

Safety & Risk Management Policies and Procedures

Title: Confined Space Entry Policy

Date: July 2003

Rationale: Workplaces contain many confined spaces that may pose hazards to those employees who must perform various types of work in these confined spaces. Confinement, limited access and egress, restricted ventilation and other hazards must be addressed to ensure safe working conditions.

Goals: The purpose of Southwestern's Confined Space Program is to set procedures that will ensure workers safe entry into confined spaces to perform routine tasks associated with their employment. This procedure is designed to provide the safety requirements in accordance with the Occupational Safety and Health Administration's (OSHA) Confined Space Standard, 1910.146.

Policy & Procedure: This policy/program has been developed to ensure the protection of all employees from the various types of hazards associated with confined space entry.

Definition of a Confined Space

A **confined space** means 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 (not just at the point of entry – ex. - crawlspace with pipes requiring crawling that limit emergency egress meets definition; **and** 3) is not designed for continuous human occupancy.

Examples of confined spaces include but are not limited to storage tanks, vessels, bins, silos, boilers, ventilation or exhaust ducts, sanitary and storm sewer system lines and manholes, underground utility vaults, tunnels, crawlspaces, attics.

A **permit-required confined space** means a confined space that **either:**

- 1) contains or has the potential to contain a hazardous atmosphere,
- 2) contains a material that has the potential for engulfing an entrant,
- 3) 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**
- 4) contains any other serious safety or health hazard.

1910.146
Confined Space Program
Table of Contents

- I. Assignment of Responsibility
 - A. Employer – Director of Campus Safety & Risk Management
 - B. Operational Program Manager - Manager of Physical Plant
 - C. Entry Supervisors
 - D. Attendants
 - E. Rescue Team
 - F. Entrants/Affected Employees
- II. Training
 - A. Training Frequency
 - B. General Training
 - C. Specific Training
 - D. Verification of Training
- III. Identification of Hazards and Evaluation of Confined Spaces
 - A. Assessment of Confined Spaces – Inventory and Posting
 - B. Hazard Reevaluation
 - C. Pre-Entry Hazard Assessment
 - D. Hazard Controls
- IV. Entry Permits
 - A. Key Elements of Entry Permits
 - B. Permit Scope and Duration
- V. Entry Procedures
 - A. Prior to Entry
 - B. Opening a Confined Space
 - C. Atmospheric Testing
 - D. Isolation and Lockout/Tagout Safeguards
 - E. Ingress/Egress Safeguards
 - F. Warning Signs and Symbols
- VI. Emergency Response
 - A. Emergency Response Plan
 - B. Retrieval Systems and Methods of Non-Entry Rescue
- VII. Attachment, Sample Process Duty Roster

I. ASSIGNMENT OF RESPONSIBILITY

A. Director of Campus Safety & Risk Management is responsible to develop, provide consultation, training and audit the confined space written policy.

1. Provide training to affected employees, supervisors, Managers.
2. Provide technical consultative assistance as needed
3. Audit and update the policy/program as needed.

B. Manager of Physical Plant

Manager of Physical Plant is responsible for managing the daily operational aspects of the Confined Space Program, and shall:

1. Ensure confined space assessment is conducted and documented.
2. Ensure a list of confined spaces and PRCS is maintained.
3. Ensure training of personnel is conducted.
4. Provide personal protective equipment and other equipment (forced air-ventilation units, confined space meter) for employees as needed.
5. Coordinate with outside responders.
6. Ensure that the Entry Supervisors in charge of confined space work shall:
 - a. Ensure program requirements for entry have been completed before entry is authorized.
 - b. Ensure confined space monitoring is performed.
 - c. Know the hazards that may be faced during entry.
 - d. Fill out a permit if required.
 - e. Determine the entry requirements prior to entry of a confined space.
 - f. Notify all involved employees of the permit requirements.
 - g. Post the permit in a conspicuous location near the job.
 - h. Install or post any required barriers and signs.
 - i. Ensure periodic atmospheric monitoring is done according to permit requirements.
 - j. Ensure the confined space is safely closed and all workers are cleared from the area.

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

C. Entry Supervisors

Entry Supervisor(s), shall be qualified and authorized to approve confined space entry permits. The Entry Supervisor(s) shall be responsible for:

1. Determining if conditions are acceptable for entry.
2. Authorizing entry and overseeing entry operations.
3. Terminating entry procedures as required.
4. May serve as an Attendant, as long as the person is trained.
5. Ensuring measures are in place to keep unauthorized personnel clear of the area.
6. Checking the work at least twice a shift to verify and document permit requirements are being observed.

D. Attendants

Attendant(s) shall be stationed outside of the confined workspace. The Attendant(s) shall:

1. Be knowledgeable of, and be able to recognize potential confined space hazards.
2. Maintain the confined space entry permit.
3. Monitor surrounding activities to ensure the safety of personnel.
4. Maintain effective and continuous communication with personnel during confined space entry, work, and exit.
5. Order personnel to evacuate the confined space if he/she:
 - a. observes a condition which is not allowed on the entry permit;
 - b. notices the entrants acting strangely, possibly as a result of exposure to hazardous substances;
 - c. notices a situation outside the confined space which could endanger personnel;
 - d. notices a hazard within the confined space that has not been previously recognized or taken into consideration;
 - e. must leave his/her work station; or
 - f. must focus attention on the rescue of personnel in some other confined space that he/she is monitoring.
6. Immediately summon the Rescue Team (911) if rescue becomes necessary.
7. Keep unauthorized persons out of the confined space, order them out, or notify authorized personnel of an unauthorized entry.

E. Rescue Team

The Rescue Team members are designated as Georgetown Fire Department and EMS. Call 911 to activate. Physical Plant Manager should periodically coordinate emergency

Safety & Risk Management Policies and Procedures

Confined Space Entry Policy and Procedure

services with City of Gt Fire Department for permit-required confined spaces to make them aware of the site specific spaces and means of rescue prior to an adverse event.

F. Entrants/Affected Employees

Employees who are trained and authorized to enter a confined space shall:

1. Read and observe the entry permit requirements.
2. Remain alert to the hazards that could be encountered while in the confined space.
3. Properly use the personal protective equipment that is required by the permit.
4. Immediately exit the confined space when:
 - a. they are ordered to do so by an authorized person;
 - b. they notice or recognize signs or symptoms of exposure;
 - c. a prohibited condition exists; or
 - d. the automatic alarm system sounds.
5. Alert Attendant(s) when a prohibited condition exists and/or when warning signs or symptoms of exposure exist.

II. TRAINING

Southwestern University shall provide training so that all employees whose work is regulated by this Confined Space Program acquire the understanding, knowledge, and skills necessary for the safe performance of their duties in confined spaces.

A. Training Frequency

Director of Campus Safety & Risk Management (by notification of Manager of Physical Plant) shall provide training to each affected employee:

1. before the employee is first assigned duties within a confined space,
2. when Southwestern University has reason to believe that there are deviations/deficiencies from the confined space entry procedures required in this program, or that there are inadequacies in the employee's knowledge or use of these procedures.

The training shall establish employee proficiency in the duties required in this program, and shall introduce new or revised procedures, as necessary, for compliance with this program.

B. General Training

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

All employees who will enter confined spaces shall be trained in entry procedures. Personnel responsible for supervising, planning, entering, or participating in confined space entry and rescue shall be adequately trained in their functional duties prior to any confined space entry. Training shall include:

1. Explanation of the general hazards associated with confined spaces.
2. Discussion of specific confined space hazards associated with the facility, location, or operation.
3. Reason for, proper use, and limitations of personal protective equipment and other safety equipment required for entry into confined spaces.
4. Explanation of permits and other procedural requirements for conducting a confined space entry.
5. A clear understanding of what conditions would prohibit entry.
6. Procedures for responding to emergencies.
7. Duties and responsibilities of the confined space entry team.
8. Description of how to recognize symptoms of overexposure to probable air contaminants in themselves and co-workers, and method(s) for alerting the Attendant(s).

Refresher training shall be conducted as needed to maintain employee competence in entry procedures and precautions.

C. Specific Training

1. Training for atmospheric monitoring personnel shall include proper use of monitoring instruments, including instruction on the following:
 - a. proper use of the equipment;
 - b. calibration of equipment – conducted by 3rd party.
 - c. sampling strategies and techniques; and
 - d. exposure limits (PELs, TLVs, LELs, UELs, etc.).
2. Training for Attendants shall include the following:
 - a. procedures for summoning rescue services (Call 911)
 - b. proper utilization of equipment used for communicating with entry and emergency/rescue personnel.
3. Training for Emergency Response Personnel shall include:
 - a. rescue plan and procedures developed for each type of confined space that is anticipated to be encountered;
 - b. use of emergency rescue equipment;
 - c. first aid and CPR techniques; and
 - d. work location and confined space configuration to minimize response time.

III. IDENTIFICATION OF HAZARDS AND EVALUATION OF CONFINED SPACES

A. Assessment of Confined Spaces – Inventory and Posting

Manager of Physical Plant shall ensure a survey/assessment of the worksite is conducted to identify confined spaces. The purpose of the survey/assessment is to develop an inventory of those locations and/or equipment at Southwestern University that meet the definition of a confined space. Permit required and Alternate Permit required confined spaces shall be inventoried and signs posted at the entrance that read: “DANGER – PERMIT REQUIRED CONFINED SPACE – AUTHORIZED ENTRANTS ONLY”. This information shall be communicated to personnel, and appropriate confined space procedures shall be followed prior to entry. The initial surveys shall include air monitoring to determine the air quality in the confined spaces. The potential for the hazardous environments shall be evaluated by *Manager of Physical Plant and Director of Campus Safety & Risk Management*.

A master inventory of confined spaces shall be maintained using the **assessment of confined space forms**. Any change in designation of a confined space will be routed to all affected personnel by Manager of Physical Plant.

RECLASSIFICATION OF PERMIT SPACE – Temporary & Permanent

Permit required and hazardous atmosphere only confined spaces may be reclassified as Non Permit confined spaces. **Reclassification** occurs when all hazards and potential hazards are removed (this does not include using forced air ventilation to remove atmospheric hazards). Neutralization of dangerous moving parts, electrical hazards by lockout (LOTO) for example, may allow reclassification to Non-Permit status **ONLY** if the hazard can be isolated/eliminated **without entering the confined space**. An alternate entry confined space may be **reclassified** if air monitoring consistently indicates that no atmospheric hazards exist and/or have been confirmed eliminated by repair or other means. Testing results (alternate entry permits) with atmospheric testing must be filed on record in order to make this **reclassification**.

B. Hazard Reevaluation

The Manager of Physical Plant shall identify and reevaluate hazards based on possible changes in activities or other physical or environmental conditions that could adversely affect work.

C. Pre-Entry Hazard Assessment

A hazard assessment shall be completed by Entry Supervisor prior to any entry into a confined space. The hazard assessment should identify:

1. the sequence of work to be performed in the confined space;
2. the specific hazards known or anticipated; and

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

3. the control measures to be implemented to eliminate or reduce each of the hazards to an acceptable level.

No entry shall be permitted until the hazard assessment has been reviewed and discussed by all persons engaged in the activity. Personnel who are to enter confined spaces shall be informed of known or potential hazards associated with said confined spaces.

ENTRY WITHOUT PERMIT

Confined spaces that do not contain known hazards have reduced requirements for entry. Spaces classified as Non-Permit do not involve hazards considered serious. Non-Permit spaces do not require a written permit or formal OSHA trained attendant for entry. Non-Permit confined spaces do not require any special testing as long as no hazardous conditions are introduced into the space (conducting welding, use of paints/solvents, etc.). **Best practice protocol is for entrant to communicate via radio to a nearby attendant or if not available, Physical Plant administrative assistant via radio prior to and immediately upon exit of confined space to ensure the safety of the entrant.**

D. Hazard Controls

Hazard controls shall be instituted to address changes in the work processes and/or working environment. Hazard controls must be able to either control the health hazards by eliminating the responsible agents, reduce health hazards below harmful levels, or prevent the contaminants from coming into contact with the workers.

The following order of precedence shall be followed in reducing confined space risks.

1. Engineering Controls

Engineering controls are those controls that eliminate or reduce the hazard through implementation of sound engineering practices.

Ventilation is one of the most common engineering controls used in confined spaces. When ventilation is used to remove atmospheric contaminants from a confined space, the space shall be ventilated until the atmosphere is within the acceptable ranges. Ventilation shall be maintained during the occupancy if there is a potential for the atmospheric conditions to move out of the acceptable range. When ventilation is not possible or feasible, alternate protective measures or methods to remove air contaminants and protect occupants shall be determined by Manager of Physical Plant and Director of Campus Safety & Risk Management prior to authorizing entry.

When conditions necessitate and can accommodate continuous forced air ventilation, the following precautions shall be followed:

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

- a. Employees shall not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- b. Forced air ventilation shall be directed so as to ventilate the immediate areas where an employee is or will be present within the space.
- c. Continuous ventilation shall be maintained until all employees have left the space.
- d. Air supply or forced air ventilation shall originate from a clean source.

2. Work Practice (Administrative) Controls

Work practice (administrative) controls are those controls which eliminate or reduce the hazard through changes in the work practices (i.e., rotating workers, reducing the amount of worker exposure, and housekeeping).

3. Personal Protective Equipment (PPE)

If the hazard cannot be eliminated or reduced to a safe level through engineering and/or work practice controls, PPE should be used. Manager of Physical Plant and Director of Campus Safety & Risk Management shall determine the appropriate PPE needed by all Southwestern University personnel entering the confined space. PPE that meets the specifications of applicable standards shall be selected in accordance with the requirements of the job to be performed.

IV. ENTRY PERMITS

The Confined Space Entry Permit is the most essential tool for assuring safety during entry in confined spaces with known hazards, or with unknown or potentially hazardous atmospheres. The entry permit process guides the supervisor and workers through a systematic evaluation of the space to be entered. The permit should be used to establish appropriate conditions. Before each entry into a confined space, an entry permit will be completed by Entry Supervisor. The Entry supervisor will then communicate the contents of the permit to all employees involved in the operation, and post the permit conspicuously near the work location. A standard entry permit shall be used for all entries.

A. Key Elements of Entry Permits

A standard entry permit shall contain the following items:

1. Space to be entered.
2. Purpose of entry.
3. Date and authorized duration of the entry permit.

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

4. Name of authorized entrants within the permit space.
5. Means of identifying authorized entrants inside the permit space (i.e., rosters or tracking systems).
6. Name(s) of personnel serving as Attendant(s) for the permit duration.
7. Name of individual serving as Entry Supervisor, with a space for the signature or initials of the Entry Supervisor who originally authorized the entry.
8. Hazards of the permit space to be entered.
9. Measures used to isolate the permit space and to eliminate or control permit space hazards before entry (i.e., lockout/tagout of equipment and procedures for purging, continuous forced air ventilation, and flushing permit spaces).
10. Acceptable entry conditions.
11. Results of initial and periodic tests performed, accompanied by the names or initials of the testers and the date(s) when the tests were performed.
12. Rescue and emergency services that can be summoned, and the means of contacting those services (i.e., equipment to use, phone numbers to call).
13. Communication procedures used by authorized entrants and Attendant(s) to maintain contact during the entry.
14. Equipment to be provided for compliance with this Confined Space Program (i.e., PPE, testing, communications, alarm systems, and rescue).
15. Other information necessary for the circumstances of the particular confined space that will help ensure employee safety.
16. Additional permits, such as for hot work, that have been issued to authorize work on the permit space.

B. Permit Scope and Duration

A permit is only valid for one shift. For a permit to be renewed, the following conditions shall be met before each reentry into the confined space:

1. Atmospheric testing shall be conducted and the results should be within acceptable limits. If atmospheric test results are not within acceptable limits, precautions to protect entrants against the hazards should be addressed on the permit and should be in place.
2. Entry Supervisor shall verify that all precautions and other measures called for on the permit are still in effect.
3. Only operations or work originally approved on the permit shall be conducted in the confined space.

A new permit shall be issued, or the original permit will be reissued if possible, whenever changing work conditions or work activities introduce new hazards into the confined space. Entry Supervisor shall retain each canceled entry permit to facilitate the review of the Confined Space Entry Program. Any problems encountered during an entry operation shall be noted on the respective permit(s) so that appropriate revisions to the confined space permit program can be made.

V. ENTRY PROCEDURES

When entry into a permit-required confined space is necessary, the Entry Supervisor may initiate entry procedures, including the completion of a confined space entry permit. Entry into a confined space shall follow the standard entry procedure below.

A. Prior to Entry

The entire confined space entry permit shall be completed before a standard entry. Entry shall be allowed only when all requirements of the permit are met and it is reviewed and signed by an Entry Supervisor. The following conditions must be met prior to standard entry:

1. Affected personnel shall be trained to establish proficiency in the duties that will be performed within the confined space.
2. The internal atmosphere within the confined space shall be tested by Entry Supervisor with a calibrated, direct-reading instrument.
3. Personnel shall be provided with necessary PPE as determined by the Entry Supervisor.
4. Atmospheric monitoring shall take place during the entry. If a hazardous atmosphere is detected during entry:
 - a. personnel within the confined space shall be evacuated by the Attendant(s) or Entry Supervisor until the space can be evaluated by Manager of Physical Plant and Director of Campus Safety & Risk Management to determine how the hazardous atmosphere developed; and
 - b. controls shall be put in place to protect employees before reentry.

B. Opening a Confined Space

Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed. When entrance covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent anyone from falling through the opening. This barrier or cover shall protect each employee working in the space from foreign objects entering the space. If it is in a traffic area, adequate barriers shall be erected.

C. Atmospheric Testing

Atmospheric test data is required prior to entry into a confined space. Atmospheric testing is required for two distinct purposes: (1) evaluation of the hazards of the permit space, and (2) verification that acceptable conditions exist for entry into that space. If a person must go into the space to obtain the needed data, then Standard Confined Space

Safety & Risk Management Policies and Procedures

Confined Space Entry Policy and Procedure

Entry Procedures shall be followed. Before entry into a confined space, Entry Supervisor shall conduct testing for hazardous atmospheres. The internal atmosphere shall be tested with a calibrated, direct-reading instrument for oxygen, flammable gases and vapors, and potential toxic air contaminants, in that order.

All testing equipment shall be approved by a nationally recognized laboratory, such as Underwriters Laboratories or Factory Mutual Systems.

1. Evaluation Testing

The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity. The analysis shall identify and evaluate any hazardous atmospheres that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data and development of the entry procedure should involve a technically qualified professional (i.e., consultant, industrial hygienist, safety professional).

2. Verification Testing

A confined space that may contain a hazardous atmosphere shall be tested for residues of all identified or suspected contaminants. The evaluation testing should be conducted with specified equipment to determine that residual concentrations at the time of testing and entry are within acceptable limits. Results of testing shall be recorded by the person performing the tests on the permit. The atmosphere shall be periodically retested to verify that atmospheric conditions remain within acceptable entry parameters.

3. Acceptable Limits

The atmosphere of the confined spaces shall be considered to be within acceptable limits when the following conditions are maintained:

- a. oxygen: 19.5 percent to 23.5 percent;
- b. flammability: less than 10 percent of the Lower Flammable Limit (LFL); and
- c. toxicity: less than recognized American Conference of Governmental Industrial Hygienists (ACGIH) exposure limits or other published exposure levels [i.e., OSHA Permissible Exposure Limits (PELs) or National Institute of Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs)].

D. Isolation and Lockout/Tagout Safeguards

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

- All energy sources that are potentially hazardous to confined space entrants shall be secured, relieved, disconnected, and/or restrained before personnel are permitted to enter the confined space. Equipment systems or processes shall be locked out and/or tagged out as required by the Southwestern's Lockout/Tagout Program prior to permitting entry into the confined space. All pipes should be physically disconnected or isolation blanks bolted in place. **Closing valves is not sufficient.** In confined spaces where complete isolation is not possible, Entry Supervisor shall evaluate the situation and make provisions for as rigorous an isolation as practical. Special precautions shall be taken when entering double-walled, jacketed, or internally insulated confined spaces that may discharge hazardous material through the vessel's internal wall.

E. Ingress/Egress Safeguards

Means for safe entry and exit shall be provided for confined spaces. Each entry and exit points shall be evaluated by Entry Supervisor to determine the most effective methods and equipment that will enable employees to safely enter and exit the confined space.

Appropriate retrieval equipment or methods shall be used whenever a person enters a confined space. Use of retrieval equipment may be waived by the Entry Supervisor if use of the equipment increases the overall risks of entry or does not contribute to the rescue. A mechanical device shall be available to retrieve personnel from vertical confined spaces greater than five (5) feet in depth.

F. Warning Signs and Symbols

All confined spaces that could be inadvertently entered shall have signs identifying them as confined spaces. Signs shall be maintained in a legible condition. The signs shall contain a warning that a permit is required before entry. Accesses to all confined spaces shall be prominently marked.

G. Types of Permit and confined space determinations – see assessment and permit

1. Full permit-required space
 - a. Requires multiple components listed on permit for spaces with both a potential for hazardous atmosphere and other safety hazards present
2. Alternate permit-required space
 - a. Requires only forced-air ventilation and continuous monitoring for spaces with a potential for hazardous atmosphere only.
3. Best practice protocol for non-permit required spaces

VI. EMERGENCY RESPONSE

A. Emergency Response Plan

If an emergency rescue is needed, Entry Supervisor or Attendant shall call 911.

B. Retrieval Systems and Methods of Non-Entry Rescue

Retrieval systems shall be available and ready when an authorized person enters a permit space, unless such equipment increases the overall risk of entry, or the equipment would not contribute to the rescue of the entrant. Retrieval systems shall have a chest or full-body harness and a retrieval line attached at the center of the back near shoulder level or above the head. If harnesses are not feasible, or would create a greater hazard, wristlets may be used in lieu of the harness. The retrieval line shall be firmly fastened outside the space so that rescue can begin as soon as anyone is aware that retrieval is necessary. A mechanical device shall be available to retrieve personnel from vertical confined spaces more than five (5) feet deep.

Safety & Risk Management Policies and Procedures
Confined Space Entry Policy and Procedure

Date:

Approved (signature and date):

Supervisor _____

Director of Physical Plant _____

AVP for Facilities _____

Vice President for Fiscal Affairs If needed _____

Copy:

All supervisors _____

Related crafts _____

Department Heads _____

VP's _____

President _____