

Elevated Indoor Carbon Dioxide: Brief Explanation

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A recent carbon dioxide monitoring report prepared by GLE Facilities and Environmental Consultants indicated higher than recommended carbon dioxide (CO₂) readings throughout Mountain View Elementary. Elevated average CO₂ measurements (\geq 1000ppm - 1776ppm) were reported in **7 classrooms** (C9, E2, E11, D5, K6, K8, & K10), the **cafeteria**, and **9 hallway locations**. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) stipulates that indoor CO₂ levels should not exceed 1000ppm. This standard is based primarily on occupant comfort, minimizing ambient odors, and overall perceived air quality (ASHRAE, 2010). It is important to note that none of the reported measurements reached the Permissible Exposure Limit of 5000 ppm set by the Occupational Safety and Health Administration (OSHA, 29 CFR 1910.1000).

Recent research suggests that elevated CO₂ levels may be directly responsible for effects on building occupants. In a controlled study of college students, moderate decreases in decision-making skills were observed at CO₂ levels of 1000ppm (Satish et al, 2012 [online]). In a Health Effects of School Environment study conducted in Europe, children exposed to CO₂ levels >1000ppm displayed a higher risk of dry cough and nasal symptoms (Simoni et al, 2010). Furthermore, the Environmental Protection Agency (EPA) issued a report in 2003 stating that "Evidence continues to emerge showing that poor indoor air quality can cause illness requiring absence from school, and can cause acute health symptoms that decrease performance while at school" (EPA, 2003).

GLE specifically recommends that the HVAC system at Mountain View Elementary be evaluated by an engineer to address elevated CO₂ levels in the building. Sufficient outdoor make-up air is necessary for dilution of CO₂ and other indoor air contaminants.

References

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE). 2010. *ASHRAE Standard: Ventilation for Acceptable Indoor Air Quality; Standard 62.1-2007*.

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