



# GENERAL INFORMATION ON

# Carbon Dioxide SAFETY

According to the **Occupational Health and Safety (OHS)** guidelines, carbon dioxide is a Class A, compressed gas. At low concentrations, the gas is not hazardous. However, as concentration levels increase, so do the severity of potential health effects. CO<sub>2</sub> gas does not support life and in concentrations above 4% it has dangerous effects and negative implications. Health implications consist of headaches, fatigue, nausea, unconsciousness, and even fatality.

## PHYSICAL SYMPTOMS OF CO<sub>2</sub> LEVELS



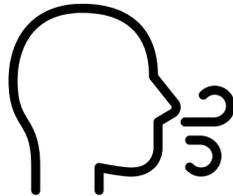
**0.1% | 1,000 PPM**

Prolonged exposure can affect concentration



**0.5% | 5,000 PPM**

The International Safety Limit (HSE, OSHA)



**1.0% | 10,000 PPM**

Rate of breathing increases slightly



**3.0% | 30,000 PPM**

An increase in heart rate, blood pressure, and headaches. Hearing can become impaired.



**10-100%**

Labored breathing, headaches, eventual unconsciousness, and suffocation

## CO<sub>2</sub> SAFETY CODES AND STANDARDS



### International Fire Code

5,000 ppm CO<sub>2</sub> Concentration or Fault Indicator - Awareness Indication



### NFPA 55 and OSHA

5,000 ppm (0.5%) 8-hour Time Weighted Average (TWA) - Indication



### NBIC Part 1 and Supplement 3

Pre-set 15,000 ppm (1.5%) and 30,000ppm (3.0%) High Alarms.

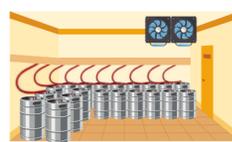
As noted by the National Board Inspection Code part 1 supplement 3 and short term exposure limit defined by ACGIH and NIOSH.



### OSHA and NIOSH

OSHA and NIOSH for CO<sub>2</sub> exposure for workers that is no lower than 5,000ppm TWA for first alarm, 15,000ppm as the half STEL (short term exposure limit).

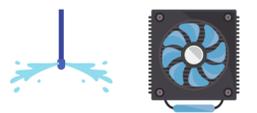
## HAZARD AREAS



Confined Spaces or Low Lying Areas



Areas Where CO<sub>2</sub> is Transported or Used



Areas Where CO<sub>2</sub> is Vented and Stored



Areas Where CO<sub>2</sub> is Enriched or Implemented



Areas Where CO<sub>2</sub> is Filled, Including Adjacent Areas.

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