



TEXAS TECH UNIVERSITY™

Operating Policy and Procedure

OP 60.16: Confined Space Entry Program

DATE: June 9, 2023

PURPOSE: The purpose of this Operating Policy/Procedure (OP) is to ensure the safety of personnel required to enter and conduct work in confined spaces. The program describes procedures for defining and working in confined spaces that meet the requirements of [29 CFR 1910.146](#).

REVIEW: This OP will be reviewed in April of even-numbered years by the Assistant Vice President for Environmental Health & Safety with substantive revisions forwarded through the Associate Vice President for Research (Responsible Research) to the Vice President for Research & Innovation.

POLICY/PROCEDURE

1. Intent

This document has been developed to ensure the safety of personnel required to enter and conduct work in confined spaces. These spaces have the potential to contain physical and chemical hazards that may injure individuals who enter and work in those spaces. The program contained herein describes reasonable and necessary policies and procedures for any and all facilities, departments, and individuals who are associated with confined space entry operations. **This program and all parts of [29 CFR 1910.146](#) and [29 CFR 1926 Subpart AA](#) shall apply to all confined space entry operations conducted at Texas Tech University (TTU) institutions.**

2. Definitions

- a. Attendant – Trained and designated person who remains outside the confined space and is in constant communication with the personnel working inside the confined space.
- b. Authorized Entrant – Trained and designated person who is approved or assigned to perform a specific type of duty or duties or to be at a specific location at the job site.
- c. Confined Space – A limited or restricted means of entry or exit that is large enough for an employee to enter and perform assigned work but is not designed for continuous occupancy by the employee. These spaces include, but are not limited to, underground vaults, tanks, storage bins, pits and diked areas, vessels, and boilers.
- d. Entry – 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.

- e. Entry Permit – 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 this program. Under TTU's program, permits are part of the process used to document and certify the removal of hazards in association with alternative entry procedures or reclassification of a permit-required confined space.
- f. Entry Supervisor – The trained and designated representative (such as the foreman or crew lead) 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 program. This individual may, if appropriately trained and equipped, serve as an entry attendant.
- g. Hazardous Atmosphere – An atmosphere that may expose employees to the risk of death, incapacitation, and 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:

- Flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL)
- Airborne combustible dust at a concentration that meets or exceeds its LFL

Note: This concentration 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% or above 23.5%
- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of [29 CFR 1910](#) and that could result in employee exposure in excess of its dose or permissible exposure limit (*SEE NOTE 1 BELOW*)
- Any other atmospheric condition that is immediately dangerous to life or health (*SEE NOTE 2 BELOW*)

NOTE 1: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

NOTE 2: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the [Hazard Communication Standard, section 1910.1200](#), published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

- h. Non-Permit-Required Confined Space – A confined space that does not contain, nor has the potential to contain, any hazard capable of causing death or serious physical harm (with respect to atmospheric hazards).
- i. Permit-Required Confined Space – A confined space that **is** potentially hazardous. A permit-required confined space 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 that slopes downward and tapers to a smaller cross-section; or
- (4) Contains any other recognized serious safety or health hazard. Examples of serious safety or health hazards might include:
 - (a) Fall hazards;
 - (b) Unguarded machinery;
 - (c) Extreme heat or cold;
 - (d) Steam pipes or chemical lines;
 - (e) Hazardous noise levels;
 - (f) Electrical hazards;
 - (g) Presence of asbestos; or
 - (h) Potentially hazardous levels of dust.

Note: Confined spaces that have not been classified are assumed to be permit-required confined spaces.

- j. Serious Hazard – A hazard where there is a substantial potential for death or serious physical harm to result. Serious physical harm is hospitalization for over 24 hours, a body part is lost, or permanent disfigurement or disability occurs.

3. Responsibilities

- a. Environmental Health & Safety (EHS) shall:
 - (1) Conduct online and classroom-based training for personnel to enter permit-required confined spaces;
 - (2) Review and update the Confined Space Entry Program to conform to current standards;
 - (3) Maintain confined space atmospheric testing and monitoring equipment;
 - (4) Issue Confined Space Entry Permits;
 - (5) Ensure compliance with standards set forth in the program by periodic inspection of entry sites and canceling permits where unsafe conditions are present; and
 - (6) Assist supervisors with:
 - (a) Providing training as set forth in the program; and
 - (b) Identifying and classifying confined spaces.
- b. Authorized supervisors and competent persons shall be responsible for and receive training in the following:
 - (1) Identify and classify confined spaces within facilities or areas under their control;
 - (2) Ensure all personnel are qualified and trained to enter permit-required confined spaces;

- (3) Identify and mitigate hazards within a confined space under their control;
- (4) Initiate the entry process by completing and signing the *Confined Space Entry Planning Worksheet* (Attachment B) and providing it to EHS for review. This worksheet can be found on the EHS website;
- (5) Ensure that the required atmospheric tests are performed at the confined space and the results recorded on the permit prior to entry authorization;
- (6) Ensure that at least one entrant into each permit-required confined space (including those entries conducted under alternate entry procedures or reclassification) is carrying a personal 4 gas monitor;
- (7) Maintain all equipment necessary to complete the confined-space entry project;
- (8) Terminate the entry and cancel the permit when:
 - (a) Entry operations covered by the entry permit have been completed; or
 - (b) A condition that is not allowed under the entry permit arises in or near the permit space.
- (9) Ensure that entry operations remain consistent with terms of the entry permit and ensure that acceptable entry conditions are maintained.

c. Authorized Entrants

The person(s) authorized to enter a confined space shall be responsible for and receive training in the following:

- (1) The knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of potential exposures;
- (2) Proper use of equipment involved in the entry and the work to be conducted;
- (3) Communication with the attendant, as necessary, to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space if required;
- (4) Alerting the attendant (standby person) whenever:
 - (a) The entrant recognizes any sign or symptom of exposure to a dangerous situation; or
 - (b) The entrant detects a prohibited condition.
- (5) Exiting the permit space as quickly as possible whenever:
 - (a) An order to evacuate has been given by the attendant or the entry supervisor;
 - (b) The entrant recognizes any sign or symptom of exposure to a dangerous situation;
 - (c) The entrant detects a prohibited condition; or
 - (d) An evacuation alarm is activated.

- d. Authorized attendants shall be responsible for and receive training in the following:
- (1) The knowledge of hazards that may be faced during entry, including the mode, signs or symptoms, and consequences of potential exposures;
 - (2) Awareness of possible behavioral effects of hazard exposure in authorized entrants;
 - (3) Maintaining an accurate inventory of authorized entrants in the permit space;
 - (4) Remaining outside the permit space during entry operations until relieved by another attendant;
 - (5) Attempting **non-entry** rescue if proper equipment is in place and the rescue attempt will not present further hazards to the entrant or attendant;
 - (6) Communicating with authorized entrants, as necessary, to monitor entrant status and to alert entrants of the need to evacuate the space when conditions warrant;
 - (7) Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and ordering the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - (a) If the attendant detects a prohibited condition;
 - (b) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
 - (c) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
 - (d) If the attendant cannot perform all duties required by this program effectively and safely.
 - (8) Summoning rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards;
 - (9) Taking the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - (a) Warning unauthorized persons that they must stay away from the permit space;
 - (b) Advising unauthorized persons that they must exit immediately if they have entered the permit space; and
 - (c) Informing the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
 - (10) Performing no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.
 - (11) Attendants shall be current in first aid/CPR certification.

4. Procedures

In general, TTU personnel and contractors will not enter permit-required confined spaces unless the space has been reclassified or the entry is conducted under alternate procedures. If the hazards in a space cannot be mitigated prior to entry, EHS must be involved in the entry planning process and rescue procedures must be in place prior to entry.

- a. Entities in charge of confined spaces must ensure that all spaces have been identified, evaluated, and classified as permit- or non-permit-required. Identification may be accomplished through labeling entry points to permit-required confined spaces with a permanent sign or other identifying marking or identifying these spaces in an inventory and conveying that information to personnel in the work area (including contractors) as part of safety briefings or training.
- b. While excavations are not technically considered permit-required confined spaces, any work in excavations deeper than 4 feet will take into account the following:
 - Work conducted in the excavation may be in a separate confined space (such as a large diameter pipe) that must be evaluated prior to entry.
 - If there is a potential for a hazardous atmosphere in the excavation, any work in the trench will follow the alternate entry procedures listed below.
 - Entrants into an excavation must be provided a means of egress every 25 feet and be protected from engulfment, excavation spoils, or materials staged near the excavation, accumulated water, and construction equipment. A competent person must assess the excavation site on a daily basis.
- c. For permit-required confined spaces where the **only** serious hazard posed is an actual or potential hazardous atmosphere, alternate entry procedures listed below will be employed for entry. For spaces where other serious hazards may be present, **but can be eliminated without entry**, the reclassification process listed below will be employed for entry. For entry into permit-required confined spaces where alternate procedures or reclassification cannot be employed, EHS must be consulted to develop entry procedures.
 - (1) Alternate entry procedures
 - (a) Complete the *Confined Space Entry Planning Worksheet* (Attachment B) and submit to EHS 24 hours prior to entry.
 - (b) When entrance cover is removed, the opening must promptly be guarded by a railing, temporary cover, or other temporary barrier.
 - (c) Prior to entry, the internal atmosphere of the space will be tested with a calibrated direct reading instrument for oxygen, flammable gases and vapors, and toxic air contaminants.
 - (d) Continuous forced air ventilation will be used to create/maintain a safe atmosphere for the duration of the entry.* Entrants must exit the space if ventilation ceases or a hazardous atmosphere develops.
 - (e) At least one entrant in the space will wear a personal 4 gas monitor that logs the atmospheric parameters.* That data will be collected by EHS at the end of the entry.
 - (f) An authorized supervisor or competent person must verify with written certification that the space is safe to enter. Permit paperwork will be used to document this and will be posted at the entry site.

* This provision does not apply to entry into excavations unless site conditions warrant.

- (g) An attendant will be present while personnel are in the permit space.
- (2) Reclassification process
- (a) Complete the *Confined Space Entry Planning Worksheet* (Attachment B) and submit to EHS 24 hours prior to entry. The authorized supervisor or competent person should note how non-atmospheric hazards will be eliminated without entering the space.
 - (b) Prior to entry, the internal atmosphere of the space will be tested with a calibrated direct reading instrument for oxygen, flammable gases and vapors, and toxic air contaminants.
 - (c) Continuous forced air ventilation may be used to improve conditions in the space, but if ventilation is required to maintain a safe atmosphere, the entry must be re-evaluated.
 - (d) At least one entrant in the space will wear a personal 4 gas monitor that logs the atmospheric parameters. That data will be collected by EHS at the end of the entry.
 - (e) An authorized supervisor or competent person must verify with written certification that the space is safe to enter. Permit paperwork will be used to document this and will be posted at the entry site. Reclassification of the space lasts for the duration of the job or one shift.
 - (f) An attendant will be present while personnel are in the permit space.
- d. If serious hazards in a permit-required confined space cannot be mitigated prior to entry, the space may only be entered after a consultation with EHS. These spaces may not be entered until the permit process is completed and manned rescue equipment and a standby rescue team are in place.
- e. Entrants should work in pairs if possible and notify their supervisor prior to entering a confined space and when they exit and complete work.
- f. All personnel involved in the evaluation and classification process or involved in the entry process must be trained in their confined space entry roles within the past 36 months. Rescue team members must have completed training within the past 12 months and be currently first aid/CPR certified.
- g. When work is completed or a situation that violates the terms of the permit arises, the permit is to be immediately terminated and EHS should be notified.
- h. A permit (including those used for reclassification or used for alternate entry procedures) is authorized **only** for the duration of the job or one shift. If there is an extended break or all personnel leave the work area during the job, alternate entry procedures or reclassification procedures must be completed again prior to entry.
- i. Contractors must be informed of permit-required confined spaces in the workplace and the hazards of the spaces prior to initiating work. If contractors are to enter permit-required

- confined spaces, their personnel must be apprised of TTU policies and procedures governing entry into those spaces.
- j. Any situations where a permit is canceled unexpectedly will be reviewed by TTU EHS and representatives of the entity that authorized it.
 - k. Any permit-required confined space entries that are not proposed to be conducted using the processes outlined above will require (1) EHS consultation in the planning process and (2) a trained and equipped emergency rescue capability deployed at the entry site and ready to respond.
 - l. Violations of this OP may result in corrective action including, but not limited to, mandatory leave without pay, loss of position, or termination for both the person committing the violation and their supervisor.

[Attachment A: Confined Space Entry Permit](#)

[Attachment B: Confined Space Entry Planning Worksheet](#)