

Confined space

1.0 Purpose

The purpose of the A-State Confined Space Program is to establish procedures and methods for safe entry into confined spaces. This program includes all employees, students and contractors who may enter a confined space.

This program provides the minimum accepted practices for working inside a confined space. All personnel involved in confined space entry will adhere to the requirements and procedures of this program. Confined space entry should only be performed when there is no alternative, less hazardous way to carry out the task. A-State evaluates their confined spaces and procedures, measures should be put into place to reduce the likelihood of someone being required to enter the confined spaces to perform work.

2.0 Definitions

2.1 Confined Space – An area that meets all of the following criteria:

- a. Is large enough and so configured that an individual can bodily enter and perform assigned work.
- b. Has limited or restricted means for entry or exit (for example, bag houses, vessels silos, storage bins, vaults, pits).
- c. Is not designed for continuous personnel occupancy.

2.2 Entry – The action by which a person passes through an opening into a permitrequired confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the vertical or horizontal plane of an opening into the space.

2.3 Entry Permit – A written or printed document that is provided by the employer to allow and control entry into a permit space.

2.4 Entry Supervisor – A person responsible for determining if acceptable entry conditions are present in a permit space where entry is planned, completing and signing the entry permit, authorizing entry and overseeing entry operations, and terminating entry as required.

2.5 Entry Team – Refers to the entire team assigned to a confined space, (entry supervisor, attendant, entrants, and the monitor.)

2.6 Hazardous Atmosphere – An atmosphere that may expose individuals to the risk of death, incapacitation, impairment of ability to self-rescue from a permit space, injury or acute illness as the result of oxygen deficiency, toxic and/or flammable gases and vapors or any other atmospheric condition that is immediately dangerous to life or health.

2.7 Isolation – The process of blanking or blinding, removing a section of line, duct or pipe, a double block and bleed, lock-out / tag-out of all sources of energy as may be required to protect a permit space against the release of energy and material into the space.

2.8 Non-Permit Confined Space – A confined space that does not contain, or with respect to atmospheric hazards, does not have the potential to contain any hazard(s) capable of causing death or physical harm.

2.9 Oxygen Deficient Atmosphere – An atmosphere containing less than 19.5 percent or lower oxygen content by volume.

2.10 Oxygen Enriched Atmosphere – An atmosphere that contains 23.5 percent or higher oxygen by volume.

2.11 Retrieval System – the equipment (including a retrieval line, chest or full-body harness, rescue hook, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

2.12 Testing / Monitoring – The process of identifying and evaluating the hazards that may be present inside of a confined space. When testing for atmospheric hazards, first test for oxygen, then for combustible gasses and vapors, and then for toxic gasses or vapors.

2.13 Tester / Monitor – The person assigned the task and specifically trained on how to perform specific testing in and around the permit spaces.

3.0 General Requirements

Confined spaces at Arkansas State University typically include tunnel space or man holes. The following general requirements are required to be implemented when working in or around confined spaces:

3.1 When practical, all confined spaces shall be permanently marked. A sign shall be installed at each opening of the Confined Space. Signs should contain the following text or similar language: DANGER – PERMIT REQUIRED CONFINED SPACE DO NOT ENTER

3.2 Spaces not permanently marked (ex. Manholes) shall be posted with a portable sign when access to the space is required.

3.3 All confirmed spaces where there is an opening that can be easily walked into (floor openings, manhole openings, etc.) shall have a physical barrier (guardrail, cover, gate, etc.)

3.4 When required, isolating energy sources to the confined space shall be performed in accordance with the Arkansas State University Lockout / Tagout Program.

3.5 If “hot work” conditions exist, precautions shall be taken in accordance with the Arkansas State University Hot Work Program. Cylinders of compressed gases are never permitted in a confined space.

3.6 Air monitoring is required 30 minutes before and during entry at 15 minute intervals in any confined space.

3.7 Portable electrical equipment used in confined spaces shall be supplied power through a ground fault interrupter or be battery powered.

4.0 Roles & Responsibilities

4.1 Confined Space Attendant – An individual who is stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendants’ duties assigned in this program.

a. Attend confined space training

b. Maintain effective and continuous communication with personnel during confined space entry, work, and exit.

c. Order evacuation of the confined space if:

i. A condition exists that is not allowed on the entry permit

ii. Entrants act strangely, possibly as a result of exposure to the hazardous substances

iii. A situation exists outside the confined space that could endanger personnel

iv. A hazard is identified within the confined space that has not been previously recognized or taken into consideration

v. Attendant must leave the work station

vi. Rescue of personnel in other confined space is required

4.2 Entrant – An individual who is authorized by an employer to enter a permit space.

a. Attend confined space training

b. Report unusual conditions associated with confined space equipment or confined space operations to their supervisor and the safety department immediately. Do not enter confined space until unusual conditions are evaluated.

c. Follow instructions from the confined space attendant.

d. Follow all health and safety measures developed by Arkansas State University around confined spaces and other safety hazards.

e. Read and observe the entry permit requirements

f. Remain alert to the hazards that could be encountered while in the confined space.

g. Properly use the PPE that is required by the permit.

h. Immediately exit the confined space if:

i. Evacuation is ordered by an authorized person

ii. Other entrants display symptoms consistent with exposure to confined space hazards

iii. Entrant themselves experiences symptoms consistent with exposure to confined space hazards

iv. A prohibited conditions exists

i. Alert attendant(s) when a prohibited condition exists

j. Alert attendant(s) when warning signs or symptoms of exposure exist

4.3 Emergency Response – The Safety Department shall maintain a written plan of action that has provisions for conducting a timely rescue of individuals within a confined space, should an emergency arise. All affected personnel shall be trained on the Emergency Response Plan.

5.0 Training

All employees who will enter confined spaces shall be trained in entry procedures. Personnel responsible for supervising, planning, entering or participating in confined space entry and rescue shall be adequately trained in the functional duties prior to a confined space entry. Refresher training shall be conducted as needed to maintain employee competence in entry procedures and precautions. Training shall include:

5.1 Explanation of the general hazards associated with confined spaces.

5.2 Discussion of specific confined space hazards associated with the facility, location or operation.

5.3 Reason for, proper use and limitations of personal protective equipment and other safety equipment required for entry into confined spaces.

5.4 Explanation of permits and other procedural requirements for conducting a confined space entry.

5.5 Procedures for responding to emergencies.

5.6 Duties and responsibilities of the confined space entry team.

5.7 Description of how to recognize symptoms of overexposure to probable air contaminants in themselves and co-workers and methods for alerting the attendant.

5.8 Training for atmospheric monitoring personnel shall include proper use of monitoring instruments, including instruction on the following:

- a. Proper use of the equipment
- b. Sampling strategies and techniques
- c. OSHA exposure limits for anticipated contaminants: CO, O₂, H₂S, Low Explosive Limit (LEL) gases

5.9 Training for Attendants shall include:

- a. Procedures for summoning rescue or other emergency services
- b. Proper use of equipment used for communicating with entry and emergency/rescue personnel.

6.0 Permits

6.1 Permit Required Confined Space – An area that meets the definition of a confined space and has one or more of the following characteristics:

- a. Contains or has a potential to contain a hazardous atmosphere.
- b. Contains a material that has a potential of engulfing an entrant (i.e. water or sand).
- c. 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 smaller cross-section.
- d. Contains any other recognized serious safety or health hazards (i.e. wind, insecure footing, electrical).

6.2 The following procedures must be implemented for all permit-required confined spaces:

- a. Identify and evaluate the hazards of permit spaces before employees enter
- b. Specify acceptable entry conditions (use the Confined Space Entry Permit);
- c. Perform air monitoring of the space prior to entry and continuously during entry;
- d. Isolate the permit space using lockout/tagout methods (i.e., lock and tag out compressed gas system on presses, lock out pumps and electrical connections in sumps, etc.)
- e. Purge, inert, flush or ventilate the permit space as necessary to eliminate or control atmospheric hazards
- f. Provide barriers as necessary to protect entrants from external hazards;
- g. Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry;
- h. Designate the communication methods that will be used between the entrant and the attendant
- i. Designate rescue requirements and place equipment needed next to the permit-required confined space in the event that an emergency rescue is needed
- j.

Provide at least one attendant outside the permit space for the duration of entry operations

- k. Designate employees who have active roles in the entry process; entrant,

attendant; rescue. etc.

l. The Arkansas State University Confined Space Permit shall be completed and signed/approved by the Safety Department

m. Permits shall be cancelled at the end of each shift, or when new hazards arise. A confined space entry permit is only valid for one work shift.

6.3 Alternate Entry Procedures – All steps taken to reclassify the permit space to an alternate entry space must be written on the entry permit and reviewed by the Safety Office prior to reclassification. All confined spaces shall be considered permit-required until the pre-entry procedures demonstrate otherwise. Alternate entry procedures may be used if the only hazard present in the confined space is:

a. Atmospheric in nature

b. The atmospheric hazard can be controlled by mechanical ventilation alone

c. The Permit Space atmosphere will not become immediately dangerous to life and health (IDLH) if the mechanical ventilation fails.

d. Under Alternate Entry Procedures, the entrant may enter the confined space following the procedure below:

i. Establish and ensure that the mechanical ventilation system is operational and providing clean, fresh air to the entrants' work location within the space during the entire confined space operation

ii. Test the atmosphere of the space prior to entry into the space and continually operate a personal gas detector during the entire confined space operation

iii. Immediately evacuate the space if ventilation fails, or if the portable air sampling equipment fails to enter alarm mode

iv. Immediately evacuate the space if you discover, or become aware of a previously unrecognized hazard.

v. Immediately notify the Safety Department of any previously unidentified hazards.

6.4 Non-Permit Confined Spaces – If the confined space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the Safety Office may reclassify the permit space as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.

a. If it is necessary to enter the permit space to eliminate hazards, such entry will be performed as a permit-required confined space entry.

b. If hazards arise while employees are working in a non-permit space, each employee shall exit the space immediately.

c. The Safety Office shall then reevaluate the space and determine whether it must be reclassified as a permit space.

6.5 The attached Service Route Map will designate the interior sidewalks where SMV operation is allowed.

6.6 The attached SMV Service Routes for Pre- & Post-Game Activities Map specifies routes for ADA shuttles, courtesy parking shuttles and service vehicles. These routes are strictly reserved for the specified purpose for ½ hours prior to and ½ hours after the game.

6.7 All SMVs on the A-State Farm must operate on farm property and roadways only.

6.8 The operator must report any accidents to the University Police Department and to the operator's supervisor. Supervisors are responsible for reporting such accidents to the Office of Risk Management.

6.9 SMV operators are to use extreme caution at all times.

6.10 The use of cell phones is strictly prohibited while operating SMVs.

6.11 Wearing headsets that impair hearing or masks that obstruct vision is strictly prohibited while operating SMVs.

6.12 Pedestrians have the right-of-way on campus. SMVs must yield to pedestrians on sidewalks and in crosswalks.

6.13 Operators must not travel on sidewalks where there is insufficient space for pedestrians to pass the SMV without stepping off of the sidewalk.

6.14 Operators must be diligent and pay particular attention to the needs of disabled persons, as limitations in vision, hearing or mobility may impair their ability to see or hear SMVs.

6.15 SMVs are not to be overloaded, i.e. carrying more passengers than seating provided or overloading the vehicle's recommended carrying or load capacity.

6.16 Operators are responsible for ignition keys for the period of time in which they are using the vehicle. Keys should not be left in SMVs unattended.

6.17 When parking, use designated service parking areas indicated by yellow striping.

6.18 If service parking is not available, the following guidance applies:

a. Keep emergency access sidewalks clear. Routes marked with larger dots indicate emergency access sidewalks on the attached map.

b. Do not block building entrances

c. Do not impede pedestrian access on walkways.

6.19 Bollards located in the middle of sidewalks indicate that driving is prohibited beyond the bollard. This includes the multi-use trail or any bollard with a yellow "No Motorized Vehicles" decal.

7.0 Standard Safety Features

7.1 As of the effective date of this policy all new SMV acquisitions must meet the minimum safety features found in National Highway Safety and Traffic Administration (NHSTA), Standard 500 (49CFR Part 571.500), hereafter "Standard 500".

a. SMVs operated by contractors and other non-affiliated departments, companies, corporations, etc. must meet Standard 500.

b. Personal SMVs allowed as ADA accommodation must meet Standard 500.

7.2 From Standard 500:

a. The maximum speed attainable within one mile for SMV will not exceed 25 miles per hour.

b. All SMVs will be equipped with:

i. Headlamps,

ii. Front and rear turn signal lamps,

iii. Tail lamps,

iv. Stop lamps,

v. Reflex reflectors: one red on each side as far to the rear as practicable, and one red on the rear,

vi. An exterior mirror mounted on the driver's side of the vehicle and either an exterior mirror mounted on the passenger's side of the vehicle or an

- interior mirror,
- vii. A parking brake,
- viii. A windshield of AS-1 or AS-5 composition, that conforms to the American National Standard Institute's "Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," Z26.1-1977, January 28, 1977, as supplemented by Z26.1a, July 3, 1980
- ix. A Slow Moving Vehicle Reflective Triangle
- x. An alert sound as required by §571.141 [This refers to horns and reverse alarms]

7.3 For SMVs acquired prior to the effective date of this policy, the following guidelines apply:

- a. SMVs must be four-wheeled vehicles - No three-wheeled vehicles.
- b. All SMVs and trailers pulled by SMVs must have clearly displayed on the exterior of the SMV and trailer the slow moving vehicle reflective triangle.

7.4 When SMVs that do not meet Standard 500 are rented for special events, such as parking shuttle service, the rented vehicles must include the standard safety features listed below. SMVs permitted as ADA accommodation must also meet the standards below at a minimum. University Safety & Emergency Management must approve of any substitutes for the following:

- a. Headlamps,
- b. Tail lamps,
- c. Reflex reflectors: one red on each side as far to the rear as practicable, and one red on the rear,
- d. A parking brake,
- e. A Slow Moving Vehicle Reflective Triangle

7.5 Required Slow Moving Vehicle Reflective Triangle:

7.6 A university identification number (provided by the Facilities Management at the owning department's expense) must be displayed prominently on university-owned SMVs. Contractors and non-affiliated departments, companies, corporations, etc. must display company name on their SMV at the owner's expense.

8.0 Maintenance

8.1 SMVs must be maintained so that all original equipment safety features are kept in good working order.

8.2 Modification or tampering with the governor of an SMV is prohibited and constitutes a violation of Federal Law.

8.3 University-owned SMVs must be maintained in accordance with manufacturer and Facilities Management recommended service schedule.

8.4 Owning-departments are financially responsible for all repair and maintenance costs (labor, parts, and supplies).

8.5 Facilities Management must perform all repairs and maintenance on university-owned SMVs.

8.6 Facilities Management will be responsible for record-keeping regarding all repairs and maintenance.

8.7 Owning-departments are responsible for keeping all original equipment and safety features in good working order

