

# CONFINED SPACE ENTRY PROGRAM

## POLICY

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Whitworth University has implemented the following confined space entry program to reduce or eliminate fatalities and injuries that could occur in sewers, manholes, vaults, and other confined spaces. All employees assigned to work in and around confined spaces shall be adequately trained and protected from potential hazards. All persons working in or near confined spaces are responsible for complying with the requirements set forth in this policy.

## RESPONSIBILITIES

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**Entry supervisors:** Entry supervisors in affected departments will be familiar with this plan and its contents. Entry supervisors will be responsible for authorizing entry permits into permit-required confined spaces, verifying all hazards associated with a confined space have been identified and all testing has been completed, confirming rescue equipment is in use when necessary, and that rescue teams are notified prior to all permit-required confined space entries, ensuring the entry procedures are adhered to throughout the course of the work, terminating permits when conditions change, and ensuring that employees working in and around confined spaces have received the appropriate level of training. Entry supervisors must also know the potential hazards of each entry, including the symptoms of exposure, behavioral reaction to and consequences of exposure.

**Safety Manager:** The Safety Manager/designee will be responsible for providing training to all departments with affected employees, documenting each training session, and maintaining the written confined space plan. He/she will also be responsible for addressing unsafe situations with the employee's supervisor, or in the case of an emergency, addressing the situation directly with the employee and notifying the supervisor in a timely manner following the emergency.

**Confined space entrants:** Confined space entrants shall receive training in accordance with the confined space program prior to working in or around confined spaces. Entrants will be responsible for identifying all hazards that will be present prior to entry, calibrating monitoring equipment, obeying all commands given from the confined space attendant, and using the required protective equipment outlined in the confined space program.

**Confined space attendants:** Confined space attendants will remain outside of a confined space and will be responsible for monitoring the space while it's occupied. He/she will also be responsible for identifying all hazards that will be present prior to entry, calibrating monitoring equipment, monitoring the interior and exterior of the space for dangerous conditions, warning entrants of hazardous conditions as they develop and instructing the entrant(s) to exit the space if necessary, summoning aid in the event of an emergency, assisting with personnel retrieval, and preventing unauthorized persons from entering the space.

**Rescue team:** The rescue team is a pre-established group consisting of Whitworth employees who have received confined space entrants training. The rescue team is responsible for responding to confined spaces in emergency situations, performing personnel retrieval in a safe manner, providing first aid and CPR if trained to do so, and summoning advanced medical personnel as necessary.

## CONFINED SPACES

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Whitworth University has two types of confined spaces. The following information has been included to help employees understand the differences between a confined space and a permit-required confined space.

### 1. Confined Space

A confined space is a space that is **ALL** of the following:

- a. Large enough and arranged so an employee could fully enter the space and work;
- b. Has limited or restricted entry or exit (tanks, vessels, storage bins, hoppers, vaults, excavations, and pits); *and*
- c. Not designed for continuous human occupancy.

### 2. Permit-Required Confined Space

A permit-required confined space is a confined space that has **ALL** of the characteristics of a confined space and **one or more** of the following characteristics capable of causing death or serious physical harm.

- a. Contains or has a potential to contain a hazardous atmosphere; *or*
- b. Contains a material with the potential for engulfing someone who enters the space; *or*
- c. Has an internal configuration 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*
- d. Contains any other recognized serious safety or health hazard that could either:
  - i. Impair the ability of self-rescue; *or*
  - ii. Results in a situation that presents an immediate danger to life or health.

## PROCEDURES AND REQUIREMENTS

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### 1. Identifying Confined Spaces

Before entering a confined space, entrants must determine if the space is classified as a confined space or a permit-required confined space. This information can be obtained from Facilities Services or the Safety Manager. A map of Whitworth's confined spaces has been compiled using Whitworth's Geographic Information Systems (GIS) data. The GIS map for confined spaces will provide the location of the space, the identification number for the space, and will indicate if the space is permit-required. Attics, crawl spaces, and other yet to be identified confined spaces are not included on the GIS map. Employees should contact the Safety Manager if a confined space exists and is not included on the GIS map. All employees shall assume that Whitworth's confined spaces are permit-required unless information obtained from the Safety Manager or the GIS map expressly states otherwise.

### 2. Controlling Entry Into Permit-Required Confined Spaces

All permit-required confined spaces will be controlled to prevent unauthorized entry, and all associated hazards will be identified and evaluated before employees enter these spaces.

Examples of precautions that may be taken to prevent unauthorized entries include but are not limited to:

- Placing locks on access ways;
- Labeling permit-required confined spaces with appropriate signage; *and*
- Using signs, cones, barricades, warnings tape, and attendants to warn bystanders.

### 3. Entry Permits

Entry permits are required when any person will enter permit-required confined spaces and must be completed by an entry supervisor **prior** to entering the space. Only the Safety Manager and entry supervisors who have received confined space training may issue an entry permit. Under no circumstance shall an employee enter a permit-required confined space without attaining an entry permit.

Once completed and signed, the entry permit will be posted at the point of entry and all entrants made aware of the permit and its contents. The permit will be followed exactly throughout the entire time of entry. In addition, the entry may not exceed the time allotted on the permit. If work must extend beyond the time period specified on the permit, the permit must be re-issued with new testing, signatures and coordination. If an entry must span two or more work shifts, a new permit must be initiated and completed by the on-coming crew, and all procedures documented here must be followed.

### 4. Protective Equipment

Due to the potentially hazardous nature of confined spaces, certain forms of protective equipment will always be required, regardless of how the space is classified. All protective equipment used for confined spaces will be provided at no cost to the employee. The following protective equipment will always be required when entering a confined space:

- Air sampling equipment for oxygen, flammability, hydrogen sulfide and toxic materials; *and*
- Communication equipment.

In addition to protective equipment, a confined space attendant must always be present when entering a confined space.

**Note:** Signs, cones, barricades, or warnings tape to indicate the space is in use will be required when people are near the vicinity of the work area. If no one is in the vicinity of the work area **and** the work will not extend beyond 15 minutes, barricades are not required to be deployed.

Permit-Required Confined Spaces - Additional protective equipment requirements are in place for entering permit-required confined spaces. The following pieces of equipment will always be required when entering a permit-required confined space unless they make the entry more dangerous, would not contribute to the rescue of the entrant, or alternate entry procedures can be used. This determination will be made by the Safety Manager/designee.

- Ventilation equipment (air mover);
- Full body harnesses for entrants; *and*
- Personnel retrieval systems.

A mechanical lifting device, such as a tripod, will always be provided whenever a vertical entry is made into a permit-required confined space, unless alternate entry procedures can be used. *A mechanical lifting device will be required when vertical entries are made into confined spaces that are at least 10 feet deep.* In situations where a retrieval system would pose additional hazards, such as entanglement or electrocution hazards, the entry procedures shall be modified. The Safety Manager/designee will work with departments to develop procedures for modified entries that are specific to the permit-required confined space.

Additional PPE - Additional protective equipment may be required depending on the confined space being entered. This includes but is not limited to:

- Hard hats;
- Hearing protection;
- Eye protection;
- Lighting equipment; *and/or*
- Respirators;

Contact the Safety Manager for more information about protective requirements.

## 5. Atmospheric Testing

All confined spaces must be tested for hazardous atmospheres **prior** to entry using a calibrated direct-reading instrument. If the space is too large to isolate or is part of a continuous system (i.e., a sewer), then pre-entry testing will be performed to the extent possible. The acceptable entry conditions will be indicated on the confined space entry forms and no one will not be allowed to enter a confined space if the acceptable entry conditions have not been met. Acceptable entry conditions can be achieved through a variety of means, including forced air ventilation.

If the entry is authorized, entry conditions will be continuously monitored in the areas where entrants are working. Acceptable entry conditions must be consistently monitored and maintained during the entry work.

If a hazardous atmosphere is detected during entry, do all of the following:

- a. Evacuate all personnel from the space immediately;
- b. Evaluate the space to determine how the hazardous atmosphere developed;
- c. Implement measures to protect the entrants from hazardous atmospheres before continuing the entry operation - notify the Safety Manager/designee if necessary; *and*
- d. Verify the space is safe for entry before continuing the entry operation.

## 6. Entry Procedures: Confined Spaces

Entry into a confined space will commence once **ALL** of the following protocols have been completed:

- a. All personnel are properly attired, trained and coordinated;
- b. The atmosphere has been tested;
- c. If applicable, all lockout/tagout procedures have been followed;

- d. An attendant is present and monitoring the space; *and*
- e. The non-permit required check list has been completed.

If any negative conditions occur, personnel will evacuate the confined space immediately, and the entry will be re-evaluated. Entrants shall immediately comply with commands from the attendant to evacuate the space.

**Note:** Attics that meet the criteria for confined spaces **are** exempt from the entry procedures for confined spaces. Attics that meet the criteria for permit-required confined spaces **are not** exempt from the entry procedures for permit-required confined spaces.

## 7. Entry Procedures: Permit - Required Confined Spaces

Entry into a permit-required confined space will commence once **all** of the following protocols have been completed:

- a. A permit has been completed by an entry supervisor;
- b. Additional permits have been acquired if necessary (hot work, etc.);
- c. All personnel are properly attired, trained and coordinated;
- d. The atmosphere has been tested;
- e. Preparation procedures are finalized (lockout/tagout, etc.);
- f. A personnel retrieval system is being used in accordance with the permit-required equipment standards;
- g. Ventilation is established if necessary;
- h. An attendant is present and monitoring the space; *and*
- i. A rescue team has been placed on standby during the entry.
  - If alternate entry procedures cannot be used, the space cannot be temporarily reclassified, and it is not possible to perform a non-entry rescue, the Facilities Services main office must be notified prior to initiating the permit-required entry.

During an entry into a permit required confined space, **all** of the following protocols will be maintained:

- a. The attendant(s) will continue to monitor the entrant(s);
- b. Communication will be maintained with the entrant(s);
- c. The atmosphere in the space will be continually monitored; *and*
- d. The entrants will monitor each other for physical signs of health problems.

If any of these processes show a negative change in conditions, personnel will evacuate the confined space immediately, and the entry will be re-evaluated. Entrants shall promptly comply with commands from the attendant to evacuate the space.

**Note:** Attics that meet the criteria for confined spaces **are** exempt from the entry procedures for confined spaces. Attics that meet the criteria for permit-required confined spaces **are not** exempt from the entry procedures for permit-required confined spaces.

## **8. Alternate Entry Procedures**

Alternate entry procedures may be used to enter a permit-required confined space when the only hazard is an actual or potentially hazardous atmosphere and continuous forced air ventilation is all that is needed to maintain the permit-required confined space for safe entry.

Entry supervisors must verify the permit-required space is eligible for an alternate entry and must complete the university's temporary reclassification and alternate entry form prior to employees entering the space. If an alternate entry is approved, the space will be continuously ventilated and all non-permit required confined space procedures will apply.

## **9. Post Entry Procedures**

When work in a confined space is completed, all tools and equipment will be removed from the confined space, and each entrant will be accounted for. Once each entrant has been accounted for, equipment in the confined space may be re-energized in accordance with the lockout/tagout procedures found in WAC 296-803. The entrance to the confined space shall also be secured to prevent unauthorized entry. If the confined space is permit-required, the permit will be removed from the site and cancelled by the entry supervisor. All permits must be returned to the Safety Manager and will be kept on file for a minimum period of one year.

## **10. Contractors**

In situations involving various groups of personnel (Whitworth University employees and subcontractor personnel) entering the same space simultaneously, the entry supervisor from Whitworth who signs the permit will coordinate the efforts of both parties to ensure the entry is made in accordance with the requirements established in this plan. All personnel shall be clear on their roles, have received the necessary training and shall understand Whitworth's emergency procedures.

Contractors will be required to establish and abide by a confined space entry program that complies with the confined space regulations found in WAC 296-809 when they will enter Whitworth's permit-required confined spaces without the direct supervision or involvement of Whitworth personnel.

# **RECLASSIFICATION OF CONFINED SPACES**

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## **1. Confined Spaces**

Any time conditions change in a non-permit confined space, the space and the entry procedure for that space should be re-evaluated. Employees should immediately notify the Safety Manager if a hazard is discovered that may require the space to be reclassified. If necessary, the space should be reclassified as a permit space by the Safety Manager/designee and the confined space map should be updated. This process must be documented with at least the following information:

- Date
- Location of the space
- Signature of the person making the determination

## 2. Permit-Required Confined Spaces

In some cases, a permit-required space can temporarily be reclassified as a non-permit required space by an entry supervisor or the Safety Manager. A space can be reclassified only if:

- The space poses no actual or potential atmospheric hazards; *and*
- All hazards within the space are eliminated without entry into the space.

The space may be reclassified as a non-permit confined space as long as the hazards remain eliminated. If the space must be entered in order to eliminate the hazards, an entry permit must be completed prior to entry, and the entry must be performed in accordance with the permit-required confined space entry procedures until all hazards have been eliminated.

**Note:** The control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards. Alternate entry procedures will be used when an actual or potential atmospheric hazard remains since the space may not be reclassified.

The basis for determining that all hazards within the space have been eliminated must be documented using the temporary reclassification and alternate entry form. This form will be made available to all employees entering the space. If hazards arise within the space after reclassification, all entrants will immediately evacuate the space, and the space will be re-evaluated. If the hazards cannot be eliminated, the space must be treated as a permit-required confined space.

## RESPIRATOR PROTECTION

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Employees will not enter confined spaces that have atmospheres containing airborne contaminants with concentrations above the PEL as defined by the Washington Administrative Code (WAC). No employee is authorized to knowingly enter an oxygen deficient atmosphere, toxic atmosphere or flammable atmosphere.

## HOT WORK

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Due to the generation of hazardous gasses, the Safety Manager/designee's permission shall be required prior to doing hot work in a manhole. Hot work means any work which requires the intentional use of an ignition source of any type, which could ignite flammable gases or vapors (e.g., cutting torch, welding).

## EMERGENCY PROCEDURES

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Should an emergency situation arise, the attendant will immediately summon emergency rescue personnel and call security without leaving his or her post. If retrieval equipment is in place, the attendant should begin emergency personnel retrieval.

The members of Whitworth's rescue team are primarily responsible for rescuing other university personnel during an emergency in a confined space. When a rescue will be performed by the members of a rescue team the appropriate equipment (e.g., tripod, ropes, etc.) and rescue personnel must be available. Here, "available" means that the equipment must be in place at the

entrance, safety harnesses must be worn by all entrants, and a retrieval line must be properly affixed to each harness so that personnel can be retrieved if necessary. Surface emergency personnel must be on site and easily contacted for emergency response.

All rescue service personnel will be trained in confined space entry procedures and all necessary personal protective and rescue equipment. At least one member of the rescue team must be trained in first aid, cardio pulmonary resuscitation (CPR) and automated external defibrillators (AEDs). Each confined space rescue team member will practice confined space rescues at least once every 12 months. This training will be conducted using the same equipment that would be used in a real situation; using a manikin, dead weight or live person (if this can be done without undo exposure); and within environments (e.g., dimensions of entrances, etc.) that are identical to those where actual rescues may be necessary.

Once the personnel are retrieved from the space, necessary first aid will be delivered by Whitworth personnel or paramedics as available. If requested, a safety data sheet (SDS) for any material to which entrants have been exposed will be provided to treating medical personnel.

As a secondary measure, the local fire department has a technical rescue team capable of providing confined space rescue services when Whitworth's rescue team members cannot perform a rescue during a permit-required confined space entry. Facilities Services' main office must be notified prior to employees entering a permit-required confined space when a non-entry rescue is not possible. This will help ensure the fire department is notified as soon as possible in the event of an emergency.

## TRAINING

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All employees who will authorize confined space entries, make confined space entries, serve as attendants or members of a rescue team, will be trained in Whitworth's confined space entry program. Employees must demonstrate competency in confined space entry procedures prior to making an entry. To ensure competency in the confined space entry program, training will be provided to each employee under the following conditions:

- Before the employee is assigned any confined space duties;
- Before any change in assigned duties;
- Whenever the entry process or potential entry hazards change;
- Whenever an employee is to address a confined space hazard for which he or she has not been trained;
- Whenever deviations occur from the procedures outlined in this policy; *or*
- Whenever the employee's supervisor feels that an employee's knowledge is insufficient.

The confined space entry training will cover at least the following topics:

- How to identify confined spaces and permit-confined spaces;
- The roles and responsibilities of entry supervisors, entrants, attendants and rescue teams;
- How to identify hazards that may be present when entering confined spaces;
- An overview of protective equipment used for confined space entry;
- The use and maintenance of equipment;
- How to test and monitor for atmospheric hazards;



- Whitworth's procedures for issuing entry permits; *and*
- Whitworth's procedures for entering confined spaces and permit-required confined spaces.

Training records for the confined space entry program will be created and maintained by the Safety Manager/designee in conjunction with department supervisors.

## PROGRAM EVALUATION

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The confined space entry program will be evaluated at least annually by the Safety Manager/designee to ensure it is effective in practice and that it complies with all applicable regulations.

## DEFINITIONS

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**Acceptable entry conditions** - The conditions that must exist in a permit-required confined space to allow safe entry and work.

**Attendant** - An individual stationed outside one or more permit-required confined spaces to monitor the entrants.

**Contaminants** - Any organic or inorganic substance, dust, fume, mist, vapor, or gas. Their presence in air may be harmful to human beings.

**Emergency** - Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit-required confined space that could endanger authorized entrants.

**Engulfment** - The surrounding capture of a person by a liquid or finely divided (flowable) solid substance that can be inhaled 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, or crushing.

**Enter (entry)** - The action by which a person passes through an opening into a permit-required confined space and includes work activities in that space. Entry is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

**Entrant** - An employee who is authorized by the employer to enter a permit-required confined space.

**Entry permit (permit)** - The written or printed document that is provided by Whitworth to allow and control entry into a permit-required confined space and that contains the information required in WAC 296-809-500, Permit entry procedures.

**Entry supervisor** - An employee responsible for:

- Determining if acceptable entry conditions are present at a permit-required confined space where entry is planned;
- Authorizing entry and overseeing entry operations; and
- Terminating entry as required.

**Flammable atmospheres** - Atmospheres in excess of 10% of the lower flammable limit (LFL).

**Gases** - The gases most commonly found in manholes, sewers, wetwells, or vaults (methane or hydrogen sulfide)

**Hazardous atmosphere** - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit-required confined space), injury, or acute illness.

**Hot work permit** - A written authorization to perform operations, for example, riveting, welding, cutting, burning, and heating, that can provide a source of ignition.

**Inerting:** The displacement of the atmosphere in a permit-required confined space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This procedure produces an IDLH oxygen-deficient atmosphere.

**Nonpermit confined space** - A confined space that does NOT contain actual hazards or potential hazards capable of causing death or serious physical harm.

**Oxygen deficient atmosphere** - An atmosphere containing less than 19.5 percent oxygen by volume.

**Oxygen enriched atmosphere** - An atmosphere containing more than 23.5 percent oxygen by volume.

**Permit-required confined space program** - An overall program for:

- Controlling and appropriately protecting employees from permit-required confined space hazards; and
- Regulating employee entry into permit-required confined spaces.

**Permit system** - means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

**Prohibited condition** - Any condition in a permit-required confined space that is not allowed by the permit during the authorized entry period.

**Retrieval system** - The equipment used for nonentry rescue of persons from permit-required confined spaces, such as a retrieval line, full-body harness or wristlets, and a lifting device or anchor.

**Testing** - The process of identifying and evaluating the hazards that entrants may be exposed to in a permit-required confined space. Testing includes specifying the tests that are to be performed in the permit-required confined space. Testing allows employers to devise and implement adequate controls to protect entrants during entry, and to determine if acceptable entry conditions are present.

## REFERENCES

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WAC 296-809

If you have questions regarding Whitworth University's confined spaces program please contact the University's Safety Manager in the Human Resources office at 777-3236.

**Approved By:** Gerald Gemmill      **Date:** 8/26/2015