

DEPARTMENT OF THE ARMY
U.S. Army Medical Department Center and School and
Fort Sam Houston
Fort Sam Houston, TX 78234-5014

FSH Regulation
No. 420-8

1 May 96

Public Works
PERMIT REQUIRED CONFINED SPACE

Issue of supplements to this regulation by subordinate commanders is prohibited, unless specifically approved by Headquarters, U.S. Army Garrison.

1. PURPOSE. To set forth the responsibilities for acceptable entry conditions into confined spaces and to ensure that personnel involved with a permit-required confined space can safely enter into and work within the space.
 2. APPLICABILITY. This regulation applies to all activities supported by HQ, U.S. Army Medical Department Center and School and Fort Sam Houston.
 3. REFERENCE. 29 CFR 1910.146
 4. GENERAL
 - a. The Directorate of Public Works (DPW), Fire Protection Division, evaluates the work places to determine if any are permit-required confined spaces.
 - b. If the work place contains permit space, DPW will inform exposed personnel, by posting danger signs or by other equally effective means, of the existence, location, and dangers posed by the permit spaces.
- NOTE: The sign will read: "DANGER - Permit-Required Confined Space - DO NOT ENTER."
- c. If the Fire Protection Division decides that employees may not enter permit spaces, effective measures to prevent employees from entering the permit space will be taken.
 - d. If the Fire Protection Division decides that the employees may enter permit spaces, the written program will be available for inspection by employees.

e. Employees must demonstrate that continuous forced air ventilation alone is sufficient to maintain that the permit space is safe for entry.

f. Conditions that make it unsafe to remove an entrance cover shall be eliminated before the cover is removed.

g. After entrance covers are removed, the opening will be promptly guarded by a railing, temporary cover, or other temporary barrier that prevents an accidental fall through the opening, and that protects employees working in the space from foreign objects.

h. Before an employee enters the space, the internal atmosphere will be tested with a calibrated direct-reading instrument, for the following conditions in the order given

Oxygen content

Flammable gases and vapors

(3) Potential toxic air contaminants

i. There may be no hazardous atmosphere within the space whenever an employee is inside the space.

j. Continuous forced air ventilation will be used as follows:

(1) Employees are denied entrance until the forced air ventilation has eliminated any hazardous atmosphere.

(2) Forced air ventilation will be directed as to ventilate the immediate areas where employees are, or will be and will be continued until all employees have left the area.

(3) The air supply for the forced air ventilation will be from a clean source and will not increase the hazards in the space.

k. The atmosphere within the space will be periodically tested as necessary, to ensure that continuous forced air ventilation prevents the accumulation of a hazardous atmosphere

l. If a hazardous atmosphere is detected during entry the following precautions must be taken:

(1) Immediate evacuation

(2) The area will be evaluated to determine how the hazardous atmosphere developed.

(3) Measures will be implemented to protect personnel from the hazardous atmosphere before any subsequent entries take place.

m. The Fire Protection Division will verify (in writing) that the area is safe for entry. The written certification will contain the date, the location of the space, and the signature of the person providing the certification. The certification will be initiated before entry takes place and will be made available to each employee that enters the space.

n. The Fire Protection Division will reevaluate the space in case of changes in the use or configuration of a non-permit confined space. The Fire Protection Division will reevaluate that area and if necessary, reclassify it as a permit-required confined space.

o. An area classified by the Fire Protection Division as a permit-required confined space will be reclassified as a non-permit confined space under the following conditions:

(1) The permit space poses no actual or potential atmospheric hazards, and if all hazards within the area are eliminated without entry into the area, the permit space will be reclassified as a "non-permit confined space" for as long as the non-atmospheric hazards remain.

(2) The basis for determining a permit space as hazard free will be documented by the Fire Protection Division in form of a certification that contains the date, location of the space and signature of individuals that are responsible for the determination. The certification will be made available to each employee entering the space.

(3) If hazards arise within a permit space, that had been declassified to a non-permit space, employees must exit the area. The Fire Protection Division will reevaluate the area and determine whether it must be reclassified as a "permit space" in accordance with (IAW) other applicable provisions of this section.

p. If the Directorate of Public Works arranges to have employees of another employer (contractor) perform work that involves permit space entry, the Fire Protection Division will:

(1) Inform contractor personnel that the work place is classified as permit space and that permit space entry is authorized only in compliance with the permit space program, that meets the requirements of this section.

(2) Apprise the contractor of the elements, including the hazards identified, and the cause and circumstances for the permit space.

(3) Apprise the contractor of any precautions or procedures that Public Works has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.

(4) Coordinate entry operations with the contractor when both Public Works personnel and contractor personnel will be working in or near permit spaces.

(5) Debrief the contractor at the conclusion of the entry operations regarding the permit space program, followed by and regarding any hazards confronted or created in permit spaces during entry operations.

q. In addition to complying with the permit space requirements, each contractor who is retained to perform permit space entry operation will:

(1) Obtain all available information regarding permit space hazards and entry operations from the Directorate of Public Works.

(2) Coordinate entry operation with Public Works.

5. PERMIT-REQUIRED CONFINED SPACE.

a. Entry supervisors must implement the measures necessary to prevent unauthorized entry.

b. Fire Protection Division will identify and evaluate the hazards of permit spaces before employees enter.

c. Fire Protection Division will test conditions in the permit space before entry, to determine if acceptable entry conditions exist.

d. The employer will have at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.

e. To summon rescue and emergency services, dial 911

f. Before entry begins, the entry supervisor, identified on the permit, will sign the entry permit to authorize entry.

g. The completed permit will be made available at the time of entry to all authorized entrants by posting it at the entry portal.

h. The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.

i. The entry supervisor will terminate entry and cancel the entry permit when:

(1) Entry operations covered by the entry permit have been completed.

(2) A condition that is not allowed under the entry permit arises in or near the permit space.

j. The Fire Protection Division will retain each canceled entry permit for at least one year to facilitate the review of the permit required confined space program. Any problems encountered during an entry operation will be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.

k. Preventive Medicine, Brooke Army Medical Center (BAMC) will evaluate persons required to use respiratory protection to ensure they are medically cleared to use the required devices. All such employees will comply with the provisions outlined in the FSH Respiratory Protection Program.

6. ENTRY PERMIT. Entry permits that document compliance with this section and authorize entry to a permit space will identify:

a. The permit space to be entered.

b. The purpose of the entry.

c. The date and authorized duration of the entry permit.

d. Authorized entrants within the permit space, to enable attendants quick and accurate identification of authorized personnel.

e. The hazards of the permit space

f. Measures to isolate the permit space and to eliminate or control permit space hazards before entry may require lock-out/tag-out, and procedures for purging, inerting, ventilating and flushing of the permit space.

g. The acceptable entry conditions.

h. The results of initial and periodic tests performed.

i. Emergency number to be called - 911

j. The communication procedures used by authorized entrants.

k. Equipment, such as personnel protective equipment, testing equipment, communications equipment, alarm system, and rescue equipment.

l. Any additional permits, such as for hot work, that have been issued to authorize work in the permit space.

7. TRAINING.

a. Employees that perform tasks regulated by this regulation will be trained to acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned.

b. The training will establish employee proficiency in the duties required and will introduce new or revised procedures, as necessary.

c. Training conducted will be certified. The certification will contain each employee's name, the signatures or initials of the trainers, and the dates of the training. The certification will be available for inspection by employees and their authorized representatives.

8. DUTIES OF AUTHORIZED ENTRANTS.

a. Knowledge of the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

b. Proper use of equipment, to include personnel protective equipment and respirators.

c. Communication with the attendant as necessary, that enables the attendant to monitor entrant status, and alert entrants of the need to evacuate the area as required.

d. The attendants need to be alerted whenever:

(1) The entrant recognizes warning signs or symptoms of exposure to a dangerous situation.

(2) The entrant detects a prohibited condition

e. Evacuation of the permit space is required when the following occurs:

(1) An order to evacuate is given by the attendant or the entry supervisor.

(2) The entrant recognizes warning signs or symptoms of exposure to a dangerous situation.

(3) The entrant detects a prohibited condition

(4) The evacuation alarm is activated.

9. DUTIES OF ATTENDANTS.

a. Knowledge about the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

b. Awareness of possible behavioral effects of hazardous exposure in authorized entrants.

c. The maintaining of an accurate count of authorized entrants in the permit space and the means used to identify authorized entrants.

d. Remain outside the permit space during operations until relieved by another attendant.

e. Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.

f. Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the area and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:

(1) The attendant detects a prohibited condition

(2) The attendant detects the behavioral effects of hazard exposure in an authorized entrant.

(3) The attendant detects a situation outside the space that could endanger the authorized entrants.

(4) The attendant cannot effectively and safely perform all the duties required of this section.

g. Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.

h. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:

(1) Warn the unauthorized persons that they must stay away from the permit space.

(2) Advise the unauthorized persons that they must exit immediately if they have entered the permit space.

(3) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

i. Performs non-entry rescues as specified by the employer's rescue procedures.

j. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

10. DUTIES OF ENTRY SUPERVISOR

a. Ensures that each entry supervisor is familiar with the hazards he may face during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

b. Verifies, appropriate entries on the permit, ensures all tests specified by the permit have been conducted, all procedures and equipment specified by the permit are in place, and entrants are included in the Respiratory Protection Program.

c Terminates the entry and cancels the permit as required.

d. Verifies that rescue services are available and that the means for summoning them are operable.

e. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

RESCUE AND EMERGENCY SERVICES.

a. The Directorate of Public Works will ensure that members of the rescue service are medically approved and trained to properly use the personal protective equipment and rescue equipment necessary to undertake rescue missions from permit spaces.

b. Members of the rescue service will practice permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces will, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescues will be performed.

d. Members of the rescue service will be trained in basic first-aid and in cardiopulmonary resuscitation (CPR).

e. Public Works or contractor personnel will brief rescue services on entry procedures into a permit space, and about the hazards they may encounter, when called upon.

f. Public Works or contractor personnel will provide rescue services with access to all permit spaces that require rescue services.

g. To facilitate non-entry rescues, retrieval systems or methods will be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

h. Retrieval systems will meet the following requirements: Each authorized entrant will use a chest or full body harness, with a retriever line attached at the center of the entrant's back near shoulder level. The other end of the line will be attached to a mechanical device or a fixed point outside the permit space.

ATMOSPHERIC TESTING.

a. Evaluation Testing. The atmosphere of a confined space must be analyzed using equipment of sufficient sensitivity and specificity to 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 the data, and development of the entry procedure, will be done by or reviewed by a technically qualified professional (for example, OSHA consultation service or certified industrial hygienist, registered safety engineer, certified safety professional, etc.) based on evaluations of all serious hazards.

b. Verification Testing. The atmosphere of a permit space that may contain a hazardous atmosphere will be tested for residues of all contaminants identified, through the use of permit specified equipment, to determine that residual concentrations, at the time of testing and entry are within the range of acceptable entry conditions. Results of testing will be recorded on the permit in the space provided adjacent to the stipulated acceptable entry conditions.

13. SPECIAL EQUIPMENT.

- a. Personal protective clothing.
- b. Gas detection monitoring devices, intrinsically safe.
- c. Escape self contained breathing apparatus.
- d. Flashlights; water/explosion proof.
- e. Rescue equipment.
- f. Supplied breathing air systems.
- g. Radios.
- h. Appendix A. Pre-Entry Checklist for Confined Spaces
- i. Appendix B. Confined Space Entry Permit

GLOSSARY.

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

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

Authorized Entrant: Personnel that are authorized to enter a permit space.

Confined Space..

(1) Space that is large enough and configured so that an employee can bodily enter and perform assigned work.

(2) Space that has limited or restricted means for entry or exit (tanks, vessels, pits, etc.)

(3) Space that is not designed for continuous employee occupancy.

Entry Permit. The written or printed document that is provided to allow and control entry into a space and that contains the information specified.

Entry Supervisor. Oversees entry operations and terminates entry, as required.

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

(1) Flammable gas, vapors 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) Any other atmospheric condition that is immediately dangerous to life or health.

Hot Work Permit. The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, or heating) capable of providing a source of ignition.

Inerting. 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.

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

Oxygen Deficient Atmosphere. An atmosphere containing less than 19.5 percent oxygen by volume

Oxygen Enriched Confined Space. An atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space. 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 to the extent 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.
- (4) Contains any other recognized serious safety or health hazard.

Permit System. The employer's written procedures for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

Prohibited Condition: An unauthorized condition in a permit space, during the duration when entry is authorized.

Retrieval System. The equipment (including a retrieval line, chest or full-body harness) used for non-entry rescue of persons from permit space.

The proponent of this regulation is the Directorate of Public Works, Fire & Emergency Services Division. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to the Commander, USAG, ATTN: MCGA-PW, Fort Sam Houston, TX 78234-5014

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