# MIOSHA

Michigan Occupational Safety and Health Administration (MIOSHA)
Department of Labor and Economic Opportunity (LEO)

**AGENCY INSTRUCTION**

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| MIOSHA-STD-05-1R4 | May 2, 2024 |

**SUBJECT: Permit-Required Confined Spaces (PRCS) Standard in General Industry**

**Purpose. This instruction establishes policies and provides clarification to ensure uniform enforcement and interpretation of the Permit-Required Confined Spaces (PRCS) Standard.**

**Scope. This instruction applies to the Consultation Education and Training (CET) Division and the General Industry Safety and Health Division (GISHD).**

**References.**

**29 CFR 1910.146, Permit-Required Confined Spaces, Technical Amendment to Preamble; November 4, 1994, Federal Register Vol. 59, No. 213, p. 55209.**

**29 CFR 1910.146, Permit-required Confined Space Decision Flow Chart.**

**CET Division Instruction CET-ADM-09-1, Onsite Consultation Program Policies and Procedures Manual, as amended.**

**CET Division Instruction, CET-ADM-13-1 CET Division Operations Manual, as amended.**

**General Industry Standard Part 90, Permit-Required Confined Spaces (Part 90).**

**General Industry Standard Part 490, Permit-Required Confined Spaces (Part 490).**

**MIOSHA Field Operations Manual (FOM), as amended.**

**Occupational Safety and Health Administration Instruction CPL 02-00-100, (formerly CPL 2.100), May 5, 1995, Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146.**

**Occupational Safety and Health Standards 29 CFR 1910.146, Permit-Required Confined Spaces.**

**Distribution. MIOSHA Staff; Federal OSHA; S-drive Accessible; MIOSHA Messenger; and Internet Accessible.**

**Cancellations. All previous versions of this agency instruction.**

**Next Review Date. To be reviewed five years from date of issuance.**

**History. History of previous versions includes:**

MIOSHA-STD-05-1R3, June 6, 2018
MIOSHA-STD-05-1R2, April 3, 2014
MIOSHA-STD-05-1R1, January 28, 2011
MIOSHA-STD-05-1, January 31, 2005

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**Background. The Occupational Safety and Health Administration (OSHA) published its PRCS standard on January 14, 1993, with an effective date of April 15, 1993. MIOSHA adopted the OSHA standard by reference which became effective on October 30, 1993, in Michigan. OSHA Instruction CPL 2.100, issued on May 5, 1995, established uniform policies, procedures, clarifications, and compliance guidelines for enforcement of the PRCS standard. The MIOSHA PRCS Standard was amended on October 22, 1999, in Section (k) Rescue and Emergency Services in accordance with federal standard changes.**

**Significant Changes. There are no significant changes.**

**Organization of this Instruction. Compliance and consultation guidelines are addressed both within the main part of this instruction and the appendices. Appendices to this instruction are:**

**Appendix A: General Industry Standard Part 90 (Part 90) and General Industry Standard Part 490 (Part 490) Questions And Answers.**

**Appendix B: Requirements for a Written Program When Only (c)(5) or (c)(7) Are Used For Entry.**

**Appendix C: Guidelines for Developing a Permit-Required Confined Space (PRCS) Entry Written Program.**

1. **Attachment 1: List of Equipment.**
2. **Attachment 2a: Evaluation Tool to Help Determine If a Confined Space Is a Permit Space.**
3. **Attachment 2b: Permit-Required Confined Space/Confined Space Evaluation and List.**
4. **Attachment 3a: Guidelines for Permit Space Entry – Intent to Enter Using (c)(5).**
5. **Attachment 3b: Guidelines for Permit Space Entry – Intent to Enter Using (c)(7) Reclassification.**
6. **Attachment 4: Sample Entry Permit.**

**Appendix D: PRCS Compliance Checklist.**

**Appendix E: PRCS Citation and Grouping Guideline.**

**Appendix F: Specific Vertical Standards Taking Precedence.**

**Appendix G: OSHA Settlement Agreement for Electrical Utilities.**

**Standard Overview. The standard describes minimum safety and health program management practices for a permit-required confined space (permit space or PRCS). It also recognizes the dynamic character of permit spaces as they occur in general industry. Thus, the standard and its enforcement focus on the employer's whole program as**

**conceived, documented, and implemented as a primary safeguard for employees, and on the capacity of that program to detect confined space hazards and to respond to them appropriately. The standard includes the requirement [29 CFR 1910.146 (c)(6)] that employers must be aware that changes in non-permit confined spaces may create or introduce a hazard that would necessitate reclassification to a PRCS.**

1910.146 Appendix A of the standard, the Permit-Required Confined Space Decision Flow Chart, is an aid for following this instruction.

**Inspection Procedures. MIOSHA safety officers/industrial hygienists (SOs/IHs) shall conduct inspections and investigations relative to the PRCS Standard in accordance with the FOM, as amended and this instruction.**

**Unprogrammed Inspections. A comprehensive PRCS program review is expected to include a review of all recognized confined spaces where the subject of the complaint, referral, or initiating event is permit space hazards. Additionally, the employer's PRCS program must be evaluated when the SO/IH observes employees exposed to permit space hazards even if they were not the subject of the complaint, referral, or event.**

**Programmed Inspections. A PRCS program review shall be part of a comprehensive general industry programmed inspection in any workplace where confined space may exist.**

**Citation Guidelines. Citations for violations of the PRCS Standard shall be issued in accordance with the FOM and Appendices E and F of this instruction.**

**Classification of Violations. Most violations of the PRCS Standard could result in death or serious physical harm to employees. Therefore, violations of the PRCS Standard shall normally be classified as serious.**

**A number of other-than-serious violations may be grouped with a serious classification following FOM guidance.**

**Citations. As noted in Appendix A, the standard applies to maintenance activities, but not to construction. In situations where the nature of the work being performed is ambiguous because it may be viewed as either construction or maintenance, a review of the scope must be performed to determine if construction or general industry rules are applicable.**

**Consultative Procedures. MIOSHA's general industry consultants will conduct hazard surveys relative to the PRCS Standard in accordance with the CET Division Instruction CET-ADM-09-1, Onsite Consultation Program Policies and Procedures Manual, as amended or the CET Division Instruction, CET-ADM-13-1 CET Division Operations Manual, as amended and this instruction. Consultants should provide Appendices A, B, C and/or D during consultative visits and outreach activities to assist with the requirements of the PRCS Standard.**

## APPENDIX A

## GENERAL INDUSTRY STANDARD PART 90 (Part 90) AND GENERAL INDUSTRY STANDARD PART 490 (Part 490) QUESTIONS AND ANSWERS

### SECTION (a) – Scope and Application

1. **Are only those employers engaged in manufacturing operations covered by the PRCS Standard?**

No. The standard applies to all general industry places of employment. Among them are agricultural services, manufacturing, transportation and utilities, wholesale trade, retail trade, hotels and other lodging, health services, museums, botanical gardens, public employers and zoos to name a few.

2. **What agricultural Standard Industrial Classification (SIC) codes fall under the scope exemption of the standard?**

SIC codes in Major Groups 01 and 02, which are directly related to crop and livestock production, are exempt. All other major groups within agriculture will have to be determined on a case-by-case basis.

3. **When is work in the telecommunication industry covered by the generic 1910.146 standard?**

Telecommunications employers do have obligations under the PRCS standard. Like all other general industry employers, 1910.146 (c)(1) requires them to evaluate the workplace to determine if there are any permit spaces. It is expected that these spaces have been known for years and there is most likely a history of any manholes that present hazards not already addressed by either General Industry Standard Part 50, Telecommunications (Part 50), or Construction Standard Part 30, Telecommunications for Construction, (Part 30), both standards which adopt by reference OSHA Standard 1910.268, Telecommunications. Those manholes which are suspected of posing "other" hazards must be evaluated under 1910.146 (d)(2). The detailed evaluation does not have to be completed prior to the effective date of the standard but does have to be completed prior to entry.

Many hazards encountered in telecommunications work in manholes and unvented vaults are addressed by 1910.268 (o). The telecommunications standard will continue to be applied to those hazards, and the provisions of 1910.146 would not apply where the provisions of 1910.268 (o) already apply. However, the agency can envision manholes and work situations that will be covered by 1910.146. For example, although it is rare, manholes can become overwhelmingly contaminated with toxins or other hazardous chemicals. If the work area cannot be made safe before entry, through compliance with 1910.268 (o)(2)(i)(B), any entry would be performed under the provisions of 1910.146.

Confined space hazards in general industry that are not addressed by an industry specific standard will be covered by 1910.146 (Part 90 and Part 490).

MIOSHA also considers entry operations or activities which produce toxins or create other hazards, which are not controlled through compliance with 1910.268 (o), to be covered by 1910.146 (Part 90 and Part 490).

4. **How will MIOSHA enforce the PRCS Standard in electrical power facilities?**

The alternate entry procedures of General Industry Standard Part 86, Electric Power Generation, Transmission, and Distribution (Part 86) for "enclosed spaces" and "underground electrical installations" apply to "qualified employees" performing maintenance or operations work. 1910.146 will continue to apply in all other PRCS situations.

5**. How will MIOSHA address confined space hazards in shipyards, marine terminals, and longshoring operations?**

MIOSHA does not have jurisdiction over these industries. Please refer to federal OSHA.

6. **Must an employer covered by an industry-specific standard perform the initial workplace evaluation required by 1910.146 (c)(1)?**

Yes. Employers with spaces covered by a specific industry standard must still determine if they have spaces which would qualify as a permit space not covered by the industry specific standard. Therefore, all employers must do an initial evaluation under 1910.146(c)(1).

7. **A facility, falling within the scope of the general industry standards, is undertaking physical changes involving work in permit spaces. These changes will also employ construction practices either by in-house or contractual employees. Which standard, General Industry Standards Part 90 and Part 490, 1910.146, or Construction Standard Part 35, Confined Space in Construction (Part 35), will apply for the work involved in the permit-required confined spaces?**

Generally speaking, refurbishing of existing equipment and space is maintenance; reconfiguration of space or installation of substantially new equipment (as for a process change) is usually construction. Those spaces identified under 1910.146 (c)(1) as permit spaces that are undergoing maintenance or modifications, which do not involve construction, would be subject to the general industry standards. A confined space created during or as a result of construction activity or entered to perform construction activity would usually fall within the scope of Part 35, until the space is turned over for general industry operations.

8. **Would a utility, other than telecommunication or electrical distribution, be covered under Part 30 [1910.268 (o)] , Part 35, or Part 86 [1910.269], rules for street manhole entries?**

No. The procedures for manhole entry with regard to telecommunication and electrical distribution were developed specifically to address certain anticipated hazards for those industries.

**SECTION (b) – Definitions**

1. **Under the definition of "confined space," when will stairs or ladders constitute a limited or restricted means of egress?**

Ladders, and temporary, movable, spiral, or articulated stairs will usually be considered a limited or restricted means of egress. Fixed industrial stairs that meet MIOSHA standards will be considered a limited or restricted means of egress when the conditions or physical characteristics of the fixed industrial stairs, would interfere with the entrant's ability to exit or be rescued in a hazardous situation.

2. **Does the fact that a space has a door mean that the space does not have limited or restricted means of entry or exit and, therefore, is not a "confined space?"**

No. A space has limited or restricted means of entry or exit if an entrant's ability to escape in an emergency would be hindered. The dimensions of a door and its location are factors in determining whether an entrant can easily escape; however, the presence of a door does not in and of itself mean that the space is not a confined space. For example, a space such as a bag house or crawl space that has a door leading into it, but also has pipes, conduits, ducts, equipment, or materials that an employee would be required to crawl over or under or squeeze around in order to escape, has limited or restricted means of exit. A piece of equipment with an access door, such as a conveyor feed, a drying oven, or a paint spray enclosure, will also be considered to have restricted means of entry or exit if an employee has to crawl to gain access to their intended work location. Similarly, an access door or portal which is too small to allow an employee to walk upright and unimpeded through it will be considered to restrict an employee's ability to escape.

3. **Can the distance an employee must travel in a space such as a tunnel, to reach a point of safety be a determinant for classifying a space as a confined space?**

Yes. The determination would most likely be a function of the time of travel to the point of safety.

4. **How will MIOSHA assess a space which is entirely open on one plane, such as a pit, in determining whether a space has limited or restricted means for entry or exit?**

In determining whether a space has limited or restricted means for entry or exit, MIOSHA will evaluate its overall characteristics to determine if an entrant's ability to escape in an emergency would be hindered. Thus, a pit, shaft, or tank that is entirely open on one plane can be considered a confined space if the means for entering the space (stairway, ladderway, etc.) are narrow or twisted, or otherwise configured in such a way as to hinder an entrant's ability to quickly escape

(See question No. 1 of this section). Similarly, the pit, shaft, or tank itself may be confining because of the presence of pipes, ducts, baffles, equipment, or other factors which would hinder an entrant's ability to escape.

5. **How will compliance officers interpret a "condition in which the dust obscures vision at a distance of five feet or less" with reference to the definition of a hazardous atmosphere?**

The phrase appears in a note and is meant to be an informational aid to employers and employees in approximating the lower flammable limits. It should be noted that combustible dusts have differing lower flammable limits which are dependent on the composition of the dusts, the particle size, distribution, and other factors. Since the airborne concentration may vary considerably within the space, and the settled dust may also pose hazards, it is important that the employer recognize the potential hazards when entering confined spaces containing such dust and that the employer take appropriate precautions for protection of entrants.

Regarding flammable dusts in a confined space, MIOSHA may sample and analyze such dusts for combustibility, prior to issuing citations, whenever there is doubt as to the nature and extent of the dust hazard. Note that existing permissible exposure limits for nuisance dusts and other standards continue to apply.

6. **How will MIOSHA address a space that does not satisfy the criteria for a confined space but that potentially contains a hazardous atmosphere?**

Employers must comply with the permissible exposure limits and other requirements contained in standards addressing specific toxic substances and air contaminants, to the extent applicable, in all spaces in which employees may be present. In addition, General Industry and Construction Standard Part 451, Respiratory Protection (Part 451), applies to situations where an employee must enter a space in which a hazardous atmosphere may be present and no other specific standard applies. The respiratory protection standard contains special precautions for working in atmospheres that are oxygen deficient or immediately dangerous to life or health.

7. **Are the hazards posed by a space to be considered in determining whether a space meets the definition of a confined space?**

The determination whether a space has "limited or restricted means for entry or exit" within the meaning of the standard's definition of "confined space" should include consideration of whether, in light of the hazards posed by the particular space at issue, the configuration or other characteristics of the space would interfere with an entrant's ability to escape or be rescued in an emergency situation.

8. **Can a space that is initially designed for continuous human occupancy become a "confined space" because of changes in its use?**

If the changes alter the character of the space or if new or more serious hazards are introduced, those changes require reevaluation of whether the space is fit for continuous employee occupancy. If the space is not fit for continuous employee occupancy and the other criteria of the confined space definition are met, the space should be reclassified as a confined space.

9. **Does the characteristic "contains or has a potential to contain a hazardous atmosphere" in the definition of "PRCS" refer only to those atmospheres which pose an acute hazard?**

Where employees are exposed to atmospheric or toxic hazards which do not present an immediate danger of death or disability that would render the employee unable to escape from the confined space (e.g., air contaminants such as arsenic or asbestos), MIOSHA's health standards for those hazards apply rather than 1910.146. Employees must be appropriately protected in accordance with those health standards. The PRCS standard is intended to protect entrants against short-term, acute hazards (not exposures at or below the permissible exposure limits); other standards address a broader range of health and safety concerns.

As noted in the definition of "hazardous atmosphere" relating to atmospheric concentration of any substance for which a dose or permissible exposure limit is published in OSHA Subparts "G" and "Z" (MIOSHA's equivalent General Industry Standard Part 301, Air Contaminants for General Industry, and substance specific standards), any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to health effects is not covered by the PRCS standard.

10. **The definition of permit-required confined space contains the phrase "any other recognized serious safety or health hazard" as one of its hazard characteristics which would result in a confined space being classified as a permit space. Does the mere presence of a non-specified hazard such as physical hazards (e.g., grinding, agitators, steam, mulching, falling/tripping, other moving parts); corrosive chemical hazards; biological hazards; and other hazards (i.e., electrical, rodents, snakes, spiders, poor visibility, wind, weather, or insecure footing), which do not pose an immediate danger to life or health or impairment of an employee's ability to escape from the space constitute a hazard which would invoke this characteristic?**

When a hazard in a confined space is immediately dangerous to life or health, the "permit space" classification is triggered. The list referenced above is only illustrative of the general range of confined space hazards which could, but not necessarily always, constitute a hazard which would present an immediate danger to life or health. Generally, the vertical standards covering those hazards will apply but in their absence Part 90 and Part 490 may be applied.

11. **Does the mere presence of water in a confined space such as a manhole trigger the application of the PRCS Standard in order to work in that space?**

No. See Question 12.

12. **If the presence of water alone is not considered a hazard characteristic which would trigger the classification of a PRCS, what would?**

As previously stated, the mere presence of water alone would not be a basis for applying the PRCS Standard; there must be a quantity sufficient either to endanger the life of the entrant or to interfere with escape from the space. Water in combination with other hazardous conditions could trigger the application of the permit space provisions of the PRCS Standard if no vertical standard could be applied for this situation. For example, a small quantity of water (perhaps as much as two to three inches deep) in the confined space may not trigger the PRCS classification; however, if the water conceals trip and fall hazards such as abandoned machine pads or floor holes and openings and no vertical standards could be applied, the combination of these conditions may very well cause the confined space to be classified as a permit space.

**SECTION (c) – General Requirements**

1. **Are employers covered by the PRCS Standard in violation of paragraph (c)(1) of the standard if they have not evaluated their workplace to determine if any permit-required confined spaces exist?**

Yes. As of the effective date of the standard (October 30, 1993), employers were required to evaluate their workplace to determine if any spaces were a PRCS. Employers who have not performed the evaluation would be in violation of paragraph (c)(1) unless the workplace does not and could not contain any confined spaces.

2. **Can MIOSHA cite an employer for not documenting the initial evaluation of the workplace required by paragraph 1910.146(c)(1)?**

The evaluation need not be documented. The employer must be able to explain how the evaluation was conducted and describe the results. Thus, MIOSHA's citation will be for failure to evaluate as required by the standard, rather than for failure to create a record of the evaluation. While the standard does not require the evaluation to be documented, it is recommended as a best practice.

3. **Does the initial survey for determining if a confined space is a permit space, required by paragraph (c)(1), mandate a specific physical survey of each space?**

Not necessarily, the survey requirement may be met through existing records and knowledge of the space, provided this information is adequate to make the determination required by the standard. For example, a telecommunications company may have records which show that the hazards of all manholes in one section of the region can be addressed by 1910.268 (o) Part 50

procedures, and that the manholes in another section of the region may contain toxins due to ground water contamination. Only manholes in the latter section would need to be surveyed. This same approach can be used for any industry which has a number of identical spaces and records to support its determination(s).

4. **How will MIOSHA interpret the language in paragraph 1910.146 (c)(2) requiring employers to inform employees of permit spaces by posting signs or "by any other equally effective means?"**

Ordinarily, information about permit spaces is most effectively and economically communicated through the use of signs. Consequently, signs would be the principal method of warning under the standard. Alternative methods, such as additional training, may be used where they are truly effective in warning all employees who could reasonably be expected to enter the space. It is the employer's obligation to assure that an alternative method is at least as effective as a sign. In some cases, employers may have to provide training in addition to signs, to protect employees who do not speak English or who would have difficulty understanding or interpreting signs. (One method by which MIOSHA can gauge an employer's effectiveness is through random interviews of affected employees.)

If a space has a locked entry cover or panel, or an access door that can only be opened with special tools, the use of signs may be unnecessary if the employer ensures that all affected employees are informed about such spaces and know that they are not to be opened without taking proper precautions, including temporary signs, to restrict unexpected or unknowing entry.

5. **Upon deciding that no employee will enter a permit space, 1910.146 (c)(3) requires that ". . . the employer shall take effective measures to prevent its employees from entering the permit spaces . . . ." What does MIOSHA consider "effective measures?"**

These measures could include permanently closing the space and physical barriers, as well as bolting and locking the space, supplemented by training employees and posting danger signs. The steps taken by the employer must be capable of preventing employees from entering permit spaces.

6. **Does an employer who has permit spaces at their work site and had initially met its obligation under paragraph (c)(3), have to take additional measures when a contractor begins to alter a permit space?**

Yes, the host employer has a continuing obligation under the standard to prevent affected employees from entering permit spaces. Paragraphs (c)(8) and (c)(9) require coordination when both the host and contractor employees are in or near a permit space during entry operations. Only affected employees (those working in or who routinely pass through the work area) are required to be informed.

**7. What is required for a written program when employees only enter a permit space using either alternate entry 1910.146 (c)(5) or reclassification 1910.146 (c)(7)?**

Please see Appendix B for an answer to this question.

**8. How will an employer determine a "safe for entry" level for contaminants under the provisions of paragraph (c)(5)?**

MIOSHA is willing to accept as the minimal "safe for entry" level, that which is 50% of the flammable or toxic substance concentrations that would constitute a hazardous atmosphere. There are two examples footnoted in the preamble to the Federal OSHA Permit Confined Space Standard on page 4488:

(A) The Lower Flammability Limit (LFL) for methane is a concentration of 5 percent by volume. Ten percent of this value is 0.5 percent, a concentration which would be considered hazardous by definition. Under the guideline, the measured concentration of methane cannot exceed 0.25 percent after ventilation in order for the procedures specified in paragraph (c)(5)(ii) of the final rule to be acceptable.

(B) The 8-hour time weighted average Permissible Exposure Limit (PEL) for chlorine, under Table Z-1, is 1.0 parts per million. This concentration of chlorine would be considered hazardous by the definition of "hazardous atmosphere." Under the guideline, the measured concentration of chlorine cannot exceed 0.5 parts per million after ventilation in order for the procedures specified in paragraph (c)(5)(ii) of the final rule to be acceptable.

Entry under (c)(5) would not be acceptable if hazards in the space quickly increased if the ventilation were to stop. Sufficient time must be available for an entrant to safely exit the space if the ventilation stops.

9. **What type of documentation will MIOSHA look for if an employer uses the alternate procedure of paragraph (c)(5)?**

The data must demonstrate that there are no non-atmospheric hazards and that the ventilation will keep the air inside the permit space safe for entry. This should include initial data in the form of:

- Volume of the space to be entered.
- Capacity and configuration of the ventilation equipment to be used.
- Identified atmospheric hazards and potential hazards.
- The sampling results from routine testing of the space from the time ventilating has begun through final determination of acceptable entry conditions.
- Atmospheric hazards created by work in the space.

10. **What is meant by the phrase "immediate area where an employee is or will be present within the space" as used in paragraph (c)(5)(ii)(E)(2)?**

The forced clean air ventilation must be directed to where the employee is working or will be working. If the space is so configured or so large that directed air cannot be delivered by local ventilation (such as fans and blowers), ducting the "clean" air is required. The continuous forced clean air ventilation must continue while all employees are working in the space and until all employees have left the space.

NOTE: The exhaust discharge of contaminants from the permit space to areas adjacent to the permit space must not endanger the employees of the other work areas. Also, the supplied air ventilation for the permit space must not cause ventilation imbalances which would create hazards in the work area from which it is taken.

11. **How much periodic testing is required?**

The frequency of testing depends on the nature of the permit space and the results of the initial testing performed under paragraph (c)(5)(ii)(C).

The requirement in paragraph (c)(5)(ii)(F) for periodic testing as necessary to ensure the space is maintained within the limits of the acceptable entry conditions is critical. MIOSHA believes that all permit space atmospheres are dynamic due to variables such as temperature, pressure, physical characteristics of the material posing the atmospheric hazard, variable efficiency of ventilation equipment, and air delivery system, etc.

The employer will have to determine and document on an individual permit space basis what the frequency of testing will be and under what conditions the verification testing will be done.

12. **What are the minimal credentials for the person authorized to certify the space safe for entry referred to in paragraph (c)(5)(ii)(H)?**

MIOSHA would consider as acceptable any employer representative who possesses a level of knowledge, training, and understanding of the specific permit space equal to that of an Entry Supervisor, as defined in the standard.

13. **Are simple alarm devices considered to be the "direct reading instruments" referenced in paragraph (c)(5)?**

No, simple "alarm only" devices which do not provide readings, are not considered acceptable direct reading instruments, for either initial (pre-entry) or periodic (assurance) testing of a "(c)(5)" space since they do not provide enough information relative to the established acceptable entry conditions which is essential to the entrants' knowledge. Combination units which have a meter or display which reflect the actual concentrations and a preset alarm feature would be acceptable and possibly desirable because they provide "real time" information on

actual concentrations as well as the benefit of automatic (unattended) alarming at a predetermined value.

14. **What does MIOSHA accept as a "calibrated" direct reading instrument required by paragraph (c)(5)(ii)(C) for entrants to test the atmosphere for permit space entry?**

A testing instrument calibrated in accordance with the manufacturer's recommendations meets this requirement. The best way for an employer to verify calibration is through documentation.

15. **Can the alternate entry procedure (1910.146 (c)(5)) be used when hazards, other than atmospheric, are eliminated before entry takes place?**

Paragraph (c)(5) of 1910.146 provides the requirements, commonly known as the "alternate entry procedure." This procedure is for entering a permit space that only contains a potential or actual atmospheric hazard that can be controlled by the use of forced air ventilation. However, it is very common for permit spaces to contain serious physical hazards in addition to an actual or potential atmospheric hazard. These physical hazards include, but are not limited to:

- High temperature.
- Mechanical such as unguarded equipment, conveyors or mixing blades.
- Entrapment by converging walls, sloping floor.
- Engulfment from solid or liquid materials, etc.

MIOSHA will evaluate the alternate entry procedure to be used when hazards, other than an actual or potential hazardous atmosphere, can be eliminated before entry takes place on a case-by-case basis. This decision will be based on situations where the non-atmospheric hazards are few and can be eliminated by simple procedures and the employer must document that all other serious hazards have been eliminated and must comply with 1910.146 (c)(5)(i) and (c)(5)(ii). Following are two examples where MIOSHA would allow the alternate entry procedure to be used:

- An electric oven has exposed heating elements and high temperature in addition to a potential for a hazardous atmosphere. Lock-out of the heating elements would eliminate this hazard to employees, but only in conjunction with the oven being allowed to cool to room temperature. Once this cooling occurs, the only remaining hazard is a potential atmospheric hazard.
- A tank contains a mixer with exposed blades to blend chemicals in a process. In addition to the potential for a hazardous atmosphere, the mixing blades are a serious physical hazard. This hazard can be eliminated by removing the mixer from the tank or by proper lock-out of this equipment. Therefore, at the time entry takes place, the only remaining potential hazard is atmospheric.

When applying the above exemption, it is essential to understand the difference between "hazard elimination" and "hazard control." "Hazard elimination" is all of the following:

- Blanking or blinding.

- Misaligning or removing sections of lines, pipes, or ducts.
- Double block and bleed.
- Lock-out or tag-out of electro-mechanical hazards.
- Blocking or disconnecting all mechanical linkages.
- Installing a temporary floor above the area where an employee could be trapped or asphyxiated.

If entry into a permit space was necessary to eliminate any serious hazard, then entry could not be done under the alternate entry procedure. Entry would have to be done using a permit system (paragraphs (d) through (k)) until the hazards could be eliminated.

"Hazard control" is entirely different than hazard elimination. The following are examples of hazard control:

- Lock-out of a valve for a flowable material such as steam, natural gas, toxic gases, or any other substance that can cause a hazardous atmosphere or an engulfment hazard.
- Allowing employees to enter a "high temperature" space and limiting their time in the space.
- Providing personal protective equipment to protect employees from the hazard.

These control methods do not eliminate the hazard; therefore, they are not an acceptable means to deal with any non-atmospheric hazards. Alternate entry procedures [(c)(5)] may not be used when non-atmospheric hazards are controlled but not eliminated.

**16. What does the phrase "made available" mean in paragraphs (c)(5)(ii)(H) and (c)(7)(iii)?**

The certification must be made available to employees entering the space [or to those employees' authorized representative(s)] so they can have the means to evaluate the measures taken for their protection. This requirement can be satisfied either by providing each affected employee with a copy of the certification or by posting the certification so that each affected employee is able to inspect it. In addition, the individual who prepared the certification must be available to explain the measures taken to eliminate the hazards if any of the affected employees are reading-impaired or cannot understand the language in which the certification is written.

17. **What does MIOSHA consider to be examples of changes in "use and configuration" which might increase the hazard to entrants and require reevaluation and reclassifying non-permit confined spaces under paragraph 1910.146 (c)(6)?**

Changes in "configuration" address physical changes in the space such as shape (adding or removal of inwardly covering floor), volume, equipment, or components (addition or removal of a blender), means of access or egress.

Changes in "use" include changes in the function of the space, the contents or atmosphere created within it, the temperature and humidity, and the work practices being performed or anticipated in the space.

18. **What are the employer's responsibilities in multi-employer permit space entries?**

Coordination between employers who have employees entering a particular permit space is required by 1910.146 (c)(8)(iv), (c)(9)(ii) and (d)(11). The host employer who arranges for a permit space entry by contractor employees has a duty to instruct the contractor on the hazards or potential hazards and other factors that make the space a permit space. The contractor who will have employees enter the permit space is responsible for obtaining that information prior to entry. All employers who will have employees in the permit space are responsible for developing and implementing procedures to coordinate entry operations (for example, determining operational control over the space, affected employee training, rescue, emergency services, and all other aspects of the standard requiring coordination). Any one of the employers having employees enter the permit space could have operational control over the permit space during dual entry. All parties (host employer and contractors) retain responsibility for the protection of their own employees even though all the employers have agreed to designate one employer as having operational control over a specific permit space. There should be absolutely no doubt, by any permit space entrant, attendant, and entry supervisor regarding which employer has operational control and whose policy and permit space practices are to be followed.

19. **What information about the present or previous contents of the permit space must be provided to the contractor before its employees enter?**

At a minimum, the applicable material safety data sheet (MSDS), safety data sheet (SDS), or other hazard information relevant to the contents, coatings or liners, potential hazardous atmospheres, sampling data base, and residue(s) found or anticipated in the permit space. All information generated in the original evaluation of the permit space must also be provided.

20. **Are the examples explaining physical hazards and their relationship to paragraph (c)(7) in the preamble at 58 Fed. Reg. 4490-4491 and note 15 of instances in which hazards will be deemed eliminated from permit-required confined spaces by compliance with General Industry Standard Part 85, The Control of Hazardous Energy Sources (Part 85) [1910.147], and General Industry Standard Part 39, Design Safety Standards for Electrical Systems [1910.303], exclusive?**

No. The principle embodied in the preamble that hazards will be deemed removed from permit-required confined spaces by compliance with existing standards, applies to any standard that eliminates the hazard.

21. **How long can a space reclassified using the procedures of paragraph (c)(7) remain a non-permit confined space?**

Once a space has been reclassified as a non-PRCS, it remains reclassified as long as all hazards remain eliminated. The basis for determining that all the hazards have been eliminated and thus can be reclassified must be documented. The documentation required must be kept until entry operations have been completed.

**SECTION (d) – Permit Space Entry Program**

1. **Continuous monitoring is required by 1910.146 (d)(5)(i) in the areas where the authorized entrants will be working when the employer allows entry without pre-entry determination of acceptable entry conditions for spaces, and where isolation is infeasible because the space is large, or part of a continuous system, such as a sewer system. Does each entrant have to be monitored individually or can an area monitor be used?**

An area monitor could be used where small groups (two or three employees) work together in close proximity as long as the monitor can measure hazards encountered by the employees. However, all the entrants must remain together as a group for the entire entry procedure.

2. **What does testing or monitoring "as necessary" mean as required by 1910.146 (d)(5)(ii) to decide if the acceptable entry conditions are being maintained?**

The standard does not have specific frequency rates because of the performance-oriented nature of the standard and the unique hazards of each permit space. However, there will always be, to some degree, testing or monitoring during entry operations which is reflective of the atmospheric hazard. The employer must determine the degree and the frequency of testing or monitoring. Some of the factors that affect frequency are:

- Results of test allowing entry.
- The regularity of entry (daily, weekly, or monthly).
- The uniformity of the permit space (the extent of which the configuration, use, and contents vary).
- The documented history of previous monitoring activities.
- Knowledge of the hazards which affect the permit space as well as the historical experience gained from monitoring results of previous entries.

Knowledge and recorded data gained from successive entries (such as ventilation required to maintain acceptable entry conditions) may be used to document changes in the frequency of monitoring.

3. **Are the results of the air sampling and exposure monitoring required by this standard considered exposure records under General Industry and Construction Standard Part 470, Employee Medical Records and Trade Secrets (Part 470).**

Those results which show the composition of an atmosphere to which an employee is actually exposed (even if the employee is using a respirator) are exposure records under Part 470. Conversely, if the employer determines as the result of initial air sampling not to allow entry into a confined space until additional ventilation and purging of the atmosphere has occurred, the sample would not be considered an exposure record because no employee would ever have been exposed to the atmosphere sampled. However, once the employer takes corrective action so that an employee can enter, the results of subsequent air sampling that show the atmosphere the employee actually entered would be considered exposure records.

## SECTION (h) - Duties of Authorized Entrant(s)

1. **Can an employee be both an entry supervisor and authorized entrant for an entry?**

The standard allows an employee to be both an entry supervisor and entrant as long as the employee has had the appropriate training and the duties of one activity do not conflict with the duties of the other.

## SECTION (i) – Duties of Attendants

1. **When a single attendant is monitoring more than one permit space, is there a limit on how far the attendant can be from any of the spaces monitored?**

The benchmark for monitoring multiple permit spaces by a single attendant is his/her ability to perform all their (attendant) duties without compromising the safety of any entrants in all the permit spaces being monitored by the attendant. There is no minimum proximity requirement.

## SECTION (j) – Duties of Entry Supervisor(s)

1. **Does an employer have to verify the availability of the off-site rescue service each time a permit space entry is scheduled or attempted?**

Yes, the employer has overall responsibility for employee safety. If the off-site rescue service indicates, for any reason, that it would be unable to respond to a rescue summons, entry shall not be authorized unless an adequate alternative rescue service is arranged.

## SECTION (k) – Rescue Service

1. **Does an off-site rescue service have to have a permit space program?**

No, a complete program is not necessary; however, rescue plans and procedures are necessary. Rescue services (on-site and off-site) are required by paragraph (k) to have members who are trained, equipped, and practiced for safe entry into the particular permit spaces from which they will be expected to rescue entrants.

2. **What is MIOSHA's policy on "horizontal" non-entry rescue?**

When practical, non-entry rescue is required by paragraph (k)(3) of the standard and is the preferred method of rescue, even for horizontal entries. MIOSHA recognizes that the danger of entanglement due to lifelines or lanyards snagging or obstructions within a permit space may be greater for horizontal permit spaces than for vertical spaces.

3. **Would a rescuer entering an immediately dangerous to life and health (IDLH) atmosphere using a supplied-air respirator in combination with self-contained breathing apparatus (SCBA) be in violation of MIOSHA regulations?**

Yes, however, under the conditions addressed below, the violation can be considered as de minimis.

The PRCS standard, because of its performance nature, does not specify the personal protective or rescue equipment for rescue. Part 451 requires, when an IDLH atmosphere exists, . . . A standby employee(s) with suitable SCBA shall be at the nearest fresh air base for emergency rescue.

Part 451 was derived from a now out-of-date voluntary standard (American National Standards Institute (ANSI) consensus standard Z88.2-1969). The most recent (1992) version of this ANSI standard permits the use of either a SCBA or a combination supplied-air respirator with SCBA in situations involving IDLH atmospheres.

It is MIOSHA policy to accept compliance with a provision in a current national consensus standard (ANSI) which provides an equivalent or greater level of protection from the hazards.

A rescue service can employ the use of supplied-air respirators in combination with SCBA when conducting rescue operations. If a rescue service employer chooses to use combination supplied-air respirator with SCBA over the SCBA specified in Part 451, for permit-required confined space rescue, the violation will not be cited as long as the following minimum conditions are also employed:

- An evaluation of the permit space to be entered has been done to determine which appropriate respiratory protection (SCBA or Supplied air with SCBA) is best suited for the rescue.
- The rescuer's respirators and air source meet the requirements of Part 451.
- The air source for the rescuer's respiratory protection is independent from that which is being used by the authorized entrants.

We also would recommend the following policies and work practices for the rescue services which choose the supplied-air respirators with SCBA option:

- Establish a policy requiring immediate withdrawal from the space whenever a respiratory protection problem develops.
- Establish a policy for use and training on emergency air line sharing "buddy-breathing."
- Ensure that the rescuers wear a full body harness and use lifelines whenever practical.

- Establish a policy requiring a minimum capacity of the source air to be twice (2x) the volume of the total needs of all rescuers connected to it for the anticipated duration of the rescuer's entry.
- Establish a policy which mandates a minimum team of two rescuers for all permit space rescue entries.

## APPENDIX B

## REQUIREMENTS FOR A WRITTEN PROGRAM WHEN ONLY (c)(5) OR (c)(7) ARE USED FOR ENTRY

The purpose of this appendix is to clarify the written program requirements when the employer only allows its employees to enter a permit space using either the alternate entry procedure (c)(5) or reclassification (c)(7). For an employer that will allow its employees to enter permit spaces, paragraph (c)(4) requires the development and implementation of a written permit space program that complies with this section. "Complies with this section" refers to the mandatory paragraphs of 1910.146. It is important to note: This is a performance standard; therefore, it is the responsibility of each employer to document and implement the procedures necessary for employees to safely enter permit spaces.

Paragraph (c)(5)(i) specifically exempts the employer from complying with paragraphs (d) through (f) and (h) through (k) of this section. However, the employer must still comply with the remaining paragraphs of this section which are:

- (c)(1), evaluation of the workplace.
- (c)(2), informing exposed employees.
- (c)(3), prevent employee entry into permit spaces.
- (c)(4), written permit space program.
- (c)(5), alternate entry procedure.
- (c)(6), reevaluate of confined spaces.
- (c)(7), reclassification.
- (c)(8), host employer responsibilities.
- (c)(9), contractor responsibilities.
- (g), employee training.
- (l), employee participation.

The employer needs to have a written statement addressing the above paragraphs of 1910.146. To comply with (c)(5) requirements, the employer must be able to demonstrate:

- The only hazard posed by the permit space is an actual or potential hazardous atmosphere.
- Continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.

In addition, (c)(5)(ii) requires various procedures to assure the permit space is entered safely. These requirements must be addressed in some manner; this will usually be in the form of written documentation.

Paragraph (c)(7) applies to a permit space that has been reclassified to a non-permit space. Therefore, employees are not entering a permit space per se. The employer must still have procedures in place to assure that all serious hazards have been eliminated. As with (c)(5) entries, the employer must also address paragraphs (c), (g), and (l).

The written certification required for (c)(5) and (c)(7) entries is only a means of verification that the person providing the certification has been properly trained and is following the necessary procedures to assure the permit space is safe for entry. There is nothing in either (c)(5) or (c)(7) that exempts the employer from the requirements of (c)(4).

# APPENDIX C

## GUIDELINES FOR DEVELOPING A PERMIT-REQUIRED CONFINED SPACE (PRCS) ENTRY WRITTEN PROGRAM

### Introduction

Death and serious injury may occur in PRCS. This document is provided as an aid to assist employers and employees in their development of a site-specific PRCS program. This guide references each section of 1910.146 and it contains tips, examples, and clarifications.

A written PRCS program cannot just consist of a repetition of the 1910.146 requirements or this document. The PRCS Standard is complex and requires a thorough understanding of occupational safety and health to implement properly. Therefore, it is strongly recommended that a PRCS program be developed or reviewed by an occupational safety or health professional.

1910.146 (l) requires the employer to consult with affected employees and their authorized representatives on the development and implementation of all aspects of the permit space program required by 1910.146 (c).

### Background

Part 90 and Part 490, adopt by reference the federal OSHA standard 1910.146 (Permit-Required Confined Spaces). Therefore, each of these standards is identical.

1910.146(a) Scope and Application, states that this standard applies to general industry employers. The standard does not apply to agriculture, construction or to shipyard employment. It is important to note that not all work on a farm is considered agriculture and therefore exempt from this standard. For example, a company hired to perform maintenance in a permit-required confined space on a farm would be covered by this standard. The maintenance work they are performing is considered general industry. Companies that usually perform construction work must be aware that when the scope of their work is maintenance and not construction, then the standard does apply to that operation. For example, when a company builds a water tank that is a construction operation. However, when a contactor returns to the same site and enters the tank to perform maintenance, such as cleaning, 1910.146 then applies. A question-and-answer discussion on the topic of construction vs. maintenance activities can be found at the OSHA website (www.osha.gov):

**1910.146 -** Clarification of maintenance vs. construction activities; standards applicable to the removal and replacement of steel tanks and structural steel supports.

Employers who have permit spaces, but do not allow their employees to enter these spaces must still comply with 1910.146 (c)(1) PRCS evaluation, (c)(2) informing exposed employee, (c)(3)

preventing unauthorized entry, (c)(6) reevaluation of confined spaces, and (c)(8) host employer responsibilities.

## SAMPLE WRITTEN PROGRAM

### I. Responsibilities

**Overall Program Responsibility**

(Employer representative's name and position) is responsible for the overall implementation, review, and maintenance of written programs and procedures, employee training and rescue concerning the requirements of the permit-required confined space standard.

**Training**

(Employer representative's name and position) is responsible for ensuring that all affected personnel are properly trained, and that refresher training is given.

**Equipment**

(Employer representative's name and position) will ensure that all equipment needed for safe entry into any permit space or permit space reclassified to a non-permit space is available and in proper working order. Attachment 1 lists the equipment that is available and where it is located.

**Rescue Services**

(Employer representative's name and position) will ensure that rescue and emergency services are available whenever a permit space is entered.

### II. Permit-Required Confined Space Evaluation, 1910.146 (c)(1)

(Employer representative's name and position) is responsible for evaluating the workplace to determine if any permit spaces are present.

Attachment 2 is a list of all permit-required confined spaces at (insert company name and location). Also listed are confined spaces that are not permit-required confines spaces, at this time. Per 1910.146 (c)(6), if there are any changes in a confined space classified as a non-permit space, then this space will be reevaluated to determine if it has become a permit-required confined space.

**Note to Employer**

Attachment 2 contains two parts. Attachment 2a is an evaluation tool to help you properly classify your confined spaces. Attachment 2b is an example of a permit-required/confined space evaluation and list.

A *confined space* is a space which:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; **and**
- 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**
- Is not designed for continuous employee occupancy.

If a space does not meet all three criteria, as stated above, then the space is not a confined space and 1910.146 does not apply. Bodily enter means that it is possible for an employee's entire body to enter the space. Continuous employee occupancy means that the space could be occupied during normal operations, not that it is always occupied.

A *permit-required confined space* is a *confined space* which has **one or more** of the following characteristics:

- Contains or has a potential to contain a *hazardous atmosphere*; **or**
- Contains a material that has the potential for engulfing an entrant; **or**
- 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**
- Contains any other recognized serious safety or health hazard (i.e., electrical, mechanical, elevated temperature, etc.).

All italicized words are defined in 1910.146 (b) "Definitions."

A space cannot be a *permit space*, unless it is a *confined space*. For example, a tank of a very toxic material has a 12" diameter hatch that an employee could put their head through. This hatch is the largest opening in the tank. Since the opening is too small to bodily enter, this space cannot be a *confined space* and therefore cannot be a *permit space*. Of course, this does not mean that this tank poses no potential or actual serious hazard to employees. It only means that this particular standard does not apply to this space.

## III. Informing Exposed Employees, 1910.146 (c)(2)

Exposed employees have been informed of the existence and location of permit spaces by posting a sign that reads **DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER**. Attachment 2 lists the permit spaces that have a sign posted.

**Note to Employer**

The standard also allows the use of "any other equally effective means." This can include employee training on the existence and location of permit spaces. If training is used, it should be documented by summarizing the training provided, employees present and the training date.

## IV. Prevention of Unauthorized Entry, 1910.146 (c)(3)

The following method(s) will be used to prevent unauthorized entry into permit-required confined spaces: Exposed employees have been informed of the existence and location of permit spaces by posting a sign that reads **DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER**. Attachment 2 lists the permit spaces that have a sign posted.

**Note to Employer**

The written program needs to describe how the employer will prevent unauthorized entry. The following are examples of appropriate means to prevent unauthorized entry into a permit-required confined space.

1. Posting of a sign reading Danger – Permit-Required Confined Space, Do Not Enter or using other similar language would satisfy the requirement for a sign.
2. Instruct affected employees that they are not to enter permit spaces and provide them with the location and types of permit spaces and actual or potential hazards.
3. Prevent employee access to permit spaces by locking or bolting the means of entry or exit such as a door, hatch, lid, cover, etc.

## V. Written Permit Space Program, 1910.146 (c)(4)

If the employer decides that its employees will enter permit spaces, the employer shall develop and implement a written permit space program that complies with this standard. The written program shall be available for inspection by employees and their authorized representatives. A written program is required for full-blown permit entries (d), alternate entries (c)(5), or reclassification (c)(7).

**Note to Employer**

If an employer has employees that will enter a permit space, a written permit space program that complies with this section must be developed and implemented. The written program must be available for inspection by employees or their authorized representatives.

The purpose of this document is to give guidance to employers and employees in the development and implementation of an acceptable written program. Given the scope and complexity of work that can take place in a permit space along with conditions that can change rapidly, there is no single best way to write a written program. This is a performance standard which means it is each employer's responsibility to develop and implement the written procedures necessary to address the hazards posed in their workplace and meet the requirements of the standard.

A question that is often asked is, what is required for a written program when employees only enter a permit space using the alternate entry procedure (c)(5) or reclassification (c)(7) method? The (c)(5) entry is a special situation that allows a permit space to be entered without compliance with several main sections of the standard. Reclassification takes place when all hazards in a permit space are eliminated before any entry takes place. The main point is that these spaces are permit spaces.

For an employer that will allow its employees to enter permit spaces, paragraph (c)(4) requires the development and implementation of a written permit space program that complies with this section. "Complies with this section" refers to the mandatory paragraphs of 1910.146. It is important to note: This is a performance standard; therefore, it is the responsibility of each employer to document and implement the procedures necessary for employees to safely enter permit spaces.

Paragraph (c)(5)(i) specifically exempts the employer from complying with paragraphs (d) through (f) and (h) through (k) of this section. However, the employer must still comply with the remaining paragraphs of this section which are:
(c)(1), evaluation of the workplace,
(c)(2), informing exposed employees,
(c)(3), prevent employee entry into permit spaces,
(c)(4), written permit space program,
(c)(5), alternate entry procedure,
(c)(6), reevaluation of confined spaces,
(c)(7), reclassification,
(c)(8), host employer responsibilities,
(c)(9), contractor responsibilities,
(g), employee training, and
(l), employee participation.

The employer needs to have a written statement addressing the above paragraphs of 1910.146. To comply with (c)(5) requirements, the employer must be able to demonstrate: The only hazard posed by the permit space is an actual or potential hazardous atmosphere, and continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.

In addition, (c)(5)(ii) requires various procedures to assure the permit space is entered safely. These requirements must be addressed in some manner; this will usually be in the form of written

documentation.

Paragraph (c)(7) applies to a permit space that has been reclassified to a non-permit space. Therefore, employees are not entering a permit space per se. The employer must still have procedures in place to assure that all serious hazards have been eliminated. As with (c)(5) entries, the employer must also address paragraphs (c), (g), and (l).

The written certification required for (c)(5) and (c)(7) entries is only a means of verification that the person providing the certification has been properly trained and is following the necessary procedures to assure the permit space is safe for entry. Using either (c)(5) or (c)(7) methods do not exempt the employer from the requirements of 1910.146 (c)(4).

## VI. Alternate Entry Procedures, 1910.146 (c)(5)

See Attachment 3, for alternate entry procedures used by (name of establishment).

**Note to Employer**

**See Attachment 3a for a sample (c)(5) alternate entry procedure.**

This procedure can be used when the employer can demonstrate that the **only hazard** posed by the permit space is:
1. An actual or potential hazardous atmosphere.
2. The hazard can be controlled by continuous forced air ventilation.

Alternate entry procedures cannot be used if the permit space contains any other serious hazard, such as: heat, electrical, mechanical, engulfment, etc.

**This procedure requires the employer to demonstrate and document:**

1. The only hazard present is an actual or potential hazardous atmosphere.
2. Continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry.
3. The employer develops monitoring and inspection data that supports the above conclusions.

**Performance requirements for entering a permit space using alternate entry:**

1. Evaluate and eliminate any hazard to ensure that the cover to a confined space can be removed safely.
2. Guard openings to spaces to prevent persons or objects from falling into them.
3. Prior to entry, test the atmosphere with a calibrated, direct-read instrument for oxygen, flammability, and potential toxic air contaminants. Record the results.
4. No hazardous atmosphere can be present whenever any employee is inside the space.
5. Forced air ventilation shall be directed to ventilate the immediate areas where an employee is or will be present and must be on continuously while employees are in the space.
6. Assure safe atmospheric conditions by periodic testing and recording.
7. If a hazard is detected, any employee must leave the space immediately, the space must be evaluated

to determine how the hazardous atmosphere developed and action must be taken to protect employees before a subsequent entry takes place.

8. Train entrants on the hazards, equipment, and safe work practices necessary to make the entry and all work performed during the entry, safe.
9. Verify that the space is safe for entry and that the pre-entry procedures have been taken by a written certification that contains the date, the space and the signature of the person performing the certification.

The demonstration, written documentation and certification must be made available to any employee entering a space. In addition, the employee must be provided an opportunity to observe pre-entry or periodic testing.

## VII. Non-Permit Space Reevaluation, 1910.146 (c)(6)

Any spaces that are confined spaces but are not presently classified as permit spaces will be reevaluated anytime there are changes in the use or configuration of the non-permit space. It is everyone's responsibility to notify the safety and health manager of any changes in the use or configuration of the confined space. Changes in use or configuration include, but are not limited to, the following:

- Introduction of flammables, solvents, chemicals, or gases into the space.
- New equipment or a change in the type of equipment present.
- Work processes such as cleaning or painting, etc.
- A change in the means of access or dimensions of the space.

**Note to Employer**

Any employer must perform the reevaluation if they have confined spaces. If the employer determines that a space has become a permit space, then paragraphs (c)(2), (c)(3) and (c)(4) must be addressed. Before any permit space entry takes place, it must be determined how the space will be entered, i.e., alternate entry procedure, reclassification, or permit entry. No matter the means of entry, employees must be properly trained and equipped to perform the work safely.

It is recommended that a list of non-permit confined spaces be maintained and that these spaces are routinely evaluated to assure they are not a permit space.

## VIII. Reclassification of a Permit Space 1910.146 (c)(7)

See Attachment 3, for reclassification procedures used by (name of establishment).

**Note to Employer**

**See Attachment 3b for a sample (c)(7) reclassification procedure.**

To reclassify a permit space using this section of the standard, **all hazards** must be **eliminated** before any entry takes place. It is important to remember that a reclassified permit space, once it is put back into service, again becomes a permit space. Therefore, before any subsequent entry takes place, the space must be reevaluated to make sure the reclassification procedure can be used. In other words, there is no such thing as a permanently reclassified permit space.

The employer shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. This certification (1910.146 (c)(7)(iii)) shall be made available to each employee entering the space. This certification must be completed each time the permit space is reclassified.

## IX. Host Employer's Responsibilities with Contractors, 1910.146 (c)(8)

When contractors are involved in permit space entry work at our workplace, (Employer representative's name and position) will inform the contractor of the following information and coordinate any entry operations.

List the means and procedures that are used to comply with this paragraph.

**Note to Employer**

When your company (host employer) arranges to have employees of another employer (contractor) perform work in a permit space, the host employer shall inform the contractor of:

- Any permit spaces, and that permit space entry is only allowed through compliance with a permit space program, alternate entry or reclassification procedure.
- Identified hazards, experience with the space and the company's rationale for classifying the space as a permit space.
- Any precautions or procedures that have been implemented to protect employees in or near permit spaces where the contractor is working.
- The coordination of entry operations where your employees will be working with the contactors' employees. This includes the development and implementation of procedures to coordinate entry operations so that employees do not endanger each other.
- The need to debrief the contractor at the conclusion of the entry operations regarding the permit space program followed, hazards encountered or created in the space during operations.

## X. Contractor's Responsibilities with Host Employers 1910.146 (c)(9)

When contractors are involved in permit space entry work at our workplace, (Employer representative's name and position) will ensure that the contactor is complying with the following information and coordinate any entry operations.

**Note to Employer**

This paragraph applies to the contractor. Compliance with the host employer's requirements as summarized above will help to assure the contractor is meeting their responsibilities with respect to this paragraph.

The contractor shall:

- Obtain from the host employer any available information regarding permit space hazards and previous entry operations.
- Coordinate entry operations with the host employer when their employees will be working with the contactors' employees. This includes the development and implementation of procedures to coordinate entry operations so that employees do not endanger each other.
- Inform the host employer of the permit space program that will be followed and of any hazards encountered or created in the permit space.

## XI. Permit-Required Confined Space Program 1910.146 (d)

Describe your written program for permit-required confined space entries.

The standard does not require this section if the permit space is entered using the alternate entry 1910.146 (c)(5) or reclassification 1910.146 (c)(7) procedures. See Section V of this guideline for a description of written program requirements when using alternate entry procedures or the reclassification method.

**Note to Employer**

Appendix C of 1910.146 presents examples of permit space programs that are considered to comply with the requirements of paragraph 1910.146 (d). The deaths, serious illnesses and injuries that have occurred in permit spaces are often due to unusual circumstances or a combination of factors occurring at the same time to create an unexpected hazard. For this reason, the guides are just that… guides.

Under the written permit space program required by 1910.146 (c)(4), paragraph 1910.146 (d) lists the specific items to be included in the written program.

In summary, 1910.146 (d) requires:

1. Prevent unauthorized entry.
2. Identify and evaluate the hazards of permit spaces before anyone enters.
3. Develop and implement the means, procedures, and practices necessary for safe operations including, but not limited to, the following:
    i. Specifying acceptable entry conditions.

ii. Allow entrants to observe any monitoring or testing of permit spaces.
iii. Isolating the permit space.
iv. Purging, inerting, flushing, or ventilating the permit space to eliminate or control atmospheric hazards.
v. Provide barriers as necessary to protect entrants from external hazards.
vi. Verify that conditions in the permit space are acceptable throughout the duration of an entry.

4. If necessary, provide, maintain, and ensure the proper use of the following equipment: (**Note:** Equipment must be used, tested, calibrated, and maintained in accordance with the manufacturers' recommendations.)
   i. Testing and monitoring equipment.
   ii. Ventilating equipment.
   iii. Communications equipment.
   iv. Personal protective equipment.
   v. Lighting equipment.
   vi. Barriers and shields.
   vii. Equipment needed for safe entry and exit from the space.
   viii. Rescue and emergency equipment.
   ix. Any other equipment necessary for safe entry or rescue.
5. Evaluate permit space conditions as follows:
   i. Before entry, test conditions in the permit space to determine if acceptable entry conditions exist; if necessary, continuously monitor entry conditions where entrants are working.
   ii. Test or monitor the permit space as necessary to ensure entry conditions are maintained.
   iii. When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors and then for toxic substances.
   iv. Provide entrants the opportunity to observe any pre-entry or subsequent testing or monitoring of permit spaces.
   v. Reevaluate the permit space when requested to do so by an entrant.
   vi. Immediately provide each entrant with the results of any testing conducted.
6. Provide at least one attendant outside the permit space for the duration of entry operations.
7. When multiple permit spaces are monitored by one attendant, describe the means and procedures to enable the attendant to meet their responsibilities.
8. Designate the persons who have active roles in entry operations, identify their duties and provide them with the training required by 1910.146 (g).
9. Develop and implement procedures for summoning rescue and emergency services, for rescuing entrants, and preventing unauthorized personnel from attempting a rescue.
10. Develop and implement a system for the preparation, issuance, use, and cancellation of entry permits.
11. Develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously in a permit space.
12. Develop and implement procedures necessary to conclude the entry.
13. Review entry operations whenever there is reason to believe the current program may not protect employees and correct any deficiencies that are found before any subsequent entries are authorized. Review the permit space program and canceled permits annually.

## XII. Permit System, 1910.146 (e)

Describe your process for using the entry permit including before entry takes place, during entry, and at the completion of the work.

**Note to Employer**

The employer must document the completion of the measures required by 1910.146 (d)(3) by preparing an entry permit. This must be done before anyone enters the permit space. 1910.146, Appendix D provides examples of permits that are considered to comply with this paragraph.

1. Before any entry takes place the entry supervisor identified on the permit shall sign the entry permit to authorize entry after assuring that all necessary pre-entry actions have been taken to make the space safe for entry.
2. The completed permit will be posted or otherwise provided to all entrants to confirm that the pre-entry preparations have been completed.
3. The duration of the permit cannot exceed the duration of the task or job identified on the permit.
4. The entry supervisor must terminate entry and cancel the entry permit when:
   (i) The entry operations covered by the entry permit have been completed; or
   (ii) A condition arises in or near the permit space that is not allowed by the entry permit. Any such condition will be noted on the permit.
5. At a minimum, each canceled permit shall be retained for 1 year.

## XIII. Entry Permit, 1910.146 (f)

Attachment 4 shows an example of the permit used by our company for entry into permit spaces that are not entered using the alternate entry procedure 1910.146 (c)(5) or reclassification 1910.146 (c)(7).

**Note to Employer**

The following summarizes the requirements of 1910.146 (f):
1. The name of the permit space to be entered.
2. The purpose of the entry.
3. The date and authorized duration of the entry permit.
4. The name of the authorized entrants within the permit space at all times.
   (The standard does allow other means to be used to track the people in a permit space. Whatever system is used it must meet the criteria of allowing a quick and accurate means of determining, at any time, who is in the permit space.)
5. The names of any personnel currently serving as attendants.
6. The names of any personnel currently serving as an entry supervisor and the signature of the supervisor who originally authorized entry.
7. The hazards of the permit space to be entered.
8. The measures used to isolate the permit space and to eliminate or control permit space hazards before entry.

9. The acceptable entry conditions.
10. The results of initial and periodic tests performed under paragraph (d)(5) of this section, along with the name of the testers and when the tests were performed.
11. The rescue and emergency services that can be summoned and the means for summoning those services.
12. The communication procedures used by the entrants and attendants to maintain contact during entry.
13. Equipment such as personal protective equipment, air monitoring or other testing equipment, communication, alarm systems, rescue equipment, etc.
14. Any other information needed for safe entry in a particular permit space.
15. Any additional permits such as hot work permits.

## XIV. Training, 1910.146 (g), (h), (i) and (j)

(Employer representative's name and position) is responsible for ensuring that all affected personnel are properly trained and for certifying that the training required by paragraph (g) Training of the standard has been accomplished.

All employees who will be entering a permit space or a permit space that has been reclassified will receive training before any entry takes place. The purpose of the training is for employees to acquire the understanding, knowledge, and skills necessary for the safe performance of assigned duties.

**Outline here your actual training program.**

**Note to Employer**

Employees must be trained before their first assignment. This includes any authorized entrants, attendants, entry supervisors, on-site rescue team members, and employees who enter the space under paragraphs (c)(5) or (c)(7) of the standard.

Paragraph (g) lists the general training requirements for all employees who have job duties covered by this standard. Paragraphs (h) Duties of authorized entrants; (i) Duties of attendants; and (j) Duties of entry supervisors, has additional knowledge requirements and specific duties of each of these functions. This also requires training to assure the employees have the knowledge and ability to properly perform their assigned tasks.

It is very important that the brief nature of the standard's requirements for training, does not lead to the conclusion that the training requirements are minimal. The key statement is that all employees "acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned." In addition, "the training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures."

Given the type of equipment, personal protective equipment, and hazards associated with permit spaces, there are often other standards that apply. These include, but are not limited to, General Industry Standard Part 2, Walking-Working Surfaces; General Industry Standard Part 85, The Control

of Hazardous Energy Sources (Lockout/Tagout); General Industry Standard Part 92 and General Industry Standard Part 430, Hazard Communication; General Industry Standard Part 33, and General Industry Standard Part 433, Personal Protective Equipment; General Industry and Construction Standard Part 451, Respiratory Protection (Part 451); etc. These standards all have additional employee training requirements.

## XV. Rescue and Emergency Services, 1910.146 (k)

(Employer representative's name and position) will ensure that rescue and emergency services are available. It is also the responsibility of the entry supervisor to verify that rescue services are available and that an effective means of contact is available.

Describe under this paragraph the site-specific procedures and items needed to meet the requirements of the standard.

**Note to Employer**

1910.146 (k) allows rescue services to be performed by an outside service (1910.146 (k)(1)) or by its employees who have been designated and properly trained to provide permit space rescue (1910.146 (k)(2)). Appendix F of 1910.146 provides information on the evaluation and selection of a rescue service.

Do not assume that a fire department or other such rescue service will automatically respond to a rescue request. Many of these departments will not respond because they may not have the proper equipment, training, or practice in the particular type of space where rescue is required. It is also very important to make sure the rescue service is actually available during the time period that the entry takes place.

Whenever possible, non-entry rescue methods must be used. Rescue operations are dangerous and too often people have died attempting rescue. Therefore, the best means of rescue is self-rescue, followed by non-entry rescue, and finally entry rescue.

1910.146 (k)(1) requires an employer who designates rescue and emergency services to:
(i) Consider the hazards identified; evaluate the rescuer's ability to respond in a timely manner.
(ii) Evaluate the rescuer's ability (proficiency and equipment) to perform rescue from a particular type of permit space. For example, if a permit space is entered by ladder access to an elevated platform, then the rescue service must be able to provide rescue from this elevated space.
(iii) Select a rescue service that has the ability to reach the victim in a timely manner that is appropriate for the hazards identified. For example, if an oxygen deficient atmosphere is possible, death could occur within several minutes. In this case, 20 minutes for a rescue service to arrive would be too long to prevent death.
(iv) Inform each rescue service of the hazards they may encounter.
(v) Provide the rescue service with access to all permit spaces so that appropriate rescue plans can be developed, and the rescue team can practice rescue operations.

1910.146 (k)(2) requires an employer whose employees have been designated to provide permit space

rescue to:
(i) Provide employees, at no cost to them, personal protective equipment and employee must be proficient in the use of proper personal protective equipment.
(ii) Employees must be trained to perform assigned rescue duties and successfully complete the training to be an authorized entrant as required by 1910.146 (g) and (h).
(iii) Train rescue employees in basic first aid and CPR.
(iv) At least once, in a 12-month period, the employees must practice simulated rescue operations from the actual permit spaces or from representative permit spaces.

1910.146 (k)(3) requires retrieval systems or methods be used whenever an entrant enters a permit space to facilitate non-entry rescue. This equipment or method does not have to be used if it increases the entrant's overall risk or it does not contribute to the entrant's rescue.

Part 451, 1910.134 (g)(3), requires the employer to provide emergency rescue services whenever there is an immediate danger to life or health (IDLH) atmosphere. Employee(s) trained and properly equipped must be onsite directly outside of the IDLH atmosphere.

## APPENDIX C

## ATTACHMENT 1

## List of Equipment

| Equipment | Location |
|---|---|
| Manhole Barrier | Maintenance Shop |
| ABC Blower and Hose | Maintenance Shop |
| XYZ four-gas instrument | Maintenance Supervisor Office |
| Tripod retrieval system | Maintenance Shop |
| Etc. | |

## APPENDIX C

## ATTACHMENT 2a

### Evaluation Tool to Help Determine If a Confined Space Is a Permit Space

**Note to Employer: This form is not required to be part of the written permit-required confined space program. However, it is a useful tool to properly classify your confined spaces.**

<table>
<tr><td colspan="2">Any of the following serious hazards make a confined space a permit space. The classification of a confined space as a permit space is triggered only by the presence of hazards that could cause an acute illness or immediate disabling injury which could impede an entrant’s ability to self-rescue.</td></tr>
<tr><td colspan="2">1. The space contains or has the potential to contain a hazardous atmosphere. Following are some examples of how this can occur:<br>• A chemical, equipment, or process brought into the space.<br>• Conditions inherent to the space or its location.<br>• Naturally occurring processes such as rusting or organic material decomposition.</td></tr>
<tr><td>Yes or No</td><td></td></tr>
<tr><td></td><td>Flammable gas, vapor, or mist in excess of 10% of the LFL.</td></tr>
<tr><td></td><td>Dust at a concentration that meets or exceeds its LFL.</td></tr>
<tr><td></td><td>Oxygen concentration below 19.5%.</td></tr>
<tr><td></td><td>Oxygen concentration above 23.5%.<br>(Note: There are no natural processes that cause this.)</td></tr>
<tr><td></td><td>Atmospheric concentration of any substance that could cause death, incapacitation, impairment of ability to self-rescue, injury, or acute illness.</td></tr>
<tr><td></td><td>Any atmospheric condition that is immediately dangerous to life or health (IDLH).</td></tr>
<tr><td colspan="2">2. Contains a material that has the potential for engulfing an entrant:</td></tr>
<tr><td>Yes or No</td><td></td></tr>
<tr><td></td><td>Sand, gravel, grain, plastic pellets, rocks, or anything that can engulf.</td></tr>
<tr><td></td><td>Water or other liquid materials that pose a drowning hazard.</td></tr>
<tr><td colspan="2">3. Has an internal configuration that could trap or asphyxiate an entrant:<br>Examples are bins, chutes, hoppers, etc.</td></tr>
<tr><td>Yes or No</td><td></td></tr>
<tr><td></td><td>Inwardly converging walls.</td></tr>
<tr><td colspan="2">4. Contains any other recognized serious safety or health hazard:</td></tr>
</table>

| Yes or No | |
|---|---|
| | Unguarded chain and sprocket, belt and pulley, or other mechanical equipment. |
| | Moving shaft, conveyor, agitator, or mixer. |
| | Exposed electrical equipment. |
| 5. Contains any other potential **serious** safety or health hazards: A "yes" to any of the potential hazards below requires further evaluation. | |
| Yes or No | |
| | High or low temperature. |
| | Physical hazards such as extreme noise, vibration, electrical or magnetic fields, or ionizing radiation. |
| | Biological hazards. |
| | Inadequate lighting. |
| | Shallow water that obscures hidden lower levels. |
| | Dermal or eye exposure to corrosive materials that would impede self-rescue. |
| | Slippery floors. |
| | Falling material or overhead material that can be dislodged. |
| | Low or high atmospheric pressure. |
| | Other serious hazard. |

## APPENDIX C

## ATTACHMENT 2b

### Permit-Required Confined Space/Confined Space Evaluation and List

| | | | | |
|---|---|---|---|---|
| Space Evaluated | | Vacuum Chamber | #1 & #2 Process Annealing Furnaces | |
| Location | | Dept. 56, near column c45 | Dept. 66, near columns c3 & c6 | |
| Confined Space | | Yes | Yes | |
| Permit Space | | Yes | Yes | |
| The intended method of entry | | Reclassification, see attachment 3b | Alternate Entry, see attachment 3a | |
| Actual or Potential Hazards | Low Oxygen <19.5% | Yes | Yes | |
| | High Oxygen >23.5% | No | No | |
| | Flammable Atmosphere | No | Natural gas | |
| | Toxic Atmosphere | No | Carbon monoxide | |
| | Engulfment | No | No | |
| | Entrapment | No | No | |
| | Electrical | No | No | |
| | Mechanical | No | Yes, heavy entry and exit doors & moving conveyor belt | |
| | Temperature | No | Yes, heat | |
| | Other Hazard (specify) | Low pressure | No | |
| Danger Sign Posted | | Yes | Yes | |

EMPLOYER NAME: _____

Click here for an Excel spreadsheet version of this form that you can use in your workplace.

## APPENDIX C

## ATTACHMENT 3a

### Guidelines for Permit Space Entry – Intent to Enter Using (c)(5)

**Space Identification:** #1 & #2 Process Annealing Furnaces, Dept. 66

**Hazard Determination:**

1. **Moving metal conveyor belt.**
2. **High temperature.**
3. **Potential hazardous atmosphere: flammable natural gas, lack of oxygen, byproducts of combustion; i.e., carbon monoxide.**
4. **Pneumatic entry and exit doors.**

**Normal Production Activity**
These furnaces are heated to a maximum of 550 degrees Fahrenheit by two, direct-fired, natural gas burners. Each furnace is ≈6' wide x 4' high x 25' long. The door at each end is about 4' wide x 3' tall (when fully open) and is pneumatically raised and lowered. The only moving part within each oven is a slow-moving, metal conveyor belt. Furnace operators are not to enter the ovens.

**Maintenance Operations**
The furnaces can be entered for maintenance operations. If possible, all maintenance operations will be performed without entering the oven. This procedure does not include any hot work or the use of any hazardous chemical within the oven. Should hot work or use of a hazardous chemical be necessary, this type of entry will be reviewed by the maintenance supervisor and the safety and health manager before any entry takes place.

Per 1910.146 (5)(i)(A), once the following procedure is followed, the only hazard posed by the space is a potential atmospheric hazard. The potential atmospheric hazard is caused by the natural gas and combustion byproducts. Although the gas valves are locked-out in the closed position, it is still possible for the valve to leak and allow gas to enter the oven.

Per 1910.146 (5)(i)(B), the company has demonstrated that continuous forced air ventilation alone is sufficient to maintain the space safe for entry. At no time has a potential atmospheric hazard been detected by the use of our gas monitor. Monitoring is done for oxygen, combustibles and carbon monoxide. The oven is monitored before any entry takes place and continuously during entry. Never has the odor of natural gas been detected. Records of this monitoring are maintained by the safety and health manager.

**Entry Procedure:**
For normal maintenance operations, the intent is that this space will be entered using the following procedure that meets the requirements of the alternate entry specified by 1910.146 (c)(5).

1. **Using the lockout procedure, lockout both natural gas valves in the closed position.**
2. **Lockout both pneumatic oven doors in the open position. Both doors must be open even if employee access is through only one door. Block or chain doors in open position.**
3. **Lockout the conveyor belt.**
4. **Lockout the oven control panel.**
5. **Remove the two panels (each are 2' x 2') on the side of the oven. Employees are not to access the oven from these openings.**
6. **Position a Wild Wind, 18" diameter, axial flow fan at each of the 2' x 2' opening and direct the air into the furnace. These fans must be operated continuously whenever employees are in the space. These fans can also be used to help cool the space.**
7. **The interior of the furnace must be allowed to cool to room temperature.**
8. **Once the oven has cooled to room temperature, monitor the air inside the furnace at both of the open ends, at the two openings at the side of the oven, and at the small opening located near the gas-fired units. Monitoring is done in the following order using a properly calibrated instrument:**
    - Oxygen
    - Flammable/combustible gases
    - Carbon Monoxide

Acceptable entry conditions for this space are normal room conditions; i.e., 20.9 % oxygen, 0% flammable gases and less than 10 ppm carbon monoxide. **Do not enter the space, if any readings are outside of these parameters.**

9. **Lighting is provided by lights positioned at each end of the oven. If needed, employees are allowed to take a safety work light or flashlight into the space.**
10. **Access to the oven can be made from either end.**
11. **Monitoring for oxygen, flammable gases and carbon monoxide must be done continuously while employees are in the oven.**
12. **Immediately exit the space should monitoring indicate unacceptable entry conditions or if the odor of natural gas is detected and contact the maintenance supervisor. The space will be evaluated by the maintenance supervisor, safety and health manager and employees performing the entry to determine the cause of the hazardous atmosphere. Before any subsequent entry takes place, measures will be implemented to protect employees.**

| **Note to Employer** |
| --- |

Locking-out a valve for a flowable material such as a gas or liquid or even some solids does not **eliminate** the hazard. A locked-out valve can still leak allowing gas to enter the oven. In this case, lockout is only a means of **controlling** the hazard. To **eliminate** the hazard posed by a flowable material an isolation technique such as line breaking, blanking or blinding, or a double block and bleed would have to be done. "Isolation" is defined by the standard in 1910.146 (b).

Lockout is considered a means of hazard **elimination** for hazards that are electrical or mechanical in nature.

This permit space is a good example of a space that depending on the action taken could be entered using any one of the three entry procedures:
1. Permit entry (c)(4).
2. Alternate entry procedure (c)(5).
3. Reclassification (c)(7).

In the scenario given, the alternate entry procedure is appropriate. The alternate entry procedure only applies to an actual or potential atmospheric hazard that can be controlled by continuous forced air ventilation.

However, alternate entry cannot be used if the oven were not allowed to cool before entry was made. The reason for this is that it would have a serious recognized hazard, heat stress, in addition to the potential atmospheric hazard. Entry into the oven under these conditions would have to be made using a permit space program (c)(4). Of course, appropriate means would have to be taken so that employees were not subject to thermal burns or heat stress.

It would also be possible to reclassify (c)(7) this space to a non-permit space. By isolating (hazard elimination) the natural gas piping system from the oven, there would be no reason for an actual or potential atmospheric hazard. In addition, by using lock-out (hazard elimination for electrical or mechanical hazards), allowing the oven to cool, and ventilating the space beforehand to remove combustion byproducts, all hazards could be eliminated.

## APPENDIX C

## ATTACHMENT 3b

### Guidelines for Permit Space Entry – Intent to Enter Using (c)(7) Reclassification

**Space Identification:** Vacuum Chamber, Dept. 56

**Hazard Determination:** **1. Atmospheric pressure too low.**
**2. Lack of oxygen.**

**Normal Production Activity**
This is a glass lamination process using a large cylinder over 7' in diameter and ≈20' long. During operation, a hazardous atmosphere is formed by the air being evacuated from the cylinder. The atmospheric pressure and consequently the percent oxygen are too low to support life. This is the only hazard present; there are no moving parts, and no hazards are introduced to the space. At the end of the cycle, room air is allowed to reenter the cylinder and the large door (forms one end of the cylinder) opens. This space has to be entered several times daily to load and unload parts. When the door is open, interlocks prevent anything else from operating. Even if the vacuum pump started with the door open, this does not pose a hazard to employees within the cylinder.

**Maintenance Operations**
For general maintenance and cleaning operations, hazards are not introduced to the chamber such as a hazardous chemical or a hot work operation. Cleaning is only to be done with a broom or mop/rag used with soap and water.

**Potential Unusual Hazard**
A sealed container (not part of the process) left within the chamber could rupture and release the contents when the pressure in the chamber is reduced during the vacuum cycle. To prevent this potential hazard, no sealed containers are allowed in the chamber.

Should the need arise for hot work or the use of a hazardous chemical, a review of the task will take place by the safety director and maintenance supervisor.

**Entry Procedure**
For normal production operations, maintenance, and cleaning, the intent is that this space will be reclassified to a non-permit space according to 1910.146 (c)(7). It is the responsibility of the vacuum chamber operator or maintenance personnel to follow this procedure. Once the vacuum chamber is put back into service, it again becomes a permit space and must be reclassified per this procedure.

1. Once the chamber door opens, raise the entry platform into position. Once this is done, the floor of the vacuum chamber, platform, and workplace floor are all at the same level.

2. Using the lockout procedure, chain the door open.
3. Observe the chamber for anything unusual such as a foreign container that has ruptured. If anything is noted, do not enter and report to the department supervisor.
4. The written certification for entry is on the clipboard attached to the control panel. The trained entrant must write the date, time, and sign the certification. This must be done each time this space is entered.
5. Immediately exit the space and report to your supervisor if any hazard arises within the space after it has been reclassified.

**APPENDIX C**

**ATTACHMENT 4**

**Sample Entry Permit**
**(Appendix D-1 and D-2 of 1910.146 give other examples of acceptable entry permits.)**

EMPLOYER NAME: _____
**PRCS Entry Permit**

**Date and Time Issued:** _____
**Date and Time Expires:** _____

**Space Identification:**

_____
**List all Hazards of the Space:**

_____
**Measures Used to Isolate, Eliminate, or Control the Hazards Listed Above:**

_____
**Work to be performed:**

_____
**Entry Supervisor:**_____ _____ _____

**Entrants:**_____ _____ _____

**Attendant:**_____ _____ _____
(Note: There can be only one entry supervisor in charge at any one time.)
**Atmospheric Monitoring Results:**
Monitoring by: _____Monitor Calibration Date: _____
Monitor Serial #:_____

**Initial Results (Before Entry)**: Oxygen _____% Combustible _____% LFL
Identify Contaminant 1: _____ Record Initial Results: _____
Identify Contaminant 2: _____ Record Initial Results: _____

**Recommended Conditions**: Oxygen 20.9 %, Combustible 0% LFL, Contaminant 1 _____
Contaminant 2_____ (these values depend on the actual contaminants)

| **Periodic Results** | **Test 1** | **Test 2** | **Test 3** | **Test 4** | **Test 5** | **Test 6** | **Test 7** | **Test 8** |
|---|---|---|---|---|---|---|---|---|
| Time of Test | | | | | | | | |
| Oxygen (%) | | | | | | | | |
| Combustibles (% LFL) | | | | | | | | |
| Contaminant 1 | | | | | | | | |
| Contaminant 2 | | | | | | | | |

**Ventilation of Space**

| Type | Yes | No | NA | Comments |
|---|---|---|---|---|
| **Mechanical** | | | | |
| **Natural Only** | | | | |

**Equipment to be Used**

| Equipment | Yes | No | NA | Equipment | Yes | No | NA |
|---|---|---|---|---|---|---|---|
| Calibrated gas monitor | | | | SCBA | | | |
| Safety harnesses/lifelines | | | | Other respirators (specify): | | | |
| Hoisting equipment | | | | Protective clothing | | | |
| Tripod | | | | All electrical equipment listed Class l, Division 1, Group D and non-sparking tools | | | |
| Powered communications | | | | Other equipment (specify): | | | |

**Communication Procedures**

| |
|---|
| |

**Rescue Procedures**

Rescue service availability confirmed by entry supervisor: _____

| |
|---|
| |

**Entry Authorization**

The work and conditions authorized by this permit have been reviewed. Properly trained personnel are used to perform the entry and know the procedures that have been developed and implemented for safe entry. This permit is not valid unless all items have been completed.

| PRCS Permit | Title | Print Name | Signature and Date |
|---|---|---|---|
| **Prepared By** | | | |
| **Approved By** | Entry Supervisor | | |
| **Cancelled By** | Entry Supervisor | | |
| **Reviewed By** | | | |

## APPENDIX D

## PRCS COMPLIANCE CHECKLIST

| COMPLIANCE CHECKLIST FOR PERMIT-REQUIRED CONFINED SPACE ENTRY | | | | | | |
|---|---|---|---|---|---|---|
| Establishment Name: | | | | | | Comments/Person Responsible |
| | | | | | | |
| | | Y | N | NA | | |
| | **1910.146 (c) General requirements** | | | | | |
| 1 | Employer evaluated the workplace to identify and categorize any confined spaces. [(c)(1)] | | | | | |
| 2 | Permit spaces exist and employer informed employees of their existence by posting or other effective means. [(c)(2)] | | | | | |
| 3 | Permit spaces exist, employees will not enter, and employer took measures to prevent entry. [(c)(3)] | | | | | |
| 4 | Permit spaces exist, employees will enter permit spaces and employer developed and implemented a written program. [(c)(4)] | | | | | |
| 5 | Employer met the requirements of paragraph (c)(5) and implemented alternate entry procedures. [(c)(5)] | | | | | |
| 6 | Employer appropriately reclassified a permit space to a non-permit confined space. [(c)(7)] | | | | | |
| 7 | Multiple employers worked near or performed entries into permit spaces and host employer notified the contractor(s) of the existence of the: permit spaces; hazards of entry; permit requirements of any entry; and precautions, procedures and coordination required for safe work in and around permit spaces. [(c)(8)] | | | | | |
| 8 | Contract employers had a permit entry program and coordinated and communicated with the host employer and other exposed employers regarding hazards, precautions, and procedures used before, during, and after entry. [(c)(9)] | | | | | |
| | **1910.146 (d) Permit-required confined space program.** Permit spaces exist, employees will enter permit spaces and employer developed a program that: | | | | | |
| 1 | Implemented measures to prevent unauthorized entry. [(d)(1)] | | | | | |
| 2 | Identified and evaluated the hazards of permit spaces. [(d)(2)] | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Implemented the means, procedures, and practices necessary for safe permit space entry operations. [(d)(3)] | | | | |
| 4 | Provided equipment at no cost to employees, maintained equipment properly, and ensured that employees used that equipment properly. [(d)(4)] | | | | |
| 5 | Evaluated permit space conditions when entry operations are conducted. [(d)(5)] | | | | |
| 6 | Provided attendant outside the permit space for the duration of entry operations. [(d)(6)] | | | | |
| 7 | Included the means and procedures to enable the attendant to respond to an emergency if multiple spaces are monitored. [(d)(7)] | | | | |
| 8 | Designated the persons who are to have active roles in entry operations and the duties of each such employee. [(d)(8)] | | | | |
| 9 | Implemented procedures for summoning rescue and emergency services, for providing necessary emergency services, and for preventing unauthorized personnel from attempting a rescue. [(d)(9)] | | | | |
| 10 | Implemented a system of preparation, issuance, use, and cancellation of entry permits. [(d)(10)] | | | | |
| 11 | Reviewed entry permits and operations (retaining all permits for 1 year) and revised program to correct deficiencies. [(d)(13-14)] | | | | |
| | **1910.146 (e) Permit system.** Permit spaces exist, employees will enter permit spaces and employer: | | | | |
| 1 | Documented (by permit) the completion of measures to ensure compliance with (d)(3) and has the entry supervisor sign the permit. [(e)(1)& (2)] | | | | |
| 2 | Made the completed permit available at the time of entry to all authorized entrants or their authorized representatives. [(e)(3)] | | | | |
| 3 | Retained each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program. [(e)(6)] | | | | |
| | **1910.146 (f) Entry permit.** Employer met requirements for the entry permit and entry conditions. | | | | |
| | **1910.146 (g) Training.** Permit spaces exist, employees will enter permit spaces. Employer provided and certified training necessary for the safe performance of duties assigned. [(g)(1)] | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | **1910.146 (h), (i), (j) – Duties.** Employer identified individuals as authorized entrants, attendants, and entry supervisors and ensured their understanding of the knowledge, skills and duties ascribed to each classification. [(h), (i), (j)] | | | | |
| | **1910.146 (k) Rescue and emergency services.** | | | | |
| 1 | Employer provided rescue services either in-house or by arrangement with an off-site rescue service. [(k)(1)] | | | | |
| 2 | Employer used retrieval system to facilitate non-entry rescue. A mechanical device was available to retrieve personnel from within vertical permit spaces deeper than 5 feet. [(k)(3)] | | | | |
| | **1910.146 (l) Employee participation.** Employer consulted with affected employees and authorized representatives as required. | | | | |

## APPENDIX E

## PRCS CITATION AND GROUPING GUIDELINE

This guideline applies to all violations identified in Part 90 and Part 490, 29 CFR 1910.146. Typically, grouping of citations will be in accordance with the following formats. Classifications will be determined in accordance with the MIOSHA Field Operations Manual, as amended. Deviations for classification and grouping are permitted where appropriate and shall be documented in the case file.

1. No confined space program - No intent to enter.

| | | |
|---|---|---|
| Item 1a – Paragraph (c)(1) | Evaluation | Grouped |
| Item 1b – Paragraph (c)(2) | Signs | |
| Item 2 – Paragraph (c)(3) | Effective measures to prevent entry (lock, bolt, instructions, etc.) | |

2. No confined space program - Entry occurred or intended.

| | | |
|---|---|---|
| Item 1a – Paragraph (c)(1) | Evaluation | Grouped |
| Item 1b – Paragraph (c)(2) | Signs | |
| Item 2 – Paragraph (c)(4) | Establish/implement written program | |
| Item 3 – Other Standards | Other serious physical hazard(s) cite SAVEs and/or rule (e.g., exposed belt and pulley, live electrical, not enforcing lockout) | |

3. Partial confined space program - Entry occurred or intended - Cite the following sections as appropriate.

| | | | |
|---|---|---|---|
| Item(s) 1 - | Paragraph (c)(1) | Evaluation | Grouped |
| | Paragraph (c)(2) | Signs | |
| Item(s) 2 - | Paragraph (c)(4-9) | General requirements | |
| | Paragraph (d)(1-14) | Permit-required confined space program | |
| | Paragraph (e)(1-6) | Permit system | |
| | Paragraph (f)(1-15) | Entry permit | |
| | Paragraph (g)(1-4) | Training | Grouped |
| | Paragraph (h)(1-5) | Duties of entrant(s) | |
| | Paragraph (i)(1-10) | Duties of attendant(s) | |
| | Paragraph (j)(1-6) | Duties of entry supervisors | |
| | Paragraph (k)(1-4) | Rescue and emergency services | |
| | Paragraph (l)(1-2) | Employee participation | |

## APPENDIX F

## SPECIFIC VERTICAL STANDARDS TAKING PRECEDENCE

These vertical standards take precedence over Part 90 and Part 490 for the specific hazards addressed. Use the PRCS Standard for hazards not specifically addressed by the vertical standard.

### General Industry Safety Standards

**General Industry Standard Part 12, Welding and Cutting, Rule 1213(1) to 1213(6)**
Removal of arc welding electrodes during suspension of work in confined spaces. Protection of personnel welding in confined spaces (ventilation, securing welding equipment, lifelines, attendants, electrode removal, gas cylinder shutoff, warnings).

**General Industry Standard Part 50, Telecommunications, 1910.268 (o)(1-3)**
Addresses certain hazards involving manhole and unvented vault entry by telecommunication employees.

**General Industry Standard Part 63, Pulp, Paper, and Paperboard Mills, Rule 6333**
Specifies safe practices (lifeline, safety harness, attendant atmospheric testing, availability of SCBA, and lock-out) for entering a vessel in pulp, paper, and paperboard mills.

**General Industry Standard Part 77, Grain Handling Facilities, Rule 7707**
Specifies entry procedures for bins, silos, flat storage buildings, and tanks with a diameter less than the height, and for all top entries of these structures in grain facilities.

**General Industry Standard Part 86, Electric Power Generation, Transmission, and Distribution, 1910.269 (e), (o) and (t)**
Applies to routine entry into enclosed spaces by qualified employees performing operations or maintenance work within the scope and application of this standard. Provides additional requirements for work in underground electrical installations.

**General Industry Standard Part 529, Welding, Cutting, and Brazing, Rules 6, 10, 12, 13, 20, 21, 22, 23, and 24**
Specifies ventilation and respiratory protection requirements for welding in confined spaces using fluorides, zinc, mercury, lead, beryllium, or cadmium.

**Construction Standard Part 621, Health Hazard Control for Specific Equipment and Operations for Construction, Rule 62107**
Requirement for exhaust ventilation when welding, cutting, or heating is performed in confined spaces and for air line respirators and standby persons whenever the means of access is blocked by ventilation equipment.

## APPENDIX G

## OSHA SETTLEMENT AGREEMENT FOR ELECTRICAL UTILITIES

OSHA's settlement agreement with the Edison Electrical Institute, Tampa Electric Company, Consolidated Edison Co. of New York Inc., Florida Power and Light Company, and Florida Power Corporation, agreed to include the March 12, 1993, letter to Mr. Stephen C. Yohay into this instruction.

This appendix is the vehicle by which this letter is included. The terms of the settlement agreement also amended the last sentence of paragraph D.2. of this letter to read as follows:

The survey requirements can be met through existing records and knowledge of the spaces, provided this information is adequate to make the determinations required by the Standard.

Please Note:

1. The original letter has not been modified and that pen and ink changes with regard to the amended sentence in paragraph D.2. will have to be accomplished by the reader.

2. This letter deals specifically with the proposed rule and not the final. Some of the comments and policy positions may change as a result of the publication of the final rule on power generation, transmission, and distribution facilities.

March 12, 1993

Mr. Stephan C. Yohay
McDermott, Will and Emery
1850 K Street, N.W.
Washington, D.C. 20006-2296

Dear Mr. Yohay:

This is in response to your letter of February 18, regarding concerns of the members of the Edison Electric Institute about OSHA's Permit Required Confined Space standard, 29 CFR 1910.146 (confined spaces or PRCS standard). It also summarizes the extended discussion between you and your clients and OSHA and Solicitor of Labor staff on February 22, at which occasion your letter served as an agenda.

First, I will summarize the major, general points made at the meeting, and then will address the specific questions in your letter.

1. The Permit Required Confined Space standard covers electric power generation, transmission and distribution facilities and will continue to do so with respect to those

spaces and situations which are not explicitly addressed in the forthcoming specific standard for the power generation industry, 29 CFR 1910.269 Electric Power Generation, Transmission, and Distribution (the "power generation standard").

2. The power generation standard was published as a proposal in 1989. It was, as your colleague, Mr. Platt, notes in correspondence to the Secretary, based on electric utility industry and union inputs, among other sources. When it becomes a final standard, it will resolve many of the significant problems the industry has in complying with the general industry confined space standard.

3. OHSA accepts compliance with the proposed power generation standard, in the spaces and situations where it will apply, as equivalent to compliance with the confined space standard. That is to say, OSHA will neither issue citations nor propose penalties where the employer has appropriately carried out the requirements of the proposed power generation standard. This policy is consistent with long-standing agency practice; specific procedures are spelled out in the OSHA Field Operations Manual (CPL 2.45B et seq.) whereby compliance with proposed standards in lieu of existing applicable standards is treated as a de minimis violation of the Occupational Safety and Health Act, carrying no penalties and resulting in no citations, as long as this practice affords equivalent protection to employees.

EEI's Questions and Concerns

A. "General Concerns." As indicated above, OSHA recognizes that the proposed power generation standard represents significant consensus by the electric utility industry and unions, and that it reflects practices already being implemented in that industry. We agree that the final standard, which we expect to be substantially similar to the proposal, will eliminate many of the specific problems raised in your letter.

B. Regarding the Need for a "Vertical Standard for Electric Utilities." As indicated above, OSHA agrees that a standard is necessary for electric power generation, transmission, and distribution work and is moving toward its promulgation as rapidly as resources and good workmanship allow. The Agency recognizes that there are problems associated with performing similar types of work under differing construction and general industry standards. Should ambiguities remain, they will be addressed through interpretation of existing standards and through guidance to OSHA's enforcement staff through compliance directives. It is presently the intention of the Agency to propose a revision of Subpart V of the Construction Standards after final 1910.269 is published.

C. Urging that "Electric Utilities . . . be excluded from the PRCS for the same reasons that shipyards were excluded." As noted in the general comments above, promulgation of an electric power generation, transmission, and distribution standard will address the electric utilities concerns and will treat them "equally" with shipyards. Note that, like the shipyards, they will not be required to implement the PRCS standard only to have to comply with a new and vastly different vertical standard after a short time. For all practical purposes, the electric

utilities industry is protected from any "whip-saw effect" by simply complying with the proposed power generation standard where it applies and with the PRCS standard where the proposal does not apply.

D. Regarding the Effect of PRCS on Operations and Customers Service.

1. Definition of permit required confined space. As indicated in our discussion, energized equipment will not trigger permit entry requirements if it is insulated, or enclosed. Where Electric equipment is insulated or enclosed and where there are no atmospheric or other hazards which, in their own right, would trigger PRCS requirements, no permit is required.

   Additionally, where employees are exposed to atmospheric or other toxic hazards which do not present an immediate danger of death or disability that would render the employee unable to escape from the confined space (e.g., air contaminants such as arsenic or asbestos), OSHA's health standards for those hazards apply rather than 1910.146, and employees must be appropriately protected in accordance with those health standards. The PRCS standard is intended to protect employees against specific short-term, acute hazards (not exposure at or below the permissible exposure limits); other standards address a broader range of health and safety concerns.

2. Initial Survey of Facilities. We agreed that the tens of thousands of manholes owned by the utilities need not be physically surveyed to determine whether they are permit required confined spaces. The survey requirement can be met through existing records and knowledge of the spaces.

3. Definition of Entry. While the standard defines the process of "entry" into a confined space as beginning with the insertion of any part of the body into that space, it defines as confined spaces only those areas that can contain the whole body, and not cabinets or control panels which are accessed by simply reaching in to turn a valve or a switch. This is stated explicitly in the preamble to the final rule (page 4477 column 2 of the final 1910.146 standard).

4. Definition of Hazardous Atmosphere. We agreed that the term "lower flammable limit" is synonymous with the older term "lower explosive limit." The utilities are free to use either term in their PRCS programs. Regarding flammable dusts in confined space, it will be OSHA policy to sample and to analyze such dusts for combustibility, prior to issuing citations, whenever there is doubt as to the nature and extent of the dust hazard. Note that existing permissible exposure limits of nuisance dusts and other standards continue to apply. The note in the final standard (at the definition of "hazardous atmosphere") provides additional guidance on this topic.

5. "Declassification" of permit required spaces. As discussed on February 22, the standard provides simple criteria for classifying and re-classifying spaces. Once a space has been reclassified as a non-PRCS, it remains reclassified as long as all hazards remain

eliminated. The basis for classification must be documented. With regard to the documentation required by paragraph (c)(5), it must be kept until the job is completed and there will be no further entry of the space in question. (Refer to 29 CFR 1910.146, paragraphs (c)(5) and (c)(7))

6. Attendants. Attendants may conduct rescue from outside the confined space, using (for example) harnesses and lanyards. The attendant, for obvious reasons, may not enter the space to perform a rescue unless he or she is properly relieved by another employee who is properly qualified to assume attendant responsibilities. This precaution, with other safeguards, will prevent the possible injury or death of the rescuer. The proposed power generation standard under 1910.269 (e)(5) requires stationing of an attendant trained in basic first aid at an enclosed space, under certain circumstances, to provide emergency assistance. This proposed language reflects OSHA's intent to have attendants help enclosed space entrants outside the spaces (i.e., providing first aid), rather than to have attendants enter spaces to rescue entrants. In addition, 1910.269 (t)(3)(ii), cited in your letter, provides that an attendant may enter a manhole for inspection, housekeeping, taking readings, or similar work, if such work can be performed safely. A third person to act as relief for the attendant is not required. An attendant who is properly trained and equipped may conduct non-entry rescue. Neither the PRCS standard nor proposed 1910.269 (e)(5) permits attendants to enter permit spaces to rescue entrants, unless the "attendant" has been properly trained, equipped, and relieved. (An attendant required under 1910.269 (t)(3) would be permitted to enter the space for rescue purposes, as long as it is safe to do so.)

7. Rescue. The confined space standard and the proposed power generation standard differ as to their requirements for retrieval lines, harnesses, etc. Compliance with the proposed power generation standard when working in manholes and other covered locations will avoid the problems enumerated in your letter. Note that retrieval lines are not required in all cases -- if the employer can demonstrate that retrieval lines are not feasible (are a greater hazard or would not contribute to rescue of an entrant), they are not required. If retrieval lines are not required, then tripods or other mechanical retrieval devices are also not required.

8. Administrative Burdens and Paperwork. The documentation requirements of the confined space standard were carefully reviewed during the promulgation process, including a thorough regulatory analysis of paperwork burdens and other costs. We found that the burdens imposed by the standard were justified and cost-effective.

E. Coverage of Electric Utilities in 1910.146. The proposed power generation standard does cover manhole entry and other similar industry-specific tasks; until it is promulgated, electric utility employers have the option of complying with the more general 1910.146 standard, or with the industry-specific 1910.269 proposed standard, as long as the serious hazards are addressed by compliance with the chosen standard.

> With respect to the electric utility work in manholes and vaults, for example OSHA would apply 1910.146 only in the event that procedures taken under proposed 1910.269 (e) and (t) do not adequately protect employees. As an illustration, the Agency would apply 1910.146 to work in a manhole where a water hazard that could not be eliminated from outside the space and that would pose a life– threatening hazard to an entrant is present. The presence of water alone would not be a basis for applying the PRCS standard; there must be a quantity sufficient either to endanger the life of the entrant or to interfere with escape from the space. In such cases, the provisions proposed in 1910.269 would not address the hazards involved.
>
> When our meeting ended, we indicated that we would summarize our oral responses, in writing, as a reply to your letter of February 18; you indicated that you would send an additional letter, requesting further clarification on specific points. In a later conversation with Ray Donnelly (General Industry Compliance Assistance), you indicated that no additional letter would be sent at this time.

If you have questions or additional comments about any of the foregoing, we will welcome them.

Sincerely,

H. Berrien Zettler
Deputy Director
Compliance Programs