

**NFPA®**

**99**

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**Health Care Facilities Code**

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**2018**



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## NFPA® 99

# Health Care Facilities Code

## 2018 Edition

This edition of NFPA 99, *Health Care Facilities Code*, was prepared by the Technical Committees on Electrical Systems, Fundamentals, Health Care Emergency Management and Security, Hyperbaric and Hypobaric Facilities, Mechanical Systems, Medical Equipment, and Piping Systems, released by the Correlating Committee on Health Care Facilities, and acted on by NFPA at its June Association Technical Meeting held June 4–7, 2017, in Boston, MA. It was issued by the Standards Council on August 17, 2017, with an effective date of September 6, 2017, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See “Codes & Standards” at [www.nfpa.org](http://www.nfpa.org) for more information.

This edition of NFPA 99 was approved as an American National Standard on September 6, 2017.

## Origin and Development of NFPA 99

The idea for this document grew as the number of documents under the original NFPA Committee on Hospitals grew. By the end of 1980, there existed 12 documents on a variety of subjects, 11 directly addressing fire-related problems in and about health care facilities. These documents covered health care emergency preparedness, inhalation anesthetics, respiratory therapy, laboratories in health-related institutions, hyperbaric facilities, hypobaric facilities, inhalation anesthetics in ambulatory care facilities, home use of respiratory therapy, medical–surgical vacuum systems in hospitals, essential electrical systems for health care facilities, safe use of electricity in patient care areas of health care facilities, and safe use of high-frequency electricity in health care facilities.

A history on the documents that covered these topics can be found in the “Origin and Development of NFPA 99” in the 1984 edition of NFPA 99. What was then the Health Care Facilities Correlating Committee reviewed the matter beginning in late 1979 and concluded that combining all the documents under its jurisdiction would be beneficial to those who used those documents, for the following reasons:

- (1) The referenced documents were being revised independently of each other. Combining all the individual documents into one document would place all of them on the same revision cycle.
- (2) It would place in one unit many documents that referenced each other.
- (3) It would be an easier and more complete reference for the various users of the document (e.g., hospital engineers, medical personnel, designers and architects, and the various types of enforcing authorities).

To learn if this proposal was desired or desirable to users of the individual documents, the Committee issued a request for public comments in the spring of 1981, asking whether purchasers of the individual documents utilized more than one document in the course of their activities and whether combining these individual documents would be beneficial. Seventy-five percent of responses supported such a proposal, with 90 percent of health care facilities and organizations supportive of it. Based on this support, the Correlating Committee proceeded with plans to combine all the documents under its jurisdiction into one document.

In January, 1982, a compilation of the latest edition of each of the 12 individual documents under the jurisdiction of the correlating committee was published. It was designated NFPA 99, *Health Care Facilities Code*. The correlating committee also entered the document into the revision cycle reporting to the 1983 Fall Meeting for the purpose of formally adopting the document.

For the 1984 edition of NFPA 99, in addition to technical changes, administrative and organizational changes were made.

For the 1987 edition of NFPA 99, the third and final step in the process of combining the previous individual documents took place — that of integrating the content of these individual documents into a cohesive document. In addition, there were again technical changes made. The 1987 edition also saw the incorporation of NFPA 56F, *Standard on Nonflammable Medical Piped Gas Systems*, into NFPA 99.

For the 1990 edition of NFPA 99, some structural changes were made and some modifiers were added to make it easier to determine where requirements are applicable. Technical changes made included correlation with NFPA 101®, *Life Safety Code*®, changes for compressed medical air systems on the use of gas-powered medical devices operating at a gauge pressure of 200 psi and piped gas systems in general, clarification that patient care areas and wet locations are mutually exclusive, and further guidance on the effects of a disaster on staff.

For the 1993 edition of NFPA 99 there were further efforts to make the document more user-friendly (e.g., placing all “recommended” guidance either in notes or in the appendix). Significant technical changes included adding requirements and recommendations to further prevent or minimize fires in operating rooms. There were also major changes to requirements for installing, testing, inspecting, verifying, and maintaining nonflammable medical piped gas systems. New sections on dental compressed air and dental vacuum requirements were added. For the 1996 edition of NFPA 99, further changes to make the document more user-friendly were made. These included restructuring Chapters 3 and 4 so that all requirements for a Type 1, 2, or 3 essential electrical system, or a Level 1, 2, 3, or 4 piped gas or vacuum system, were contained in one section.

Other technical changes included moving requirements on flammable anesthetizing locations and the use of flammable inhalation anesthetics to a new Appendix 2. The subject of emergency preparedness was changed from guidance to a new chapter containing requirements. A new chapter on home health care was added. Requirements for storage rooms containing gas cylinders and containers totaling less than 3000 ft<sup>3</sup> were also added. For the 1999 edition, some significant technical and structural changes were made. Chapters on ambulatory health care centers, clinics, and medical/dental offices, were replaced completely by a new Chapter 13 covering health care facilities other than hospitals, nursing homes, and limited care facilities as defined in the document. A new chapter on freestanding birthing centers was added.

The 2002 edition included format and technical revisions. The *Manual of Style for NFPA Technical Committee Documents*, April 2000 edition, was applied to the document, resulting in changes to its structure and format. Introductory material in Chapter 1 was formatted for consistency among all NFPA documents. Referenced publications that apply to the document were relocated from the last chapter to Chapter 2, resulting in the renumbering of chapters. Informational references remained in the last annex. Appendices were designated as annexes. Definitions in Chapter 3 were reviewed for consistency with definitions in other NFPA documents, were systematically aligned, and were individually numbered. Paragraph structuring was revised with the intent of one mandatory requirement per section, subsection, or paragraph. Information that often accompanied many of the requirements was moved to Annex A, Explanatory Material. Exceptions were deleted or rephrased in mandatory text, unless the exception represented an allowance or required alternate procedure to a general rule when limited specified conditions existed. The reformatted appearance and structure provided continuity among NFPA documents, clarity of mandatory text, and greater ease in locating specific mandatory text.

The occupancy Chapters 13–21 stated what is required, while Chapters 4–12 prescribed how those requirements are achieved. Each chapter began with a section explaining applicability. Information concerning the nature of hazards was moved to Annex B. Annexes A and C retained explanatory information, and Annexes 1 and 2 became Annexes D and E. Informational references were in Annex F.

The changes made to the 2005 edition were mainly for clarity and were editorial in nature. A centralized computer was allowed to be used in lieu of one of the master alarms for medical gas and vacuum systems. Stainless steel tubing was added as an approved material for vacuum systems.

The 2012 edition went through a major overhaul. The premise of an occupancy-based document was modified to become a risk-based document. NFPA 99 was changed to a “code” instead of a “standard” to reflect how the document is used and adopted. This change was made to reflect how health care is delivered. The risk to the patient does not change for a given procedure. If the procedure is performed in a doctor’s office versus a hospital, the risk remains the same. Therefore, NFPA 99 eliminated the occupancy chapters and transitioned to a risk-based approach. New Chapter 4 outlined the parameters for this approach. The *Code* now reflected the risk to the patient in defined categories of risk.

Chapter 5, Gas and Vacuum Systems, went through some editorial changes in the 2012 edition as well as adding new material on the testing and maintenance of gas and vacuum systems. In addition, the administrative details for care, maintenance, and handling of cylinders moved to chapters under the responsibility of the new Technical Committee on Medical Equipment. Several new chapters were added for the 2012 edition on Information Technology and Communications Systems; Plumbing; Heating, Ventilation, and Air Conditioning; Security Management; and Features of Fire Protection. Many of these systems were not previously addressed by NFPA 99. These are important systems and protection features in health care and needed to be addressed. The Technical Committees on Gas Delivery Equipment and the Technical Committee on Electrical Equipment were combined into a single Technical Committee on Medical Equipment. The hyperbaric chapter had relatively minor changes for clarity.

The 2015 edition of NFPA 99 built upon the major change that the 2012 edition presented. The way that risk categories are defined was revised to be more inclusive, and the categories could now be applied to equipment and activities, rather than being applicable only to chapters that deal with systems. The requirements for Category 3 medical gas and vacuum systems, while originally aimed specifically for dental applications, were expanded to include the possibility that other gases might fall under Category 3, based on the facility's risk assessment.

The Technical Committee on Electrical Systems continued the task of correlating requirements with *NFPA 70®*, *National Electrical Code®*, and Chapter 6, and they removed the requirements for Level 3 essential electrical systems (EES), determining that if there was not a need for a Level 1 or 2 EES, then the requirements in *NFPA 70* that apply to all buildings would provide the necessary level of safety. Each of the technical committees made a concerted effort to specifically identify how each chapter was to apply to existing buildings or installations and to list the sections that applied.

The 2018 edition of the code features numerous technical changes as well as provisions for new technologies and materials. Some of the most major or noteworthy changes are as follows:

- (1) The requirements addressing the risk assessment in Chapter 4 have been revised to clarify the responsibility for conducting a risk assessment and determining risk categories. It further stresses, through annex language, that determining risk should be a collaborative effort.
- (2) Chapter 5 includes requirements that now allow for the use of oxygen concentrators as central supply sources for piped systems.
- (3) Corrugated medical tubing is now a permitted material for medical gas and vacuum systems.
- (4) Chapter 6 has been reorganized to be structured in a more logical manner. This better groups related requirements and allows for the deletion of duplicated requirements for different types of EES.
- (5) Chapter 7 now includes requirements for wireless phone and paging integration as well as for clinical information systems.
- (6) Chapter 14 has compiled all of the requirements for inspection, testing, and maintenance for hyperbaric facilities into one section.
- (7) A new Chapter 15, Dental Gas and Vacuum Piping Systems, was added to the *Code*. After several editions of trying to work the requirements for dental systems into Chapter 5, it was decided to create a chapter dedicated to the application of piped gas and vacuum systems for these systems that do not always readily fall under the requirements for medical gas and vacuum as addressed in Chapter 5.



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**Committee Scope:** This Committee shall have primary responsibility for documents that contain criteria for safeguarding patients and health care personnel in the delivery of health care services within health care facilities: a) from fire, explosion, electrical, and related hazards resulting either from the use of anesthetic agents, medical gas equipment, electrical apparatus, and high frequency electricity, or from internal or external incidents that disrupt normal patient care; b) from fire and explosion hazards; c) in connection with the use of hyperbaric and hypobaric facilities for medical purposes; d) through performance, maintenance and testing criteria for electrical systems, both normal and essential; and e) through performance, maintenance and testing, and installation criteria: (1) for vacuum systems for medical or surgical purposes, and (2) for medical gas systems; and f) through performance, maintenance and testing of plumbing, heating, cooling, and ventilating in health care facilities.

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**Committee Scope:** This Committee shall have primary responsibility for documents or portions of documents covering the minimum requirements for performance, testing, maintenance, operations, and failure management of electrical systems, low voltage systems, wireless technologies, informatics, and telemedicine to safeguard patients, staff, and visitors within health care facilities based on established risk categories.



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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

**Committee Scope:** This Committee shall have primary responsibility for documents or portions of documents on the scope, application, and intended use of documents under the Health Care Facilities Project, including reference standards, performance, the protection from fire and explosion hazards, protection of special hazards, establishing criteria for levels of health care services based on risk, as well as definitions not assigned to other committees in the Health Care Facilities Project.

## Technical Committee on Health Care Emergency Management and Security

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**Jeffrey E. Harper**, JENSEN HUGHES, IL [SE]

**Frank L. Keisler, Jr.**, CNA Insurance Company, GA [I]

**Dale L. Lyman**, Greeley Fire Department, CO [E]

**John Maurer**, The Joint Commission, IL [E]

**James L. Paturas**, Yale New Haven Health System, CT [U]

**Jack Poole**, Poole Fire Protection, Inc., KS [SE]

**Ronald C. Reynolds**, Virginia State Fire Marshal's Office, VA [E]

**Kevin A. Scarlett**, Washington State Department of Health, WA [E]

**James P. Simpson**, Electrical Training Alliance, MN [L]

Rep. International Brotherhood of Electrical Workers

**Michael D. Widdekind**, Zurich Services Corporation, MD [I]

### Alternates

**Chad E. Beebe**, ASHE - AHA, WA [U]

(Alt. to Susan B. McLaughlin)

**Myron Lee Draper**, Koffel Associates, MD [SE]

(Alt. to Sharon S. Gilyeat)

**Zachary Goldfarb**, Incident Management Solutions, Inc., NY [SE]

(Alt. to Robert M. Becker)

**Valerie Miller**, Zurich North America, PA [I]

(Alt. to Michael D. Widdekind)

**John Pelazza**, Yale New Haven Health System, CT [U]

(Alt. to James L. Paturas)

**Eric R. Rosenbaum**, JENSEN HUGHES, MD [SE]

(Alt. to Jeffrey E. Harper)

### Nonvoting

**Reginald D. Jackson**, U.S. Department of Labor, DC [E]

**Chelsea Tuttle**, NFPA Staff Liaison

*This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.*

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

**Committee Scope:** This Committee shall have primary responsibility for documents or portions of documents covering the framework for emergency management and security of health care facilities proportionate to the risk of the patient and health care staff. This Committee shall have primary responsibility for the elements of planning over a continuum from minor incidences to catastrophic events, including: management controls, mitigation practices, incident response, continuity of services, recovery, stored capacity, staff training, and program evaluation based on established risk categories.

## Technical Committee on Hyperbaric and Hypobaric Facilities

**James Bell**, *Chair*

Intermountain Healthcare, UT [U]

**Michael W. Allen**, Life Support Technologies Group Inc., PA [U]

**Peter Atkinson**, Royal Brisbane and Womens Hospital, Australia [C]  
Rep. Hyperbaric Technicians & Nurses Association Inc.

**Richard C. Barry**, Healogics, FL [SE]

**Chad E. Beebe**, ASHE - AHA, WA [U]

Rep. American Society for Healthcare Engineering

**W. Robert Bryant**, Perry Baromedical Corporation, TX [M]

**Mario Caruso**, Hyperbaric Consulting LLC, FL [SE]

**Keith Ferrari**, Praxair, Inc., NC [M]

**W. T. Gurnée**, OxyHeal Medical Systems, Inc., CA [M]

**Barry E. Newton**, WHA International, Inc., NM [SE]

**Kevin A. Scarlett**, Washington State Department of Health, WA [E]  
Rep. NFPA Health Care Section

**Robert B. Sheffield**, International ATMO, Inc., TX [U]

**John M. Skinner**, Medical Equipment Technology, Inc., GA [IM]

**Deepak Talati**, Sechrist Industries, Inc., CA [M]

**Viky G. D. Verna**, US Food and Drug Administration, MD [E]

**Wilbur T. Workman**, Undersea & Hyperbaric Medical Society, TX [U]

### Alternates

**Justin Callard**, Hyperbaric Technicians & Nurses Association Inc., Australia [C]

(Alt. to Peter Atkinson)

**Paul Mario Caruso**, Hyperbaric Consulting LLC, FL [SE]

(Alt. to Mario Caruso)

**Mark Chipps**, Life Support Technologies Group Inc., NY [U]  
(Alt. to Michael W. Allen)

**Kevin I. Posey**, International ATMO, Inc., TX [U]  
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**Chelsea Tuttle**, NFPA Staff Liaison

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

**Committee Scope:** This Committee shall have primary responsibility for documents or portions of documents covering the construction, installation, testing, performance, and maintenance of hyperbaric and hypobaric facilities for safeguarding staff and occupants of chambers.