Figure: 25 TAC §131.148(a)

TABLE 1
VENTILATION REQUIREMENTS FOR FREESTANDING EMERENCY MEDICAL CARE FACILITIES [1]

Area Designation	Air movement relationship to adjacent areas[2]	Minimum air changes of outdoor air per hour [3]	Minimum total air changes per hour[4]	All air exhausted directly to outdoors[5]	Recirculated by means of room units[6]	Relative humidity [7] (%)	Design temperature[8] (degrees F)
Emergency suite waiting	In	2	12	Yes[13]	----	----	70-75
Triage	In	2	12	Yes[13]	----	----	70-75
Treatment room	Out	3	15	----	No	30-60	70-75
Trauma room	Out	3	15	----	No	30-60	70-75
Examination room	Out	2	12	----	No	30-60	70-75
Airborne infection isolation room[9, 11, 12]	In	2	12	Yes	No	30-60	70-75
Observation/Holding room	Out	2	6	----	----	----	70-75
Clean linen storage	Out	----	2	----	----	----	----
Pharmacy	Out	----	4	----	----	----	70-75
Medication room	Out	----	4	----	----	----	70-75
Laboratory General[10]	----	2	6	----	----	----	70-75
Sterilizer equipment room[2]	In	----	10	Yes	No	----	----
Anesthesia gas storage	In	----	8	Yes	----	----	----
Radiology[10] X-ray – CT (diagnostic and treatment)	Out	2	6	----	----	----	75
Darkroom	In	----	10	Yes	No	----	----
Toilet room	In	----	10	Yes	----	----	70-75
Janitor’s closet	In	----	10	Yes	No	----	----
Decontamination room	In	----	6	Yes	No	----	68-73
Soiled linen (sorting and storage)	In	----	10	Yes	No	----	----
Soiled workroom or soil holding	In	----	10	Yes	No	----	----
Clean workroom or clean holding	Out	----	4	----	----	----	----
Sterile Supply/Storage	Out	----	4	----	----	70 Max	----
Equipment storage	----	----	2	----	----	----	----
Administrative and support service	----	----	2	----	----	30 Min	68-73

Notes applicable to Table 1: "Ventilation Requirements for Freestanding Emergency Medical Care Facilities."

[1] The ventilation rates in this table cover ventilation for comfort, as well as for asepsis and odor control in areas of acute care that directly affect patient care and are determined based on health care facilities being predominantly "No Smoking" facilities. Where smoking may be allowed, ventilation rates will need adjustment. Areas where specific ventilation rates are not given in the table shall be ventilated in accordance with American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE) Standard 62.1, 2004 edition, Ventilation for Acceptable Indoor Air Quality, and American Society of Heating Refrigeration and Air-Conditioning Engineers, Handbook of Applications, 2003 edition. Specialized patient care areas, including organ transplant units, burn units, specialty procedure rooms, etc. shall have additional ventilation provisions for air quality control as may be appropriate. Occupational Safety and Health Administration (OSHA) standards and/or National Institute for Occupational Safety and Health (NIOSH) criteria require special ventilation requirements or employee health and safety within health care facilities.

[2] Design of the ventilation system shall provide air movement which is generally from clean to less clean areas. 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. Except where specifically permitted by exit corridor plenum provisions of NFPA 90A, 2002 edition, the volume of infiltration or exfiltration shall be the volume necessary to maintain a minimum of 0.01 inch water gauge.

[3] To satisfy exhaust needs, replacement air from the outside is necessary. Table 1 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. In variable volume systems, the minimum outside air setting on the air handling unit shall be calculated using the ASHRAE Standard 62.1, 2004 edition.

[4] 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 the maximum infiltration or exfiltration permitted in Note 2 is not exceeded and if adjacent pressure balancing relationships are not compromised. Air quantity calculations must account for filter loading such that the indicated air change rates are provided up until the time of filter change-out. The minimum total air change requirements shall be based on the supply air quantity in positive pressure rooms and the exhaust air quantity in negative pressure rooms. Air change requirements indicated are minimum values. Higher values shall be used when required to maintain indicated room conditions (temperature and humidity, based on the cooling load of the space: lights, equipment, people, exterior walls and windows, etc.).

[5] Air from areas with contamination and/or odor problems shall be exhausted to the outside and not recirculated to other areas. Note that individual circumstances may require special consideration for air exhaust to the outside.

[6] Recirculating room heating, ventilating, and air conditioning (HVAC) units refers to those local units that are used primarily for heating and cooling of air, and not disinfection of air. Because of cleaning difficulty and potential for buildup of contamination, recirculating room units shall not be used in areas marked "No." However, for airborne infection control, air may be recirculated within individual isolation rooms if filters with a maximum efficiency rating value of 17 or higher are used. The maximum efficiency rating value (MERV) is a standard of ASHRAE, Standard 52.2, 1999 edition. Isolation rooms may be ventilated by reheat induction units in which only the primary air supplied from a central system passes through the reheat unit. Gravity-type heating or cooling units such as radiators or convectors shall not be used in trauma rooms and other special care areas. Recirculating devices with 99.97% efficiency filters may have potential uses in existing facilities as interim, supplemental environmental controls to meet requirements for the control of airborne infectious agents. Limitations in design must be recognized. The design of either portable or fixed systems should prevent stagnation and short circuiting of airflow. The supply and exhaust locations should direct clean air to areas where health care workers are likely to work, across the infectious source, and then to the exhaust, so the health care worker is not in a position between the infectious source and the exhaust location. The design of such systems should also allow for easy access for scheduled preventive maintenance and cleaning.

[7] The ranges listed are the minimum and maximum limits where control is specifically needed. The maximum and minimum limits are not intended to be independent of a space's associated temperature. The relative humidity is expected to be at the

lower end of the range when the temperature is at the higher end, and vice versa.

[8] Where temperature ranges are indicated, the systems shall be capable of maintaining the rooms at any point within the range. A single figure indicates a heating or cooling capacity of at least the indicated temperature. This is usually applicable when patients may be undressed and require a warmer environment. Additional heating may be required in these areas to maintain temperature range. Nothing in these rules shall be construed as precluding the use of temperatures lower than those noted when the patients' comfort and medical conditions make lower temperatures desirable. Unoccupied areas such as storage rooms shall have temperatures appropriate for the function intended.

[9] The infectious disease isolation room described here is to be used for isolating the airborne spread of infectious diseases, such as measles, varicella, or tuberculosis. The design of airborne infection isolation rooms should include the provision for normal patient care during periods not requiring isolation precautions. Supplemental recirculating devices may be used in the patient room, to increase the equivalent room air exchanges; however, such recirculating devices do not provide the outside air requirements. Air may be recirculated within individual isolation rooms if filters with a MERV rating of 17 or higher are used. Exhaust systems for infectious isolation rooms shall exhaust no other areas or rooms. Rooms with reversible airflow provisions for the purpose of switching between protective environment and AII functions are not acceptable.

[10] When required, appropriate hoods and exhaust devices for the removal of noxious gases or chemical vapors shall be provided. Laboratory hoods shall meet the following general standards.

1. Have an average face velocity of at least 75 feet per minute.
2. Be connected to an exhaust system to the outside which is separate from the building exhaust system.
3. Have an exhaust fan located at the discharge end of the system.
4. Have an exhaust duct system of noncombustible corrosion-resistant material as needed to meet the planned usage of the hood.

Laboratory hoods shall meet the following special standards:

1. Fume hoods and their associated equipment in the air stream, intended for use with perchloric acid and other strong oxidants, shall be constructed of stainless steel or other material consistent with special exposures, and be provided with a water wash and drain system to permit periodic flushing of duct and hood. Electrical equipment intended for installation within the duct shall be designed and constructed to resist penetration by water. Lubricants and seals shall not contain organic materials. When perchloric acid or other strong oxidants are only transferred from one container to another, standard laboratory fume hoods and associated equipment may be used in lieu of stainless steel construction. Fume hood intended for use with radioactive isotopes shall be constructed of stainless steel or other material suitable for the particular exposure and shall comply with National Fire Protection Association 801, Facilities for Handling Radioactive Materials, 2003 edition (NFPA 801).

NOTE: RADIOACTIVE ISOTOPES USED FOR INJECTIONS, ETC. WITHOUT PROBABILITY OF AIRBORNE PARTICULATES OR GASES MAY BE PROCESSED IN A CLEAN WORKBENCH-TYPE HOOD WHERE ACCEPTABLE TO THE NUCLEAR REGULATORY COMMISSION.

2. In new installations and construction or major renovation work, each hood used to process infectious or radioactive materials shall have a minimum face velocity of 150 feet per minute with suitable static pressure operated dampers and alarms to alert staff of fan shutdown. Each hood shall have filters with an efficiency of 99.97% (based on the dioctyl-phtalate test method) in the exhaust stream, and be designed and equipped to permit the removal, disposal, and replacement of contaminated filters. Filters shall be as close to the hood as practical to minimize duct contamination. Hoods that process radioactive materials shall meet the requirements of the Nuclear Regulatory Agency.

[11] Differential pressure shall be a minimum of 0.01 inch water gauge. If alarms are installed, allowances shall be made to prevent nuisance alarms of monitoring devices.

[12] Air movement shall be IN to the isolation anteroom from the adjacent corridor and OUT from the anteroom to the adjacent isolation room.

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In a ventilation system that recirculates air, filters with a MERV rating of 17 or higher can be used in lieu of exhausting the air from these spaces to the outside. In this application, the return air shall be passed through the HEPA filters before it is introduced into any other space.