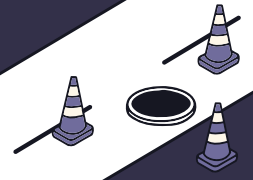


Confined Spaces



Confined Spaces are "enclosed or partially enclosed spaces not intended for human occupancy" (AS 2865). They pose significant risks due to poor access and environmental, chemical, biological, energy, or impact hazards.

Awareness of hazards:

The confined environment is poorly accessed and may involve working at height. Atmospheric hazards include toxic atmosphere. High oxygen levels risk fire and explosion. Low oxygen levels or airborne chemicals can incapacitate or asphyxiate. Spaces may have contained or rising liquids, or free flowing materials. Working inside plant and machinery can present energy or impact hazards. Spaces may contain biological pathogens. Examples are storage tanks, boilers, silos, pits, pipes, sewers, shafts, and ducts.

Health hazards expose workers to stress, noise, heat, biological pathogens and chemicals.

Understanding risks:

Complex work environments add significant safety risks to the work being performed. Risks include suffocation, intoxication, entrapment, impacts, falls, fire, explosion, engulfment, and drowning.

Eliminate or minimise risks (examples):

Risk controls focus on either the hazard or the behaviour of workers and others.

- **Eliminate the hazard.** Removing hazardous materials or atmosphere before work starts.
- **Substitute the hazard.** Robotics and remote devices. Choosing safe chemicals (SDS).
- **Isolate the hazard.** Isolation zones. Machinery lockout devices. Disconnect power source.
- **Use engineered modifications.** Breathing and rescue equipment.

Focusing on human behaviours include:

- **Administration of safe systems of work.** Training. Health monitoring. Task analyses. Monitors and sensors.
- **Personal protection equipment.** PPE. Communication and monitoring devices (worn).

Because access may be needed under emergency conditions there is a significant danger for rescuers. Confined work should be done under a **permit system**.

Worker health also affects safety. Medical conditions, mental impairment, sensory disability, and physical mobility affect **perceptions, decisions, and responses** to danger.

Atmospheric monitoring is key to assessing explosion and suffocation risks. **Rescue plans**, personnel and equipment (often extraction by a tripod and harness system). Rescues must be rehearsed and immediately **deployable**. PPE may include full breathing apparatus (BA).

Safe behaviours mean being mentally and physically fit for risky work. Pre-start checks ensure equipment is certified and in good working order. Spaces should be ventilated, flushed, emptied or cleaned for entry. **Unsafe behaviours** include ignoring or tampering with **lockout devices** or working alone, or when unwell.