

UNIVERSITY OF TOLEDO HEALTH SCIENCE CAMPUS

SUBJECT: CONFINED SPACE PROGRAM

Procedure No: S-08-019

PROCEDURE STATEMENT

Safe procedures, as defined by Occupational Safety and Health Administration (OSHA) and described below, shall be followed by all University of Toledo personnel prior to entry into a confined space.

PURPOSE OF PROCEDURE

To ensure the safety and health of employees and outside contractors at the University of Toledo through compliance with regulations promulgated by OSHA in 29CFR1910.146.

DEFINITION

"Confined Space" means a space that:

1. Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
3. Is not designed for continuous employee occupancy.

"Permit-required Confined Space (permit space)" means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. 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
4. Contains any other recognized serious safety or health hazard.

"Hot Work Permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

"Attendant" means 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.

"Authorized Entrant" means an employee who is authorized by the employer to enter a permit space.

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

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL;
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;

NOTE: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

5. Any other atmospheric condition that is immediately dangerous to life or health.

NOTE: For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Hazard Communication Standard, section 1910.1200 of this Part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

RESPONSIBILITY

The appropriate Facilities Maintenance Supervisor, or their designees, in conjunction with Safety & Health, are responsible for the initiation and execution of approved confined space entry procedures as defined by the Confined Space Entry Permit issued for entry.

Campus Police must be notified at x3770 prior to entry into "permit required confined space".

PROCEDURE

A. Hazard Identification

Facilities Maintenance supervisors shall identify all spaces, meeting the criteria listed in the definition, which they believe may be a confined space, or a permit required confined space, in which it is reasonably anticipated that employees may be required to enter. (See current list attached.)

B. Confined Space Entry Permits

The entry permit (sample attached) identifies and evaluates the potential hazards of a confined space and is the tool by which employees are authorized to enter the space. The permit will define the conditions under which the space may be entered; states the reason(s) for entering the space; the anticipated hazards of the entry; eligible entrants and attendants; and establishes the length of time for which the permit is valid.

These spaces shall be evaluated by Safety & Health and permits issued accordingly. These spaces shall be readily identifiable as confined spaces through signage and by the posting of the entry permit at all points of access.

C. The following criteria will be considered in issuing the permit:

1. Entry of unauthorized entrants shall be precluded.
2. The space will be emptied, in so far as possible, of any liquid, gas or solid material.
3. The space will be cleaned by the best practical method, such as cold water, warm water, steam, etc.
4. Barriers will be erected to protect entrants from external hazards such as might be created by vehicles or passers-by.
5. Lock-Out/Tag-Out Permit procedures will be followed, assuring that the equipment is at zero energy state.
6. All lines or ducts feeding materials or gases into the enclosed space will be disconnected or "blanked-off." Blanking will be of materials adequately resistant to corrosion by the material held back.
7. The atmosphere in the enclosed space shall be tested for oxygen deficiency and unprotected entry will not be made if oxygen content is below 19.5%. Oxygen content of below 19.5% will require the use of an airline respirator, with requirements for testing, training, fit testing, etc. met.
8. The atmosphere in the enclosed space shall be tested for toxic materials and if toxics are detected above the OSHA permissible levels for that material, unprotected entry shall not be made.

9. The atmosphere in the enclosed space shall be tested for explosivity (% low explosive limit, % LEL). Entry shall not be made unless measurements assure that explosive levels are not present.
10. An enclosed space which has or may have any of the above hazardous characteristics, shall be retested during the entry and work procedure to assure that each item is at a safe level. Any indication of an unsafe condition shall require the worker(s) to immediately vacate the space.
11. The presence of toxic or corrosive material in the confined space shall require the presence of a charged water hose with a spray nozzle for flushing of eyes and skin.
12. The confined space shall be thoroughly ventilated with natural ventilation, fans or other air movers as required. Such ventilation shall continue as long as people remain in the enclosed space.
13. A confined space, which has held flammable or explosive material, shall be cleaned appropriately and require the use of non-sparking tools and gear.
14. Adequate illumination shall be provided, to the extent it doesn't present an ignition hazard.
15. Torches, hoses and all other non-work equipment shall be carefully inspected before work begins. This equipment is not to be brought into the enclosed space until use is necessary and is to be removed immediately after use.
16. All hand and power tools, illumination, etc., shall be properly grounded and shall be non-sparking if there is the potential for fire or explosion.

D. Confined Space Attendant

A Confined Space Attendant is required by the entry permit. This person shall be present outside of the confined space, but able to see the worker inside, at all times when there is the slightest possibility of oxygen deficiency, toxic or corrosive materials, or flammability and explosivity. For all confined space entries, Campus Police shall be notified by the appropriate supervisor, of the start and anticipated stop time of the confined space work. Two-way communication shall also be provided. The attendant shall summon rescue assistance as soon as the attendant determines entrants need to escape. The attendant shall call Campus Police - "77" - advising of the location of the entrants and the need for "Confined Space Rescue." (9-1-1 will be called)

E. Personal Protective Equipment

Personal protective equipment is never a substitute for the creation of safe working conditions and good judgement on the part of the worker and supervisory personnel. All personnel protective equipment shall be selected based upon hazard assessment of the job.

1. Safety Harness
Any potential for oxygen deficiency, toxic or corrosive material, or flammability and explosivity shall require the worker(s) inside the space to wear an adequate body harness, so designed as to facilitate immediate removal if an unexpected event should occur. Extraction devices and pulleys shall be provided so as to remove the person from the space without further injury to the space entrant. The free end of the lifeline, attached to the harness, shall be anchored outside of the space.
2. Eye protection shall be selected with regard to the possible hazard(s) involved in the job.
3. Respiratory protection shall meet all requirements of the OSHA Respiratory Protection Standard.
4. Head protection shall be selected with regard to the possible hazard(s) involved in the job.
5. Foot protection shall be selected with regard to the possible hazard(s) involved in the job. Rubber booties or shoes are preferred when flammable material may be present. Rubber overshoes may be substituted. Steel toe safety shoes should be worn within confined spaces unless they interfere with the safe performance of the individuals performance of his or her job.

F. Training

The appropriate Supervisor shall ensure that his employees receive training on this procedure's requirements and personal protective equipment (where such protection is required) prior to entry of any confined space. Employees should attend Maintenance OSHA Safety & Health training.

G. Outside Contractors

When outside contractors must enter a known confined space, it is the duty of the appropriate supervisor to provide a copy of the OSHA Standard on confined space entry to that contractor. In this case, the "appropriate" supervisor is the supervisor with primary knowledge of the work to take place. In addition to providing a copy of the standard, the supervisor shall enable, to the degree possible, the contractor to provide for safe practices for their employees. The supervisor shall provide assurance to the Safety & Health Department as to the effectiveness and use of the contractor's confined space entry program.

Source: Safety & Health Committee

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6/2/99

1/7/02

1/1/05

12/28/07

LIST OF CONFINED SPACES

Location	Entrants, Staff from	Frequency (X/Yr.)	Potential*
Ash Silo	Power House	2	1,2,P
Boiler Ash Hoppers (7)	Power House	2	1,2,P
Boiler Fire Box (4)	Power House	1	1,2,P
Boiler Mud Drum (4)	Power House	1	4,P
Boiler Steam Drum (4)	Power House	1	4, P
Coal Bunker	Power House	Infrequent	1,2,P
Coal Pits (2)	Power House	Daily	1,2
Deaerator Tank	Power House	1	1,2,4,P
EP Fan Housing	Power House Electricians	1 1	1,2,P
EP Ash Hoppers (6)	Power House	1	1,2,4,P
EP Stack	Power House	1	1,2,P
EP Vibrator Housing (4)	Power House Electricians	1	1,2,P
WP Wire Rack Housing	Power House Electricians	1	1,2,P
FD Fan Housing (4)	Power House Electricians	Infrequent	1,2,P
Hot Well Tank	Power House	Infrequent	2,4,P
ID Fan Housing (4)	Power House Electricians	Infrequent	1,2
Tower Pump Pit	Power House Electricians	Winter=Frequent	2,4,P
Steam Tunnels:			2,4
Heatherdown	Operating engineer		
Main Campus to P.H.	Operating engineer MRW's		
P.H. to Dana	Operating engineer MRW's		
Storm Sewer Manholes (deeper than 4 feet)	Grounds	Infrequent	2,4,P
Heatherdowns Boiler	Operating engineer	1	1,2,4,P
Underground Storage Tanks			2,3,4,P
Air Handlers: (those large enough to enter)	Air quality, MRW's, Painters, Electricians	4	2
D.H. (8)			
HEB (10)			
CAPH (1)			
Health Center (2)			
Glendale (1)			
Dana (1)			
FSB (1)			
Library (1)			
BHSB (4)			2,3,5,P
ECI	MRW's	1 Response to Plug	2,4,P

*See next page for code definitions

1. Combustible Dust
2. Limited Access/Egress
3. Flammable Atmosphere
4. Oxygen Deficiency/Enrichment
5. Exceeds OSHA Limit
- P Permit required

Location	Entrants, Staff from	Frequency (X/Yr.)	Potential*
Elevator Pits	MRW's		2,4
D.H. (4)	Electricians		
HEB (2)	Plumbers		
CAPH (1)			
Health Center (1)			
Glendale (1)			
Dana (1)			
Library (5)			
Hospital (8)			
HSB (3)			
Cooling Towers	Air Quality Electricians	1	2
Sewer Manholes	Plumbers		2,4,P
Acid Sumps	Plumbers		2,4,P
Utility Tunnel at Sub. St.	Electricians		2,4,P
Natural Gas Manholes			2,3,P
Sump Pump Pits			2,4,P
Wire Closets	Plumbers, HVAC, P.H. Stat. Eng, Telephone Services		2
Pipe Shafts	Data Services		2

Atmosphere Hazards

1. Combustible Dust = An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less.
 2. Limited Access/Egress = A space large enough that an employee can enter, which has restricted means for entry or exit and is not designed for continuous employee occupancy.
 3. Flammable Atmosphere = A flammable gas, vapor, or mist in excess of 10% of its lower flammable limit.
 4. Oxygen Deficiency/Enrichment = An atmospheric oxygen concentration below 19.5% or above 22%.
 5. Exceeds OSHA Limit = Exceeds a "recognized" exposure limit [OSHA permissible exposure limit, immediately dangerous to life or health limit, or published exposure recommendation (i.e., from an MSDS).]
- P Permit required for entry (where feasible area is required to be posted "Permit Required Confined Space").