



**BOISE STATE UNIVERSITY**  
ENVIRONMENTAL HEALTH, SAFETY  
AND SUSTAINABILITY

**Confined Space Program**  
[Idaho Division of Building Safety](#)  
General Health and Safety Standards 043  
[OSHA 1910.146](#)

Revision 3, Oct. 2014

## Statement of Program

Confined spaces at Boise State have been identified and evaluated using a standard checklist. Atmospheric conditions have been monitored in each space to determine existing air quality. The campus has primarily non-permit required confined spaces and a few permit required confined spaces. Each identified permit required confined space will be labeled and access restricted. All confined spaces will be evaluated by Environmental Health, Safety and Sustainability (EHSS) as necessary and as requested. All employees working in areas where confined spaces are present will be trained on the confined space program and all required elements.

Known hazards will be communicated to contractors coming on site to complete work in confined spaces when requested. Contractors must follow their company's confined space program; provide their own sampling and personal protective equipment, and have completed the appropriate training as outlined by Idaho Division of Building Safety General Health and Safety Standards 043 and OSHA 1910.146.

## Prevention of Unauthorized Entry

All campus identified confined spaces have been cataloged, evaluated for hazards, and noted in this document: [Confined Space Inventory](#). All confined spaces that qualify as a [permit](#) required entry will be labeled on the exterior of that space **Danger Confined Space Enter by Permit Only**. All permit required confined spaces will be controlled by the entry team during operations to prevent unauthorized entry.



## Definitions

**Breaking the Plane** – When any part of the body enters a confined space. Once the plane of the space has been broken it is considered “entered”. All requirements regarding that space must be followed by all individuals who have broken the plane.

**Confined Space** – A workspace that is large enough to enter completely, has a restricted means of entry/exit, and is not designed for continuous occupancy.

**Entry Team** – The essential personal for maintenance operations involving permit required confined space. Team member roles are defined within the section of this document titled *Roles of Entry Team*.

**Hazardous Atmosphere** – Any atmosphere, inside a confined space, that may expose employees to the risk of death, incapacitation, impairment of the ability to evacuate (self-rescue), injury, or acute illness.

**Multi-Gas Meter/Confined Space Monitor** – A calibrated direct reading gas monitor that is capable of detecting oxygen content, flammable gases and vapors, and potential toxic air contaminants. The unit currently owned by EHSS (MX6 iBrid) has a visual alarm, audio alarm and data logging functions.

**Non Permit Required Confined Space (NPRCS)** – A confined space that does not contain a significant health hazard to entrants or, with respect to atmospheric or engulfment hazards, does not have the potential to contain any hazard capable of causing death or serious physical harm.

**Parts Per Million (PPM)** – PPM is a standard expression of concentration commonly used to compare occupational exposure to gasses or vapors.

**Permit Required Confined Space (PRCS)** – A confined space (as defined above) that may also have one or more of the following characteristics:

1. Contains or has the potential to contain a hazardous atmosphere per OSHA 1910.146
2. Contains a material that has the potential for engulfment (such as water, sand, etc.)
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section.
4. Contains any other recognized serious safety or health hazard.

## Atmospheric Testing

All confined spaces listed on the [confined space inventory](#) have been evaluated for atmospheric conditions. Employees may observe any monitoring or testing occurring in confined spaces. If an employee requests that a confined space be tested, every reasonable accommodation will be made to test the space immediately by calling the EHSS 24-hour phone at 863-8024. If a hazardous atmosphere is discovered, the space must be purged with fresh air to eliminate the hazard, re-tested, and a confined space permit can then be filled out. Before entrants are allowed to continue work, the area must test within appropriate parameters. Based on the type of work being performed, the atmospheric tests should continue to ensure the entrants are working in a safe environment. The conditions listed below must be met or entry is prohibited. If the space is occupied, and these values are exceeded the space must be immediately evacuated.

### Minimum Conditions for Confined Space Entry

|                        |   |                    |                               |
|------------------------|---|--------------------|-------------------------------|
| Oxygen                 | Between 19.5-23.5%                          | Flammable dusts    | Visibility > 5 ft.            |
| Flammable gasses       | <10% of *LEL                                | Engulfment hazards | None present                  |
| Hydrogen sulfide       | <10 ppm                                     | Hazardous flows    | Secured and locked/tagged out |
| Carbon monoxide        | < 25 ppm                                    | Hazardous energies | Secured and locked/tagged out |
| Other toxic substances | < <a href="#">*1/2 of PEL for substance</a> | External hazards   | Controlled                    |

\*LEL denotes the lower explosive limit of a substance and can be located on the SDS (MSDS).

\*PEL is an OSHA defined permissible exposure limit usually defined as an 8 hr. time weighted average (value is not valid for exposures exceeding 8 hrs.)

## Non-permit Required Confined Space

### General Requirements

Entry into a non-permit required confined space requires that the equipment inside the space be locked and tagged out and that all hazardous energy sources are isolated by following the proper procedures, per the [Energy Isolation Program](#). Atmospheric testing may not be required if; 1) a survey conducted by EHSS has determined there is no potential for a hazardous atmosphere AND 2) that no modifications have been made to the equipment or configuration of the space since the initial evaluation. Due to the nature of below ground vaults and the possible accumulation of hazardous gases, atmospheric testing is required prior to entering any of these spaces. Standard barriers need to be erected when necessary to protect entrants from external hazards.

When changes in the configuration or use of a confined space occur that may increase or present new hazards, EHSS needs to be notified to re-evaluate the space. If at any time the entrants request that the atmosphere be tested during their work in the confined space, the work will cease and all appropriate measures will be made to test the space before re-entry.



Standard Barrier

## Entry Procedures - Non-Permit Required Space

Before employees enter a non-permit required confined space they must:

- Inform immediate supervisors of the confined space location and plans for entry.
- Obtain and complete a pre-entry checklist.
- Guard or barricade the opening to protect the safety of personnel, pedestrians and motorists (see image of Standard Barrier).
- Lock out and isolate equipment or hazardous energy sources, per the [Energy Isolation Program](#).
- Test for a hazardous prior to entry with a calibrated, direct-reading instrument for a hazardous atmosphere (if required per general requirements). See EHSS for use of this equipment.
- Evaluate the space for engulfment, entrapment or any other serious safety or health hazards. If one of these hazards is identified, the space must not be entered. Notify your supervisor and inform EHSS.
- Wear all required personal protective equipment (PPE) for the assigned task.
- Be observant of the potential effects of hazardous contaminants and evacuate immediately if any signs are detected. Potential effects/warning signs may include but are not limited to:

|   |                       |
|---|-----------------------|
| Irritation of the eyes, throat or mouth | Fatigue               |
| Slurred or slowed speech                | Dizziness             |
| Headache                                | Heavy/rapid breathing |
| Nausea                                  | Anxiety               |
- Have the means to summon assistance (i.e., cell phone, two way radio, etc.)

## Permit Required Confined Space

Confined spaces that present a serious hazard to the health of entrants are deemed “permit required confined spaces.” A confined space that exhibits one or more of the following characteristics will require that the confined space be classified as permit-required:

- a. Contains or has a known potential to contain a hazardous atmosphere.
- b. Contains a material that can potentially engulf an entrant (such as water, sand, etc.).
- c. Has an internal configuration that may trap or asphyxiate an entrant such as inwardly converging walls or a sloped floor that tapers to a smaller cross section.
- d. Contains any other recognized serious safety or health hazard.
- e. Any inventoried confined space that has been modified in a manner that may increase the potential for harm or present new hazards, must be considered permit required until it can be evaluated by EHSS personnel.

Activities conducted in these spaces must be carried out with extreme caution and in compliance with Boise State University’s permit-required confined space procedure. This procedure requires that the

entry take place under a permit issued by a designated Entry Supervisor. During the entry a minimum of one attendant will be stationed outside the permit required space for the duration of entry. Prior to entry, a number of pre-entry procedures (summarized below) must be followed including, but not limited to, barricading space entrances, removal or control of atmospheric hazards, isolation of the permit space, entry team meeting and a process put in place to verify that acceptable conditions are maintained throughout the entry. The team meeting will involve a discussion regarding any space specific hazards, entry procedures, the work being performed, duties of each team member and a review of emergency response actions.

## Permit Required Confined Space Entry Procedures

1. Complete a [pre-entry checklist](#).
2. Obtain a [confined space permit](#) and complete the required entries.
3. Before entry, the confined space must have its internal atmosphere tested – contact EHSS to obtain the multi-gas meter/confined space monitor if needed.
4. If a hazardous atmosphere is identified, forced air ventilation from a clean source must be used to ventilate. This ventilation will continue while work is being conducted.
5. Provide barriers to protect entrants from external hazards that may enter the space.
6. Periodically, during the work, the confined space must be tested per the entry permit. EHSS will test the space if arrangements are made ahead of time.
7. If a hazardous atmosphere is detected during entry:
  - a. Evacuate the entrants from the space
  - b. Evaluate how the condition was generated
  - c. Implement measures to protect the entry employees from the hazardous atmosphere before re-entry.
  - d. Re-enter through written certification, date, location and signature of the Entry Supervisor.

## Roles of the Entry Team

### Authorized Entrant

Authorized entrants are employees who have been given the authority by their supervisor to enter a permit required confined space. Responsibilities of the entrant include:

1. Knowing the hazards associated with confined space entry including the specific hazards associated with the PRCS being entered.
2. Knowing how to use all equipment involved for work or monitoring.
3. Knowing the procedures to communicate with the attendant.
4. Knowing how to identify and communicate to the attendant any hazardous or prohibited conditions.
5. Being prepared to evacuate the space immediately.

### Attendant

The safe execution of PRCS operations can rely on the significant responsibilities of the designated attendant. This individual must be able to make quick decisions based on the conditions present in the space and their responsibilities include:

1. Knowing the hazards of the space and the nature of the work.
2. Being able to identify behavioral effects (warning signs) that might indicate the presence of a hazard impacting the entrant.
3. Identifying all authorized entrants and keeping an accurate count of individuals inside.

4. Remaining outside of the PCRS until being relieved.
5. Communicating effectively with the entrants.
6. Monitoring conditions inside and outside of the confined space and being prepared to evacuate the entrants if necessary.
7. Summoning rescue/emergency services.
8. Keeping unauthorized persons away.
9. The attendant must NOT undertake any additional duties that might interfere with these primary duties listed above.

## **Entry Supervisor**

The entry supervisor is responsible for determining whether acceptable entry conditions exist, authorizing the entry, overseeing entry operations, terminating the entry, and canceling the permit. If the entry supervisor is properly trained and equipped, he or she may also serve as an authorized entrant or attendant. Responsibilities of the entry supervisor include:

1. Knowing the hazards.
2. Verifying that all procedures are followed, and that required equipment is available and used during entry.
3. Terminating entry and cancelling the permit.
4. Verifying the availability and effectiveness of rescue services.
5. Removing unauthorized persons.
6. Ensuring acceptable conditions are maintained throughout the duration of entry.

## **Equipment**

Boise State University will provide the following equipment to employees for confined space entry when requested:

- Multi-gas meter
- Ventilation equipment for purging the air space
- Portable lighting
- Barrier, shield or guarding for the opening
- Full body harness with D ring between shoulders

## **Confined Space Rescue**

Boise State employees will not attempt to rescue individuals in confined spaces. Emergency retrieval will require a call to 911 to solicit emergency response from the Boise Fire Department. Boise State has communicated this need with the Boise Fire Department.

## **Contractors**

In the event both Boise State employees and contractors are entering a confined space, both groups will follow their respective confined space programs; each obtaining the required entry permit. Hazard information regarding specific confined spaces on campus can be located within the [confined space inventory and survey document](#) or from the EHSS office via request. Confined space programs in use by contractors must comply with the Idaho Division of Building Safety General Health and Safety Standards 043 and OSHA 1910.146.

Contractors working in confined spaces must be trained to these standards prior to coming to Boise State to perform work. The contractor will be asked to provide a copy of their written confined space program and documentation of training for the personnel working in the confined space. The contractor must inform the Boise State project manager of the permit system program that the contractor will follow.

Contractors should be prepared and bring their own multi-gas meter. When this occurs, a BSU employee will test alongside the contractor if they also plan to enter the space. If the contractor does not provide their own rescue services, the Boise Fire Department will be contacted in response to an emergency. At the conclusion of work, the Boise State project manager will debrief with the contractor to note if any hazards were encountered or created during entry.

If the contractor will be performing work that requires additional certification (i.e. Hot Work), evidence of this certification will need to be available if requested. If any safety deficiencies are reported to EHSS regarding confined space operations they will be addressed as soon as possible.

## Training

**Training on the Confined Space Program will be conducted prior to the Employee's initial assignment and will include:**

1. Program contents and location of written program
2. How to detect potential hazards
3. Symptoms of hazards
4. Which hazards to monitor at regular intervals
  - a. Oxygen
  - b. Carbon Monoxide
  - c. Lower Explosive Limit (LEL)
5. Checklist for pre-entry
  - a. Lockout/Tagout
  - b. Atmosphere Checks
  - c. Fall Protection
  - d. Communication
  - e. Using Ventilation
  - f. Contracting Rescue Services
6. Determining # of people needed for project
7. Determining amount of time needed for project
8. Evacuation for trapped Employees or contractors
9. Responsibilities of Entrants
10. Responsibilities of Attendants
11. Responsibilities of Entry Supervisors
12. Using the Permit

Confined Space Training is required upon initial assignment, and every three years thereafter. If identified spaces are changed or modified and hazards have changed, additional training would be required prior to entry. If employees demonstrate or request that additional training is needed, the confined space program will be evaluated and additional training will be made available.

Canceled permits will be reviewed and the program will be revised as necessary.

## Acknowledgement

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