**The Pennsylvania State University**

**Confined Space Program**

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| **Revision ID** | **Date** | **Item** | **Purpose** |
| Initial – Pre OSHA | 04-01-2002 | The Penn State Confined Space Procedure | Initial document (pre-OSHA-clarification- Penn State) |
| Initial – OSHA | 09-15-2015 | The Penn State University Confined Space Program | Updated/revised for procedural, facility, personnel, and OSHA compliance requirements |
| Rev 01 | 02-12-2016 | Program revision | Revise sections related to contractor requirements, and to OSHA confined space in construction standard |
| Rev 02 | 04-15-2021 | Program minor revision | Correct sections related to training- no annual requirement, periodic review |
| Rev 03 | 03-04-2022 | Program minor revision | Add preliminary (pre-planning) hazard assessment subsection 6.2.1.1, and awareness training update |
| Rev 04 | 08-08-2022 | Program minor revision | Add Confined Space Assessment, Classification, Permit form; update logo; assign EHS Document Numbers. |

**TABLE OF CONTENTS**

1. **PROGRAM STATEMENT**
2. **INTRODUCTION**

2.1 Summary

2.2 Scope & Applicability

2.3 Reference & Regulations

1. **DEFINITIONS**
2. **RESPONSIBILITIES**

4.1 Management, Budget Executives, Administrators

4.2 Supervisor

4.3 Employee

4.4 Safety Officer

4.5 EHS

4.6 Primary Project Contact

1. **CONTRACTORS**
2. **CONFINED SPACE ENTRY PROCEDURES**

6.1 Evaluation and Classification of Confined Spaces

6.2 Permit-Required Confined Space Procedure

6.2.1 Pre-Entry Planning

6.2.2 Confined Space Entry Permit & Requirements

6.3 Non-Permit Required Confined Space Procedure

6.4 Other Required Safety and Health Permits

6.5 Re-Classification of Confined Spaces

1. **CONFINED SPACE RESCUE PROCEDURES**

7.1 Standardized Confined Space Rescue Planning

7.1.1 Volunteer Confined Space Rescue/ Response Personnel

7.1.2 Response Personnel Medical Clearance

7.1.3 Rescue/ Response Personnel Training

7.1.4 Coordinated Confined Space Rescue Plan

7.1.5 Coordinated Confined Space Rescue Preparedness & Response

7.1.6 Confined Space Rescue/ Servicer Requirements

7.1.7 Confined Space Emergency Communications

1. **CONFINED SPACE TRAINING**

8.1 Initial Confined Space Training Requirements

8.2 Periodic Refresher Training

1. **CONFINED SPACE RECORDKEEPING & DOCUMENTATION**

9.1 Document and Record Retention Requirements

9.2 Training Records

9.3 Medical & Respirator Fitness Exam Records

1. **CONFINED SPACE PROGRAM REVIEW, EVALUATION & REVISION**
2. **REFERENCES**

**TABLE OF CONTENTS**

**APPENDICES**

|  |  |
| --- | --- |
| **Appendix A** | **Penn State Confined Space Inventories\*** |
|  |  |
| **Appendix B** | **Penn State Confined Space Classification Form** |
|  |  |
| **Appendix C** | **Penn State Confined Space Permit** |
|  |  |
| **Appendix D** | **Confined Space Monitor - Calibration Log** |
|  |  |
| **Appendix E** | **Confined Space Contractor Requirements** |
|  |  |
| **Appendix F** | **Penn State Confined Space Site-Specific Program Checklist** |
|  |  |
| **Appendix G** | **Penn State Confined Space Rescue Information** |
|  |  |
| **Appendix H** | **Penn State Confined Space Decision Process** |
|  |  |
| **Appendix I** | **PS Confined Space Entry Assessment, Classification & Permit (with Instructions)** |
|  |  |

**\*** Contact your local Confined Space Coordinator or EHS for assistance with inventory updates at (814) 865-6391.

# PROGRAM STATEMENT

In addition to the University Park campus, The Penn State University (Penn State) operates twenty-one additional campuses across the Commonwealth of Pennsylvania. A wide variety of confined spaces are present within the Penn State system. As such, employees performing work in these confined spaces may be presented with unique challenges and potentially dangerous conditions during their work.

The Occupational Safety and Health Administration (OSHA) has specifically defined confined spaces. OSHA has further defined specific hazard conditions under which confined space work requires specific protective measures, testing, procedures and programming for the protection of workers from serious physical harm, or even fatality. This Penn State Confined Space Program is intended to comply with the OSHA requirements, and more importantly, to protect our employees and contractors working in these confined spaces.

It is the policy of Penn State to provide a safe working environment for all employees, faculty and staff, and confined space work is no exception. All employees and contractors are expected to recognize and abide by these Penn State Confined Space Program requirements, unless using other more stringent program requirements.

# INTRODUCTION

**2.1 Summary**

The Occupational Safety and Health Administration (OSHA) promulgated the permit-required confined space standard (29 CFR 1910.146), to address work-related fatalities and failed rescue attempts in confined spaces. The Penn State University (Penn State) has been historically committed to the prevention and control of incidents related to confined spaces, and subsequently developed it’s “*Performing Work in Confined Spaces*” policy. Revisions and updates of this policy have resulted in the development of the Penn State “*Confined Spaces Program*. (CSP)” These include updates to Penn State’s confined space inventories reflecting current facilities and spaces, procedural developments, current rescue planning, training, and other aspects.

The Penn State University system includes numerous facilities across the Pennsylvania Commonwealth, and many types of confined spaces. These may include: manholes, vaults, tanks, tunnels, boilers, silos, bins, pits, crawl spaces, pipe chases, ventilation equipment, cooling towers, ducts, pumping stations, storm/sanitary drains, sumps, and other miscellaneous types of confined spaces.

Penn State employees and contractors are frequently required to enter these spaces to perform inspection, repair, maintenance, and service activities. Either the work performed, or the inherent hazards in these spaces may pose the risk of injury or fatality. Such hazards are controlled through the Penn State CSP, and typically require a permit for acceptable entry and work. The Penn State CSP further describes the safe work methods and procedures, training, protective equipment, controls, and management practices, used to insure the safety, health and protection of Penn State employees and contractors while performing work, or necessary rescue, within these confined spaces across the Penn State system.

# 2.2 Scope & Applicability

## This program applies to all Penn State employees performing work, or rescue in confined spaces. Penn State retains contractors to provide many services in confined spaces at the University Park Campus and across the Commonwealth. All Penn State Contractors shall be informed regarding the inherent hazards in the pertinent Penn State confined spaces in which they will work, and shall be required to show evidence of compliance with the OSHA permit-required confined spaces standard. The Hershey Medical Center and the College of Medicine are exempt from this program.

## **2.3 Reference & Regulations**

# In addition to OSHA’s “confined space standards” (*Permit-Required Confined Spaces*, referenced at Title 29 Code of Federal Regulations, Part 1910.146, and *Confined Spaces in Construction* at Subpart AA, Part 1926.1201, other OSHA standards, and associated Penn State Environmental, Health & Safety programs may apply to work performed within Penn State confined spaces. Penn State employees are required to recognize these programs as they pertain to their work, and to understand the hazards, controls and necessary protections against the associated hazards.

A partial listing of Penn State EHS Programs, and/or OSHA standards includes:

|  |  |
| --- | --- |
| **Penn State EHS Program Area** | **OSHA Standard (Title 29)** |
| Asbestos | Asbestos (Part 1910.1001, Part 1926.1101) |
| Lead | Lead (Part 1910.1025, Part 1926.62) |
| Industrial Hygiene Program, Indoor Air Quality | Ventilation Standard (Part 1910.94, Part 1926.57) |
| Hearing Conservation Program | Occupational Noise Exposure (1910.95) |
| Chemical Inventory Management, Hazardous Materials Shipping | Subpart H Hazardous Materials (1910.101-111) |
| Personal Protective Equipment Program,  Respiratory Protection Program | Subpart I Personal Protective Equipment (1910.132-138) |
| Lock-Out/ Tag-Out Program | The Control of Hazardous Energy  ( 1910.147) |
| Emergency Response Plans | Subpart K Medical and First Aid (1910.151) |
| Machine Shop Safety | Subpart P Hand and Portable Powered Tools and Equipment (1910.241-244) |
| Fire Prevention & Protection, Hot Work | Subpart Q Welding, Cutting and Brazing (Part 1910.251-255) |
| Energized Electrical Safety | Subpart S Electrical (Part 1910.301-308, 331-335, 339) |
| Hazard Communication, Industrial Hygiene | Subpart Z Toxic and Hazardous Substances (Part 1910.1000-1096, 1200, 1201, 1450) |

**3.0 DEFINITIONS**

## *Acceptable entry conditions* - conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

## *Authorized Attendant* - individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program. Authorized Attendant may also be the Entry Supervisor.

## *Authorized Entrant* - employee who is authorized by the employer to enter a permit space.

## *Barrier* – means a physical obstruction that blocks or limits access (Construction Standard)

## *Blanking or Blinding* - closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

## *Cardiopulmonary Resuscitation (CPR)* – a combination of rescue breathing and chest compressions delivered to victims thought to be in cardiac arrest.

## *Combustible Gas* – airborne concentration of gas or vapor which may present the risk of fire or explosion if an ignition source of sufficient energy is introduced. This term is synonymous with "flammable vapor" and "explosive gas."

*Competent Person* – means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them (Construction Standard).

## *Confined Space* - a space which possesses all of the following characteristics:

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

## (2) 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

## (3) is not designed for continuous employee occupancy.

## *[Confined Space] Entry* - action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional or any work activities are actually performed in the space.

*Control –* means the action taken to reduce the level of any hazard inside a confined space using engineering control methods (for example, by ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the

engineering methods used for this purpose. Personal protective equipment is not a control. (Construction Standard)

*Controlling Contractor* – is the employer that has overall responsibility for construction at the worksite. Note – If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer. (Construction Standard)

## *Double Block and Bleed* - closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

*Early-Warning System* – means the method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include, but are not limited to: alarms activated by remote sensors; and lookouts with equipment for immediately communicating with the authorized entrants and attendants. (Construction Standard)

*Emergency* – means any occurrence (including any failure of power, hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants. (Construction Standard)

## *Engulfment* - surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

## *Entry Permit (Permit)* - written or printed document that is provided by the employer to allow and control entry into a permit space and that contains the information specified in Appendix C of this program.

*Entry Employer* – means any employer who decides that an employee it directs will enter a permit space. Note: An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space. (Construction Standard)

## *Entry Rescue* – occurs when a rescue service enters a permit space to rescue one or more employees. (Construction Standard)

## *Entry Supervisor* - person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section. Entry Supervisor may also be the Authorized Attendant.

Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation. (Construction Standard)

*Hazard* – means a physical hazard or hazardous atmosphere. See further definitions.

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

## Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

## Airborne combustible dust at a concentration that meets or exceeds its LFL;

## Note: This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet (1.52 meters) or less.

## Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

## Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart D, Occupational Health and Environmental Control, or in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;

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

## Any other atmospheric condition that is immediately dangerous to life or health.

## *Host employer* - means the employer that owns or manages the property where the construction work is taking place.

Note: If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, and has transferred to that entity the information specified in § 1926.1203(h)(1), OSHA will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case will there be more than one host employer. (Construction Standard)

## *Hot Work* – means operations capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating.) (Construction Standard)

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

## *Immediately Dangerous to Life or Health (IDLH)* - condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

## Note: Some materials-hydrogen fluoride gas and cadmium vapor, for example-may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" after recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health. (Construction Standard)

*Inerting* – means displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. (Construction Standard). Note: Inerting produces an IDLH oxygen-deficient atmosphere.

*Intrinsically Safe (Equipment)* – is defined as equipment and wiring which is incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture in its most easily ignited concentration. (ANSI/ISA RP12.06.01-1995 (R2002))

*Isolate or Isolation* - process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tag-out of all sources of energy; or blocking or disconnecting all mechanical linkages; or placement of barriers to eliminate the potential for employee contact with a physical hazard.

*Limited or restricted means for entry or exit -* means a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders. (Construction Standard)

## *Line Breaking or Misalignment* - intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

*Lockout/ Tagout –* a procedure whereby a lock and/or tag device is used to hold an energy-isolating device (such as a switch, valve, etc) in the “off” or safe position. This procedure is fully explained in the Penn State Lockout/ Tagout Program, and further defined in the OSHA confined space standard definitions.

## *Lower Flammable Limit (LFL) or Lower Explosive Limit (LEL) –* lowest concentration at which a gas or vapor can ignite and can be used interchangeably with LFL or LEL. Concentrations below this level are too lean to burn.

*Monitor or Monitoring –* means the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space. (Construction Standard)

*Non-entry rescue* - occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space. (Construction Standard)

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

## *Oxygen Deficient Atmosphere* - atmosphere containing <19.5 percent oxygen by volume.

## *Oxygen Enriched Atmosphere* - atmosphere containing >23.5 percent oxygen by volume.

## *Permit-Required Confined Space (“Permit Space”)* - confined space that has one or more of the following characteristics:

## Contains or has a 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; or

## Contains any other recognized serious safety or health hazard.

## *Physical Hazard* - means an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: Explosives (as defined by paragraph (n) of § 1926.914, definition of "explosive"); mechanical, electrical, hydraulic and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation). (Construction Standard)

## *Primary Project Contact –* Primary Penn State contract liaison, which may be a project manager, project coordinator, maintenance supervisor, or other commonwealth liaison, for purposes of Penn State and contractor coordination in work involving Penn State confined spaces.

## *Prohibited Condition* - condition in a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee.

## *Qualified Person* - means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project. (Construction Standard)

## *Rescue -* means retrieving, and providing medical assistance to, one or more employees who are in a permit space. (Construction Standard)

## *Rescue Services* – means the personnel designated to rescue employees from permit spaces. (Construction Standard)

## *Retrieval System* - equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

*Serious Physical Damage* - means an impairment or illness in which a body part is made functionally useless or is substantially reduced in efficiency. Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional. (Construction Standard)

## *Self-Contained Breathing Apparatus (SCBA)* – An atmosphere-supplying respirator in which the source of air is contained with the respirator independent of any other source.

## *Test or Testing* - means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

## Note: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry. (Construction Standard)

## *Upper Explosive Limit (UEL)* – the highest concentration at which a gas or vapor can ignite and can be used interchangeably with UFL (Upper Flammable Limit). Concentrations above this level are too rich to burn.

## *Ventilate or Ventilation* - means controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of § 1926.57 (Ventilation).

## *Work Induced Hazard* – hazard created due to nature of work, e.g., welding (generates fumes) and painting (generates solvents in the atmosphere).

Refer to OSHA confined space standards for further details and clarifications on definitions.

# RESPONSIBILITIES

## **Budget Executives and Administrators**

4.1.1 Ensure that responsibilities assigned within this program are carried out within their administrative work unit, and verify by signature.

* + 1. Designate individuals responsible for the implementation of the CSP program within their work unit.
    2. Monitor implementation of this program within their work unit.
    3. Ensure adequate funding is available to support the Penn State Confined Spaces Program.

## **Supervisors**

* + 1. Supervisors are predominantly responsible to ensure employees are properly trained and have the necessary procedures and equipment to safely enter and work in the confined spaces. Key responsibilities include:
       1. Be thoroughly informed of the contents of this program and how it applies to their areas of responsibility and authority.
       2. Ensure that confined space hazards are properly controlled through the required confined space permit, and all other necessary engineering and workplace controls, and required personal protective equipment.
       3. Evaluate, approve, and document necessary procedures for safe confined space entry or rescue.
       4. Ensure employees comply with this CSP program and take prompt corrective action when unsafe conditions or practices are observed.
       5. Investigate injuries and incidents within their work unit related to confined space entries
       6. Participate in annual review and revision of the CSP, including needed confined space classification or re-classifications, as part of this CSP program.

## **Employees**

* + 1. Authorized Entrants (as defined in Section 2.0) are responsible for complying with the provisions outlined within this written CSP, including:

4.3.1.1 Knowledge of confined space locations and potential hazards, pertinent to their job responsibilities.

4.3.1.2 Understand what constitutes a hazardous condition or atmosphere in a confined space; how to identify when a hazardous condition is present; and emergency procedures.

4.3.1.3 Properly complete, post, and file a confined space permit prior to, during and following entry into permit-required confined spaces.

4.3.1.4 Maintain communication with the Attendant to ensure information is accurately and frequently provided.

4.3.1.5 Comply with this program and use procedures, controls and personal protective equipment as required.

4.3.1.6 Attend all training required by this program.

4.3.1.7 Promptly report any concerns related to the CSP to their immediate supervisor.

* + 1. Authorized Attendants/Entry Supervisors (as defined in Section 2.0) are responsible for complying with the provisions outlined within this written CSP, including:
       1. Complete required confined space training.
       2. Knowledge of confined space locations and potential hazards, pertinent to their job responsibilities.
       3. Understand what constitutes a hazardous condition or atmosphere in a confined space; how to identify a hazardous condition; and emergency procedures.
       4. Knowledge of the signs and symptoms of exposure to hazardous materials.
       5. Maintain accurate count of authorized entrants.
       6. Communicate with authorized entrants to ensure safety and monitor status.
       7. Ensure efficient exit from the confined space by all entrants in the event of an unsafe condition or once work is complete.
       8. Ensures prompt rescue of authorized entrant in the event of an emergency or unsafe condition where the entrant is unable to perform self-rescue.
       9. Ensure unauthorized personnel do not enter the confined space during work.

## **Departmental Safety Officers**

* + 1. Determine the applicability of the Confined Space (CS) program to activities conducted within their work unit.
    2. Coordinate implementation of the CS program within their work unit.
    3. Ensure all necessary hazard assessments are performed and documented for confined space work areas and / or job tasks.
    4. Ensure that all affected employees within their work unit have been trained in accordance with requirements of this CS program.
    5. Ensure CS program records, permits, other documentation, and training are maintained by the work unit.
    6. Assist in the investigation of confined space injuries and incidents within their work unit

## **Environmental Health and Safety**

* + 1. Assist work units in implementing the provisions of this CSP program.
    2. Periodically review and update this program as needed.
    3. Set minimum standards for the CSP, when applicable.
    4. Provide training to supervisors and to those performing CSP training or other CSP evaluation activities.
    5. Develop materials to support supervisors in training employees.
    6. Perform audits or inspections of CSP activities, as may be requested or necessary for CSP compliance.
    7. Perform or provide guidance on CSP incident investigations in event of necessary CSP rescue.

## **Primary Project Contact (Office of Physical Plant, Commonwealth Services, or Maintenance Supervisor)**

* + 1. The Primary Project Contact may be a Penn State Office of Physical Plant, Commonwealth Services, or Campus Maintenance employee, and shall serve to:
       1. Where applicable, coordinate the exchange of hazard and control information among contractors performing work within Penn State confined spaces at the work unit, for the protection of all parties entering the permit-required confined spaces.
       2. Ensure Penn State employees working in close proximity to, or associated with contractor confined space work, are informed of the contractor work activities and hazards.
       3. Apprise the applicable contractor(s) of any specific recognized hazards associated with the confined space(s) where the contractor will perform work.
       4. This notification does not absolve the contractor from performing their own hazard assessment, particularly with respect to the performance of their work within the identified confined space.
       5. Verify that the contractor(s) have prepared to comply with other OSHA-required programs, as applicable. Some applicable OSHA standards may include: *The Control of Hazardous Energy, Respiratory Protection, Hazard Communication, Asbestos, Electrical Arc-Flash Safety*, and other recognized hazard control programs.

# CONTRACTORS

**5.1 Contractor’s Written Confined Space Program**

Contractors entering confined spaces must enter to perform work in accordance with their own confined space program, and in accordance with all applicable OSHA regulations. Contractor may typically be requested to provide a copy of their OSHA Confined Space program for Penn State project files.

* + 1. Contractor’s written confined space program must minimally meet the requirements of the OSHA permit-required confined space standard (29 CFR 1910.146) and other applicable OSHA regulations, as pertinent to their confined space work.
    2. Contractor’s employees must have been trained to safely enter permit-required confined spaces in accordance with OSHA's Permit-Required Confined Space standard (29 CFR 1910.146)

**5.2 Contractor’s Equipment & Materials**

5.2.1 Contractors are responsible to supply all equipment necessary to perform safe entry into a confined space, and safe emergency rescue. Penn State does not supply equipment or materials to contractors for their work in Penn State confined spaces.

**5.3 Contractor’s Permit-Required Confined Space Entry**

5.3.1 Where Contractors are expected to enter Penn State confined spaces, the contractor must determine whether their work will be permit-required in accordance with OSHA's permit-required confined space (PRCS) standard (29 CFR 1910.146).

5.3.2 When contractors enter a permit-required confined space on Penn State property they must post the permit during entry, and close the permit upon work completion.

**5.4 Contractor Notification, Preparedness & Information Exchange**

5.4.1 Prior to beginning confined space work, the Primary Project Contact (i.e. Office of Physical Plant Project Manager/Coordinator or applicable Commonwealth or Campus liaison) shall perform the following with respect to contractor work in confined spaces:

5.4.1.1 Coordinate hazard communication information exchange, as necessary between Penn State and the Contractor.

5.4.1.2 Verify that the contractor(s) have prepared to comply with other OSHA-required programs, as applicable. Some applicable OSHA standards may include: *The Control of Hazardous Energy, Respiratory Protection, Hazard Communication*, *Asbestos,* *Electrical Arc-Flash Safety*, and other recognized hazard control programs.

5.4.2 The contractor's entry supervisor must ensure the following:

5.4.2.1 Contractor’s employees are aware of the location and potential hazards of relevant confined spaces.

5.4.2.2 Emergency planning and rescue provisions have been established for the contractor’s local work in the Penn State confined space(s).

Refer to Appendix E – Confined Space Contractor Requirements for further details.

# CONFINED SPACE ENTRY PROCEDURES

* 1. **Evaluation and Classification of Confined Spaces**
     1. Identification of Confined Spaces

Environmental Health & Safety (EHS) shall assist and support determination of confined spaces. The location Safety Officer or Confined Space Coordinator shall be responsible for identification and the *posting* of signs or labels for Penn State University Park and Commonwealth/ Campus confined spaces.

6.1.1.1 **Signs or Labels** – Penn State Permit-Required Confined Spaces or Non-Permit Confined Spaces shall be labeled with signs as follows: “*Danger – Confined Space: Authorized Personnel Entry Only*.”

6.1.1.2 **Non-Standard Signs or Labels** – Where standard signs or labels cannot be used due to the configuration or conditions of the space, other suitable materials or means shall be used to convey the above information.

* + 1. Inspection of Confined Spaces

Confined spaces shall be inspected on a regular basis to ensure signs are maintained to prevent unauthorized access. Routine inspections shall be the responsibility of the Maintenance Supervisor or Campus Confined Space Coordinator, or as designated in the *Penn State Confined Space Site-Specific Program*. Refer to Appendix F.

6.1.2.1 If problems are discovered during an inspection, notification should be made first to the University Park Department Safety Officer or the Campus Maintenance Supervisor/ CS Coordinator, and/or then to Environmental Health & Safety (EHS) for resolution.

* + 1. Preliminary Evaluation of Confined Spaces

Penn State confined spaces are typically designated as “p*ermit-required confined spaces*.” The following key forms are used to record the evaluation of Penn State confined spaces:

* + - 1. **Penn State Confined Space Classification Form** (Appendix B) – Used for classification (non-permit vs. permit-required), planning, preparation, and completion of work in new or changing confined spaces, forms shall be submitted to the Maintenance Supervisor or Commonwealth/ Campus Confined Space Program Coordinator for approval. The Confined Space Program Coordinator may seek support from EHS to assist in confined space classification.
      2. **Penn State Confined Space Permit** (Appendix C) – Used to complete all necessary documentation required by Penn State, and by OSHA for a *permit-required confined space*.
    1. Qualifications of Personnel Evaluating Confined Spaces

Penn State confined space evaluations may only be performed by qualified EHS personnel or safety officers, or Authorized Entry Supervisors, Maintenance Supervisor, or Campus Confined Space Coordinators that have been trained through Penn State’s training program, as part of the Penn State Confined Spaces Program. All confined space evaluations are subject to review by EHS.

* 1. **Permit-Required Confined Space Procedure**

**6.2.1 Preliminary Hazard Assessment and PRCS Pre-Entry Planning**

6.2.1.1 As a function of assessing the need for PRCS entry, the work unit, in coordination with the unit Safety Officer(s) (SOs), and EHS shall perform a preliminary (pre-planning) hazard assessment (PHA) associated with any work to be performed within or associated with a confined space. The purpose of the PHA is to determine whether a PRCS entry may be necessary, or whether all appropriate hazards may be consistently eliminated, and work safely performed by means of a written standard operating procedure (SOP). Such an SOP shall be specific to the detailed work to be performed. Certain air monitoring or other assessment steps may be required in support of the SOP. The SOP must be limited to the defined conditions and type of work, and be affirmed in writing by the SO and work unit user group.

If due to variable or uncontrolled conditions a continuing risk of life-threatening or uncontrolled hazards remains, the work unit, and work unit SO or designated confined space coordinator, in consultation with EHS representative(s), shall treat the entry and work as a potential PRCS entry. The PRCS entry shall be assessed with all appropriate controls and rescue provisions made for safe entry.

Refer to subsequent sections 6.2.1.2, and 6.5.

6.2.1.2 **Pre-Entry Requirements**

Prior to any entry into a *permit-required confined space*, the Authorized Supervisor(s), Entrant(s) and Attendant(s) must ensure the following parameters are met to allow for confined space entry, and completion of work:

* Eliminate confined space hazards,
* Complete a Penn State Confined Space Permit (CSP),
* Assign Attendant to monitor entry from entrance point,
* Establish barriers to prevent entry by unauthorized personnel,
* Monitor for hazardous atmospheres, initially or continuously depending on atmospheric conditions of entry,
* Lines, equipment and sources of hazardous energy shall be locked out and tagged out,
* Implement necessary measures to eliminate or control atmospheric and safety hazards,
* Select the appropriate personal protective equipment,
* Establish appropriate means of communication,
* Implement other needed safety & health permits,
* Plan for evacuation and pertinent C/S rescue,
* Close-out and cancel the CSP.

**6.2.2 Confined Space Entry Permit & Requirements**

Following determination that a confined space will be a *permit-required confined space*, the Authorized Supervisor shall complete the Confined Space Entry Permit (CSP) (Appendix C). The Penn State CSP is prepared for the following purposes:

* Prompts the Authorized Supervisor to take the necessary planning steps to prepare the confined space for entry,
* Facilitate and document tracking of the conditions prior to, during, and following the entry,
* Facilitate proper and timely closure of the confined space permit, as required by OSHA,
* Serve as an instructional guide to the Entry Supervisor, Attendants, and Entrants,
* Serve as a “warning or cautionary notice” to nearby workers,
* Provides critical information to emergency responders, in event of a confined space emergency.

6.2.2.1 Confined Space Permit Duties

Entry Supervisor

The Entry Supervisor will assess and record all information onto the CSP, and sign the CSP.

* The steps further described in this section will assist in completing the hazard information required.
* Entry Supervisor will review the completed Permit with all Authorized Entrants and Attendants.
* The Permit will be posted at the work site or otherwise be readily accessible to Authorized Entrants and emergency personnel.
* Entry Supervisor will close out the permit at the completion of the work and sign the permit. The Permit will be forwarded to the Maintenance Supervisor or Departmental or Campus Confined Space Program Coordinator for maintenance and review. The EHS Office may request canceled permits for subsequent program review.
* All canceled permits must be kept on record for a period of one year. Any problems encountered during an entry operation shall be noted on the Permit so that EHS can investigate and make any appropriate revisions to the Penn State Confined Space Program.

Attendant Duties

During entry, each permit-required confined space (PRCS) must be assigned an attendant to remain outside the confined space, be in constant communication with the entrants, and be capable of summoning emergency rescue personnel in the event of an accident or hazardous exposure within the confined space.

Attendants may be authorized to attend nearby confined spaces at one time provided they can adequately respond to issues in any single confined space without disrupting service and protection to personnel in adjacent confined spaces.

Entrant Duties

Entrants must remain in communication with the Attendant assigned to their PRCS continuously. Communication must be visual or by voice/ radio communication. Entrants must be responsive to all instructions by the assigned Attendant(s), such as any changing conditions that may put their lives at risk during the confined space entry. Entrants must conduct continuous monitoring where communication with the Attendant is required by work away from the Attendant area, or where initial monitoring results were found out-of-range, or where oxygen-consuming equipment are used during the PRCS entry.

* + - 1. Equipment & Material Requirements

Equipment must be provided and available for use during confined space entry. Equipment / Materials may minimally include:

* Penn State Confined Space Permit forms,
* Other Penn State work permit forms (where required),
* Air monitoring devices,
* Personal Protective Equipment (PPE) including full body harness, hard hat, hand/eye protection and any other required protective gear,
* Rescue equipment (tripods, etc),
* Communication devices (radios, cell phones, etc),
* Ventilation devices,
* Lighting equipment,
* Barriers to prevent unauthorized access and,
* Tools or equipment necessary to complete the required task(s). In addition to work tools, these items may include: ventilation air horns, confined space monitoring equipment, permits, personal protective equipment,
  + - 1. Isolation Requirements

Isolation is the process by which a confined space is removed from service and completely protected against the release of energy and material into the space. Isolation is achieved by such means as:

* misaligning or removing sections of lines, pipes, or ducts;
* lockout or tag-out of all sources of energy;
* blocking, blanking, bleeding or disconnecting all mechanical linkages.

These requirements will ensure the accidental release of energy or hazardous materials will not occur while Entrants are in the confined space.

It may not be feasible to isolate certain confined spaces (i.e. sewer system). In this situation, air monitoring shall be continuous, and PPE/ other control requirements must be strictly adhered to.

* + - 1. Eliminate Atmospheric Hazards

Atmospheric hazards must be controlled or removed from the confined space via purging, inerting, flushing, or continuous ventilating of the confined space.

NOTE: Under certain conditions, entry into dangerous atmospheres (IDLH, or potential IDLH) may be required. Only those specially trained in the use of self-contained breathing apparatus (SCBA) will be allowed to enter these confined spaces.

* + - 1. Block or barricade pedestrian and vehicular access

Ensure pedestrian and vehicle access to confined space entry points is blocked during all confined space entry activities, and that the entry is secured against entry by unauthorized persons. In addition to personnel/attendant monitoring, this may be accomplished by barricades, signage, tape, etc.

* + - 1. Complete air monitoring and permit documentation

Ensure the completion of air monitoring and written permit for entry are complete as outlined in this section, and that the permit is posted immediately outside the permit-required confined space. The general sequence for completing air monitoring shall accommodate the following:

1. Employees that conduct monitoring shall have received training in confined space monitoring.
2. Equipment shall have been calibrated and bump tested per manufacturer instructions, or monthly, and tagged/labeled with updated calibration requirements. A calibration log shall be maintained for each instrument, as assigned by the Confined Space Coordinator or Maintenance Supervisor. This may also be an electronic log, which can be printed for written documentation.
3. Monitor for oxygen level, combustible gas (LEL), pertinent toxic gases & vapors, depending on confined space setting (such as CO, CO2, NO2, NH3, and/or H2S) with documentation written on or attached to permit (if electronic print out).
4. Frequency – Test permit-required confined space air initially, and continuously while work is conducted in the space. Where work is conducted away from the Attendant, personnel in confined space shall monitor continuously with data logging capability. Perform continuous monitoring where oxygen-consuming equipment is used in the space. Any initial measurements resulting in out-of-range readings, shall require ventilation and continuous monitoring once space is cleared for entry.
5. Attendant (or Entrant(s)) shall record monitoring data during testing, or monitoring data shall be recorded by real-time data logging instrument, where required, and later assure that data is identified and affixed to the permit..
6. Communication – Attendants and entrants must maintain visible or communication contact (radio) during confined space work.
   * + 1. Confined Space Entry

Once air monitoring has deemed the confined space safe for entry and the permit is complete and posted outside the confined space, the Authorized Entrants are permitted to enter the confined space to perform duties. Entry into a permit-required confined space is prohibited until the appropriate tests and clearances have been completed. While working in a permit-required confined space, periodic measurements shall be collected, either manually or electronically. Such continuous measurements will be recorded or printed and attached to the closed Confined Space Permit.

* + - 1. Changes in Atmospheric Conditions

If at any time, atmospheric conditions change while work is being conducted in a permit-required confined space, such that an increased hazard is suspected by entrants or the attendant, personnel shall discontinue work and exit the PRCS until the source of increased hazard is identified and corrected.

* + - 1. Confined Space Permit Closure

Once work if complete within the confined space, all authorized entrants must safely exit the space and the permit cancelled and signed by the entry supervisor.

**6.3 Non-Permit Confined Space Procedure**

Where confined space work conditions are believed to be non-permit entry by the work unit, a request may be made to the University Park Department Safety Officer, Maintenance Supervisor, or the Campus Confined Space Coordinator to review the entry request. Upon review, the above authorized parties shall complete a Penn State Confined Space Classification Form, and shall be signed by at least two responsible parties.

A responsible party may seek support in the determination by EHS.

Once completed and signed by each applicable party, the Authorized Supervisor may initiate the work without a Confined Space Permit. All work must be completed according to the specified limitations within the Confined Space Classification Form. All other job requirements, permits, and associated PPE and controls will be required. Refer to Section 4.1.3 – Preliminary Evaluation of Confined Spaces.

**6.4 Other Required Safety & Health Permits**

As required, all other Penn State work permits must be completed. These may include: Hot Work Permits, and other required Penn State work permits.

**6.5 Reclassification of Confined Spaces**

As noted above at section 6.3, changes made to *non-permit confined spaces* which introduce new hazards to entrants, must be re-evaluated and potentially reclassified to *permit-required confined spaces* unless the Confined Space Classification finds no unusual hazardous conditions, nor necessary re-classification.

A *permit-required confined space* may be reclassified to a *non-permit confined space* in cases where no actual or potential atmospheric hazards will be introduced to the confined space, and if all hazards are eliminated without entry into the space as determined and documented through appropriate air monitoring and evaluation.

Completion of the Confined Space Classification Form must be completed by the University Park Department Safety Officer, the Departmental or Campus/ Commonwealth Maintenance Supervisor or Confined Space Coordinator, prior to reclassification of any confined space. Two signatures shall be required. Entry shall be limited to the specified limitations listed on the signed Confined Space Classification Form.

# 7.0 CONFINED SPACE EMERGENCY PROCEDURES

**7.1 Standardized Confined Space Rescue Planning**

Each location/work unit, shall make provision for confined space emergencies, including necessary training, planning, procedures, equipment, coordination, and communications, and shall be responsible for the safe rescue of their personnel working in permit-required confined spaces, according to the following requirements:

7.1.1 **Volunteer Confined Space Rescue/ Response Personnel**

Volunteers may be sought from among confined space-trained personnel within each applicable department to participate/ serve on the work unit's confined space rescue team. Such volunteers must be willing to respond during an emergency and be capable to respond.

Work unit personnel, including authorized entrants, attendants, and supervisors are strongly encouraged to participate as volunteer confined space rescuers. These personnel are most familiar with the routine and special operations required within the specific work unit’s PRCS, and can be immediately or promptly responsive to confined space emergencies, as these occur.

Other personnel are encouraged to participate based on timely availability, in a manner to support necessary rescue. Off-site responders are encouraged to participate in Penn State training exercises and drills to increase the overall effectiveness of University Park confined space emergencies.

7.1.2 **Response Personnel Medical Clearance**

Confined Space Rescue personnel may be required to complete a medical fitness exam verifying their fitness to respond during confined space rescue scenarios.

7.1.3 **Rescue/ Response Personnel Training**

Personnel shall be properly trained and outfitted in accordance with OSHA's confined space rescue requirements. Rescue training may be coordinated with other work units, and with members of the Centre Country Alpha Fire Company, or pertinent Commonwealth Campus Area Fire Company during annual or periodic training activities. Initial training is anticipated to require 16 hours, followed by one or more ½ day drills conducted annually. Refresher training is anticipated to require up to 8 hours.

7.1.4 **Coordinated Confined Space Rescue Plan**

Each Penn State work unit and Campus shall prepare a coordinated confined space emergency rescue plan, which shall address the following aspects:

1) Coordinated response call-out/ notification procedure including all pertinent University Park or Campus work unit personnel, off-site support work units, on-site and off-site emergency response organizations (i.e. Penn State Hazmat Team volunteers, Alpha Fire Company or other local Fire Company volunteers, other contracted organizations, their respective roles, and contact information,

2) Roles and lines of authority during confined space rescue,

3) Active response personnel listing,

4) Active equipment inventory, pertinent storage location, and periodic inspection verification,

5) Response procedures to discuss different means of egress to different types of PRCS entered, and for dealing with both conscious and unconscious victims,

6) Detailed training plan, frequency and training content, which shall engage all pertinent parties in periodic refresher and update drills,

7) Means for verifying and maintaining training records for all work unit response personnel,

8) Annual Confined Space Rescue Plan review process, and signature forms to verify the CSRP is currently active.

9) Each work unit shall be prepared to inform each rescue team of hazardous conditions present at rescue site,

10) Must ensure coordination and proper information is conveyed to rescuers/ servicers arriving on-site to perform confined space rescue,

7.1.5 **Coordinated Confined Space Rescue Preparedness & Response**

7.1.5.1 An authorized supervisor, entrant, attendant, serving also as a confined space rescuer, or other designated confined space rescuer must anticipate the prospective emergencies that may occur in the PRCS, and be prepared to respond to these emergencies.

The applicable work unit must therefore:

* Inform confined space rescuers/ emergency service providers of hazards they may confront supporting effective rescue preparedness,
* Provide access to all permit spaces where rescue may be required so that rescuers/ service providers can develop necessary rescue plans AND practice rescue operations,

7.1.5.2 Rescuer Capabilities

Any authorized confined space rescuer going to the aid of an employee who is in a confined space must be capable of, and determine the extent of assistance required by the victim.

7.1.5.3 Rescuer Limitations & 911

When rescue is beyond the capability of employees, assistance should be obtained by dialing 911 or other appropriate emergency contact number(s) to request emergency rescue assistance. EHS must also be notified as soon as possible.

Where telephone service is not readily available, the Penn State Work Control Center (Service Desk) shall be contacted to request assistance in contacting 911 and Police Services.

7.1.5.4 Non-Entry Confined Space Rescue

As applicable, non-entry rescue shall be prepared, planned, and performed to every extent feasible. To facilitate entry-free operations, retrieval systems shall be used whenever an authorized entrant enters a permit required confined space.

For PRCS work, each authorized entrant must wear a full body harness during entry operations with a retrieval line attached. The other end of the retrieval line must be attached to a mechanical device (hoist) or fixed point outside the confined space, which shall serve to structurally support personnel during necessary rescue operations, and to ensure that prompt rescue can be performed.

* + 1. **Confined Space Rescue/ Servicer Requirements**

7.1.6.1 Rescuers/ Services shall be appropriately trained and deemed by Penn State to possess the ability to respond to a rescue summons in a timely manner, and to address the hazardous conditions.

* + - 1. Rescuer/ Services shall be capable to provide response time pertinent to the specific hazards, i.e. IDLH atmospheres require immediate rescue assistance by standby person(s) qualified to wear SCBA respirators.
      2. Rescue teams or services must be capable to reach victims in a timely manner appropriate to space hazards,
      3. Proficient and equipped to perform needed rescue services

**7.1.7 Confined Space Emergency Communications**

7.1.7.1 As part of confined space rescue planning, communications planning with emergency responders and emergency services shall be conducted to support each University Park and Commonwealth Campus work unit, and shall include the process by which personnel and organizations shall be contacted and engaged during an emergency.

# 8.0 CONFINED SPACE TRAINING

**8.1 Initial Confined Space Training Requirements**

8.1.1 Confined Space or Permit-Required Confined Space Entry

No employee shall enter or attend permit-required confined spaces unless they have been fully trained in confined space entry and in this Penn State Confined Space Program. Each affected employee must be trained according to these limitations:

8.1.1.1 Before first assignment of duties, or with a change in duties that requires work within or associated with confined spaces,

8.1.1.2 Prior to work within or associated with confined spaces, where new hazards are introduced,

8.1.1.3 Whenever there is indication to Penn State Maintenance Supervisors, Campus/Commonwealth Confined Space Coordinators, EHS, or other authorized parties, that deviations from permit-required entry procedures have occurred, or inadequacies in employee knowledge in procedures are evident.

8.1.2 Confined Space Awareness Level Training

Employees whose duties may place them in close proximity to confined spaces, or who may need to be informed of basic OSHA confined space requirements for the protection of Penn State students or employees, should receive Penn State confined space awareness level training, as approved or developed by Penn State EHS.

8.1.3 Training Coordination

EHS will coordinate and/or conduct initial training on confined space entry, and associated equipment. The location/ work unit shall arrange for all other training.

8.1.4 Initial Training Content

Training shall address the specific duties of authorized entrants, attendants, and supervisors, and be pertinent to the specific work unit’s confined spaces and work activities. Essential content shall be pertinent to the requirements of each discipline.

Entrants/ Attendants

* + - * Knows hazards associated with specific entry and mode, signs or symptoms of exposure
      * Proper use of confined space equipment (testing/monitoring, ventilating, communications, personal protective equipment (PPE), lighting, barriers and shields, ladders, any other equipment needed for safe entry
      * Communication procedures between entrants and attendants
      * Alerting attendants of needed evacuation from a confined space due to: any signs or symptoms by entrants during entries, prohibited conditions, during evacuation alarms.
      * Possible behavioral effects of hazardous exposure by entrants,
      * Maintaining an accurate count of authorized entrants,
      * Remains at entry to confined space until relieved by an authorized attendant,

NOTE: Authorized attendants may perform rescue if conducted according to Penn State rescue procedures, and are relieved by an authorized attendant.

* + - * Continuously monitors conditions inside and outside space to determine safety for entrants to remain in confined space
      * Attendants may order a confined space evacuation due to: detecting a prohibited condition, behavior effects of hazardous exposure by entrants, outside conditions that may endanger entrants, or if attendant cannot effectively and safely monitor attendant duties,
      * Summoning rescue and other emergency services at moment entrants may need assistance to escape,
      * Warning unauthorized persons to stay away from the permit space,
      * Advising unauthorized entrants to leave space,
      * Informing entrants and supervisors when unauthorized entry has occurred,
      * Performs non-entry rescues, where specified
      * Refrains from performing duties that may disrupt attendant duties when assigned as the authorized attendant.

Supervisors

* + - * Knows hazards associated with specific entry and mode, signs or symptoms of exposure,
      * Verifies that all entries have been performed according to confined space permit requirements including all testing, procedures, equipment are in place, and endorsing permit.
      * Terminates entry and cancels permit,
      * Verifies rescue services are available and means for summoning are operable,
      * Removes unauthorized individuals who enter or attempt entry from a PRCS
      * Determines necessary transfer of responsibility during entry operations and that safe entry operations are maintained.

Rescue Personnel or Services

* + - * Refer to Section 7.0 for details of Penn State confined space rescue and emergency service provider requirements.
      * Rescue personnel training must include basic first aid and cardiopulmonary resuscitation (CPR).
      * Annual refresher training shall include training operations consisting of review of rescue and emergency procedures, and physical removal of dummy, manikin, or actual person from a confined space or representative confined space.

8.1.4 Training Certification

Authorized entrants, attendants and supervisors must be certified as having knowledge and understanding, pertinent to perform their respective confined space duties. EHS and/or the training authority shall certify each individually accordingly.

8.1.5 Training Frequency and Time Requirements

8.1.5.1 Initial standard confined space training shall be adequate to cover necessary requirements for entrants, attendants, and site entry supervisors.

8.1.5.2 Initial rescue training shall be anticipated to include an additional 8 hours (1 day) for rescue personnel, with subsequent periodic drills and exercises to retain readiness.

**8.2 Periodic Refresher Training**

8.2.1 As pertinent to entrants, attendants, supervisors, rescuers, and rescue/ emergency service providers, refresher training, when determined necessary per section 8.1.1 shall take place and be documented.

8.2.1.1 Training content shall be adequate to maintain proficiency and readiness for confined space duties, and rescue operations.

8.2.2 Re-Training shall take place whenever:

* Changes arise in existing confined spaces,
* Newly established or introduced confined spaces,
* Employees fail to follow procedures outlined in this program,
* An accident or injury occurs resulting from confined space entry.

# 9.0 CONFINED SPACE RECORDKEEPING & DOCUMENTATION

**9.1 Confined Space Permits**

9.1.1 Confined space permits shall be retained for a period no less than 1 year by the issuing work unit or campus.

9.1.2 Each Confined Space Coordinator shall periodically review confined space permits to determine any necessary changes or modifications in confined space procedures.

9.1.3 Confined space permits shall be reviewed by the Confined Space Coordinator in event of unforeseen emergency or incident involving a confined space, to ensure all procedures were properly followed, and to collect any additional information pertinent to the incident report.

**9.2 Training Records**

9.2.1 All Training Records, including course rosters, and trainee certificates shall be retained by the University Park work unit or Campus, according to current established training records retention policy or procedures.

9.2.2 Electronic files of training records shall be transferred to Penn State EHS annually, for inclusion in the EHS training records retention system.

**9.3 Medical & Respirator Fitness Exam Records**

9.3.1 Medical and respiratory fitness exam records shall be retained by the University Park work unit or Campus, according to current medical exam records retention policy or procedures.

**10.0 CONFINED SPACE PROGRAM REVIEW, EVALUATION, REVISION**

**10.1 Work Unit/ Commonwealth Campus CSP Review & Revision**

10.1.1 Each UP work unit/ commonwealth campus shall conduct a periodic review of the site-specific confined space program. This review shall be conducted at the request of the Confined Space Coordinator and seek to verify that each element of the confined space program is being adhered to. This review shall evaluate current site-specific aspects, and determine necessary revisions to ensure the CSP remains active and up-to-date.

10.1.2 This review shall be scheduled and be performed periodically.

10.1.3 A brief report shall be provided with any current recommendations to the Work Unit Safety Officer, Maintenance Supervisor and/or Campus Business Director for further action. EHS may be consulted as required.

10.1.4 EHS may periodically inspect or audit the site-specific reviews to ensure the review process is active, and provide any local recommendations for improvement.

**10.2 Work Unit Confined Space Review Process**

10.2.1 Each work unit will periodically review each element of the local confined space program. These include: permits, training, equipment maintenance including confined space monitor calibration and maintenance, and emergency preparedness.

10.2.2 Confined Space emergencies shall be reviewed for effectiveness of response. Any such emergencies shall be reviewed as required by Penn State incident response requirements, and necessary revisions incorporated into the site-specific procedures, or preparedness aspects.

10.2.3 Each unit should develop a standard plan for assuring that periodic review is performed.

**10.3 Penn State Confined Space Program Review & Revision**

10.3.1 The EHS department will periodically review the overall written program, as well as work unit/ campus inputs, and as necessary, update the Penn State Confined Space Program.

10.3.2 The EHS department may periodically inspect the site-specific confined space programs, to ensure that overall worker safety and OSHA compliance are included.

**11.0 REFERENCE SECTION**

## The following references may be consulted as pertinent to the Penn State Confined Space Program:

|  |  |
| --- | --- |
| **Reference Documents** | **Link** |
| OSHA Permit-Required Confined Space Standard | https://www.osha.gov/pls/oshaweb/owadisp.show\_document?p\_table=STANDARDS&p\_id=9797 |
| OSHA Permit-Required Confined Space Compliance Guide | https://www.osha.gov/Publications/osha3138.html |
| OSHA Safety & Health Topics – Confined Spaces information webpage | https://www.osha.gov/SLTC/confinedspaces/index.html |

**APPENDIX A – PENN STATE CONFINED SPACE INVENTORIES**

The applicable confined space inventory shall be maintained at each applicable Penn State organization, by that organization’s Confined Space Coordinator.

**APPENDIX B – PENN STATE CONFINED SPACE CLASSIFICATION FORM**

**CONFINED SPACE CLASSIFICATION FORM**

****

**6 Eisenhower Parking Deck**

**The Pennsylvania State University**

**University Park, PA 16802**

**(814) 865-6391 / FAX (814) 863-7427**

<http://www.ehs.psu.edu>

**REVIEW THE FOLLOWING TO DETERMINE THE CLASSIFICATION OF A CONFINED SPACE.**

**FUNDAMENTAL CLASSIFICATION – ALL ANSWERS IN SECTION MUST BE AFFIRMATIVE TO CLASSIFY SPACE AS A CONFINED SPACE.**

**❑Yes ❑ No 1.** Is the space large enough and shaped so an employee can enter and work?

**❑Yes ❑ No 2.** Does the space have a limited or restricted means of entry or exit?

**❑Yes ❑ No 3.** Is the space **NOT** designed for continuous human/ worker occupancy?

**PERMIT-REQUIRED CONFINED SPACE CLASSIFICATION – ANY ONE AFFIRMATIVE ANSWER CONFIRMS THE SPACE IS PERMIT-REQUIRED.**

**❑Yes 1.** Does the space contain, or have the potential to contain, a hazardous atmosphere, i.e., oxygen deficiency, flammable vapors, toxic gases or dusts, etc., or pipes, ducts, vents or other entry points for potentially hazardous substances, or will volatile chemicals be used, or will painting or other work that could create a breathing hazard be performed? *Specify potential or known hazards*:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑Yes 2.** Does space contain a material with potential to engulf a worker, e.g., grain, sand or water? Specify potential or known hazards: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑Yes 3.** Does space have an internal shape such that a worker could be trapped or suffocated by inwardly converging walls, floor or ceiling?

Specify potential or known hazards: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑Yes** **4.** Does space contain other recognized safety or health hazards, such as: mechanical hazards; exposed or vulnerable electrical wires

or energized equipment; gas or chemical lines; special hazards related to elevation or falling; or temperature extremes/ heat stress. Specify potential or known hazards: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑Yes 5.** Will welding, cutting, torch work, or other hot work be performed?

Specify potential or known hazards: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**IF ALL ANSWERS IN THIS SECTION ARE “NO”, THE SPACE IS A NON-PERMIT CONFINED SPACE. IF (5) ONLY IS YES, THE SPACE IS PERMIT-REQUIRED AND WILL ALSO REQUIRE AN ADDITIONAL “HOT WORK PERMIT.”**

**REVIEW THE FOLLOWING SECTION TO FURTHER CHARACTERIZE THE TYPE OF NON-PERMIT CONFINED SPACE. Non-Permit Confined Spaces are approved for non-permit entry given the following restricted conditions. All other Penn State Safety Permits, Requirements and OSHA requirements shall apply. Responsible Supervisors must verify that no other hazardous operations or sources interfere with the intended non-permit confined space entry (adjacent gas, power, fuel, or electromechanical sources or hazards). Contact your Supervisor for assistance.**

**CONTACT YOUR CONFINED SPACE COORDINATOR AND CONSULT EHS PRIOR TO RE-CLASSIFYING CONFINED SPACES.**

**CONFINED SPACE EVALUATION FORM PAGE 2 OF 2**

1. **Crawlspaces**

* No utility service (electrical, natural gas, oxygen-displacing gas (N2 or inert gas), or explosive fuel source may terminate within the crawlspace.
* No hot work may be performed in the space, without prior alternate entry evaluation.
* No vapor-causing or volatile compounds may used, without prior, alternate entry evaluation and Safety or EHS authorization. Non-volatile compounds (pipe dope compounds, caulk or paste lubricants, etc.) may be used, if no restricted hazard is introduced by their use.
* No reasonable probability of rupturing utility service within the crawlspace, or, opening of service lines in the crawlspace.
* Where feasible, crawl space must be cross-ventilated, or exhaust ventilated, where no ventilation is present.

1. **Pipe Chases**

* Ventilation must be provided, or designed into, and vented through the space during work.
* No utility service, and no explosive fuel source may terminate within the crawlspace; no hot work may be performed w/out prior alternate entry evaluation per item 1 Crawlspaces.
* No interconnection to other pipe chases, tunnels, or potential permit-required confined spaces, OR to spaces with uncontrolled atmospheres or hazardous atmospheres may be present.

1. **Ductwork/ Air Handlers (HVAC equipment)**

* HVAC Systems DO NOT include, nor pertain to, fume hood exhaust or other forms of exhaust systems/ ducts.
* Must be able to open and to permit air exchange through the equipment/duct.
* All other hazardous exposures/ electromechanical sources must be properly controlled (pulleys, drives, fans, etc.) and lock-out/tag-out (LOTO) must be properly enforced.

1. **Cooling Towers**

* Side panels must be removed to permit cross-ventilation and complete air exchange, prior to and during cooling tower rebuild or cleaning.
* No other maintenance activity permitted, which may involve top entry or potential exposure to moving parts or electro-mechanical hazards.
* All other hazardous exposures or electromechanical sources must be properly controlled and (LOTO) must be properly enforced.

1. **Equipment/Pool Service Pits and Sub-Basements**

**Non OPP/Tech Service Staffs Only:**

* Non-permit entry restricted to performing inspections, pool chemical additions, filter replacements, and similar non-hazardous tasks
* Simultaneous hazardous confined space entry work is prohibited during non-permit entry.
* No hot work may be performed in the space, without prior alternate entry evaluation.

**Office of Physical Plant Tech Services Staff:**

* All entry to this type space for work associated with electrical or mechanical service is determined by task, and may be permit-required.

1. **Elevator Service Pits**

* Elevators must be de-energized, blocked, and all safety controls in place. All energy sources must be disconnected, and/or locked out as required by LO/TO procedures.
* No atmospheric hazards, NOR other hazards, generators, or energy sources may be located within, or introduced into space during work.

**Confined Space Type**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Confined Space ID (where available)**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑ Single Entry Assessment (Dates: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)** **❑ Tentative Permanent Entry Assessment**

**Authorized Supervisor Name/ Signature**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Department/Region Confined Space Coordinator Name/ Signature** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**APPENDIX C – PENN STATE CONFINED SPACE PERMIT**

**CONFINED SPACE LOCATION/ SPECIFIC ID:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Entry Purpose: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Entry Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Authorized Permit Duration: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Authorized Entrants: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Authorized Attendants: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Entry Supervisor Authorization:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ / \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_/ \_\_\_\_\_\_\_\_\_\_\_ (Name) (Signature) (Date/ Time)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **RECORD HAZARDS of the permit space to be entered**  **Hazard Yes** **No** **N/A** | | | | **CHECK OR LIST BELOW THE MEASURES USED TO ISOLATE, ELIMINATE OR CONTROL THE SPECIFIC PERMIT SPACE HAZARDS** |
| A. Lack of Oxygen |  |  |  | * A. Purge-Flush and Vent |
| B. Oxygen Enrichment |  |  |  | * B. Ventilation |
| C. Combustible Gases/Vapors |  |  |  | * C. Lockout/Tag Out |
| D. Toxic Gases/Vapors |  |  |  | * D. Inerting |
| E. Chemical Contact |  |  |  | * E. Blanking, Blocking, Bleeding |
| F. Electrical Hazards |  |  |  | * F. External Barricades |
| G. Mechanical Hazards |  |  |  | * G. Regulatory Signs |
| H. Temperature |  |  |  | * H. Temperature Control (indicate): |
| I. Engulfment |  |  |  | * I. |
| J. Entrapment |  |  |  | * J. |
| K. Other (list): |  |  |  | * K. |
| **Labels/ Signs Intact?** |  |  |  | **Other Follow-up Action:** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Test(s) To Be Taken** | **Acceptable Entry Levels** | **Test 1|Time** | **Test 2| Time** | **Test 3| Time** | **Test 4| Time** | **Test 5| Time** |
| A. Percent of Oxygen (O2) | 19.5% to 23.5% |  |  |  |  |  |
| B. Combustibles | <10% LEL |  |  |  |  |  |
| C. H2S | < 10 ppm (OSHA PEL) |  |  |  |  |  |
| D. CO | < 35 ppm (OSHA PEL) |  |  |  |  |  |
| E. NO2 | < 5 ppm (OSHA Ceiling) |  |  |  |  |  |
| F. Other: | ( ) |  |  |  |  |  |
| G. Other: | ( ) |  |  |  |  |  |
| **NOTES: 1)** Attach Continuous Monitoring Data Record to Permit, as alternate to Test Readings. **2) Contact CS Coordinator to reclassify space where hazards are safely eliminated/ isolated without entry AND no atmospheric hazards are found, nor introduced.** | | | | | | |

|  |  |  |
| --- | --- | --- |
| **PERMIT DETAILS (per above MEASURES)** | | **List Type/ Manufacturer/ Model, and PSU Asset No., where available** |
| 1) | **Gas Testing/ Monitors:** |  |
| 2) | **Ventilation:** |  |
| 3) | **Communication Equipment:** |  |
| 4) | **Personal Protective Equipment** |  |
|  | ❑ Protective Clothing: | ❑ Glove(s): |
|  | ❑ Respirator(s): | ❑ Ear/ Hearing Protectors: |
|  | ❑Safety Harness/Life Lines: | |
|  | ❑ Face ❑Hard Hats ❑ Foot/Safety | |
| 5) | **Lighting:** | |
| 6) | **Barriers-Shields:** ❑Pedestrian ❑Vehicle: ❑ Other: | |
| 7) | **Safe Ingress/Egress:** ❑ Ladders ❑ Other: | |
| 8) | **Rescue and Emergency:** ❑Lifelines ❑ Hoists/Wince ❑ Tripod ❑ Resuscitators- Inhalators | |
| 9) | Other Safety Equipment (specify): | |
| **Emergency Contact Phone to Service Desk or 911:** | | |

**THIS CONFINED SPACE ENTRY PERMIT HAS BEEN CANCELLED BY:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_/ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Entry Supervisor Name/.Signature)

at \_\_\_\_\_\_AM | PM and on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Date). 8/2014 rev.

**APPENDIX D – CONFINED SPACE MONITOR – CALIBRATION LOG**

This information is a record of confined space monitor maintenance, and does NOT replace proper completion of the Confined Space Permit. Refer to the confined space permit(s) for a record of measurements taken during confined space entries.

|  |  |  |  |
| --- | --- | --- | --- |
| **Work Unit/ Campus ID:** |  | **Instr. Manufacturer:** |  |
| **Address:** |  | **Model:** |  |
| **Confined Space Coord:** | (Name) (Yr) | **S/N:** |  |
| **Safety Officer:** | (Name) (Yr) | **In-Service Date:** |  |
| **EHS Rep:** | (Name) | **Last Mfr. Calibration:** |  |
|  |  | **Calibration Doc’s?** | Y N |
| **Notes:** | Instrument calibration documents must be centrally maintained by Maintenance or CSC office. | | |

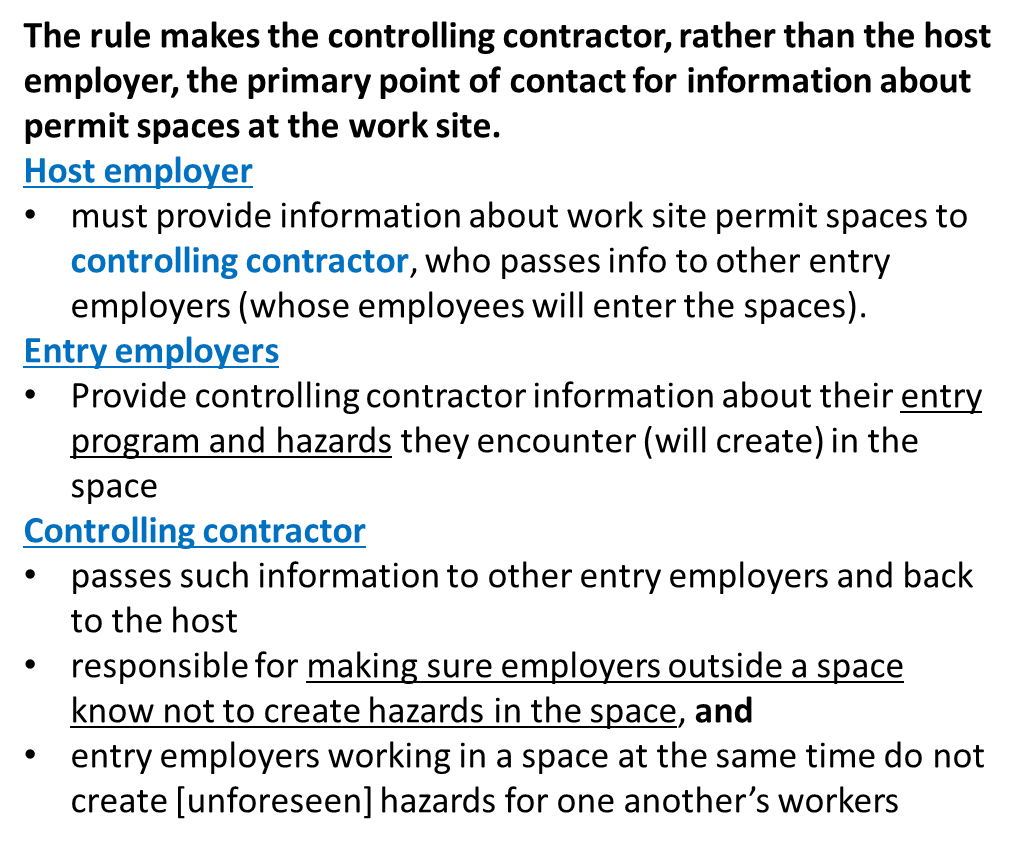
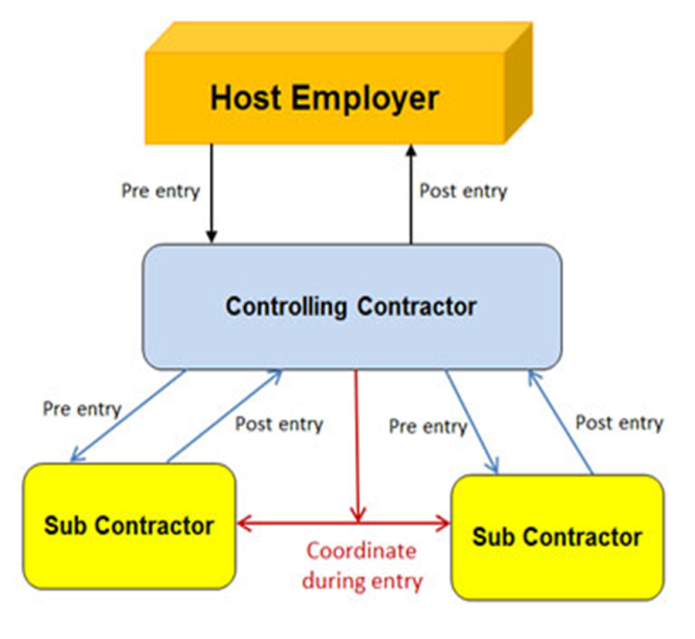
|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test Information** | | LEL Range | % O2 | CO | H2S | NH3 | NO2 | Other: | Other: |
|  | Calibration Gas Composition: |  |  |  |  |  |  |  |  |
|  | Actual Gas Concentration Measured: |  |  |  |  |  |  |  |  |
| **Calibration Gas Manufacturer:** | (specify) |  |  |  |  |  |  |  |  |
| **Bottle ID:** |  |  |  |  |  |  |  |  |  |
| **Instr. Cal. Date:** | (specify) |  |  |  |  |  |  |  |  |
| Last Instr. Cal. Date: |  |  |  |  |  |  |  |  |  |
| **Bump Test Date:** | (specify) |  |  |  |  |  |  |  |  |
| Last Bump Test Date: |  |  |  |  |  |  |  |  |  |

**Additional/ Other Test Notes:**

|  |
| --- |
|  |
|  |
|  |
|  |
|  |
|  |

**APPENDIX E – CONFINED SPACE CONTRACTOR REQUIREMENTS**

**OSHA has established the following specific requirements with respect to contractor work, as further summarized.**

****

Contact location Confined Space Coordinator or Penn State EHS (5-6391) for assistance.

**In Summary:**

**Host Employer (Penn State) provides information to Controlling Contractor:**

* Permit space locations
* Permit space hazards
* Permit space precautions

**Controlling Contractor (General) provides information to Entry Employers (Sub-Contractors), and others affected:**

* Information from Host Employer
* Any additional hazard information
* Permit space precautions

**Controlling Contractor also debriefs host and entry employers/ exchanges information**

**Entry Employer (Contractors) must:**

* Obtain information from Controlling Contractor
* Inform Controlling Contractor of permit program being followed, including information on created hazards

**APPENDIX F – PENN STATE CONFINED SPACE PROGRAM**

**SITE-SPECIFIC PROGRAM CHECKLIST**

**Program Location/ Unit:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Program Effective Date at This Location:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Location Safety Officer Name:**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Location Maintenance Supervisor/**

**Confined Space Coordinator Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑** **Location Confined Space Inventory** (Attach inventory, inventory date, and confined space ID’s for pertinent location confined spaces)

**❑ Confined Space Entry Procedures/ SOP’s** (List as pertinent, and Attach Copies):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

❑Non-Permit Confined Space Classifications (Refer to PSU CSP Appendix B):

**❑ Confined Space Rescue Procedures/ SOP’s** (List, reference, or attach copies):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: Refer also to Appendix F. Include communication procedures, call-out lists, and facility-specific equipment, materials.

**❑ Confined Space Training Records** (list, reference or attach roster with names, type training received, date(s) of training including refreshers, training provider and certification dates): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**❑ Other Applicable Records (indicate/ verify storage location)**

❑Contractor Communication Procedures:

❑Other Safety Training Records pertinent to Confined Space Entries:

❑ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Work Unit Program Review and Revision**

❑Procedures used to verify this location confined space program has been reviewed periodically per requirements of Section 10.0 (Attached: Y N )

❑Procedures used in follow-up to confined space emergencies to review/

revise entry procedures or other aspects of this location confined space

program per requirements of Section 10.0 (Attached: Y N )

❑CSC Title/ Initials: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

❑Work Unit Responsible Person (Title/Initials):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Responsible Site/Location Title/ Signature**

I have evaluated these requirements and do attest to their proper completion**:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title/ Signature Date

**End Appendix F**

**APPENDIX G – PENN STATE CONFINED SPACE RESCUE**

**INFORMATION**

❑List/ attach all pertinent confined space rescue equipment, asset numbers, and equipment storage location(s) (list, attach, or reference below):

❑ List initial Penn State location and vendor call-out personnel or organization names, contact information, and sequence of call-out at initial notice of a confined space emergency condition. Include medical, and all other forms of support, as pertinent (list, attach, or reference below):

❑ List internal and external communication procedures during and following confined space emergencies (attach or reference procedures as appropriate. Include Location, Penn State University Park, External Agency, and Vendor personnel names, titles, contact information, and the sequence, timing, and manner in which communications are conducted (list, attach, or reference below):

**APPENDIX H – PENN STATE CONFINED SPACE DECISION PROCESS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Line No.** | **QUESTION** | **RESPONSE** | **ACTION REQUIRED** |
|  | **PRE-PLANNING QUESTIONS** |  |  |
| 1 | **Is the work area under consideration an OSHA-defined confined space (CS)?** | Y | Proceed to line 3 |
| 2 | Ditto | N | OSHA CS standard does not apply; Proceed to line 5 |
| 3 | Does Penn State own or control the OSHA confined space (CS)? | Y | Post Signs/Labels to ID confined space; Proceed to line 5 |
| 4 | Ditto | N | Make service employees aware of utility spaces not owned by Penn State. |
| 5 | Do other Penn State EHS programs or OSHA standards apply to prospective work/ work area? | Y | Comply with separate requirements; monitor prospective changes to CS or work. |
| 6 | Ditto | N | Monitor prospective changes to CS or work. |
| 7 | **IS THE CS a PERMIT-REQUIRED CONFINED SPACE (PRCS)? Refer to the Penn State CS Classification Form.** | Y | Proceed to line 9 |
| 8 | Ditto | N | Proceed to line 5 |
| 9 | **Employees identified who will supervise, enter or attend the CS or PRCS, and specific work assigned to authorized personnel?** | Y | Proceed to line 11 |
| 10 | Ditto | N | Identify authorized employees for work. |
| 11 | Assigned PS personnel received all pertinent CS training? | Y | Proceed to line 13 |
| 12 | Ditto | N | CS Coordinator identify/arrange necessary training before CS entry, or before related work.  CS workers complete necessary training.  CS Coordinator affirm necessary training is complete. |
| 13 | PS Contractors will enter the Penn State CS? | Y | Contractors confirm (by contract) they have OSHA CS program, properly trained personnel, and will abide by OSHA CS requirements. Contractors notified to keep PS Responsible Party and all prospective PS entrants/attendants/supervisors updated, where dual entry occurs (potential or expected). |
| 14 | Ditto | N | Proceed to line 15 |
| 15 | Non PS Entities will enter the Penn State CS? | Y | Non PS Entities notified/requested that PS Responsible Party receive notification of their date(s) of entry; Non PS Entities notified to keep prospective PS entrants/attendants/supervisors updated, where dual entry occurs (potential or expected). |
| 16 | Ditto | N | Proceed to line 17 |
| 17 | Trained entrants, attendants, supervisors, rescuers secured all necessary work/control/monitoring equipment, protective equipment, ventilation, CS procedures, permits, Hot-Work Permits, and/or other permits for PRCS work? | Y | Proceed to line 19 |
| 18 | Ditto | N | Entry Supervisor obtain all necessary equipment, procedures, permits, information. |
| 19 | All necessary CS rescue pre-planning arranged? | Y | Proceed to line 21 |
| 20 | Ditto | N | Entry Supervisor verify rescue pre-planning, equipment, and information is in place. Responsible Site Party or P/M ensure contractor notifies Penn State regarding planned site activity, and provide pertinent MSDS for work, process, or procedures affecting PS employees working in or outside PS confined spaces. |
| 21 | PS ready to Initiate CS or PRCS entry? | Y | Proceed to line 23 |
| 22 | Ditto | N | Proceed to line 23 |
|  | **SPECIFIC ENTRY PROCEDURE DETERMINATIONS** |  |  |
| 23 | Can all hazards be eliminated?  (Note: Ventilation is not removal of hazard). | Y | Proceed to line 25 |
| 24 | Ditto | N | Consult CS Coordinator to determine whether safe entry can be made by continuous ventilation. Proceed to line 25 |
| 25 | Can space be maintained safe through continuous forced air ventilation alone? | Y | Proceed to line 27 |
| 26 | Ditto | N | Consider PS contractor entry. Utilize full PRCS entry procedures. Proceed to line 27 |
| 27 | Authorized entry supervisor issue/sign CS Permit; authorized personnel enter space after establishing ventilation. Testing verifies acceptable entry conditions (throughout entry)? | Y | CS Entry Supervisor monitor conditions of entry. Close permit end-of-shift or upon verification of work completion. Entry Supervisor or Attendant monitor and evacuate CS as required. |
| 28 | Ditto | N | CS Entry Supervisor order CS evacuation; perform follow-up CS incident investigation per PS guidelines. Proceed to line 29 |
| 29 | Local/ PS EHS CS Program review and revision conducted following CS incident with documented program revisions? | Y | Conduct and communicate pertinent CS program revisions to all stakeholders. |
| 30 | Ditto | N | Site CS Entry Supervisor, Site CS Coordinator arrange/conduct review of CS program, with follow-up review by Penn State EHS. |
| 31 | Penn State EHS audit/ initiate proposed revisions to CS Program? | Y | Update PS CS Program. |
| 32 | Ditto | N | EHS complete audit review and/or program revision. |

**Purpose**

This Instruction Sheet provides guidance for proper completion of the “*Penn State Confined Space Entry Assessment, Classification and Permit” or CSACP*. The dual-purpose form provides a preliminary confined space assessment tool (Page One), AND where required, a Confined Space Entry Permit (Page Two). These instructions guide the user to document an initial confined space assessment, and to classify the space as either “non-permit” or permit-required” for a particular confined space entry. This form supports documentation of the control measures, air monitoring data (where applicable), and trained supervisor signature authorization, necessary to support safe entry to the confined space to perform work.

**Instructions**

Use the following sequence of steps to properly assess and classify the confined space before entry. These steps assume the confined space has been correctly identified.

A. Complete Table 1 – Identification

* **Entry Purpose / Task**: Describe why the space must be entered and/or the tasks performed inside the space (e.g. instrument adjustment, pesticide fumigation, tank cleaning, welding repair, painting, valve replacement).
* **Unit/Department:** Indicate college/department affected by the entry (e.g. department entrant assigned to).
* **Space Identification / Location**: Concise description-location of the space (Room #, equipment ID, etc.). Information should be clear to inspectors, emergency responders, etc.
* **Responsible Person Completing Assessment:** Person qualified/authorized to complete the assessment and verify information accuracy.
* **Responsible Person Unit:** Likely same as Unit/Department, but may differ.

B. Complete Table 2 – Hazards and Controls

* **Hazards** 
  + Check every Potential Hazard line item, as appropriate. All blanks must be checked (“Yes”, if potential hazard exists, and “No” if the hazard type does not exist or does not apply to the planned entry). All lines must be completed to support the Controls section.
  + Notate “Other Hazards” if not listed in table (e.g. dangerous pests, animals). Provide details as needed (e.g. Electrical hazard exposure to 480V, radiation hazard (x-ray), engulfment (corn silo)
* **Controls**
  + At Controls section, check each control item as “Yes” or “No,” and as needed to control (isolate/eliminate) the corresponding Potential Hazard.
* **Related SOPs/Other Controls**
  + List control methods not listed to address Other Hazards (e.g. nitrogen gas flush, auger will be locked/tagged out, entry delayed 24 hours to allow for temperature to regulate). List/reference any related SOPs needed for safe shut down or entry.

C. Complete Table 3 – Atmospheric Assessment

* **Check if Potential Atmospheric Hazards are Present** 
  + Check box Yes if applicable, or “No” if not applicable. If not applicable, Check corresponding box at Table 3A, and proceed to Table 4.
* **Hazards**
  + Similar to Table 2, check each blank as “Yes” or “No” for potential atmospheric hazards with potential to cause harm. List applicable sources of hazards (e.g. welding, potential soil gas, gasoline, etc.).
* **Controls** 
  + Similar to Table 2, check each blank as “Yes” or “No” whether implemented or not needed to control the corresponding atmospheric hazards.
* **Respiratory Protection**
  + List respiratory protection if required (e.g. respirator model, OVP100 cartridge no., etc.). NOTE: If respirators are required, the space will be permit-required, since respirators do not eliminate/isolate) the atmospheric hazard.

D. Complete Table 3A – Initial Air Monitoring and Instrument Information

* **Initial Checkbox**
  + Check preliminary box, if potential atmospheric hazards are not present, and proceed to Table 4.
* **Meter Reading**
  + Obtain a properly calibrated air monitor and fill-in meter readings. Measurements must be completed by a trained user, with an extension tube or hose, throughout the space (vertically and horizontally, as required). Entry into the space is not permitted to obtain readings. The hazards required to be monitored depend on the Hazards identified. If uncertain what atmospheric hazards/gases may be present or what to monitor, STOP, and contact your work unit Safety Officer or EHS.
* **Additional Information**
  + Fill out all information concerning the meter and person taking test data.

E. Complete Table 4 – Additional PPE – Equipment Requirements

* Check each pertinent PPE type, and Equipment type required for safe entry to the confined space. Describe the intended use for any additional equipment.

F. Complete Table 5 – Assessment Classification

* Box 1 – **Non-Permit Entry**
  + Check this box if there are no hazards/potential hazards present that can cause serious harm. All hazards have been isolated or eliminated using the control methods listed in Table 2. Page Two (Permit) is not required. Contact your unit SO, or EHS to determine if an SOP may be needed.
  + Responsible Person authorizing this assessment must sign and date Page One at blanks indicated. Retain this form. If hazards do not change, and all controls are implemented before entry, this hazard assessment and non-permit entry may apply until confined space work or conditions change.
* **Box 2 – Permit-Required** 
  + Check this box if one or more hazards cannot be isolated, eliminated or assessed, and the space is permit-required. Uncertainty to the level of risk or existence of a hazard necessitate treatment of the space as permit-required. Continuous forced air ventilation is required, if potential atmospheric hazards exist (e.g. welding fume generated may cause unknown toxic gas levels), which should be continuously monitored by personal monitor or the confined space attendant.
  + As noted above, Responsible Person authorizing this assessment must sign and date Page One at the correct blank. Proceed to Page Two and complete all information. The completed Page One and Two must be posted near the confined space entry point, and available for inspection during the entry.

G. Complete Table 6 – Continuous Air Monitoring Readings (entry is permit-required)

* **Complete preliminary blanks.** This Page Two section must be completed if confined space is permit-required.
  + If the space has a potential atmospheric hazard, continuous monitoring and continuous forced air ventilation will be required.
* **Meter Reading**
  + As noted per Table 3A, obtain a properly calibrated air monitor and fill-in meter readings. Measurements must be completed by a trained user, with an extension tube or hose, throughout the space (vertically and horizontally, each 15-30 minutes), or by personal monitor. Note the location, time and gas reading. If the instrument will datalog readings (capture and record for future download), then this table is not required to be filled out. This must be indicated “Yes” or “No” in the last row of Table 6. Attach data upon completion of the entry. Space entry must be discontinued, and entrants must leave the space, if atmospheric hazards/gases alarms are indicated.

H. Complete Table 7 – Attendant (entry is permit-required)

* **Name(s) of Attendant(s)**
  + List name of trained/authorized person(s) that will observe, and continuously monitoring entrants and conditions for permit-required entry. This person must be trained on confined space attendant duties.
* **Means of communication with Entrant(s)**
  + Check or list what methods of communication will be used.

I. Complete Table 8 – Entrants (entry is permit-required)

* **List of Entrants**
  + List names of trained/authorized persons that will enter the confined space to perform work.

J. Complete Table 9 – Conditions Required for Safe Entry (entry is permit-required)

* **Description of conditions**
  + Briefly summarize what conditions must be met before entry is authorized (e.g. LOTO applied and verified by entrants, attendant in place, rescue team is on site, or available and ready to respond). Proper response equipment must be ready at the site.

K. Complete Table 10 (entry is permit-required) – Emergency Plan

* Check the boxes that apply to the rescue plan:
  + **On-site:** This indicates a rescue team is on site and will perform emergency extraction.
  + **911**: If 911 is the only means of rescue, hazards must be such that immediate extraction is not required.
  + **Non-entry**: Check this box if non-entry rescue means will be used (e.g. tripod and winch)
  + **Stand-by**: This means the risk associated with identified hazard does not require rescue to be on site, but ready and on standby to expedite response.
* **Name of nearest street of building**: Identify how the space will be conveyed to emergency responder if needed (e.g. building address, “one acre behind the barn at the corner of 68 and main”)
* **Describe Escape Plan**: Describe what the rescue crew will do to extract an entrant. What will happen if emergency extraction is needed?
* Indicate if rescue team is familiar and competent to perform their duties. Do not proceed if the answer is “No”, until rescuers are prepared.

L. Complete Table 11 (if entry is permit-required) – Other Comments, Notes, Instructions

* Add any pertinent information regarding needed SOPs or other supporting information, related to this Permit. Content is optional.

M. Complete Table 12 (if entry is permit-required) – Permit Authorization

* **Supervisor Name**
  + Name of the entry Supervisor. Responsible person trained and qualified in confined space operations (entrant/attendant/supervisor roles). This does not have to be the entrants’ immediate supervisor. A permit entry Supervisor can be an entrant, or attendant.
* **Check box** to indicate if all safe entry conditions listed in Table 9 are met.
* **Supervisor Signature**
  + Responsible entry supervisor must sign (signify) they have reviewed the assessment and permit information and are responsible for the safe work entry. They must also separately sign up completion/closure of the entry permit.
* **Start date/time**
  + Time listed by the entry Supervisor indicating when safe entry can begin. Time must be after all required conditions for entry are met.
* **Termination date/time**
  + Time entry Supervisor indicates the permit expires and or is closed. A permit can only be issued for a defined time-period. All safe entry conditions must be maintained until it is terminated, and no unauthorized entry may occur during this time.

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| **Table 1. Identification** | | | | | | | | | | | | | | |
| **Entry Purpose /Task:** | | | | | | | | | **PSU Campus:** | | | | | |
| **Entry College-Unit /Department:** | | | | | | | | | **Space Location /ID:** | | | | | |
| **Responsible Person Completing Assessment:** | | | | | | | | | **Responsible Person Unit:** | | | | | |
| **Table 2. Hazards and Controls** | | | | | | | | | | | | | | |
| ***Potential* Hazards** | | | | Yes | | No | **Controls** | | | | Yes | | N/A | |
| Lack of oxygen | | | |  | |  | Purge / flushing | | | |  | |  | |
| Oxygen enrichment | | | |  | |  | No reasonable failure / potential leaks (no terminations) | | | |  | |  | |
| Combustible or flammable gases/vapors | | | |  | |  | Lockout / Tagout | | | |  | |  | |
| Toxic gases/vapors | | | |  | |  | Documented energy control procedure | | | |  | |  | |
| Chemical contact | | | |  | |  | Blank, misaligning, block/bleed | | | |  | |  | |
| Electrical hazards | | | |  | |  | External barricades | | | |  | |  | |
| Mechanical / physical hazards | | | |  | |  | Signage | | | |  | |  | |
| Environment [temperature (high/low), radiation, noise] | | | |  | |  | Temperature control | | | |  | |  | |
| Engulfment / suffocation (grain, sand, steam, liquid) | | | |  | |  | Temporary flooring or supplemental walking surface | | | |  | |  | |
| Entrapment / inwardly sloping walls | | | |  | |  | Lifeline / tie-off / harness | | | |  | |  | |
| Inherent fall hazards | | | |  | |  | Fall prevention or fall protection | | | |  | |  | |
| Pneumatic or hydraulic hazards | | | |  | |  | Guarding | | | |  | |  | |
| Gravity (falling on, crushing hazards) | | | |  | |  | Blocking / securing | | | |  | |  | |
| Radiation (ionizing, non-ionizing) | | | |  | |  | Radiation protection office guidance needed (3-3976) | | | |  | |  | |
| **Other hazards (describe):** | | | |  | |  | **Related SOPs / procedures:**  **Other Controls:** | | | |  | |  | |
| **Table 3. Atmospheric Assessment** | | | | | | | | **(Check If Potential Atm. Hazards Present):** | | Yes  No | | | | |
| **Potential Hazards** | | | | | Yes | No | **Controls** | | | | | Yes | | No |
| Existing / potential atmospheric hazard in space | | | | |  |  | Natural ventilation (airing out) | | | | |  | |  |
| Introduced atmospheric hazard from work (e.g. welding) | | | | |  |  | Local exhaust ventilation | | | | |  | |  |
| Nearby potential sources of contaminants (e.g. cryogens) | | | | |  |  | Forced air ventilation (initial only, purging, inerting) | | | | |  | |  |
| Source(s) of potential atmospheric hazard and possible effects: | | | | | | | Forced air ventilation (continuous) | | | | |  | |  |
| Interlocked sensor/alarm | | | | |  | |  |
| **Respiratory protection, if required list type (does NOT eliminate/isolate hazard)**: | | | | | | | | | | | |  | |  |
| **Table 3A. Initial Air Monitoring and Instrument Information** | | | | | | | | | | | | | | |
| **Check if initial monitoring is NOT required for assessment. (Disregard Table 3A if no potential atm. hazards identified at Table 3**) | | | | | | | | | | | | | | |
|  | **Reading Time** | **Location** | **Reading** | | | | | **Meter – Additional Information** | | | | | | |
| **O2**(19.5-23.5%) |  |  |  | | | | | **Date of initial test:**  **Name of tester and initials:**  **Make/Model of meter:**  **Instrument properly calibrated? Yes / No**  **Date of last calibration:** | | | | | | |
| **LEL** (<10%) |  |  |  | | | | |
| **H2S** (<10 ppm) |  |  |  | | | | |
| **CO** (<35 ppm) |  |  |  | | | | |
| **NO2** (<5 ppm) |  |  |  | | | | |
| **Other:** |  |  |  | | | | |
| **Table 4. Additional PPE - Equipment Requirements** | | | | | | | | | | | | | | |
| **PPE required:** Eye/face protection  Gloves  Hard hat  Safety shoes Protective clothing Hearing protection | | | | | | | **Equipment**: Tripod/winch Fire Extinguisher Lighting Barrier/shields Ladder Communication equipment | | | | | | | |
| **Describe any additional equipment:** | | | | | | | | | | | | | | |

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| **Table 5. ASSESSMENT CLASSIFICATION** | | |
|  | **NON-PERMIT REQUIRED** | No hazards exist that are critical to life/ health and safety, or all hazards have been isolated/eliminated per this documented assessment. The space is non-permit required for this task (entry can proceed without further action). **Where applicable, an SOP may be required. Consult EHS or your Unit Safety Officer.** |
|  | **PERMIT- REQUIRED** | **One or more hazards cannot be isolated, eliminated or assessed and pose a serious threat to life/ health and safety, or forced air ventilation is required to control a hazardous atmosphere.** **The space is permit-required** (requires designated attendant/entrants/supervisor, permit authorization, AND rescue plan) **– USE PERMIT NEXT PAGE.** |

\***By signing this assessment, you certify that you are qualified to identify and assess the specific hazards of this confined space entry operation. You are certifying that all hazards have been identified and evaluated, and the indicated control methods will be implemented before and during entry.**

**Signature:**       **Date:**

**PAGE 2 – PENN STATE CONFINED SPACE PERMIT**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **REFER TO PAGE 1 FOR HAZARDS AND NECESSARY CONTROLS, INCLUDING FORCED AIR VENTILATION** | | | | | | | | | | | | | | | | | |
| **Entry Purpose:** | | | | | | | **Entry Planned Duration:** | | | | | | **Permit ID:** | | | | |
| **Table 6. Continuous Air Monitoring READINGS (Permit Required Spaces with Potential Hazardous Atmosphere)** | | | | | | | | | | | | | | | | | |
| **TEST Contaminant** | **Time**  **1** | **Location**  **1** | **Read**  **1** | **Time**  **2** | **Location**  **2** | **Read**  **2** | | **Time**  **3** | **Location 3** | **Read**  **3** | **Time**  **4** | **Location**  **4** | | **Read**  **4** | **Time**  **5** | **Location**  **5** | **Read**  **5** |
| O2 (19.5-23.5%) |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| LEL (<10%) |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| H2S (<10 ppm) |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| CO (<35 ppm) |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| NO2 (<5 ppm) |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| Other: |  |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |
| **Instrument datalog used in place of table? (check)**       **datalog personal sample?**       **Attach datalog to permit, if used.** | | | | | | | | | | | | | | | | | |
| **Use an additional form if more room is needed for air monitoring results.** | | | | | | | | | | | | | | | | | |

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| **Table 7. Attendants** |
| **Name of Planned Attendant(s):** |
| **Means of communication with entrants:**  Voice  Radio  Sight  Other: |

|  |  |
| --- | --- |
| **Table 8. List of Entrants** | |
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|  |  |
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**Permit required confined space (PRCS) Entrants, Attendants, and Supervisors must have PRCS training.**

|  |
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| **Table 9. Conditions Required for Safe Entry** |
| **Description of Conditions:** |

|  |
| --- |
| **Table 10. Emergency Rescue Plan** |
| **Rescue plan on site**  **Means of calling 911 on site**  **Non-entry rescue equipment in place**  **Rescue team notified/on Stand-By** |
| **Name of nearest street or building:** |
| **Describe Emergency Rescue Plan:**  **Is rescue service familiar with space and prepared to provide assistance? Yes**        **No**  **If NO, do not proceed until service is prepared):** |

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| **Table 11. Other Comments Notes and Instructions (OPTIONAL)** |
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|  |  |  |  |
| --- | --- | --- | --- |
| **Table 12. Permit Authorization** | | | |
| Entry Supervisor Name: | | | Are all safety entry conditions met? Yes / No |
| Start Date and Time: | Supervisor Signature (approval of permit): | | |
| Termination/Expiration Date and Time: | | Supervisor Signature (closure of permit): | |
|  | | | |

Reminders: Other permits may apply such as but not limited to: energized electrical work and hot work. Other procedures may be needed for safe entry such as energy control procedures and SOPs. If any conditions change that present a hazard while inside the space, exit the space immediately and terminate the Permit until hazards can be reassessed and controlled.

**PS EHS Doc No. EHS-0081ata (8-8-22)**