

Appendix A - Sample Department Confined Space Inventory List

Area X Maintenance Spaces Evaluated as Permit-Required Confined Spaces:

A4-001 Boyd Law, Passenger elevator pit, (Hydraulic), Air, C-7
A4-002 Boyd Law, Cooling tower access, roof, Air, C-7
A4-003 Boyd Law, Cond. pump pit, Steam valve vault (in floor), Rm. 60, basement, Water, Prohibited Entry
A4-010 Dental Science Bldg., Passenger elevator pit (2 cars), South Bldg., (Cable), Air, C-7
A4-012 Dental Science Bldg., Freight elevator pit, SE corner, South Bldg., (Cable), Air, C-7
A4-014 Dental Science Bldg., Oral Suction Tank, North side, Basement Machine Room, Room S-115, C-7
A4-015 Dental Science Bldg., Steam Cond. Tank, South side, Basement Machine Room, Room S-115, C-7
A4-020 Fieldhouse, Passenger Elevator pit, (Hydraulic), Air, C-7
A4-022 Fieldhouse, San. sewer pump pit, Room 130, Sewage, Prohibited Entry
A4-023 Fieldhouse, Dom. hot water tank, Rm. 6A, walk through sauna in Locker Rm. to reach, Prohibited Entry
A4-030 Hardin Library, Passenger elevator pit, (Hydraulic), Air, C-7
A4-031 Hardin Library, San. sewer pump pits (2), (one not in use), Basement, Room 108, Sewage, Prohibited Entry
A4-040 Medical Education Bldg., Waste water sump pit, Sub-Basement, Room 2-01, Water, Prohibited Entry
A4-041 Medical Education Bldg., Condensate pit, Sub-Basement, Room 2-01, Water, Prohibited Entry
A4-042 Medical Education Bldg., Domestic Hot Water Tank, Sub-Basement, Room 2-01, Water, C-7
A4-051 Medical Research Facility, Passenger elevator access, Penthouse, Air, C-7
A4-061 Pharmacy, Old Bldg., Hot Water Tanks (2), Basement Mechanical Room, Water, C-7
A4-066 Pharmacy, South Wing, Distilled Water Tank, Rm. S-44A, Water, C-7
A4-067 Pharmacy, South Wing, Empty Tank, manhole entrance in floor, Rm. S-33, Air, C-7
A4-080 Speech & Hearing Clinic, Condensate pits (2), Basement mechanical room, Water, Prohibited Entry
A4-081 Speech & Hearing Clinic, Heating System Expansion Tank, Basement Mechanical Room, Water, C-7
A4-082 Speech & Hearing Clinic, Domestic Hot Water Expansion Tank, Basement Mechanical Room, Water, C-7
A4-083 Speech & Hearing Clinic, Passenger elevator pit, (Hydraulic), Air, C-7

Area X Maintenance Spaces Evaluated as Non-Permit Confined Spaces:

Boyd Law, Steam condensate vault, in floor, Room 60, Basement
Dental Sciences Bldg., Auditorium wall storage pits (2)
Dental Sciences Bldg., Pipe Chases (4), North Building (16 spaces total)
Dental Sciences Bldg., Pipe Chases (5), South Building (20 spaces)
Pharmacy, Old Bldg., Storage space under stairs, Rm.G-2
Steam pit, outside SW corner Dental Science, 10 x 25 x 20 ft. deep

Area X Maintenance Spaces Evaluated as Not Confined Spaces:

Dental Science Bldg., Suction Tank, North side, Basement Machine Room, Room S-115
Pharmacy, Old Bldg., Pipe chase next to elevator, Basement Mech. Room
Pharmacy, South Wing, Domestic Water Expansion Tank, Room S-33

Area X Maintenance Spaces Not Yet Evaluated:

Hardin Library, Manhole in floor, base of stairs, Rm. 108
Rec. Bldg., pressure pump, in west steam tunnel

Appendix B – Confined Space Evaluation Form

Not Confined Space _____ Certificate Space _____ Full Permit Space _____

Space Code Designation _____ Space Name & Access Location _____

Material in space: AIR WATER WASTE WATER OTHER: _____

Space Entry Designation: Full Permit C-5 C-7 Prohibited Entry

Potential Hazards

Oxygen Deficiency
Fire/Explosion
Toxic/Corrosive Atmosphere
Mechanical Moving Equipment
Equipment
Engulfment
Entrapment
Electrocution
Fall from Height
Hot/Burning Material

Precautions Before Entry

Cool Space
Empty Space
Isolate Inlet & Outlet Lines
Lockout Electrical & Mechanical
Test Air for Oxygen,
Flammable/Explosive, Toxics
Ventilate Space
Confirm Rescue Service
Monitor Dust Level
Designate Entrant, Attendant,
Supervisor
Complete, Sign & Post
Permit/Certificate

Precautions During Entry

Retrieval Capability
Confirm Rescue Service
Continuous Ventilation
Test Air
Attendant
Communication Equipment
Respiratory Protection
Protective Clothing
Explosion Precautions
Monitor Dust Level

Safety Equipment

Test meter
Safety Harness & Lifeline
Safety Hoist
Protective Clothing
Respiratory Protection
Non-sparking Tools
Low Voltage Lighting
Ventilation Equipment
Communication Equipment
Ground Fault Interrupter

Additional Information:

Appendix C – Sample

Confined Space Evaluation Table

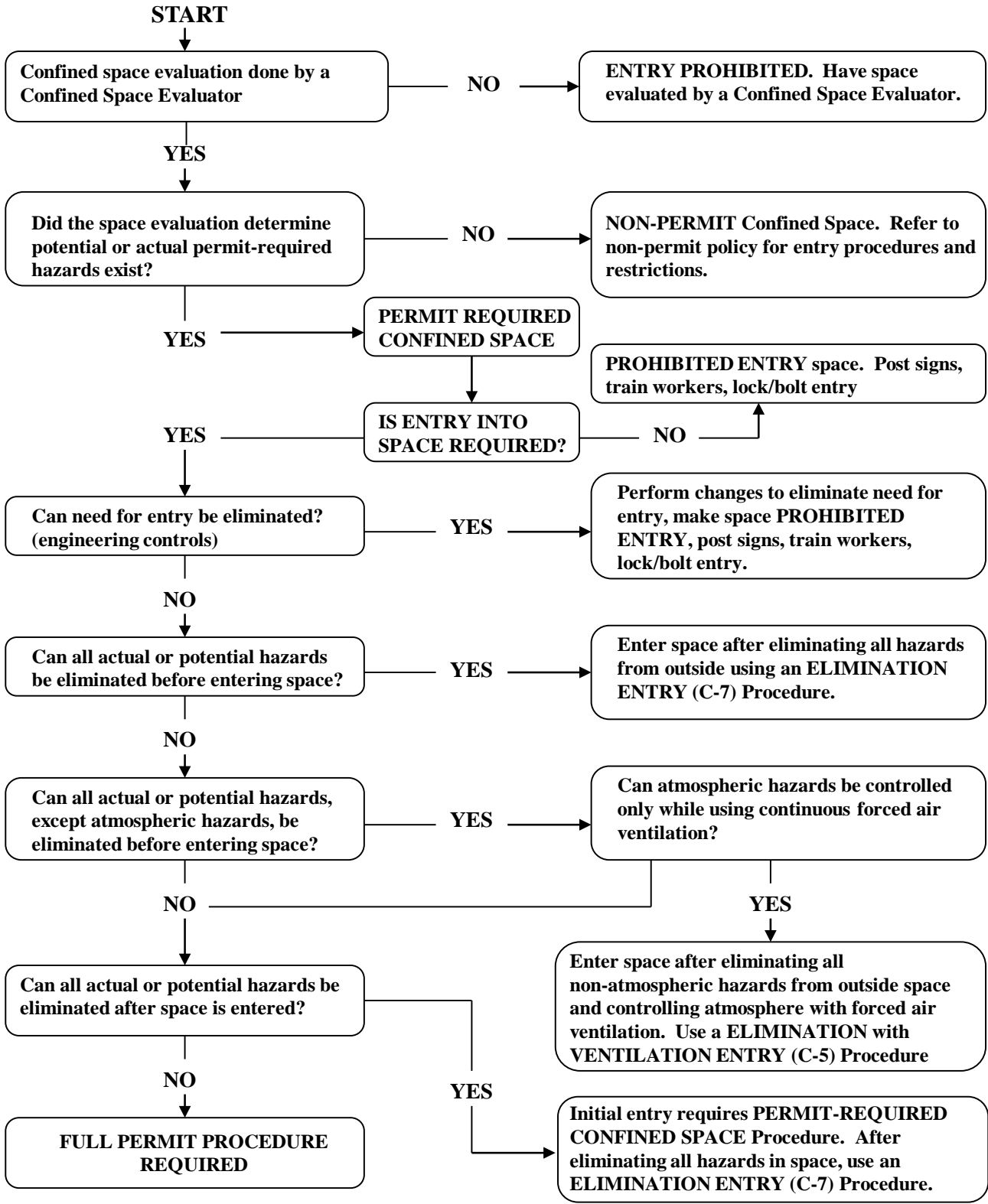
Space Code	Space & Access Locations/Material	Space Entry Designation	Potential Hazards	Precautions Before Entry	Precautions During Entry	Safety Equipment
RS - 8	Elevator Pit Quadrangle Kitchen Freight Elevator (Air)	Prohibited Entry				
HR-11	Open Throat Wind Tunnel, Hyd. Res. Wind Tunnel Bldg.	Elimination Entry C-7	Mechanical moving equipment	Lockout electrical & mechanical equipment, Complete C-7 certificate		
MI-6	North Return Water Tanks (2) End Entry (2) Water (treated)	Elimination Entry C-7	Oxygen deficiency Engulfment Hot / Burn Material	Cool Space Empty Space Isolate Inlet & Outlets Lockout Electrical & mechanical Equipment Test Air Complete & sign certificate	Attendant* Comm. equipment	Test meter
MI-9	Boiler # 10 Precipitator 1 Side & 3 Bottom Entries & Side Door Entry Flue gas (carbon monoxide & Sulfur dioxide & High voltage wires)	Elimination Entry C-7	Toxic Atmosphere Oxygen Deficiency Hot / Burn Material Electrocution	Cool Space Isolate Inlet & Outlets Lockout Electrical & mechanical Equipment Test Air Complete & sign certificate	Attendant* Safety harness & line Comm. equipment	Safety harness & line Test meter
MH-012* FV-1.3.3	West of Quad in sidewalk, called master splice vault Top entry (Air, possible water)	Elimination with Ventilation Entry C-5	Oxygen deficiency Fire/explosion Toxic atmosphere Engulfment	Test air Empty space (water) Ventilate space Complete & post C-5 certificate	Monitor air Continually ventilate Comm. equipment GFI	Test meter Ventilation equipment
CA-6a	Coal Silo #1 Top Entry Coal (Total and silica dust)	Full Permit Entry	Fire/explosion Toxic atmosphere Oxygen deficiency Engulfment Hot/Burn Material Fall From Height	Isolate Inlet & Outlets Lockout Electrical & mechanical equipment Ventilate Space Test Air Desig. entrant, attendant Confirm rescue service Complete, sign & post permit	Comm. equipment Monitor air Attendant Safety harness & line Safety hoist Continuous ventilation	Safety Harness & line Safety hoist Comm. equipment Test meter

APPENDIX D

ENTRY PROCEDURES AND FORMS

- **Decision Logic Flow Chart**
- **Prohibited Entry Procedure**
- **Elimination Entry Procedure (C-7)**
- **Elimination with Ventilation Entry Procedure (C-5)**
- **Full Permit Entry Procedure**

THE UNIVERSITY OF IOWA
CONFINED SPACE DECISION LOGIC FLOW CHART



PROHIBITED ENTRY PROCEDURE

Requirements for use

When a department permit confined space is identified that no department employee will ever be required to enter, the department will control exposure by classifying the space a Prohibited Entry Space. This Prohibited Entry Procedure is designed to prevent all department employee entries into a space designated as a Prohibited Entry Space.

Procedures

The following requirements must be completed to achieve prohibited entry designation for a permit space:

- A sign must be posted on or near the permit space when feasible to prevent accidental entry. The wording on the sign shall be large enough to be easily readable, and in bright colors designed to catch the attention of anyone near it. The sign shall contain the following or similar wording:

DANGER
Permit Required Confined Space
Entry Prohibited

- The entrance to the permit space shall be locked or bolted to prevent accidental entrance, such as at night when the sign may not be easily readable. Limit access to the key.
- Employees who might have some reason to enter the space must be informed about permit space hazards and precautions for entry into such spaces, and why entrance into Prohibited Entry spaces is not allowed.

ELIMINATION ENTRY (C7) FORM and PROCEDURE

University of Iowa

Confined Space Elimination Entry Certificate (C-7)

CAUTION: This is not a permit-required confined space entry form, or elimination with ventilation entry certificate.

This certificate can only be used, where feasible, to declassify an existing permit-required confined space to a non-permit required space for a specific job. All hazards must be eliminated prior to entry of the space. Refer to Confined Space Identification/Evaluation Table for potential hazards and required precautions of specific spaces.

- ◆ Any entries to obtain data or perform actions necessary for elimination entry must be done using a permit system entry.
- ◆ The basis for the elimination entry must be fully described by completing the information below.
- ◆ This elimination entry certificate must be available to each employee entering the area.
- ◆ Upon job completion, the area reverts back to a permit-required confined space status. Return this form to your department safety office after completing entry.



Elimination Entry Specific Information

Workplace/Location _____

Basis for Elimination Entry: (respond appropriately or enter N/A; leave no blank spaces)

All Hazards Have Been Eliminated

YES NO N/A

- Space identified as an Elimination Entry (C-7) space on Confined Space Identification/Evaluation Table.
- Space no longer meets OSHA 1910.146 definition of a "Confined Space". An example of this is: doors opened, access panels removed.
- All mechanical hazards within the space are locked out/tagged out.
- All electrical hazards have been locked out/tagged out.
- Inlet and Outlet lines have been blanked and/or valves locked out/tagged out.
- Space has been emptied, no potential for engulfment from water, coal, sand, sludge, or other moving material.
- For spaces that have an internal configuration of sloping walls, the opening where the floor converges has been covered or protected to prevent personnel from becoming trapped in the opening.
- No atmospheric hazard exists. (Results of air testing required by Confined Space Identification/Evaluation Table are within acceptable limits)
Oxygen Level _____% LEL _____% VOC _____ ppm CO _____ ppm
H2S _____ PPM Other _____ Tester Initial _____
- All other hazards have been eliminated. Explain: _____

Pre-Entry Signature of "Entry Supervisor" _____ Date _____

Entry Start Time _____ Entry Completion Time & Initials _____

Use the back of this page for further clarification of Elimination Entry or comments

Elimination Entry Procedure (C-7) for permit space

Requirements for use

A confined space elimination entry procedure (C-7 Procedure) is allowed by OSHA regulation 29 CFR 1910.146(c)(7) and can only be used to enter a permit space when all permit hazards and potential for permit hazards in the space can be eliminated (not just controlled) prior to entering the space.

If these required entry parameters cannot be achieved, refer back to The University of Iowa Confined Space Decision Logic Flow Chart (The Flow Chart) for guidance in determining the proper procedure. When the parameters listed above can be achieved, department employees shall follow this procedure using an Elimination Entry Certificate to safely enter into the permit space. No changes, modifications, etc., to this procedure may be made without entry supervisor approval.

CAUTION: Do not use this procedure for full permit space entry or for an elimination with ventilation entry. Only use this procedure when the Permit Confined Space Program states it should be used.

Procedures

The following steps shall be followed in order to perform an Elimination Entry Procedure:

1. The Department Space Evaluation Table (The Table) shall be used to confirm the space can be entered using the Elimination Entry Procedure. The Table shall be used as a reference for hazard information and equipment needs. All hazards listed on The Table for the space to be entered shall be eliminated prior to entry.
2. The entry supervisor (usually first line supervisor) assigned entry oversight and employees assigned to perform work must make certain prior to entry that no serious hazard will be introduced by work to be performed in space.
3. Any entries into a space to obtain data or perform actions necessary before allowing use of an Elimination Entry Certificate must be done using a Full Permit Procedure.
4. Confirm all employees involved with the Elimination Entry Procedure have been trained in accordance with 29 CFR 1910.146(g) and are authorized by the entry supervisor to perform elimination entries.
5. Obtain & inspect all personal protective devices, tools, and equipment needed for entry. Confirm air test meter is working properly and capable of testing for all air contaminants listed for the space to be entered in The Table. Calibrate meter as necessary.
6. Control hazards at entry site as soon as arriving, including alerting and channeling approaching vehicular and pedestrian traffic, by using warning signs, flags, railings or temporary barriers. Face approaching traffic while working.
7. Confirm no atmospheric permit hazard exists in the space. Use a lifter to open the entrance cover just enough to allow for air testing, taking care not to stand above the cover. Using a calibrated test meter with a probe, test the air in the space to be entered for the air contaminants listed on The Table to demonstrate airborne levels in the space are safe. Test the space near the top, middle, and bottom, keeping the probe out of any water. When testing, always use the following order of testing:
 - Oxygen content (between 19.5 to 22.5%)

- Flammable gases and vapors (None detected)
- Potential toxic air contaminants (CO less than 30 ppm, H₂S less than 10 ppm)

Completely remove cover if air test is acceptable.

If any hazardous atmosphere is detected in the space during air testing, stop entry procedures and contact the entry supervisor who will consult with a confined space evaluator to determine if the entry can proceed and what procedure to use.

8. Eliminate all non-atmospheric permit hazards in the space. This shall be considered achieved for any hazard when it is eliminated by compliance with any appropriate OSHA regulation. For example, the locking out/ tagging out of electrical equipment in accordance with the OSHA lockout/tagout regulations would achieve elimination of the hazards associated with the mechanical running or electric shock from the equipment. Use a submersible pump to empty any water that has accumulated in the space. Sandbag or shield the manhole opening.
9. Train employees serving as entrants on hazards and precautions of entry and work to be performed.
10. Complete Elimination Entry Certificate, including a full description of the basis for using it. Entry supervisor signs the certificate to allow entry. Maintain the entry certificate at the space during the entry.
11. If an emergency occurs (i.e. heart attack), call 911 to request assistance.
12. While not necessary, periodic air testing of space may be performed during the entry at the request of an employee to demonstrate air contaminants have been eliminated. The requesting employee, serving as entrant, may wear an air test meter for continuous monitoring.
13. If at any time during the entry a change in atmospheric conditions is detected in the space, all employees must immediately leave the space and contact the entry supervisor who will consult with a confined space evaluator to determine how to proceed.
14. Upon job completion, exit space removing all unused materials and tools. Secure space and safely remove all safety controls used to enter the space. The space reverts back to permit required space status. Return the Elimination Entry Certificate to the office to check whether any changes should be amended on the Space Evaluation Table (e.g., changes that would affect the hazard elimination or entry the next time.)

Elimination with Ventilation Entry (C-5) Form and Procedure

University of Iowa

Confined Space Elimination with Ventilation Entry Certificate (C-5)

CAUTION: This is not a permit-required confined space entry form, or elimination entry certificate.

This certificate can only be used, where feasible, to declassify an existing permit-required confined space to a non-permit required space for a specific job. All non-atmospheric hazards must be eliminated (not just controlled) prior to space entry. Continuous forced air ventilation must be sufficient to maintain the space atmosphere safe for entry. Refer to Confined Space Evaluation Tables for potential hazards and required precautions of specific spaces.

- ◆ Any entries to obtain data or perform actions necessary to use an elimination with ventilation entry certificate must be done using a permit system entry procedure.
- ◆ The use of the elimination with ventilation entry certificate requires completion of all the information below.
- ◆ This elimination with ventilation entry certificate must be available to each employee entering the area.
- ◆ Upon job completion, the area reverts back to permit-required confined space status. Return this certificate to the department safety office after completing entry.

Workplace/Location _____

Basis for Elimination with Ventilation Entry: (respond appropriately or enter N/A, leave no blank spaces)

All Non-Atmospheric Hazards Eliminated Prior to Entry

YES NO N/A

- All mechanical hazards within the space are locked out/tagged out.
- All electrical hazards have been locked out/tagged out.
- Inlet and Outlet lines have been blanked and/or valves locked out/tagged out.
- Space has been emptied, no potential for engulfment from water, coal, sludge, or other moving material.
- For silos and other spaces that have an internal configuration of sloping walls, the opening where the floor converges has been covered or protected to prevent personnel from falling into the opening.
- Other non-atmospheric hazards have been eliminated. Explain: _____

All Potential or Existing Atmospheric Hazards are Controlled Prior to Entry

- Sufficient volume of ventilation air forced through space to purge it.
- Space under sufficient continuous forced air ventilation to prevent increase in air contaminant levels.
- Air testing required by Confined Space Evaluation Table is within acceptable limits.

Oxygen Level _____% LEL _____% VOC _____ ppm CO _____ ppm
 H2S _____ PPM Other _____ Tester Initial _____

Pre-Entry Signature of "Entry Supervisor" _____ Date & Time _____

Time of Job Completion & Initials _____

Use the back of this page for further clarification of entry or comments:

Elimination with Ventilation Entry Procedure (C-5) for permit space

Requirements for use

A confined space Elimination with Ventilation Entry Procedure (C-5 procedure) is allowed by OSHA regulation 29 CFR 1910.146(c) (5) and shall only be used to make a permit space entry under the following conditions:

- All actual or potential atmospheric permit hazards in the space can be controlled prior to and during entry using continuous forced air ventilation.
- All non-atmospheric permit hazards of the space can be eliminated from outside the space prior to entry.

If the entry parameters required cannot be achieved, refer back to The Flow Chart for guidance in determining the proper procedure. When the requirements listed above can be achieved, department employees shall follow this procedure using an Elimination with Ventilation Entry certificate (C-5 Certificate) to safely enter into the permit required confined space.

This procedure eliminates the need for the following administrative and/or operational requirements of a Full Permit Procedure:

- Preparation of an Full Permit Entry Form
- Presence of an attendant
- Arrangements for emergency services
- A retrieval system

No changes, modifications, etc. to this procedure may be made without the approval of the first line supervisor.

CAUTION: Do not use this procedure for Full Permit entry or for an Elimination Entry. Only use this procedure when the Permit Confined Space Program states it should be used.

Procedures

The following steps shall be followed in order to perform an Elimination with Ventilation Entry Procedure:

1. The department Space Evaluation Table (The Table) shall be used to confirm the space can be entered using the Elimination with Ventilation Entry Procedure. The Table shall be used as a reference for hazard information and equipment needed. All non-atmospheric hazards to be eliminated and atmospheric hazards to be controlled listed on The Table for the space to be entered shall be addressed prior to entry. If for any reason the Elimination with Ventilation Entry procedures cannot be followed, stop and contact the entry supervisor who will consult with a confined space evaluator to determine how to proceed.
2. The entry supervisor (usually first line supervisor) assigned entry oversight and employees performing work must make certain prior to entry that no serious hazard will be introduced by work to be performed in the space.

3. Any entries into a space to obtain data or perform actions necessary before allowing use of an Elimination with Ventilation Entry Certificate must be done using the Full Permit Procedure.
4. Confirm all employees involved with the Elimination with Ventilation Entry Procedure have been trained in accordance with 29 CFR 1910.146(g) and are authorized by the entry supervisor to perform Elimination with Ventilation entries.
5. Obtain and inspect all personal protective devices, tools, and equipment needed for entry. Confirm air test meter is working properly and capable of testing for all air contaminants listed in The Table for the space to be entered. Calibrate meter as necessary.
6. Control hazards at site as soon as arriving, including alerting and channeling approaching vehicular or pedestrian traffic by using warning signs, flags, railings or temporary barriers. Face approaching traffic while working.
7. Prior to entrance cover removal, check for any conditions that might make removing the cover unsafe. Use a lifter to open the entrance cover just enough to allow for air testing, taking care not to stand above the cover. Use a calibrated test meter with a probe to test the air in the top of the space to be entered in the listed order to confirm the following atmospheric conditions exist:
 - Oxygen content is greater than 15%
 - Flammable gas and vapor concentration is less than 10% of the LEL

Completely remove cover if air test is acceptable.

If any hazardous atmosphere is detected in the space during the testing, stop entry procedures and contact the entry supervisor who will consult with a confined space evaluator to determine if the entry can proceed and what procedure to use.

8. Eliminate all non-atmospheric hazards in the space. This shall be considered achieved for any hazard when it is eliminated by compliance with any appropriate OSHA regulation. For example, the locking out/ tagging out of electrical equipment in accordance with the OSHA lockout/tagout regulations would achieve elimination of the hazards associated with the mechanical running or electric shock from the equipment. Use a submersible pump to empty any water that has accumulated in the space. Sandbag or shield the manhole opening.
9. Purge the space prior to entry using adequate power ventilation equipment (certified 500 cfm minimum) to produce seven air changes. Position blower to ensure that air intake is from a clean source, away from any exhaust fumes, and exhaust from the blower does not enter the space. The end of the blower hose must be near the bottom of the space (above any water) with only one 90 degree bend in the hose while purging. See Diagram 1.
10. After purging and prior to entry, use test meter probe to test air in space for air contaminants listed on The Table to demonstrate airborne levels in the space are being controlled within safe limits. Test the space near the top, middle, and bottom,

keeping the probe out of any water. When testing, always use the following test order and required conditions:

- Oxygen content is between 19.5 and 22.5%
- No flammable gases and vapors detected
- No potential toxic air contaminants detected

If any atmospheric condition listed above is not achieved using power ventilation, stop the entry procedure and contact the first line supervisor who will consult with a confined space evaluator to determine if the entry can proceed and what procedures to use.

11. Train employees serving as entrants on the hazards and precautions of the entry and work to be done.
12. Complete Elimination with Ventilation Entry Certificate, including a full description of the basis for using the certificate. Complete form with certifying entry supervisor signature, and post the certificate at the space prior to and during entry.

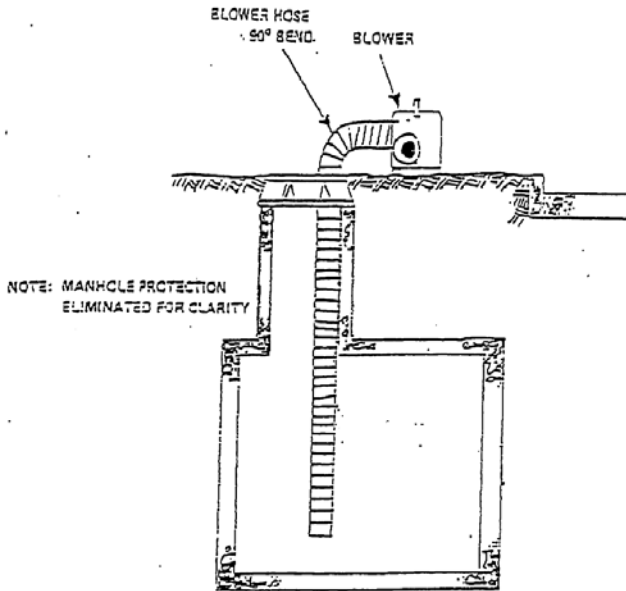
ENTRY IS ALLOWED ONLY IF ALL READINGS ARE WITHIN ACCEPTABLE SAFE LIMITS & SPACE HAS BEEN VENTILATED FOR 7 AIR CHANGES

13. Install entry ladder if required, and tent or heater if desired.
14. Entrants enter space, reposition and secure blower hose in a horizontal position, directing hose end toward an end wall of hole or vault with only two 90 degree bends in hose. See Diagram 2.
15. Continue using blower for forced air ventilation through the space for entire entry to assure atmospheric hazards remain controlled.
16. If an emergency occurs (i.e., heart attack), call 911 to request assistance.
17. Perform periodic air testing of the space as necessary during the entire entry to demonstrate air contaminant levels are being controlled to within safe limits. If feasible, have worker in the space wear air test meter for continuous monitoring.
18. If an open flame (acetylene torch) is to be used in the elimination with ventilation entry space, a combustible gas test must be done immediately before using the open flame, with retesting at least once per hour while using the flame-producing device. The fuel tank can only be in the space during the time the flame-producing device is actually in use.
19. If at any time during the entry a condition changes that effects safety or health (i.e., blower stops working), all employees must immediately leave the space and contact the entry supervisor who will consult with a confined space evaluator to determine how to proceed.
20. Upon job completion, exit space removing all unused materials and tools. Secure space and safely remove all safety controls used to enter the space. The space reverts back to permit required confined space status. Return the Elimination with

Ventilation Entry Certificate to the entry supervisor to check whether any changes should be amended on the Space Evaluation Table (e.g., changes that would affect the hazard elimination or entry the next time).

Diagram 1

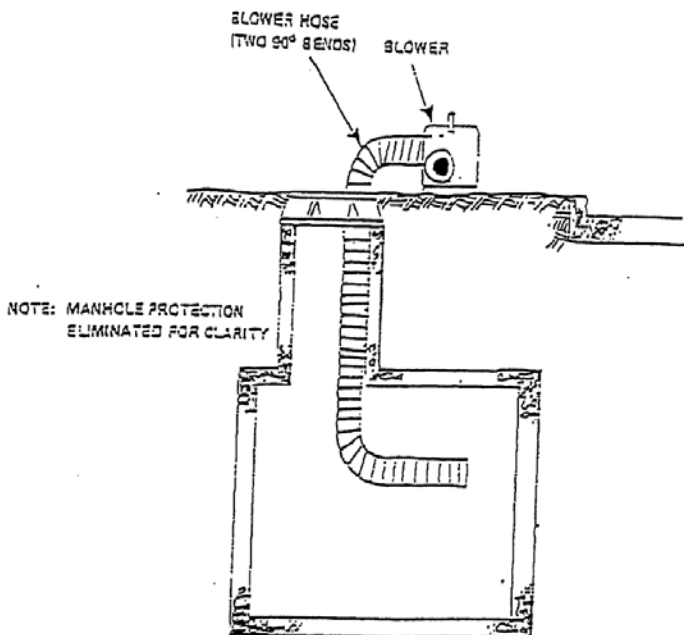
TYPICAL SETUP FOR PURGING



DURING PURGING ONLY ONE 90° BEND IS PERMITTED IN THE BLOWER HOSE AND THE END MUST POINT DOWN AND REACH NEAR THE BOTTOM OF THE SPACE.

Diagram 2

TYPICAL SETUP FOR VENTILATING



DURING VENTILATION ONLY TWO 90° BENDS ARE PERMITTED IN THE BLOWER HOSE AND THE END MUST BE SECURED IN A HORIZONTAL POSITION DIRECTED TOWARD AN END WALL OF THE SPACE.

FULL PERMIT ENTRY – FORM and PROCEDURE

UNIVERSITY OF IOWA FULL PERMIT ENTRY FORM (PERMIT)

CONFINED SPACE # _____ (see the Department Space Evaluation Tables)

LOCATION: _____ (Not allowed at Oakdale Campus)

PURPOSE, Description, Location of work _____

DATE/TIME (valid for one shift only): _____ / _____ / _____ From: _____ AM PM To: _____ AM PM

PERSONNEL The following person(s) trained in confined space procedures are assigned work in connection with a confined space entry, in accordance with this permit:

<u>Entrants:</u> Name (Printed)		<u>Attendants</u>	Name (Printed)
_____		_____	_____
_____		_____	_____

1. Permit space isolated and controlled:		Yes	No	N/A	Time	Checked By
Area posted: - - - - -		_____	_____	_____	_____	_____
Area barricaded: - - - - -		_____	_____	_____	_____	_____
Piping disconnected: - - - - -		_____	_____	_____	_____	_____
Energy sources and mechanical hazards locked/tagged out:		_____	_____	_____	_____	_____
Cleaning (flushing/washing) done: - - - - -		_____	_____	_____	_____	_____
Required purging or inerting done: - - - - -		_____	_____	_____	_____	_____
Sources of ignition controlled: - - - - -		_____	_____	_____	_____	_____
Cutting, welding permit obtained: - - - - -		_____	_____	_____	_____	_____
Use of hazardous or flammable materials approved: - - -		_____	_____	_____	_____	_____

2. Permit space atmosphere evaluated:		Reading	Tested by	N/A
Test for oxygen content: % O2 (oxygen) (19.5% minimum, 23% maximum)		_____	_____	_____
Test for flammable concentration: % LEL (lower explosive limit) (10% or less)		_____	_____	_____
Test for toxic concentration: ppm of CO (carbon monoxide) (30 ppm max)		_____	_____	_____
Test for any other airborne toxic(s) as required _____		_____	_____	_____
Continuous testing required _____ / Retest required every _____ minutes/ _____ hours / Not required _____				

3. Personal Protective Equipment: (inspected, and in working order)
 Retrieval line _____ Hard Hat _____ Safety Harness _____ Hearing Protection _____ Eye Protection _____
 Respirators _____ (type): _____
 Protective Clothing _____ (type): _____ Gloves _____ (type): _____
 Fire Extinguisher _____ GFI In Wet Environment _____ Gas/Oxygen/Toxicity Detector(s) _____
 Emergency Communication Equipment (ability to contact Rescue Provider) _____
 Ventilation Equipment _____ Others _____ (specify): _____

4. Emergency/Rescue: Only available in Iowa City. Confirm Iowa City Fire Department rescue available before entry _____
No rescue service is available on Oakdale Campus. All rescue efforts by non-rescue providers must be from **outside** the confined space. Do not enter the confined space. If a person is down for no apparent cause, you must assume that toxic gases or oxygen deficiency could exist. Emergency procedures are in the Written Confined Space Entry Program at the _____ Office.

5. Additional Information:
 Contractor(s) Notified: _____ Permit Conditions: _____ Potential Hazards: _____
 Any other information that is necessary to ensure the well-being of entrants: _____

6. Pre-Entry Briefing: I/We have reviewed this permit and are aware of the hazards and precautions necessary for performing the designated work in the confined space authorized by this permit: (Signed by all entrants & attendants)
 NAME (Signature) _____ NAME (Signature) _____

7. Certification: I certify that all existing and potential hazards have been evaluated, necessary protective measures have been taken, and acceptable environmental conditions exist:

Printed Name _____ **Signed** _____ **Date:** ____ / ____ / ____
(Authorized Person)

Full Permit Entry Procedure for permit space

A. Requirements for use

This procedure fulfills the regulatory requirement for a permit required confined space entry as allowed by OSHA regulation 29 CFR 1910.146(d). It shall be the only procedure used to make a permit required confined space entry when

- all non-atmospheric hazards of space cannot be eliminated from outside the space prior to entry; or
- all actual or potential atmospheric hazards in the space cannot be controlled prior to and during entry using continuous forced air ventilation.

Each time entry is desired to a space under "permit required" conditions, a Full Permit Entry Form (Permit) must be completed and signed by an Authorized Person.

The permit must confirm, prior to entry, that employees are properly trained, appropriate feasible engineering controls (i.e. ventilation, purging) are in place, atmospheric conditions were tested for appropriate hazardous materials associated with that space, and emergency rescue is available. Testing and monitoring of atmospheric conditions are completed only by the Authorized Person.

Special precautions, such as blanking lines and blocking moving parts, are taken to guard against engulfment and any mechanical hazards that could present a threat to life and health. Lockout and tagout procedures will be completed by each of those employees entering a confined space when there is threat of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or radiation exposure. When a situation warrants, employees will be provided the necessary personal protective equipment (i.e. respirator, boots, fall protection, retrieval gear, etc.) for safe entry.

No changes, modifications, etc. to this Full Permit Entry procedure may be made without approval of the Authorized Person.

B. Requirements for program content

The program used for entering permit spaces under "permit conditions" is required to have the following administrative and/or operational components:

- A written document to describe the permit space entry program.
- Formal training on full permit entry requirements and procedures
- Measures to prevent unauthorized entry
- A hazard identification and evaluation procedure.
- Requirements to complete prior to and during entry operations.
- Equipment for entry and ensuring employees use it properly.
- Evaluation of permit space conditions when entry operations are conducted.
- At least one attendant outside permit space for duration of authorized entry.
- Means for one attendant to monitor multiple spaces if undertaken.
- Designate persons involved in entry, identifying each person's duties, and training them.

- Procedures for summoning rescue and emergency services, and preventing unauthorized personnel from attempting rescue.
- A system for preparation, issuance, use, & cancellation of Full Permit Entry Forms (permits).
- Procedures to coordinate entries of multiple departments or employers.
- Procedures to conclude entry operations.
- Revision of program if believe deficiencies exist.
- Annual review of permit program, looking at canceled Full Permit Entry Forms.

C. Requirements for written program

The written program describing entry into permit spaces under "permit required" conditions specifically addresses the following:

- Assignment of authority for supervising the entering of spaces.
- Testing and monitoring of conditions inside the space.
- A system for preparing, issuing, using, and canceling Full Permit Entry Forms.
- Procedures if an attendant is needed outside permit spaces during entry.
- Procedures for summoning rescuers and preventing unauthorized personnel from attempting rescue.
- Coordinated entry for more than one employer - such as contract workers.
- Procedures for concluding entry operations and canceling the permits.
- Procedure to provide required full permit training
- Review of the entire permit program as needed, but at least annually.

D. Responsibility

The entering of a permit space requires a number of individuals assigned specific roles to assure that entry and work inside the space are carried out safely from beginning to end.

1. Supervisory Responsibilities

First line supervisors shall ensure that all existing, new, and transferred employees who are required to enter permit spaces receive initial permit space training and annual refresher training.

First line supervisors shall only allow trained employees to enter and work in a permit space. Only Authorized Persons shall be responsible for signing and issuing Full Permit Entry Forms for confined space entry. First line supervisors who are responsible for ensuring the health and safety of employees engaged in permit space work shall monitor the work site to ensure that all confined space entry rules, precautions, and practices are observed. The first line supervisor must be notified as to where and who is performing a Full Permit Procedure. The Full Permit Entry Form shall be sent to the first line supervisor after the entry is completed.

2. Employee Responsibilities

Under no circumstances shall department employees enter a permit space where permit required conditions exist without a signed Full Permit Entry Form authorizing entry and the specific work to be done.

Whenever a violation of permit space standard operating procedures occurs or is observed, work shall cease until violation is corrected and reported to appropriate supervisor.

E. Policy Compliance Review

The department Confined Space Entry Program will be reviewed yearly to ensure the requirements of OSHA 29 CFR 1910.146 standard are being followed and the program is effective.

F. Policy Enforcement

University employees found in non-compliance with the standard operating procedures shall be subject to retraining. Employees found willfully in non-compliance of the standard operating procedures shall be subject to disciplinary action.

G. Hazard Identification and Evaluation

A hazard evaluation shall be conducted for each identified potential confined space or group of similar potential confined spaces. Parameters used in the evaluation should include:

1. Hazard Identification in permit spaces
 - Past and current uses of the space that may adversely affect the atmosphere of the space
 - Physical characteristics, configuration, & location of the space
 - Existing or potential hazards in the space, such as:
 - Oxygen deficient or enriched atmosphere
 - Flammable/explosive atmosphere
 - Toxic atmosphere
 - Biological hazards associated with the space
 - Mechanical hazards
2. Hazard Evaluation of permit spaces
 - Scope of hazard exposure
 - Magnitude of hazard
 - Likelihood of hazard occurrence
 - Consequences of the hazard occurrence
 - Potential for changing conditions/activities

All departmental controlled confined spaces determined to be permit spaces will be assigned a space designation code and listed in The Table. The Table shall be reviewed and the actual conditions assessed by an Authorized Person or designee filling out the Permit before entering any permit space. The Table shall be available to all parties involved in the entry.

Permit spaces shall be clearly labeled with permanent placards, where feasible. Permit space's located outside, or where not feasible inside buildings, may not have placards.

The list of identified permit spaces will be reviewed during initial employee confined space training and annually thereafter.

H. Full Permit Entry Form Requirements

The Full Permit Procedure is used when a C-7 Elimination Entry or a C-5 Elimination with Ventilation Entry cannot be used. The procedure uses a Full Permit Entry Form, which is the equivalent of the OSHA Permit Required Entry Permit, called a "PREP".

1. Full Permit Entry Form Content

The Full Permit Entry Form developed for entry into confined spaces under permit required conditions requires, at a minimum, the following information from each space to be entered:

- Date of entry, location of entry, and type of work which will be conducted in the space
- Names of entrants and attendants
- Hazards to be controlled or eliminated prior to proceeding with entry
- Safety equipment required to perform the entry and job duties in the space
- Safety precautions required to perform the job
- Results of atmospheric tests performed
- Type of equipment which will be necessary for a rescue and how aid will be summoned in the event of an emergency
- Duration of the permit
- Pre-entry briefing with signatures verifying the briefing
- Space for signature of approval authority (the Authorized Person) and employees working in or in connection with entry

2. Use of Full Permit Entry Form

The Full Permit Entry Form is to be used as a reference and checklist during work planning and authorization. Prior to authorizing permit entry work and issuing a Full Permit Entry Form, all parties involved shall, as a group, review the appropriate Full Permit Entry Form, evaluate all potential hazards, pre-plan the scope of work to be done, and complete the form. After all form requirements have been properly completed, the Full Permit Entry Form shall be signed by an Authorized Person and all parties to be involved in the entry.

3. Posting and Records of Full Permit Entry Forms

At all times during the entry and work, the Full Permit Entry Form shall be posted near the entrance of the space being entered, or be in the possession of the standby person. Full Permit Entry Forms from completed entries shall be routed to the office.

4. Duration of Full Permit Entry Form and Re-Entry

A Full Permit Entry Form is effective for one entry or until the end of the work shift for authorized entrants. Before any re-entry into the permit space, a new permit must be issued to ensure that:

- atmospheric test results must be within acceptable limits, or precautions to protect entrants against the hazards shall be addressed on the permit in place;
- permit authorized person has reviewed and signed the permit verifying all precautions and other measures specified in the permit remain in effect; and,
- only operations or work originally approved on the permit shall be conducted in the space.

5. Revoking of a Full Permit Entry Form

When conditions or work activities change from those specified in original Full Permit Entry Form that could increase existing hazards or introduce a new hazard to the space, the original Full Permit Entry Form shall be invalid and a new form prepared prior to work continuing.

I. Hazard Protection Requirements

Hazards addressed in this section require action on a Full Permit Entry Form:

1. Protection from External Hazards

All open hatches and covers which present a hazard to personnel, pedestrian or vehicular traffic shall be suitably identified with hazard communication signs and barricaded.

2. Atmospheric Testing

a. Air testing requirements

Before entry into a permit space, air testing shall be conducted. The testing must be done by a person trained and qualified using approved testing equipment capable of detecting the hazardous air contaminants suspected. When air testing is not feasible, worst case conditions shall be assumed and no entry is permitted until further evaluation.

b. Air monitoring instruments and testing procedures

Only a trained and qualified person shall make air quality tests for permit space entry.

Air monitoring and testing equipment shall be used, maintained, and calibrated in accordance with the manufacturer's recommendations. When necessary for permit space entry work, the following air testing protocol shall be used:

- 1) Before any instrument is used to check the atmosphere in a utility it shall be fresh air checked and field-tested following manufacturer's instructions.
- 2) When required for pre-entry testing and/or for continuous monitoring of the atmosphere within a confined space testing shall be done with an appropriate device to determine whether dangerous air contamination, oxygen deficiency, or oxygen enrichment exists. The tests shall be made in the following sequence: (1) oxygen, (2) combustibles, and (3) toxins. Tests shall be made at various locations from the top to the bottom of the confined space for appropriate toxic gases, such as carbon monoxide and hydrogen sulfide. The following are minimum acceptable air quality standards for permit space entry:
 - Oxygen level: not less than 19.5% by volume or greater than 23.5% by volume.
 - Combustible gas: any reading will prohibit entry, or if occupied and the meter reading elevates, the confined space shall be evacuated until source has been identified and controlled.
 - Toxic substances: concentration shall not exceed that which would constitute a threat of death, injury, acute illness, or disablement. Some toxic air limits are:
 - Carbon Monoxide = less than 35 ppm
 - Hydrogen Sulfide = less than 10 ppm
 - Sulfur Dioxide = less than 2 ppm
- 3) If minimum air quality cannot be met, the confined space shall not be entered, or if occupied it shall be evacuated until minimum air quality is achieved.
- 4) Ignition sources shall not be introduced into a permit space until it is determined by air testing devices that a flammable or explosive atmosphere does not exist.
- 5) In specific instances tests may also be required for the presence of biological materials, pathogens, and radiation. When tests unfamiliar to department personnel are required, outside expertise shall be consulted. The need for these tests shall be determined during the work planning sessions.

3. Isolation and Lockout/tagout

All energy sources which are potentially hazardous to permit space entrants shall be secured, relieved, disconnected and/or restrained in accordance with established procedures before personnel are permitted to enter the confined space. For specific Lockout/tagout requirements, consult the department lockout/tagout Program.

a. Isolation

Methods and means shall be selected and used to prevent flammable, toxic, irritating, or oxygen displacing gases and vapors from entering the space. All hazardous material, high pressure, high temperature and other piping that could introduce a hazard shall be isolated by utilizing blinding, disconnection, or removal as needed to prevent entry of material(s) and hazardous contaminant(s).

b. Lockout/tagout

Equipment or processes shall be locked and tagged according to the department lockout/tagout program. This would include:

- Where there is a need to test, position or activate equipment by temporarily removing the lock or tag or both, a procedure shall be developed and implemented to control hazards to the occupants.
- Any removal of locks, tags, or other protective measures shall be done in accordance with the procedures.
- Lockout/tagout of equipment, systems and processes shall be confirmed prior to permit space entry.

4. Ventilation

a. Requirements

When ventilation is used to remove atmospheric contaminants from a permit space, the space shall be ventilated until atmosphere is within acceptable ranges. Confined space ventilation shall be maintained during occupancy if a potential exists for atmospheric conditions to move out of the acceptable range. When ventilation is not possible or feasible, alternate protective measures or methods to remove air contaminants and protect occupants shall be determined by the Authorized Person prior to authorizing entry.

b. Blowers Used for Confined Space Ventilation

Blowers for permit space entry shall be used, inspected, and maintained in accordance with the manufacturer's recommendations by the department using them.

Ventilation shall be accomplished by forcing fresh, clean air into the confined space. Care should be taken in placing the blower so contaminated air is not drawn into the blower intake. When necessary, extension hoses shall be attached to the blower so that fresh air is discharged into the bottom of the permit space.

When applicable and appropriate, fixed fans and blowers (e.g., the use of forced and induced draft fans to ventilate and cool boiler combustion chambers, ductwork, and dust collectors) may be used to ventilate confined spaces. These exceptions will be specifically stated in the confined space entry permit.

In confined spaces, where it is appropriate to use ventilation as the sole means of assuring uncontaminated air, at least seven (7) complete air changes are required before the initial entry is made. The space shall continue to be ventilated with sufficient air changes per hour to prevent air contaminant build-up during the entry.

5. Cleaning/Decontamination

Permit spaces shall be cleaned/decontaminated of hazardous materials to the extent feasible before entry. Cleaning/decontamination shall be the preferred method of reducing exposure to hazardous materials. Where this is not practical, personal protective equipment shall be worn by entry personnel to provide appropriate protection against hazards that may be present.

6. Other Hazard Considerations for Confined Space Work

a. Heat Stress

Precautions shall be taken while working in permit space's to reduce the potential for worker heat stress. When necessary, heat stress measurements shall be taken by a properly trained person to establish an appropriate work/rest regime.

b. Noise

Because of the design and acoustical properties, noise can be amplified within a confined space. Appropriate hearing protectors shall be worn in confined spaces where high noise levels exist or are generated by the operation of power tools or pneumatic equipment. Hearing protectors shall be required at noise levels exceeding 85 decibels.

c. Personal Hygiene

Employees shall not eat, drink, or smoke while in a permit space and shall exercise appropriate personal hygiene when confined space work is completed.

7. Personal Protective Equipment

a. Protective Equipment & Clothing

All personal protective equipment and clothing required for permit space entry and work shall be selected, used, and inspected in accordance with the manufacturer's recommendations and applicable OSHA regulations.

Suitable protective clothing, protective equipment, and respiratory devices shall be selected for the specific hazards. Contact EHS for technical assistance where there is a question about the proper personal protective equipment.

b. Respiratory Protection

All respiratory protective devices required for confined space entry shall be used in accordance with the department respiratory program. Only

appropriately trained and authorized employees shall be allowed to wear self-contained breathing apparatus in a confined space.

8. Safeguards

a. Entry and Exit

Each entry and exit point shall be evaluated to determine the most effective methods and equipment to be utilized to enable employees to safely enter and exit the permit space. Safe entry and exit means shall be provided for permit spaces.

b. Retrieval Equipment and Fall Protection /Lifelines, Safety Harnesses, and Hoists

Safety harnesses and lifelines shall be worn by all workers entering permit space's except in situations where they would create tripping hazards or by nature of their use create a greater hazard.

Only full body harnesses shall be used for permit space entry, safety belts shall not be used. Only safety lines and wire cables approved for human lifting and having an adequate test capacity shall be used. Safety harnesses and lifelines shall be used, maintained, and inspected in accordance with the manufacturer's instructions.

Only hoists and winches approved for human lifting and having an adequate capacity shall be used for permit space entry. Powered winches and/or hoisting devices designed for material handling shall not be used for human lifting. Where falls could be injurious, winches with fall arresting devices shall be used. All hoists and winches used for confined space entry shall be used, maintained, and inspected as per the manufacturer's instructions by the using department. Hoists and winches designed for human lifting shall not be used for material moving.

Retrieval devices utilizing wire cable shall not be used in areas where the cable may come in contact with energized electrical equipment.

The manufacturer should be consulted to determine the suitability of using a specific retrieval device or system in the presence of corrosive fumes, gases, or vapors that could damage it.

c. Electrical Lights, Tools, and Equipment

All tools, equipment, and materials taken into a permit space entry shall be lowered by hand lines if distance to worker is over ten feet down.

When an electrocution hazard exists due to wet environments, only approved low voltage (6 or 12 volts) light and extension cords or electrical apparatus provided with a ground fault circuit interrupter shall be used in confined spaces.

Where combustible materials or dusts may be present, explosion- proof lights and non-sparking tools shall be used, and portable fire extinguishers shall be immediately available.

9. Employee Information/Prevention Unauthorized Entry

Entrances to all permit space entries shall be posted as necessary to prevent unauthorized or inadvertent entry.

Confined spaces which, due to physical locations or conditions (e.g., sewer manholes and electrical vaults in roadways), cannot be permanently signed, shall be conspicuously posted as confined space whenever the access cover is removed and/or while work is in progress.

Signs used to identify permit required confined spaces shall contain the following information:

DANGER
Permit Required Confined Space
Entry by Permit Only

10. Emergency Response/Rescue

On the main campus of The University of Iowa, the Iowa City Fire Department shall be “on call” to provide emergency response/rescue service when an entry takes place using the Full Permit Entry procedure. On the Oakdale Campus of The University of Iowa, no rescue service is available and no Full Permit Entry Procedure into a permit space is allowed.

If a rescue requiring entry into a confined space with “permit required” conditions becomes necessary, the onsite rescue personnel will begin rescue procedures and will immediately call 911 to notify the Iowa City Fire Department of the rescue. When the ICFD arrives they will take command over the rescue. EMD’s will respond to provide medical assessment and transport if needed.

Emergency response/rescue work within the confined space shall be done only by trained fire department rescue personnel and not by untrained University employees.

In addition, all department employees serving as confined space Attendants, Authorized Entrants, or Authorized Persons shall be provided training and instruction on permit space emergency procedures. The training and instruction shall include summoning assistance and hands-on practice with emergency equipment like retrieval devices used for non-entry rescue.

11. Attendant

Duties of a Standby Person

When specified for a Full Permit Entry Procedure (see The Tables), a standby person shall be stationed at the confined space opening. The standby person shall function as the work site safety officer and has the authority to cease all confined space work and to evacuate personnel from the confined space if a hazardous situation develops. The standby person is not allowed to enter the confined space at any time for any reason. Situations requiring the standby person to evaluate the confined space include, but are not limited to the following:

- Failure of ventilation equipment or air monitoring devices.
- Conditions deviating from acceptable standards, or when air monitoring indicates.
- Unacceptable conditions.
- If the attendant detects behavioral effects of hazard exposure amongst the entrants.
- If an uncontrolled hazard is observed or detected within the confined space.
- If a situation develops outside of the confined space which could endanger the entrants.
- If a prohibited practice or condition is observed.
- If standby person is required to leave immediate vicinity of the confined space opening.
- If standby person is monitoring more than one confined space, and an emergency develops in one of the confined spaces.

The standby person must remain at the confined space opening and maintain communication with the confined space workers at all times. He/she must have the means to summon assistance (two-way radio or telephone) in the event of an emergency. Additionally, the standby person may be required to monitor the confined space atmosphere and/or the operation of ventilation equipment.

In the event of a permit space emergency involving an unresponsive or unconscious entrant, the standby person shall always assume the atmosphere is immediately dangerous to life and health (IDLH) until proven otherwise.

The Iowa City Fire Department emergency response/rescue service shall be notified in the event of a permit space emergency. The standby person should be prepared to provide emergency response personnel with whatever information is known about the hazards of the confined space.

In an emergency situation, the standby person shall not enter the confined space.

Whenever practical, a safety hoist, lifeline, and safety harness shall be used so the standby person can remove an entrant from outside of the confined space in an emergency.

During authorized work, the standby person shall also secure the work site in order to prevent unauthorized entry. In the event of unauthorized entrants, the standby person shall first request the unauthorized entrants to leave the confined space, and if they fail to leave the area, the standby person shall request assistance from a department manager or supervisor. If necessary, campus security shall be contacted.

12. Employee Training

a. Training Employees for Full Permit Entry Procedure

All department employees required to perform duties and/or tasks associated with a Full Permit Entry Procedure shall be provided with appropriate training and instruction. Training and instruction shall comply with IOSHA confined space training requirements in 29 CFR 1910.146 (e), (f), (g), & (h). Training shall be provided by qualified persons.

The department office shall maintain training records for department employees who are qualified and authorized for confined space duties and tasks.

Only appropriately trained and authorized persons shall be assigned to permit space duties and tasks.

b. Training Persons Authorizing/Supervising Full Permit Entry

Persons required to authorize or supervise Full Permit Entry shall receive appropriate training. At a minimum, the training shall include the following:

- Review and explanation of applicable IOSHA regulations and standards, and provisions of this confined space entry program.
- Safe practices and procedures for confined space work including personal protective equipment.
- Identification, isolation and lockout and/or blanking of all sources of hazards.
- Use of air monitoring devices and other equipment for confined space work.
- Confined space emergency procedures.
- Developing confined space work plans, completion of entry permits and authorization of confined space work.
- Dealing with unauthorized entry into confined spaces.
- Posting requirements.
- Periodic refresher training.

- c. Training Persons as Full Permit Entry Entrants and Standby Persons
Persons required to be Full Permit Entry entrants and Standby Persons shall receive appropriate training. At a minimum, the training shall include:
- Review and explanation of applicable OSHA regulations and standards and provisions of this permit required confined space entry program.
 - Confined space hazards, including their consequences, recognition, and control.
 - Procedure for authorized confined space entry.
 - Identification, isolation and lockout and/or blanking of all sources of hazards.
 - Safe practices and procedures for confined space work.
 - Selection, use, care, and limitations of personal protective equipment, respirator protective equipment.
 - Selection, care, use, and limitations of air monitoring devices and ventilation equipment.
 - Confined space emergency procedures.
 - Posting requirements.
 - Annual refresher training.

13. Duty to Other Employers

Whenever a contractor's employees are required to perform a Full Permit Procedure into a space under the control of the department, management shall provide the contractor with all available information on the permit confined space(s) to be entered. The information shall be furnished to the contractor's representative at the pre-construction meeting and, at a minimum, shall include:

- Potential hazards of the confined space, including, if applicable, an MSDS for the vessel contents.
- Entry requirements for the confined space as established in this confined space program.
- Procedures for confined space emergencies.
- Any other pertinent information on work place hazards and safety rules.

Under the provisions of this permit space entry program, it is the contractor's responsibility to provide their employees with appropriate training and instruction and with all necessary safety equipment and personal protective equipment required for the confined space entry.

J. Review of Permit System

To ensure its continued effectiveness, these Full Permit Entry procedures and completed Full Permit Entry Forms shall be reviewed on an annual basis. Completed Full Permit Entry Forms shall be returned to the first line supervisor to check whether any changes should be amended on the Space Evaluation Table (e.g., changes that would affect the hazard elimination or entry the next time) and retained for one year.