Revise 5.1.3.5.13 to read as follows:

Temporary Oxygen Supply Connection (TOSC)

And all other references to Emergency Oxygen Supply Connection and EOSC should be replaced with the terminology above.

Statement of Problem and Substantiation for Public Input

There is a common misconception that the EOSC can be utilized for Emergency Preparedness and is a viable way to feed the health care facility in the event of an unplanned loss of the oxygen supply system. In reality bulk gas suppliers are not able to provide a temporary oxygen supply trailer as quickly as would be needed for this type of event. There usually needs to be another interim measure for dealing with the loss of oxygen (i.e. high pressure cylinders back feeding critical care areas). Most bulk suppliers will not guarantee they will be able to respond quickly in an emergency event. This nomenclature leads facility managers to assume that the EOSC is the best option for dealing with an emergency situation, but in fact it is not.

Submitter Information Verification

Submitter Full Name: Jonathan Willard
Organization: Certified Medical Gas Services
Submittal Date: Wed Jun 06 07:23:21 EDT 2012

Committee Statement

Statement: There is a common misconception that the EOSC can be utilized for Emergency Preparedness and is a viable way to feed the health care facility in the event of an unplanned loss of the oxygen supply system. In reality bulk gas suppliers are not able to provide a temporary oxygen supply trailer as quickly as would be needed for this type of event. There usually needs to be another interim measure for dealing with the loss of oxygen (i.e. high pressure cylinders back feeding critical care areas). Most bulk suppliers will not guarantee they will be able to respond quickly in an emergency event. This nomenclature leads facility managers to assume that the EOSC is the best option for dealing with an emergency situation, but in fact it is not.

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5.1.9.2.3.1 through 5.1.9.2.3.6
Delete these paragraphs from the code and move them to the annex or they should be reworded so that they are consistent with paragraph 5.1.9.2.3.

Statement of Problem and Substantiation for Public Input

These paragraphs conflict with paragraph 5.1.9.2.3 which does not limit technology by using the term "wired" but instead uses the term "communicate". The intention of the code is to ensure that alarms and signaling equipment communicate in a safe, reliable supervised manner - not to limit or restrict the technology as to how these goals are accomplished.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 13:44:02 EDT 2012

Committee Statement

Resolution: These requirements are important to keep as written as a way to include requirements for wired systems. Removing these sections would remove important requirements.

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NOTE: This proposal appeared as Comment 99-180 (Log #106) which was held from the A11 ROC on Proposal 99-500.

Add new text to read as follows:

5.1.11.3(1) Where the outlet is downstream of a flow control device the station outlet identification shall include a warning not to use the outlet for ventilating patients.

5.1.11.3(2) No other flow control device (such as a flowmeter) shall be attached to the station outlet.

Statement of Problem and Substantiation for Public Input

Sleep labs are being built with outlets downstream of flow control devices using standard labeling (i.e., Oxygen).

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Mon Jun 11 11:22:28 EDT 2012

Committee Statement

Resolution: FR-281-NFPA 99-2012. Item 2 was deleted as it does not address labeling.
Statement: Sleep labs are being built with outlets downstream of flow control devices using standard labeling (i.e., Oxygen)

Copyright Assignment

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Utilize a common chapter format for all chapters that use the risk assessment approach contained in Chapter 4. While it might be desirable to have Category 1 as the .1 Section of each Chapter this may not be practical. Therefore, an alternative approach would be to have the .1 Section address Applicability, the .2 Section address other issues such as Nature of Hazards, the .3 Section be Category 1, the .4 Section be Category 2, the .5 Section be Category 3.

Within each chapter it would also be good to follow a similar format for the categories addressed. For example, sprinkler requirements are found in 7.3.1.2.1.7 for EF’s but in 7.3.1.2.3.9 (within Environmental Requirements) for TR’s.

Statement of Problem and Substantiation for Public Input

A common format for each chapter would make the document more user friendly. A common format within each chapter would make it easier to determine the differences between the requirements for different categories of each system.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 21:21:03 EDT 2012

Committee Statement

Resolution: This has been addressed by several of the technical committees. TC on Electrical Systems: A full reorganization of the Chapters under ELS committee is not practical at the time of the First Draft meeting. This would result in large changes and often a large deal of duplication. TC on Mechanical Systems: The TC has included risk categories but has kept them as reserved. TC on Piping Systems: Chapter 5 is already written in such a way. A CI has been created that looks to align Category 3 with the requirements for Category 1 and 2.

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Public Input No. 338-NFPA 99-2012 [ Global Input ]

Throughout the document

Emergency Electrical System should be changed to Essential Electrical Systems (EES) or Emergency Power Supply (EPS)

whichever is applicable.

Specifically: 5.1.9.1, 5.1.9.4.1, 7.3.1.2.1.5, 7.3.1.2.3.8, 14.2.5.1.6, 14.2.5.4.3, chapter 1 and annexes.

Statement of Problem and Substantiation for Public Input

The term Emergency Electrical System is used in chapters outside of chapter 6 where EES and EPS are very clearly defined (Essential Electrical Systems (EES) and Emergency Power Supply (EPS)), but not emergency electrical systems is not a defined system anywhere in the book. I believe in some chapters (outside of chapter 6) where emergency electrical system is used, the intent of the chapter was for an essential electrical system or an emergency power supply. It is confusing when you read a chapter, outside of chapter 6, that requires an emergency electrical system, when the intent was an essential electrical system or emergency power supply.

This should be an editorial change.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Wed Jun 20 16:58:52 EDT 2012

Committee Statement

Resolution: Each of the six sections that were referenced have been revised in different FRs.

Copyright Assignment

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Public Input No. 351-NFPA 99-2012 [ Global Input ]
Change the word "room" to "spaces" in the following sections:
3.3.31
3.3.138
A.3.3.138
A.3.3.138.1
A.3.3.138.2
A.3.3.138.3*
A.3.3.138.3
3.3.184*
6.3.2.2*
A.6.3.2.2.1
6.3.2.2.6.2 (A)
6.3.2.2.6.2 (B)
6.3.2.2.9.1
6.3.2.2.10.1
6.3.2.2.10.2
6.3.2.2.10.3
6.3.2.2.10.4
6.3.2.2.10.5
6.3.3.1
6.3.3.2
6.3.3.3.1
6.3.4.1.2
6.4.2.2.4.2 (3) (a)

Statement of Problem and Substantiation for Public Input

Use of the term “room(s)” is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term “room(s)” may restrict Code requirements or enforcement for perimeter areas that may need to be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 16:07:31 EDT 2012

Committee Statement

Resolution: This has been resolved through several FRs throughout the document.

Copyright Assignment

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Public Input No. 365-NFPA 99-2012 [Global Input]

Chapter 14 - Hyperbaric Facilities

Strongly concur – Under a risk based approach – all Hyperbaric chambers would require the patient to be directly (“hands on patient”) accessed by medical staff personnel and be directly monitored by acute care critical care monitors that be adjusted and or altered on the spot by appropriate medically qualified personnel.

Therefore multiplace Class A chambers would be the only type authorized for acute care. Namely this type permits “hands on” patient care for the acute care or potentially acute care intervention patient. This type of chamber, having fire suppression and a safer air environment, is clearly the only choice.

Class B chambers therefore would be relegated to “non acute care” patient treatments only.

Statement of Problem and Substantiation for Public Input

Impact: No code technical specifications needed other than designating Class A – Acute care and Class B – non acute care. NFPA99 Chapter 14’s current text would only require a clear listing of what Class A Hyperbaric Systems must have for an acute care setting versus what Class B Hyperbaric Chambers require for a non acute care setting, i.e. rearranging the existing text appropriately.

Submitter Information Verification

Submitter Full Name: W. Gurnée
Organization: OxyHeal Health Group
Submittal Date: Fri Jun 22 14:08:47 EDT 2012

Committee Statement

Resolution: It should not be the jurisdiction of NFPA 99 to be practicing medicine. It should be up to the doctor and facilities to determine how to provide care in chambers.

Copyright Assignment

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7.3.1.2.2 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:08:51 EDT 2012

Committee Statement

Resolution: This was addressed through the creation of FR 39 that resulted from the review of PI 36.

Copyright Assignment

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7.3.3.2 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:11:12 EDT 2012

Committee Statement

Resolution: The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Public Input No. 39-NFPA 99-2012 [Chapter NFPA]

7.3.1.2.4.4 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:10:29 EDT 2012

Committee Statement

Resolution: This change is no longer applicable. It was handled last revision cycle.

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6.3.2.10.5 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submital Date: Wed Mar 28 08:06:22 EDT 2012

Committee Statement

Statement: There are other rooms or areas that do need to be served by the EES.

Copyright Assignment

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Public Input No. 35-NFPA 99-2012 [Chapter NFPA]

6.4 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:07:09 EDT 2012

Committee Statement

Statement: Removes reference to distribution as these requirements are found in another section. Also removes reference to hospital and uses the more general term health care. The term "hospital appliance" was changed to "health care appliance" as requirements are to be based on category of hazard, not occupancy.

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Public Input No. 36-NFPA 99-2012 [ Chapter NFPA ]

7.3.1.2.1.4(H) The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:08:00 EDT 2012

Committee Statement

Statement: The EF and other data closets are widely used to house and distribute systems that use either Cat5/6, Coax or twisted pair low voltage systems.

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9.4.4.3.2 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:11:55 EDT 2012

Committee Statement

Resolution: This is no longer in the document.

Copyright Assignment

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Chapter 7 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:12:43 EDT 2012

Committee Statement

Statement: The title of Chapter 7 has been revised as there is no need to include "for Health Care Facilities" in the document. This correlates with the rest of NFPA 99.

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Note: This Proposal originates from Tentative Interim Amendment 99-12-1 (TIA 1031) issued by the Standards Council on August 11, 2011.

Add a new Chapter 8 to read as follows:

Chapter 8 Plumbing

8.1 Applicability.
8.1.1 This chapter shall apply to construction of new health care facilities, except as noted in 8.1.2 and 8.1.3.
8.1.2 This chapter shall also apply to the altered, renovated, or modernized portions of existing systems or individual components.
8.1.3 Existing construction or equipment shall be permitted to be continued in use when such
use does not constitute a distinct hazard to life.

8.1.4 Definitions.

8.1.4.1 Nonmedical Compressed Air. Air that is used for purposes other than patient care or medical devices that provide direct patient care.

8.2* System Category Criteria. The health care facility

8.2.1* The category of risk applied to each plumbing system serving a space shall be independent of the category of risk applied to other systems serving that same space.

8.3 General Requirements.

8.3.1 Potable Water. Potable water systems shall comply with applicable plumbing codes.

8.3.2 Nonpotable Water. Nonpotable water systems shall comply with applicable plumbing codes.

8.3.3 Water Heating. Maximum hot water temperatures shall comply with applicable plumbing codes.

8.3.4 Water Conditioning. Water shall be treated or heated to control pathogens in the water.

8.3.5 Nonmedical Compressed Air.

8.3.5.1 Nonmedical air compressors shall be listed or approved.

8.3.5.2 Nonmedical compressed air shall not be used for medical instruments or for human respiration.

8.3.6 Special Use Water Systems. When special use water systems are required, application of standards shall be provided in accordance with appropriate publicly reviewed nationally published standards.

8.3.7 Grease Interceptors.

8.3.7.1 Sizing for grease interceptors shall be permitted per local plumbing codes on an engineered calculation factoring meals served per day.

8.3.7.2 Grease interceptors shall be sized to capture grease from kitchen cooking and cleaning functions and shall prohibit introduction of grease into the sanitary sewer system.

8.3.8 Fixtures. Plumbing fixtures shall be suitable for the intended use.

8.3.9 Black Waste Water. Black waste water shall be discharged to a sanitary sewer or private on-site waste treatment system as permitted by applicable plumbing codes.

8.3.10 Grey Waste Water.

8.3.10.1 Grey waste water shall be permitted to be stored on-site and used for nonpotable water systems as permitted by applicable plumbing codes.

8.3.10.2 Grey waste water shall not be used for any system that aerosolizes the water in a breathing zone or has direct contact with humans.

8.3.10.3 Excess grey waste water shall be discharged to a sanitary sewer or private on-site waste treatment system as permitted by applicable plumbing codes.

8.3.11 Clear Waste Water.

8.3.11.1 Clear waste water shall be permitted to be stored on-site and used for nonpotable water systems as permitted by applicable plumbing codes.

8.3.11.2 Clear waste water that has been treated to potable water standards shall be permitted to be used as nonpotable water.

8.3.11.3 Clear waste water that has not been treated to potable water standards shall not be used for any system that aerosolizes the water in a breathing zone or has direct contact with humans.

8.3.11.4 Excess clear waste water shall be discharged to a storm sewer, held in detention ponds, or recharged into the water table as permitted by applicable plumbing codes.

A.8.2.1 There are no interdependencies for each type of system (e.g., medical gas, electrical, potable water, nonpotable water, nonmedical compressed air, heating). A risk assessment of each system should be conducted to evaluate the risk to the patient, staff, and visitors. It is possible when applying this section to identify multiple categories of systems serving a single space.
possible when applying this section to identify multiple categories of systems serving a single patient. For example see Table A.8.2 and A.4.1.

***INSERT Table A.8.2 HERE***

A.8.3.3 Another source of maximum hot water temperatures would be *FGI Guidelines for Design and Construction of Health Care Facilities, 2010.*

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**Additional Proposed Changes**

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<th>Description</th>
<th>Approved</th>
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<td>NFPA 99_TblA.8.2 (Log #2)</td>
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</table>

**Statement of Problem and Substantiation for Public Input**

Chapter 8, Plumbing, was returned to the committee at the Association Technical Meeting in June 2011. As a result, there are no requirements for any plumbing system in a health care facility. The committee feels it is necessary to reference local and national codes for the installation of a plumbing system to provide guidance to the users of NFPA 99. It was stated at the Association Technical Meeting, and agreed upon, that in the event of Chapter 8 being returned, the committee would process a TIA to bring back the necessary language that the committee felt was not controversial and would make the document a more useable code.

Emergency Nature: It is important to process the following TIA immediately to correct an omission as NFPA 99 will be incomplete without the reference to local and national codes for plumbing system in a health care facility. Health care facilities depend on the requirements of NFPA 99 for the various systems such as electrical, medical gas and vacuum, security systems and information systems but the code will be incomplete if the plumbing requirements do not exist, thus leaving the users and designers without any specific guidance. This TIA will correct a situation that has an adverse impact on the safety of patients and staff in health care facilities as well as an adverse impact on the adoption of the code.

**Submitter Information Verification**

Submitter Full Name: Roger Lautz
Organization: Affiliated Engineers, Inc.
Submittal Date: Wed Mar 28 14:07:29 EDT 2012

**Committee Statement**

Resolution: This has be incorporated through several FRs to Chapter 8.

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6.3.2.6.2 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 07:49:28 EDT 2012

Committee Statement

Resolution: These conflicts have been resolved through the actions on FR’s in different way than submitted.

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Public Input No. 21-NFPA 99-2012 [Chapter NFPA]

4.3.2.2.4.3 The CC is directing the TC to address the performance criteria for surge protection in the next revision of NFPA 99.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 07:11:56 EDT 2012

Committee Statement

Resolution: There has been no new information provided relating to surge protection since the last revision cycle to 99.

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Public Input No. 44-NFPA 99-2012 [Chapter NFPA]

Note: This Proposal originates from Tentative Interim Amendment 99-12-2 (TIA 1032) issued by the Standards Council on August 11, 2011.

Add a new Chapter 9 to read as follows:

Chapter 9 Heating, Ventilation, and Air Conditioning (HVAC)

9.1 Applicability.

9.1.1 This chapter shall apply to construction of new health care facilities, except as noted in 9.1.2 and 9.1.3.

9.1.2 This chapter shall also apply to the altered, renovated, or modernized portions of existing systems or individual components.

9.1.3 Existing construction or equipment shall be permitted to be continued in use when such use does not constitute a distinct hazard to life.
use does not constitute a distinct hazard to life.

9.1.4 Definitions.

9.1.4.1 Ventilation. The mechanical or natural movement of air.

9.2* System Category Criteria. The health care facility

9.2.1* The category of risk applied to each HVAC system serving a space shall be independent of the category of risk applied to other systems serving that same space.

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 shall be provided in accordance with ASHRAE 170.

9.3.1.2 Laboratories shall comply with NFPA 45.

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 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.

9.3.3.2 Commissioning shall follow ASHRAE Guidelines 0 and 1 or any other publically 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 plumbing 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* Acoustics. Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code shall not exceed approved noise criteria.

9.3.7 Medical Gas Storage or Transfilling.

9.3.7.1 All gases, other than medical gases, shall be provided with ventilation per NFPA 55, Compressed Gases and Cryogenic Fluids Code.

9.3.7.2 Outdoor storage/installations for medical gases and cryogenic fluids shall be provided with ventilation per NFPA 55, Compressed Gases and Cryogenic Fluids Code.

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

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

9.3.7.5 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 9.3.7.5.1 through 9.3.7.8.

9.3.7.5.1* 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.

9.3.7.5.2 Natural Ventilation.

9.3.7.5.2.1 Natural ventilation shall consist of two nonclosable louvered openings, each having an aggregate free opening area of at least 155 cm² (24 in.²/1000 ft³) of the fluid designed to be stored in the space and in no case less than 465 cm² (72 in.²).

9.3.7.5.2.2 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.
9.3.7.5.2.3 The openings shall be located to ensure cross ventilation.

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

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

9.3.7.5.3 Mechanical Ventilation.

9.3.7.5.3.1 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.

9.3.7.5.3.2 Mechanical exhaust shall be at a rate of 1 L/sec of airflow for each 300 L (1 cfm per 5 ft³ 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).

9.3.7.5.3.3 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.

9.3.7.5.3.4 Mechanical exhaust air fans shall be supplied with electrical power from the essential electrical system.

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

9.3.7.5.3.6 The exhaust duct material shall be noncombustible.

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

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

(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.

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

9.3.7.7 A storage room shall maintain a temperature not greater than 52

9.3.7.8 A transfer or manifold room shall maintain a temperature not greater than 52

9.3.8 Waste Gas.

9.3.8.1 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.

9.3.8.1.1 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.

9.3.8.1.2 Passive Systems.

9.3.8.1.2.1 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.

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

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

9.3.8.3 The excess anesthetic gases shall be deposited into the exhaust stream either at the...
9.3.9 Medical Plume Evacuation. Plumes from medical procedures including the use of lasers shall be captured by one of the following methods:

(1) Direct connection to a unfiltered dedicated exhaust system that discharges outside the building
(2) HEPA filtering and direct connection to a return or exhaust duct
(3) Chemical and thermal sterilization and return to the space

9.3.10 Emergency Power System Room.

9.3.10.1 Heating, cooling, and ventilating of the emergency power system shall be in accordance with NFPA 110.

9.3.10.2 Maintenance of Temperature. The EPS shall be heated as necessary to maintain the water jacket temperature determined by the EPS manufacturer for cold start and load acceptance for the type of EPSS. [110:5.3.1]

9.3.10.3 Heating, Cooling, and Ventilating.

9.3.10.3.1* With the EPS running at rated load, ventilation airflow shall be provided to limit the maximum air temperature in the EPS room to the maximum ambient air temperature required by the EPS manufacturer. [110:7.7.1]

9.3.10.3.2 Ventilation air supply shall be from outdoors or from a source outside of the building by an exterior wall opening or from a source outside the building by a 2-hour fire-rated air transfer system. [110:7.7.2]

9.3.10.3.3 Ventilation air supply shall be from outdoors or from a source outside of the building by an exterior wall opening or from a source outside the building by a 2-hour fire-rated air transfer system. [110:7.7.3]

9.3.10.3.4 Ventilation air shall be provided to supply and discharge cooling air for radiator cooling of the EPS when running at rated load. [110:7.7.4]

9.3.10.3.5 Motor operated dampers, when used, shall be spring-operated to open and motor-closed. Fire dampers, shutters, or other self-closing devices shall not be permitted in ventilation openings or ductwork for supply or return/discharge air to EPS equipment for Level 1 EPSS. [110:7.7.5]

9.3.10.3.6 The ambient air temperature in the EPS equipment room or outdoor housing containing Level 1 rotating equipment shall be not less than 4.5110:7.7.6]
9.3.10.3.7 Units housed outdoors shall be heated as specified in 5.3.1 of NFPA 110, *Standard for Emergency and Standby Power Systems*. [110:7.7.7]

9.3.10.3.8 Design of the HVAC system for the EPS equipment room shall include provision for factors including, but not limited to, the following:

1. Heat
2. Cold
3. Dust
4. Humidity
5. Snow and ice accumulations around housings
6. Louvers
7. Remote radiator fans
8. Prevailing winds blowing against radiator fan discharge air [110:7.7.8]

9.3.11 Ventilation During Construction. Ventilation during construction shall comply with the applicable mechanical codes.

A.9.2 Table A.9.2 represents a typical analysis for a health care facility. The governing body, or its designate, should complete a system analysis based on its functional program. A table similar to Table A.9.2 can be developed to transfer information from the governing body to designers or authorities having jurisdiction, or both.

***INSERT TABLE A.9.2 HERE***

A.9.2.1 There are no interdependencies for each type of system (e.g., medical gas, electrical, potable water, nonpotable water, nonmedical compressed air, plumbing). A risk assessment of each system should be conducted to evaluate the risk to the patient, staff, and visitors. It is possible when applying this section to identify multiple categories of systems serving a single patient. For example see Table A.9.2 and A.4.1.

A.9.3.6 A source for determining acceptable noise criteria is the ASHRAE Handbook.

A.9.3.7.3 Paragraph 9.3.7.3 only covers fluids that are stored in enclosed spaces.

A.9.3.7.5.1 Table A.9.3.7.5.1 shows the cylinder volumes and weights of typical medical gas cylinders.

***INSERT TABLE A.9.3.7.5.1 HERE***

A.9.3.10.3.1 During operation, EPS and related equipment reject considerable heat that needs to be removed by proper ventilation or air-cooling. In some cases, outdoor installations rely on natural air circulation, but enclosed installations need properly sized, properly positioned ventilation facilities, to prevent recirculation of cooling air. The optimum position of air-supply louvers and radiator air discharge is on opposite walls, both to the outdoors. [110: A.7.7.1]


### Additional Proposed Changes

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<th>Approved</th>
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### Statement of Problem and Substantiation for Public Input
Chapter 9, Heating, was returned to the committee at the Association Technical Meeting in June 2011. As a result, there were several ventilation requirements that were deleted but existed in the 2005 edition and are considered necessary by the committee. The requirements for ventilation of rooms transferring or transfilling cylinders and containers with oxygen and smoke removal of windowless anesthetizing rooms needs to be added back into the code to make the document more complete. In addition there are other new ventilation requirements that should also be added back into the code and they include system category criteria, generator ventilation, energy conservation, acoustics, commissioning, waste gas, medical plume evacuation and ventilation during construction. It was stated at the Association Technical Meeting, and agreed upon, that in the event of Chapter 9 being returned, the committee would process a TIA to bring back the necessary language that the committee felt was not controversial and would make the document a more useable code.

Emergency Nature: It is important to process the following TIA immediately to correct an omission as NFPA 99 will be incomplete without the requirements for ventilation and HVAC systems in a health care facility. Health care facilities depend on the requirements of NFPA 99 for the various systems such as electrical, medical gas and vacuum, security systems and information systems but the code will be incomplete if the ventilation requirements do not exist, thus leaving the users and designers without any specific guidance. In addition, there were existing requirements that were moved to the proposed new Heating chapter but were eliminated when the chapter was returned to the committee. The elimination of these requirements has left a gap in the standard for the ventilation of rooms used to transfill and transfer oxygen into cylinders and containers. This TIA will correct a situation that has an adverse impact on the safety of patients and staff in health care facilities as well as an adverse impact on the adoption of the code.

Submitter Information Verification

Submitter Full Name: Roger Lautz
Organization: Affiliated Engineers, Inc.
Submittal Date: Wed Mar 28 14:11:00 EDT 2012

Committee Statement

Resolution: This has been added through several FRs to Chapter 9.

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Public Input No. 45-NFPA 99-2012 [ Chapter NFPA ]
NOTE: This proposal appeared as Comment 99-146 (Log #94) which was held from the A11 ROC on Proposal 99-171.

Revise text to read as follows:

5.2.3.4 Central Supply Systems. Level 2 systems shall comply with 5.1.3.4, except as follows:
(1) Manifolds for Cryogenic Liquid Containers shall be permitted to have a primary supply and reserve supply.
(2) The facility staff shall develop their emergency plan to deal with the loss of medical gases.

Statement of Problem and Substantiation for Public Input

The increased usage of micro bulks and mini bulks, supplies between 5000 cu ft and 20,000 cu ft of gas, in the healthcare industry have caused confusion as to their proper installation. Most installers will follow 5.1.3.4.12 for Manifolds for Cryogenic Liquid Containers, but some installations are being designed to 5.1.3.4.13 Bulk Cryogenic Liquid Systems because the word Bulk is used in the term "Micro Bulk". By NFPA 99 -section 3.3.19.2 oxygen definition, a supply of oxygen more than 20,000 cu ft is considered a bulk supply. The supply of gas 20,000 cu ft or less is not a bulk supply and should be installed in accordance with 5.1.3.4.12. This may not be practical in the case of a micro bulk. In accordance with 5.1.3.4.12, there needs to be two equal headers. This means that the facility either will have to install two micro bulks and a reserve or have enough supply of gas (cylinders or containers) on the secondary side to equal the primary supply. By adding another micro bulk, this additional supply would in most cases increase the total supply to over 20,000 Cu ft thus requiring the installation to follow NFPA 55 code. Most of the micro or mini bulk installation are supplying level II facilities (clinics, same days under general anesthesia, emergency care,...). In the NFPA 99 Level II sections 5.2.3.5, 5.2.3.6, & 5.2.3.7, there are exceptions for the Medical Air Supply Systems, Medical Surgical Vacuum Systems and WAGD central supply systems. I believe that Cryogenic Liquid Containers can be designed with a Primary supply and reserve supply for level II facilities without lowering patient safety standards. The facility will still need to develop an emergency plan that addresses the loss of medical gases.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Thu Mar 29 09:28:43 EDT 2012

Committee Statement

Resolution: The liquid cryogenic containers by design make it difficult to monitor the liquid level for alarm purposes.

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Public Input No. 52-NFPA 99-2012 [Chapter NFPA]

NOTE: This proposal appeared as Comment 99-99 (Log #45) which was held from the A11 ROC on Proposal 99-97.

Add new text to read as follows:

In the operating room environment, if a GFCI is used as a means to mitigate risk, then only a single outlet shall be protected by a GFCI, or only one outlet shall be controlled by a single overcurrent protection device.

Statement of Problem and Substantiation for Public Input

It is essential that if a GFCI trips that only one outlet is interrupted. Having the power interrupted to more than one outlet would result in confusion and loss of multiple pieces of equipment. This would create a serious risk to patient safety.

Submitter Information Verification

Submitter Full Name: JAN EHRENWERTH
Organization: YALE UNIVERSITY SCHOOL OF MEDICINE
Submittal Date: Thu Mar 29 10:04:14 EDT 2012

Committee Statement

Resolution: There is no technical substantiation to justify this change.

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NOTE: This proposal appeared as Comment 99-180 (Log #153) which was held from the A11 ROC on Proposal 99-500.

Add new text to read as follows:

20.2.8.6.4 When air cylinders are used to provide breathing air in Class A or B chambers, the breathing air shall be medical air USP.
20.2.8.6.5 When cylinders are used to provide oxygen in Class A or B chambers, the gas shall be oxygen USP.
20.2.8.6.5 In addition to the required labeling on the cylinders the certificate of analysis or product certification shall be available and checked by the safety director.

Statement of Problem and Substantiation for Public Input

HEA /HYP substantiation for the addition of 20.2.8.6.4 and 20.2.8.6.5 is not complete, suggest requiring the COA for the cylinders as additional verification to the labeling on the cylinders. Without the additional statement we could still connect mislabeled cylinders to our systems. Standard practice in some cases is to analyze the cylinders for O2% and tag the cylinders with initials, % and date prior to connection.

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Health Care
Submittal Date: Thu Mar 29 10:02:18 EDT 2012

Committee Statement

Resolution: This material is adequately addressed in the Annex in A.14.2.8.6.

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Public Input No. 50-NFPA 99-2012 [ Chapter NFPA ]

NOTE: This proposal appeared as Comment 99-33 (Log #83) which was held from the A11 ROC on Proposal N/A.
Revise text to read as follows:

3.3.19 Bulk System. An assembly of equipment, such as storage containers, pressure regulators, pressure relief devices, vaporizers, manifolds, and interconnecting piping, that terminates at the source valve of oxygen or 1452 kg (3200 lb) of nitrous oxide including unconnected reserves on the site. (PIP)

Statement of Problem and Substantiation for Public Input

Specific definitions for Bulk Oxygen and Bulk Nitrous are in 3.3.19.1 & 3.3.19.2.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Thu Mar 29 09:56:51 EDT 2012

Committee Statement

Statement: Definitions have been revised for simplification.

Copyright Assignment

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Public Input No. 38-NFPA 99-2012 [ Chapter NFPA ]

7.3.1.2.3 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:09:42 EDT 2012

Committee Statement

Resolution: This was addressed through the creation of FR 39 that resulted from the review of PI 36.

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Public Input No. 48-NFPA 99-2012 [ Chapter NFPA ]

NOTE: This proposal appeared as Comment 99-188 (Log #92) which was held from the A11 ROC on Proposal 99-341.

Revise text to read as follows:
5.1.13.2.3.1(12) Medical Gas Quality
(a) Purity - Percent Concentration
(b) Permanent Particulates & Contaminants
(c) Odor & Moisture

Statement of Problem and Substantiation for Public Input
There is a continual need for human diligence in the establishment and maintenance of safe practices for respiratory therapy. It is essential for personnel having responsibility for respiratory therapy to establish and enforce appropriate safety programs.

The supply of gas that comes from the manufacturer or distributor should be accompanied with a Certificate of Analysis. Additional impurities can enter the pipeline over time from wear and tear on the pipeline, temperature changes that affect the pipeline, moisture buildup, maintenance work on the pipeline and components, etc. The purity of the gas does not end at the supply source. The pipeline network runs throughout the facility. There are numerous articles written about pipeline contamination (i.e. ECRI).

1. ECRI recommend random testing of selected outlets for purity and contaminant testing.

1. Routinely inspect and maintain medical gas and vacuum systems. Schedules and procedures are described in our IMP Procedure in Health Devices 23 (1-2).

2. Use filters on medical gas outlets only as a temporary measure to protect patients and devices against particles, bacteria, or liquid water found in the system. Develop a schedule of filter inspection and replacement and a plan to correct the source of contamination in a medical gas system as soon as possible. Note that filters will not remove water vapor or other gases, which can damage some medical devices. Water found in the system is a serious problem requiring immediate action to eliminate its cause and limit the extent and impact of the contamination.

2. Contamination of medical gas and water pipelines in a new hospital building.

Eichhhorn JH, Bancroft ML, Laasbert LH, du Moulin GC, Saubermann AJ.

Abstract
Medical gases and water were sampled and tested for purity prior to the opening of a 176-bed addition to a 450-bed general hospital.

Contamination was found. In delivered oxygen, compressed air, and nitrous oxide, this consisted of a volatile hydrocarbon at an initial concentration of 10 parts per million and a dust of fine gray particulate matter. In water from new taps bacterial contamination with as many 400,000 organisms per 100 ml was present. All these contaminants were considered potential hazards to patient safety. Studies were done to help delineate the nature and origin of these contaminants. Each contaminant was eventually largely eliminated by purging the respective pipeline systems with continuous flows. Planners, builders, and responsible medical personnel must be aware of the potential such hazards in a new hospital building.

3. Contamination of piped medical gas supply with water.

Abstract
The failure of anesthetic equipment as a result of maintenance is extremely rare. The ingress of water into the flowmeters of an anesthetic machine from the piped medical air supply is reported and is possibly unique. The piped medical air supply was open to the atmosphere during maintenance. Water condensed in the gas pipeline and this was not noticed during subsequent testing. Water was seen leaking from the orthopaedic air tools used for surgery but was assumed to be from the autoclaving process. Later the same day, when medical air from the piped source was used as part of the gas mixture for a general anesthetic, water was seen filling the barrel of the flowmeter air control valve. This could have had far-reaching and dangerous consequences for the patient, which were fortunately averted.

(Published Online August 16, 2006)

4. Medicine

Journal of Clinical Monitoring and Computing Volume 11, Number 1, 73-76, DOI: 10.1007/BF01627427

APSF Newsletter

Medical gas contamination: An unrecognized patient danger

Dr. Moss, of Verona, NY, has been very active with and is a consultant to the New Jersey State Society of Anesthesiologists. He is an APSR Director and also Chairman of the APSF Subcommittee on Medical Gas and Vacuum Systems.
6.3.2.2.10 The CC directs the TC to review this issue for next cycle.

Statement of Problem and Substantiation for Public Input

This is a direction from the Technical Correlating Committee on Health Care Facilities in accordance with 3.4.2 and 3.4.3 of the Regulations Governing Committee Projects.

Submitter Information Verification

Submitter Full Name: CC on HEA-ELS
Organization: NFPA
Submittal Date: Wed Mar 28 08:03:43 EDT 2012

Committee Statement

Resolution: The use of this is not based on facilities in whole but on specific areas of the facility.

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NOTE: This proposal appeared as Comment 99-177 (Log #2) which was held from the A11 ROC on Proposal 99-295.

Add text to read as follows:

The installation of medical gas equipment such as but not limited to medical gas compressors, air dryers, vacuum pumps, headwalls, columns, ceiling columns, ceiling hung pendants, movable tract systems, and so forth, shall be installed by qualified, competent, technicians who meet the requirements of ASSE 6010 Professional Qualification Standard for Medical Gas Systems Installers.

Statement of Problem and Substantiation for Public Input

In Contra Costa County, these items are being installed by persons who are not trained in the handling, installation and inspection of this equipment. To prevent equipment from being installed that may be contaminated, I believe that any and all persons who install medical gas equipment must meet the requirements of ASSE 6010.

Submitter Information Verification

Submitter Full Name: Robert Sewell
Organization: Plumbers & Steamfitters Local
Submittal Date: Thu Mar 29 09:44:02 EDT 2012

Committee Statement

Resolution: This requirement would be too restrictive to personnel working in other fields who are qualified.

Copyright Assignment

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This code shall apply to all health care facilities other than home care and veterinary care.

Statement of Problem and Substantiation for Public Input

This will eliminate the confusion that this does not apply to veterinary care.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 07 12:18:42 EDT 2012

Committee Statement

Resolution: FR-308-NFPA 99-2012
Statement: This will eliminate the confusion by clearly stating that NFPA 99 does not apply to veterinary care.

Copyright Assignment

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Public Input No. 350-NFPA 99-2012 [Section No. 1.3.4]
1.3.4 Patient Care Rooms \textit{Spaces}.

1.3.4.1 The governing body of the facility or its designee shall establish the following areas in accordance with the type of patient care anticipated and with the following definitions of the classification (see definition of patient care room in Chapter 3):

1. Critical care \textit{rooms spaces}
2. General care \textit{rooms spaces}
3. Basic care \textit{rooms spaces}
4. Support rooms

1.3.4.2 Anesthesia.

It shall be the responsibility of the governing body of the health care organization to designate anesthetizing locations.

1.3.4.3 Wet Procedure Locations.

It shall be the responsibility of the governing body of the health care organization to designate wet procedure locations.

Statement of Problem and Substantiation for Public Input

Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 16:02:16 EDT 2012

Committee Statement

Resolution: FR-310-NFPA 99-2012
Statement: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

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### 2.2 NFPA Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

- **NFPA 750®, Standard on Water Mist Fire Protection Systems**
Statement of Problem and Substantiation for Public Input

Add new reference to automatic water mist system to section 15.8 Automatic Sprinklers and Other Extinguishing Equipment. Since this section should indicate “Other Extinguishing Equipment” and Water Mist systems have been approved and installed in many sprinkler applications globally for over 15 years, water mist systems should be included. They have been listed by national and internationally recognized testing laboratories such as: UL (Ordinary Hazard Group 1), FM (Light Hazard occupancies, Computer Rooms, Subfloors, Special Hazard Machinery & spaces), City of New York (Light Hazard Occupancies, Combustion Turbines, Machinery Spaces), VdS Germany (Light Hazard, Ord Haz Grp I,II parking garages & III selected occupancies, Cable Tunnels), KfV Austria (Light Hazard, Ord Haz Grp I, Combustion Turbines) and other agencies. These listings and installations have demonstrated equivalent fire protection to the authority having jurisdiction (AHJ). The addition of the proposed text will provide the AHJ a clear option to accept water mist systems as an equivalent system to an approved automatic sprinkler system thereby allowing construction alternatives without having to prove equivalency or be considered an alternative extinguishing system.

Submitter Information Verification

Submitter Full Name: SCOTT HARRISON
Organization: MARIOFF NORTH AMERICA
Submittal Date: Fri Jun 22 11:43:34 EDT 2012

Committee Statement

Resolution: FR-311-NFPA 99-2012
Statement: The use of water mist has been allowed by Chapter 14 for limited applications. The reference to NFPA 99 has been removed because there is no reason to reference itself. NFPA 101A was removed as it is not referenced.

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2.3.1 ANSI Publications.
American National Standards Institute, Inc., 22 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI/AAMI ES 60601–1, Medical Electrical Equipment, 2005.
ANSI/UL 1069, Standard for Hospital Signaling and Nurse Call Equipment, 2012

Statement of Problem and Substantiation for Public Input

Rationale: Nurse call systems are required, as set forth in chapter 7. However, the code does not identify or describe the standard to which nurse call systems need to be listed. UL 1069 is an ANSI approved standard.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Tue Jun 12 14:54:19 EDT 2012

Committee Statement

Resolution: This has not been incorporated into Chapter 7, so it cannot be added to Chapter 2.

Copyright Assignment

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2.3.2 AHSRAE Publications.
American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305
ASHRAE 170, Ventilation of Health Care Facilities, 2008, with all addenda that have been formally adopted as of xx/xx/20xx (date of adoption of NFPA 99-2015).

Statement of Problem and Substantiation for Public Input

ASRAE 170-2008 is a continuing maintenance standard, and as such, addenda are continuously adopted. ASRAE 170-2008 without addenda is obsolete and is not the current Standard of Care. An alternate method would be to list the addenda. As of 6/22/2012, those addenda are a, b, d, e, f, g, h, i, and m.

Since the linking tool is not working, this is related to Public inputs # 381, and 383.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 17:12:48 EDT 2012

Committee Statement

Resolution: NFPA regulations do not permit accepting addenda to documents that will be accepted in the future. The committee needs to be able to review these before the publication of NFPA 99. There should be a reasoning as to why the suggested addenda appear to leave out certain addenda. The TC appreciates following the most up to date requirements, and would include specific addenda at the time of the comments stage.

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2.3.2 ASHRAE Publications.
American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.—ASHRAE,
1791 Tullie Circle, NE, Atlanta, GA 30329-2305

Statement of Problem and Substantiation for Public Input

Fixed misspelling.
ASHRAE is the official name of this organization. See the linked press release.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 17:24:36 EDT 2012

Committee Statement

Resolution: FR-312-NFPA 99-2012
Statement: Fixed misspelling. ASHRAE is the official name of this organization. See the linked press release.

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2.3.5 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.


Statement of Problem and Substantiation for Public Input

ASTM standards update.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 08:55:16 EDT 2012

Committee Statement
Statement: ASTM standards update. E2652 was added as it is now referenced in Chapter 4 through the action on FR 313.

Copyright Assignment

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Public Input No. 315-NFPA 99-2012 [Section No. 2.3.5]
2.3.5 ASTM Publications.
ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

Statement of Problem and Substantiation for Public Input

This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. Therefore this public input proposes to put simply a place holder in chapter 3 (definitions) and place the requirements into Chapter 4 (fundamentals), just as was done in NFPA 101 and 5000. The proposed language is identical to the language in NFPA 101. If the technical committee wishes it can simply extract the language from NFPA 101. The corresponding sections are: 3.3.96 would be extracted from 3.3.169.2, 3.3.123 would be extracted from 3.3.169.4, 4.4.1 would be extracted from 4.6.13 and 4.4.2 would be extracted from 4.6.14.
Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:16:33 EDT 2012

Committee Statement

Statement: ASTM standards update. E2652 was added as it is now referenced in Chapter 4 through the action on FR 313.

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Public Input No. 317-NFPA 99-2012 [ Section No. 2.3.5 ]
2.3.5 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.


Statement of Problem and Substantiation for Public Input

This public input is basically editorial, but it is necessary to ensure that no alternate tests are used to determine the fire resistance rating. It is possible to use various non standard tests and get fire resistance ratings but then the safety desired by the code would not necessarily be achieved.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Committee Statement

Resolution: The piping committee did not reference this standard so there is no need to have it appear in this location.

Copyright Assignment

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2.3.5 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.


Statement of Problem and Substantiation for Public Input

This public input corrects a problem and allows more flexibility while retaining fire safety.

Issues with the present language:
1. In fact, very few paints (interior finish materials) are noncombustible and the application of the requirements would result in most paints being “high quality epoxy”, whether flammable or not.
2. There is no requirement for smoke emission in NFPA 99 and none is being proposed in this public input.
3. What is being proposed today is more severe than a material that has a flame spread or heat release of a Class A is a material which exhibits a flame spread index of no more than 25 (when tested to ASTM E 84, Steiner tunnel) or a maximum heat release rate of 800 kW and no flashover (when tested to NFPA 286, room...
The proposed fire test criteria (from either the room corner test, NFPA 286, or the cone calorimeter, ASTM E1354), are fire performance levels intermediate between that of “flame resistant” material (as the previous edition of NFPA 99 asked for, and which was equivalent to testing to NFPA 701, a textile test) and a limited combustible material. The NFPA 286 test is already referenced in NFPA 99.

The proposed changes will provide the following:
1. Improved flexibility for use of interior finish materials over the existing NFPA 99.
2. Improved fire safety over existing hyperbaric chambers, but without the combination in the code of either excessive requirements (as represented by noncombustible materials) or no requirements (as represented by high quality epoxy).

Note further:
1. Use of the term “high quality epoxy” for the paint or finish is meaningless, as the paint or finish needs to be one that is described in performance terms and that is approved or listed for the application, to prevent any epoxy paint from being used. Any vendor of epoxy finishes will claim that they market “high quality” materials and this section is, thus, unenforceable as is. The additional words will ensure the appropriate fire safety while retaining the permission to use “high quality epoxy” finishes.
2. Since a “high quality epoxy” finish is allowed today, and no specific fire performance is required, then a material that exhibits heat release rate lower than that finish material should also be allowed.
3. NFPA 286 is a full scale room-corner test and if a material were to pass the test, it would require that it exhibits excellent fire performance, better than a typical Class A material used for interior finish (as I had proposed at the last cycle).
4. ASTM E1354 (cone calorimeter) is a small scale heat release test that provides the most comprehensive approach to assessing fire performance of materials, using a 100 mm x 100 mm (roughly 4 inches by 4 inches) test sample. If the proposed requirements are complied with, good fire performance is assured.
5. Since a limited combustible material is permitted for sound deadening materials inside the hyperbaric chamber, then they should also be permitted as finish for the chamber.
6. The changes to the terminology related to “noncombustible” and “limited combustible” from “as defined in” to “in accordance with” reflect the fact that the NFPA system is going away from “defining” these terms (with requirements) in favor of including the requirements in the body of the code or standard. That has already been approved for NFPA 101 and 5000 and other documents and I have submitted public input for the same to occur in NFPA 99.
7. The change to the word “listed” with regard to the options prevents the confusion with the specific definition in NFPA of the term “listed” for materials that have undergone listing by an outside organization.
Public Input No. 165-NFPA 99-2012 [ Section No. 2.3.9 ]

Original  Hide Markup

2.3.9  CGA Publications.
Compressed Gas Association, 4221 Walney Road, 5th Floor 14501 George Carter Way, Suite 103, Chantilly, VA 20151-2923.

CGA C-4, Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, 1954. CGA C-7, Guide to the Preparation of Precautionary Labeling and Marking of Compressed Gas Containers, 20042011.


CAG P-2.5, Transfilling of High Pressure Gaseous Oxygen to be Used for Respiration, 20072011.
CGA P-2.6, Transfilling of Liquid Oxygen to be Used for Respiration, 20082011.


CGA V-1, Compressed Gas Association Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections (ANSI B57.1), 2005.

CGA V-5, Diameter-Index Safety System (Noninterchangeable Low Pressure Connections for Medical Gas Applications), 2008.

CGA V-6, Standard Cryogenic Liquid Transfer Connection, 2008.

Statement of Problem and Substantiation for Public Input

CGA C-4, Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, 1954. (Superseded by C-7, American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained). Update address and documents to the latest edition throughout the NFPA 99 Code. The address change and some of the latest edition updates are listed above.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue Jun 05 10:02:16 EDT 2012

Committee Statement

**Statement:** CGA C-4, Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, 1954. (Superseded by C-7, American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained). Update address and documents to the latest edition throughout the NFPA 99 Code. The address change and some of the latest edition updates are listed above.

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**Origin (from sources other than the submitter)**

CGA NFPA 99 Adhoc Tech Committee
Public Input No. 90-NFPA 99-2012 [ Section No. 2.3.16 ]

2.3.16 UL Publications.
Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062–2096.

Statement of Problem and Substantiation for Public Input
Update referenced standard to most recent edition as indicated.

Submitter Information Verification
Submitter Full Name: John Bender
Organization: Underwriters Laboratories Inc.
Submittal Date: Wed Apr 18 13:15:51 EDT 2012

Committee Statement
Resolution: FR-316-NFPA 99-2012
Statement: Update referenced standard to most recent edition as indicated.

Copyright Assignment
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Public Input No. 3-NFPA 99-2012 [ Chapter 3 ]

Chapter 3 Definitions
3.1 General.
The definitions contained in this chapter shall apply to the terms used in this code. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. Merriam-Webster's Collegiate Dictionary, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.
3.2.1* Approved.
3.2.1 Approved.
Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ).
An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3* Code.
A standard that is an extensive compilation of provisions covering broad subject matter or that is suitable for adoption into law independently of other codes and standards.

3.2.4 Guide.
A document that is advisory or informative in nature and that contains only nonmandatory provisions. A guide may contain mandatory statements such as when a guide can be used, but the document as a whole is not suitable for adoption into law.

3.2.5 Labeled.
Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.6* Listed.
Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.7 Shall.
Indicates a mandatory requirement.

3.2.8 Should.
Indicates a recommendation or that which is advised but not required.

3.2.9 Standard.
A document, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 ACFM.
Actual cubic feet per minute. (PIP)

3.3.2 Adiabatic Heating.
The heating of a gas caused by its compression. (HYP)

3.3.3 Aerosol.
An intimate mixture of a liquid or a solid in a gas; the liquid or solid, called the dispersed phase, is uniformly distributed in a finely divided state throughout the gas, which is the continuous phase or dispersing medium. (MED)

3.3.4 Alarm System.

3.3.4.1 Area Alarm System.
A warning system within an area of use that provides continuous visible and audible surveillance of Category 1 and Category 2 medical gas and vacuum systems. (PIP)

3.3.4.2 Category 3 Alarm System.
A warning system within an area of use that provides continuous visible and audible surveillance of Category 3 medical gas systems. (PIP)

3.3.4.3 Local Alarm System.
A warning system that provides continuous visible and audible surveillance of medical gas and vacuum system source equipment at the equipment site. (PIP)

3.3.4.4 Master Alarm System.
3.3.4.4 Master Alarm System.
A warning system that monitors the operation and condition of the source of supply, the reserve source (if any), and the pressure in the main lines of each medical gas and vacuum piping system. (PIP)

3.3.5 Alternate Power Source.
One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical service; or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises. (ELS)

3.3.6 Ambulatory Health Care Center.
A building or portion thereof used to provide services or treatment simultaneously to four or more patients that (1) provides, on an outpatient basis, treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others; or (2) provides, on an outpatient basis, anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others. (FUN)

3.3.7 Ampacity.
The current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (ELS)

3.3.8 Anesthetic.
As used in this code, applies to any inhalational agent used to produce sedation, analgesia, or general anesthesia. (MED)

3.3.9* Anesthetizing Location.
Any area of a facility that has been designated to be used for the administration of general anesthesia. (MED)

3.3.10 Anoxia.
A state of markedly inadequate oxygenation of the tissues and blood, of more marked degree than hypoxia. (HYP)

3.3.11 Appliance.
Utilization equipment, generally other than industrial, normally built in standardized sizes or types, that is installed or connected as a unit to perform one or more functions. (MED)

3.3.12* Applicator.
A means of applying high-frequency energy to a patient other than by an electrically conductive connection. (MED)

3.3.13 Area of Administration.
Any point within a room within 4.3 m (15 ft) of oxygen equipment or an enclosure containing or intended to contain an oxygen-enriched atmosphere. (MED)

3.3.14* Atmosphere.
The pressure exerted by, and gaseous composition of, an environment. (HYP)

3.3.14.1 Ambient Atmosphere.
The pressure and composition of the environment surrounding a chamber. (HYP)

3.3.14.2 Atmosphere Absolute (ATA).
The pressure of the earth’s atmosphere, 760.0 mmHg, 101.325 kPa, or 14.7 psia. Two ATA = two atmospheres. (See also 3.3.14, Atmosphere.) (HYP)

3.3.14.3* Atmosphere of Increased Burning Rate.
Any atmosphere containing a percentage of oxygen or oxygen and nitrous oxide greater than the quotient of 23.45 divided by the square root of the total pressure in atmospheres. (HYP)

3.3.14.4 Chamber Atmosphere.
The environment inside a chamber. (HYP)

3.3.15 Automatic.
Providing a function without the necessity of human intervention. (ELS)

3.3.16 Bathrooms.
An area including a basin with one or more of the following: a toilet, a tub, or a shower. (FUN)

3.3.17 Battery-Powered Lighting Units.
Individual unit equipment for backup illumination consisting of a rechargeable battery, battery-charging means, provisions for one or more lamps mounted on the equipment, or with terminals for remote lamps, or both, and relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment. [70, 2011] (ELS)

3.3.18 Bends.
Decompression sickness; caisson worker’s disease. (HYP)

3.3.19 Branch Circuit.
The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). [70, 2011] (ELS)

3.3.20 Branch Line.
See 3.3.144, Piping.

3.3.21 Bulk System.
An assembly of equipment, such as storage containers, pressure regulators, pressure relief devices, vaporizers, manifolds, and interconnecting piping, that terminates at the source valve of oxygen or 1452 kg (3200 lb) of nitrous oxide, including unconnected reserves on the site. (PIP)

3.3.21.1 Bulk Inert Gas System.
An assembly of equipment consisting of, but not limited to, storage containers, pressure regulators, pressure relief devices, vaporizers, manifolds, and piping, with a storage capacity of more than 20,000 ft³ (scf) (566 m³) of inert gas including unconnected reserves on hand at the site. The bulk system terminates at the point where the gas supply, at service pressure, first enters the supply line. The containers are either stationary or movable, and the source gas is stored as a compressed gas or cryogenic fluid. (PIP)

3.3.21.2 Bulk Nitrous Oxide System.
An assembly of equipment as described in the definition of bulk oxygen system that has a storage capacity of more than 1452 kg (3200 lb) [approximately 793 m³ (28,000 ft³) (at normal temperature and pressure)] of nitrous oxide. (PIP)

3.3.21.3* Bulk Oxygen System.
An assembly of equipment such as oxygen storage containers, pressure regulators, pressure relief devices, vaporizers, manifolds, and interconnecting piping that has a storage capacity of more than 566 m³ (20,000 ft³) of oxygen (at normal temperature and pressure), including unconnected reserves on hand at the site. (PIP)

3.3.22 Category 3 Drive Gas System.
An assembly of component parts including, but not limited to, the source, pressure and operating controls, filters and purification equipment, valves, alarm warning systems, alarm wiring, gauges, and a network of piping and suitable outlets that produces and distributes compressed air from cylinders, compressed air from compressors, or nitrogen from cylinders less than 1100 kPa gauge (less than 160 psi gauge) to power devices (hand pieces, syringes, cleaning devices, delivery system chairs, and so forth) as a power source. The system includes the compressor intakes and ends with the service outlet where the user connects their clinical equipment. (PIP)

3.3.23 Category 3 Vacuum System.
A Category 3 vacuum distribution system that can be either a wet system designed to remove liquids, air–gas, or solids from the treated area; or a dry system designed to trap liquid and solids before the service inlet and to accommodate air–gas only through the service inlet. (PIP)

3.3.24 Cold Room.
A refrigerated area large enough for personnel to enter.

3.3.25 Combustible.
Capable of undergoing combustion. (MED)

3.3.26* Combustible Liquid.
Any liquid that was a closed-cup flash point at or above 37.8°C (100°F). Combustible liquids are classified as follows: (a) Class II liquid. Any liquid that has a flash point at or above 37.8°C (100°F) and below 60°C (140°F); (b) Class IIIA liquid. Any liquid that has a flash point at or above 60°C (140°F) and below 93°C (200°F); (c) Class IIIB liquid. Any liquid that has a flash point at or above 93°C (200°F).

3.3.27* Combustion.
3.3.27 Combustion.
A chemical process of oxidation that occurs at a rate fast enough to produce heat and usually light in the form of either a glow or flame. [5000, 2012] (HYP)

3.3.28 Compact Storage.
Storage on solid shelves not exceeding 0.9 m (36 in.) in total depth, arranged as part of a compact storage module, with no more than 0.76 m (30 in.) between shelves vertically and with no internal vertical flue spaces other than those between individual shelving sections. [13, 2010] (FUN)

3.3.29 Container.
A low-pressure, vacuum-insulated vessel containing gases in liquid form. (MED)

3.3.29.1 Liquid Oxygen Ambulatory Container.
A container used for liquid oxygen not exceeding 1.5 L (0.396 gal) specifically designed for use as a medical device as defined by 21 USC Chapter 9, the United States Food, Drug and Cosmetic Act, that is intended for portable therapeutic use and to be filled from its companion base unit, which is a liquid oxygen home care container. (MED)

3.3.29.2 Liquid Oxygen Base Reservoir Container.
A container used for liquid oxygen not exceeding 60 L (15.8 gal) specifically designed for use as a medical device as defined by 21 USC Chapter 9, the United States Food, Drug and Cosmetic Act, that is intended to deliver gaseous oxygen for therapeutic use, transfilling, or both. (MED)

3.3.29.3 Liquid Oxygen Home Care Container.
A container used for liquid oxygen not exceeding 60 L (15.8 gal) specifically designed for use as a medical device as defined by 21 USC Chapter 9, the United States Food, Drug and Cosmetic Act, that is intended to deliver gaseous oxygen for therapeutic use in a home environment. (MED)

3.3.29.4 Liquid Oxygen Portable Container.
A container used for liquid oxygen not exceeding 1.5 L (0.396 gal) specifically designed for use as a medical device as defined by 21 USC Chapter 9, the United States Food, Drug and Cosmetic Act, that is intended for portable therapeutic use and to be filled from its companion base unit, which is a liquid oxygen base reservoir container. (MED)

3.3.30 Critical Branch.
A system of feeders and branch circuits supplying power for task illumination, fixed equipment, select receptacles, and select power circuits serving areas and functions related to patient care that are automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. (ELS)

3.3.31 Critical Care Area.
See 3.3.138, Patient Care Room.

3.3.32 Critical Equipment.
That equipment essential to the safety of the occupants of the facility. (HYP)

3.3.33 Cylinder.
A supply tank containing high-pressure gases or gas mixtures at pressures that can be in excess of 13.8 kPa gauge (2000 psi gauge). (MED)

3.3.34 Decompression Sickness.
A syndrome due to evolved gas in the tissues resulting from a reduction in ambient pressure. (HYP)

3.3.35* Defend in Place.
The operational response to an emergency in a building, in which the initial action does not involve evacuation of the building occupants. (FUN)

3.3.36 Demand Check.
A paired set of fittings that permit gas flow when correctly mated but interrupt flow when separated. (PIP)

3.3.37 Detonation.
An exothermic reaction wherein the reaction propagates through the unreacted material at a rate exceeding the velocity of sound, hence the explosive noise. (MED)

3.3.38* Direct Electrical Pathway to the Heart.
An externalized conductive pathway, insulated except at its ends, one end of which is in direct contact with heart muscle while the other is outside the body and is accessible for inadvertent or intentional contact with grounded objects or energized, ground-referenced sources. (MED)

3.3.39* Disaster.
Within the context of this code, any unusual occurrence or unforeseen situation that seriously overtaxes or threatens to seriously overtax the routine capabilities of a health care facility. (HES)

3.3.40 D.I.S.S. Connector.
A system of noninterchangeable medical gas and vacuum connectors complying with CGA V-5, Diameter-Index Safety System (Noninterchangeable Low Pressure Connections for Medical Gas Applications). (PIP)

3.3.41* Double-Insulated Appliances.
Appliances where the primary means of protection against electrical shock is not grounding. The primary means is by the use of combinations of insulation and separation spacings in accordance with an approved standard. (MED)

3.3.42 Electrical Life Support Equipment.
Electrically powered equipment whose continuous operation is necessary to maintain a patient's life. (ELS)

3.3.43 Electrode.
An electrically conductive connection to a patient. (MED)

3.3.43.1 Active Electrode.
An electrode intended to generate a surgical or physiological effect at its point of application to the patient. (MED)

3.3.43.2 Bipolar Electrode.
An electrode consisting of adjacent contacts (e.g., the two legs of a forceps) such that the current passes between the pair of contacts generating the intended effect. (MED)

3.3.43.3* Dispersive Electrode.
An electrode intended to complete the electrical path between patient and appliance and at which no surgical effect is intended. (MED)

3.3.44 Emergency Management.
The act of developing procedures and plans to create effective preparedness, mitigation, response, and recovery during a disaster affecting a health care facility. (HES)

3.3.45 Emergency Oxygen Supply Connection.
An assembly of equipment that permits a gas supplier to make a temporary connection to supply oxygen to a building that has had its normal source of oxygen disconnected. (PIP)

3.3.46 Equipment Branch.
A system of feeders and branch circuits arranged for delayed, automatic, or manual connection to the alternate power source and that serves primarily 3-phase power equipment. (ELS)

3.3.47 Equipment Grounding Bus.
A grounding terminal bus in the feeder circuit of the branch circuit distribution panel that serves a particular area. (MED)

3.3.48* Essential Electrical System.
A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system. (ELS)

3.3.49 Evacuation — Waste Gas.
See 3.3.183, Waste Anesthetic Gas Disposal.

3.3.50 Exposed Conductive Surfaces.
Those surfaces that are capable of carrying electric current and that are unprotected, uninsulated, unenclosed, or unguarded, permitting personal contact. (ELE)

3.3.51* Failure.
An incident that increases the hazard to personnel or patients or that affects the safe functioning of electric appliances or devices. (MED)
3.3.52 Fault Current.
A current in an accidental connection between an energized and a grounded or other conductive element resulting from a failure of insulation, spacing, or containment of conductors. (ELS)

3.3.53 Feeder.
All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device. (ELS)

3.3.54 Flammable.
A combustible that is capable of easily being ignited and rapidly consumed by fire.

3.3.55 Flammable Gas.
Any substance that exists in the gaseous state at normal atmospheric temperature and pressure and is capable of being ignited and burned when mixed with proper proportion of air, oxygen, or other oxidizers. (HYP)

3.3.56 Flammable Liquid.
A liquid that has a closed-cup flash point that is below 37.8°C (100°F) and a maximum vapor pressure of 2068 mmHg (40 psi absolute) at 37.8°C (100°F).

3.3.57 Flash Point.
The minimum temperature at which a liquid or a solid emits vapor sufficient to form an ignitable mixture with air near the surface of the liquid or the solid. (FUN)

3.3.58 Flow-Control Valve.
A valve, usually a needle valve, that precisely controls flow of gas. (MED)

3.3.59 Flowmeter.
A device for measuring volumetric flow rates of gases and liquids. (MED)

3.3.59.1 Pressure Compensated Flowmeter.
A flowmeter indicating accurate flow of gas whether the gas is discharged into ambient pressure or into a system at nonambient pressure. (MED)

3.3.60 Frequency.
The number of oscillations, per unit time, of a particular current or voltage waveform. The unit of frequency is the hertz. (MED)

3.3.61 Fume Hood.
An enclosure designed to draw air inward by means of mechanical ventilation.

3.3.62 Gas-Powered System.
A Level 3 gas distribution system comprised of component parts including but not limited to cylinders, manifolds, air compressor, motor, receivers, controls, filters, dryers, valves, and piping that delivers compressed air or nitrogen at pressures less than 1100 kPa (less than 160 psi) gauge to power devices (e.g., hand pieces, syringes, cleaning devices) as a power source. (PIP)

3.3.63 General Anesthesia and Levels of Sedation/Analgesia.
3.3.63.1 Deep Sedation/Analgesia.
A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained. (MED)

3.3.63.2 General Anesthesia.
A drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired. (MED)

3.3.63.3 Minimal Sedation (Anxolysis).
A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected. (MED)

3.3.63.4 Moderate Sedation/Analgesia (Conscious Sedation).
A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patient airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained. (MED)

3.3.64 General Care Area.
See 3.3.138, Patient Care Room.

3.3.65 Governing Body.
The person or persons who have the overall legal responsibility for the operation of a health care facility. (FUN)

3.3.66 Ground-Fault Circuit Interrupter (GFCI).
A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. (ELS)

3.3.67 Grounding.
See 3.3.68, Grounding System.

3.3.68 Grounding System.
A system of conductors that provides a low-impedance return path for leakage and fault currents. (ELS)

3.3.69 Hazard Current.
For a given set of connections in an isolated power system, the total current that would flow through a low impedance if it were connected between either isolated conductor and ground. (ELS)

3.3.69.1 Fault Hazard Current.
The hazard current of a given isolated power system with all devices connected except the line isolation monitor. (ELS)

3.3.69.2 Monitor Hazard Current.
The hazard current of the line isolation monitor alone. (ELS)

3.3.69.3 Total Hazard Current.
The hazard current of a given isolated system with all devices, including the line isolation monitor, connected. (ELS)

3.3.70 Hazardous Chemical.
A chemical with one or more of the following hazard ratings as defined in NFPA 704, Standard System for the Identification of the Hazards of Materials for Emergency Response: Health — 2, 3, or 4; Flammability — 2, 3, or 4; Reactivity — 2, 3, or 4.

3.3.71 Health Care Facilities.
Buildings, portions of buildings, or mobile enclosures in which medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided. (FUN)

3.3.72 Home Care.
Medical services (equipment) provided in residential occupancies. (FUN)

3.3.73 Hospital.
A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [101, 2012] (FUN)

3.3.74 Hospital-Based.
In the interpretation and application of this code, physically connected to a hospital. (MED)

3.3.75 Humidifier.
A device used for adding water vapor to inspired gas. (MED)

3.3.76 Hyperbaric.
Facility, building, or structure used to house chambers and all auxiliary service equipment for medical applications and procedures at pressures above normal atmospheric pressures. (HYP)

3.3.77 Hyperbaric Oxygenation.
The application of pure oxygen or an oxygen-enriched gaseous mixture to a subject at elevated pressure. (HYP)
3.3.78 **Hyperbaric Stand-Alone Oxygen System.**
The oxygen system is entirely separate from the hospital’s Level 1 Oxygen System or is a freestanding hyperbaric facility. (HYP)

3.3.79 **Hypobaric.**
Facility, building, or structure used to house chambers and all auxiliary service equipment for medical applications and procedures at pressures below atmospheric pressures. (HYP)

3.3.80 **Hypoxia.**
A state of inadequate oxygenation of the blood and tissue sufficient to cause impairment of function. [99B, 2010] (HYP)

3.3.81 **Immediate Restoration of Service.**
Automatic restoration of operation with an interruption of not more than 10 seconds. (ELS)

3.3.82* **Impedance.**
Impedance is the ratio of the voltage drop across a circuit element to the current flowing through the same circuit element. The unit of impedance is the ohm. (MED)

3.3.83 **Incident Command System (ICS).**
The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure that has responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident or training exercise. [1670, 2009] (HES)

3.3.84 **Instrument Air.**
For the purposes of this code, instrument air is air intended for the powering of medical devices unrelated to human respiration (e.g., surgical tools, ceiling arms). Medical air and instrument air are distinct systems for mutually exclusive applications. Instrument air is a medical support gas that falls under the general requirements for medical gases. (PIP)

3.3.85 **Intermittent Positive-Pressure Breathing (IPPB).**
Ventilation of the lungs by application of intermittent positive pressure to the airway. (MED)

3.3.86* **Intrinsically Safe.**
As applied to equipment and wiring, equipment and wiring that are incapable of releasing sufficient electrical energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture. (HYP)

3.3.87 **Invasive Procedure.**
Any procedure that penetrates the protective surfaces of a patient’s body (i.e., skin, mucous membrane, cornea) and that is performed with an aseptic field (procedural site). [Not included in this category are placement of peripheral intravenous needles or catheters used to administer fluids and/or medications, gastrointestinal endoscopies (i.e., sigmoidoscopies), insertion of urethral catheters, and other similar procedures.] (ELS)

3.3.88 **Isolated Patient Lead.**
A patient lead whose impedance to ground or to a power line is sufficiently high that connecting the lead to ground, or to either conductor of the power line, results in current flow below a hazardous limit in the lead. (MED)

3.3.89* **Isolated Power System.**
A system comprising an isolation transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors. (ELS)

3.3.90 **Isolation Transformer.**
A transformer of the multiple-winding type, with the primary and secondary windings physically separated, that inductively couples its ungrounded secondary winding to the grounded feeder system that energizes its primary winding. (ELS)

3.3.91* **Laboratory.**
A building, space, room, or group of rooms intended to serve activities involving procedures for investigation, diagnosis, or treatment in which flammable, combustible, or oxidizing materials are to be used.

3.3.92* **Laboratory Work Area.**
A room or space for testing, analysis, research, instruction, or similar activities that involve the use of chemicals. This work area may or may not be enclosed.

3.3.93 **Leak Detectant.**
For purposes of this standard, a reagent, a solution, or an electronic or mechanical device suitable for the detection or visualization of escaping gas. (PIP)

3.3.94 Life Safety Branch.
A system of feeders and branch circuits supplying power for lighting, receptacles, and equipment essential for life safety that are automatically connected to alternate power sources by one or more transfer switches during interruption of the normal power source. (ELS)

3.3.95 Limited Care Facility.
A building or portion of a building used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitations due to accident or illness; or limitations such as mental retardation/developmental disability, mental illness, or chemical dependency. [101, 2012] (FUN)

3.3.96* Limited-Combustible (Material).
Refers to a building construction material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 8141 kJ/kg (3500 Btu/lb), where tested in accordance with NFPA 259, Standard Test Method for Potential Heat of Building Materials, and includes either of the following: (1) materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 1/8 in. (3.2 mm) that has a flame spread index not greater than 50; or (2) materials, in the form and thickness used, having neither a flame spread index greater than 25 nor evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor evidence of continued progressive combustion, when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials. [90A, 2012] (PIP)

3.3.97 Line Isolation Monitor.
A test instrument designed to continually check the balanced and unbalanced impedance from each line of an isolated circuit to ground and equipped with a built-in test circuit to exercise the alarm without adding to the leakage current hazard. (ELS)

3.3.98* Liquid.
Any material that (1) has a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM D 5, Standard Test Method for Penetration of Bituminous Materials, or (2) is a viscous substance for which a specific melting point cannot be determined but that is determined to be a liquid in accordance with ASTM D 4359, Standard Test for Determining Whether a Material is a Liquid or a Solid. [30, 2012] (LAB)

3.3.99* Local Signal.
A visible indication of the operating status of equipment. (PIP)

3.3.100 mA.
Milliampere.

3.3.101 Manifold.
A device for connecting the outlets of one or more gas cylinders to the central piping system for that specific gas. (PIP)

3.3.102* Manufactured Assembly.
A factory-assembled product designed for aesthetics or convenience that contains medical gas or vacuum outlets, piping, or other devices related to medical gases. (PIP)

3.3.103 Mask.
A device that fits over the mouth and nose (oronasal) or nose (nasal) used to administer gases to a patient. (MED)

3.3.104* Medical Air.
For purposes of this code, medical air is air supplied from cylinders, bulk containers, or medical air compressors or reconstituted from oxygen USP and oil-free, dry nitrogen NF. (PIP)

3.3.104.1 Proportioning System for Medical Air USP.
A central supply that produces medical air (USP) reconstituted from oxygen USP and nitrogen NF by means of a mixer or blender. (PIP)

3.3.105 Medical Air Compressor.
A compressor that is designed to exclude oil from the air stream and compression chamber and that does not under normal operating conditions or any single fault add any toxic or flammable contaminants to the compressed air. (PIP)

3.3.106* Medical/Dental Office.
A building or part thereof in which the following occur: (1) examinations and minor treatments/procedures are performed under the continuous supervision of a medical/dental professional; (2) only sedation or local anesthesia is involved and treatment or procedures do not render the patient incapable of self-preservation under emergency conditions; and (3) overnight stays for patients or 24-hour operation are not provided. (FUN)

3.3.107 Medical Gas.
A patient medical gas or medical support gas. (See also 3.3.142, Patient Medical Gas and 3.3.109, Medical Support Gas.) (PIP)

3.3.108 Medical Gas System.
An assembly of equipment and piping for the distribution of nonflammable medical gases such as oxygen, nitrous oxide, compressed air, carbon dioxide, and helium. (PIP)

3.3.109 Medical Support Gas.
Nitrogen or instrument air used for any medical support purpose (e.g., to remove excess moisture from instruments before further processing, or to operate medical–surgical tools, air-driven booms, pendants, or similar applications) and, if appropriate to the procedures, used in laboratories and are not respired as part of any treatment. Medical support gas falls under the general requirements for medical gases. (PIP)

3.3.110 Medical–Surgical Vacuum.
A method used to provide a source of drainage, aspiration, and suction in order to remove body fluids from patients. (PIP)

3.3.111 Medical–Surgical Vacuum System.
An assembly of central vacuum–producing equipment and a network of piping for patient suction in medical, medical–surgical, and waste anesthetic gas disposal (WAGD) applications. (PIP)

3.3.112 Multiple Treatment Facility.
A diagnostic or treatment complex under a single management comprising a number of single treatment facilities, which can be accessed one from the other without exiting the facility (i.e., does not involve widely separated locations or separate distinct practices). (FUN)

3.3.113 mV.
Millivolt.

3.3.114 Nasal Cannula.
Device consisting of two short tubes to be inserted into the nostrils to administer oxygen or other therapeutic gases. (MED)

3.3.115 Nasal Catheter.
A flexible tube for insertion through the nose into the nasopharynx to administer oxygen or other therapeutic gases. (MED)

3.3.116 Nebulizer.
A device used for producing an aerosol of water and/or medication within inspired gas supply. (MED)

3.3.117 Negative Pressure.
Pressure less than atmospheric. (MED)

3.3.118 Nitrogen.
An element that, at atmospheric temperatures and pressures, exists as a clear, colorless, and tasteless gas; it comprises approximately four-fifths of the earth’s atmosphere. (MED)

3.3.118.1 Nitrogen NF (Oil-Free, Dry).
Nitrogen complying as a minimum with oil-free, dry nitrogen NF. (PIP)

3.3.119 Nitrogen Narcosis.
A condition resembling alcoholic inebriation, which results from breathing nitrogen in the air under significant pressure. (HYP)

3.3.120 Nitrous Oxide.
An inorganic compound, one of the oxides of nitrogen. It exists as a gas at atmospheric pressure and temperature, possesses a sweetish smell, and is used for inducing anesthesia when inhaled. The oxygen in the compound will be released under conditions of combustion, creating an oxygen-enriched atmosphere. (MED)

3.3.121 Noncombustible (Hyperbaric).
An adjective describing a substance that will not burn in 95 ±5 percent oxygen at pressures up to 3 ATA (44.1 psia). (HYP)

3.3.122 Noncombustible (Hypobaric).
An adjective describing a substance that will not burn in 95 ±5 percent oxygen at pressures of 101.325 kPa (760 mmHg). (HYP)

3.3.123 Noncombustible (Material).
A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials that are reported as passing ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, shall be considered noncombustible materials. (HYP)

3.3.124 Nonflammable.
Not readily capable of burning with a flame and not liable to ignite and burn when exposed to flame.

3.3.125* Nonflammable Anesthetic Agent.
Refers to those inhalation agents that, because of their vapor pressure at 37°C (98.6°F) and at atmospheric pressure, cannot attain flammable concentrations when mixed with air, oxygen, or mixtures of oxygen and nitrous oxide. (MED)

3.3.126* Nonflammable Medical Gas System.
See 3.3.105, Medical Gas System, and Chapter 5.

3.3.127 Nursing Home.
A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [101, 2012] (FUN)

3.3.128* Oxidizing Gas.
A gas that supports combustion. (HYP)

3.3.129* Oxygen.
A chemical element that, at normal atmospheric temperatures and pressures, exists as a colorless, odorless, and tasteless gas and comprises about 21 percent by volume of the earth's atmosphere. (MED)

3.3.129.1 Gaseous Oxygen.
A colorless, odorless, tasteless, and nontoxic gas, comprising about 21 percent of normal air by volume, that is about 10 percent heavier than air; also the physical state of the element at atmospheric temperature and pressure. (MED)

3.3.129.2* Liquid Oxygen.
Exists at cryogenic temperature, approximately -184.4°C (-300°F) at atmospheric pressure. It retains all of the properties of gaseous oxygen, but, in addition, when allowed to warm to room temperature at atmospheric pressure, it will evaporate and expand to fill a volume 860 times its liquid volume. (MED)

3.3.130* Oxygen Delivery Equipment.
Any device used to transport and deliver an oxygen-enriched atmosphere to a patient. (MED)

3.3.131 Oxygen-Enriched Atmosphere (OEA).
For the purposes of this code, an atmosphere in which the concentration of oxygen exceeds 23.5 percent by volume. (HYP)

3.3.132* Oxygen Hood.
A device encapsulating a patient's head and used for a purpose similar to that of a mask. (See also 3.3.103, Mask.) (HYP)

3.3.133 Oxygen Index.
The minimum concentration of oxygen, expressed as percent by volume, in a mixture of oxygen and nitrogen that will just support combustion of a material under conditions of ASTM D 2863.
and nitrogen that will just support combustion of a material under conditions of ASTM D 2863, Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index). (HYP)

3.3.134* Oxygen Toxicity (Hyperbaric).
Physical impairment resulting from breathing gaseous mixtures containing oxygen-enriched atmospheres at elevated partial pressures for extended periods of time. (HYP)

3.3.135 Oxygen USP.
Oxygen complying with Medical USP.

3.3.136 Patient Bed Location.
The location of a patient sleeping bed, or the bed or procedure table of a critical care area. (ELS)

3.3.137 Patient-Care-Related Electrical Equipment.
Electrical equipment appliance that is intended to be used for diagnostic, therapeutic, or monitoring purposes in a patient care vicinity. (MED)

3.3.138* Patient Care Room.
Any room of a health care facility wherein patients are intended to be examined or treated. (MED)

3.3.138.1* Basic Care Room.
Room in which the failure of equipment or a system is not likely to cause injury to the patients or caregivers but can cause patient discomfort (Category 3). (MED)

3.3.138.2* Critical Care Room.
Room in which failure of equipment or a system is likely to cause major injury or death of patients or caregivers (Category 1). (MED)

3.3.138.3* General Care Room.
Room in which failure of equipment or a system is likely to cause minor injury to patients or caregivers (Category 2). (MED)

3.3.138.4* Support Room.
Room in which failure of equipment or a system is not likely to have a physical impact on patients or caregivers (Category 4). (MED)

3.3.139 Patient Care Vicinity.
A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. (MED)

3.3.140 Patient Equipment Grounding Point.
A jack or terminal that serves as the collection point for redundant grounding of electric appliances serving a patient care vicinity or for grounding other items in order to eliminate electromagnetic interference problems. (MED)

3.3.141* Patient Lead.
Any deliberate electrical connection that can carry current between an appliance and a patient. (MED)

3.3.142 Patient Medical Gas.
Piped gases such as oxygen, nitrous oxide, helium, carbon dioxide, and medical air that are used in the application of human respiration and the calibration of medical devices used for human respiration. (PIP)

3.3.143 Piped Distribution System.
A pipeline network assembly of equipment that starts at and includes the source valve, warning systems (master, area, local alarms), bulk gas system signal actuating switch wiring, interconnecting piping, and all other components up to and including the station outlets/inlets. (PIP)

3.3.144 Piping.
The tubing or conduit of the system. The three general classes of piping are main lines, risers, and branch (lateral) lines. (PIP)

3.3.144.1 Branch (Lateral) Lines.
Those sections or portions of the piping system that serve a room or group of rooms on the
Those sections or portions of the piping system that serve a room or group of rooms on the same story of the facility. (PIP)

3.3.144.2 Main Lines.
The piping that connects the source (pumps, receivers, etc.) to the risers or branches, or both. (PIP)

3.3.144.3 Risers.
The vertical pipes connecting the system main line(s) with the branch lines on the various levels of the facility. (PIP)

3.3.145 Plug (Attachment Plug, Cap).
A device that, by insertion in a receptacle, establishes connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle. (MED)

3.3.146 Positive-Negative Pressure Breathing.
Ventilation of the lungs by the application of intermittent positive-negative pressure to the airway. (MED)

3.3.147 Pressure.

3.3.147.1 Absolute Pressure.
The total pressure in a system with reference to zero pressure. (HYP)

3.3.147.2 Ambient Pressure.
Refers to total pressure of the environment referenced. (HYP)

3.3.147.3 Gauge Pressure.
Refers to total pressure above (or below) atmospheric. (HYP)

3.3.147.4 High Pressure.
A pressure exceeding 1.38 kPa (200 psi) gauge (215 psia). (MED)

3.3.147.5 Partial Pressure.
The pressure, in absolute units, exerted by a particular gas in a gas mixture. (HYP)

3.3.147.6 Positive Pressure.
Pressure greater than ambient atmospheric. (MED)

3.3.147.7 Working Pressure.
A pressure not exceeding 200 psi (11.6 kg/cm²) gauge. (MED)

3.3.148 Pressure-Reducing Regulator.
A device that automatically reduces gas under high pressure to a usable lower working pressure. (MED)

3.3.149 Procedure Room.
Where the proceduralist is using instrumentation that requires constant observation and control. (MED)

3.3.150 psia.
Pounds per square inch absolute, a unit of pressure measurement with zero pressure as the base or reference pressure. (HYP)

3.3.151 psig.
Pounds per square inch gauge, a unit of pressure measurement with atmospheric pressure as the base or reference pressure. (HYP)

3.3.152* Qualified person.
A person who by possession of a recognized degree, certificate, or professional standing, or by knowledge training and experience has successfully demonstrated the ability to perform the assigned task. (HYP)

3.3.152 Reactance.
The component of impedance contributed by inductance or capacitance. The unit of reactance is the ohm. (MED)

3.3.153 Reactive Material.
A material that, by itself, is readily capable of detonation, explosive decomposition, or explosive reaction at normal or elevated temperatures and pressures. [45, 2011]

3.3.154 Receptacle.
A receptacle is a contact device installed at the outlet for the connection of an attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is two or more contact devices on the same yoke.  [70, 2011] (ELS)

3.3.155 Reference Grounding Point.
The ground bus of the panelboard or isolated power system panel supplying the patient care room. (MED)

3.3.156* Refrigerating Equipment.
Any mechanically operated equipment used for storing below normal ambient temperature hazardous materials having flammability ratings of 3 or 4.

3.3.157* Remote.
A Level 3 source of supply that is accessed by exiting the single or multiple treatment facility. (PIP)

3.3.158 Reserve Supply.
Where existing, that portion of the supply equipment that automatically supplies the system in the event of failure of the operating supply. The reserve supply only functions in an emergency and not as a normal operating procedure. (PIP)

3.3.159 Safety Can.
An approved container, of not more than 18.9 L (5 gal) capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

3.3.160 Scavenging.
Evacuation of exhaled mixtures of oxygen and nitrous oxide. (PIP)

3.3.161 SCFM.
Abbreviation of flow rate units of standard cubic feet per minute. (PIP)

3.3.162 Selected Receptacles.
A minimal number of receptacles selected by the governing body of a facility as necessary to provide essential patient care and facility services during loss of normal power. (ELS)

3.3.163 Self-Extinguishing.
A characteristic of a material such that, once the source of ignition is removed, the flame is quickly extinguished without the fuel or oxidizer being exhausted. (HYP)

3.3.164 Semipermanent Connection.
A noninterchangeable connection, usually a D.I.S.S. connector, which is the termination of the pipeline and that is intended to be detached only for service. It is not the point at which the user makes connections or disconnections. (PIP)

3.3.165 Service Inlet.
The pneumatic terminus of a Level 3 piped vacuum system. (PIP)

3.3.166 Service Outlet.
The pneumatic terminus of a piped gas system for other than critical, continuous duty, nonflammable medical life support–type gases such as oxygen, nitrous oxide, or medical air. (PIP)

3.3.167* Single Treatment Facility.
A diagnostic or treatment complex under a single management comprising a number of use points, but confined to a single contiguous group of use points (i.e., does not involve widely separated locations or separate distinct practices). (PIP)

3.3.168* Site of Intentional Expulsion.
All points within 0.3 m (1 ft) of a point at which an oxygen-enriched atmosphere is intentionally vented to the atmosphere. (MED)

3.3.169 Station Inlet.
An inlet point in a piped medical/surgical vacuum distribution system at which the user makes connections and disconnections. (PIP)

3.3.170 Station Outlet.
An outlet point in a piped medical gas distribution system at which the user makes connections and disconnections. (PIP)

3.3.171 Supply Source.
3.3.171 Supply Source.

3.3.171.1 Operating Supply.
The portion of the supply system that normally supplies the piping systems. The operating supply consists of a primary supply or a primary and secondary supply. (PIP)

3.3.171.2 Primary Supply.
That portion of the source equipment that actually supplies the system. (PIP)

3.3.171.3 Reserve Supply.
Where provided, that portion of the source equipment that automatically supplies the system in the event of failure of the primary and secondary operating supply. (PIP)

3.3.171.4 Secondary Supply.
Where provided, that portion of the source equipment that automatically supplies the system when the primary supply becomes exhausted. (PIP)

3.3.172* Surface-Mounted Medical Gas Rail Systems.
A surface-mounted gas delivery system intended to provide ready access for two or more gases through a common delivery system to provide multiple gas station outlet locations within a single patient room or critical care area. (PIP)

3.3.173 Task Illumination.
Provisions for the minimum lighting required to carry out necessary tasks in the areas described in Chapter 6, including safe access to supplies and equipment and access to exits. (ELS)

3.3.174 Terminal.
The end of a flexible hose or tubing used in a manufactured assembly where the user is intended to make connection and disconnection. (PIP)

3.3.175 Touch Current.
Leakage current flowing from the enclosure or from parts thereof, excluding patient connections, accessible to any operator or patient in normal use, through an external path other than the protective grounding (earth) conductor to earth or to another part of the enclosure. (MED)

3.3.176 Transfilling.
The process of transferring a medical gas in gaseous or liquid state from one container or cylinder to another container or cylinder (MED).

3.3.177 Tube.
3.3.177.1* Endotracheal Tube.
A tube for insertion through the mouth or nose into the upper portion of the trachea (windpipe). (MED)

3.3.177.2* Tracheotomy Tube.
A curved tube for insertion into the trachea (windpipe) below the larynx (voice box) during the performance of an appropriate operative procedure (tracheotomy). (MED)

3.3.178* Unattended Laboratory Operation.
A laboratory procedure or operation at which there is no person present who is knowledgeable regarding the operation and emergency shutdown procedures. [45, 2011]

3.3.179 Use Point.
A location with any number of station outlets and inlets arranged for access by a practitioner during treatment of a patient. (PIP)

3.3.180* Utility Center (J Box).
A type of terminal enclosure for utilities (e.g., gas power, vacuum, water, electrical power) used in office-based occupancies. (PIP)

3.3.181 Vaporizer.
A heat exchange unit designed to convert cryogenic liquid into the gaseous state. (PIP)

3.3.182* WAGD Interface.
A device provided on the anesthesia gas machine that connects the WAGD network to the patient breathing circuit. (PIP)

3.3.183 Waste Anesthetic Gas Disposal (WAGD).
The process of capturing and carrying away gases vented from the patient breathing circuit during the normal operation of gas anesthesia or analgesia equipment. (PIP)
3.3.184* Wet Procedure Locations.
The area in a patient care room where a procedure is performed that is normally subject to wet
conditions while patients are present, including standing fluids on the floor or drenching of the
work area, either of which condition is intimate to the patient or staff. (FUN)

3.4 BICSI Definitions.
These terms are defined in The BICSI Information Transport Systems (ITS) Dictionary. (HES)

3.4.1 Telecommunications Entrance Facility (EF).
An entrance to a building for both public and private network service cables that includes the
building entrance point and the entrance room or space at the point of demarcation between
campus or utility service and building interior distribution of communications systems. (ELS)

3.4.2 Telecommunications Equipment Room (TER).
An environmentally controlled centralized space for telecommunications equipment, typically
including main or intermediate cross-connect equipment and cabling. (ELS)

3.4.3 Telecommunications Room (TR).
An enclosed architectural space for housing telecommunications equipment, cable
terminations, and cross-connect cabling, serving a floor or an area of a floor. (ELS)

Statement of Problem and Substantiation for Public Input

There is no definition in the NFPA 99 for qualified person.

See NFPA 25 chapter 3.

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Healthcare
Submittal Date: Fri Mar 02 14:17:14 EST 2012

Committee Statement

Statement: This adds a definition of the "qualified person" required to perform ITM per Chapter 14 based on
action FR 193.

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signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
Public Input No. 306-NFPA 99-2012 [ New Section after 3.2 ]

Acute care: **Acute care is a branch of secondary health care where a patient receives active but short-term treatment for a severe injury or episode of illness, an urgent medical condition, or during recovery from surgery. In medical terms, care for acute health conditions is the opposite from chronic care, or longer term care.** (HYP)

Non-acute Care: **Short term care of those that do not meet the definitions for acute care.** (HYP)

Statement of Problem and Substantiation for Public Input

Chapter 14 defines oxygen systems depending on acute vs non acute treatment, but there is no definition of acute or non acute in the definition section of NFPA 99.

Submitter Information Verification

**Submitter Full Name:** Keith Ferrari  
**Organization:** Praxair, Inc.  
**Submittal Date:** Fri Jun 15 12:28:58 EDT 2012

Committee Statement

**Resolution:** This idea has been used by several First Revisions in Ch. 14

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Public Input No. 59-NFPA 99-2012 [ New Section after 3.3 ]
3.3.X* Building Systems Categories.
The classification of building systems in health care facilities according to potential hazards to patients
and caregivers.

3.3.X.1* Category 1.
Building systems in which failure of such equipment or system is likely to cause major injury or death
of patients or caregivers.

3.3.X.2* Category 2.
Building systems in which failure of such equipment is likely to cause minor injury to patients or
caregivers.

3.3.X.3 Category 3.
Building systems in which failure of such equipment is not likely to cause injury to patients or
caregivers, but can cause patient discomfort.

3.3.X.4 Category 4.
Building systems in which failure of such equipment would have no impact on patient care.

Statement of Problem and Substantiation for Public Input

Building system categories is currently in Chapter 4, section 4.1. Sections 4.3 and A.4.1 both state that
these are definitions. So if they all look like definitions and are definitions, they belong in section 3.3.

Related Public Inputs for This Document

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<td>Public Input No. 61-NFPA 99-2012 [New Section after A.3.3.27]</td>
<td>Annex sections for this proposal. Text moved from A.4.1, A.4.1.1 and A.4.1.2</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Thu Apr 12 11:04:17 EDT 2012

Committee Statement

Statement: It is useful to provide definitions for building systems categories in Chapter 3 because they are
definitions.

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and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic
signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
3.3.Y Hazard Vulnerability Assessment (HVA)
A systematic and methodical process for identifying and examining potential hazards for causation of undesired outcomes in health care facilities.

Statement of Problem and Substantiation for Public Input

The term Hazard Vulnerability Assessment (HVA) currently doesn't appear until Chapter 12, but is a basic concept of NFPA 99. The HVA is the method for determining building system categories, which is a fundamental principle of the document. A new definition is added for HVA so that it is defined as used currently and the proposed use in Chapter 4.

Related Public Inputs for This Document

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<td>Open Public Input No. 62-NFPA 99-2012 [Chapter 4]</td>
<td>This link provides the first use of the new definition in the document.</td>
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</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Thu Apr 12 11:17:45 EDT 2012

Committee Statement

Resolution: This term is only used in Chapter 12. For that reason this definition should go under the purview of the HES committee. The term will not be used in Chapter 4 to include a more complicated analysis than is currently required.

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3.3.7 Ampacity.
The maximum current, in amperes, that a conductor can carry continuously under the conditions of use without exceeding its temperature rating. (ELS)

Statement of Problem and Substantiation for Public Input

Coordinate definition with NFPA 70, National Electrical Code, Article 100. Provides clarity for users by indicating the maximum ampacity a conductor can carry continuously. The current definition implies maximum current used under continuous use. Adding maximum will correct omission of the word “maximum”.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Wed Jun 20 15:21:43 EDT 2012

Committee Statement

Resolution: FR-1-NFPA 99-2012
Statement: Coordinate definition with NFPA 70, National Electrical Code, Article 100. Provides clarity for users by indicating the maximum ampacity a conductor can carry continuously. The current definition implies maximum current used under continuous use. Adding maximum will correct omission of the word “maximum”.

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3.3.9* Anesthetizing Location.

Any area of a facility that has been designated to be used for the administration of general anesthesia, deep sedation, moderate sedation and minimal sedation. (MED)

Statement of Problem and Substantiation for Public Input

3.3.9 only addresses general anesthesia. The NFPA 99, 2012 edition expanded the definition of Anesthesia under 3.3.63. 3.3.9 was not updated with the new information.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 15:40:54 EDT 2012

Committee Statement

Resolution: FR-91-NFPA 99-2012
Statement: New definitions of anesthesia were written for the 2012 edition (3.3..63). References to "anesthetizing locations" were to be removed. This definition is being deleted in accordance with that intent.

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Public Input No. 336-NFPA 99-2012 [ Section No. 3.3.16 ]

3.3.16 Bathrooms.
An area including a basin with one or more of the following: a toilet, a urinal, a tub, or a shower; a bidet, or similar plumbing fixtures. [70, 2011] (FUN)

Statement of Problem and Substantiation for Public Input
Coordinate definition with NFPA 70, National Electrical Code, Article 100. Revision will clarify plumbing fixtures and functions that qualify a room or area as a bathroom. Including the word "or similar plumbing fixtures" allows the definition to remain open ended for coverage of rooms that would qualify as bathrooms when constructed with fixtures typically used in bathrooms.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Wed Jun 20 15:24:39 EDT 2012

Committee Statement

Statement: Coordinate definition with NFPA 70, National Electrical Code, Article 100. Revision will clarify plumbing fixtures and functions that qualify a room or area as a bathroom. Including the word "or similar plumbing fixtures" allows the definition to remain open ended for coverage of rooms that would qualify as bathrooms when constructed with fixtures typically used in bathrooms.

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3.3.31 Critical Care Areas

See 3.3.138, Patient Care Room. Those special care units, intensive care units, coronary care units, angiography laboratories, cardiac catherization laboratories, delivery tooms, operating rooms, postanesthesia recovery rooms, emergency departments, and similar areas in which patients are intended to be subjected to invasive procedures and connected to line-operated, patient-care-related electrical appliances.

Statement of Problem and Substantiation for Public Input

Currently the term "Critical Care Areas" is used throughout the code, e.g. paragraph 6.3.2.2.1.2 and 6.4.2.4.2(1) without a definition. This term was defined in Chapter 3, paragraph 3.3.138.1 of the 2005 edition [The explanation with examples (in Paragraph 3.3.138.1) provided the users, contractors and consultants with a better understanding of code intent and application.]. Provide a definitive definition in the 2015 edition.

Submitter Information Verification

Submitter Full Name: James Meade
Organization: US Army Corps of Engineers
Submittal Date: Tue Jun 12 13:42:09 EDT 2012

Committee Statement

Resolution: Providing a list in the definition might not be entirely inclusive and could become out of date when new technologies are developed. This would also require invasive procedures in order to be considered a critical care area which does not fully address the risk to the patient.

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3.3.66  Ground-Fault Circuit Interrupter (GFCI).
A device intended for the protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. The value for a Class A device.

A.3.3.66  Class A ground-fault circuit interrupters trip when the current to ground is 6 mA or higher and do not trip when the current to ground is less than 4 mA. For further information, see UL 943, Standard for Ground-Fault Circuit Interrupters, [70, 2011] (ELS)

Statement of Problem and Substantiation for Public Input

Coordinate definition with NFPA 70, National Electrical Code, Article 100.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [Not Specified]
Submittal Date: Wed Jun 20 15:37:15 EDT 2012

Committee Statement

Resolution: FR-2-NFPA 99-2012
Statement: Coordinate definition with NFPA 70, National Electrical Code, Article 100.

Copyright Assignment

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Public Input No. 180-NFPA 99-2012 [ Section No. 3.3.71 ]

3.3.71* Health Care Facilities.
Buildings, portions of buildings, or mobile enclosures in which human medical, dental, psychiatric, nursing, obstetrical, or surgical care is provided. (FUN)

Statement of Problem and Substantiation for Public Input

This will eliminate the confusion that this does not apply to veterinary care.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: Self
Submittal Date: Thu Jun 07 12:24:44 EDT 2012

Committee Statement

Statement: This will eliminate the confusion by clarifying that this does not apply to veterinary care.

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3.3.84 Instrument Air.

For the purposes of this code, instrument air is air intended for the powering of medical devices unrelated to human respiration (e.g., surgical tools, ceiling arms). Medical air and instrument air are distinct systems for mutually exclusive applications. Instrument air is a medical support gas that falls . Instrument air similar to Nitrogen gas are medical support gases used for the same purpose and may be connected together on the same piping system and not considered as a cross-connection but both or either used shall fall under the general requirements for medical gases. (PIP) When a Nitrogen system are connected to an operating instrument air system, the outlets shall be labeled accordingly, i.e., Nitrogen/instrument air. Either IA or N2 outlets may be used.

Statement of Problem and Substantiation for Public Input

The N2 or IA gas used for this application is appropriate using either or a mixture of both. To allow the hospital community to incorporate the two into one "support gas" will allow existing hospitals a way to switch to a lower cost gas without any detrimental effect to the patient.

Submitter Information Verification

Submitter Full Name: Mark Franklin
Organization: Sherman Engineering Company
Submittal Date: Fri Jun 22 13:38:12 EDT 2012

Committee Statement

Resolution: This PI would put requirements into the definition which is not permitted.

Copyright Assignment

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3.3.84 Instrument Air.
For the purposes of this code, instrument air is air intended for the powering of medical devices
unrelated to human respiration (e.g., surgical tools, ceiling arms). Medical Instrument air is a
medical support gas that falls under the general requirements for medical gases. Medical air
and instrument air are distinct systems for mutually exclusive applications. instrument air is a
medical support gas that falls under the general requirements for medical gases.

Statement of Problem and Substantiation for Public Input
This Public Input simplifies the definition of Instrument Air, since the definition of the umbrella term, Medical
Support Gas includes the proper uses of Instrument Air. This simplification reduces any confusion and
conflict.

This Public Input is associated with Public Inputs defining Medical Support Gas and Nonmedical Compressed
Air. These Public Inputs work well together to clarify that there are two separate systems of non-respired gas
systems used in healthcare. One, (Medical Support Gas, which includes Instrument Air) is a system used
directly in patient care, where the gas is in intimate contact with patients in an invasive setting, or has the
potential to contaminate sterile product.

The other non-respired gas (Nonmedical Compressed Air) is a system used to support equipment in a
healthcare facility, and can be used for raising or lowering booms, surgical tables, sterilizer doors, cart wash
leveling ramps, etc. as well as regular facility maintenance.

Instrument Air requires brazed pipe with alarms, zone valve boxes, testing, and a redundant source capable of
very dry, very clean gas. Not all "medical support applications" require this level of system. The distinction
should be made based on whether or not the gas is in direct contact with patients in an invasive setting.
These coordinated proposals make that distinction.

Instrument Air has much higher level of cleanliness than Medical Air (IA filtered to 98 percent efficiency at
0.01 micron, MA allows for 98 percent efficiency at 1 micron; IA required to be free of hydrocarbon vapors, MA
allows for 25 ppm of gaseous hydrocarbons; IA dew point -40 °F, MA dew point of +32 °F, MA). It is ironic
that NFPA 99 currently prohibits the relatively dirty Medical Air system from providing mechanical function to
an equipment boom, while at the same time prevents the much cleaner Instrument Air system from being
used for respiration.

As the linking tool is not working for me, this is related to Public Inputs 394, 396, 397, and 398

Submitter Information Verification
Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submital Date: Fri Jun 22 18:31:29 EDT 2012

Committee Statement
Statement: This FR simplifies the definition of Instrument Air, since the definition of the umbrella term, Medical
Support Gas includes the proper uses of Instrument Air. This simplification reduces any confusion and
conflict.

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signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
3.3.96* Limited-Combustible (Material).

Refers to a building construction material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 8141 kJ/kg (3500 Btu/lb), where tested in accordance with NFPA 259, Standard Test Method for Potential Heat of Building Materials, and includes either of the following: (1) materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of \(\frac{1}{8}\) in. (3.2 mm) that has a flame spread index not greater than 50; or (2) materials, in the form and thickness used, having neither a flame spread index greater than 25 nor evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor evidence of continued progressive combustion, when tested in accordance with ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials. [90A, 2012] (PIP) See 4.4.1.2.

Statement of Problem and Substantiation for Public Input

This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. Therefore this public input proposes to put simply a place holder in chapter 3 (definitions) and place the requirements into Chapter 4 (fundamentals), just as was done in NFPA 101 and 5000. The proposed language is identical to the language in NFPA 101. If the technical committee wishes it can simply extract the language from NFPA 101. The corresponding sections are: 3.3.96 would be extracted from 3.3.169.2, 3.3.123 would be extracted from 3.3.169.4, 4.4.1 would be extracted from 4.6.13 and 4.4.2 would be extracted from 4.6.14. Also, update (in Chapter 2) ASTM E136 to the 2011 edition and ASTM E84 to the 2012 edition and add also a reference to ASTM E2652 (2009a) Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:10:34 EDT 2012

Committee Statement

Resolution: FR-326-NFPA 99-2012
Statement: This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements.

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3.3.109 Medical Support Gas.

Nitrogen, or instrument air, Carbon Dioxide, or Instrument Air used for any medical support purpose (e.g., to remove excess moisture from instruments before further processing, or to operate medical–surgical tools, air-driven booms, pendants, or similar applications) and, if appropriate to the procedures, used in laboratories and are not where the gas has the possibility of patient contact in an invasive procedure, or where the gas has the potential to contaminate sterile items. Medical support gas may be used, but it's use is not mandatory, in laboratories and for non-patient contact applications in direct support of medical procedures (e.g. equipment booms, pendants, patient surgical tables). Medical support gasses shall not be respired as part of any treatment. Medical Support Gas shall not be used for general facility needs. Medical support gas falls under the general requirements for medical gases. (PIP)

**Statement of Problem and Substantiation for Public Input**

This adds Carbon Dioxide to the list of Medical Support Gasses. This has been used for years without direction from NFPA 99. The Standard of Care has been to treat it like Nitrogen. This formalizes that practice. This Public Input is associated with Public Inputs defining Instrument Air and Non Medical Compressed Air. These Public Inputs work well together to clarify that there are two separate systems of non-respired gas systems used in healthcare. One, (Medical Support Gas) is a system used directly in patient care, where the gas is in intimate contact with patients in an invasive setting, or has the potential to contaminate sterile product. This includes gasses used to drive tools where the exhaust is very near to an open surgical site, provide an inert gas field around a surgical site, used directly to dry body tissue, for insufflation, or to force dry medical devices. The other is a system used to support the medical equipment in a healthcare facility, and can be used for raising or lowering booms, surgical tables, sterilizer doors, cart wash leveling ramps, etc. This equipment can all be considered “any medical support applications”, but the system of gasses involved only provide a mechanical function, not requiring intimate exposure with human beings in an invasive environment. Any Medical Support Gas requires brazed pipe with alarms, zone valve boxes, testing, and a redundant source capable of very dry, very clean gas. Not all “medical support applications” require this level of system. The distinction should be made based on whether or not the gas is in direct contact with patients in an invasive setting. These coordinated proposals make that distinction. This Public Input ALLOWS for a Medical Support Gas to be used in a limited applications directly supporting the medical program, but does not REQUIRE this system where the redundancy, alarms, etc of this system are not needed. This Public input clarifies that a Medical Support Gas can not be used for general facility use. As the linking tool is not working for me, this is related to Public inputs 395, 396, 397, and 398

**Submitter Information Verification**

Submitter Full Name: MARK JELINSKE  
Organization: CATOR RUMA ASSOC  
Submittal Date: Fri Jun 22 17:57:53 EDT 2012

**Committee Statement**

Resolution: This proposed language adds requirements to the definition which is not permitted. There are other applications for carbon dioxide which apply to direct patient care.

Copyright Assignment

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Public Input No. 124-NFPA 99-2012 [ New Section after 3.3.118 ]

3.3.11X NITROGEN CONTROL PANEL
A panel used to regulate the nitrogen pressure from line pressure (160 -180 psig) to a working pressure for medical devices and pneumatic tools

Statement of Problem and Substantiation for Public Input

Nitrogen control panels are used throughout 100% of the hospitals that plumb in nitrogen to OR's. There is not definition to identify these panels.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 15:51:45 EDT 2012

Committee Statement

Resolution: This term is not currently used in NFPA 99 and it is not known if the term was accepted by PIP in the first draft stage.

Copyright Assignment

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3.3.123 Noncombustible (Material).
A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials that are reported as passing ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, shall be considered noncombustible materials. (HYP) See 4.4.1.1.

Statement of Problem and Substantiation for Public Input

This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. Therefore this public input proposes to put simply a place holder in chapter 3 (definitions) and place the requirements into Chapter 4 (fundamentals), just as was done in NFPA 101 and 5000. The proposed language is identical to the language in NFPA 101. If the technical committee wishes it can simply extract the language from NFPA 101. The corresponding sections are: 3.3.96 would be extracted from 3.3.169.2, 3.3.123 would be extracted from 3.3.169.4. 4.4.1 would be extracted from 4.6.13 and 4.4.2 would be extracted from 4.6.14.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:11:48 EDT 2012

Committee Statement

Resolution: At the time of the HYP meeting, there is no Section 4.4.1.1 to reference. If the submitter's related input is used by FUN, this can be incorporated at the comment stage for the Second Draft.

Copyright Assignment

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Public Input No. 396-NFPA 99-2012 [ New Section after 3.3.126 ]

3.3.xx Nonmedical Compressed Air.
Compressed air intended for use for general facility support and for support of medical equipment where it is not in contact with patients in an invasive procedure setting. Nonmedical compressed is not associated with patient respiration or used in an invasive setting where the compressed air could have patient contact.

Statement of Problem and Substantiation for Public Input

This Public Input is associated with Public Inputs defining Medical Support Gas and Instrument Air. These Public Inputs work well together to clarify that there are two separate systems of non-respired gas systems used in healthcare. One, (Medical Support Gas) is a system used directly in patient care, where the gas is in intimate contact with patients in an invasive setting, or has the potential to contaminate sterile product.

The other non-respired gas (Nonmedical Compressed Air) is a system used to support equipment in a healthcare facility, and can be used for raising or lowering booms, surgical tables, sterilizer doors, cart wash leveling ramps, etc. as well as regular facility maintenance.

Instrument Air requires brazed pipe with alarms, zone valve boxes, testing, and a redundant source capable of very dry, very clean gas. Not all “medical support applications” require this level of system. The distinction should be made based on whether or not the gas is in direct contact with patients in an invasive setting. These coordinated proposals make that distinction.

As the linking tool is not working for me, this is related to Public Inputs # 394, 395, 397, 398

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 18:48:58 EDT 2012

Committee Statement

Resolution: There is already a definition in Chapter 8 of NFPA 99 for this definition. The FUN TC asks the CC to forward this to the MEC committee.

Copyright Assignment

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Public Input No. 264-NFPA 99-2012 [ Section No. 3.3.138.1 ]

Original Hide Markup

3.3.138.1* Basic Care Room Category 3 room.
Room in which the failure of equipment or a system is not likely to cause injury to the patients or caregivers but can cause patient discomfort (Category 3). (MED)

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define room because the document has changed to a risk based document and the room is defend by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 17:47:34 EDT 2012

Committee Statement

Statement: The terminology was updated to be consistent with Article 517 of the NEC. The medical equipment technical committee (MED) recommends that control of these definitions is moved to the fundamentals committee (FUN).

Copyright Assignment

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Public Input No. 265-NFPA 99-2012 [Section No. 3.3.138.2]

3.3.138.2*—Critical Care Room, Category 1 Room.
Room in which failure of equipment or a system is likely to cause major injury or death of patients or caregivers (Category 1) (MED)

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define room because the document has changed to a risk based document and the room is defend by risk category.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 17:53:42 EDT 2012

Committee Statement

Statement: The terminology was updated to be consistent with Article 517 of the NEC. The medical equipment technical committee (MED) recommends that control of these definitions is moved to the fundamentals committee (FUN).

Copyright Assignment:

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Public Input No. 266-NFPA 99-2012 [Section No. 3.3.138.3]

3.3.138.3*—General-Care-Room: Category 2 Room.
Room in which failure of equipment or a system is likely to cause minor injury to patients or caregivers (Category 2). (MED)

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define room because the document has changed to a risk based document and the room is defined by risk category.

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Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 17:57:19 EDT 2012

Committee Statement

Statement: The terminology was updated to be consistent with Article 517 of the NEC. The medical equipment technical committee (MED) recommends that control of these definitions is moved to the fundamentals committee (FUN).

Copyright Assignment

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Public Input No. 267-NFPA 99-2012 [Section No. 3.3.138.4]

3.3.138.4* Support Room. Category 4 Room.
Room in which failure of equipment or a system is not likely to have a physical impact on patients or caregivers. (Category 4). (MED)

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define room because the document has changed to a risk based document and the room is defend by risk category.

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<td>Public Input No. 264-NFPA 99-2012 [Section No. 3.3.138.1]</td>
<td></td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 17:59:59 EDT 2012

Committee Statement

Statement: The terminology was updated to be consistent with Article 517 of the NEC. The medical equipment technical committee (MED) recommends that control of these definitions is moved to the fundamentals committee (FUN).

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3.3.139 Patient Care Vicinity.
A space, within a location intended for the examination and treatment of patients, extending 1.8 m (6 ft) beyond the normal location of the bed, chair, table, treadmill, or other device that supports the patient during examination and treatment and extending vertically to 2.3 m (7 ft 6 in.) above the floor. (MED)

Statement of Problem and Substantiation for Public Input

This section is not necessary. It goes back to the now disproved micro shock problem. The genesis is an article written by John M. R. Bruner in 1967, Hazards of Electrical Apparatus, Anesthesiology, Mar-April, 1967. He does not document any cases of micro shock injuries but does reference articles where ventricular fibrillation occurred in patients with lead wires placed directly into the heart via cardiac catheterization. This particular instance has been included in the current edition of NFPA 99 in section 10.5.2.2 Protection of Patients with Direct Electrical Pathways to the Heart. This group of patients is confined to intensive care units and the cardiac catheterization lab. The normal patient population is no different than non patient population in terms of being more susceptible to micro shock. Someone who is sitting on their bed at home using a laptop computer does not become susceptible to micro shock if they are using the same laptop computer sitting in a hospital bed.

Submitter Information Verification

Submitter Full Name: John Collins
Organization: ASHE
Submittal Date: Wed May 30 15:28:31 EDT 2012

Committee Statement

Resolution: Removing the definition would leave the current requirements (e.g. 6.3.2.2.7.1, 6.3.2.2.7.2, and 10.4.2.1) ambiguous and possibly expand them beyond the current intentions.

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Chapter 4 Fundamentals

4.1 Building System Categories.

Building systems in health care facilities shall be designed to meet system Category 1 through Category 4 requirements as detailed in this code.

4.1.1 Category 1.

Facility systems in which failure of such equipment or system is likely to cause major injury or death of patients or caregivers shall be designed to meet system Category 1 requirements as defined in this code.

Fundamental Principles.

4.1.1.1 The primary goals of this standard shall be:

(1) To safeguard hazards in the health care environment that could cause death or injury to patients and caregivers.

(2) To provide reasonable safeguards to protect property from hazards in the health care environment.

4.1.2 Category 2.

Facility systems in which failure of such equipment is likely to cause minor injury to patients or caregivers shall be designed to meet system Category 2 requirements as defined in this code.

Implementing the goals of this standard shall require a hazard vulnerability assessment (HVA).

4.1.3 Category 3.

Facility systems in which failure of such equipment is not likely to cause injury to patients or caregivers, but can cause patient discomfort, shall be designed to meet system Category 3 requirements as defined in this code.

The results of the HVA shall be documented and records retained.

4.1.4 Category 4.

Facility systems in which failure of such equipment would have no impact on patient care shall be designed to meet system Category 4 requirements as defined in this code.

2 Building Service Categories.

4.2.1 Each building system shall be assigned to a building service category as determined by the results of the HVA.

4.2 Risk Assessment.

Categories shall be determined by following and documenting a defined risk assessment procedure.

Activities or interventions of caregivers shall not be used in classification of building systems.

4.3 Application.

The Category definitions in Chapter 4 shall apply to Chapters 5 through 11.

Building systems shall be designed to meet the requirements of the category assigned in 4.2.1.

Statement of Problem and Substantiation for Public Input

Building system categories is a definition. If in doubt, it is stated in Section 4.3 and the annex to 4.1. Building system categories moved to section 3.3 as definitions in public input #59. Hazard Vulnerability Assessment (HVA) is introduced in Chapter 4 as a fundamental concept. Currently the term does not appear until Chapter 12, but is a basic concept of the document. A new definition is added for HVA in public input #60. Moved requirements from the annex to the body of the document such as the requirement to do a risk assessment and provide documentation of having done so. The new section 4.2 states the requirement to classify building systems according to the risk assessment that was only implied before in annex text. Consolidated the many...
exhortations to comply with the defined building service categories into one location at new section 4.3.

### Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Input No. 59-NFPA 99-2012 [New Section after 3.3]</td>
<td>Shows moved text to section 3.3 from current section 4.1.</td>
</tr>
<tr>
<td>Public Input No. 60-NFPA 99-2012 [New Section after 3.3]</td>
<td>New definition for HVA, which was only implied in annex material.</td>
</tr>
<tr>
<td>Public Input No. 61-NFPA 99-2012 [New Section after A.3.3.27]</td>
<td>Moved and edited current annex material from section 4.1 as annex material to the new definitions in public input #59</td>
</tr>
</tbody>
</table>

### Submitter Information Verification

**Submitter Full Name:** Michael DeVore  
**Organization:** State Farm Insurance Company  
**Submittal Date:** Thu Apr 12 12:03:19 EDT 2012

### Committee Statement

**Resolution:** This would require a more in depth assessment than what is currently anticipated by Chapter 4. Category definitions are so fundamental to the use of the Code that they have been retained in Chapter 4 and the definitions have also been added to Chapter 3.

---

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---

**Public Input No. 106-NFPA 99-2012 [ Section No. 4.1 ]**
4.1* Building System Categories.
Building systems in health care facilities shall be designed to meet system Category 1 through Category 4 requirements as detailed in this code.

4.1.1* Category 1.
Facility systems in which failure of such equipment or system is likely to cause major injury or death of patients or caregivers shall be designed to meet system Category 1 requirements as defined in this code.

4.1.2* Category 2.
Facility systems in which failure of such equipment is likely to cause minor injury to patients or caregivers shall be designed to meet system Category 2 requirements as defined in this code.

4.1.3 Category 3.
Facility systems in which failure of such equipment is not likely to cause injury to patients or caregivers, but could cause patient discomfort, shall be designed to meet system Category 3 requirements as defined in this code.

4.1.4 Category 4.
Facility systems in which failure of such equipment would have no impact on patient care shall be designed to meet system Category 4 requirements as defined in this code.

Additional Proposed Changes

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Wang-proposed changes to 4.1-Building system categories.docx</td>
<td>Rationale for proposed changes to 4.1 Building system categories.</td>
<td></td>
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</tbody>
</table>

Statement of Problem and Substantiation for Public Input

The proposed changes are based on the following rationale:

1) As stated in A4.2, risk assessment is a well defined and standarized process codified in ISO/IEC 31010 and with terms defined in ISO Guide 73.
2) As stated clearly in the documents above, risk is “a combination of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence.” In other words,

Risk = severity (or consequences) * probability (or likelihood)

3) The current verbiage (“... equipment or system is likely to...”) suggests erroneously that the probability/likelihood has already been considered.
4) In reality, the definitions of categories are apparently based solely on severity (major injury, minor injury, or no injury).

Actually, it would be desirable to modify the classification to allow the use of risk (i.e., both severity and probability) in the classification. This would allow facilities to focus more attention to systems that seldom fail but has high severity, as well as systems that fail frequently but has low severity. Less resources would be spent on systems that fail occasionally and with medium or low severity. The challenge with this classification is that facilities would have to learn how to perform risk assessment (4.2) before defining system categories (4.1).

Submitter Information Verification

Submitter Full Name: BINESS WANG
Organization: ARAMARK Healthcare Technologies
Submittal Date: Wed May 02 16:43:30 EDT 2012
Resolution: Changing the term "likely" to "could" is much too open ended and might include all situations. The term "cannot" is too absolute.

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Public Input No. 313-NFPA 99-2012 [ New Section after 4.3 ]

Add a new section to read:

4.4 Materials
4.4.1* Noncombustible Material.  4.4.1.1 A material that complies with any of the following shall be considered a noncombustible material:
   (1)* A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat
   (2) A material that is reported as passing ASTM E 136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C
   (3) A material that is reported as complying with the pass/fail criteria of ASTM E 136 when tested in accordance with the test method and procedure in ASTM E 2652, Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750 Degrees C
4.4.1.2 Where the term limited-combustible is used in this Code, it shall also include the term noncombustible.
4.4.2* Limited-Combustible Material. A material shall be considered a limited-combustible material where all the conditions of 4.4.2.1 and 4.4.2.2, and the conditions of either 4.4.2.3 or 4.4.2.4, are met.
   4.4.2.1 The material shall not comply with the requirements for noncombustible material in accordance with 4.4.1.
   4.4.2.2 The material, in the form in which it is used, shall exhibit a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg) where tested in accordance with NFPA 259, Standard Test Method for Potential Heat of Building Materials.
   4.4.2.3 The material shall have the structural base of a noncombustible material with a surfacing not exceeding a thickness of 1/8 in. (3.2 mm) where the surfacing exhibits a flame spread index not greater than 50 when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials.
   4.4.2.4 The material shall be composed of materials that, in the form and thickness used, neither exhibit a flame spread index greater than 25 nor evidence of continued progressive combustion when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, or ANSI/UL 723, Standard for Test for Surface Burning Characteristics of Building Materials, and shall be of such composition that all surfaces that would be exposed by cutting through the material on any plane would neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E 84 or ANSI/UL 723.
   4.4.2.5 Where the term limited-combustible is used in this Code, it shall also include the term noncombustible.

Statement of Problem and Substantiation for Public Input

This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012
cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. Therefore this public input proposes to put simply a place holder in chapter 3 (definitions) and place the requirements into Chapter 4 (fundamentals), just as was done in NFPA 101 and 5000. The proposed language is identical to the language in NFPA 101. If the technical committee wishes it can simply extract the language from NFPA 101. The corresponding sections are: 3.3.96 would be extracted from 3.3.169.2, 3.3.123 would be extracted from 3.3.169.4, 4.4.1 would be extracted from 4.6.13 and 4.4.2 would be extracted from 4.6.14.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:12:52 EDT 2012

Committee Statement

Resolution: FR-313-NFPA 99-2012
Statement: This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. This has been extracted from NFPA 101 to keep consistency between the documents.

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4.3  Application.

The Category definitions in Chapter 4 shall apply to Chapters 5 through 11.

Statement of Problem and Substantiation for Public Input

Chapters 10 and 11 do not follow chapter 4 risk categories.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:01:42 EDT 2012

Committee Statement

Resolution: While, the Input is correct to the 2012 edition of NFPA 99, risk categories have now been added into Chapter 10 and 11. It is recommended that any Categories be aligned with the risk categories defined in Chapter 4.

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Public Input No. 280-NFPA 99-2012 [ Section No. 4.3 ]

4.3 Application.

The Category definitions in Chapter 4 shall apply to Chapters 5 through 11.

Statement of Problem and Substantiation for Public Input

Section 4.1 states that the categories of Chapter 4 are intended to apply to building systems. Chapters 10 and 11 are not building systems and are not written to apply to the Chapter 4 approach.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: Self
Submital Date: Wed Jun 13 20:36:43 EDT 2012

Committee Statement

Resolution: While, the Input is correct to the 2012 edition of NFPA 99, risk categories have now been added into Chapter 10 and 11. It is recommended that any Categories be aligned with the risk categories defined in Chapter 4.

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Gas and Medical Gas, Support Gas and Medical-Surgical Vacuum Systems

Statement of Problem and Substantiation for Public Input

With the inclusion of Chapter 8 Plumbing Systems and Chapter 9 HVAC that include non medical gas and non medical - surgical vacuum systems, we need to match the chapter 5 title with the chapter 5 scope. This change would include changes to 5.1, 5.2 and 5.3 section titles also.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Fri Jun 15 12:17:54 EDT 2012

Committee Statement

Resolution: The current title of Chapter 5 is sufficient. The additions proposed are clarified in the text of the Chapter.

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Public Input No. 300-NFPA 99-2012 [ Section No. 5.1.1.3 ]

5.1.1.3

Wherever the term medical–surgical vacuum occurs, the provisions shall apply to systems for piped medical–surgical patient vacuum and piped waste anesthetic gas disposal (WAGD). Wherever the name of a specific vacuum service occurs, the provision shall apply only to that vacuum service.

Statement of Problem and Substantiation for Public Input

The original text does not make sense. How do you differentiate medical-surgical vacuum system from medical - surgical vacuum system? The intent is clear, but every time we use the word medical-surgical vacuum system and do not intend for the WAGD to be included on the item, based on this code section it would include WAGD. We need to have a term that means both Patient vacuum system and waste anesthetic gas disposal, then when we have code items only for patient vacuum systems or WAGD, it is clear.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Fri Jun 15 11:23:40 EDT 2012

Committee Statement

Statement: This section only adds confusion to the user. The different types of vacuum systems are identified throughout the Chapter.

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5.1.1.3
Wherever the term medical–surgical vacuum system occurs, the provisions shall apply to systems for piped medical–surgical vacuum and piped waste anesthetic gas disposal (WAGD). Wherever the name of a specific vacuum service occurs, the provision shall apply only to that vacuum service.

Statement of Problem and Substantiation for Public Input

It is not possible to distinguish when the term "medical-surgical vacuum" is intended to include WAGD because the same term is used for vacuum only and vacuum with WAGD. It appears that when the term "medical-surgical vacuum system" is used it refers to both vacuum and WAGD throughout section 5.

Submitter Information Verification

Submitter Full Name: RACHAEL STEPHENSON
Organization: Stryker Communications
Submittal Date: Fri Jun 22 11:23:48 EDT 2012

Committee Statement

Statement: This section only adds confusion to the user. The different types of vacuum systems are identified throughout the Chapter.

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Public Input No. 127-NFPA 99-2012 [Section No. 5.1.3.3.1.1]

5.1.3.3.1.1
Any of the following systems shall be permitted to be located together in the same outdoor enclosure:

1. Manifolds for gas cylinders without reserve supply (see 5.1.3.5.10)
2. Manifolds for gas cylinders with reserve supply
3. Manifolds for cryogenic liquid containers (see 5.1.3.5.12)
4. Bulk cryogenic liquid systems (see 5.1.3.5.13)

Statement of Problem and Substantiation for Public Input

Manifolds for gas cylinders with reserve supply was removed in the 2012. (Editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:07:35 EDT 2012

Committee Statement

Resolution: FR-244-NFPA 99-2012
Statement: Manifolds for gas cylinders with reserve supply was removed in the 2012 edition. References were corrected.

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Public Input No. 137-NFPA 99-2012 [ Section No. 5.1.3.3.1.1 ]

5.1.3.3.1.1
Any of the following systems shall be permitted to be located together in the same outdoor enclosure:

1) Manifolds for gas cylinders without reserve supply (see 5.1.3.5.10)
2) Manifolds for gas cylinders with reserve supply
3) Manifolds for cryogenic liquid containers (see 5.1.3.5.12)
4) Bulk cryogenic liquid systems (see 5.1.3.5.13)

Statement of Problem and Substantiation for Public Input

editorial - no need for wording since with reserve was removed in 2012.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:57:22 EDT 2012

Committee Statement

Resolution: FR-244-NFPA 99-2012
Statement: Manifolds for gas cylinders with reserve supply was removed in the 2012 edition. References were corrected.

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5.1.3.3.1.2
Any of the following systems shall be permitted to be located together in the same indoor enclosure:

1. Manifolds for gas cylinders without reserve supply (see 5.1.3.5.10)
2. Manifolds for gas cylinders with reserve supply
3. Manifolds for cryogenic liquid containers (see 5.1.3.5.12)
4. In-building emergency reserves (see 5.1.3.5.14)
5. Instrument air standby headers (see 5.1.3.9.5)

Statement of Problem and Substantiation for Public Input

This section should have been removed from the list when the entire section on Manifolds for gas cylinders with reserve supply was deleted in the 2012 edition. (Editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:04:27 EDT 2012

Committee Statement

Resolution: FR-245-NFPA 99-2012
Statement: Manifolds for gas cylinders with reserve supply was removed from the 2012 edition. Reference was corrected.

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Public Input No. 138-NFPA 99-2012 [Section No. 5.1.3.3.1.2]

5.1.3.3.1.2
Any of the following systems shall be permitted to be located together in the same indoor enclosure:

(1) Manifolds for gas cylinders without reserve supply (see 5.1.3.5.10)
(2) Manifolds for gas cylinders with reserve supply
(3) Manifolds for cryogenic liquid containers (see 5.1.3.5.12)
(4) In-building emergency reserves (see 5.1.3.5.14)
(5) Instrument air standby headers (see 5.1.3.9.5)

Statement of Problem and Substantiation for Public Input

editorial - no need for wording since with reserve was removed in 2012.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:58:37 EDT 2012

Committee Statement

Resolution: FR-245-NFPA 99-2012
Statement: Manifolds for gas cylinders with reserve supply was removed from the 2012 edition. Reference was corrected.

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Public Input No. 128-NFPA 99-2012 [ Section No. 5.1.3.3.1.5 ]

5.1.3.3.1.5—
Locations shall be chosen to allow access by delivery vehicles and management of cylinders (e.g., proximity to loading docks, access to elevators, and passage of cylinders through public areas).

Statement of Problem and Substantiation for Public Input

Relocate section to 5.1.3.3.2
This section fits better under Design and Construction list of requirements. (Editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:12:40 EDT 2012

Committee Statement

Resolution: FR-246-NFPA 99-2012
Statement: This section has been relocated to 5.1.3.3.2 This section fits better under Design and Construction list of requirements.

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Cylinders in use and in storage shall be prevented from reaching temperatures in excess of 54°C (130°F) (52°C (125°F)).

Statement of Problem and Substantiation for Public Input

125 degrees is the recommended high storage temp for cylinders. (CGA). Also, this will be harmonized with sections: 5.1.3.3.1.8, 9.3.7.7, 9.3.7.8 and A.5.1.14 which all reference 125 degrees. (Editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:21:38 EDT 2012

Committee Statement

Statement: This was not deleted but rather relocated to the operations section as it is something that it is an operational requirement. 125 degrees is the recommended high storage temp for cylinders. (CGA). Also, this will be harmonized with sections: 5.1.3.3.1.8, 9.3.7.7, 9.3.7.8 and A.5.1.14 which all reference 125 degrees. (Editorial).

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Central supply systems for nitrous oxide and carbon dioxide using cylinders or portable containers shall be prevented from reaching temperatures lower than the recommendations of the central supply system's manufacturer, but shall never be lower than -29°C (-20°F) or greater than 51.6°C (125°F).

Statement of Problem and Substantiation for Public Input

Temperature vs flow data was not provided when this change was adopted in the 2012 edition of NFPA 99. To date, temperature vs flow data is not available. This change will increase patient safety by lowering the likelihood of a gas supply issue.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 13:24:53 EDT 2012

Committee Statement

Statement: This was relocated to 5.1.3.2 as it is an operational consideration. Furthermore, it was revised as temperature vs flow data was not provided when this change was adopted in the 2012 edition of NFPA 99. To date, temperature vs flow data is not available. This change will increase patient safety by lowering the likelihood of a gas supply issue.

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5.1.3.3.2* Design and Construction.

Locations for central supply systems and the storage of positive-pressure gases shall meet the following requirements:

1. They shall be constructed with access to move cylinders, equipment, and so forth, in and out of the location on hand trucks complying with 11.4.3.1.1.
2. They shall be secured with lockable doors or gates or otherwise secured.
3. If outdoors, they shall be provided with an enclosure (wall or fencing) constructed of noncombustible materials with a minimum of two entry/exits.
4. If indoors, they shall be constructed and use interior finishes of noncombustible or limited-combustible materials such that all walls, floors, ceilings, and doors are of a minimum 1-hour fire resistance rating.
5. * They shall be compliant with NFPA 70, National Electrical Code, for ordinary locations.
6. They shall be heated by indirect means (e.g., steam, hot water) if heat is required.
7. They shall be provided with racks, chains, or other fastenings to secure all cylinders from falling, whether connected, unconnected, full, or empty.
8. * They shall be supplied with electrical power compliant with the requirements for essential electrical systems as described in Chapter 6.
9. They shall have racks, shelves, and supports, where provided, constructed of noncombustible materials or limited-combustible materials.
10. They shall protect electrical devices from physical damage.
11. They shall allow access by delivery vehicles and management of cylinders (e.g., proximity to loading docks, access to elevators, and passage of cylinders through public areas).
Statement of Problem and Substantiation for Public Input

Relocate 5.1.3.3.1.5 to this section (Editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:15:13 EDT 2012

Committee Statement

Resolution: FR-249-NFPA 99-2012

Statement: The requirement for two entry/exits was separated out into a new item 4 to specify that this is for bulk cryogenic liquid systems which is where the original concerns were. The addition of the new item (13) relocates 5.1.3.3.1.5 to this section. The type of construction and fire resistance and fire protection ratings required of the construction have been clarified. Specifically, the Code currently uses improper terms and is inconsistent with NFPA 101, NFPA 5000 and the IBC. Interior finishes do not have a fire resistance rating and the current wording could be interpreted as requiring such.

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5.1.3.3.2* Design and Construction.
Locations for central supply systems and the storage of positive-pressure gases shall meet the following requirements:

(1) They shall be constructed with access to move cylinders, equipment, and so forth, in and out of the location on hand trucks complying with 11.4.3.1.1.
(2) They shall be secured with lockable doors or gates or otherwise secured.
(3) If outdoors, they shall be provided with an enclosure (wall or fencing) constructed of noncombustible materials with a minimum of two entry/exits.
(4) If indoors, they shall be constructed and use interior finishes of noncombustible or limited-combustible materials such that all walls, floors, ceilings, and doors are of a minimum 1-hour fire resistance rating, when tested in accordance with ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
(5) They shall be compliant with NFPA 70, National Electrical Code, for ordinary locations.
(6) They shall be heated by indirect means (e.g., steam, hot water) if heat is required.
(7) They shall be provided with racks, chains, or other fastenings to secure all cylinders from falling, whether connected, unconnected, full, or empty.
(8) They shall be supplied with electrical power compliant with the requirements for essential electrical systems as described in Chapter 6.
(9) They shall have racks, shelves, and supports, where provided, constructed of noncombustible materials or limited-combustible materials.
(10) They shall protect electrical devices from physical damage.

Statement of Problem and Substantiation for Public Input

This public input is basically editorial, but it is necessary to ensure that no alternate tests are used to determine the fire resistance rating. It is possible to use various non-standard tests and get fire resistance ratings but then the safety desired by the code would not necessarily be achieved.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:20:47 EDT 2012

Committee Statement

Statement: This was added to the annex to help the user of the document understand what tests are typically used to determine these ratings but to keep it from over complicating the code.

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Public Input No. 131-NFPA 99-2012 [Section No. 5.1.3.3.3.3(A)]

(A)
Outdoor locations surrounded by impermeable walls—except fire barrier walls—shall have protected ventilation openings located at the base of each wall to allow free circulation of air within the enclosure.

C) The fire barrier wall shall not have openings or penetrations, except conduit or piping shall be permitted provided that the penetration is protected, with a firestop system in accordance with the building code.

Statement of Problem and Substantiation for Public Input

Fire walls cannot have "open" penetrations per the NFPA 55, 2010 edition section 8.7.2.1.1.1. This will harmonize with the Compressed Gases and Cryogenic Fluids Code.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submital Date: Tue May 15 16:25:39 EDT 2012

Committee Statement

Statement: Fire walls cannot have "open" penetrations per the NFPA 55, 2010 edition section 8.7.2.1.1.1. This will harmonize with the Compressed Gases and Cryogenic Fluids Code.

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Sample Port
A DN8 (NPS 1\frac{1}{4}) valved sample port shall be provided downstream of the final line pressure regulators and upstream of the source shutoff valve to allow for sampling of the medical gases.

Statement of Problem and Substantiation for Public Input

Medical Gases in the form of cylinders, containers, and Bulk Vessels come with a Certificate of Analysis for the gases delivered. The gases then run through a network of components (Manifolds, vaporizers, pigtails, ...) with no on-line monitoring of the purity of these gases. Periodic gas sampling should/could be done at a sample port, similar to the medical air system (medical gas manufactured on site) to check that the gases being delivered to the patients from the central supply meets the medical air quality needed for patient care.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:01:26 EDT 2012

Committee Statement

Statement: The addition of an auxiliary connection would simplify: 1. source changeouts 2. major source service 3. connection of an emergency supply in event of source failure.

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Public Input No. 172-NFPA 99-2012 [New Section after 5.1.3.5.6.4]

New
5.1.3.5.7 Auxiliary inlets. All source systems shall be provided with an auxiliary inlet / outlet connection point of the same size as the main line which shall be located immediately on the patient side of the source valve.

5.1.3.5.7.1 The connection consists of a tee, valve and a removable plug or cap.
5.1.3.5.7.2 The auxiliary connection valve shall be normally closed and secured.
5.1.3.5.7.3 On oxygen systems furnished with an emergency oxygen supply connection (EOSC), the EOSC shall be considered to fulfill this requirement.

Additional Proposed Changes

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<td>Final</td>
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Statement of Problem and Substantiation for Public Input

The addition of an auxiliary connection would simplify:
1. source changeouts
2. major source service
3. connection of an emergency supply in event of source failure.

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 19:09:26 EDT 2012

Committee Statement

Statement: The addition of an auxiliary connection would simplify: 1. source changeouts 2. major source service 3. connection of an emergency supply in event of source failure.

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Public Input No. 139-NFPA 99-2012 [ Section No. 5.1.3.5.10 ]

5.1.3.5.10* Manifolds for Gas Cylinders Without Reserve Supply.

5.1.3.5.10.1
The manifolds in this category shall be located in accordance with 5.1.3.3.1 and shall meet the following:

(1) If located outdoors, they shall be installed in an enclosure used only for this purpose and sited to comply with minimum distance requirements in NFPA 55.

(2) If located indoors, they shall be installed within a room used only for enclosure of such manifolds.

5.1.3.5.10.2
The manifold locations for this category shall be constructed in accordance with 5.1.3.3.2.

5.1.3.5.10.3
The manifold locations for this category shall be ventilated in accordance with 5.1.3.3.3.

5.1.3.5.10.4
The manifolds in this category shall consist of the following:

(1) Two equal headers in accordance with 5.1.3.5.9, each with a sufficient number of gas cylinder connections for an average day’s supply, but not fewer than two connections, and with the headers connected to the final line pressure regulator assembly in such a manner that either header can supply the system.

(2) Vent valves, if fitted on a header, vented outside of the building per 5.1.3.5.6.1(5) through (9) and 5.1.3.5.6.2.

(3) Intermediate relief valve(s), piped to the outside in accordance with 5.1.3.5.6.1(5) through (9), that protects the piping between the header pressure regulator and the line pressure regulator assembly, and protects the line pressure regulators from overpressure in the event of a header regulator failure.

5.1.3.5.10.5
The manifolds in this category shall include an automatic means of alternating the two headers to accomplish the following in normal operation:

(1) One header is the primary and the other is the secondary, with either being capable of either role.

(2) When the primary header is supplying the system, the secondary header is prevented from supplying the system.

(3) When the primary header is depleted, the secondary header automatically begins to supply the system.

5.1.3.5.10.6
The manifolds in this category shall have a local signal that visibly indicates the operating status of the equipment and shall activate an indicator at all master alarm panels when or at a predetermined set point before the secondary header begins to supply the system, indicating changeover has occurred or is about to occur.

5.1.3.5.10.7
If manifolds are located out of doors, they shall be installed per the manufacturer’s requirements.

Statement of Problem and Substantiation for Public Input
editorial - no need for wording since with reserve was removed in 2012.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:59:53 EDT 2012

Committee Statement

Statement: This is an editorial change as there is no need for the wording since provisions for those with reserve were removed in the 2012 edition.

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new
5.1.3.5.15 Oxygen Concentrator Sources
5.1.3.5.15.1 Oxygen concentrator systems used as sources shall comply to ISO 10083 "Oxygen concentrator supply systems for use with medical gas pipeline systems"

Statement of Problem and Substantiation for Public Input

Central oxygen concentrator sources are still rare in U.S. healthcare but are increasingly common internationally. It is appropriate that the standard give some guidance for a safe installation. At this time I do not believe it appropriate for NFPA to attempt to write a standard, so I propose to reference the most widely used international standard.

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submital Date: Wed Jun 06 19:43:23 EDT 2012

Committee Statement

Resolution: Oxygen concentrators are currently not allowed as a source per 5.1.3.5 so specifying a standard for design is not needed. Additionally, the ISO Standard that the submitter referenced was not available for committee review prior to the meeting.

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Public Input No. 167-NFPA 99-2012 [ Section No. 5.1.3.5.14 ]

Public Input No. 173-NFPA 99-2012 [ New Section after 5.1.3.5.12.4 ]
5.1.3.5.14 In-Building Emergency Reserves (IBERs).

5.1.3.5.14.1
In-building emergency reserves (IBERs) shall not be used as substitutes for the bulk gas reserves that are required in 5.1.3.5.12.4.

5.1.3.5.14.2
When an emergency reserve is provided inside the building as a substitute for the EOSC or for other purposes, it shall be located in accordance with 5.1.3.3 as follows:

(1) In a room or enclosure constructed per 5.1.3.3
(2) In a room or enclosure ventilated per 5.1.3.3.2

5.1.3.5.14.3
In-building emergency reserves (IBERs) shall consist of either of the following:

(1) Gas cylinder header per 5.1.3.5.9 with sufficient cylinder connections to provide for at least an average day’s supply with the appropriate number of connections being determined after consideration of the delivery schedule, the proximity of the facility to alternate supplies, and the facility’s emergency plan
(2) Manifold for gas cylinders complying with 5.1.3.5.10

5.1.3.5.14.4
In-building emergency reserves (IBERs) shall include a check valve in the main line placed on the distribution system side of the ordinary source's main line valve to prevent flow of gas from the emergency reserve to the ordinary source.

5.1.3.5.14.5
In-building emergency reserves (IBERs) shall have a local signal that visibly indicates the operating status of the equipment and an alarm at all master alarms when or just before the reserve begins to serve the system.

Statement of Problem and Substantiation for Public Input

To add IBER in Chapter 5. The term IBER is used in Chapter 14 to indicate in-building emergency reserve, similar to EOSC for emergency oxygen supply connection in Chapters 5 and 14.

Submitter Information Verification

Submitter Full Name: J. Richard Wagner
Organization: J. Richard Wagner, PE, LLC
Affiliation: Mechanical Contractors Association
Submittal Date: Tue Jun 05 11:12:32 EDT 2012

Committee Statement

Statement: To add IBER in Chapter 5. The term IBER is used in Chapter 14 to indicate in-building emergency reserve, similar to EOSC for emergency oxygen supply connection in Chapters 5 and 14. An incorrect reference was fixed and the terminology was updated to better reflect the requirement.

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Public Input No. 99-NFPA 99-2012 [Section No. 5.1.3.5.14.5]

5.1.3.5.14.5
In-building emergency reserves shall have a local signal that visibly indicates the operating status of the equipment and an alarm at all master alarms when or just before the reserve begins to serve the system.

Statement of Problem and Substantiation for Public Input

I recently had a customer whose facility was cited by their state authority for not having their in building emergency reserve system alarm at the Master Alarm panels. Their in building emergency reserve system is not a system that automatically feeds the system. It is a system that is manually operated when the gas emergency plan is activated. For automatically operating in building emergency reserves the low line pressure alarm should be adequate notice for operation of the system.

Submitter Information Verification

Submitter Full Name: Robert Sutter
Organization: B&R Compliance Associates
Affiliation: None
Submital Date: Mon Apr 23 10:12:42 EDT 2012

Committee Statement

Resolution: The initial reason for this operating alarm is to inform the facility when this IBER is in operation. The facility needs to know when this is in use. The local alarm will not give sufficient alert that the system is in operation.

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5.1.3.6.1* Quality of Medical Air.

Medical air shall be required to have the following characteristics:

1. It shall be supplied from cylinders, bulk containers, or medical air compressor sources, or it shall be reconstituted from oxygen USP and oil-free, dry nitrogen NF.
2. Cylinders shall meet the requirements of medical air USP.
3. Medical air supplied from compressors using ambient source air shall be tested at initial installation and quarterly to meet the specifications of USP medical air (CGA grade N).
4. It shall have no detectable liquid hydrocarbons.
5. It shall have less than 25 ppm gaseous hydrocarbons.
6. It shall have equal to or less than 1 mg/m³ (6.85 × 10⁻⁷ lb/yd³) of permanent particulates sized 1 micron or larger in the air at normal atmospheric pressure.

Statement of Problem and Substantiation for Public Input

USP medical air is / or has been typically accepted as CGA grade N. The limiting CO₂ is 500ppm for CGA grade N (USP medical air). The local ambient air supply globally is increasing. The average CO₂ level is somewhere around 350 ppm. There are days in the large cities where the ambient level is over 600ppm. I was unable to find the history behind why 500 ppm was chosen. The USP / FDA / and CGA are all involved as are the DOT and NFPA. I would suggest that if we leave the limit at 500 ppm CO₂ we will start to see failure to meet the standard. It would be expensive to add air treatment packages and monitoring to compressor systems to meet the 500ppm CO₂. An alternative would be to include a definition of medical air from compressors using ambient air and have the limits listed in a table. Also note that 5.1.3.6.3.14 does not agree with 5.1.3.6.1 as there is no requirement to monitor for CO₂, nitric oxide, nitrogen dioxide, sulfer dioxide, etc…only CO, and dewpoint.

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Health Care
Submittal Date: Wed May 02 16:00:06 EDT 2012

Committee Statement

Resolution: The testing is important but the frequency of testing by a facility should be based on their experience and risk assessments (See 5.1.14).

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5.1.3.6.2* Uses of Medical Air.
Medical air sources shall be connected to the medical air distribution system only and shall be used only for air in the application of human respiration and calibration of medical devices for respiratory application and cleaning of endoscopes.

Statement of Problem and Substantiation for Public Input

Instrument air is often not available, and if available it is at an unacceptably high pressure. Compressed air is not clean enough.

Submitter Information Verification

Submitter Full Name: MIKE LEMANEK
Organization: CERTECH
Submittal Date: Fri Mar 09 14:08:14 EST 2012

Committee Statement

Resolution: This is not an appropriate use of medical air. Medical air has always only been intended for the use of human respiration and calibration of medical devices for respiratory application. This is a vital life support gas.

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Public Input No. 133-NFPA 99-2012 [ Section No. 5.1.3.6.3.3 ]

5.1.3.6.3.3 – Air Drying Equipment—
Medical air compressor systems shall preclude the condensation of water vapor in the piping distribution system by the selection of the air drying equipment.

Statement of Problem and Substantiation for Public Input

relocate to 5.1.3.6.3.7 (editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submitter Date: Tue May 15 16:44:17 EDT 2012

Committee Statement

Resolution: FR-258-NFPA 99-2012
Statement: This section has not been deleted, but rather relocated to 5.1.3.6.3.7.

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Air Drying Equipment
Medical Air compressor systems shall preclude the condensation of water vapor in the piping distribution system by the air drying equipment.

Statement of Problem and Substantiation for Public Input

Relocated 5.1.3.6.3.3 to this section. (editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:46:06 EDT 2012

Committee Statement

Statement: This relocates the section from 5.1.3.6.3.3.

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### Public Input No. 135-NFPA 99-2012 [ Section No. 5.1.3.6.3.9 ]

<table>
<thead>
<tr>
<th><strong>Section No.</strong></th>
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<td>5.1.3.6.3.9</td>
<td>Medical Air Local Alarm. -</td>
</tr>
<tr>
<td></td>
<td>A local alarm complying with 5.1.9.5 shall be provided for the medical air compressor source.</td>
</tr>
</tbody>
</table>

### Statement of Problem and Substantiation for Public Input

Relocate 5.1.3.6.3.9 (and annex) to 5.1.3.6.3.13 Operating Alarms and Local Signals. (Editorial).

### Submitter Information Verification

- **Submitter Full Name:** Keith Ferrari
- **Organization:** Praxair, Inc.
- **Submittal Date:** Tue May 15 16:49:05 EDT 2012

### Committee Statement

- **Resolution:** FR-260-NFPA 99-2012
- **Statement:** This section (and associated annex material) has not been deleted, but rather relocated to 5.1.3.6.3.13 Operating Alarms and Local Signals.

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Public Input No. 141-NFPA 99-2012 [ Section No. 5.1.3.6.3.12(F) ]

(F) Compressor intake piping shall be permitted to be made of materials and use a jointing technique as permitted under 5.1.10.2 and 5.1.10.3.

Statement of Problem and Substantiation for Public Input

I believe this was a error on the original print (2012 edition). There was no referenced jointing technique as listed in 5.1.3.6.3.12. 5.1.10.3 references the jointing technique needed for this section.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:09:13 EDT 2012

Committee Statement

Statement: This was a error on the original print (2012 edition). There was no referenced jointing technique as listed in 5.1.3.6.3.12. 5.1.10.3 references the jointing technique needed for this section.

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Medical air systems shall be monitored for conditions that can affect air quality during use or in the event of failure, based on the type of compressor(s) used in the system.

A local alarm complying with 5.1.9.5 shall be provided for the medical air compressor source.

Statement of Problem and Substantiation for Public Input

Relocated 5.1.3.6.3.9 to this section. (Editorial).

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 16:51:25 EDT 2012

Committee Statement

Statement: Relocated 5.1.3.6.3.9 to this section. (Editorial).

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5.1.3.7.4 Vacuum Local Alarm.
A local alarm complying with 5.1.9.5 shall be provided for the vacuum source.

Statement of Problem and Substantiation for Public Input

This section is redundant with 5.1.3.7.8

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:13:41 EDT 2012

Committee Statement

Statement: This section is redundant with 5.1.3.7.8

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Public Input No. 143-NFPA 99-2012 [ New Section after 5.1.3.7.7 ]

TITLE OF NEW CONTENT
Vacuum exhaust piping shall be permitted to be made of materials and use a jointing technique as permitted under 5.1.10.2 and 5.1.10.3

Statement of Problem and Substantiation for Public Input

2012 Log CP2 99-219 inadvertently took out the exhaust piping section. the NFPA 99, 2012 does not have a section for exhaust piping materials or joining techniques (The NFPA 99, 2005 edition section "5.1.3.6.7.4 The exhaust shall be piped of materials approved for medical–surgical vacuum piping under 5.1.10.2.").

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:15:43 EDT 2012

Committee Statement

Statement: 2012 Log CP2 99-219 inadvertently took out the exhaust piping section. the NFPA 99, 2012 does not have a section for exhaust piping materials or joining techniques (The NFPA 99, 2005 edition section "5.1.3.6.7.4 The exhaust shall be piped of materials approved for medical–surgical vacuum piping under 5.1.10.2.").

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5.1.3.7.7.2
The exhaust shall be located as follows:

(1) Outdoors

(2) At least 3.75 m (12 ft) from any door, window, air intake, or other openings in buildings or places of public assembly

(3) At a level 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

Statement of Problem and Substantiation for Public Input

The FGI 2.1-8.4.4.2 2010 edition requires 25 ft for exhausts from windows, doors, air intakes,.. Teh Medical Air intake was corrected in 2012 edition, but the vacuum exhaust was not.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:20:46 EDT 2012

Committee Statement

Statement: The FGI 2.1-8.4.4.2 2010 edition requires 25 ft for exhausts from windows, doors, air intakes,.. The Medical Air intake was corrected in 2012 edition, but the vacuum exhaust was not.

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5.1.3.7.7.6 The exhaust shall be piped of materials approved for medical-surgical vacuum piping under 5.1.10.2.

Statement of Problem and Substantiation for Public Input

Would clarify the type of materials to be used for vacuum exhaust. Under the current code there is no defined material to be used on vacuum exhaust piping. This section was removed from the current edition. Since the code has a defined vacuum exhaust section the material used should be shown.

Submitter Information Verification

Submitter Full Name: ANTHONY LOWE
Organization: ALLIED AIR COMPRESSOR INC
Submittal Date: Fri Jun 15 18:59:10 EDT 2012

Committee Statement

Statement: 2012 Log CP2 99-219 inadvertently took out the exhaust piping section. The NFPA 99, 2012 does not have a section for exhaust piping materials or joining techniques (The NFPA 99, 2005 edition section "5.1.3.6.7.4 The exhaust shall be piped of materials approved for medical–surgical vacuum piping under 5.1.10.2."

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Public Input No. 145-NFPA 99-2012 [ Section No. 5.1.3.8.3 ]

5.1.3.8.3 WAGD Connections to Vacuum Piping.
If WAGD is joined to vacuum piping, it shall be connected at a minimum distance of 1.5 m (5 ft) from any vacuum inlet.

Statement of Problem and Substantiation for Public Input

Relocate to 5.1.5.16 (editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:23:52 EDT 2012

Committee Statement

Resolution: FR-266-NFPA 99-2012
Statement: This section has not been deleted, but rather relocated to a more appropriate section.

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Public Input No. 183-NFPA 99-2012 [ Section No. 5.1.4.3 ]

This section has not been deleted, but rather relocated to a more appropriate section.
5.1.4.3 Valve Types.
New or replacement shutoff valves shall be as follows:

(1) They shall be of the quarter turn, full ported, ball type.
(2) They shall be of brass or bronze construction.
(3) They shall have extensions for brazing.
(4) They shall have a handle indicating open or closed.
(5) They shall consist of three pieces permitting in-line serviceability without cutting or brazing.

5.1.4.3.1 Valves for positive pressure gases shall be cleaned for oxygen service by the manufacturer.
5.1.4.3.2 Valves for vacuum or WAGD service shall be permitted to be ball or butterfly type and shall not be required to be cleaned for oxygen service.

Statement of Problem and Substantiation for Public Input

Inclusion of the word “ball” restricts/limits technology. There are other types of valve designs that can meet all five of the requirements for medical valves but are currently denies to the market.
Inclusion of the phrase "consists of three pieces" restricts/limits technology. There are other types of valve designs that can meet all five of the requirements for medical valves but are currently denies to the market.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 13:40:51 EDT 2012

Committee Statement

Resolution: Information on the “other” valves that meet this is not readily available. The committee would like to see detailed specifications before deleting the requirement for ball valves and three piece valves.

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5.1.4.3.2
Valves for vacuum or WAGD service shall be permitted to be ball per 5.1.4.3 or butterfly type and shall not be required to be cleaned for oxygen service.

Statement of Problem and Substantiation for Public Input

Inclusion of the word "ball" restricts/limits technology. There are other types of valve designs that can meet all five of the requirements for medical valves but are currently denied to the market.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 13:39:00 EDT 2012

Committee Statement

Statement: By reference to 5.1.4.3 this further clarifies the type of valve that is permitted for vacuum or WAGD service.

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5.1.4.4.1

The source valve shall be located in the immediate vicinity of the source equipment, except as allowed by 5.1.3.4.

Statement of Problem and Substantiation for Public Input

Editorial

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:28:19 EDT 2012

Committee Statement

Resolution: The proposed solution is not comprehensive enough to adequately address the issues of the location of source valves.

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A shutoff valve shall be provided in the main supply line inside of the building(s) being served, except where one or more of the following conditions exist:

1. The source and source valve are located inside the building served.
2. The source system is physically mounted to the wall of the building served, and the pipeline enters the building in the immediate vicinity of the source valve.

Statement of Problem and Substantiation for Public Input

When there are multiple free standing buildings being served by one central supply source, there will be more than one main valve.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:30:47 EDT 2012

Committee Statement

Statement: When there are multiple free standing buildings being served by one central supply source, there will be more than one main valve.

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Public Input No. 7-NFPA 99-2012 [Section No. 5.1.4.8 [Excluding any Sub-Sections]]

All station outlets/inlets shall be supplied through a zone valve as follows:

(1) The zone valve shall be placed such that a wall intervenes between the valve and outlets/inlets that it controls.

(2) The zone valve shall serve only outlets/inlets located on that same story.

(3) The zone valve shall not be located in a room with station outlets/inlets that it controls.

(4) The zone valve shall be placed to allow someone to shut off the flow of gas without being directly exposed to the fire and any products of combustion.

Statement of Problem and Substantiation for Public Input

This language is from the code handbook. The current language and exhibit 5.22(a) leaves a person exposed to products of combustion.

Submitter Information Verification

Submitter Full Name: MIKE LEMANEK
Organization: CERTECH
Submittal Date: Fri Mar 09 14:17:15 EST 2012

Committee Statement

Resolution: This requirement is not enforceable. The term “any products of combustion” could potentially be very restrictive. Requiring a wall to intervene between the valve and outlets/inlets that it controls provides adequate safety.

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A zone valve shall be located immediately outside each vital life-support area, critical care area, and anesthetizing location of moderate sedation, deep sedation, or general anesthesia, in location in each medical gas or vacuum line, or both, and located so as to be readily accessible in an emergency.

Statement of Problem and Substantiation for Public Input

The proposed deleted phrase is in conflict with the definition of an Anesthetizing Location in 3.3.9. There is no such thing as an anesthetizing location of moderate or deep sedation. An anesthetizing location is by definition limited to general anesthesia.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 17:43:40 EDT 2012

Committee Statement

Resolution: The conflict has been removed with the deletion of the definition of 3.3.9 in a First Revision.

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5.1.4.10 Valves for Future Connections shall be included as part of the piping design of all medical gas and installed in the riser line to be used for future changes and additions to the piping systems. The valve size shall be the same as the riser and shall be replaced with a new valve in the event the first valve is used during any piping change.

Shutoff valves provided for the connection of future piping shall meet the following requirements:

1. They shall be located in a restricted area.
2. They shall be locked or latched closed.
3. They shall be identified in accordance with 5.1.11.2.

5.1.4.10.1
Future connection valves shall be labeled as to gas content.

5.1.4.10.2
Downstream piping shall be closed with a brazed cap with tubing allowance for cutting and rebrazing.

Statement of Problem and Substantiation for Public Input

Medical gas piping changes are inevitable in every hospital or medical care facility. The cost of shutting down the medical gas is expensive and increases risk becoming dangerous to patients. The medical gas industry has been brilliant in developing a means of performing live tie-ins to complete the necessary changes such as "Smart Tap" and others. By including future valves as mandatory in the design code, and having facilities use these valves will reduce this risk and maintain the integrity of our medical gas piping.

Submitter Information Verification

Submitter Full Name: Mark Franklin
Organization: Sherman Engineering Company
Submital Date: Wed Jun 27 08:10:09 EDT 2012

Committee Statement

Resolution: This was not used because there are currently available and used systems that have been safely used that would not be able to meet these new requirements.

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Public Input No. 149-NFPA 99-2012 [New Section after 5.1.5]

Station outlets/inlets shall be installed where they are visible and accessible at all times.
Station Outlets/Inlets shall not be installed behind normally open or normally closed doors or otherwise hidden from plain view.

Statement of Problem and Substantiation for Public Input

Recently there have been hospitals "Temporarily" building rooms with in rooms where walls are going up over existing walls that have medical gas outlets/inlets on them. The temporary installations are lasting for months, sometimes yrs. This seems to be a less expensive way of using an area without having to demo the area and perform shutdowns.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:33:14 EDT 2012

Committee Statement

Resolution: This was rejected because there are currently available and used systems that have been safely used that would not be able to meet these new requirements.

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Public Input No. 146-NFPA 99-2012 [ Section No. 5.1.5.16.1 ]

5.1.5.16.1
Station inlets for WAGD service shall have the following additional characteristics:

(1) They shall not be interchangeable with any other systems, including medical–surgical vacuum.

(2) Components necessary for the maintenance of WAGD specificity shall be legibly marked to identify them as components of a WAGD inlet.

(3) They shall be of a type appropriate for the flow and vacuum level required by the facility's gas anesthetic machines.

(4) They shall be located to avoid physical damage to the inlet.

(5) If joined to the vacuum piping, it shall be connected at a minimum distance of 1.5 m (5 ft) from any vacuum inlet.

Statement of Problem and Substantiation for Public Input

RElocated 5.1.3.8.3 (Editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:25:44 EDT 2012

Committee Statement

Resolution: FR-269-NFPA 99-2012
Statement: This is a relocation of 5.1.3.8.3 to a more appropriate location.

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Public Input No. 170-NFPA 99-2012 [ Section No. 5.1.6.8 ]

5.1.6.8
Station outlets installed in Manufactured assemblies connected to the pipeline by brazing shall have station outlets/inlets that comply with 5.1.5 in all respects.

Statement of Problem and Substantiation for Public Input

More clear wording. Not all manufactured assemblies contain outlets.

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 18:58:20 EDT 2012

Committee Statement

Resolution: FR-270-NFPA 99-2012
Statement: Clarifies wording. Not all manufactured assemblies contain outlets.

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Public Input No. 366-NFPA 99-2012 [New Section after 5.1.6.9]

Found 2 configuration elements matching the xpath: /systemconfig/systemhomeroot in file C:\TerraXML\terra_view_config.xml

Statement of Problem and Substantiation for Public Input

Flexible hose may wear or be damaged over time. The manufacturer should specify the minimum frequency of inspections for this component. This is equivalent to the requirements in the international standard BS EN ISO 11197:2009.

Submitter Information Verification

Submitter Full Name: RACHAEL STEPHENSON
Organization: Stryker Communications
Submittal Date: Fri Jun 22 14:31:43 EDT 2012

Committee Statement

Resolution: Section 5.1.14.2.3.2 (A) specifies testing frequencies per manufacturer’s recommendations, every 18 months or at a duration determined by a risk assessment. If the manufacturer’s recommendations are not provided, then guidance is provided.

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5.1.8.1.7—
The rated accuracy of indicators used for testing shall be 1 percent (full scale) or better at the point of reading.

Statement of Problem and Substantiation for Public Input

Relocate to 5.1.12 This has nothing to do with the pipeline indicators and more to do with testing equipment in 5.1.12.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:39:02 EDT 2012

Committee Statement

Statement: This section has not been deleted, but rather relocated to 5.1.12 This has nothing to do with the pipeline indicators and more to do with testing equipment in 5.1.12.

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### 5.1.9.2.1
The master alarm system shall consist of two or more alarm panels located in at least two separate locations, as follows:

1. One master alarm panel shall be located in the office or work space of the on-site individual responsible for the maintenance of the medical gas and vacuum piping systems when staffed 24 hours a day.

2. In order to ensure continuous surveillance of the medical gas and vacuum systems while the facility is in operation, the second one or more master alarm panels shall be located in an area of continuous observation (e.g., the telephone switchboard, security office, or other continuously staffed location).

3. It is permitted for the individuals responsible for the medical gas and vacuum systems to automatically be notified by phone, pager, or other means in addition to the warning systems above.

### Statement of Problem and Substantiation for Public Input
The Joint Commission has charged many hospitals this year with relocating one of the existing master panels to the maintenance office. This change will eliminate locating a master alarm panel in an office that is typically locked at night, where it cannot be responded to or silenced.

The maintenance/engineering department is a non-revenue producer that is often moved in some facilities requiring the relocation of all their alarms. The ability to contact these individuals automatically wherever they may be by phone or pager can improve response times to emergency situations.

### Submitter Information Verification
Submitter Full Name: CORKY BISHOP  
Organization: AIRGAS MEDICAL SERVICES  
Submittal Date: Thu Jun 21 23:57:27 EDT 2012

### Committee Statement
Resolution: The proposed change to item (1) would eliminate a current practice by requiring 24-hour surveillance. The overall change does not improve upon current requirements. The new technology concept in item (3) is allowed.
Public Input No. 152-NFPA 99-2012 [ Section No. 5.1.9.2.3.10 ]

5.1.9.2.3.10—
Multiple master alarms shall be permitted to monitor a single initiating device.

Statement of Problem and Substantiation for Public Input

redundant to 5.1.9.2.3.4 (editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari  
Organization: Praxair, Inc.  
Submittal Date: Tue May 15 17:44:49 EDT 2012

Committee Statement

Resolution: FR-274-NFPA 99-2012  
Statement: This section has been removed as it is redundant to 5.1.9.2.3.4.

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Public Input No. 370-NFPA 99-2012 [Section No. 5.1.9.3.4]

5.1.9.3.4
Alarm sensors for area alarms shall be located as follows:

1) Critical care areas shall have the alarm sensors installed on the patient or use side of each individual zone valve box assemblies.

2) Anesthetizing locations where moderate sedation, deep sedation, or general anesthesia is administered shall have the sensors installed either on the source side of any of the individual room zone valve box assemblies or on the patient or use side of each of the individual zone valve box assemblies.

Statement of Problem and Substantiation for Public Input

The proposed deleted phrase, "where moderate sedation, deep sedation... is administered" is in conflict with, and "or general anesthesia" is redundant to the definition of an Anesthetizing Location in 3.3.9. There is no such thing as an anesthetizing location where moderate sedation or deep sedation is administered. An anesthetizing location is by definition limited to general anesthesia.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:18:42 EDT 2012

Committee Statement

Resolution: The conflict has been removed with the deletion of the definition of 3.3.9 in a First Revision

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Public Input No. 102-NFPA 99-2012 [ New Section after 5.1.10 ]

Add new text to read as follows:

5.1.10.x.3 The use of bending shall only be used on overhead main or branch piping and is only meant to be used when the building structure has odd angles.

5.1.10.x.4 Bending shall be performed using proper tools and methods to allow for a smooth transition without kinks or damage to the wall of the piping or tubing.

5.1.10.x.5 Machine, manual benders, or the heating of the tubing while under nitrogen purge shall be acceptable methods.

Statement of Problem and Substantiation for Public Input

Certain offsets in medical gas and vacuum piping are necessary due to structural reasons. Bending of medical gas and vacuum copper piping should be allowable when the degree of bend is less than what is available from fitting manufacturers. A bend should be allowed if the degree of bend is 22° or less.

Submitter Information Verification

Submitter Full Name: MICHAEL HEARNE
Organization: UNIVERSITY MECHANICAL
Submittal Date: Fri Apr 27 08:23:18 EDT 2012

Committee Statement

Resolution: Improper bending of tubing can cause potential for flow restriction. There are safer ways of offsetting the pipe to accomplish the same thing.

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Public Input No. 344-NFPA 99-2012 [ New Section after 5.1.10.1 ]

5.1.10.1.7 Witnessing of installer performed test
Type your content here. Witnessing of installer performed test shall be witnessed by the authority having jurisdiction and signed off by both the installing contractor and the AHJ before proceeding to the next testing procedure. The authority having jurisdiction shall be certified in medical gas inspections per the ASSE 6020 standards, follow the standards outlined in this code, and shall follow inspection procedures outlined in the ASSE 6000.

Statement of Problem and Substantiation for Public Input

Not all AHJ's are medical gas certified, or know what they are looking at half the time. In order to provide a more code compliant installation, we feel the inspector shall be ASSE 6020 certified, and witness to all the installing contractors installers performed test. Many times blockages will get by the installers performed test, and sometimes get past the verifiers performed task. As an inspector we should be making sure that the installing contractor has actually performed his/her required test. This would help eliminate many issues we see after the fact. By giving the medical gas inspector some added verbiage in this code section, it will help to provide some much needed support for their inspections.

Submitter Information Verification

Submitter Full Name: John Gregory
Organization: HDR
Submittal Date: Thu Jun 21 10:06:42 EDT 2012

Committee Statement

Resolution: It is not practical to require the AHJ to be present for all installer performed testing or to be certified to witness testing.

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Tubes shall be hard-drawn seamless copper in accordance with ASTM B 819, *Standard Specification for Seamless Copper Tube for Medical Gas Systems*, medical gas tube, Type L, except Type K shall ACR B 819 OXY/MED (Type L ACR is rated for 743 psi, and well within the 1.5 times testing pressure. The brazed fittings are rated the same as the pipe). Type K may be used where operating pressures are above a gauge pressure of 1275 kPa (185 psi) and the pipe sizes are larger than DN80 [NPS 3 (3 1/8 in. O.D.)] but not required.

**Statement of Problem and Substantiation for Public Input**

Type L or Type K on a Nitrogen system. Typically we will use Type K for this higher pressure pipe, thus that's how I responded. However type L ACR B 819 OXY/MED pipe is actually an acceptable system. In my systems we call for all pressure pipe and vacuum systems to use Type L ACR OXY/MED B 819 pipe. In some cases we call for Nitrogen or High Pressure Oxygen to use Type K of the same, however Type L ACR is rated for 743 psi, and Type L is 741 psi, well within the 1.5 times testing pressure. The brazed fittings are rated the same as the pipe. So you actually can use the Type L for Nitrogen, even though industry standard is to use Type K. These pressures are based on the system temperature of 100 -150 degrees F.

**Submitter Information Verification**

- **Submitter Full Name:** John Gregory
- **Organization:** HDR
- **Submittal Date:** Thu Jun 21 09:58:23 EDT 2012

**Committee Statement**

**Resolution:** ASTM B813 does not include ACR copper tube. NFPA 99 recognizes "OXY/ACR" and "ACR/MED" tube that complies with both ASTM B813 and ASTM B280 in 5.1.10.1.5. The rated working pressure of Type L, Type K, and ACR copper tube decreases as the tube size increases. The rated working pressure for brazed copper tubing must be based on annealed tube. The requirement for Type K copper tube above 185 psi operating pressure with pipe sizes larger than 3" is justified.

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Public Input No. 53-NFPA 99-2012 [New Section after 5.1.10.2.1]

(a) ASTM A 269 TP304L or 316L Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

(b) ASTM A 312 TP304L or 316L Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes.

(c) A312 TP 304L/316L Sch. 5S pipe and A403 WP304L/316L Sch. 5S fittings.

Statement of Problem and Substantiation for Public Input

There is no material/s indicated for the stainless steel piping vacuum system. This would create acceptable material/s for stainless steel vacuum piping.

Submitter Information Verification

Submitter Full Name: MICHAEL HEARNE
Organization: UNIVERSITY MECHANICAL
Submittal Date: Mon Apr 02 13:40:10 EDT 2012

Committee Statement

Statement: Previously, there is were no material/s indicated for the stainless steel piping vacuum system. This creates acceptable material/s for stainless steel vacuum piping.

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Public Input No. 87-NFPA 99-2012 [New Section after 5.1.10.4.2.3]

5.1.10.5.2.4 When required, exterior deburring (manual filing) of piping for proper insertion into fittings shall be performed by inserting a clean white, lint-free cloth or line-size cap into the pipe paying close attention to sealing off as much area as possible. When the beveling process is completed, the cloth or cap shall be removed carefully so as to keep any filing materials from entering the cleaned pipe end. A clean white, lint-free cloth will then be saturated with a Tri-Sodium Phosphate (TSP) solution and the end wiped clean after which close inspection shall be made to ensure no debris is present.

5.1.10.5.2.5 When piping is cut from random lengths provided by the manufacturer, ends shall be sealed after cutting to prevent debris or other contaminants from entering the pipe. No nitrogen purge for either resultant lengths of pipe is required.

Statement of Problem and Substantiation for Public Input

There are no procedures for the outside of the piping/tubing when cutting. When a tubing cutter is used, especially on large diameter pipe, the cutter forms a ridge that must be reduced or eliminated in order for proper insertion into fittings as the tolerances do not allow the ridge to properly seat into the bottom of the fitting/s. New Sections 5.1.10.5.2.4 and 5.1.10.5.2.5 will create a procedure to rectify that.

Submitter Information Verification

Submitter Full Name: MICHAEL HEARNE
Organization: UNIVERSITY MECHANICAL
Submittal Date: Wed Apr 18 09:01:03 EDT 2012

Committee Statement

Resolution: Deburring is already addressed in 5.1.10.4.2.3. The process uses the TSP without a rinse which could remain on the fitting and possibly get into the pipeline.

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5.1.10.4.5.6
During and after installation brazing, openings in the piping system shall be kept sealed to maintain a nitrogen atmosphere within the piping, other than the purge gas openings, to prevent debris or other contaminants from entering the system.

Statement of Problem and Substantiation for Public Input

The word 'installation' does not technically describe prefabrication procedures and prefabrication is not part of the installation. (It's somewhat of a middle ground.) Therefore, the word "installation" should change to brazing as this is a part of both the prefabrication and installation of medical gas and vacuum systems. Also, it has been locally interpreted that the phrase "to maintain a nitrogen atmosphere" means that the piping is recharged with nitrogen under pressure. It is not. This should rectify both issues.

Submitter Information Verification

Submitter Full Name: MICHAEL HEARNE
Organization: UNIVERSITY MECHANICAL
Submittal Date: Wed Apr 18 09:02:47 EDT 2012

Committee Statement

Resolution: The proposed wording would limit this requirement only to brazing. The current wording adequately covers maintaining a nitrogen atmosphere. 5.1.10.4.5.7 addresses the purge opening.

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5.1.10.4.5.9

After the joint has cooled, the purge discharge opening shall be sealed to prevent contamination of the inside of the tube and maintain the non-pressurized nitrogen atmosphere within the piping system.

Statement of Problem and Substantiation for Public Input

Locally, "maintain a nitrogen atmosphere" has been interpreted to mean a nitrogen pressure charge. A pressurized nitrogen charge is not the intent.

Submitter Information Verification

Submitter Full Name: MICHAEL HEARNE
Organization: UNIVERSITY MECHANICAL
Submittal Date: Wed Apr 18 09:04:27 EDT 2012

Committee Statement

Resolution: Specifying "non-pressurized" is not necessary. This would imply that any other location where the term is used would mean it is pressurized. The term "nitrogen atmosphere" applies to either non-pressurized or pressurized environment and is intended to provide an inert atmosphere within the pipe.

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5.1.10.8 Threaded Fittings.
Threaded fittings shall meet the following criteria:

(1) They shall be limited to connections for pressure and vacuum indicators, alarm devices, gas specific demand check valves, and source equipment on the source side of the source valve.

(2) They shall be tapered pipe threads complying with ASME B1.20.1, Pipe Threads, General Purpose, Inch.

(3) * They shall be made up with polytetrafluoroethylene tape or other thread sealant recommended for oxygen service, with sealant applied to the male threads only and care taken to ensure sealant does not enter the pipe.

Statement of Problem and Substantiation for Public Input

2012 edition required oxygen check valves to have brazed extensions. The only check valve that can be thread on the pipeline is the gas specific demand check valve for sensors.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:46:27 EDT 2012

Committee Statement

Resolution: FR-276-NFPA 99-2012
Statement: 2012 edition required oxygen check valves to have brazed extensions. The only check valve that can be thread on the pipeline is the gas specific demand check valve for sensors.

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5.1.10.11.6.1
Hose and flexible connectors, both metallic and nonmetallic, shall be no longer than necessary and shall not penetrate or be concealed in walls, floors, ceilings, or partitions.

Where flexible hose is used as part of a manufactured assembly, it shall be permitted to penetrate or be concealed in walls, floors, ceilings, or partitions and shall be as follows:

1. Shall be connected to building pipeline no farther than 10 feet from the manufacturer assembly.
2. Meet the requirements of 5.1.6.10
3. Accessible by removal of a panel, door, or cover

Statement of Problem and Substantiation for Public Input

This is a clarification for application of this requirement to manufactured assemblies. Allowing connection of flexible hose from manufactured assemblies within the walls or ceiling allows manufactured assemblies to be maintained rather than fully removed for flexible hose servicing.

Submitter Information Verification

Submitter Full Name: RACHAEL STEPHENSON
Organization: Stryker Communications
Submittal Date: Fri Jun 22 12:03:04 EDT 2012

Committee Statement

Resolution: The hose should be accessible at all times to hear or look for leaks. The language as proposed, does not provide enough detail on this level of accessibility.

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Public Input No. 364-NFPA 99-2012 [ New Section after 5.1.10.11.7.1 ]

Add an Exception to read:

Exception: Pipe medical gas systems with the same medical gas content may be interconnected when a normally closed valve is installed between the systems and the systems are allowed to operate independently as designed except when the failure or shutdown of either system mandates the use of the normally closed valve to protect the patient population.

Note: Each system must be designed and installed to handle the entire load of the facility when the normally closed valve is open.

Statement of Problem and Substantiation for Public Input

Redundancy - our facility has 2 independent med air systems serving 2 patient towers. Due to an electrical outage on the emergency branch feeding one of the med air systems, we had a critical care unit without med air for about 50 minutes. If the type of normally closed valve had been installed between the 2 systems, we would have minimized the risk to our patients while the system was shut down.

Submitter Information Verification

Submitter Full Name: DAVID MCGUNIGALE
Organization: BALTIMORE WA MED CENTER
Submittal Date: Fri Jun 22 13:47:01 EDT 2012

Committee Statement

Statement: Where the contents of the systems are the same, then the interconnection of the systems can be acceptably done with the installation of an in-line valve.

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5.1.10.11.7.1
Two or more medical gas or vacuum piping systems shall not be interconnected for installation, testing, or any other reason.

Two or more medical gas or vacuum piping systems of the same medical gas can be allowed to be interconnected by automatic or manual means. Each Source shall be capable of supplying the entire facility. The sizing shall be confirmed by the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

Modernization of hospitals often included a 2nd tower which included a 2nd medical air or medical vacuum system were both systems are large enough to supply the complete facility. Two facilities have this set up and have requested to install interconnecting piping so each system can back up the other in the event of a total system failure. One facility would like to install an electronic normally closed actuating ball valve with transducer(s) on each side of the valve to automatically open the valve when pressure falls below a giving set point. The transducer(s) would obviously require demand checks.

This would allow the facility to focus on the total failure and not have to focus on the medical gas or medical vacuum. We feel this exceeds the current 99 Code requirements but said section reads that two systems can not be interconnected for any reason.

Where the contents of the systems are the same, then the interconnection of the systems can be acceptably done with the installation of an in-line valve.

Submitter Information Verification

Submitter Full Name: ANTHONY LOWE
Organization: ALLIED AIR COMPRESSOR INC
Submittal Date: Thu Jun 21 17:31:54 EDT 2012

Committee Statement

Resolution: 
Statement: 

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5.1.11* Labeling, Identification and Identification Operating Pressure.
Color and pressure requirements shall be in accordance with Table 5.1.11.

### Table 5.1.11 Standard Designation Colors and Operating Pressures for Gas and Vacuum Systems

<table>
<thead>
<tr>
<th>Gas Service</th>
<th>Abbreviated Name</th>
<th>Colors (Background/ Text)</th>
<th>Standard Gauge Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical air</td>
<td>Med air</td>
<td>Yellow/black</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>CO₂</td>
<td>Gray/black or gray/white</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Helium</td>
<td>He</td>
<td>Brown/white</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>N₂</td>
<td>Black/white</td>
<td>1100–1275 psi 160–185 kPa</td>
</tr>
<tr>
<td>Nitrous oxide</td>
<td>N₂O</td>
<td>Blue/white</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O₂</td>
<td>Green/white or white/green</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Oxygen/carbon dioxide mixtures</td>
<td>O₂/CO₂ n%</td>
<td>Green/white</td>
<td>345–380 psi 50–55 kPa</td>
</tr>
<tr>
<td>Medical–surgical vacuum</td>
<td>Med vac</td>
<td>White/black</td>
<td>380 mm to 760 mm (15 in. to 30 in.) HgV</td>
</tr>
<tr>
<td>Waste anesthetic gas disposal</td>
<td>WAGD</td>
<td>Violet/white</td>
<td>Varies with system type</td>
</tr>
<tr>
<td>Other mixtures</td>
<td>Gas A%/Gas B%</td>
<td>Colors as above Major gas for background/minor gas for text</td>
<td>None</td>
</tr>
</tbody>
</table>

---

Nonmedical air (Category 3 gas-powered device)

- Yellow and white diagonal stripe/black None

---

Nonmedical and Category 3 vacuum

- White and black diagonal stripe/black boxed None

---

Laboratory air

- Yellow and white checkerboard/black None
5.1.11.1 Pipe Labeling.

5.1.11.1.1 Piping shall be labeled by stenciling or adhesive markers that identify the patient medical gas, the support gas, or the vacuum system and include the following:

1. Name of the gas or vacuum system or the chemical symbol per Table 5.1.11
2. Gas or vacuum system color code per Table 5.1.11
3. Where positive pressure gas piping systems operate at pressures other than the standard gauge pressure in Table 5.1.11, the operating pressure in addition to the name of the gas

5.1.11.1.2 Pipe labels shall be located as follows:

1. At intervals of not more than 6.1 m (20 ft)
2. At least once in or above every room
3. On both sides of walls or partitions penetrated by the piping
4. At least once in every story height traversed by risers

5.1.11.1.3 Medical gas piping shall not be painted.

5.1.11.2 Shutoff Valves.

5.1.11.2.1 Shutoff valves shall be identified with the following:

1. Name or chemical symbol for the specific medical gas or vacuum system
2. Room or areas served
3. Caution to not close or open the valve except in emergency

5.1.11.2.2 Where positive pressure gas piping systems operate at pressures other than the standard gauge pressure of 345 kPa to 380 kPa (50 psi to 55 psi) or a gauge pressure of 1100 kPa to 1275 kPa (160 psi to 185 psi) for nitrogen or instrument air, the valve identification shall also include the nonstandard operating pressure.

5.1.11.2.3 Source valves shall be labeled in substance as follows:

SOURCE VALVE
FOR THE (SOURCE NAME).

5.1.11.2.4
Main line valves shall be labeled in substance as follows:

**MAIN LINE VALVE FOR THE (GAS/VACUUM NAME) SERVING (NAME OF THE BUILDING).**

5.1.11.2.5

The riser valve(s) shall be labeled in substance as follows:

**RISER FOR THE (GAS/VACUUM NAME) SERVING (NAME OF THE AREA/BUILDING SERVED BY THE PARTICULAR RISER).**

5.1.11.2.6

The service valve(s) shall be labeled in substance as follows:

**SERVICE VALVE FOR THE (GAS/VACUUM NAME) SERVING (NAME OF THE AREA/BUILDING SERVED BY THE PARTICULAR VALVE).**

5.1.11.3  Station Outlets and Inlets.

5.1.11.3.1

Station outlets and inlets shall be identified as to the name or chemical symbol for the specific medical gas or vacuum provided.

5.1.11.3.2

Where medical gas systems operate at pressures other than the standard gauge pressure of 345 kPa to 380 kPa (50 psi to 55 psi) or a gauge pressure of 1100 kPa to 1275 kPa (160 psi to 185 psi) for nitrogen, the station outlet identification shall include the nonstandard operating pressure in addition to the name of the gas.

5.1.11.4  Alarm Panels.

Labeling of alarm panels shall comply with the requirements of 5.1.9.1(6) and (7).

**Statement of Problem and Substantiation for Public Input**

Rename of section to be consistent with the information described in the 5.1.11 Pressure is listed in the section, but not in the heading.

**Submitter Information Verification**

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:48:48 EDT 2012

**Committee Statement**

Statement: Rename of section to be consistent with the information described in the 5.1.11 Pressure is listed in the section, but not in the heading.

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The zone valve(s) shall be labeled in substance as follows:
Zone Valve for the (gas/vacuum name) Serving (name of the area/ rooms served by the particular valve)

Statement of Problem and Substantiation for Public Input

Zone valves are the only valve not listed in this section on labeling.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:55:37 EDT 2012

Committee Statement

Statement: Zone valves are the only valve not listed in this section on labeling.

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5.1.11.4 Alarm Panels.
Labeling of alarm panels shall comply with the requirements of 5.1.9.1 (6) and (7) for each indicator, indicating the condition monitored for its area of surveillance.

Statement of Problem and Substantiation for Public Input

Replaced reference of 5.1.9.1(6) & (7) with section wording for clarity.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submital Date: Tue May 15 17:59:06 EDT 2012

Committee Statement

Statement: Replaced reference of 5.1.9.1(6) and (7) with section wording for clarity.

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The rated accuracy of indicators used for testing shall be 1 percent (full scale) or better at the point of reading.

Statement of Problem and Substantiation for Public Input

Relocated 5.1.8.1.7 (Editorial)

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 17:42:10 EDT 2012

Committee Statement

Statement: This relocates 5.1.8.1.7 to the more appropriate testing section.

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Section 5.1.12.2.1.1

The tests required by 5.1.12.2 shall be performed and documented by the installer, and witnessed by an ASSE 6020 certified inspector, prior to the tests listed in 5.1.12.3.

Statement of Problem and Substantiation for Public Input

NFPA identifies the certification levels for the installing contractor, the verifier and the maintenance worker for the medical gas systems, but the medical gas inspector certified to the ASSE 6020 standards is not mentioned anywhere. I believe there should be some description either under the AHJ description or its own which identifies what they shall perform and how.

Submitter Information Verification

Submitter Full Name: John Gregory
Organization: HDR
Submittal Date: Fri Jun 22 15:08:01 EDT 2012

Committee Statement

Resolution: It is not practical to require the AHJ to be present for all installer performed testing or to be certified to witness testing.

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Public Input No. 384-NFPA 99-2012 [ Section No. 5.1.12.3.7.1 ]

<table>
<thead>
<tr>
<th>5.1.12.3.7.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A minimum of</td>
</tr>
<tr>
<td>1000 L (35 ft$^3$) of gas shall be filtered through a clean, white 0.45 micron filter at a minimum flow rate of 100 Nl/min (3.5 SCFM).</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

By allowing flow rates greater than 100 L/min the total amount of particulate matter deposited on the filter element can increase, possibly exceeding the permissible level in 5.1.12.3.7.3. Same erroneous result can occur by allowing the total volume of gas to exceed 1,000 L. As the flow increases, the gas velocity increases and the aerosolized particulate matter in the piping system can increase, thus depositing more particulate matter on the filter element.

Two tests performed on the same outlet using different rates of flow (1 at 100 L/min and 1 at >100L/min) could produce different results, perhaps causing the higher flow rate to exceed the total allowable particulate matter per unit of volume - 1mg/M3.

Submitter Information Verification

Submitter Full Name: GEORGE SCOTT
Organization: Scott Associates, LLC
Submittal Date: Fri Jun 22 16:35:51 EDT 2012

Committee Statement

Resolution: The suggested language is very specific and would be difficult to verify.

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Public Input No. 5-NFPA 99-2012 [Sections 5.1.12.3.8.1, 5.1.12.3.8.2, 5.1.12.3.8.3, 5.1.12.3.8.4, 5.1.12.3.8.5]

Sections 5.1.12.3.8.1, 5.1.12.3.8.2, 5.1.12.3.8.3, 5.1.12.3.8.4, 5.1.12.3.8.5

5.1.12.3.8.1—
These tests shall be performed with oil-free, dry nitrogen NF or the system gas.

5.1.12.3.8.2—
The outlet most remote from the source shall be tested for total non-methane hydrocarbons and compared to the source gas.

5.1.12.3.8.3—
If the system gas is used as the source gas, it shall be tested at the source equipment.

5.1.12.3.8.4—
The difference between the two tests shall in no case exceed 5 ppm of total non-methane hydrocarbons.

5.1.12.3.8.5—
The difference between the two tests shall in no case exceed 5 ppm halogenated hydrocarbons.

Statement of Problem and Substantiation for Public Input

Eliminate expensive and time consuming test.

Submitter Information Verification

Submitter Full Name: MIKE LEMANEK
Organization: CERTECH
Submittal Date: Fri Mar 09 13:53:29 EST 2012

Committee Statement

Resolution: This is an important test and hydrocarbons need to be found if they exist before the system is put into use. There is no empirical information that was submitted to support the removal of this requirement.

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All positive pressure gas outlets, except nitrous oxide, shall be tested for odor. No appreciable odor shall be discernible. At an outlet flow of approximately 10 SLPM, deflect a portion of the gas stream toward the nose and sniff. Do not direct the outlet gas stream toward the face.

**Statement of Problem and Substantiation for Public Input**

Odor is presently not required during the verification process, but is seen too frequently when tubing plugs are brazed into the piping system during installation, causing an offensive odor. Gas odor is at times missed resulting in costly opening of walls, etc. and sometimes causing delayed clinical unit openings to remove the piping sections involved. Occasionally the problem is not noted until patient use, resulting in costly clinical unit(s) unplanned shutdowns. The odor test should be performed with source gas, because the source gas itself is occasionally the cause of the odor. The new section methodology is similar to the USP test required on some medical gases. Although odor can be subjective between individuals, a “discernible odor” would be caught by the vast majority of verifiers. Perhaps a clarification in the Appendix would be helpful explaining the difference between breathing the gas under test and just sniffing it for odor.

**Submitter Information Verification**

*Submitter Full Name:* GEORGE SCOTT  
*Organization:* Scott Associates, LLC  
*Submittal Date:* Fri Jun 22 19:36:24 EDT 2012

**Committee Statement**

**Resolution:** FR-295-NFPA 99-2012  
**Statement:** Odor is presently not required during the verification process, but is seen too frequently when tubing plugs are brazed into the piping system during installation, causing an offensive odor. Gas odor is at times missed resulting in costly opening of walls, etc. and sometimes causing delayed clinical unit openings to remove the piping sections involved. Occasionally the problem is not noted until patient use, resulting in costly clinical unit(s) unplanned shutdowns.

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5.1.13.1 Applicability

5.1.13.1.1 Support gases are any gases which are used primarily for powering equipment used in patient care procedures (typical support gases are nitrogen and instrument air). Support gas applications require delivery at pressures, cleanliness or purities specific to their intended function(s) (e.g., to operate medical-surgical tools). Support gases shall be permitted to be piped into areas intended for any medical support purpose and, if appropriate to the procedures, to be piped into laboratories.

5.1.13.1.2 Support gases sources are permitted to be used for many general utility uses (e.g., to remove excess moisture from instruments before further processing, or to operate gas-driven booms, boom brakes, pendants, or similar applications). Requirements for general utility systems will be found in Chapter 9.

5.1.13.1.3 Support gas systems shall not convey oxidizing gases other than air or gases intended for patient or staff respiration.

5.1.13.2 Nature of Hazards

5.1.13.2.1 Design, installation and operation of support gas systems shall consider all hazards involved with any pressurized gas except those associated with oxidizing gases and hazards associated with the elevated pressures typical of these systems.

5.1.13.2 Sources

5.1.13.2.1 Support gases may be supplied from the same sources as patient care gases. Where this is done, they shall be treated as the patient care gas and not as a support gas (refer to 5.1.1 to 5.1.12 and 5.1.14).

5.1.13.2 Sources

Requirements for support gas sources shall be in accordance with the following:

1. Paragraphs 5.1.3.1 through 5.1.3.5 for nitrogen
2. Paragraph 5.1.3.9 for instrument air

2.2 Sources for support gases delivered from cylinders shall comply with 5.1.3.3 through 5.1.3.5.10.

5.1.13.2.3 Sources for support gases delivered from containers shall comply with 5.1.3.3 through 5.1.3.5.11 except 5.1.3.5.10.
5.1.13.2.4 Sources for support gases delivered from bulk sources shall comply with 5.1.3.3 through 5.1.3.5.11 except 5.1.3.5.10.

5.1.13.2.5* Instrument Air Supply Systems.

5.1.13.2.5.1 Quality of Instrument Air. The quality of instrument air shall be as follows:

(1) Compliant with instrument air section in ANSI/ISA S-7.0.01, Quality Standard for Instrument Air

(2) Filtered to 0.01 micron

(3) Free of liquids (e.g., water, hydrocarbons, solvents)

(4) Free of hydrocarbon vapors

(5) Dry to a dew point of ?40°C (?40°F)

5.1.13.2.5.2 Instrument air supply systems shall be located per 5.1.3.3 as follows:

(1) Indoors, in a dedicated mechanical equipment area that is adequately ventilated and with any required utilities

(2) In a room ventilated per 5.1.3.3.3.2

(3) For air-cooled equipment, in a room designed to maintain the ambient temperature range as recommended by the equipment manufacturer

5.1.13.2.5.3 Instrument Air Sources shall provide air with the following characteristics:

(1) a guage pressure not less than a 1380 kPa (200 psi) at the compressor.

(2) meeting the definition of instrument air in 5.1.13.2.5.1.

5.1.13.2.5.4 Instrument air sources shall be of any of the following formats:

(1) at least two compressors

(2) one compressor and a standby header complying with 5.1.3.5.8.

5.1.13.2.5.5 Instrument air sources shall include the components specified in 5.1.3.6.3.2 (Components), 5.1.3.6.3.5 (Aftercoolers), 5.1.3.6.3.6 (Receivers), 5.1.3.6.3.7 (except (1)) (Dryers).

5.1.13.2.5.6 Instrument air compressors shall be permitted to be of any type capable of not less than a gauge pressure of 1380 kPa (200 psi) output pressure and of providing air meeting the definition of instrument air in 5.1.13.2.5.1.

5.1.13.2.5.7 Instrument Air Standby Headers. Where instrument air systems are provided with a standby header, the header shall meet the following requirements:
(1) It shall comply with 5.1.3.5.9, except that the number of attached cylinders shall be sufficient for 1 hour normal operation.

(2) It shall use connectors as for medical air in CGAV-1, Compressed Gas Association Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections (ANSI B57.1).

(3) It shall enter the system upstream (source side) of the final line filters. (See Figure A.5.1.3.9.)

(4) It shall automatically serve the system in the event of a failure of the compressor.

5.1.13.2.5.8* Intake Air. Intake air for instrument air compressors shall be permitted to be drawn from the outside, from ducted air, or from the equipment location.

5.1.13.2.5.9 Instrument Air Filters. Instrument air sources shall be provided with filtration sized for 100 percent of the system peak calculated demand at design conditions and with the following elements and characteristics:

(1) activated carbon filters located upstream (source side) of the final line filters.

(2) line filters located upstream (source side) of the final line regulators and downstream of the carbon filters rated for a minimum of 98 percent efficiency at 0.01 micron.

(3) equipped with a continuous visual indicator showing the status of the line filter element life.

(4) constructed of materials deemed suitable by the manufacturer.

(5) filters combining the functions in (1) to (4) in a single unit shall be permitted to be used.

5.1.13.2.5.10 Instrument Air Accessories. Accessories used for instrument air sources shall comply with the following subparagraphs:

(1) 5.1.3.6.3.5 for aftercoolers

(2) 5.1.3.6.3.6 for air receivers

(3) 5.1.3.6.3.7 for air dryers

(4) 5.1.3.5.9 for air regulators

5.1.13.2.5.11 Instrument Air Piping Arrangement and Redundancies.

Instrument air sources shall comply with 5.1.3.6.3.10, except for the following:

(1) Systems employing a standby header shall be permitted to have simplex aftercoolers and dryers.

(2) Systems employing a standby header shall not require a three-valve receiver bypass.

(3) Standby headers, where provided, shall be isolated from the compressor by a check valve to prevent backflow through the compressor.
5.1.13.2.5.12 Instrument Air Monitoring and Alarms. Instrument air sources shall include the following alarms:

(1) Local alarm that activates when or just before the backup compressor (if provided) activates, indicating that the lag compressor is in operation and that must be manually reset.

(2) Local alarm and alarms at all master alarm panels that activate when the dew point at system pressure exceeds \(-30^\circ C (\approx 22^\circ F)\), indicating high dew point.

5.1.3.9.10.2 For sources with standby headers, the following additional conditions shall activate a local alarm at the compressor site, a local signal at the header location, and alarms at all master alarm panels:

(1) Alarm that activates when or just before the reserve begins to supply the system, indicating reserve in use.

(2) Alarm that activates when or just before the reserve falls below an average hour’s supply, indicating reserve low.

5.1.13.2.5.13 Electrical Power and Control. Power and control for instrument air sources shall have the following characteristics:

(1) Each compressor motor shall be provided with electrical components including, but not limited to, the following:

(a) Dedicated disconnect switch installed in the electrical circuit ahead of each motor starter.

(b) Motor starting device.

(c) Overload protection.

(d) Where compressor systems having two or more compressors employ a control transformer or other voltage control power device, installation of at least two such devices.

(e) Control circuits arranged in such a manner that the shutdown of one compressor does not interrupt the operation of another compressor.

(f) Automatic restart function such that the compressor(s) will restart after power interruption without manual intervention.

(2) Electrical installation and wiring shall conform to the requirements of NFPA 70, National Electrical Code.

(3) Emergency electrical service for the compressors shall conform to the requirements of the essential electrical system as described in Chapter 6.

(4) When multiple compressors are used, an additional compressor(s) shall automatically activate when the compressor(s) in operation is incapable of maintaining the required pressure.

(5) When multiple compressors are used, automatic or manual alternation of compressors shall allow division of operating time. If automatic alternation of compressors is not provided, the facility staff shall arrange a schedule for manual alternation.

Delete 5.1.3.9.
Statement of Problem and Substantiation for Public Input

This reorganization advances the original intent of creating a separate set of requirements for support gases to recognize their less critical nature. It also attempts to identify them more clearly and to separate them from utility systems (Chapter 9).

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 19:52:17 EDT 2012

Committee Statement

Statement: The Committee agrees in principle with the idea of this proposal. It is being submitted as a CI to solicit comments from the public and also to give the TC time for any needed editorial revisions. This reorganization advances the original intent of creating a separate set of requirements for support gases to recognize their less critical nature. It also attempts to identify them more clearly and to separate them from utility systems (Chapter 9).

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5.1.13.4.1 Requirements for nitrogen support gas outlets shall be in accordance with 5.1.5.1, 5.1.5.2, 5.1.5.4 through 5.1.5.8, 5.1.5.11, and 5.1.5.13 through 5.1.5.15.

Statement of Problem and Substantiation for Public Input

These requirements are not unique for nitrogen.

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 20:27:03 EDT 2012

Committee Statement

Statement: The requirements are not unique for nitrogen. 5.1.13.4.2 was then deleted because the deletion of "nitrogen" made the first section apply to all support gases which would have made the two redundant.

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Public Input No. 177-NFPA 99-2012 [ Section No. 5.1.13.8 ]

5.1.13.8 Distribution.
Requirements for support gas piping distribution shall be in accordance with 5.1.10.1 through 5.1.10.4.1, 5.1.10.3, 5.1.10.4 through 5.1.10.4.3, 5.1.10.9, and 5.1.10.11.

Statement of Problem and Substantiation for Public Input

Some corrections to references and also deletion of unnecessary requirements for support gases.

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 20:11:26 EDT 2012

Committee Statement

Resolution: The submitter indicated to the committee that this PI was not complete and would not be pursued.

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5.1.14.2.2.5 Qualifications.

Persons maintaining these systems shall be qualified to perform these operations. Appropriate qualification shall be demonstrated by any of the following:

1. Training and certification: Training program through the health care facility by which such persons are employed to work with specific equipment as installed in that facility.

2. Credentialing to the requirements of ASSE 6040, Professional Qualification Standard for Medical Gas Maintenance Personnel.

3. Credentialing to the requirements of ASSE 6030, Professional Qualification Standard for Medical Gas Systems Verifiers.

Statement of Problem and Substantiation for Public Input

These systems have been maintained for several years by trained individuals within the healthcare origination. To use the term "certification" required the hospital to become a certifying body and goes well beyond a well developed training program.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 18:17:25 EDT 2012

Committee Statement

Statement: These systems have been maintained for several years by trained individuals within the healthcare origination. To use the term "certification" required the hospital to become a certifying body and goes well beyond a well developed training program.

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5.1.14.2.2.5 Qualifications.
Persons maintaining these systems shall be qualified to perform these operations. Appropriate qualification shall be demonstrated by any of the following:

1. Training and certification through the health care facility by which such persons are employed to work with specific equipment as installed in that facility

2. Credentialing to the requirements of ASSE 6040, Professional Qualification Standard for Medical Gas Maintenance Personnel

   • Credentialing to the requirements of ASSE 6030, Professional Qualification Standard for Medical Gas Systems Verifiers

Statement of Problem and Substantiation for Public Input

The ASSE 6030 Standard does not include knowledge of manufactured equipment. If the ASSE 6030 can perform maintenance so can the ASSE 6005, ASSE 6010, ASSE 6020, ASSE 6050. Just because a person has knowledge with medical gas systems does not constitute knowledge of the actual equipment to perform routine maintenance. The current standard allows ALL ASSE 6030 credentialed person(s) to perform maintenance. Maintenance performed by untrained person(s) can be detrimental to the performance of the equipment being serviced.

Submitter Information Verification

Submitter Full Name: ANTHONY LOWE
Organization: ALLIED AIR COMPRESSOR INC d/b/a/ Allied Hospital Systems
Submittal Date: Fri Jun 15 17:55:58 EDT 2012

Committee Statement

Statement: These systems have been maintained for several years by trained individuals within the healthcare origination. To use the term "certification" required the hospital to become a certifying body and goes well beyond a well developed training program

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5.1.14.2.3.1 General.
The elements in 5.1.14.2.2 through 5.1.15 shall be inspected or tested as part of the maintenance program as follows:

(1)  
*  Medical air source, as follows:

(2)  Room temperature
(3)  Shaft seal condition
(4)  Filter condition
(5)  Presence of hydrocarbons
(6)  Room ventilation
(7)  Water quality, if so equipped
(8)  Intake location
(9)  Carbon monoxide monitor calibration
(10)  Air purity, medical air supplied from compressors shall be verified to meet 5.1.3.6.1 by quarterly sampling using an AIHA or equivalent testing service unless continuous monitoring with alarms is installed.
(11)  Dew point
(12)*  Medical vacuum source — exhaust location
(13)  WAGD source — exhaust location
(14)*  Instrument air source — filter condition
(15)*  Manifold sources (including systems complying with 5.1.3.5.10, 5.1.3.5.11, 5.1.3.5.12, and 5.1.3.5.13), as follows:

(16)  Ventilation
(17)  Enclosure labeling
(18)  Bulk cryogenic liquid source inspected in accordance with NFPA 55, Compressed Gases and Cryogenic Fluids Code
(19)  Final line regulation for all positive pressure systems — delivery pressure
(20)*  Valves — labeling
(21)*  Alarms and warning systems — lamp and audio operation
(22)  Alarms and warning systems, as follows:
(a)  Master alarm signal operation
(b)  Area alarm signal operation
(c)  Local alarm signal operation
(23)*  Station outlets/inlets, as follows:

(24)  Flow
(25)  Labeling
(26)  Latching/delatching
(27)  Leaks
Statement of Problem and Substantiation for Public Input

There is no requirement to test the medical air from compressors to meet 5.1.3.6.1 and it is not clear what (i) air purity means.

OSHA standards and US Navy standards for breathing air require biannual sampling of the air provided by compressors. I would suggest that medical air should be held to a higher or equal standard as occupational breathing air.

See 14.2.8.6.1*

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Health Care
Submital Date: Wed May 02 17:05:45 EDT 2012

Committee Statement

Resolution: The testing frequency is suggested to be quarterly by this PI, which should be a decision determined by the facilities risk analysis. AIHI is not a testing agency, but is a credentialing agency.

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public input No. 174-NFPA 99-2012 [ Section No. 5.1.15 ]

5.1.15* Category 1 Maintenance.
Facilities shall have a routine maintenance program for their piped medical gas and vacuum systems.

Statement of Problem and Substantiation for Public Input

This section is redundant to 5.1.14

Submitter Information Verification

Submitter Full Name: Mark Allen
Organization: Beacon Medaes
Submittal Date: Wed Jun 06 19:50:11 EDT 2012

Committee Statement

Statement: This section is redundant to 5.1.14

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Public Input No. 302-NFPA 99-2012 [ Section No. 5.3.7 ]

5.3.7* Category 3 Gas-Powered Device Supply Systems (Compressed Air and Nitrogen).

5.3.7.1 General Requirements.

5.3.7.1.1 Category 3 gas-powered device supply systems shall be used to drive dynamic devices, to dry surfaces for patient treatment, to drive vacuum turbines, and to remove excess moisture from instruments before further processing and for other general compressed gas uses in Category 3 facilities.

5.3.7.1.2 Category 3 gas-powered device supply systems shall be permitted to be used to supply power to gas-driven devices for scavenging, but only where the exhaust of the scavenging device is a closed vent to the outside of the building.

5.3.7.1.3*
Category 3 gas-powered device supply systems shall be furnished by the equipment manufacturer(s) or supplier(s), who shall be familiar with the proper application of the equipment and shall supervise its installation.

5.3.7.1.4
Installers of Category 3 gas-powered device supply systems shall be experienced in the installation and testing of such systems and the requirements of this code.

5.3.7.2 Piping for Gas-Powered Devices.

5.3.7.2.1 Tubes.

5.3.7.2.1.1
Tubes shall be in accordance with one of the following:

1. ASTM B 819, *Standard Specification for Seamless Copper Tube for Medical Gas Systems*, medical gas tube, not less than Type L
2. ASTM B 88, *Standard Specification for Seamless Copper Water Tube*, water tube, not less than Type L

5.3.7.2.1.2
Tubing shall be hard temper or annealed (soft temper).

5.3.7.2.2 Fittings.

Fittings for Category 3 gas-powered device supply piping shall be one of the following:

1. Brazed or soldered fittings complying with ASME B16.22, *Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings*
2. Brazed fittings complying with ASME B16.50, *Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings*
4. Flared fittings complying with ASME B16.26, *Cast Copper Alloy Fittings for Flared Copper Tubes*
5. Compression fittings (¾ in. maximum size)
6. Special-purpose fittings permitted for Category 1 medical gas piping

5.3.7.2.3 Joints.

5.3.7.2.3.1
Joints for Category 3 gas-powered device supply piping shall be of the brazed, soldered, threaded, flared, or compression type.

5.3.7.2.3.2
Where joints are brazed, they shall comply with the requirements for Category 3 medical gas piping in 5.3.6.1 through 5.3.6.10.

5.3.7.2.3.3
Soldered joints in Category 3 gas-powered supply piping shall be made in accordance with ASTM B 828, *Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings*, using a “lead-free” solder filler metal containing not more than 0.2 percent lead by volume that complies with ASTM B 32, *Standard Specification for Solder Metal*.

5.3.7.3 Installation of Gas-Powered Device Piping.

5.3.7.3.1 Pipe Sizing.

Piping systems shall be designed and sized to deliver the required flow rates at the utilization pressures.

5.3.7.3.2 Protection of Piping.

Piping shall be protected in accordance with 5.3.6.11.4.

5.3.7.3.3 Pipe Support.

Pipe support shall be in accordance with 5.3.6.12.
Pipe support shall be in accordance with 5.3.6.12.

5.3.7.4 Underground Piping Outside of Buildings.
Buried piping outside of buildings shall be in accordance with 5.3.6.13.

5.3.7.5 Underground Piping Within Buildings.
Underground piping within buildings shall be in accordance with 5.3.6.14.

5.3.7.6 Piping Within Floor Slabs.

5.3.7.6.1
Category 3 gas-powered device piping (compressed air and nitrogen) that is installed within floor slabs shall be enclosed in a conduit, in flexible plastic tubing, or by other means to prevent contact between the copper tubing and concrete.

5.3.7.6.2
During construction, access shall be provided at any joints for visual inspection and leak testing.

5.3.7.4 Valves in Gas-Powered Device Piping.
Shutoff valves shall be permitted to be installed in Category 3 gas-powered device piping.

5.3.7.5 Location of Gas-Powered Device Source Equipment.

5.3.7.5.1
Source equipment for Category 3 gas-powered devices shall be one or more of the following:

1) One or more air compressors
2) One or more air compressors with compressed air cylinders
3) Nitrogen cylinders

5.3.7.5.2
Air compressors for Category 3 gas-powered devices shall be installed in a designated mechanical equipment area, heated and ventilated in accordance with 5.1.3.3.2 and 5.1.3.3.3, and have required utilities (e.g., electrical power, drains, lighting).

5.3.7.5.3
Where nitrogen or compressed air in cylinders is used, the cylinders shall be permitted to be located in a compressor equipment room.

5.3.7.5.4
Nitrogen and compressed air cylinders shall be permitted to be located in enclosures for Category 3 medical gases (oxygen and nitrous oxide).

5.3.7.6 Air Compressor Source Equipment.

5.3.7.6.1 General.
Category 3 compressed air compressor supply systems shall include the following:

1) Disconnect switch(es)
2) Motor-starting device(s)
3) Motor overload protection device(s)
4) One or more compressors
5) For single, duplex, or multiple compressor systems, means for activation/de-activation of each individual compressor
6) When multiple compressors are used, manual or automatic means to alternate individual compressors
7) When multiple compressors are used, manual or automatic means to activate the additional unit(s) should the in-service unit(s) be incapable of maintaining adequate pressure
8) Intake filter–muffler(s) of the dry type
9) Receiver(s) with a manual or automatic drain
10) Shutoff valves
11) Compressor discharge check valve(s) for multiple compressors.
(11) Compressor discharge check valve(s) (for multiple compressors)

(12) Air dryer(s) that maintains a minimum of 40 percent relative humidity at operating pressure and temperature

(13) In-line final particulate/coalescing filters rated at 0.01 micron, with filter status indicator to ensure the delivery of compressed air with a maximum allowable 0.05 ppm liquid oil

(14) Pressure regulator(s)

(15) Pressure relief valve

(16) Pressure indicator

(17) Moisture indicator

5.8.3.7.6.2 Receiver(s).
5.8.3.7.6.2.1
The receiver(s) shall have the capacity to prevent short cycling of the compressor(s).

5.8.3.7.6.2.2
The receiver(s) shall comply with Section VIII, “Unfired Pressure Vessels,” of the ASME Boiler and Pressure Vessel Code.

5.8.3.7.6.3* Moisture Indicator.
5.8.3.7.6.3.1
The moisture indicator shall be located in the active airstream prior to, or after, the receiver and upstream of any system pressure regulators.

5.8.3.7.6.3.2
The moisture indicator shall indicate (e.g., by color change, digital readout, or other method understood by the user) when the relative humidity of the compressed air exceeds 40 percent at line pressure and temperature.

5.8.3.7.6.4 Pressure Relief Valve Discharge.
Pressure relief valves for compressed air systems having less than 84,950 L (3000 ft³) at STP shall be permitted to discharge locally indoors in a safe manner that will not restrict the flow.

5.8.3.7.6.5* Source of Compressor Intake Air.
5.8.3.7.6.5.1
Air sources for a compressor(s) located inside the building shall meet the following requirements:

(1) They shall be located within a space where no chemical-based materials are stored or used.

(2) They shall be located in a space that is not used for patient medical treatment.

(3) They shall not be taken from a room or space in which there is an open or semi-open discharge from a Category 3 vacuum or scavenging system.

5.8.3.7.6.5.2
Air sources for a compressor(s) located outside the building shall be drawn from locations where no contamination from vacuum or scavenging system discharges or particulate matter is anticipated.

5.8.3.7.7 Compressed Air Cylinder Source Equipment.
5.8.3.7.7.1
Compressed air cylinders shall be permitted to be installed in enclosures for Category 3 medical gases (oxygen and nitrous oxide) as described in 5.3.6.20.2 or in a mechanical room.

5.8.3.7.7.2
Compressed air cylinder source equipment shall include the following:

(1) One or more cylinders of compressed air, each providing at least an average day's supply

(2) Manifold if primary and secondary cylinders are provided

(3) Line pressure regulating valve

(4) Check valve downstream from the pressure regulating valve
(4) Check valve downstream from the pressure regulating valve.

(5) Pressure relief valve set at 50 percent above the normal line pressure and located downstream from the check valve specified in 5.3.7.7.2(4)

5.8.3.7.7.3
Mechanical means shall be provided to ensure that the compressed air cylinder gas source equipment is connected to the correct gas distribution piping system.

5.8.3.7.7.4
Threaded connections to manifolds shall comply with CGA V-5, Diameter-Index Safety System (Noninterchangeable Low Pressure Connections for Medical Gas Applications).

5.8.3.7.7.5
Flexible connectors shall have a gauge pressure rating not less than 6895 kPa (1000 psi).

5.8.3.7.7.6
Flexible connectors of other than all-metal construction that connect manifolds to the gas distribution piping shall not exceed 1.52 m (5 ft) in length and shall not penetrate walls, floors, ceilings, or partitions.

5.8.3.7.7.7
Pressure relief valves for compressed air cylinder systems having less than 84,950 L (3000 ft³) at STP shall be permitted to discharge locally indoors in a safe manner that will not restrict the flow.

5.8.3.7.8* Nitrogen Source Equipment.

5.8.3.7.8.1
Nitrogen source equipment shall be permitted to be installed in enclosures for Category 3 medical gases (oxygen and nitrous oxide) as described in 5.3.6.20.2 or in a mechanical room.

5.8.3.7.8.2
Nitrogen source equipment shall include the following:

(1) One or more cylinders of nitrogen NF, each providing at least an average day's supply

(2) Manifold, if primary and secondary cylinders are provided

(3) Line pressure regulating valve

(4) Check valve downstream from the pressure regulating valve

(5) A pressure relief valve set at 50 percent above the normal line pressure and located downstream from the check valve specified in 5.3.7.8.2(4)

(6) Pressure relief valve discharge piped to outdoors at a point that will not create a probable hazard and that is turned down to prevent the entry of rain or snow

5.8.3.7.8.3
Mechanical means shall be provided to ensure that the nitrogen gas source equipment is connected to the correct gas distribution piping system.

5.8.3.7.8.4
Cylinder valve outlets for nitrogen shall comply with CGA V-1, Compressed Gas Association Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections.

5.8.3.7.8.5
Threaded connections to manifolds shall comply with CGA V-5, Diameter-Index Safety System (Noninterchangeable Low Pressure Connections for Medical Gas Applications).

5.8.3.7.8.6
Flexible connectors shall have a gauge pressure rating not less than 6895 kPa (1000 psi).

5.8.3.7.8.7
Flexible connectors of other than all-metal construction that connect manifolds to the gas distribution piping shall not exceed 1.52 m (5 ft) in length and shall not penetrate walls, floors, ceilings, or partitions.
Gas-Powered Systems are not part of the scope of Chapter 5. The Gas-powered sytems in Chapter 5 category 3 are plumbing systems. Chapter 5 includes medical gases, support gases, medical-surgical vacuum. Chapter 8 scope includes plumbing systems (non medical gas). The entire section should be moved to Chapter 8 and the TC for chapter 8 needs to review these sections.

Submitter Information Verification

Submitter Full Name: Keith Ferrari  
Organization: Praxair, Inc.  
Submittal Date: Fri Jun 15 11:44:02 EDT 2012

Committee Statement

Resolution: This is being addressed through the use of a task group being used by the committee. This input is therefore no longer valid based by the actions of that task group. This is also medical support plumbing, not general building plumbing.

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Public Input No. 304-NFPA 99-2012 [Section No. 5.3.8]

5 8.3.8 Category 3 Vacuum and Scavenging Systems.
5 8.3.8.1 General Requirements.
5 8.3.8.1.1 Category 3 vacuum and scavenging systems shall be furnished by an equipment manufacturer(s) or a supplier(s) who is familiar with the proper application of the equipment and shall be installed under their supervision.
5 8.3.8.1.2 Installers of Category 3 vacuum and scavenging systems shall be experienced in the installation and testing of such systems and the requirements of this code.
5 8.3.8.1.3 Any water supply and drain piping associated with vacuum or scavenging source equipment shall comply with the locally adopted plumbing code.
5 8.3.8.2 Piping for Vacuum and Scavenging Systems.
5 8.3.8.2.1 Piping for Category 3 vacuum and scavenging systems shall be copper, PVC plastic, or CPVC plastic.
5 8.3.8.2.2 Copper piping shall comply with the requirements for Category 3 gas-powered supply piping as follows:
   (1) Copper tubing shall be in accordance with 5.3.7.2.1.
   (2) Copper fittings shall be in accordance with 5.3.7.2.2.
(3) Joints in copper tubing shall be in accordance with 5.3.7.2.3.

5.8.3.8.2.3
PVC plastic piping shall be in accordance with the following:

(1) PVC plastic pipe shall be Schedule 40 or Schedule 80, complying with ASTM D 1785, *Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.*


5.8.3.8.2.4
CPVC plastic piping shall be iron pipe size (IPS) or copper tube size (CTS) in accordance with the following:

(1) CPVC IPS plastic pipe shall be Schedule 40 or Schedule 80, complying with ASTM F 441, *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.*


(4) Solvent cement for joints in CPVC plastic piping shall comply with ASTM F 493, *Solvent Cements for CPVC Pipe and Fittings.*

5.8.3.8.3 Installation of Vacuum and Scavenging Piping.

5.8.3.8.3.1 Pipe Sizing.
Piping systems shall be designed and sized to draw the required flow rates at the utilization vacuums.

5.8.3.8.3.2 Protection of Piping.
Piping shall be protected in accordance with 5.3.6.11.4.

5.8.3.8.3.3 Copper Pipe Support.
Pipe support for copper piping shall be in accordance with 5.3.6.12.

5.8.3.8.3.4 Plastic Pipe Support.
The maximum support spacing for plastic pipe shall be in accordance with Table 5.3.8.3.4. Table 5.3.8.3.4 Maximum Plastic Pipe Support Spacing

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Hanger Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN15 (NPS 1½ 2) (5/8 in. O.D.)</td>
<td>1220 4.00</td>
</tr>
<tr>
<td>DN20 (NPS 3½ 4) (7/8 in. O.D.)</td>
<td>1220 4.00</td>
</tr>
<tr>
<td>DN25 (NPS 1) (1 1/8 in. O.D.)</td>
<td>1320 4.33</td>
</tr>
<tr>
<td>DN32 (NPS 1½ 4) (1 3/8 in. O.D.)</td>
<td>1320 4.33</td>
</tr>
<tr>
<td>DN40 (NPS 1½ 2) (1 5/8 in. O.D.)</td>
<td>1420 4.66</td>
</tr>
<tr>
<td>DN50 (NPS 2) (2 3/8 in. O.D.)</td>
<td>1420 4.66</td>
</tr>
</tbody>
</table>
58.3.8.3.5 Underground Piping Outside of Buildings.
Buried piping outside of buildings shall be in accordance with 5.3.6.13.

58.3.8.3.6 Underground Piping Within Buildings.
Underground piping within buildings shall be in accordance with 5.3.6.14.

58.3.8.3.7 Piping Within Floor Slabs.
58.3.8.3.7.1 Copper Category 3 vacuum and scavenging piping that is installed within floor slabs shall be enclosed in a conduit, flexible plastic tubing, or other means to prevent contact between the copper tubing and concrete.

58.3.8.3.7.2 Plastic Category 3 vacuum and scavenging piping shall be permitted to contact concrete.

58.3.8.3.7.3 During construction, access shall be provided at all joints for visual inspection and leak testing.

58.3.8.3.7.4 Care shall be taken to protect plastic piping from damage from vibrators while wet concrete is being consolidated.

58.3.8.3.8 Valves in Vacuum and Scavenging Systems.
Shutoff valves shall be permitted to be installed in Category 3 vacuum and scavenging piping.

58.3.8.3.9* Category 3 Vacuum and Scavenging Source Equipment.

58.3.8.3.9.1 Category 3 vacuum sources shall include the following:

1. Vacuum pump or pumps suited for wet or dry service as intended in the system design
2. If intended for wet service, properly vented liquid/air separator

58.3.8.3.9.2 Category 3 vacuum and scavenging source equipment shall be obtained from, and be installed under the supervision of, the manufacturer(s) or supplier(s) who is familiar with its installation, operation, and use.

58.3.8.3.10 Drainage from Vacuum Equipment.
None of the requirements of 5.3.8.3.10.1 through 5.3.8.3.10.6 for drainage in Category 3 vacuum systems shall supersede provisions of the local plumbing code.

58.3.8.3.10.1 Liquids drained from a Category 3 vacuum source shall discharge indirectly to a sanitary drainage system through an approved air gap to a trapped and vented drain.

58.3.8.3.10.2 The clear air gap between a vacuum drain outlet, or indirect drain pipe, and the flood category rim of an indirect waste receptor, or other point of disposal, shall be not less than twice the diameter of the effective opening of the drain served, but not less than 25.4 mm (1 in.), unless the local plumbing code requires a larger air gap.

58.3.8.3.10.3 Where the drainage is from a waste holding tank on the suction side of the vacuum source, the following requirements shall be met:

1. A check valve shall be installed in the drain line from the holding tank between the tank and any vent lines.
2. The trap in the building drainage system shall be the deep-seal type that is conventionally vented within the plumbing system.
3. An additional vent shall be installed between the holding tank drain check valve and the drain trap, on the inlet side of the trap, to close and seal the check valve while the holding tank is operating under vacuum and collecting waste.
(4) The additional vent described in 5.3.8.3.10.3(3) shall be permitted to be connected to the plumbing system vents, unless a drain pump system with a positive pressure discharge is installed, in which case 5.3.8.3.10.4 shall apply.

(5) Both of the vents in 5.3.8.3.10.3(3) and (4) shall extend vertically to not less than 152 mm (6 in.) above the top of the holding tank before turning horizontal.

(6) Outdoor vents shall be protected against the entry of insects, vermin, debris, and precipitation.

(7) The trap and drain branch shall be not less than two pipe sizes larger than the waste pipe from the separator, but not less than DN50 (NPS 2).

(8) The trap seal shall be not less than 100 mm (4 in.) deep.

(9) The vent for the vacuum check valve shall be not less than the size of the check valve.

(10) The vent for the trap shall be not less than one-half the size of the trap and drain branch.

5.8.3.8.3.10.4*
Where the drainage is from a waste holding tank on the suction side of the vacuum source and a positive discharge pump drain system is in place, the following requirements shall be met:

(1) The pump shall drain indirectly to the plumbing system through an air gap equal to the diameter of the discharge pipe but not less than 25.4 mm (1 in.) above the rim.

(2) A check valve shall be installed in the drain line from the holding tank to the drain.

(3) The trap in the building drainage system shall be the deep-seal type that is conventionally vented within the plumbing system.

(4) The trap and drain branch shall be not less than two pipe sizes larger than the waste pipe from the separator, but not less than DN40 (NPS 1 1/2).

(5) The trap seal shall be at least two times the exhaust back pressure in the separator but not less than 100 mm (4 in.) deep.

5.8.3.8.3.10.5
Where the drainage is at a positive pressure from an air/waste separator on the discharge side of the vacuum source, the following requirements shall be met:

(1) Where there is a positive pressure discharge from a vacuum pump, it shall be required to drain through an air/waste separator.

(2) Discharge shall be either of the following:
   
   (a) Direct into a trap in the building drainage system that is the deep-seal type and is conventionally vented within the plumbing system
   
   (b) Indirect to the plumbing system through an air gap equal to the diameter of the discharge pipe, but not less than 25.4 mm (1 in.) above the rim

(3) The trap vent shall extend vertically to not less than 152 mm (6 in.) above the top of the separator before turning horizontal.

(4) Outdoor vents shall be protected against the entry of insects, vermin, debris, and precipitation.

(5) The trap and drain branch shall be two pipe sizes larger than the waste pipe from the separator, but not less than DN40 (NPS 1 1/2).

(6) The air/waste separator vent shall be the full size of the separator vent connection.

(7) The separator vent shall be separate from the building vent piping.

5.8.3.8.3.10.6
The indirect drainage from vacuum equipment shall discharge to the sanitary drainage system through an approved air gap without causing overflow or splatter on building surfaces.

5.8.3.8.3.11 Vacuum Exhaust.
The exhaust from Category 3 vacuum and scavenging sources shall comply with the following:
(1) The exhaust shall be piped to the outside through a separate vent system.
(2) The exhaust point shall be chosen to minimize the hazards of noise.
(3) The exhaust point shall be remote from any door, window, or other opening into the building.
(4) The exhaust point shall be located at a different elevation than air intakes.
(5) The exhaust point shall not be located where affected by prevailing winds, adjacent buildings, topography, or other obstacles to the rapid dispersion of the exhaust gases.
(6) The exhaust point shall be protected against the entry of insects, vermin, debris, and precipitation.
(7) The exhaust piping shall be sized to prevent back pressure greater than the pump manufacturer's recommendations.
(8) Where multiple pumps exhaust through a common pipe, each pump shall be fitted with a check valve or a manual isolation valve or shall be arranged to allow capping the individual pump exhausts when a pump is removed for service.
(9) Where multiple pumps exhaust through a common pipe, piping shall be arranged following the pump manufacturer's recommendations.

Statement of Problem and Substantiation for Public Input

Vacuum and Scavenging Systems are not part of the scope of Chapter 5. The Vacuum and Scavenging systems in Chapter 5 category 3 are plumbing systems. Chapter 5 includes medical gases, support gases, medical -surgical vacuum. Chapter 8 scope includes plumbing systems (non medical - surgical vacuum). The entire section should be moved to Chapter 8 and the TC for chapter 8 needs to review these sections.

As with my submittal on Gas Powered Systems, this section needs to either move to Chapter 8 or be defined as a Medical-Surgical Vacuum System Cat. 3 and defined with specific details. NFPA 99, 2012 seems to include wet, dry and other types of vacuum systems in Cat 3 vacuum. Also, the term "scavenging" as used in this section seems to conflict with Chapter 9 use of the term "scavenging" systems.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Fri Jun 15 12:07:33 EDT 2012

Committee Statement

Resolution: This is being addressed through the use of a task group being used by the committee. This input is therefore no longer valid based by the actions of that task group. This is also medical support plumbing, not general building plumbing.

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Public Input No. 345-NFPA 99-2012 [ New Section after 6.3 ]

TITLE OF NEW CONTENT
6.3.2.2.10.5 (New)

The installation of the life safety branch and the critical branch shall be in accordance with NFPA 70, National Electrical Code Article 700 except as supplemented or modified in Chapter 6.

Statement of Problem and Substantiation for Public Input

The life safety branch especially is analogous to the NEC Article 700 Emergency Systems and the critical branch has the same critical high reliability need for safety of human life. There are several critical requirements in NEC Article 700 which are not in NFPA 99 Chapter 6. As a result of these voids the system is not as reliable as necessary and intended. This new requirement should be compatible with the 99-ELS TC based on the 2011 NFPA Annual Meeting transcript. Mr. D’Antona stated: “One of the concerns from the NITMAM was that in fact we were relieving ourselves of the requirements of Article 700. In fact what we were trying to do is clarify what portions of the system applied to Article 700. And in fact in NFPA 70, Article 517.26 it says the essential electrical system shall meet the requirements of Article 700 except as amended by Article 517. So no matter what we do, whether we take the term out or leave as is all portions of the essential electric system which includes life safety critical and equipment branch still apply to Article 700.” And Mr. Dagenais stated: “Dave Dagenais speaking on behalf of the healthcare section in opposition of the motion. This morning at the healthcare executive board meeting the membership and the board voted to oppose this motion. The healthcare section believes by inserting this into the definition the specific requirement to comply with 700 NFPA 70 is not standards format. Additionally by inserting this within the definition it could in fact imply that that is the only branch that 700 would have to conform with. There has never been an intention that these branch labeling life safety critical branch or equipment would not fall within the 700 realm. This further confuses the issue by placing this requirement within the definition.”

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 15:42:29 EDT 2012

Committee Statement

Resolution: From a performance perspective, it is not expected that these branches need to comply with Article 700 of the NEC. Section 6.3.2.1 requires installation in accordance with NFPA 70.

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Add text to read as follows:

6.3.2.1.2 In hospital settings, consideration should be given to the physical separation of the main feeders of the alternate source from the main feeders of the normal electrical source to prevent possible simultaneous destruction as a result of a local catastrophe.

Statement of Problem and Substantiation for Public Input

There have been power reliability concerns in hospital settings, where the main feeders of the alternate source and the main feeders of the normal electrical source share the same pathways such as underground duct banks or utility bridges. The main feeders of the alternate source will probably be destructed, in the event of natural catastrophe, the fault of the main feeder of normal electrical source, or terrorist attack. The physical separation of the main feeders of the alternate source from the main feeders of the normal electrical source becomes essential in keeping hospitals operational.

Submitter Information Verification

Submitter Full Name: JAMES DA
Organization: The University of Texas MD Anderson Cancer Center
Submittal Date: Wed Jun 06 07:19:27 EDT 2012

Committee Statement

Resolution: This is not written in mandatory language.

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Public Input No. 404-NFPA 99-2012 [ Section No. 6.3.2.1.1 ]

6.3.2.1.1 Distribution system arrangements shall be designed to minimize interruptions to the electrical systems due to internal failures by the use of adequately rated equipment.

Note: Assignment of degree of reliability of electrical systems in health care facilities depends on the careful evaluation of the variables at each particular installation. For further information, see ANSI/IEEE 493-2007, Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems.
Statement of Problem and Substantiation for Public Input

Note that this language is identical to language recently adopted into the 2011 NEC. The IEEE “Gold Book” (493) is the most comprehensive document on quantitative methods for electrical power system reliability in the world. The link to background information on it is available here: http://standards.ieee.org/findstds/standard/493-2007.html

The scope of this document is partially reproduced here:

“The objective of this book is to present the fundamentals of reliability analysis applied to the planning and design of industrial and commercial electric power distribution systems. The intended audience for this material is primarily consulting engineers and plant electrical engineers and technicians. The design of reliable industrial and commercial power distribution systems is important because of the high cost associated with power outages. It is necessary to consider the cost of power outages when making design decisions for new power distribution systems as well as to have the ability to make quantitative “cost-versus-reliability” trade-off studies. The lack of credible data concerning equipment reliability and the cost of power outages has hindered engineers in making such studies. This edition of the IEEE Std 493 overcomes these obstacles.”

Since reliable power systems are a critical part of safety in health care facilities, all NFPA committees should have this book as a reference document in order to become more familiar with the terms of art of reliability engineering.

Members of that NEC committee that adopted this reference agreed that this resource offered a way to convey opinions about power security into the realm of science. Very often, the AHJ is put in the position of having to assess the reliability and availability of security-related infrastructure. It would be reasonable for the AHJ to ask for reliability calculations, much as he or she might ask for short circuit or ampere demand calculations in a power system design. Unfortunately, the training of many electrical engineers does not include formal, reliability analysis so reference to this document will provide a starting point for establishing equivalencies in the reliability assumptions that form the foundation of business continuity risk assessments.

While the IEEE “Color Book” series will be revised and re-packaged in the coming years into the so-called “3000 Dot Series” standards, the substance will remain the same and should not deter the committee from accepting this proposal.

Submitter Information Verification

Submitter Full Name: Michael Anthony
Organization: University of Michigan
Submittal Date: Thu Jul 19 11:34:28 EDT 2012

Committee Statement

Resolution: This adds no mandatory language.

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Origin (from sources other than the submitter)

APPA Issue 12-18 Proposal 1
Public Input No. 327-NFPA 99-2012 [Section No. 6.3.2.2.1 [Excluding any Subsections]]

Regular voltage wiring. Branch circuit wiring, 600V or less, shall comply with the requirements in 6.3.2.2.1.1 through 6.3.2.2.1.4.

Statement of Problem and Substantiation for Public Input

The phrase "regular voltage" is imprecise and not suitable for the document.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: Self
Submittal Date: Wed Jun 20 12:07:15 EDT 2012

Committee Statement

Resolution: FR-5-NFPA 99-2012
Statement: The phrase "regular voltage" is imprecise and not suitable for the document.

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Public Input No. 269-NFPA 99-2012 [ Section No. 6.3.2.1.2 ]

6.3.2.1.2–Critical Care Areas

Critical care areas—Category 1 areas—shall be served by circuits from a critical branch panel(s) served from a single automatic transfer switch and a minimum of one circuit served by the normal power distribution system or by a system originating from a second critical branch automatic transfer switch.

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 18:28:52 EDT 2012

Committee Statement

Resolution: FR-8-NFPA 99-2012
Statement: It is confusing to the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

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Public Input No. 328-NFPA 99-2012 [ Section No. 6.3.2.2.2(A) ]

(A) Where used, the reliability of grounding circuits installed to a power receptacle in all patient care rooms shall be at least equivalent to that provided by an electrically continuous copper conductor of appropriate ampacity run from the receptacle to a grounding bus in the distribution panel.

Statement of Problem and Substantiation for Public Input

6.3.2.2.2 (A) and (B) are redundant. 6.3.2.2.2 (B) provides the cleaner, more user friendly alternative.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: Self
Submittal Date: Wed Jun 20 12:13:20 EDT 2012

Committee Statement

Statement: 6.3.2.2.2.2 (A) and (B) are redundant. 6.3.2.2.2.2 (B) provides the cleaner, more user friendly alternative.

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6.3.2.2.2.3 - Separate Grounding Conductor.

When existing construction does not have a separate grounding conductor, the continued use of the system shall be permitted, provided that it meets the performance requirements in 6.3.3.1.

Statement of Problem and Substantiation for Public Input

Public and patient safety demands assured grounding. Why should the age of a structure reduce electrical safety requirements?

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: Self
Submittal Date: Wed Jun 20 12:17:41 EDT 2012

Committee Statement

Resolution: There is no technical justification for this change. The substantiation does not contain objective evidence to conclude that the testing prescribed by 6.3.3.1 is not sufficient to assure grounding continuity.

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Public Input No. 330-NFPA 99-2012 [ Section No. 6.3.2.4.2 ]

6.3.2.4.2* Personnel Protection.
If used, ground-fault circuit interrupters (GFCIs) shall be listed as a Class A device.

Statement of Problem and Substantiation for Public Input

This change bring the statement into alignment with 99-3.3.66.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: Self
Submittal Date: Wed Jun 20 12:29:48 EDT 2012

Committee Statement

Resolution: If it is listed, then the GFCI will be a Class A device. This is also now in the definition by the action on FR-7.

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Receptacles for Patient Bed Locations in General Care Areas (Category 2) in Category 2 Areas. Each patient bed location shall be provided with a minimum of eight receptacles.

Statement of Problem and Substantiation for Public Input

It is confusing to the document to define rooms or areas because the document has changed to a risk based document and the room is defend by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submital Date: Wed Jun 13 18:36:59 EDT 2012

Committee Statement

Resolution: FR-63-NFPA 99-2012
Statement: In several places, the term "room" or "area" was replaced with "spaces" this has been done to correlate with the NEC in many places in Chapter 6 under the following substantiation: Use of the term “room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term “room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code. Furthermore, it is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defend by risk category. The term of category 1 is not needed. All operation room have this requirement. Section 6.3.2.2.6.2 for minimum number of receptacles has been revised to correlate with how it is addressed within the NEC.

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Receptacles for Patient Bed Locations in Critical Care Areas (Category 1) in Category 1 Areas. Each patient bed location shall be provided with a minimum of 14 receptacles.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 18:49:17 EDT 2012

Committee Statement

Resolution: FR-63-NFPA 99-2012
Statement: In several places, the term "room" or "area" was replaced with "spaces" this has been done to correlate with the NEC in many places in Chapter 6 under the following substantiation: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code. Furthermore, it is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. The term of category 1 is not needed. All operation room have this requirement. Section 6.3.2.2.6.2 for minimum number of receptacles has been revised to correlate with how it is addressed within the NEC.

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Receptacles for Operating Rooms (Category 1). Operating rooms shall be provided with a minimum of 36 receptacles.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. The term of category 1 is not needed. All operating rooms have this requirement.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 18:55:00 EDT 2012

Committee Statement

Resolution: FR-63-NFPA 99-2012
Statement: In several places, the term "room" or "area" was replaced with "spaces" this has been done to correlate with the NEC in many places in Chapter 6 under the following substantiation: Use of the term “room(s)” is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term “room(s)” may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code. Furthermore, it is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. The term of category 1 is not needed. All operating rooms have this requirement. Section 6.3.2.2.6.2 for minimum number of receptacles has been revised to correlate with how it is addressed within the NEC.

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Public Input No. 273-NFPA 99-2012 [ Section No. 6.3.2.2.6.2(F) ]

Original Hide Markup

(F)

Designated General Care Designated Pediatric Locations. Receptacles that are located within the patient rooms, bathrooms, playrooms, and activity rooms of pediatric units, other than nurseries, shall be listed tamper-resistant or shall employ a listed tamper-resistant cover.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defend by risk category. we should be protecting all of these areas

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submital Date: Wed Jun 13 18:59:34 EDT 2012

Committee Statement

Resolution: FR-63-NFPA 99-2012
Statement: In several places, the term "room" or "area" was replaced with "spaces" this has been done to correlate with the NEC in many places in Chapter 6 under the following substantiation: Use of the term “room(s)” is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term “room(s)” may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code. Furthermore, it is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defend by risk category. The term of category 1 is not needed. All operation room have this requirement. Section 6.3.2.2.6.2 for minimum number of receptacles has been revised to correlate with how it is addressed within the NEC.

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6.3.2.2.6.4—Receptacles and Amperage—

(A)—
Receptacles for use with 250-V, 50-A, and 60-A ac service shall be designed for use in locations where deep sedation or general anesthesia is administered and shall be so designed that the 60-A receptacle will accept either the 50-A or the 60-A plug.

(B)—
Fifty-ampere receptacles shall be designed so as not to accept the 60-A attachment plug.

(C)—
Both 50-A and 60-A receptacles shall be of the two-pole, three-wire design, with the third contact connecting to the grounding wire (green or green with yellow stripe) of the electrical system.

Statement of Problem and Substantiation for Public Input

This section requires all 50A and 60A receptacles to be designed for use in a deep sedation or general anesthesia locations, regardless of the nature of the the risk assessment. This language is antiquated and must speak to an installation long ago abandoned.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: self
Submittal Date: Tue Jun 19 14:36:14 EDT 2012

Committee Statement

Statement: This section requires all 50A and 60A receptacles to be designed for use in a deep sedation or general anesthesia locations, regardless of the nature of the the risk assessment. This language is antiquated and must speak to an installation long ago abandoned.

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Public Input No. 115-NFPA 99-2012 [ Section No. 6.3.2.8.4 ]

6.3.2.8.4*

Operating rooms shall be not be considered to be a wet procedure location, unless a risk assessment conducted by the health care governing body determines otherwise.

Statement of Problem and Substantiation for Public Input

This change reverts to the intent of the old wording of this code. there is no evidence that a well maintained operating room is a "wet location". As currently worded this creates unnecessary expense with no evidence to support.

Submitter Information Verification

Submitter Full Name: Ronald Smidt
Organization: Carolinas HealthCare System
Submital Date: Mon May 07 15:31:05 EDT 2012

Committee Statement

Resolution: The ELS committee discussed this in depth over the past several editions of the standard. No new evidence has been provided since the committee last determined the current language that would change the position of the TC.

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Public Input No. 9-NFPA 99-2012 [Section No. 6.3.2.8.4]

6.3.2.8.4*
Operating rooms shall not be considered to be a wet procedure location, unless a risk assessment shall be conducted by the health care governing body determines otherwise for orthopedic operating rooms to determine if the procedures being performed will likely result in a wet procedure.

Statement of Problem and Substantiation for Public Input

Additional studies have been conducted and it has been determined that very few operating rooms are considered wet locations. Many anesthesiologists have indicated that there may have been an error in the philosophy presented during the last cycle and that may have been more appropriate for Orthopedic Operating Rooms and not general operating rooms. Given that the preponderance of the US operating rooms are not wet proceeding locations it makes send only to require such an assessment where facilities are likely to have a wet procedure. It should be noted in the appendix that even though a procedure maybe be considered a wet location, the proper protocols and installation of mitigating devices can be used in lieu of determining that the operating room must meet the wet procedure location requirements.

Submitter Information Verification

Submitter Full Name: Chad Beebe
Organization: American Society for Healthcare Engineering
Submittal Date: Tue Mar 20 12:53:17 EDT 2012

Committee Statement

Resolution: The ELS committee discussed this in depth over the past several editions of the standard. No new evidence has been provided since the committee last determined the current language that would change the position of the TC.

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Public Input No. 94-NFPA 99-2012 [Section No. 6.3.2.8.5 [Excluding any Sub-Sections]]

In existing construction, the requirements of 6.3.2.8.1 shall not be required when a written inspection procedure, acceptable to the authority having jurisdiction, is continuously enforced by a designated individual at the hospital to indicate that equipment grounding conductors for 120-V, single-phase, 15-A and 20-A receptacles; equipment connected by cord and plug; and fixed electrical equipment are installed and maintained in accordance with NFPA 70, National Electrical Code, and the applicable performance requirements of this chapter.

Statement of Problem and Substantiation for Public Input

There is no way to "continuously" enforce any policy. It implies 24x7 coverage and no other duties.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Thu Apr 19 11:59:19 EDT 2012

Committee Statement

Statement: There is no way to "continuously" enforce any policy. It implies 24x7 coverage and no other duties. The term "enforced" was editorially changed to "performed".

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(B) Fixed receptacles, equipment connected by cord and plug, and fixed electrical equipment shall be tested as follows:

1. When first installed
2. Where there is evidence of damage
3. After any repairs
4. At intervals not exceeding 6 months

Statement of Problem and Substantiation for Public Input

In my experience, 12 months is an adequate interval for inspection of equipment and receptacles. The committee has not provided any documentation for showing that a six month interval is necessary.

The cost in person power to have a six month interval is twice that of a 12 month interval. The committee needs to have documented justification before imposing that upon institutions.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submital Date: Thu Apr 19 12:02:46 EDT 2012

Committee Statement

Resolution: Section 6.3.2.2.8.5 is in its entirety a relaxation of 6.3.2.2.8.1. To further relax the requirement, it is essential to provide technical substantiation in accordance with 4.3.1.3(d) of the regulations. The submitter has not submitted this substantiation.

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Operating rooms defined as wet procedure locations shall be protected by either an isolated power or ground fault circuit interrupters system (IPS).

Statement of Problem and Substantiation for Public Input

Ground-fault circuit interrupters (GFCI) are dangerous in an operating room because of the danger of loss of power for a line to ground problem that is not likely to be dangerous assuming that the ground wire is intact. GFCI interrupt the power in the event of a problem and that is very bad for patient care.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Thu Apr 19 11:48:08 EDT 2012

Committee Statement

Resolution: These concerns were addressed in FR-14.

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Critical care rooms (Category 1 Room) shall be served only by a Type I EES.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self

Committee Statement

Resolution: FR-16-NFPA 99-2012
Statement: It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. In addition, The term "rooms" was changed to "spaces" to correlate with changes being made to much of Chapter 6 under the following substantiation: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

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6.3.2.2.10.2

General care rooms (Category 2 Room) Category 2 rooms shall be served by a Type I or Type II EES.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 19:16:18 EDT 2012

Committee Statement

Resolution: FR-16-NFPA 99-2012
Statement: It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. In addition, The term "rooms" was changed to "spaces" to correlate with changes being made to much of Chapter 6 under the following substantiation: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

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6.3.2.2.10.3

A Type I EES serving a critical care room (Category 1 Room) shall be permitted to serve general care rooms (Category 2 Room) in the same facility.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 19:19:28 EDT 2012

Committee Statement

Resolution: FR-16-NFPA 99-2012
Statement: It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. In addition, The term "rooms" was changed to "spaces" to correlate with changes being made to much of Chapter 6 under the following substantiation: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

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Basic care rooms Category 3 or Category 4 rooms shall not be required to be served by an EES.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 19:24:11 EDT 2012

Committee Statement

Resolution: FR-16-NFPA 99-2012
Statement: It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category. In addition, The term "rooms" was changed to "spaces" to correlate with changes being made to much of Chapter 6 under the following substantiation: Use of the term "room(s)" is normally defined as four walls and a door. This term is too restrictive for designers and will cause confusion for users of the Code. The term "room(s)" may restrict Code requirements or enforcement for perimeter areas that may need be including for patient safety. For example, one room may have many patient care spaces effecting the installing of branch circuits and receptacles required elsewhere in the code.

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6.3.2.5.1 Applicability.
The requirements of 6.3.2.5.2 shall apply to hospitals and other buildings housing critical care areas, housing Category 1 areas, or utilizing life-support equipment and buildings that provide essential utilities or services for the operation of critical care areas, of Category 1 areas, or electrical life-support equipment.

Statement of Problem and Substantiation for Public Input

It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self

Committee Statement

Resolution: FR-17-NFPA 99-2012
Statement: It is confusing for the document to define rooms or areas because the document has changed to a risk based document and the room is defined by risk category.

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Public Input No. 325-NFPA 99-2012 [Section No. 6.3.2.6.1.2(A)]

(A) The neutral of the primary winding shall be grounded in an approved manner.

Statement of Problem and Substantiation for Public Input

Not all isolation transformers primary windings require a neutral.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: self
Submittal Date: Tue Jun 19 14:26:56 EDT 2012

Committee Statement

Statement: Not all isolation transformers primary windings require a neutral.

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Public Input No. 101-NFPA 99-2012 [Section No. 6.4.1.1.1]
6.4.1.1.1.1 - Design Considerations

Dual sources of normal power shall be considered but shall not constitute an alternate source of power as described in this chapter.

6.4.1.1.1

1 Distribution system arrangements shall be designed to minimize interruptions to the electrical systems due to internal failures by the use of adequately rated equipment.

6.4.1.1.1.2

The following factors shall be considered in the design of the distribution system:

1. Abnormal voltages, such as single phasing of three-phase utilization equipment; switching or lightning surges, or both; voltage reductions; and so forth

2. Capability of achieving the fastest possible restoration of any given circuit(s) after clearing a fault

3. Effects of future changes, such as increased loading or supply capacity, or both

4. Stability and power capability of the prime mover during and after abnormal conditions

5. * Sequence reconnection of loads to avoid large current inrushes that trip overcurrent devices or overload the generator(s)

6. Bypass arrangements to allow testing and maintenance of system components that could not otherwise be maintained without disruption of important hospital functions

7. Effects of any harmonic currents on neutral conductors and equipment

Statement of Problem and Substantiation for Public Input

Is it possible to require someone to consider dual power? This doesn’t appear to be enforceable code language. The text provides no guidance on how to deal with dual sources of power.

Submitter Information Verification

Submitter Full Name: Doug Hohbein
Organization: Northcentral Fire Code Develop
Submittal Date: Thu Apr 26 07:42:39 EDT 2012

Committee Statement

Statement: It is not possible to require someone to consider dual power.

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6.4.1.1.7.1

The generating equipment used shall be either reserved exclusively for such service or normally used for other purposes of peak demand control, internal voltage control, load relief for the external utility, or cogeneration. If normally used for such other purposes, two or more sets shall be installed, such that the maximum actual demand likely to be produced by the connected load of the life safety and critical branches, as well as medical air compressors, medical–surgical vacuum pumps, electrically operated fire pumps, jockey pumps, fuel pumps, and generator accessories, shall be met by a multiple generator system, with the largest generator set out of service (not available). The alternate source of emergency power for illumination and identification of means of egress shall be the essential electrical system. The alternate power source for fire protection signaling systems shall be the essential electrical system.

It is recommended that the "Fire Pump(s)" be added to the list of loads that cannot be shed in paragraph 6.4.1.1.3.

Statement of Problem and Substantiation for Public Input

Currently, paragraph 6.4.1.1.7.1 implies that if a multiple paralleled generator system has only one remaining operational generator, then the remaining generator must have the capacity to support the fire pump plus the loads identified in paragraph 6.4.1.1.3 that shall not be shed.

Submitter Information Verification

Submitter Full Name: James Meade
Organization: US Army Corps of Engineers
Submittal Date: Tue Jun 12 13:47:02 EDT 2012

Committee Statement

Resolution: FR-20-NFPA 99-2012
Statement: Currently, paragraph 6.4.1.1.7.1 implies that if a multiple paralleled generator system has only one remaining operational generator, then the remaining generator must have the capacity to support the fire pump plus the loads identified in paragraph 6.4.1.1.3 that shall not be shed.

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Statement of Problem and Substantiation for Public Input

It is a well known fact that many short-circuits in electrical systems are actually ground faults. And it is ground faults that caused so many problems, from shocking people (low level ground faults) to burning down large electrical switchboards (high level ground faults). The electrical industry has addressed both of these issues quite adequately over the years.

GFCI circuit breakers and receptacles have been on the market for decades and have proven to save many lives that would have been lost because of accidental contact with an energized surface where very low levels of ground fault current could flow through a person, but were still large enough current to electrocute.

Overcurrent protective devices for mains and feeders have been required to detect, for 40+ years, much higher levels of ground fault current that were consistently burning down switchboards, but at current levels that were not high enough to open the overcurrent device before the switchboards literally burned down. This protection worked too well at first, often causing the main of a building to open because of a ground fault in a branch circuit. There were many documented incidents of whole wings of hospitals or even whole hospitals being shut down because of a fault in a ballast in a lighting branch circuit. As a result, requirements were adopted to prohibit the main in a hospital from opening due to a ground fault condition on a branch circuit. Those requirements are now found in 6.3.2.5.3 of NFPA 99 and in 517.17(C) of the 2011 NEC.

Unfortunately, the change made to 6.4.2.1.2.1 for the 2012 Edition has now nullified the safety requirements in both NFPA 99 6.3.2.5.3 and NEC 517.17(C) that have been in place for so many years. The current NFPA 99 6.4.2.1.2.1 language literally allows the consulting engineer to design an electrical system where the main of a hospital can open due to a ground fault in a ballast in a lighting branch circuit. (The consulting engineer doesn’t have to worry about curves crossing below 0.1 seconds.) The latest edition of NFPA 99 has taken a giant safety step backward, back to the time when whole wings of hospitals or whole hospitals were without power because of a ground fault in a branch circuit. Removing the allowance for mains to shut down for ground faults that would cause opening the main in under 0.1 seconds will certainly save lives and take us back to the levels of safety upon which we have learned to rely.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: IBEW
Submittal Date: Thu Jun 21 08:36:15 EDT 2012

Committee Statement

Resolution: The committee has reviewed this issue over the past several revisions of NFPA 99. There has been insufficient technical justification submitted that would justify the proposed change.

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Public Input No. 56-NFPA 99-2012 [ Section No. 6.4.2.1.2.1 ]

6.4.2.1.2.1
Overcurrent protective devices serving the essential electrical system shall selectively coordinate for the period of time that a fault's duration extends beyond be selectively coordinated on time current curves between 0.1 second seconds and infinite time .

Statement of Problem and Substantiation for Public Input

The 2012 NFPA 99 text states that coordination is to take place for “faults” that endure for longer than 0.1 seconds. A better terminology would be “overcurrents” as this term more aptly reflects overload and faulted conditions. References to current levels could cross over regions of instantaneous overlap, so reference to current levels or time to clear really does not adequately represent the intent. Referencing time current curves, which are widely published and used, would be an easily communicated medium. Perhaps even a time current curve being shown would be more explicit. References to performance of such a system under arcing and or bolted fault conditions should also be spelled out as much as can be reasonably expected. It has been my experience in performing coordination studies that there is a significant amount of disparity among affected protective device manufacturers, consulting engineers, and clients regarding this issue, and a wide variety of approaches are taken in design with really an assumed basis for performance. Criteria for overall performance would more clearly distinguish whether an essential system meets the intent or not. This remark pertains also to sections 6.5.2.1.1 and 6.6.2.1.1

Submitter Information Verification

Submitter Full Name: Mark Magee
Organization: Trindera Engineering
Submittal Date: Thu Apr 05 13:53:36 EDT 2012

Committee Statement

Resolution: The committee has reviewed this issue over the past several revisions of NFPA 99. There has been insufficient technical justification submitted that would justify the proposed change.

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Public Input No. 331-NFPA 99-2012 [ Section No. 6.4.2.2.3.2 ]
6.4.2.2.3.2
The life safety branch shall supply power for lighting, receptacles, and equipment as follows:

(1) Illumination of means of egress in accordance with NFPA 101, Life Safety Code
(2) Exit signs and exit directional signs in accordance with NFPA 101, Life Safety Code
(3) Hospital communications systems, where used for issuing instruction during emergency conditions
(4) Generator set location as follows:
   (a) Task illumination
   (b) Battery charger for emergency battery-powered lighting unit(s)
   (c) Select receptacles at the generator set location and essential electrical system transfer switch locations
(5) Elevator cab lighting, control, communications, and signal systems
(6) Electrically powered doors used for building egress
(7) Fire alarms and auxiliary functions of fire alarm combination systems complying with NFPA 72, National Fire Alarm and Signaling Code

Statement of Problem and Substantiation for Public Input

The phrase "...for lighting, receptacles and equipment..." is redundant and may confuse the end user.

Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: Self
Submittal Date: Wed Jun 20 12:33:36 EDT 2012

Committee Statement

Resolution: FR-21-NFPA 99-2012
Statement: The phrase "...for lighting, receptacles and equipment..." is redundant and may confuse the end user.

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6.4.2.3.4
Loads dedicated to a specific generator, including the fuel transfer pump(s), ventilation fans, electrically operated louvers, controls, cooling system, and other generator accessories essential for generator operation, shall be connected to the life safety branch or the output terminals of the generator with overcurrent protective devices.

Statement of Problem and Substantiation for Public Input

This change is necessary for two reasons:
1) Allowing electrical equipment to be connected directly to the generator terminals, even though series overcurrent devices are installed, creates a situation where enormous amounts of incident energy are available on these circuits. This presents an unnecessary hazard to electricians who may be required in an emergency to work on these circuit while energized.
2) Allowing the associated electrical equipment to be directly connected to the generator terminals means the associated equipment will only work when the generator is running and up to speed. This is a problem should the generator go offline and the associated equipment effect other generation equipment in the space, also issues with associated equipment commissioning, certification and testing occur when the equipment is only energized when the generator itself is online.

Submitter Information Verification

Submitter Full Name: Stephen Lipster  
Organization: The Electrical Trades Center  
Affiliation: Self  
Submittal Date: Wed Jun 20 12:39:08 EDT 2012

Committee Statement

Resolution: There would rarely be a reason to conduct live work on the loads mentioned when they were driven from the generator.

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6.5.2.1.1
Overcurrent protective devices serving the essential electrical system shall selectively coordinate for the period of time that a fault’s duration extends beyond 0.1 second – be selectively coordinated.

Statement of Problem and Substantiation for Public Input

It is a well known fact that many short-circuits in electrical systems are actually ground faults. And it is ground faults that caused so many problems, from shocking people (low level ground faults) to burning down large electrical switchboards (high level ground faults). The electrical industry has addressed both of these issues quite adequately over the years.

GFCI circuit breakers and receptacles have been on the market for decades and have proven to save many lives that would have been lost because of accidental contact with an energized surface where very low levels of ground fault current could flow through a person, but were still large enough current to electrocute.

Overcurrent protective devices for mains and feeders have been required to detect, for 40+ years, much higher levels of ground fault current that were consistently burning down switchboards, but at current levels that were not high enough to open the overcurrent device before the switchboards literally burned down. This protection worked too well at first, often causing the main of a building to open because of a ground fault in a branch circuit. There were many documented incidents of whole wings of hospitals or even whole hospitals being shut down because of a fault in a ballast in a lighting branch circuit. As a result, requirements were adopted to prohibit the main in a hospital from opening due to a ground fault condition on a branch circuit. Those requirements are now found in 6.3.2.5.3 of NFPA 99 and in 517.17(C) of the 2011 NEC.

Unfortunately, the change made to 6.5.2.1.1.1 for the 2012 Edition has now nullified the safety requirements in both NFPA 99 6.3.2.5.3 and NEC 517.17(C) that have been in place for so many years. The current NFPA 99 6.5.2.1.1.1 language literally allows the consulting engineer to design an electrical system where the main of a hospital can open due to a ground fault in a ballast in a lighting branch circuit. (The consulting engineer doesn’t have to worry about curves crossing below 0.1 seconds.) The latest edition of NFPA 99 has taken a giant safety step backward, back to the time when whole wings of hospitals or whole hospitals were without power because of a ground fault in a branch circuit. Removing the allowance for mains to shut down for ground faults that would cause opening the main in under 0.1 seconds will certainly save lives and take us back to the levels of safety upon which we have learned to rely.

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Submitter Information Verification

Submitter Full Name: Stephen Lipster
Organization: The Electrical Trades Center
Affiliation: IBEW
Submittal Date: Thu Jun 21 08:42:59 EDT 2012

Committee Statement

Resolution: The committee has reviewed this issue over the past several revisions of NFPA 99. There has been insufficient technical justification submitted that would justify the proposed change.

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Public Input No. 112-NFPA 99-2012 [New Section after 6.5.2.2.1.1]

**TITLE OF NEW CONTENT**

Type your content here ... The essential electrical system shall be divided into the following two branches:

1. Life Safety branch
2. Equipment branch

Statement of Problem and Substantiation for Public Input

This will clarify the requirement of the branches needed and will match the format in 6.4.2.2.1.1 for type 1 EES.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Submittal Date: Wed May 02 22:09:43 EDT 2012

Committee Statement

Resolution: ____________
Statement: ____________

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Statement of Problem and Substantiation for Public Input

Rationale: Nurse call systems are described to be powered by the Critical Branch circuit of a Type 1 EES but, there is no reference to powering nurse call systems for a Type 2 EES. Therefore, for Type 2 EES, it is indeterminate as to which branch circuit should be used for powering the nurse call system. The recommendation is to add nurse call systems as item (6) on the Equipment Branch of a Type 2 EES. Doing so will be consistent with the functions described for the Type 1 EES critical branch (i.e., compare 6.5.2.2.3.3 with 6.4.2.2.4.2 and add additional systems, equipment items and functions that are missing in the former.)

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 08:47:42 EDT 2012

Committee Statement

Resolution: FR-24-NFPA 99-2012
Statement: Rationale: Nurse call systems are described to be powered by the Critical Branch circuit of a Type 1 EES but, there is no reference to powering nurse call systems for a Type 2 EES. Therefore, for Type 2 EES, it is indeterminate as to which branch circuit should be used for powering the nurse call system. The recommendation is to add nurse call systems as item (6) on the Equipment Branch of a Type 2 EES. Doing so will be consistent with the functions described for the Type 1 EES critical branch (i.e., compare 6.5.2.2.3.3 with 6.4.2.2.4.2 and add additional systems, equipment items and functions that are missing in the former.)

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Statement of Problem and Substantiation for Public Input

It is a well known fact that many short-circuits in electrical systems are actually ground faults. And it is ground faults that caused so many problems, from shocking people (low level ground faults) to burning down large electrical switchboards (high level ground faults). The electrical industry has addressed both of these issues quite adequately over the years.

GFCI circuit breakers and receptacles have been on the market for decades and have proven to save many lives that would have been lost because of accidental contact with an energized surface where very low levels of ground fault current could flow through a person, but were still large enough current to electrocute.

Overcurrent protective devices for mains and feeders have been required to detect, for 40+ years, much higher levels of ground fault current that were consistently burning down switchboards, but at current levels that were not high enough to open the overcurrent device before the switchboards literally burned down. This protection worked too well at first, often causing the main of a building to open because of a ground fault in a branch circuit. There were many documented incidents of whole wings of hospitals or even whole hospitals being shut down because of a fault in a ballast in a lighting branch circuit. As a result, requirements were adopted to prohibit the main in a hospital from opening due to a ground fault condition on a branch circuit. Those requirements are now found in 6.3.2.5.3 of NFPA 99 and in 517.17(C) of the 2011 NEC.

Unfortunately, the change made to 6.6.2.1.1.1 for the 2012 Edition has now nullified the safety requirements in both NFPA 99 6.3.2.5.3 and NEC 517.17(C) that have been in place for so many years. The current NFPA 99 6.6.2.1.1.1 language literally allows the consulting engineer to design an electrical system where the main of a hospital can open due to a ground fault in a ballast in a lighting branch circuit. (The consulting engineer doesn’t have to worry about curves crossing below 0.1 seconds.) The latest edition of NFPA 99 has taken a giant safety step backward, back to the time when whole wings of hospitals or whole hospitals were without power because of a ground fault in a branch circuit. Removing the allowance for mains to shut down for ground faults that would cause opening the main in under 0.1 seconds will certainly save lives and take us back to the levels of safety upon which we have learned to rely.

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Submitter Information Verification

Submitter Full Name: Stephen Lipster  
Organization: The Electrical Trades Center  
Affiliation: IBEW  
Submittal Date: Thu Jun 21 08:51:31 EDT 2012

Committee Statement
Resolution: The committee has reviewed this issue over the past several revisions of NFPA 99. There has been insufficient technical justification submitted that would justify the proposed change.

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Public Input No. 113-NFPA 99-2012 [ New Section after 6.6.2.2.1 ]

TITLE OF NEW CONTENT
Type your content here ...
...The essential electrical system shall consist of the following branch
(1) Life Safety branch

Statement of Problem and Substantiation for Public Input

This will clarify the requirement of only 1 branch requirement and will match the format in 6.4.2.2.1.2

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Submittal Date: Wed May 02 22:19:12 EDT 2012

Committee Statement

Resolution: FR-26-NFPA 99-2012
Statement: There is nowhere in NFPA 99 that requires or permits the use of a Type III essential electrical system.

Copyright Assignment

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Public Input No. 110-NFPA 99-2012 [Section No. 6.6.3.1.1]

6.6.3.1.1
The life safety and critical branches shall have an alternate source of power separate and independent from the normal source that will be effective for a minimum of 1 ½ hours after loss of the normal source.

Statement of Problem and Substantiation for Public Input

It is not necessary to have a critical Branch on a type 3 EES

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Submittal Date: Wed May 02 21:51:08 EDT 2012

Committee Statement

Resolution: FR-26-NFPA 99-2012
Statement: There is nowhere in NFPA 99 that requires or permits the use of a Type III essential electrical system.

Copyright Assignment

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Public Input No. 196-NFPA 99-2012 [ Section No. 6.6.3.1.1 ]

6.6.3.1.1

The life safety and critical and equipment branches shall have an alternate source of power separate and independent from the normal source that will be effective for a minimum of 1 1/2 hours after loss of the normal source.

Statement of Problem and Substantiation for Public Input

Rationale: Reference to the “critical” branch is inconsistent with the formulation of EES Type 1 and Type 2 systems, where EES Type 1 defines life safety, critical, and equipment branches and EES Type 2 defines life safety and equipment branches. In the 2012 Code Handbook, exhibit 6.7 depicts these structures for Type 1 and Type 2 systems but, does not depict any identification of branch circuits for EES Type 3. If there is to be two distinct branch circuits for EES Type 3 systems then, we are recommending an ‘equipment’ branch vice ‘critical’ branch, as an EES Type 3 system should not be of a higher designation than a Type 2 system.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 08:53:09 EDT 2012

Committee Statement

Resolution: FR-26-NFPA 99-2012
Statement: There is nowhere in NFPA 99 that requires or permits the use of a Type III essential electrical system.

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6.6.3.1.2

The life safety and critical and equipment branches shall be so arranged that, in the event of failure of the normal power source, the alternate source of power shall be automatically connected to the load within 10 seconds.

Statement of Problem and Substantiation for Public Input

Rationale: Reference to the “critical” branch is inconsistent with the formulation of EES Type 1 and Type 2 systems, where EES Type 1 defines life safety, critical, and equipment branches and EES Type 2 defines life safety and equipment branches. In the 2012 Code Handbook, exhibit 6.7 depicts these structures for Type 1 and Type 2 systems but, does not depict any identification of branch circuits for EES Type 3. If there is to be two distinct branch circuits for EES Type 3 systems then, we are recommending an ‘equipment’ branch vice ‘critical’ branch, as an EES Type 3 system should not be of a higher designation than a Type 2 system.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 08:55:48 EDT 2012

Committee Statement

Resolution: FR-26-NFPA 99-2012
Statement: There is nowhere in NFPA 99 that requires or permits the use of a Type III essential electrical system.

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Public Input No. 283-NFPA 99-2012 [ Section No. 7.3.1.2.1.4(A) ]

(A) The EF shall be permitted to be located with the emergency room (ER).

(B) Where the EF is combined with the ER, the space and electrical power and cabling shall be added to the ER to accommodate the telecommunications service provider's space and access requirements.

Statement of Problem and Substantiation for Public Input

The current section includes two requirements in one numbered section. It is easier to follow if they are separated and is in accordance with the NFPA Manual of Style.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self

Committee Statement

Statement: The current section includes two requirements in one numbered section. It is easier to follow if they are separated and is in accordance with the NFPA Manual of Style. Incorrect reference to emergency room was resolved.

Copyright Assignment

I, David Dagenais, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Input (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Input in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Input and that I have full power and authority to enter into this copyright assignment.

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Public Input No. 346-NFPA 99-2012 [ Section No. 7.3.1.2.1.4(E) ]

(E)—
Other underground utilities, such as electrical, water, gas, and sewer, shall not be located below the EF.

Statement of Problem and Substantiation for Public Input

Underground utilities should not affect the operation of equipment in the EF. This area should not be treated any differently than other areas near utility entrance.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 15:50:59 EDT 2012

Committee Statement

Statement: Underground utilities should not affect the operation of equipment in the EF. This area should not be treated any differently than other areas near utility entrance.

Copyright Assignment

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Public Input No. 289-NFPA 99-2012 [ New Section after 7.3.1.2.1.4(F) ]

A.7.3.1.2.1.4(F)
Such sources of electromagnetic interference include, but are not limited to, medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio and radar systems.

Statement of Problem and Substantiation for Public Input

: This informational material was previously located within the body of the code. It better belongs here as annex material.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submital Date: Thu Jun 14 12:46:15 EDT 2012

Committee Statement

Statement: This informational material was previously located within the body of the code. It better belongs here as annex material.

Copyright Assignment

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Public Input No. 288-NFPA 99-2012 [ Section No. 7.3.1.2.1.4(F) ]

(F)
The EF shall be located not less than 3.66 m (12 ft) from any permanent source of electromagnetic interference, such as medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio and radar systems, or other sources of electromagnetic interference.

Statement of Problem and Substantiation for Public Input

These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 12:42:55 EDT 2012

Committee Statement

Resolution: FR-29-NFPA 99-2012
Statement: These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

Copyright Assignment

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Public Input No. 290-NFPA 99-2012 [Section No. 7.3.1.2.1.4(G)]

(G) The EF shall be located in an area not subject to flooding and
(H) shall be as close as practicable to the building communications service entrance point.

Statement of Problem and Substantiation for Public Input

The current section includes two requirements in one numbered section. It is easier to follow if they are separated and is in accordance with the NFPA Manual of Style.

Submitter Information Verification

Submitter Full Name: David Dagenais  
Organization: Wentworth-Douglass Hospital  
Affiliation: self  
Submittal Date: Thu Jun 14 12:50:55 EDT 2012

Committee Statement

Resolution: FR-31-NFPA 99-2012  
Statement: The current section includes two requirements in one numbered section. It is easier to follow if they are separated and is in accordance with the NFPA Manual of Style.

Copyright Assignment

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Public Input No. 282-NFPA 99-2012 [ New Section after 7.3.1.2.1.5 ]

7.3.1.2.1.5 Security. Access to EFs shall be restricted and controlled.

Type your content here ...

Statement of Problem and Substantiation for Public Input

: Security is addressed for both the TER and TR, it makes sense to require security for the EF as well.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Wed Jun 13 20:51:13 EDT 2012

Committee Statement

Statement: Security is addressed for both the TER and TR, it makes sense to require security for the EF as well.

Copyright Assignment

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Public Input No. 291-NFPA 99-2012 [ Section No. 7.3.1.2.1.5(B) ]

(B)*
Circuits serving equipment in the EF shall be connected to the critical power branch of the emergency essential electrical system.

Statement of Problem and Substantiation for Public Input

Revised to coincide with the terms now used in the code.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 12:54:05 EDT 2012

Committee Statement

Resolution: FR-33-NFPA 99-2012
Statement: This change adds clarity to the Code. As used in this section, the word “emergency” was changed to “essential” in the previous edition of NFPA 99. This correction should be made for continuity of the document.

Copyright Assignment

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Public Input No. 347-NFPA 99-2012 [Section No. 7.3.1.2.1.5(B)]

(B)*
Circuits serving equipment in the EF shall be connected to the critical power branch of the emergency essential electrical system.

Statement of Problem and Substantiation for Public Input

This change adds clarity to the Code. As used in this section, the word “emergency” was changed to “essential” in the previous edition of NFPA 99. This correction should be made for continuity of the document.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [Not Specified]
Submittal Date: Thu Jun 21 15:52:14 EDT 2012

Committee Statement

Resolution: FR-33-NFPA 99-2012
Statement: This change adds clarity to the Code. As used in this section, the word “emergency” was changed to “essential” in the previous edition of NFPA 99. This correction should be made for continuity of the document.

Copyright Assignment

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7.3.1.2.1.7 Fire Suppression Systems.
Sprinklers shall be provided with wire cages or shall be recessed to prevent accidental operation.

Statement of Problem and Substantiation for Public Input

The appropriate phrase is "sprinklers" and not "sprinkler heads." Furthermore it should be noted that the Committee should re-evaluate the entire paragraph. Concealed sprinklers, which should probably also be acceptable, would not be permitted by the reference to recessed sprinklers.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 20:36:52 EDT 2012

Committee Statement

Resolution: FR-36-NFPA 99-2012
Statement: The appropriate phrase is "sprinklers" and not "sprinkler heads."

Copyright Assignment

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7.3.1.2.2.1 General.

The telecommunications equipment room (TER) houses the main networking equipment and shall be permitted to also house application servers and data storage devices that serve the health care facility if the TER is being utilized as a data center.

7.3.1.2.2 In addition.

Central equipment for other communications systems shall be permitted to be housed in the TER.

Statement of Problem and Substantiation for Public Input

This breaks the two "shall" requirements in the section into two separate sections.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 12:59:33 EDT 2012

Committee Statement

Resolution: FR-41-NFPA 99-2012
Statement: This breaks the two "shall" requirements in the section into two separate sections and correct the abbreviation for the entrance facility to (EF) as used throughout the chapter.

Copyright Assignment

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7.3.1.2.2*

The TER shall be a separate space and shall not be used for any other purposes besides networking, data storage, and processing, except that the telecommunications entrance facility (TEF EF) can be combined with the TER space.

Statement of Problem and Substantiation for Public Input

The telecommunication entrance facility is abbreviated “EF” in all other sections of the document.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:03:38 EDT 2012

Committee Statement

Resolution: FR-41-NFPA 99-2012
Statement: This breaks the two “shall” requirements in the section into two separate sections and correct the abbreviation for the entrance facility to (EF) as used throughout the chapter.

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A.7.3.1.2.2.5(E)

Such sources of electromagnetic interference include, but are not limited to, medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio and radar systems.

Type your content here ...

Statement of Problem and Substantiation for Public Input

This informational material was previously located within the body of the code. It better belongs here as annex material.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:14:45 EDT 2012

Committee Statement

Resolution: FR-54-NFPA 99-2012
Statement: This informational material was previously located within the body of the code. It better belongs here as annex material.

Copyright Assignment

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Public Input No. 294-NFPA 99-2012 [Section No. 7.3.1.2.2.5(E)]

(E)
The TER shall be located not less than 3.66 m (12 ft) from any permanent source of electromagnetic interference, such as medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio transmission systems, or other sources of electromagnetic interference.

Statement of Problem and Substantiation for Public Input

These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submital Date: Thu Jun 14 13:10:21 EDT 2012

Committee Statement

Statement: These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

Copyright Assignment

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(C)
Circuits serving other communications equipment in the TER shall be connected to the essential electrical system. This equipment shall include the telephone system, nurse call, staff assistance call, and code systems.

Statement of Problem and Substantiation for Public Input
Revise this section to provide clarity for code for users and enforcement authority. The equipment in these rooms shall be connected to the essential electrical system. Providing a list of items, as currently shown, is not necessary as other equipment may be installed in the TER that is not on the list leading to confusion of the intent of this section.

Submitter Information Verification
Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 15:55:06 EDT 2012

Committee Statement
Statement: Revise this section to provide clarity for code for users and enforcement authority. The equipment in these rooms shall be connected to the essential electrical system. Providing a list of items, as currently shown, is not necessary as other equipment may be installed in the TER that is not on the list leading to confusion of the intent of this section.

Copyright Assignment
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A.7.3.1.2.3.6(D)
such as medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio transmission systems, or other sources of electromagnetic interference.

Statement of Problem and Substantiation for Public Input

This informational material was previously located within the body of the code. It better belongs here as annex material.

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Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:27:58 EDT 2012

Committee Statement

Statement: This informational material was previously located within the body of the code. It better belongs here as annex material.

Copyright Assignment

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Public Input No. 296-NFPA 99-2012 [ Section No. 7.3.1.2.3.6(D) ]

(D)
The TR shall be located a minimum of 3.66 m (12 ft) from any permanent source of electromagnetic interference, such as medical imaging equipment, transformers, motors, variable frequency drives, induction heaters, arc welders, radio transmission systems, or other sources of electromagnetic interference.

Statement of Problem and Substantiation for Public Input

These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:23:02 EDT 2012

Committee Statement

Statement: These examples, while useful, better belong as annex material as they do not change what the requirement is. Another input has been submitted to add this to the annex.

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Public Input No. 298-NFPA 99-2012 [ Section No. 7.3.1.2.3.8(B) ]

(B) Circuits serving the TR shall be connected to the critical power branch of the emergency power system.

Statement of Problem and Substantiation for Public Input

Revised to coincide with the terms now used in the code.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:34:26 EDT 2012

Committee Statement

Resolution: FR-34-NFPA 99-2012
Statement: Revised to coincide with the terms now used in the code.

Copyright Assignment

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(B) Circuits serving the TR shall be connected to the critical power branch of the essential electrical system.

Statement of Problem and Substantiation for Public Input

This change adds clarity to the Code. As used in this section, the word “emergency” was changed to “essential” in the previous edition of NFPA 99. This correction should be made for continuity of the document.

Submitter Information Verification

Submitter Full Name: GARY BECKSTRAND
Organization: [ Not Specified ]
Submittal Date: Thu Jun 21 15:59:37 EDT 2012

Committee Statement

Resolution: FR-34-NFPA 99-2012
Statement: Revised to coincide with the terms now used in the code.

Copyright Assignment

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Public Input No. 279-NFPA 99-2012 [Section No. 7.3.1.2.3.9(B)]

(B) Sprinkler heads - Sprinklers shall be provided with wire cages to or shall be recessed to prevent accidental discharge.

Statement of Problem and Substantiation for Public Input

The appropriate phrase is "sprinklers" not "sprinkler heads." The inclusion of recessed sprinklers has been included to be consistent with 7.3.1.2.1.7. It is not clear why recessed sprinklers are acceptable for EF but not for TR's. However, it should also be noted that recessed may not be the correct reference in either location. A concealed sprinkler is not a recessed sprinkler but would probably be considered acceptable in either location.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 20:27:56 EDT 2012

Committee Statement

Resolution: FR-51-NFPA 99-2012
Statement: The appropriate phrase is "sprinklers" not "sprinkler heads." The inclusion of recessed sprinklers has been included to be consistent with 7.3.1.2.1.7.

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Public Input No. 299-NFPA 99-2012 [ Section No. 7.3.1.2.5.1 ]

7.3.1.2.5.1 General.
Outside plant (OSP) infrastructure shall consist of the conduits, vaults, and other pathways and cabling used to connect buildings on a campus and to provide services from off-campus service providers.

Statement of Problem and Substantiation for Public Input

This current section is not a requirement. It should either be revised to be an enforceable statement as proposed, or a definition should be added in Chapter 3 if that is the intent of this section.

Submitter Information Verification

Submitter Full Name: David Dagenais
Organization: Wentworth-Douglass Hospital
Affiliation: self
Submittal Date: Thu Jun 14 13:44:34 EDT 2012

Committee Statement

Statement: This current section was not a requirement. It has been revised to be an enforceable statement.

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Public Input No. 322-NFPA 99-2012 [ Section No. 7.3.3.1 ]

7.3.3.1 Nurse Call Systems.

7.3.3.1.1 General.
The nurse call systems shall communicate patient and staff calls for assistance and information in health care facilities. The nurse call systems shall be the audiovisual type and listed for the purpose.

7.3.3.1.1.1 The nurse call systems shall provide for communication of patient and staff calls for assistance and information, medical device alarms, and patient safety and security alarms.

7.3.3.1.2 Supplemental features shall be permitted to include call initiation to alphanumeric pagers and
Supplemental features shall be permitted to include call initiation to alphanumeric pagers and other wireless devices carried by health care facility staff.

7.3.3.1.2 Patient Area Call Station.
Each patient bed location shall be provided with a calling device. Not more than two calling devices, serving adjacent beds, shall be served by a single audiovisual call station providing two-way voice communication.

7.3.3.1.3 Signals.
Activation of a patient bed calling device shall cause visual signal activation in:

3 Call Signals and Call Notification. Call signals, such as an emergency resuscitation alarm (code call), emergency call, patient call for help or assistance, medical device alarm, and general purpose routine calls such as privacy, or housekeeping requests shall be initiated via call stations or calling devices.

7.3.3.1.3.1 Initiation of a call signal shall activate call notification. Call notification shall be a visual signal in the corridor at the patient room door and at the associated nursing calling station, the calling station, and associated nursing unit support areas, including medication, nourishment, charting, storage, and exam/treatment rooms and clean and soiled linen storage areas and visual and audible annunciation at the the primary nursing station and other nursing unit support areas as required by state and local codes and as determined by the facility and AHJ.

7.3.3.1.4— 3.2
Additional visual signals shall be provided at corridor intersections where individual patient door signals are not directly visible from the central nursing station.

7.3.3.1.5
A visual signal indication shall be provided at each calling station indicating voice circuit operation.

7.3.3.1.6 Emergency Call.
Each calling station shall be capable of initiating a visual and audible emergency signal, distinct from the regular nurse call signal, that can be turned off only at that station. The emergency call shall activate an annunciator at the nearest associated nursing station and a visual signal in the corridor at the patient room door and at other locations as directed by the facility.

7.3.3.1.6.1
Emergency calling devices shall be provided at each inpatient toilet, bath, shower, or sitz bath and shall be accessible to a patient lying on the floor. A pull cord shall be permitted to be used for this access.

7.3.3.1.6.2
Emergency calling devices shall be provided in outpatient and treatment areas where patients can be incapacitated.

7.3.3.1.6.3
Emergency branches calling devices shall be provided in patient toilet rooms in imaging suites, renal dialysis units, and similar areas.

7.3.3.1.7 Staff Emergency Assistance Call.

7.3.3.1.7.1
An emergency assistance system for staff to summon additional assistance shall be provided in each operating, delivery, recovery, emergency, examination, treatment, and intermediate care area, and in critical care units, nurseries, special procedure rooms, cardiac catheterization rooms, stress test areas, triage, outpatient surgery, admission and discharge areas, and areas for psychiatric patients, including seclusion and security rooms, anterooms and toilet rooms that serve them, communal toilet and bathing facility rooms, and dining, activity, therapy, exam, and treatment rooms.

7.3.3.1.7.2
Other communications systems that perform the same function shall be permitted.

7.3.3.1.8 Emergency Resuscitation Alarm.
The call system shall include provisions for an emergency code resuscitation alarm to summon assistance from outside the unit for critical care, pre-op, recovery, and emergency units.

7.3.3.1.9
In areas where patients are under constant visual surveillance, such as pre-op, recovery, and
emergency units, the nurse call system shall be permitted to be limited to the staff emergency assistance call and the emergency resuscitation alarm. Two-way communication from the patient bed location shall not be required.

7.3.3.1.10
A nurse call system shall be provided for geriatric, Alzheimer's, and other dementia units, and all hardware shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and call cords or strings in excess of 152 mm (6 in.) shall not be permitted.

7.3.3.1.11
A nurse call system shall not be required in psychiatric units, but, if one is included, all hardware shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and control to limit unauthorized use shall be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: Currently, the code does not clearly establish or describe the types of call signals that can be produced by a nurse call system. Neither does the code establish the generally understood and used term “Call Notification”, which is the combination of visual and audible signaling to alert staff. Further, the code does not currently require audible annunciation at the nursing station or nursing unit support areas. Audible and visual annunciation is an established requirement in the UL 1069 standard. With this change, we are proposing a generic construct for the implementation of call notification. We are also highlighting the fact that it may be undesirable to require call notification at all of the staff areas that the code currently prescribes. Such notifications may be unnecessary and undesirable in some locations and noise fatigue may surely result in others. Noting also that, there may be specific state and local code requirements that apply (e.g., State of California.) Therefore, we strongly recommend to allow the facility and AHJ determine the exact locations for primary and secondary call notification, which would certainly lead to compliance with state and local codes.

Rationale: Recommending a re-index of the requirement to be logically aligned under the “Call Signals and Call Notification” topic. No other changes to the requirement would be necessary.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Tue Jun 19 11:03:18 EDT 2012

Committee Statement

Resolution: Add Task Group Subs.

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Public Input No. 199-NFPA 99-2012 [ Section No. 7.3.3.1.1 ]

Original Hide Markup

7.3.3.1.1 General.
The nurse call systems shall communicate patient and staff calls for assistance and information in health care facilities. The nurse call systems shall be the audiovisual type and listed for the purpose listed to ANSI/UL 1069, Standard for Hospital Signaling and Nurse Call Equipment.

7.3.3.1.1.1 The nurse call systems shall provide for two-way audio communication of patient and staff calls for assistance and information. Call notifications shall be provided for medical device alarms, patient safety and security alarms, staff emergencies, emergency resuscitation alarms, and staff or patient requests for help or assistance.

7.3.3.1.1.2 Supplemental features shall be permitted to include call initiation, call notification to alphanumeric pagers and other wireless devices carried by health care facility staff. If provided, the wireless phone and paging integration feature shall be in accordance with 7.3.3.6.

Statement of Problem and Substantiation for Public Input

7.3.3.1.1 -Rationale: As currently written, it is open to interpretation as to which standard can be used to establish listing credibility. The ANSI/UL1069 standard is specifically written and widely recognized as the certification standard for systems and equipment of this intended use. 7.3.3.1.1 --Rationale: As currently written, there is very little difference between this clause and that which is previously stated in 7.3.3.1.1. We are recommending an expansion of the first sentence to specifically describe “two-way audio” communication and “requests for” information. The second sentence should be expanded to introduce the concept of “call notification”, which is a generally understood term and functional capability of all listed nurse call systems. Call notification will be referenced and further described in subsequent proposals.

7.3.31.1.2 --Rationale: It is incorrect to state call “initiation” in this case. In fact, it is call “notification” which is what is sent to pagers and wireless devices. Also, it is unclear that the supplemental feature advanced by this requirement would also need to be in accordance with the requirements specified under 7.3.3.6. It is recommended to explicitly tie these two requirements together.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 09:04:28 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.2.2 Calling devices such as wired or wireless pillow speaker pendant controls, call cords, or patient or staff worn personal pendants, shall be permitted to initiate patient or staff calls.

Statement of Problem and Substantiation for Public Input

Rationale: Currently, the code does not distinguish between 'call stations' and 'call devices', which are separate and unique elements (albeit mutually dependent.) Clause 7.3.3.1.2 refers to a “calling device” that is to be provided at each patient bed location. However, the code does not provide a description of a “calling device” and thereby 'muddles' the distinction between that and a “calling station”. Calling devices are generically known as “call initiating devices” and can be attached to a patient station for wired implementations, or can be automatically associated with a nearby patient station with a wireless implementation. Calling devices by design are portable (i.e., they can be carried or conveyed from one location to another) and are connected to or associated with a single patient station.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 09:30:15 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.2 Patient Area Call Station.

Patient area call stations shall provide the ability to initiate an Emergency Resuscitation Alarm (Code Call), Emergency Call, Medical Device Alarm, and Patient Call, the functions of which are permitted to be integrated in one station or which may be individually provided as a standalone station. Call stations shall be located in patient care rooms and patient care vicinities as described by this code, and as required by state and local codes, facility needs, and AHJ determination.

7.3.3.1.2.1 Each patient bed location shall be provided with a calling device. Not more than two calling devices, serving adjacent beds, shall be served by a single audiovisual audio visual call station providing two-way voice communication.

Statement of Problem and Substantiation for Public Input

Rationale: “Patient Areas” may contain many types and combinations of call stations and functions (e.g., Code, Emergency, Medical Device Alarm, Patient, and others.) These types of stations are generically referred to as “call initiation stations”. A single station can be equipped and configured to activate a single call type or a number of different call types (e.g., Code Blue, Code Pink, Emergency, Help, Assistance, Auxiliary Device Alarm, Housekeeping, etc.) We believe that it is important for the code to describe “Patient Area Call Stations” as capable of providing single or multiple call types on a single station. This is standard industry practice and expected capability. We also believe that it is important to establish that state and local codes may prescribe the types and quantities of call stations and functions that are required for different areas of a facility. For example, for 2013, the California Electrical Code (CEC) is quite prescriptive in their requirements, which are primarily based on the Guidelines for Design and Construction of Health Care Facilities, by the Facility Guidelines Institute, 2010 edition. However, while the CEC is prescriptive, it also maintains flexibility for tailoring the requirements to facility needs. In so doing, the AHJ is required to be involved for review and approval. The terminology ”patient care rooms” and ”patient care vicinity” are NFPA 99 code definitions. In change proposals that follow, we will be proposing statements for call cancelation at the “station or room of origin”, which should be understood as “patient care vicinity” and “patient care room” respectively.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 09:15:58 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.3.3 A visual or aural signal indication shall be provided at each audio calling station to indicate voice circuit operation.

Statement of Problem and Substantiation for Public Input

Rationale: Recommending a re-index of the requirement to be logically aligned under the “Call Signals and Call Notification” topic. Only call stations that are equipped with audio capability would need to indicate voice circuit operation. Such indication may be visual or aural.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 10:06:32 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Additional visual signals shall be provided at corridor intersections where individual patient door signals are not directly visible from the central nursing station.

Patient Call. Call stations that provide the ability for patients to initiate calls for help or assistance shall activate a visual and optional audible signal that can be turned off at the station, room or device where the call was initiated. For call stations that provide audio communication, it shall be permitted to turn the activated signals off remotely when communication is established between the calling station, room of origin, and the remote location. A patient call shall activate call notification in accordance with 7.3.3.1.3.

Statement of Problem and Substantiation for Public Input

Rationale: Patient calls are typically activated via a wired or wireless patient pendant device (e.g., pillow speaker, pendant control, or body worn pendant.) A patient request for help or assistance is clinically considered normal or routine. When equipped with audio communications, the UL 1069 standard allows for automatic call cancelation when audio communications is established. We recommend specifically stating that the 'station activated' audible signal at the call station is optional because some state and local codes desire audible and visual annunciation for an activated station, whereas other codes do not for the purpose of noise abatement. We also recommend the reference to “call notification” and a prior clause for implementation.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 09:58:53 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on
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A visual signal indication shall be provided at each calling station indicating voice circuit operation.

**Medical Device Alarm.** Call stations that initiate a medical device alarm shall activate a visual and audible alarm signal that is distinct from all other nurse call signals. A medical device alarm shall be turned off only at the station or room from where it originates. The medical device alarm shall activate call notification in accordance with 7.3.3.1.3.

**Statement of Problem and Substantiation for Public Input**

Rationale: The code does not currently describe how a Medical Device Alarm is activated, annunciated or reset. We also recommend the reference to “call notification” and a prior clause for implementation.

**Submitter Information Verification**

**Submitter Full Name:** VINCE BACLAWSKI  
**Organization:** NEMA  
**Submittal Date:** Wed Jun 13 10:02:25 EDT 2012

**Committee Statement**

**Resolution:** This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.6 Emergency Call and Staff Emergency Assistance Call.
Each calling station shall be capable of initiating Call stations that initiate an emergency call or staff emergency assistance call shall activate a visual and audible emergency signal, distinct from the regular nurse call signal, that signal that is distinct from all other nurse call signals. An emergency call can be turned off only at that station at the station or room from where it originates. The emergency call shall activate an annunciator at the nearest associated nursing station and a visual signal in the corridor at the patient room door and at other locations as directed by the facility, call notification in accordance with 7.3.3.1.3.

7.3.3.1.6.1 Emergency calling devices call stations shall be provided at each inpatient toilet, bath, shower, or sitz bath and shall be accessible to a patient lying on the floor. A pull cord shall be permitted to be used for this access.

7.3.3.1.6.2 Emergency calling devices call stations shall be provided in outpatient and treatment areas where patients can be incapacitated.

7.3.3.1.6.3 Emergency branches calling devices Emergency call stations shall be provided in patient toilet rooms in imaging suites, renal dialysis units, and similar areas.

Statement of Problem and Substantiation for Public Input

7.3.3.1.6 - Rationale: The code currently requires an Emergency Call function at “each calling station”, which is economically impractical and technically needless from installation, service and maintenance perspectives. In normal practice, not all calling stations would require an emergency call function. Thus, the code is currently imposing an undesirable requirement on nurse call system implementation. We are further recommending to use “call notification” terminology and to reference a prior clause for implementation, noting that call notification would be identical with that as described for all other call types – patient call, medical device alarm, or code call. Noting also that proposed clause 7.3.3.1.3.1 prescribes flexibility whereby the facility will be able to determine additional locations for emergency event annunciation. For rationale why “Staff Emergency Assistance Call” is included in this proposal,
please refer to the proposed change to clause 7.3.3.1.7.2. 7.3.3.1.6.1. - Rationale: Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another. 7.3.3.1.6.2 - Rationale: Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 10:14:40 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.6.3

Emergency branches calling devices. Emergency call stations shall be provided in patient toilet rooms in imaging suites, renal dialysis units, and similar areas.

Statement of Problem and Substantiation for Public Input

Rationale: The term “branches” is used in the definitions of the Essential Electrical Systems (EES) in Chapter 6 and is not logically appropriate for use in this chapter of the code. Using it here is confusing. Also, Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:02:44 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.7—Staff Emergency Assistance Call—7.3.3.1.7

An emergency assistance system for staff to summon additional assistance shall be provided in each operating, delivery, recovery, emergency, examination, treatment, and intermediate care area, and in critical care units, nurseries, special procedure rooms, cardiac catheterization rooms, stress test areas, triage, outpatient surgery, admission and discharge areas, and areas for psychiatric patients, including seclusion and security rooms, anterooms and toilet rooms that serve them, communal toilet and bathing facility rooms, and dining, activity, therapy, exam, and treatment rooms.

7.3.3.1.7.2

Other communications systems that perform the same function shall be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: As acknowledged in the NFPA 99 Code Handbook, the emergency call function is an inherent and fundamental function of a nurse call system. Therefore, clause 7.3.3.1.7 should be eliminated, clause 7.3.3.1.7.1 should be re-indexed to be a logical continuation of the “Emergency Call” requirements for the nurse call system, and clause 7.3.3.1.7.2 should be eliminated. (Please refer to specific proposals that follow for further rationale.)

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:14:58 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.76.1—
An emergency assistance system for staff to summon additional assistance shall
4
Emergency call stations shall be provided in each operating, delivery, recovery, emergency,
examination, treatment, and intermediate care area, and in critical care units, nurseries, special
procedure rooms, cardiac catheterization rooms, stress test areas, triage, outpatient surgery,
admission and discharge areas, and areas for psychiatric patients, including seclusion and
security rooms, anterooms and toilet rooms that serve them, communal toilet and bathing facility
rooms, and dining, activity, therapy, exam, and treatment rooms. Additional locations may be
required by state and local codes.

Statement of Problem and Substantiation for Public Input

Rationale: This requirement should be logically associated with a nurse call system. A separate
(and duplicative) emergency system is economically and technically impractical. A separate
emergency call system would only duplicate the functions inherently provided with the nurse call
system and would result in a doubling of installation, service and maintenance costs over the
entire life spans of both. Most importantly, having two systems with duplicated functions would
be confusing for users at the clinical level. Also, as previously established, the emergency call
function can be implemented as a unique call station type or be made available in a combination
type station that provides other call functions as well. Finally, as previously established, state
and local codes may prescribe additional requirements.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:17:05 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not
needed in every situation. This may be more appropriately submitted as annex material for the
user of the document. The committee will develop a task group to review this matter and
determine how such information may best be implemented into the document. This will focus on
finding the minimum level of safety based on reliability and function of the systems and
individual components.

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electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
7.3.3.1.7.1
An emergency assistance system for staff to summon additional assistance shall be provided in each operating, delivery, recovery, emergency, examination, treatment, and intermediate care area, and in critical care units, nurseries, special procedure rooms, cardiac catheterization rooms, stress test areas, triage, outpatient surgery, admission and discharge areas, and areas for psychiatric patients, including seclusion and security rooms, anterooms and toilet rooms that serve them, communal toilet and bathing facility rooms, and dining, activity, therapy, exam, and treatment rooms. Call stations that initiate a code call shall activate a visual and audible code signal that is distinct from all other nurse call signals. A code call can be turned off only at the station or room from where it originates. The code call shall activate call notification in accordance with 7.3.3.1.3

Statement of Problem and Substantiation for Public Input

Rationale: The code does not currently describe how an Emergency Resuscitation Alarm is activated, annunciated or reset. We are further recommending to use “call notification” terminology and to reference a prior clause for implementation, noting that call notification would be identical with that as described for all other call types – patient call, medical device alarm, and emergency call. Noting also that, proposed clause 7.3.3.1.3.1 prescribes flexibility whereby the facility will be able to determine additional locations where the code call could be annunciated.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:30:46 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.7.2—
Other communications systems that perform the same function shall be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: This clause is in conflict with 7.3.3.1.1 which stipulates that the nurse call system “shall be listed for the purpose”. By including this clause as written, the code allows for subjective interpretation and creates an opportunity for the installation and use of a non-listed system, which can end up taking precedence over an NRTL tested and listed nurse call system. A non-listed system could be technically inferior and dubiously reliable. (What other communication system is thought of here?) If another communication system is suitable for this purpose, then it should be defined with its own set of requirements, apart from the Nurse Call System definition. Without a descriptive definition, the code becomes subjective and open to false and unintended interpretation. This could end up resulting in significant conflicts and delays with code enforcement. Most importantly, having two (or more) systems with overlapping functions would be confusing for users at the clinical level.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:24:22 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Public Input No. 221-NFPA 99-2012 [ Section No. 7.3.3.1.8 ]

7.3.3.1.8 Emergency Resuscitation Alarm (Code Call).
The nurse call system shall include provisions for an emergency code resuscitation alarm to summon assistance from outside the unit for critical care, pre-op, recovery, and emergency or code response units.

Statement of Problem and Substantiation for Public Input

Rationale: The Emergency Resuscitation Alarm is commonly and clinically known as a Code Call (e.g., Code Blue, Code Pink, etc.) We are recommending the addition of the word “nurse” to maintain consistency that this requirement still applies to the Nurse Call System definition. We are also recommending reference to “code response units”, as this type of response team is commonly organized in acute care facilities.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:26:09 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Call stations that are located in areas where patients are under constant visual surveillance, such as pre-op, recovery, and emergency units, the nurse call system shall be permitted to be limited to the staff emergency assistance call and the emergency resuscitation alarm. Two-way communication from communication with the patient bed location shall not be required.

Statement of Problem and Substantiation for Public Input

Rationale: Re-indexing of this clause would be required based on previous proposed changes. Also, it is more appropriate to describe the limitation as being applied to “calling stations”—vice—“nurse call system” as this is much more a feature and functional limitation of ‘station’ capability rather than the overall system.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:33:03 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.1.10

A. The nurse call system shall be provided for geriatric, Alzheimer's, and other dementia units, and all hardware. Call stations shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and call cords or pull strings in excess of 152 mm (6 in.) shall not be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: Re-indexing of this clause would be required based on previous proposed changes. Also recommending editorial tweaks to strengthen and clarify clause description. These editorial changes take into account other proposed changes to prior clauses.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:35:54 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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A. The nurse call system shall not be required in psychiatric units, but, if one is included, all hardware if provided call stations shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and control to limit unauthorized use shall be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: Re-indexing of this clause would be required based on previous proposed changes. Also recommending editorial tweaks to strengthen and clarify clause description. These editorial changes take into account other proposed changes to prior clauses.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:38:33 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Public Input No. 226-NFPA 99-2012 [Section No. 7.3.3.2]

Original Hide Markup

7.3.3.2—2 Reserved

The staff emergency assistance system shall annunciate each call visibly and audibly in the clean workroom; in the soiled workroom; in medication, charting, clean linen storage, nourishment, equipment storage, and examination/treatment rooms, if provided; and at the nursing station of the associated nursing unit, with backup to another staffed area from which assistance can be summoned.

Statement of Problem and Substantiation for Public Input

Rationale: Current clause 7.3.3.2 should be re-indexed to be 7.3.3.1.11 making it the final and concluding clause of the Nurse Call System definition. In keeping with the way the code is currently structured, 7.3.3.2 would then become a “Reserved” section. For the revisions to 7.3.3.1.11, we are recommending the elimination of all requirements and limitations on the locations to where nurse call event notifications are currently described. Most may be unnecessary, and some may be an annoyance. It is highly recommended to leave it up to the health care facility to determine the exact locations to where notifications need to be annunciated. Noting also, state and local codes (e.g., State of California) may have specific requirements that apply. In all cases, the AHJ should be involved with final determinations.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 11:42:42 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.3.3.2

The staff emergency assistance

The nurse call system shall annunciate each call visibly and audibly in the clean workroom; in the soiled workroom; in medication, charting, clean linen storage, nourishment, equipment storage, and examination/treatment rooms, if provided; and at the nursing station of the associated nursing unit, with backup to another staffed area from which assistance can be summoned to all areas to where calls need to be directed, in accordance with 7.3.3.1.3, and as determined by state and local codes, the facility, and the AHJ. Secondary call notifications to staffed areas from which backup assistance can be summoned shall be taken into consideration when finalizing and approving the layout and configuration of the installed system.

Statement of Problem and Substantiation for Public Input

Rationale: Current clause 7.3.3.2 should be re-indexed to be 7.3.3.1.11 making it the final and concluding clause of the Nurse Call System definition. In keeping with the way the code is currently structured, 7.3.3.2 would then become a “Reserved” section. For the revisions to 7.3.3.1.11, we are recommending the elimination of all requirements and limitations on the locations to where nurse call event notifications are currently described. Most may be unnecessary, and some may be an annoyance. It is highly recommended to leave it up to the health care facility to determine the exact locations to where notifications need to be annunciated. Noting also, state and local codes (e.g., State of California) may have specific requirements that apply. In all cases, the AHJ should be involved with final determinations.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Tue Jun 19 11:21:55 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.1 General.
The nurse call system shall communicate patient and staff calls for assistance and information in health care facilities. The nurse call system shall be the audiovisual or visual type (using light and tone signals only to communicate calls) and shall be listed to ANSI/UL 1069, Standard for Hospital Signaling and Nurse Call Equipment.

7.4.3.1.1.1
The nurse call system shall provide for communication of patient and staff calls for assistance, medical device alarms, and patient safety and security alarms.

7.4.3.1.1.2
Supplemental features shall be permitted to be included, such as call initiation to alphanumeric pagers and other wireless devices carried by health care facility staff.

Statement of Problem and Substantiation for Public Input

Rationale: As currently written, it is open to interpretation as to which standard can be used to establish listing credibility. The ANSI/UL1069 standard is specifically written and widely recognized as the certification standard for systems and equipment of this intended use.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:32:13 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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The nurse call system shall provide for communication of patient and staff calls for assistance. Call notifications shall be provided for medical device alarms, and patient safety and security alarms, staff emergencies and staff or patient requests for help or assistance.

Statement of Problem and Substantiation for Public Input

Rationale: As currently written, there is very little difference between this clause and that which is previously stated in 7.4.3.1.1. We are recommending the deletion of a duplicate non-value added statement, and an expansion that describes the types of call events and notifications that need to be provided by a Category 2 system. Call notification will be referenced and described in subsequent proposals.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:34:17 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Supplemental features shall be permitted to be included, such as call notification to alphanumeric pagers and other wireless devices carried by health care facility staff. If provided, the wireless phone and paging integration feature shall be in accordance with 7.4.3.6.

Statement of Problem and Substantiation for Public Input

Rationale: It is incorrect to state call "initiation" in this case. In fact, it is call "notification" which is what is sent to pagers and wireless devices. Also, it is unclear that the supplemental feature advanced by this requirement would also need to be in accordance with the requirements specified under 7.4.3.6. It is recommended to explicitly tie these two requirements together.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:37:11 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.2 Patient Area Call Station.

Patient area call stations shall provide the ability to initiate an Emergency Call, Medical Device Alarm, and Patient Call, the functions of which are permitted to be integrated in one station or which may be individually provided as a standalone station. Call stations shall be located in patient care rooms and patient care vicinities as described by this code, and as required by state and local codes, facility needs, and AHJ determination.

7.4.3.1.2.1
Each patient bed location shall be provided with a calling device.

7.4.3.1.2.2
Not
Not more than two calling devices, serving adjacent beds, shall be served by a single call station.

Statement of Problem and Substantiation for Public Input

Rationale: “Patient Areas” may contain many types and combinations of call stations and functions (e.g., Emergency, Medical Device Alarm, Patient, and others.) These types of stations are generically referred to as “call initiation stations”. A single station can be equipped and configured to activate a single call type or a number of different call types (e.g., Emergency, Help, Assistance, Auxiliary Device Alarm, Housekeeping, etc.) We believe that it is important for the code to describe “Patient Area Call Stations” as capable of providing single or multiple call types on a single station. This is standard industry practice and expected capability. We also believe that it is important to establish that state and local codes may prescribe the types and quantities of call stations and functions that are required for different areas of a facility. For example, for 2013, the California Electrical Code (CEC) is quite prescriptive in their requirements, which are primarily based on the Guidelines for Design and Construction of Health Care Facilities, by the Facility Guidelines Institute, 2010 edition. However, while the CEC is prescriptive, there is also flexibility for tailoring the requirements to facility needs. In so doing, the AHJ is required to be involved for review and approval. The terminology “patient care rooms” and “patient care vicinity” are NFPA 99 code definitions. In change proposals that follow, we will be proposing statements for call cancelation at the “station or room of origin”, which should be understood as “patient care vicinity” and “patient care room” respectively. Also, we are recommending combining 7.4.3.1.2.1 and (current) 7.4.3.1.2.2 into one requirement, to maintain continuity with the same description that is provided for Category 1 nurse call systems.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:39:24 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.2.2

Not more than two calling devices, serving adjacent beds, shall be served by a single call station. Calling devices such as wired or wireless pillow speaker pendant controls, call cords, or patient or staff worn personal pendants, shall be permitted to initiate patient or staff calls.

Statement of Problem and Substantiation for Public Input

Rationale: As written, the code does not distinguish between 'call stations' and 'call devices', which are separate and unique elements (albeit mutually dependent.) Currently, clauses 7.4.3.1.2.1 and 7.4.3.1.2.2 refer to a "calling device" that is to be provided at each patient bed location. However, the code does not provide a description of a "calling device" and thereby 'muddles' the distinction between that and a "calling station". Calling devices are generically known as "call initiating devices" and can be attached to a patient station for wired implementations, or can be automatically associated with a nearby patient station with a wireless implementation. Calling devices by design are portable (i.e., they can be carried or conveyed from one location to another) and are connected to or associated with a single patient station.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:46:22 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.3  Signals

Activation of a patient bed calling device shall cause visual signal activation in the corridor at the patient room door, the associated nursing station, the calling station, and associated nursing unit support areas, including medication, nourishment, charting, storage, and exam/treatment rooms and clean and soiled linen storage areas. Call signals and call notifications shall be in accordance with 7.3.3.1.3 and 7.3.3.1.3.1 through 7.3.3.1.3.3. Signaling for an emergency resuscitation alarm (code call) is not required.

Statement of Problem and Substantiation for Public Input

Rationale: Currently, the code does not clearly establish or describe the types of call signals that can be produced by a nurse call system. Neither does the code establish the generally understood and used term “Call Notification", which is the combination of visual and audible signaling to alert staff. Further, the code does not currently require audible annunciation at the nursing station or nursing unit support areas. Audible and visual annunciation is an established requirement in the UL 1069 standard. The proposal for this clause is dependent on the acceptance of the proposal for clauses 7.3.3.1.3, 7.3.3.1.3.1, and 7.3.3.1.3.2. In both cases, we are proposing a generic construct for the implementation of call notification. We are also highlighting the fact that it may be undesirable to require call notification at all of the staff areas that the code currently prescribes. Such notifications may be unnecessary and undesirable in some locations and noise fatigue may surely result in others. Noting also that there may be specific state and local code requirements that apply (e.g., State of California.) Therefore, we strongly recommend to allow the facility and AHJ determine the exact locations for primary and secondary call notification, which would certainly lead to compliance with state and local codes.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 13:49:55 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.5 **Medical Device Alarm.** Call stations that initiate a medical device alarm shall activate a visual and audible alarm signal that is distinct from all other nurse call signals. A medical device alarm shall be turned off only at the station or room from where it originates. The medical device alarm shall activate call notification in accordance with 7.4.3.1.3

**Statement of Problem and Substantiation for Public Input**

Rationale: The code does not currently describe how a Medical Device Alarm is activated, annunciated or reset. We also recommend the reference to “call notification” and a prior clause for implementation.

**Submitter Information Verification**

**Submitter Full Name:** VINCE BACLAWSKI  
**Organization:** NEMA  
**Submittal Date:** Wed Jun 13 14:02:35 EDT 2012

**Committee Statement**

**Resolution:** This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.4
Additional visual signals shall be provided at corridor intersections where individual patient door signals are not directly visible from the central nursing station. Patient Call. Call stations that provide the ability for patients to initiate calls for help or assistance shall activate a visual and optional audible signal that can be turned off at the station, room or device where the call was initiated. A patient call shall activate call notification in accordance with 7.4.3.1.3.

Statement of Problem and Substantiation for Public Input

Rationale: The text that is proposed for strikeout is duplicative of that which is already presented in Category 1 System clause 7.3.3.1.4 (which is proposed to be re-indexed to 7.3.3.1.3.2.) A proposal for 7.4.3.1.3 recommends referencing 7.3.3.1.3.2 instead of repeating the text here. Patient calls are typically activated via a wired or wireless patient pendant device (e.g., pillow speaker, pendant control, or body worn pendant.) A patient request for help or assistance is clinically considered normal or routine. We recommend specifically stating that the ‘station activated’ audible signal at the call station is optional because some state and local codes desire audible and visual annunciation for an activated station, whereas other codes do not for the purpose of noise abatement. We also recommend the reference to “call notification” and a prior clause for implementation.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.4.3.1.5 Emergency Call and Staff Emergency Assistance Call.

Each calling station shall be capable of initiating an emergency call or staff emergency assistance call. Call stations that initiate an emergency call or staff emergency assistance call shall activate a visual and audible emergency signal, distinct from the regular nurse call signal, that can be turned off only at the station where it originates. The emergency call shall activate an annunciator at the nearest associated nursing station, a visual signal in the corridor at the patient room door, and other locations as directed by the facility. An emergency call shall activate call notification in accordance with 7.4.3.1.3.

7.4.3.1.5.1

Emergency calling devices shall be provided at each inpatient toilet, bath, shower, or sitz bath and shall be accessible to a patient lying on the floor. A pull cord shall be permitted to be used for this access.

7.4.3.1.5.2

Emergency calling devices shall be provided in outpatient and treatment areas where patients can be incapacitated.

7.4.3.1.5.3

Emergency calling devices shall be provided in patient toilet rooms in imaging suites, renal dialysis units, and similar areas.

Statement of Problem and Substantiation for Public Input

Rationale: The code currently requires an Emergency Call function at “each calling station”, which is economically impractical and technically needless from installation, service and maintenance perspectives. In normal practice, not all calling stations would require an emergency call function. Thus, the code is currently imposing an undesirable requirement on nurse call system implementation. We are further recommending to use “call notification” terminology and to reference a prior clause for implementation, noting that call notification would be identical with that as described for all other call types – patient call and medical device alarm. Noting also that proposed clause 7.4.3.1.3 prescribes flexibility (by reference to 7.3.3.1.3.1) whereby the facility will be able to determine additional locations for emergency event annunciation. For rationale why “Staff Emergency Assistance Call” is included in the heading and clause description, please refer to the proposed change to clause 7.4.3.1.6.2.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:04:28 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Emergency calling devices shall be provided at each inpatient toilet, bath, shower, or sitz bath and shall be accessible to a patient lying on the floor. A pull cord shall be permitted to be used for this access.

Statement of Problem and Substantiation for Public Input

Rationale: Need to re-index this clause to be in logical alignment with the topic of Emergency Call. Also, Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:10:48 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Emergency calling devices **call stations** shall be provided in outpatient and treatment areas where patients can be incapacitated.

**Statement of Problem and Substantiation for Public Input**

Rationale: Need to re-index this clause to be in logical alignment with the topic of Emergency Call. Also, Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another.

**Submitter Information Verification**

**Submitter Full Name:** VINCE BACLAWSKI

**Organization:** NEMA

**Submittal Date:** Wed Jun 13 14:12:53 EDT 2012

**Committee Statement**

**Resolution:** This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Emergency calling devices shall be provided in patient toilet rooms in imaging suites, renal dialysis units, and similar areas.

Statement of Problem and Substantiation for Public Input

Rationale: Need to re-index this clause to be in logical alignment with the topic of Emergency Call. Also, Emergency Call Stations need to be installed as stationary fixtures. Calling devices, as previously established, are portable which means they can be carried or conveyed from one location to another.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:14:51 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Staff Emergency Assistance Call

An emergency assistance system for staff to summon additional assistance shall be provided in each outpatient surgery, admission and discharge areas, and areas for psychiatric patients, including seclusion and security rooms, anterooms and toilet rooms that serve them, communal toilet and bathing facility rooms, and dining, activity, therapy, exam, and treatment rooms.

Other communications systems that perform the same function shall be permitted. Additional locations may be required by state and local codes.

Rationale:

Clauses 7.4.3.1.6 and 7.4.3.1.6.1 should be eliminated, clause 7.4.3.1.6.1 should be re-indexed to be a logical continuation of the “Emergency Call” requirements for the nurse call system, and clause 7.4.3.1.6.2 should be eliminated. (Please refer to specific proposals that follow for further rationale.)

7.4.3.1.6.1 Rationale: This requirement should be logically associated with a nurse call system. A separate (and duplicative) emergency system is economically and technically impractical. A separate emergency call system would only duplicate the functions inherently provided with the nurse call system and would result in a doubling of installation, service and maintenance costs over the entire life spans of both. Most importantly, having two systems with duplicated functions would be confusing for users at the clinical level.

7.4.3.1.6.2 Rationale: This clause is in conflict with 7.4.3.1.1 which stipulates that the nurse call system "shall be listed for the purpose". By including this clause as written, the code allows for subjective interpretation and creates an opportunity for the installation and use of a non-listed system, which can end up taking precedence over an NRTL tested and listed nurse call system. A non-listed system could be technically inferior and dubiously reliable. If another communication system is suitable for this purpose, then it should be defined with its own set of requirements, apart from the Nurse Call System definition. Without a descriptive definition, the code becomes subjective and open to false and unintended interpretation. This could end up resulting in significant conflicts and delays with code enforcement. Most importantly, having two (or more) systems with overlapping functions would be confusing for users at the clinical level.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:20:34 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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The nurse call system shall be provided for geriatric, Alzheimer's, and other dementia units, and all hardware. Call stations shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and call cords or pull strings in excess of 15.24 cm (6 in.) shall not be permitted.

Statement of Problem and Substantiation for Public Input

Rationale: We are recommending minor editorial tweaks to strengthen and clarify clause description. These editorial changes take into account other proposed changes to prior clauses.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:28:31 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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The nurse call system shall not be required in psychiatric units, but if one is included, all hardware if provided call stations shall have tamper-resistant fasteners, provisions shall be made for removal or covering of call button outlets, and control to limit unauthorized use shall be permitted.

**Statement of Problem and Substantiation for Public Input**

Rationale: We are recommending minor editorial tweaks to strengthen and clarify clause description. These editorial changes take into account other proposed changes to prior clauses.

**Submitter Information Verification**

- **Submitter Full Name:** VINCE BACLAWSKI
- **Organization:** NEMA
- **Submittal Date:** Wed Jun 13 14:30:35 EDT 2012

**Committee Statement**

**Resolution:** This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Reserved.

Statement of Problem and Substantiation for Public Input

Rationale: Current clause 7.4.3.2 should be re-indexed to be 7.4.3.1.9 making it the final and concluding clause of the Nurse Call System definition. In keeping with the way the code is currently structured, 7.4.3.2 would then become a “Reserved” section. For revisions to 7.4.3.1.9, we are recommending the elimination of all requirements and limitations on the locations to where nurse call event notifications are currently described. Most may be unnecessary, and some may be an annoyance. It is highly recommended to leave it up to the health care facility to determine the exact locations to where notifications need to be annunciated. Noting also, state and local codes (e.g., State of California) may have specific requirements that apply. In all cases, the AHJ should be involved with final determinations.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:39:38 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Statement of Problem and Substantiation for Public Input

Rationale: Current clause 7.4.3.2 should be re-indexed to be 7.4.3.1.9 making it the final and concluding clause of the Nurse Call System definition. In keeping with the way the code is currently structured, 7.4.3.2 would then become a “Reserved” section. For revisions to 7.4.3.1.9, we are recommending the elimination of all requirements and limitations on the locations to where nurse call event notifications are currently described. Most may be unnecessary, and some may be an annoyance. It is highly recommended to leave it up to the health care facility to determine the exact locations to where notifications need to be annunciated. Noting also, state and local codes (e.g., State of California) may have specific requirements that apply. In all cases, the AHJ should be involved with final determinations.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 14:32:50 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.1 General. The nurse call system shall communicate patient and staff calls for assistance and information in health care facilities. The nurse call system shall be the audio visual or visual type (using light and tone signals only to communicate calls) and shall be listed to ANSI/UL1069, Standard for Hospital Signaling and Nurse Call Equipment.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:08:06 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.1.1 Call notifications for staff emergencies and staff or patient requests for help or assistance shall be provided.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:10:12 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Public Input No. 251-NFPA 99-2012 [ New Section after 7.5.3.1 ]

7.5.3.1.1.2 Supplemental features shall be permitted to include call initiation to alphanumeric pagers and other wireless devices carried by health care facility staff. If provided, the wireless phone and paging integration feature shall be in accordance with 7.4.3.6.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:12:07 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.2 Calling Stations and Calling Devices.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:14:14 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.2.1 Calling stations shall provide the ability to initiate an Emergency Call and Staff or Patient Call, the functions of which are permitted to be integrated in one station or which may be individually provided as a standalone station. Call stations shall be located in patient care rooms and patient care vicinities as described by this code, and as required by state and local codes, facility needs, and AHJ determination.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:16:03 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Each patient care room shall be provided with a calling station. A calling station shall not be permitted to be shared between patient care rooms.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:18:01 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.2.3 Calling devices such as wired or wireless speaker pendant controls, call cords, or patient or staff worn personal pendants, shall be permitted to initiate patient or staff calls.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:19:12 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.2.3 Patient or emergency call stations shall be provided in patient care rooms, toilet rooms, imaging suites, and similar areas as described by this code, and as required by state and local codes, facility needs, and AHJ determination. An emergency call station located in a toilet room shall be equipped with a pull cord for access by a patient lying on the floor.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:21:14 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.4 Patient Call. Calling stations that provide the ability for patients or staff to initiate calls for help or assistance shall activate a visual and optional audible signal that can be turned off at the station, room or device where the call was initiated. A patient call shall activate call notification in accordance with 7.5.3.1.3.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:24:43 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.5 Emergency Call. Call stations that initiate an emergency call or staff emergency assistance call shall activate a visual and audible emergency signal that is distinct from all other nurse call signals. An emergency call can be turned off only at the station or room from where it originates. The emergency call shall activate call notification in accordance with 7.5.3.1.3.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:26:09 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.6 Medical Device Alarm. Signaling for a medical device alarm is not required but shall be permitted. If provided call stations that initiate a medical device alarm shall activate a visual and audible signal that is distinct from all other nurse call signals. A medical device alarm shall be turned off only at the station or room from where it originates. The medical device alarm shall activate call notification in accordance with 7.5.3.1.3.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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7.5.3.1.7 The nurse call system shall annunciate each call visibly and audibly in all areas to where calls need to be directed, in accordance with 7.5.3.1.3, and as determined by state and local codes, the facility, and the AHJ. Secondary call notifications to staffed areas from which backup assistance can be summoned shall be taken into consideration when finalizing and approving the layout and configuration of the installed system.

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:28:44 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Public Input No. 247-NFPA 99-2012 [ Section No. 7.5.3.1 ]

7.5.3.1 Nurse Call Systems.
(Reserved)

Statement of Problem and Substantiation for Public Input

Rationale: To resolve heretofore undefined requirements, as indicated in all underlined text that follows. Terminology and constructs in this proposal are consistent with those recommended for sections 7.3.3.1 and 7.4.3.1.

Submitter Information Verification

Submitter Full Name: VINCE BACLAWSKI
Organization: NEMA
Submittal Date: Wed Jun 13 15:06:44 EDT 2012

Committee Statement

Resolution: This input adds more requirements for patient area call stations that are not needed in every situation. This may be more appropriately submitted as annex material for the user of the document. The committee will develop a task group to review this matter and determine how such information may best be implemented into the document. This will focus on finding the minimum level of safety based on reliability and function of the systems and individual components.

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Statement of Problem and Substantiation for Public Input

Delete this item. There are no standards listed for "control". This is not enforceable code language.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:31:13 EDT 2012

Committee Statement

Resolution: CI-77-NFPA 99-2012
Statement: This provides a direction the user of the standard. It is being submitted as a CI to ensure that the document is published for public use.

Copyright Assignment

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Public Input No. 397-NFPA 99-2012 [Section No. 8.3.5.2]

<table>
<thead>
<tr>
<th>8.3.5.2</th>
</tr>
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<tbody>
<tr>
<td>Nonmedical compressed air shall not be used for powering medical instruments or for instruments having the potential for patient contact in an invasive setting, where there is the potential for contamination of sterile product, or for human respiration.</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

This Public Input is associated with Public Inputs defining Medical Support Gas and Instrument Air. These Public Inputs work well together to clarify that there are two separate systems of non-respired gas systems used in healthcare. One, (Medical Support Gas) is a system used directly in patient care, where the gas is in intimate contact with patients in an invasive setting, or has the potential to contaminate sterile product.

The other non-respired gas (Nonmedical Compressed Air) is a system used to support equipment in a healthcare facility, and can be used for raising or lowering booms, surgical tables, sterilizer doors, cart wash leveling ramps, etc. as well as regular facility maintenance.

As the linking tool is not working for me, this is related to Public inputs 394, 395, 396 and 398

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittl Date: Fri Jun 22 18:57:19 EDT 2012

Committee Statement

Statement: This specifies that nonmedical compressed gas is not to be used for powering instruments but can be used for cleaning or other purposes. This basis for this language is that it is being added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-1.

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8.3.5.3.
Nonmedical compressed air shall meet the quality and pressure requirements of the equipment connected to the system.

Statement of Problem and Substantiation for Public Input

A healthcare facility has many compressed air needs. Whereas a Medical Support Gas is well defined for a very high level of quality and a specific pressure, the variety of requirements for this general support gas can not be easily be defined in this code without being overly restrictive. This Public Input requires the designer to consider all uses of the system and design appropriately. As the linking tool is not working for me, this is related to Public inputs 394, 395, 396 and 397

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 19:01:24 EDT 2012

Committee Statement

Resolution: FR-80-NFPA 99-2012
Statement: A healthcare facility has many compressed air needs. Whereas a Medical Support Gas is well defined for a very high level of quality and a specific pressure, the variety of requirements for this general support gas can not be easily be defined in this code without being overly restrictive. This Public Input requires the designer to consider all uses of the system and design appropriately.

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8.3.6 Special Use Water Systems.

When special use water systems are required, application of standards shall be provided in accordance with appropriate publicly reviewed nationally published standards.

Statement of Problem and Substantiation for Public Input

Delete this section, there is no definition of "special use water systems". There may or may not be a publicly reviewed nationally published standard for every specialty system a healthcare organization needs.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:35:11 EDT 2012

Committee Statement

Resolution: FR-81-NFPA 99-2012
Statement: A specific standard has now been referenced in this section. Although titled a guideline, the document is written in mandatory language. The language is added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-1.

Copyright Assignment

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Sizing for grease interceptors shall be permitted in accordance with local plumbing codes on an engineered calculation factoring meals served per day.

Statement of Problem and Substantiation for Public Input

In accordance with code is sufficient. Local codes are not always based on the number of meals.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:41:00 EDT 2012

Committee Statement

Resolution: FR-82-NFPA 99-2012
Statement: This was updated to indicate that this includes two separate options for the sizing of grease interceptors rather than one. UPC uses a legacy system and has been accepting the alternative. This section is added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-1.

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8.3.7.2

Grease interceptors shall be sized to capture grease from kitchen cooking and cleaning functions and shall prohibit introduction of grease into the sanitary sewer system.

Statement of Problem and Substantiation for Public Input

Grease interceptors can not "capture grease", particularly from cleaning functions due to the emulsification by detergent. They certainly do not "prohibit introduction of grease into the sanitary sewer system". Grease interceptors are a method to REDUCE the amount of grease entering the sewer, but they are not 100% effective. Besides, "comply with applicable codes" of the previous sentence is sufficient.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:43:05 EDT 2012

Committee Statement

Resolution: FR-83-NFPA 99-2012
Statement: Grease interceptors can not "capture grease", particularly from cleaning functions due to the emulsification by detergent. They certainly do not "prohibit introduction of grease into the sanitary sewer system". Grease interceptors are a method to REDUCE the amount of grease entering the sewer, but they are not 100% effective. Besides, "comply with applicable codes" of the previous sentence is sufficient.

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8.3.8 Fixtures.

Plumbing fixtures shall be suitable for the intended use.

Statement of Problem and Substantiation for Public Input

Delete. Waste of ink and unenforceable.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:48:13 EDT 2012

Committee Statement

Resolution: FR-84-NFPA 99-2012

Statement: This provides a specific reference to the user. Although titled a guideline, it is written in mandatory language. This section is added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-1.

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Sections 8.3.9, 8.3.10, 8.3.11

8.3.9 Black Waste Water.

Black waste water shall be discharged to a sanitary sewer or private on-site waste treatment system as permitted by applicable plumbing codes.

8.3.10 Gray Waste

8.3.10.1 Gray waste water
shall be permitted to be stored on-site and used for nonpotable water systems as permitted by applicable plumbing codes.

8.3.10.2
Gray waste water shall not be used for any system that aerosolizes the water in a breathing zone or has direct contact with humans.

8.3.10.3
Excess gray waste water shall be discharged to a sanitary sewer or private on-site waste treatment system as permitted by applicable plumbing codes.

8.3.11 Clear Waste Water

8.3.11.1 Clear waste water shall be permitted to be stored on-site and used for nonpotable water systems as permitted by applicable plumbing codes.

8.3.11.2 Clear waste water that has been treated to potable water standards shall be permitted to be used as nonpotable water.

8.3.11.3 Clear waste water that has not been treated to potable water standards shall not be used for any system that aerosolizes the water in a breathing zone or has direct contact with humans.

8.3.11.4 Excess clear waste water shall be discharged to a storm sewer, held in detention ponds, or recharged into the water table as permitted by applicable plumbing codes.

Chapter 9 was added by a tentative interim amendment (TIA). See page 1.

shall comply with applicable plumbing codes.

Statement of Problem and Substantiation for Public Input
The terms Black, Grey, and Clear waste are not defined. They may or may not be addressed by the plumbing code. "Comply with code" is sufficient. If local code allows for the differentiation of waste streams, these issues will be covered.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 15:54:09 EDT 2012

Committee Statement

Resolution: The TC has attempted to address the concern of the submitter by introducing definitions for the different types of waste water.

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Original Hide Markup

**9.2** System Category Criteria.

The health care facility's governing body that has the responsibility for the building system components as identified in this chapter shall designate, in accordance with the function of each space, building system categories in accordance with Sections 4.1 and 4.2.

**9.2.1** The category of risk applied to each HVAC system serving a space shall be independent of the category of risk applied to other systems serving that same space.

**Statement of Problem and Substantiation for Public Input**

Delete these sections. There is nothing this code requires of the different system categories (nor should it), so this effort is a waste of time.

**Submitter Information Verification**

**Submitter Full Name:** MARK JELINSKE

**Organization:** CATOR RUMA ASSOC

**Submittal Date:** Fri Jun 22 16:00:19 EDT 2012

**Committee Statement**

**Resolution:** This approach is consistent with the approach of Chapter 4 which requires a risk assessment. It is important for a facility to understand the risks associated with their building systems regardless of whether this chapter provides additional requirements. This may highlight areas where the user should consider using more than the minimum requirements specified in this Code.

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Public Input No. 381-NFPA 99-2012 [ Section No. 9.3.1.1 ]

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, including amendments adopted as of the project submittal date to the Authority Having Jurisdiction.

Statement of Problem and Substantiation for Public Input

ASHRAE 170 is a Continuing Maintenance Standard. It is continuously updated to correct errors and respond to new developments in the Healthcare industry. As I write this, the current standard is still called "ASHRAE 170-2008", even though there have been several significant amendments that have greatly improved the document. If current amendments are not included, NFPA 99 - 2015 will be referencing an old, obsolete document.

Since the linking tool is not working, this is related to Public Input No. 383

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 16:03:18 EDT 2012

Committee Statement

Resolution: The technical committee cannot adopt future amendments per NFPA policy. The latest edition prior to publication of NFPA 99 is what is permitted to be referenced.

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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.

Statement of Problem and Substantiation for Public Input

If NFPA can not adopt a continuing maintenance standard with amendments, then the reference to ASHRAE 170 should be deleted. As I write this, the current standard is still called ASHRAE 170-2008, but without amendments, it is already obsolete. Many substantive changes have been made by amendment. Many jurisdictions adopt this and include the amendments, and therefore NFPA 99 would conflict with those jurisdictions regulations. The Healthcare Industry already is bound to follow the current ASHRAE 170 via other official adoptions as well as it being considered a Standard of Care, therefore the deletion of the NFPA reference does not leave the industry without direction. Since the linking tool is not working, this is related to Public Input No. 381.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 16:15:55 EDT 2012

Committee Statement

Resolution: While the technical committee understands the changes that come with a standard, it is better to keep a reference to a document that the TC has reviewed rather than nothing. It is the intention of this committee to adopt all appropriate addenda to this document in this revision cycle. If future addenda are substantial enough to be of an emergency nature, then a TIA can be issued to NFPA 99 to include the change.

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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 ASHRAE Guideline 0, The Commissioning Process, and ASHRAE Guideline 1.1, HVAC&R Technical Requirements for the Commissioning Process, or any other publically reviewed document acceptable to the authority having jurisdiction.

Statement of Problem and Substantiation for Public Input

Commissioning, while a good idea, and even perhaps a Standard of Care, is beyond the principle of mandatory code minimum requirements.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 16:44:02 EDT 2012

Committee Statement

Resolution: The TC understands that a formal process of accepting the building is essential to the health and safety of the occupants. Standard 90.1 provides the requirements for this process. The other guidelines provide methods for approaching this acceptance process. The FGI guidelines does call for commissioning, functional performance testing. This is in line with industry minimum practice at this time.

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Public Input No. 386-NFPA 99-2012 [Section No. 9.3.4]

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 plumbing codes.

Statement of Problem and Substantiation for Public Input

HVAC and Process piping is covered in Mechanical Codes, not Plumbing Codes.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 16:55:11 EDT 2012

Committee Statement

Statement: HVAC and Process piping is covered in Mechanical Codes, not Plumbing Codes. This material is being added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-2 and as shown.

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Public Input No. 387-NFPA 99-2012 [ Section No. 9.3.6 ]

9.3.6 - Acoustics -

Heating, cooling, ventilating, and process systems serving spaces or providing health care functions covered by this code shall not exceed approved noise criteria.

Statement of Problem and Substantiation for Public Input

No standard are referenced. Unenforceable.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE
Organization: CATOR RUMA ASSOC
Submittal Date: Fri Jun 22 17:01:04 EDT 2012

Committee Statement

Statement: No standard are referenced. Unenforceable. This material would have been added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-2 but was deleted as shown.

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9.3.11 Ventilation During Construction.
Ventilation during construction shall comply with the applicable mechanical codes.

Statement of Problem and Substantiation for Public Input

I am unaware of any mechanical codes that apply to buildings under construction. They only address buildings occupied by the intended final occupants. This section could require construction sites to be ventilated as if they were final, finished spaces.

Submitter Information Verification

Submitter Full Name: MARK JELINSKE  
Organization: CATOR RUMA ASSOC  
Submittal Date: Fri Jun 22 17:09:39 EDT 2012

Committee Statement

Resolution: FR-70-NFPA 99-2012  
Statement: There are no mechanical codes that address ventilation of buildings under construction. While this is titled a guideline, it is written in mandatory language. This material is being added back into NFPA 99 as a part of the acceptance of language from TIA 99-12-2 with modification as shown.

Copyright Assignment

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Public Input No. 368-NFPA 99-2012 [ New Section after 10.1.2 ]

**Electrical Equipment Categories**

Electrical Equipment in health care facilities shall be installed, inspected, tested and maintained to meet the system Category 1 through Category 4 requirements as detailed in this code. [modified from 4.1]

X.1 **Category 1.** Permanent or portable, corded or non-corded electrical equipment that provides direct pathway to the heart in which failure of such equipment is likely to cause major injury or death of patients shall meet Category 1 equipment requirements as defined in this code.

X.2 **Category 2.** Permanent or portable, corded or non-corded electrical equipment that is directly connected to the patient for treatment purposes that failure of such equipment is likely prevent treatment or to cause minor injury, to patients shall meet Category 2 equipment requirements as defined in this code.

X.3 **Category 3.** Non-corded electrical equipment that comes in direct contact with the patient in which failure of such equipment is not likely to cause injury to patients shall be designed to meet Category 3 requirements as defined in this code.

X.4 **Category 4.** Permanent or portable, corded or non-corded electrical equipment that has no direct contact with the patient and would have no impact on patient care shall meet Category 1 equipment requirements as defined in this code.

[Revise rest of chapter to appropriately address equipment categories]

**Statement of Problem and Substantiation for Public Input**

Revise chapter 10 to include electrical equipment categories. Chapter 10 and 11 don't currently address the risk categories which creates confusion on its application. Many of the requirements within this chapter are not suitable to all pieces of electrical equipment used within a healthcare facility, but AHJ's require healthcare facilities to treat all equipment the same, they expect the same documentation and prev. maint. for TV remote control as they do for a cardiac catheter. For example 10.5.3.1.1 lists 13 items required illustrations schematics, wiring diagrams, mechanical layouts, part lists and many other records that need to be kept for each device, but not all devices need this level of documentation - a thermometer for example. In most cases, a healthcare facility would opt to simply replace the device if it was faulty, there is no intention of taking it apart and trying to diagnose and fix it. this is true will almost all low voltage / battery operated health care equipment. To make it clearer for AHJ's use the risk category system system established in Chapter 4 and apply to electrical equipment. The intention of the proposed electrical equipment categories is: Cat. 1 - all elec. equipment, pathway to heart which will likely cause death if faulty (example Cardiac Catheter) Cat. 2 all elec. equipment that a patient will touch (i.e. not direct pathway to heart) Cat. 3 all battery operated equipment, typically used for diagnostic or treatment that would not result in injury, but could prevent / delay treatment from being given (until equipment is replaced or fixed- example: thermometer, digital sphygmomanometers) Cat. 4 no direct patient contact. (example, patient TV) This was submitted at the request of the HEA-MED committee chair for inclusion on the technical committee agenda.

**Submitter Information Verification**

Submitter Full Name: Chad Beebe  
Organization: ASHE - AHA  
Submittal Date: Fri Jun 22 15:01:47 EDT 2012

**Committee Statement**

Statement: Revise chapter 10 to include electrical equipment categories. Chapter 10 and 11 don't currently address the risk categories which creates confusion on its application. Many of the requirements
within this chapter are not suitable to all pieces of electrical equipment used within a healthcare facility, but AHJ's require healthcare facilities to treat all equipment the same, they expect the same documentation and prev. maint. for TV remote control as they do for a cardiac catheter. For example 10.5.3.1.1 lists 13 items required illustrations schematics, wiring diagrams, mechanical layouts, part lists and many other records that need to be kept for each device, but not all devices need this level of documentation - a thermometer for example. In most cases, a healthcare facility would opt to simply replace the device if it was faulty, there is no intention of taking it apart and trying to diagnose and fix it. this is true will almost all low voltage / battery operated health care equipment. To make it clearer for AHJ's use the risk category system established in Chapter 4 and apply to electrical equipment. The intention of the proposed electrical equipment categories is: Cat. 1 - all elec. equipment, pathway to heart which will likely cause death if faulty (example Cardiac Catheter) Cat. 2 all elec. equipment that a patient will touch (i.e. not direct pathway to heart) Cat. 3 all battery operated equipment, typically used for diagnostic or treatment that would not result in injury, but could prevent / delay treatment from being given (until equipment is replaced or fixed- example: thermometer, digital sphygmomanometers) Cat. 4 no direct patient contact. (example, patient TV) The quantity and definitions of the proposed categories may be modified at the comment stage. The intent is to reorganize the existing requirements to better address medical equipment in accordance with these categories, not to introduce new requirements in this cycle.

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10.3.3.4* Leakage Touch Current Limits.
The leakage touch current limits in 10.3.4 and 10.3.5 shall be followed.

Statement of Problem and Substantiation for Public Input

Editorial - Change should have been made when touch current term was introduced in 2012 edition.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI

Committee Statement

Resolution: FR-95-NFPA 99-2012
Statement: This is editorial as the change should have been made when touch current term was introduced in 2012 edition. The reference to sections were updated according to other revisions.

Copyright Assignment

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Public Input No. 14-NFPA 99-2012 [Section No. 10.3.4.2]

10.3.4.2
The leakage current flowing through the ground conductor of the power supply connection to ground of permanently wired appliances installed in general or critical care areas shall not exceed 10.0 mA (ac or dc) with all grounds lifted.

Statement of Problem and Substantiation for Public Input

Editorial - Change should have been made when touch current term was introduced in 2012 edition.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
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<tbody>
<tr>
<td>Public Input No. 13-NFPA 99-2012 [Section No. 10.3.3.4]</td>
<td>Same editorial change.</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed Mar 21 11:26:18 EDT 2012

Committee Statement

Resolution: According to IEC-AAMI 60101-1, this is referred to as "leakage current" not "touch current," because it refers to the current flowing through the ground conductor.

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10.3.5.1* Touch Current Limits.
The touch current for cord-connected equipment shall not exceed 100 \(\mu\text{A}\) with normal polarity and the ground wire intact (if a ground wire is provided) or 500 \(\mu\text{A}\) with the ground wire intact and disconnected with normal polarity and shall not exceed 500 \(\mu\text{A}\) with the ground wire disconnected.

Statement of Problem and Substantiation for Public Input

For the 2012 edition, the committee removed the requirement to test the device with ground intact (see section 10.3.5.4 and Figure 10.3.5.4). Because of this, the 100 microamp limit when ground is intact is a relic.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed Mar 21 11:32:15 EDT 2012

Committee Statement

Statement: These sections provide performance criteria which belong in section 10.2. They have been moved from 10.3.4.2 and 10.3.5.1 in the 2012 edition. For the 2012 edition, the committee removed the requirement to test the device with ground intact (see section 10.3.5.4 and Figure 10.3.5.4). Because of this, the 100 microamp limit when ground is intact is a relic. In the 2012 edition, the term "leakage current" was changed to "touch current." This change was never applied to these sections.

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Public Input No. 160-NFPA 99-2012 [Sections 10.3.5.2, 10.3.5.3]

Sections 10.3.5.2, 10.3.5.3

10.3.5.2
If multiple devices are connected together and one power cord supplies power, the leakage touch current shall be measured as an assembly.

10.3.5.3
When multiple devices are connected together and more than one power cord supplies power, the devices shall be separated into groups according to their power supply cord, and the leakage touch current shall be measured independently for each group as an assembly.

Statement of Problem and Substantiation for Public Input

In the 2012 edition, the term "leakage current" was changed to "touch current." This change never got applied to these sections. Change should be editorial.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed May 23 09:33:41 EDT 2012

Committee Statement

Statement: In the 2012 edition, the term "leakage current" was changed to "touch current." This change was never applied to these sections.

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Public Input No. 11-NFPA 99-2012 [Section No. 10.3.5.4.2]

10.3.5.4.2—
Test shall be made with Switch A in Figure 10.3.6.4 closed.

Statement of Problem and Substantiation for Public Input

Switch A is no superfluous.

As part of my comment, change Figure 10.3.5.4 to remove "Switch A" from the diagram.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed Mar 21 11:12:25 EDT 2012

Committee Statement

Statement: Switch A is now superfluous. The reference to this switch is deleted from the text and from Figure 10.3.5.4 as well.

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10.3.6.2
An acceptable test configuration shall be as illustrated in (substitute figure Figure 8.4.3.5.4.1 from the 2005 edition).

Statement of Problem and Substantiation for Public Input

The 2005 figure is totally gone from 2012 edition. 2012 section 10.3.6.2 refers to Figure 10.3.5.4 which is not relevant to the requirement in 10.3.6.2 because no patient leads are depicted.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: Healthcare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed Mar 21 11:17:43 EDT 2012

Committee Statement

Resolution: 
Statement: 

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The documents specified in 10.5.3.1 shall include the following, where applicable:

1. Illustrations that show the location of controls
2. Explanation of the function of each control
3. Illustrations of proper connection to the patient or other equipment, or both
4. Step-by-step procedures for testing and proper use of the appliance
5. Safety considerations in use and servicing of the appliance
6. Precautions to be taken if the appliance is used on a patient simultaneously with other electric appliances
7. Schematics, wiring diagrams, mechanical layouts, parts lists, and other pertinent data for the appliance
8. Instructions for cleaning, disinfection, or sterilization
9. Utility supply requirements (electrical, gas, ventilation, heating, cooling, and so forth)
10. Explanation of figures, symbols, and abbreviations on the appliance
11. Technical performance specifications
12. Instructions for unpacking, inspection, installation, adjustment, and alignment
13. Preventive and corrective maintenance, inspection, and repair procedures

Statement of Problem and Substantiation for Public Input

Although many people believe inspection is preventive maintenance (PM), extensive experience in healthcare and other industries indicate these two maintenance activities are fundamentally different. As its name indicates, PM is performed to prevent failures, typically by replacing wearable parts, components or supplies, regardless of the existence of any failure. Inspection is performed to detect failures that already happened but may not be noticeable to the user (hidden failure) or not reported by the user (evident failure), as well as failures that are in the process of occurring (potential failure). PM is useless for solid-state electronic devices and assemblies due to the statistical nature of those failures, whereas mechanical, chemical and pneumatic devices and assemblies often can benefit from PMs. The specific mention of "inspection" in this clause is to avoid confusion and allegations that some manufacturers have made that "there is no PM required" even though some inspections could be very useful to detect and, thus, reduce the probability of serious injuries to patients and users.

Submitter Information Verification

Submitter Full Name: BINSENG WANG
Organization: ARAMARK Healthcare Technologies
Submittal Date: Wed May 02 17:12:52 EDT 2012

Committee Statement

Statement: Although many people believe inspection is preventive maintenance (PM), extensive experience in healthcare and other industries indicate these two maintenance activities are fundamentally different. As its name indicates, PM is performed to prevent failures, typically by replacing wearable parts,
components or supplies, regardless of the existence of any failure. Inspection is performed to detect failures that already happened but may not be noticeable to the user (hidden failure) or not reported by the user (evident failure), as well as failures that are in the process of occurring (potential failure). PM is useless for solid-state electronic devices and assemblies due to the statistical nature of those failures, whereas mechanical, chemical and pneumatic devices and assemblies often can benefit from PMs. The specific mention of “inspection” in this clause is to avoid confusion and allegations that some manufacturers have made that “there is no PM required” even though some inspections could be very useful to detect and, thus, reduce the probability of serious injuries to patients and users.

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10.5.5.2*
The physical integrity of the power cord, attachment plug, and cord strain relief shall be confirmed at least annually by visual inspection and other appropriate tests.

Statement of Problem and Substantiation for Public Input

Section 10.5.5.2 is superfluous. Laboratories are not unique. The need for testing laboratory equipment is covered adequately in section 10.5.5.1

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Tue Apr 17 15:21:07 EDT 2012

Committee Statement

Resolution: FR-103-NFPA 99-2012
Statement: Section 10.5.5.2 is superfluous. Laboratories are not unique. The need for testing laboratory equipment is covered adequately in section 10.5.5.1

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Gas Equipment Categories

Gas Equipment in health care facilities shall be installed, inspected, tested and maintained to meet the system Category 1 through Category 4 requirements as detailed in this code.

X.1 **Category 1.** gas equipment in which failure of such equipment is likely to cause major injury or death of patients shall meet Category 1 equipment requirements as defined in this code.

X.2 **Category 2.** gas equipment in which failure of such equipment is likely to prevent treatment or to cause minor injury to patients shall meet Category 2 equipment requirements as defined in this code.

X.3 **Category 3.** gas equipment in which failure of such equipment is not likely to cause injury to patients shall be designed to meet Category 3 requirements as defined in this code.

X.4 **Category 4.** gas equipment that has no direct contact with the patient and would have no impact on patient care shall meet Category 1 equipment requirements as defined in this code.

[Revise rest of chapter to appropriately address equipment categories]

Statement of Problem and Substantiation for Public Input

The gas equipment chapter needs to address different categories similar to other chapters. Not all gas equipment needs to be treated the same, for example, anesthetic apparatus should require more attention than a nebulizer. Although both critical to patient care, faulty anesthetic apparatus could cause immediate injury or death where a faulty nebulizer would take considerable more time to result in major injury. Testing equipment should be treated even differently.

Submitter Information Verification

Submitter Full Name: Chad Beebe
Organization: ASHE - AHA
Submittal Date: Fri Jun 22 15:48:50 EDT 2012

Committee Statement

Resolution: FR-104-NFPA 99-2012

Statement: The gas equipment chapter needs to address different categories similar to other chapters. Not all gas equipment needs to be treated the same, for example, anesthetic apparatus should require more attention than a nebulizer. Although both critical to patient care, faulty anesthetic apparatus could cause immediate injury or death where a faulty nebulizer would take considerable more time to result in major injury. Testing equipment should be treated even differently. The quantity and definitions of the proposed categories may be modified at the comments stage. The intent is to reorganize the existing requirements to better address gas equipment in accordance with these categories, not to introduce new requirements in this cycle.

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11.3.2.3
Oxidizing gases such as oxygen and nitrous oxide shall be separated from combustibles or materials by one of the following:

(1) Minimum distance of 6.1 m (20 ft)

(2) Minimum distance of 1.5 m (5 ft) if the entire storage location is protected by an automatic sprinkler system designed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems* or is protected by an automatic water mist system designed in accordance with NFPA 750, *Standard on Water Mist Fire Protection Systems*

(3) Enclosed cabinet of noncombustible construction having a minimum fire protection rating of 1/2 hour

Statement of Problem and Substantiation for Public Input

Add the reference to water mist systems. Water Mist systems have been approved and installed in many sprinkler applications globally for over 15 years. They have been listed by national and internationally recognized testing laboratories such as: UL (Ordinary Hazard Group 1), FM (Light Hazard occupancies, Computer Rooms, Subfloors, Special Hazard Machinery & spaces), City of New York (Light Hazard Occupancies, Combustion Turbines, Machinery Spaces), VdS Germany (Light Hazard, Ord Haz Grp I,II parking garages & III selected occupancies, Cable Tunnels), KfV Austria (Light Hazard, Ord Haz Grp I, Combustion Turbines) and other agencies. These listings and installations have demonstrated equivalent fire protection to the authority having jurisdiction (AHJ). The addition of the proposed text will provide the AHJ a clear option to accept water mist systems as an equivalent system to an approved automatic sprinkler system thereby allowing the cylinder spacing options of oxidizing gases without having to prove equivalency or be considered an alternative extinguishing system.

Submitter Information Verification

Submitter Full Name: SCOTT HARRISON
Organization: MARIOFF NORTH AMERICA
Submittal Date: Fri Jun 22 11:45:13 EDT 2012

Committee Statement

Resolution: The technical committee does not have the expertise to determine whether water mist systems are capable of protecting the various environments within health care facilities, particularly including oxygen enriched environments. The submitter's substantiation does not provide enough data to educate the committee on this topic.

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11.4.3.2 Gas Equipment — Laboratory.

11.4.3.2.1 Gas appliances shall be of an approved design and installed in accordance with NFPA 54, National Fuel Gas Code.

11.4.3.2.2 Shutoff valves shall be legibly marked to identify the material they control.

2 Medical Devices

Statement of Problem and Substantiation for Public Input

Rename this section Medical Devices. Delete information related to labs. Labs has been removed from NFPA 99. The remaining information relates to Medical Devices.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Tue May 15 18:05:02 EDT 2012

Committee Statement

Resolution: ________________
Statement:

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11.4.3.2 was deleted since laboratories are no longer covered by NFPA 99. A title was added to 11.4.3.3 (now 11.4.3.2) editorially.
11.5.1.3 Servicing and Maintenance of Equipment.

11.5.1.3.1 Defective equipment shall be immediately removed from service.

11.5.1.3.2 Defective electrical apparatus shall not be used.

11.5.1.3.3 Areas designated for the servicing of oxygen equipment shall be clean and free of oil, grease, or other flammable substances.

11.5.1.3.4 Service manuals, instructions, and procedures provided by the manufacturer shall be used in the development of a program for maintenance of equipment.

11.5.1.3.5 A scheduled preventive maintenance program, if defined by the program developed in 11.5.1.3.4, shall be followed.

Statement of Problem and Substantiation for Public Input

The suggested change will harmonize Gas Equipment maintenance with Electrical Equipment. The current statement of "Service manuals, instructions, and procedures provided by the manufacturer shall be used in the maintenance of equipment" could be misinterpreted by the reader as manufacturer's recommendations must be followed verbatim instead of considered. The experience accumulated by the facility and others (evidence-based maintenance) should be used to adjust manufacturers' recommendations whenever and wherever appropriate.

Submitter Information Verification

Submitter Full Name: BINSENG WANG
Organization: ARAMARK Healthcare Technologies
Submittal Date: Wed May 02 17:24:26 EDT 2012

Committee Statement

Statement: Deleted 11.5.1.3.2 to eliminate redundancy with 11.5.1.3.1. Moved 11.5.1.3.4 to the Annex as a recommendation to 11.5.13.5. The current statement of "service manuals, instruction, and procedure provided by the manufacturer shall be used in the maintenance of equipment" could be misinterpreted by the reader as manufacturer's recommendations must be followed verbatim instead of considered. The experience accumulated by the facility an others "evidence based maintenance" should be used to adjust manufacturer's recommendations whenever and wherever appropriate.

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Public Input No. 355-NFPA 99-2012 [ Sections 11.5.2.2.2, 11.5.2.2.3 ]

Original  Hide Markup
Sections 11.5.2.2.2, 11.5.2.2.3

11.5.2.2.2
Transfilling - Transfer of gaseous oxygen from one oxygen that utilizes at least one high pressure cylinder to another shall be in refill another cylinder shall be considered transfilling and shall done in accordance with CGA P-2.5, Transfilling of High Pressure Gaseous Oxygen to be Used for Respiration outside of patient care rooms of health care facilities.

Rationale/Justification Note: CGA P2.5 deals with the use of one or more high volume, high pressure cylinders as the source of gaseous oxygen and presents risks inherent to transferring gases under high pressures and flow rates that need professional training to mitigate risks of transfilling. Mechanical compressors designed for low flow refilling rates using a low pressure, oxygen concentrator source of gaseous oxygen do not present the same risks upon cylinder refilling and should not be considered transfilling subject to CGA P2.5. Alternate filling technologies that refill patient cylinders with low flow rates and low pressure sources do not present the same safety risks to patients as a CGA P2.5 transfilling condition and should not be banned from being performed in patient care areas.

11.5.2.2.3
Transfer of any gases

Rationale/Justification Note: The filling of a cylinder with any gas or gaseous mixture other than oxygen needs to be banned from patient care areas due to the inherent safety risks and hazards of high pressure, high flow rate transfilling of any cylinders to which the patients may be exposed.

Statement of Problem and Substantiation for Public Input

Many state facility inspectors are stating that oxygen cylinder refilling systems based on oxygen concentrators and mechanical compressors are really transfilling systems and are banning them from patient care areas. Transfilling as defined by CGA P2.5 requires one or more high pressure, high volume cylinders, evacuation equipment, cleaning equipment, gauges, pumps, plumbing, etc. and involve serious hazards and risks. Transfilling also requires specialized training in handling and operation to prevent fire, death, or equipment damage to facilities. State of the art refilling sytems based on oxygen concentrators for cylinders do not involve the risks and hazards associated with CGA P2.5 based transfilling systems and would allow patients to refill their own personal cylinders for ambulatory use. The oxygen concentrator based refilling systems are FDA approved and have been in use in the home care market for many years already with excellent safety records. The inherent risks associated with typical transfilling do not exist with oxygen concentrator based refilling compressors. Distinctions need to be generated in the standard to recognize the differences between transfilling systems

Submitter Information Verification

Submitter Full Name: DAVID D POLACSEK
Organization: INVACARE CORP
Submittal Date: Fri Jun 22 09:22:53 EDT 2012

Committee Statement

Statement: The oxygen concentrator based refilling systems are FDA approved and have been in use in the home care market for many years already with excellent safety records. The inherent risks associated with typical transfilling do not exist with oxygen concentrator based refilling compressors. Limitations were
placed on these systems in order to prevent the risks associated with larger, higher flow or higher pressure systems being introduced into the patient environment. The cylinder size was limited to cylinders normally used for patient ambulation. The filling rate was limited to prevent excessive heating of the cylinder contents. The filling pressure was limited based on the existing industry practice.

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Annual table top, functional, or full-scale exercises shall include the following:

1. Community integration
2. Assessment of sustainability

Statement of Problem and Substantiation for Public Input

The term "sustainability" is now commonly used in lieu of the term "stand-alone capability."

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Sun Jun 10 16:57:21 EDT 2012

Committee Statement

Resolution: FR-118-NFPA 99-2012
Statement: The term "sustainability" is now commonly used in lieu of the term "stand-alone capability."

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12.5.3.4.5.2
Prior to beginning work, efforts shall be made to verify identities of other volunteers offering to assist during response activities must be verified.

Statement of Problem and Substantiation for Public Input

Verification of the identity of non-clinical volunteers is mandatory. Previous wording could be interpreted that this is an optional activity.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submital Date: Wed Jun 13 09:03:40 EDT 2012

Committee Statement

Statement: Verification of the identity of non-clinical volunteers is mandatory. Previous wording could be interpreted that this is an optional activity.

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**Public Input No. 200-NFPA 99-2012 [ Section No. 12.5.3.6.1 ]**

### 12.5.3.6.1
The facility shall update its emergency management program annually, which shall include the following:

1. Updates to the facility HVA
2. Updates to the facility EOP
3. Updates to the facility emergency supplies inventory

### Statement of Problem and Substantiation for Public Input
The Joint Commission requires this third update as part of the annual evaluation process.

### Submitter Information Verification

**Submitter Full Name:** Susan McLaughlin  
**Organization:** MSL Healthcare Consulting, Inc  
**Submital Date:** Wed Jun 13 09:10:03 EDT 2012

### Committee Statement

**Resolution:** FR-125-NFPA 99-2012  
**Statement:** Various accredited and regulatory organizations require these updates as part of the evaluation process. The revised text also consolidates the updates previously required by 12.5.3.3.9.8.

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Public Input No. 64-NFPA 99-2012 [Section No. 13.1 [Excluding any Sub-Sectons]]

This chapter shall provide those with the responsibility for security in new apply to new and existing health care facilities with the criteria to develop a security management program.

Statement of Problem and Substantiation for Public Input

The existing sentence did not contain a requirement. The explanatory language was removed to the annex and the sentence revised to show the applicability of the chapter, which matches content in other chapters of NFPA 99.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 14:28:05 EDT 2012

Committee Statement

Statement: Scope is covered in Chapter 1. Section 13.1 was changed to be consistent with other chapters. A new section 13.2 was created to separate the security management plan requirement from the applicability statement.

Copyright Assignment

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Public Input No. 66-NFPA 99-2012 [Sections 13.1.1, 13.1.2]

Statement of Problem and Substantiation for Public Input

Sections moved to 13.2 in public input #67.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
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<tbody>
<tr>
<td>Public Input No. 67-NFPA 99-2012 [Section No. 13.2]</td>
<td>Deleted material is moved to Section 13.2.</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 14:44:30 EDT 2012

Committee Statement

Resolution: The security vulnerability assessment is separate from the security management plan. It is utilized to determine the content of the security management plan.

Copyright Assignment

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Public Input No. 67-NFPA 99-2012 [Section No. 13.2]

The security vulnerability assessment is separate from the security management plan. It is utilized to determine the content of the security management plan.
13.2 Security Vulnerability Assessment (SVA) — Plan

13.2.1* A health care facility shall have a security management plan.

13.2.2 The health care facility shall conduct a security vulnerability assessment (SVA), as part of the security plan.

13.2.3 The SVA shall evaluate the potential security risks posed by the physical and operational environment of the health care facility to all individuals in the facility.

13.2.4 The facility shall implement procedures and controls in accordance with the risks identified by the SVA.

13.2.5 The scope, objectives, performance, and effectiveness of the security plan shall be tested at a frequency shown to be necessary by review of the security vulnerability assessment (SVA).

Statement of Problem and Substantiation for Public Input

Reorganized sections under heading of Security Plan for clarity. Section 13.1.1 becomes 13.2.1 and section 13.1.2 becomes 13.2.5. The existing sections of 13.2 are renumbered. The security plan and plan evaluation do not fit under Scope. The SVA is actually part of the SVA so all of this text should be together under the one heading.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 14:47:13 EDT 2012

Committee Statement

Resolution: The security vulnerability assessment is separate from the security management plan. It is utilized to determine the content of the security management plan.

Copyright Assignment

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Public Input No. 73-NFPA 99-2012 [New Section after 13.3.2]

13.4 People Management.

13.4.1 Employees.

13.4.1.1* Employers shall promote trustworthiness by using the following personnel practices for employees with access to critical assets:

(1)* Background screening
(2) Verification of background screening of contracted personnel acting in the capacity of employees
(3) Drug testing program

13.4.1.2* Identification badges shall have a photograph of the bearer and the bearer's name.

13.4.1.3 When identification badges are issued, employees shall, as indicated in the security plan, do one but not both of the following:

(1) Display the badge at all times
(2) Display the badge on demand

13.4.2 The Public.

Public visitation controls shall be enforced.

13.4.2.1 After-hours entrance by the public shall be restricted to designated areas such as entrance lobbies and emergency departments.

13.4.2.2 Health care facility security controls and procedures shall comply with life safety requirements for egress.

13.4.3* The Media.

The security management plan shall include procedures to accommodate media representatives.

13.4.3.1 A person shall be designated to serve as media contact and representative for the organization in regard to media interactions.

13.4.3.2 An area shall be designated for assembly of media representatives.

13.4.3.2.1 A security or facility staff member shall remain with the media representative(s) at all times.

13.4.3.2.2* Media representatives shall be escorted when granted access to the health care facility outside of the area designated in 13.4.3.2.

13.4.4* Crowd Control.

13.4.4.1 The security management plan shall provide procedures for crowd control demanding access to a health care facility.

13.4.4.2 The procedures for managing crowd control shall provide for coordination and collaboration of security
and law enforcement.

13.4.5* Security Personnel.

13.4.5.1 Personnel Requirements.

13.4.5.1.1 The number of security personnel shall be determined by the security plan and the person responsible for facility security.

13.4.5.1.2 Selection criteria for security personnel shall include but not be limited to the following:

(1) Federal, state, and local laws and regulations
(2) Knowledge of criminal activities and proper law enforcement response procedures
(3) Good judgment and emotional stability
(4) Experience and demonstrated ability to retain composure under pressure
(5) Disclosure of charges or convictions for felonies or crimes involving dishonesty or moral turpitude

13.4.5.2* Security Duties.

13.4.5.2.1 Facilities with security personnel shall have post orders.

13.4.5.2.2 Post orders shall contain instructions to cover reasonably foreseeable events security personnel may encounter.

13.4.5.2.2.1 Post orders shall list the name of the facility, the date issued, effective date, and purpose.

13.4.5.2.2.2 Post orders shall list security personnel duties, including but not be limited to the following:

(1) Authority of security personnel
(2) Emergency response procedures
(3) Job classification
(4) Uniforms
(5) Authorized weapons, including firearms, batons, and mace
(6) Reporting times
(7) Security patrols
(8) Hours of coverage
(9) Facility rules and regulations
(10) Applicable federal, state, and local laws
(11) Other duties to be assigned

13.4.5.2.3* Instructions shall be lawful and endeavor to protect the safety of security personnel and those they interact with in performance of their duties.

13.4.5.2.3 Post orders shall be reviewed and updated at a frequency shown to be necessary by review of the SVA.

13.4.5.2.3.1 Facility management and security management shall periodically assess post orders to identify and correct operational problems.

13.4.5.2.3.2 A procedure shall be established to inform security personnel of changes in post orders.
A procedure shall be established to inform security personnel of changes in post orders.

13.4.5.* Supervision.

13.4.5.1* Security patrols shall be supervised.

13.4.5.2 Records shall be kept, including but not limited to the following:

1. Crimes discovered by or reported to security personnel
2. Frequency of patrols
3. Activity log
4. *Exceptions log

13.4.5.3 Security records shall be retained for not less than 5 years or until the expiration of the appropriate statute of limitations, whichever is longer.

13.4.5.4 Security Personnel Communications.

Field security personnel shall have a process and means to communicate with a security office or public safety agencies.

13.4.5.5* Weapons and Equipment.

13.4.5.5.1 Security personnel shall carry only authorized equipment.

13.4.5.5.2 When weapons are authorized, policies and procedures governing their storage, handling, and use shall be established.

13.4.5.6* Training.

13.4.5.6.1 Security personnel shall be trained in the performance of their duties.

13.4.5.6.2 Security personnel that carry weapons shall be trained in their storage, handling, and use.

13.4.5.6.3 Armed security personnel shall have firearms training.

13.4.5.6.4 Security personnel in health care facilities should have additional training to include but not be limited to the following:

1. Customer service
2. Emergency procedures
3. Patrol methods
4. De-escalation training
5. Use of physical restraints
6. Use of force

13.5 Material Receiving.

13.5.1 Commercial Receivables.

13.5.1.* Shipments coming into facilities shall be stopped for entry authorization and dock assignment.

13.5.1.1* Shipments coming in shall be expected and have corresponding purchase orders or requisitions.
13.5 Undocumented deliveries shall not be accepted.

13.5.1 Receipt of hazardous materials shall be documented and tracked.

13.5.2 Package Deliveries.

13.5.2.1 Packages being delivered shall be inspected for evidence of tampering or damage.

13.5.2.2* Any damaged or suspicious packages shall be reported to the carrier.

13.5.3 Mail.

13.5.3.1* Employees who handle mail shall evaluate the appearance of incoming packages to determine if they fit the characteristics of mail normally received.

13.5.3.2 The recipient of a letter or package shall evaluate the delivery to determine if a package is from an unknown, unsolicited source.

13.5.4 Couriers.

13.5.4.1 Couriers making deliveries shall provide identification.

13.5.4.2 Courier identification shall be entered into a delivery log or attached to the item being delivered.

13.6 Security Perimeters.

13.6.1 General.

13.6.1.1 The area covered by the security plan shall be defined by the security vulnerability assessment (SVA).

13.6.1.2* The primary security perimeter shall include the total area in the security plan.

13.6.1.3* Secondary security perimeters within the primary security perimeter shall be areas identified as either secured or unsecured.

13.6.1.4* Movement through every portal in a secured perimeter shall be controlled.

13.6.1.5 Physical barriers or security systems utilized or installed in security perimeters shall comply with applicable fire code or other life safety requirements.

13.6.2* Area Designations.

Areas within secondary security perimeters should be designated as one of the following:

1. Unsecured
   (a) Open
   (b) Protected

2. Secured
   (a) Controlled
   (b) Restricted
Statement of Problem and Substantiation for Public Input

The new text is from NFPA 730, 2011 edition. NFPA 730 went through a complete revision going into the 2011 edition. Each occupancy chapter was normalized in format. This additional language reflects the revisions to NFPA 730, chapter 12 on Healthcare.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 16:33:48 EDT 2012

Committee Statement

Resolution: The proposed text is covered in other sections within chapter 13: security personnel training is covered in 13.3.2(9), emergency procedures is covered in 13.3.2(3), media control is covered in 13.6, etc. In addition the language is vague or unenforceable (e.g. “promote trustworthiness” and “good judgement and emotional stability”).

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Public Input No. 202-NFPA 99-2012 [Section No. 13.3.2]

13.3.2
The duties of the person assigned as required by 13.3.1 shall include, but not be limited to, the following, as identified in the SVA:

(1) Provide identification for patients, staff, and other people entering the facility
(2) Control access in and out of security-sensitive areas
(3) Define and implement procedures as follows:
   (a) Security incident
   (b) Hostage situation
   (c) * Bomb (explosive device or threat)
   (d) Criminal threat
   (e) Labor action
   (f) Disorderly conduct
   (g) Workplace violence
   (h) Restraining order
   (i) Prevention of, and response to, infant or pediatric abduction
   (j) Situations involving VIPs or the media
   (k) Maintenance of access to emergency areas
(l) Civil disturbance
(m) Forensic patients
(n) Patient elopement
(o) Homeland Security advisory system (threat level changes)
(p)
(q) Suspicious powder or substance Suspicious package
(r) Use of force policy
(s) Security staffing augmentation
(t) Active shooter

(4) Provide security at alternate care sites or vacated facilities
(5) Control vehicular traffic on the facility property
(6) Protect the facility assets, including property and equipment
(7) Provide policy for interaction with law enforcement agencies
(8) Comply with applicable laws, regulations, and standards regarding security management operations
(9) Educate and train the facility security force to address the following:
(a) Customer service
(b) Use of physical restraints
(c) Use of force
(d) Response criteria
(e) Fire watch procedures
(f) Lockdown procedures
(g) Emergency notification procedures
(h) Emergency communications procedures

Statement of Problem and Substantiation for Public Input

Removing Homeland Security threat level changes: Hospitals typically do not adapt policies to threat level changes.
Change "suspicious powder or substance" to "suspicious package." Any suspicious powder or substance will likely be contained within a suspicious package, which hospital receiving departments should be trained to recognize.
Add Active Shooter policy: Given events that have taken place in hospitals, most are developing and implementing this policy.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 09:22:10 EDT 2012

Committee Statement

Statement: Replaced "homeland security advisory system" with NTAS which is the replacement system.
Changed "suspicious powder or substance" to "suspicious material or package" to be more
Public Input No. 75-NFPA 99-2012 [Section No. 13.4]

13.4 Security-Sensitive Areas.

13.4.6.3.1 All security-sensitive areas, as identified by the SVA, shall be protected classified as appropriate controlled or restricted.

13.4.6.3.2 Emergency department security shall include appropriate protection, including the following:

- (1) * Control and limitation of access by the general public
- (2) Private duress alarm at the nurses’ station and reception for summoning immediate assistance
- (3) Access-control of treatment area
- (4) Lockdown procedure to secure the area when conditions threaten the viability of the department
- (5) Bullet-resisting glazing material, as deemed necessary by review of the SVA

13.4.6.3.3 Pediatric and infant care areas shall have a security plan for the prevention of, and response to, pediatric and infant abduction that shall include appropriate protections, such as the following:

- (1) Control and limitation of access by the general public
- (2) Screening by nursing prior to allowing persons access to infant care areas
- (3) Matching protocol with staff clearance to pair infants with parents
- (4) System to monitor and track the location of pediatric and infant patients
- (5) * Facility alert system, lockdown, and staff inspection of all packages leaving the premises
- (6) Use of electronic monitoring, tracking, and access control equipment
- (7) Use of an automated and standardized facilitywide alerting system to announce pediatric or infant abduction
- (8) Remote exit locking or alarming
- (9) Facility lockdown procedures and staff inspection of all persons and packages leaving the premises
- (10) Prohibition on birth announcements by staff
- (11) Detection of the presence of nonidentified individual constitutes security breach
- (12) Movement of infants restricted to basins only — no hand carries

Comprising. Added active shooter policy to address recent developments in the industry.

*Control and limitation of access by the general public
*Facility alert system, lockdown, and staff inspection of all packages leaving the premises

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Movement of infants restricted to basinet only — no hand carries

Health care staff wear unique identification or uniforms

Secure storage of scrubs and uniforms, both clean and dirty

Education in pediatric and infant abduction as follows:

(a) Health care staff are familiar with infant abduction scenarios.

(b) Parents know not to leave a child or an infant unattended or in the care of an unidentified person.

Visiting family and friends not permitted to enter any nursery area with an infant or a newborn from the outside

Infant abduction drills conducted periodically to test effectiveness of chosen measures

Medication storage and work areas shall be secured against admittance of unauthorized personnel through the use of the following:

(1) Physical access control

(2) Unique identification for the area

(3) Secure storage and controlled dispensing of drugs

Clinical and research laboratories shall be secured against admittance of unauthorized personnel through appropriate protections, such as the following:

(1) Physical access control

(2) Unique identification for the area

(3) Secure storage and controlled dispensing of regulated chemical, biological, and radiological materials

Dementia or behavioral health units shall be secured against the admittance or release of unauthorized personnel through appropriate protections, such as the following:

(1) Physical access control

(2) Unique identification for the area

(3) Procedure to prevent entry of contraband prior to a person being admitted into the unit or department

(4) Elopement precautions

(5) Maintenance of color photos with the medical information of current patients to aid in identification

Forensic patient treatment areas shall provide appropriate protections, such as the following:

(1) Law enforcement attending the patient at all times

(2) Treatment performed in an area separate from other patients

(3) Restraints applied or removed only under forensic staff control

Communications, data infrastructure, and medical records storage areas shall be secured against the admittance of unauthorized personnel or unauthorized release of confidential information through the use of appropriate protections, such as the following:

(1) Physical access control

(2) Unique identification for the area
Surveillance equipment
Data encryption and password protection

Statement of Problem and Substantiation for Public Input

Renumber the section to match the proposal for additional text from NFPA 730, 2011 edition. Change the first paragraph to state that entrance to security-sensitive areas needs to be controlled and the control measures are determined by whether the area is controlled or secured. See the earlier public input for the classification of spaces in the security plan.

Related Public Inputs for This Document

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<tr>
<th>Related Input</th>
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<tbody>
<tr>
<td>Public Input No. 74-NFPA 99-2012 [New Section after A.13.3.2(3)(c)]</td>
<td>Contains the text explaining controlled and restricted access.</td>
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</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Mon Apr 16 16:01:15 EDT 2012

Committee Statement

Resolution: The section was not renumbered since PI-73 was not incorporated into the document. The terminology "controlled or restricted" was not adopted since there are no definitions or requirements for these terms.

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Public Input No. 78-NFPA 99-2012 [New Section after 13.5]

13.7 Portal Control.
13.7.1 General.
13.7.1.1 The number of portals in a security perimeter shall be restricted to the minimum required for safe and efficient operation of the facility.
13.7.1.2* Movement through portals in security perimeters shall be controlled.
13.7.2 Exterior Portals.
13.7.2.1
Exterior entrances shall be provided with locking devices.

13.7.2.2
Exterior hinge pins on doors in security perimeters shall be secured against removal.

13.7.3 Locks.

13.7.3.1*
Egress and fire resistance provisions relating to doors and hardware shall be maintained.

13.7.3.2
Individual products shall be listed to the following standards as applicable:

(1)* ANSI/BHMA A156 Series for builders' hardware
(2) ANSI/UL 1034 for burglary-resistant electronic locking mechanisms
(3) ANSI/UL 437 for key locks
(4) ANSI/UL 768 for combination locks
(5) ANSI/UL 294 for access control system units
(6) UL Subject 2058 for high security electronic locks
(7) ANSI/UL 305 and ANSI/BHMA A156.3 for exit panic devices

13.7.3.3
Locking devices shall be properly installed and be in good working order.

13.7.3.4*
Doors intended to be continuously secured shall automatically close and securely latch.

13.7.4* Key Control.

13.7.4.1
The integrity of key systems shall be protected by using key control.

13.7.4.2
Key control procedures shall include but not be limited to the following:

(1) Re-key when a key to a designated controlled or restricted area is lost
(2) Maintain access lists for persons authorized to draw master keys
(3)* Maintain security of key storage containers and cabinets
(4) Perform security checks of key storage containers and cabinets
(5) Inventory keys annually or as dictated by the security plan
(6) Maintain a written record of key issuance requests, approvals, and issuances
(7) Destroy or maintain security on keys not issued or no longer needed
(8) Discretely identify keys and key tags by using a coding system
(9)* Train employees on key control policy and procedure

13.7.4.3*
Key control records shall include but not be limited to the following:

(1) Number assigned to each key and lock
(2) Location of each lock (room number)
(3) Person to whom keys have been issued
(4) Date of issuance
(5) Date of return
(6)* Documented acceptance for keys issued and returned

Statement of Problem and Substantiation for Public Input
Proposed new text from NFPA 730, 2011 edition. NFPA 730 went through a complete revision in for the 2011 edition and that additional text for healthcare facilities is proposed for addition here.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submital Date: Mon Apr 16 16:25:21 EDT 2012

Committee Statement

Resolution: The proposed text would not be appropriate for some healthcare facilities, such as intermediate health care facilities for the mentally retarded, rural health clinics, end stage renal disease facilities, etc. Also, the term "portals" is not commonly used in health care.

Copyright Assignment

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Statement of Problem and Substantiation for Public Input

The deleted text is submitted in another public input to become new section 13.4.2. Numbering and title of the remaining section is revised for manual of style and to match the numbering in previous public inputs.

Related Public Inputs for This Document

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Public Input No. 73-NFPA 99-2012 [New Section after 13.3.2]</td>
<td>Public input that contains the text deleted herein.</td>
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</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Mon Apr 16 16:13:28 EDT 2012

Committee Statement

Resolution: The previous public inputs were not incorporated into the document.

Copyright Assignment

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Public Input No. 81-NFPA 99-2012 [Sections 13.6, 13.7, 13.8, 13.9, 13.10]

Sections 13.6, 13.7, 13.8, 13.9, 13.10
13.6 – Media Control –

13.6.1 –

The security management plan shall include procedures to accommodate media representatives.

13.6.1.1 –

A person shall be designated to serve as media contact and representative for the organization in regard to media interactions.
13.6.2 —
An area shall be designated for assembly of media representatives.
13.6.3 —
A security or facility staff member shall remain with the media representative(s) at all times.
13.6.4 —
Media representatives shall be escorted when granted access to the health care facility outside of the area designated in 13.6.1.
13.7 —
Crowd Control.
13.7.1 —
The security management plan shall provide procedures for crowd control for management of those demanding access to a health care facility.
13.7.2 —
The procedures for crowd control shall provide for the coordination and collaboration of security and law enforcement.
13.8 —
Security Equipment.
13.8.1 —
The security management plan shall provide procedures for crowd control demanding access to a health care facility.
13.8.2 —
The security management plan shall include processes and procedures for controlling access to the health care facility.
13.8.2.1 —
Exterior entrances shall be provided with locking devices.
13.8.2.2 —
Locking devices shall comply with applicable federal, state, and local requirements.
13.8.2.3 —
Locking devices shall be properly installed and be in good working order.
13.8.3 —
The facility shall operate a key control program.
13.9 —
Employment Practices.
Employers shall ensure a high level of integrity in the workplace by using the following practices:

(1) Background checks of employees with access to critical assets
(2) Background checks of outside contractors’ employees
(3) Drug testing program for employees

13.10 —
Security Operations.
13.10.1 —
Post orders shall be written for security personnel.
13.10.2 —
Security personnel training shall include, but not be limited to, the following:

(1) Customer service
(2) Emergency procedures
(3) Patrol methods
(4) De-escalation training
(5) Use of physical restraints
(6) Use of force

Statement of Problem and Substantiation for Public Input

Delete this material because it was moved to people management and portal control sections as proposed in public inputs to reorganize Chapter 13 based on the complete revision of NFPA 730, in the 2011 edition.

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<tr>
<td>Public Input No. 73-NFPA 99-2012 [New Section after 13.3.2]</td>
<td>Location of people management.</td>
</tr>
<tr>
<td>Public Input No. 78-NFPA 99-2012 [New Section after 13.5]</td>
<td>Location of portal control.</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Tue Apr 17 10:17:40 EDT 2012

Committee Statement

Resolution: The previous public inputs were not incorporated into the document.

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13.11.8 Drills

13.11.8.1 Periodic drills shall be conducted at various times and locations.

13.11.8.2 The drills shall be critiqued for plan effectiveness and to identify opportunities for improvement.

13.11.8.3 Identified opportunities for improvement shall be incorporated into the security plan.

13.11.8.4 The security plan shall be evaluated at least annually.

The evaluation of the security management plan shall include a review of laws, regulations, and standards applicable to the security program.

Statement of Problem and Substantiation for Public Input

Renumber to match the reorganization of Chapter 13. Delete 13.11.4 because it is in direct conflict with 13.1.2.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Tue Apr 17 10:22:31 EDT 2012

Committee Statement

Statement: The annual evaluation was limited to the security plan. An annual update of the SVA is addressed in 13.2.1 as revised.

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Public Input No. 96-NFPA 99-2012 [ Chapter 14 [Title Only] ]

Hyperbaric Chamber(s) and Supporting Facilities

Statement of Problem and Substantiation for Public Input

My thought in the addition of "chamber(s) and supporting facilities" was to distinguish between two separate areas of codes and standards, i.e., the chamber itself and the building or structure enclosing the chamber, along with the facility's administrative structure and support.

Submitter Information Verification

Submitter Full Name: WILLIAM GOSSETT
Organization: Convergent Hyperbaric Consulting Services, LLC
Submittal Date: Fri Apr 20 11:31:16 EDT 2012

Committee Statement

Resolution: The scope of Chapter 14 as provided in Section 1.1.12 clearly indicates that Chapter 14 is to be applied to hyperbaric chambers and the associated facilities.

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Public Input No. 388-NFPA 99-2012 [Section No. 14.2.1.2 [Excluding any Sub-Sections]]

A hydraulically calculated automatic wet pipe sprinkler system meeting the requirements of NFPA 13, Standard for the Installation of Sprinkler Systems, or a clean agent fire suppression system meeting the requirements of NFPA 2001, Standard, shall be installed in the room housing a Class A, Class B, or Class C chamber and in any ancillary equipment rooms.

Statement of Problem and Substantiation for Public Input

New technology of clean agent fire suppression systems allow for chamber operators to manually activate the FSS and to remain in the chamber room while excavating the patient. Use of the clean agent system is less costly to the end user should renovation be a factor.

Submitter Information Verification

Submitter Full Name: Richard Barry
Organization: Diversified Clinical Services
Affiliation: Committee Member
Submittal Date: Fri Jun 22 17:05:09 EDT 2012

Committee Statement

Resolution: There are concerns over whether clean agents are able to provide equivalent protection as sprinkler systems, specifically with concerns about perimeter integrity which can prevent extinguishment.

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Public Input No. 186-NFPA 99-2012 [ New Section after 14.2.1.4.4 ]

Add a new subsection to read:
14.2.1.4.4(a) Service valves shall be installed at each chamber to allow servicing of the chamber, patient side piping or station outlets without shutting down the entire main, riser or facility.

Statement of Problem and Substantiation for Public Input

The requirement for service valves does not exist in the current code. A multi-chamber may be built without service valves requiring shut down of the complete facility if one of the chambers is disconnected from the piping system.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 14:00:53 EDT 2012

Committee Statement

Resolution: The Code already includes these requirements in 14.2.1.4.2 and 14.2.1.4.3 through reference to Chapter 5 and PVHO-1.

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Origin (from sources other than the submitter)

NFPA 99, 2012 5.1.4.7
Public Input No. 187-NFPA 99-2012 [ New Section after 14.2.1.4.4 ]

Add new subsections to read:

14.2.1.4.4(b) Each station outlet for medical gases shall be gas-specific, whether the outlet is threaded or is a noninterchangeable quick coupler.
14.2.1.4.4(c) Each station outlet for medical gases shall be legibly identified in accordance with 5.1.11.3.
14.2.1.4.4(d) Each station outlet shall be designed so that parts or components that are required to be gas specific for compliance with 14.2.1.4.4(b) cannot be interchanged between the station outlet for different gases.
14.2.1.4.4(e) The use of common parts in outlets, such as O-rings, fasteners, seals and shutoff poppets, shall be permitted.
14.2.1.4.4(f) Station outlets shall be permitted to be recessed or otherwise protected from damage.
14.2.1.4.4(g) If operated at a pressure in excess of 550 kPa (80 psi) the station outlets shall be a noninterchangeable threaded connection.

Statement of Problem and Substantiation for Public Input

A standard has not been defined for station outlets.

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 14:03:30 EDT 2012

Committee Statement

Resolution: The Code already includes these requirements through reference to Chapter 5 and PVHO-1. Station outlets would fall under Chapter 5 rules if they are piped downstream of the zone valve. If a valve is added downstream of the zone valve, then PVHO-1 is required to be followed. This section applies to both Class A and Class B chambers and in many hyperbaric operations there is a need for gas switching from outside of the chamber. There is also a requirement elsewhere in Chapter 14 for oxygen switching to air in the event of fire in the chamber.

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Origin (from sources other than the submitter)

NFPA 99, 2012 5.1.5.1, 5.1.5.5, 5.1.5.7, 5.1.5.8, 5.1.5.13, and 5.1.5.15(3)
Public Input No. 188-NFPA 99-2012 [ New Section after 14.2.1.4.4 ]

Add a new subsection to read:
14.2.1.4.4(h) Central Supply Systems. Medical air systems, when installed, shall comply with 5.1.3.5.
14.2.1.4.4(i) The facility staff shall develop their emergency plan to deal with the loss of medical air.

Statement of Problem and Substantiation for Public Input

Medical Air (break air) is often piped also. The current code provides no provision for Medical Air (break air).

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 14:10:32 EDT 2012

Committee Statement

Resolution: Section 14.2.1.6 and 14.2.1.6.4.7 already address medical air requirements that are suggested.

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Origin (from sources other than the submitter)

NFPA 99, 2012 5.2.3.4 and 5.2.3.5
Public Input No. 185-NFPA 99-2012 [ Section No. 14.2.1.4.4.2 ]

14.2.1.4.4.2 Central Supply Systems.

Oxygen systems shall comply with 5.1.3.5, as applicable, except as follows:

1. An emergency oxygen supply connection (EOSC) is not required for the hyperbaric oxygen system.
2. An in-building emergency reserve (IBER) is not required for the hyperbaric oxygen system.

Statement of Problem and Substantiation for Public Input

Medical Air (break air) is often pipes also. The current code provides no provision for Medical Air (break air).

Submitter Information Verification

Submitter Full Name: James Lucas
Organization: Tri-Tech Medical Inc.
Submittal Date: Thu Jun 07 13:59:04 EDT 2012

Committee Statement

Resolution: Section 14.2.1.6 already addresses medical air.

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Origin (from sources other than the submitter)

NFPA 99, 2012 14.2.1.4.4
Public Input No. 97-NFPA 99-2012 [Section No. 14.2.1.4.4.5]

14.2.1.4.4.5 Warning Systems.
Oxygen systems shall comply with 5.1.9, as applicable, except that warning systems shall be permitted to be a single master/area alarm panel. The alarm panel shall be located in close proximity to the chamber's control panel to allow for easy audio and visual monitoring by the chamber operator.

Statement of Problem and Substantiation for Public Input

The chamber operator should be immediately aware of any medgas alarm condition that may affect the safe operation of the hyperbaric treatment he/she is responsible for.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
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<tr>
<td>Public Input No. 98-NFPA 99-2012 [Section No. 14.2.1.6.4.7]</td>
<td>Both deal with the chamber operator's responsibility to be aware of any alarm condition affecting the safety of chamber operations.</td>
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Submitter Information Verification

Submitter Full Name: WILLIAM GOSSETT
Organization: Convergent Hyperbaric Consulting Services, LLC
Submittal Date: Fri Apr 20 11:40:22 EDT 2012

Committee Statement

Resolution: FR-203-NFPA 99-2012. The term "close proximity" is not enforceable language and subject to interpretation.
Statement: The chamber operator should be immediately aware of any medical gas alarm condition that may affect the safe operation of the hyperbaric treatment he/she is responsible for.

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Public Input No. 98-NFPA 99-2012 [ Section No. 14.2.1.6.4.7 ]

14.2.1.6.4.7

Medical air systems shall comply with Section 5.2 as applicable, except as follows:

1. Area and master alarms are not required for alarms shall be required for all acute and nonacute care chamber operations.

2. Remote monitoring and alarms, for the medical air system, shall be located in close proximity to the operator's panel for clear audio and visual monitoring by the chamber operator.

3. A gas cylinder header per Section 5.2 with sufficient cylinder connections to provide for at least an average day's supply with the appropriate number of connections being determined after consideration of delivery schedule, proximity of the facility to alternate supplies, and the facility's emergency plan are permitted.

Statement of Problem and Substantiation for Public Input

Alarm Panel Location:
The chamber operator is responsible for the safe operation of chamber treatments. The requirement of remote monitoring at the operator's panel provides system data and status to the operator, which he/she should be cognizant of while operating the chamber.

Acute care verses non-acute care:
Monitoring the air system during acute care or nonacute care seems to be an equally important responsibility of the chamber operator, regardless of acuity.

Submitter Information Verification

Submitter Full Name: WILLIAM GOSSETT
Organization: Convergent Hyperbaric Consulting Services, LLC
Submittal Date: Fri Apr 20 11:59:25 EDT 2012

Committee Statement

Resolution: There has been no technical substantiation provided as to why alarms must be provided for "non acute" care, which is now referred to as "Category 2" care. The new use of terminology clearly identifies that Category 2 care will not result in injury to the patient, so it does not seem necessary to provide the alarms.

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14.2.2.5*
The interior of Class A chambers shall be unfinished or treated with a finish that is in accordance with 14.2.2.5.1:

14.2.2.5.1* The finish material for the interior of Class A chambers shall be one of the following:

- High quality epoxy
- Noncombustible material as defined in 3.3.
  1. A material that, when tested in accordance with ASTM E1354, Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter, in the horizontal orientation, at an incident heat flux of 50 kW/m², using steel as a substrate, exhibits a heat release rate of no more than 200 kW/m².
  2. A material that, when tested in accordance with NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth, using steel as a substrate, does not exhibit flashover and exhibits a heat release rate of no more than 500 kW.
  3. A limited-combustible material in accordance with 3.3.98
  4. A Noncombustible material in accordance with 3.3.123

If the interior of a Class A chamber is treated (painted) with a finish listed described in 14.2.2.5.1, the cure procedure and minimum duration for each coat of finish to off-gas shall be in accordance with the manufacturer's application instructions and material safety data sheets.

14.2.2.5.2*
If sound-deadening materials are employed within a hyperbaric chamber, they shall be limited-combustible materials as defined in accordance with 3.3.98.

Statement of Problem and Substantiation for Public Input

This public input corrects a problem and allows more flexibility while retaining fire safety. Issues with the present language: 1. In fact, very few paints (interior finish materials) are noncombustible and the application of the requirements would result in most paints being “high quality epoxy”, whether flammable or not. 2. There is no requirement for smoke emission in NFPA 99 and none is being proposed in this public input. 3. What is being proposed today is more severe than a material that has a flame spread or heat release of a Class A is a material which exhibits a flame spread index of no more than 25 (when tested to ASTM E 84, Steiner tunnel) or a maximum heat release rate of 800 kW and no flashover (when tested to NFPA 286, room corner test). 4. The proposed fire test criteria (from either the room corner test, NFPA 286, or the cone calorimeter, ASTM E1354), are fire performance levels intermediate between that of “flame resistant” material (as the previous edition of NFPA 99 asked for, and which was equivalent to testing to NFPA 701, a textile test) and a limited combustible material. The NFPA 286 test is already referenced in NFPA 99. The proposed changes will provide the following: 1. Improved flexibility for use of interior finish materials over the existing NFPA 99. 2. Improved fire safety over existing hyperbaric chambers, but without the combination in the code of either excessive requirements (as represented by noncombustible materials) or no requirements (as represented by high quality epoxy). Note further: 1. Use of the term “high quality epoxy” for the paint or finish is meaningless, as the paint or finish needs to be one that is described in performance terms and that is approved or listed for the application, to prevent any epoxy paint from being used. Any vendor of epoxy finishes will claim that they market “high quality” materials and this section is, thus, unenforceable as is. The additional words will ensure the appropriate fire safety while retaining the permission to use “high quality epoxy” finishes. 2. Since a “high quality epoxy” finish is allowed today, and no specific fire performance is required, then a material that exhibits heat release rate lower than that finish material should also be allowed. 3. NFPA 286 is a full scale room-corner test and if a material were to pass the test, it would require that it exhibits excellent fire
performance, better than a typical Class A material used for interior finish (as I had proposed at the last cycle). 4. ASTM E1354 (cone calorimeter) is a small scale heat release test that provides the most comprehensive approach to assessing fire performance of materials, using a 100 mm x 100 mm (roughly 4 inches by 4 inches) test sample. If the proposed requirements are complied with, good fire performance is assured. 5. Since a limited combustible material is permitted for sound deadening materials inside the hyperbaric chamber, then they should also be permitted as finish for the chamber. 6. The changes to the terminology related to “noncombustible” and “limited combustible” from “as defined in” to “in accordance with” reflect the fact that the NFPA system is going away from “defining” these terms (with requirements) in favor of including the requirements in the body of the code or standard. That has already been approved for NFPA 101 and 5000 and other documents and I have submitted public input for the same to occur in NFPA 99. 7. The change to the word “listed” with regard to the options prevents the confusion with the specific definition in NFPA of the term “listed” for materials that have undergone listing by an outside organization.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:27:15 EDT 2012

Committee Statement

Resolution: FR-210-NFPA 99-2012. The option for limited combustible material for finish was not included as the flame spread characteristics (50) are greater than a Class A rating. Sound deadening materials are permitted to be limited combustible because commonly used materials are not available as noncombustible.

Statement: The TC has replaced the term “high quality epoxy” with a requirement to meet a Class A interior finish rating in accordance with NFPA 101. Material safety data sheets were removed as they do not provide curing or off-gassing information.

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Public Input No. 121-NFPA 99-2012 [ Section No. 14.2.4.1.3.3 ]

14.2.4.1.3.3
Breathing apparatus shall function at all pressures that can be encountered in the chamber and maintain initial source (outlet) pressure throughout all pressure changes.

Statement of Problem and Substantiation for Public Input

Clarifies that the pressure supplying any breathing device needs to be maintained at the same initial pressure regardless of the chamber atmospheric pressure. For example a 50 psig outlet pressure at 1 ATA, that is operating a critical care ventilator, will still be 50 psig when the chamber is at 3 ATA.

Submitter Information Verification

Submitter Full Name: WILLIAM GOSSETT
Organization: CONVERGENT HCS
Submittal Date: Fri May 11 00:05:38 EDT 2012

Committee Statement

Resolution: The current language ensures that breathing apparatus functions at all pressures regardless of the pressure of the breathing gas supply.

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Public Input No. 122-NFPA 99-2012 [ Section No. 14.2.4.1.3.4 ]

14.2.4.1.3.4
In the event of a fire within a chamber, provision shall be made to simultaneously switch all breathing apparatus to an air supply that is independent of the chamber atmosphere.

Statement of Problem and Substantiation for Public Input

The addition of the word "simultaneously" prevents a gas system design that would require the operator to switch multiple valves during a fire deluge or any emergency requiring an air switch over.

Submitter Information Verification

Submitter Full Name: WILLIAM GOSSSETT
Organization: CONVERGENT HCS
Submittal Date: Fri May 11 00:15:18 EDT 2012

Committee Statement

Resolution: FR-204-NFPA 99-2012
Statement: The addition of the word "simultaneously" prevents a gas system design that would require the operator to switch multiple valves during a fire deluge or any emergency requiring an air switch over.

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Public Input No. 402-NFPA 99-2012 [ Section No. 14.2.4.4.3 ]

14.2.4.4.3
For Class B chambers equipped with a breathing apparatus, the breathing apparatus shall function at all pressures that can be encountered in the chamber.

Individual breathing apparatus shall be available inside a Class B chamber for the occupant for use in the event that the chamber atmosphere is fouled by combustion or otherwise.

Statement of Problem and Substantiation for Public Input

Prevention of CO poisoning/death in the event of a chamber fire or smoke in the chamber.

Submitter Information Verification

Submitter Full Name: Dan McCluskey
Organization: [ Not Specified ]
Submittal Date: Fri Jun 22 20:48:29 EDT 2012

Committee Statement

Resolution: The option to have individual breathing apparatus is always a design option for the end user. This is not needed as the Code already requires the ability for fast egress from Class B chambers.

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Public Input No. 166-NFPA 99-2012 [ New Section after 14.2.5 ]

Add new text to read as follows:
Class 'A' chambers that utilize pneumatically operated controls that are related to critical functions of safety shall be equipped with a means to function such valves/controls in the event that the primary pneumatic supply to those systems fails.

Pneumatically operated systems shall automatically be isolated from the primary source of control air in the event that pressure drops below the requirements of pneumatically operated control devices. The secondary source of pneumatic or other alternative power source shall be designed that it will automatically supply sufficient operating power without interruption to operate all affected systems at least until such time that persons within the chamber can be removed to safety.

Statement of Problem and Substantiation for Public Input

The option to have individual breathing apparatus is always a design option for the end user. This is not needed as the Code already requires the ability for fast egress from Class B chambers.
A Proposal for a Back Up System Insuring That Air Actuated (Powered) Valves and Controls Have a Secondary Emergency Source of Power Available

Class ‘A’ hyperbaric chambers often utilize air actuated valves in their chambers’ operating control system in addition to valves that are solely operated by backed up electrical means. Often these air actuated valves are of a critical nature; controlling breathing gases, rapid shut offs, fire suppression activation deluge valves, and other essential operational safety related control functions. Most are powered by the chamber’s main air pressure supply that is also used to pressurize the chamber.

A loss of available pressure to these systems results in their failure to be able operate. Our chamber depends on the main air supply for powering on and off breathing gases, emergency breathing gases, rapid supply and exhaust valves, and most critically, the Fire Suppression Deluge System.

An incident occurred at our facility during the pressurization of the chamber while treating patients that resulted in almost total available air pressure loss to the operating control air. Had an emergency occurred concurrently with that event none of the aforementioned systems would function. A loss of pressure event can occur due to human error as well as an emergency situation where demand for air flow exceeds the capability of the system. (such as an air flush) Human Factors Engineering (HFE) logic calls for designs that are practical and seek to eliminate adverse outcomes that can occur when machines are being controlled by humans. In a perfect world machines would be engineered to eliminate human induced errors.

NFPA requires two independent sources of electrical supply, two types of fire suppression systems in class ‘A’ chambers as well as backup breathing gasses and communications. It is inconsistent to not require some similar redundant system for those affected systems that utilize air pressure as a power source for functions related to life safety.

The potential for this human induced error scenario was eliminated in our facility by adding an accumulator tank holding a reserve air pressure into the operating control air circuit. With no main air supply available this accumulator air tank is capable of functioning affected valves at least 50 cycles while still maintaining pressure exceeding the manufacturer’s recommended pressures. Such a reserve is more than sufficient to terminate a treatment, operate emergency air actuated valves, while providing ample time to safely remove occupants from the chamber. I designed our system to automatically replenish the accumulator tank at times of available higher pressures and hold it in reserve, isolate the control system from the main pressure supply in the event that it drops below that of the reserve accumulator, and simultaneously switch control air demand over to the reserve and draw needed control air from the accumulator. The end result is the elimination of one more potential human induced error - one that has considerable safety ramifications yet can easily be remedied.

This technology was inspired from my previous employment where I was performing field engineering duties as a Senior Submersible Mechanical Technician. We operated manned research submersibles for science that were PVHO classed vessels rated to work at depths of 3,000 fsw while maintaining a 1ata inside the manned chamber. There were many safety related systems covering a myriad of unpleasant scenarios installed on those manned underwater vehicles, some of which were designed by myself. Our Hospital system that I installed was engineering approved by the chamber manufacturer who whole heartedly endorses the concept, design, its components and hardware specifications that were provided to them for their evaluation.

Their company will be offering this technology as an option to their customers at initial installation or as a retrofit to existing systems. The OEM feels that it would cost about $2000 dollars. I was able to do our installation for less. The manufacturer feels this is a significant technological safety step forward that is practical and affordable. It was suggested by the manufacturer that I submit this suggestion to become a requirement under NFPA, Chapter 20, Hyperbaric Facilities.

Submitter Information Verification

Submitter Full Name: Alan Fuller
Organization: health-first
Submittal Date: Tue Jun 05 10:29:29 EDT 2012

Committee Statement

Statement: NFPA 99 requires two independent sources of electrical supply, two types of fire suppression systems in class ‘A’ chambers as well as backup breathing gasses and communications. Similar requirements for those affected systems that utilize air pressure as a power source for functions related to life safety should be applied.

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Public Input No. 2-NFPA 99-2012 [New Section after 14.2.5.5]

14.2.5.5
The inspections, testing and maintenance of the hyperbaric fire suppression systems shall be performed by a qualified person.

Statement of Problem and Substantiation for Public Input

The hyperbaric fire suppression systems are unique and should not be inspected, tested and maintained (ITM) by a person or company that does not completely understand the system. It could be inappropriate to apply the certifications and licensing required for the ITM of other fire suppression systems to the hyperbaric chamber system. As hyperbaric chambers become more commonplace there needs to be language in our chapter regarding who can complete the hyperbaric chamber fire suppression system ITM. I find no definition of Qualified, or Qualified person in 99 chapter 3 definitions.

Suggested text is 3.3.152* Qualified person.
A person who by possession of a recognized degree, certificate, or professional standing, or by knowledge training, and experience has successfully demonstrated the ability to perform the assigned task. (HYP) see NFPA 25 3.3.28 Qualified. A competent and capable person or company that has met the requirements and training for a given field acceptable to the AHJ.

See 5.1.4.2.5.5

14.2.5.5.5. may not be the best place for this to reside.

See also

There should be an annex note to clarify the intent as above.

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Healthcare
Submittal Date: Fri Mar 02 13:17:32 EST 2012

Committee Statement

Resolution: FR-208-NFPA 99-2012
Statement: Hyperbaric fire suppression systems are unique and should be inspected, tested and maintained (ITM) by a person or company that understands these systems. A definition for "qualified person" has been added in Chapter 3.

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14.2.7.3.17.5 Battery-Operated Devices. Battery-operated devices shall meet the following requirements:

1. Batteries shall be fully enclosed and secured within the equipment enclosure.
2. Batteries shall not be damaged by the maximum chamber pressure to which they are exposed.
3. Batteries shall be of a sealed type that does not off-gas during normal use.
4. Batteries or battery-operated equipment shall not undergo charging while located in the chamber.
5. Batteries shall not be changed on in-chamber equipment while the chamber is in use.
6. The equipment electrical rating shall not exceed 12 V and 48 W.
7. Lithium and lithium ion batteries shall be prohibited, be permitted, in the chamber during chamber operations, unless the product has been accepted or listed for use in hyperbaric conditions by the manufacturer or a nationally recognized testing agency.

Statement of Problem and Substantiation for Public Input

There are no documented incidents resulting from the failure of lithium and/or lithium ion batteries and their respective equipment in a Class A hyperbaric chamber. The previous wording casts an undue responsibility and limitation on the user of equipment necessary for use in a class A chamber treating critically ill patients requiring cardiac monitoring.

There are many pieces of equipment currently used in a class A chamber which have not been recognized by either a manufacturer or a nationally recognized testing agency.

The Technical Committee needs to provide objective testing that demonstrates the danger of using lithium or lithium ion batteries in the specific piece of equipment and in the class A hyperbaric environment.

Submitter Information Verification

Submitter Full Name: WILLIAM GEARHART
Organization: [None ]
Affiliation: NFPA Technical Committee 99 Chapter 14 -User
Submittal Date: Fri Jun 22 20:31:42 EDT 2012

Committee Statement

Resolution: The concerns over using lithium and lithium ion batteries still remain. If more information is provided, this can be reconsidered. The TC is looking for more information on: 1) differences between lithium and lithium ion batteries 2) differences between rechargeable and non rechargeable batteries 3) Battery size and energy capacity 4) Environmental range (temperature and pressure ranges)

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Public Input No. 1-NFPA 99-2012 [ New Section after 14.3.1.4 ]

14.3.1.4.9
The chamber operator(s) are not allowed to use cell phones and other personal electronic devices during chamber operations for non essential purposes while operating the chamber.

Statement of Problem and Substantiation for Public Input

To reduce distractions of the chamber operator during operation of the hyperbaric chamber(s).

The chamber operator needs to remain alert to the condition of the chamber(s) and occupants(s). With the advances and availability of personal electronic technologies the requirement in 14.3.1.4.8, to be physically at the control panel is not sufficient. There have been national mishaps due to inattention, “surfing the net”, talking on the cell phone, texting, watching movies, etc.

We expect the chamber operator(s) to multitask and short / intermittent usage of personal electronic devices is allowed.

Submitter Information Verification

Submitter Full Name: James Bell
Organization: Intermountain Healthcare
Submittal Date: Fri Mar 02 12:50:33 EST 2012

Committee Statement

Resolution: While this should be a best practice, it is inappropriate to place this operational requirement in NFPA 99.

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Public Input No. 353-NFPA 99-2012 [New Section after 14.3.1.5.4]

TITLE OF NEW CONTENT

Where flame resistance is specified, the fabric shall meet the requirements set forth for the small-scale test in NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, in an atmosphere equivalent to the maximum oxygen concentration and pressure proposed for the chamber.

Statement of Problem and Substantiation for Public Input

Requirement 20.3.1.5.4.5 from the 2005 NFPA 99 edition no longer exists in the new 2012 NFPA Edition under 14.3.1.5.4 Textiles.

I request the requirement get reinstated below section 14.3.1.5.4

Submitter Information Verification

Submitter Full Name: W. Gurnée
Organization: OxyHeal Health Group
Submittal Date: Thu Jun 21 20:04:55 EDT 2012

Committee Statement

Statement: This provides actual guidance on the fire performance of materials for mattresses, pillows, and cushions used in hyperbaric chambers. It is acknowledged that specific acceptable test outcomes (i.e., Class 1 or 2, etc.) will need to be added in the comment period.

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15.3.1
The storage and handling of flammable liquids or gases shall be in accordance with the following applicable standards:

(1) NFPA 30, Flammable and Combustible Liquids Code
(2) NFPA 54, National Fuel Gas Code
(3) NFPA 58, Liquefied Petroleum Gas Code [101:8.7.3.1]
(4) NFPA 55, Cryogenic and Compressed Gas Code

Statement of Problem and Substantiation for Public Input

The Code for compressed gases and cryogenic gases is NFPA 55. You will find gases such as Flammables (Hydrogen).
The scope of the code includes: This code shall apply to the installation, storage, use, and handling of compressed gases and cryogenic fluids in portable and stationary containers, cylinders, equipment, and tanks in all occupancies.

Submitter Information Verification

Submitter Full Name: Keith Ferrari
Organization: Praxair, Inc.
Submittal Date: Wed Jun 20 17:10:06 EDT 2012

Committee Statement

Statement: The Code for compressed gases and cryogenic gases is NFPA 55. You will find gases such as Flammables (Hydrogen). The scope of the code includes: This code shall apply to the installation, storage, use, and handling of compressed gases and cryogenic fluids in portable and stationary containers, cylinders, equipment, and tanks in all occupancies.

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15.6 Rubbish _Waste_ Chutes, Incinerators, and Laundry _and Linen_ Chutes.

Rubbish _waste_ chutes, laundry _linen_ chutes, and incinerators shall be installed and maintained in accordance with NFPA 82, Standard on Incinerators and Waste and Linen Handling Systems and Equipment, unless such installations are approved existing installations, which shall be permitted to be continued in service.

15.6.1

Any rubbish _waste_ chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection in accordance with Section 9.7. [101 :19.5.4.3]

---

Statement of Problem and Substantiation for Public Input

The proposed language is consistent with the verbiage used in NFPA 82. I recognize that paragraph 15.6.1 is extracted text and may not be able to be changed unless the language has also been proposed to be changed in NFPA 101. However, even if “rubbish” cannot be changed to “waste” in paragraph 15.6.1, the remaining changes should still be made to be consistent with NFPA 82.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 20:57:12 EDT 2012

Committee Statement

Resolution: FR-331-NFPA 99-2012
Statement: The proposed language is consistent with the verbiage used in NFPA 82.

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**15.7.3.3**

The alarms shall sound only within an individual dwelling unit, suite of rooms, or similar area and shall not actuate the building fire alarm system, unless otherwise permitted by the authority having jurisdiction. Remote annunciation shall be permitted. [ - 401 - : 9.6.2.10.4]

**Statement of Problem and Substantiation for Public Input**

This requirement was lifted from NFPA 101 - Life Safety Code. In NFPA 101 the requirement refers to dwelling units, which NFPA 101 annex material defines as: "A dwelling unit is that structure, area, room or combination of rooms, including hotel rooms/suites in which a family or individual lives. A dwelling unit includes living areas only and not common usage areas in multifamily buildings such as corridors, lobbies and basements."

Clearly the intent of NFPA 101 was to apply this requirement to dwelling units - not health care facilities. The use of residential codes in a structure as important as a health care facility should not occur.

**Submitter Information Verification**

**Submitter Full Name:** Stephen Lipster  
**Organization:** The Electrical Trades Center  
**Affiliation:** Self  
**Submittal Date:** Wed Jun 20 12:58:53 EDT 2012

**Committee Statement**

**Resolution:** This section does apply to many different areas that can be found in health care facilities including on-call rooms, or suites of on-call rooms and should remain in Code because there are areas are not just patient care areas in these facilities, and use this technology.

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**Public Input No. 359-NFPA 99-2012 [ Section No. 15.8 ]**

This section does apply to many different areas that can be found in health care facilities including on-call rooms, or suites of on-call rooms and should remain in Code because there are areas are not just patient care areas in these facilities, and use this technology.
15.8 Automatic Sprinklers and Other Extinguishing Equipment.

15.8.1 Automatic Sprinklers.

15.8.1.1 Automatic sprinkler system shall be installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

15.8.1.1.1 In lieu of an automatic sprinkler system an automatic water mist systems may be installed in accordance with NFPA 750, Standard on Water Mist Fire Protection Systems.

15.8.1.2* Defend in Place.

For new and existing facilities, where the response to a fire is to defend in place within a safe place in the building and not to automatically evacuate the building, sprinkler system zones shall coincide with smoke compartment boundaries or shall be in accordance with the facility fire plan.

15.8.1.3* Closets.

Sprinklers shall not be required in clothes closets of patient sleeping rooms in hospitals where the area of the closet does not exceed 6 ft² (0.55 m²) provided the distance from the sprinkler in the patient sleeping room to the back wall of the closet does not exceed the maximum distance permitted by NFPA 13, Standard for the Installation of Sprinkler Systems. [101 :18.3.5.10]

Statement of Problem and Substantiation for Public Input

Add new reference to automatic water mist system to section 15.8 Automatic Sprinklers and Other Extinguishing Equipment. Since this section should indicate “Other Extinguishing Equipment” and Water Mist systems have been approved and installed in many sprinkler applications globally for over 15 years, water mist systems should be included. They have been listed by national and internationally recognized testing laboratories such as: UL (Ordinary Hazard Group 1), FM (Light Hazard occupancies, Computer Rooms, Subfloors, Special Hazard Machinery & spaces), City of New York (Light Hazard Occupancies, Combustion Turbines, Machinery Spaces), VdS Germany (Light Hazard, Ord Haz Grp I,II parking garages & III selected occupancies, Cable Tunnels), KfV Austria (Light Hazard, Ord Haz Grp I, Combustion Turbines) and other agencies. These listings and installations have demonstrated equivalent fire protection to the authority having jurisdiction (AHJ). The addition of the proposed text will provide the AHJ a clear option to accept water mist systems as an equivalent system to an approved automatic sprinkler system thereby allowing construction alternatives without having to prove equivalency or be considered an alternative extinguishing system.

Submitter Information Verification

Submitter Full Name: SCOTT HARRISON
Organization: MARIOFF NORTH AMERICA
Submittal Date: Fri Jun 22 11:41:33 EDT 2012

Committee Statement

Resolution: No specific evidence has been provided to the committee showing that water mist systems are suitable for protection of health care facility. The application of water mist protection is limited to special spaces, hazards, or equipment.

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Public Input No. 285-NFPA 99-2012 [Section No. 15.8.1.1]

15.8.1.1
Automatic sprinkler system shall. Buildings or structures housing a health care facility shall be the automatic sprinkler system requirements of the applicable building code; NFPA 101, Life Safety Code, or fire code acceptable to the authority of jurisdiction.

15.8.1.2 Where provided, automatic sprinkler systems shall be installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

Statement of Problem and Substantiation for Public Input

The current language requires an automatic sprinkler system in ALL health care facilities within the scope of NFPA 99. The proposed language follows the concept in 15.7 for fire alarm systems except that the reference to NFPA 13 is not limited to those systems required for life safety as is used in paragraph 15.7.1.2 for fire alarm systems.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 21:07:57 EDT 2012

Committee Statement

Resolution: FR-332-NFPA 99-2012
Statement: The current language requires an automatic sprinkler system in ALL health care facilities within the scope of NFPA 99. This revised language follows the concept in 15.7 for fire alarm systems.

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Public Input No. 61-NFPA 99-2012 [New Section after A.3.3.27]
A.3.3.X Building Service Categories.
The following are examples of facilities or systems and appropriate building system categories.

Category 1:
   Ambulatory surgical center for two or more patients that has full OR services
   Reconstructive surgeon’s office with general anesthesia

Category 2:
   Cooling towers in warm or damp climates such as Houston, TX

Category 3:
   Other cooling towers that are not Category 2, such as Minneapolis, MN
   Dental office without general anesthesia

Category 4:
   Typical doctor’s office or exam room
   Lawn sprinkler system

A.3.3.X.1
Major injury can include the following:
   (1) Any amputation
   (2) Loss of the sight of an eye (whether temporary or permanent)
   (3) Chemical or hot metal burn to the eye or any penetrating injury to the eye
   (4) Any injury that results in electric shock and electric burns leading to unconsciousness
       and that requires resuscitation or admittance to a hospital for 24 hours or more
   (5) Any injury leading to hypothermia, heat induced illness, or unconsciousness requiring
       resuscitation or admittance to a hospital for 24 hours or more
   (6) Loss of consciousness caused by asphyxia or lack of oxygen or exposure to a biological
       agent or harmful substance
   (7) Absorption of any substance by inhalation, skin, or ingestion causing loss of
       consciousness or acute illness requiring medical treatment
   (8) Acute illness requiring medical treatment where there is reason to believe the exposure
       was to biological agents, its toxins, or infected materials

A.3.3.X.2 Minor injuries would be those that are not in Category 1.

Statement of Problem and Substantiation for Public Input

These are the annex sections for Public Input #59. The language is from the current annex sections to 4.1,
4.1.1, and 4.1.2. The language is edited for clarity.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Thu Apr 12 11:42:29 EDT 2012

Committee Statement

Resolution: The building category definitions have been retained in Chapter 4, so these should remain there.
Public Input No. 63-NFPA 99-2012 [Sections A.4.1, A.4.1.1, A.4.1.2, A.4.2]

Sections A.4.1, A.4.1.1, A.4.1.2, A.4.2

A.4.1

Four levels of systems categories are defined in this code, based on the risks to patients and caregivers in the facilities. The categories are as follows:

(1) **Category 1**: Systems are expected to work or be available at all times to support patient needs.

(2) **Category 2**: Systems are expected to provide a high level of reliability; however, limited short durations of equipment downtime can be tolerated without significant impact on patient care. Category 2 systems support patient needs but are not critical for life support.

(3) **Category 3**: Normal building system reliabilities are expected. Such systems support patient needs, but failure of such equipment would not immediately affect patient care. Such equipment is not critical for life support.

(4) **Category 4**: Such systems have no impact on patient care and would not be noticeable to patients in the event of failure.

The category definitions apply to equipment operations and are not intended to consider intervention by caregivers or others. Potential examples of areas/systems and their categories of risk follow: A risk assessment should be conducted to evaluate the risk to the patients, staff, and visitors:

(1) Ambulatory surgical center, two patients with full OR services, Category 1
(2) Reconstructive surgeon’s office with general anesthesia, Category 1
(3) Procedural sedation site for outpatient services, Category 2
(4) Cooling Towers in Houston, TX, Category 2
(5) Cooling Towers in Seattle, WA, Category 3
(6) Dental office, no general anesthesia, Category 3
(7) Typical doctor’s office/exam room, Category 4
(8) Lawn sprinkler system, Category 4

A.4.1.1

Major injury can include the following:

(1) Amputation
A minor injury means not serious or involving risk of life.


The results of the assessment procedure should be documented and records retained.

Statement of Problem and Substantiation for Public Input

The A.4.1, A.4.1.1, and A.4.1.2 are deleted as they were moved and edited to be in public input #61. The building service categories are definitions as stated in these annex sections and thus should be in section 3.3. The beginning is edited for clarity. The deletion of the reference is correction of an errata because it is printed twice. NFPA 730 was added as a reference on performing risk assessments. The last sentence was deleted because it becomes section 4.3 in public input #62.

Related Public Inputs for This Document

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<td>This is the body text associated with this annex change.</td>
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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Thu Apr 12 12:32:44 EDT 2012
Committee Statement

Resolution: The building category definitions have been retained in Chapter 4, so these should remain here.

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Public Input No. 314-NFPA 99-2012 [New Section after A.4.2]

Statement of Problem and Substantiation for Public Input

This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle. NFPA requirements are that definitions cannot contain requirements and the definitions of noncombustible and limited combustible contain requirements. Therefore this public input proposes to put simply a placeholder in chapter 3 (definitions) and place the requirements into Chapter 4 (fundamentals), just as was done in NFPA 101 and 5000. The proposed language is identical to the language in NFPA 101. If the technical committee wishes it can simply extract the language from NFPA 101. The corresponding sections are: 3.3.96 would be extracted from 3.3.169.2, 3.3.123 would be extracted from 3.3.169.4, 4.4.1 would be extracted from 4.6.13 and 4.4.2 would be extracted from 4.6.14.

Related Public Inputs for This Document

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<tr>
<td>Public Input No. 313-NFPA 99-2012 [New Section after 4.9]</td>
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Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:13:56 EDT 2012

Committee Statement

Statement: This change puts NFPA 99 in line with what was done for NFPA 101 (and many other documents) in the 2012 cycle.

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Public Input No. 159-NFPA 99-2012 [Section No. A.5.1.9.2]
See Table A.5.1.9.2
Table A.5.1.9.2 Requirements for Category 1 Master Alarms for Gas and Vacuum Systems

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<td>Instrument Air Compressors (5.1.3.18)</td>
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<td>9</td>
<td>Medical–Surgical Vacuum Pumps (5.1.3.18)</td>
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14.5

12.4(2)  5.1.0.2.4(3)

5.1.3.5.12.4(2)

Oxygen reserve supply less than 1 day (low contents)

5.1.3.5.11.9(4)

5.1.0.2.4(5)

5.1.3.5.12.4(3)

Oxygen reserve pressure low (not functional)

5.1.9.2.4(6)

5.1.3.5.12.4(3)

Nitrous oxide main line pressure high

5.1.9.2.4(7)

5.1.3.5.10.6

5.1.9.2.4(1)

5.1.0.2.4(1)

Nitrous oxide main line pressure low

5.1.9.2.4(7)

5.1.9.2.4(7)

Nitrous oxide changeover to secondary supply

5.1.3.5.10.6  5.1.3.5.11.9(1)

5.1.0.2.4(1)

Nitrous oxide main supply less than 1 day (low contents)

5.1.0.2.4(1)

5.1.9.2.4(2)

5.1.9.2.4(2)

Nitrous oxide reserve in use

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<td>Medical–surgical main line vacuum low</td>
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Nitrous oxide reserve pressure low (not functional)
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<td>Instrument air dew point high</td>
<td>Instrument air cylinder reserve in use (if provided)</td>
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### Additional Proposed Changes

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### Statement of Problem and Substantiation for Public Input

updated table (editorial)

### Submitter Information Verification

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<thead>
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<th>Submitter Full Name</th>
<th>Organization</th>
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</thead>
<tbody>
<tr>
<td>Keith Ferrari</td>
<td>Praxair, Inc.</td>
</tr>
</tbody>
</table>
Committee Statement

Statement: This Table has been editorially updated.

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Public Input No. 8-NFPA 99-2012 [Section No. A.5.1.14.1.4]

A.5.1.14.1.4
Other examples of prohibited use of medical–surgical vacuum would be scope cleaning, decontamination, and laser plume.

Statement of Problem and Substantiation for Public Input

Trying to enforce this prohibition during verification is futile.

Submitter Information Verification

Submitter Full Name: MIKE LEMANEK
Organization: CERTECH
Submittal Date: Fri Mar 09 14:26:11 EST 2012

Committee Statement

Resolution: Scope cleaning is a nonmedical application and therefore should not be permitted by the vacuum system. Just because the enforcement may be difficult does not mean the wording should be removed.

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Public Input No. 10-NFPA 99-2012 [ Section No. A.6.3.2.8.4 ]

A.6.3.2.8.4

In conducting a risk assessment, the health care governing body should consult with all relevant parties, including, but not limited to, clinicians, biomedical engineering staff, and facility safety engineering staff. Even though a risk assessment may initially determine a wet location, the facility should also consider other mitigating factors such as additional equipment used. Providing such equipment as suction mats, strips or other devices may be sufficient in eliminating the hazard and not requiring the operating room to be a wet procedure location.

Statement of Problem and Substantiation for Public Input

Not all operating rooms are wet procedure locations, a relatively small percentage of hospitals actually perform procedures that would be considered a wet location. The change made last cycle actually creates a much worse issue by empowering facilities to practice poor housekeeping procedures and depend solely on building equipment for protection or personnel. The reality is that a well kept operating room shouldn't be considered a wet location, although there may be some procedures that, due to their nature, require the use of large volumes of fluids, these fluids need to be dealt with. The facility should be able to look at the individual procedure and determine the best course of action for the safety of the staff and patient. In addition flexibility needs to be allowed for facilities that perform these procedures regularly and those that perform these procedures rarely. In operating rooms that rarely perform these procedures it may be just as effective (both safely and financially) to use a few devices to remove the hazard. in facilities that regular have conditions that would be considered wet procedures it may be more effective to depend on the building equipment. Additionally, the change last cycle inadvertently required unnecessary building systems in operating rooms that only performed small routine procedures (including dermatology and dental procedures) that generate no standing fluids at all.

Submitter Information Verification

Submitter Full Name: Chad Beebe
Organization: American Society for Healthcare Engineering
Submittal Date: Tue Mar 20 13:15:58 EDT 2012

Committee Statement

Resolution: The considerations mentioned in the PI would be integral to a risk assessment and therefore the language is redundant.

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In conducting a risk assessment, the health care governing body should consult with all relevant parties, including, but not limited to, clinicians, biomedical engineering staff, and facility safety engineering staff.

Statement of Problem and Substantiation for Public Input

Delete appendix material consistent with my other comment to delete text in code.

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Thu Apr 19 09:33:22 EDT 2012

Committee Statement

Resolution: No change was made to the text in the body of the standard. Resolving this, coordinates with that decision.

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Public Input No. 15-NFPA 99-2012 [ Section No. A.10.3.6 ]

A.10.3.6

Although the chassis leakage current value is 300-500 $\mu$A, patient lead leakage current limit for nonisolated input has been intentionally limited to 100 $\mu$A. This decision is in recognition of the need for a greater level of electrical safety for those portions of devices that make direct electrical patient connection.

Statement of Problem and Substantiation for Public Input

Editorial - "chassis leakage current" is now "touch current." The touch current level is now 300 $\mu$A.

Consistency with 2012 requirements

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Wed Mar 21 11:29:12 EDT 2012

Committee Statement

Resolution: FR-134-NFPA 99-2012
Statement: Editorial - "chassis leakage current" is now "touch current." The touch current level is now 500 $\mu$A.
Consistency with 2012 requirements

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A.10.5.5.2—1

Most laboratory fires involve biomedical or other electronic equipment failures. The most common ignition factors are short circuits or ground faults. Electrical wire or cable insulation is the material most likely to first ignite in a clinical laboratory fire. (See Hoeltge, G.A., Miller, A., Klein, B.R., Hamlin, W.B., “Accidental fires in clinical laboratories.”)

Statement of Problem and Substantiation for Public Input

I propose to delete 10.5.5.2 is accepted, combine existing appendix material with existing A.10.5.5.1

Submitter Information Verification

Submitter Full Name: Alan Lipschultz
Organization: HealthCare Technology Consulting LLC
Affiliation: AAMI
Submittal Date: Tue Apr 17 15:26:48 EDT 2012

Committee Statement

Statement: The 500 uA limit is no longer valid for laboratory equipment. The annex material from A.10.5.5.2 was retained to provide additional explanation on 10.5.5.1.

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A.11.3.2
When determining the volume of storage, do not consider cylinders and containers that are in use. There is no limit on the amount of nonflammable gas cylinders or containers that can be stored within a smoke compartment, provided nonflammable gas cylinders and containers in excess of 300 ft$^3$ are stored in an enclosure that meets the requirements of 11.3.2.1 through 11.3.2.3 — Only the volume of stored gas that is in excess 300 ft$^3$ is required to be located in an enclosure, since 11.3.3 already permits up to 300 ft$^3$ without any special storage requirements.

Statement of Problem and Substantiation for Public Input

Many AHJs are misinterpreting this requirement and are requiring health care facilities to meet the requirements of 11.3.2.1 for storing cylinders in an interior space of noncombustible or limited construction. This is in conflict with 11.3.3 which permits up to 300 ft$^3$ of cylinders of storage without any special precautions. As an example, assuming each e-cylinder of oxygen contains 25 ft$^3$ by volume, whenever 13 e-cylinders of oxygen are stored within a smoke compartment, AHJs are requiring all 13 cylinders to be stored per 11.3.2, when only the 13th cylinder needs to meet this requirements, since 11.3.3 permits 12 to be stored anywhere within a smoke compartment. This language, or something similar is needed in order to clarify the intent of 11.3.2 and 11.3.3.

The second sentence was deleted because it conflicted with the requirement in the base paragraph. The upper limit is 3000 ft$^3$, it is not unlimited even when in an enclosure.

Submitter Information Verification

Submitter Full Name: Peter Larrimer
Organization: US Department of Veterans Affa
Submittal Date: Fri Jun 22 16:00:54 EDT 2012

Committee Statement

Statement: Many AHJs are misinterpreting this requirement and are requiring health care facilities to meet the requirements of 11.3.2.1 for storing cylinders in an interior space of noncombustible or limited construction. This is in conflict with 11.3.3 which permits up to 300 ft$^3$ of cylinders of storage without any special precautions. As an example, assuming each e-cylinder of oxygen contains 25 ft$^3$ by volume, whenever 13 e-cylinders of oxygen are stored within a smoke compartment, AHJs are requiring all 13 cylinders to be stored per 11.3.2, when only the 13th cylinder needs to meet this requirements, since 11.3.3 permits 12 to be stored anywhere within a smoke compartment. This language, or something similar is needed in order to clarify the intent of 11.3.2 and 11.3.3. The second sentence was deleted because it conflicted with the requirement in the base paragraph. The upper limit is 3000 ft$^3$, it is not unlimited even when in an enclosure.

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A.11.5.2.2 Transfer of gaseous oxygen to refill individual cylinders used during ambulatory patient therapy contains inherent safety risks due to the hazards involved. Using a system of one or more high pressure, high volume cylinders to refill cylinders is considered transfilling and is discussed in the CGA P2.5 Transfilling of High Pressure Gaseous Oxygen to be used for Respiration. Use of oxygen sources with high pressures and high flow rates for refilling cylinders can present explosive or fire hazards to personnel associated with adiabatic heating through compression, particle impact and friction induced fires, or rupture due to extremely high pressures along with an increased fire risk due to contaminants and physical damage of unsecured cylinders. Personnel using transfilling systems must be properly trained for handling the risks associated with refilling cylinders in safe and secured areas. The hazards of fire and death due to rupture or fire in high volume, high pressure oxygen transfilling equipment prevents any transfilling from being carried out in any patient care areas.

Alternate means of refilling medical gaseous oxygen cylinders without using transfilling systems have been developed that utilize low flow rates, pressures, and storage volumes of oxygen from oxygen concentrators. Many of the risks associated with typical transfilling of cylinders have been mitigated or eliminated in the design of mechanical compressors coupled with locally generated gaseous oxygen from an oxygen concentrator. Low refilling flow rates, typically less than 5 liters per minute, eliminate adiabatic heating and reduce particle impact/friction fire risks. Low source pressures in oxygen concentrators, typically less than 30 PSI, reduce hazards associated with high pressure sources. The safety and effectiveness of refilling oxygen cylinders with mechanical compressor systems no longer requires specialized training in transfilling operation and risk reduction and can be accomplished by patients with minimal operator training. Many such systems are reviewed and approved for patient use by various governmental regulatory bodies and safety agencies around the world.

Reduction in the number of cylinders stored in a patient care areas associated with a mechanical compressor refilling system adds to patient and facility safety. Typically, larger numbers of gaseous oxygen cylinders filled by the transfilling process are left in patient care areas to supply the needs of the patient during the day. The increased amount of additional oxygen stored in cylinders adds to the fire safety load and presents additional patient hazards due to the physical storage of these extra cylinders. Utilizing a mechanical compressor refilling system reduces the number of cylinders needed for patient ambulatory needs to only one or two cylinders per patient instead of the higher numbers typically stored in the patient's room. Refilling of the patient's cylinder in their room allows for lower numbers of cylinders for daily use and increases fire safety in the facility.

Transfilling operation for oxygen cylinders are not permitted in patient care areas due to the high risks and hazards present to the patient, personnel, and the facility. Refilling operations based on mechanical refilling systems utilizing oxygen concentrators can be permitted in patient care areas due to the reduction or elimination of many of the transfilling risks and hazards.

Statement of Problem and Substantiation for Public Input

Transfilling of gases in patient care areas subject to CGA P2.5 is inherently dangerous due to hazards and risks associated with fire, explosion, rupture in transfilling cylinders. It should be banned from patient care areas as already stated in the standard. However, alternate refilling systems that are not based on transfilling using state of the art refilling systems based on low pressure, low volume, low flow rate oxygen concentrators and compressors are safe and effective. They should be allowed to be used by patients in patient living rooms in health care facilities. The oxygen concentrator based compressor systems for refilling have eliminated many of the hazards and risks associated with the typical transfilling systems. State facility inspectors need additional guidance in applying the more restrictive transfilling systems over the safe mechanical compressor refilling systems. Additional safety is provided to the facility and personnel in that in room refilling systems based on oxygen concentrators have been approved by the FDA for patient direct use and there is a reduction in the number of supplemental oxygen cylinders needed in every facility. Reducing the number of total cylinders needed in a facility will reduce the fire potential of stored oxygen in cylinders. Some rationale should be added to lend guidance in restricting transfilling and allowing refilling systems.

Submitter Information Verification

Submitter Full Name: DAVID D POLACSEK
Organization: INVACARE CORP
Submittal Date: Fri Jun 22 10:35:18 EDT 2012

Committee Statement

Resolution: FR-140-NFPA 99-2012
Statement: The explanatory material was added for the newly added section on oxygen concentrator filling systems.

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Public Input No. 205-NFPA 99-2012 [ Section No. A.12.1.1 ]

A.12.1.1

Throughout this chapter, wherever the term hospital is used, the term health care facilities. Applicable facilities include, but are not limited to, hospitals, convalescent or nursing homes, and emergency receiving stations. A government authority could formally designate such facilities as disaster treatment centers. Such facilities would not normally include doctors’ or dentists’ offices, medical laboratories, or school nurseries, unless such facilities are used for the treatment of disaster victims. National bioterrorism preparedness efforts call for the use of schools and other large public facilities to provide facilities for mass immunization. An emergency management program (formerly known as a disaster plan or internal/external plan) encompasses activities across four phases: mitigation, preparedness, response, and recovery. Mitigation activities are those designed to reduce or eliminate the impact of hazards. Preparedness activities include those that build organizational and individual capabilities to deal with disasters. Response activities include all necessary actions to stop ongoing negative effects of a disaster. Recovery activities are those that restore the organization, its employees, and the community back to normal.


NFPA 1600, Standard on Disaster/Emergency Management and Business Continuity Programs, is an internationally accepted framework for an emergency program. NFPA 99, Chapter 12, recognizes this overall structure and provides additional information useful to health care organizations. Table A.12.1.1 illustrates the relationship between the elements of NFPA 99, Chapter 12, and NFPA 1600.

Table A.12.1.1 How NFPA 99, Chapter 12, Relates to NFPA 1600

<table>
<thead>
<tr>
<th>NFPA 1600</th>
<th>NFPA 99, Chapter 12</th>
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</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>12.1.1 Applicability</td>
</tr>
<tr>
<td>Scope</td>
<td>12.1.2 Framework</td>
</tr>
</tbody>
</table>
Statement of Problem and Substantiation for Public Input

The sentence removed is unclear.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Committee Statement

Resolution: FR-149-NFPA 99-2012
Statement: The sentence removed is unclear.

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Public Input No. 207-NFPA 99-2012 [ Section No. A.12.5.3.1.2 ]

A.12.5.3.1.2

By basing the planning of health care emergency management on realistic conceptual events, the program reflects those issues or events that are predictable for the environment in which the organization operates. Thus, such conceptual planning should focus on issues, such as severe weather typical in the locale, situations that can occur due to close proximity of industrial, government, or transportation complexes, or earthquake possibilities due to local seismic activity. Planning should also incorporate knowledge available in the emergency management research about how individuals, small groups, organizations, communities, and societies behave during emergencies.

Statement of Problem and Substantiation for Public Input

Proximity to government buildings is a significant vulnerability.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 09:45:59 EDT 2012

Committee Statement

Resolution: FR-150-NFPA 99-2012
Statement: Proximity to government buildings is a significant vulnerability.

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Public Input No. 212-NFPA 99-2012 [ Section No. A.12.5.3.3.6.1(5) ]
A.12.5.3.6.1(5)

Emergency internal and external communications systems should be established to facilitate communication with security forces and other authorities having jurisdiction, as well as internal patient care and service units in the event normal communications methods are rendered inoperative. The basic form of communication in a disaster is the telephone system. As part of the contingency plan to maintain communication, a plan for restoring telephone systems or using alternate systems is necessary. Typically, the first line of internal defense for a system outage is strategically placed power-failure telephones that are designed to continue to function in the event of system failure (e.g., dedicated lines, fax lines). Plans for external outages and load control should include the use of pay phones, where available, that have first priority status in external system restoration. Facilities should preplan restoration activities and prioritization with their telephone service providers. A review with the state and other communications agencies (Government Emergency Telecommunications Service, Wireless Priority Service, Health and Homeland Alert Network) should be conducted.

Contingency plans should also contain strategies for the use of radio frequency communications to supplement landline usage. The plan should include a means to distribute and use two-way radio communication throughout the facility. A plan for the incorporation and use of amateur radio operators should also be considered.

It should be recognized that single-channel radio communication is less desirable than telephone system restoration due to the limited number of messages that can be managed. Cellular telephones, although useful in some disaster situations, should not be considered a contingency that has high reliability due to their vulnerability to the load control schemes of telephone companies. Portable text messaging has been proven to be more reliable than cellular phone calls. Social media can be an important tool for emergency communication, but it must be managed so that responses to inquiries can be provided. Portable e-mail devices, satellite telephones, and audio- and video-conferencing services are useful tools to link key staff and organizations.

Statement of Problem and Substantiation for Public Input

Additional information provided about current communication methods.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 10:04:45 EDT 2012

Committee Statement

Statement: Additional information provided about current communication methods, which have proven to be successful in recent disasters.

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A.13.1

This chapter provides those with responsibility for security management in health care facilities and is based on the foundations of NFPA, the criteria to develop a security management plan. Additional information can be found in NFPA 730, Guide for Premises Security.

Statement of Problem and Substantiation for Public Input

Explanatory material is from the body text. Then the duplicate material was deleted.

Related Public Inputs for This Document

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<td>Explanatory material in section 13.1 moved to annex.</td>
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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 14:36:44 EDT 2012

Committee Statement

Resolution: Section 13.1 identifies NFPA 99 as the primary source for security management in health care facilities.

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Public Input No. 68-NFPA 99-2012 [Section No. A.13.1.1]

A.13.2.1
A health care facility security plan can be formulated from security-sensitive areas that need the highest level of protection outward to the perimeter of the health care facility campus in concentric rings. Viewed from the outside, security is thus open and welcoming to patients and visitors. As an individual proceeds into the interior, public spaces might have minimal surveillance, but those sensitive areas that cannot be entered are layered with protections and countermeasures.

Statement of Problem and Substantiation for Public Input

Renumber annex to match the reorganization in the body of the document.

Related Public Inputs for This Document

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<tr>
<td>Submittal Date:</td>
<td>Fri Apr 13 15:12:45 EDT 2012</td>
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Committee Statement

Resolution: The previous public inputs that would have necessitated renumbering were not incorporated into the document.

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The security plan should be reviewed annually or more frequently if new challenges present themselves.

Statement of Problem and Substantiation for Public Input

Renumbered to match changes to body text.

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<td>New location of body text.</td>
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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 15:15:17 EDT 2012

Committee Statement

Resolution: The previous public inputs that would have necessitated renumbering were not incorporated into the document.

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A.13.2.4
The risks identified in the SVA should be categorized by severity and frequency into building systems categories. The security plan should address risks according to the danger to patients and caregivers and then to the risk tolerance of the health care facility.

Statement of Problem and Substantiation for Public Input

Added expantory material on how to sort the SVA findings to organize them into categories that can be addressed for the safety of patients, caregivers, and other building occupants.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 15:29:13 EDT 2012

Committee Statement

Resolution: The proposed text that would have necessitated this addition was not incorporated in the code. The categories outlined in Chapter 4 are designed to evaluate the risk to patients based on systems. It is not intended to apply to security as identified in Section 4.3.

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A.13.2.1
The security vulnerability assessment should be part of the HVA required by Chapter 4, Fundamentals. For general information regarding the SVA and premises security, see NFPA 730, Guide for Premises Security.

Statement of Problem and Substantiation for Public Input

Renumbered to match revision of body text. Sentence added to explain the correlation between the HVA and the SVA.

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<td>New definition for HVA.</td>
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<tr>
<td>Public Input No. 62-NFPA 99-2012 [Chapter 4]</td>
<td>Requirement for HVA.</td>
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<td>Public Input No. 67-NFPA 99-2012 [Section No. 13.2]</td>
<td>Revision of body text numbering.</td>
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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 15:20:29 EDT 2012

Committee Statement

Resolution: A hazard vulnerability assessment is not currently required by Chapter 4.

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Employee screening is typically a function managed by the human resources department.

The increase in the number of lawsuits based on the tort of negligent hiring has resulted in employers being under a greater responsibility to use due care in selecting employees. At the same time, federal
Employers have a greater responsibility to use due care in selecting employees. At the same time, federal and state laws impose restrictions on employers that are intended to protect the privacy of applicants. Since many employees have access to critical assets (people, property, and information), the need for pre-employment screening cannot be overemphasized.

**A.13.4.1.1(1)**

Employers should conduct an appropriate level (based on the SVA and employee duties) of background screening varying from checking resources, criminal history, and credit, to a full background check with drivers’ records, visual inspection of residence, interviews with known associates, and other formal checks. Polygraphs should be conducted only as permitted by law.

**A.13.4.1.2**

For large facilities, the use of color codes on identification badges should be considered and codes established for specific buildings, floors, or areas.

**A.13.4.3**

Patients who generate media interest should have special security procedures. VIP or media representatives bring a unique set of security requirements. Protection of VIPs is normally accomplished by restricting the use of names on charts and rooms and by assigning a dedicated security watch. Admission of a high-profile person to a health care facility creates two sets of problems that might require partial activation of the Health Care Emergency Management Plan: security and reception of news media. Provision of security forces in this situation might be provided by a governmental agency or private security forces. However, activation of facility security forces might be required to prevent curious onlookers from entering facility work areas and interfering with routine facility functioning. Routine visiting privileges and routine visiting hours might need to be suspended in parts of the facility.

**A.13.4.3.2.2**

An escort can control movement of media personnel in the facility.

**A.13.4.4**

Crowd control of persons demanding access to care will create additional demands on security. Because of the intense public interest in disaster casualties, news media representatives should be given as much consideration as the situation will permit. Ideally, news media personnel should be provided with a reception area, with access to telephone communication and, if possible, an expediter who, though not permitted to act as spokesman for news releases, could provide other assistance to the news media. The marketing department of the hospital might be best suited to assist security personnel with media control. News media personnel should not be allowed into the health care facility without proper identification. To alert off-duty health care staff and to reassure the public, use of broadcast media should be planned. Media representatives should be requested to wear some means of identification for security purposes. Where feasible, photo identifications or other means to ensure positive identification should be used. Visitor and crowd control creates the problem of distinguishing staff from visitors. Such identification should be issued to all facility personnel, including volunteer personnel who might be utilized in disaster functions. Note that care should be taken to ensure that identification badges are recalled whenever personnel terminate association with the health care facility. Members of the news media should be asked to wear some means of identification, such as press cards, on their outside garments so that they are readily identifiable by security guards controlling access to the facility or certain areas therein. Clergy also frequently accompany casualties or arrive later for visitations and require some means of identification.

**A.13.4.5**

Security personnel can be an effective and useful component of a facility’s physical security program. The effectiveness of alarm devices, physical barriers, and intrusion detectors can depend on a response by security personnel.

Security services can be used for, but are not limited to, the following circumstances:

1. The mission of the facility is particularly critical.
2. There is a high level of sensitivity of information handled at the facility, such as national security information.
3. An in-house response capability is needed, for example, the facility contains alarmed vaults or other sensitive operations, and off-site security personnel or police are not close enough for quick response.
quick response.

(4) The facility is vulnerable to theft or damage, for example, a facility location in a high-crime area.

(5) Pedestrian or automobile traffic is heavy or congested and requires special controls.

(6) Valuable goods are stored or used in the facility.

As with any expenditure of funds for security, the annual costs of security services normally should not exceed the monetary value of the protected items.

A substantial expense for security services can be required for crowd or traffic control, for safeguarding highly classified or sensitive information, or for protecting material or functions that have high intrinsic rather than monetary value. This is especially true as applied to the safety of employees, since it is impossible to put a dollar value on human lives or peace of mind. A security post in a high-crime area can yield substantial benefits in terms of improved safety, higher employee morale, and increased productivity.

A.13.4.5.1.2(5)

The disclosure should be in compliance with legal, regulatory, and contractual requirements.

A.13.4.5.2

Security personnel can perform the following services:

(1) Entrance control. Operate and enforce a system of access control, including inspection of identification credentials and packages.

(2) Roving patrol. Patrol routes or designated areas, such as perimeters, buildings, vaults, and public areas.

(3) Traffic control. Direct traffic (vehicular and pedestrian), control parking, check permits, and issue citations.

(4) Key control. Receive, issue, and account for certain keys to the building and its internal areas.

(5) Security and fire systems. Monitor, operate, and respond to intrusion and fire alarm systems or protective devices.

(6) Utility systems. Monitor, record data, or perform minor operations for building utility systems.

(7) Lost and found. Receive, provide receipts for, and store found items.

(8) Reports and records. Prepare reports on accidents, fires, thefts, and other building incidents.

(9) Response to emergencies. In case of any emergency (e.g., fire, bomb threat, assault, or civil disturbance), respond, summon assistance, administer first aid, and assist public safety personnel.

(10) Law and order. Maintain law and order within the area of assignment.


A.13.4.5.2.2.3

Security personnel should be covered by liability insurance. Check for adequate liability insurance when contracting security services.

A.13.4.5.3

These methods are most effective when applied in conjunction with a system that ensures the patrols are actually performed. Such systems include watchclock service, electronic guard tour monitoring, and watchman systems. These systems provide a documentary record of the locations in the facility that were visited and the times at which each location was visited. Regular review of these records can help to ensure that security personnel are performing their patrols as planned.

A.13.4.5.3.1

Some ways to accomplish supervision are spot checks, daily logs, watch clock tours, and activity reports.

A.13.4.5.3.2(4)

Signs of vandalism as well as signs of transients or vagrants living on or around the property should be
Signs of vandalism as well as signs of transients or vagrants living on or around the property should be noted. Security-related complaints made by employees or tenants should be noted as well.

A.13.4.5.5

Security personnel should be armed only when there are compelling reasons. If security personnel are armed for a deterrent effect, that is, to prevent crime or other unauthorized activity, responsible officials must weigh that advantage against such disadvantages as the danger to innocent personnel if a firearm is used by a security person; the possibility of an accidental discharge; and the possibility, no matter how remote, of irrational behavior on the part of security personnel. Many states have laws that require background checks and specific training for security personnel, especially armed personnel.

A.13.4.5.6

It is essential that facilities using security personnel train them in the legal and practical applications of their employment. Training should be repeated periodically. Training must reflect changes in regulations and the enactment of new laws.

A.13.5.1.1

While shipments typically arrive by truck, shipments also can come in through other transportation modes such as trains or barges.

A.13.5.2.2

See A.6.3.3.1 for characteristics indicating a suspicious package.

A.13.5.3.1

Suspicious packages or mail should not be opened. Suspicious mail may show any or all of the following characteristics:

1. No return address
2. Mailed from a foreign country
3. Excessive postage
4. Restrictive markings like “Personal” or “Special Delivery”
5. Misspelled information in the address
6. Addressed to a title rather than an individual
7. Badly typed or written
8. Powdery substance felt through or appearing on the package or envelope
9. Lopsided or uneven in shape
10. Rigid or bulky packaging
11. Strange odor
12. Oily stains, discoloration, or crystallization on the packaging
13. Excessive packaging material such as masking tape or string
14. Excessive weight
15. Ticking sound
16. Protruding wires or aluminum foil

Consideration should be given to receiving mail in an area separated from critical functions.

A.13.6.1.2

The primary security perimeter might contain areas that are not contiguous. The noncontiguous U.S. states, Hawaii and Alaska, are well-known examples.

A.13.6.1.3

The primary security perimeter can include multiple secondary security perimeters. It is possible for a secondary perimeter to be congruent with the primary perimeter.

A.13.6.1.4

Secured perimeters are physical barriers that control authorized access to secure areas. Physical barriers can be of two general types: natural and structural. Natural barriers include mountains, cliffs, canyons, rivers, or other terrain that is difficult to traverse. Structural barriers are man-made devices.
Canyons, rivers, or other terrain that is difficult to traverse. Structural barriers are man-made devices, such as fences, walls, floors, and roofs.

A.13.6.2

There are few security plans where access is intended to every area. Accordingly, access to some areas is necessarily secured.

The following areas should be designated as controlled areas:

1. An area where confidential information or highly sensitive information is handled, processed, or stored (e.g., a mailroom)
2. An area that houses equipment that is significantly valuable or critical to the continued operations or provision of service
3. An area where uncontrolled access would interfere with or disrupt personnel assigned to the area in carrying out their official duties
4. An area where equipment or operations constitute a potential safety hazard
5. An area that is particularly sensitive as determined by the responsible manager

The following areas should be designated as restricted areas:

1. An area that houses mainframe computers or designated sensitive information systems
2. An area that is highly critical or sensitive as determined by the responsible manager

Statement of Problem and Substantiation for Public Input

These are the Annex sections to go with the new text from NFPA 730, Guide to Premises Security, 2011 edition.

Related Public Inputs for This Document

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<tr>
<td>Public Input No. 73-NFPA 99-2012 [New Section after 13.3.2]</td>
<td>New body text associated with these annex sections.</td>
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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Mon Apr 16 15:18:19 EDT 2012

Committee Statement

Resolution: The associated material was not incorporated into the document.

Copyright Assignment

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A.13.3.2(3)(c)

The emergency potential inherent in the telephoned bomb threat warrants inclusion of this contingency in the health care emergency operations plan. Experience has shown that facility personnel have to accompany police or military bomb demolition personnel in searching for the suspected bomb, because speed is of the essence, and only individuals familiar with a given area can rapidly spot unfamiliar or suspicious objects or conditions in the area. This is particularly true in health care facilities. The facility switchboard operator has to provide a checklist, to be kept available at all times, in order to obtain as much information as possible from the caller concerning the location of the supposed bomb, time of detonation, and other essential data, which have to be considered in deciding whether or not to evacuate all or part of the facility.

Statement of Problem and Substantiation for Public Input

Edit for language.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 10:10:02 EDT 2012

Committee Statement

Statement: Revised text to non-mandatory language as is required in the manual of style.

Copyright Assignment

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A.13.3.2(3)(c)
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Statement of Problem and Substantiation for Public Input

Revised text to non-mandatory language as required in the annex.

Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Fri Apr 13 16:06:49 EDT 2012

Committee Statement

Statement: Revised text to non-mandatory language as is required in the manual of style.

Copyright Assignment

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Sections A.13.4.2(1), A.13.4.3(5), A.13.4.4, A.13.4.6(3), A.13.4.7(1)

A.13.4.5.2(1)

A visible presence is normally accomplished by the placement of a security officer at the ambulance entrance. This serves the dual purpose of monitoring the security cameras throughout the emergency department as well as the activity at the ambulance entrance.

A.13.4.6.3.3(5)

The facility-wide alerting system should be activated for all reports of pediatric or infant abduction. The use of a standardized “code alert” system can facilitate the announcement; for example, “code pink” for an infant abduction or “code purple” for a pediatric abduction.

A.13.4.6.3.4

Video surveillance and motion detection can be used as additional protection for these areas. Some controlled drugs might need to be stored in safes.

A.13.4.6.3.6(3)

Reasons for a contraband check procedure would be to control items such as tobacco, drugs, or tools that could cause harm to the patient or staff.

A.13.4.6.3.7(1)

Law enforcement personnel should have orientation on the emergency procedures and layout of the facility. There should be good communication between law enforcement and health care facility security staff.

Statement of Problem and Substantiation for Public Input

Revise numbering to match public input #75.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Mon Apr 16 16:08:57 EDT 2012

Committee Statement

Resolution: The associated material was not incorporated into the document.

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Public Input No. 245-NFPA 99-2012 [ Section No. A.13.4.4 ]

A.13.4.4 Video surveillance and motion detection can be used as additional protection for these areas. Some controlled drugs might need to should be stored in safes.

Statement of Problem and Substantiation for Public Input

Edit language.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 15:02:44 EDT 2012

Committee Statement

Statement: Updated to be in in accordance with the manual of style.

Copyright Assignment

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Public Input No. 79-NFPA 99-2012 [ New Section after A.13.5.3.1 ]

A.13.7.1.2 Access through portals is usually controlled for ingress, but it is possible to control movement in both directions. The decision to control in both directions is based on the SVA. When portals are not staffed, they should be locked, illuminated during the hours of darkness, and periodically inspected. Semi-active entrances, such as railroad siding gates or gates used only during peak traffic flow periods, should be locked except when actually in use.

A.13.7.3.1 More information on fire resistance–rated opening protectives is in NFPA 80, Standard for Fire Doors and Other Opening Protectives.

A.13.7.3.2(1) ANSI/BHMA A156 performance guides include security tests.
A.13.7.3.4
Doors that are always locked should have a latch-type lock and closer to ensure they are not accidentally left unlocked.

A.13.7.4
The integrity of a key system is important to safeguarding property and controlling access. Lost or stolen keys and key blanks can compromise the security of a key system. The security officer should ensure that responsible individuals maintain control over the facility's key system by storing, issuing, and accounting for all keys under the facility's control. Issuance of keys should be kept to a minimum. Keys should be issued only to persons who have an official need.

PC-based software, key storage cabinets, and computer-controlled key retention and distribution systems are available to facilitate the management of a master key system and help to ensure its long-term integrity.

Facility keys should not be identified in any manner such that a person finding a lost key could trace it back to the facility. A policy should be established to restrict duplication of keys without written permission. All keys should be marked “DO NOT DUPLICATE” to deter the unauthorized copying of keys.

A master key system should be designed so that the grandmaster key is the only key that will open every restricted area of the facility. A master key system is used to limit the number of keys carried by personnel requiring access to multiple areas of the building. It is important that such a system not be designed so that the loss of a single key could provide an unauthorized person unrestricted access to all areas of the building. The sophistication of the master key system should depend upon an assessment of employees’ or tenants’ needs and the criticality, risk, and sensitivity of restricted areas. The number of grandmaster keys should be limited to the least number necessary for operation of the facility. Master key distribution should be limited to the personnel requiring access to multiple restricted areas.

A.13.7.4.2(3)
Key storage containers and cabinets should be kept locked with a pick- and drill-resistant, patented high security cylinder that is not keyed to the facility master key system.

A.13.7.4.2(9)
Key control policies should do the following:
(1)Remind employees to keep official keys on their person or securely locked in a desk or cabinet.
(2)Have a policy against lending keys to an unauthorized person.
(3)Require employees to promptly return official keys checked out on a temporary basis.
(4)Require reporting of lost or stolen keys immediately to the appropriate official.
(5)Establish procedures for collecting keys from terminated employees, employees on vacation, and vacated tenants.

A.13.7.4.3
Records of key issuance should be secured and kept separate from keys.

A.13.7.4.3(6)
There are many ways to document the acceptance for keys. The recipient can sign the key control record, use a machine readable credential, or be tracked with an electronic key control system.

Statement of Problem and Substantiation for Public Input


Related Public Inputs for This Document

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### Submitter Information Verification

**Submitter Full Name:** Michael DeVore  
**Organization:** State Farm Insurance Company  
**Submittal Date:** Mon Apr 16 16:39:53 EDT 2012

### Committee Statement

**Resolution:** The associated material was not incorporated into the document.

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There can be times when full or partial facility access or egress is not desirable. Planning for these events should be conducted in coordination with local emergency agencies, such as police, fire, and public health agencies.

Statement of Problem and Substantiation for Public Input

Numbering revised to match public input for the body text.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Mon Apr 16 16:42:26 EDT 2012

Committee Statement

Resolution: The previous public inputs that would have necessitated renumbering were not incorporated into the document.

Copyright Assignment

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Patients with generate media interest should be subject to special security procedures. VIP or media representatives present the need for a unique set of security requirements. Protection of VIPs is normally accomplished by restricting the use of names on charts and rooms and by assigning a dedicated security watch.
Admission of a high-profile person to a health care facility creates two sets of problems that might require partial activation of the health care emergency management plan. These problems are security and the reception of news media.

Provision of security forces in this situation might be provided by a governmental agency or private security forces. However, activation of facility security forces might be required to prevent hordes of curious onlookers from entering facility work areas and interfering with routine facility functioning. Routine visiting privileges and routine visiting hours might need to be suspended in parts of the facility.

A.13.6.1.1

The marketing department of the hospital might be best suited to assist security personnel with media control.

A.13.6.2

Ideally, news media personnel should be provided with a media briefing area or a media staging area, or both, with access to telephone communication and, if possible, an expediter who, though not permitted to act as a spokesperson for news releases, could provide other assistance to such personnel. News media personnel should not be allowed into the health care facility without proper identification. Media representatives should be requested to wear some means of identification for security purposes. Members of the news media should be asked to wear some means of identification, such as a press card, on their outside garments so that they are readily identifiable by security guards controlling access to the facility or certain areas therein.

A.13.7

Crowd control of persons demanding access to care will create additional demands on security. Because of the intense public interest in disaster casualties, news media representatives should be given as much consideration as the situation will allow. To alert off-duty health care staff and to reassure the public, use of broadcast media should be planned.

Where feasible, photo identification or other means to ensure positive identification should be used. Visitor and crowd control create the problem of distinguishing staff from visitors. Such identification should be issued to all facility personnel, including volunteer personnel who might be utilized in disaster functions. Note that care should be taken to ensure that identification cards are recalled whenever personnel terminate association with the health care facility. Clergy also will frequently accompany casualties or arrive later for visitations and require some means of identification.

A.13.8.3

Facility keys should not be identified in any manner such that a person finding a lost key could trace it back to the facility. A policy should be established to restrict duplication of keys without written permission. All keys should be marked “DO NOT DUPLICATE” to deter the unauthorized copying of keys.

There should be a log of keys issued to employees and vendors maintained at the facility. A responsible individual should be in charge of issuing keys and maintaining complete, up-to-date records of the disposition of keys, including copies. The records should show the issuance and return of keys, including the name of the person to whom the key was issued, as well as the date and time. Records of key issuance should be secured and kept separate from keys.

Keys should be restricted to those who need them, and extra copies of keys should be kept locked in a secure cabinet with access control.

Procedures should be established for collecting keys from terminated employees, employees on vacation, and vacated tenants. Lost keys should be reported immediately and procedures established for the rekeying or replacement of the affected locks.

A master key system should be designed so that the grandmaster key is the only key that will open every restricted area of the facility. A master key system is used to limit the number of keys carried by personnel requiring access to multiple areas of the building. It is important that such a system not be designed so that the loss of a single key could provide an unauthorized individual unrestricted access to all areas of the building. The sophistication of the master key system should depend upon an assessment of employees’ or tenants’ needs and the criticality, risk, and sensitivity of restricted areas.
The number of grandmaster keys should be limited to the least number necessary for operation of the health care facility. Master key distribution should be limited to the personnel requiring access to multiple restricted areas. A log should be maintained showing who is in possession of master keys.

A.13.9 —
Background checks should include criminal record checks, employment histories, and references. This function is typically managed by the human resources department.

A.13.10 —
The number of guards needed at any given time will depend on the size of the facility, the hours of operation, and the current risk factors. Many states have laws that require background checks and specific training for security personnel, especially armed personnel. It is essential that facilities using security personnel train them in the legal and practical applications of their employment. Training must reflect changes in regulations and the enactment of new laws.

A.13.10.1 —
Post orders should contain a list of the duties of the security officer and instructions to cover all foreseeable events the security officer can encounter. Post orders should list the name of the facility, the date issued, the effective date, and the purpose. Duties of security personnel should be listed, including job classification, uniforms, carrying of firearms, reporting times, watch tours, hours of coverage, and other duties to be assigned. Instructions should be lawful and protect the safety of the security officer and those they encounter. Reviews of post orders should be conducted regularly with facility management and security officers. Post orders should be updated regularly and at least annually. A procedure should be established to inform security officers of changes in post orders.

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**Statement of Problem and Substantiation for Public Input**

The body text was deleted by a previous public input and the proposed complete revision of Chapter 13. The annex text is moved to people management and portal control sections.

**Related Public Inputs for This Document**

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<td>New location of body text for people management.</td>
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<td>Public Input No. 78-NFPA 99-2012 [New Section after 13.5]</td>
<td>New location of body text on portal control.</td>
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<td>New location of annex text for portal control.</td>
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**Submitter Information Verification**

**Submitter Full Name:** Michael DeVore  
**Organization:** State Farm Insurance Company  
**Submittal Date:** Tue Apr 17 10:30:32 EDT 2012

**Committee Statement**

**Resolution:** The related public inputs that would necessitate this were not incorporated.

**Copyright Assignment**

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A.13.8.3

Key cards are preferable to traditional keys because they can be immediately deactivated if lost or not returned by a terminated employee.

Facility keys should not be identified in any manner such that a person finding a lost key could trace it back to the facility. A policy should be established to restrict duplication of keys without written permission. All keys should be marked “DO NOT DUPLICATE” to deter the unauthorized copying of keys.

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The number of grandmaster keys should be limited to the least number necessary for operation of the health care facility. Master key distribution should be limited to the personnel requiring access to multiple restricted areas. A log should be maintained showing who is in possession of master keys.

Statement of Problem and Substantiation for Public Input

This input updates the material to include current technology commonly in use that would eliminate many of the concerns that are subsequently identified in this section.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 15:04:43 EDT 2012
Committee Statement

Statement: This input updates the material to include current technology commonly in use that would eliminate many of the concerns that are subsequently identified in this section.

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A.13.11.1

The effectiveness of the security plan is tested by performing drills. Drills should be conducted on all work schedules. Drills during all shifts are necessary so that all personnel are familiar with the plan. Practicing the plan helps personnel react as needed during a security incident.

Statement of Problem and Substantiation for Public Input

Revised the numbering to match the body text revision. Also deleted the first sentence as unneeded. Deleted the part about being necessary as this indicates the drill is mandatory, which is not permitted in the annex material.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Michael DeVore
Organization: State Farm Insurance Company
Submittal Date: Tue Apr 17 10:35:22 EDT 2012

Committee Statement

Statement: This removes redundant language.

Copyright Assignment

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Public Input No. 319-NFPA 99-2012 [New Section after A.14.2.2.5]

Add new section to read:

A.14.2.2.5.1 In past editions of this code “high quality epoxy” materials were allowed to be used as interior finish in these chambers, without a specific fire performance attached to them. The reason for the permission to use these materials was that they offer suitable physical properties.
Statement of Problem and Substantiation for Public Input

This public input corrects a problem and allows more flexibility while retaining fire safety.

Issues with the present language:
1. In fact, very few paints (interior finish materials) are noncombustible and the application of the requirements would result in most paints being "high quality epoxy", whether flammable or not.
2. There is no requirement for smoke emission in NFPA 99 and none is being proposed in this public input.
3. What is being proposed today is more severe than a material that has a flame spread or heat release of a Class A is a material which exhibits a flame spread index of no more than 25 (when tested to ASTM E 84, Steiner tunnel) or a maximum heat release rate of 800 kW and no flashover (when tested to NFPA 286, room corner test).
4. The proposed fire test criteria (from either the room corner test, NFPA 286, or the cone calorimeter, ASTM E1354), are fire performance levels intermediate between that of "flame resistant" material (as the previous edition of NFPA 99 asked for, and which was equivalent to testing to NFPA 701, a textile test) and a limited combustible material. The NFPA 286 test is already referenced in NFPA 99.

The proposed changes will provide the following:
1. Improved flexibility for use of interior finish materials over the existing NFPA 99.
2. Improved fire safety over existing hyperbaric chambers, but without the combination in the code of either excessive requirements (as represented by noncombustible materials) or no requirements (as represented by high quality epoxy).

Note further:
1. Use of the term “high quality epoxy” for the paint or finish is meaningless, as the paint or finish needs to be one that is described in performance terms and that is approved or listed for the application, to prevent any epoxy paint from being used. Any vendor of epoxy finishes will claim that they market “high quality” materials and this section is, thus, unenforceable as is. The additional words will ensure the appropriate fire safety while retaining the permission to use “high quality epoxy” finishes.
2. Since a “high quality epoxy” finish is allowed today, and no specific fire performance is required, then a material that exhibits heat release rate lower than that finish material should also be allowed.
3. NFPA 286 is a full scale room-corner test and if a material were to pass the test, it would require that it exhibits excellent fire performance, better than a typical Class A material used for interior finish (as I had proposed at the last cycle).
4. ASTM E1354 (cone calorimeter) is a small scale heat release test that provides the most comprehensive approach to assessing fire performance of materials, using a 100 mm x 100 mm (roughly 4 inches by 4 inches) test sample. If the proposed requirements are complied with, good fire performance is assured.
5. Since a limited combustible material is permitted for sound deadening materials inside the hyperbaric chamber, then they should also be permitted as finish for the chamber.
6. The changes to the terminology related to “noncombustible” and “limited combustible” from “as defined in” to “in accordance with” reflect the fact that the NFPA system is going away from “defining” these terms (with requirements) in favor of including the requirements in the body of the code or standard. That has already been approved for NFPA 101 and 5000 and other documents and I have submitted public input for the same to occur in NFPA 99.
7. The change to the word “listed” with regard to the options prevents the confusion with the specific definition in NFPA of the term “listed” for materials that have undergone listing by an outside organization.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:38:35 EDT 2012

Committee Statement

Resolution: FR-211-NFPA 99-2012
Statement: The term "high quality epoxy" was removed from the body of the Code. This annex language explains its past use and provides additional guidance on interior finish selection.

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Public Input No. 320-NFPA 99-2012 [Section No. A.14.2.2.5.2]

A.14.2.2.5.2—3  Many commercial sound-deadening materials that might be nonflammable are porous and will absorb water from activation of the fire-suppression system and retain odor. Metallic panels that contain a large quantity of small holes or are made of wire mesh and are installed about 2.5 cm (1 in.) away from the chamber wall can be used to form an acoustic baffle. These panels should be made from corrosive-resistant materials, such as stainless steel or aluminum, and are permitted to be painted in accordance with 14.2.2.5.1.

Statement of Problem and Substantiation for Public Input

This public input corrects a problem and allows more flexibility while retaining fire safety.

Issues with the present language:
1. In fact, very few paints (interior finish materials) are noncombustible and the application of the requirements would result in most paints being “high quality epoxy”, whether flammable or not.
2. There is no requirement for smoke emission in NFPA 99 and none is being proposed in this public input.
3. What is being proposed today is more severe than a material that has a flame spread or heat release of a Class A is a material which exhibits a flame spread index of no more than 25 (when tested to ASTM E 84, Steiner tunnel) or a maximum heat release rate of 800 kW and no flashover (when tested to NFPA 286, room corner test).
4. The proposed fire test criteria (from either the room corner test, NFPA 286, or the cone calorimeter, ASTM E1354), are fire performance levels intermediate between that of “flame resistant” material (as the previous edition of NFPA 99 asked for, and which was equivalent to testing to NFPA 701, a textile test) and a limited combustible material. The NFPA 286 test is already referenced in NFPA 99.

The proposed changes will provide the following:
1. Improved flexibility for use of interior finish materials over the existing NFPA 99.
2. Improved fire safety over existing hyperbaric chambers, but without the combination in the code of either excessive requirements (as represented by noncombustible materials) or no requirements (as represented by high quality epoxy).

Note further:
1. Use of the term “high quality epoxy” for the paint or finish is meaningless, as the paint or finish needs to be one that is described in performance terms and that is approved or listed for the application, to prevent any epoxy paint from being used. Any vendor of epoxy finishes will claim that they market “high quality” materials and this section is, thus, unenforceable as is. The additional words will ensure the appropriate fire safety while retaining the permission to use “high quality epoxy” finishes.
2. Since a “high quality epoxy” finish is allowed today, and no specific fire performance is required, then a material that exhibits heat release rate lower than that finish material should also be allowed.
3. NFPA 286 is a full scale room-corner test and if a material were to pass the test, it would require that it exhibits excellent fire performance, better than a typical Class A material used for interior finish (as I had proposed at the last cycle).
4. ASTM E1354 (cone calorimeter) is a small scale heat release test that provides the most...
comprehensive approach to assessing fire performance of materials, using a 100 mm x 100 mm (roughly 4 inches by 4 inches) test sample. If the proposed requirements are complied with, good fire performance is assured.

5. Since a limited combustible material is permitted for sound deadening materials inside the hyperbaric chamber, then they should also be permitted as finish for the chamber.

6. The changes to the terminology related to “noncombustible” and “limited combustible” from “as defined in” to “in accordance with” reflect the fact that the NFPA system is going away from “defining” these terms (with requirements) in favor of including the requirements in the body of the code or standard. That has already been approved for NFPA 101 and 5000 and other documents and I have submitted public input for the same to occur in NFPA 99.

7. The change to the word “listed” with regard to the options prevents the confusion with the specific definition in NFPA of the term “listed” for materials that have undergone listing by an outside organization.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:39:34 EDT 2012

Committee Statement

Resolution: FR-212-NFPA 99-2012
Statement: Revision is to correlate with renumbering in the body of the code.

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A.15.8.1.3

Although this exception is currently not recognized by NFPA 13, Standard for the Installation of Sprinkler Systems, a proposal has been submitted for consideration by the NFPA 13 Technical Committee on Sprinkler System Installation Criteria. This exception is limited to hospitals as nursing homes and many limited care facilities can have more combustibles within the closets. The limited amount of clothing found in the small clothes closets in hospital patient rooms is typically far less than the amount of combustibles in casework cabinets that do not require sprinkler protection such as nurse servers. In many hospitals, especially new hospitals, it is difficult to make a distinction between clothes closets and cabinet work. This exception is far more restrictive than similar exceptions for hotels and apartment buildings. NFPA 13 already permits the omission of sprinklers in wardrobes [see 8.1.1(7) of NFPA 13]. It is not the intent of this paragraph to affect the wardrobe provisions of NFPA 13. It is the intent that the sprinkler protection in the room covers the closet as if there was no door on the closet (see 8.5.3.2.3 of NFPA 13). [101 : A.18.3.5.8]

Statement of Problem and Substantiation for Public Input

The first sentence is no longer applicable based upon the 2013 Edition of NFPA 13. Whereas NFPA 13 now permits the omission of sprinklers in such closets of hospitals there is no need to compare the language to a similar exception for hotels and apartment buildings. It is recognized that the Annex note is extracted text. However, I am not sure that the Annex note in NFPA 101 will be revised since I did not submit a Public Input to NFPA 101 to revise the note. Therefore, it is intended that this PI is intended to provide a mechanism by which the Annex note can be changed in both NFPA 101 and NFPA 99.

Submitter Information Verification

Submitter Full Name: William Koffel
Organization: Koffel Associates, Inc.
Submittal Date: Wed Jun 13 21:14:09 EDT 2012

Committee Statement

Statement: The first sentence is no longer applicable based upon the 2013 Edition of NFPA 13. Whereas NFPA 13 now permits the omission of sprinklers in such closets of hospitals there is no need to compare the language to a similar exception for hotels and apartment buildings.

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B.12.1.1.4 Develop, Publish, and Distribute the Emergency Operations Plan (EOP).

NFPA 1600, Standard on Disaster/Emergency Management and Business Continuity Programs, Section 3.6, describes four types of planning: strategic administrative (preparedness) planning, mitigation planning, recovery planning, and emergency operations planning.

The Federal Emergency Management Agency, now part of the Department of Homeland Security, issues guidance on the development of emergency operations plans, or EOPs. The EOP is designed to address all hazards, and it accomplishes this through its organization by functions, not departments, hazards, or individuals. Flexibility is a key feature of this type of format, as only the functions needed to address the problems are activated, not the entire plan. This type of EOP format (a basic plan and functional annexes) is that used by communities, states, and the Federal Response Plan. (See Annex D.)

Hard copies of the EOP need not be widely distributed. Staff members need access to incident-specific plans, but not the entire document. Several copies of the full EOP should be available in the Hospital Command Center, the administrative offices, and with the chair of the Emergency Management Committee. Posting the EOP on the hospital intranet with linkages to enhance movement through the plan can also be very effective, however a few hard copies should still be available in the event of computer failure.

Statement of Problem and Substantiation for Public Input

The current version of this section addresses distribution but does not identify to whom the plan should be distributed. This input limits the distribution of the EOP.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 15:11:46 EDT 2012

Committee Statement

Resolution: FR-158-NFPA 99-2012
Statement: The current version of this section addresses distribution but does not identify to whom the plan should be distributed. This input limits the distribution of the EOP.

Copyright Assignment

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B.12.3.2.8 Staff Issues.
The following staff issues were found to be important to address:

1. Transportation, including knowledge of which roads are open and actually transporting staff to the facility. **Any transportation provided to staff should be by hospital drivers in hospital vehicles to avoid liability.**

2. Addressing the safety of families of staff

3. Provision of food, liquids, and lodging for staff and family members

Statement of Problem and Substantiation for Public Input

Many hospital EOPs include volunteer staff members picking up other staff members in their personal vehicles. This is not advisable due to the hospital's liability in the event of an accident.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 15:20:06 EDT 2012

Committee Statement

Resolution: There are various volunteer and non-hospital organizations that are active in emergency response who provide transportation services.

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Evacuation can be partial or total. It might involve moving from one story to another, from one lateral section or wing to another, or moving out of the structure. Even partial evacuations can involve all categories of patients. Where patients are those who would not routinely be moved, extraordinary measures might be required to support life. It is also necessary to ensure movement of supplies in conjunction with any evacuation. Decisions to evacuate might be made as a result of internal problems or under the menace of engulfing external threats. In all cases, the following considerations should govern:

(1) Move to predesignated areas, whether in the facility, nearby, or in remote zones. Evacuation directives will normally indicate destinations. Note that it is recommended to predesign a mutual aid evacuation plan with other health care facilities in the community. (See Annex D, U.S. Government Publication 3152, Hospitals and Community Emergency Response — What you Need to Know, on the subject of health care community mutual aid and evacuation planning.) In some communities, receiving hospitals are designated by EMS services based on availability.

(2) Ensure movement of equipment, supplies, and medical records to accompany or meet patients and staff in the new location.

(3) Execute predetermined staffing plans. Some staff will accompany patients; others will rendezvous in the new location. Maintenance of shifts is more complex than normal, especially when some hard-to-move patients stay behind in the threatened location, and when staff might be separated from their own relocated families.

(4) Protect patients and staff (during and after movement) against the threatening environment.

(5) When planning, consider transportation arrangements and patient tracking.

Statement of Problem and Substantiation for Public Input

This input recognizes that pre-determined mutual aid agreement may not be necessary in communities where EMS manages the evacuation.

Submitter Information Verification

Submitter Full Name: Susan McLaughlin
Organization: MSL Healthcare Consulting, Inc
Submittal Date: Wed Jun 13 15:24:39 EDT 2012

Committee Statement

Resolution: FR-159-NFPA 99-2012
Statement: This revision recognizes that predetermined mutual aid agreement may not be necessary in communities where EMS manages the evacuation.

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Public Input No. 310-NFPA 99-2012 [ Section No. D.1.2.5 ]

D.1.2.5 ASTM Publications.
ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.


Statement of Problem and Substantiation for Public Input

ASTM standards update.

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Submittal Date: Tue Jun 19 09:00:35 EDT 2012

Committee Statement

Resolution: FR-335-NFPA 99-2012
Statement: ASTM standards update.

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Public Input No. 120-NFPA 99-2012 [ Section No. D.2.3 ]

D.2.3 Addresses of Other Organizations that Publish Standards or Guidelines.

American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.

American Industrial Hygiene Assoc., 475 Wolf Ledges Parkway, Akron, OH 44311.

American Society for Healthcare Engineering (www.ashe.org), 155 North Wacker Drive, Chicago, IL 60606.

College of American Pathologists, 325 Waukegan Road, Northfield, IL 60060.


Scientific Apparatus Makers Assoc., 1101 16th Street, NW, Washington, DC 20036.

University of Colorado, Natural Hazards and Information Applications Center, Disaster Research Clearinghouse, www.colorado.edu/hazards.

University of Delaware, Disaster Research Center, http://www.udel.edu/DRC/.

Statement of Problem and Substantiation for Public Input

ASHE is one of the developers of ANSI/ASHRAE/ASHE Standard 170: Ventilation of Health Care Facilities, and in 2010 ASHE published the Health Facility Commissioning Guidelines.

Submitter Information Verification

Submitter Full Name: Pamela Blumgart
Organization: ASHE
Submittal Date: Thu May 10 21:36:46 EDT 2012

Committee Statement

Statement: Deleted the reference to College of American Pathologists, as there is no longer a laboratories chapter in NFPA 99. Additional resource information was added. ASHE is one of the developers of ANSI/ASHRAE/ASHE Standard 170: Ventilation of Health Care Facilities, and in 2010 ASHE published the Health Facility Commissioning Guidelines.

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D.2.4.1 Publications.

National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

American Health Care Association, 1201 L Street, Washington, DC 20005.

American Hospital Association, 840 North Lake Shore Drive, 155 N. Wacker Drive, Suite 400, Chicago, IL 60611 60606.

American Medical Association, 515 N. State Street, Chicago, IL 60610.

American Red Cross, National Headquarters, 2025 E Street, NW, Washington, DC 20006.

American Nurses’ Association, 8515 Georgia Avenue, Suite 400, Silver Spring, MD 20910.

American Red Cross:

Family Disaster Planning http://www.redcross.org/services/disaster/beprepared/familyplan.html

Disaster Preparedness for People with Disabilities http://www.redcross.org/services/disaster/beprepared/disability.html

Association of American Railroads, 50 F Street, Washington, DC 20001-1564.

Charles C. Thomas Publisher, 2600 South First Street, Springfield, IL 62704.

Dun-Donnelley Publishing Corp., 666 Fifth Avenue, New York, NY 10019.


Florida Health Care Association, 307 W. Park Avenue, P.O. Box 1459, Tallahassee, FL 32301.


Hospital Emergency Incident Command System, State of California Emergency Medical Services Authority, 1930 9th Street, Sacramento, CA 95814.

http://www.emsa.ca.gov/dms2/heics3.htm

International Association of Fire Chiefs, 4025 Fair Ridge Drive, Suite 300, Fairfax, VA 22033-2868.

Joint Commission on Accreditation of Healthcare Organizations (JCAHO), One Renaissance Blvd., Oakbrook Terrace, IL 60181.

National Interagency Incident Management System, Incident Command System, National Interagency Fire Coordination Center, Boise, ID.

http://www.nwcg.gov/pms/forms/ics_cours/ics_courses.htm

Pan American Health Organization, 525 23rd Street, NW, Washington, DC 20037 (Attn.: Editor, Disaster Preparedness in the Americas).

Standardized Emergency Management System, State of California Governor’s Office of Emergency Services, 3650 Schreiber Avenue, Mather, CA 95655.

http://www.oes.ca.gov/Operational/OESHome.nsf/Content/B4943535210895488256C2A0071E038?
OpenDocument

University of Delaware, Disaster Research Center (Publications), Newark, DE 19716.


Statement of Problem and Substantiation for Public Input

Corrected street address for American Hospital Association: http://www.aha.org/
Submitter Information Verification

Submitter Full Name: KENNETH KOCANDA
Organization: ASHE/AHA
Submittal Date: Tue May 01 10:01:21 EDT 2012

Committee Statement

Statement: Corrected street address for American Hospital Association: http://www.aha.org/ Note the address in the "locations" section of the website's footer.

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Table A.8.2  Category Designation by Function — Plumbing

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Note: This is a sample table. The numbers represented in this table might not be consistent with the health care facility scenario.
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</tr>
<tr>
<td>Patient education</td>
<td>4</td>
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<td>4</td>
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</tr>
<tr>
<td>Pharmacy</td>
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</tr>
<tr>
<td>Physical therapy</td>
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<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Protective environment room</td>
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<td>2</td>
<td>2</td>
<td>NA</td>
</tr>
<tr>
<td>Radiology</td>
<td>2</td>
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<td>2</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Waiting rooms</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

NA: Not applicable

Note: This is a sample table. The numbers represented in this table might not be consistent with the health care facility scenario.
Table A.9.3.7.5.1 Typical Medical Gas Cylinders’ Volume and Weight of Available Contents

[All Volumes at 21.1°C (70°F) and 101.325 kPa (14.696 psi)]

<table>
<thead>
<tr>
<th>Cylinder Style and Dimensions</th>
<th>Nominal Volume L (in.³)</th>
<th>Name of Gas</th>
<th>Mixtures of Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Air</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>B 8.89 x 33 cm (3 x 1/2 in. O.D. x 13 in.)</td>
<td>1.43 (87)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>0.68</td>
</tr>
<tr>
<td>D 10.8 x 43 cm (4 1/2 in. O.D. x 17 in.)</td>
<td>2.88 (176)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>1.73 (3-13)</td>
</tr>
<tr>
<td>E 10.8 x 66 cm (4 1/4 in. O.D. x 26 in.)</td>
<td>4.80 (293)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>2.92 (6-7)</td>
</tr>
<tr>
<td>M 17.8 x 109 cm (7 in. O.D. x 43 in.)</td>
<td>21.9 (1337)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>13.9 (30-10)</td>
</tr>
<tr>
<td>G 21.6 x 130 cm (8 1/2 in. O.D. x 51 in.)</td>
<td>38.8 (2370)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>22.7 (50-0)</td>
</tr>
<tr>
<td>H or K 23.5 x 130 cm (9 1/4 in. O.D. x 51 in.)</td>
<td>43.6 (2660)</td>
<td>kPa (psig)</td>
<td>L (ft³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kgs (lb-oz)</td>
<td>29.1 (64)</td>
</tr>
</tbody>
</table>

Notes: These are computed contents based on nominal cylinder volumes and rounded to no greater variance than ±1%.
* The pressure and weight of mixed gases will vary according to the composition of the mixture.
† 275 ft³/7800 L cylinders at 2490 psig are available upon request.
Source: Compressed Gas Association, Inc.