ANSI/ASHRAE Addendum *h* to
ANSI/ASHRAE Standard 62-2001

ASHRAE®
STANDARD

Ventilation for Acceptable Indoor Air Quality

Approved by the ASHRAE Standards Committee on June 28, 2003; by the ASHRAE Board of Directors on July 3, 2003; and by the American National Standards Institute on November 26, 2003.

This standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE web site, *http://www.ashrae.org*, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard and printed copies of a public review draft may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: *orders@ashrae.org*. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in U.S. and Canada).

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ASHRAE Standard Project Committee 62.1
Cognizant TC: TC 4.3, Ventilation Requirements and Infiltration
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SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Consensus is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Manager of Standards of ASHRAE should be contacted for:

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard,
d. permission to reprint portions of the Standard.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process.)

Foreword to Addendum 62h

This addendum modifies the Indoor Air Quality (IAQ) Procedure in Section 6.2 of the standard, as well as some related material in Section 6.1. The IAQ Procedure is a performance-based alternative to the Ventilation Rate Procedure in the standard. The modifications convert the current material in the standard into requirements that are in mandatory and enforceable language. It does not tell the user when to use the IAQ Procedure, only how to use it. Addendum 62i, approved in 2002, addresses the former issue.

Addendum 62h

Delete the second, fourth, and fifth bullets of Section 6.2. [Note that Section 6.1 in the printed version of Standard 62-2001 was renumbered as Section 6.2 as a result of the publication of addendum 62i. The second and fourth bullets are relevant to the IAQ Procedure and should not be listed under the Ventilation Rate Procedure. The last bullet is overly detailed for this general description of the Ventilation Rate Procedure and is deleted for clarity.]

6.2 Ventilation Rate Procedure: This procedure prescribes:

- the outdoor air quality acceptable for ventilation
- ~~outdoor air treatment when necessary~~
- ventilation rates for residential, commercial, institutional, vehicular, and industrial spaces
- ~~criteria for reduction of outdoor air quantities when recirculated air is treated by contaminant removal equipment~~
- ~~criteria for variable ventilation when the air volume in the space can be used as a reservoir to dilute contaminants~~

Delete Section 6.1.3.2 (now 6.2.3.2) in its entirety and renumber remaining sections accordingly. [The gist of the first paragraph is covered adequately in Section 6.1.3 (now 6.2.3) and notes to Table 2. The second two paragraphs are only applicable to the IAQ Procedure but were included here under the Ventilation Rate Procedure.]

6.1.3.2 ~~Recirculation Criteria.~~ ~~The requirements for ventilation air quantities given in Table 2 are for 100% outdoor air when the outdoor air quality meets the specifications for acceptable outdoor air quality given in 6.1.1. While these quantities are for 100% outdoor air, they also set the amount of air required to dilute contaminants to acceptable levels. Therefore, it is necessary that at least this amount of air be delivered to the conditioned space at all times the building is in use except as modified in 6.1.3.4.~~

~~Properly cleaned air may be recirculated. Under the ventilation rate procedure, for other than intermittent variable occupancy as defined in 6.1.3.4, outdoor air flow rates may not be reduced below the requirements in Table 2. If cleaned, recirculated air is used to reduce the outdoor air flow rate below the values shown in Table 2, the Air Quality Procedure, 6.2, must be used. The air-cleaning system for the recirculated air may be located in the recirculated air or in the mixed outdoor and recirculated air stream (see Fig. 1).~~

~~The recirculation rate for the system is determined by the air-cleaning system efficiency. The recirculation rate must be increased to achieve full benefit of the air cleaning system. The air cleaning used to clean recirculated air should be designed to reduce particulate and, where necessary and feasible, gaseous contaminants. The system shall be capable of providing indoor air quality equivalent to that obtained using outdoor air at a rate specified in Table 2. Appendix E may be referenced for assistance in calculating the air flow requirements for commonly used air distribution systems.~~

Delete existing Section 6.3 and replace with the following:

6.3 Indoor Air Quality Procedure

The Indoor Air Quality (IAQ) Procedure is a performance-based design approach in which the building and its ventilation system are designed to maintain the concentrations of specific contaminants at or below certain limits identified during the building design and to achieve the design target level of perceived indoor air quality acceptability by building occupants and/or visitors. For the purposes of this procedure, acceptable perceived indoor air quality excludes dissatisfaction related to thermal comfort, noise and vibration, lighting, and psychological stressors.

6.3.1 Designs employing the Indoor Air Quality Procedure shall comply with the requirements in the following sections.

6.3.1.1 Contaminant Sources. Contaminants of concern for purposes of the design shall be identified. For each contaminant of concern, indoor and outdoor sources shall be identified, and the strength of each source shall be determined.

6.3.1.2 Contaminant Concentration. For each contaminant of concern, a target concentration limit and its corresponding exposure period and an appropriate reference to a cognizant authority shall be specified. (See Appendix B for some contaminant concentration guidelines.)

6.3.1.3 Perceived Indoor Air Quality. The criteria to achieve the design level of acceptability shall be specified in terms of the percentage of building occupants and/or visitors expressing satisfaction with perceived indoor air quality.

6.3.1.4 Design Approaches. Select one or a combination of the following design approaches to determine minimum space and system outdoor airflow rates and all other design parameters deemed relevant (e.g., air cleaning efficiencies and supply airflow rates).

(a) Mass balance analysis. The steady-state equations in Appendix D, which describe the impact of air cleaning on outdoor air and recirculation rates, may be used as part of a mass balance analysis for ventilation systems serving a single space.

(b) Design approaches that have proved successful in similar buildings.

(c) Approaches validated by contaminant monitoring and subjective occupant evaluations in the completed building. An acceptable approach to subjective evaluation is presented in Appendix B, which may be used to validate the acceptability of perceived air quality in the completed building.

(d) Application of one of the preceding design approaches (a, b, or c) to specific contaminants and the use of the Ventilation Rate Procedure to address the general aspects of indoor air quality in the space being designed. In this situation, the Ventilation Rate Procedure would be used to determine the design ventilation rate of the space and the IAQ Procedure would be used to address the control of the specific contaminants through air cleaning or some other means.

6.3.2 Documentation. When the IAQ Procedure is used, the following information shall be included in the design documentation: the contaminants of concern considered in the design process; the sources and source strengths of the contaminants of concern; the target concentration limits and exposure periods and the references for these limits; the design approach used to control the contaminants of concern; and the background or justification for this design approach. If the design is based on an approach that has proved successful for similar buildings, the documentation shall include the basis for concluding that the design approach was successful in the other buildings and the basis for concluding that the previous buildings are relevant to the new design. If contaminant monitoring and occupant evaluation are to be used to demonstrate compliance, then the monitoring and evaluation plans shall also be included in the documentation.

Delete References 29 and 30 from Section 9. [Text containing these references has been deleted from the body of the standard.]

~~29 NAP *1981 Indoor Pollutants*. National Academy Press, Washington, DC.~~

~~30 *The Consequences of Involuntary Smoking*. 1986. U.S. Surgeon General, U.S. Dept. of Health and Human Services.~~

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.