

# NFPA 1620

## Recommended Practice for Pre-Incident Planning

2003 Edition



NFPA, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101  
An International Codes and Standards Organization

NFPA License Agreement

This document is copyrighted by the National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101 USA.  
All rights reserved.

NFPA grants you a license as follows: The right to download an electronic file of this NFPA document for temporary storage on one computer for purposes of viewing and/or printing one copy of the NFPA document for individual use. Neither the electronic file nor the hard copy print may be reproduced in any way. In addition, the electronic file may not be distributed elsewhere over computer networks or otherwise. The hard copy print may only be used personally or distributed to other employees for their internal use within your organization.

## **IMPORTANT NOTICES AND DISCLAIMERS CONCERNING NFPA DOCUMENTS**

### **NOTICE AND DISCLAIMER OF LIABILITY CONCERNING THE USE OF NFPA DOCUMENTS**

NFPA codes, standards, recommended practices, and guides, of which the document contained herein is one, are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing varied viewpoints and interests to achieve consensus on fire and other safety issues. While the NFPA administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in its codes and standards.

The NFPA disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document. The NFPA also makes no guaranty or warranty as to the accuracy or completeness of any information published herein.

In issuing and making this document available, the NFPA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the NFPA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

The NFPA has no power, nor does it undertake, to police or enforce compliance with the contents of this document. Nor does the NFPA list, certify, test or inspect products, designs, or installations for compliance with this document. Any certification or other statement of compliance with the requirements of this document shall not be attributable to the NFPA and is solely the responsibility of the certifier or maker of the statement.

## **ADDITIONAL NOTICES AND DISCLAIMERS**

### **Updating of NFPA Documents**

Users of NFPA codes, standards, recommended practices, and guides should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of Tentative Interim Amendments. An official NFPA document at any point in time consists of the current edition of the document together with any Tentative Interim Amendments and any Errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of Tentative Interim Amendments or corrected through the issuance of Errata, consult appropriate NFPA publications such as the National Fire Codes® Subscription Service, visit the NFPA website at [www.nfpa.org](http://www.nfpa.org), or contact the NFPA at the address listed below.

### **Interpretations of NFPA Documents**

A statement, written or oral, that is not processed in accordance with Section 6 of the Regulations Governing Committee Projects shall not be considered the official position of NFPA or any of its Committees and shall not be considered to be, nor be relied upon as, a Formal Interpretation.

### **Patents**

The NFPA does not take any position with respect to the validity of any patent rights asserted in connection with any items which are mentioned in or are the subject of NFPA codes, standards, recommended practices, and guides, and the NFPA disclaims liability for the infringement of any patent resulting from the use of or reliance on these documents. Users of these documents are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

NFPA adheres to applicable policies of the American National Standards Institute with respect to patents. For further information contact the NFPA at the address listed below.

### **Law and Regulations**

Users of these documents should consult applicable federal, state, and local laws and regulations. NFPA does not, by the publication of its codes, standards, recommended practices, and guides, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

### **Copyrights**

This document is copyrighted by the NFPA. It is made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of safe practices and methods. By making this document available for use and adoption by public authorities and private users, the NFPA does not waive any rights in copyright to this document.

Use of NFPA documents for regulatory purposes should be accomplished through adoption by reference. The term “adoption by reference” means the citing of title, edition, and publishing information only. Any deletions, additions, and changes desired by the adopting authority should be noted separately in the adopting instrument. In order to assist NFPA in following the uses made of its documents, adopting authorities are requested to notify the NFPA (Attention: Secretary, Standards Council) in writing of such use. For technical assistance and questions concerning adoption of NFPA documents, contact NFPA at the address below.

### **For Further Information**

All questions or other communications relating to NFPA codes, standards, recommended practices, and guides and all requests for information on NFPA procedures governing its codes and standards development process, including information on the procedures for requesting Formal Interpretations, for proposing Tentative Interim Amendments, and for proposing revisions to NFPA documents during regular revision cycles, should be sent to NFPA headquarters, addressed to the attention of the Secretary, Standards Council, NFPA, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

For more information about NFPA, visit the NFPA website at [www.nfpa.org](http://www.nfpa.org).

Copyright © 2003, National Fire Protection Association, All Rights Reserved

**NFPA 1620**  
**Recommended Practice for**  
**Pre-Incident Planning**  
**2003 Edition**

This edition of NFPA 1620, *Recommended Practice for Pre-Incident Planning*, was prepared by the Technical Committee on Pre-Incident Planning and acted on by NFPA at its May Association Technical Meeting held May 18–21, 2003, in Dallas, TX. It was issued by the Standards Council on July 18, 2003, with an effective date of August 7, 2003, and supersedes all previous editions.

This edition of NFPA 1620 was approved as an American National Standard on July 18, 2003.

**Origin and Development of NFPA 1620**

In 1987, following a report of a large loss fire to a sprinklered warehouse in Ohio, fire service and insurance company officials met at NFPA headquarters to discuss such fires and to determine whether there were steps that could be taken to cooperatively address this problem. After a series of meetings, the group developed a report entitled “Before the Fire” (*see Appendix B*). This report made several recommendations relating to large loss fires in sprinklered properties.

One of the recommendations was that NFPA develop a document that addressed the need for adequate pre-incident planning for such occupancies. The NFPA Standards Council assigned the project to the Fire Service Training Committee. The Committee established a subcommittee with additional expertise from the insurance industry to develop a document relating to pre-incident planning for warehouse occupancies. That document, NFPA 1420, *Recommended Practice for Pre-Incident Planning for Warehouse Occupancies*, was adopted by the NFPA membership in 1993.

Following adoption of NFPA 1420, the Subcommittee of the Training Committee that had been involved with developing NFPA 1420 felt that the scope of the document could be expanded to include all occupancies. At the urging of the subcommittee, the Standards Council established a separate technical committee to assume responsibility for the document and to expand it. The 1998 edition was the result of that work. The document was renumbered as NFPA 1620 and retitled *Recommended Practice for Pre-Incident Planning*.

The 2003 edition of NFPA 1620 incorporates editorial changes to comply with the NFPA *Manual of Style*.

## Technical Committee on Pre-Incident Planning

**John A. Welling, III**, *Chair*  
Bristol-Myers Squibb Company, NJ [U]

**Robert G. Acker**, Plano Fire Department, TX [E]  
**Robert E. Botts**, Harrisburg, PA [SE]  
**Coleman L. Cashion**, FM Global, NC [I]  
**Joseph R. Ciepierski**, Chubb Group of Insurance Companies, NJ [I]  
**Lee M. DeWoody, Jr.**, LMG Property Engineering, GA [I]  
 Rep. Alliance of American Insurers  
**Richard W. Duncanson**, City of Middletown Fire Department, NY [E]  
 Rep. NFPA Fire Service Section  
**James M. Feld**, Feld Engineering, CA [SE]  
**Darrell M. Franchuk**, HSB Professional Loss Control, TN [I]  
**William C. Gearhart**, University of Pennsylvania, PA [U]  
**John W. Kennedy, Jr.**, J. W. Kennedy Inc., NJ [SE]  
**James G. Munger**, James G. Munger & Associates, Inc., AL [SE]

**Mark Andrew Oglesby**, Bolingbrook Fire Department, IL [U]  
**Donald L. Schmidt**, Marsh Inc., MA [I]  
**Michael J. Serapiglia**, Lucent Technologies, Inc., MA [U]  
**Michael D. Snyder**, Dow Corning Corporation, MI [U]  
**J. Michael Thompson**, Gage-Babcock & Associates, Inc., VA [U]  
 Rep. American Health Care Association  
**Harry J. Walsh**, Pennsylvania Lumbermens Mutual Insurance Company, PA [I]  
**Timothy E. Whalen**, Royal & SunAlliance, CT [I]  
**Don N. Whittaker**, Bechtel BWXT Idaho, LLC (BBWI), ID [U]  
**Ronald W. Woodfin**, Tetra Tek, Inc., TX [SE]  
**Michael R. Zanotti**, Science Applications International Corporation (SAIC), VA [SE]

### Alternates

**Edmund M. Kelly**, Chubb Group of Insurance Companies, FL [I]  
 (Alt. to J. R. Ciepierski)  
**L. Jeffrey Mattern**, FM Global, PA [I]  
 (Alt. to C. L. Cashion)

**Richard C. Ryan**, Tetra Tek, Inc., TN [SE]  
 (Alt. to R. W. Woodfin)

**David G. Trebisacci**, 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 on the site-specific pre-incident planning for response to fires and other types of emergencies.

## Contents

|                                                                  |         |                                                                |         |
|------------------------------------------------------------------|---------|----------------------------------------------------------------|---------|
| <b>Chapter 1 Administration</b> .....                            | 1620- 5 | 9.3 Incident Operations .....                                  | 1620-13 |
| 1.1 Scope .....                                                  | 1620- 5 | 9.4 Accountability System .....                                | 1620-14 |
| 1.2 Purpose .....                                                | 1620- 5 |                                                                |         |
| <b>Chapter 2 Referenced Publications</b> .....                   | 1620- 5 | <b>Chapter 10 Plan Testing and Maintenance</b> .....           | 1620-14 |
| 2.1 General .....                                                | 1620- 5 | 10.1 General .....                                             | 1620-14 |
| 2.2 NFPA Publication .....                                       | 1620- 5 | 10.2 Plan Evaluation .....                                     | 1620-14 |
| 2.3 Other Publications. (Reserved) .....                         | 1620- 5 | 10.3 Plan Maintenance .....                                    | 1620-14 |
| <b>Chapter 3 Definitions</b> .....                               | 1620- 5 | <b>Chapter 11 Assembly Occupancies</b> .....                   | 1620-15 |
| 3.1 General .....                                                | 1620- 5 | 11.1 Administration .....                                      | 1620-15 |
| 3.2 NFPA Official Definitions .....                              | 1620- 5 | 11.2 Pre-Incident Planning Process .....                       | 1620-15 |
| 3.3 General Definitions .....                                    | 1620- 5 | 11.3 Physical Elements and Site Considerations .....           | 1620-15 |
| <b>Chapter 4 Pre-Incident Planning Process</b> .....             | 1620- 7 | 11.4 Occupant Considerations .....                             | 1620-15 |
| 4.1 General .....                                                | 1620- 7 | 11.5 Protection Systems and Water Supplies .....               | 1620-15 |
| 4.2 Develop a Pre-Incident Plan .....                            | 1620- 7 | 11.6 Special Hazards .....                                     | 1620-15 |
| 4.3 Before the Incident .....                                    | 1620- 7 | 11.7 Emergency Operations .....                                | 1620-15 |
| 4.4 During the Incident .....                                    | 1620- 8 | 11.8 Plan Testing and Maintenance .....                        | 1620-15 |
| 4.5 After the Incident .....                                     | 1620- 8 | <b>Chapter 12 Educational Occupancies</b> .....                | 1620-15 |
| <b>Chapter 5 Physical Elements and Site Considerations</b> ..... | 1620- 8 | 12.1 Administration .....                                      | 1620-15 |
| 5.1 General .....                                                | 1620- 8 | 12.2 Pre-Incident Planning Process .....                       | 1620-16 |
| 5.2 Construction .....                                           | 1620- 8 | 12.3 Physical Elements and Site Considerations .....           | 1620-16 |
| 5.3 Building Services .....                                      | 1620- 9 | 12.4 Occupant Considerations .....                             | 1620-16 |
| 5.4 Site Conditions .....                                        | 1620-10 | 12.5 Protection Systems and Water Supplies .....               | 1620-16 |
| <b>Chapter 6 Occupant Considerations</b> .....                   | 1620-10 | 12.6 Special Hazards .....                                     | 1620-16 |
| 6.1 General .....                                                | 1620-10 | 12.7 Emergency Operations .....                                | 1620-16 |
| 6.2 Life Safety Considerations .....                             | 1620-10 | 12.8 Plan Testing and Maintenance .....                        | 1620-16 |
| 6.3 On-Site Emergency Organization .....                         | 1620-11 | <b>Chapter 13 Health Care Occupancies</b> .....                | 1620-16 |
| <b>Chapter 7 Protection Systems and Water Supplies</b> .....     | 1620-11 | 13.1 Administration .....                                      | 1620-16 |
| 7.1 General .....                                                | 1620-11 | 13.2 Pre-Incident Planning Process .....                       | 1620-16 |
| 7.2 Water Supplies .....                                         | 1620-11 | 13.3 Physical Elements and Site Considerations .....           | 1620-16 |
| 7.3 Automatic Sprinkler Systems .....                            | 1620-11 | 13.4 Occupant Considerations .....                             | 1620-16 |
| 7.4 Standpipe System .....                                       | 1620-12 | 13.5 Protection Systems and Water Supplies .....               | 1620-17 |
| 7.5 Protective Signaling Systems .....                           | 1620-12 | 13.6 Special Hazards .....                                     | 1620-17 |
| 7.6 Special Hazard Protection Systems .....                      | 1620-12 | 13.7 Emergency Operations .....                                | 1620-17 |
| 7.7 Portable Fire Extinguishers .....                            | 1620-12 | 13.8 Plan Test and Maintenance .....                           | 1620-17 |
| 7.8 Smoke Management .....                                       | 1620-12 | <b>Chapter 14 Detention and Correctional Occupancies</b> ..... | 1620-17 |
| <b>Chapter 8 Special Hazard Considerations</b> .....             | 1620-12 | 14.1 Administration .....                                      | 1620-17 |
| 8.1 General .....                                                | 1620-12 | 14.2 Pre-Incident Planning Process .....                       | 1620-17 |
| 8.2 Transient Conditions .....                                   | 1620-12 | 14.3 Physical Elements and Site Considerations .....           | 1620-17 |
| 8.3 Inventory .....                                              | 1620-12 | 14.4 Occupant Considerations .....                             | 1620-17 |
| 8.4 Special Hazards .....                                        | 1620-12 | 14.5 Protection Systems and Water Supplies .....               | 1620-17 |
| <b>Chapter 9 Emergency Operations</b> .....                      | 1620-13 | 14.6 Special Hazards .....                                     | 1620-17 |
| 9.1 General .....                                                | 1620-13 |                                                                |         |
| 9.2 Incident Notification .....                                  | 1620-13 |                                                                |         |

|                   |                                                         |                |                    |                                                                      |                |
|-------------------|---------------------------------------------------------|----------------|--------------------|----------------------------------------------------------------------|----------------|
| 14.7              | Emergency Operations .....                              | 1620-17        | 18.4               | Occupant Considerations .....                                        | 1620-20        |
| 14.8              | Plan Testing and Maintenance .....                      | 1620-17        | 18.5               | Protection Systems and Water<br>Supplies .....                       | 1620-20        |
| <b>Chapter 15</b> | <b>Residential Occupancies .....</b>                    | <b>1620-18</b> | 18.6               | Special Hazards .....                                                | 1620-20        |
| 15.1              | Administration .....                                    | 1620-18        | 18.7               | Emergency Operations .....                                           | 1620-20        |
| 15.2              | Pre-Incident Planning Process .....                     | 1620-18        | 18.8               | Plan Testing and Maintenance .....                                   | 1620-20        |
| 15.3              | Physical Elements and Site<br>Considerations .....      | 1620-18        | <b>Chapter 19</b>  | <b>Industrial Occupancies .....</b>                                  | <b>1620-20</b> |
| 15.4              | Occupant Considerations .....                           | 1620-18        | 19.1               | Administration .....                                                 | 1620-20        |
| 15.5              | Protection Systems and Water<br>Supplies .....          | 1620-18        | 19.2               | Pre-Incident Planning Process .....                                  | 1620-20        |
| 15.6              | Special Hazards .....                                   | 1620-18        | 19.3               | Physical Elements and Site<br>Considerations .....                   | 1620-20        |
| 15.7              | Emergency Operations .....                              | 1620-18        | 19.4               | Occupant Considerations .....                                        | 1620-21        |
| 15.8              | Plan Testing and Maintenance .....                      | 1620-18        | 19.5               | Protection Systems and Water<br>Supplies .....                       | 1620-21        |
| <b>Chapter 16</b> | <b>Residential Board and Care<br/>Occupancies .....</b> | <b>1620-18</b> | 19.6               | Special Hazards .....                                                | 1620-21        |
| 16.1              | Administration .....                                    | 1620-18        | 19.7               | Emergency Operation .....                                            | 1620-21        |
| 16.2              | Pre-Incident Planning Process .....                     | 1620-18        | 19.8               | Plan Testing and Maintenance .....                                   | 1620-21        |
| 16.3              | Physical Elements and Site<br>Considerations .....      | 1620-18        | <b>Chapter 20</b>  | <b>Warehouses and Storage<br/>Occupancies .....</b>                  | <b>1620-21</b> |
| 16.4              | Occupant Considerations .....                           | 1620-18        | 20.1               | Administration .....                                                 | 1620-21        |
| 16.5              | Protection Systems and Water<br>Supplies .....          | 1620-19        | 20.2               | Pre-Incident Planning Process .....                                  | 1620-21        |
| 16.6              | Special Hazards .....                                   | 1620-19        | 20.3               | Physical Elements and Site<br>Considerations .....                   | 1620-21        |
| 16.7              | Emergency Operations .....                              | 1620-19        | 20.4               | Occupant Considerations .....                                        | 1620-22        |
| 16.8              | Plan Testing and Maintenance .....                      | 1620-19        | 20.5               | Protection Systems and Water Supply .....                            | 1620-22        |
| <b>Chapter 17</b> | <b>Mercantile Occupancies .....</b>                     | <b>1620-19</b> | 20.6               | Special Hazards .....                                                | 1620-22        |
| 17.1              | Administration .....                                    | 1620-19        | 20.7               | Emergency Operations .....                                           | 1620-22        |
| 17.2              | Pre-Incident Planning Process .....                     | 1620-19        | 20.8               | Plan Testing and Maintenance .....                                   | 1620-22        |
| 17.3              | Physical Elements and Site<br>Considerations .....      | 1620-19        | <b>Annex A</b>     | <b>Explanatory Material .....</b>                                    | <b>1620-22</b> |
| 17.4              | Occupant Consideration .....                            | 1620-19        | <b>Annex B</b>     | <b>Case Histories of Warehouse Fires .....</b>                       | <b>1620-32</b> |
| 17.5              | Protection Systems and Water<br>Supplies .....          | 1620-19        | <b>Annex C</b>     | <b>Data Collection .....</b>                                         | <b>1620-34</b> |
| 17.6              | Special Hazards .....                                   | 1620-19        | <b>Annex D</b>     | <b>Data Reduction and Pre-Incident Plan<br/>Presentation .....</b>   | <b>1620-36</b> |
| 17.7              | Emergency Operation .....                               | 1620-20        | <b>Annex E</b>     | <b>Sample Pre-Incident Plans and Data<br/>Collection Forms .....</b> | <b>1620-36</b> |
| 17.8              | Plan Testing and Maintenance .....                      | 1620-20        | <b>Annex F</b>     | <b>Informational References .....</b>                                | <b>1620-53</b> |
| <b>Chapter 18</b> | <b>Business Occupancies .....</b>                       | <b>1620-20</b> | <b>Index .....</b> | <b>1620-54</b>                                                       |                |
| 18.1              | Administration .....                                    | 1620-20        |                    |                                                                      |                |
| 18.2              | Pre-Incident Planning Process .....                     | 1620-20        |                    |                                                                      |                |
| 18.3              | Physical Elements and Site<br>Considerations .....      | 1620-20        |                    |                                                                      |                |

## NFPA 1620

## Recommended Practice for Pre-Incident Planning

## 2003 Edition

**IMPORTANT NOTE:** *This NFPA document is made available for use subject to important notices and legal disclaimers. These notices and disclaimers appear in all publications containing this document and may be found under the heading “Important Notices and Disclaimers Concerning NFPA Documents.” They can also be obtained on request from NFPA or viewed at [www.nfpa.org/disclaimers](http://www.nfpa.org/disclaimers).*

**NOTICE:** An asterisk (\*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, Annex F lists the complete title and edition of the source documents for both mandatory and nonmandatory extracts. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text should be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex F.

### Chapter 1 Administration

**1.1 Scope.** This document provides criteria for evaluating the protection, construction, and operational features of specific occupancies to develop a pre-incident plan that should be used by responding personnel to manage fires and other emergencies in such occupancies using the available resources.

**1.1.1** Chapter 1 through Chapter 10 of this document provide general information, philosophies, and principles that might or might not be applicable to all occupancies.

**1.1.2\*** The authority having jurisdiction should determine the level of planning appropriate for the jurisdiction and the property being pre-planned.

**1.1.3** Chapter 11 through Chapter 20 provide information addressing special or unique characteristics of specific occupancy classifications.

**1.2\* Purpose.** The primary purpose of this document is to aid in the development of a pre-incident plan to help responding personnel effectively manage emergencies with available resources and should not be confused with fire inspections, which monitor code compliance.

### Chapter 2 Referenced Publications

**2.1 General.** The documents or portions thereof listed in this chapter are referenced within this recommended practice and should be considered part of the recommendations of this document.

**2.2 NFPA Publication.** National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 291, *Recommended Practice for Fire Flow Testing and Marking of Hydrants*, 2002 edition.

**2.3 Other Publications. (Reserved)**

### Chapter 3 Definitions

**3.1 General.** The definitions contained in this chapter apply to the terms used in this recommended practice. Where terms are not included, common usage of the terms applies.

#### 3.2 NFPA Official Definitions.

**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 Recommended Practice.** A document that is similar in content and structure to a code or standard but that contains only nonmandatory provisions using the word “should” to indicate recommendations in the body of the text.

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

#### 3.3 General Definitions.

**3.3.1 Anchor Store.** A department store or major merchandising center that has direct access to the covered mall but in which all required means of egress is independent of the covered mall. [101B:3.3]

**3.3.2\* Bonded Warehouse.** A facility for storing controlled materials, such as alcohol and tobacco products, that generally has high levels of security and very limited access.

#### 3.3.3 Building.

**3.3.3.1 Apartment Building.** A building or portion thereof containing three or more dwelling units with independent cooking and bathroom facilities. [101:3.3]

**3.3.3.2 Bulk Merchandising Retail Building.** A building in which the sales area includes the storage of combustible materials on pallets, in solid piles, or in racks in excess of 12 ft (3.7 m) in storage height. [101:3.3]

**3.3.3.3\* Covered Mall Building.** A building, including the covered mall, enclosing a number of tenants and occupancies, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses, wherein two or more tenants have a main entrance into the covered mall. [101B:3.3]

**3.3.4\* Confined Space.** A space that is not intended for continuous occupancy and that has limited openings for the entry and exit of persons who perform assigned work within the space.

**3.3.5 Controlled Atmosphere (CA) Warehouse.** A facility for storing specialty products, such as fruits, that generally includes sealed storage rooms, with controlled temperature and air content, the most common being an atmosphere containing a high percentage of a gas such as nitrogen.

**3.3.6\* Dormitory.** A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms, under joint occupancy and single management, with or without meals, but without individual cooking facilities. [101:3.3]

**3.3.7 Emergency Operations Center.** A fixed, designated area to be used in supporting and coordinating operations during emergencies.

**3.3.8\* Evacuation Capability.** The ability of occupants, residents, and staff as a group either to evacuate a building or to relocate from the point of occupancy to a point of safety. [101:3.3]

**3.3.9\* Fire Barrier.** A continuous membrane or a membrane with discontinuities created by protected openings with a specified fire protection rating, where such membrane is designed and constructed with a specified fire resistance rating to limit the spread of fire, and that also restricts the movement of smoke. [101:3.3]

**3.3.10 Fire Compartment.** A space within a building that is enclosed by fire barriers on all sides, including the top and bottom. [101:3.3]

**3.3.11 Fire Wall.** A wall separating buildings or subdividing a building to prevent the spread of fire and having a fire resistance rating and structural stability. [221:1.3]

**3.3.12\* Hotel.** A building or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons and primarily used by transients for lodging with or without meals. [101:3.3]

**3.3.13 HVAC.** Heating, ventilation, and air conditioning systems and their related components.

**3.3.14 Key Box.** See Lock Box.

**3.3.15 Lift.** A mechanically or electrically operated platform used to work at various heights within a building.

**3.3.16\* Lock Box.** A locked container often used to store building entry keys, plans, and related data.

**3.3.17 Lodging or Rooming House.** A building or portion thereof that does not qualify as a one- or two-family dwelling, that provides sleeping accommodations for a total of 16 or fewer people on a transient or permanent basis, without personal care services, with or without meals, but without separate cooking facilities for individual occupants. [101:3.3]

**3.3.18 Material Safety Data Sheet (MSDS).** A form, provided by manufacturers and compounders (blenders) of chemicals, containing information about chemical composition, physical and chemical properties, health and safety hazards, emergency response, and waste disposal of the material.

### 3.3.19 Occupancy.

**3.3.19.1\* Assembly Occupancy.** An occupancy (1) used for a gathering of 50 or more persons for deliberation, worship, entertainment, eating, drinking, amusement, awaiting transportation, or similar uses; or (2) used as a special amusement buildings, regardless of occupant load. [101:3.3]

**3.3.19.2\* Business Occupancy.** An occupancy used for account and record keeping or the transaction of business other than mercantile. [101:3.3]

**3.3.19.3\* Detention and Correctional Occupancy.** An occupancy used to house four or more persons under varied degrees of restraint or security where such occupants are mostly incapable of self-preservation because of security measures not under the occupants' control. [101:3.3]

**3.3.19.4\* Educational Occupancy.** An occupancy used for educational purposes through the twelfth grade by six or more persons for 4 or more hours per day or more than 12 hours per week. [101:3.3]

**3.3.19.5\* Health Care Occupancy.** An occupancy used for purposes of medical or other treatment or care of four or more persons where such occupants are mostly incapable of self-preservation due to age, physical or mental disability, or because of security measures not under the occupants' control. [101:3.3]

**3.3.19.6\* Industrial Occupancy.** An occupancy in which products are manufactured or in which processing, assembling, mixing, packaging, finishing, decorating, or repair operations are conducted. [101:3.3]

**3.3.19.7\* Mercantile Occupancy.** An occupancy used for the display and sale of merchandise. [101:3.3]

**3.3.19.8\* Residential Board and Care Occupancy.** A building or portion thereof that is used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services. [101:3.3]

**3.3.19.9\* Storage Occupancy.** An occupancy used primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals. [101:3.3]

### 3.3.20 Plan.

**3.3.20.1 Emergency Action Plan.** A plan of designated actions by employers, employees, and other building occupants to ensure their safety from fire and other emergencies.

**3.3.20.2\* Facility Emergency Action Plan (Detention and Correctional Occupancy).** A plan developed by a detention and correctional facility to describe the actions to be taken during various internal and external emergencies that is generally available on site.

**3.3.20.3\* Facility Emergency Action Plan (Health Care Occupancy).** A plan developed by a health care facility to describe the actions to be taken during various internal and external emergencies that is generally available on site.

**3.3.20.4 Pre-Incident Plan.** A document developed by gathering general and detailed data used by responding personnel to determine the resources and actions necessary to mitigate anticipated emergencies at a specific facility.

**3.3.20.5 Spill Prevention Control and Countermeasure (SPCC) Plan.** A plan prepared for facilities with a chemical or chemicals that exceed certain capacities in accordance with governmental regulations.

**3.3.21 Plan Developer.** The individual, group, or agency responsible for developing and maintaining the pre-incident plan.

**3.3.22\* Process Hazard Analysis.** An analysis of a process or system used to identify potential cause and effect relationships and resultant hazards or system failures.

**3.3.23\* Responding Personnel.** Personnel whether public or private available to respond to emergencies.

**3.3.24 Sally Port (Security Vestibule).** A compartment provided with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time. [101:3.3]

**3.3.25\* Smoke Barrier.** A continuous membrane, or a membrane with discontinuities created by protected openings, where such membrane is designed and constructed to restrict the movement of smoke. [101:3.3]

**3.3.26 Smoke Compartment.** A space within a building enclosed by smoke barriers on all sides, including the top and bottom. [101:3.3]

## Chapter 4 Pre-Incident Planning Process

### 4.1\* General.

**4.1.1** Before the pre-incident planning process begins, all parties involved should be familiar with the basic information to be gathered and included in the final plan.

**4.1.2** The following factors should be evaluated when assessing the potential situations that could affect a facility during emergency conditions:

- (1) Construction
- (2) Occupant characteristics
- (3) Protection systems
- (4) Capabilities of public or industrial responding personnel
- (5) Availability of mutual aid
- (6) Water supply
- (7) Exposure factors

**4.1.3** The pre-incident plan should be a cooperative effort among the plan developer, facility staff, and responding personnel.

**4.1.4** Other persons who might be able to provide valuable input during the development of the pre-incident plan, including technical experts who might not actually respond to an incident, should be consulted as appropriate.

**4.1.5\*** The pre-incident plan should be coordinated with an incident management system.

**4.1.6** The responsible agency's ability to respond to and control an incident in a specific occupancy should be evaluated.

**4.1.6.1** This evaluation should include the department's equipment, personnel, and personnel training, to determine whether they are capable of providing a sufficient response.

**4.1.6.2** Where it is necessary to involve other emergency response agencies, these should be chosen after their capabilities have been evaluated.

**4.1.7** Once the basic information has been gathered, the development of the actual pre-incident plan should begin.

**4.1.8** The plan should be developed and maintained so that all participants are aware of their respective responsibilities.

**4.1.9\*** The development of a pre-incident plan for new facilities should begin before construction and actual occupancy.

### 4.2 Develop a Pre-Incident Plan.

**4.2.1** In developing a schedule for pre-incident plans, strong consideration should be given to items such as the following:

- (1) Potential life safety hazard
- (2) Structure size and complexity
- (3) Value
- (4) Importance to the community
- (5) Location
- (6) Presence of chemicals
- (7) Susceptibility to natural disasters

**4.2.2\*** Once a site has been selected for pre-incident planning, the plan developer should explain the nature of the information required.

**4.2.3** To develop a pre-incident plan, plan developers should regularly visit the property to become thoroughly familiar with its layout, contents, construction, and protection features. (See Figure 4.2.3.)

**4.3\* Before the Incident.** Deciding what to include in a pre-incident plan, how to execute it, and what to do with the information should occur before the incident.

### 4.3.1\* Collect Data.

**4.3.1.1** The data should be collected by consulting with other professionals involved in the site or facility development, such as fire protection engineers, sprinkler contractors, building architects or engineers, water authorities, and insurance professionals, as well as site surveys.

**4.3.1.2** Data should also be obtained from existing emergency plans required by governmental regulatory agencies.

**4.3.1.3** Historical data on similar occupancies involved in emergencies should be reviewed for items that could cause problems in the structure being surveyed.

**4.3.1.4** Regardless of the data source, some of the information gathered might be of a sensitive or proprietary nature, and appropriate arrangements should be taken to protect the confidentiality of this information.

**4.3.2\* Organize Data.** The information should be recorded based on what information is needed and how it is to be used.

**4.3.3\* Prepare the Plan.** Once data are collected, decisions should be made about what data are to be presented, and how they should be stored, retrieved, and utilized.

**4.3.3.1** Each plan should be kept simple enough to remain useful.

**4.3.3.2** As individual pre-incident plans become too cumbersome, it is strongly recommended that each be split into multiple plans.

### 4.3.4 Distribute the Plan.

**4.3.4.1** Copies of the plan should be distributed to appropriate responding personnel.

**4.3.4.2** A list of all plan recipients should be maintained for distribution of updated copies of the plan.

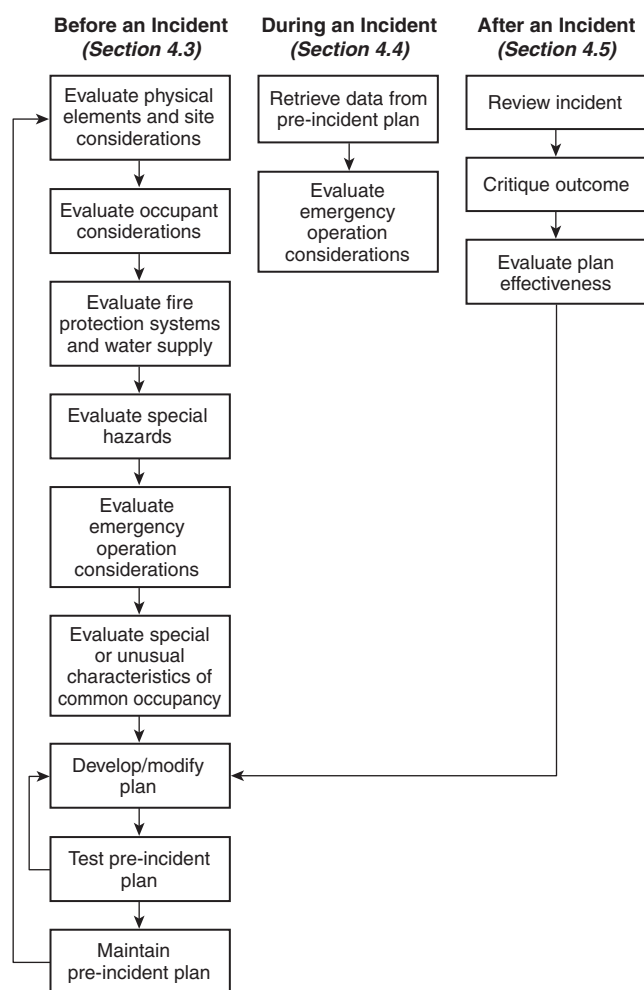


**FIGURE 4.2.3 Development, Use, and Maintenance of a Pre-Incident Plan.**

**4.3.5 Review and Evaluate the Plan.** The pre-incident plan should be tested and practiced periodically to provide an opportunity to review the data and refine the plan.

#### **4.3.6\* Training.**

**4.3.6.1** The pre-incident planning process should include a provision for training in those portions of the plan that involve unique or unusual evolutions or operations.

**4.3.6.2** Training should be utilized to communicate the pre-incident plan expectations to individuals or agencies identified in the plan that do not normally work together.

#### **4.4 During the Incident.**

**4.4.1** The pre-incident plan should be the foundation for decision-making during an emergency situation and provide important data that will assist the incident commander in developing appropriate strategies and tactics for managing the incident.

**4.4.2** The pre-incident plan should help responding personnel identify critical factors that will affect the ultimate outcome of the incident, including personnel safety.

**4.4.3** The pre-incident plan should provide for available facility personnel to advise responding personnel of current conditions on arrival.

**4.4.4** The incident commander should use the information contained in a pre-incident plan to anticipate likely scenarios.

**4.4.4.1** The incident commander should develop tactical options based on the pre-incident plan.

**4.4.4.2** The incident commander should consult the pre-incident plan throughout the incident to remain aware of factors that might affect the success of the operation and the need for strategic or tactical adjustment.

#### **4.5 After the Incident.**

**4.5.1** The effectiveness of the pre-incident plan should be re-evaluated after an actual emergency.

**4.5.2** The review recommended by 4.5.1 should include an analysis of the incident and the performance of responding personnel, facility owners, and occupants and might indicate the need for revision of the plan.

## **Chapter 5 Physical Elements and Site Considerations**

**5.1\* General.** Physical elements and site considerations should be classified into the following three groups:

- (1) Construction
- (2) Building services, including utilities
- (3) External (site) conditions

#### **5.2 Construction.**

**5.2.1\* Area and Height.** The building size, including overall height, number of stories, and square footage should be determined and included in the plan.

#### **5.2.2 Building Features.**

**5.2.2.1** The pre-incident plan should address the structural integrity of walls, roofs, and floors including added live and dead loads, indications of deterioration and structural weakening, and any other conditions that impact the following:

- (1) Spread of fire, products of combustion or contaminants, and toxic gases and vapors that move from floor to floor via the building's exterior or voids in curtain walls
- (2) Ability of responding personnel to safely perform interior operations
- (3) Ability of responding personnel to access the building's interior, either through openings or by breaching a wall
- (4) Potential for falling materials such as glass, curtain walls, exterior ornamentation, parapets, and overhanging components
- (5) Exposures

**5.2.2.2** Data regarding building construction details that should be recorded include wall construction and insulation information such as the location(s) of the following:

- (1) Unsupported exterior walls
- (2) Metal panel walls
- (3) Masonry walls
- (4) Glass walls
- (5) Wood frame walls
- (6) Plastic wall components
- (7) Combustible insulation

**5.2.2.3** Data regarding roof construction that should be recorded include the following:

- (1) Roof support components (e.g., wood joist, wood truss, steel joist, steel truss, and beam and girder), including the length of the support spans
- (2) Roof deck material (e.g., wood, metal, concrete)
- (3) Roof cover, including insulation materials, vapor barrier, and waterproofing, since combustibility and buildup thickness can affect fire-fighting tactics
- (4) Roof shape or configuration (e.g., peaked, flat, dome, sawtooth)
- (5) Availability of means for runoff drainage (e.g., trenches, drains, scuppers, slopes)

**5.2.2.4** Data regarding floor construction that should be recorded include the following:

- (1) Floor support components (e.g., wood joist, wood truss, steel joist, steel truss, beam and girder), including long lengths of span and the level of protection afforded to the floor support
- (2) Floor members (e.g., wood deck, metal deck, concrete)
- (3) Availability of means for runoff drainage (e.g., trenches, drains, scuppers, slopes)

**5.2.2.5** Data regarding other building features that should be recorded include the following:

- (1) Construction of interior walls
- (2) Interior finish materials
- (3) Suspended-ceiling assemblies
- (4) Raised floors
- (5) Concealed spaces, including multiple ceiling and roof levels
- (6) Windows for rescue, or ventilation, or both
- (7) Confined space
- (8) Fire resistance and protection of structural members

**5.2.2.6** Data regarding the location, types, and construction of access features that should be recorded include the following:

- (1) Doorways
- (2) Locking devices
- (3) Accessible windows
- (4) Fire escapes
- (5) Tunnels
- (6) Breachable walls

**5.2.2.7** The pre-incident plan should note areas where products of combustion or other contaminants could spread due to a lack of structural barriers.

**5.2.2.7.1** The construction of any barriers should be identified as well as the presence of any protection items such as fire doors, fire shutters, or automatic closing devices or dampers designed to contain fire, products of combustion, or contaminants.

**5.2.2.7.2** Data regarding spread of combustion products or other contaminants that should be recorded include the following:

- (1) Large undivided areas
- (2) Unprotected openings between floors such as the following:
  - (a) Stairwells
  - (b) Elevator shafts
  - (c) Utility shafts
  - (d) Escalators
  - (e) Light wells
- (3) High-hazard areas
- (4) Wall openings

**5.2.2.8** Data regarding atriums that should be recorded include the following:

- (1) Location of atriums in the building
- (2) Number of stories connected by the atrium
- (3) Number of stories open to the atrium
- (4) Fire suppression system(s) present in the atrium area
- (5) Automatic fire detection and alarm system(s) present in the atrium
- (6) Smoke management systems, including location of controls and operation

**5.3\* Building Services.** Emergency contact information should be obtained for building services.

**5.3.1\* HVAC.** The ability to control HVAC equipment could be needed, and the plan should note the location and operation of the controls.

### **5.3.2 Utilities.**

**5.3.2.1 Electric Power.** The location(s) and method of entrance (aboveground or underground) for electric power, the location of disconnects both inside and outside the facility, and overhead primary and secondary conductors resulting in reduced vertical clearance should be noted.

**5.3.2.2 Transformers.** The location of transformers, both inside and outside the building, and the combustibility and environmental concerns of transformer fluids should be noted.

#### **5.3.2.3 Emergency Power.**

**5.3.2.3.1** The location and duration of emergency power components (e.g., generators, fuel supply, batteries, uninterruptible power supply systems) as well as what equipment remains powered when normal power is lost should be noted.

**5.3.2.3.2** If the emergency power system requires manual action, it should also be noted.

**5.3.2.4 Domestic Water.** Water shutoffs should be noted with special consideration given to any critical equipment or processes that require an uninterrupted supply of water.

#### **5.3.2.5 Compressed and Liquefied Gases.**

**5.3.2.5.1** The location of compressors, storage containers, and the nearest disconnecting means should be noted.

**5.3.2.5.2** Special consideration should be given to any critical equipment or processes that might pose a hazard if the compressed or liquefied gas supply is interrupted.

#### **5.3.2.6 Steam.**

**5.3.2.6.1** The location of steam lines and boilers should be noted as well as the equipment that depends on them.

**5.3.2.6.2** The location of the nearest shutoff means for the steam supply should be noted.

#### **5.3.2.7 Fuels.**

**5.3.2.7.1** Some facilities have the capability of changing over from one fuel to another, and information regarding these systems should be noted.

**5.3.2.7.2** The location of all gas metering and pressure-regulating equipment as well as all shutoff valves should be noted.

**5.3.2.7.3** The location and size of LP-Gas system storage tanks and shutoff valves should be noted.

**5.3.2.7.4** The location of all pumps, tanks, regulating equipment, and shutoff valves for liquid fuels should be noted.

**5.3.3 Elevators.** The pre-incident plan should note the following for all elevators:

- (1) Number
- (2) Floors served
- (3) Type (e.g., electric or hydraulic, passenger or freight, manual or automatic)
- (4) Restrictions
- (5) Location

**5.3.3.1 Elevator Recall.** The pre-incident plan should note data for automatic elevator recall, including primary and secondary recall floor levels.

**5.3.3.2 Service Override.** The pre-incident plan should note whether fire service override is provided on all elevators and the location of any keys necessary for this operation.

**5.3.3.3\* Elevator Lobbies.** The pre-incident plan should note the presence of any fire- or smoke-resistant elevator lobbies.

**5.3.3.4 Emergency Power.** The pre-incident plan should note whether emergency power is provided for the elevators.

#### **5.4 Site Conditions.**

**5.4.1 Access.** Conditions that would hamper the access of responding personnel should be noted, including the following:

- (1) Bridges with width or weight restrictions
- (2) Narrow rights of way
- (3) Roads subject to flooding, motor vehicles, drifting snow, washout, primary approach from downwind, or other blockage
- (4) Low overhead clearances, railroad grade crossings, and drawbridges

**5.4.2 Security.** Because many occupancies have some form of security measure that can restrict access to the facility, including various types of locking devices, data regarding such security measures should be noted.

##### **5.4.2.1 Fences.**

**5.4.2.1.1** The height and construction of fences should be noted.

**5.4.2.1.2** Location and security (e.g., lock boxes, alarms, unusual locking devices) of access points should be identified.

**5.4.2.1.3** Electrically charged fences or those that contain restrictive measures such as use of barbed wire or razor wire should be noted.

##### **5.4.2.2 Dogs.**

**5.4.2.2.1** The use and number of guard dogs should be noted.

**5.4.2.2.2** Contact information should also be obtained for the person(s) responsible for the dogs.

**5.4.2.3** Data regarding an on-site security service that should be recorded include the following:

- (1) Procedure for contacting the security service
- (2) On-site location
- (3) Number of personnel on duty
- (4) Level of access within the facility
- (5) Scope of security service emergency response training

**5.4.3 Exposures.** The grounds surrounding the site, structure, or building should be surveyed to identify buildings, structures, equipment, storage, and people that could be exposed by an incident, and the information should be noted on the plan.

**5.4.4\* Environmental Impact.** Information should be gathered on potential environmental contaminants.

##### **5.4.5 Communications Impact.**

**5.4.5.1** A functional test of the communications system as it would be used at an emergency should be conducted.

**5.4.5.2** Data regarding communications impact that should be recorded include the following:

- (1) Interference or poor coverage as a result of construction or radio system design including coverage in the following areas:
  - (a) Below grade and shielded areas
  - (b) Interiors of large structures
  - (c) Upper floors of high-rise buildings
- (2) Assignment of radio channels
- (3) Other supplemental communications

## **Chapter 6 Occupant Considerations**

**6.1 General.** Because the number and type of occupants in a facility can have a substantial impact on a pre-incident plan, information should be gathered on the number of occupants and their ages, their physical or mental conditions, and whether they are ambulatory or nonambulatory.

### **6.2 Life Safety Considerations.**

**6.2.1\* General.** Regardless of the population, in the event of an emergency, life safety considerations are a priority that should be addressed to allow responding emergency service personnel to assist in immediate and safe evacuation of a facility or to support protection in place.

**6.2.2 Hours of Operation.** The hours of operation should be noted because, while most activities take place during daylight hours, major activities can occur in most occupancies at other times.

**6.2.3 Occupant Load.** The number of occupants can vary depending on the time of day, day of the week, and year, and information should be gathered regarding the normal occupant load and any expected variations.

**6.2.4 Location of Occupants.** Various uses of sections of the facilities should be identified, and the number of occupants anticipated to be in those areas should be noted.

### **6.2.5 Means of Egress.**

**6.2.5.1** The number of exits, their location, and any special locking conditions, such as delayed release, limited security access, and stairwell locking, should be noted on the pre-incident plan.

**6.2.5.2** The potential for exits to be compromised should be noted.

### **6.2.6 Emergency Action Plan.**

**6.2.6.1** If a facility has an emergency action plan (whether known as a site emergency plan, an emergency response plan, or known by some other name), it should be reviewed.

**6.2.6.2** The strategy and tactics to be used by emergency responders should be coordinated with the facility's emergency action plan.

**6.2.7\* Assistance for the Disabled.** The locations of occupants who need assistance to safely evacuate should be noted.

**6.2.7.1** Areas of refuge, if provided, should be noted.

**6.2.7.2** Location of equipment such as stair chairs, stretchers, or lifts that can assist evacuation should be identified.

### **6.2.8 Defend-in-Place Concept.**

**6.2.8.1** Defend-in-place methods are utilized where complete evacuation is either impossible or impractical such as in high-rise, health care, or detention facilities.

**6.2.8.2** The planned methods, safe areas, and all areas utilizing this method should be noted.

### **6.3 On-Site Emergency Organization.**

**6.3.1\* Emergency Response Capabilities.** The on-site emergency response capabilities and the manner in which their functioning coordinates with responding personnel should be noted.

#### **6.3.2 Emergency Action Plan.**

**6.3.2.1 Organizational Structure.** An organizational structure and emergency contact list should be obtained from facility management.

**6.3.2.1.1** The emergency contact list should be updated annually or when changes occur.

**6.3.2.1.2** At a minimum, the list should include whom to contact, in order of priority, in the event of an emergency.

**6.3.2.2\* Assignment of Non-Fire-Fighting Duties.** A current list that specifies each individual's assigned emergency response duties should be available.

**6.3.2.3 Special Equipment Operation.** Some occupancies contain very specialized operations, processes, and hazards that can pose unique challenges in an emergency, and emergency operating procedures and personnel for these conditions should be documented and readily available.

#### **6.3.2.4 Hazardous Materials Coordinator.**

**6.3.2.4.1** Where an occupancy has an individual(s) who is responsible for maintaining material safety data sheets (MSDS) and inventories of hazardous materials, the pre-incident plan should contain information for contacting this person(s) for on-scene assistance at any emergency.

**6.3.2.4.2** The location of MSDS and related data should be indicated in the pre-incident plan.

## **Chapter 7 Protection Systems and Water Supplies**

**7.1 General.** Fire protection systems and water supplies should be determined in the development of, and specifically noted in, the pre-incident plan.

### **7.2 Water Supplies.**

**7.2.1\* Adequacy of Water for Fire Fighting.** The adequacy of available water for sprinkler systems, inside and outside hose streams, and any other special requirements or needs should be considered when evaluating a site for its fire loss potential.

**7.2.2 Required Fire Flow.** The required fire flow should be determined by evaluating the site in terms of size of the building (e.g., height, number of floors, and area), construction type, occupancy, exposures, fire protection systems, and any other features that could affect the amount of water needed to control or extinguish the fire.

**7.2.2.1\*** A water supply test should be conducted in accordance with NFPA 291.

**7.2.2.2** The results of the water supply test should be reported in the plan, including the available flow at a specified residual pressure [typically 140 kPa (20 psi)].

**7.2.2.3** The results of the water supply test should be compared to the sprinkler system demand.

**7.2.2.4** Where the demand exceeds the available supply, the plan should address an appropriate response to mitigate the deficiency.

**7.2.3 Fire Department Connections (FDC).** Data concerning the FDC that should be recorded include the following:

- (1) Physical location
- (2) Area covered
- (3) Type of system(s) supplied
- (4) Size and type of threads

### **7.2.4 Fire Pumps.**

**7.2.4.1** Data regarding the fire pump that should be recorded include the following:

- (1) Location
- (2) Type of driver (e.g., electric, diesel, or other)
- (3) Capacity (e.g., rated flow, pressure)
- (4) Source of water supply (e.g., reservoir, tank, public supply)
- (5) Operation (e.g., automatic, manual)
- (6) Areas or systems served
- (7) Contact information for person(s) responsible for maintaining the pump

**7.2.4.2** For electric fire pumps, the location and means of electrical disconnect should be identified so that the power to the pump is not compromised during the incident.

**7.2.4.3** If the fire pump power supply is not electrically separated from the facility disconnect, it should be noted in the plan.

**7.2.5 Fire Hydrants.** Data regarding the fire hydrants that should be recorded include the following:

- (1) Location and type of each fire hydrant
- (2) Number and diameter of each outlet
- (3) Threads and diameter
- (4) Alternate hydrant locations from other sources of water (i.e., public, private, or high pressure)
- (5) Size of the water main connection

**7.3\* Automatic Sprinkler Systems.** Data concerning automatic sprinkler protection that should be recorded include the following:

- (1) Type of system (e.g., wet, dry, pre-action)
- (2)\*Hazard classification of the system and occupancy
- (3)\*Known sprinkler system deficiencies
- (4)\*Location and identification of all exterior control valves, including street boxes

- (5)\*Location and identification of all interior control and sectional valves
- (6) Location and identification of all risers
- (7) Location and identification of local water flow alarms and procedures for silencing the local alarms
- (8) Contact information for person(s) responsible for maintaining the system
- (9) Extent of sprinkler coverage

#### **7.4\* Standpipe System.**

**7.4.1** Data concerning standpipe systems that should be recorded include the following:

- (1) Type of system (e.g., wet, dry, pre-action)
- (2) Location, threads, and size of hose outlets
- (3)\*Pressure available at hose valve outlet(s)
- (4) Water supply (demand)
- (5) Location and identification of all exterior control valves, including street boxes
- (6) Location and identification of all interior control and sectional valves
- (7) Location and identification of all risers
- (8) Contact information for person(s) responsible for maintaining the system

**7.4.2\* Pressure Restricting Devices and Pressure Reducing Valves.** The presence of standpipe valves that are pressure restricting devices (regulate residual pressure only) or pressure reducing valves (regulate both static and residual pressures) should be noted in the pre-incident plan.

**7.5\* Protective Signaling Systems.** Data regarding the protective signaling system that should be recorded include the following:

- (1) Method of system activation (e.g., manual, automatic)
- (2) Area of coverage
- (3) Location of fire alarm control panel (FACP) and remote annunciator panels
- (4) Type of automatic detectors provided (e.g., smoke, heat)
- (5) Method of off-site alarm transmission, if any
- (6) Name of, and contact number for, any off-site monitoring agency
- (7) Capability for public address system or voice alarm
- (8) Capability for emergency fire service telephone and the location of telephone connections and handsets
- (9) Name of, and contact information for, person(s) responsible for maintaining the system
- (10) Method and extent of occupant notification

**7.6\* Special Hazard Protection Systems.** Data regarding any special hazard protection systems that should be recorded include the following:

- (1) Type of system
- (2) Hazard or area protected by the system
- (3) Location of control panels
- (4) Location of all protective agent supply and reserve containers
- (5) Activation method
- (6) Activation threshold
- (7) Personnel hazards of protective agent
- (8) Name of, and contact information for, person(s) responsible for maintaining the system
- (9) Method and extent of occupant notification

#### **7.7 Portable Fire Extinguishers.**

**7.7.1** The plan should note the locations and types of portable fire extinguishers found within the occupancy where they could be useful to responding personnel.

**7.7.2** In facilities where large wheeled equipment and/or specialized extinguishers (e.g., Class D fire extinguishers, chemical neutralization units) are provided, consideration should be given to the value that such extinguishers might provide responding personnel.

**7.8\* Smoke Management.** Data regarding smoke management systems that should be recorded include the following:

- (1) Type of system
- (2) Location of areas served by system
- (3) Location of control systems
- (4) System operation information (e.g., automatic or manual)
- (5) Location of backup operating instructions
- (6) Location of manual override controls
- (7) Location and type of detection devices
- (8) Location of supply (e.g., makeup air) and discharge arrangement
- (9) Contact information for person(s) responsible for maintaining the system

## **Chapter 8 Special Hazard Considerations**

**8.1\* General.** The pre-incident plan should document any special hazards to ensure that emergency response personnel are aware of these hazards, and that appropriate response considerations, resource activation, or both occur during an emergency.

**8.2\* Transient Conditions.** If special hazards exist only during specific times throughout the year, each hazard and the time it is expected to be present should be recorded.

#### **8.3 Inventory.**

**8.3.1** Because inventory of special hazard materials can fluctuate throughout the year, maximum inventory values should be requested during site surveys.

**8.3.2** The plan should include a method to obtain current inventories of special hazard materials at the time of an emergency.

**8.3.3\*** Some materials that present special hazards are shipped in bulk and nonbulk containers that can be temporarily stored at or near the occupancy being surveyed, and the operational conditions, locations, and characteristics of these containers should be documented as part of the pre-incident survey.

#### **8.4\* Special Hazards.**

**8.4.1\* Flammable and Combustible Liquids.** Data regarding flammable and combustible liquids that should be recorded include the following:

- (1) Where material will drain if spilled
- (2) Amount of fire-fighting water that can be contained with the spilled materials if secondary containment is provided
- (3) Necessary extinguishing agent resources (e.g., fire-fighting foams)

**8.4.2 Explosives.** The use or storage of explosive materials in an occupancy should be highlighted as part of the initial site survey.

**8.4.2.1** The presence and location of such materials should be noted on the pre-incident plan, because these materials can pose extreme risk to emergency responders.

**8.4.2.2** Typical commercial materials that could explode upon exposure to fire, heat, or both, such as ammonium nitrate, should also be documented on the pre-incident plan.

**8.4.3 Toxic or Biological Agents.**

**8.4.3.1** The location and quantity of toxic or biological agents within an occupancy that can pose a risk to emergency responders should be documented in the pre-incident plan, with special notation as to what special protective equipment might be needed.

**8.4.3.2** The impact of toxic or biological agents on neighboring or downwind occupancies should also be evaluated.

**8.4.4 Radioactive Materials.** The location and type of radioactive materials and radiation-producing devices should be identified because small amounts of radioactive material used in laboratory, manufacturing, health care, or other occupancies could pose significant risks.

**8.4.5 Reactive Chemicals and Materials.** Because many chemicals can produce an adverse reaction if contaminated or mixed with other materials, or undergo chemical reaction when exposed to elevated temperatures, as in a fire, the potential for buildup of pressure in containers, generation of toxic by-products, and heat generated by chemical reaction should be evaluated during the pre-incident plan development.

**8.4.5.1** Reactive chemicals that require cooling (e.g., in a refrigerated warehouse) should also be noted, because it is likely that power could be interrupted during an emergency.

**8.4.5.2** Materials that react upon exposure to air or water should be documented on the pre-incident plan.

**8.4.6 Electrical and Mechanical Hazards.** The pre-incident plan should identify where the instructions for de-energizing electrical systems or for isolating and securing mechanical systems are kept so these systems can be shut down to protect emergency responders from the hazards of electrocution, mechanical entrapment, or other perils.

**8.4.7 Special Atmospheres.** Any area of an occupancy, including the following, that contains rooms or equipment storing or using special gases or vapors that can present a hazard to the emergency responders, should be noted on the pre-incident plan:

- (1) Confined spaces
- (2) Inert atmospheres
- (3) Ripening facilities
- (4) Special equipment treating atmospheres

## Chapter 9 Emergency Operations

**9.1 General.** A system for using the pre-incident plan should be designed that allows access to the plan itself or a summary of key elements of the plan while en route to and during the incident.

**9.1.1** An important component of the responding personnel's emergency response plan should be the inclusion of a system that provides for the preparation, distribution, and updating of pre-incident plans of various occupancies.

**9.1.2** The pre-incident information should be presented so as to be easily deciphered and understood under the emergency response conditions that could be encountered within a responding emergency vehicle's passenger compartment.

**9.2 Incident Notification.**

**9.2.1\*** The pre-incident plan should provide critical information that could be advantageous for responding personnel at the time of dispatch.

**9.2.2** Communicating this information should be incorporated as part of the normal dispatching procedures.

**9.3 Incident Operations.**

**9.3.1\*** The plan should address a standard response to an incident at the facility or site, as well as additional resources required for significant incidents.

**9.3.2** Where local resources are limited, the plan should address acquiring additional resources.

**9.3.3** The plan should include initial actions based on the priorities of life safety, scene stabilization, and incident mitigation.

**9.3.4** The plan should address the importance of the facility personnel and responding personnel having a working knowledge of each other's capabilities and emergency operational procedures because this will facilitate the smooth transference of information at the incident command post.

**9.3.5** The plan should address the implementation of an appropriate incident management system upon the arrival of the first emergency units.

**9.3.5.1** The plan should address how timely information will flow in both directions between the facility and the fire department.

**9.3.5.2** When a facility representative is not available, the facility should provide the fire department with information allowing for rapid access to, and consultation with, a site representative until an on-site liaison can be established.

**9.3.5.3** Although the scope and intensity level of required information flow between the facility staff and the fire department incident commander will vary during various phases of the incident, information flow, including any actions taken by the occupants, between both parties should continue throughout the incident.

**9.3.6** The location of the incident command post and emergency operations center, if provided, should be noted.

**9.3.6.1** Additional information should include whether or not the incident command post and emergency operations center are staffed and how to gain access to the area.

**9.3.6.2** Some supplemental detailed information such as building plans and fire alarm drawings should be kept in a lock box or other secured area.

**9.3.7** The plan should direct that emergency operations commenced by the facility are to be communicated to the emergency responders.

**9.3.8** The plan should contain provisions for sheltering evacuated occupants.

**9.3.9** The plan should address situations that are likely to require the use of long hose stretches that could include supply and attack hose lines.

**9.4\* Accountability System.** An accountability system for determining the location and number of occupants should be established since the number of occupants will vary with the facility's operations and time of day.

## Chapter 10 Plan Testing and Maintenance

**10.1 General.** An effective plan should include initial and periodic testing and maintenance of the plan because, during the planning process, it can be difficult to recognize various problems or requirements that might be encountered during an emergency.

### 10.2 Plan Evaluation.

**10.2.1** During testing, using the pre-incident plan should provide an opportunity to train facility and responding personnel.

**10.2.2\*** In preparation for a test of the pre-incident plan, three questions should be addressed:

- (1) What is the test designed to accomplish?
- (2) How will the test be conducted?
- (3) What resources will be needed for the test?

**10.2.3** All of the variables that might be encountered during an actual emergency should be considered.

**10.2.3.1** Plans for a test should rely on research, development, and experience, rather than perceptions or assumptions.

**10.2.3.2** In any test, unusual conditions also should be considered, such as how to identify and handle an actual emergency that might occur during a test.

**10.2.4** To the extent possible, plan testing should involve all who might be expected to assist during an actual emergency.

**10.2.5** Those persons who should be involved in plan testing might include mutual aid units, emergency medical service personnel, law enforcement officials, facility management, and technical experts.

**10.2.6** Pre-incident plan testing should be coordinated with both emergency responders and facility personnel.

**10.2.6.1** For tests involving the facility itself, the facility management should be involved in the planning of the test.

**10.2.6.2\*** If necessary, management should be convinced of the need for a drill or on-site test.

**10.2.7** The test should be planned with as much detail as that used in the development of the pre-incident plan itself.

**10.2.7.1** Copies of the plan should be distributed to all assisting parties, including facility representatives, so that all participants know what to expect and what their responsibilities are.

**10.2.7.2** Internal coordination should be established to ensure that the owner and occupant are aware of their individual roles in the test and that all available resources are most efficiently utilized.

**10.2.7.3** Each level of management within the facility should ensure that the staff and employees are aware of their individual roles and responsibilities during the test, stressing the flexibility of such roles and responsibilities.

**10.2.7.4** Because no facility or fire department is completely self-sufficient, external coordination should be established and is essential if the pre-incident plan is to be effective.

**10.2.7.5** External coordination should involve public relations personnel, the news media, police, medical services, dispatch center, and other units as appropriate.

**10.2.8** The respective duties and responsibilities of the various participants in the test should be clearly identified.

**10.2.9** Color-coded arm bands, head gear, vests, or some other form of visible identification should be used to distinguish the duties and responsibilities of the participants.

**10.2.10** Appropriate security measures should be established because occupancies can contain valuable objects, and there is generally information on-site about operations and employees that should remain secure.

**10.2.11** The communication system for a test should include an "emergency signal" to identify that an actual emergency, such as an injury to a test participant, has occurred during the test or exercise.

**10.2.12** A visitor or observer identification system should be established.

**10.2.12.1** The identification system should distinguish between actual test participants and spectators.

**10.2.12.2** Procedures should be established to control the movement and location of spectators.

**10.2.13** As an on-site test will involve a large number of personnel, apparatus, and other forms of vehicular traffic, plans to handle additional traffic that is not normally present at the facility or during an actual incident should be included.

**10.2.14** Personnel who are not participants in the test should be assigned to observe and provide critical evaluation to the post-test analysis.

**10.2.15** The most valuable portion of a test is the post-test analysis, and subsequent modifications should be made to the plan to correct any deficiency or increase efficiency.

**10.2.16** The analysis should fully discuss test procedures to assist in future testing of the pre-incident plan.

### 10.3 Plan Maintenance.

**10.3.1** Most occupancies present an ever-changing environment, which means that ongoing maintenance of the pre-incident plan should receive the same critical attention as the original development of the plan.

**10.3.2** New construction or expansion, changes in water supply, changes in available hydrants, changes in occupancy, changes in response routes or traffic patterns, testing that identifies problems, or problems in an actual incident should trigger the need to review or update the plan.

**10.3.3** Responsibility for plan maintenance should be determined at the time of planning initiation.

**10.3.4** The ideal maintenance procedure should provide for a review of each plan on at least an annual basis.

**10.3.5** The following new information or circumstances should be considered indications that a plan revision could be needed:

- (1) Property or deed transfers
- (2) Issuance of occupancy permits
- (3) Information from utilities (e.g., water, electric, gas, or sewer authorities)
- (4) Information from police and security officials
- (5) Changes in telephone numbers
- (6) Issuance of building permits
- (7) Inquiries from architects, engineers, or other consultants
- (8) Observations of economic or social change
- (9) Observations by response personnel during training exercises
- (10) Notices from highway department of street closings
- (11) Protection equipment impairment notices
- (12) Submission of data to regulatory authorities
- (13) Actual incidents
- (14) Loss experience in similar occupancies
- (15) Fire department inspections

**10.3.6** Where conditions indicate that a change in a pre-incident plan is warranted, the plan should be updated and distributed in accordance with 4.3.4 to appropriate persons and agencies.

**10.3.7** Prior editions of the pre-incident plan should be archived or destroyed in accordance with local policy.

## Chapter 11 Assembly Occupancies

### 11.1 Administration.

**11.1.1** All pre-incident plans should follow the general provisions set forth in Chapter 4 through Chapter 10.

**11.1.2** This chapter contains recommendations that should be applied to the pre-incident planning for emergencies in assembly occupancies.

**11.1.3** The pre-incident planning concepts of this chapter should be utilized for assembly occupancies that exist within other occupancies.

**11.1.4** Pre-incident planning in an assembly occupancy should involve not only the emergency responders, but also administrators, event supervisors, and other staff members.

**11.2 Pre-Incident Planning Process.** No special considerations should be necessary for the pre-incident planning process for assembly occupancies.

**11.3 Physical Elements and Site Considerations.** Conditions under which access is difficult due to location and other conditions that include the following should be noted in the plan:

- (1) Low levels of lighting
- (2) High-rise top stories
- (3) Waterfront locations
- (4) Fixed water crafts
- (5) Subgrade locations

### 11.4 Occupant Considerations.

**11.4.1** Due to the possible large numbers of occupants, consideration should be given to the expected characteristics of occupants, including the following:

- (1) Age
- (2) Mobility
- (3) Awareness
- (4) Knowledge
- (5) Maximum number of occupants at any given time

**11.4.2** Obstruction or impairment of means of egress by the following should be noted:

- (1) Variable seating arrangements (e.g., festival and temporary)
- (2) Decorations and displays
- (3) Temporary storage
- (4) Waiting spaces
- (5) Furniture and fixtures

**11.4.3** Expected effectiveness of crowd managers, security, or on-site emergency services, if provided, should be included in the pre-incident plan.

### 11.5 Protection Systems and Water Supplies.

**11.5.1** The automatic sprinkler systems in locations where exhibits, live stage productions, and similar shows are conducted should be closely evaluated to determine whether adequate protection is present for the intended use and the findings noted in the plan.

**11.5.2** Because the nature of an event could result in the intentional temporary impairment of a protection system to allow for pyrotechnic displays or theatrical smoke generation, the plan should note alternate protection means or procedures for these situations.

**11.6 Special Hazards.** No special considerations for special hazards should be necessary for pre-incident plans for assembly occupancies.

### 11.7 Emergency Operations.

**11.7.1** Consideration of life safety at places of assembly should be the major point addressed by the plan.

**11.7.2** Sufficient space and resources should be provided to relocate occupants away from operating emergency units.

**11.7.3** The potential for an emergency responder's access to become obstructed or impaired should be noted in the plan.

**11.8 Plan Testing and Maintenance.** Although testing of the pre-incident plan under actual occupancy conditions is not practical in most instances, every effort and consideration should be exercised during testing to account for the expected occupant load.

## Chapter 12 Educational Occupancies

### 12.1 Administration.

**12.1.1** All pre-incident plans should follow the general provisions set forth in Chapter 4 through Chapter 10.

**12.1.2** This chapter contains recommendations that should be applied to the pre-incident planning for emergencies in educational occupancies.

**12.1.3** Pre-incident planning in an educational occupancy should involve not only the emergency responders, but school administrators, teachers, other staff members, and students.

**12.2 Pre-Incident Planning Process.** No special considerations should be necessary for the pre-incident planning process for educational occupancies.

**12.3 Physical Elements and Site Considerations.** The pre-incident plan should note any changes in access patterns that might occur during occupancy.

**12.4 Occupant Considerations.** The pre-incident plan should contain the following:

- (1) Number of students and their age range
- (2) Location of various age groups within the facility
- (3) Location and occupant load of any assembly areas

**12.5 Protection Systems and Water Supplies.** No special considerations for protection systems and water supplies should be necessary for pre-incident plans for educational occupancies.

#### **12.6 Special Hazards.**

**12.6.1** The location of any hazard areas such as shops, laboratories, and kitchens should be noted on the pre-incident plan.

**12.6.2** The quantity, type, and location of any hazardous materials should be noted on the pre-incident plan.

#### **12.7 Emergency Operations.**

**12.7.1** The pre-incident plan should note the system or method used for accounting for all of the occupants.

**12.7.2** The pre-incident plan should include provisions for handling the interaction between emergency responders, facility staff, and students and their parents or guardians.

**12.8 Plan Testing and Maintenance.** No special considerations for plan testing and maintenance should be necessary for pre-incident plans for educational occupancies.

## **Chapter 13 Health Care Occupancies**

### **13.1 Administration.**

**13.1.1** All pre-incident plans should follow the general provisions set forth in Chapter 4 through Chapter 10.

**13.1.2** This chapter contains recommendations that should be applied to the pre-incident planning for emergencies in health care occupancies.

**13.1.3\*** Pre-incident planning in a health care occupancy should involve not only the emergency responders, but also health care administrators, section or department supervisors, the maintenance director or building engineer(s), and other staff members.

**13.1.4** Within health care facilities, the established management team with overall responsibility for operating the health care facility should be consulted for the development of the pre-incident plan.

### **13.2 Pre-Incident Planning Process.**

**13.2.1** The information in the health care facility's fire or disaster plan should be incorporated into the pre-incident plan.

**13.2.2** The acronyms that the facility uses to implement the fire or disaster plan should be noted.

**13.2.3** During the planning process, a knowledge of existing safety-related documentation such as the following should be used to enhance and expedite the development of the pre-incident plan itself:

- (1) Emergency procedures established for controlling chemical spills
- (2) Procedures for operating room or surgical suite emergencies, including evacuation and equipment shutdown procedures, and provisions for control of emergencies by facility staff until arrival of the emergency responders

### **13.3 Physical Elements and Site Considerations.**

#### **13.3.1 General.**

**13.3.1.1** Pre-incident plans should address each of the following facilities individually and should note their criticality and the impact, both from a fire and continued facility services aspect, that their loss would have on the entire facility:

- (1) Large health care facilities or complexes that occupy a large tract of land with numerous site-specific hazards
- (2) Separate, stand-alone buildings that provide physical plant support functions or specialized medical care or treatment

**13.3.1.2** Smaller health care facilities, such as nursing homes, will generally occupy one building.

**13.3.2 Construction.** In general, health care facilities are designed with construction features to compartmentalize a fire within the enclosure or area of origin, and the location of these features such as fire walls, fire barriers, smoke barriers, and areas of refuge should be noted in the pre-incident plan.

**13.3.3\* Access.** The location of multiple entrances to health care facilities, including a main entrance, an emergency room entrance, and specialized treatment entrances should be identified.

**13.3.4\* Building Services.** The plan should address the decision-making process to shut off a health care facility utility, because evacuation of a health care facility is not always feasible or necessary, and shutting off building utilities can be detrimental to the occupants' safety and health.

**13.3.5\* Special Utility Considerations.** Because the types and extent of special utilities are based on the facility size and types of treatment being provided, the plan should address the decision-making process for shutting off a special utility.

**13.4 Occupant Considerations.** The pre-incident plan should note the maximum number of patients within each smoke zone to help allocate resources if an incident occurs.

**13.4.1** The pre-incident plan should incorporate appropriate data from the facility emergency action plan.

**13.4.2** Movement of patients, most of whom are incapable of self-preservation, and their care after movement are issues that require consideration, and planning should include a close working relationship with the facility staff.

**13.4.3\* Health Care Facility Evacuation Procedures.** An analysis of the required resources necessary for the horizontal evacuation of patients should be considered as part of the pre-incident plan.

**13.4.3.1** Building plans of the health care facility should be used to assist in evaluating the features of such smoke zones.