

# UCCS CONFINED SPACE ENTRY PROGRAM

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**INTRODUCTION AND PURPOSE**

Entering confined spaces with an atmospheric hazard, a chance of engulfment or entrapment, or any other recognized serious safety hazard can be life threatening. The purpose of this program is to establish a best management program for the University of Colorado Colorado Springs (UCCS) based on the OSHA Confined Space Standard, Title 29 Code of Federal Regulations 1910.146, as well as other recognized safety standards. This program applies to all personnel, including employees, faculty, students and visitors, who perform work in or enter confined spaces at UCCS.

The purpose of this program is to ensure that safe work practices are utilized during all activities regarding permit-required confined spaces to prevent personal injuries and illnesses. Copies of this written program may be obtained from the Environmental, Health and Safety (EHS) department in the Academic Office Building.

**RESPONSIBILITIES**

Anyone who enters a confined space is responsible for recognizing the hazards and following all procedures listed in this program. Depending on the role during entry, the involved personnel have more defined responsibilities listed below under Authorized Entrant, Authorized Attendant, and Entry Supervisor.

The EHS department is responsible for the following:

- Developing, maintaining, and revising this written program.

- Providing initial identification, risk assessment, classification and atmospheric monitoring for all confined spaces.
- Providing necessary training to all affected personnel.
- Maintaining any and all records related to confined space.
- Planning and coordinating confined space rescue drills with all interested parties.

Supervisors in each department are responsible for:

- Implementing and enforcing this written program in their specified areas.
- Purchasing any equipment necessary to perform the confined space entry safely.
- Assisting in identifying confined spaces and the associated hazards.

## HAZARD EVALUATION FOR PERMIT SPACES

EHS conducts initial hazard evaluation of all workspaces to determine the location of permit-required confined spaces at UCCS. This evaluation identifies the existence and location of all confined spaces and determined, if any, are permit-required confined spaces. The inventory and identification of these spaces can be found in Appendix A. If at any time a new confined space is added to the campus or modifications are made to an existing space, the inventory will be updated.

Criteria used during the hazard evaluation included defining a confined space as one that is large enough and so configured that an employee can bodily enter and perform work, has limited or restricted means for entry and exit, and is not designed for continuous human occupancy. Criteria for evaluating if it is a permit required confined space included:

- Contains or has the potential to contain a hazardous atmosphere (i.e., toxic, explosive, or asphyxiating).
- Contains a material that has the potential for engulfing an entrant.
- 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.
- Contains any other recognized serious safety or health hazard.

If any of the above criteria are met, the space was determined to be a permit-required confined space until otherwise reclassified.

## RECLASSIFICATION

If a confined space is initially identified as a permit-required space, but it is determined all hazards can be eliminated, the reclassification checklist in Appendix C may be filled out. This form may only be filled out if there are no atmospheric hazards and all other hazards can be eliminated from outside of the space through methods such a lockout tagout. This reclassification might only apply to a specific task or scenario within that space and not the entire space itself. Once reclassified, the permit requirement is removed for that task or space.

Non-permitted spaces may also become permit-required based on alterations to the space or change the atmospheric hazards such as welding or painting. In this case, although it is normally a non-permitted space, the confined space is reclassified as permit-required and all the required entry procedures apply.

## PREVENTING UNAUTHORIZED ENTRY

In this document, entry means breaking the plane of the space with any body part. In order to provide a safe work environment and to prevent exposed employees from accidentally entering a permitted space, signage has been placed either on the confined space itself or at the entry of the building or room to indicate the location of the confined space. All employees, faculty, students, contractors, and visitors are instructed and expected to follow all posted safety signage. In addition to signage, most entrances to the location of confined spaces are locked to ensure that unauthorized employees do not enter and/or work in permit-required confined spaces without authorized entry.

## NON-PERMIT ENTRY REQUIREMENTS

All confined spaces must be considered permit-required until it has been determined that either the hazards do not exist or they have been eliminated. If all hazards have been eliminated, entry can proceed without the use of an entry permit or an attendant. Confined space training is still required for entering into non-permitted spaces.

All personnel entering a non-permit confined space must:

- Visually check the space to ensure no modifications have been made that would change the classification.
- Guard or barricade entry opening to protect from unauthorized entry.
- Wear all required personal protective equipment (PPE).
- Be observant and aware of the effects of hazardous contaminants and evacuate the space immediately if they are detected.
- Have a means to summon assistance in an emergency (Two-way radio, cell phone, etc.)

All non-permitted spaces are identified in the UCCS Confined Space Inventory.

## PERMIT-REQUIRED ENTRY PROCEDURES

Entry into confined spaces with hazardous atmospheres, engulfment hazards, entrapment hazards or other serious hazards must be performed under permit-required confined space entry procedures as found on the entry permit.

## PERMIT

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The use of the entry permit is required for any entry into a permit-required confined space as identified in the inventory. It is also required for any non-permitted space that becomes permit-

required due to the nature of the work being performed. The permit can be obtained through your manager, EHS, or printed offline. All sections of the permit must be filled out prior to entering the space. Entry supervisors are responsible for filling out the permit and authorizing entry into the space. The entry supervisor may serve another role such as entrant or attendant.

The permit must be canceled if the conditions outlined in the permit change, entry procedures and conditions are no longer met, or the work is completed. Permits are to be returned to EHS once complete or canceled and retained for a minimum of 1 year. Any problems encountered during the entry must be noted on the permit so revisions to the procedures can be made as necessary. This permit does not replace all other permits, and if hot work is being performed in a confined space, the employees must have a hot work permit in addition to the confined space entry permit.

## **EQUIPMENT**

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To ensure the safety and health of our employees, UCCS provides equipment to all employees who work in or near the permit-required spaces. All equipment is maintained in excellent working condition and any equipment found to be faulty during the pre-use inspection is not to be used and replaced as soon as possible. All employees who work in and around confined spaces are trained in the correct usage of this equipment, and ensure that all equipment, including that used for personal protection, is used properly.

Some of the equipment utilized at UCCS includes air movers, harnesses, PPE, air monitoring equipment, lighting devices, barricading devices, communication equipment and any other safety equipment necessary to complete the job.

## **DUTIES OF DESIGNATED EMPLOYEES**

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### **AUTHORIZED ENTRANTS**

Anyone who has completed the training and are authorized to enter permit-required confined spaces (authorized entrants) are assigned specific duties and responsibilities that they must perform prior to and while working in the space. Their duties and responsibilities include:

1. Identifying the hazards associated with the confined space.
2. Maintaining communication with the outside attendant(s).
3. Identifying any changes or modifications to the space that may cause danger to life, safety or health.
4. Knowing the proper use of all equipment and utilizing equipment as necessary.
5. Promptly exiting the space whenever the authorized attendant says, whenever a hazardous condition is detected, or whenever the air-monitoring instrument alarms.
6. Wear all required Personal Protective Equipment (PPE).

### **AUTHORIZED ATTENDANTS**

Anyone who has completed the training and been designated as outside attendants are assigned specific duties and responsibilities that they must perform before and during a confined space entry. **The attendant(s) are never allowed to enter the confined space under any circumstance.** Other duties and responsibilities include:

1. Maintaining communication with the entrant(s).
2. Knowing the hazards of the space and the behavioral effects of those hazards.
3. Monitoring the confined space atmosphere and ventilation equipment.
4. Summoning emergency response personnel when necessary.
5. Performing non-entry rescue steps when applicable.
6. Prohibiting unauthorized entry into the space.
7. Identifying any situations that may require entrants to exit the space.
8. Ordering the authorized entrants to exit the confined space immediately if: a hazardous condition is detected inside or outside the space, the authorized entrant acts abnormally, or it is not possible for the attendant to perform required duties.
9. Remaining outside the permitted space until entry is complete or relieved by another attendant.
10. Performing no other duties that interfere with the above listed duties.

## **ENTRY SUPERVISORS**

Anyone who has completed the training and have been designated as permit space entry supervisors are assigned specific duties and responsibilities that they must perform in prior to authorizing entry into the space. Their duties and responsibilities include:

1. Knowing the hazards that may be faced during entry, including signs, symptoms, and consequences of exposure.
2. Filling out the Entry Permit and authorizing entry by signing the permit.
3. Verifying that all Entry Permit requirements have been properly addressed before entry.
4. Verifying that rescue services are available and can be summoned.
5. Canceling the permit if unacceptable conditions arise during entry.
6. Ensuring that the terms of the Entry Permit are followed and that acceptable entry conditions are maintained.

The authorized entrant or attendant can also be the entry supervisor if they are trained and knowledgeable.

## **ATMOSPHERIC TESTING**

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Atmospheric testing is required for both initial classification of a confined space and prior to entering any permit-required confined space. This is accomplished through the use of a handheld air meter. At a minimum, every space must be monitored for oxygen, combustible gases and vapors, and toxic gases and vapors with oxygen being measured first. Documentation of the testing must be recorded on the Confined Space Entry Permit.

If the space can be isolated from the cause of the atmospheric hazard, only pre-entry and periodic air testing are required, however continuous monitoring is always encouraged. In spaces that cannot be isolated or there is a risk of changing atmospheric conditions, continuous air monitoring must be used, and the monitoring device should be worn by the entrant or placed near the work. If the air monitoring device turns off or goes into alarm, the entrant(s) must exit the space. When performing atmospheric monitoring in vertical spaces, samples must be pulled from multiple levels within the space before entry as atmospheric conditions can be stratified.

All air monitoring devices must be maintained according to manufacturer's specification. The calibration must be current prior to utilizing the meter for confined space entry. All entrants and users of the atmospheric monitors must be thoroughly trained on the calibration and operation of the specific air monitor. Each department is responsible for the maintenance and purchasing of their own air monitoring devices.

Minimum entry conditions are listed below. If conditions are not met, then entry is prohibited. If the space is occupied and the entry conditions are no longer met, the space must be evacuated immediately.

<b>Hazard</b>	<b>Acceptable Limits</b>
Oxygen	Between 19.5% and 23.5%
Flammable gasses	<10% of LEL
Carbon Monoxide (CO)	<35 ppm
Hydrogen Sulfide (H <sub>2</sub> S)	<10 ppm
Carbon Dioxide (CO <sub>2</sub> )	0.5% or 5000 ppm
Dust	Visibility >5 ft.
Hazardous Flows and Energy	Secured and locked/tagged out
Engulfment Hazards	None Present
Other Atmospheric Hazards	See EHS

## TRAINING PROGRAM

Every employee, faculty or student at UCCS who is involved in confined space entry is provided with training that gives them the understanding, knowledge and skills necessary to perform entry safely. The training is the same whether you are an entrant, an attendant, or entry supervisor as all the required information for these duties is provided during the training.

EHS conducts permit required confined space training for all applicable new hires and annually thereafter. Training can occur online, in a classroom, in the field, or any combination of those three. When changes occur in permit required confined space areas, retraining is provided as necessary. If new confined space equipment is purchased or a new confined space is added, training on the specific equipment or space will be provided. If there is reason to believe that an employee does not understand the proper entry procedures or that their knowledge seems inadequate, EHS will provide retraining as necessary. All training related materials, documents, and records are kept in EHS.

## RESCUE AND EMERGENCY SERVICES

In the event of an emergency, UCCS will provide non-entry rescue, if feasible, and will notify outside authorities for assistance. UCCS utilizes the Colorado Springs Fire Department (CSFD) to perform entry rescue services if necessary. Non-entry rescue is the preferred method of rescue and retrieval systems will be put in place prior to entry whenever possible. Retrieval systems may include a full body harness, retrieval line, a winch, tripod, or other forms of PPE. In the event of an emergency, the outside attendant will also notify UCCS Police after calling 911.

No UCCS employee, student or faculty is trained to perform entry rescue. However, authorized attendants are trained in non-entry rescue procedures that include, but is not limited to, staging rescue equipment, utilizing hoist and tripod to pull up entrant(s), notifying UCCS Police and CSFD, setting up and starting ventilation and air movement, and acquiring medical and/or first aid equipment. Only CSFD or trained contractors can perform entry rescue.

## RESCUE DRILLS

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EHS is responsible for planning, organizing, and executing routine confined space rescue drills with the local Fire Department in conjunction with the UCCS. These drills can include either non-entry or entry rescue and will be held in actual confined spaces or in like spaces where confined space rescue would be necessary.

## CONTRACTOR AND MULTIPLE EMPLOYER ENTRY PROCEDURES

All outside employees/contractors must have their own permit-required confined space entry program to follow when entering permit-required confined spaces at UCCS. This may include, but is not limited to, air sampling requirements, training documentation, communications plan and a rescue plan. Before entering the space, UCCS will inform the contractor of the location of permit-required spaces and the hazards identified that make the space in question a permitted space.

If a contractor or outside employee is working in a permit-required space in conjunction with a UCCS employee, a pre-planning meeting will be held with all parties before work is authorized to begin so that all involved agree with regards to the requirements of confined space entry and other safety concerns. One permit may be used for entry, but it must be signed by all involved parties.

## REVIEW AND RECORDKEEPING

UCCS reviews the Permit-Required Confined Space Entry Program on a regular basis to ensure the safety of employees. The program is also updated as issues, questions or concerns are brought up, as well as with new equipment or any change in the procedures.



All records in relation to confined space are kept in the EHS department. This includes this program, completed permits, training records, and the confined space inventory.

### Document Review Log

Date	Reviewed by:	Changes Made:
Sept 2018	Kelley Hixson	Document Created
Oct 2018	Kelley Hixson	Updated the permit based on feedback from Facilities CS training.
July 2019	K. Hixson	Updated the EHS website

## APPENDICES

### Appendix A

#### Confined Space Inventory

A list of UCCS Confined Spaces can be found on the EHS Website here:

<https://www.uccs.edu/police/environmental/physical-safety-program/ergonomics>

### Appendix B – Confined Space Permit



# Confined Space Entry Permit

Version: 1  
Last Updated:  
7/30/2019

Date:

Time:

Location of Work:

Scope of Work:

Known Hazards of the Space (check all that apply):

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Oxygen Deficiency     | <input type="checkbox"/> Hydrogen Sulfide (H2S) | <input type="checkbox"/> Engulfment           |
| <input type="checkbox"/> Combustible gas/vapor | <input type="checkbox"/> Other gas/vapor: _____ | <input type="checkbox"/> Entrapment           |
| <input type="checkbox"/> Combustible dust      | <input type="checkbox"/> Chemical Hazards       | <input type="checkbox"/> Extreme Temperatures |
| <input type="checkbox"/> Carbon Monoxide (CO)  | <input type="checkbox"/> Electrical Hazards     | <input type="checkbox"/> Fall Hazards         |
| <input type="checkbox"/> Mechanical Hazards    | <input type="checkbox"/> Pipes under pressure   | <input type="checkbox"/> Other Hazards: _____ |

Ventilation:

- Before entry
- Continuously
- None

Communication Method:

- Verbal
- Visual
- Two Way Radio
- Other: \_\_\_\_\_

Additional Lighting Needed:

- Flashlight
- GFCI
- None
- Other: \_\_\_\_\_

Additional PPE (Check all that apply):

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Hearing Protection | <input type="checkbox"/> Head Protection | <input type="checkbox"/> Harness                |
| <input type="checkbox"/> Gloves: _____      | <input type="checkbox"/> Body Protection | <input type="checkbox"/> Dust Mask              |
| <input type="checkbox"/> Work Boots         | <input type="checkbox"/> Rubber Boots    | <input type="checkbox"/> Safety Glasses/Goggles |
| <input type="checkbox"/> Face Shield        | <input type="checkbox"/> Knee pads       | <input type="checkbox"/> Other: _____           |

Additional Considerations (check all that apply):

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Lockout Tagout               | <input type="checkbox"/> Tripod with Winch | <input type="checkbox"/> Generator       |
| <input type="checkbox"/> Hot Work (requires a permit) | <input type="checkbox"/> Barricade Entry   | <input type="checkbox"/> Portable Ladder |
| <input type="checkbox"/> Other: _____                 |  |  |

Time	Location of Air Sample	Oxygen (Acceptable from 19.5% to 23.5%)	LEL (acceptable <10%)	CO (acceptable <35 ppm)	H2S (acceptable <10 ppm)	Other Gases

Instrument Model:

Date of Last Calibration:

**In case of an emergency, call 911.** Tell the operator you need a confined space rescue and assistance from the fire department. **DO NOT ENTER THE SPACE!** Then contact UCCS Police at (719) 255-3111 and begin any non-entry rescue procedures, if applicable.

I have reviewed this permit and I am aware of the hazards and precautions necessary for performing the designated work in the confined space. I certify that all existing and potential hazards have been evaluated, necessary protective measures have been taken, and acceptable environmental conditions exist for entry.

<b>Entry Title</b> (Entrant, Attendant, Alternate, Supervisor, etc.)	<b>Name</b>	<b>Signature</b>
Entrant		
Attendant		

This permit must be displayed at job site until work is complete, canceled, or the shift has ended.

Comments/Problems During Entry:

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The work is:

Complete       Canceled       Done for the day

Entrant Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

# Appendix C

## UCCS Confined Space Reclassification Checklist

**Applicability:** Confined spaces can be reclassified for various reasons. A permit-required confined space can only qualify for reclassification if the following are met:

- There are no actual or potential atmospheric hazards.
- There are no hazards capable of causing death or serious physical harm.
- All other hazards associated with the space can be eliminated from outside the space by means such as lockout tagout.

If at any time there are modifications to the space, it must be re-evaluated. This reclassification only applies to the work/purpose of entry described and if any other work is to be performed in the space, it must be considered permit required until otherwise reclassified.

Date: \_\_\_\_\_

Confined Space: \_\_\_\_\_

Location of Space: \_\_\_\_\_

Work to be performed/ Purpose of entry:

\_\_\_\_\_  
\_\_\_\_\_

Hazards Associated with the Space	How Hazards will be Eliminated

Authorized Entrant Employee Signature: \_\_\_\_\_ Date: \_\_\_\_\_

EHS Signature: \_\_\_\_\_ Date: \_\_\_\_\_