

# CONFINED SPACE ENTRY PROGRAM

## FOR

### University of Wyoming

This university and its associated work places have confined spaces that due to various chemical and physical properties may cause death or serious injury to employees who may enter them. This Confined Space Entry Program is developed and established to identify, evaluate, and control such spaces, and more important, to detail procedures and responsibilities for entering and working within confined spaces.

Adherence to the policies and directives contained in this program is mandatory for all supervisors and employees of this university. Supervisors and employees failing to follow this program are subject to disciplinary action and/or dismissal.

## DEFINITIONS

Confined Space - A space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit; and
- Is not designed for continuous employee occupancy.

Permit Required Confined Space - A confined space that:

- Contains or has a potential to contain a hazardous atmosphere; or
- Contains a material that has the potential for engulfing an entrant; or
- 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; or
- Contains any other recognized serious safety or health hazard.

Acceptable Entry Conditions - The conditions that must exist in a permit space to allow entry and to ensure employees can safely enter into and safely work within a permit required confined space.

Entry - The action by which a person passes through an opening into a permit required confined space. Entry is considered to occur as soon as any part of the entrant's body breaks the plane of an opening into the space. **NOTE:** For entry to occur there must be intent to bodily enter the confined space. You may reach into a space, and not bodily enter (say to adjust a valve), and do so without an entry permit being required.

Entry Permit - The written or printed document provided by this university to allow and control entry into a permit space.

Entry Supervisor - The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.

Hazardous Atmosphere - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following conditions:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL. (this may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less);
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
- Atmospheric concentration of any substance for which a dose of permissible limit is published (in Subpart G Occupational Health and Environmental Control; or Subpart Z Hazardous and Toxic Substances); or
- Any other atmospheric condition that is immediately dangerous to life or health.

Non-Permit Confined Space - A confined space that does not contain, or with the respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Prohibited Condition - Any condition in a permit space that is not allowed by the permit during the time when entry is authorized.

Testing - The process by which the hazards are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

## CONFINED SPACE LOCATIONS

Workplaces within this university have been surveyed to identify any confined spaces that may be present. Such locations are listed below.

Non-Permit: The following locations have been identified as non-permit confined spaces, and may be entered and worked in using normal work procedures:

Locations

Permit-Required: The following locations have been identified as permit required confined spaces, and may be entered ONLY by following the entry permit procedures established in this program:

Locations	Hazards

Alternate Entry: The following permit required confined spaces may be entered by following the Alternate Entry Procedures:

Locations

Reclassify: The following permit required confined spaces may be reclassified and entered as a non-permit space ONLY after their hazards have been eliminated following prescribed procedures:

Locations	Eliminated By

**RESPONSIBILITIES**

Employers:

- a. Will evaluate the work place and identify permit required confined spaces.
- b. Inform exposed employees of the existence, location of, and the danger posed by the permit space by posting danger signs or by any other equally effective means.
- c. Determine if employees will or will not enter permit required space. If not, take effective measures to prevent employees from entering the permit spaces.
- d. Provide and document training for entrants, attendants, entry supervisors, and (if used) in-house rescue personnel.
- e. Designate the appropriate supervisor(s) as entry supervisor(s).

- f. Provide all specified equipment required for entry in a permit required confined space as outlined in this and the Wyoming OSHA program at no cost to the employees, maintain that equipment properly, and ensure that employees use that equipment properly.
- g. When acting as host employer for a contractor performing permit space entry work, shall,
  - 1. Inform contractor of permit space entry program;
  - 2. Apprise contractor of hazards of particular permit spaces and precautions and procedures implemented for protection of employees in or near permit spaces;
  - 3. Coordinate entry operations with contractor when both will be working in or near permit spaces and debrief contractor after entries.
  - 4. Obtain information from contractor of permit program to be followed and coordinate multiple entry operations.
  - 5. Debrief contractors of the hazards encountered or created.
- h. If necessary, reclassify a non-permit confined space as a permit space when there are changes in use or configuration.

Employees:

- a. Will not enter any permit required confined space unless specifically authorized by an entry supervisor and only in full accordance with this program and the OSHA standard.
- b. Attend and complete any scheduled training required by his/her supervisor and this program.
- c. When selected as an entrant, attendant, or entry supervisor, perform those duties as outlined in this program.

## **PERMIT REQUIRED CONFINED SPACE ENTRY PROGRAM AND PROCEDURES**

All permit required confined spaces will be identified by [supervisors, department heads, safety manager]. Exposed employees will be informed of such spaces through posting with warning signs or other equally effective means, such as facility maps or training [employer should specify which procedure is used in this program].

Only trained and qualified employees will be authorized as permit space entrants, attendant, or entry supervisor.

No employee shall enter a permit space without having a properly completed entry permit signed by an entry supervisor.

Entry permit procedures are as outlined below:

- a. Entrants will obtain an entry permit from [location or person] prior to entry of the space.
- b. The entrant will accomplish all pre-permit actions required for entering the space, such as atmospheric testing, hazard control/elimination actions, have all required equipment on hand, provide for attendant and rescue services, etc.
- c. Complete all items on the permit.

- d. The entry will be authorized and the permit will be signed only by an authorized entry supervisor. If any item on the permit is checked as "NO" (meaning not yet completed or available), the permit will not be signed.
- e. Entry may proceed. A copy of the entry permit will be placed outside the confined space until the permit has been cancelled by appropriate personnel.

#### Testing and Monitoring.

- a. Test the space as necessary to determine if acceptable entry conditions exist before beginning entry operations. Initial testing of the atmosphere must be done from outside the confined space prior to any entry. If isolation of the space is infeasible because the space is large or part of a continuous system (such as a sewer), entry conditions will be continuously monitored where entrants are working.
- b. Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
- c. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors. Parameters for non-hazardous atmospheres are:
  - 1. Oxygen between 19.5 and 23.5 percent;
  - 2. Flammability less than ten percent of the lower flammability limit (LFL).
  - 3. Toxicity less than the permissible exposure limit (PEL).

An authorized attendant must be present and monitoring the entry at all times. The attendant will not be assigned any other duties that may interfere with his attendant duties. Attendant duties are outlined below.

Equipment required for permit required confined space entry includes that equipment required for testing and monitoring; ventilating; communications between the entrant and attendant, and for summoning rescue; personal protection; lighting; barriers/shields for openings; means of ingress and egress; and any other equipment necessary for safe entry and rescue.

#### Rescue and emergency services:

- a. Non-entry rescue is the preferred method for rescue of personnel from a permit required space. **Employees will not enter a permit space for rescue unless they have been specifically trained and equipped for such rescue.**
- b. To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enter a permit space, unless the retrieval equipment would increase overall risk of entry or would not be of value to any rescue. Retrieval system requirements are:
  - 1. Each entrant shall use a chest or full body harness, with a retrieval line attached at the center of the back near shoulder level, or other appropriate point.
  - 2. Other end of retrieval line shall be attached to a mechanical device or fixed point outside of permit space enabling immediate use. A mechanical device will be used to retrieve personnel from vertical type permit spaces more than five feet deep.

3. If injured entrant is exposed to any substance with a required MSDS or similar document, that MSDS or document will be made available to the medical facility treating entrant.
- c. If rescue should become necessary, the attendant will:
  1. Notify and summon the rescue team/service;
  2. Attempt **non-entry** rescue procedures to the extent possible by the circumstances.
  3. Monitor the situation and be ready to give rescuers information on how many victims and their status, what hazards, chemical types, concentrations, etc. are present.
- d. Only designated personnel will enter permit spaces for rescue purposes. Each designated rescue team member will be trained on:
  1. Use of personal protective and rescue equipment necessary for making the rescue from the permit space;
  2. Performance of assigned rescue duties and also that training required of authorized entrants;
  3. Basic first-aid and cardiopulmonary resuscitation (CPR). At least one member of the rescue team will hold current certification in first aid and CPR.

Each rescue team member will practice making permit space rescues at least once every 12 months, by means of simulated rescue operations and in spaces representative of the types of permit spaces from which rescue is to be performed.

Permits will be cancelled by the entry supervisor upon completion of the work, or when any prohibited condition arises. Permits cannot just be let to expire. Cancelled permits must be kept for the annual review.

Program Review: Cancelled entry permits will be retained on file for at least one year. The Permit Space Program will be reviewed within one year of each entry using these cancelled permits to revise the program as necessary to ensure employees are protected from permit space hazards. A single review covering all entries in the preceding year may be conducted.

## **DUTIES OF THE ENTRANT, ATTENDANT, AND ENTRY SUPERVISOR**

### **Entrant**

- a. Know the hazards that may be faced, including the mode, signs or symptoms, and consequences of the exposure;
- b. Properly use equipment as required;
- c. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to alert entrants of the need to evacuate the space.
- d. Alert the attendant whenever the entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or detects a prohibited condition.
- e. Exit from the permit space as quickly as possible whenever:
  1. An order to evacuate is given by the attendant or the entry supervisor, or an evacuation alarm is activated.

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

### **Attendant**

- a. Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- b. Is aware of possible behavioral affects of hazard exposure.
- c. Continuously maintain an accurate count and identity of authorized entrants.
- d. Remain outside the permit space during entry operations until relieved by another attendant
- e. Communicate with entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate.
- f. Monitor activities inside and outside space to determine if safe for entrants to remain in space and orders evacuation when necessary.
- g. Summon rescue and emergency services when assistance for emergency exit from permit space is necessary.
- h. Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:
  1. Warn them to stay away, or exit immediately if they have entered.
  2. Inform the entrants and entry supervisor if unauthorized persons enter the permit space.
- i. Perform non-entry rescues as specified by university procedure.
- j. Perform no duties that might interfere with their primary duty to monitor and protect authorized entrants.

### **Entry Supervisor**

- a. Know the hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of the exposure.
- b. Verify that acceptable conditions for entry exist before endorsing the permit and allowing entry to begin.
- c. Terminate the entry and cancel the permit when entry operations are complete or a prohibited condition arises.
- d. Verify that rescue services are available and the means for summoning them are operable.
- e. Remove unauthorized individuals who enter or who attempt to enter the permit space.
- f. Determine, whenever responsible and at appropriate intervals, that acceptable entry conditions are maintained.

## **TRAINING**

Only trained and qualified employees may be authorized as entrant, attendant, entry supervisor, or in-house rescue team members. The training will establish proficiency in the duties required by this program so that the employee acquires the understanding, knowledge, and skill necessary for the safe performance of his/her duties.

Training must be completed before employee is assigned duties under this program, before there is a change in assigned duties and, whenever a supervisor has reason to

believe either that there are deviations from permit space entry procedures or inadequacies in the employee's knowledge or use of this program.

Supervisors will certify that this training has been accomplished. The certification will contain the employee's name, signatures or initials of the trainers, and the dates of training. The certification will be kept on file.

## **ALTERNATE ENTRY PROCEDURES**

Alternate entry procedures may only be used when the only hazard is an actual or potential hazardous atmosphere. If alternate entry procedures are used, no permits are needed, no attendant or supervisor is required, and rescue provisions need not be used. Training and a written certification are required.

### **Conditions to Be Met To Qualify For Alternate Procedures:**

- a. The only hazard posed by permit space is an actual or potential hazardous atmosphere. (See Note after the Permit Space Reclassification section.)
- b. Continuous forced air ventilation alone is sufficient to maintain safe permit space.
- c. Monitoring and inspection data that supports above demonstrations have been developed and documented.
- d. If initial entry is necessary to obtain above data, it shall be performed in accordance with this program.
- e. Documented determinations and supporting data will be made available to entrants.

### **Entry must be in accordance with the following requirements:**

- a. Any condition making it unsafe to remove an entrance cover shall be eliminated before removing the cover. When entrance covers are removed, the opening shall be promptly and effectively guarded.
- b. Before entry, the internal atmosphere shall be tested with a calibrated direct-reading instrument, for the following conditions in the order given:
  1. Oxygen content: 19.5 - 23.5%
  2. Flammable gases and vapors:  $\leq 10\%$  of LEL
  3. Potential toxic air contaminants:  $< PEL$
- c. There may be no hazardous atmosphere within the space whenever any employee is inside the space.
- d. Continuous forced air ventilation shall be used as follows:
  1. Entry not permitted until hazardous atmosphere is eliminated.
  2. Ventilation shall be directed to immediate areas where employees are or will be present and will continue until all employees have left the space;
  3. Air supply shall be from a clean source and may not increase hazards in space.
- e. Atmosphere within space shall be periodically tested as necessary to ensure that ventilation is adequate. If hazardous atmosphere is detected during entry:
  1. Each employee shall leave space immediately;
  2. Space shall be evaluated to determine how hazardous atmosphere developed; and

3. Measures must be taken to protect employees from hazardous atmosphere before any subsequent entry.
- f. The entry supervisor will verify that the space is safe for entry and that all of the above requirements have been met. Such verification will be in writing to include the date, location of the space, and the signature of the person providing the certification, and shall be made available to each employee before entry.

## **PERMIT SPACE RECLASSIFICATION**

A permit space may be reclassified as a non-permit space:

- a. If there are no actual or potential atmospheric hazards and if all hazards within permit space are eliminated without entry, space may be reclassified for as long as the non-atmospheric hazards remain eliminated.
- b. Hazards may be eliminated by such actions as purging or inerting tank/vessels of contaminants, emptying material from hoppers/bins, use of university lockout/tag procedures for electrical/ mechanical hazards. The control of atmospheric hazards through forced air ventilation does not constitute elimination of that hazard (it only controls the hazard: the preceding Alternate Entry Procedures must be used in such cases).
- c. If entry is required to eliminate hazards, it shall be according to regulations and the space may be reclassified for as long as the hazards remain eliminated.
- d. Entry supervisors will certify in writing that all hazards in permit space have been eliminated and make this document available to each entrant.
- e. If hazards arise in declassified permit space, employee(s) shall exit and the employer shall determine whether to reclassify space.

**NOTE:** A combination of reclassification procedures and alternate entry procedures (e.g. using lockout/tagout to eliminate a physical hazard, then continuous forced air to control an atmospheric hazard) may not be used together. Situations as such must be entered under the permit program.

## **WRITTEN PERMIT**

The following information must be included in the written permit. The permit must be a standardized format for each entry.

1. The permit space to be entered.
2. The purpose of the entry.
3. The date and the authorized duration of the entry permit.
4. The authorized entrants within the permit space, by name or by such other means.
5. The personnel, by name, currently serving as attendants.
6. The individual, by name currently serving as entry supervisor, with space for signature or initials.
7. The hazards of the permit space to be entered.
8. The measure used to isolate the permit space and to eliminate or control permit space hazards before entry.
9. The acceptable entry conditions.

10. The results of initial and periodic tests, with the names or initials of the testers and when the tests were done.
11. The rescue and emergency services that can be summoned and the means for summoning them.
12. The communications procedures used by authorized entrants and attendants to maintain contact during the entry.
13. Equipment (such as personal protective equipment, testing, communications, alarm system, and rescue equipment) to be provided for compliance with this section.
14. Any other information whose inclusion is necessary in order to ensure employee safety.

(Attached to permit) Any additional permits, such as for hot work, that have been issued for work in the permit space. ]

# ENTRY PERMIT

Date & Time Issued \_\_\_-\_\_\_-\_\_\_/\_\_\_\_\_ Date & Time Expires \_\_\_-\_\_\_-\_\_\_/\_\_\_\_\_

Permit Space ID: \_\_\_\_\_ Purpose Of Entry \_\_\_\_\_

Entrants' Names/Team ID: \_\_\_\_\_

Attendant(s): \_\_\_\_\_ Entry Supervisor \_\_\_\_\_

All Entrants, Attendant(s), & Entry Supervisor Verified Trained For Duties.

Hazard(s) of Space: Atmospheric \_\_\_\_\_ Engulfment \_\_\_\_\_ Electrical \_\_\_\_\_ Mechanical \_\_\_\_\_ Other \_\_\_\_\_

DATE TIME N/A

Method to Eliminate / Ventilation \_\_\_\_\_

Control Hazard(s) Lockout/Tagout \_\_\_\_\_

Completed: Line(s) Broken-Capped-Blanked \_\_\_\_\_

Purge-Flush-Vent \_\_\_\_\_

Other \_\_\_\_\_

Equipment Available:

	N/A	YES	NO		N/A	YES	NO
Calibrated Gas Monitor	( )	( )	( )	Protective Clothing	( )	( )	( )
Safety Harnesses & Lifeline	( )	( )	( )	Ventilation	( )	( )	( )
Emergency Retrieval Line	( )	( )	( )	Communication	( )	( )	( )
Hoisting Equipment	( )	( )	( )	Explosion-Proof	( )	( )	( )
Breathing Apparatus	( )	( )	( )	Lights & Tools	( )	( )	( )

Communication Procedures - Entrant <> Attendant: \_\_\_\_\_

Rescue: Non-Entry Retrieval Means of Summoning: \_\_\_\_\_

TESTING & MONITORING: Periodic \_\_\_\_\_ Continuous \_\_\_\_\_ N/A \_\_\_\_\_ Pre-entry

Others Percent of Oxygen: 19.5% - 23.5% \_\_\_\_\_

Flammability: <10% LFL ( \_\_\_\_\_ ) \_\_\_\_\_

Concentrations: < PEL ( \_\_\_\_\_ ) \_\_\_\_\_ Tester's Initials \_\_\_\_\_

Additional Work Permits (Hot-work, etc) Attached: Yes \_\_\_\_\_ No \_\_\_\_\_ N/A \_\_\_\_\_.

Entry cannot be approved if any entries are marked in the "No" column. This permit is not valid unless all items are completed.

All entry conditions have been met. \_\_\_\_\_

Entry is authorized.

(Entry Supervisor)

Or:

Alternate Entry Procedures: I certify that all pre-entry measures required by this program have been completed and that the space identified above is safe for entry following Alternate Entry Procedures.

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(Entry Supervisor)

Or:

Reclassification to Non-Permit Space. I certify that all hazards have been eliminated from the space identified above and that the space is reclassified as a non-permit space.

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(Entry Supervisor)