

**INTERPRETATION IC 62.2-2013-2 OF  
ANSI/ASHRAE STANDARD 62.2-2013  
Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings**

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**Request from:** Max Sherman ([MHSherman@lbl.gov](mailto:MHSherman@lbl.gov)), Lawrence Berkeley National Laboratory, MHS 90-3074; 1 Cyclotron Rd, Berkeley, CA 94720.

**Reference:** This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 62.2-2013, Section 4.6, regarding real-time ventilation controllers and equivalent ventilation.

**Background:** Section 4.6 states:

***4.6 Equivalent Ventilation.** A whole-building ventilation system shall be designed and operated in such a way as to provide the same or lower annual exposure as would be provided by complying with Section 4.1. The calculations shall be based on a single zone with a constant contaminant emission rate. The manufacturer, specifier, or designer of the equivalent ventilation system shall certify that the system meets this intent and provide supporting documentation.*

The interpretation request concerns the issue of whether a real-time ventilation controller meets the requirements of Section 4.6. By real-time ventilation controller we mean a device that monitors the ventilation caused by known mechanism such as intentional and incidental (or exogenous) systems; and then uses that information to increase or decrease the rate of a mechanical ventilation system to provide equivalent ventilation to the minimum provided by Section 4.1. These exogenous systems could include economizers, clothes dryers, toilet fans, evaporative coolers, positive make-up air fans or any other systems that affects the total building ventilation rate.

Use of a real-time ventilation controller can reduce ventilation rates when doing so benefits the occupants such as during periods of extreme weather, during periods of poor outdoor air quality, or during periods of high utility rates or energy costs. The controller will then compensate at other times by increasing the ventilation rate sufficient to provide equivalent ventilation.

Sections 4.1.2 and 4.5 implicitly use the calculation methods of Sherman and Wilson (1986) to do find equivalent exposure over a defined period of time for a specific ventilation pattern.

Walker et al. (2012) describe how to do this for a specific real-time controller using equivalence based on 62.2-2010. Other controller strategies such as shutting off ventilation during periods of extreme temperature or humidity, or during periods of low occupancy have been proposed.

Section 4.6 specifies that an *annual* time period be used for determining equivalence. Shorter periods of time (i.e. *sub-annual* time periods) are more restrictive and therefore provide greater protection than annual periods.

The purpose of this standard is to provide acceptable IAQ. If the building is unoccupied there is no one to express dissatisfaction nor can there be any health risk. Therefore the only times when the quality of the air matters is when there are actually occupants in the occupiable space. A real-time ventilation controller that is able to detect occupancy can further optimize ventilation rates by considering equivalent exposure only when there is at least one occupant in the occupiable space.

**Interpretation No.1:** A *real-time ventilation controller* meets the requirement of Section 4.6 if it is certified by the manufacturer, specifier or designer to provide the same or lower annual exposure as would be provided by Section 4.1 based on a single-zone, constant emission rate source.

**Question No.1:** Is this interpretation correct?

**Answer No.1:** Yes.

**Comments:** This interpretation is based on the definition of “real-time ventilation controller” provided by the requestor: “By real-time ventilation controller we mean a device that monitors the ventilation caused by known mechanism such as intentional and incidental (or exogenous) systems; and then uses that information to increase or decrease the rate of a mechanical ventilation system to provide equivalent ventilation to the minimum provided by Section 4.1.”

**Interpretation No.2:** For the purposes of Section 4.6, exposure may be calculated during only-occupied times.

**Question No.2:** Is this interpretation correct?

**Answer No.2:** Yes.

**Comments:** Note that concentration must be calculated on an annual basis during occupied and unoccupied times.