

Confined Spaces

WORKING WITHIN CONFINED SPACES

The purpose of this document is to assist in the identification and then establish a generic procedure for the safe entry into confined spaces.

Definitions and Abbreviations

Acceptable Entry Conditions	Conditions that must exist to allow entry and to ensure that Operatives involved with a confined space entry can safely enter into and work within the space.
Competent Person	An individual who has immediate knowledge of the subject, either by years of experience in the specific field, formal education, or specialized training pertaining to: • Job activity being performed • Operation and use of specific equipment • Potential hazards associated with specific jobs • Applicable Safety, Health and Environmental standards • Project HSE procedure pertaining to the tasks being undertaken
Confined Space	A confined space is defined as a space of any volume which is: • not intended as a regular workplace; • has restricted means for entry and exit; • may have inadequate ventilation and/or an atmosphere which is either contaminated or oxygen deficient; • is at atmospheric pressure during occupancy;

Confined spaces may include but are not limited to: storage tanks, process vessels, boilers, pressure vessels and silos open-topped spaces such as pits or degreasers;

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pipes, sewers, shafts, ducts and similar structures.

Contaminant any dust, fume, mist, vapor, gas or other substance in liquid or solid form, the presence of which may be harmful to health and safety.

Entry Attendant (Stand-By Person Emergency Response Initiator):

a competent person assigned to remain on the outside of and at the entrance to the confined space and capable of being in continuous communication with and, if practical, to observe those inside.

Flammable Range The range of a flammable contaminant (percentage by volume) in air in which an explosion can occur upon ignition. Expressed by lower explosive limit (LEL) and upper explosive limit (UEL).

Lower Explosive Limit the concentration of a containment in air below which the transmission of a flame does not occur on contact with an ignition source.

Safe Oxygen Level Minimum oxygen content in air of 19.5 percent by volume under normal atmospheric pressure and maximum oxygen content in air of 23.5 percent by volume under normal atmospheric pressure during occupancy.

Upper Explosive Limit the concentration of a containment in air above which the transmission of a flame does not occur on contact with an ignition source

Responsibilities

The following personnel have responsibilities mentioned in this document:

Project Manager Ensure full compliance with the requirements of this procedure Line Managers / Implement controls and arrange training.

Supervisors Conduct workplace inspections and enforce compliance.

HSE Officer Audit and monitor compliance with this procedure;

Identify remedial corrective actions required to meet the Confined Space Entry procedure;

Act as Authorised Gas Tester where an independent person has not been identified. Barring that he has the necessary confined space entry Gas Detection Training Course deemed as a Required of Authorized Gas Tester.

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Authorised Gas Tester (AGT) The AGT should have been deemed a 'Competent Person' as defined in Section 3 of this procedure;

The AGT must have successfully completed an appropriate Confined Space Entry or Gas Detection training course. The AGT is responsible for verifying that testing equipment is in calibration and conducting testing in accordance with permit requirements. The AGT should be independent of the Confined Space entry team

Entry Supervisor

The Entry Supervisor is responsible for ensuring the safety of all entrants before entry, through identification and control of all entry hazards; during entry by enforcing all permit requirements and authorizes entry by verifying and signing the permit.

The Entry Supervisor should be nominated by the Project Manager as a designated competent person. The entry Supervisor must have completed a Confined Space Entry training course.

The Entry Supervisor's responsibilities include:

Verifying the requirements of this Instruction are in place and undertake the role of Permit Holder;

Knowing the hazards that may be faced during entry and consequences of exposure and be fully conversant with the roles, responsibilities and tasks of this position;

Verifying that the atmospheric testing requirements documented on the Permit have been conducted;

Verifying all procedures and equipment specified by the Permit are in place before accepting the Permit and allowing entry to begin;

Complete a Job Safety & Environmental Analysis (JSEA) and discussed with all concerned;

Terminate the entry when either the entry operations covered by the entry permit have been completed or a condition that is not allowed under the entry permit arises in or near the confined space;

Verify that Emergency Response rescue services are available and that the means for summoning them are operable;

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Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations;

At the completion of shift, ensure that:

- The site is left in a clean and safe condition;
- All personnel have departed the confined space; (Head Count)
- All entry points are barricaded and signposted;
- Any gas cutting equipment is removed;
- All personnel have removed their Lock-out Facility.

At the completion of work ensure that a closure inspection is undertaken with the Department Manager.

Entry Attendant / Exit Spotter Entry attendants should have attended a Confined Space Training course approved by the Project Manager and be designated as a 'Competent Person' as defined in Section 3 of this Instruction.

Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure; monitor rescue rope

Is fully conversant with the roles, responsibilities and tasks of this position;

Continuously maintains an accurate count of authorised entrants in the confined space and ensures that all personnel are recorded entering and leaving the confined space on the Confined Space Entry/Exit Log;

Remains outside the Confined Space during entry operations until relieved by another attendant and under no circumstances enter the confined space or attempts a rescue; only monitors a rescue rope.

Communicates with authorised entrants as necessary to monitor entrant status, and to alert entrants of the need to evacuate the space if required;

Verifies operation of any radios used to maintain communication;

Ensure emergency radio channel protocol is understood and followed;

Initiates Emergency Response (if required);

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Once the Confined Space is vacated, ensures that any access to the space is barricaded off and 'No Entry' signs placed;

Monitors activities inside and outside the Confined Space to determine if it is safe for entrants to remain in the space and orders the authorised entrants to evacuate the confined space immediately under any of the following conditions:

- if the attendant detects a situation outside the space that could endanger the authorised entrants;
- If the attendant detects the behavioral effects of hazard exposure in an authorised entrant;
- If the attendant cannot effectively and safely perform all of the above duties;

Not perform any duties that might interfere with the attendant's primary duty to monitor and protect the authorised entrants.

All persons acting as attendants at confined spaces are medically fit and have been selected for their physical ability, sense of responsibility and competence in the use of equipment involved.

Authorised Entrants

Authorised entrants should have attended an approved Confined Space Entry training course and be competent in the following:

Know the hazards that may be faced during entry, and consequences of the exposure;

Follow the identified safe working procedures;

Safe use of the equipment being utilized in the confined space;

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 where required;

Alert the attendant whenever the entrant recognizes any warning signs of exposure to a dangerous situation;

Exit from the Confined Space as quickly as possible whenever an order to evacuate is given by the attendant or the Entry Supervisor;

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Procedure

Nominated Confined Spaces

Project Managers should ensure that all confined spaces are identified and clearly labelled. A register of confined spaces should be maintained on the project site. Demarcation or a drawing as means of Identifying.

Entry into a Confined Space

Entry into a confined space is prohibited unless a Job Safety Analysis has been completed and discussed with all concerned and a current Confined Space Entry Permit has been issued in accordance with this Instruction. Refer F01 Confined Space Entry Permit.

Training

All personnel involved with confined space entry should undergo a confined space entry training session. This includes Entry Attendant, Entry Personnel, Authorised Gas Tester and Entry Supervisor. The training should be recorded and maintained on file.

Access

- a) Access openings into the confined space must permit rescue of all personnel who enter the confined space. These access ways (in and out) must be kept clear of any obstructions.
- b) It may be necessary to provide scaffold platforms and stairs or ladders to the access levels to gain safe convenient access for work or rescue purposes.
- c) Internal scaffold landings may also be required.

Atmospheric Testing

- a) As a minimum, an Authorised Gas Tester should perform an atmospheric test prior to entry at the commencement of each shift and record the result in the relevant section of the Confined Space Entry Permit;
- b) The Department Manager should identify the frequency of ongoing atmospheric tests if the nature of the confined space or the work being performed indicates this is warranted. Ongoing atmospheric tests results should be recorded by the Authorised Gas Tester on the Confined Space Entry Permit;

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- c) As an absolute minimum, oxygen content will be tested each atmospheric assessment. Other contaminants potentially present should be tested prior to entry and when any repeat atmospheric tests are required;
- d) Prior to entry, the atmosphere of a confined space must meet the following minimum requirements:
 - i. The oxygen level in air (by volume) is between 19.5 percent and 23.5 percent under normal atmospheric pressure during occupancy;
 - ii. Any explosive contaminant concentration is less than 5% of Lower Explosive Level (LEL)
- e) Continuous atmospheric monitoring may be required and will form part of the requirements of the Confined Space Entry Permit if deemed necessary.

Communication

- a) Adequate means of communication between people inside the confined space and the confined space Entry Attendant are essential.
- b) The Entry Attendant must ensure that communication with personnel inside the confined space is maintained at all times to allow a call for assistance, including:
 - i. Maintaining visual or verbal contact;
 - ii. The use of life line signals;
 - iii. The use of hand held radios. All hand held radios must be tested by the confined space Entry Attendant prior to entry;

Signs

Signs stating, 'Confined Space – No entry' should be displayed across all access locations into the confined spaces prior to (and during) personnel entry, and throughout confined space operations while any normally closed entrances are open.

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Electrical Equipment in Confined Spaces

If electrical equipment must be used, then the following precautions should be taken:

- i. 32v lighting is to be used;
- ii. All cables of electrical equipment required in a confined space should be provided and fed through a portable earth leakage unit located immediately outside the confined space;
- iii. Where possible, electrical, welding and cutting equipment leads should be fed into the confined space via a location other than those used for access / egress;
- iv. Equipment should be disconnected and removed from the confined space when not in use (including meal breaks etc).

Isolation

- a) Any pipelines to the confined space (e.g. tank, vessel etc.) should be positively isolated by blinding (or other appropriate means) as near as possible to the confined space.
- b) Electrical equipment associated with the confined space should be isolated and locked / tagged out. Refer to Lock out Tag out procedure.
- c) Prior to the issuing of a Confined Space Entry Permit, all blinding points and electrical lockout points should be tagged by the Supervisor responsible for the area and witnessed by the person issuing the

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Entry Attendant (Spotter)

- a) An Entry Attendant must be positioned at the single designated entry point to the confined space prior to any entry, during entry and during the entire occupation of the space.
- b) The Entry Attendant is responsible for ensuring that only authorised personnel enter a confined space.
- c) Under no circumstances should the Entry Attendant enter the confined space or attempt a rescue.
- d) The Spotter, while undertaking the duties, should be identified by the wearing of a orange vest and yellow hard hat.

Emergency Rescue

- a) Emergency rescue plans should be clearly detailed and instructions given to all personnel involved in the confined space activity as part of the initial process.
- b) Emergency rescue equipment should be provided in a convenient location and readily accessible in the event of an emergency.

Ventilation and Extraction Equipment

Where the activities being undertaken inside the confined space have the potential to produce additional hazards such as fumes, reduction in oxygen levels, etc., mechanical extraction equipment may be required to ensure oxygen and gas levels etc. remain at a satisfactory level.

Oxygen/Acetylene Equipment

The use of oxygen / acetylene equipment is discouraged inside a confined space. Where it is necessary, the following safe guards should be used:

- i. Wet blankets;
- ii. All flammable materials must be removed prior to the use of equipment;
- iii. Normal fire prevention measures must be taken;
- iv. Fire extinguishers located at access / egress points.

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- v. Flash Back arrestors installed as Equipment.

Confined Space Entry Permits

- a) The Department Manager and / or representative should be responsible for the issue and control of confined space entry permits and monitored by the HSE department.
- b) All requests for entry into a confined space should be made to the Department Manager and approved by the Safety officer
- c) The Confined Space Entry Permit should be displayed in a waterproof cover at the main access and egress location of the confined space.
- d) The Confined Space Entry Permit should display an expiry date. The permit should expire at the completion of the activity or at the date displayed (whichever occurs first).
- e) A logbook should be maintained of all issued Confined Space Entry Permits. Permits should be individually numbered. Completed permits should be maintained on file.

Confined Space Entry Permit Closure and Hand Over

- a) At the completion of all work associated with the Confined Space Entry Permit and prior to the closure of the confined space, the Permit Issuer should inspect the confined space to ensure it is ready for closure.
- b) All Confined Space Entry Permits should be returned to the Department Manager / HSE Dep't. at the completion of the activity or the expiration of the permit