

# Confined Space Policy

## Introduction

Due to the many injuries and deaths each year that were attributed to entering into confined spaces that were hazardous the Occupational Safety and Health Administration (OSHA) instituted the Permit-Required Confined Space Standard. 29 CFR 1910.146 and under 29 CFR §§ 1926.21 (b)(6) states that all confined spaces be identified and that a written policy be implemented to outline procedures required for entry into confined spaces.

## Policy Statement

It shall be the policy of Eastern Illinois University (EIU) that prior to any Facilities Planning and Management or Contractor's personnel are permitted to enter a confined space at EIU safe working conditions shall be ensured. These employees shall receive instruction and procedures shall be implemented which require positive protection against unsafe atmospheric conditions, toxic materials, fires, inadvertent operation of systems, electrical shock and other safety hazards. Preplanning is extremely important in confined space entry work.

## Definitions

**20-3.1** Confined Space - A space that:

(**20-3.1.1**) is large enough and so configured that an employee can bodily enter and perform assigned work.

(**20-3.1.2**) has limited or restricted means for entry and exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that limit means of entry).

(**20-3.1.3**) is not designed for continuous employee occupancy.

**20-3.2** Confined Space Entry Permit (CSEP) - Permit initiated by the person responsible for total work of the workers who will enter the confined space. The CSEP provides information on the responsibilities and precautions that the responsible supervisor shall take to provide a safe environment for the workers in the confined space. It also provides information that the person monitoring the confined space atmosphere shall take to ensure that the atmosphere is safe to work in. At the bottom of the CSEP is an area where the responsible supervisor and the person who monitors the confined space atmosphere shall sign their names stating that all necessary preparations have been taken.

**20-3.3** Safety Attendant - A person stationed outside the confined space and assigned the responsibility of maintaining communications with personnel working in a confined space and initiating emergency action when required.

**20-3.4** Lower Explosive Limit (LEL) - The lower limit of flammability of a gas or vapor at ordinary ambient temperature expressed in a percentage of the gas/vapor in air by volume.

**20-3.5** Threshold Limit Value (TLV) - The time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be exposed without adverse effect. The TLV is measured as parts of the vapor or gas per one million parts of air by volume (ppm) or as approximate milligrams of particulate per cubic meter of air (mg/m<sup>3</sup>).

**20-3.6** Hot Work - The process of joining together two pieces of metal (welding, brazing) or the breaking apart of metal into two pieces (cutting) by means of extreme heat or spark producing equipment.

# Confined Space Policy

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## Eastern Illinois University - Safety Manual Chapter 20

**20-3.7 Hazardous Material** - A material which, under normal conditions, may be considered to be toxic, flammable, combustible, reactive, or unstable.

**20-3.8 Toxic** - The potential harmful effects of a material on biologic functions.

**20-3.9 Reactive Material** - Material which can enter into a chemical reaction with other materials.

**20-3.10 Unstable Material** - Material which will vigorously polymerize, decompose, condense, or become self reactive and undergo violent chemical changes.

**20-3.11 Flammable Liquid** - Liquid having a flash point below 100 degrees Fahrenheit.

**20-3.12 Combustible Liquid** - Liquid having a flash point at or above 100 degrees Fahrenheit.

**20-3.13 Shall** - Denotes a mandatory requirement.

**20-3.14 Should** - A recommendation that is sound safety and health practice; it does not denote a mandatory requirement.

**20-3.15 Qualified Person** - A person who by reason of training, education, and experience is knowledgeable in the operation to be performed and is competent to judge the hazards involved.

**20-3.16 Blinding/Blanking** - Inserting a solid barrier across the open end of a pipe leading into or out of the confined space and securing the barrier in such a way to prevent leakage of material into the confined space.

**20-3.17 Double Block and Bleed** - A method used to isolate a confined space from a line, duct, or pipe by physically closing two-in-line valves on a piping system and opening a vented-to-atmosphere valve between them.

## Responsibilities

**20-4.1** Safety of employees shall be the number one responsibility of the supervisor whenever employees must enter a confined space.

**20-4.2** The Associate Vice President to Facilities and/or his designee, where appropriate, are responsible for implementing this standard.

**20-4.3** The Safety Officer shall be responsible for administering this standard. Each supervisor effected by the standard will be responsible for coordinating training in accordance with the standard.

**20-4.4** The supervisor is responsible for functionally complying with this standard.

**20-4.5** All supervisors and employees are responsible for complying with the requirements in this standard.

## Training

**20-5.1** All personnel and their supervisors shall be properly trained in confined space entry safety and rescue procedures before being allowed to enter a confined space. Training shall include a minimum of the following:

**20-5.2** Proper Use:

# Confined Space Policy

## Eastern Illinois University - Safety Manual Chapter 20

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- A. Proper use of air monitoring equipment
- B. Proper use and setup of ventilation equipment
- C. Proper use and setup of fall protection/arrest and retrieval equipment
- D. Proper isolation procedures (Lockout/Tagout)
- E. Summoning rescue and other emergency response
- F. Proper use of communication equipment
- G. Proper use of respiratory protection equipment
- H. How to recognize probable air contaminant overexposure symptoms to themselves and coworkers.

**20-5.3** Training shall be repeated to maintain an acceptable level of personnel competence as required by the type of work.

**20-5.4** All training shall be coordinated through the Environmental Health and Safety office.

### Confined Space Identification

**20-6.1** A sign stating "CAUTION--CONFINED SPACE--ENTER BY PERMIT ONLY" shall be posted in the immediate vicinity of all known confined spaces.

**20-6.1.1** This section by no means indicates that every space has been identified. Continued surveillance by supervision for unidentified confined spaces shall be an ongoing process.

**20-6.1.2** If an employee discovers an area he/she believes to be a confined space, the employee's supervisor and the Safety Officer shall be contacted before entry is allowed. Appropriate signs shall be placed in the vicinity if the area is determined to be a confined space and the provisions of the standard shall then be followed.

**20-6.2** A list and map of all known confined spaces should be maintained by the Safety Officer. A copy to the list and map as well as all updates shall be made available to Department of Environmental Health and Safety.

**20-6.3** Manholes will not normally be identified with a sign but shall still be considered to be confined spaces. The provisions of this standard shall be in effect when a manhole is entered.

### Permit Requirements

**20-7.1** A Confined Space Entry Permit (CSEP) must be obtained and completed in its entirety prior to entry into confined spaces.

**20-7.2** The supervisor responsible for the entire work of the employees in the confined space shall complete the CSEP. THE supervisor shall assign the CSEP a number and enter the number and any other pertinent information into the Department's Confined Space Entry Log book. The log book shall be kept at all times in the department.

**20-7.2.1** Whenever possible, the CSEP should be initiated on the day shift when safety personnel are on site to provide consultation and assistance.

**20-7.2.2** The hot work portion of the CSEP shall be filled in when hot work is to be performed, as outlined in the Special; Requirements section.

**20-7.3** The name of the contact person shall be written on the "Notified" line at the bottom of the CSEP.

**20-7.4** The time limit of the CSEP shall not exceed the time required to complete the assigned task or job identified on the CSEP.

**20-7.4.1** When another shift of workers is to continue work in the confined space, the CSEP will transfer to the new group, provided no new hazards are created by the work.

# Confined Space Policy

## Eastern Illinois University - Safety Manual Chapter 20

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**20-7.4.2** The new responsible supervisor and the old responsible supervisor shall arrange for the transfer of the CSEP and any confined space equipment being used.

**20-7.4.3** The new responsible supervisor shall see that all of the requirements of this standard are being compiled with prior to any work beginning in the confined space.

**20-7.5** The CSEP and the record of air samples shall be posted near the opening of the confined space.

**20-7.6** When a CSEP is initiated, the responsible supervisor shall ensure that there are no other CSEP's for the same confined space that could cause a potentially dangerous situation (for example: one group welding and another group using a flammable solvent).

**20-7.7** Separate CSEP's are required whenever separate jobs are being performed in the same confined space.

**20-7.8** When work in the confined space is complete the responsible supervisor shall take the following actions in order to terminate the CSEP:

**20-7.8.1** Ensure that all personnel, tools, and equipment are out of the confined space;

**20-7.8.2** Close all access openings (if applicable);

**20-7.8.3** Sign the "Confined Space Entry Work Terminated" line of the CSEP and return the CSEP and the Record

Air Samples Sheet to the Safety Office; and

**20-7.8.4** Notify the FPM department that the work in the confined spaces is completed.

## Prior to Entry into a Confined Space

**20-8.1** The supervisor shall have determined that entry into the confined space is necessary.

**20-8.2** The supervisor shall have obtained and completed a CSEP in accordance with the Permit Requirement section.

**20-8.3** The supervisor shall have determined that the workers entering the confined space have been trained in accordance with the Training Requirements section.

**20-8.4** All potential hazardous energy sources shall be eliminated and the confined space shall be isolated by Lockout/Tagout, blinding/blanking, double block and bleed, or other acceptable engineering practice.

**20-8.5** The confined space shall be provided with forced air ventilation.

**20-8.5.1** The supervisor shall furnish or approve all ventilation for the confined space.

**20-8.5.2** When ventilating flammable or combustible gases/vapors, explosion proof ventilation equipment shall be used. Ventilation shall be a safe area away from open flames.

**20-8.5.3** When ventilating toxic materials, they shall be ventilated into a safe area.

**20-8.5.4** Oxygen shall never be used to ventilate a confined space.

**20-8.5.5** Ventilation equipment shall be returned to the Physical Plant.

**20-8.5.6** The Safety Officer is available for assistance with ventilation concerns.

**20-8.6** The atmosphere of the confined space shall be tested, both before and after ventilation is applied, to be certain that the following conditions are met:

**20-8.6.1** There is an oxygen level of at least 19.5% but not greater than 23.5%.

**20-8.6.2** There is a hydrogen sulfide level of than 10 parts per million.

# Confined Space Policy

## Eastern Illinois University - Safety Manual Chapter 20

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**20-8.6.3** There is a combustible gas/vapor mixture of less than 10% of the lower explosive limit.

**20-8.6.4** The concentration of airborne combustible dust is less than its lower flammable limit.

**20-8.6.5** Exposure to an atmospheric concentration of any substance for which a dose or permissible exposure limit is published in 29 CFR 1910 Subpart G, Toxic and Hazardous Substances, or in Subpart Z, Toxic and Hazardous Substances, in excess of that dose or permissible exposure limit.

**20-8.7** If the atmosphere does not fall within the acceptable range as stated above, employee(s) shall not enter the confined space.

### During the Entry Period

**20-9.1** The confined space shall be continuously provided with forced air ventilation when possible.

**20-9.1.1** When ventilation is not possible, alternate protective measures or methods to remove air contaminants and protect occupants shall be determined by the Safety Officer.

**20-9.1.2** If ventilation equipment fails, all personnel shall leave the confined space immediately and the supervisor shall be notified.

**20-9.1.3** The employee in the confined space shall continuously monitor the atmosphere to be certain that it remains within acceptable limits as stated on Confined Space Form in #6 of "Prior Entry Into a Confined Space". If the air levels fall outside of the limits stated in #6 of Prior Entry Into a Confined Space, the employee shall immediately vacate the confined space.

**20-9.1.4** A departmental safety attendant shall be on standby immediately outside of the confined space for the entire time an employee is inside. The safety attendant shall be responsible for the following:

**20-9.1.5** Remaining in constant communication with the employee inside the confined space.

**20-9.1.6** Keeping an accurate count of all persons entering the space.

**20-9.1.7** Keeping all unauthorized persons from entering the confined space.

**20-9.1.8** Monitoring activities inside and outside of the space to be certain that it is safe for entrants to remain in the confined space.

**20-9.1.9** Summoning the rescue team and the Charleston Fire Department and giving an accurate description of the emergency and the location of the emergency. In addition, the safety attendant shall contact the Physical Plant and the Safety Officer as soon as possible.

**20-9.1.10** When possible, perform non-entry rescue procedures by retrieving the entrant with a retrieval line or safety line (care must be taken by the safety attendant to see that the non-entry rescue procedures do not cause greater harm to the entrant than waiting for the Fire Department would likely cause). All non-entry rescue equipment must comply with Confine Space Entry Form section #3 in Special Requirements.

**20-9.2** Appropriate personal protective equipment shall be supplied for and used by all employees entering a confined space including but not limited to eye, head, hand, foot, and hearing protection.

### Special Requirements

**20-10.1** This section is intended for those activities that require special precautions. If any of the activities described in this section are going to be done in a confined space, the requirement of this section in addition to the requirements of the previous sections shall apply.

**20-10.2** Hot work

**20-10.2.1** Before hot work or any other spark or flame producing operation may be performed in a confined space; the Hot Work Permit portion shall be completed.

**20-10.2.2** No hot work or any other spark or flame producing operation is permitted on the interior, exterior, or near the openings of a confined space which may contain toxic, flammable, or explosive

# Confined Space Policy

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## Eastern Illinois University - Safety Manual Chapter 20

gases/vapors or materials until the confined space has been properly ventilated and the source of the gases/vapors or materials has been removed.

**20-10.2.3** Whenever hot work is being performed in a confined space, adequate ventilation shall be provided.

**20-10.2.4** Whenever hot work is being performed in a confined space, an appropriate fire extinguisher shall be located nearby.

**20-10.2.5** All gas welding and cutting equipment used in confined spaces shall be pretested for leaks prior to entry into a confined space. The torch and hose shall be removed from the confined space whenever the hot work is completed or the confined space is exited.

**20-10.2.6** Aerosol containers shall not be used in a confined space when hot work or any other spark-producing work is being performed. If aerosol materials must be used, all hot work and any other spark-producing work must be stopped and the confined space adequately ventilated.

**20-10.2.7** Compressed gas cylinders shall not be allowed inside a confined space unless authorization is given by the Safety Officer. In such cases, the shutoff valves for the cylinders should be within reach of the employee.

**20-10.2.8** Fall Protection

**20-10.2.9** Where the potential exists for persons or objects to fall into a confined space, warning systems or barricades shall be employed at the entrance.

**20-10.2.10** A fall arresting system shall be worn by persons entering a confined space as determined by a qualified person. (It should be noted that the presence of a ladder or rungs in a confined space does not in itself eliminate the need for a fall arresting system. The qualified person shall take into account the condition of the ladder or rungs [slippery, wet, greasy, etc.], the length of the descent, the descending persons, visibility, and any other condition that could reasonably be expected to cause the employee entering the confined space to fall.)

**20-10.2.11** When fall protection is provided, it shall consist of a full body harness with a retrieval line attached at the center of the entrants back near the shoulder level. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.

**20-10.2.12** When fall protection is provided for spaces greater than five feet deep, a mechanical device meeting the requirements for Confine Space Entry.

## Listing of Required Confined Spaces

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The following lists identify permitted, (areas requiring a permit to enter), and non-permitted, (areas not requiring a permit to enter), spaces that employees and contractors are allowed to enter. The list is a partial list and should not be interpreted as a complete list of space that would fall under the PERMIT REQUIRED CONFINED SPACE regulation.

1. Storage Tanks
2. Lift Stations
3. Water Towers
4. Sewer Treatment Plants
5. Pits
6. Excavations
7. Swimming Pools

# Confined Space Policy

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## Eastern Illinois University - Safety Manual Chapter 20

8. Underground Vaults
9. Manholes
10. Sewer
11. Tunnels
12. Pipes and Ducts
13. Gas Regulator Vault
14. Cooling Tower
15. Boilers
16. Splice Vaults
17. Process Vessels
18. Underground Storage Tanks
19. Septic Tanks Concrete Trucks
20. Conveyor Systems
21. Coal Bunkers
22. Open Trench Over Four Feet Deep
23. Chemical Storage Room That Has Limited Ventilation
24. Chile water loop- valts

## Non - Permit Required Confined Spaces

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The following is a list of NON - PERMIT REQUIRED CONFINED SPACES and is limited to these locations. A non-permit required confined space may become a permit required confined space if conditions of the space change (i.e. performing hot work, introducing chemical in the space, and other conditions).

Electrical Rooms - that a person may enter through a regular 80" high door way designed for people.

Machinery - Vent Rooms (i.e. filter banks)

Steam Tunnels/(Utility Tunnels) - that a person may enter through a non restricted entrance, that a person may move about without restriction and the entrant is no further that 150' for an exit.

A non-permit required space must have periodic surveillance of air quality and quantity by the Physical Plant for the designation of non-permit required confined space to exist

# Permit - Required Confined Space Physical Characteristics

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A permit required confined space is a space that has limited means of egress, (and/or) not designed for continuous employee occupancy, (and/or) having one or more of the following characteristics:

### **Toxic atmosphere:**

Less than 19.5% oxygen and not over 23.5%

Flammable/combustible/explosive atmospheres present or able to be generated or to enter into an area. % OF L.E.L = over 10%

Toxic atmospheres present or able to be generated or to enter into an area

P.E.L.

Carbon Monoxide = 50 ppm

Aromatic Hydrocarbon = 10 ppm

Hydrocyanic Acid = 10 ppm

Hydrogen Sulfide = 10 ppm

Sulfur Dioxide = 5 ppm

Ammonia = 25 ppm

Areas not protected against entry of water, gas, sand, gravel, ore, grain, coal, biological, radiation, corrosive chemicals, or any other substance which could possibly trap, suffocate, or harm a person.

### **Poor ventilation**

Restricts entry for rescue purposes

An open - topped space over 4 feet deep

### **Hazard Identification**

The hazards that may exist or develop during entry of a confined space include:

Oxygen deficient atmospheres Corrosive Materials

Toxic atmospheres Hot equipment

# Confined Space Policy

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## Eastern Illinois University - Safety Manual Chapter 20

Engulfed or buried Toxic Materials

Electrocuted Drains Open

Fire and/or explosives, cleaning (chemical or water lance)

Drowning Spark Producing Operations

Falls Spiller Liquids

Crushed or Mangled Pressure Liquids

Exposure to harmful chemicals

## Non-Permit Required - Tunnel

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South of Old Main in North Quad

Twenty feet South of Old Main, outside Cashiers Office

## Permit Required - Sanitary Sewer

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1. Man Hole
2. Southeast entrance of Old Main
3. North Quad by Napoleon's flower bed, Southwest corner
4. North Library Quad, South of Union
5. West side of Phipps Lab, Physical Science Building
6. South of Cooper in parking lot
7. South of Yorkshire
8. North of Cooper
9. North side of 1012 Greek Court
10. Greek Court 1020
11. Northwest side of Greek Court 1016
12. Northwest side of Greek Court 1017
13. South side of Greek Court 1013
14. South side of Greek Court 1009
15. South side of Greek Court 1005

## Confined Space Policy

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### Eastern Illinois University - Safety Manual Chapter 20

16. South side of Greek Court 1001
17. Two locations between Tarble Arts and Buzzard Building
18. Southwest corner of the Field House
19. Main door of Recreation Center, North side

## Permit Required - Storm Water

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1. Man Hole
2. Two locations between Pemberton Hall and Old Main near Lincoln Street
3. Two locations Northwest corner Pemberton Hall
4. Northeast corner of Physical Science Building
5. South of Lumpkin Hall
6. West of Lumpkin Hall, West door
7. Between Taylor Hall Wings next to 4th Street
8. North of Carmen Food Service
9. North of Carmen near electrical vaults
10. South side of Greek Court 1000
11. International House Lake North side
12. International House Lake West side
13. North side of Greek Court 1000
14. Two locations North side of Greek Court 1008
15. North side of Greek Court 1009
16. Two locations North side of Greek Court 1005
17. Main entrance to University Court

## Permit Required - Water Vault

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1. Permit Required Confined Space - Man Hole
2. Fine Arts Building Northwest corner

# Confined Space Policy

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## Eastern Illinois University - Safety Manual Chapter 20

3. Fine Arts Building Southeast corner
4. Life Science Northwest corner
5. East side of Booth Library halfway down near sidewalk
6. In front of Greenhouse next to 7th Street
7. Lumpkin Hall East door
8. Lawson and Andrews Quad near flagpole

## Permit Required - Electric

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The following is a partial list intended to supplement the confined space drawing. If a location has not been identified, consider this space a permit required confined space\*

### Vault:

1. Two North Quad near Napoleon's flower bed, Southwest corner
2. Two southeast side of Fine Arts Building
3. South of Fine Arts
4. Two locations Southwest corner Fine Arts, Library Quad East sidewalk
5. Two locations North Library Quad, South of Union
6. Two locations North of Coleman Hall
7. Lawson and Andrews Quad by Flag Pole
8. South Quad East sidewalk
9. Northeast side of Hampton
10. North of Carmen
11. North side of Greek 1008
12. Northwest corner of Field House next to Football Stadium
13. Between main doors of Recreation Center North side and Douglas

### Permit Required - Telephone

To enter telephone vaults follow 29 CFR §§ 1910.268 "Telecommunication Regulations"\*