OREGON HEALTH & SCIENCE UNIVERSITY

CONFINED SPACE ENTRY PROCEDURES

APPLICABILITY: This policy applies to all who enter confined spaces at OHSU.

PURPOSE: This policy establishes the OHSU Confined Space Program. The policy is designed to instruct employees and advise contractors on confined space entry procedures as required by Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.146.

IMPLEMENTATION: Implementation of the provisions within this policy is the responsibility of all who enter confined spaces.

DEFINITIONS AND DISCUSSION: A confined space is defined by OSHA as a space that is: “large enough so that an employee can bodily enter and perform work, has limited or restricted means for entry or exit and is not designed for continuous occupancy.”

OSHA further divides confined spaces into three categories:
   1.) Permit-Required Confined Space
   2.) Alternate Procedure Space
   3.) Non-Permit-Required Confined Space

1.) A Permit-Required Confined Space (PRCS) is defined as a confined space that has one or more of the following characteristics:
   - Contains, or has the potential to contain, a hazardous atmosphere (example: sewer gas, welding fumes, inadequate oxygen, organic solvent vapors, carbon monoxide from vehicle exhaust, etc.); or
   - Contains a material that has the potential for engulfing an entrant (example: un-shored soil during excavation work); or
   - Contains any other recognized serious safety or health hazard (example: high temperature, inadequate lighting)

2.) An Alternate Entry Procedure Space is a space in which the hazard is atmospheric only (example: not enough oxygen), and can be controlled by forced air ventilation. EHRS must show and document, by use of air monitoring equipment, that the air in these spaces is safe for entry. All documentation will be maintained by EHRS.

3.) A Non-Permit-Required Confined Space is a space that poses no actual or potential atmospheric hazards, and all other hazards within the space can be eliminated without entry into the space. The procedure by which the hazard was eliminated must be documented and submitted to EHRS for review.

*Currently, OHSU does not have sufficient objective data documenting absence of hazards in any of its confined spaces to permanently reclassify any space as an “Alternate Procedure Space or as a “Non-Permit Required Confined Space”. Until sufficient data has been collected, all confined spaces at OHSU will be labeled as “Permit-Required Confined Spaces” and each space may be re-classified as either an “Alternate Procedure Space” or a “Non Permit-Required Confined Space” on a case-by-case basis prior to entry. The procedures for reclassification are outlined in this policy. If hazards cannot be eliminated prior to entry, the space will remain classified as a “Permit-Required Confined Space” and OHSU employees will not be permitted to enter.
**REQUIREMENTS:**

1.) **Confined Space Identification:** All confined spaces on campus must be identified and labeled. FMC and EHRS will identify and label all confined spaces on campus.

   Facilities Management and Construction (FMC) employees, in cooperation with Environmental Health and Radiation Safety (EHRS), will identify and label spaces that meet the definition of a permit-required confined space. Signs must read:

   **DANGER**
   **PERMIT-REQUIRED CONFINED SPACE**
   **DO NOT ENTER**
   **CALL 503-494-7795**
   **FOR ASSISTANCE**

2.) **Hazard Assessment:** All confined spaces must be assessed to determine the hazards within each space. The following hazards shall be identified and documented prior to entry into a confined space:

   - Atmospheric hazards
   - Burn hazards
   - Heat stress hazards
   - Mechanical hazards
   - Engulfment hazards
   - Physical hazards (falls, debris, slipping hazards, entry, egress)
   - Electrocution
   - Danger of unexpected movement of machinery
   - Noise hazards

3.) **Training:** All affected staff must be trained how to safely enter confined spaces.

   Training will provide employee proficiency in the duties required by 29 CFR 1910.146 and will include new or revised procedures, as necessary, to maintain compliance with this policy.

   Training shall be provided and/or include:

   - Before the employee is first assigned duties
   - Before there is a change in assigned duties.
   - The procedures for entry outlined in this policy.
   - Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
   - Whenever inadequacies in the employee’s knowledge or use of the procedures outlined in this policy are discovered.

**RESPONSIBILITIES:** All OHSU employees and contractors must abide by applicable procedures in this policy.

**FMC:** FMC is responsible for assisting with identifying and labeling confined spaces; informing contractors of the location of confined spaces and required entry procedures; attending confined space entry training; requesting necessary re-training; following proper entry procedures, and enforcing compliance with entry procedures; and properly documenting each entry as detailed in this policy.
EHRS: EHRS will maintain the confined space entry policy; provide periodic training and assistance upon request; maintain and calibrate assessment instrumentation before use; conduct confined space monitoring and preauthorization; assist with labeling and identifying confined spaces; maintain objective data on each space; and assist departments with evaluating the hazards of confined spaces and their compliance with the policy.

Contracted Personnel: When contracted personnel enter confined spaces on the OHSU campus, they will follow all applicable confined space rules and procedures for safe entry or equivalent.

PRCS RECLASSIFICATION AND ENTRY PROCEDURES (OHSU EMPLOYEES ONLY):

*All outside contractors must follow the procedures outlined in their own respective confined space programs.*

Equipment Needed for Entry:

- Ventilation Blower, as needed
- Confined space permit and a pen
- Barriers, barrier tape and signs, as needed
- Lights, if applicable
- Cell phone, radios, and other communication devices as necessary
- Personal protective equipment, as needed (gloves, boots, coveralls, face shield, safety glasses)
- Other monitoring equipment as needed

Procedure:

1. **Call EHRS: 4-7795.** Call EHRS to schedule entry whenever possible. If after hours, call Public Safety Dispatch at 4-7744.

2. **REVIEW:** Go over specific entry procedures and complete permit. (Carefully review “Types of Hazards” and “Safety Precautions/Control Measures”). Supervisor or EHRS must review and sign “Pre-Entry Authorization” line.

   ♦ Call EHRS if there are any questions: 4-7795.

3. **GUARD:** After opening confined space, immediately guard the area so no one can fall in while it is open. Erect signs, barriers and barrier tape as necessary.

4. **LOCK-OUT:** Before entering, lock and tag out (LOTO) any mechanical hazards, gas, water lines, or electrical power. Try to turn the system on after locking out to ensure that there is no energy available. Also follow the affected department Standard Operating Procedures (SOPs) regarding proper LOTO of potential energy sources and equipment. (ie: SOP 24 in the Heating Plant)

5. Atmospheric Hazard Evaluation: EHRS will monitor the space to ensure that no atmospheric hazards are present. Monitoring must always be conducted immediately before entering any confined space. Failure to test confined space for air quality can result in serious injury and death! (For procedures, see Appendix A)

**SAFE AIR LIMITS FOR CONFINED SPACE ENTRY:**

- **Oxygen:** Between 19.5% and 23.5%
- **LEL:** Less than 10% of known LEL (LEL = Lower Explosive Limit)
- **H₂S:** Less than 10 ppm.
- **CO:** Less than 35 ppm.
VOC: Must be below the dose or exposure limit for the particular material as published in 29 CFR 1910. Subpart G, Occupational Health and Environmental control, or in Subpart Z, Toxic and Hazardous Substances.

Note: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

If the air quality inside the confined space is safe with no fresh air ventilation, and if entry is not particularly restricted and the space is well lit, the space may now be reclassified as an “Alternate Procedure Space.” Proceed to step 7, ENTER.

If readings are not within safe limits, then proceed with step 6, VENTILATE. You may ventilate the space even if the first readings were within safe limits, however you must always re-test the atmosphere after ventilating to ensure that it did not change after introducing outside air.

6. VENTILATE: Set up the ventilation blower so that it takes in clean, uncontaminated air. Do not place intake next to vehicles, gas-powered equipment, or exhaust vent for lab or other potentially contaminated work area.

- Attach ducts to ventilation blower, turn on, and place exhaust end well inside confined space.
- Run ventilation blower at least 5 minutes. There must be enough clean, outside air for at least one complete air change inside the space. Make sure tubing blows fresh air to all parts of the confined space.
- While the ventilation blower is on, EHRS will re-test the atmosphere inside the confined space. Results will be recorded on the confined space permit.
- If fresh air ventilation is required in order to achieve or maintain a safe atmosphere, a supervisor must sign bottom line authorizing entry. An attendant is also required outside the space if constant ventilation is needed to maintain normal atmospheric conditions.
- If a safe atmosphere cannot be maintained, the space remains classified as “Permit-Required” and OHSU employees may not enter. EHRS will make this determination.
- When a safe atmosphere is established, proceed to Step 7, ENTER.

7. ENTER: Once all hazards (atmospheric, mechanical, other) have been eliminated and the space has been reclassified, the employee may enter the space.

Entrant puts on necessary personal protective equipment, secures a communication device if necessary, and then enters space to perform work.

8. EXIT: Entrant must exit Confined Space IMMEDIATELY if the gas monitor alarms or fails; ventilation fails; entrant begins to feel faint or notices strong odors; or if any employee becomes concerned about safety for any reason.

9. Send completed permit to EHRS, mail code: PP-170. EHRS will maintain cancelled permits and keep a log of all entry data.
**EMERGENCY SITUATIONS**

NEVER ENTER A CONFINED SPACE TO ATTEMPT RESCUE of an unconscious or unresponsive person.

In case of an emergency, the attendant must immediately call 4-4444 to request emergency assistance. Make sure to tell the 4-4444 operator that a “potentially hazardous confined space environment is involved.”

- OHSU employees do not attempt rescue because they are not trained or equipped to do so.

**RECORDKEEPING:** EHRS will maintain a list of all confined spaces and hazards identified. FMC will send all completed permits to EHRS.

**RESOURCES:** Information about this policy, regulatory compliance, or industry standards is available through EHRS.

**REFERENCES:**

- Oregon Occupational Safety and Health Administration, (OR-OSHA), Oregon Department of Consumer and Business Services; Federal Code 29 CFR 1910.146, Occupational Safety and Health Standards.

Related policies, procedures and forms:

- **Appendix A:** EHRS Confined Space Entry Procedures
- **Appendix B:** Confined Space Entry Flowchart
- **Appendix C:** Lists of Confined Spaces on Campus

OHSU West Campus Permit-Required Confined Space Program