Committee Input No. 906-NFPA 99-2021 [Sections 9.3, 9.4]

See Public Input No. 389 for proposed changes to be discussed at Second Draft.

Sections 9.3, 9.4

9.3 General.

9.3.1 Heating, Cooling, Ventilating, and Process Systems.

9.3.1.1

Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code or listed within ASHRAE 170, *Ventilation of Health Care Facilities*, shall be provided in accordance with ASHRAE 170.

9.3.1.2

Laboratories shall comply with NFPA 45.

9.3.1.3* Anesthetizing Locations.

Anesthetizing locations shall not be required to have a smoke purge system.

9.3.2 Energy Conservation.

Heating, cooling, and ventilating systems serving spaces or providing health care functions covered by this code shall comply with ASHRAE 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, or another locally adopted energy code.

9.3.3 Commissioning.

9.3.3.1

Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code shall be commissioned in accordance with ASHRAE 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*.

9.3.3.2*

Commissioning shall follow any publicly reviewed document acceptable to the authority having jurisdiction.

9.3.4 Piping.

Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code shall utilize piping systems complying with applicable mechanical codes.

9.3.5 Ductwork.

Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code shall utilize ductwork systems complying with NFPA 90A or applicable mechanical codes.

9.3.6 Medical Gas Storage or Transfilling.

9.3.6.1

All gases, other than medical gases, shall be provided with ventilation per NFPA 55.

9.3.6.2

Outdoor storage/installations for medical gases and cryogenic fluids shall be provided with ventilation per NFPA 55.

9.3.6.3*

Medical gases and cryogenic fluids that are in use per Chapter 11 shall not require special ventilation.

9.3.6.4

Transfilling area shall be provided with ventilation in accordance with NFPA 55.

9.3.6.5

Indoor storage or manifold areas and storage or manifold buildings for medical gases and cryogenic fluids shall be provided with natural ventilation or mechanical exhaust ventilation in accordance with 9.3.6.5.1 through 9.3.6.8.

9.3.6.5.1*

For the purposes of this section the volume of fluid (gas and liquid) to be used in determining the ventilation requirements shall be the volume of the stored fluid when expanded to standard temperature and pressure (STP) of either the largest single vessel in the enclosed space or of the entire volume of the connected vessels that are on a common manifold in the enclosed space, whichever is larger.

9.3.6.5.2 Natural Ventilation.

9.3.6.5.2.1

Natural ventilation shall consist of two nonclosable louvered openings, each having an aggregate free opening area of at least 155 cm^2/35 L (24 $in.^2$/1000 ft^3) of the fluid designed to be stored in the space and in no case less than 465 cm^2 (72 $in.^2$).

9.3.6.5.2.2

One opening shall be located within 30 cm (1 ft) of the floor, and one shall be located within 30 cm (1 ft) of the ceiling.

9.3.6.5.2.3

The openings shall be located to ensure cross ventilation.

9.3.6.5.2.4

Natural ventilation openings shall be directly to the outside atmosphere without ductwork.

9.3.6.5.2.5

Mechanical ventilation shall be provided if natural ventilation requirements cannot be met.

9.3.6.5.3 Mechanical Ventilation.

9.3.6.5.3.1

Mechanical exhaust to maintain a negative pressure in the space shall be provided continuously, unless an alternative design is approved by the authority having jurisdiction.

9.3.6.5.3.2

Mechanical exhaust shall be at a rate of 1 L/sec of airflow for each 300 L (1 cfm per 5 ft^3 of fluid) designed to be stored in the space and not less than 24 L/sec (50 cfm) nor more than 235 L/sec (500 cfm).

9.3.6.5.3.3

Mechanical exhaust inlets shall be unobstructed and shall draw air from within 300 mm (1 ft) of the floor and adjacent to the cylinder or containers.

9.3.6.5.3.4

Mechanical exhaust air fans shall be supplied with electrical power from the essential electrical system. Where an essential electrical system is not provided, a risk assessment shall be conducted to determine if continuous ventilation shall be provided by alternate means.

9.3.6.5.3.5

Dedicated exhaust systems shall not be required, provided that the system does not connect to spaces that contain combustible or flammable materials.

9.3.6.5.3.6

The exhaust duct material shall be noncombustible.

9.3.6.5.3.7

A means of make-up air shall be provided according to one of the following:

(1) Air shall be permitted via noncombustible ductwork to be transferred from adjacent spaces, from outside the building, or from spaces that do not contain combustible or flammable materials.

(2) Air shall be permitted to be transferred from a corridor under the door up to the greater of 24 L/sec (50 cfm) or 15 percent of the room exhaust in accordance with NFPA 90A.

(3) Supply air shall be permitted to be provided from any building ventilation system that does not contain flammable or combustible vapors.

9.3.6.6

Discharge from the natural and mechanical ventilation systems shall be sited by a minimum separation distance in accordance with NFPA 55.

9.3.6.7

A storage room shall maintain a temperature not greater than 52°C (125°F).

9.3.6.8

A transfer or manifold room shall maintain a temperature not greater than 52°C (125°F) and not less than −7°C (20°F).

9.3.7 Waste Gas.

9.3.7.1

Removal of excess anesthetic gases from the anesthesia circuit shall be accomplished by waste anesthetic gas disposal (WAGD), as described in Chapter 5, or by an active or passive scavenging ventilation system.

9.3.7.1.1 Active Systems.

A dedicated exhaust system with an exhaust fan shall be provided to interconnect all of the anesthesia gas circuits to provide sufficient airflow and negative pressure in the gas disposal tubing so that cross contamination does not occur in the other circuits connected to the system.

9.3.7.1.2 Passive Systems.

9.3.7.1.2.1

A dedicated exhaust system with an exhaust fan shall be provided to exhaust snorkels at all of the anesthesia gas circuits to provide sufficient airflow to capture the gases, vapors, and particles expelled from the gas disposal tubing.

9.3.7.1.2.2

The snorkel shall include a minimum 25.4 mm (1 in.) diameter tubing connected to the exhaust system.

9.3.7.2

All the exhausted air shall be vented to the external atmosphere.

9.3.7.3

The excess anesthetic gases shall be deposited into the exhaust stream either at the exhaust grille or further downstream in the exhaust duct.

9.3.8 Medical Plume Evacuation.

9.3.8.1*

Plumes from medical procedures, including the use of lasers, shall be captured by one of the following methods:

(1) * Dedicated exhaust system that discharges in accordance with 9.3.8.2

(2) Connection and return or exhaust duct after air cleaning through HEPA and gas phase filtration

(3) Point of use smoke evacuator for air cleaning and return to the space

9.3.8.2

The exhaust shall be located as follows:

(1) Outdoors

(2) At least 7.5 m (25 ft) from any door, window, air intake, or other openings in buildings or places of public assembly

(3) At an elevation different from air intakes

(4) Where prevailing winds, adjacent buildings, topography, or other influences will not divert the exhaust into occupied areas or prevent dispersion of the exhaust

9.3.9 Emergency Power System Room.

Heating, cooling, and ventilating of the emergency power system shall be in accordance with 6.7.1.3.4.

9.3.10 Ventilation During Construction.

Ventilation during construction shall comply with the applicable volume of FGI guidelines.

9.4 Category 1. (Reserved)

Submitter Information Verification

Committee: HEA-MEC

Submittal Date: Fri Jul 09 11:10:58 EDT 2021

Committee Statement

Committee Statement: The committee recognizes the challenges related to application of design and construction standards for accreditation reviews for existing facilities, and finds that the submitted public input can present a means of addressing this important healthcare topic. Public comment is encouraged as this is a unique new approach within this section.

Response Message: CI-906-NFPA 99-2021

Public Input No. 389-NFPA 99-2021 [Sections 9.3, 9.4]

Committee Input No. 905-NFPA 99-2021 [Section No. 9.3.7.1.1]

9.3.7.1.1 Active Systems.

A dedicated exhaust system with an exhaust fan shall be provided to interconnect all of the anesthesia gas circuits to provide sufficient airflow and negative pressure in the gas disposal tubing so that cross contamination does not occur in the other circuits connected to the system. Requirements for active systems are included in Chapter 5.

Submitter Information Verification

Committee: HEA-MEC

Submittal Date: Thu Jul 08 16:56:35 EDT 2021

Committee Statement

Committee Statement: Request specific sections or list of requirements for a dedicated exhaust fan system that addresses the safety concerns of the PI.

Response Message: CI-905-NFPA 99-2021

Public Input No. 194-NFPA 99-2021 [Section No. 9.3.7.1.1]