

**INTERPRETATION IC 62-1989-20-03 OF
ASHRAE STANDARD 62-1989
VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY**

January 29, 1995
REVISION APPROVED: 2/5/2000

Originally issued as interpretation of Standard 62-1989 on January 29, 1995, but revised based on approval of addendum 62f and publication of Standard 62-1999. Revisions made to all Background, Question and Answer statements to reflect Standard 62-1999 language.

Request from: Debbie Paolini, Manager of Health and Safety, The Dufferin-Peel Roman Catholic Separate School Board, 40 Matheson Blvd. West, Mississauga, Ontario L5R 1C5, CANADA

References: This request refers to the CO₂ requirements in ASHRAE Standard 62-1989, 6.1.3 Ventilation Requirements.

Background:

Ms. Paolini's letter includes the following comments:

Exception #2 under 6.1.3 Ventilation Requirements, reads in part: "~~Carbon dioxide concentration has been widely used as an indicator of indoor air quality.~~ Comfort (odor) criteria with respect to human bioeffluents are likely to be satisfied if the ventilation ~~rate is set so that 1000~~ results in indoor CO₂ concentrations less than 700 ppm ~~CO₂ is not exceeded above the outdoor concentration.~~"

CO₂ is also referenced in 6.2.1, Quantitative Evaluation, in Table 3, Guidelines for Selected Air Contaminants of Indoor Origin and in Appendix D, Rationale for Minimum Physiological Requirements For Respiration Air Based on CO₂ Concentrations.

It is unclear what is meant by the clause, "ventilation results in indoor CO₂ concentrations less than 700 ~~rate is set so that 1000~~ ppm above the outdoor concentration ~~CO₂ is not exceeded.~~"

In Ms. Paolini's letter ~~continues~~ requesting the original interpretation she stated, "as a result of continuous monitoring of indoor air quality using CO₂ levels in several classrooms, we have noted that CO₂ levels peak when students enter the classroom in the morning, after morning recess, after lunch and after afternoon recess. In some instances these peaks are above 1000 ppm CO₂. Recently the provincial Ministry of Labour issued a Compliance Order at one of the schools to 'reduce the levels of CO₂ below the guideline of 1000 ppm, whenever the classrooms are occupied.'"

Question 1: Is the ~~1000-700~~ ppm CO₂ a ceiling value or a time weighted average value?

Answer 1: The reference to ~~1000-700~~ ppm CO₂ in Section 6.1.3 is only as a point of information. This is not a requirement of ASHRAE 62-1989. Since it is not a requirement it is neither a ceiling value nor a time weighted average value. Rather, it can be considered ~~a target concentration level~~ an indicator that the outdoor air ventilation may not meet the minimum requirements of the standard. Since the comfort (odor) criteria are likely to be satisfied when the CO₂ does not exceed ~~1000-700~~ ppm above outdoors the converse is also likely to be true, i.e., when the CO₂ level exceeds ~~1000-700~~ ppm above outdoors, the comfort (odor) criteria may not be satisfied.

Question 2: If it is a time weighted average value, how are CO₂ test results to be calculated and weighted?

Answer 2: Moot because of Answer 1.

Question 3: Would CO₂ levels measured only during room occupancy be used or CO₂ levels measured throughout the time period of ventilation system operation?

Answer 3: CO₂ levels should be ~~measured-considered only~~ during the time of occupancy, since the significance of indoor CO₂ levels relates to the perception of human bioeffluents and such perception is only an issue when the

| space is occupied. This is defined for the classroom as the time between initial occupancy in the morning and dismissal time for students.