



# ENVIRONMENTAL HEALTH & SAFETY

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## Confined Space Program

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## ACRONYMS & DEFINITIONS

Attendant or Stand-by Person	An individual stationed outside one or more permit required confined spaces that monitors the entrants and conditions in the space.
Confined Space Entrant	The individual entering the confined space.
Confined Space Entry Permit	An authorization and approval in writing that specifies the location and type of work to be done, which certifies that all existing hazards have been evaluated and necessary protective measures have been taken to ensure the safety of each worker entering a Permit Required Confined Space (see Attachment 1).
EHS	University of New Mexico, Department of Environmental Health and Safety
Emergency	Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.
Engulfment	The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system, or that can exert enough force on the body to cause physical harm or death by strangulation, constriction or crushing.
Entrapment	A confined space that has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor which slopes downward by inwardly converging walls, or by a floor which slopes downward and tapers to a smaller cross-section.
Entry	Occurs when any part of the entrant's body breaks the plane of the entry access.
Entry Supervisor	Entry supervisor refers to the person responsible for ensuring acceptable entry conditions, overseeing entry operations, and terminating access to permit spaces.
Hazardous Atmosphere	Any atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to do self-rescue, injury or acute illness from: flammable gases at concentrations greater than 10% of the lower flammability limit (LFL); airborne combustible dust at a concentration that meets or exceeds its lower explosive limit (LEL); an oxygen content less than 19.5% or greater than 23.5%; an airborne concentration of a substance that exceeds its permissible exposure limit; or any other atmospheric condition that is immediately dangerous to life and health.

Hazardous Energy	Hazardous Energy - Any energy source (e.g., electrical, mechanical, hydraulic, pneumatic, chemical, thermal or the sudden release of stored energy) that could cause injury or death to an employee while servicing or repairing a piece of machinery.
Hot work	Any assigned task that introduces an ignition source into a confined space (e.g., welding, cutting, brazing or soldering).
Lockout/Tagout	The control of all hazardous energies within a system prior to performing service on the system according to OSHA's 29 CFR 1910.147, Control of Hazardous Energy (Lockout/Tagout) Standard.
Personal Protective Equipment (PPE)	Equipment that will help prevent accidents and personal injury. PPE includes hardhats, eye protection, face shields, steel-toed boots, respirators, aprons, gloves and full body suits, as necessary, dependent upon the hazards.
PRCS	Permit-required confined space

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## 1. PURPOSE

This program contains requirements for practices designed and implemented to protect University employees from the hazards of entering into and working within confined spaces as identified by the University and as defined by OSHA in 29 CFR 1910.146.

## 2. SCOPE

This program is applicable to all UNM (faculty, staff, and contractors that are required, by the nature of their job, to enter vessels or enclosures that are considered confined spaces under the definitions listed in this program.

## 3. PROGRAM COMPLIANCE

Due to the potential for serious injury and/or death, all faculty, staff, and contractors are required to comply with this program. Failure to comply with the provisions of this program could result in disciplinary action up to and including discharge.

## 4. ROLES & RESPONSIBILITIES

### 4.1. Environmental Health & Safety (EHS):

EHS is responsible for developing, implementing, and administering the Confined Space Program. This involves:

- 1) Developing and maintaining the written program, training programs, and other training resources that can be used by University employees.
- 2) Maintaining centralized records of training, work procedures, inspection data and reports.
- 3) Providing technical assistance to University employees.
- 4) Evaluating the overall effectiveness of the Program on a tri-annual basis.
- 5) Maintaining a list of all identified confined spaces
- 6) EHS will be responsible for issuing the PRCs permit.

### 4.2. Managers of Areas with Confined Spaces:

Managers shall be the principle confined space entry supervisors within their respective sections and shall have the following duties:

- 1) Implement the confined space entry procedures.

- 2) Manage the confined space entry program.
- 3) Ensure employees are trained.
- 4) Designate entry supervisors.
- 5) Ensure that all confined space entry equipment is inspected and calibrated.
- 6) Enforce program compliance.
- 7) Notify EHS of any discovered or created confined spaces.

### **4.3. Entry Supervisors:**

Entry supervisors have the following responsibilities:

- 1) Pre-plan confined space entries.
- 2) Conduct employee pre-entry planning sessions and provide hazards awareness information.
- 3) Obtain and inspect confined space entry equipment.
- 4) Perform hazard evaluation and control.
- 5) Verify that all hazards have been identified and either eliminated or controlled.
- 6) Implement and cancel any entry permits.
- 7) Report program violations to their immediate supervisor.
- 8) Verifying the physical address and best directions to the confined space prior to entry.

### **4.4. Employees:**

Each and every employee is responsible for observing the confined space entry procedures and duties established in this program.

- 1) Authorized Entrants shall:
  - a. Observe all confined space entry procedures;
  - b. Inspect and use confined space entry equipment as per the manufacturer's recommendations;
  - c. Immediately exit a confined space whenever ordered to do so by an attendant or whenever a hazardous condition is detected or perceived;
  - d. Notify EHS of any discovered or created confined spaces; and
  - e. Report program violations to their immediate supervisor.
- 2) Attendants shall:
  - a. Maintain verbal contact with (or have other suitable means of communications for high noise areas) and keep an accurate account of confined space entrants;

- b. Prevent unauthorized entry and ward off intruders;
- c. Remain in the vicinity of the confined space opening(s) at all times until relieved by another trained attendant;
- d. Order the entrants to evacuate the confined space, if required to leave the immediate vicinity of the confined space;
- e. Remain alert for external and internal hazards;
- f. Immediately order the evacuation of the confined space and prevent re-entry if a hazardous condition is detected or perceived;
- g. Have a positive means to summon emergency assistance to the work site and provide emergency information to on-scene emergency response personnel;
- h. Have suitable and appropriate rescue and extrication equipment available; and
- i. Report program violations to their immediate supervisor.
- j. Notify EHS of any discovered or created confined spaces

Attendants may (as appropriate and prudent):

- 1) monitor multiple confined space entries, so long as the openings are in close proximity, and/or
- 2) perform multiple duties in the vicinity of the confined space, so long as a high level of entrant safety can be maintained.

#### **4.5. Outside Contractors:**

Confined space entries involving outside contractors shall be pre-planned and coordinated by the contractor's job site supervisor, the UNM Project Manager, the Area Manager where the work is to be performed, and EHS. Contractors shall:

- 1) Work to their approved confined space entry program.
- 2) Ensure employees are trained.
- 3) Designate entry supervisors.
- 4) Ensure that all confined space entry equipment is inspected and calibrated.
- 5) Enforce program compliance.
- 6) Notify EHS of any discovered or created confined spaces.

## **5. TRAINING**

EHS will develop basic a confined space awareness training that addresses the following items:

NOTE: Additional training and information shall be provided that is commensurate with the assigned job duties prior to working in and around confined spaces

### **5.1. Affected Employees Training**

- 1) General training prior to assignment;
- 2) Refresher training when assigned duties change;
- 3) Changes to confined spaces that may present hazards not covered in previous training
- 4) Refresher training when the supervisor feels that there are inadequacies in the employee's knowledge or use of required procedures.

### **5.2. Authorized Entrant Training**

- 1) Hazards associated with confined space entry, including information on the mode, signs, symptoms and consequences of exposure
- 2) Proper uses of equipment required for entry, including monitoring, ventilation, PPE, lighting, barriers/shields, safety equipment for entry and egress, and rescue and emergency equipment;
- 3) Procedures to ensure communication between the authorized entrant and the attendant when the authorized entrant recognizes any warning signs, symptoms of exposure to a dangerous situation or a prohibited condition; and
- 4) Required communication to monitor status and alert them of the need to evacuate the space.

### **5.3. Attendant Training**

- 1) Hazards associated with confined space entry, including information on the mode, signs, symptoms and consequences of exposure;
- 2) Behavioral effects of hazards exposure, such as those from heat or chemical exposure (i.e., slurred speech or physical impairment);
- 3) The process of maintaining an accurate count of entrants and ensuring that the permit correctly identifies who is in the space;
- 4) The importance of remaining outside the confined space at all times during a confined space entry until relieved by another trained attendant;
- 5) The activities associated with confined spaces;
- 6) Requiring the immediate evacuation of the space if a prohibited condition is detected, behavioral effects of hazard exposures to authorized entrants are detected, conditions outside the space change such that entrants are endangered or if the attendant cannot perform the duties required;
- 7) Performance of multiple tasks as long as the tasks are in close proximity and the confined space entrant safety is the first priority;

- 8) Procedures to summon rescue and other emergency services as soon as the attendant determines the entrants need assistance to escape permit required space hazards; and
- 9) Prevention of confined space entry by unauthorized personnel.

#### **5.4. Entry Supervisor Training**

- 1) The hazards associated with confined space entry, including information on the mode, signs, symptoms and consequences of exposure;
- 2) Proper procedures for filling out entry permits;
- 3) Conditions in which a permit can be canceled;
- 4) Procedures to ensure that rescue services are available and the means for summoning them are operational; and
- 5) Procedures to ensure that operations are consistent with the requirements of the entry permit.

## **6. IDENTIFICATION OF CONFINED SPACES**

### **6.1. Confined Space**

A Confined Space is defined by OSHA 29 CFR 1910.146 as any space that meets all three of the following requirements:

- 1) is large enough and so configured that an employee can bodily enter and perform work;
- 2) has limited or restricted means for entry or exit; and
- 3) is not designed for continuous human occupancy.

### **6.2. Permit Required Confined Spaces (PRCS or Permit Space)**

Confined spaces that contain any of the following characteristics:

- 1) Contains, or has the potential to contain, a hazardous atmosphere.
- 2) Contains a material that has 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 that slopes downward and tapers to a small cross-section.
- 4) Contains any other recognized serious safety or health hazard.

Permit spaces require a written permit prior to entry and involve careful consideration of the potential hazards and ways to mitigate or remove those hazards.

### 6.3. Non-Permit Required Confined Space

A confined space that does not contain, or, with respect to atmospheric hazards, have the potential to contain, any hazard capable of causing death or serious physical harm.

**NOTE:** EHS can reclassify permit required confined spaces to non-permit required confined spaces after all potential safety and health hazards have been eliminated.

### 6.4. Identified confined spaces at the University

- 1) This list is maintained by EHS ([Attachment B: Hazard Inventory and Assessment of Confined Spaces](#)).
- 2) Departments must survey their workplace to determine if confined spaces, as defined by OSHA, are present in areas under their administrative control and report any newly discovered or created confined spaces to EHS.
- 3) EHS will work in conjunction with the departments to ensure the list is complete and periodically updated. At a minimum, EHS shall review and update the list of confined spaces on campus during their tri-annual review of this program.
- 4) UNM shall perform testing and evaluation of each confined space to determine its status as a permit required or non-permit required confined space in accordance with the OSHA Permit-Required Confined Space Decision Flow Chart ([Attachment C](#)). This testing shall be renewed every 5 years or whenever there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants in accordance with OSHA 1910.146(c)(6).
- 5) Where practical, signage will be utilized to identify confined spaces.
- 6) Employees that encounter potential confined spaces should notify EHS. EHS will then review the space and update [Attachment B: Hazard Inventory and Assessment of Confined Spaces](#)

#### 6.4.1. Utility Tunnels

UNM Utilities has developed their own entry procedure for the Utility Tunnels on Main Campus. Contact UNM FM Utilities for a copy of the entry plan.

#### **ELECTRICAL VAULTS**

Electrical Vaults fall under the requirements of OSHA 29 CFR 1910.269 *Electrical power generation, transmission, and distribution*. UNM Utilities has developed their own entry procedure to address entry into these spaces on Main Campus. Contact UNM FM Utilities for a copy of the entry plan.

#### **COMMUNICATION VAULTS**

A Specific Entry Plan has been developed to address entry into Communication Vaults. See [Section 10: Communication Vault Specific Entry Plan](#).

Departments with similar situations may develop alternate entry plans with the assistance and approval of EHS.

### 6.4.2. Air Handling Units

A Specific Entry Plan has been developed to address entry into Air Handling Units on Main Campus. See [Section 11: Air Handling Unit Specific Entry Plan](#).

## 7. PREVENTION OF UNAUTHORIZED ENTRY

The University will take all precautions to prevent unauthorized entry into confined spaces. The primary means of deterrent will be through signage, training and access control. Outside contractors working on the campus will be appraised of confined spaces prior to commencement of projects. An attendant or stand-by person will prevent unauthorized entry during an authorized entry event. In special situations, appropriate barricades and/or banner tape will be utilized to identify and isolate confined space areas.

## 8. PERMIT REQUIRED CONFINED SPACE (PRCS) ENTRY PROCEDURES

PRCS entry procedures shall be observed when all serious hazards (hazardous atmosphere, engulfment, entrapment or other recognizable serious hazards) cannot be eliminated prior to entry into the confined space. Entry into a PRCS requires compliance with the following procedures:

### 8.1. General Requirements

- 1) Entry must only be accomplished after submission and approval of a PRCS Work request through the EHS website (ehs.unm.edu).
- 2) The completed confined space entry permit must be present at the job site during the work in the confined space. If a permit is cancelled prior to entry, UNM shall retain each canceled entry permit for at least 1 year to facilitate the review of the permit-required confined space program.
- 3) Entry must be authorized by a trained entry supervisor.
- 4) Any Hot Work to be performed in the confined space must be authorized on the entry permit.
- 5) Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the permit space program can be made.
- 6) Coordination with third party rescue contractors.

### 8.2. Planning and Entry Permit

- 1) Define the scope of work to be performed.
- 2) Identify all potential hazards:
  - a. Inherent to the confined space (i.e., toxic gases, explosive/flammable gases, oxygen deficiency, potential engulfment materials, space configuration, pressure systems, electrical equipment, chemicals, moving mechanical equipment, etc.);
  - b. Created by the work being performed (i.e., welding, cutting, chemical/solvent use, grinding, etc.);

- c. Chemicals taken into the space for the work being performed (i.e., gases, corrosives, etc.);
  - d. Other safety hazards (i.e., slipping/tripping hazards, lighting, low ceilings, strike against hazards, struck by hazards, etc.).
- 3) Identify the means and methods to control the hazards through;
  - a. Engineering controls, ventilation, isolation of the space and lockout/tagout;
  - b. Modification of the work practices;
  - c. Proper selection and use of personal protective equipment.
- 4) Identify the procedures needed in the event of an emergency situation.

### 8.3. Prior to Entry

- 1) Isolate and identify the work area using barricades, signage and/or hazards banner tape.
- 2) Secure and isolate the confined space according to the entry permit requirements (i.e., lockout/tagout all equipment and machinery as necessary, and double block and bleed all hazardous inflow material, etc.).
- 3) Drain, rinse and/or purge the confined space as determined by the planning and entry permit.
- 4) Test the confined space atmosphere with the appropriate instrumentation in accordance with [Section 13: Atmospheric Testing](#) of this procedure, and record results on the confined space entry permit. Confined space entrants should be involved with the atmospheric testing.
- 5) If a blower is utilized or deemed necessary to address a hazard, ensure the intake air for the blower is from a clean area.

### 8.4. During Entry

- 1) The attendant or stand-by person must be present at the entrance to the confined space and must maintain contact with the entrants at all times.
- 2) All entrants must be wearing a safety harness attached to a retrieval line, unless such equipment creates a significant hazard or inhibits self-rescue.
  - a. Exemptions from the use of a safety harness must include a written rescue plan and be approved by EHS on the entry permit.
- 3) The atmosphere in the confined space must be monitored continuously. Any abnormal air monitoring results, identified in the entry permit, requires the immediate evacuation of the confined space.
- 4) If ventilation is being utilized, continue to provide clean ventilation air into the confined space during the work and monitor air intake to ensure no hazards.
- 5) All entrants must utilize PPE as required by the entry permit and the entry supervisor.
  - a. Proof of fit testing is required for the use of respiratory protection.



- 6) All entrants and attendants must be alert for the sudden development of a hazardous condition in the confined space, and immediately require an evacuation if a hazard is detected or perceived.

## 8.5. Emergency Procedures

- 1) It is mandatory for all individuals entering a confined space to immediately evacuate the area upon receiving instructions from the attendant or if they detect any hazardous condition. In such an event, the emergency team must be notified first, followed by the entry supervisor, who should be informed immediately. Re-entry into the confined space must only be allowed once the area has been thoroughly re-evaluated and authorized by the entry supervisor.
- 2) In the event of an emergency situation, notify the on-site emergency response personnel, then use the nearest communication device (telephone or radio) to initiate a 911 response. Identify the full situation so that the appropriate emergency services can be dispatched. Be sure to identify that the emergency involves a confined space.
  - a. When calling from a UNM land line, you will be connected to UNMPD automatically. When calling from a cell phone, be sure to identify that the emergency is on UNM property.
- 3) If the entrant is attached to a lifeline, the attendant will attempt extrication from the confined space.
  - a. Nobody, including the attendant, may enter the confined space to perform an unassisted confined space rescue.
- 4) Stand-by Rescue Services will be scheduled and must be present when PRCS entry is conducted.

## 9. NON-PERMIT REQUIRED CONFINED SPACE PROCEDURES

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

### 9.1. Prior to entry:

- 1) Review the work to see if personal protective equipment is needed;
- 2) Establish traffic control barriers at the entry point, if applicable;
- 3) Eliminate any condition that would make removal of the confined space entry cover unsafe;
- 4) Once the entry cover is removed, promptly guard the entry point with a temporary barrier to prevent an accidental fall through the opening and protect employees working in the space from foreign objects entering the space;
- 5) Ensure a safe means of communication is available (some spaces may not have cell phone coverage); and

- 6) Ensure appropriate lighting and/or equipment (e.g., ladders) for safe entry and exit by entrants is available.

Note: Activities involving chemical processes can result in a change in the atmosphere of a confined space. If these activities are to be performed within a confined space designated as a non-permit confined space, Environmental Health and Safety shall be contacted.

## 10. ALTERNATE ENTRY PROCEDURE: COMMUNICATION VAULTS

During the service life of a communication vault, a technician may be required to bodily enter the space to perform cleaning, maintenance or inspections. The interior of a Communication Vault is considered a permit required confined space due to the potential hazards of:

- 1) DC Electrical Voltage
- 2) Inclement Weather / Lightning Strikes
- 3) Potential Hazardous Atmosphere
- 4) Restricted Egress and Inability for Self-Rescue
- 5) Flooding/Potential Engulfment
- 6) Potential Shared Space with Electrical Vaults

This alternate entry procedure is designed to identify and remove these hazards so that the Communication Vault can be reclassified as a confined space prior to entry.

### 10.1. Prior to entry:

- 1) All communication vault entry must be reviewed and approved by UNM IT, in writing, prior to removal of the manhole cover.
- 2) All communication vault entries must be performed with minimum of two (2) personnel. No solo entries are allowed.
- 3) Prior to removal of manhole cover, a barricade must be erected, or a full-time attendant must be stationed to prevent accidental entry.
- 4) An air quality sample must be taken prior to entry to verify a hazardous atmosphere does not exist. If a hazardous atmosphere exists, proper steps must be taken to supply fresh air into the space and remove the hazard.
- 5) Perform a visual inspection of the space to verify no additional hazards are present. These may include:
  - a. Flooding
  - b. Structural Damage
  - c. Damage to wires or electrical components
  - d. Dead or decaying plant/animal matter

- 6) Verify the entrant is able to maintain communication with the attendant stationed at the entrance. This communication can be supplemented by:
  - a. Radio Communication
  - b. Cell Phone Communication
- 7) Verify emergency response procedures are in place in case:
  - a. Entrant loses consciousness
  - b. Entrant has medical emergency
  - c. Additional hazards become apparent after entry
- 8) Review SDS sheets. Cleaning agents can be acidic or highly alkaline, refer to the cleaning agent manufacturer's Safety Data Sheet and follow all recommended safe handling practices; and
- 9) Inspect all tools and equipment to ensure it is in proper working condition.

### **10.2. During Entry**

- 1) Perform all work in a safe and professional manner (no horseplay);
- 2) Keep work area clean and free of debris and trash;
- 3) Ensure work area is properly lit for task at hand;
- 4) If ladder has to be removed, stage it safely so it remains easily accessible in case of emergency;
- 5) No food or drink allowed within the communication vaults; and
- 6) At the first sign of any issues, evacuate immediately.

### **10.3. Post Entry**

- 1) Take an inventory and verify all tools have been removed from the space;
- 2) Verify vault is clean and orderly prior to closing cover;
- 3) Refasten ladder (if applicable); and
- 4) Replace manhole cover and ensure it is secure.

## **11. SPECIFIC ENTRY PROCEDURE: AIR HANDLER UNITS**

During the service life of an Air Handler Unit (AHU), a technician may be required to bodily enter the unit to perform cleaning, maintenance or updates. The interior of an AHU is considered a permit required confined space due to the potential hazards of:

- 1) Electrical Voltage
- 2) Hazardous Pressures
- 3) Chemicals within a confined space
- 4) Rotating components

- 5) Burns from Steam Lines & Heating Elements
- 6) Potential Thermal Exposure

This specific entry procedure is designed to identify and remove these hazards so that the AHU can be reclassified as a confined space prior to entry.

**NOTE:** All maintenance activities shall be performed in accordance with the Manufacturer's Recommendations.

### **11.1. Prior to entry:**

- 1) Secure power to unit in accordance with UNM's Lockout/Tagout procedures to ensure power cannot be inadvertently energized. (If power cannot be secured, the AHU shall be considered a PRCS and [Section 8: PRCS Entry Procedures](#) must be followed)
- 2) Discharge residual power from capacitors. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with an appropriate voltmeter that all capacitors have discharged.
- 3) Secure rotating or loose components that could cause pinch, cut, or caught-between accidents.
- 4) Verify components containing hazardous temperatures have been accounted for and addressed appropriately without creating an additional hazard upon re-energization.
- 5) Review SDS sheets. Coil cleaning agents can be either acidic or highly alkaline, refer to the cleaning agent manufacturer's Safety Data Sheet and follow all recommended safe handling practices.
  - a. NOTE: Coils contain refrigerant under pressure. When cleaning coils, maintain coil cleaning solution temperature under 150°F to avoid excessive pressure in the coil.
- 6) Don proper PPE in accordance with manufacturer's maintenance procedures and/or equipment labels, tags or stickers.

## **12. EQUIPMENT**

Many different items of safety equipment are required to assist with safe entries into and rescues from permit-required confined spaces. These items must be supplied, at no charge, to employees engaged in PRCS entries. The extent of actual equipment required will depend on the hazards present and the category of the confined space being entered. Employee training must include hands-on usage of all required equipment to such an extent that the employees become proficient in their understanding and use of the equipment, such as

- |                         |  |
|-------------------------|--|
| 1) Ventilation Fan(s)   | 6) Lighting Equipment                  |
| 2) Life Lines           | 7) Communication Equipment             |
| 3) Retrieval Equipment  | 8) Lockout/Tagout Devices              |
| 4) PPE                  | 9) Barricade Equipment                 |
| 5) Monitoring Equipment | 10) Other safety equipment as required |

### **13. ATMOSPHERIC TESTING**

- 1) Atmospheric testing is required to evaluate hazards in a confined space and to verify that acceptable conditions for entry into the confined space exist. At a minimum, the space must be tested for oxygen, combustible gases and vapors, and toxic gases and vapors. These items can be tested simultaneously.
- 2) Testing for atmospheric hazards must be conducted prior to entry into a PRCS, and recorded on the PRCS Entry Permit, to determine whether acceptable entry conditions exist. Then, during entry into the space, monitoring must be conducted continuously or periodically to ensure that acceptable entry conditions are maintained. The atmosphere must be tested at various levels in the confined space as atmospheric hazards may be found at different levels, depending on the contaminant present and the conditions of the space. If the monitoring instrument goes into alarm or fails to operate at any time during the entry, the entry must be stopped and entrants must be removed from the space.
- 3) Monitoring equipment must be maintained according to the manufacturer's specifications to ensure proper operation during confined space testing and entry. Instrument calibration must be conducted frequently and recorded to ensure equipment operation is within acceptable ranges.
- 4) Proper atmospheric testing will be one of the most important subjects covered in employee training. Employees must become familiar with the performance and limitations of their particular monitoring equipment. EHS can assist departments on the proper selection and usage of personal monitoring equipment for confined spaces testing and entry.

### **14. EMERGENCY RESPONSE PROCEDURES**

The University of New Mexico cannot utilize Albuquerque Fire & Rescue as their standby emergency services. Instead, UNM must develop a plan, or contract with a third party, to have emergency personnel on standby during a permit confined space entry. The Campus Police will assist in crowd and traffic control during an emergency. These emergency services are accessible by dialing 911 from any campus telephone.

- 1) If an acute threat to safety and health is observed or perceived, all personnel shall immediately exit the confined space by the nearest means of egress and:
  - a. Assist injured to escape;
  - b. Secure the jobsite;
  - c. Contact the supervisor/manager of the job; and
  - d. Not re-enter the confined space until the hazard is identified, evaluated and eliminated.

- 2) If emergency assistance is required, use either the nearest telephone to call 911 or utilize other forms of two-way communication equipment. Clearly state to the 911 dispatcher "this is an emergency" and provide the following information:
  - a. Location of the emergency
  - b. Telephone number from where the call is being made (if a telephone is used)
  - c. Your name
  - d. What happened; the nature of the emergency
  - e. What assistance is needed
  - f. Help or first aid that is being provided
  - g. If telephone communication is used, stay on the line until all information requested by the dispatcher is provided and let the dispatcher hang up first.
- 3) Station someone at a highly visible, but safe location along the street to flag down and direct any emergency response personnel and vehicles to the scene of the emergency.
- 4) If required, render appropriate and prudent first aid until emergency personnel arrive on the scene.

In compliance with the OSHA Standard, the University has provided Albuquerque Fire & Rescue with a list of the PRCs on the campus and the hazards associated with each. UNM has also extended to AFR the opportunity to access any of those PRCs for the purpose of developing necessary rescue plans and for practicing rescue operations.

## **15. PROGRAM REVIEW**

The EHS Director and Department Managers shall review this plan tri-annually to verify compliance with all current requirements.

Reviews shall be noted on the document revision log, and will always generate a new revision number.

UNM Confined Spaces shall be reviewed and tested every 5 years to verify status as permit required or non-permit required confined space.

## **16. LIST OF ATTACHMENTS**

- A. Confined Space Entry Permit
- B. Hazard Inventory & Assessment of Confined Spaces
- C. OSHA Permit-Required Confined Space Decision Flow Chart

**ATTACHMENT A: CONFINED SPACE ENTRY PERMIT**

**The University of New Mexico  
CONFINED SPACE ENTRY PERMIT**

**DESCRIPTION AND LOCATION**

Description: \_\_\_\_\_ Location: \_\_\_\_\_  
 Contents: \_\_\_\_\_ NFPA Hazard Rating: \_\_\_\_\_

**POTENTIAL HAZARDS (check all that apply)**

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Hazardous Residue       | <input type="checkbox"/> Hazardous Atmosphere   | <input type="checkbox"/> Engulfment    |
| <input type="checkbox"/> Flash Fire              | <input type="checkbox"/> Electrocution          | <input type="checkbox"/> Poor Lighting |
| <input type="checkbox"/> Minimum Work Room       | <input type="checkbox"/> Moving Machinery       | <input type="checkbox"/> Poor Footing  |
| <input type="checkbox"/> Solid Mat'l In-Flow     | <input type="checkbox"/> Injury/Sudden Illness  | <input type="checkbox"/> Hot Surfaces  |
| <input type="checkbox"/> Solid Mat'l Out-Flow    | <input type="checkbox"/> Respirable Dust        | <input type="checkbox"/> Fall Hazard   |
| <input type="checkbox"/> Steam/Hot Water In-Flow | <input type="checkbox"/> Other (specify): _____ |  |

**REQUIRED PRECAUTIONS BEFORE ENTRY**

Isolate and Lockout:  
 Tests Space for: \_\_\_\_\_ %O<sub>2</sub> \_\_\_\_\_ %LEL \_\_\_\_\_ ppm H<sub>2</sub>S \_\_\_\_\_ ppm CO \_\_\_\_\_ Other: \_\_\_\_\_  
 \_\_\_\_\_ Barricade Opening \_\_\_\_\_ Ventilation  
 Other (specify): \_\_\_\_\_

**REQUIRED PRECAUTIONS DURING ENTRY**

- |  |  |
|--|--|
| <input type="checkbox"/> Surveillance Method     | <input type="checkbox"/> Safety Hoist              |
| <input type="checkbox"/> Ventilation             | <input type="checkbox"/> Respirator                |
| <input type="checkbox"/> Monitor Atmosphere      | <input type="checkbox"/> Other PPE                 |
| <input type="checkbox"/> Safety Harness/Lifeline | <input type="checkbox"/> GFI/Low Voltage Equipment |

**EMERGENCY ACTION PLAN**

Entrants shall immediately self-evacuate if a hazard is detected or perceived. Stand-by person should use nearest telephone (or two-way radio) to CALL 911 to summon emergency assistance. If entrant is attached to a lifeline, attempt to extricate without entering the confined space. Stand-by person shall not enter to perform an unassisted internal rescue.

**EMERGENCY RESPONSE INFORMATION**

Agency Designated to Respond to an Emergency: \_\_\_\_\_  
 Access to Confined Space: \_\_\_\_\_  
 Small Entry Opening: \_\_\_\_\_  
 Most Likely Foreseeable Emergency: \_\_\_\_\_  
 Worst Case Scenario: \_\_\_\_\_

**ENTRY PERMIT AND WORK AUTHORIZATION**

Permit Issued By: \_\_\_\_\_ Date Issued: \_\_\_\_\_ Expiration Date: \_\_\_\_\_  
 Name of Confined Space: \_\_\_\_\_  
 Scope of Work: \_\_\_\_\_  
 Hot Work Authorized: \_\_\_\_\_ Yes \_\_\_\_\_ No Scope: \_\_\_\_\_

Signatures of Authorized Entrants and Stand-By Person (may alternate):  
 1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_  
 4. \_\_\_\_\_ 5. \_\_\_\_\_ 6. \_\_\_\_\_

SIGNATURES VERIFY THAT SAFETY PLAN AND APPLICABLE SDSs HAVE BEEN REVIEWED.

REVIEWED/CANCELLED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

## ATTACHMENT B: HAZARD INVENTORY AND ASSESSMENT OF CONFINED SPACES

Building Number	FM Area	Confined Space Number	Space Description
8	1	1-001	Electrical Utility Manhole - #33
8	1	1-002	Electrical Utility Manhole - #34
10	1	1-003	East Tunnel, entrance Scholes Hall tunnel
11	1	1-004	North to East Tunnel Junction -North Antho.
48	1	1-005	East Tunnel, entrance to Dane Smith
48	1	1-006	Electrical Utility Manhole - #27
48	1	1-007	Electrical Utility Manhole - #28
152	1	1-008	Electrical Utility Manhole - #23
152	1	1-009	Electrical Utility Manhole - #24
167	1	1-010	Electrical Utility Manhole - #1
167	1	1-011	Electrical Utility Manhole - #2
216	1	1-012	Automotive Fuel Storage Tanks vault
224	1	1-013	Double Tunnel, 25 ft to North Chiller Jct.
230	1	1-014	Electrical Utility Manhole
266	1	1-015	HSSB Cooling Tower Sump
302	1	1-016	Pit - Northwest corner into mech chases
302	1	1-017	Pit - Southwest corner into mech chases
307	1	1-018	Athletics, Mechanical room
207	2	2-001	North Tunnel (Med1) PhysicsAstro. Junction
248	2	2-002	Electrical Utility Manhole
253	2	2-003	Tunnel - BMSB/Basement, West Ent., and carpenter shop
253	2	2-004	50 ft into med-1, called North Tunnel (to PandA)
56	3	3-001	Headed west to Mesa Vista Jct
58	3	3-002	Main Tunnel and Hokona Jct.
58	3	3-003	Hokona Hall - electrical utility manhole
59	3	3-004	Johnson Center Olympic Swimming pool
59	3	3-005	Johnson Center Therapy Swimming pool
59	3	3-006	East Tunnel headed to Johnson Center
59	3	3-007	South tunnel to Johnson Center
59	3	3-008	Electrical Utility Manhole - #11
59	3	3-009	Electrical Utility Manhole - #12
59	3	3-010	Electrical Utility Manhole - #13
59	3	3-011	Electrical Utility Manhole - #14
59	3	3-012	
59	3	3-013	Electrical Utility Manhole - #16



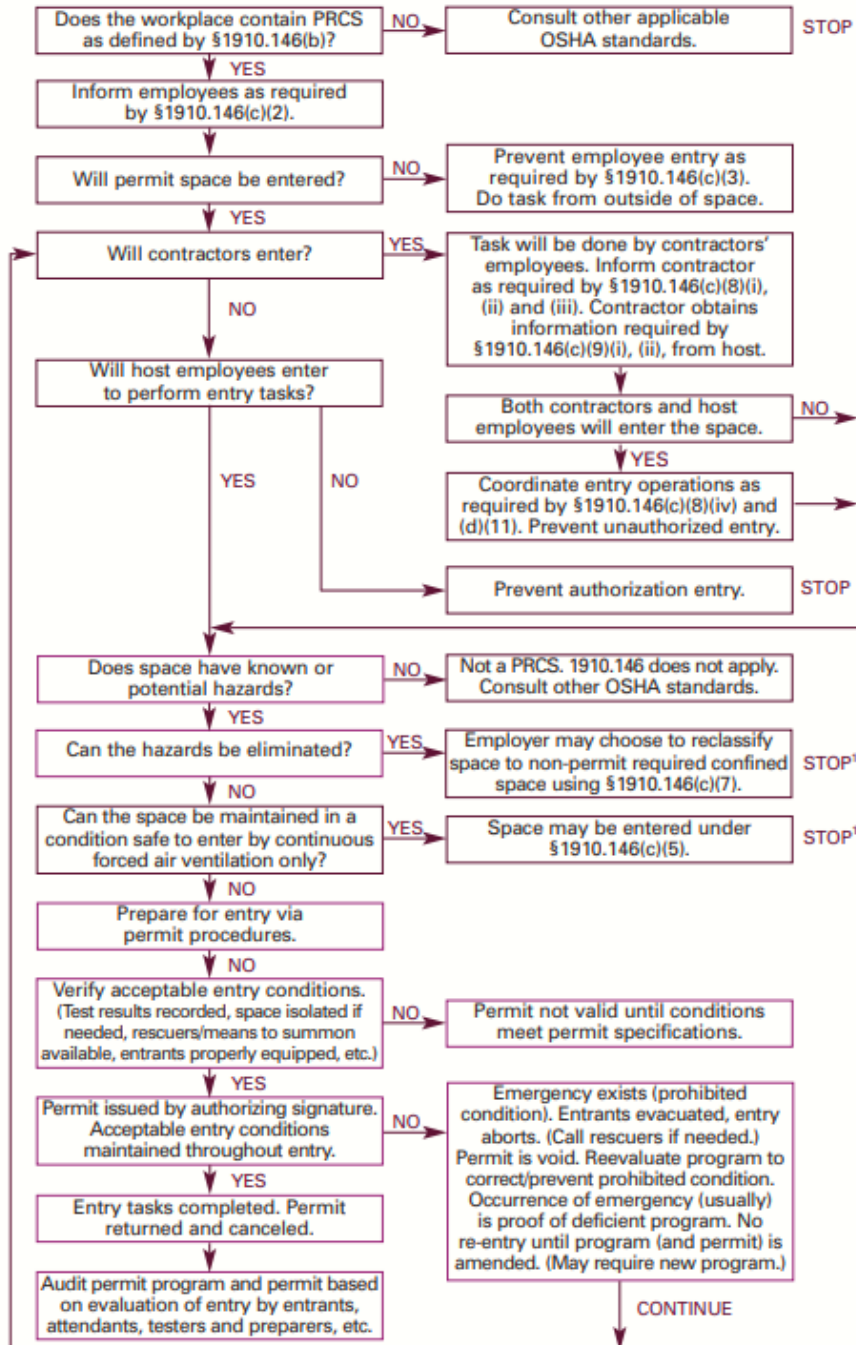
Building Number	FM Area	Confined Space Number	Space Description
60	3	3-014	Just inside of Sub tunnel entrance, basement area
60	3	3-015	Turned north in tunnel to Sub
60	3	3-016	75 ft into north tunnel to Sub
60	3	3-017	Tunnel - 25 ft from Sub entrance
60	3	3-018	Just outside of Sub tunnel entrance, basement area
66	3	3-019	Electrical Utility Manhole - #5
66	3	3-020	Electrical Utility Manhole - #6
70	3	3-021	Electrical Utility Manhole - #7
70	3	3-022	Electrical Utility Manhole - #8
71	3	3-023	20 ft. inside/tunnel/SantaAnna mechanical room
72	3	3-024	Middle East tunnel, between Popejoy / Sub
72	3	3-025	Main Tunnel at Popejoy maintenance room.
73	3	3-026	Turned west in tunnel to Sub
73	3	3-027	Headed west at Student health Jct
73	3	3-028	Electrical Utility Manhole - #17
73	3	3-029	Electrical Utility Manhole - #18
76	3	3-030	Electrical Utility Manhole - #3
76	3	3-031	Electrical Utility Manhole - #4
78	3	3-032	Electrical Utility Manhole - #25
78	3	3-033	Electrical Utility Manhole - #26
85	3	3-034	Tunnel - Student center/Reservoir and tennis courts
85	3	3-035	Electrical Utility Manhole - #9
85	3	3-036	Electrical Utility Manhole - #10
155	3	3-037	East Tunnel to Coronado, ~200 feet in tunnel
155	3	3-038	Tunnel - 50 ft. from Coronado mechanical room
156	3	3-039	Tunnel - 50 ft. from onate mechanical room
176	3	3-040	Campus Utility Plant Cooling Tower Sump
194	3	3-041	Lomas CHW Plant Cooling Tower Sumps - When drained
155/71	3	3-042	East Tunnel/Coronado and Santa Anna Jct.
157/156	3	3-043	Alvarado and Onate Tunnel Jct.
60/72	3	3-044	Main Tunnel at Sub / Popejoy Jct.
63/76	3	3-045	Main Tunnel to PandA/Hokona Jct.
71/157	3	3-046	Santa Anna and alvarado tunnel Jct.
84/62	3	3-047	middle East tunnel, between FineArt/Popejoy

Building Number	FM Area	Confined Space Number	Space Description
	3	3-048	Reservoir
25	4	4-001	Electrical Utility Manhole - #32
26	4	4-002	Electrical Utility Manhole - #29
26	4	4-003	Electrical Utility Manhole - #30
26	4	4-004	Electrical Utility Manhole - #47
34	4	4-005	East tunnel, at Psych Jct.
35	4	4-006	South Tunnel at Regener hall Jct.
35	4	4-007	South to East Tunnel, by #24 Telephone
82	4	4-008	Electrical Utility Manhole - #19
82	4	4-009	Electrical Utility Manhole - #20
82	4	4-010	Electrical Utility Manhole - #21
82	4	4-011	Electrical Utility Manhole - #22
84	4	4-012	Middle East tunnel, turned E. Fine Arts Jct.
107	4	4-013	Electrical Utility Manhole - #35
107	4	4-014	Electrical Utility Manhole - #36
115	4	4-015	East tunnel, south turn to Journalism.
116	4	4-016	East of B14-East Tunnel from Ford
116	4	4-017	East Main Tunnel to South Loop, Engineering Area
116	4	4-018	Ford Utility Plant Boiler #1
116	4	4-019	Ford Utility Plant Boiler #2
35/34	4	4-020	East tunnel, south of Reg/Psy, ~50 ft. headed east.
116	4	4-021	Electrical Utility Manhole - #37
116	4	4-022	Electrical Utility Manhole - #38
9	4	4-023	Electrical Utility Manhole - #45
9	4	4-024	Electrical Utility Manhole - #46
22	4	4-025	Electrical Utility Manhole - #41
22	4	4-026	Electrical Utility Manhole - #42
24	4	4-027	Tunnel back at Geo Jct., headed north to Chem/Earth Plan.
24	4	4-028	Tunnel - Earth and Plan. In South main Box 9-5
24	4	4-029	Electrical Utility Manhole - #43
24	4	4-030	Electrical Utility Manhole - #44
25	4	4-031	Electrical Utility Manhole - #31
116	4	4-032	Ford Utility Plant HRSG 1
116	4	4-033	Ford Utility Plant HRSG 2
116	4	4-034	Ford Utility Plant Boiler #3

Building Number	FM Area	Confined Space Number	Space Description
116	4	4-035	Ford Utility Plant Boiler #4
116	4	4-036	Ford Utility Plant Boiler #5
116	4	4-037	Ford Utility Plant Cooling Tower sumps
116	4	4-038	Ford Utility Salt Storage Facility
116	4	4-039	Ford Utility Chemical Mixing Pit
119	4	4-046	South Tunnel at Farris Eng. Jct.
115/9	4	4-047	East Tunnel, Journ / Marron Hall Jct.
16/8	4	4-048	50 ft. into North tunnel - marker A407
24/115	4	4-049	East tunnel, Geo / Journalism Jct.
24/84	4	4-050	Middle East tunnel, turned SE Toward Fine Arts

**ATTACHMENT C: OSHA PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART**

**Permit-Required Confined Space Decision Flow Chart**



<sup>1</sup> Spaces may have to be evacuated and reevaluated if hazards arise during entry.

Source: 29 CFR 1910.146 Appendix A.












# Confined Space Program w Attachments R2.2

Final Audit Report

2024-05-09

Created:	2024-02-19
By:	Thanatos VonFox (vgough@unm.edu)
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