



American University
**CONFINED SPACE
PROGRAM**



Office of Risk Management and Environmental Health and Safety

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CHAPTER 1: PURPOSE

The Purpose of this program is to provide guidelines on how to safely permit and enter Confined Spaces on all American University-owned or operated property. This document establishes safe operating procedures to protect workers from the hazards associated with entry into confined spaces on the university's campus.

This policy was written to ensure compliance with the regulations set forth by OSHA, 29 CFR 1910.146, *Permit Required Confined Spaces*.

CHAPTER 2: SCOPE

This program applies to all individuals who work around and/or enter confined spaces on American University property.

A confined space is defined as a space that has limited or restricted means of entry or egress, is large enough for an employee to enter and perform work, and is not designed for continuous human occupancy.

CHAPTER 3: RESPONSIBILITIES

ENVIRONMENTAL HEALTH AND SAFETY

Establish a Confined Space Program in accordance with all regulations.

Assist Facilities Maintenance and other affected personnel in the evaluation of confined spaces.

Compile and maintain a database of confined spaces and associated hazards, in addition to any specific precautions and/or procedures not otherwise found in this program.

Provide instruction and training on the Confined Space Program.

Provide guidance in the proper selection and use of equipment required by this program.

Evaluate and measure the air and/or train personnel to perform routine measurement of the air in confined spaces.

Audit the implementation of the program and revise as necessary.

Maintain employee training records for the Confined Space Program.

DEPARTMENT OF PUBLIC SAFETY

Dispatch and coordinate rescue and emergency services when notified of a confined space emergency.

Guide rescue services to the work site.

FACILITIES MAINTENANCE

Identify, evaluate, and classify confined space hazards prior to employee entry. EH&S may provide assistance if/as necessary.

Implement measures necessary to prevent unauthorized entry into permit spaces.

Conduct site inspections to review unit compliance with confined space entry procedures.

Oversee the issuance of confined space permits and forward expired permits to EH&S.

AFFECTED EMPLOYEES

This includes all individuals working in and around confined spaces.

Receive training in, and comply with the Confined Space Program.

Report any observed program deficiencies and equipment malfunctions to a supervisor.

Never enter a confined space that is suspected of having a hazardous atmosphere, even to rescue a fellow employee.

PERSONNEL WHO HOST CONTRACTORS

When contracting work that involves or may involve entry into a confined space, require bidders to provide a copy of their Confined Space Program as part of their bid package. Consult with EH&S prior to awarding the contract.

Provide contractors with a list of known confined spaces on campus.

CHAPTER 4: SIGNS AND POSTING

IDENTIFICATION & CLASSIFICATION OF CONFINED SPACES

Permit and non-permit required confined spaces will be identified through health and safety area surveys and audits performed by Facilities Maintenance and the EH&S office. Each space is evaluated for potential hazards and to identify specific entry instructions based on those hazards. An inventory of identified confined spaces and their recognized hazards will be kept by the EH&S office as part of this program and will be made available to all employees who work in or around these areas.

PERMIT-REQUIRED CONFINED SPACES

Signs must be placed in all areas where a permit-required confined space has been identified. The list of known confined spaces on campus as well as the posting of confined space signage will help ensure safety communication to workers.

Signs in these areas will read, "Danger, confined space, enter by permit only."



NON-PERMIT-REQUIRED CONFINED SPACES

Signs must also be placed near known non-permit confined spaces to warn workers of potential hazards.

Signs in these areas will read, "Notice, non-permit required confined space."



CHAPTER 5: PERMIT AND ENTRY PROCEDURES

ENTRY INTO NON-PERMIT SPACES

A non-permit-required confined space, by definition, poses no hazard to an employee more serious than its restricted means of entry and exit. Therefore, provided that the work to be performed lacks any potential to create a prohibited or unacceptable condition, entry to a Non-Permit-Required confined space may proceed as described below.

Prior to entry:

- Review the work order to determine requirements for personal protective equipment,
- If applicable, establish traffic control at the entry point,
- Eliminate any condition making it unsafe to remove the confined space entry cover, and
- Once the entry cover is removed, promptly guard the entry point with a temporary barrier to prevent an accidental fall through the opening and to protect employees working in the space from foreign objects entering the space.

If the work to be performed in the space has potential to create a prohibited or unacceptable condition, this space must be entered using the same procedure as a permit-required confined space.

PERMITS

Prior to each permit-required confined space entry, a permit must be completed by the Entry Supervisor. A copy of a blank permit template and completion instructions can be found in the Appendices of this program.

RECLASSIFICATION CERTIFICATE

FM with the assistance of an Industrial Hygienist, Public Safety, Environmental or Facility Engineer, and/or other required personnel shall evaluate and certify permit-required confined spaces to determine if alternate procedures can be used. Once a space has been certified for alternative procedures, a permit, an attendant, certain equipment, respirators, and rescue equipment are not necessary for each entry into the space. The step-by-step alternative procedure described below can be used for subsequent entries, provided conditions, which could result in an increased hazard, do not change. To certify that alternative procedures can be used, FM shall:

- Verify that the only actual or potential hazard posed by the space is atmospheric
- Verify that the space has continuous forced air ventilation, which is sufficient to maintain an atmosphere that is safe for entry.
- Document air monitoring and inspection data to support the above verifications
- Make this documentation available to employees who enter the space

Verification of the above conditions shall be documented by completing a Confined Space Entry Permit shown in Appendix A. This form shall be available to employees entering the space. The Assistant Director for Central Plant Operations shall make the initial certification. All certifications shall be valid until or unless entry conditions change which could result in an increased hazard to entrants. Certifications shall be valid for no longer than one year and will be retained by Facilities Management.

The alternative procedures for entry into permit spaces are:

- Any conditions that would make it unsafe to remove the cover to the space shall be eliminated before the cover is removed.
- The entrance to the space shall be guarded, or barricaded to prevent anyone from accidentally falling onto the space and to prevent the entry of foreign objects into the space.
- Prior to entry, the atmosphere of the space shall be tested for oxygen content, flammable gases and vapors and potential toxic contaminants. Proper test procedures shall be used as outlined in section 15.0.
- Continuous forced air ventilation shall be used so that:
- No employee enters the space until the ventilation has eliminated any/all hazardous atmospheric conditions.
- The air is directed to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air is supplied from a clean source and does not increase the hazard of the space

The atmosphere inside the space shall be continuously tested to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Results of this monitoring shall be recorded and retained for one year.

In the event that a hazardous atmosphere is detected inside the space all employees shall leave the space immediately. The Assistant Director for Central Plant Operations or entry supervisor shall investigate and determine how the hazardous atmosphere developed. Subsequent entry shall not be permitted until steps have been implemented to protect employees from the hazardous atmosphere. Furthermore, alternative procedures can no longer be used until the space is certified again for the use of alternative procedures.

DUTIES OF AUTHORIZED ENTRANTS

- Recognize hazards they may face, the signs and symptoms of hazard exposure, understand the hazard exposure consequences and thoroughly review the permit prior to entering the space.
- Properly use required equipment for ventilation, communication, lighting, rescue, personal protective equipment, and personal monitoring systems and emergency scenarios needed for safe entry and exit into permit-required spaces.

- Maintain continuous contact with the attendant and notify the attendant of self-initiated evacuation from the space.
- Alert the attendant whenever the entrant perceives that he/she is in danger or the entrant detects a hazardous/prohibited condition.
- Exit the space as quickly as possible when the attendant or entry supervisor orders evacuation of the space and/or automatic alarm on air monitoring equipment is activated.

DUTIES OF ATTENDANTS

- Recognize hazards and the signs and symptoms of hazard exposure, understand the hazard exposure consequences and thoroughly review the permit prior to permitting entry into the space.
- Know and recognize the behavior effects of hazard exposure in authorized entrants. Examples include slurred speech, dizziness, incoherence and loss of consciousness.
- Constantly maintain an accurate account of all entrants into the space.
- Remain outside the space during the entry operations until relieved by another authorized attendant and refrain from engaging in activities that may hinder attending duties.
- Maintain continuous contact with authorized entrants and alert the entrants of the need to evacuate the space.
- Monitor the activities inside and outside the space to determine if it is safe for the entrants to continue in the operations.
- Order authorized entrants to evacuate the space immediately when:
 - Prohibited conditions are observed or detected
 - Entrant behavioral effects are detected
 - A situation outside the permit-required space which could endanger or hinder the entrants is detected
 - The attendant cannot effectively and safely perform all the duties noted above.
- Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from the space
- Never enter the space to attempt to rescue of entrants or assist in operations taking place in the space.
- Perform non-entry rescue to remove entrants by equipment, harness and retraction device, when required.
- Take the following actions when authorized persons approach or enter a permit spaces while entry is underway:
 - Warn unauthorized persons that they must stay away from the space and if necessary contact Public Safety for assistance with the unauthorized persons
 - If unauthorized persons have entered the permit required space, advise them that they must exit immediately

- Inform authorized entrants and entry supervisor of unauthorized personnel and their actions
- Perform no duties that may interfere with the primary duty to monitor and protect the entrants.

DUTIES OF ENTRY SUPERVISOR(S)

- Know and recognize hazards they may face, the signs and symptoms of hazard exposure, understand the hazard exposure consequences and thoroughly review the permit prior to authorizing entry into the space
- Evaluate the operations/work to be performed in the space before a job permit is issued
- Verify that all hazards and potential hazards in the space have been properly identified
- Verify that all information of the entry permit is correct.
- Ensure that all pre-entry test and procedures are dutifully carried out prior to entry
- Terminate entry and cancel the permit when:
 - Operations ore completed
 - A hazard is identified
 - A prohibited condition occurs
- Verify that rescue services and a means for summoning them are available.
- Remove unauthorized persons who enter or attempt to enter the work area and/or permit-required space.
- Determine that acceptable entry conditions are maintained
- Properly inform all affected personnel when responsibilities of the entry, supervisor, attendant etc. changes during an entry.
- Ensure that all process piping, mechanical equipment, electrical equipment or any other source of energy in the space is isolated, by positive means, from the energy source and rendered inoperative prior to entry in the space. See Lockout/Tagout Program.
- When necessary, ensure that the space is cleaned and decontaminated of hazardous materials to the extent feasible prior to entry. This shall be accomplished by methods including but not limited to draining, ventilating, cooling rinsing or purging.
- Ensure that any and all compounds used in the space are compatible with the environment and conditions inside the space.
- Ensure that entrants and attendants are familiar with their duties and the procedures specific for the entry permit.
- Ensure that the entrant is provided all the necessary PPE and is familiar with the use and limitations of the equipment.
- Ensure that the space is naturally or mechanically ventilated for 30 min. prior to the entry.
- Ensure that any "hot work" that is conducted in the space shall not have an adverse effect on the entrants' safety and wellbeing.

CONTRACTORS

When contractors are hired to perform work involving confined spaces, the following procedures apply:

- The Project Manager shall notify each contractor whose work will involve confined spaces that this facility has confined spaces that entry into these spaces is allowed only through compliance with the plant confined space permit program. See "Notice to Contractors" below.
- The Project Manager shall inform the contractor of the known hazard characteristics of the space.
- Prior to entry, the Project Manager shall obtain and review a copy of the contractor's entry procedure for the space in question.
- When entry operations involve both American University's employees and the contractor's employees, the Project Manager and Entry Supervisor shall coordinate entry activities to ensure that applicable entry procedures of this program are followed.

WORKING IN A CONFINED SPACE

Equipment to be used at permit-required confined spaces at this facility may include:

- Warning signs and barricades.
- Ventilation equipment, capable of delivering 600 cubic feet of air per minute into the space.
- Portable lighting- explosion proof
- Non-sparking tools.
- Air line or self-contained breathing apparatus.
- Body harness and/or wristlets to which lifeline can be attached.
- Life lines-5/8 inch diameter, corrosion resistant, with quick latch hook on one end, 50 and 100 feet long.
- Mechanical lifting devices.
- Fire extinguishing equipment.
- Direct reading instruments for evaluating the atmosphere.
- Communications equipment.

Specific equipment used at a permit-required confined space depends on the nature of the hazards and the work to be done in the space.

If flammable liquids or gases were previously present within the permit space, explosion-proof equipment shall be used. All equipment shall be positively grounded. Electric lighting not exceeding 12 volts shall be used.

If entrants are to use hand tools in a permit space, they shall be in good repair, properly grounded (if electrical), and selected according to intended use. Where possible, employees shall use pneumatic power tools. Certain circumstances may require the use of nonferrous, non-sparking tools.

Hand-held lights and other illumination means utilized in permit spaces shall be properly grounded and shall be equipped with guards to prevent contact with the bulb.

All electrical equipment taken into a wet/damp permit space shall be protected by a ground fault circuit interrupter. Battery operated equipment may also be used in such a permit space.

Except for the gas cylinders used for self-contained breathing apparatus (SCBA), compressed gas cylinders shall not be taken into a permit space. Gas-supplying hoses shall be removed from the space and the supply turned off at the cylinder valve prior to personnel leaving the permit space.

The entry supervisor must approve all chemicals taken into the confined space.

PERSONAL PROTECTIVE EQUIPMENT

The type of work to be conducted in the permit space shall determine the requirements for the use of eye, face, and skin protection, and these shall be specified by the entry supervisor prior to entry.

Depending upon the permit space condition and the work to be performed, other personal protective equipment such as gloves, clothing, and hearing protection may be needed.

RESPIRATORS

Prior to wearing respiratory protection equipment, all employees must meet the requirements outlined in the University's Respiratory Protection Program. Only National Institute for Occupational Safety and Health (NIOSH) /Mine Safety and Health Administration (MSHA) approved self-contained breathing apparatus, or NIOSH/MSHA approved airline respirators, equipped with a 5-minute emergency egress bottle, shall be used in permit spaces during emergency situations, such as during hazardous atmospheres or IDLH conditions.

Required respiratory protection for entry into a permit space shall be determined by the entry supervisor, based upon the space conditions, the atmospheric sampling test results, the work to be performed, and any materials to be utilized. The employee's supervisor shall obtain this information prior to authorizing space entry. This respiratory protection shall only be the type approved for non-IDLH atmospheres.

Respiratory protective equipment and protective clothing shall not be substituted for cleaning, decontamination and ventilation of the permit space.

VENTILATION

Positive/forced mechanical ventilation is required if atmospheric test results of the permit space indicate the presence of, or the potential for a hazardous atmosphere.

When mechanical ventilation is required, the permit space must continue to be ventilated until the atmosphere is within the acceptable ranges and all entrants have left the space.

The forced ventilation shall be directed, so that, both the immediate areas where an entrant starts, as well as where the entrant will be within the permit space, is ventilated.

Compressed air cannot be used for ventilation.

The forced ventilation air supply shall be from a clean source and may not increase the hazards in the permit space.

All chemicals must be removed from the vicinity of the permit space when air-moving units are needed to provide ventilation.

Vehicles shall not be left running near a confined space, before or during the entry procedure, or near air moving equipment being used to ventilate a permit space.

ATMOSPHERIC TESTING

Prior to entry into a permit space, and before validation/re-validation of an Entry Permit, a qualified person shall conduct environmental testing of the space to determine the presence of a hazardous atmosphere from outside of the space entrance (remote testing). Qualified personnel shall conduct the required environmental monitoring for all routine permit spaces. For those spaces that present special or unique hazards, an Industrial Hygienist will be consulted if professional judgment is needed.

Intrinsically safe gas detection monitors and approved calibration equipment/supplies will be used.

PROCEDURES

Equipment calibration shall be performed prior to each entry.

The person conducting the environmental monitoring of the permit space atmosphere shall remain at the site until all air monitoring is completed for the needed duration of the entry into the space.

Testing of the atmosphere of permit spaces shall be conducted throughout the entire portion of the space to be occupied, especially at the lowest points in the space.

The air monitoring sequence shall be oxygen, flammability, and then toxicity. (When the oxygen percent by volume is less than 16%, combustible gas sensors are not accurate).

Initial monitoring of the atmospheric conditions of a permit space, and subsequent testing after work has been stopped for a significant period of time (greater than 30 minutes), shall be done with the ventilation systems shut down.

Additional testing shall be conducted with ventilation systems working to ensure that the contaminants are removed and that the ventilation system is not itself causing a hazardous atmosphere or condition.

The permit space atmosphere shall be retested prior to allowing re-entry after the space has been vacated for greater than 30 minutes.

The permit space atmosphere shall be considered to be hazardous whenever any of the following conditions occur:

- Oxygen content is less than 19.5% or more than 23.5%
- The concentration of a flammable gas, vapor, or mist present in the space is at or above 10 percent of its lower flammable limit (LFL).
- An airborne combustible dust concentration that is at or above the LFL, as indicated by conditions that do not obscure vision at a distance of 5 feet or less.
- An airborne concentration of any substance for which there is an OSHA dose or permissible exposure limit (PEL), or other exposure limit(s) when a PEL has not been established, that could result in an exposure above permissible limit(s).
- Any other atmospheric condition that is immediately dangerous to life and health (IDLH).
- CAUTION: Concentrations of flammable less than 10 percent are not likely to be an explosion hazard. However, 10 percent of the LEL can be well above 1000 parts per million (PPM) for many solvents or gases, which may be a toxic hazard. If significant levels of gases or solvents are detected below 10 percent of the LFL, additional investigation shall be done if the nature and source of contamination is not known. If the source is known, proper steps shall be taken to assure a safe entry.

Whenever monitoring of the atmosphere of a permit space indicates that a hazardous atmosphere exists, entry shall be prohibited until the hazardous atmosphere is removed through the use of positive mechanical ventilation.

If additional atmospheric testing fails to eliminate the hazardous atmosphere, following mechanical ventilation, entry shall be permitted only with: the continuation of the ventilation; use of the highest level of personal protection equipment (PPE); and continuous air monitoring. Entry cannot be made prior to contacting an Industrial Hygienist for assistance. Other precautions shall be adequate to deal with the worst possible condition, which could occur in the permit space.

If the atmospheric test results indicate that acceptable limits exist initially, but the work to be done in the permit space may produce a hazardous atmosphere while the work is in progress, procedures and equipment shall be used that allow the entrant(s) to safely exit the space. Examples of such processes include but are not limited to: Welding, cutting, disturbance of accumulated sludge on the space floor; or the use of solvents in the space.

Results of all atmospheric tests shall be recorded on the Entry Permit form along with the corresponding time. The person monitoring the atmosphere shall also initial the results in the designated box on the Entry Permit.

The Entry Supervisor shall have the responsibility to evaluate and monitor the potential and actual atmospheric hazards that may be present during work to be conducted within a permit space, if the supervisor is not a qualified tester, a qualified person must

be consulted with prior to entry. Safety procedures, personal protective equipment (PPE), and rescue equipment required must be confirmed prior to signing the Permit.

RESCUE AND EMERGENCY SERVICES

Each contractor who enters a permit required space is responsible for rescue operations in case of an emergency. In addition, the Washington, D.C. Fire Department will be notified of the emergency and will be made aware of the hazards they may confront when called on to perform rescues. Upon request, EH&S or FM will provide the Fire Department with access to all permit-required confined spaces from which rescue may be necessary so that they can develop appropriate rescue plans and practice rescue operations.

If an injured entrant is exposed to a substance for which a Safety Data Sheet or other similar written information is required to be kept at the work site, that SDS or written information will be made available to the medical facility treating the exposed entrant.

CHAPTER 6: TRAINING

EH&S will train all employees working around known confined spaces (affected employees) so that they are equipped to recognize confined spaces and their potential hazards. They will be instructed on how to find more information regarding known confined spaces on campus as well as how to report unrecognized/suspected confined spaces for further investigation.

Training will be provided to each affected employee:

- Before the employee is first assigned duties.
- Before there is a change in assigned duties.
- Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained
- Whenever EH&S has reason to believe that there are work practice deviations from the Confined Space Program entry procedures or that there are inadequacies in the employee's knowledge or use of procedures.

Employees who may be assigned to enter confined spaces (authorized entrants), perform work directly on confined spaces without entry, or serve as entry supervisors or attendants, are required to receive hands-on training that covers proper confined space entry procedures.

EH&S will certify that this training has been accomplished. The certification will contain each employee's name, the signatures or initials of the trainer(s), and the dates of training. The certification is made available for inspection by employees and their authorized representatives.

CHAPTER 7: PROGRAM REVIEW AND UPDATES

EH&S will conduct an annual review of all confined space entries in the previous twelve months and whenever the safety of an entry operation procedure was not adequately addressed by this program. If any deficiencies are found during the review process, they will be remediated through the revision of this program.

APPENDIX A: DEFINITIONS

Acceptable Entry Conditions are conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

An **attendant** is an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

An **authorized entrant** is an employee who is authorized by the employer to enter a permit space.

Confined Space is a space that is large enough and so configured that an employee can bodily enter and perform assigned work, has limited or restricted means for entry or exit (e.g. tanks, vessels, silos, storage bins, hoppers, vaults, and pits), and is not designed for continuous occupancy.

An **emergency** is any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger an entrant.

Entry is the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in the space and occurs as soon as any part of the entrant's body breaks the plane of an opening into the space.

An **entry permit** (permit) is the document that is provided by the employer to allow and control entry into a permit space.

The **entry supervisor** is the person (such as the supervisor, Chief Engineers, Assistant Chiefs, or project manager) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required for each role he or she fills. The duties of entry supervisor may be passed from one individual to another during the course of an entry operation provided each responsible person has been adequately trained to perform in that capacity.

Hazardous Atmosphere - an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
- Airborne combustible dust at a concentration that meets or exceeds its LFL.
- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
- Any other atmospheric condition that is immediately dangerous to life or health.

Immediately Dangerous To Life Or Health (IDLH) - any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Isolation - the process by which a permit space is removed from service and completely protected against the release of energy into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Lower Flammable Limit –the lowest concentration of a material in air at which ignition will occur.

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 (Permit Space) - a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such 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
- Contains any other recognized serious safety or health hazard.

Permit-Required Confined Space Program (Permit Space Program) - the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Rescue Service - the personnel or local emergency service provider designated to rescue employees from permit spaces.

APPENDIX B: CONFINED SPACE ENTRY PERMIT

Location: _____		Type of Space: _____							
Reason for Entry: _____									
Atmospheric Hazards:	<input type="checkbox"/> Oxygen deficiency	<input type="checkbox"/> Combustible gas	<input type="checkbox"/> Toxic contaminants						
	<input type="checkbox"/> Chemical/Biological	<input type="checkbox"/> Noise	<input type="checkbox"/> Other _____						
Physical Hazards:	<input type="checkbox"/> Mechanical	<input type="checkbox"/> Electrical	<input type="checkbox"/> Heat						
	<input type="checkbox"/> Ventilation	<input type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> PPE						
<input type="checkbox"/> Other: _____									
Start Date: _____	Start Time: _____	End Date: _____	End Time: _____						
Authorized Personnel									
Entrant Name & Department/Company		Attendant Name & Department/Company							
_____		_____							
_____		_____							
Required Equipment									
Communication Methods with Entrants: <input type="checkbox"/> Voice <input type="checkbox"/> Radio <input type="checkbox"/> Phone <input type="checkbox"/> Visual <input type="checkbox"/> Rope Signals									
<input type="checkbox"/> Other: _____									
Communication Methods for Emergency Services: <input type="checkbox"/> Phone <input type="checkbox"/> Radio <input type="checkbox"/> Other: _____									
Personal Protective Equipment: <input type="checkbox"/> Coveralls <input type="checkbox"/> Tyvek suit <input type="checkbox"/> Leather gloves									
<input type="checkbox"/> Chemical resistant gloves <input type="checkbox"/> Welding gloves <input type="checkbox"/> Welding hood <input type="checkbox"/> Eye protection									
<input type="checkbox"/> Hearing protection <input type="checkbox"/> Respiratory protection <input type="checkbox"/> Safety shoes/boots <input type="checkbox"/> Hard hat <input type="checkbox"/> Harness/life line									
<input type="checkbox"/> Tripod/winch <input type="checkbox"/> Other: _____									
Traffic Control:		Hot Works:							
<input type="checkbox"/> Barricades <input type="checkbox"/> Vests <input type="checkbox"/> Flags <input type="checkbox"/> Signs		<input type="checkbox"/> Yes (Hot works permit required) <input type="checkbox"/> No							
Atmospheric Testing									
Type of Gas Monitor: _____		Date of Last Calibration: _____							
Tests	Acceptable Entry Conditions	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Oxygen	19.5 - 23.5%								
Combustible Gas	Below 10% LEL								
Carbon Monoxide	0-25 ppm								
Initials of Tester									
Approvals									
Entry Supervisor (Print) _____					(Sign) _____				
I assumed responsibility of Entry Supervisor on (date) _____ at (time) _____									
Entry Supervisor (Print) _____					(Sign) _____				
This Permit has been revoked because: _____									
Entry Supervisor (Print) _____					(Sign) _____				
Comments: _____									

INSTRUCTIONS - Confined Space Entry Permit

The Confined Space Entry Permit process shall be completed before any employee enters a space designated as a Permit Required Confined Space.

1. Check the Confined Space Inventory at <http://www.american.edu/finance/rmehs/confinedspace.cfm> to verify that the space that will be entered is listed in the inventory. If it is, use the information found in the inventory listing for identifying the location, type of space, and hazards on the permit. If the information in the inventory is NOT correct or the space is NOT listed, complete a survey form (available on the web site) and send to EH&S.
2. Evaluate the known hazards and prepare control measures.
3. Enter the names of the authorized entrants and attendants with the name of their department, shop, or company. All entrants and attendants must have completed Confined Space Awareness and Entry training. Contractors are required to follow their own permit system.
4. Notify 2FIX at 202-885-2349 before entry. Give the date, time, location and reason for entry. Also give the name of the Entry Supervisor and a means of contacting that person during the entry.
5. Notify local fire department or rescue team of entry.
6. At the site, ensure the following items have been implemented:
 - All barricades are in place and caution signs are posted.
 - Hazardous energy has been locked and tagged.
 - An emergency escape plan has been developed. All phones and radios are operational.
 - Retrieval systems (tripod, winch, harness, life line) are in place.
 - Space has been properly ventilated.
 - Personal Protective Equipment is available and in use.
 - Hot Works Permits has been obtained for all welding and cutting. A permit can be obtained online from <http://www.american.edu/finance/rmehs/>
7. Perform atmospheric testing and enter readings on permit. Entrants may not enter space until acceptable entry conditions are verified. Entrants have the right to witness the testing.
8. The Entry Supervisor must sign the permit only after all precautions have been implemented and the atmospheric readings have been taken and found to be acceptable.
9. Post the permit at the entrance of the space.
10. Enter additional atmospheric readings on permit. For continuous monitoring, enter readings at regular intervals.
11. After the work has been completed and the entrants have left the space, notify 2FIX at 202-885-2349
12. Forward the expired permit to the Environmental Health & Safety office. Expired permits are needed for the OSHA required program evaluation.

APPENDIX C: KNOWN CONFINED SPACES AT AMERICAN UNIVERSITY

Building	Room #	Space Type	Equipment ID	Permit Required?	Potential Hazard(s)
Grounds		Steam service manholes		Yes	Atmosphere
Grounds		Storm water and sewage manholes		Yes	Atmosphere
Grounds		Transformer vaults		Yes	Atmosphere Energy
Anderson		Cooling tower		Yes	Mechanical Energy
Anderson		Air handling units		Yes	Mechanical Energy
Anderson	Loading dock	Trash compactor		Yes	Mechanical
Anderson		Sump pits		Yes	Energy Atmosphere
Anderson		Sanitary sewer		Yes	Atmosphere
Asbury		Boilers 1, 2, 3		Yes	Energy Atmosphere
Asbury		Smoke stacks		Yes	Atmosphere
Asbury	Boiler plant	Trash compactor		Yes	Mechanical
Asbury		Makeup water tank		Yes	Engulfment
Asbury		Sump pit		Yes	Mechanical Atmosphere
Asbury		Air handling units		Yes	Mechanical Energy
Beeghly	G18 Mech Rm	Sump pits		Yes	Atmosphere Energy Mechanical
Beeghly	PH Mech Rm	Air handling units		Yes	Mechanical Energy
Bender Library		Cooling tower		Yes	Mechanical Energy
Bender Library		Air handling units		Yes	Mechanical Energy
Bender Library		Domestic hot water tanks		Yes	Atmosphere
Bender Library	Outdoor	Sump pit, generator		Yes	Atmosphere Energy
Brandywine		Sump pits		Yes	Mechanical Energy Atmosphere
Butler		Air handling units		Yes	Mechanical Energy

Cassell	160 Mech Rm	Air handling unit		Yes	Mechanical Energy
Cassell	PH Mech Rm	Air handling unit		Yes	Mechanical Energy
Cassell	161 Loading	Trash compactor		Yes	Mechanical
Centennial		Elevator pits		Yes	Mechanical Energy
Centennial		Air handling units		Yes	Mechanical Energy
Hamilton		Steam pit		Yes	Mechanical Energy Atmosphere
Hughes		Elevator pits		Yes	Mechanical Energy
Hughes		Cooling towers		Yes	Mechanical Energy
Hughes		Air handling units		Yes	Mechanical Energy
Hughes		Domestic hot water tanks		Yes	Atmosphere
Hurst		Areas under stair		Yes	Energy
Hurst		Pip chase in attic		No	N/A
Katzen	P3 Mech Rm	Sump pit		Yes	Atmosphere
Leonard		Elevator pit		Yes	Mechanical Energy
Leonard		Cooling tower		Yes	Mechanical Energy
Leonard		Air handling units		Yes	Mechanical Energy
Leonard		Domestic cold and hot water tanks		Yes	Atmosphere
McCabe		Domestic hot water tanks		Yes	Atmosphere
McDowell		Elevator pits		Yes	Mechanical Energy
McDowell		Cooling tower		Yes	Mechanical Energy
McDowell		Air handling units		Yes	Mechanical Energy
McDowell		Trash compactor		Yes	Mechanical

McDowell	Fire pump room	Old chimney		Yes	Atmosphere
McDowell		Trash chute		Yes	Fall
McDowell		Domestic hot water tank		Yes	Atmosphere
McKinley	T81 Mech Rm	Air handling unit		Yes	Mechanical Energy
McKinley	T81A Mech Rm	Sewage sump		Yes	Atmosphere
McKinley	361 Mech Rm	Air handling unit		Yes	Mechanical Energy
Nebraska		Elevator pits		Yes	Mechanical Energy
Nebraska		Domestic hot water tank		Yes	Atmosphere
Nebraska		Smoke stacks		Yes	Atmosphere
Reeves/ Bender Arena		Water tank		Yes	Atmosphere
Reeves/ Bender Arena		Sump pit		Yes	Atmosphere Energy
Reeves/ Bender Arena		Air handling units		Yes	Mechanical Energy
Reeves/ Bender Arena		Steam pit		Yes	Mechanical Energy
SIS	Garage P2	Sump pit		Yes	Atmosphere Energy
Ward		Cooling tower		Yes	Mechanical Energy
Ward		Steam line tunnel		Yes	Atmosphere Energy
Ward		Sewage sumps		Yes	Atmosphere Engulfment
Ward		Elevator pit		Yes	Mechanical Energy
Ward		Storm sump		Yes	Atmosphere Engulfment
Ward	T7	Air handling units		Yes	Mechanical Energy
Watkins		Chiller units		Yes	Atmosphere

APPENDIX D: CONFINED SPACE ASSESSMENT FORM

Space:

Purpose(s) of Entry:

To determine if the space listed above is a confined space, read each of the following statements and highlight the response that best applies to the space being evaluated.

The space is large enough and is so configured that an employee can bodily enter and perform assigned work. Yes No

The space has limited or restricted means of entry or exit (i.e. tanks, vaults, vessels, pits, diked areas). Yes No

The space is not designed for continuous employee occupancy. Yes No

If all three of the above statements were answered yes, the area being evaluated is a confined space. Continue to the next section to determine if it is a permit required confined space. If any of the above statements were answered no, the area does not qualify as a confined space.

The space contains, or has the potential to contain a hazardous atmosphere. If yes, check all that apply. Yes No

- | | |
|---|---|
| <input type="checkbox"/> Flammable gas/vapor/mist | <input type="checkbox"/> Oxygen concentration below 19.5% or above 23.5% |
| <input type="checkbox"/> Fuel supply locked out/disconnected | <input type="checkbox"/> Atmospheric concentration exceeding the PEL or dose for any substance published in subpart G or Z. |
| <input type="checkbox"/> Airborne combustible dust concentration > or = it's LFL. Dust obscures vision 5 ft. or less. | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Any other atmospheric condition that is IDLH. | |

The space contains a material that has the potential for engulfing an entrant (i.e. fill or plug respiratory tract, cause death by crushing, construction, or strangulation) Yes No

The space has an internal configuration such that an entrant could become trapped or asphyxiated. If yes, check all that apply. Yes No

- | | |
|--|--|
| <input type="checkbox"/> Converging walls / downward sloping floors | <input type="checkbox"/> Construction / taper to a smaller cross-section |
| <input type="checkbox"/> Difficult to exit / inadequate access / obstacles | <input type="checkbox"/> Other: |

The space contains other recognized serious safety or health hazards. If yes, check all that apply. Yes No

- | | |
|--|---|
| <input type="checkbox"/> Poor or difficult communication | <input type="checkbox"/> Noise/vibration |
| <input type="checkbox"/> Equipment startup/mechanical hazard | <input type="checkbox"/> Inadequate light/poor visibility |
| <input type="checkbox"/> Hot or cold contact/extremes | <input type="checkbox"/> Slip/trip surfaces, fall from height |
| <input type="checkbox"/> Electrical shock | <input type="checkbox"/> Sharp/falling objects |