APPLIED RESEARCH SERVICES LIMITED

Technical Bulletin 51

Carbon Dioxide Fact Sheet

Carbon dioxide (CO_2) is a colourless odourless gas that is a byproduct of normal respiration – we breathe it out. CO_2 can build up in buildings that house people (or animals), and high levels of CO_2 are a symptom of problems with fresh air circulation.
Measurements of CO_2 levels in indoor air can reveal if the heating, ventilation, and air conditioning (HVAC) systems are operating within guidelines. CO_2 levels are usually measured in percent (%) of air or parts per million (ppm). High CO_2 levels, (generally over 1000 ppm), indicate a potential problem with air circulation and fresh air in a room or building.

Exposure to CO_2 can produce a variety of health effects. These may include headaches, dizziness, restlessness, a tingling or pins and needles feeling, difficulty breathing, sweating, tiredness, increased heart rate, elevated blood pressure, coma, asphyxia, and convulsions.

The levels of CO_2 in the air and potential health problems are:

250 - 350 ppm	background (normal) outdoor air level
350- 1,000 ppm	typical level found in occupied spaces with good air exchange
1,000 – 2,000 ppm	level associated with complaints of drowsiness and poor air
2,000 – 5,000 ppm	level associated with headaches, sleepiness, and stagnant, stale, stuffy air. Poor concentration, loss of attention, increased heart rate and slight nausea may also be present.
>5,000 ppm	This indicates unusual air conditions where high levels of other gases could also be present. Toxicity or oxygen deprivation could occur
>40,000 ppm	This level is immediately harmful due to oxygen deprivation.

References

1) Wisconsin Department of Health Services, Chemical Fact Sheet – Carbon Dioxide, Last Revised Aug 07, 2013 http://www.dhs.wisconsin.gov/eh/chemfs/fs/carbondioxide.htm