

State of Iowa Department of Corrections

Policy and Procedures

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Chapter 3: INSTITUTIONAL OPERATIONS

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Subject: CONFINED SPACE ENTRY PROGRAM

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1. PURPOSE

To describe the procedures that the Iowa Department of Corrections (IDOC) institutions shall use to ensure the protection of employees and contractors from hazards of entry into confined spaces.

2. POLICY

It is the policy of the IDOC to have in place in each of its institutions a confined space entry program. The provisions of this program apply to all staff and contractors working at an IDOC facility whose duties involve entry into, or work around, confined spaces.

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3. DEFINITIONS

- A. Blinding/Blanking - Inserting a solid barrier across the open end of a pipe leading into or out of the confined space and securing the barrier in such a way to prevent leakage of material into the confined space.
- B. Certified Safe Alternate Entry - Alternate Procedures are allowed for entry into a permit space where the only hazard is an actual or potential atmospheric hazard that can be maintained safe for entry with continuous forced air ventilation alone. Alternate Entry still requires a permit to enter the PRCS.
- C. Confined Space - A space which 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 (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and is not designed for continuous employee occupancy. An evaluation shall be conducted to determine if any spaces are permit required confined spaces. There are two different types of confined space classifications:
 - 1. Non Permit Required Confined Space - A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious harm.

2. Permit Required Contined Space (PRCS) - Atleast one of four conditions must exist in a confined space before it is considered a Permit-Required Space:

- a. Contains or has a potential to contain a hazardous atmosphere. Oxygen deficient or enriched, flammable, combustible, explosive, or toxic.
- b. Contains a material that has a potential of engulfing an entrant (i.e., sand, coat, water, grain)
- c. Has an internal configuration such that an entrant could be trapped or asphyxiated
- d. Contains any other recognized serious safety or health hazards.

D. Engulfment - The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

E. Entry - The action by which a person passes through an opening into a permit required confined space. This occurs when any part of the body breaks the plane of an opening into the space.

F. Entry Supervisor - The person "such as the employer, forman, or crew chief" responsible for the determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this policy.

Also may serve as the attendant or as an authorized entrant, as long as that person is trained and equipped as required by this section for each role he/she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

G. Hazardous Atmosphere - An atmosphere that may be, or is injurious to occupants by reason of oxygen deficiency, enrichment, flammability, explosiveness or toxicity.

H. Hazard Evaluation - A process to assess the severity of known, real or potential hazards in a confined space.

- I. Hot Work - Work within a confined space that may produce hot areas, sparks, flames, heat or other sources of ignition.
- J. Isolation - A process of physically interrupting or disconnecting pipes, lines, and/or energy sources from confined spaces.
- K. LEL/LFL and UEL/UFL - Acronyms for "lower explosive limit"/"lower flammable limit" and "upper explosive limit"/"upper flammable limit".
- L. Lockout/Tagout - The placement of a lock/tag on an energy isolating device in accordance with an established procedure.
- M. Oxygen Deficient Atmosphere - An atmosphere containing less than 19.5% of oxygen by volume.
- N. Oxygen Enriched Atmosphere - An atmosphere containing more than 23.5% oxygen by volume.
- O. PEL - An acronym for "permissible exposure limit" which is the allowable air contaminant level established by OSHA.
- P. Permit System - The permit provides written authorization for entering and working in confined spaces, clearly states all known or potential hazards and identifies the safety equipment required to insure the safety of the worker.
- Q. Purging - The method by which gases, vapors or other airborne impurities are displaced from a confined space.
- R. Standby Person/Attendant - A person trained in emergency rescue procedures and assigned to remain on the outside of the confined space and to be in communication with those working inside.
- S. Toxic Atmosphere - An atmosphere containing a concentration of a substance above the published safe levels.
- T. See IDOC Policy **AD-GA-16** for additional Definitions.

4. PROCEDURES

**A. Permit Required Contined Space (PRCS) Entry Permit (IO-SE-22 F-1,
Confined Space Entry Permit)**

1. An inventory shall be conducted to determine if any spaces are permit required confined spaces.
2. Each institution shall identify in their procedure the method of PRCS identification. All non secure PRCS shall be identified with appropriate signage. This may include A sign reading "DANGER Permit Required Confined Space, Do Not Enter".
3. An entry permit shall be utilized for all PRCS entries. All expired entry permits shall be retained for at least one year by the Supervisor. Copies of the expired permits shall be forwarded to the Safety Officer to facilitate the annual review of this program.
4. Before each entry into a PRCS, an entry permit shall be completed by the Entry Supervisor and communicated to the entrants.
5. The Safety Officer shall be informed of any PRCS entry, prior to entry.
6. The permit shall be in effect for one specific shift only, and only for the person(s) entering the PRCS .
7. Before each entry and re-entry in the PRCS, the following steps shall be followed:
 - a. Ensure atmospheric test results are within acceptable Permissible Exposure Limits (PEL).
 - b. Verify that all precautions and other measures called for on the permit are in effect.
 - c. Ensure that only operations or work originally approved on the permit are conducted in the PRCS.
8. When conditions or work activities are different than those specified on the permit and could introduce a new hazard to the PRCS , the permit shall be immediately revoked.
9. A new permit shall be issued whenever changing conditions or work activities introduce new health hazards into the PRCS.

B. Atmospheric Testing

1. Before entering into a PRCS appropriate testing shall be conducted.
2. Initial testing of atmospheric conditions shall be done with the ventilation system shut down.
3. Further testing shall be conducted with the ventilation system turned on to insure that contaminants are removed.
4. If the PRCS is vacated for any period of time, the atmosphere shall be re-tested before re-entry is permitted.
5. The atmosphere of the PRCS shall be considered to be within acceptable limits when the following conditions are maintained:
 - a. Oxygen content - oxygen content must be between 19.5% and 23.5%.
 - b. Explosive/Flammability - flammable gases or vapors must be less than 10% of the Lower Explosive Limit (LEL).
 - c. Toxic gases must be less than the recognized OSHA Permissible Exposure Limit (PEL).
 - d. Testing must be representative of the entire PRCS.
 - e. **Confined spaces that are found to be immediately dangerous to life and health shall not be entered.**

C. Standby Person/Attendant

1. Under **NO** circumstances shall any individual enter a PRCS without having a standby person posted outside. This person shall remain outside the PRCS unless relieved by another standby.
2. Standby personnel shall have the following duties which do not conflict with his/her primary responsibilities including, but not limited to:

- a. Provide assistance to occupants entering the confined space (i.e., handling tools and equipment).
- b. Initiate evacuation and emergency procedures.
- c. Maintain communication with occupants of the confined space.
- d. Handle lifelines if required.
- e. Knows the possible behavioral effects of hazard exposure in authorized entrants.
- f. Knows the hazards that may be faced during entry, including information on the mode, signs of symptoms and consequences of the exposure.

D. Duties of Entrants - All entrants shall:

- 1. Know the hazards that may be faced during entry, including information on the form, signs or symptoms and consequences of the exposure.
- 2. Properly use equipment as required (i.e., testing and monitoring equipment, ventilation equipment, personal protective equipment, barriers and shields, ladders, rescue and emergency equipment and any other equipment necessary for safe entry into and rescue from confined spaces).
- 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.
- 4. Alert the attendant whenever:
 - a. The entrant recognizes any warning signs or symptoms of exposure to a dangerous situation,
 - b. The entrant detects a prohibited condition,
 - c. An order to evacuate is given by the attendant or the entry Supervisor,

- d. An evacuation alarm is activated.

E. Reclassifying a Permit Required Confined Space

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.
2. Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.
3. The employer shall document on **IO-SE-22 F-1, *Confined Space Entry Permit***, the basis for determining that all hazards in a permit space have been eliminated.

F. Isolation and Lockout/Tagout

All energy and/or hazard sources must be controlled to prevent the unexpected energization, or start-up or release of stored energy or contaminants which may cause injury to workers in PRCS.

G. Hot Work

A Hot Work Permit must be obtained anytime hot work is to be performed in a PRCS.

H. Alternate Certified Safe Procedures

Alternate Safe Entry Procedures allow for limited entry to PRCS that exhibit atmospheric hazards that are unable to be eliminated. Entry requires forced mechanical air ventilation and continuous monitoring. The entrant shall wear a continuous air quality monitor.

1. Conditions for "Alternate Procedures" must demonstrate and document:
 - a. The only hazard posed by the permit space is an actual or potential hazardous atmosphere;
 - b. That continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry.

2. **IO-SE-22 F-2**, *Alternate Certified Safe Permit*, shall be issued when using Alternate Certified Safe Procedures.

I. Training

See **IO-SE-03**, *Safety and Health Program Management* for training requirements.

J. Duties of Entry Supervisors

1. Know the hazards that may be faced during entry, including information on the form, signs or symptoms and consequences of the exposure.
2. Verify, 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.
3. Terminate the entry and cancel the permit if all requirements are not adhered to.
4. Verify that rescue services are available and that the means for summoning them are operable.
5. Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
6. Inform the rescue service of the hazards they may confront when called in to perform entry rescue.
7. Provide the rescue service with access to all permit spaces from which rescue may be necessary so that rescue service can develop appropriate rescue plans and practice rescue operations.

K. Rescue and Emergency Service

1. The area Fire Department, if capable, shall provide rescue services that require rescue entry into a confined space. The Safety Officer shall contact Fire Department officials to determine if the Fire Department provides confined space rescue services.

2. Non-entry rescue shall be provided by trained IDOC personnel.
3. To facilitate non-entry rescue, man-rated retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk at entry or would not contribute to the rescue of the entrant.
4. Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head, or other approved device.
5. The other end of the retrieval line shall be attached to a man-rated mechanical device 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 man-rated mechanical device shall be available to retrieve personnel from vertical type permit spaces more than five feet deep.
6. If an injured entrant is exposed to a substance for which Safety Data Sheet (SDS) or other similar written information is required to be kept at the work site, that SDS or written information shall be made available to the medical facility treating the exposed entrant.