

### **4-1.3 DECISION NO. 37**

#### **DENTAL VENTILATION REQUIREMENTS**

##### **Issue:**

To provide HVAC criteria for Indian Health Service (IHS) new construction, renovation, and operation of existing IHS Health Care Facilities in designing dental facilities for comfort, as well as for sepsis and odor control.

##### **Decision:**

The Health Facilities Advisory Committee (HFAC) reviewed and approved the final draft of the “Dental HVAC Criteria” dated April 9, 1997, subject to editorial revisions. The final chapter will be submitted for approval to the Director of the Division of Facilities and Environmental Engineering (DFEE). Effective immediately, this guide will apply to all IHS construction programs.

##### **Reference:**

Copies of the final draft criteria are attached and can be obtained from DFEE. The approved Chapter will be issued as Chapter 21-4.8, Dental Ventilation Requirements, Part 21, Volume III of the Technical Handbook for Environmental Health and Engineering.

Adopted by HFAC on January 6, 1999.

Kenneth R. Harper, PE  
Chairman, HFAC

# Ventilation Requirements for Areas Affecting Patient Care in Dental Facilities<sup>1</sup>

Area Designation	Air movement relationship to adjacent area <sup>2</sup>	Minimum air changes of outdoor air per hour <sup>3</sup>	Minimum total air changes per hour <sup>4</sup>	All air exhausted directly to outdoors <sup>5</sup>	Relative humidity <sup>6</sup> (%)	Design temperature <sup>7</sup> (degrees F/C)
Enclosed Dental Operatory (w/nitrous oxide) <sup>8,9</sup>	In	3	12	Yes	30-60	75 (24)
Open Dental Operatory (w/nitrous oxide) <sup>10</sup>	---	---	---	---	---	---
Open Dental Operatory (w/o nitrous oxide)	---	2	6	---	30-60	75 (24)
Cleanup/Sterilization	In	2	10	Yes	---	75 (24)
Laboratory	In	2	6	Yes	---	75 (24)
Dark Room	In	2	10	Yes	---	75 (24)

## Notes

<sup>1</sup> The ventilation rates in this table cover ventilation for comfort, as well as for asepsis and odor control in areas of dental facilities that directly affect patient care and are determined based on health care facilities being predominantly No Smoking facilities. Areas where specific ventilation rates are not given in the table shall be ventilated in accordance with ASHRAE Standard 62-1989, *Ventilation for Acceptable Indoor Air Quality*, and ASHRAE *Handbook of Applications*. OSHA standards and/or NIOSH criteria require special ventilation requirements for employee health care facilities. Central systems shall be provided with 90% filters (ASHRAE dust spot efficiency).

<sup>2</sup> Design of the ventilation system shall provide air movement which is generally from clean to less clean areas except in the enclosed dental operatory where containment of nitrous oxide is desired. If any form of variable air volume or load shedding system is used for energy conservation, it must not compromise the corridor-to room pressure balancing relationships or the minimum air changes required by the table.

<sup>3</sup> To satisfy exhaust needs, replacement air from the outside is necessary. The Table does not attempt to describe specific amounts of outside air to be supplied to individual spaces except for certain areas such as those listed. Distribution of the outside air, added to the system to balance required exhaust, shall be as required by good engineering practice. Minimum outside air quantities shall remain constant while the system is in operation.

<sup>4</sup> Number of air changes may be reduced when the room is unoccupied if provisions are made to ensure that the number of air changes indicated is reestablished any time the space is being utilized. Adjustments shall include provisions so that the direction of air movement shall remain the same when the number of air changes is reduced. Areas not indicated as having continuous directional control may have ventilation systems shut down when space is unoccupied and ventilation is not otherwise needed, if adjacent pressure balancing relationships are not compromised.

<sup>5</sup> Air from areas with contamination (i.e. bioaerosols, respirable particulates, nitrous oxide, and/or odor problems) shall be exhausted to the outside and not recirculated to other areas.

<sup>6</sup> The ranges listed are the minimum and maximum limits where control is specifically needed.

<sup>7</sup> A single figure indicates a heating or cooling capacity of at least the indicated temperature. Nothing in these guidelines shall be construed as precluding the use of temperatures lower than those noted when the patients' comfort and medical conditions make lower temperatures desirable.

<sup>8</sup> National Institute for Occupational Safety and Health (NIOSH) "Technical Report: Control of Nitrous Oxide in Dental Operatories" indicates a need for both local exhaust (scavenging) systems and general ventilation of the areas in which the respective gases are utilized.

<sup>9</sup> Air flow patterns shall be controlled to reduce nitrous oxide exposure to the staff.

<sup>10</sup> Nitrous oxide administration in an open dental operatory is not allowed. Nitrous oxide exposure to staff cannot be effectively controlled in this setting.