

Permit Required Confined Spaces: Workshop for Proper Classification of Spaces

Dr. V. R. Brown, Ph.D.

It has been over 14 years since Federal OSHA issued its final rule CFR1910.146 “Permit-Required Confined Spaces.” Surprisingly State and Federal Review Commissions and Administrative Law Judges still hear contested cases regarding compliance issues associated with the regulation. Many of the cases are based on the employer’s contention that a workspace was either “not confined” or, if “confined,” it was free of all hazards and thus it was possible to classify the space as a “Non-Permit Confined Space.” The reality is that many employers designate the decision for proper classification of the space to an employee with limited exposure to the language found in the regulation in general, or limited confined space safety work practice, in particular. The result can often be costly (monetary fines) and sometimes fatal to one or more employees. This program will cover the fundamental definitions regarding confined spaces as found in the regulation and lead the attendee through the intent of that language and follow up with examples of real world spaces. These real world spaces will be discussed, their proper classification derived, and then the space will be evaluated for its potential to be considered as an “Alternate Procedure Entry” (i.e. vented vault) or its prospects for total and complete hazard elimination, thus achieving “Non-Permit Confined Space” status through the hazard elimination process.

Key Definitions (from 1910.146) needed in this program are listed below:

1. Confined Spaces means a space that:
 - a) Is large enough and so configured that an employee can bodily enter and perform assigned work AND
 - b) Has limited or restricted means for entry or exit AND
 - c) Is not designed for continuous employee occupancy.

2. Permit-Required Confined Spaces (Permit Space) means a confined space that has one or more of the following characteristics:
 - a) Contains or has the potential to contain a hazardous atmosphere
 - b) Contains a material that has the potential for engulfing an entrant
 - c) 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
 - d) Contains any other recognized serious safety or health hazard.

3. Non-Permit Confined Spaces means a confined space that does not contain or (w/r/t atmospheric hazards) have the potential to contain any hazard capable of causing death or serious physical harm.

4. Alternate Procedure Entry (c)(5):
 - a) Only hazard is actual or potential hazardous atmosphere
 - b) Continuous forced air ventilation alone is sufficient to maintain safe entry
 - c) Document determinations and supporting data
 - d) Certification made available to entrants
 - e) No formal written program [requirements in (c)(5)(ii) act as a substitute written program]
 - f) No permit system or permits [a written certification is required]
 - g) No attendant or supervisor
 - h) No rescue provisions
 - i) Training is required.

5. Hazard Elimination Entry (c)(7):
 - a) Space poses no actual or potential atmospheric hazards
 - b) Certify that all hazards within the space have been eliminated
 - c) Certification made available to entrants.

From Fed OSHA's PRCS Three Day Course #2260 (OSHA Training Institute)

It is instructive to note that for well over a decade OSHA's O.T.I. (OSHA Training Institute) has in its 3 day confined space course emphasized the following "Hierarchy" for safe confined space work practice:

"Hierarchy" of Permit-Required Confined Space Entry

Best Option-No Entry (Perform Work Without Entering the Permit Space)

- (c)(7) Reclassification-Hazards Eliminated
 - Certification, (c)(7)(iii)

- (c)(5) Alternate Procedures-Hazards Controlled
(By Continuous Forced Air Ventilation)
 - Documentation & supporting data, (c)(5)(i)(E)
(See CPL 2.100, pgs. 28-30)
 - Training, (g)
 - "mini-program", (c)(5)(ii)
 - certificate, (c)(5)(ii)(H)

(c)(4) Permit Space Entry-Hazards Cannot Be Eliminated nor Controlled

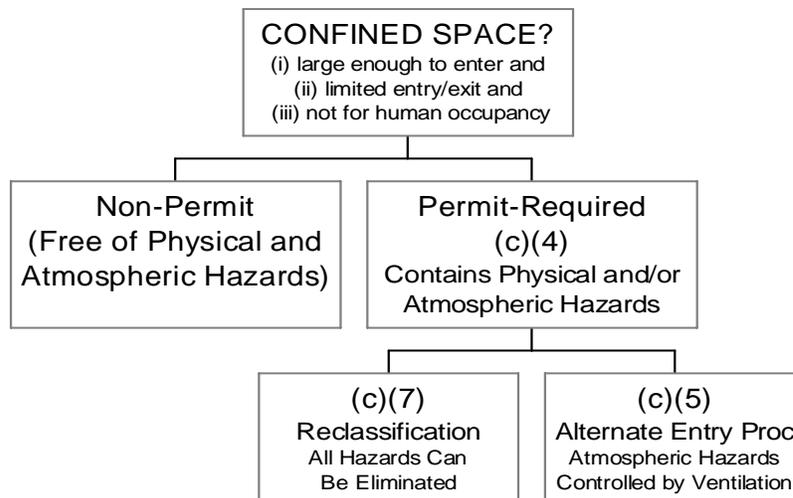
- written program and procedures, (d)
- permits, (e) & (f)
- training, (g)
- attendant, (d)(6)
- entry supervisor, (e)(2)
- testing, (d)(5) (See CPL 2.100, pgs. 33-34)
- rescue, (k)
- employee participation, (l)

Note that the O.T.I. has strongly endorsed “no entry” (if possible), followed in descending order by hazard eliminated entry “(c)(7)”, ventilated entry “(c)(5)” (when only atmospheric hazards are present), and suggests full permit entry “(c)(4)” only as the last resort when all other options can not be pursued.

Logic Path Diagram for Classification of Spaces

Classification of Spaces: CFR1910.146 states in its General Requirement Section (c) (a) that an employer must evaluate work spaces at their facilities for the possible presence of “Permit-Required Confined Spaces” as given in the Definition Section (b) of the regulation. The evaluation of the workspace and the resultant proper classification of the space are best described by logic path diagram given in Figure #1 below.

Options for Entry



It should be noted from Figure #1 that upon determining that a workspace meets the three concurrent confinement requirements given in OSHA’s definition of “confined space”, then

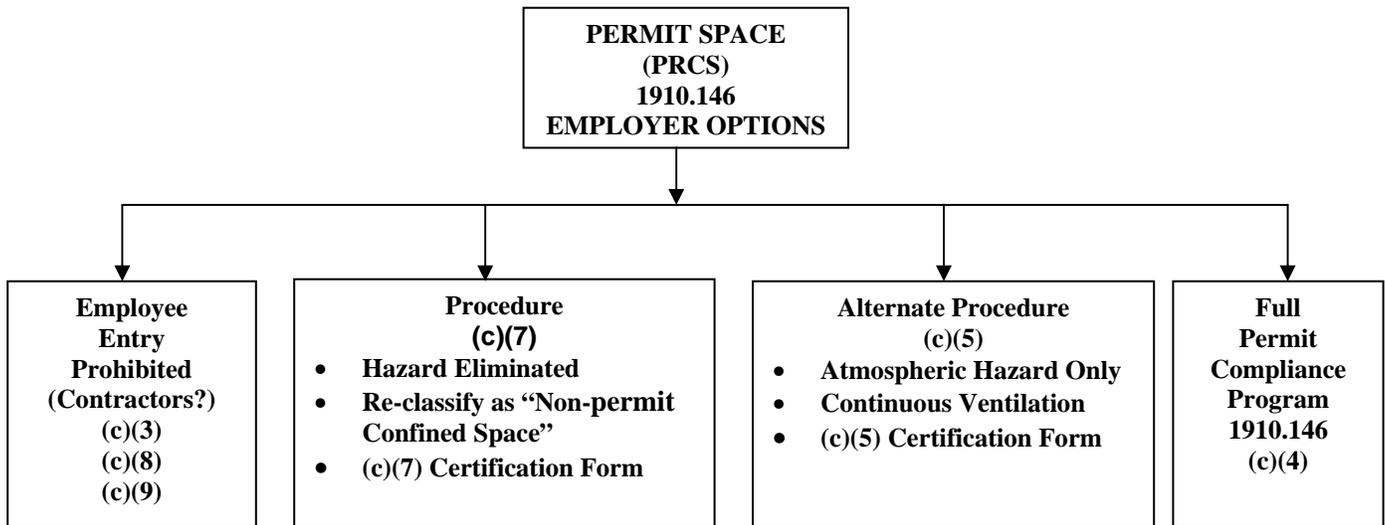
the competent person making the evaluation has only two options in their classification logic—“Non-Permit Confined Space” or “Permit-Required Confined Space.” A truly “Non-Permit Space” must be free of all hazards, requires no signage, eliminates rescue requirements, and suspends the bulk of any costly and time-consuming requirements for entry. [A hazard review form should be kept on file to support the employers’ contention of “hazard free” status of such a space.]

When the confined space under review fails the test of “hazard free” status, it must be designated as “permit-required.” But in-depth review of the history of the space, accident/incident reports, nature of tasks performed may allow the competent person to elect one of the three options listed below:

1. Permit in Perpetuity (Always entered under full permit conditions)
2. “Reclassification to Non-Permit” status through elimination of all hazards
3. “Alternate Procedure” using adequate ventilation when only atmospheric hazards are present

[Full discussions of these options are found in sections (c)(4), (c)(7), and (c)(5) respectively of CFR1910.146.]

Although the language of 1910.146 may not be eminently clear to all, it is a simple fact that the discussion above and the content of the rule allows 4 options for entry whenever an employer requires that a task be done in a permit-required confined space under their ownership or control. This is best summarized by the diagram in Figure #2 which follows.



Cases involving improper classification of space have frequently centered on:

- Reclassified space to non-permit status as found in paragraph (c)(7)
- “Alternate procedure” entry by continuous ventilation of atmospheric hazards to safe levels as found in section (c)(5)(ii)

Some Common Errors in Classification

Some common classification errors are listed below:

1. The employer often makes a determination of non-permit status even when All Hazards have not been eliminated. [Example: A space has been emptied of contents, isolated (including lockout), washed and cleaned but shows several %LEL of residual flammable substances and an oxygen level of 19.9% by volume—it clearly is not free of all atmospheric hazards!]
2. The employer introduces a blower of 1200 cfm effective blower capacity to a 15001 ft³ pit with 6” of standing liquid of unknown origin at the bottom of the pit. In this instance, the blower is of adequate capacity to effectively ventilate the space, but standing liquids of unknown origin cannot be present during “(c)(5)/Alternate Procedure” entries.
3. The employer decides to combine (c)(5) and (c)(7) procedures to reclassify a space not being aware that a Fed OSHA opinion letter of the mid 1990’s does not allow combining the two procedures (since ventilation never eliminates air contaminants, it possibly could only control them to safe levels.)
4. An employer puts workers in protective suits to clean out sludge-like residue at the bottom of a chemical tank after bringing a gasoline powered blower into the tank producing carbon monoxide. The contention of a (c)(5) “Alternate Procedure” due to continuous ventilation was firmly over ruled by an administrative law judge due to CO exposure and chemical hazards still in the confined space.
5. An employer incorrectly designated furnace shut down, cool down, isolation (with lock out) as “Alternate Procedure” simply because a blower was required after all other hazard removal steps were complete. Only atmospheric hazards (actual or potential) can be present in “Alternate Procedure” entries, thus the above furnace preparation was essentially a (c)(7) “Hazard Eliminated” entry not “Alternate Entry.”

Some Real World Spaces Analyzed in the Workshop are listed below:

1. Wet well
2. Dry well
3. Airport fuel storage tank
4. Water fountain pump room
5. Gas pipeline entry
6. Latex paint mixer
7. Utility service tunnel
8. Sewer trunk line with bar screen
9. “Ready mix” cement truck