New Mexico Institute of Mining & Technology



Confined Space Entry Program

REGULATORY STANDARD: OSHA - 29 CFR 1910.146 (Includes 1999 revisions)

Preamble: New Mexico Institute of Mining and Technology will not enter into any identified *permit required* confined space. This is an administrative policy due to the inherent danger of spaces defined by OHSA as permit required. New Mexico Tech does recognize confined space hazards and will address these in this program.

BASIS: Over 1 1/2 million workers enter confined spaces on an annual basis. Serious injury or death in a confined space can be the result of asphyxiation, engulfment, electric shock, falls and heat stress. The Occupational Safety and Health Administration (OSHA) estimate that 85 percent of these accidents can be prevented if proper safety precautions at job sites are initiated.

GENERAL: New Mexico Tech will ensure that all potential confined spaces within our facility(s) are evaluated and identified. This standard practice instruction is intended to address comprehensively the issues of evaluating and identifying potential confined spaces, evaluating the associated potential hazards, communicating information concerning these hazards, and establishing appropriate procedures and protective measures for employees.

Contents of the Confined Space Program

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- 1. <u>Written program</u>. New Mexico Tech will review and evaluate this standard practice instruction on an annual basis, or when changes occur to 29 CFR 1910.146, that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Additionally, we will review the permit-required confined space program, using the canceled permits retained within 1 year after each entry and revise the program as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.
- **2.** <u>General requirements</u>. New Mexico Tech will establish confined space operational procedures through the use of this document.
 - 2.1. After an annual facility evaluation, spaces that meet the following criteria will be designated as a confined space:
 - 2.1.1. It is large enough and so configured that an employee can bodily enter and perform assigned work.
 - 2.1.2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults and pits are spaces that may have limited means of entry.)
 - 2.1.3. Is not designed for continuous employee occupancy.
 - 2.1.4. Contains or has a potential to contain a hazardous atmosphere.
 - 2.1.5. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
 - 2.1.6. Contains any other recognized serious safety or health hazard.
 - 2.2 Facility Evaluation. This employer shall evaluate our facility(s) to determine if any spaces meet the criteria for designation as a confined space. The decision flow chart in Appendix A to 29 CFR 1910.146 will be used to facilitate compliance with this requirement.
 - 2.3 Confined Space Identification.
 - 2.3.1. Permit-required confined spaces. Those spaces meeting the criteria delineated in this section and having a known potential to contain hazardous atmospheres will be designated as permit-required confined spaces. All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. This employer shall inform exposed employees, by posting danger signs, conducting awareness training, or by any other equally effective means, of the existence and location of and the danger posed by the permit confined spaces. A sign reading "DANGER PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER" or similar language will be used to satisfy the requirement for a sign.
 - 2.3.2. Non-permit confined spaces. Those spaces meeting the criteria delineated in this section that do not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm will be designated as non-permit confined spaces.
 - 2.4. Confined Space listing. New Mexico Tech will maintain a detailed listing that permanently identifies locations meeting the criteria for a confined space.

- 2.5. Non-permit required confined spaces. Non-permit required confined spaces will be designated where the atmosphere and safety conditions can be controlled. Confined spaces may be entered without the need for a written permit or attendant provided that:
 - 1. The space is determined not to be a permit- required confined space.
 - 2. The space can be maintained in a safe condition for entry by mechanical ventilation alone.

All spaces shall be considered permit-required confined spaces until the preentry procedures demonstrate otherwise. This company will ensure that any employee required or permitted to pre-check or enter a confined space shall have successfully completed the training as required by this instruction.

A written copy of operating and rescue procedures as required by this instruction shall be at the work site for the duration of the job. A site specific Confined Space Pre-Entry Check List must be completed by the LEAD WORKER before entry into a confined space. This list will verify completion of the items required to verify safe entry. This check list shall be kept at the job site for the duration of the job. If circumstances dictate an interruption in the work, the permit-required confined space must be re-evaluated and a new check list must be completed. Assuming the conditions set forth in the paragraphs listed below can be met, the following elements of the permit required confined space program need not be complied with if: (see 2.7.1 - 2.7.3)

- (1) Permit required confined space program
- (2) Permit system
- (3) Entry permit
- (4) Duties of authorized entrants
- (5) Duties of attendants
- (6) Duties of entry supervisors
- (7) Rescue and emergency services
- 2.7.1. It can be demonstrated that the only hazard posed by the permitted space is an actual or potentially hazardous atmosphere.
- 2.7.2. It can be demonstrated that continuous forced air ventilation alone is sufficient to maintain the space safe for entry.
- 2.7.3. Monitoring and inspection data supports the demonstrations required by paragraphs 2.7.1 and 2.7.2.
- 2.8. If an initial entry of the permit space is necessary to obtain monitoring and inspection data. Worst case will be assumed and the full provisions of permit-required confined space entry procedures will be implemented.
- 2.9. Entry can be performed by company personnel, once determinations and supporting data required by paragraphs 2.7.1, 2.7.2, and 2.7.3 are documented, and are made available to each employee who enters the permit space.

- 2.10. Reclassification of a permit space after all hazards within the space has been eliminated. The following requirements apply to entry into permit spaces that meet the conditions set forth in paragraphs 2.7.1, 2.7.2, and 2.7.3. No company personnel will enter the confined space unless:
 - 2.10.1. Conditions making it unsafe to remove an entrance cover are eliminated before the cover is removed.
 - 2.10.2. The opening at entrance covers are guarded by a railing, temporary cover, or other temporary barrier that will prevent accidental fall-through and will protect each employee working in the space from foreign objects entering the space.
 - 2.10.3. The internal atmosphere has been tested, with a calibrated directreading instrument, for the following conditions in the order given:

(1) Oxygen content. (19.5% - 23.5%)	OSHA Mandated
(2) Flammable gases and vapors.	OSHA Mandated
(3) Potential toxic air contaminants.	OSHA Mandated
(4) Airborne combustible dusts	Site Specific

- 2.11. There may be no hazardous atmosphere within the space whenever any employee is inside the space.
- 2.12. Continuous forced air ventilation shall be used, as follows:
 - 2.12.1. No employee may enter the space until testing confirms that the forced air ventilation has eliminated any hazardous atmosphere.
 - 2.12.2. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
 - 2.12.3. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
 - 2.12.4. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.
 - 2.12.5. If a hazardous atmosphere is detected during entry:
 - (1) All employees will evacuate.
 - (2) The space shall be evaluated to determine how the hazardous atmosphere developed.
 - (3) Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
 - 2.13.1. The following personnel are qualified to certify safe entry for company personnel entering confined spaces.

<u>Name</u>

<u>Title</u>

- (1) Mark Waggoner
- (2) Dennis Hunter
- (3) Robert Hignight
- (4) Pete Sanchez

Safety Director Assistant Safety Director Construction Manager Utility Manager

- 2.14. Non-Permit Required Confined Space Certification. When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, New Mexico Tech shall reevaluate that space and, if necessary, reclassify it as a permit-required confined space.
- 2.15. Permit to Non-Permit Reclassification. A space classified by New Mexico Tech as a permit-required confined space will be reclassified as a non-permit confined space under the following conditions:
 - 2.15.1. If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.
 - 2.15.2. If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under the assumption that a hazard exists. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

Note: Control of atmospheric hazards through forced air ventilation alone does not constitute elimination of the hazards. Periodic monitoring will be conducted to ensure forced air ventilation maintains a safe worker environment for reclassification to a non-permit confined space.

- 2.15.3 New Mexico Tech shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains as a minimum; the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space.
- 2.15.4 If hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space shall immediately exit the space and notify their supervisor. This employer shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this instruction.
- 2.16. Company Responsibilities Regarding Contractor Operations in Permitted Confined Spaces. When New Mexico Tech arranges to have employees of another employer (contractor) perform work that involves permit space entry, this employer shall:
 - 2.16.1. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with the company permit space program meeting the requirements of this instruction.
 - 2.16.2. Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space;

- 2.16.3. Apprise the contractor of any precautions or procedures that the company has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
- 2.16.4. Coordinate entry operations with the contractor, when both company personnel and contractor personnel will be working in or near permit spaces.
- 2.16.5. Debrief the contractor at the conclusion of the entry operation regarding the company permit space program, and any hazards confronted or created in the concerned permit spaces during entry operations.
- 2.17. Contractor Responsibilities Regarding Contractor Operations in Permitted Confined Spaces. In addition to complying with the permit space requirements that apply to all employees of this company, each contractor who is retained to perform permit space entry operations shall:
 - 2.17.1 Obtain any available information regarding permit space hazards and entry operations from this company.
 - 2.17.2 Coordinate entry operations with this company, when both company personnel and contractor personnel will be working in or near permit spaces.
 - 2.17.3 Inform the company of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces within this facility or others belonging to this company, either through a debriefing or during the entry operation.
- **3. Training.** This company shall develop a standardized training format to meet the requirement for a safe confined space entry.
 - 3.1. Training shall be provided to each affected employee:
 - 3.1.1. Before the employee is first assigned duties that require a confined space entry.
 - 3.1.2. Before there is a change in assigned duties.
 - 3.1.3. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
 - 3.1.4. Whenever this employer has reason to believe that there are deviations from the permit space entry procedures required by this instruction or inadequacies in the employee's knowledge or use of these procedures.
 - 3.2. The training shall establish employee proficiency in the duties required by this instruction and shall introduce new or revised procedures, as necessary, for compliance with this instruction or when future revisions occur.
 - 3.3. New Mexico Tech shall certify that the training required by this section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

- **4.** <u>**Duties of authorized entrants.**</u> This employer shall ensure that all authorized entrants:
 - 4.1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
 - 4.2. Properly use equipment as required by paragraph 29 CFR 1910.146 (d)(4) of this section.
 - 4.3. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by this section.
 - 4.4. Alert the attendant whenever:
 - 4.4.1. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - 4.4.2. The entrant detects a prohibited condition.
 - 4.5. Exit from the permit space as quickly as possible whenever:
 - 4.5.1. An order to evacuate is given by the attendant or the entry supervisor.
 - 4.5.2. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - 4.5.3. The entrant detects a prohibited condition.
 - 4.5.4. An evacuation alarm is activated.
- 5. <u>Duties of authorized attendants</u>. This employer shall ensure that each attendant:
 - 5.1. Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
 - 5.2. Is aware of possible behavioral effects of hazard exposure in authorized entrants.
 - 5.3. Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under this section accurately identifies who is in the permit space.
 - 5.4. Remains in a predesignated location outside the permit space during entry operations until relieved by another attendant.
 - 5.5. Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.
 - 5.6. Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions.
 - 5.6.1. If the attendant detects a prohibited condition.
 - 5.6.2. If the attendant detects the behavioral effects of hazard exposure in an entrant.
 - 5.6.3. If the attendant detects a situation outside the space that could endanger the entrants.
 - 5.6.4. If the attendant cannot effectively and safely perform all the duties required under this section.
 - 5.7. Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards.

- 5.8. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - 5.8.1. Warn the unauthorized persons that they must stay away from the permit space.
 - 5.8.2. Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
 - 5.8.3. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
- 5.9. Performs non-entry rescues as specified by this employer's rescue procedure.
- 5.10. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the entrants.
- 6. Duties of entry supervisors. New Mexico Tech shall ensure that each entry supervisor:
 - 6.1. Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
 - 6.2. Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
 - 6.3. Terminates the entry and cancels the permit as required in accordance with the "permit section" this instruction.
 - 6.4. Verifies that rescue services are available and that the means for summoning them are operable.
 - 6.5. Ensures removal of unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
 - 6.6. Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.
- 7. <u>Rescue and emergency services</u>. As general policy, New Mexico Tech employees will not enter into an identified permit required confined space.
- 8. <u>Procedures for Atmospheric Testing</u>. New Mexico Tech will provide entrants, or their authorized representatives, an opportunity to observe any testing of a space prior to entry or subsequent to entry. Atmospheric testing for confined space entry is required for two distinct purposes: Evaluation of the hazards of the permit space and verification that acceptable entry conditions for entry into that space exist.
 - 8.1. Evaluation testing. New Mexico Tech will ensure that the atmosphere of a confined space is analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmospheres that may exist or arise. This is required to ensure that appropriate permit entry procedures specific to the operation can be developed and acceptable entry conditions stipulated for that specific space. Evaluation and interpretation of these data, and development of the entry procedure, will be done by, or reviewed by, a technically qualified professional (e.g., OSHA consultation service, or certified industrial hygienist, registered safety engineer, certified safety professional,

certified marine engineer etc.) based on evaluation of all serious hazards. The internal atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

(1) Oxygen content. (19.5% - 23.5%)	OSHA Mandated
(2) Flammable gases and vapors.	OSHA Mandated
(3) Potential toxic air contaminants.	OSHA Mandated
(4) Airborne combustible dusts	Site Specific

8.2. Verification testing. The atmosphere of a permit space which may contain a hazardous atmosphere will be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry are within the range of acceptable entry conditions. Results of testing (i.e., actual concentration, etc.) will be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition. The atmosphere will be verified, with a calibrated direct-reading instrument, for the following conditions in the order given:

(1) Oxygen content. (19.5% - 23.5%)	OSHA Mandated
(2) Flammable gases and vapors.	OSHA Mandated
(3) Potential toxic air contaminants.	OSHA Mandated
(4) Airborne combustible dusts	Site Specific

- 8.3. Duration of testing. Measurement of values for each atmospheric parameter will be made for at least the minimum response time of the test instrument specified by the manufacturer.
- 8.4. Testing stratified atmospheres. When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope will be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress will be slowed to accommodate the sampling speed and detector response. The stratified atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:

(1) Oxygen content. (19.5% - 23.5%)	OSHA Mandated
(2) Flammable gases and vapors.	OSHA Mandated
(3) Potential toxic air contaminants.	OSHA Mandated
(4) Airborne combustible dusts	Site Specific

- (4) Airborne combustible dusts
- 9. Employee Involvement in the Confined Space Program. 29 CFR 1910.146 requires that employers consult with their employees regarding the employers' efforts in the development and implementation of the Confined Space Program. The Standard also requires us to train and educate our employees and to inform affected employees of the findings from incident investigations conducted under the Confined Space Program.

It is our company policy that not only will we consult with our employees regarding efforts to develop, implement and maintain the Confined Space Program programs, but that we will, where ever possible, integrally involve our employees in the entire process. This is essential because employees of this company comprise the best determination of confined space operational procedures, and solutions to confined space operations problems peculiar to our business. This will be accomplished through a "Confined Space Safety Committee." This committee will be responsible for developing Confined Space policy and procedures.

10. Confined Space Safety Committee.

10.1. Composition. The New Mexico Tech Confined Space Safety Committee will be comprised of members of management/supervision and hourly personnel. The make up of the committee will consist of the following:

Confined Space Safety Committee

<u>Title</u>	<u>Member</u>
Safety Director	Mark Waggoner
Asst. Safety Director	Dennis Hunter
Safety Technician	Kathy Morin
Human Resources	Safety Officer

- 10.2. Principal Responsibilities. The principal responsibilities of the company Confined Space Safety Committee will be as follows:
 - 10.2.1. Assemble on a bi-annual basis to conduct Confined Space Safety meetings.
 - 10.2.2. Conduct and oversee departmental Confined Space evaluations, inspections, and reviews.
 - 10.2.3. Review accident, injury, and near-miss reports to determine Confined Space Operational deficiencies and discuss corrective actions.
 - 10.2.4. Direct and monitor departmental training and safety meetings.
 - 10.2.5. Discuss and report on unfinished business from previous meetings.
 - 10.2.6. Discuss new business.
 - 10.2.7. Maintain appropriate records of activities.
 - 10.2.8. The safety technician will make notations of the meeting. She will track open Confined Space issues to conclusion. She will also act as chairman in the absence of the designated chairman or vice chairman.
- 10.3. Charter. Charter for the New Mexico Confined Space Safety Committee. This committee will be responsible for developing Confined Space Operations policy and procedure. The committee will encourage Confined Space awareness among all employees. It will be established to evaluate, and monitor Confined Space Operational performance, perform the necessary Confined Space evaluations, and inspections, and aid the Safety Director in administering the company Confined Space program.

- To reduce injuries and save lives by prevention of confined space operational injuries.
- To constantly be aware of confined space conditions in all work areas that can produce injuries.
- To aid the company in complying with all laws pertaining to Confined Spaces.
- To place the personal safety and health of each employee of this company a position of primary importance.
- To aid in the prevention of occupationally-induced injuries and illnesses.
- To the greatest degree possible, aid management in providing all mechanical and physical facilities required for personal safety and health in keeping with the highest standards.
- To maintain a Confined Space program conforming to the best management practices of organizations of this type.
- To establish a program that instills the proper attitudes toward Confined Space not only on the part of supervisors and employees, but also between each employee and his or her co-workers.
- To ultimately achieve a Confined Space program maintained in the best interest of all concerned.
- 11. Format for Confined Space Permit. (Starts at top of next page.)

New Mexico Confined Space Entry Permit

Job Site:		Permit Num	nber:		
Permit Validity Period: Confined space identification Notes:)	_)	
Authorized Personnel					
Workers Authorized Entry		dants	Fire wat	ch (hot work)	
Known hazards (indicate	specific haza	rds with initia	als)		
Oxygen deficiency Oxygen enrichme Flammable gases Airborne combust Toxic gases or va Mechanical hazard Electrical hazards Engulfment hazar Materials harmful Other:	nt (more thar or vapors (m ible dust (me pors (more th ds ds to skin	n 23.5%) hore than 10% ets or exceed han PEL <u>)</u>	ds LFL)		
Employee Training and P	Pre-Entry Bri	<u>efing</u>			
 Safe Entry and Rescue Mandatory Pre-Entry Br Does this job require an If yes, type of training re 	riefing Conduny special trai	cted on? ning? Yes_	No		
Contractor Notification					
Contractor Notified of:	Permit Cond Potential Ha	itions: Yes_ zards: Yes_	No No		
Communication Requirer	<u>ments</u> :	Intrinsically Visually Ins			

<u>_ighting Requirements</u> :	Intrinsically Safe? Yes No_ Visually Inspected? Yes No_
Special Tools/Equipment:	Intrinsically Safe? Yes <u>No</u> Visually Inspected? Yes No

Site Preparation

- 1. Work area isolated with signs and or barriers
- 2. All energy sources locked/tagged out?
- 3. All input lines capped/blinded?
- 4. If vessel, drained, flushed, neutralized?
- 5. If vessel, cleaned, purged?
- 6. Ventilation initiated 30 min. before entry?
- 7. Fire extinguishers on hand?

Emergency/Rescue Procedures

- 1. Location of written Emergency/Rescue Plan:
- 2. Type of Emergency/Rescue Team required:

On-site: Yes No Contact: Phone: _____

Off-site: Yes No Contact: Phone: _____

3. Additional Information:

Safety Equipment



Personal Protective Equipment Required

1		
2.		
3.		
4.		
5.		
6. Air purifying respirator? Type:	Yes	No
7. Self-contained Breathing Apparatus Required?	Yes	No
8. Atmospheric Monitor Required? Type:	Yes	No

Area Safety Equipment Required

1.	
2.	
3.	
4.	
5.	

Permit Authorization

I certify that I have inspected the work area for safety and reviewed all safety precautions recorded on this permit.

1.	Name:	Signature:	Signature:		
	Title:	Date:	Time:		
2.	Name:	Signature:			
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	Title:	Date:	Time:		