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i. Purpose

This program establishes a process to protect employees from the hazards associated with entry into confined spaces and provides guidance for the safe access and entry into, working inside, and egress from confined spaces.

ii. Scope

This program applies to all contractors and University of Pittsburgh Employees who have to perform work in a Confined Space.

a. Definition

Confined Spaces are defined as areas that:

i. Are large enough for an employee to enter and perform work,
ii. Have limited or restricted means for entry or exit, and
iii. Are not designed for continuous occupancy.

Examples of confined spaces are sewers, manholes, tunnels, tanks, boilers, transformers, pipes, excavations, elevator pits, vaults, and ducts. For the purpose of this program, there are two classifications of confined spaces:

i. Non-permit confined space – confined space that meets the definition of a confined space (above) but does not meet the requirements for a permit required confined space (below).
ii. Permit-required confined space – confined space that has one or more of the following characteristics:
    a. Contains or has a potential to contain a hazardous atmosphere,
    b. Contains a material that has the potential for engulfing an entrant,
    c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or a floor that slopes downward and tapers to a smaller cross section,
    d. Or contains any other recognized, serious safety or health hazard.

b. Evaluation

i. Assessments must be conducted to determine whether a confined space is classified as a non-permit confined space or a permit-required confined space
ii. When there are changes in the use or configuration of a non-permit confined space, or when certain operations (e.g., welding, steam lines, chemicals) might introduce or create new hazards to entrants, the confined space must be

reevaluated prior to entry. If necessary, the space will be reclassified as a permit required confined space.

iii. Responsibilities

a. Environmental, Health, and Safety (EHS)
   i. Review, audit, and revise this program annually or when deemed necessary.
   ii. In collaboration with Facilities, assess new and existing confined spaces.
   iii. Provide guidance as needed.

b. Department and Units
   i. Department chief, supervisor, or designee must approve entry into permit required confined spaces, including contractors.
   ii. Ensure employees are fully informed, authorized, and trained in confined space entry requirements and procedures as outlined in this program.
   iii. Prevent unauthorized entry into permit-required confined spaces through training, signage, and security measures.
   iv. Monitor employees' need for additional or refresher training, based upon assigned duties, changes in confined spaces, or changes to this program.
   v. Collaborate with EHS to ensure each contractor's Confined Space Program and permit process is compliant with regulatory and University of Pittsburgh requirements.

c. Project Managers
   i. Inform contractors of work that involves any confined space entry and provide assessments for those spaces.
   ii. Collaborate with Facilities when energy shutdowns or lifesaving impairments are necessary.
   iii. Collaborate with EHS to ensure each contractor's Confined Space Program and permit process is compliant with regulatory and University of Pittsburgh requirements.
   iv. Inform and provide contractors with the University of Pittsburgh Confined Spaces Program and specific procedures developed for confined space entries.

d. Authorized Entrants
   i. Successfully complete confined space entry training.
   ii. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure
   iii. Maintain communication with the attendant to alert regarding the need to evacuate the space.
   iv. Exit the space as quickly as possible when:
      a. An order to evacuate is given by the attendant or entry supervisor,
      b. An entrant recognizes any warning signs or symptoms of exposure to a dangerous situation,
      c. An entrant detects a prohibited condition, or
      d. An evacuation alarm is activated.
   v. Report any injuries, illnesses, questions, or any unsafe working conditions to the department Supervisor.

e. Authorized Attendants
   i. Successfully complete confined space entry training.
   ii. Know the hazards that may be faced during entry.
   iii. Conduct assigned tasks in a safe manner.
   iv. Be aware of possible behavioral effects of hazard exposure of entrants.
   v. Accurately record all data on the permit (e.g., names of individuals, date, time of entry, atmospheric data) and be the sole person responsible for the permit.

vi. Continuously maintain an accurate count of entrants in the space
vii. Ensure an attendant is always present while entrants are in the space.
viii. Maintain communication with the entrants to assess entrant status and alert entrants of the need to evacuate immediately under the following conditions:
    a. If an attendant detects a prohibited condition,
    b. If an attendant detects the behavioral effects of hazard exposure in an entrant,
    c. If an attendant detects a situation outside the space that could endanger the entrants, or
    d. If an attendant cannot effectively and safely perform all the duties.
ix. Summon rescue or other emergency services if entrants need assistance to escape from the space.
x. Ensure unauthorized entrants do not enter the permit-required confined space.
xi. Report any injuries, illnesses, questions, or any unsafe working conditions to the department Supervisor.

f. Authorized Entry Supervisors
    i. Successfully complete confined space training
    ii. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of exposure.
    iii. Verify all tests specified by the Confined Space Entry Permit have been conducted and all procedures and equipment specified on the permit are in place prior to endorsing the permit and allowing entry to begin.
    iv. Terminate the entry permit, whenever warranted.
    v. Verify rescue services are available and a means to summon them is operable.
    vi. Report any injuries, illnesses, questions, or any unsafe working conditions to the department Supervisor.

g. Contractors
    i. Provide a copy of a site-specific/project-specific confined spaces program to University of Pittsburgh department project managers and EHS.
    ii. Confined Spaces programs must meet or exceed the minimum requirements set forth in this program, in addition to the OSHA General Industry and/or Confined Spaces in Construction regulations, as applicable.
    iii. Obtain copies of all necessary confined space assessments and coordinate all confined space entries with University of Pittsburgh project managers, including when both University of Pittsburgh and contractor personnel will be working in or near confined spaces; contractors must receive authorization from University of Pittsburgh Facilities prior to entry in a confined space.
    iv. Ensure employees are properly trained in confined space entry procedures
    v. Provide the necessary equipment, personal protective equipment, personnel, and resources necessary for safe entry into confined spaces, including air monitoring equipment and rescue equipment/services.
    vi. Post permits at confined space entry sites for the duration of the entry.
    vii. Contractors must use their own confined space permits and provide completed permits to University of Pittsburgh project managers.
    viii. Inform University of Pittsburgh project managers of any hazards confronted or created in the confined space.
    ix. Develop rescue procedures specific to the space(s) entered (see Section IX).
    x. In the event of an emergency requiring confined space rescue, the authorized entry supervisor or attendant will immediately notify emergency services.

xi. Provide a scope of work to University of Pittsburgh project managers and EHS, prior to entry into confined spaces on University of Pittsburgh property that are not controlled or maintained by University of Pittsburgh (e.g., city sewers, electrical vaults)

iv. Non-Permit Confined Space Entry
   a. Before entry into non-permit confined spaces, authorized entry supervisors must evaluate the scope of work and determine whether conditions will change that might make the space a permit-required confined space. Examples include welding, working with hazardous chemicals, introduction or intrusion of a hazardous substance (e.g., flooding) or atmosphere (e.g., active steam release), and known or assumed structural failure. If such conditions are expected, suspected, or develop, supervisors must contact EHS to assist with a hazard assessment to conduct a permit entry.
   b. If non-permit confined spaces have no hazards, entry can be done without using the permit system.
   c. Only trained and authorized individuals may enter and perform work inside non-permit required confined spaces.

v. Permit- Required Confined Space Entry
   a. Pre-Entry
      i. Notify EHS prior to entry into a Permit-Required Confined Space.
      ii. Notify Fire Department prior to entry into a permit-required confined space if means of rescue is not feasible (retrieval system tie off cannot be maintained, etc); this information must be noted on the entry permit.
      iii. Review the confined space assessment and scope of work to determine the permit requirements
      iv. Evaluate the work activities and work conditions, hazards, responsibilities, assigned duties, communication, and rescue/emergency services procedures
      v. Review the SOP and applicable confined space assessment(s) and lockout/tagout procedure(s) with all parties involved during a pre-work briefing.
      vi. Test all air monitoring equipment before each entry into a confined space in accordance with the manufacturer's instructions, and calibrate if necessary.
      vii. No employee may enter a confined space until all identified hazards are eliminated or controlled and acceptable entry conditions have been established.
      viii. Because atmospheric hazards confined spaces may be immediately dangerous to life and health (IDLH), continuous forced air ventilation must be used to eliminate the potentially hazardous atmosphere:
         a. Air must be taken from a clean source and continued until all employees have left the space.
         b. If the minimum oxygen content of 19.5% cannot be maintained by forced air ventilation and the environment is oxygen-deficient, consult with Facilities Operations and EHS.
         c. This method cannot be used if asbestos is present in the space.
      ix. Submit the completed permit to EHS for review and approval in-person or by such means as emailing or texting a photo of the permit. EHS will evaluate the permit to ensure all requirements are met prior to entry.
      x. Post the authorized confined space permit at the entrance, or by any other equally effective, conspicuous manner, prior to beginning work.

   b. Entry

i. Only trained and authorized employees may enter a confined space or act as an attendant or supervisor; measures must be in place to prevent unauthorized entries.
ii. During permit-required confined space entries, an attendant must be present at all times; the attendant cannot perform any other tasks that could potentially interfere with his/her abilities to provide any/all support necessary to the entrant(s).
iii. Smoking is prohibited in confined spaces and near the entrance/exit area.
iv. Keep running vehicles away from the permit workspace.
v. Maintain constant visual or voice communication between the attendant and entrants entering a permit-required confined space using intrinsically safe communications (see Section VII).
vi. Access spaces with engulfment hazards away from affected areas or by top entry only.
vii. Protect all openings to confined spaces with barriers when hatches, covers, or lids are removed to protect entrants and others from accidental falls through the opening.
viii. When the possibility of a release of hazardous energy exists, appropriate lockout/tag out procedures must be utilized (see Section X).
ix. Utilize all required personal protective equipment
x. In the event a hazardous atmosphere or condition is detected or suspected at any time during a confined space entry, all personnel must exit the space immediately and measures must be implemented to protect employees from the hazards before any subsequent entries take place; department supervisors and EHS must be notified.
xi. If an emergency rescue becomes necessary or in the event of an injury, the Entry Supervisor or Attendant must call 911 immediately and provide information, guidance, and assistance as necessary.
xii. University of Pittsburgh employees are not permitted to enter a confined space to perform a rescue under any circumstances.

c. Post-Entry
i. When all work is complete and personnel have exited the confined space, the Entry Supervisor must:
a. Ensure the worksite is returned to safe conditions,
b. Close out the permit
c. Document any problems encountered during the entry
ii. Provide copies of all SOPs, permits, and any other relevant documentation (e.g., hot work permits) to EHS for post-entry review, who will:
a. Evaluate the entry permit and any other relevant documents to ensure they were completed properly
b. Provide immediate feedback and guidance to supervisors for any deficiencies identified, and
c. Maintain all relevant documentation for at least three years to facilitate the review of the Confined Spaces Program.

vi. Signage
a. For all permit-required confined spaces, post appropriate danger signage at the entry portal, hatch, cover, or equally effective location.
b. When feasible, provide locks on all confined space access points.
c. Steam, chilled water, and hot water vault access points must be marked with the vault number, in conspicuous manner, which corresponds to the system drawings and confined

space assessments; paint, tags, or any other effective means of marking and identifying the vaults may be used.

d. When infeasible to post permanent danger signage at confined space entry points (e.g., outdoor steam vaults, hot water vaults, chill water vaults), post temporary appropriate danger signage at the access point(s) when the access points are open.

vii. Communication

a. Departments and contractors must ensure two-way communication is available during all permit-required confined space entries and are responsible for ensuring adequate communication:
   i. Between those inside the confined space,
   ii. Between those inside the confined space and those outside, and
   iii. To summon emergency responders in the event of an emergency.

b. Examples of acceptable forms of communication are:
   i. Cellular phone
   ii. verbal communication
   iii. Tapping
   iv. Visuals (hand signals)

viii. Air Monitoring

a. Departments are responsible for maintaining, calibrating, and operating all air monitoring equipment according to the manufacturer's instructions.
   i. Prior to performing air monitoring for non-permit and permit confined space entry, perform a bump test or full calibration in accordance with the manufacturer's instructions using the appropriate test gas.
   ii. Calibration of air monitoring equipment must be performed monthly and documented.

b. Before authorized entrants enter the space and while entrants work in the space, atmospheric conditions must remain within the following limits:
   i. Oxygen: between 19.5% and 23.5%
   ii. Lower Explosive Limit (LEL): less than 10%
   iii. Carbon Monoxide (CO): less than 35 ppm (parts per million)
   iv. Hydrogen Sulfide (H2S): less than 10 ppm (parts per million)

c. Atmospheric conditions must be tested at least every 2 hours, as necessary based on the hazards present, and anytime deemed necessary by any member of the confined space entry team.

d. Atmospheric test results must be documented on entry permits.

ix. Rescue

a. Rescue Procedures
   i. Rescue procedures are required for all permit-required confined space entries.
   ii. The fire department is considered a back-up rescue service and must be notified prior to any confined space entry as outlined in Section V.
   iii. If an entrant requires rescue from a confined space, the Entry Supervisor or Attendant must call 911 immediately and report the incident as a "confined space rescue."
   iv. University of Pittsburgh employees are not permitted to enter a confined space to perform a rescue under any circumstances.

b. Rescue Methods

There are two types of rescue: entry and non-entry

   i. Only trained 3rd party rescue professionals can perform entry rescue.

ii. Trained attendants and entry supervisors may perform non-entry rescue with the use of a retrieval system. No attendants or supervisors shall enter the space to perform rescue.

c. Rescue Method Selection
   i. Retrieval systems, such as tripods, must be set-up and used whenever an employee enters a permit-required confined space to facilitate non-entry rescue, if needed.
   ii. Retrieval systems must include a chest or full-body harness, retrieval line, and a mechanical retrieval device (if the vertical space is over 5 feet deep).
   iii. Only trained and authorized personnel may utilize retrieval equipment, and equipment must be inspected prior to use.
   iv. Retrieval equipment owned by departments and units must be inspected annually by a competent person.
   v. The retrieval system is not required if the equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.
   vi. If non-entry retrieval equipment will be ineffective (e.g., horizontal exit points, piping or equipment obstructions), a means of entry rescue must be in place, such as a standby rescue team.

x. Hazardous Energy Isolation

Every effort must be made to avoid entering confined spaces by such methods as reconfiguring or relocating equipment, using cameras for inspections, or utilizing extension tools to operate equipment. If confined spaces must be entered, hazardous energy must be isolated prior to entry.

a. When hazardous energy must be isolated, the procedures outlined in University of Pittsburgh's Control of Hazardous Energy (Lockout/Tagout) Program must be followed.
b. Isolation of all hazardous energy is required to reclassify a permit-required confined space to a non-permit required confined space.
c. Isolation or de-energization of hazardous energy is required using documented lockout/tagout procedures. Examples of conditions when hazardous energy must be isolated include:
   i. Line breaking;
   ii. Visible or suspected steam leaks;
   iii. Corroded piping;
   iv. Installation, repair, or demolition of system components;
   v. Adjusting or tightening compression seals, such as flanges;
   vi. Operation of valves;
   vii. Inspections or surveys;
   viii. Draining or releasing hot water from steam traps or condensate lines;
   ix. Any work in normally flooded spaces, such as boilers and water tanks;
   x. When steam or condensate is enclosed in sealed piping and piping components (e.g., valves, steam traps); and
   xi. When there is imminent risk of direct exposure to contained hazards.
d. Single-valve isolation of flowable materials (e.g., steam, water) is not permitted.
e. Flowable materials (e.g., steam, water) must be isolated by the use of the following techniques:
   i. Blanking or blinding
   ii. Misaligning or removing sections of pipe or duct; or
   iii. Use of a double block and bleed system
f. Isolation of hazardous energy is not required in permit-required confined spaces where there is no foreseeable exposure to physical hazards (e.g., no visible or suspected steam leaks, no corroded piping, no other known conditions that could result in the potential

release of hazardous energy) and when physical hazards are contained or enclosed, such as:

i. Electrical hazards that are enclosed in conduit or enclosures.
ii. Flowable physical hazards, such as steam, water, or liquids, that are:
    a. Contained in tanks
    b. Enclosed in mechanically and structurally continuous runs of piping, without connections such as flanges, valves, and traps; and
    c. Where there is no imminent risk of direct exposure to the contained hazard.
iii. If at any time a hazard is suspected, develops, or is discovered while in the space (e.g., discovery of a steam leak, damage, or corrosion), the space must be immediately evacuated and re-evaluated.

xi. Reclassification Procedures

a. The Confined Space Assessment Form for each space shall be evaluated prior to entering the confined space.
    i. If conditions change from the initial assessment form, complete a new assessment form for the space and contact EHS.
b. A permit-required confined space may be reclassified as a non-permit confined space if the space poses no actual or potential atmospheric hazards and all hazards within the space are eliminated without entry into the space.
c. If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed using a confined space entry permit. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.
d. If hazards arise within a permit space that has been reclassified to a non-permit space, the space must be evacuated immediately and reevaluated to determine whether it must be reclassified as a permit space.
e. Entry operations are immediately canceled when the work is completed, a condition that is not allowed under the form arises, or after 8 hours. Re-entry into the space requires a permit.

xii. Training

a. Responsibility

Departments are responsible for ensuring employees are properly trained and proficient in the duties required for confined space entry. Additional training is required when procedures are updated, or a new hazard exists.

b. Requirements

Confined space entry training is required:

i. Before an employee is initially assigned a task involving a confined space as a supervisor, entrant, or attendant,
ii. Whenever there is a change in a confined space that presents hazards(s) to which the employee has not been previously trained, or
iii. If there are observed inadequacies in an employee's knowledge or execution of confined space procedures.

xiii. Recordkeeping

Departments are responsible for maintaining space records.

a. University of Pittsburgh and contractor entry permits and associated forms (e.g., Safe Operating Procedures, Hot Work Permits, Live Utility Work Authorizations) must be retained for at least one year.
b. EHS is responsible for maintaining the confined space assessments on the EHS website. Assessments must be readily available, as long as they are valid and accurate. Any new assessments or changes to existing assessments must be included, as necessary.
c. Departments are responsible for maintaining employee training records and must be kept for a minimum of three years; records must include employees' names, trainers' signatures or initials, and dates of training.

xiv. Regulatory Information
a. 1910.146 - Permit-required confined spaces | Occupational Safety and Health Administration
b. 1926.1203 - General requirements. | Occupational Safety and Health Administration

Appendices

Appendix A

a. Purpose
This appendix establishes the minimum safe working procedures and guidelines for working in University of Pittsburgh's utility tunnels.
b. Scope
Some of the tunnels on campus are considered "Passageway Tunnels" and are not covered under this appendix. This appendix applies to all University of Pittsburgh employees and contractors who work in the utility tunnels, most of which meet all three requirements of confined spaces:
i. Large enough to enter and perform work;
ii. Have limited or restricted means for entry or exit (e.g., fixed ladder and hatch for egress, dead-end more than 50-feet in length, requiring climbing over pipes, and/or requiring navigating through tight spaces); and
iii. Not designed for continuous occupancy (e.g., the space does not have lighting and sufficient natural or forced ventilation; unfavorable natural ventilation that could contain or produce dangerous air contaminants)

Utility tunnels are classified based on the conditions present and their design and configuration:
i. Restricted Access Utility Tunnels have a limited or restricted means for entry or exit, but are designed for continuous occupancy; as such, they are not classified as confined spaces, but University of Pittsburgh restricts access to authorized and trained personnel.
ii. Confined Space Utility Tunnels have limited or restricted means for entry or exit and are not designed for continuous occupancy; as such, they are classified as confined spaces, and, due to the nature of and hazards within the tunnels, may be considered Permit-Required Confined Spaces based on the scope of work in the space.

c. Utility Tunnel Entry Requirements
i. Planning for work
a. Employees must notify their supervisor prior to entering utility tunnels and discuss the scope of work to be performed.
b. The supervisor must verify that the employee has received the proper training..

iii. Security
a. Facilities, ISD, and Environmental Health and Safety (EHS) have permanent access to the utility tunnels. If employees from other departments or contractors need access, they must coordinate entry with Facilities.

b. All access points for utility tunnels must be either secured or continuously monitored during entry to prevent unauthorized entry.
c. All utility tunnels must be marked with signage indicating the entry requirements (e.g., permit-required confined space, safe operating procedures required).

iv. Additional Requirements

a. When working in a utility tunnel, access hatches or doors near the work area must be opened and barricaded to ensure at least two points of entry and exit separate and remote from one another can be maintained; if a fixed ladder is not installed at the hatch, an extension ladder must be supplied.
b. Prior to working in tunnels with mechanical ventilation, verify the ventilation is working properly at its control panel.

d. Contractor Work in Tunnels

i. Contractors whose scope of work involves working in the tunnels will be informed of the conditions and requirements for accessing the tunnels by Facilities Management, Planning Design and Construction, and EHS.

ii. The contractor will assume overall responsibility for the work site.

iv. If the contractor encounters additional hazards within the tunnel or performs work that creates an additional hazard, the contractor must:

a. Exit the tunnel immediately,
b. Bring additional hazards to University of Pittsburgh's attention, and
c. Comply with University of Pittsburgh's Confined Spaces Program and applicable regulations (i.e., 29 CFR 1910.146 and 29 CFR 1926.800).