



ASHRAE/ASHE Guideline 43

Operations Guideline for Ventilation of Health Care Facilities



ASHRAE/ASHE Guideline 43 - Introduction



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Operations Guideline for Ventilation of Health Care Facilities

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Operations *Guideline* for the Ventilation of Health Care Facilities

- **Purpose:** to provide *recommendations* for the operations of heating, ventilation and air conditioning (HVAC) systems that provide environmental control in health care facilities for the safety and comfort of health care facility occupants.
- **Scope:** The operation of health care facility HVAC systems and equipment, their normal and routine maintenance, major tasks of periodic maintenance, and energy conservation.



ASHRAE/ASHE Guideline 43 – Table of Contents

Section 1 - Purpose

Section 2 - Scope

Section 3 - Definitions

Section 4 - Operating Practices

Section 5 - Monitored Spaces

Section 6 - Implementation

Informative Appendixes

Appendix A - Recommended System Condition Indicators

Appendix B - Sources of Program Objectives

Appendix C - Situations Requiring Review of the Maintenance Plan

Appendix D - Reasons for Adjusting Maintenance Task Frequency

Appendix E - Facility Observations That May Influence Baseline Inspection Frequencies

Appendix F - Ventilation Management Program Plan

Appendix G - Ventilation Management Program Plan Baseline Inspection and Maintenance Tasks



Steps to Developing a VMP

- **Form a Committee**
- **Develop a “Source of Truth”**
- **Risk Ranking**
- **Condition Indicators**
- **Excursion Response**
- **Create the VMP**
- **Get Approval**
- **Educate Staff**
- **Maintain the Plan**

Multidisciplinary Committee

- Accreditation, PDC, Engineering, Infection Prevention, Nursing, Perioperative Services, Pharmacy, Site Leaders
- Subcommittee of EoC?
- Meet often during development
 - Standardize meeting with EoC/Utility Management

Develop Source of Truth

- **Create list of spaces/equipment**
 - **Ventilation Requirements**
 - **Patient Services**
 - **Equipment**
 - **Consider utilizing existing lists**
 - **ASC (Align, Standardize, Combine)**
- **Code References**
 - **AAMI, ANSI, ASHRAE, USP, State & Local Codes**
 - **Different editions based on time of design/construction**
 - **Design versus Operations**

Risk Ranking

- **Patient Services Provided**
- **Impact of HVAC to Services**
 - Pressure
 - Temperature
 - Humidity
 - Exhaust
- **Example - NFPA 99 Categories**
 - Category 1 – Major Injury/Death
 - Category 2 – Minor Injury
 - Category 3 – Cause Injury/Discomfort
 - Category 4 – No Impact on Patient Care

ASHRAE/ASHE 43 Guideline – Chapter 5

- **Chapter 5: Monitored Spaces - categorized based on risk of harm**
 - **Critically Ventilated Spaces**
 - Those spaces *used for invasive or high-risk procedures*, infection control isolation, or any space where loss of required air flow, temperature, humidity, and/or pressurization *could result in harm, injury or death to patients, visitors or staff.*
 - **Generally Ventilated Spaces**
 - Those spaces *not used for invasive or high-risk procedure areas*, not used for infection control isolation, and where loss of required air flow, temperature, humidity, and/or pressurization *would not result in harm, injury or death to patients, visitors or staff.*

Risk Ranking

ASHRAE 170-2008

Function of Space	Pressure Relationship to Adjacent Areas (n)	Pressure Risk Category	Relative Humidity (k),%	Humidity Risk Category	Design Temperature (l) F°/C	Temperature Risk Category
SURGERY AND CRITICAL Care						
Classes B and C operating room, (m), (n), (o)	Positive	1	30-60	1	68-75	1
Operating/surgical cystopic rooms, (m), (n), (o)	Positive	1	30-60	1	68-75	1
Delivery room (Caesarean) (m), (n), (o)	Positive	1	30-60	1	68-75	1
Critical and intensive care	Positive	2	30-60	3	70-75	4
Newborn intensive care	Positive	2	30-60	3	70-75	4
Treatment Room (p)	N/R	-	30-60	4	70-75	4
Trauma room (crisis or shock) (c)	Positive	1	30-60	1	70-75	3
Medical/anesthesia gas storage (r)	Negative	1	N/R	-	N/R	-
ER waiting room (q)	Negative	3	max 65	-	70-75	4
Triage	Negative	3	max 60	-	70-75	4
ER decontamination	Negative	3	N/R	-	N/R	-
Radiology waiting rooms (q)	Negative	2	max 60	3	70-75	3
Class A Operating/Procedure room (o), (d)	Positive	2	30-60	2	70-75	2
INPATIENT NURSING						
Patient rooms (s)	N/R	-	max 60	4	70-75	4
Toilet room	Negative	4	N/R	-	N/R	-
Protective environment room (f), (n), (t)	Positive	1	max 60	4	70-75	4
All room (e), (n), (u)	Negative	1	max 60	4	70-75	4
All isolation room (t), (u)	N/R	1	N/R	-	N/R	-

Category 1 Risks
Category 2 Risks
Category 3 Risks
Category 4 Risks

Develop Condition Indicators

- **Develop Condition Indicators**
 - Physical characteristics and delivery performance of equipment
 - Ranges for operation
- **Measurements/Observations of physical condition and delivery**
 - Thermal comfort
 - Indoor air quality
 - Energy efficiency
- **Monitor changes to provide advance indication of problems**

Table 5.1: Recommended Monitoring Frequencies

Function of Space(s)	Testing frequency for Temperature, Humidity, and Pressure ^a
Airborne Infection Isolation (All) Room, Protective Environment (PE) Room, Combination All/PE Room, Operating Room, Operating/surgical cystoscopic rooms, Critical care patient care, Neonatal intensive care, Wound intensive care (burn unit), Class 2 & 3 Imaging rooms, Pharmacy Services: Pharmacy Areas (USP-regulated), Sterile storage room (clean/sterile medical/surgical supplies), Cesarean Delivery room	Daily or as determined by the VMP
Continued care nursery, Newborn nursery, Nursery workroom, Emergency department public waiting area, Emergency department trauma/resuscitation room, Emergency service triage area, Labor/delivery/recovery (LDR), Labor/delivery/recovery/postpartum (LDRP), Laser eye room, Patient room, Phase 1 PACU and Phase II recovery, Radiology waiting rooms, Seclusion room, Treatment Room, Class 1 imaging room, Dialysis treatment area, General examination room, Hydrotherapy, Physical therapy, Special examination room, Treatment room, ECT procedure room, Nuclear medicine hot lab, Instrument processing room, Procedure room, Intermediate care patient room, Bronchoscopy, sputum collection, and pentamidine administration, Gastrointestinal endoscopy procedure room, Pharmacy Services: Pharmacy Areas (non-USP regulated)	Semiannually or as determined by the VMP
Laboratory work areas (all), Food and supply storage, Food preparation areas, Toilet Room, Clean assembly /workroom, Soiled workroom/decontamination room, Autopsy room, Clean linen storage room, Nonrefrigerated body holding room, additional spaces identified within the VMP. ^b	Annually or as determined by the VMP

a. Accuracy of sensors should be verified as determined within the VMP.

b. Not all spaces must be identified within the VMP.

Excursion response

- **Excursions Happen**
- **Develop Responses**
 - **Base on Patient Impact**
 - **Base on Risk Ranking**
- **Document in VMP**
 - **Follow and document**

ASHRAE/ASHE Guideline 43

■ Section 6: Implementation

■ Excursion Variations

■ Recommended Actions

Table 6.8.1 Thresholds for Response to Temporary Increase in Rh

Relative humidity $\leq 5\%$ over upper limit	
> 6 hours continuously	> 12 hours continuously
<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and adjust the mechanical system to bring the Rh down within acceptable range. 	<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and notify the leader or designee of the respective departments of the involved space. The leader or designee will convene with the key

Table 6.8.2 Thresholds for Response to Temporary Decrease in Rh

Relative humidity up to 5% below lower limit		Relative humidity $> 5\%$ below lower limit
> 6 hours continuously	> 12 hours continuously	> 4 hours continuously
<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and adjust the mechanical system to bring the Rh up 	<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and notify the leader or designee of the respective departments. The leader or designee will 	<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and notify the leader or designee of the respective departments.
<ul style="list-style-type: none"> Facility engineer will take <i>corrective action</i> and notify the leader or designee of the respective departments. The leader or designee will 		

Create the VMP

- **Ventilation Management Plan**
- **Defined and Published**
- **Should Include**
 - **Committee Members**
 - **Code References**
 - **Listing of Spaces**
 - **Control Indicators**
 - **Excursion Responses**

Get Approval

- **Each aspect of VMP needs committee approval**
- **Needs approval from Leadership**

Educate Staff

- **Educate Committee Members**
- **Educate Clinical Staff**
- **Educate Facility Staff**

Maintain the VMP

- **Requires regular maintenance and updates**
- **Evaluate condition indicators at committee meetings**
- **Update space listing**
- **Update operational requirements**
- **Update per construction/renovations/repairs**

Questions?



- Thank you for attending!

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