

## **PURPOSE**

The purpose of this document is to provide a generalised appreciation for some of the potential hazards when working in a confined space.

## **INTRODUCTION**

Working in confined spaces requires personnel to be highly trained, experienced and hold the appropriate qualifications to ensure the health, safety and welfare of people working in these potentially lethal environments. Persons without the appropriate skills should never enter a confined space. The standard AS/NZS 2865:2001 outlines the requirements and procedures to ensure the well being of persons required to work in a confined space.

## **CONFINED SPACE HAZARDS**

The confined space must be checked for potential hazards prior to any staff entering it.

Confined spaces can contain many hazards that are not always immediately obvious. Experience has shown that conditions inside a confined space may change without the occupant's knowledge.

Some of the hazards to consider are:

- Oxygen deficiency in the confined space which may be caused by:
  - slow oxidation reactions of either organic or inorganic substances
  - rapid oxidation (combustion)
  - dilution of air with an inert gas
  - absorption by grains, chemicals or soils
  - physical activity
- Oxygen excess in the confined space which may be caused by a leaking oxygen supply fitting such as in gas cutting or heating equipment
- The presence of contaminants on surfaces or in the atmosphere. Contaminants may be in the form of solids, liquids, sludges, gases, vapors, fumes or particulates. The source of atmospheric contaminants encountered may include:
  - the manufacturing process
  - substances stored or by-products (e.g. disturbing decomposed organic material in a tank can liberate toxic substances such as hydrogen sulphide, while biological hazards such as bacteria, viruses and fungi may also be present)
  - operation performed in the confined space (e.g. painting with coatings containing toxic or flammable substances and welding or brazing with metals capable of producing toxic fumes)
- Operation of moving equipment (e.g. being trapped by augers, crushed by rotating or moving parts such as conveyor belts)
- Uncontrolled introduction of steam, water, or other gas or liquid
- Suffocation by solids (e.g. paint dust from surface preparation, grain, sand, flour and fertiliser)
- Electrocutation
- Explosion or fire
- Sources of ignition generated from sources such as welding heat or sparks, friction or static from tools or clothing, lighting, electrical equipment and hot surfaces

Additional factors undertaking work in confined spaces may greatly increase the risk of injury from hazards, such as:

- Noise, which may be caused by hammering or the use of equipment within the confined space
- Temperature, either high or low which can result from the work process or the weather conditions, or where appropriate ventilation or appropriate clothing is not supplied or worn
- Radiation within a confined space e.g. from x-rays, radiation, gauges, isotopes, lasers and welders)
- Manual handling
- Falls, trips and slips

#### **PERSONAL PROTECTION EQUIPMENT**

All types of personal protection should be considered and will vary depending upon the task to be performed, e.g. clothing/skin protection, breathing apparatus, foot wear, head protection, eye protection, harnesses, gloves etc.).

#### **VENTILATION**

Appropriate ventilation should be provided to ensure the work environment is as safe as possible.



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