University of Vermont
Department of Physical Plant
Permit-Required Confined Space Entry Program
in accordance with
OSHA 29 CFR 1910.146

REVISED AND DISTRIBUTED BY:
THE UNIVERSITY OF VERMONT
DEPARTMENT OF PHYSICAL PLANT
TRAINING AND COMPLIANCE OFFICE

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Confined Space Entry Program
Department of Physical Plant

Introduction

The Occupational Safety and Health Administration (OSHA) set forth in 29 CFR 1910.146 the requirements of working in confined spaces. The regulation contains requirements for practices and procedures to protect employees from the hazards posed by entry into confined spaces. This written program establishes the procedures to be used by Physical Plant employees for entry into confined spaces defined by OSHA as meeting the following criteria:

1. Any space that is not ordinarily inhabited by people and is large enough for an individual to enter;

2. Has limited or restricted entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means for entry); and

3. Is not designed for continuous employee occupancy.

Entry into a confined space has occurred if any part of the person's body breaks the plane of an opening to a confined space. Confined spaces that can typically be encountered by Physical Plant personnel include tanks, concrete vaults, sumps, boilers, tunnels, and exhaust systems.

Program

The Physical Plant Department is committed to adequately safeguarding all their employees during the performance of their jobs. This program is intended to identify permit required confined spaces and their hazards and provide the necessary training to facilitate safe entry. It will be the responsibility of each employee to follow the stated guidelines for confined space entry and practice safe work practices. The Training & Compliance Office (TCO) is responsible for implementation and review of this program.

Classification of Confined Spaces

Non-Permit Required Confined Space

A confined space that poses no threat to life or health, with the exception of a hazardous atmosphere that can be eliminated through continuous forced air ventilation, can be defined as a non-permit required confined space. Entry into the space that poses an atmospheric hazard is allowed only after the space has been monitored for oxygen content and contamination and determined to be free of hazards while continuous ventilation is performed. In the event that ventilation stops, the entrants

must exit the space until conditions can be monitored and the space be deemed acceptable for re-entry. If any hazards are discovered within a non-permit space, the space is to be considered permit required and the components of the permit system apply. The University of Vermont will identify and label non-permit spaces. If there are questions regarding a *Non-Permit Required Confined Space* contact the TCO for assistance at 656-SAFE (7233) or contact Service Operations Support at 656-1430 or 656-2649 to page a member of the Confined Space Rescue Team.

Non-Permitted spaces are labeled with the following label:

Permit-Required Confined Spaces

A permit is required if the space meets the criteria of a confined space and also has the following hazards:

1. The area contains, or has a known potential to contain, a hazardous atmosphere. This may be an atmosphere with toxic gases above the OSHA permissible exposure limit (PEL), poor natural ventilation, or an atmosphere with an insufficient amount of oxygen, less than 19.5% or greater than 23.5%.

2. The area contains material with the potential to engulf an entrant. This may be either a solid or a liquid.

3. The area has an internal configuration such that an entrant could be trapped by inwardly conveying walls or by a floor that slopes downward and tapers to a smaller cross-section.

4. The area contains any other recognized serious safety or health hazard, which may be physical, biological, or mechanical.

Examples of Permit-Required Confined Spaces include steam holes, concrete vaults, boilers, sumps, wastewater holding tank, and underground maintenance pits, tunnel systems. A list of permit-required confined spaces is included in Appendix C.

Permit-Required Entry Procedures

In cases where employees plan to enter a Permit-Required Confined Space that has not been entered previously, no historical documentation of the conditions inside exists, or specific procedures have not been developed, the following is required:

Permit Required space are labeled with the following label:

1. If a previously unidentified space is found please contact TCO to develop written procedures. 656-SAFE.

The following items will be covered but not limited to in the specific written procedures.

1. Cordon off work area.

2. Eliminate pressure buildup before entry cover is removed, if applicable.

3. Guard opening to the entrance with a railing or other barrier.

4. Review procedures necessary for safe entry with team.

5. Verify, using a Combustible Gas Indicator (CGI), that atmospheric concentrations are within the following ranges:

Oxygen	19.5 to 23.5 percent
Flammable Gas/Vapor	< 10 percent of LEL
Known Contaminant	< PEL

During entry, the atmosphere must be regularly tested with a CGI to assure that the readings stay within the recommended ranges. *The CGI must be calibrated on a monthly basis. Follow the PM schedule setup in the famis system.*

If any of the airborne readings fall outside of the range, or CGI alarm is activated, the following actions must be taken.

* Leave the space immediately.

* Re-evaluate the atmosphere from outside the space.

* Implement additional measures to assure that a hazardous atmosphere will not develop prior to re-entry.

* Prepare a written certification indicating the date, location of space, atmospheric readings, and signature of certifying person prior to re-entry.

* Complete a new permit.

ITX Four gas meter Calibration Locations:

TCO Shop – Fort Ethan Allen
Central Heat Plant control room
South Zone in the Life Safety Office of Davis Building
MCM – Given Building Room E019
Utilities Zone at Centennial

Questions regarding meters contact TCO 656-SAFE

6. Verify that other conditions such as electrical supply, have been locked out or otherwise controlled.

7. Ventilate the space to control atmospheric hazards. Ventilation may be either positive or negative pressure.

8. Provide the following equipment:

* Ventilators

* Communications, i.e., walkie-talkie/radio, cellular phone, tag line, etc. if verbal contact cannot be maintained.

* Personal protective equipment (PPE) including hard hats, gloves, safety shoes, coveralls, and respirators (when applicable)

* Intrinsically safe lighting (labeled as Class I Division I),

* Ladders, if needed

* Harness, lifeline and winch or pulley

9. Station at least one attendant outside of the space for the entire duration of the entry whose sole responsibility is to monitor activities within the space, and prevent entry by unauthorized persons.

10. Plan in advance procedures for summoning rescue and emergency services. As notification, prior to entering the Confined Space and at the completion of work, contact Service Operations Support at 656-2560 to page all members of the Confined Space Rescue Team.

11 . Complete the permit prior to entry and post at the entry portal. A copy of the permit is included in Attachment B.

If for any reason the procedures and operations used at a site are judged to be inadequate by the team or the supervisor, the supervisor has the authority and responsibility to cancel the permit and revise the program to correct deficiencies.

Personal Protective Equipment

The purpose of Personal Protective Equipment (PPE) is to shield or isolate individuals from the chemical, physical, and biological hazards that may be encountered during confined space operations, as it is not always apparent when exposure occurs. Chemicals and petroleum products can cause serious injury and death if inhaled or when coming in contact with unprotected skin.

It is important the PPE users realize that no single combination of protective equipment and clothing is capable of protecting a worker against all hazards. PPE can itself create significant hazards to the wearer such as heat stress and physical and psychological stress in addition to impaired vision, mobility, and communication. PPE should be selected on a case-by-case basis because overprotection as well as under protection can be hazardous and should be avoided.

PPE must be worn whenever the wearer faces potential hazards arising from chemical exposure.

The minimum personal protective equipment requirements in a confined space include:

Hard Hat: to be worn at all times.

Safety Glasses/Goggles: to be worn at all times, if a full face-piece respirator is not donned.

Work Gloves: standard work gloves - to be worn in dry conditions; nitrite or butyl rubber glove to be worn in wet conditions.

Safety Work Shoes/Boots: to be worn at all times.

Respirator: to be worn as determined by the on-site attendant.

Hearing Protection: to be worn when excessive noise requires a person to yell to communicate from a distance of 3 feet. Readings can be taken by the TCO staff upon request.

Contractor Requirements

The University of Vermont utilizes contractors to perform tank testing, inspections, and cleaning. Contractors are required to adhere to The University of Vermont's Confined Space Entry Program at all times when entry into a vessel is performed. Contractors may follow their own program providing it is submitted to the Loss Prevention Specialist or Safety Programs Coordinator prior to performing work. All contractor confined space entry programs will be reviewed to assure that they are at least as stringent as the University of Vermont's program.

Rescue and Emergency Services

Employees of the University of Vermont who are authorized to provide rescue service are provided with, and trained to use, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.

Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants.

Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit space or from representative permit spaces.

One member of the rescue service shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR).

Prior to permit-required confined space entry, the entry supervisor will confirm that the on-site rescue service is located on the University grounds and prepared to respond. A means for summoning those services will be established prior to entry.

If rescue services are performed, the following procedures apply:

1. The local ambulance service will be contacted immediately.

2. Remote rescue will be attempted before entry-rescue is performed.

3. Assess the situation prior to entry to determine the cause of the injury (e.g. electrocution, chemical release, etc.) and secure the space prior to entry.

4. At least one attendant will be stationed at the opening to the confined space.

5. Rescuers will use the "buddy system" whenever possible.

6. Rescuers will be equipped with their own tripod (or other means of extricating rescuers) and air supply.

7. Rescuers will be provided with their own atmospheric testing equipment and shall not rely on the monitoring device used by the original entrants.

8. Rescuers will enter confined spaces for rescue purposes using SCBA (or an airline with 30-minute escape bottle). An additional air line or 30-minute breathing air cylinder will be brought into the confined space for each victim.

9. Atmospheric conditions in the confined space will be continuously monitored and rescuers will evacuate immediately if dangerous conditions are encountered.

10. Remove the victim as quickly as possible through the use of a ladder, backboard, or other means, guiding the victim over obstructions and through turns and openings.

Program Critique

All confined space permits are to be copied and forwarded to the Safety Programs Coordinator who will review the permits annually, or sooner. Changes will be made as needed to update the program and correct noted deficiencies.