CHAPTER 8
CONFINED SPACE

1.0 REFERENCES AND RESOURCES:

WAC 296-809 Confined Spaces
SPPM 2.68 Confined Spaces

2.0 APPENDICES:

Appendix A Confined Space Survey Summary
Appendix B Confined Space Entry Form

3.0 PURPOSE and SCOPE:

The WSU Tri-Cities Confined Space Program establishes policy to protect employees from hazards, associated with confined space entry. A confined space must meet all of the following requirements to be subject to the requirements in this chapter:

1) Large enough for an employee to enter fully and work;
2) Limited or restricted entrance and exit e.g. tanks, vessels, silos, storage bins, hoppers, vaults, excavations, and pits;
   Note: Examples of limited or restricted entrance or exit include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.
3) Not primarily designed for continuous human occupancy.

A permit required confined space meets the above requirements *and one or more of the following characteristics*:

1) Contains or has a potential to contain a hazardous atmosphere;
2) Contains a material with the potential for engulfing someone who enters;
3) Has an internal configuration that could allow someone entering to be trapped or asphyxiated by inwardly converging walls or by a floor, which slopes downward and tapers to a smaller cross section;
4) Contains any physical hazard. This includes any recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, or moving parts;
5) Contains any other recognized serious safety or health hazard that could either:
   (a) Impair the ability to self-rescue; or
   (b) Result in a situation that presents an immediate danger to life or health.

WSU Tri-Cities employees will not enter confined spaces without case-specific review by EHS, and shall not enter any permit-required confined spaces. Contact EHS at 372-7163 to evaluate suspect confined spaces.

The following pages summarize the requirements for confined space entry. Alternate entry procedures may be utilized to control/eliminate hazards as described in the following sections.

4.0 RESPONSIBILITIES:

Supervisors are responsible for identifying projects and tasks subject to this chapter and verifying conditions allowing for entry into a non-permit required confined space.

Note: It is possible that in the course of assigning employees work, a supervisor may unknowingly assign employees to tasks which require confined space entry; therefore:

Employees are responsible for identifying tasks requiring confined space entry to their supervisor if encountered.

5.0 TRAINING REQUIREMENTS:

This program provides guidance on classifying permit required and non-permit required confined spaces, along with identifying designated employee duties and use of required equipment.

- Supervisors must receive sufficient training to identify a confined space, and to evaluate hazardous atmospheres and other potential hazards outlined in Section 3.0 defining a permit required confined space. Supervisors may consult with additional subject matter experts as needed to support this evaluation.
- Employees must receive sufficient training to:
  - Identify a confined space as defined in Section 3.0;
  - Understand the controls in place e.g. lock-out-tag-out (see Chapter 20) to render the space “non-permit required.”
- Facilities Services will provide protective measures such as posting signs reading; Danger-Permit Required Confined Space, DO NOT ENTER" or other similar wording, or protective measure that may include bolted covers, or locks.

NON-PERMIT REQUIRED CONFINED SPACE ENTRY PROCEDURE:

The supervisor is responsible for determining if a confined space meets non-permitted conditions. Non-permit required confined spaces are identified in Appendix A. EHS may be consulted if questions arise during this process. The following requirements and conditions must be met in order to classify a confined space as non-permitted:

- The confined space does not contain any actual or potential hazards or hazardous atmosphere, capable of causing death or serious physical harm. This includes any recognized health or safety hazards including engulfment in solid or liquid material, electrical shock, moving parts, etc.
- Document how you determined the confined space contained no permit-required confined space hazards, including atmospheric hazards, by completing the non-permit confined space form provided as Appendix B. This form must be signed by the supervisor or a qualified individual identified by the supervisor e.g. lead.

All employees must exit the confined space immediately if a hazard is identified/develops.

CONFINED SPACE ENTRY PROCEDURE:

Confined spaces hazards may include: leaks of pressurized or high temperature steam or water, potential burn hazards where steam pipes are exposed, heat stress, potential exposed electric wires, damaged asbestos pipe insulation, toxic or asphyxiant gases, and slip, trip and fall hazards. Confined space entry procedures include the procedures identified above for non-permit required confined space entry as well as the following:

- Prior to entry, personnel evaluate exit locations, and identify preferred exits. At least 2 exits in opposite directions from the work area shall be identified wherever possible, and must be made ready for immediate egress (i.e., manhole covers removed, ladder in place, etc.).
- Prior to entry the area atmosphere must be evaluated for oxygen content, flammability, carbon monoxide and hydrogen sulfide) and probe attachment. Monitoring shall be performed by EHS. If a hazardous atmosphere is identified, no entry will be allowed.
- Prior to entry the supervisor or EHS shall evaluate the space for additional hazards (steam/water leaks, potential burn hazards, heat stress, exposed electric wires, damaged asbestos pipe insulation, slip, trip and fall hazards and any other observed potential hazards). These shall be recorded on the completed confined space entry form provided in Appendix B.
- Prior to entry all identified hazards shall be controlled/eliminated by applying engineering controls (e.g. shutting off steam/water flow, repairing lights) and administrative controls (e.g. housekeeping, identifying trip hazards, exposed steel pipes, rotating out employees to reduce heat exposure) before proceeding with work. Contact EHS for assistance as needed. Means for controlling these hazards shall be recorded on the completed confined space entry form provided in Appendix B.
- All entrants shall wear a bump cap (preferred) or hard hat and will carry a radio or personal mobile phone.
- All entrants shall carry a flashlight.
- Air monitoring shall continue for as long as the space is occupied. At least one person entering the space shall wear an air monitoring device, and if a hazardous atmosphere develops, all occupants shall immediately exit.

CONFINED SPACE ALTERNATIVE METHODS:

Alternate entry procedures shall be applied to all non-permit required confined spaces. EHS may be consulted if questions arise during this process. The following requirements and conditions apply when entering confined spaces:

Note: To apply alternative methods, you must document monitoring and inspection information supporting the following:

- All physical hazards are eliminated e.g. lock-out tag-out, line breaking or blanking.

- The only potential or actual remaining hazard is a hazardous atmosphere. **DO NOT ENTER A CONFINED SPACE TO EVALUATE ATMOSPHERIC HAZARDS. USE A 4-GAS METER AND ATTACHED PROBE.**
- If hazardous atmospheric conditions are identified, forced air ventilation must be sufficient to control the atmospheric hazard.
- Document atmospheric monitoring data collection and applicable controls on the confined space entry form provided in Appendix B. This information must be immediately available to all entrants.

Follow these alternative methods for confined space entry.

- Eliminate any unsafe conditions before removing an entrance cover.
  - When entrance covers are removed, promptly guard the opening with a railing, temporary cover, or other temporary barrier to prevent accidental falls through the opening and protect entrants from objects falling into the space.
  - Certify that pre-entry measures have been taken (such as safe removal of the cover and having protection needed to gather pre-entry data), with the date, location of the space, and signature of the person certifying. Enter this information in the confined space entry form provided in Appendix B.
  - Make the pre-entry certification (Appendix B) available before entry to each entrant.
- Before an employee enters the confined space, test the internal atmosphere with a calibrated, direct-reading instrument and probe (do not enter the space) for all of the following, in this order:
  - Oxygen content.
  - Flammable gases and vapors.
  - Potential toxic air contaminants (hydrogen sulfide and carbon monoxide).
- Provide entrants, or their authorized representatives, with an opportunity to observe pre-entry and periodic atmospheric testing.
- Ensure the atmosphere within the space is not hazardous when entrants are present e.g. continuous monitoring and forced air ventilation as necessary.
- When hazardous atmospheres are identified, use continuous forced air ventilation, as follows:
  - Wait until the forced air ventilation has controlled the hazardous atmosphere before allowing entry.
  - Direct forced air ventilation toward the immediate areas where employees will enter and work, and continue ventilation until all employees have left the space.
  - Provide the air supply from a clean source and make sure it does not increase hazards in the space.
- Continually monitor the atmosphere within the space to ensure hazards do not accumulate.
- If a hazardous atmosphere is detected while personnel are in the confined space, do all of the following:
  - Evacuate employees from the space immediately.
  - Evaluate the space to determine how the hazardous atmosphere developed.

- Implement measures to protect employees from the hazardous atmosphere before continuing the entry operation.
- Verify the space is safe for entry before continuing the entry operation, under a new, revised confined space entry form.

CONFINED SPACE RECORD KEEPING:

Completed entry forms shall be retained by the supervisor for at least one year. In some special circumstances, records may be kept for longer than the one year period. Some special circumstances include:

- There was an unauthorized entry of a permit required space.
- A new hazard was identified.
- A prohibited condition occurred.
- An injury or near miss occurred.
- There is a change in the use or configuration of the space.
- Employee complaint.

EHS will monitor and assist first line supervisors in completing annual evaluations of confined space permits. This permit review will be done jointly with both parties. Annual reviews led by EHS will include the following items:

- The overall confined space program.
- Individual confined space forms that were completed in the last calendar year.

The protection provided to employees entering confined spaces.

CONFINED SPACE EQUIPMENT:

Confined space atmospheres will be evaluated with a 4 gas meter and/or other direct reading instruments as necessary (whenever there is reason to suspect a hazardous atmosphere), *WSU Tri-Cities personnel will not enter confined spaces with hazardous atmospheres under any circumstances*. Engulfment sources or sources of hazardous energy and/or equipment will be locked-out (see Chapter 20) to render the space not permit required *prior to personnel entry*. All criteria in Section 3.0 defining a permit required confined space shall be eliminated *prior to personnel entry*.

Appendix A: Confined Space Survey Summary

Confined Space Survey Summary

#	Location	Space	CS	PRC	APC	Sign	Notes
1	Campus Wide	Sanitary sewer system	Y	Y	N	N	Entry prohibited
2	Campus Wide	Stormwater system	Y	Y	N	N	Entry prohibited
3	BSEL south walkway	Process sewer sampling port	Y	Y	N	N	Entry prohibited. Activities must be conducted from sidewalk level
4	Wine Science Center service area	Winery wastewater tanks	Y	Y	N	N	Entry prohibited. Activities must be conducted from street level
5	Wine Science Center service area	Process sewer sampling port	Y	Y	N	N	Entry prohibited. Activities must be conducted from sidewalk level
6	Floyd Mech. Penthouse	Vertical duct access	Y	Y	N	Y	Entry prohibited.

CS: Confined Space **PRCS**: Permit Required Confined Space **APCS**: Alternate Procedures Confined Space