

This is an extract from IOGP Report 577 - Fabrication site construction safety recommended practice - Hazardous activities, version 1.2 published November 2018. IOGP Reports are subject to regular review and update. In all cases only the current version of Report 577 is authentic.

## 2. Confined space entry

**Confined spaces are enclosed or partially enclosed spaces that are not designed or constructed for continuous human occupancy, have limited or restricted means for entry or exit, and where there is risk of injury or illness from hazardous substances or conditions. Confined spaces include, but are not limited to, underground vaults, tanks, storage bins, manholes, pits, silos, process vessels, pipes and tubulars. Constant vigilance is required during construction to recognize and manage new confined spaces which may be created, including entering tubulars/piping for testing or inspection.**

- 1) Carrying out work activities in confined spaces is avoided wherever possible.
- 2) There is a documented confined space entry procedure that describes work and permit authorization processes.
- 3) Pre-entry planning considers and ensures where applicable the following:
  - the risks and necessary measures for when atmospheric oxygen content differs from normal (20.9%)
  - that ventilation and air extraction system are in place and used when natural ventilation is not adequate
  - gas/atmospheric testing and its frequency
  - that communications are in place and tested between workers and watchman/attendant
  - that Personal Protective Equipment evaluation and its use is relevant for the work being done
  - that an escape/rescue plan is in place
  - that emergency response plan and equipment is in place at the workplace
  - that the emergency team is trained, equipped and available for rescue and First Aid
  - that the required firefighting equipment is available
  - the equipment and tools to be used are checked prior to use
  - the low voltage and/or ground fault protected equipment and lighting inside the confined space
  - that spray painting in confined space addresses additional measures as described below
    - Engineering controls such as ventilation to prevent worker exposure to hazardous atmospheres
    - Personal protection as described in PPE section for vapor and chemical exposure
    - Grounding or bonding for Arcing/sparking potential from equipment
    - Hazardous atmosphere or intrinsically safe rating for energized equipment/systems/wiring

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- the identification and verification of isolation needs
  - the location of breathing air sources
  - the location of inert or hazardous gas sources (bottles or packs)
  - the location of generators or equipment with engine exhaust.
- 4) Gas monitoring/atmospheric testing is carried out and recorded by Authorized Gas Tester prior to the commencement of, and during, the work. Gas monitoring/atmospheric testing is in place during work activities in accordance with the Job Safety Analysis and at least after every break, after lunch and at the beginning of a new work shift, or if the atmosphere inside the confined space is expected to change during work activities (e.g. during welding operations).
  - 5) Clear communication is maintained between the entrant and the watchman (attendant), e.g. voice, radio, pre-arranged signals and whistles.
  - 6) All entries into confined spaces are controlled with a confined space entry permit through the Permit to Work system. Each permit applies to a single confined space.
  - 7) All the potential hazards (e.g. hazardous atmosphere, fire, falls, snags, congestion, release of hazardous energy, migration of hazardous products, fatigue, temperature) and acceptable entry criteria have been identified and recorded on the pre-entry plan, Job Safety Analysis and permit; and the controls to safely enter and exit confined spaces are in place.
  - 8) Simultaneous operations relating to confined space entry are identified and addressed.
  - 9) There is a means of controlling all potential entry points, including labelling, signage and barricading, a tag system to account for all entrants that is managed at the access point of the confined space.
  - 10) Isolation requirements are verified through Permit to Work and Lock-out Tag-out procedures.
  - 11) Pre-entry meetings, attended by all personnel involved in confined space entries, are held in order to review the Job Safety Analysis and the confined space entry permit to ensure that all measures are implemented, isolation points in place and gas detection done prior to authorizing the work to start and entry.

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- 12) All personnel with roles and responsibilities in the planning, approval, execution, and monitoring of entry into confined spaces are trained in a language they understand, including (but not limited to):
  - Entry supervisors
  - Authorized entrants
  - Watchmen (attendant)
  - Permit coordinators
  - Permit approvers
  - Authorized Gas Tester
  - Emergency/Rescue team.
- 13) Confined space is attended by a trained and competent watchman (attendant) with no other duties, typically one per entry point. One watchman on two or more confined spaces is possible if all confined space entry points they are responsible for are visible from one standing point of the watchman, and the watchman is able to perform their responsibilities for all confined spaces they are responsible for.
- 14) Utility lines (e.g. oxygen and gas hoses) are disconnected or removed when not in use – this is verified by entry Supervisor in charge and double checked by the watchman (attendant).
- 15) Permit to Work is closed after completion or suspension of the confined space work, and a means of preventing re-entry is established.

### Relevant IOGP Life-Saving Rules, Report 459



Obtain authorisation before entering a confined space



Work with a valid permit when required



Control flammables and ignition sources