

**Interpretation IC 170-2008-11 of
ANSI/ASHRAE/ASHE Standard 170-2008
Ventilation of Health Care Facilities**

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Reference: This request for interpretation refers to the requirements in ANSI/ASHRAE/ASHE Standard 170-2008, Table 7-1, regarding outdoor air changes per hour (ACH) for hospitals.

Background: For over 26 years ASHRAE Application Handbook included the following statement: “**outdoor air, in comparison to (hospital) room air, virtually free of infectious bacteria and viruses**” and currently documented in ASHRAE 2011 Applications Handbook Chapter 8, Page 8-2. In addition, since filters are not perfect and subject to maintenance, to reduce the risk of infectious bacteria and viruses, as compared to hospital recirculated air, ASHRAE Application Handbook Table 3 recognized that the IAQ resulted from 100% outdoor air is better. Therefore till 2003 ASHRAE Application Handbook Table 3 encouraged the use of 100% outside air by allowing for example reduced outside air in operating rooms when 100% outside air is used. In 2003 AHSRAE Application Handbook Table 3 ACH the requirements for operating rooms when 100% outside air was omitted resulted in same ACH criteria for 100% outdoor air as for recirculating air systems.

The state of California elaborated on the use of 100% outside air with the intent to reduce the risk associated with hospital recirculated air as compared to outdoor air and continues to do so and encourage the use of 100% outdoor air. The state of California requirements for ventilation in hospitals as shown in Table 4-A of the California Mechanical Code (CMC) has separate Air Change per Hour (ACH) requirements for 100% Outdoor Air (OA) systems and for re-circulating systems. Typically, the ACH for 100% OA systems are lower because “outdoor air, in comparison to (hospital) room air, virtually free of infectious bacteria and viruses” as shown above. For example, an operating room ,which would require a total ACH of 20 and an OA ACH of 5 if it is a re-circulating system, would only require an OA (and Total) ACH of 12 if is a 100% OA system. Many systems in California are designed as 100% OA with heat recovery to take advantage of the superior outdoor air quality as compared to hospital recirculating air, and associated reduced airflow.

A conflict arises when California hospitals are electing to pursue LEED-Healthcare or Joint Commission Accreditation; or meet CMS requirements which would trigger a requirement to comply with ASHRAE/ASHE Standard 170 which does not differentiate between re-circulating systems and 100% OA systems. Meeting the ASHRAE/ASHE Standard 170 requirements diminishes the energy savings associated with the reduced volume permitted by the CMC and defeats the purpose of the energy saving LEED is trying to achieve.

Interpretation: A system designed to be 100% OA still needs to meet the total ACH required in Standard 170, Table 7-1.

Question: Is this interpretation correct?

Answer: Yes.

Comments: Per ASHRAE/ASHE Standard 170-2008, Section 7.1.1c, “For design purposes, the minimum number of total air changes indicated shall be either supplied for positive pressure rooms or exhausted for negative pressure rooms.” No differentiation or exception is made for 100% OA systems.