



Works in confined spaces

Mostly relevant for cleaning, maintenance and repair operations, working in quarries or sand and gravel pits in many cases entails entering confined spaces. Although not as frequent as other hazardous situations, injuries in confined spaces are usually severe due to the particularities of the area.

Confined space can be characterised any place (e.g., silo, tank, pit) of substantially (though not necessarily entirely) enclosed nature, in which a reasonably foreseeable specified risk may arise. With relation to occupational needs, confined spaces have adequate size for workers to enter and perform certain tasks, have limited points of entry/egress and are not designed for continuous work.

With the appropriate designing and implementation of a safe system of work, companies can minimise the occupational risks for the workers, while ensuring the unobstructed continuity of their operations.



Why is it important to tackle works in confined spaces?



Working in confined spaces constitutes an essential part in the working life of many employees in the aggregates industry. However, on many occasions, people of the sector do not fully comprehend the specificities of a confined space and underestimate the perils involved. Potential hazards include (but are not limited) to:

- Flammable substances and oxygen enrichment
- Excessive heat
- Toxic gas, fume or vapour
- Oxygen deficiency
- The ingress or presence of liquids
- Solid materials which can flow
- Excessive stress.

Among others, reported cases comprise loss of consciousness, serious injuries and loss of life (e.g., from drowning or asphyxiation). Considering all these aspects, employees must be very attentive and respect all precautionary health and safety measures, while employers must guarantee that such measures are clearly defined and dutifully implemented.



What do Employers have to do?

Avoidance

To eliminate health and safety issues, workers should be prevented from entering confined spaces unless reasonably necessary to achieve a purpose. To that direction, measures taken may include the modification of the space or the introduction of tools and processes which allow workers to carry out activities outside the space (e.g., camera inspection).

Risk assessment

If entrance to a confined space is reasonably unavoidable, a competent entity should assess the risks for all workers and any others affected by their working activities, when entering and working in that space. The competent entity should take into consideration the following factors:

- Previous contents
- Residues
- Contamination
- Oxygen deficiency and oxygen enrichment
- Ingress of substances
- Physical dimensions
- Cleaning chemicals
- Sources of ignition
- Increasing temperature

Safe system to work & permit-to-work

When designing a safe system to work, the employer shall take the following protective measures:

- Emptying & Isolation & Ventilation & Clearance of confined spaces
- Respiratory Protection
- Avoidance of hazards caused by an oxygen deficit/excess
- Avoidance of the incidence of explosive atmospheres/mixtures
- Avoidance of sources of ignition
- Protection against high and low temperatures
- Protection against mechanical/electrical hazards
- Protection against falls from a height
- Protection against sinking or engulfment
- Protection against health hazards arising from increased physical/mental stresses

To ensure that all workers are aware of the hazards involved and a formal in writing checklist describing all protective elements of a safe system of work is in place, a permit-to-work shall be developed.

Emergency procedures

Working in confined spaces must be accompanied by specific emergency arrangements. More specifically:

- Rescue and resuscitation equipment
- Safeguarding the rescuers
- Fire safety
- Public emergency services
- First aid
- Control of plant
- Training of workers



EXAMPLES

National Examples (non exhaustive list):

- **Bundesverband Mineralische Rohstoffe (MIRO), Germany:**

German companies benefit from a wide range of resources when it comes to safety measures for works in confined spaces, provided by MIRO, other trade associations, insurance companies and the government (some publications are available in English as well):

- A 4.5 Arbeiten in engen Räumen – Berufsgenossenschaft Rohstoffe und chemische Industrie
- Mitführbare Anschagvorrichtung für Persönliche Schutzausrüstung gegen Absturz – Förderpreis Arbeit Sicherheit Gesundheit 2011 Persönliche Schutzausrüstung
- Vessels, silos and confined spaces – Deutsche Gesetzliche Unfallversicherung, DGUV Regel 113-004, February 2020

- **Mineral Products Association (MPA), United Kingdom:**

- Best Practice. Thinking outside the confined space, 2008
- Best Practice. Eliminating confined space working for maintenance of septic tank pump, 2013
- Incident Alert. 00182 – Identification of a Confined Space, July 2008
- Safe work in confined spaces, Confined Spaces Regulation 1997 – Approved Code of Practice and guidance, HSE
- Tool Box Talk. Working in Confined Spaces – Foster Yeoman
- Tool Box Talk. Working in Confined Spaces – CEMEX UK

- **HeidelbergCement Group, United Kingdom:**

- Confined/Restricted Space Entry Permit, 2019
- Confirmed Space Permit Book, 2019

- **Federación de Áridos (FdA), Spain:**

Integrates good practices on the topic in their following publications:

- Prevención de Riesgos Laborales en Plantas de Tratamiento de Áridos - ANEFA
- Prevención de Riesgos Laborales en Trabajos de Mantenimiento - ANEFA





Find out more

EU law

Framework Directive: 89/391/EEC Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:01989L0391-20081211> (23 languages).

Directive: 89/654/EEC of 30 November 1989 of 30 November 1989 concerning the minimum safety and health requirements for the workplace (first individual directive within the meaning of Article 16 (1) of Directive 89/391/EEC) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31989L0654> (23 languages).

Directive: 89/655/EEC of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31989L0655> (23 languages).

Directive: 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace (third individual directive within the meaning of Article 16 (1) of Directive 89/391/EEC) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:01989L0656-20070627> (23 languages).

Directive: 90/269/EEC - manual handling of loads of 29 May 1990 on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (fourth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC): <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31990L0269> (23 languages).

Directive: 90/270/EEC of 29 May 1990 on the minimum safety and health requirements for work with display screen equipment (fifth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC): <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31990L0270> (23 languages).

Directive: 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organization of working time: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32003L0088> (23 languages).

Directive: 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32006L0042> (23 languages).

Directive: 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0104> (23 languages).