

Section 15

Confined Space Policy and Procedures

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POLICY

Effective Date: October 1, 1992

Authority: WAC 296-62-145, 296-45-650

Approved By: Provost and Vice President for Business and Financial Affairs

& 296-32-340

Cancels:

See Also: POL U5950.01 Health, Safety and Environmental Protection

POL-U5950.02 CONFINED SPACE

This policy applies to all university employees or students who may be exposed to a hazard arising from entry into a confined space.

1. Training, Protective and Rescue Equipment and Procedures Safeguard Workers or Students Exposed to Confined Space Hazards

It is the policy of Western Washington University that whenever employees or students are exposed to a hazard arising from entry into a confined space, appropriate training, protective and rescue equipment, and procedures are used to safeguard the exposed workers or students from serious injury or death.

2. Washington Administrative Code Parts 296-62-145, 296-45-65027 and 296-32-340 Provide Applicable Requirements

Confined space entry requirements are defined in the Washington Administrative Code (WAC), Part 296-62-145. Confined space for electrical workers is governed by WAC 296-45-65037 and telecommunications work is governed by WAC 296-32-340.

3. Trained Individuals Evaluate the Hazards of Assignments

For each project or job, individuals who are competent in the evaluation of hazards, precautions, first aid, and artificial respiration shall specifically be assigned. All personnel shall be trained in the use of personal protective equipment required for the job assignment.

4. Department Head or Directors Ensure the Confined Space Program Is Employed

It is the responsibility of the department head or center director to ensure that this confined space program is employed for areas under their purview. The department head shall also be responsible for procedures, training, and planning for entry into confined spaces which present a problem due to toxicity, flammability, oxygen deficiency or excess mechanical, electrical, corrosive, or temperature hazard.

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5. **Supervisors Implement the Confined Space Program for Work Under Their Purview**

Supervisors shall be responsible to the department head for implementing the confined space program for employees and work under their purview. The supervisor or his or her designate shall assure that the confined space work permit (attached) is completed prior to entry into a confined space, that appropriate air quality monitoring has been arranged in advance, and that appropriate equipment and trained personnel are available to safely enter the confined space.

6. **Employees Comply with Confined Space Procedures**

All employees shall comply with the confined space procedures and shall be protected from hazards resulting from entry into confined spaces.

7. **Environmental Health and Safety (EHS) Staff Provide Procedures and Assist Departments with Implementation**

The Environmental Health and Safety staff shall be responsible for providing and updating University-wide procedures and assisting departments with implementation of the program.

Confined Space Entry

A. Introduction

Confined space entry requirements are defined in the Washington Administrative Code (WAC), Part 296-809. Confined space for electrical workers is governed by WAC 296-45-205 and 215 and telecommunications work is governed by WAC 296-32-340. Applicable definitions are provided at the end of this text.

B. General Precautions

Employees shall not be permitted to enter atmospheres in a confined space which has contained toxic, flammable or corrosive materials or which may have had such materials accidentally introduced or generated until such space has been evaluated and/or tested by a competent person, generally Environmental Health and Safety staff, who shall declare the space safe for entry. Exposure to temperature extremes, noise, and ionizing radiation shall be controlled.

C. Confined Space Entry Permit

A confined space entry permit (attached) shall be prepared as described under supervisor responsibilities prior to entry into any permit-required confined space. It shall be kept at the confined space location during the length of the job and shall be in effect for one shift only. Upon execution of the work, the completed permit shall be filed by the supervisor and a copy sent to the Environmental Health and Safety office.

D. Toxic or Flammable Atmospheres

Atmospheres where contamination is below permissible exposure limits/threshold limit values may be entered without respiratory protection. Atmospheres where contamination is above the permissible exposure limits (PEL) but below values immediately dangerous to life or health (IDLH) may be entered when appropriate respiratory protective equipment is properly worn.

Atmospheres immediately hazardous to life may be entered only in the event of emergency and then only when employees are protected by equipment approved for such exposures. Atmospheres where the toxicity is not known shall require full protection. Entry into spaces which contain or could contain corrosive chemicals or chemicals which are toxic through skin absorption shall require equipment to prevent skin and/or eye contact.

Atmospheres which contain or could contain flammable gases or vapors shall not be entered if the concentration of gases or vapors in any part of the area is more than 10% of the lower explosive limit (LEL) except in the event of emergency and then only when employees are protected by equipment approved for such exposures. It must be remembered that measurements less than 10% of the LEL may still be above the IDLH of some substances.

E. Oxygen Deficiency or Excess

Atmospheres having an oxygen content less than 19.5% or greater than 23% are considered hazardous. Areas with oxygen concentrations below 19.5 shall not be entered without approved respiratory protective equipment which will provide an adequate supply of breathing air. In the event that the air may be diluted by an unknown gas, the atmosphere shall be considered highly toxic and/or flammable.

F. Mechanical Hazards

Confined areas containing parts which may move or which contain agitators, fans, or other power driven moving parts of potential hazard to employees shall not be entered until it is assured that such parts cannot move to injure the employee.

The following procedures are applicable if entry involves mechanical hazards. The University's Lockout/Tagout Program for Control of Hazardous Energy shall be followed in confined spaces, as appropriate. Circuit breakers and switches are opened and locked. Fuses are removed or wiring is disconnected and locations are tagged. Belts or mechanical linkages are disconnected and tagged. Parts are physically blocked against movement and switches, clutches or other means of control are tagged.

Tagging of controls without other means of control shall be considered satisfactory only if the control is barricaded and/or is under constant observation during occupancy of the space.

G. Electrical Hazards

Electrical circuits in the confined area which may present a hazard shall be disconnected, locked out, and tagged in accordance with Western Washington University's Lockout/Tagout Program for Control of Hazardous Energy. All temporary lights shall be protected against damage and cords shall be heavy duty and kept clear of working spaces and walkways. Only low voltage, battery operated, or ground fault protected equipment shall be used on water-sides of boilers or when electrically conductive liquids are involved.

Electric supply circuits, lighting, portable tools, and other equipment used where potentially hazardous concentrations of flammable vapors, gases, or dusts are present or may develop shall conform to the current National Electric Code requirements. Portable electric tools shall be grounded or isolation transformers, ground fault interrupters, or double insulated tools shall be required in such areas.

H. Procedures Prior To Entry into Confined Spaces Containing Possible Toxic or Flammable Atmospheres

The following procedures are to be followed prior to entry into a confined space containing possible toxic or flammable atmospheres:

1. Determine the type and extent of contamination including gases, liquids, sludge, residue, or absorbed material using knowledge of the area.
2. Make every reasonable effort to reduce the hazard to safe levels prior to permitting entry into the enclosed space.
3. Survey the area to determine the effect of escape of gases or vapors in surrounding areas.
4. Post or barricade the area to prevent unauthorized entry.
5. Ensure control of all sources of ignition when a potential fire hazard exists.
6. Inspect the condition of all required equipment including pumps, ventilating equipment, personal protective equipment, atmospheric testing equipment, and mechanical equipment. Ensure that all equipment is compatible with the work involved.
7. Ensure that all entry personnel are trained and familiar with the hazards involved.
8. Remove all possible liquid product, sludge, or residue if present by draining, pumping, or washing as applicable. Dispose of solid, liquid or gaseous materials in a manner which will not cause air or water pollution, a fire hazard, or endanger workmen or equipment.
9. Vent any pressure as required.
10. Isolate any tank or confined space from all potential sources of hazardous (or dangerous) materials by one of the following: (1) remove a valve, spool piece, or expansion joint, cap open the ends, and tag the line; or (2) insert a blank in the line and tag it.

I. Vapor Freeing (Ventilation) In Toxic or Flammable Atmospheres.

Vapor freeing is usually done by ventilation. The effectiveness of ventilation is dependent upon the number of air changes and the efficiency of mixing of the air with the gas in the tank. Ventilation by supply air provides more efficient mixing than exhaust air but cannot be used if it creates a hazard near the discharge point. Exhaust air ducts must be placed at locations remote from air inlets and may require moving to various locations.

Prior to entry, a minimum of five air changes is recommended where oxygen deficiency may exist and ten air changes is recommended where a toxic and/or flammable material is involved.

Concentrations of vapors or gases in the flammable or above the flammable range may require replacement by an inert gas, such as nitrogen or carbon dioxide, to prevent explosions. This situation is highly unlikely at the University; however, if inert gases are used, they must subsequently be replaced by air prior to entry

except when the inert gas provides safer working conditions.

All fans and other equipment used for removing flammable gases or vapors shall conform to NFPA requirements and shall not create an ignition hazard. Oxygen shall never be used for ventilation.

J. Evaluation of Potentially Hazardous Atmospheres.

Evaluation of the atmospheres shall be made by personnel appropriately trained, generally staff in the Environmental Health and Safety office. Atmospheric tests shall be made using accepted procedures and/or instruments to determine the kind and extent of any hazards present. However, atmospheric tests should be supplemented by other types of evaluation.

Evaluation shall consider such factors as degree of toxicity, flammability, oxygen deficiency, noise, temperature, vapor pressures, sorption on surface, sludges, residue, and ventilation rates. Evaluation shall be made immediately prior to entry and during occupation at intervals dependent on the possibility of changing conditions. Testing or other evaluation shall be made in all locations where persons may be exposed. If there is any doubt as to the validity of evaluation, a high hazard shall be assumed to be present, and personal protective equipment or measures used accordingly.

K. Entry into a Confined Space

After initial removal of any hazardous material potentially present, ventilation of the space (vapor freeing), and testing the atmosphere with accepted procedures and instrumentation, the confined space may be entered to complete cleaning, repair or other work. The following procedures are applicable.

1. Respiratory protective equipment shall be used when indicated.
2. An observer capable of maintaining communication at all times shall be located outside the confined space. He or she shall have respiratory protection available when indicated.
3. If the possibility of a highly toxic or flammable atmosphere, or oxygen deficiency exists or can develop, workers shall wear a safety harness with lifeline attached and a means of rescue shall be provided.
4. Fire extinguishing equipment shall be immediately available when indicated.
5. Continuous, forced-air ventilation is used prior to entry if needed to eliminate a hazardous atmosphere, and continues until employees have left the space. All work shall stop and the area shall be evacuated if ventilation fails. Ventilating air is to be from a clean source and must not increase the hazard in the space.
6. All tools and equipment shall be available as required.
7. Emergency lighting shall be available as required.
8. The area shall be evacuated if any indications of ill effects such as dizziness, irritation or excessive odors are noted.

L. Hot Work

The following procedures are applicable if hot work is performed in a confined space:

1. Any hot work involving sources of ignition and including welding and burning shall require positive assurance that fire hazards and flammable atmospheres have been controlled. Combustible material shall be protected.
2. Usually the atmosphere is tested by a combustible gas indicator and/or other device as indicated. Tests are made frequently enough during work to assure that safe conditions prevail.
3. A hot work permit is required prior to beginning hot work.
4. Where hot work involves the generation of toxic gases, vapors, or fumes, local exhaust and/or respiratory protection shall be required.
5. Compressed gas cylinders should not generally be allowed in confined spaces. Compressed gas

lines shall be protected from rupture or damage.

6. Compressed gas cylinders or electric generators should be attended at all times. Sources of compressed gases or arc welding power shall be turned off immediately when an emergency arises or when work is interrupted or completed.

M. Use of Toxic and/or Flammable Materials in Confined Spaces

Work in confined spaces may require the use of toxic or flammable materials. These include but are not limited to coatings, linings, paints, cements, and solvents. Quantities of toxic or flammable materials brought into or used in confined spaces shall be limited to the smallest amount consistent with efficient use. Containers shall be designed to minimize evaporation and spillage. Safety cans or small squeeze bottles are preferable when applicable. Spraying of toxic or flammable substances such as paint is not recommended.

Continuous ventilation shall be provided in sufficient quantity and design to control fire and health hazards. Atmospheres shall be tested and/or evaluated to provide positive assurance that hazards do not exist. In no instance shall flammable vapor concentrations exceed 10% of the lower explosive limit. Evaluation shall be repeated at intervals to ensure no hazardous build up of concentrations.

Respiratory protective equipment shall be used as appropriate. Sources of ignition shall be eliminated when flammable liquids are used. Materials, equipment, and training shall be provided to clean up spills. All applicable instructions or recommendations from the manufacturer shall be employed.

N. Emergency Response/Injured Person Removal and Assistance

Call 911 from an accessible telephone. If you need police assistance, but not an aid car (ambulance) call x3911. Notify Public Safety at x3911 after you call 911.

If a telephone is not easily accessible, Facilities Management personnel radio the Work Control Center. Ask the base operator to call 911 and dispatch an emergency vehicle to the area requiring response. Ask the base radio operator to notify Public Safety at x3911.

Stay at the site until emergency assistance arrives. If possible, remove the injured worker via the emergency removal equipment, and the harness and line. Under no circumstances shall the attendant enter the confined space unless trained in confined space rescue. Provide first aid as possible and necessary. Do not attempt to move or remove an injured worker unless it can be done safely. Emergency rescue by University employees follows procedures in WAC 296-62-14519.

After any job-related accident, file an accident report with the Environmental Health and Safety office, Safety Building Room 111, 650-3064.

O. Training

All employees required to enter into confined spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, emergency procedures, the permit system, and in the use of protective and emergency equipment required. All training shall be documented. Training relating to other safety programs including respiratory protection, lockout/tagout, hot work, first aid, and CPR may also be required of employees prior to confined space entry.

P. Contractors

Any contractor of the University working in a confined space must have a written confined space program. A copy shall be provided to the University prior to confined space entry. Training of contractor employees shall have been performed and copies of training documentation shall be made available upon request.

A department retaining a contractor for work in a confined space shall inform the contractor of any potential fire, explosion, or health and safety hazards reasonably ascertainable within the confined space. The department representative shall inform the contractor of the University's confined space program and other applicable safety procedures, including emergency response procedures.

Q. Definitions

- **AIR CHANGE** refers to replacement of the entire volume of air in a room or space with an equal volume of fresh air.
- **CONFINED SPACE** means any space having a limited means of egress which is subject to the accumulation of toxic or flammable contaminants or an oxygen deficient atmosphere. Confined spaces include but are not limited to storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines and open top spaces more than 4 feet in depth, such as pits, tubes, vaults and vessels.
- **CONFINED SPACE ENTRY PERMIT** is the University's authorization for entry under defined conditions into a confined space.
- **FLAMMABLE ATMOSPHERES** are atmospheres in excess of 10% of the lower explosive limit. These are usually toxic as well as flammable.
- **HOT WORK** is the performance of work involving burning, welding, riveting, or similar fire-producing operations as well as work that produces a source of ignition, such as drilling, abrasive blasting, and space heating.
- **HOT WORK PERMIT** is a permit completed prior to initiating hot work.
- **IDLH is IMMEDIATELY DANGEROUS TO LIFE AND HEALTH** and represents a maximum concentration from which one could escape unaided without any escape-impairing symptoms or irreversible health effects.
- **LEL** is the **LOWER EXPLOSIVE LIMIT** which represents the minimum concentration of a combustible gas or vapor in air, usually expressed in percent by volume at sea level, that will ignite if an ignition source with sufficient ignition energy is present.
- **OXYGEN DEFICIENT/ENRICHED ATMOSPHERES.** Oxygen deficient atmospheres are deemed to exist if the atmosphere at sea level has less than 19.5% oxygen by volume or has a partial pressure of 148 millimeters of mercury or less. Factors such as acclimatization, physical condition of persons involved, etc., must be considered for such circumstances and conditions. Oxygen enriched atmospheres are over 23.5%.
- **PERMISSIBLE EXPOSURE LIMIT** is the maximum eight-hour time-weighted average of an airborne contaminant to which an employee may be exposed.
- **TOXIC ATMOSPHERES** are atmospheres having concentrations of airborne chemicals in excess of permissible exposure limits.

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Confined Space Entry Permit

Complete this form prior to entering any permitted confined space. Keep on site. Good for one shift (8 hrs from time listed) only.

Date _____ Time _____ Location of Confined Space _____ Trade(s) Involved _____
 Outside Contractor Involved in Work _____ Job Supervisor _____
 Equipment to be worked on _____ Work Performed _____

Qualified Entry Personnel	Qualified Back-Up Personnel

Initial atmospheric check: Meter used: <input type="checkbox"/> Biosystems PhD Plus <input type="checkbox"/> ISC CMX 271 <input type="checkbox"/> Calibrated <input type="checkbox"/> Bumped same day Testing performed by:	Time		
	Oxygen >19.5- <23%		
	LEL 10 %		
	CO < 35 ppm		
	H2S 10 ppm		
	NA	YES	NO
Source Isolation (Lock out/Tag Out)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pumps/lines blinded/disconnect/blocked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural ventilation present	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical ventilation required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Atmospheric check after ventilation	Time		
CO < 35 ppm	Oxygen >19.5- <23%		
H2S 10 ppm	LEL 10 %		
Performed by:			
Site Hazards, e.g. trip, fall:			
Chemical Hazards (list if any):			
	NA	YES	NO
Emergency notification (call base radio)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rescue procedure available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency lighting present	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Equipment Provided	NA	YES	NO
2-way radio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flashlight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Line	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Harness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rescue tripod	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protective suit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gloves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hard hat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCBAs <input type="checkbox"/> entry <input type="checkbox"/> backup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respirator <input type="checkbox"/> entry <input type="checkbox"/> backup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assured Equip Ground Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hot work permit Required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Periodic Atmospheric Testing			
Time			Time
Oxygen >19.5- <23%			Oxygen >19.5- <23%
LEL 10 %			LEL 10 %
CO < 35 ppm			CO < 35 ppm
H2S 10 ppm			H2S 10 ppm

For additional comments, use the margin or page back. Return a copy to the EHS Office, MS 9070, Safety Building 111. Job Supervisor files original.

I have reviewed the work authorized by this permit and the information in it. Written instructions and safety procedures have been received and understood. Entry cannot be approved if any item is marked "NO". This permit is not valid unless all appropriate items are completed.

Preparer Signature (EHS staff/competent person) _____ Approval Signature (job supervisor) _____

Western Washington University

Rev 0. 7/21/92. Rev 1. 9/17/92. Rev 2 7/15/98

Back of Permit Form

Procedures for Entering and Working In The University's Tunnel System

The following procedures are applicable when entering the University's tunnel system. Refer to the attached information for tunnel locations which are permit-required confined spaces.

1. **Whenever possible** create two **OPEN EXITS**, by opening manholes from the outside and putting up a barricade or opening locks on doors at the other end of the tunnel.

Tunnels where there are two open exits on either side of the work area are NON-permit-required confined spaces.

Tunnels where the only exit is to go back ARE permit-required confined spaces.

Tunnels with one locked exit ARE permit-required confined spaces.

Tunnels less than 6 feet high ARE permit-required confined spaces.

Tunnels where hazardous materials are used or generated or hot work is performed ARE permit-required confined spaces.

All pits within tunnels that cannot be accessed with full-height stairways and hand-rails ARE permit-required confined spaces. There are two exceptions to this:

1. Tunnel entry point T0 ladder is a **NON**-permit required area.
2. Tunnel entry point TN2 ladder is a **NON**-permit required area.

2. Carry a two-way radio with the Facilities Management (FM) Base frequency or a cell phone. During business hours (8:00 a.m. to 4:30 p.m.) notify FM Work Control Center Dispatch when you enter and include where you will be going. Notify again when you leave via radio or phone. After business hours, provide the same notification to University Police Dispatch.

Telephones located in the tunnels are available for use in emergency.

3. In non-permitted confined spaces, a person may enter alone **ONLY** for inspection, lamp replacement and cleaning without hazardous material type cleaners. All other maintenance and repair work requires a second person as a buddy.

Only in a permit-required confined space: An attendant remains outside the tunnel monitoring the ventilation system.

4. Carry a flashlight for lighting in the event of power failure.

5. **Only in a permit-required confined space:** Air monitoring is required. Contact EHS for monitoring or a determination providing otherwise.

6. **Only in a permit-required confined space:** Ventilation (a fan supplying air) is required in certain circumstances.

7. **Only in a permit-required confined space:** Complete the confined space entry permit prior to entering the confined space segment of the tunnel.

8. Provide lockout/tagout of hazardous energy, including water or steam, and emergency lighting if needed. If hot work is performed, it is done in accordance with hot work permit procedures and a permit is prepared.

9. If toxic materials are used in tunnels, consultation with the Environmental Health and Safety staff must occur well in advance of entry.

Confined Spaces In The University's Tunnel System

Most tunnel areas are NON-permit-required confined spaces if two unlocked exits are available on either side of the work area.

The following tunnel areas are permit-required confined spaces at all times.

- **Edens North off Mechanical Room 1 pipe chase/crawl space/tunnel**
- **Fine Arts Building tunnel off Mechanical Room 1 dead end with only one egress point**
- **Haggard Hall pipe chase/crawl space/tunnel (from Haggard Hall to the main tunnel)**
- **Higginson Hall, pit and crawl space/tunnel off Mechanical Room 1 (separate from main tunnel system)**
- **Highland Hall, pipe chase/crawl space/tunnels off Mechanical Room and student room closets**
- **Humanities pipe chase/ tunnel off Mechanical Room 1 (separate from main tunnel system)**
- **Old Main tunnel labeled Room 104D off Mechanical Room 104. NOTE: If the exit hatch in Room 285C is opened prior to entry, this tunnel (Room 104D) is a NON-permitted confined space.**
- **Old Main crawl space/low ceiling height/tunnel off Mechanical Room 131**
- **Old Main crawl space/tunnel to Snake Pit**

NOTE: Fairhaven stacks tunnel (with low head room) has been reclassified to a NON-PERMIT Confined Space as of June 1, 2000. As of September 24, 2003, specific asbestos protocols are in place which must be followed.

This is current information updated as of 09-27-2005 which may change

Rev. 0 10-1-92. Rev 1. 7/20/98. Rev 2. 09-27-05.

Confined Space Procedures for the University's Vessels

This procedure is applicable to boilers and other vessels present on the University campus. Because a lack of oxygen may be present, these are considered to be confined spaces. When it has been decided to enter a confined space, contact the Environmental Health and Safety office to arrange for air quality monitoring. This should be done at least one day prior to entry.

1. Drain the vessel.
2. If the vessel has not contained water, but has contained a toxic material, contact the Environmental Health and Safety office for specific procedures.
3. Open all ports and entries to the vessel. Allow air to move freely through the space. At least 5 air changes must occur prior to entry. If only one port is present on a vessel, ventilation shall be performed prior to monitoring.
4. Monitor the air quality within the vessel. If the oxygen level is adequate, entry is acceptable.
5. Rescue equipment, including harness, lines, and removal equipment are not required, since their use could prove more hazardous than beneficial due to the possibility of catching on pipes and valves. Once adequate oxygen is available, toxic or flammable vapors are not expected. If flammable or toxic materials are to be used, consultation with the Environmental Health and Safety staff must occur well in advance of entry.
6. Continuous ventilation is required only if one port is present on the vessel. If two ports are present which can function as exits, the space is not a confined space, and an adequate supply of air is considered to be present.

If hazardous materials are used or generated within the vessel as in cleaning or painting operations, or if hot work is performed, vessel is considered a confined space. Refer to procedures in Number 9 below.

7. One person is present outside the vessel as an attendant at all times. If toxic materials are used, the attendant shall be certified in CPR and first aid procedures.
8. Prepare the confined space entry permit and sign off prior to entry.
9. Provide lockout/tagout of hazardous energy, including water or steam, and emergency lighting if needed. If hot work is performed, it is done in accordance with hot work permit procedures and a permit is prepared. If toxic materials are used in the space, consultation with the Environmental Health and Safety staff must occur well in advance of entry.

Confined Space Procedures for the University's Utility Holes, Crawl Spaces, Attic Spaces and Pits

All utility holes on campus are considered permit-required confined spaces. Pits or holes dug into the ground over 4 feet deep are considered permit-required confined spaces.

All elevator pits and holes are permit-required confined spaces.

All enclosed pipe chases are permit-required confined spaces.

All sump pump pits are permit-required confined spaces.

All attic spaces less than 6 feet high are permit-required confined spaces.

All attic spaces 6 feet high or higher with only one entry point are permit-required confined spaces.

When it has been decided to enter a permit-required confined space, contact the Environmental Health and Safety office to arrange for air quality monitoring. Whenever possible, this contact should be made at least one day prior to entry.

The following procedure is applicable:

1. Assemble and inspect all rescue equipment, harness, line, emergency or temporary lighting, if necessary, first aid kit, radio, ventilation, protective equipment, including gloves, suits, boots, hard hats, respiratory protection, emergency respiratory protection (SCBA, if appropriate) and take equipment to the site.
2. Barricade site to prevent unauthorized entry, as appropriate. Trench and shore the site in accordance with the Washington Administrative Code.
3. Ventilate the utility hole, pit, crawl space or attic space, if needed.
4. Contact EHS to monitor the air quality within the utility hole, pit or space. If it is acceptable, continue with entry procedures. If hazardous levels are present, consult with EHS staff prior to continuing the entry program.
5. One person is present outside the confined space as an attendant at all times. He or she shall have respiratory protection available when conditions warrant.
6. Provide ventilation continuously during entry into the space.
7. Complete the confined space entry permit. Complete hot work permits.
8. Contact the Facilities Management base station via radio or phone regarding entry and location.
9. Monitor air quality during entry as appropriate, based upon the potential for hazardous or flammable gases and changing work environment. A properly trained person, generally Environmental Health and Safety staff, will determine the need for on-going testing.

Confined Spaces in the University's Utility Holes, Crawl Spaces, Attic Spaces and Pits

The following utility holes, crawl spaces, attic spaces and pits areas **ARE permit-required confined spaces at all times.** There are other, similar spaces on campus meeting the definitions of permit-required confined spaces that are not listed below.

- Alumni House crawl space off basement
- Art Annex pit and sump at Mechanical Room 1
- Birnam Wood – multiple crawl spaces
- Birnam Wood – attic spaces
- Buchanan Towers – vertical pipe chases, crawl space and pit off the mechanical room
- Canada House crawl space off basement
- Carver Gym crawl space under dance studio in Mechanical Room 1
- Carver Gym hatch and pipe chase in Rooms 122-124
- Carver Gym crawl spaces under Room 120, accessed from outside the building by the Varsity Locker Room
- College Hall crawl space off Mechanical Room 1
- College Hall enclosed pipe chases
- College Hall some attic spaces. Contact EHS for evaluation
- Fine Arts crawl space off Mechanical Room 1
- Highland 1 and 2 foundation crawl spaces
- High Street Hall crawl spaces under building at foundation
- Lakewood water and sewer pits
- Mail Room crawl spaces under building at foundation (demolition in January 2006)
- Mathes Hall crawl spaces off Storage Room 3
- Miller Hall some attic spaces. Contact EHS for evaluation
- Nash Hall crawl space and pit off Mechanical Room 1
- Old Main some attic spaces. Contact EHS for evaluation
- Performing Arts Center crawl space Room 191
- Performing Arts Center elevator pit under orchestra elevator for MainStage Theater
- Ridgeway Complex all foundation crawl spaces
- Safety Building crawl spaces under building at foundation (demolition in January 2006)
- Student Recreation Center water pit in Room 114
- Viking Commons crawl spaces on north side
- Wilson Library basement crawl spaces

The following utility holes, crawl spaces, attic spaces and pits areas **are NON-permit-required confined spaces at all times.** (In general, full height spaces with more than one exit, adequate walking surfaces and no potential hazards are non-permit required.) If a hazard or potential hazard is discovered in the areas below, contact Environmental Health and Safety for a hazard assessment.

- Arntzen Hall crawl space off Mechanical Room 1
- College Hall some attic spaces. Contact EHS for evaluation
- Miller Hall some attic spaces. Contact EHS for evaluation
- Old Main some attic spaces. Contact EHS for evaluation
- Performing Arts Center storage area (Room 167) under MainStage seating area

**Confined Spaces in the
University's Utility Holes, Crawl Spaces, Attic Spaces and Pits**

Continued

The following utility holes, crawl spaces, attic spaces and pits areas are **NON permit-required confined spaces because they have 2 exits but REQUIRE contact with Facilities Management Base Radio before and after entry.**

- Carver Gym concrete floor crawl space off Mechanical Room 1 around swimming pool
- Edens Hall basement crawl spaces with concrete floors

Confined Space Procedures for Other Mechanical and Electrical Spaces

All air handling units when accessing area with unprotected moving machinery are permit required confined spaces.

Filter banks are NOT permit-required confined spaces.

All underground electrical vaults and personnel-access holes are permit-required confined spaces.

The mechanical and electrical spaces below are considered permit-required confined spaces.

When it has been decided to enter a confined space, contact the Environmental Health and Safety office to arrange for air quality monitoring. Whenever feasible, this should be done at least one day prior to entry.

The following procedure is applicable:

1. Assemble and inspect all rescue equipment, harness, line, emergency or temporary lighting, if necessary, first aid kit, radio, ventilation, protective equipment, including gloves, suits, boots, hard hats, etc, respiratory protection, emergency respiratory protection (SCBA, if appropriate) and take to site.
2. Prevent unauthorized entry. Generally no special procedure is required, since spaces have limited access.
3. Ventilate the confined space area, if needed.
4. Monitor the air quality within the space. If it is acceptable, continue with entry procedures. If hazardous levels are present, consult with EHS staff prior to continuing the entry program.
5. Provide ventilation during entry into the space, as needed.
6. Complete the confined space entry permit. Complete hot work permits.
7. Contact the Facilities Management Work Control Center Dispatch via radio or telephone regarding entry and location.
8. Monitor air quality during entry, if appropriate, based upon the potential for hazardous or flammable gases and changing work environments. This will be determined by a competent person, generally the Environmental Health and Safety staff.

Permit-Required Mechanical & Electrical Spaces

- Birnam Wood underground electrical vault
- Fairhaven underground electrical vault
- Fine Arts pipe chase off Mechanical Room 1
- Ridgeway Complex underground electrical vaults

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