PERMIT-REQUIRED CONFINED SPACE POLICY
Revision Date: August 4, 2014

APPLICABILITY
This policy applies to OHSU employees who enter OHSU-controlled confined spaces on OHSU property. All confined spaces at OHSU are be labeled as “Permit-Required Confined Spaces” or PRCS 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 from outside the space and if the atmosphere cannot be deemed ‘safe’ with forced ventilation, the space will remain classified as a PRCS and OHSU employees will not be permitted to enter.

This program does not apply to contractors or vendors. Contractors and vendors are required to have their own confined space program that complies with state and federal regulations.

PURPOSE
This policy establishes the OHSU PRCS Program. This policy is designed to instruct OHSU employees on PRCS procedures as required by Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.146.

DEFINITIONS
1.) A Confined Space is defined as a space that:
   - is large enough and so configured that an employee can bodily enter and perform assigned work; and
   - has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
   - is not designed for continuous employee occupancy.
2.) 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, mechanical hazards, electrical hazards, etc.)
3.) 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. Air monitoring must be conducted prior to entry and during entry. Environmental Health and Radiation Safety (EHRS), Construction Safety Manager (CSM) or trained Energy Management Center (EMC) staff 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 either EHRS or EMC.

4.) 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.

**Requirements**

1.) **Confined Space Identification:** All PRCS on campus must be identified and labeled. Facilities and Logistics (F&L) and EHRS will identify and label all PRCS on campus with the following language:

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

2.) **Hazard Assessment:** All PRCS must be assessed to determine the hazards within each space. The following hazards shall be identified, documented and either eliminated from outside the space or by forced ventilation prior to entry:

   - Atmospheric hazards
   - Thermal hazards
   - Mechanical hazards
   - Engulfment hazards
   - Physical hazards (falls, debris, slipping hazards, entry, egress)
   - Electrical hazards
   - Danger of unexpected movement of machinery
   - Excessive noise (potentially could interfere with communication outside of space)

**OHSU employees are not permitted to enter a PRCS**. Entry can only occur if the space has been re-classified to a non-permit required confined space or an alternative entry procedure can be achieved.

3.) **Training:** All affected staff must be trained how to identify PRCS and next steps for possible re-classification to a non-permit required confined space or how to apply alternate procedures. 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 must abide by applicable procedures in this policy. Only affected employees are trained on PRCS procedures.

**F&L:** F&L is responsible for assisting with identifying and labeling PRCS; informing EHRS, contractors and vendors of the location of PRCS and required re-classification or alternate procedures; attending PRCS training; requesting necessary re-training; following proper entry procedures according to Standard Operating Procedures (SOPs), enforcing compliance with entry procedures; properly documenting each entry as detailed in this policy, and sending all completed assessment forms to EHRS.

**EHRS:** EHRS will maintain the PRCS policy; provide periodic training in conjunction with the Construction Safety Manager (CSM) and assistance to OHSU employees upon request; maintain and calibrate air monitoring instrumentation before use; conduct confined space monitoring and preauthorization; assist with labeling and identifying PRCS; maintain objective data on each space; and assist departments with evaluating the hazards of permit-required confined spaces and their compliance with this policy. EHRS will maintain a list of all PRCS and hazards identified.

**CSM:** The CSM will provide periodic training in conjunction with EHRS and assistance to OHSU employees and contractors upon request; maintain and calibrate air monitoring instrumentation before use; conduct confined space monitoring and preauthorization; and assist departments with evaluating the hazards of permit-required confined spaces and their compliance with this policy.

**Contracted Personnel:** Contractors (and vendors) will provide notification to EHRS and/or the CSM prior to entering an OHSU-controlled PRCS. Contractors and vendors are responsible for implementing and following their own organization’s PRCS procedures for safe entry. OHSU shall not provide assistance, in the form of training, equipment use or oversight to contractor and vendor personnel; however all available information relating to classification, monitoring, and hazards of OHSU’s confined spaces shall be provided to contractors for safe entry purposes.
ENTRY PROCEDURES
Re-classification Procedures: Permit Required Confined Space to Non-Permit Required Confined Space

Equipment Needed for Entry:
- Confined Space Re-classification/Alternate Procedures Assessment Form and a pen
- Air monitoring equipment
- Barriers, barrier tape and signs, as needed
- Lights, if applicable
- Communication equipment such as cell phone, radios, and other communication devices as necessary for effective communication between the attendant and all entrants and to initiate rescue when necessary
- Personal protective equipment, as needed (e.g., gloves, boots, coveralls, face shield, safety glasses)
- Ladders or other equipment to safely enter and exit the space
- Equipment necessary to safely enter and work in the space
- Appropriate SOP

Procedure:

1. **CONTACT:** Call EHRS (503-494-7795) or CSM (503-702-6007) to schedule entry whenever possible. If after hours, call Public Safety Dispatch at 503-494-7744.

2. **REVIEW:** Carefully review specific entry procedures and complete the Confined Space Re-classification/Alternate Procedures Assessment Form. Supervisor or EHRS must review and sign “Pre-Entry Authorization” line.

   - Follow specified SOPs for entry into Air Handling Units (AHUs), Boilers, Elevator Pits, Steam Vaults and Vaults.
   - Review historical entry records, if applicable. Inquire with EHRS.
   - Call EHRS if there are any questions: 503-494-7795.

3. **GUARD:** After opening a confined space, establish a controlled work zone to prevent unauthorized entry; falls, etc. Erect signs, barriers and barrier tape as necessary.

4. **LOCK-OUT:** Before entering, lock out and tag out (LOTO) any mechanical hazards, gas, water lines, or energized power. Verify all energy has been dissipated from any locked out system. Follow the affected department SOPs regarding proper LOTO of potential energy sources and equipment. (i.e.: SOP 2 in the Heating Plant and F&L SOPs for entry).

5. **ATOMSPHERIC HAZARD EVALUATION:** EHRS, CSM or EMC trained staff will monitor the space to ensure that no atmospheric hazards are present prior to entry. Monitoring
must always be conducted immediately before entering any confined space. Failure to test a confined space for air quality can result in serious injury and/or death.

**SAFE ATMOSPHERIC LIMITS FOR ENTRY:**

- **O₂:** 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

**Airborne Contaminants:** Must be below the permissible exposure limit (PEL) for the particular material as published in the Oregon Occupational Safety and Health (OR OSHA) Oregon Administrative Rules (OARs) Division 2 Subdivision Z [OAR 437-002-0382 Oregon Rules for Air Contaminants]; Or threshold limit values (TLV) established by the American Conference of Governmental Industrial Hygienists, whichever is more restrictive.

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

If the atmosphere inside the PRCS is deemed safe without forced ventilation and all hazards within the space are eliminated without entry into the space, the space may now be reclassified as a “Non-Permit Required Confined Space” as long as the non-atmospheric hazards remain eliminated. Proceed to step 6, ENTER.

If the atmosphere inside the PRCS is not within safe limits, then you must discontinue re-classification procedures. Proceed with the next section: *Alternate Procedures.*

6. **ENTER:** Once all hazards (atmospheric, mechanical and other) have been eliminated from outside of the space and the space has been re-classified, the employee may enter the space. Entrant must wear air monitoring equipment if the attendant is unable to constantly monitor the air where the entrant is working from outside the space. Entrant then dons necessary personal protective equipment, secures a communication device if necessary, and then enters space to perform work.

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

8. **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 Department of Public Safety (DPS) Dispatch at 503-494-4444 to request...
emergency assistance. Make sure to inform DPS that a “potentially hazardous confined space environment is involved.”

9. **DOCUMENTATION:** Send completed assessment form to EHRS, mail code: PP-170. EHRS will maintain cancelled Confined Space Re-classification/Alternate Procedures Assessment Forms and keep a log of all entry data.

**Alternate Procedures:**

**Equipment Needed for Entry:**

- Ventilating equipment, as needed
- Confined Space Re-classification/Alternate Procedures Assessment Form and a pen
- Air monitoring equipment
- Barriers, barrier tape and signs, as needed
- Lights, if applicable
- Communication equipment such as cell phone, radios, and other communication devices as necessary for effective communication between the attendant and all entrants and to initiate rescue when necessary
- Personal protective equipment, as needed (gloves, boots, coveralls, face shield, safety glasses)
- Equipment to safely enter and exit the space
- Any other equipment necessary to safely enter the space
- Appropriate SOP

**Procedure:**

1. **CONTACT:** Call EHRS (503-494-7795) or CSM (503-702-6007) to schedule entry whenever possible. If after hours, call Public Safety Dispatch at 503-494-7744.

2. **REVIEW:** Carefully review specific entry procedures and complete the Confined Space Re-classification/Alternate Procedures Assessment Form. Supervisor or EHRS must review and sign “Pre-Entry Authorization” line.

   - Follow specified SOP for entry into Air Handling Units (AHUs), Boilers, Elevator Pits, Steam Vaults and Vaults.
   - Review historical entry records, if applicable. Inquire with EHRS.
   - Call EHRS if there are any questions: 503-494-7795.

3. **GUARD:** After opening a confined space, establish a controlled work zone to prevent unauthorized entry; falls, etc. Erect signs, barriers and barrier tape as necessary.

4. **LOCK-OUT:** Before entering, lock out and tag out (LOTO) any mechanical hazards, gas, water lines, or energized power. Verify all energy has been dissipated from any locked
out system. Follow the affected department SOPs regarding proper LOTO of potential energy sources and equipment. (i.e.: SOP 2 in the Heating Plant and F&L SOPs for entry).

5. **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 supply 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.

6. **ATMOSPHERIC HAZARD EVALUATION:** Monitoring must always be conducted immediately before entering any confined space.

   - While the ventilation blower is on, EHRS, CSM or trained EMC staff will re-test the atmosphere inside the confined space. Results will be recorded on the Confined Space Re-classification/Alternate Procedures Assessment Form.
   - 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 safe atmospheric conditions.

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

- **O₂:** 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

Airborne Contaminants: Must be below the permissible exposure limit (PEL) for the particular material as published in the Oregon Occupational Safety and Health (OR OSHA) Oregon Administrative Rules (OARs) Division 2 Subdivision Z OAR 437-002-0382 Oregon Rules for Air Contaminants; Or threshold limit values (TLV) established by the American Conference of Governmental Industrial Hygienists, whichever is more restrictive.

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

If the atmosphere within the PRCS falls within safe limits **WITH** forced ventilation in place **and** all hazards within the space are eliminated without entry into the space,
If the atmosphere inside the PRCS is not within safe limits WITH forced ventilation and/or all hazards within the space cannot be eliminated without entry into the space, then you must discontinue ‘alternate procedures’. Space will remain a PRCS and OHSU employees will not be permitted to enter.

7. **ENTER:** Once all hazards (atmospheric, mechanical and other) have been eliminated from outside the space or by forced ventilation, the employee may enter the space using ‘alternate procedures’. Entrant must wear air monitoring equipment if the attendant is unable to constantly monitor the air where the entrant is working from outside the space. Entrant then dons 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. **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 Department of Public Safety (DPS) Dispatch at 503-494-4444 to request emergency assistance. Make sure to inform DPS that a “potentially hazardous confined space environment is involved.”

10. **DOCUMENTATION:** Send completed Confined Space Re-classification/Alternate Procedures Assessment Form to EHRS, mail code: PP-170. EHRS will maintain cancelled assessment forms and keep a log of all entry data.

**RESOURCES**
Information about this policy, the Confined Space Program, 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 FORMS**
Confined Space Re-classification/Alternate Procedures Assessment Form
F&L Standard Operating Procedures (SOPs) – Entry Procedures
Air Handling Units (AHUs)
Boilers
Elevator Pits
Steam Tunnels (Restricted Access)
Steam Vaults
Vaults