

Confined Space Entry Program

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PURPOSE:

The purpose of this program is to comply with the requirements of the Occupational Safety Health Administration (OSHA) Confined Space Regulation 29 CFR 1910.146. Skidmore has developed a formal written program to accomplish this. The program consists of the following elements:

- Confined Space Inventory and Hazard Assessment
- Definitions Of Confined Spaces(Classification)
- Personnel Responsibilities
- Training
- Confined Space Entry Procedures
- Emergency Procedures
- Confined Space Equipment
- Contractors

PERSONNEL RESPONSIBILITIES:

All personnel entering a confined space will be required to follow the Skidmore Confined Space Program Requirements. Supervisors are required to be notified of all Permit Required and Alternate Procedure entries for coordination and approval. The Confined Space Inventory and Assessment must be used to review the confined space classification (permit/non-permit, hazards: electrical, mechanical, atmospheric) and personal protective equipment requirements of each space.

All personnel entering a confined space must have confined space training and additional training such as lock out tag out, gas monitor training and specific personal protective equipment training. Confined space rescue personnel needed for permit required entry will be required to have appropriate rescue training.

Contractors will be required to have confined space training, a written program and required equipment for entry. Contractor program and training documentation will be required for submittal to Skidmore managers prior to starting work. If the work will be done in a permit confined space such as an electrical vault not deenergized, the contactor will be required to make arrangements to provide qualified confined space rescue. The Skidmore Confined space Inventory and Assessment will be made available to contractors for their review.

Supervisors will be responsible to review and approve confined space permits. Alternates for the review and approval process will be the Assistant Director of Facilities, Director of Facilities and Environmental Health and Safety Officer. The Environmental Health and Safety Officer will be responsible for maintaining the calibration and maintenance of the 4-gas monitor and all of the completed confined space permits and training records will reside with the Environmental Health and Safety Officer.

CONFINED SPACE INVENTORY AND HAZARD ASSESSMENT:

An inventory of confined spaces on the campus was performed to identify categories of confined spaces (electrical, telecommunications, sanitary, air handlers, tanks, crawl spaces). The hazard assessment determined the classification of the spaces such as permit or non-permit confined spaces. The hazard assessment addresses specific hazards to each space such as potential, atmospheric, mechanical,

electric shock and engulfment. In addition specific personal protective equipment for each confined space is listed as a requirement for entry. Any time a confined space needs to be entered the Confined Space Inventory and Hazard Assessment must be referenced.

OSHA sets definitions for confined space, permit required confined space, and non-permit confined space in 29 CFR 1910.146. Additionally, OSHA also sets criteria for when reclassification and alternate procedures are acceptable. A confined space is defined as a space that "is large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit; and is not designed for continuous employee occupancy. A permit-required confined space is defined as a confined space that "has one or more of the following characteristics: (1) Contains or has potential to contain a hazardous atmosphere; (2) Contains a material that has a potential for engulfing an entrant; (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) Contains any other recognized serious safety or health hazard." A non-permit confined space is defined as "a confined space that does not contain, or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm."

Reclassification from a permit space to a non-permit designation is possible if all hazards within the space are eliminated, such as performing lockout tagout on an air handling unit before entry. OSHA states in 29 CFR 1910.146(c)(7), "A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures: 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." Alternate procedures are explained in 29 CFR 1910.146(c)(5) by stating alternate procedures may be used if, "The employer can demonstrate that the only hazard posed by the permit space is an actual or potential hazardous atmosphere; The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that permit space safe for entry; The employer develops monitoring and inspection data that supports the demonstrations required." An example of a confined space that alternate procedure may be used for is entering a telecommunications vault after continuous ventilation and monitoring have been performed.

TRAINING PLAN:

All Skidmore personnel who may be required to enter a confined space will be required to receive confined space entry safety training. Employees who do not have the training will not be eligible to perform confined space related work or act as a confined space entrant, attendant or entry supervisor. Upon successful completion of the training the employee will receive documentation of training and will be required to take an annual refresher class. Training records will reside with the Environmental Health & safety Officer.

Confined Space Entry Training will address the following:

• The requirements of the campus program and OSHA Requirements

- Using the Confined Space Inventory and Assessment to determine classifications, categories, hazards, safe entry procedures and personal protective equipment requirements of each space
- Duties of an attendant
- Duties of an entrant
- Duties of an entry supervisor
- How to use and field check the 4 gas monitor
- How to use the tripod system
- How to set up the blower
- Acceptable and non-acceptable entry conditions
- Emergency procedures
- Filling out a permit and documenting
- Quiz

ENTRY PROCEDURES:

If confined space entry is required, the department supervisor will be responsible for initiating the process, providing personnel with a permit, and making sure the employees have the right equipment, reference the inventory/ hazard assessment and clearly communicate the task to the employees. Based on the inventory hazard assessment, the space will fall into one of three classifications--permit, non-permit, alternate procedure.

NON-PERMIT ENTRY

The majority of confined spaces on the campus are non-permit which means they are confined space as listed in the inventory; either the hazard has been eliminated or there is no hazard identified at the time of assessment (i.e. atmospheric, electric, mechanical).

Non-permit entry procedures are as follows:

- Identify the equipment on the confined space inventory/ hazard assessment
- Perform lockout/tagout procedure to eliminate any such hazard(s)
- Use personal protective equipment as required (based on task and/or as identified in the inventory/hazard assessment)

It is now safe to enter the space. There is no need for a confined space entry permit, atmospheric monitoring, entry supervisor or attendant.

ALTERNATE PROCEDURE ENTRY

There are instances that an authorized Skidmore College employee or contractor may allow entry into a permit-required space using alternative entry procedures. Using these procedures, a written permit, attendant or rescue team, etc. is not required, providing that:

- The only hazards in the permit space are atmospheric
- Hazards can be controlled by the use of continuous forced-air ventilation
- Atmosphere is tested periodically during entry.

NOTE: It may be necessary to conduct a full permit-required confined-space entry to test the atmosphere if it cannot be tested from the outside.

Once the atmosphere has been tested and it is determined that the only hazard is an atmospheric hazard that can be controlled through the use of forced-air ventilation, the rest of the requirements are relaxed—the only requirement being that the atmosphere must be tested periodically.

If a hazardous atmosphere is detected at any time during the entry, the following are required:

- Each employee must leave the space immediately.
- The space must be evaluated to determine how the hazardous atmosphere developed.
- Steps must be taken to protect the employees from the hazardous atmosphere before a subsequent entry takes place (e.g. conducting a Permit Required Confined Space Entry).

Once the requirements for entering using alternative entry procedures are satisfied, a permit must be completed before anyone enters the confined space. The permit will consist of the date, location of the space and signature of the person providing the certification

Alternate Procedure methods are as follows:

- Identify the space on the confined space inventory and assessment and complete a Job Hazard Analysis (JHA).
- Supervisor will initiate confined space permit process and review with employees
- Fill out permit with date and location of space, checking off the Alternate Entry Approach box
- Utilize 4-gas monitor to ensure atmospheric conditions are acceptable and record readings on permit
- Use personal protective equipment identified in the inventory hazard assessment
- Post permit at the work area
- Utilize the 4-gas monitor monitor to ensure atmospheric conditions are acceptable and record readings on permit (field test/ bump test prior to monitoring, monitor all levels of the space, continuous monitoring)
- Set up Tri-pod system with winch over the hole. Don harness and attach life-line to harness
- Set up ventilation system and continuously ventilate
- Entrant may now enter the hole to perform work
- Evacuate the space immediately and notify supervisor if atmospheric or other unsafe conditions arise

All sections of the permit confined space permit will be filled out that are applicable. Sections that are nonapplicable will be noted as NA. Employees will sign on the permit as entrant and attendant. Supervisors or qualified alternate will sign off as entry supervisor.

After employees finish work, permits will be returned to their supervisor who will file the permit with EHS.

PERMIT REQUIRED CONFINED SPACE ENTRY

Permit required confined spaces are spaces that the primary hazards in the space cannot be controlled or eliminated.

If a space cannot be successfully ventilated to control or eliminate any hazard such as live electrical systems, the space is classified as Permit Required.

Permit Required Entry procedures are as follows:

- Identify the space on the confined space inventory and assessment and complete a JHA
- Supervisor or project manager to coordinate on-site rescue team at least 72 hours prior to proposed entry
- Supervisor or project manager communicates proposed date of entry, location and hazards with EHS and Campus Safety
- On the date of the permit confined space entry, supervisor will initiate confined space permit
 process and review with contractor performing the entry as well as any affected Skidmore College
 employees
- Review Pre Plan with rescue team
- All applicable sections of the permit will be filled out and checked off as permit required entry
- Utilize the 4-gas monitor to ensure atmospheric conditions are acceptable and record readings on permit (field test/ bump test prior to monitoring, monitor all levels of the space, continuous monitoring)
- Set up Tri-pod system with winch over the hole. Don harness and attach life-line to harness
- Set up ventilation system and continuously ventilate
- Entrant may now enter the permit only hole to perform work
- Evacuate the space immediately and notify supervisor if atmospheric or other unsafe conditions arise

All sections of the permit confined space permit will be filled out that are applicable. Sections that are nonapplicable will be noted as N/A. Employees will sign on the permit as entrant and attendant. Supervisors will sign off as entry supervisor.

After employees finish work, permits will be returned to their supervisor who will file the permit with EHS.

Entering of Permit Required Confined Spaces by any Skidmore employee is prohibited without the expressed written permission by the Director or Assistant Director of Facilities Services.

CONFINED SPACE RESCUE TEAM:

Permit required entries will require an off-site confined space rescue team to be available onsite during entry. Unless the entry is an emergency, the rescue team must be notified and scheduled for services at least 72 hours in advance.

Skidmore College's available rescue teams:

- 1. Capital Technical Rescue, 22 Mill Street, Unit 2, Albany NY 12204, 518-930-4500
- 2. NRC, 4240 Albany Street, Albany, NY 12205 Phone: (518) 355-0197 www.nrcc.com

EMERGENCIES:

In the event of a non-life threatening emergency, notify Campus Safety immediately at 518-580-5566.

If emergency is life-threatening, first call 911 and then contact Campus Safety.

CONFINED SPACE ENTRY EQUIPMENT:

- QRAE 3 Wireless 4-gas Monitor. Detects oxygen (O2), hydrogen sulfide (H2S), carbon monoxide (CO) and methane (LEL). The monitor has a built in pump for remote sampling.
- Ventilation—Confined space blower at 1200 cfm.
- Retrieval system (Miller tripod and lifeline/winch).
- Harness.
- Lighting.
- Communication equipment if necessary.
- Ladders for safe access and egress from space.
- Permit and Alternate Procedure entries: Barricades to be placed around confined space entry area.
- Other Personal Protective Equipment, as needed.

DUTIES: AUTHORIZED ENTRANTS:

Those persons who have completed the training and are authorized to enter permit spaces (authorized entrants) are assigned specific duties and responsibilities which they must perform when they work in the permit space.

An Authorized Entrants duties and responsibilities include:

- Know the hazards that may be faced during entry, including information on what the, signs or symptoms, and consequences of the atmospheric exposure;
- Properly use equipment as required;
- Maintain direct 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;
- Alert the attendant whenever:
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - o The entrant detects a prohibited condition;

- Exit from the permit space as quickly as possible whenever:
 - An order to evacuate is given by the attendant or the entry supervisor,
 - The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
 - o The entrant detects a prohibited condition, or
 - An evacuation alarm is activated.

DUTIES: ATTENDANTS:

Those persons who have completed the training and have been designated as permit space attendants are assigned specific duties and responsibilities which they must perform when they work in the permit space.

Attendants' duties and responsibilities include:

- Know the hazards that may be faced during entry, including information on the, signs or symptoms, behavioral effects and consequences of an atmospheric exposure
- Maintain visual contact of authorized entrant(s) in the permit space
- Remain outside the permit space during an entire entry operation unless relieved by another qualified attendant
- Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space
- Monitor activities inside and outside the space to ensure constant safety
- Monitor space to determine if it is safe for entrants.
- Attendant may order immediate evacuation of the entrant(s) when following conditions arise:
 - o If the attendant detects a prohibited condition
 - o If the attendant detects the behavioral effects of hazard exposure in an authorized entrant
 - If the attendant detects a situation outside the space that could endanger the authorized entrants
 - o If the attendant cannot effectively and safely perform all the duties required
 - o Conditions in the space change that may impact safe operations
 - o Continuous monitoring and or continuous ventilation required cannot be performed
- Summon rescue and other emergency services if authorized entrants need assistance to escape from a confined space.
- Assist rescue team with non-entry rescue using the tripod system
- Support entry rescue efforts

DUTIES: ENTRY SUPERVISORS:

Those persons who have completed the training and have been designated as permit space entry supervisors are assigned specific duties and responsibilities that they must perform in permit and alternate method confined space job duties. Entry Supervisors are not required for Non-permit spaces.

Entry Supervisors' duties and responsibilities include:

• Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;

- 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
- For permit spaces: verify that rescue services are available and that the means for summoning them are operable
- Terminates the entry and cancels or suspends the permit as required:
 - Cancel the entry permit when the entry operations covered by the entry permit have been completed; or
 - Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it; and
 - Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is not covered by paragraph (e)(2) of this section.
- Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations
- 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.
- Ensures the Confined Space Assessment and Inventory is referenced
- The permit is properly utilized and completed
- Proper equipment is used, procedures are followed ant the permit is filed with EHS.

CONTRACTORS:

Unless a contractors' written Confined Space Entry Program meets or exceeds standards written within this program, all contractors will be required to follow Skidmore College's Confined Space Entry Program. Contractors required to enter any of Skidmore's confined spaces will be required to submit proof of training prior to entry.

Any contractor attempting to enter a Skidmore confined space must:

- 1. Have received proper confined space entry training for their employees
- 2. Have a written confined space entry program
- 3. Sign the Contractor Safety Agreement

Skidmore College will provide contractors access to the confined space inventory specified in this program prior to entry.

SKIDMORE

CONFINED SPACE ENTRY PERMIT												
	Permit-Required Confined Space Entry*				ntry Approach 🛛 🗌 Non-Permit Space Designation							
3	Project N					Work Order Number:						
VIE	Location of W											
RE	Confined Space Inventor											
RD	Description of W	/ork:										
GENERAL INFORMATION AND HAZARD REVIEW	Classification Comments: (i.e. Isolation of energy sources performed to declassify space, continuous ventilation and monitoring performed to use Alternate Entry procedures)											
	Rusting metal-Low Oxygen hydrogen Leaking nitrogen, carbon dioxide, helium, argon & other inert gas lines – Low Oxygen Leaking nitrogen, carbon dioxide, helium, argon & other inert gas lines – Low Oxygen Leaking natural gas, hydrogen, acetylene, propane and other flammable gas line s-Flammable Atmosphere (high LEL) Weldir Flammable atmosphere (high LEL) Engine exhaust/burning-Carbon Monoxide (CO) *Equip			er gas-Flammable from methane, toxic from en sulfide, Flammable & Toxic from illegally ged chemicals ing underground fuel tanks infiltration into vaults & pits – Flammable & Toxic ding/Torch Cutting-Toxic (carbon monoxide), ible (acetylene), & high or low Oxygen heres ipment energy sources-Physical hazards (shock, ement, moving parts)				 *Dangerous internal configuration *Falls >6'-Near unprotected edge or hole *Loose materials such as sand, grain & sawdust- Physical Hazard (engulfment) *Sudden changes to water flow or level – Physical Hazard (drowning) *Steam piping & hot surfaces – Physical hazards (thermal burns, obstruct vision) Other: 				
SAFETY CHECKLIST	 CHECK (✓) EACH QUESTION: YES or Not Applicable 1. Has all equipment that could cause electric shock or injury from moving parts been locked & tagged by each entrant? 2. Is process piping isolated and locked & tagged by each entrant per facility owner and/or standard operating procedures? 3. Has vessel/piping been drained, cleaned or purged? 4. Has a hot work permit been issued and are all fire prevention controls 			YES	6. / 7. tra 8. f 9. E	CHECK (✓) EACH QUESTION: YES or Not Applicable YES NA 6. Are cave-in, engulfment & drowning hazards controlled? 7. Have precautions been taken to control vehicle and pedestrian traffic around the confined space entrance? 8. Rescue team has been notified? (*Required for permit spaces) 9. Emergency contact number has been identified:				NA		
s	in place? 5. Can sparks ignite material in vicinity, sewers, lower floors?				been reviewed: Verbal Radio Other:							
	CHECK (*) ALL SAFETY EQUIPMENT NECESSARY Goggles Rubber Boots			1	(Minimum PPE – hard hat, safety glasses and safety shoes) Grounding Equipment Retrieval Equipment – tripod/winch				nch			
SAFETY EQUIPMENT	Face Shield	Half-face Resp	irator	Non-sparking Tools			n.	+	Retrever Equi	pinent apou, a	nen	
Md	Un-coated Tyvek Suit	Full-face Respi	rator	Vapor/Explosion Proof Light			Harness with Retrieval/Tether Line			ine		
II.	Tychem QC Suit	Air-line Respira	Fire Extinguisher			Ventilation Equipblower & duct			ct			
EQ	Tychem SL (Saranex) Suit	Safety Belt/Ha	Water hose			(required for alternate entry)						
Tγ	Acid Suit		Ladder/Scaffold			Barricades & Signs			Cut-Resistant (Kevlar) Gloves			
AFE	Plastic Apron Nitrile or Vinyl Gloves	Lockout/Tag o GFCI	ockout/Tag out equipment		Communications Equipment Probing Staff (for water depth)			Refer to the JSA for PPE and safety equipment needed for 1 and 6 inc				
SI	Nittine of Virty Gloves	Grei			riobing	Starr (TOF Wa	ter depuij		line repair		nen	
	Monitoring Instruments Used:						Calibration		2			
RING	Personal Protective Equipment:			Freque				ncy of Testing:				
	Time	% of LEL <10%	O ₂ % >19.	5%/23 59	0	CO <50 ppm Toxi		xic Toxic		Initial		
MONITC		,	02/07251	5,0725.5.		oo ppin			TOME			
NO												
Σ										A		
AIR										2		
1.000			4				04			Δ		0
A pre-ei necessa	NT & ATTENDANT REVIEW & PRE-EN ntry briefing is REQIORED. Entrants a nry for safe entry by the Entry Superv rk practices. Persona have been inst	ind Attendants ha isor. The briefing	ave been notified also includes a r	d of haza eview of	rds in the w emergency iditions.	ork area an						
Entrant:	Print	Sign			Attendant	Print			Sign			
Entrant:	Print	Sign	1		Attendant Print			Sign				
Entrant:	Entrant: Print Sign			Attendant Print			Sign					
1 N.M.X. 108 - 202	SUPERVISOR/PERMIT AUTHORIZATIO	DN						Conc. 217 No. 234		shift maximum)		
Print sign								Entry date://				
Print sign							Start Time::					
Print			sign							; (nem	ermit expires)	
								ae	-		exp	/

Step #	Process	Complete
1	Determine if space is Permit required, non-Permit.	
2	Can space be qualified as Alternate Procedure space?	
3	Fill out Confined Space Entry Permit	
4	Isolate the Space from all hazards	
	a. Remove unauthorized personnel form the site of entry	
	b. LOTO	
	c. Barracade work area	
5	Ventilate the space (if required)	
6	Evaluate the space	
7	Test the atmosphere	
	a. Enter atmosphere readings on the permit	
	b. Place the completed permit on or near the PRCS	
8	Get ready to enter the space and proceed with work	
	a. Is Supervisor available?	
	b. Attendant at the entry site	
	c. Harness	
	d. Required PPE	
	e. Retest atmoshpere as needed / required	
9	When the job is done:	
	a. Remove all personnel, tools and debris from the space.	
	b. Close the space	
	c. Cancel the permit	
	d. Review the job with the employer (hazards, problems, etc.)	
10	File the completed and closed permit	

SKIDMORE Confined Space Entry Procedure Checklist

SKIDMORE JOB HAZARD ANALYSIS FORM						
Job Name:			Project Supervisor:			
Location of Work:			Description of Work:			
Date:	Work Order#:					
Recommended Personal Protective Equipment (PPE): Eye Protection Goggles/Glasses Reflective Clothing Safety Footwear Hard Hat Coveralls Chemical Gloves Latex/Nitrile Gloves Cut Resistant Gloves Respirator Hearing ProtectionSafety GlassesOther (list)						
JOB STEP	POTENTIAL HAZARDS	PREVENTATIVE/CORRECTIVE ACTION				