

Creighton University

CONFINED SPACE ENTRY PROGRAM

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CONFINED SPACE ENTRY PROGRAM

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PURPOSE AND GOALS

The purpose of a this Confined Space Entry Program is to establish a system for the identification and documentation of confined spaces, to make an evaluation of the hazard potential associated with each space, and to develop a hazard control entry procedures.

The objectives of a Confined Space Entry Program are to:

- Prevent employee injury, illness or death resulting from hazards associated with confined space.
- Identify and evaluate confined spaces before entry.
- Identify and understand confined space hazards.
- Develop techniques to control confined space hazards.
- Prepare emergency rescue and other contingency plans.
- Comply with regulatory requirements.

The goal of this program is to meet the above objectives and to comply with regulatory requirements as set forth by OSHA.

The OSHA regulation 29 CFR 1910.146 defines functions in terms of three tiers of responsibility.

1. The employer; Creighton University
2. The individual authorizing or in charge of entry; and
3. Entrants, attendants, entry supervisors, and rescue teams.

The regulation itself, and this program in general defines the responsibilities of Creighton University. It specifies the duties and training requirements for all authorized entrants, attendants, and individuals authorizing or in charge of entry. It further defines rescue procedures and duties of those campus personnel involved in rescue.

Other OSHA programs such as Lockout/Tagout, Electrical Safety Standards, and HAZARD Communications must be reviewed as applicable. These standards must be reviewed prior to and in conjunction with confined space entry procedures. These programs may be required in conjunction with this program before entry is authorized.

OSHA REQUIREMENTS

The regulation requires that this program provide a basis for prevention of accidents and fatalities associated with confined spaces. The requirements may be as follows:

Recognition. Confined spaces and the hazards within are identified. Creighton University physical plant employees and safety representatives are responsible for recognizing and understanding hazards, protecting employees from hazards, and educating employees concerning worker protection and safe work practices.

Evaluation. Qualified Persons must test the space with suitable instruments. More than one type of testing instrument may be needed. In addition, Material Safety Data Sheets (MSDS) and other reference sources may need to be reviewed to determine the exposure limits for hazardous materials.

Controls. Procedures describing the specific measures and precautions which allow safe entry are written. Hazards may be controlled through engineering and/or safe work practices. (Ventilation via exhaust fans may be a good example to consider when/if appropriate.)

Confined Space Entry Permit. The Confined Space Entry Permit is the heart of the entry control system. A permit is required for each confined space entry. The permit certifies that the hazards have been identified and evaluated and that the required precautionary procedures are in place. The regulation requires a written permit system that insures the proper preparation, issuance, and use of entry permits. ([See Attach #1](#))

Training. Employees must be trained so that attendants, authorized entrants, and persons authorizing or in charge of the entry can work safely in and around the confined space. After initial training, employees may need periodic retraining to ensure continued competence in entry procedures and safe job practices. Immediate supervisory personnel are to report all known training deficiencies to senior Plant personnel immediately so that appropriate training may be conducted.

Rescue. Entrants and attendants must be trained on the proper use of safety and rescue equipment and on emergency rescue procedures. Provide a properly trained and equipped in-plant rescue team or contract for outside services. Due to the complexity of training and equipment requirements, when/if rescue is required, the Omaha Fire Department (OFD) will be summoned. OFD personnel are both trained and equipped to properly perform rescue with minimum risk to life.

SCOPE

The scope of this program is to protect Creighton University employees and any contracted personnel during entry into any permit-required confined space.

I. GENERAL REQUIREMENTS

A. OSHA requires site evaluation in order to determine if any spaces are permit required spaces. Note: Only through physical audit can all confined spaces be identified.

1. The Physical Plant in cooperation with the Director of Environmental Health and Safety will identify all potential permit required spaces. A list of all permit required spaces will be furnished to Facility Management and Environmental Health & Safety.
2. All identified permit required areas contain potential hazards. These spaces must be posted to inform employees. This shall be accomplished by posting a sign at all entrances stating, "**DANGER- PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER**".
3. Only employees selected and identified by Physical Plant and Environmental Health and Safety will be allowed access via permit into permit required spaces.
 - a. Selected employees must have written permits issued by the Director of Facilities Operations and Maintenance, or his designated representative prior to entrance.(See [attachment #1](#), Confined Space Entry Permit).
 - b. Permits will be issued only for specific spaces and for established time frames. Time frames will not exceed a normal eight (8) hour work period. If additional time is required to complete tasks within the confined space, a new permit must be issued.
 - c. Contractors working in Confined Spaces on Creighton University must be informed of the dangers, and must comply with the requirements of the permit system, and are subject to this policy in entirety. It is the responsibility of the contract manager, within the Physical Plant to

- notify, brief, and provide a copy of this policy to any contractor working in a confined space on the campus. It is the contractors responsibility to inform all workers under his control, and any subcontractors of specific confined space hazards. Briefings must be documented and records maintained for a period of not less than one (1) year.
4. Any change in the use or configuration of a non-permit confined space must be reviewed by the Director of Facilities Operations and Maintenance and the Director of Environmental Health and Safety to determine whether or not reclassification to permit status is required.
 5. Spaces classified by the Physical Plant as permit required space may be reclassified as non-permit confined space under conditions specified under 29 CFR 1910.146 (c)(7)(i)(ii)(iii)(iv).
 6. When a Creighton University employee or contract employee must work in an identified confined space, the following must be accomplished.
 - a. The Contract Manager and Operations Manager of the Physical Plant must inform the contract employee that the work place has been designated as a confined space and that entry is allowed only in accordance with Creighton University Program.
 - b. The employee must be apprised of the particular hazard that exists (i.e. electrical, oxygen deficiency, etc.) and the Physical Plant's experience with the space.
 - c. The employee must be apprised of any/all procedures that the Physical Plant has implemented for protection of employees in or near an identified space where contractor personnel will be working.
 - d. Coordination of entry operations with the contractor when both Creighton employees and contractor personnel will be working in or near identified permit spaces.
 - e. The Physical Plant and the Contract Manager and Operations Manager must debrief the contractor at the conclusion of any entry operation. (Refer to 29 CFR 1910.146 (c)(8)(i)(ii)(iii)(iv)(v) for exact contractor information requirements).

II. Permit Required Confined Space Program

- A. The following is mandatory under the permit required confined space program.
 1. Implementation of measures to prevent unauthorized entry. (Barricades, appropriate signage, roping off of the area etc.)
 2. Identify and evaluate space hazards prior to entry of employees.
 3. Develop and implement procedures necessary (for safe permit space entry operations.) These may include but are not limited to the following:
 - a. Specifications for acceptable entry conditions. (i.e. locking out electrical sources, atmospheric testing etc.)
 - b. Isolating the space.
 - c. Purge, inert, flush or vent the space as required.

- d. Establish barriers to protect entrants from external hazard. (i.e. falling or thrown objects.)
 - e. Verify conditions for the entrant throughout duration of an authorized entry. (In most cases, the condition will be verified by visual observation or by voice communication with the entrant via radio.) (Refer 29 CFR 1910.146 (d)(3)(i)(ii)(iii)).
4. Provide equipment as necessary, and ensure that employees use the equipment properly.
- a. Testing and monitoring equipment. (Must be procured, maintained, and calibrated as required by Physical Plant personnel. Training on equipment usage must be documented.)
 - b. Ventilation equipment. (Exhaust Fans or other acceptable methods.)
 - c. Communications equipment. (Hand held radios or telephone.)
 - d. Personal protective equipment (PPE). (i.e. lifelines, respirators, eye & ear protection, gloves, appropriate footwear etc.)
 - e. Lighting (To include emergency conditions. Explosion proof flashlights are required in the event that ignitable gasses may be present).
 - f. Barriers and shields as required.
 - g. Egress and ingress equipment as required (i.e. ladders, lowering devices, etc.).
 - h. Reserve and emergency equipment/procedures as required. (Refer to 29 CFR 1910.146 (d)(4)(i)through(ix)).

Note: As of 14 May 1997, All Manholes on Creighton University campus are to be considered a confined space, Permit Required. Anyone entering a Manhole, marked or unmarked, must obtain a Confined Space Permit from George Tangeman, or Dave McAtee. NO EXCEPTIONS WILL BE TOLERATED.

- Evaluate permit space conditions when entry operations are conducted.
 - a. Test condition to determine acceptable entry.
(Use of detection equipment.)
 - b. Test/monitor during course of entry operations.
 - c. Always test for oxygen levels first. (Test for oxygen adequacy first and then for an oxygen enriched atmosphere.)
 - d. Test for other atmospheric hazards. (Refer 29 CFR 1910.146 (d)(5)(i)(ii)(iii)).

- Physical Plant must provide at least one attendant outside of the permit space for the duration of authorized entry operations by University personnel.
 - a. Contract personnel are required to provide an outside attendant when contractor permit space entry is required.

- Multiple spaces may be monitored by a single attendant if the permit authorizes such entry.
 - a. This practice is not recommended and is not encouraged.

- Persons who are to have active roles in this program must be designated in writing by Physical Plant.

- Procedures must be developed to ensure the immediate reporting of emergency situations.
 - a. IN ALL SITUATIONS involving emergency rescue, the Public Safety Emergency system telephone number 2911 must be utilized. **DO NOT CALL 911 DIRECTLY** as it will delay response time.
 - b. When notifying the Public Safety dispatcher, state the following.
 - 1) Location of individual on campus. Be exact. (i.e. West Tunnel, Criss II, Basement Entrance, approximately 35' to the north. Attendant (give name) is standing by.)
 - 2) Condition of victim if known.
 - 3) Location of entrance and name of attendant.
 - 4) Immediate hazard if known (i.e. electrical, contaminated atmosphere, fire etc).

- The Creighton Public Safety Dispatcher will notify 911 and advise of the emergency. Public Safety officers will meet and guide rescue personnel to the proper location on campus. A written procedure must be developed and implemented by physical plant for preparation, issuance, use, and cancellation of entry permits. See [addendum #1](#)

- Internal procedures must be developed by physical plant and/or Director of Environmental Health and Safety for the following:
 - a. Multiple entry by C.U. employees and contractor employees if such occurs
 - b. Securing entrances, and cancellation of permits after completion of work
 - c. Review of procedures at anytime by Physical Plant supervisory or management personnel.

d. Review of permit required entry spaces within one (1) year after each entry. Review must be accomplished utilizing canceled permits. Canceled permits must be retained for a minimum of one year after completion of the job. It will be the responsibility of the Director of Environmental Health & Safety to accomplish and document annual review of permit documentation.

III. The Permit System

A. The permit system procedures for maintenance and control is the responsibility of physical plant and Environmental Health and Safety. The system is subject to review at any time by management.

1. The permit system will document at minimum, the following:
 - a. The signature of the authorized entry supervisor.
 - b. Time duration for the permit. (Not to exceed eight hours on a single day.)
 - c. Termination procedures where:
 - i. Entry operations are completed
 - ii. A condition arises in or near the entry area that is not allowed.

IV. Entry Permit ([Attachment #1](#))

A. The permit must identify the following:

1. The identity of the space to be entered.
2. Purpose of entry.
3. Date and duration of the permit.
4. Authorized entrant(s).
5. The name of the attendant(s).
6. The name of the entry supervisor.
7. Identification of Hazards (must be specific).
8. Isolation measures.
9. Acceptable entry conditions.
10. The results of initial and periodic testing
11. Rescue and Emergency procedures.
12. Communications procedures.
13. Equipment to be used.
14. Additional permit requirements, i.e. hot work-welding.
15. Any other information that may be relevant to the safety of employees.

THE PERMIT MUST BE COMPLETED EITHER IN INK OR TYPED.

V. Training

A. Initial and annual training refresher courses thereafter must be accomplished:

1. Initial training must be provided to each affected employee:
 - a. Before the employee is assigned confined space duties

- b. Before there is a change in assigned duties
 - c. When there is a change in permit space operations
 - d. Whenever physical plant supervisory personnel feel that there may be inadequacies in the program or training.
2. Annual Training
Annual training must be accomplished for all affected employees on a refresher and review basis
 3. Training must ensure employee proficiency
 4. Training documentation must contain each trained employees name, signature, and date of training. Documentation of initial training and annual training (to include any intermediate training) will be maintained by Physical Plant for a minimum of three (3) years. Copies of training documentation will be forwarded to the Director of Environmental Health and Safety.
 5. Training will be conducted by qualified Physical Plant personnel and Environmental Health and Safety personnel.

VI. Duties of the Authorized Entrants

A. At a minimum, the duties of the authorized entrant(s) are:

1. To review the permit prior to entrance.
2. To know the hazards/potential hazards of the job.
3. To know the proper use of required equipment and PPE.
4. To understand communications requirements with the attendant.
5. To alert the attendant of any unusual condition or hazard during the entry process or as the task to be performed is being accomplished.
6. To evacuate if/when directed by attendant or when an emergency arises. (IN NO CASE WILL AN ENTRANT IGNORE AN ATTENDANTS DIRECTIVE TO IMMEDIATELY EVACUATE.)
7. To perform the tasks within the space(s) as assigned.

VII. Duties of Attendants

A. At minimum, the duties of attendants are:

1. To review the permit prior to entrance of entrant with both the entrant and the entry supervisor. (Note: The attendant and the entry supervisor may be the same individual.)
2. To know the potential hazards of the tasks.
3. To be aware of possible behavioral effects of hazard exposure in authorized entrants. (Behavior not considered normal for the individual in the confined space. (i.e. lethargic, garbled voice, giddy, or no response.)
4. To maintain continuous control and count of entrants.

5. To remain outside the space at all times.
6. To maintain communication with entrant(s) at all times. In most cases in tunnel and crawl space work, communications will be via radio.
7. To monitor conditions inside and outside the confined space to insure the safety of all parties involved.
8. To summon rescue and emergency services as required. In all cases, this will be notification of Public Safety at extension #2911. (DO NOT CALL 911 DIRECTLY). To call 911 directly will cost loss of time in direct response to the accident scene.
9. To insure that unauthorized persons do not approach the work area.
10. To perform (NON-ENTRY) rescue procedures as required. (This may entail pulling the entrant from the space via rope or other device without the attendant entering the space. NOTE- In no instance will the attendant enter the confined space. Entrance by a second individual without proper equipment, i.e. SCBA, may result in the need for the rescue of the well intentioned but unprotected rescuer, as well as the original victim.
11. To perform no duty while assigned to this task that might interfere with the primary duty.

VIII. Duties of Entry Supervisors

A. At minimum, the duties of the entry supervisors are:

1. To verify completeness of the entry permit.
2. To terminate entry and cancel the permit as required.
3. To verify the availability of rescue services. (Call Public Safety at Tel. Ext. 2104. Advise the dispatcher that a confined space entry will occur. Provide location, and estimation of completion time. This procedure may enhance rescue operations if/when an emergency occurs.
4. To remove unauthorized individuals from the confined space area.
5. To determine transference of a confined space entry procedure.

IX. Rescue and Emergency Services

A. All rescue operations will be controlled through coordination with Public Safety Emergency Tele:

Ext.2911.

1. Due to the complexity of training and equipment required, in all cases involving an emergency or rescue procedure for confined space entry Public Safety will notify the Omaha Fire Department, (OFD). The Public Safety dispatcher will automatically request in addition to a squad, a Para rescue unit.
2. Public Safety officers will guide OFD to the entrance location from a meeting point designated by the Public Safety dispatcher.
3. The dispatcher will obtain as much information as possible from the reporting individual.

B. When/if an injured entrant is exposed to a chemical hazard(s), a Material Safety Data Sheet (MSDS) for the substance(s) is required. Material Safety Data Sheets may be obtained from the MSDS file within Physical Plant, or from the office of Environmental Health and Safety, Tel: 280-2280.

X. Disciplinary Actions

A. Any Creighton University employee who knowingly violates any procedure or directive contained in this program **WILL BE** subject to disciplinary action. All disciplinary actions must be documented by appropriate Physical Plant supervisory personnel. Documentation must include the signature of the individual being disciplined, and the date of the signature.

B. Any contractor violation of this program, brought to the attention of Physical Plant supervisory personnel will be documented.

1. A copy of the documented violation of the program will be furnished to the contractor for appropriate disciplinary actions.

DEFINITIONS OF TERMS (from 29 CFR 1910.146(b))

Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

Authorized entrant means an employee who is authorized by the employer to enter a permit space.

Blanking or blinding means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined space means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and

2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
3. Is not designed for continuous employee occupancy.
(Note: This will include areas normally used only for maintenance purposes.)

Double block and bleed means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction or crushing.

Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry permit (permit) means the written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in paragraph (i) of this section.

Entry supervisor means the person designated by Physical Plant managerial personnel (such as the employer, foreman, or crew chief) 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 as required by this section.

Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL;
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Sub part G, Occupational Health and Environmental Control, or in Sub part Z, Toxic and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
5. Any other atmospheric condition that is immediately dangerous to life or health.

Hot work permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or

delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Note: Some materials--hydrogen fluoride gas and cadmium vapor, for example--may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possible fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

Inerting means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This procedure produces an IDLH oxygen-deficient atmosphere.

Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; non-aligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

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

Oxygen deficient atmosphere means an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen enriched atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-required confined space (permit space) means a confined space that has one or more of the following characteristics:

1. Contains or has a 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 recognized serious safety or health hazard.

Permit-required confined space program (permit space program) means the employer's overall program for controlling, and where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Permit system means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service means the personnel designated to rescue employees from permit spaces.

Retrieval system means the equipment (including a retrieval line, chest or fullbody harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Testing means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Attachment #1

ENTRY AUTHORIZATION	ENTRY CANCELLATION
All actions and/or conditions for safe entry have been performed.	Entry has been completed and all entrants have exited permit space.
Person in Charge of Entry _____	Person in Charge of Entry _____
PLEASE PRINT	PLEASE PRINT

IN CASE OF EMERGENCY CALL 2-911
{CFR 1910.146 (f)(11)}

EH&S CONF-SPACE.DOC

Confined Space Entry Program
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