

PART III, SECTION IV

CONFINED SPACE ENTRY

1. CORPORATE POLICY, REQUIREMENTS AND PROCEDURES

1.1.Purpose – To establish requirements, procedures and conditions with regards to identification, posting and entry of confined spaces in order to eliminate or control employees' exposure to hazardous conditions.

1.2.Definitions

- A. Alternate Entry Procedure – Entry into a permit required confined space (PRCS) under other than PRCS procedures due to the ability to eliminate physical hazards without making entry into the space and the ability to maintain a safe atmosphere by use of forced air ventilation alone.
- B. Confined Space – A space that:
- Is large enough and so configured that an employee can bodily enter and perform assigned work.
 - Has limited or restricted means for entry or exit.
 - Is not designed for continuous employee occupancy.
- C. Entry – The action by which a person passes through an opening into the confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of the opening of the space.
- D. Hazardous Atmosphere – An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (unaided escape for the space), injury or acute illness from one or more of the following causes:
- Flammable gas, vapor or mist in excess of ten (10) percent of its lower explosive limit (LEL) or lower flammable limit (LFL).
 - Airborne combustible dust at a concentration that meets or exceeds its LEL/LFL. This concentration may be approximated as a condition in which the dust obscures vision at a distance of five feet or less.
 - Ambient oxygen concentration below nineteen and one-half percent (19.5%) or above twenty-three and one-half percent (23.5%).

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- Atmospheric concentration of any substance that is capable of causing death, incapacitation, impairment of ability to self-rescue, injury or acute illness due to its health effects.
 - Any other atmospheric condition that is immediately dangerous to life or health.
- E. Immediately Dangerous to Life or Health (IDLH). – Any condition that poses an immediate or delayed threat to life that would cause irreversible adverse health effects; or that would interfere with an individual's ability to escape unaided from a confined space.
- F. Non-Permit Confined Space – A confined space that does not contain, or with the respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
- G. Oxygen Deficient Atmosphere – An atmosphere containing less than 19.5% oxygen by volume.
- H. Oxygen Enriched Atmosphere – An atmosphere containing more than 23.5% oxygen by volume.
- I. Permit-Required Confined Space (PRCS) – A confined space that has one or more of the following characteristics:
- Contains or has the potential to contain a hazardous atmosphere.
 - Contains a material that has the potential for engulfing an entrant.
 - 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.
 - Contains any other recognized serious safety or health hazard.
- J. Reclassification of PRCS – A PRCS with one or more of the physical hazards in section 1.2.I, but does not contain, or have the potential contain, a hazardous atmosphere, and the physical hazards can be eliminated without entry into the PRCS.

1.3.General Requirements

- A. Workspace Evaluation

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- Using the “Confined Space Entry and Reclassification Decision Flow Chart” (included in this section), the Plant Manager and Safety Department shall evaluate the workplace annually to identify all confined spaces that;
 - Meets the definition of Section 1.2.B and;
 - Meets the definition of Section 1.2.I.
 - PRCS’ will be identified in this section on the form entitled “Confined Space Identification Form” included in this section.

- Employees will be informed of all spaces meeting the above criteria by means of training, information sharing and by means of posted danger signs. All signs shall read: **DANGER – Permit-Required Confined Space – Do Not Enter.** (Example included in this section.)
- Workplace evaluation and reclassification to Non-Permit Required Confined Spaces (NPRCS) shall be completed when there are changes in the use or configuration of the NPRCS that might increase or change the hazards to entrants.
- Workplace evaluation and an annual reclassification, where applicable, of confined spaces shall be completed within 12 months of the previous annual evaluation. To ensure compliance it is suggested that the evaluation be completed within 11 months of the previous annual evaluation.
 - If changes resulting from an evaluation of confined space require reclassification of the space to a PRCS, employees shall be informed that the space meets the permit-required criteria by means of training, information sharing and posting.

- Employees shall not enter confined spaces that have been evaluated and determined to be PRCS; that is, they meet the definition of section 1.2.B and 1.2.I., unless the Plant Manager or Safety Department approves the entry upon documented elimination of the hazards present and reclassification is completed or entry via Alternate Entry Procedures is applicable.
- Acceptable hazard elimination methods include, but are not limited to:
 - Elimination of atmospheric hazards and maintaining a safe atmosphere by use of forced air ventilation alone without entry into the space.

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- Removal of material that has the potential for engulfing and lockout/tagout of equipment which control the supply and discharge of material without entry into the space.
 - Stabilization of material that has the potential for engulfing and lockout/tagout of equipment which control the supply and discharge of the material without entry into the space.
- Documented hazard elimination means that upon completion of hazard elimination procedures and completion of the original hazard evaluation procedure, no hazards have been found to exist, or have the potential to exist, in the confined space. The Plant Manager, his designee or Safety Department shall document these findings before entrance shall be permitted.
- The form entitled “Confined Space Alternate Entry Procedure Form” (included in this section) shall be used to document the elimination of hazards present, including a known or potential hazardous atmosphere, in a PRCS and the reclassification of the confined space to NPRCS under Alternate Entry Procedures.
 - The form entitled “Confined Space Reclassification Form” (included in this section) shall be used to document the elimination of physical hazards (no known or potential hazardous atmosphere) prior to entry into the PRCS and the reclassification of the space to NPRCS.

B. Testing and Elimination of Hazardous Atmospheres

- Persons conducting evaluation tests shall be trained and competent in the use and calibration of test instruments and in the documentation of calibration and test results. Test instrument alarms shall be set to alarm at the appropriate action level to signal the evacuation warning.
- Test instruments shall be calibrated as suggested by the instrument manufacturer. The calibration shall be documented on the form entitled “Calibration Record”, included in this section. The person completing the form shall initial and date the form upon completion of the test. Calibration records shall be reviewed prior to instrument use to ensure compliance. The most recent calibration record must be available for inspection.
- Without entering the confined space, the existing atmosphere must be tested for the following, in the order listed, be within the **Acceptable Limits** specified and recorded:

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<u>Test for:</u>	<u>Acceptable Limits:</u>
Oxygen Content	19.5% - 23%
Lower Explosive Limit (LEL)	<10%
Carbon Monoxide	<35 PPM
Hydrogen Sulfide	<10 PPM
Other atmospheric hazard	OSHA acceptable limits

- If the atmosphere is not within above noted acceptable limits and the hazards can not be eliminated and maintained within acceptable limits, the confined space shall be classified as a PRCS and shall not be entered. The space shall be identified per 1.3 A., Workplace Evaluation.
- If the atmosphere is not within **Acceptable Limits**, but the atmospheric hazard can be eliminated through positive pressure ventilation, then entry via Alternate Entry Procedures can be completed.
- During ventilation, the atmosphere must be tested without entry into the confined space. Upon determining the atmosphere to be acceptable and that all other hazards have been eliminated, then entry can be made. The pre-entry, post-ventilation atmospheric reading shall be recorded on the Alternate Entry Procedure Form.
- Upon entering the confined space, the atmosphere shall preferably be tested continuously with an alarmed system. If not continuous then the atmosphere in the space shall be tested at least every 15 minutes and the results recorded not to exceed 2-hour intervals.
- During the time personnel are in the confined space, should atmospheric conditions fall outside **Acceptable Limits**, all employees shall **IMMEDIATELY** evacuate the space. The space shall then be evaluated to determine the cause and proper measures taken to eliminate the cause before personnel shall be allowed to re-enter the space. Documentation of procedures taken to correct the hazard shall be documented.
- Proper positive pressure ventilation from a clean, 100 percent outside source of the confined space must be maintained for the duration of the entry. Additional covers, lids, hatches, manhole covers etc should be removed to aid in cross circulation.
- When applicable, portable blowers/ventilators shall be set up to exhaust fumes, vapors, smoke, and mists which may be generated by welding, painting, cutting, or other such activities within the confined space.

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- Pumps, generators, gas powered ventilation systems, mobile equipment and other equipment that has the potential to generate carbon monoxide, shall be located a sufficient distance from the confined space to prevent introducing a hazardous atmosphere into the space. The equipment should be located downgrade and downwind as practical.

C. Control of Engulfment Hazards

- Persons can be engulfed if bridged material collapses or if material sloughs off the side of storage bins, hoppers or silos. Material feeding onto belts or from/onto other discharge points can bury or draw victims into augers, gates or holes causing an engulfment incident.
- Work on or above materials in these structures shall be performed from safe access platforms with handrail or other competent person approved fall protection system. Work in areas that have an engulfment hazard shall not begin until material that presents the hazard has been removed, belts, gates, augers, etc has been locked and tagged out by the entrant. Effective methods shall be used to prevent loaders and trucks from dumping or loading the space. Refer to Part III, Lockout/Tagout.
- Material that presents a potential for caving; sliding or sloughing shall be scrapped or barred down from the top and sides before entry is made.
- Work shall not performed in confined spaces until all precautions have been taken to prevent the flow of materials that can potentially cause an engulfment. Precautionary measures taken shall be recorded on the form entitled "Alternate Procedure Confined Space Entry Form" included in this section.

D. Confined Space Entry

- Upon entry approval by entry Entry Supervisor, all applicable safety practices outlined by OSHA regulation and/or this safety advisory must be followed from such time as the employee enters the confined space, until such time as the employee exits the confined space.
- Employees shall be allowed to enter all confined spaces that have been evaluated and reclassified to be non-permit spaces, that is, it has been determined that no potential atmospheric exist and that all physical hazards can be removed or made

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safe without entry into the confined space or if a real or potential atmospheric hazard exist the space is made safe and entry is made using the Alternate Entry Procedures. All applicable safety practices outlined by OSHA regulations and/or this safety advisory must be followed from such time as the employee enters the confined space, until such time as the employee exits the confined space.

1.4 Mandatory Confined Space Procedures

- A. Safety harnesses with shock absorbing lanyard or a harness and lifeline shall be worn when persons enter a confined space that requires fall protection, such as bins, tanks, silos, etc. A competent person shall approve fall protection setup and equipment. The attendant shall tend the lifeline. Refer to Part III, Fall Protection.
- B. All employee(s) given the responsibility of tending fall protection systems and lifeline(s) shall have the capability of maintaining communications with the employee(s) that enter a confined space from the time of entry until the time of exit.
- C. All required personal protective equipment shall be used when entering a confined space. Refer to Part III, Hearing Protection, Personal Protective Equipment and Respiratory Protection.
- D. A barricade or barrier shall be erected at the opening of all confined spaces being entered to prohibit unauthorized persons from entering the space.
- E. Before entering a confined space, the supply and discharge of materials shall be stopped, and all equipment which control the supply and discharge of material or which could create a hazard shall be locked and tagged out by the employee(s) entering the confined space. Refer to Part III, Lockout/Tagout.
- F. The attendant to the entrant(s) shall have knowledge and be capable of summoning rescue and emergency medical assistance in the event of an emergency.

1.5 Training

- A. Employees will be instructed in the recognition of confined spaces; the recognition of potential confined space hazards; confined space entry and exit procedures; required safety equipment,

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including respirators, rescue retrieval systems, and atmospheric monitoring, as required; summoning rescue, non-entry rescue procedures; first aid; hazard control measures such as lockout/tagout, ventilation and access control; and proper work practices including entry documentation.

- B. Confined space entry and the topics listed above will be a periodic safety-training topic.

1.6 Monitoring and Enforcement – The plant manager shall be responsible for implementation and enforcement of this policy. Failure to follow established confined space entry procedures or failure to use proper personal protective equipment will result in loss of safety incentive bonus and/or progressive disciplinary action up to and including termination of employment.

1.7 Independent Contractors

- A. Independent contractors shall be contracted to perform work that requires the entry into a permit-required space, which can not be reclassified to a non-permit space or entered through the Alternate Entry Procedures.
- B. When contracting with an outside contractor, who will be required to enter a permit-required space, the Plant Manager of the site shall:
 - Inform the contractor that the workplace contains permit-required confined spaces and that entry into these spaces is allowed only through compliance with OSHA permit required confined space standards.
 - Provide the contractor with information concerning the permit-required spaces, including the hazards identified and any past experience with the space that makes it a permit-required space.
 - Inform the contractor of any precautions or procedures that have been implemented for the protection of employees in or near any and all permit-required spaces where the contractor's personnel will be working.
 - Coordinate entry operations with the contractor, when both () and contractor personnel will be working near the permit-required confined space.
 - At the completion of the job requiring entry into the permit required spaces, debrief the contractor regarding the permit

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space program and any hazards they confronted or created during the entry operations.

1.8 Record Keeping

- A. The Plant Manager or his designee shall maintain all records including inspection and training records.
- B. Training shall be documented by means of () “Training Documentation Forms”, () “Safety Meeting Forms” and/or Certificates of Training provided by outside training sources and a copy shall be placed in each employee’s file (see Part III, Training). Training records shall be retained for a period of three years from the date of the training and shall include the following information:
 - Employee’s name.
 - Date of training.
 - Outline describing the training material.
 - Signature of trainer documenting that training was provided.
 - Signature of the employee documenting that training was received.

2. STATUTORY REFERENCES

- 2.1 29 CFR 1910.146 – Permit-required confined spaces.
- 2.2 29 CFR 1910.146 Appendix A – Permit-required confined space decision flow chart.
- 2.3 29 CFR 1910.146 Appendix B – Procedures for atmospheric testing.
- 2.4 29 CFR 1910.146 Appendix C – Examples of permit-required confined space programs.
- 2.5 29 CFR 1910.146 Appendix D – Confined space pre-entry check list.
- 2.6 29 CFR 1910.146 Appendix E – Sewer system entry.
- 2.7 29 CFR 1910.146 Appendix F- Permit-required confined

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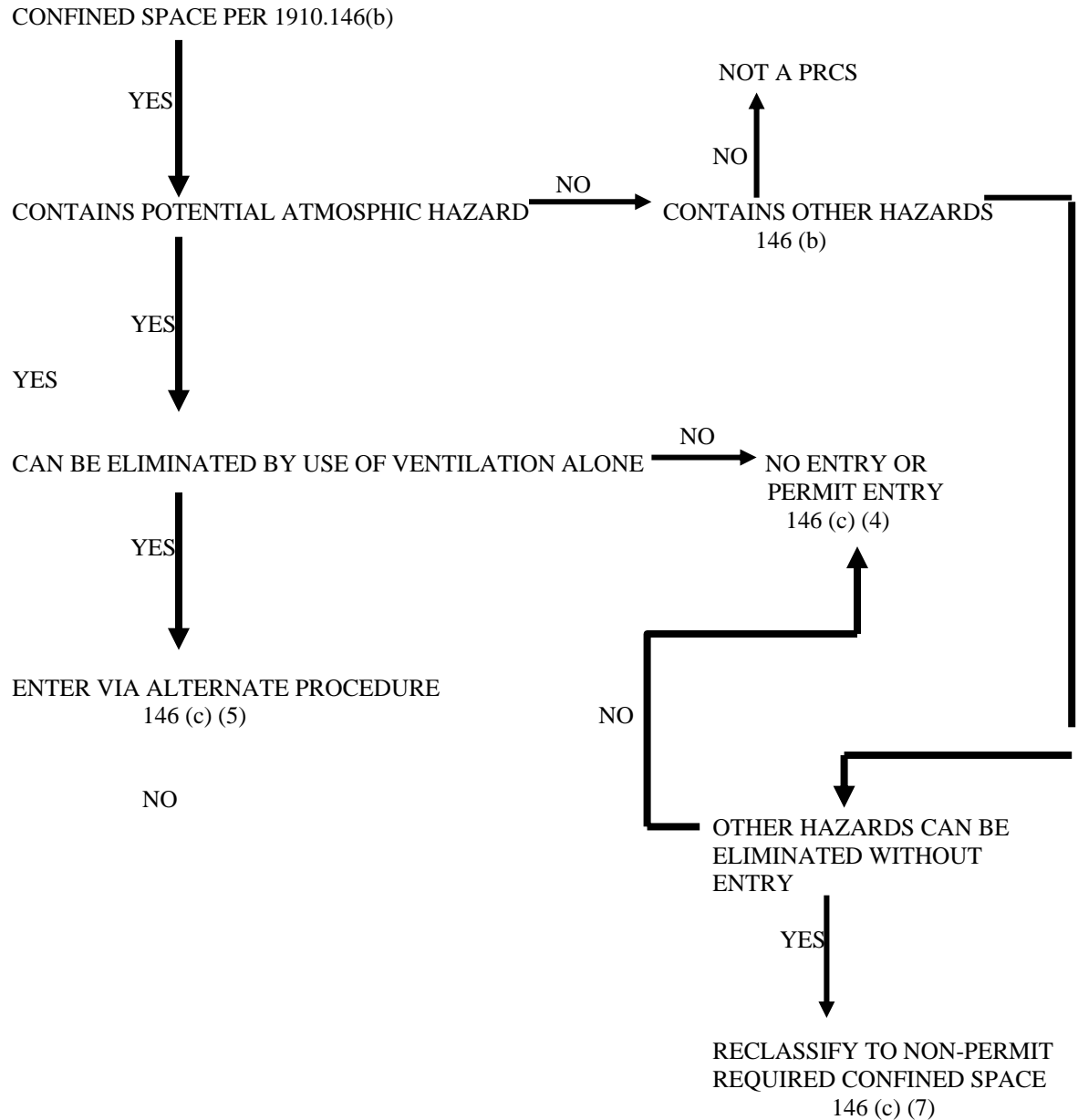
DANGER
PERMIT-REQUIRED
CONFINED SPACE
DO NOT ENTER

EXAMPLE 1

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CONFINED SPACE ENTRY and RECLASSIFICATION DECISION FLOW CHART



Confined Space Identification Form

Typical Permit-Required Confined Spaces

<u>Area</u>	<u>Hazard</u>
1. Aggregate Feed Bin (Equipped with Grizzly Bars)	Engulfment, Entrapment
2. Aggregate Pit Area	Engulfment, Entrapment
3. Storage Tanks (Water/Petroleum)	Atmosphere, Entrapment
4. Silos	Atmosphere, Engulfment
5. Baghouses	Atmosphere
6. Bins and Hoppers	Entrapment
7. Manholes/Underground Lines	Atmosphere
8. Mixer/Batching Stations	Atmosphere, Entrapment, Engulfment
9. Boilers	Atmosphere, Entrapment
10. Machine Pits	Engulfment, Entrapment

() will initially view all Confined Spaces as “Permit Required” until the space can be evaluated and reviewed for a Non-Permit Required Entry. Where feasible, () will document and reclassify the space to a Non-Permit status. This reclassification will follow the requirements of 1910.146. When “Permit Required Confined Space Entry” is required, () will contract with a contractor who shall have a permit-required confined space entry program, shall have trained personnel, and shall provide emergency rescue service in conjunction with the local fire/emergency groups defined in ()’s Emergency Response Plan.

Permit-Required Confined Space Identification

Facility: _____

Permit-Required Confined Space:

Location within Operation:

- | | | |
|----|-------|-------|
| 1. | _____ | _____ |
| 2. | _____ | _____ |
| 3. | _____ | _____ |
| 4. | _____ | _____ |
| 5. | _____ | _____ |
| 6. | _____ | _____ |

Certification: _____

Date: _____

Signature of Person Making Certification

CONFINED SPACE ALTERNATE PROCEDURE ENTRY PERMIT

Confined Space Identification: _____

Date: _____ Time: _____

Purpose of Entry: _____

Can hazardous atmosphere be eliminated and a safe atmosphere maintained by use of positive pressure ventilation alone? YES NO

Can all (other than atmospheric) hazards be eliminated without entry into the confined space? YES
NO

Are there adequate and safe means for entry and egress from the space? YES NO

(All answers must be YES before Alternate Procedure Entry is allowable)

Alternate Entry Procedure:

- Begin this procedure immediately prior to entry.
- Initiate mandatory lockout/tagout procedures for the space to be entered.
- Eliminate all engulfing hazards.
- Confirm, by completing positive pressure ventilation from a clean outside source that all atmospheric hazards have been eliminated and will a safe atmosphere will be maintained.

Safe Atmospheric Levels: LEL <10% O2 19.5 – 22.5% H2S <10ppm CO <35ppm

Atmospheric Test Equipment Used: _____

Calibration Date: _____ Tested by: _____

Results:

(Monitor continuously and record prior to entry and at least every two hours)

Time:	LEL	O2	H2S	CO	Other
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Entrant(s): _____

Supervisor: _____

If at any time during entry conditions change or atmospheric safe levels are exceeded all entrants must immediately evacuate the space and a reevaluation be completed,

Calibration Record

Gs Tech Model GX-82

Date	Initial LEL	Correct LEL	Initial O ₂	Correct O ₂	Initial H ₂ S	Correct H ₂ S	Calibrator's Initials
Facility:							

Calibration Procedure:

1. Turn instrument on and let warm-up (about five (5) minutes).
2. Open battery compartment to gain access to the three (3) adjustment screws.
3. Connect "Gas Standard" cylinder, regulator, hose and cup.
4. Attach cup to instrument and open regulator.
5. Record instrument reading in appropriate column titled "Initial."
6. If instrument reading is not as noted on "Gas Standard" cylinder, adjust corresponding adjustment screw. Note for LEL Methane that a "Gas Standard" at 50% will yield an instrument reading at 60%.
7. Upon completion of adjustments, record instrument reading in appropriate column titled "Correct."