



## 1 Purpose

This program establishes the minimum safety requirements for entering and working in confined spaces at Kennesaw State University (KSU) in alignment with the Occupational Safety and Health Administration (OSHA) Confined Space Standard (29 CFR 1910.146). It is intended to protect all employees, contractors, and visitors by ensuring that confined spaces are properly identified, evaluated, and controlled before entry.

## 2 Scope

This program applies to all confined spaces located on KSU owned, operated, or leased facilities.

## 3 Responsibilities

### Environmental Health and Safety (EHS) Department

- a. Identify and maintain inventory of all confined space locations on campus, evaluate the associated hazards, classify the spaces and outline entry requirements.
- b. Issue confined space entry permit
- c. Provide training to affected employees and supervisors.
- d. Provide technical assistance to departments as needed, including the selection of appropriate personal protective equipment.
- e. Ensure that canceled permits are reviewed for lessons learned.
- f. Maintain records pertaining to the program
- g. Review and update the program at least annually, or as needed.
- h. Monitor the effectiveness of the program.
- i. Develop safe entry requirements for all permit spaces to ensure the safety and health of all entrants
- j. Ensure the written Confined Space Program is available to employees

### Campus Operations/Facility Maintenance Operations

- a. Provide atmospheric testing and equipment as needed.
- b. Ensure that all equipment used in confined space entry are in good conditions
- c. Provide personal protective equipment as needed.

- d. Ensure that all team members required to wear respiratory protection are qualified for respiratory protection use. Effectively communicate and coordinate with KSU contractors on any work involving confined space entry on campus
- e. Restrict access to these permit spaces through permit space training, signage, restricted physical access, or through any combination therein. Take effective measures to prevent non-trained employees from entering the permit-required confined spaces
- f. Ensure personnel assigned any confined space entry responsibilities are properly trained and documented.

### **Designate an Entry Supervisor**

- a. Train all people involved in permit space entry to their level of involvement.
- b. Ensure that all team members required to wear respiratory protection are qualified and trained for respiratory protection use.
- c. Become thoroughly familiar with all hazards associated with the permit space entry.
- d. Retain entry permits for at least one year beyond termination of the job or permit.
- e. Annually review permits to ensure effectiveness of procedures. Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section
- f. Apprise the contractor of the elements, including the hazards identified and the KSU's experience with the space, that make the space in question a permit space
- g. Apprise the contractor of any precautions or procedures that the KSU has implemented for the protection of employees in near permit spaces where contractor personnel will be working
- h. In addition, in Construction, the KSU must coordinate entry operations with the contractor(s), when both KSU personnel and contractor personnel will be working in or near permit spaces; and when any activities performed could foreseeably result in a hazard in the permit space.
- i. Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding hazards confronted or created in permit spaces during entry operations.

### **Employees:**

- a. Maintain safe distances from permit spaces, unless authorized to enter them.

### **Entry Supervisor/Competent Person:**

- a. Assist in the planning of permit space entries. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- b. In conjunction with management, contractors and other qualified personnel, determine appropriate PPE to be worn by entrants.
- c. Complete a specific Confined Space Permit and verify that the appropriate information has been entered on the permit including all tests specified by the permit have been conducted by qualified persons and all procedures and protective equipment specified by the permit are in place and at the site before endorsing the permit and allowing entry to begin.

- d. Sign Entry Permit and ensure procedures specific to the permit are understood and followed, and that entrant training is completed prior to allowing entry to begin.
- e. Terminate the entry and cancel the permit as required. Verify that rescue services are available and that the means for summoning them are operable.
- f. Ensure removal of unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
- g. Whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, determine that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.
- h. Stop work if conditions are considered unsafe and immediately initiate evacuation of the Permit space.

### **Entrants:**

- a. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure, and the protective measures to be taken to prevent exposure to hazards.
- b. Properly use protective equipment, including full body harness, as required.
- c. Communicate with the attendant as necessary to ensure that if contact is lost, all entrants exit the permit space immediately.
- d. Alert the attendant whenever:
  - i. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
  - ii. The entrant detects a prohibited condition.
- e. Exit from the permit space as quickly as possible whenever:
  - i. An order to evacuate is given by the attendant or the entry supervisor.
  - ii. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
  - iii. The entrant detects a prohibited condition.
  - iv. An evacuation alarm is activated.
- f. Read, understand, and follow the requirements of the permits.

### **3.7 Attendants:**

- a. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- b. Be aware of possible behavioral effects of hazard exposure in authorized entrants.

- c. Continuously maintain an accurate count of authorized entrants in the permit space and ensure that the means used to identify authorized entrants under this section accurately identifies who is in the permit space.
- d. Remain in a pre-designated location outside the permit space during entry operations until relieved by another attendant.
- e. Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space. If contact is lost, all entrants must exit the permit space immediately.
- f. Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space, as well as the activities outside the permit space to maintain a safe environment for the entrants.
- g. Order the authorized entrants to evacuate the permit space immediately under any of the following conditions:
  - i. If the attendant detects a prohibited condition.
  - ii. If the attendant detects the behavioral effects of hazard exposure in an entrant.
  - iii. If the attendant detects a situation outside the space that could endanger the entrants.
  - iv. If the attendant cannot effectively and safely perform all the duties required under this section.
- c. Summon rescue and other emergency services as soon as the attendant determines that entrants may need assistance to escape from permit space hazards. Be familiar with location of nearest phone, fire alarm, eyewash and safety shower, or other defined criteria on the permit check list.
- d. Take the following actions when unauthorized people approach or enter a permit space while entry is underway:
  - i. Warn the unauthorized people that they must stay away from the permit space.
  - ii. Advise the unauthorized people that they must exit immediately if they have entered the permit space.
  - iii. Inform the authorized entrants and the entry team leader if unauthorized persons have entered the permit space.
- e. Performs non-entry rescues as specified by the rescue procedure.
- f. Performs no duties that might interfere with the attendant's primary duty to monitor and protect the entrants.

### **Contractors:**

- a. Obtain any available information regarding permit space hazards and entry operations from KSU.

- b. Coordinate entry operations with KSU, when both KSU personnel and contractor personnel will be working in or near permit spaces; and when any activities performed could foreseeably result in a hazard in the permit space.
- c. Inform KSU of the permit space safety program that the contractor will follow and of any hazards confronted or created in permit spaces within this facility or others belonging to KSU, either through a debriefing or during the entry operation.
- d. Comply with the applicable local, state, and federal safety laws, rules and regulations.

### **3.9 Emergency/Rescue Team Members:**

- a. Ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.
- b. Each member of the rescue service will be trained to perform the assigned rescue duties, including first aid and cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR will be available.
- c. Each member of the rescue service will also receive the training required by authorized entrants.
- d. Each member of the rescue service will practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces will, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which any anticipated rescue is to be performed.
- e. Non-KSU rescue personnel. When non-KSU rescue personnel are designated to perform a space rescue permit, KSU will:
  - i. Inform the rescue service of the hazards they may confront when called on to perform rescue.
  - ii. Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
  - iii. In Construction, the employer who designates rescue and emergency services, must:
  - iv. Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.
  - v. Evaluate a prospective rescue service's ability in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the permit space or types of permit spaces identified.
  - vi. Select the rescue team or service from those evaluated that:

- a. Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard identified.
- b. Is equipped for and proficient in performing the needed rescue services.
- c. Agree to notify the employer immediately in the event that the rescue service becomes unavailable.
- d. To facilitate non-entry rescue, retrieval systems or methods will be used whenever an entrant enters a permit space, unless the retrieval equipment increases the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems used will meet the following requirements:
  - vii. Each authorized entrant will use a chest or full body harness, with a retrieval line attached at the center of the entrant's chest or back near shoulder level, or above the entrant's head. Wristlets may be used in lieu of the chest or full body harness if it is *demonstrated that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets is the safest and most effective alternative.*
  - ii. The other end of the retrieval line will be attached to a mechanical device (such as winch, block and tackle or similar device for retrieval that is capable of being operated by manpower) or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device will be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
  - iii. In Construction, equipment that is unsuitable for retrieval must not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines used by other authorized entrants, or retrieval lines that will not work due to internal configuration of the permit space,
- g. If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, SDS or written information will be made available to the medical facility treating the exposed entrant.

## 4 Definitions

### Confined space:

A confined space is defined as any location that has limited openings for entry and egress, is not intended for continuous employee occupancy, and is so enclosed that natural ventilation may not reduce air contaminants to levels below the threshold limit value (TLV). Examples of confined spaces include manholes, stacks, pipes, storage tanks, trailers, tank cars, pits, sumps, hoppers, and bins. Entry into confined spaces without proper precautions could result in injury, impairment, or death due to the following hazards:

- a. an atmosphere that is flammable or explosive.
- b. lack of sufficient oxygen to support life.
- c. contact with or inhalation of toxic materials, or

- d. general safety or work area hazards such as steam or high-pressure materials.

There are two types of confined spaces, non-permit required, and permit required.

### **Non-Permit Confined space**

A confined space that meets the following criteria.

- a. It is large enough and so configured that an employee can bodily enter and perform assigned work.
- b. 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.)
- c. Is not designed for continuous employee occupancy.

### **Permit Required Confined space**

A confined space includes the features of non-permit required spaces and one or more of the following:

- a. Contains or has the potential to contain a hazardous atmosphere.
- b. 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.

### **Confined Space Entry**

The act of physically entering the space for work activity. Entry begins when any part of the entrant's body breaks the plane of the opening to a confined space with the intent of entry into the confined space or when the possibility of falling into the confined space exists.

### **Confined Space Entry Permit:**

A permit document designed to outline necessary safety procedures and equipment required for safe entry into designated confined spaces.

### **Competent Person:**

A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

## **5 Procedure**

### **Confined Space Identification:**

The facility or construction site will be assessed to determine if any permit or non-permit confined spaces exist. If the workplace contains confined spaces, KSU will:

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- a. Evaluate the confined space and add it to the campus inventory of confined spaces.
- b. Inform employees exposed by posting danger signs or by any other equally effective means, of the existence and location of, and the danger posed by each permit space. A sign reading "DANGER PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER" or similar language will be used.

### **Entry Permit and Permit System:**

- a. Before permit space entry is authorized, Confined Space Entry Permit must be completed.
- b. Before entry begins, the entry supervisor identified on the permit will sign the entry permit to authorize entry.
- c. The completed permit will be made available at the time of entry to all authorized entrants, by posting it at the entry portal or by any other equally effective means so that the entrants can confirm that pre-entry preparations have been completed.
- d. The duration of the permit may not exceed the time required to complete the assigned task or job identified on the permit.
- e. The entry supervisor will terminate entry and cancel the entry permit when:
  - i. The entry operations covered by the entry permit have been completed.
  - ii. A condition that is not allowed under the entry permit arises in or near the permit space.
  - iii. In Construction, a permit may be suspended until the space has been re-assessed before allowing re-entry when a condition that is not allowed under the entry permit arises in or near the permit space and the condition is temporary in nature and does not change the configuration of the space nor create any new hazards within it.
- f. Each canceled entry permit will be retained for at least 1 year after its termination or cancellation to facilitate the annual review of the permit space program. Any problems encountered during an entry operation will be noted on the pertinent permit so that appropriate revisions to the permit space safety program can be made.

### **Permit Space Program Requirements:**

Under the permit space program KSU will:

- a. Implement the necessary measures to prevent unauthorized entry.
- b. Identify and evaluate the hazards of permit spaces before employees enter them.
- c. Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following:
  - i. Specifying acceptable entry conditions.

- ii. In construction, each authorized entrant or that employee's authorized representative must be provided with the opportunity to observe any monitoring or testing of the permit space.
  - iii. Isolating the permit space.
  - iv. Purging, inserting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.
  - v. Provide barriers as necessary to protect entrants from external hazards.
  - vi. Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry by communication from attendant and periodic Atmospheric testing.
- d. Provide the following equipment at no cost to employees, properly maintain the equipment, and ensure that employees are trained in the proper use of the equipment:
- i. Testing and monitoring equipment needed to determine if hazardous conditions exist or to verify that they do not exist.
  - ii. Ventilating equipment needed to obtain acceptable air quality entry conditions.
  - iii. Communications equipment necessary for communication between personnel involved in the entry operation.
  - iv. Personal protective equipment insofar as feasible. (Where engineering and work practice controls do not adequately protect employees), and in construction, must also meet requirements for the use of PPE in a permit space (For example, if respirators are required, then the respirator requirements in 1926.103 (Respiratory Protection) must be met.
  - v. Lighting equipment is needed to enable employees to see well enough to work safely and to exit the space quickly in an emergency.
  - vi. Barriers and shields to protect workers from pedestrian and vehicular traffic.
  - vii. Ladders, needed for safe ingress and egress by authorized entrants.
  - viii. Rescue, Retrieval, and Emergency equipment needed to extract or treat injured personnel, except to the extent that the equipment and/or service is provided by rescue services that are immediately available.
  - ix. Any other equipment necessary for safe entry into and rescue from permitted spaces at our facility.

## Evaluation of Permit Space Conditions.

KSU will evaluate permit space conditions as follows when entry operation is conducted:

- a. Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), pre-entry testing will be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions will be continuously monitored in the areas where authorized entrants are working.
- When testing for atmospheric hazards, use the following protocol; first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.
- c. Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces. Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who request that the employer conduct such reevaluation because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate.
- d. Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted.

## 6 Attendant requirements:

- a. Provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations.
- b. Attendants may be assigned to monitor more than one permit space provided their duties can be effectively performed for each permit space that is monitored. Likewise, attendants may be stationed at any location outside the permit space to be monitored if their duties can be effectively performed for each permit space that is monitored.
- c. If multiple spaces are monitored by a single attendant, the permit will be annotated to provide the means and procedures by which the attendant is to respond to an emergency affecting one or more of the permit spaces being monitored.

## 7 Rescue procedures:

### Confined space rescue must be performed by outside qualified personnel

Summoning rescue and emergency services

- a. Before work starts a notice must be provided to EHS, Facilities management and external entities such as fire department and emergency responders providing rescue services.
- b. Rescuing entrants from permit spaces

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- i. Emergency rescue teams must be available while authorized entrants are in the confined space Non entry rescue is the first choice during a nonentry rescue additional hazards cannot be created with the use of rescue equipment
- ii. Before rescue the permit must be viewed to make note of all individuals inside the permit space
- iii. Use of retrieval System to bring employees out of space
- iv. Communicate with entrant using radio communication in the presence of flammable or combustible atmospheric conditions intrinsically safe radios must be used.

b) Entry

- i. Emergency rescue teams must be available while authorized entrants are in the confined space.
- ii. Before entering Permit must be viewed and atmospheric condition must be taken and documented.
- iii. Must be familiar with the type of confined spaces located in the area, the hazards they may encounter, the entry means into the confined spaces, the type of rescue equipment to affect the rescue and the type of PPE required for any potential rescue.
- iv. Rescue Techniques All members of the team must be specially trained in confined space rescue work, The team must have at least one member certified in CPR and first aid. All members of the team must be trained in the techniques and equipment of specific confined spaces.

c) Providing necessary emergency services for rescue

- i. Rescuers will provide basic life safety procedures (CPR First Aid) if necessary

## **8 Entry Permit issuance, use, and cancellation:**

- a. When employees of contractor personnel or non-KSU employees are working simultaneously as authorized entrants in a permit space, the verifying official of the permit (or pre-designated representative) will ensure that all parties concerned are aware of the accepted entry procedures for the specific operation. This will ensure entry operations are properly coordinated.
- b. The verifying official of the permit (or pre-designated representative) will ensure that all parties concerned are aware of the accepted procedures necessary for concluding the entry

after entry operations have been completed (such as closing off a permit space and canceling the permit).

- c. KSU will immediately review and as necessary halt and revise entry operations when there is reason to believe that the measures taken under the permit space safety program may not protect employees. The focus will be directed at the correction of deficiencies found to exist before subsequent entries are authorized. Examples of circumstances requiring the review of the permit space safety program are:
- Any unauthorized entry of a permit space.
  - The detection of a permit space hazard not covered by the permit.
  - The detection of a condition prohibited by the permit.
  - The occurrence of an injury or near-miss during entry.
  - A change in the use or configuration of a permit space.
  - Employee complaints about the effectiveness of the safety program.

## **9 Annual Review:**

An annual review of the permit space safety program will be conducted using the canceled permits retained to ensure that employees participating in entry operations are protected from permit space hazards. In Construction, if no entry is performed during a 12-month period then no review is necessary.

## **10 Alternate Conditions and Procedures:**

The alternate procedures listed in 5.5.2 may be followed if the permit space conditions below are met:

- a. Conditions
- i. It can be demonstrated that the only hazard posed by the permitted space is an actual or potentially hazardous atmosphere.
  - ii. It can be demonstrated that continuous forced air ventilation alone is sufficient to maintain the space safe for entry.
  - iii. Monitoring and inspection data supports the demonstrations listed above.
  - iv. If an initial entry of the permit space is necessary to obtain monitoring and inspection data, the worst case will be assumed, and the full provisions of permit-required confined space entry procedures will be implemented.

- v. Entry can be performed by KSU personnel, once determinations and supporting data are documented, and are made available to each employee who enters the permit space.

b. Alternate Procedures

- i. Any conditions making it unsafe to remove an entrance cover will be eliminated before the cover is removed.
- ii. When entrance covers are removed, the opening will be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.
- iii. Before an employee enters the space, the internal atmosphere will be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space will be provided an opportunity to observe the pre-entry testing. The parameter limits are listed in Section 6.4.
- iv. There may be no hazardous atmosphere within the space whenever any employee is inside the space.
- v. Continuous forced air ventilation will be used, as follows:
- vi. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- vii. The forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and will continue until all employees have left the space.
- viii. The air supply for the forced air ventilation will be from a clean source and may not increase the hazards in the space.
- ix. The atmosphere within the space will be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space will be provided with an opportunity to observe the periodic testing.
- x. If a hazardous atmosphere is detected during entry:
- xi. Each employee will leave the space immediately.

- xii. The space will be evaluated to determine how the hazardous atmosphere developed; and
- xiii. Measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
- xiv. The employer will verify that the space is safe for entry and that the pre- entry measures have been taken through a written certification that contains the date, the location of the space, and the signature of the person providing the certification. The certification shall be made before entry and shall be made available to each employee entering the space.

## 11 Permit Required Confined Space Reclassification:

A space classified as a permit-required confined space will be reclassified as a non- permit confined space under the following conditions:

- a. 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 confined space for as long as the non- atmospheric hazards remain eliminated.
- b. If it is necessary to enter the permit space to eliminate hazards, such entry will 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 confined space for as long as the hazards remain eliminated.
  - *In Construction, control of atmospheric hazards through forced air ventilation alone can constitute elimination of the hazards provided that if the ventilation system stops working, entrants are made aware of the situation and can exit the space safely.*
- c. It will be documented that all hazards in a permit space have been eliminated, through a permit that contains as a minimum; the date, the location of the space, and the signature of the person making the determination. The permit will be made available to each employee entering the space.
- d. If hazards arise within a permit space that has been declassified to a confined space, each employee in the space will immediately exit the space and the supervisor will be notified. KSU will then re-evaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this safety program.

## 12 Non-Permit Confined Space Reevaluation.

When there are changes in the use or configuration of a non-permit required confined space that might increase the hazards to entrants, KSU will reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

## 13 Safety Information.

- a. *Procedures for Atmospheric Testing.* Atmospheric testing for permit 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 exists.
- b. *Evaluation testing.* KSU or Contractors will ensure that the atmosphere of a permit 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, KSU EHS department, etc.) based on evaluation of all serious hazards.
- c. *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.
- d. *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.
- e. *Testing Stratified Atmospheres.* When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope will be tested 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.
- f. *Order and Parameters of Atmospheric Testing:* The internal atmosphere will be tested, with a calibrated direct-reading instrument, for the following conditions in the order given:
  - i. Oxygen content. (19.5% - 23.5% is required, any percentage less or more requires action to be taken)
  - ii. Flammable gases and vapors more than 10% of the lower flammable limit (LFL).
  - iii. Potential toxic air contaminants
  - iv. Airborne combustible dusts at a concentration that meets or exceeds its LFL.

## 14 Training and Information.

- a. KSU will develop a standardized training format to meet the requirement for a safe permit space entry.
- b. Training will be provided for each affected employee:
  - i. Before, the employee is first assigned duties that require a permit space entry.
  - ii. Before there is a change in assigned duties.
  - iii. Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
  - iv. Whenever the 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.
  - v. The training will establish employee proficiency in the duties required by this instruction and will introduce new or revised procedures, as necessary, for compliance with this instruction or when future revisions occur.
  - vi. KSU will verify that the training required by this section has been accomplished. The documentation will contain each employee's name, the signatures or initials of the trainers, and the dates of training. The documentation will be available for inspection by employees and their authorized representatives.



# CONFINED SPACE ENTRY ASSESSMENT

<b>PERMIT</b>	<b>NON-PERMIT</b>		
<b>SPACE INFORMATION</b>			
VERBAL SPACE DESIGNATION:			
NUMERICAL SPACE DESIGNATION:			
LOCATION:			
SPACE MARKED: <input type="checkbox"/> YES <input type="checkbox"/> NO	ENTRY CONTROLLED: <input type="checkbox"/> YES <input type="checkbox"/> NO		
SIGNAGE <input type="checkbox"/> YES <input type="checkbox"/> NO	BARRIERS <input type="checkbox"/> YES <input type="checkbox"/> NO		
LOCKS <input type="checkbox"/> YES <input type="checkbox"/> NO	OTHER:		
CURRENT USE OF SPACE:	PREVIOUS USE OF SPACE:		
<b>RELATED OPERATING PROCEDURES REVIEWED</b>			
HAZARD COMMUNICATION <input type="checkbox"/>	RESPIRATORY PROTECTION <input type="checkbox"/>	ELECTRICAL SAFETY <input type="checkbox"/>	
LOCK OUT TAG OUT <input type="checkbox"/>	JOB HAZARD ANALYSIS <input type="checkbox"/>	PROCESS SAFETY <input type="checkbox"/>	
WELDING SAFETY <input type="checkbox"/>	ACCIDENT INVESTIGATION <input type="checkbox"/>	FIRE PREVENTION <input type="checkbox"/>	
<b>CONFINED SPACE ASSESSMENT CHECKLIST</b>			
Can an employee enter & perform work either with or without permission?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Do people occupy the space even though it was not designed for it?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Is entry and or egress limited or present unusual rescue problems?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Does the space have any potential for a hazardous atmosphere?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Does the space contain a material or liquid that could engulf an entrant?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Does the internal space configuration present the hazard of entrapment?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Does the space contain any other recognized safety and or health hazards?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Is previous and or current entry hazard data available for review	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
*Does entry hazard data confirm designation as a permit space?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
*Were there any "yes" answers to 4-7 which cannot be controlled?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
IF * are YES, the space must be designated as a permit required confined space!			
<b>ASSESSED HAZARDS &amp; REQUIRED PERSONAL PROTECTIVE EQUIPMENT</b>			
	HAZARDS	REMARKS	PPE REQUIRED/OTHER EQUIP.
	Restricted Entry/Egress		
	Oxygen Deficiency	Less than 19.5%	
	Oxygen Enrichment	More than 23.5%	
	Oxygen Displacement		
	Flammable Gases or Vapors	More than 10% LEL	
	Toxic Gases or Vapors	More than PEL	
	Airborne Combustible Dusts	Meets or Exceeds LFL	
	Chemical Hazards		
	Mechanical Hazards		
	Electrical Hazards		
	Respiratory Hazards		
	Engulfment Hazards		
	Entrapment Hazards		
	Fall Hazards		
	Skin Hazards		
	Hot/Cold Hazards		
	Radiation Hazards		
	Biological Hazards		
	Toxic Liquids		
	Potential High Liquid Level		
	Internal Baffles		

**DIAGRAM OR PHOTOS OF SPACE** (Indicate Portals)

--

**CONFIGURATION OF SPACE**

VESSEL	PIT	VAULT	Trash compactor	HOPPER	BIN
TANK	HVAC unit	Crawl Spaces	Manhole	WELL	TUNNEL
				OTHER:	

**DIMENSIONS OF SPACE**

DEPTH/HEIGHT:	WIDTH/INNER DIAMETER:	LENGTH:
VOLUME/CAPACITY:	SHAPE:	
<input type="checkbox"/> ELEVATED	<input type="checkbox"/> ABOVE GROUND	<input type="checkbox"/> BELOW GROUND

**ANTICIPATED RESCUE**

<input type="checkbox"/> VERTICAL EXTRACTION	<input type="checkbox"/> HORIZONTAL EXTRACTION	<input type="checkbox"/> OTHER:
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**REMARKS/RECOMMENDATIONS**


 APPROVED**AUTHORIZATION**

I certify that I have conducted a confined space assessment of the above designated space. To the best of my knowledge, I believe the information contained herein to be true and accurate as of the time of the assessment.

NAME:	TITLE:
SIGNATURE:	DATE:
	TIME: <input type="checkbox"/> AM <input type="checkbox"/> PM

 FURTHER DETAILED ON ATTACHMENT(S)  YES  NO
**ASSESSMENT FORM RETENTION INFORMATION**

PERMANENT RETENTION FILE:		
FILE LOCATION:	DATE FILED:	TIME: <input type="checkbox"/> AM <input type="checkbox"/> PM
ATTACHMENT(S) INCLUDED: <input type="checkbox"/> YES <input type="checkbox"/> NO	FILED BY:	

# CONFINED SPACE ENTRY PERMIT

<b>Permit Number:</b>	<b>Site:</b>
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## Permit Validity Period:

Date		Time:	
From:	To:	From:	To:
Confined space identification code (if identified):			
Notes:			

## AUTHORIZED PERSONNEL

Workers Authorized Entry	Attendants and Shift	Attendants and Shift for Fire Watch (hot work)

## KNOWN HAZARDS

Initials	(indicate specific hazards with initials)	
	Oxygen deficiency	(less than 19.5%)
	Oxygen enrichment	(more than 23.5%)
	Flammable gases or vapors	(more than 10% of LEL)
	Airborne combustible dust	(meets or exceeds LFL)
	Toxic gases or vapors	(more than PEL)
	Mechanical hazards	
	Electrical hazards	
	Engulfment hazards	
	Materials harmful to skin	

## EMPLOYEE TRAINING AND PRE-ENTRY BRIEFING

Safe Entry and Rescue Training Conducted on:	
Mandatory Pre-Entry Briefing Conducted on:	
Does this job require any special training: <input type="checkbox"/> Yes <input type="checkbox"/> No	
➤ If yes, type of training required:	
Trainer Name:	Signature:

## CONTRACTOR NOTIFICATION

Contractor Notified of:	Permit Conditions:	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Potential Hazards:	Yes <input type="checkbox"/>	No <input type="checkbox"/>

## COMMUNICATION Type Example (radio)

	Intrinsically Safe?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Visually Inspected?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**LIGHTING REQUIREMENTS Example: (Flash light) or other means of lighting needed**

	Intrinsically Safe?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Visually Inspected?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**SPECIAL TOOLS/EQUIPMENT Example: fall arresters,**

	Intrinsically Safe?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Visually Inspected?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**SITE PREPARATION REQUIREMENTS**

Work area isolated with signs and or barriers?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
All energy sources locked/tagged out?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
All input lines capped/blinded?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If vessel; drained, flushed, neutralized, cleaned, and purged?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Ventilation initiated 30 min. before entry?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Fire extinguishers on hand?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Fall hazards considered and prepared for?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Engulfment hazards considered and prepared for?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**PRE-ENTRY ATMOSPHERIC TESTING**

<b>Tester:</b>	Name:	Signature:			
	Title:	Date:	Time:	am	pm

**INITIAL TESTING DATA**

Testing	Instrument	Last Time	Time	Action Levels	
<u>Requirement</u>	<u>Reading</u> (Pencil)	<u>Taken</u> (Pencil)	<u>Interval</u>	<u>Level</u>	<u>Unit</u>
Oxygen content	<19.5% >23.5%				%
Flammable concentration	<10%LEL				%LEL
H2S	<2PPM				PPM
Cl2	<0.5PPM				PPM
CO	<35PPM				PPM
SO2	<2PPM				PPM
Temperature					Fahrenheit

**EMERGENCY/RESCUE PROCEDURES**

Location of written Emergency/Rescue Plan:

Type of Emergency/Rescue Team required:

On-site: Yes <input type="checkbox"/> No <input type="checkbox"/>	Contact:	Phone:
Off-site: Yes <input type="checkbox"/> No <input type="checkbox"/>	Contact:	Phone:

Additional Information

**PERSONAL PROTECTIVE EQUIPMENT REQUIRED**

Blank lines for listing personal protective equipment.

Air purifying respirator? Type:

Self-Contained Breathing Apparatus Required?

Atmospheric Monitor Required?

If yes, type:

**AREA SAFETY EQUIPMENT REQUIRED**

Blank lines for listing area safety equipment.

**SPACE REVIEW INFORMATION**

Current use of Space:

Previous use of Space:

Previous Problems:

Previous Permit Reviewed: | Date: | Time: | pm | Initials:

**PERMIT AUTHORIZATION**

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

Name: | Signature:

Title: ENTRY SUPERVISOR | Date: | Time: (am) (pm)

Name: | Signature:

Title: | Date: | Time: (am) (pm)

**PERMIT RETENTION INFORMATION**

Permanent Retention File: | Location:

Date Filed: | Filed By:

## CONFINED SPACE LIST

DESIGNATION OR NAME/LOCATION OF SPACE	ASSESSED?		POTENTIAL HAZARDS	PERMIT REQUIRED ?	
	Yes			Yes	
KSU Recreation Center Room 2033 AHU#2	Yes		Atmospheric Hazards, Mechanical Hazard, Electrical	Yes	
KSU Recreation Center Room 2033 AHU#3	Yes		Atmospheric Hazards, Mechanical Hazard, Electrical	Yes	
KSU Recreation Center Room 2033 AHU#5	Yes		Atmospheric Hazards, Mechanical Hazard, Electrical	Yes	
KSU Recreation Center Chlorine Tank	Yes		Atmospheric Hazards, Mechanical Hazard, Electrical, skin	Yes	
KSU Recreation Center lower deck water pump area	Yes		Atmospheric Hazards,	Yes	
All manholes and electrical units under ground			Atmospheric Hazards, Mechanical Hazard, Electrical,	YES	
All crawl spaces under buildings			Atmospheric Hazards, Mechanical Hazard, Electrical,	YES	
Areas with High concentration of chemicals without significant air flow and alarm system			Atmospheric Hazards, Mechanical Hazard, Electrical,	YES	
Unites or equipment containing filters dust collecting or waist collecting systems			Atmospheric Hazards, Mechanical Hazard, Electrical	YES	
HVAC units water cooling towers			Atmospheric Hazards, Mechanical Hazard, Electrical,	YES	
Building duct work that meets the definition of a confined space			Atmospheric Hazards, Mechanical Hazard	YES	
Elevator pits			Electrictrical and Mechanical	YES	
Dumpsters/trash compactors/			Electrictrical and Mechanical, biological	Yes	





