

Understanding Gases

Carbon Dioxide

CO₂

Unlike other toxic gases, carbon dioxide (CO₂) is all around us, although at levels that are low not to cause health issues under normal circumstances.



CO₂ is colourless, odourless and has a density that is heavier than air, resulting in pockets of CO₂ gathering low on the ground gradually increasing in size.



Carbon dioxide is used as a refrigerant, in fire extinguishers, for inflating life rafts and life jackets, blasting coal, foaming rubber and plastics, promoting the growth of plants in greenhouses, immobilising animals before slaughter, and in the food and beverage industry.



Carbon dioxide is a gas consisting of one part carbon and two parts oxygen.

CO₂ is generated in huge amounts during fermentation and can pose a risk in confined spaces such as vats, cellars or cylinder storage areas, this can be fatal to workers in the surrounding environment, therefore Health and Safety managers must ensure the correct equipment and detectors are in place.

What is carbon dioxide?

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What are the dangers?



Inhalation: Low concentrations are not harmful. Higher concentrations can affect respiratory function and cause excitation followed by depression of the central nervous system. A high concentration can displace oxygen in the air. If less oxygen is available to breathe, symptoms such as rapid breathing, rapid heart rate, clumsiness, emotional upsets and fatigue can result.

What should you do if you are exposed?



If inhaled, there is a risk of oxygen deficiency: take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). If breathing is difficult, trained personnel should administer emergency oxygen.



Skin Contact: Not irritating. Direct contact with the liquefied gas can chill or freeze the skin (frostbite). Symptoms of mild frostbite include numbness, prickling and itching. Symptoms of more severe frostbite include a burning sensation and stiffness. The skin may become waxy white or yellow. Blistering, tissue death and infection may develop in severe cases.



Skin Contact with liquefied gas: remove the casualty from the source of contamination as soon as is safe to do so. DO NOT attempt to rewarm the affected area on site. DO NOT rub area or apply direct heat. Remove anything that may restrict circulation (i.e. jewellery) and any clothing.



Eye Contact: May cause mild irritation. Direct contact with the liquefied gas can freeze the eye. Permanent eye damage or blindness can result.



Eye Contact with liquefied gas: immediately and briefly flush with lukewarm, gently flowing water and cover both eyes with a sterile dressing.



CO₂ being 5 times heavier than air, making it a silent and deadly gas



Carbon dioxide occurs naturally in the atmosphere (typically 0.04% in air)



Exposures to 7% CO₂ can cause death in only 5 minutes