clothing, hard hats, respirators, life-lines, ventilation equipment and safety harnesses etc.
  4. Provide for emergency rescue. The Contractor must arrange for the appropriate level of rescue services based on the potential for the types and complexity of the rescue that may be required. Documentation on the rescue procedure, authorized rescuers, training and equipment must be available on site prior to conducting confined space entries requiring rescue services.
  5. For the Storrs campus, the Contractor may request to use UConn Fire Department as its rescue service. However, during the course of an entry, if the UConn Fire Department does not have sufficient staff on site, the Contractor will be advised and will be required to exit the confined space. If the Contractor's confined space work is of a type that cannot be interrupted, the contractor must provide a qualified rescue team on-site or hire a dedicated standby rescue team from UCFD. To arrange for a dedicated rescue team from UCFD, contractors may contact the Deputy Chief of Operations at 860-486-0010.
  6. Notify the UConn Fire Department at 860-486-4925 prior to conducting any permit entry on the Storrs Campus. Notification shall include the exact location of the space, name of caller, CALLBACK number for the responsible confined space attendant and estimated duration of entry. Upon completion of the entry, the Contractor must notify the UConn Fire Department that entry operations have

been completed in the confined space.

7. All Hot Work in confined spaces must be covered under a Hot Work Permit.
- C.** UConn employees entering a confined space under a contractor's confined space permit for inspection purposes shall, prior to entry:
1. review the contractor's permit to determine what hazards are/were present in the space. Based on their confined space training, the UConn employee shall evaluate the methods the contractor is using to mitigate those hazards. If the employee does not believe they are adequate for any reason, they shall not enter the space and call UConn EHS for guidance.
  2. Verify with the contractor's confined space attendant that the UConn Fire dispatch has been notified of the entry.
  3. Obtain a copy of the permit and forward it to EHS for review after the entry, (cell phone photo is sufficient).
  4. Use a UConn owned or leased confined space air monitor to verify that there are no atmospheric issues in the space prior to entering and shall carry the air monitor with them in the space during the inspection.
  5. UConn employee may only perform inspection tasks under a contractor's permit.
  6. No other work shall be performed in the space by the contractor during such inspections.
  7. Contractors shall not manipulate any energy isolating devices (e.g., valves, electrical disconnects, etc.) in the space or elsewhere, that would change the energy supply status of the space during the inspection.
- D.** The use of University services or equipment by contractors to perform an entry is strongly discouraged. If University and contractor personnel will be working together during an entry, or an unforeseen circumstance requires the use of University services or equipment, Departments must use the waiver form in [Appendix C](#).

## **APPENDIX A**

### **CONFINED SPACE ENTRY PERMIT**

Permits are for use by University of Connecticut personnel and issued only by Permit-Authorizing Officials, UConn Fire Department Officials, or to other individuals authorized by the Occupational Health and Safety Manager or Specialist.

Link: <http://www.ehs.uconn.edu/forms/CSPermit.pdf>

## **APPENDIX B**

### **Permit-Required Confined Space Pre- and Post-entry Review with Outside Contractors**

**Link:** <http://www.ehs.uconn.edu/forms/PPEntryReview.pdf>



## **APPENDIX C**

### **Permit-Required Confined Space Waiver and Release**

<http://www.ehs.uconn.edu/forms/CSWaiver.pdf>