

FACTS

Indoor Air Quality and Carbon Dioxide

Carbon dioxide (CO₂) is a colourless, odourless gas that is a component of the atmosphere. Indoor levels tend to be higher than outdoor levels. Human respiration, cooking and cigarette smoking increase CO₂ levels indoors and also add various odours. If there is insufficient fresh make-up air, the levels and odours will build up until complaints occur. The CO₂ level can be used to determine if adequate fresh air is being added to a room.

The effects of increased CO₂ levels on adults in good health are summarized below. Maximum levels may occasionally happen from time to time.

Carbon Dioxide Level (ppm)	Symptoms
350-450	Normal outdoor level
<600	Acceptable levels
600-1000	Complaints of stiffness and odours
1000-2500	General drowsiness
2500-5000	Adverse health effects expected
5000	Maximum allowable concentration within 8 hour working period

Extreme and Dangerous CO₂ Levels

- Slightly intoxicating, breathing and pulse rate increase, nausea at 30,000 ppm
- Slightly intoxicating, breathing and pulse rate increase, nausea, headaches and sight impairment at 50,000 ppm
- Unconscious, death possible at 100,000 ppm

Carbon Dioxide Standard Levels

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc (ASHRAE) Standard 62-1989 recommends:

- Classrooms and conference rooms: 1000 ppm or 15 cfm per occupant
- Office space and restaurants: 800 ppm or 20 cfm per occupant
(cfm is cubic feet per minute and is a measurement of the flow of air. The lower the cfm, the better the air exchange.)

Solutions

Measures that improve ventilation include periodic opening of doors and windows, exhaust fans over cooking equipment and in bathrooms and air to air heat exchangers.

Source: <http://www.ashrae.org/>
