Understanding & Implementing STANDARDS

NFPA 1500, 1720, and 1851

NATIONAL VOLUNTEER FIRE COUNCIL
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Acknowledgements

The National Volunteer Fire Council (NVFC) would like to thank the National Fire Protection Association (NFPA) for their assistance in developing this guide. As an advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. The NVFC is proud to work with NFPA to promote a culture of safety within the fire and emergency services.

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Contents



Introduction

Standards are an attempt by an industry or profession to self-regulate by establishing minimal operating, performance, or safety criteria. Consensus standards are developed by specific industries to describe widely accepted standards of care and operations for certain practices. They are written by consensus committees composed of industry representatives and other affected parties.

One of the most well-known and respected standards organizations is the National Fire Protection Association (NFPA). Since 1896, NFPA has developed standards directly affecting the fire service at the department level. As an advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. NFPA's National Fire Codes® are administered by more than 250 Technical Committees comprised of approximately 8,000 volunteers and are adopted and used throughout the world.

The National Volunteer Fire Council (NVFC), the leading organization representing the volunteer fire and emergency services, recognizes that many departments may have difficulty adopting these standards in their totality. The reasons for this are varied and may include factors such as limited resources or unfamiliarity with the standard. Small volunteer departments may face additional challenges in meeting standards as they may be facing more immediate challenges such as disappearing budgets and very limited staffing. However, creating and maintaining a safe and consistent environment for volunteers is a critical step to successful recruitment and retention and will contribute immeasurable to health and safety. While implementing a standard as a whole may seem overwhelming or unattainable for some, it is important to remember that steps can be taken to apply certain components of key standards while simultaneously formulating plans to adopt other components as conditions allow. Taking small steps can have a big impact. It is never too late for a department to adopt a culture of safety.

In an effort to help departments better understand and implement key safety standards, the NVFC has partnered with the NFPA to produce this guide. Readers will find information on three NFPA standards:

> 1500 Standard on Fire Department Occupational Safety and Health Program (2007 Edition)

> 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments (2010 Edition)

> 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting (2008 Edition)

Each standard highlights manageable sections that include commentary provided by NFPA. The analysis also highlights action items and/or existing resources to assist departments in working toward their safety goals. Standard checklists are also available. Additional resources including sample operating guidelines, policies, procedures, first-hand accounts from departments, and more can be found at **www.nvfc/org**.

Developing NFPA Codes and Standards

Many wonder how NFPA codes and standards come into existence or how they are revised. The following section details the development and review process and explains how the fire service can get involved.

The codes and standards development process begins with the NFPA Board of Directors. The Board has general charge over all NFPA activities and issues all of the rules and regulations that govern the development of NFPA codes and standards. The Board also appoints a 13-person Standards Council to oversee the Association's standards development activities, administer rules and regulations, and serve as an appeals body.

Members of the Standards Council are thoroughly familiar with the standards development functions of the Association and are selected from a broad range of interests. More than 250 Technical Committees and Panels are appointed by, and report to, the Standards Council. They serve as the primary consensus bodies responsible for developing and revising NFPA codes and standards. In addition to acting on their own proposed changes, these Technical Committees and Panels act on proposed changes to NFPA documents that can be submitted by any interested party.

To conduct their work, Committees and Panels are organized into projects with an assigned scope of activities. Depending on the scope, a project may develop one code or standard or a group of related codes and standards, and the project may consist of a single Technical Committee or multiple Committees and Panels coordinated by a Correlating Committee that oversees the project to resolve conflicts and ensure consistency.

Rules and Participants

There are many rules and regulations that must be followed during the codes and standards development process. Primarily these include the:

> NFPA Regulations Governing the Development of NFPA Standards

> NFPA Bylaws

> Technical Meeting Convention Rules

> Guide for the Conduct of Participants in the NFPA Standards Development Process

> Regulations Governing Petitions to the Board of Directors from Decisions of the Standards Council

All of these rules and regulations are available by request from NFPA or can be downloaded from NFPA's web site at **www.nfpa.org/regs**. All participants should refer to the actual rules and regulations for a full understanding of this process and for the rules that govern participation.

Establishing a Consensus Body

In the NFPA standards development process, NFPA Technical Committees and Panels serve as the principal consensus bodies responsible for developing and updating all NFPA codes and standards. Committees and Panels are appointed by the Standards Council and typically consist of no more than 30 voting members representing a balance of interests. NFPA membership is not required in order to participate on a NFPA Technical Committee, and appointment is based on factors such as technical expertise, professional standing, commitment to public safety, and the ability to bring the viewpoints of interested people or groups to the table. Each Technical Committee is constituted to maintain a balance of interests, with no more than one-third of the Committee from the same interest category. The categories generally used by the Standards Council to classify Committee members are:

1. Manufacturer: A representative of a maker or marketer of a product, assembly, or system, or portion thereof, that is affected by the standard

2. User: A representative of an entity that is subject to the provisions of the standard or that voluntarily uses the standard

3. Installer/Maintainer: A representative of an entity that is in the business of installing or maintaining a product, assembly, or system affected by the standard

4. Labor: A labor representative or employee concerned with safety in the workplace

5. Applied Research/Testing Laboratory: A representative of an independent testing laboratory or independent applied research organization that promulgates and/or enforces standards

6. Enforcing Authority: A representative of an agency or an organization that promulgates and/or enforces standards

7. Insurance: A representative of an insurance company, broker, agent, bureau, or inspection agency

8. Consumer: A person who is or represents the ultimate purchaser of a product, system, or service affected by the standard, but who is not included in (2)

9. Special Expert: A person not representing (1) through (8), and who has special expertise in the scope of the standard or portion thereof

The Committee must reach a consensus in order to take action on an item.

Sequence of Events for the Standards Development Process

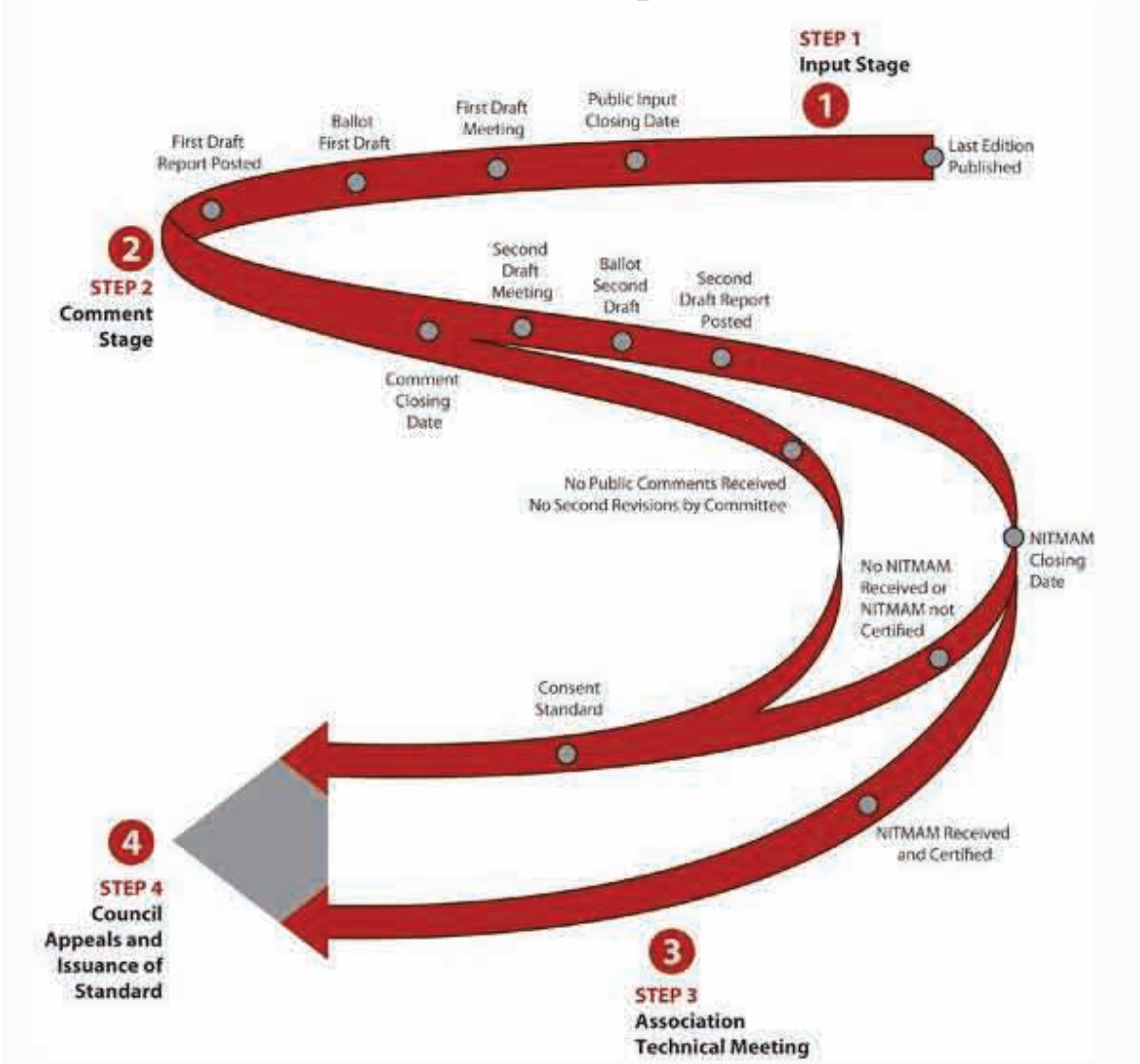
The NFPA process encourages public participation in the development process. All NFPA codes and standards (also referred to here simply as NFPA "standards") are revised and updated every three to five years in revision cycles that begin twice each year and that normally take approximately two years to complete. Each revision cycle proceeds according to a published schedule. The process contains four basic steps:

STEP 1 – Input Stage

> Input accepted from the public or other committees for consideration to develop the first draft. Visit **www.nfpa.org/submitpipc** to learn how to do this online.

> The Committee then holds a first draft meeting to revise the standard. If necessary, the revisions are reviewed by the Correlating Committee. A vote by ballot on the first draft is held, and the draft is posted for public review.

The Standards Development Process



STEP 2 – Comment Stage

> Public comments are accepted on the first draft for ten weeks. Visit **www.nfpa.org/submitpipc** to learn how to submit a public comment online.

> If the standard does not receive public comments and the Committee does not wish to further revise the standard, the standard becomes a "consent standard" and is sent directly to the Standards Council for issuance. Consent standards bypass an Association Technical Meeting and proceed directly to the Standards Council for issuance. If there are public comments, then the Committee holds a second draft meeting.

> If necessary, the Committee and Correlating Committee votes on the second draft by ballot and posts the second draft report for review.

STEP 3 – Association Technical Meeting

> Anyone challenging the proposed contents after the completion of second draft balloting can file a Notice of Intent to Make a Motion (NITMAM). NITMAMs are reviewed, and valid motions are certified for presentation at the Association Technical Meeting.

> NFPA membership meets each June at the Association Technical Meeting and acts on standards with "Certified Amending Motions" (certified NITMAMs).

> Committee(s) and Panel(s) vote on any successful amendments to the Technical Committee Reports made by NFPA members at the Association Technical Meeting.

STEP 4 – Council Appeals and Issuance of Standard

> Notification of intent to file an appeal to the Standards Council on Association must be filed within 20 days of the Association Technical Meeting.

> The Standards Council decides, based on all evidence, whether or not to issue the standard or to take additional action.

Application of NFPA Standards for Volunteers

In most cases, compliance with NFPA standards is voluntary. However, in some cases federal or state Occupational Safety and Health (OSHA) agencies have incorporated wording from NFPA standards into regulations. In these cases, complying with the standards is mandatory.

Regardless of whether NFPA standard compliance is voluntary or mandatory, fire and rescue departments must consider the impact of voluntary standards on private litigation. In some states, a department may be liable for the negligent performance of their duties. Most state laws do not protect fire or rescue departments for gross negligence, even in states that protect rescue workers under an immunity statute. Essentially, negligence involves the violation of a standard of care that results in injury or loss to some other individual or organization. In establishing the standard of care for rescue operations, the courts will frequently look to the voluntary standards issued by NFPA and other organizations. Although voluntary in name, these standards can become, in effect, a legally enforceable standard of care for fire or rescue department. Accordingly, fire and rescue departments should pay close attention to applicable standards.

Get Involved

Unfortunately the fire service does not always take advantage of the process until the codes or standards are validated and final. It is extremely important to participate in the revision process. The fire service should write proposals, suggest changes, add and delete content, and become acutely aware of the timing of both proposals and public comment periods. Additionally, fire service members should consider volunteering to sit on a Technical Committee.

Fire service members should take a more proactive approach to the codes and standards process to assure their needs and concerns are being considered. NFPA Technical Committee Meetings are open to everyone, and individuals are also invited to apply for committee membership. Visit **www.nfpa.org/tcapply** for more information. Additionally, visit the NFPA document information pages at **www.nfpa.org/1500**, **www.nfpa.org/1720** and **www.nfpa.org/1851** to view the complete standards featured in this guide free of charge, and to find meeting notices, agendas, minutes, and much more.

NFPA 1500 Standard on Fire Department Occupational Safety and Health Program

2007 Edition

The first edition of NFPA 1500 was published in 1987 to address the absence of a consensus standard addressing fire service occupational safety and health programs. Fire service organizations at the time were being increasingly subjected to regulations that were developed for general industry. This was problematic because they did not provide for many of the specific needs of emergency service organizations.

Following the first edition, revised editions were published in 1992, 1997, and 2002.The fifth edition of NFPA 1500 is addressed in this guide and was approved as an American National Standard on August 17, 2006. It supersedes all previous editions.

Firefighting and the delivery of other emergency services continues to be a hazardous job. However, the poor medical condition or physical fitness of some members - as well as problems with vehicle operator training and operation, use of an incident management system, and communication capability - continue to further erode the safety of first responders as well as the safe delivery of critical emergency services. This edition of the NFPA 1500 emphasizes a holistic approach to health and safety in the fire service.

NOTE: The following text and checklist represent extracted sections of the Standard and commentary on those sections. 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.

To view the current edition in its entirety, visit www.nfpa.org/1500.

NFPA 1500 Highlights

1.1 Scope. This standard shall contain minimum requirements for a fire service–related occupational safety and health program.

4.2 Risk Management Plan

4.2.1 The fire department shall develop and adopt a comprehensive written risk management plan.

A.4.2.1 The risk management plan should consider all fire department operations, the duties and responsibilities of members (uniform and civilian), and policies and procedures. The risk management plan should include goals and objectives to ensure that the risks associated with the daily operations of the fire department are identified and effectively managed. For additional guidance on the development of a risk management plan, see NFPA 1250, Recommended Practice in Emergency Service Organization Risk Management.

4.2.2 The risk management plan shall at least cover the risks associated with the following:

1. Administration
2. Facilities
3. Training
4. Vehicle operations, both emergency and non-emergency
5. Protective clothing and equipment
6. Operations at emergency incidents
7. Operations at non-emergency incidents
8. Other related activities

4.2.3 The risk management plan shall include at least the following components:

1. Risk identification — actual and potential hazards
2. Risk evaluation — likelihood of occurrence of a given hazard and severity of its consequences
3. Establishment of priorities for action — the degree of a hazard based upon the frequency and risk of occurrence
4. Risk control techniques — solutions for elimination or mitigation of potential hazards; implementation of best solution
5. Risk management monitoring — evaluation of effectiveness of risk control techniques

Commentary

It is imperative that a fire department establish, implement, and update a risk management plan to ensure it recognizes potential risks and hazards. The intent is to make sure that each and every member of the fire department is aware of the potential risks and hazards when responding to an incident.

A *hazard* is defined by the NFPA as a condition, an object, or an activity with the potential of causing personal injury, equipment damage, loss of material, or reduction of the ability to accomplish the mission.

A *risk* is defined by the NFPA as the chance of injury or loss.

A thorough risk management plan will greatly reduce the likelihood of injury. Risk management should focus on two main components: risk assessment and risk control. The assessment should be used to identify known or potential hazards. Risk control calls for a closer look at these hazards and then identifies how they could negatively impact the department. Each hazard should be assigned a risk level. The risk level is based on the hazard's probability of occurrence, the severity of the consequences, and the potential level of exposure. Risk control measures must be adopted when the level of risk is determined to be unacceptable.

Risk factors to examine may include the department's jurisdiction, the population serviced, and the organization's personnel. Analyze each risk factor and develop a mitigation plan.

Developing a plan should begin with the selection of a risk management committee. The committee is usually composed of individuals charged with overseeing risk-prone areas. The committee should meet on a regular basis to discuss concerns based on each member's area of responsibility. Meetings can be used to evaluate and determine organizational goals, voice concerns, and revise previous solutions or processes.

The risk management plan should be a written document that has been adopted by the department and distributed to members with responsibilities outlined in the plan. The risk management plan should apply to all aspects of a fire department's operations and activities, including emergency operations, and should be communicated throughout the organization.

Action Items

> Develop a risk management plan.

Resource Spotlight

Learn more about risk management by referencing the United States Fire Administration's (USFA) publication Risk Management Practices in the Fire Service: www.usfa.fema.gov/downloads/pdf/publications/fa-166.pdf

NFPA 1250 Recommended Practice in Emergency Service Organization Risk Management establishes minimum criteria to develop, implement, or evaluate an emergency service organization risk management program for effective risk identification, control, and financing: www.nfpa.org/1250

Example risk management plans can be found online at www.nvfc.org

Reference the International Association of Fire Chief's Rules of Engagement when developing a risk management plan: www.iafcsafety.org.

4.3 Safety and Health Policy

4.3.1 The fire department shall adopt an official written departmental occupational safety and health policy that identifies specific goals and objectives for the prevention and elimination of accidents and occupational injuries, exposures to communicable disease, illnesses, and fatalities.

A.4.3.1 The following is an example of a safety policy statement: It is the policy of the fire department to provide and to operate with the highest possible levels of safety and health for all members. The prevention and reduction of accidents, injuries, and occupational illnesses are goals of the fire department and shall be primary considerations at all times. This concern for safety and health applies to all members of the fire department and to any other persons who could be involved in fire department activities.

4.3.2 It shall be the policy of the fire department to seek and to provide for its members an occupational safety and health program that complies with this standard.

Commentary

This section of NFPA 1500 intends to provide a safe and healthy work environment for personnel. It also calls on the department to provide members the means to become, and remain, healthy. It should be the goal of the department to reduce the likelihood of injury through a comprehensive health and safety program.

Action Items

> Develop and adopt an official written occupational safety and health policy.

Resource Spotlight

Find resources to create and sustain a department health and wellness program through the NVFC's Heart-Healthy Firefighter Program: www.healthy-firefighter.org

5.1 Training, Education, and Professional Development (General requirements)

5.1.1 The fire department shall establish and maintain a training, education, and professional development program with a goal of preventing occupational deaths, injuries, and illnesses.

A.5.1.1 The primary goal of all training, education, and professional development programs is the reduction of occupational injuries, illnesses, and fatalities. As members progress through various job duties and responsibilities, the department should ensure the introduction of the necessary knowledge, skills, and abilities to members who are new in their job titles, as well as ongoing development of existing skills. These programs should include information to ensure that members are trained prior to performing individual duties, as well as ongoing professional development to ensure competency.

Training programs should include but not be limited to the following:

1. Community risk reduction (fire prevention, public
2. education, investigation, etc.)
3. Health and safety
4. Fire suppression
5. Emergency medical
6. Human resources (leadership, supervision, interpersonal dynamics, equal employment opportunity, etc.)
7. Incident management system
8. Hazardous materials
9. Technical rescue
10. Information systems and computer technology
11. Position-specific development (fire fighter, company officer, chief officer, telecommunicator, investigator, inspector, driver/operator, etc.)

5.1.2 The fire department shall provide training, education, and professional development for all department members commensurate with the duties and functions that they are expected to perform.

5.1.3 The fire department shall establish training and education programs that provide new members initial training, proficiency opportunities, and a method of skill and knowledge evaluation for duties assigned to the member prior to engaging in emergency operations.

Commentary

This section advocates for having each member of the fire department trained and educated to execute their assigned roles as responders. Members should not find themselves in unfamiliar situations that could increase the likelihood of injury or death. While initial training and education is very important, it is equally important to remain sharp through continuing education. This can be done using many different mediums such as webinars, online classes, physical classes, magazine articles, or table top exercises. Be sure to remain current with regard to changing technologies and techniques.

Action Items

> Establish and maintain a training, education, and professional development program with a goal of preventing occupational deaths, injuries, and illnesses.

Resource Spotlight

Access training resources and research training opportunities through the National Fire Academy and the National Volunteer Fire Council: www.usfa.fema.gov/nfa/ and www.nvfc.org/

5.2 Member Qualifications

5.2.1 All members who engage in structural firefighting shall meet the requirements of NFPA 1001, *Standard for Fire Fighter Professional Qualifications.*

5.2.2 All driver/operators shall meet the requirements of NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications.*

A.5.2.2 Statistics presented by the National Fire Protection Association (NFPA) and the United States Fire Administration (USFA) indicate an alarming trend in the increased number of fire fighter fatalities and injuries associated with vehicle operations. Fire departments respond with a variety of apparatus, and the members operating this apparatus must have the appropriate knowledge, skills, and abilities to operate this apparatus. The first step in this process is to properly train and educate members on the various types of apparatus they could be required to operate. NFPA 1451, Standard for a Fire Service Vehicle Operations Training Program, provides the curriculum for members to develop the necessary knowledge, skills, and abilities to meet the requirements of 5.2.2. The second step is to ensure that the fire department performs an annual proficiency evaluation of all drivers/operators as required by Section 5.5. Also, the training and education should address the standard operating procedures associated with vehicle operations, especially emergency response. These are necessary components of the department's plan to reduce the risks associated with vehicle operations. This is a systems approach to ensure the safety and health of members and the citizens they serve.

5.2.4 All fire officers shall meet the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications.*

5.2.5 All wildland fire fighters shall meet the requirements of NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications.*

Commentary

Each member should have the minimum qualifications or certifications for their assigned role(s). Certifications greatly reduce the likelihood of injury or death.

The minimum requirements for NFPA 1001, 1002, 1021, and 1051 can be viewed online at www.nfpa.org.

Many departments offer training in house through partnerships with local training academies or community colleges. Training may also be offered through county or state academies.

Most training funding comes from tax revenue, but there are times when departments may need to raise additional funds to

meet their training goals. Departments can apply through the Federal Emergency Management Agency's (FEMA) Assistance to Firefighters Grant Program (www.fema.gov) to supplement training funds. Additionally, the North American Fire Training Directors (www.naftd.org) or state fire associations may be aware of other funding opportunities.

Action Items

> Identify training opportunities for department members.

> Require members to receive the necessary training to meet the requirement of NFPA 1001 and 1002 when applicable.

> Identify funding sources to supplement training funds when necessary.

6.1 Fire Department Apparatus

6.1.1 The fire department shall consider safety and health as primary concerns in the specification, design, construction, acquisition, operation, maintenance, inspection, and repair of all fire department apparatus.

6.1.1.1 The fire department shall specify restraint devices for fire apparatus, including those restraint devices for emergency medical service (EMS) members operating in the patient compartment of the ambulance.

6.1.5 Where tools, equipment, or respiratory protection are carried within enclosed seating areas of fire apparatus or the patient compartment of an ambulance, such items shall be secured by either a positive mechanical means of holding the item in its stowed position or by placement in a compartment with a positive latching door.

Commentary

All fire department apparatus should meet certain minimum requirements to provide the highest level of safety for the operators and occupants. Be sure that occupants are restrained through the use of safety restraints, and restrain equipment that might be in the occupant/passenger areas to minimize flying hazards in the event of an accident.

Action Items

> Develop and follow a regular schedule for apparatus inspection and maintenance.

> Ensure restraint devices are available and operational in apparatus for personnel and equipment.

Resource Spotlight

Meet safety standards through timely maintenance and the replacement of equipment, gear, and apparatus with the NVFC's downloadable, customizable management template: www.nvfc.org/hot-topics/health-and-safety/safety/equipment-resources

Access a series of NVFC webinars focusing on equipment management. Topics include Proper Equipment Management and Funding Equipment: www.nvfc.org

6.2.1 Fire apparatus shall be operated only by members who have successfully completed an approved driver training program commensurate with the type of apparatus the member will operate or by trainee drivers who are under the supervision of a qualified driver.

A.6.2.1 NFPA 1451, Standard for a Fire Service Vehicle Operations Training Program, can be used to meet the requirements of an "approved driver training program."

6.2.7 The fire department shall develop standard operating procedures for safely driving fire apparatus during non-emergency travel and emergency response and shall include specific criteria for vehicle speed, crossing intersections, traversing railroad grade crossings, the use of emergency warning devices, and the backing of fire apparatus.

Commentary

Anyone who operates fire department apparatus should be trained and qualified to operate said apparatus. Driver training must include operation guidelines for each type of fire department apparatus in both emergency and non-emergency situations. Each incident will dictate a certain response. The operator must understand the limitations of each piece of apparatus.

Departments can offer training at the station or work with a local, county, or state training academy. Partnerships with community colleges are also common.

Action Items

> Develop standard operating procedures for operating fire apparatus during non-emergency travel and during an emergency response.

> Offer vehicle operations training opportunities for members.

Resource Spotlight

Access the Emergency Vehicle Safe Operations program developed by the NVFC and the United States Fire Administration (USFA). This innovative educational program includes an emergency vehicle safety best practices self-assessment, standard operating guideline examples, and behavioral motivation techniques to enhance emergency vehicle safety: www.nvfc.org/hot-topics/health-and-safety/

Many insurance providers offer online and in-person courses dealing with driver training and emergency vehicle response. Check with your provider.

Access emergency vehicle safety resources through USFA: www.usfa.fema.gov/fireservice/

6.3 Riding in Fire Apparatus

6.3.1 All persons riding in fire apparatus shall be seated and belted securely by seat belts in approved riding positions at any time the vehicle is in motion other than as allowed in 6.3.4 and 6.3.5. Standing or riding on tail steps, sidesteps, running boards, or in any other exposed position shall be specifically prohibited.

A.6.3.1 It is intended that the requirements of Section 6.3 apply to all situations when persons or members are riding on fire apparatus other than for the specific variances in 6.3.4 and 6.3.5. Included in the "seated and belted" requirement is any time the fire apparatus is traveling to, participating in, or returning from any funeral, parade, or public relations/education event. Fire fighters cannot be allowed to ride on the outside of apparatus in order to fight wildland fires. The Fire Line Safety Committee (FLSC) of the National Wildfire Coordinating Group (NWCG) represents the U.S. Forest Service, Bureau of Land Management, Bureau of Indian

Affairs, Fish and Wildlife Agency, National Park Service, and National Association of State Foresters. Their position is that the practice of fire fighters riding on the outside of vehicles and fighting wildland fires from these positions is very dangerous, and they strongly recommend this not be allowed. One issue is the exposure to personnel in unprotected positions. Persons have been killed while performing this operation. Also, the vehicle driver's vision is impaired. The second issue is that this is not an effective way to extinguish the fire, as it can allow the vehicle to pass over or by areas not completely extinguished. Fire can then flare up underneath or behind the vehicle and could cut off escape routes. The FLSC and the NWCG strongly recommend that two fire fighters, each with a hose line, walk ahead and aside of the vehicle's path, both fire fighters on the same side of the vehicle (not one on each side), in clear view of the driver, with the vehicle being driven in uninvolved terrain. This allows the fire fighters to operate in an unhurried manner, with a clear view of fire conditions and the success of the extinguishment. Areas not extinguished should not be bypassed unless follow-up crews are operating behind the lead unit and there is no danger to escape routes or to personnel.

Commentary

All occupants riding in any fire department apparatus should be restrained by seatbelts in all approved riding positions. Seatbelts can reduce the risk of injury or death in the event of a collision.

Action Items

> Adopt and enforce a department seatbelt policy.

Resource Spotlight

Participate in the NVFC's Safety Tops Our Priorities (STOP) online training focusing on seatbelt use and vehicle safety: www.nvfc.org/training-education/courses/health-and-safety-training

Sign the National Fire Service and EMS Seatbelt Pledge: http://everyonegoeshome.com/seatbelts/

6.4 Inspection, Maintenance, and Repair of Fire Apparatus

6.4.1 All fire apparatus shall be inspected at least weekly, within 24 hours after any use or repair, and prior to being placed in service or used for emergency purposes, in order to identify and correct unsafe conditions.

A.6.4.1 The purpose of this paragraph is to ensure that all vehicles are inspected on a regular basis and checked for the proper operation of all safety features. This inspection should include tires, brakes, warning lights and devices, headlights and clearance lights, windshield wipers, and mirrors. The apparatus should be started, and the operation of pumps and other equipment should be verified. Fluid levels should also be checked regularly. Where apparatus is in regular daily use, these checks should be performed on a daily basis. Apparatus stored in unattended stations that might not be used for extended periods should be checked weekly. Any time such a vehicle is used, it should be checked before being placed back in service. The 24-hour reference provides for situations in which a vehicle can be used within the period preceding a scheduled inspection, although any deficiencies noted in use should be corrected without delay. The safety equipment carried on fire department vehicles should be inspected in conjunction with the inspection of the vehicle.

6.4.2 A preventive maintenance program shall be established, and records shall be maintained as specified in 4.6.5.

Commentary

Ensure that all fire department apparatus are inspected and maintained by qualified personnel to reduce the risk of mechanical failure and identify any mechanical deficiencies. Apparatus that is used infrequently should be inspected on a weekly basis. Apparatus enduring frequent use (at least once a day) should be inspected daily.

Action Items

> Develop a maintenance checklist and schedule for all pieces of fire apparatus and for the safety equipment carried on fire department vehicles.

7.1 Protective Clothing and Protective Equipment (General)

7.1.1 The fire department shall provide each member with protective clothing and protective equipment that is designed to provide protection from the hazards to which the member is likely to be exposed and is suitable for the tasks that the member is expected to perform.

A.7.1.1 The provision and use of protective clothing and protective equipment should include safety shoes, gloves, goggles, safety glasses, and any other items appropriate to the members' activities. This applies to all activities members are expected to perform, including non-emergency activities. The applicable regulations pertaining to industrial worker safety should be consulted to determine the need for protective equipment in non-emergency activities.

7.1.3 Structural fire-fighting protective clothing shall be cleaned at least every 6 months as specified in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles.

A.7.1.3 Inspection of protective coats and protective trousers should be conducted on a frequent basis by members to ensure the protective clothing's continued suitability for use. The fire department should inspect all protective clothing at least annually. The inspection should confirm the following:

1. All materials should be free from tears, embrittlement, and fraying.
2. Seams should be intact and show no signs of excessive wear.
3. Reflective trim should show no signs of abrasion or loss of reflectivity due to heat exposure.
4. All pockets, knee pads, and other accessory items should be firmly attached to the garment and show no signs of excessive wear.
5. Sleeve and pant cuffs should show no signs of fraying.
6. The entire garment should be free from excessive dirt and stains.
7. Where a fabric color change is noted, a condition that could be caused by high heat exposure or ultraviolet exposure, the entire area should be checked for loss of tear strength.

7.2 Protective Clothing for Structural Fire Fighting

7.2.1 Members who engage in or are exposed to the hazards of structural firefighting shall be provided with and shall use a protective ensemble that shall meet the applicable requirements of NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

A.7.2.1 The fire department should consider providing each member with two complete sets of structural fire-fighting protective clothing that meet the requirements of NFPA1971 whenever possible. It is not reasonable to expect that a fire department would have enough stock protective clothing available to all members in the event that the protective clothing became soiled, wet, or contaminated during daily activities. Fire fighters provided with two complete sets of structural fire-fighting protective clothing can change easily into proper-fitting garments and will not be unnecessarily exposed or expose the public to contaminants. Structural protective clothing that is cleaned properly and is completely dried before the next use will last longer and provide greater protection than soiled or damp garments.

Commentary

Fire department members should receive the proper PPE to provide protection from potentially hazardous exposure. Departments should establish a PPE cleaning schedule to reduce exposure to toxins. There are specific requirements on how PPE should be cleaned to ensure their protective qualities are preserved and that the resulting grey water is properly disposed of. All PPE requirements are spelled out in NFPA 1971 and can be accessed at www.nfpa.org/1971.

Some departments may not have the funds to provide all members with two sets of PPE that meet the requirements of NFPA 1971. Departments should take advantage of grant programs such as the Assistance to Firefighters Grants offered through FEMA to address PPE shortages. Additionally, some manufacturers may offer grant programs to assist departments.

Take steps to develop a replacement program with a funding structure to gradually replace PPE over time if the department is unable to replace everything at once.

Action Items

> Provide members with two sets of PPE that meet the requirements defined in NFPA 1971. Develop a PPE replacement program if the department does not currently possess the appropriate PPE.

> Regularly clean all PPE using the guidelines provided in NFPA 1971.

Resource Spotlight

View a NVFC webinar focusing on heat stress and PPE: www.nvfc.org

Apply for the Assistance to Firefighters Grant program to help fund PPE replacement: www.fema.gov/assistance-firefighters-grant

7.11.1 SCBA

7.11.1.1 All open-circuit SCBA that is purchased new shall be certified as compliant with NFPA 1981 and shall also be certified by NIOSH as compliant with NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Open Circuit Self-Contained Breathing Apparatus (SCBA).

Commentary

All members should be provided with the highest level of respiratory protection by using proper SCBA. The NFPA provides the requirements for SCBA in standard 1981: www.nfpa.org/1981.

SCBA units are tested and certified by recognized independent third party organizations such as the Safety Equipment Institute or Underwriter's Laboratories. Additionally, the testing of compressed gas cylinders, including those containing breathing air for SCBA, is regulated by the United States Department of Transportation.

Some departments may not have the funds to provide all members with SCBA that meet the requirements laid out in NFPA 1981. Departments should take advantage of grant programs such as the Assistance to Firefighters Grants offered through FEMA when seeking funding.

Action Items

> Provide members with SCBA that meets the requirements defined in NFPA 1981. Develop a SCBA replacement program if the department does not currently possess the appropriate SCBA.

Resource Spotlight

Read the USFA's report on preventing SCBA failures: www.usfa.fema.gov/downloads/pdf/publications/tr-088.pdf

7.15 Personal Alert Safety System (PASS)

7.15.1 PASS devices shall meet the requirements of NFPA 1982, Standard on Personal Alert Safety Systems (PASS).

A.7.15.1 Technology has provided the integration of PASS devices with SCBA. When the SCBA unit is activated to an operational mode, the PASS device is activated. Fire departments are encouraged to utilize this technology. The use of PASS devices should be coupled with a solid incident management system, a personnel accountability system, and adequate communications to properly ensure the safety of fire fighters.

7.15.2 Each member shall be provided with, use, and activate his or her PASS devices in all emergency situations that could jeopardize that person's safety due to atmospheres that could be IDLH, in incidents that could result in entrapment, in structural collapse of any type, or as directed by the incident commander or incident safety officer.

A.7.15.2 The mandatory use and operation of a PASS by firefighters involved in rescue, fire suppression, or other hazardous duty is imperative for their safety. The primary intent of this device is to serve as an audible device to warn fellow fire fighters in the event a firefighter becomes incapacitated or needs assistance. Past firefighter fatality investigation reports document the critical need to wear and operate PASS devices when fire fighters operate in hazardous areas. Investigation results show that firefighters most often failed to activate the PASS unit prior to entering a hazardous area. Training and operational procedures are imperative to ensure activation of the PASS whenever PASS devices are used.

7.15.3 Each PASS device shall be tested at least weekly and prior to each use and shall be maintained in accordance with the manufacturers' instructions.

Commentary

The use of PASS devices enhances the ability to locate a lost or incapacitated firefighter. All members should use an approved PASS device when operating in an atmosphere considered Immediately Dangerous to Life or Health (IDLH). PASS devices must meet the requirements laid out in NFPA 1982 and also must be tested in accordance with the manufacturer's instructions to ensure proper function. Read NFPA 1982 at: www.nfpa.org/1982.

Some departments may not have the funds to provide all members with PASS devices that meet the requirements laid out in NFPA 1982. Departments should take advantage of grant programs such as the Assistance to Firefighters Grants offered through FEMA to help with budget shortfalls. Always be sure to check with the manufacturer to see if they offer any assistance or grant programs.

Action Items

> Provide members with PASS devices that meet the requirements defined in NFPA 1982. Develop a PASS replacement program if the department does not currently possess the appropriate devices.

> Train members on how to activate PASS devices. Check with the manufacturer for training resources.

> Test each PASS device weekly and prior to each use according to the manufacturer's instructions.

8.1 Incident Management

8.1.1 Emergency operations and other situations that pose similar hazards, including but not limited to training exercises, shall be conducted in a manner that recognizes hazards and prevents accidents and injuries.

8.1.2 An incident management system that meets the requirements of NFPA 1561, Standard on Emergency Services Incident Management System, shall be established with written standard operating procedures applying to all members involved in emergency operations.

8.1.3 The incident management system shall be utilized at all emergency incidents.

8.1.4 The incident management system shall be applied to drills, exercises, and other situations that involve hazards similar to those encountered at actual emergency incidents and to simulated incidents that are conducted for training and familiarization purposes.

Commentary

An incident management system (IMS) should be used at all incidents to reduce confusion and provide organization to a potentially chaotic situation. An IMS also helps to ensure that all fire departments following the National Incident Management System (NIMS) are accountable, have the proper allocation of resources, and promote member safety.

Visit www.nfpa.org/1561 to identify the requirements of an incident management system.

Action Items

> Develop a written standard operating procedure that establishes an incident management system that meets the requirements laid out in NFPA 1561.

> Train department personnel on the department's incident management system during drills, exercises, and other simulated situations.

Resource Spotlight

Access web-based incident management system training though the National Fire Academy: www.usfa.fema.gov/nfa/nfaonline/

8.3 Risk Management During Emergency Operations

8.3.1 The incident commander shall integrate risk management into the regular functions of incident command.

A.8.3.1 The incident commander has the ultimate responsibility for the safety of all fire department members operating at an incident and for any and all other persons whose safety is affected by fire department operations. Risk management provides a basis for the following:

1. Standard evaluation of the situation
2. Strategic decision making
3. Tactical planning
4. Plan evaluation and revision
5. Operational command and control

8.3.2 The concept of risk management shall be utilized on the basis of the following principles:

1. Activities that present a significant risk to the safety of members shall be limited to situations where there is a potential to save endangered lives.
2. Activities that are routinely employed to protect property shall be recognized as inherent risks to the safety of members, and actions shall be taken to reduce or avoid these risks.
3. No risk to the safety of members shall be acceptable when there is no possibility to save lives or property.
4. In situations where the risk to fire department members is excessive, activities shall be limited to defensive operations.

A.8.3.2 The risk to fire department members is the most important factor considered by the incident commander in determining the strategy that will be employed in each situation. The management of risk levels involves all of the following factors:

1. Routine evaluation of risk in all situations
2. Well-defined strategic options
3. Standard operating procedures
4. Effective training
5. Full protective clothing ensemble and equipment
6. Effective incident management and communications
7. Safety procedures and safety officers
8. Backup crews for rapid intervention
9. Adequate resources
10. Rest and rehabilitation
11. Regular evaluation of changing conditions
12. Experience based on previous incidents and critiques

8.3.3 The incident commander shall evaluate the risk to members with respect to the purpose and potential results of their actions in each situation.

A.8.3.3 The acceptable level of risk is directly related to the potential to save lives or property. Where there is no potential to save lives, the risk to fire department members should be evaluated in proportion to the ability to save property of value. When there is no ability to save lives or property, there is no justification to expose fire department members to any avoidable risk, and defensive fire suppression operations are the appropriate strategy.

Commentary

The incident commander is responsible for all activities at a scene, including the development of strategies and tactics and the order and release of resources. The incident commander should incorporate risk management practices to minimize the potential for harm at an emergency incident. Understanding that the incident itself is inherently risky, the incident commander must use all available resources to ensure the safety of all members by developing a strategy during an emergency response situation by determining an acceptable level of risk.

The incident commander should evaluate the scene. If the incident requires an offensive response, the incident commander must then make a continuous risk assessment of the situation and determine how to proceed. Situations that present significant risk to emergency responders should be limited to incidents where there is the potential to save endangered lives. Those activities routinely used to protect property should be recognized as inherent risks to members' safety, and actions taken at the scene should attempt to reduce or avoid these risks. The safety of members should not be compromised in any way if there is no possibility of saving lives or property.

Action Items

> Offer training opportunities for the incident commander.

> Integrate risk management into the regular functions of incident command.

Resource Spotlight

Access web-based incident management system training though the National Fire Academy: www.usfa.fema.gov/nfa/nfaonline/

An article from Fire Engineering provides an Incident Commander Checklist: www.fireengineering.com/articles/print/volume-162/issue-8/features/incident-commander-checklist-a-quick-reference-guide.html

10.1 Medical Requirements

10.1.1 Candidates shall be medically evaluated and qualified for duty by the fire department physician.

10.1.2 Medical evaluations shall take into account the risks and the functions associated with the individual's duties and responsibilities.

10.1.3 Candidates and members who will engage in fire suppression shall meet the medical requirements specified in NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments.

Commentary

This section calls for all members to be physically fit and capable enough to perform duties as assigned and establishes the requirement for a fire department physician to conduct medical evaluations. The standard dictates that the physician should be familiar with the department and knowledgeable of the job and conditions members are regularly exposed to. These medical evaluations are different than the annual physicals conducted by primary care physicians and are often more in depth.

Some departments may not be able to fulfill these requirements due to funding issues. Nevertheless, it is important to take steps to ensure the health of department members. Reach out to a local hospital or medical practice to implement a partnership if having a department physician is unattainable. Medical professionals may be willing to assist first responders at low or no cost. Another option is to require members to receive annual physicals from personal physicians.

It is important to remember that conducting physicals is essential in evaluating the health of department members. Accessing medical services separate from the department is better than avoiding the process altogether.

Action Items

> Have each member receive a medical evaluation conducted by a fire department physician (if possible).

> Identify, and develop a partnership with, a health provider to conduct medical evaluations in the absence of a fire department physician when necessary.

10.2 Physical Performance Requirements

10.2.1 The fire department shall develop physical performance requirements for candidates and members who engage in emergency operations.

A.10.2.1 Fire departments should consider use of the recruiting, mentoring, and training process found in the physical performance requirements referenced in the IAFF/IAFC Candidate Physical Ability Test (CPAT) Manual.

10.2.2 Candidates shall be qualified as meeting the physical performance requirements established by the fire department prior to entering into a training program to become a fire fighter.

Commentary

Physical performance requirements help to ensure that candidates and members are physically able to engage in emergency response activities. The fire department must make sure that anyone engaging in these activities is physically able to do so. Physical performance requirements reduce the potential for injury and even death.

The Candidate Physical Ability Test (CPAT) performance requirements may be difficult for some departments to implement. It is important to take steps toward adopting a culture of health and wellness; even if those efforts do not result in total CPAT compliance. The ultimate goal is improved health and physical fitness. Departments can develop a fitness program and/or adopt healthy eating habits and meal plans to work toward this goal. Leadership can set an example for the rest of the department by adopting lifestyle changes and challenging members to do the same.

Action Items

> Develop physical performance requirements for candidates and members who engage in emergency operations.

Resource Spotlight

Make fitness fun with the Fired Up for Fitness Challenge: www.healthy-firefighter.org/firefighters/fuff

10.3 Health and Fitness

10.3.1 The fire department shall establish and provide a health and fitness program that meets the requirements of NFPA 1583, Standard on Health-Related Fitness Programs for Fire Fighters, to enable members to develop and maintain a level of fitness that allows them to safely perform their assigned functions.

10.3.2 The maintenance of fitness levels specified in the program shall be based on fitness standards determined by the fire department physician that reflect the individual's assigned functions and activities and that are intended to reduce the probability and severity of occupational injuries and illnesses.

Commentary

A health and fitness program helps members maintain physical fitness and safely perform their duties. Departments must be aware of each member's limitations. A department health and fitness program will provide members with the opportunity to stay in peak physical condition and also reduce the likelihood of injury due to a lack of physical activity.

Action Items

> Develop a department health and fitness program that meets the requirements laid out in NFPA 1583.

> Work with a physician to determine appropriate fitness levels for each member based on their assigned duties.

Resource Spotlight

Participate in the NVFC's Health and Wellness Advocate training program: www.nvfc.org/training-education/courses/health-and-safety-training

Checklist: NFPA 1500*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Risk Management				
4.2.2 Develop a risk management plan for the following:				
Administration				
Facilities				
Training				
Vehicle operations, both emergency and non-emergency				
Protective clothing and equipment				
Operations at emergency incidents (see Annex C)				
Operations at non-emergency incidents				
Other related activities				
4.2.3 Risk management plan shall include (see Annex D)				
Risk identification — actual and potential hazards				
Risk evaluation — likelihood of occurrence of a given hazard and severity of its consequences				
Establishment of priorities for action — the degree of a hazard based upon the frequency and risk of occurrence				
Risk control techniques — solutions for elimination or mitigation of potential hazards; implementation of best solution				
Risk management monitoring — evaluation of effectiveness of risk control techniques				

**This checklist coincides with the sections highlighted in this guide. Visit www.nfpa.org to view the standard in its entirety.*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Safety and Health Policy				
4.3.1 Adopt a written departmental occupational safety and health policy for the prevention and elimination of accidents and occupational injuries, exposures to communicable disease, illnesses, and fatalities.				
4.3.2 Provide members an occupational safety and health program that complies with this standard.				
Training, Education, Professional Development				
5.1.1 Establish and maintain a training, education, and professional development program with a goal of occupational deaths, injuries, and illnesses.				
5.1.2 Provide training, education, and professional development for all department members commensurate with and functions that they are expected to perform.				
5.1.3 Establish training and education programs that provide new members initial training, proficiency opportunities, and a method of skill and knowledge evaluation for duties assigned to the member prior to engaging in emergency operations.				
5.2.1 Members engaged in structural fire fighting meet NFPA 1001, Standard for Fire Fighter Professional Qualifications.				
5.2.2 Driver/operators meet NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
5.2.4 Fire officers meet NFPA 1021, Standard for Fire Officer Professional Qualifications.				
5.2.5 Wildland fire fighters meet NFPA 1051, Standard for Wildland Fire Fighter Professional Qualifications.				
Fire Department Apparatus				
6.1.1 Safety and health as primary concerns in the specification, design, construction, acquisition, operation, maintenance, inspection, and repair of all fire department apparatus.				
6.1.1.1 Restraint devices for fire apparatus, including those restraint devices for emergency medical service (EMS) members operating in the patient compartment of the ambulance.				
6.1.5* Tools, equipment, or respiratory protection within enclosed seating areas of fire apparatus or the patient compartment of an ambulance, secured by either a positive mechanical means of holding the item in its stowed position or by placement in a compartment with a positive latching door.				
6.2.1 Fire apparatus operated only by members who have successfully completed an approved driver training program commensurate with the type of apparatus the member will operate.				

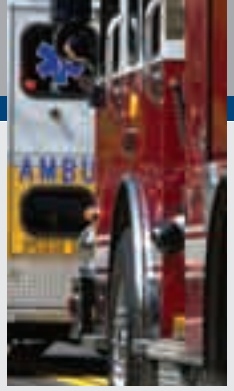
Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
6.2.7SOPs for safely driving fire apparatus during non-emergency travel and emergency response to include				
Vehicle speed				
Crossing intersections				
Traversing railroad grade crossings				
Use of emergency warning devices				
Backing of fire apparatus.				
6.3.1 All persons riding in fire apparatus shall be seated and belted securely by seat belts in approved riding positions at any time the vehicle is in motion				
Standing or riding on tail steps, sidesteps, running boards, or in any other exposed position prohibited.				
6.4.1 All fire apparatus inspected, maintained, and tested in accordance with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus.				
6.4.2 Fire pumps service tested in accordance with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus.				
Protective Clothing and Protective Equipment				
7.1.1 Each member provided protective ensembles, ensemble elements, and protective equipment designed to provide protection from hazards to which the member is likely to be exposed and that is suitable for the tasks the member is expected to perform.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
7.1.3 Structural fire-fighting and proximity fire-fighting protective ensembles and elements cleaned per NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles.				
7.2.1 Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and use a protective ensemble that meets NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.				
7.11.1.1 All new Open-circuit SCBA shall be certified as compliant with NFPA 1981 and NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Open Circuit Self-Contained Breathing Apparatus (SCBA).				
7.15.1 PASS devices shall meet the requirements of NFPA 1982, Standard on Personal Alert Safety Systems (PASS).				
7.15.3 Each member shall be provided with, use, and activate his or her PASS devices in all emergency situations that could jeopardize that person's safety due to atmospheres that could be IDLH, in incidents that could result in entrapment, in structural collapse of any type, or as directed by the incident commander or incident safety officer.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Incident Management.				
8.1.1 Emergency operations and other situations that pose similar hazards, including but not limited to training exercises, shall be conducted in a manner that recognizes hazards and prevents accidents and injuries.				
8.1.2 Written SOP established for all members to use incident management system that meets the requirements of NFPA 1561, Standard on Emergency Services Incident Management System during emergency incidents.				
8.1.3 The incident management system is utilized at all emergency incidents.				
8.1.4 The incident management system shall be applied to drills, exercises, and other situations that involve hazards.				
8.3.1 The incident commander shall integrate risk management into the regular functions of incident command.				
8.3.2 Risk management shall be utilized on the basis of the following principles:				
• (1) Activities that present a significant risk to the safety of members shall be limited to situations where there is a potential to save endangered lives.				
•(2) Activities that are routinely employed to protect property shall be recognized as inherent risks to the safety of members, and actions shall be taken to reduce or avoid these risks.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
• (3) No risk to the safety of members shall be acceptable when there is no possibility to save lives or property.				
• (4) In situations where the risk to fire department members is excessive, activities shall be limited to defensive operations.				
8.3.3 The incident commander shall evaluate the risk to members with respect to the purpose and potential results of their actions in each situation.				
Medical				
10.1.1 Candidates shall be medically evaluated and qualified for duty by the fire department physician.				
10.1.2 Medical evaluations take into account the risks and the functions associated with the individual's duties and responsibilities.				
10.1.3 Candidates and members who will engage in fire suppression meet the medical requirements specified in NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments.				
10.2.1 Develop physical performance requirements for candidates and members who engage in emergency				
10.2.2 Candidates are qualified as meeting the physical performance requirements established by the fire department prior to entering into a training program to become a fire fighter.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
10.3.1 Establish and provide a health and fitness program per NFPA 1583, Standard on Health-Related Fitness Programs for Fire Department Members, to enable members to develop and maintain a level of fitness that allows them to safely perform their assigned functions.				
10.3.2 Maintenance of fitness levels shall be based on fitness standards determined by the fire department physician that reflect the individual's assigned functions and activities and that are intended to reduce the probability and severity of occupational injuries and illnesses.				



NFPA 1720 Standard on Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments

2010 Edition

The first edition of NFPA 1720 Standard for the *Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments* was issued in 2001. When issued, the standard was the first organized approach to defining levels of service, deployment capabilities, and staffing levels for volunteer fire departments. Research work and empirical studies in North America were used by the Committee as a basis for developing response times and resource capabilities for the services identified by the fire department.

Following the issuance of the first edition, the NFPA Standards Council asked the Technical Committee to begin the revision process for a 2004 edition. The Committee reviewed and revised the first edition of NFPA 1720. A new section on community risk management was added, as was an annex titled "Risk Management Model." New sections were also added on "reporting requirements" and "initial attack." Annex material that included extracted figures from NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, was added to assist users in determining if service calls were being handled properly.

The 2010 edition of NFPA 1720 standardizes and refines the terminology and definitions used in the document. The requirement that the fire department have the capability to initiate an attack within 2 minutes of having necessary resources at the scene in remote areas was made applicable to all operations. Additionally, a new section on sustained firefighting operations was added.

The work done by the Committee provided the user with a template for developing an implementation plan on the standard. Most importantly, it provided the body politic and the citizens a true picture of potential risks and the fire department's capabilities to respond to and manage those risks.

NOTE: The following text and checklist represents extracted sections of the Standard and commentary on those sections. 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.

To view the current edition in its entirety, visit www.nfpa.org/1720.

NFPA 1720 Highlights

1.1 Scope. This standard contains minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by volunteer and combination fire departments.

Commentary

NFPA 1720 applies to combination and volunteer fire departments. The definitions for combination and volunteer fire departments are:

Combination Fire Department: A fire department having emergency service personnel comprising less than 85 percent majority of either volunteer or career membership.

Volunteer Fire Department: A fire department having volunteer emergency service personnel comprising 85 percent or greater of its department membership.

1.2 Purpose.

1.2.1 The purpose of this standard is to specify the minimum criteria addressing the effectiveness and efficiency of the volunteer and combination public fire suppression operations,

emergency medical service, and special operations delivery in protecting the citizens of the jurisdiction.

Commentary

NFPA 1720 contains minimum requirements for providing services to the community. The community can choose to apply stricter standards if desired.

4.1 Fire Suppression Organization. Fire suppression operations shall be organized to ensure that the fire department's fire suppression capability includes sufficient personnel, equipment, and other resources to deploy fire suppression resources efficiently, effectively, and safely.

A.4.1 Suppression capability is an expression of how much firefighting power can be put into action at a fire. It includes the amount of apparatus, equipment, and personnel available; the time needed to respond and place equipment in action; the water supply; the application of strategy and tactics; the level of training; and all of the components that add up to effective fireground operations.

Commentary

It is important that the fire department has the personnel and equipment necessary to adequately carry out its mission.

Action Items

> Identify the services provided by the department and ensure there are sufficient personnel, equipment, and other resources to deploy fire suppression resources efficiently, effectively, and safely.

Resource Spotlight

Address staffing needs through recruitment and retention efforts: http://www.nvfc.org/hot-topics/retention-and-recruitment

4.1.1 The authority having jurisdiction (AHJ) shall promulgate the fire department's organizational, operational, and deployment procedures by issuing written administrative regulations, standard operating procedures (SOPs), and departmental orders.

A.4.1.1 Departmental regulations and operating procedures and orders should be developed for the purpose of ensuring uniformity and effectiveness in department actions and operations. These procedures should be published and circulated to all members, and training should be provided whenever major changes or additions are made. A system should be established that requires each member to read and acknowledge existing and revised regulations and procedures. Such procedures should cover matters not subject to frequent changes and should be reviewed at least annually to ensure that they are current. All members should have access to the system of orders and directives that relate to their unit. Orders should be reviewed periodically by company officers during company meetings or training sessions. The departmental procedures should specify the channels through which orders are to be transmitted. All orders should pass through the established chain of command and should be acknowledged. The chain of command also should be followed, in reverse order, for reports and other communications from units to headquarters.

Commentary

The department must adopt official policies establishing the organization, identifying the organization's chain of command, recognizing its routine and emergency operations, planning for deployment of resources, etc. These policies can be set by administrative regulations, SOP's/SOG's, orders, or ordinances. Their level of complexity and approval will depend on the task or topic being discussed. The organization and chain of command may need to be established by a town ordinance, while other items such as setting a policy on personal protective clothing are easily handled by a SOP/SOG. ee NFPA 1201 and 1500 for guidance: www.nfpa.org/1201 and www.nfpa.org/1500.

Action Items

> Develop departmental regulations, operating procedures, and orders for the department. Publish and circulate these policies to all members and host training when necessary to provide clarification or institute a change.

> Establish a chain of command and determine how orders should be transmitted and processed.

> Review orders periodically during company meetings and/or training sessions.

Resource Spotlight

Access sample SOG and SOPs and development tips at www.nvfc.org/hot-topics/health-and-safety/standards-and-codes and www.volunteerfd.org/

4.2 Community Risk Management. The fire department shall participate in a process that develops a community fire and emergency medical services risk management plan.

A.4.2 In many communities, the fire department is assigned primary responsibility for the management of hazardous materials emergencies. In some cases, this includes regulatory responsibilities to identify and minimize risks to the community resulting from the storage, use, transportation, and disposal of hazardous materials. (See 29 CFR 1910.120.) The process used to plan response to these emergencies is also a viable tool for planning response (e.g., fire suppression, EMS, and technical rescue) to other risks within the community. The planning process should be coordinated with community and private sector planning processes that are implemented to meet legal requirements. The resulting comprehensive emergency management plan (CEMP) should be developed by the local emergency planning committee (LEPC) and exercised at least annually. The CEMP should include evacuation plans, intervention strategies, sources of expertise, and specialized assistance and disposal plans. The planning process should identify clearly the AHJ for command responsibility during hazardous materials incidents and other emergency responses to incidents within the community. Disaster planning should be coordinated at all levels of government in anticipation of large-scale emergencies. Legislation or legal restrictions could establish the overall controlling authority in disaster operations. All planning and activity should occur within the framework of these restrictions. (See Annex **B**.) NFPA 1600 is a document that provides additional information to assist users in preparing for, responding to, and mitigating disasters in their jurisdictions. In addition, it covers federal, state, and local disaster agencies' roles and responsibilities within a comprehensive planning process. See NFPA 1250, which provides additional information and tools to assist in the risk management process.

Commentary

Drafting a community risk management plan is a way for the community and the department to identify potential risks, hazards, and vulnerable populations located within the department's jurisdiction, and to determine what protection measures and resources are needed to mitigate these risks. A risk assessment helps to focus the fire prevention/loss prevention activities of the community and department.

Action Items

Work with community officials and planners to complete a risk assessment.

> Identify potential risks.

> Identify the necessary protection measures.

> Identify the necessary resources to mitigate the risks.

Resource Spotlight

The Center for Public Safety Excellence offers an advanced course on community risk/standard of cover: www.publicsafetyexcellence.org/

The USFA published an applied research project from the National Fire Academy's Executive Fire Officer's Program developing a risk assessment worksheet: www.usfa.fema.gov/pdf/efop/efo35555.pdf

4.3. Staffing and Deployment

4.3.1 The fire department shall identify minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively.

Commentary

The department should list the services they provide and then identify the number of personnel needed to perform each task for all likely emergencies. The National Institute of Standards and Technology (NIST) Technical Note 1661 Report on Residential Fireground Field Experiments and NFPA 1710 5.2.4.2.2 (below) provide a good baseline for the tasks needed to be performed for a residential fire.

The initial full alarm assignment to a structure fire in a typical 2000 ft² (186 m²), two-story single-family dwelling without basement and with no exposures shall provide for the following:

1. Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment with a minimum of one individual dedicated to this task
2. Establishment of an uninterrupted water supply of a minimum of 400 gpm (1520 L/min) for 30 minutes with supply line(s) maintained by an operator
3. Establishment of an effective water flow application rate of 300 gpm (1140 L/min) from two handlines, each of which has a minimum flow rate of 100 gpm (380 L/min) with each handline operated by a minimum of two individuals to effectively and safely maintain the line
4. Provision of one support person for each attack and backup line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry
5. Provision of at least one victim search and rescue team with each such team consisting of a minimum of two individuals
6. Provision of at least one team, consisting of a minimum of two individuals, to raise ground ladders and perform ventilation
7. If an aerial device is used in operations, one person to function as an aerial operator and maintain primary control of the aerial device at all times
8. Establishment of an IRIC consisting of a minimum of two properly equipped and trained individuals

Action Items

> Identify minimum staffing requirements to ensure safety and effectiveness when responding to emergencies.

4.3.2 Table 4.3.2 shall be used by the AHJ to determine staffing and response time objectives for structural firefighting, based on a low-hazard occupancy such as a 2000 ft² (186 m²), two-story, single-family home without basement and exposures and the percentage accomplishment of those objectives for reporting purposes as required in 4.2.2.

Table 4.3.2 Staffing and Response Times

A. 4.3.2 Table 4.3.2 outlines demographic areas, as defined by the U.S. Census Bureau; staffing and deployment requirements; and fractal measurements. The suburban area is based on the requirements provided in the report by the Ontario Fire Marshal's Office, Shaping the Future of Fire Ground Staffing and Delivery Systems within a Comprehensive Fire Safety Effectiveness Model, a report referenced in NFPA 1710, as well. This requirement must be met 80 percent of the time. Rural areas have a lower population density and require six people (two in/two out plus the incident commander and pump operator), a requirement that is derived from the country-UK standards of fire cover and must be met 80 percent of the time. The remote areas reference the OSHA "two in/two out" requirement and the assembly of four persons 90 percent of the time. Travel distances are varied and can be computed utilizing the ISO travel formula. This travel formula is as follows:

$1.7 \times \text{distance} + 0.65 = \text{travel time}$

For evaluation of response time objectives based on **Table 4.3.2**, the fire department needs to record the number of members on the scene at the end of the response time given in the table for each incident. For example, in an urban area, the fire department would record the number of members on scene 9 minutes after the completion of the dispatch notification. They would then determine how many times they had at least 15 members on scene within that 9-minute time interval and calculate a percentage based on the total calls in urban areas. To meet the objective defined in this standard for an urban area, they would need to assemble at least 15 members within 9 minutes for 90 percent of the incidents.

Staffing and Response Times

Demand Zone[aaa]	Demographics	Minimum Staff[b]	Response Time[c]	Meets Objective
Urban area	>1000 people/mi²	15	9	90%
Suburban area	500–1000 people/mi²	10	10	80%
Rural area	<500 people/mi²	6	14	80%
Remote area	Travel distance ≥ 8 m	4	Directly dependent on travel distance	90%
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90%

[a] *A jurisdiction can have more than one demand zone.*
[b] *Minimum staffing includes members responding from the AHJs department and automatic aid.*
[c] *Response time begins upon completion of the dispatch*

3.3.11 Demand Zones: An area used to define or limit the management of a risk situation.

3.3.4.1 Remote Area: A geographic area that requires a travel distance of at least 8 miles from a fire station to provide emergency services.

3.3.4.2 Rural Area: As defined by the U.S. Census Bureau, an area with fewer than 500 people per square mile.

3.3.4.3 Suburban Area: As defined by the U.S. Census Bureau, an area with between 500 people and 1000 people per square mile.

3.3.4.4 Urban Area: As defined by the U.S. Census Bureau, an area with at least 1000 people per square mile.

Commentary

Numerous demand zones (an area used to define or limit the management of a risk situation) may exist within the department's response area. The department must first determine where each demand zone is located, and then evaluate their current response capabilities. If there are shortfalls to the minimum response personnel and response times shown in Table 4.3.2, then the department should take steps to identify ways to address them and improve their response capabilities.

Action Items

> Identify the location of demand zones in the department's jurisdiction.

> Evaluate the department's current response capability for each demand zone.

> Develop a plan to address any shortfalls with regard to personnel numbers and response times if necessary.

4.3.3 Upon assembling the necessary resources at the emergency scene, the fire department shall have the capability to safely commence an initial attack within 2 minutes 90 percent of the time.

Commentary

Response time is critical when dealing with emergencies. Departments with staffing challenges may not be able to begin the initial attack two minutes after arriving on the emergency scene. Set a goal to begin the initial attack within two minutes 90 percent of the time and work to become more efficient during training drills. Staffing challenges should be addressed by being aggressive with recruitment and retention efforts. The NVFC offers recruitment and retention tips and resources at www.nvfc.org.

4.3.4 Personnel responding to fires and other emergencies shall be organized into company units or response teams and shall have required apparatus and equipment.

A.4.3.4 The AHJ should determine the number and type of fire company units to be provided. All personnel except those assigned to staff or support units or those serving as chief officers should be assigned to a specific company unit. The fire chief's responsibility is to ensure that the best use is made of personnel and equipment. See NFPA 1561 for additional information.

4.4.2. Annual Evaluation

4.4.2.1 The fire department shall evaluate its level of service, deployment delivery, and response time objectives on an annual basis.

Action Items

> Set-up an annual evaluation schedule to review the department's level of service, deployment delivery, and response time objectives.

4.4.3 Quadrennial Report. The fire department shall provide the AHJ with a written report, quadrennially, which shall be based on the annual evaluations required by 4.4.2.

Commentary

Compiling a quarterly report allows the department and the jurisdiction authority to compare results with the service objectives outlined in 4.4.2.1. A department can be more proactive if their service delivery objectives are reviewed on a frequent basis. Issues that could affect response such as a bridge out, new development, etc. should be examined when they occur to ensure service objectives can still be met or to determine how a response should be modified.

Action Items

> Provide the department's authority having jurisdiction with a quarterly report based on annual evaluations. Compare the findings with the department's previously determined service objectives to measure progress.

Checklist: NFPA 1720*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Organization, Operation, and Deployment				
4.1 Fire suppression operations shall be organized to ensure that the fire department's fire suppression capability includes sufficient personnel, equipment, and other resources to deploy fire suppression resources efficiently, effectively, and safely.				
4.1.1 AHJ promulgate the fire department's organizational, operational, and deployment procedures by issuing written administrative regulations, standard operating procedures (SOPs), and departmental orders.				
4.2 Fire department participates in a process that develops a community fire and emergency medical services risk management plan.				
Staffing and Deployment				
4.3.1 Fire department identifies minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively.				
4.3.2 Staffing and response time objectives for structural fire fighting, based on a low-hazard occupancy such as a 2000 ft2 (186 m2), two-story, single-family home without basement and exposures and the percentage accomplishment of those objectives for reporting purposes as required in Table 4.3.2 and 4.4.2.				

**This checklist coincides with the sections highlighted in this guide. Visit www.nfpa.org to view the standard in its entirety.*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
4.3.3 Have the capability to safely commence an initial attack within 2 minutes 90 percent of the time upon assembling necessary resources.				
4.3.4 Personnel responding to fires and other emergencies are organized into company units or response teams and shall have required apparatus and equipment.				
Annual Evaluation				
4.4.2.1 Fire department evaluates its level of service, deployment delivery, and response time objectives on an annual basis.				
4.4.3 Provides the AHJ with a written report, quadrennially, which shall be based on the annual evaluations required by 4.4.2.				

NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Firefighting

2008 edition

The first edition of NFPA 1851, written in 2001, was titled *Standard on the Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles*, and was developed to be a companion document for NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting. NFPA 1971, which has been in effect since 1975, specifies product design, performance, testing, and certification. NFPA 1971 is written for use by manufacturers to design and produce their products and by certification organizations to evaluate and test those products to determine compliance. While NFPA 1971 is primarily written for those groups, the standard is also used by fire departments and other organizations when developing purchase specifications for structural firefighting protective ensembles and ensemble elements.

NFPA1851 is written for organizations that identify specific needs for protective clothing, develop purchase specifications, and/or purchase structural firefighting protective ensembles and ensemble elements. It is also written for end users of structural firefighting protective ensembles and ensemble elements to be able to inspect, maintain, and care for the protective ensembles and elements they use during structural firefighting operations.

NFPA 1851 provides criteria for the selection, care, and maintenance of protective ensembles and ensemble elements. The 2008 edition is being used for this guide and was approved as an American National Standard on June 24, 2007. This edition is a complete revision of the original and was expanded to include both structural firefighting ensembles and proximity firefighting ensembles. It also follows the new format outlined by the *Manual of Style for NFPA Technical Committee Documents.*

NOTE: The following text and checklist represents extracted sections of the Standard and commentary on those sections. 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.

To view the current edition in its entirety, visit www.nfpa.org/1851.

NFPA 1851 Highlights

1.1 Scope

1.1.1 This standard shall specify the minimum selection, care, and maintenance requirements for structural firefighting protective ensembles and the individual ensemble elements that include garments, helmets, gloves, footwear, and interface components that are compliant with NFPA 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

Commentary

NFPA 1851 specifies the minimum selection, care, and maintenance requirements for structural firefighting protective ensembles and proximity firefighting ensembles, as well as structural and proximity firefighting protective ensembles with optional chemical, biological, radiological, and nuclear (CBRN) protection. NFPA 1851 does not apply to protective ensembles or clothing that must be compliant with other NFPA standards on technical rescue, wildland, vapor-protective ensembles for hazmat operations, liquid-splash protective for hazmat operations, CBRN terrorism incidents, and emergency medical operations.

1.2 Purpose

1.2.1 The purpose of this standard shall be to establish a program for structural firefighting protective ensembles and ensemble elements and for proximity firefighting protective ensembles and ensemble elements to reduce the safety risks and potential health risks associated with poorly maintained, contaminated, or damaged protective ensembles and ensemble elements.

3.3 General Definitions

3.3.10 Certification/Certified: A system whereby a certification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of a specific standard(s), authorizes the manufacturer to use a label on listed products that comply with the requirements of that standard(s), and establishes a follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine continued compliance of labeled and listed products with the requirements of that standard(s).

Commentary

NFPA 1851 states that a certification organization is responsible for determining if a manufacturer has produced a product that complies with the standard. In addition, the certification body authorizes the manufacturer to label their products accordingly and establishes a procedure to follow-up with the manufacturer to verify continued compliance.

3.3.13 Cleaning: The act of removing soils and contaminants from ensembles and ensemble elements by mechanical, chemical, thermal, or combined processes.

Commentary

Cleaning involves removing soils and contaminants from ensembles and ensemble elements by mechanical, chemical, thermal, or combined processes. There are four types of cleaning: advanced, contract, routine, and specialized:

- Advanced cleaning involves the thorough cleaning of ensembles or elements by washing with cleaning agents.
- Contract cleaning is done by an outside facility that specializes in the cleaning of protective clothing.
- Routine cleaning usually begins at the fire scene by brushing off dry debris. It also includes spot cleaning using water and a soft bristle brush.
- Specialized cleaning is done to remove hazardous materials or body fluids.

3.3.49 Independent Service Provider (ISP): An independent third party utilized by an organization to perform any one or any combination of advanced inspection, advanced cleaning, or repair services.

4.1 Program (General)

4.1.1 The organization shall develop and implement a program for the selection, care, and maintenance of structural firefighting ensembles and ensemble elements and proximity firefighting ensembles and ensemble elements used by the members of the organization in the performance of their assigned functions.

A.4.1.1 NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and NFPA 1581, Standard on Fire Department Infection Control Program, also provide requirements and information on cleaning and decontamination. Protective ensembles and ensemble elements are important tools that enable fire fighters to perform their jobs in a safe and effective manner. Organizations need to recognize that these items do not have an indefinite life span and that regular inspections are a necessary part of any protective equipment program.

Commentary

The standard requires that an organization develop and implement a program for the selection, care, and maintenance of structural and proximity firefighting ensembles. NFPA 1500 also provides additional information on cleaning and decontamination. The important thing to remember here is that special items such as structural and proximity firefighting protective clothing ensembles are subject to many stressors and do not have an extended life span. Regular inspections are an essential part of any selection, care, and maintenance program.

Action Items

> Develop and implement a program for the selection, care, and maintenance of structural and proximity firefighting ensembles.

> Conduct regular inspections of structural and proximity firefighting ensembles.

Resource Spotlight

Learn more about the types of firefighting ensembles and determine what is needed for your department: www.ppe101.com/

Inspect and maintain structural and proximity firefighting ensembles with the NVFC's downloadable, customizable equipment management template: www.nvfc.org/hot-topics/health-and-safety/safety/equipment-resources

5.1 Selection and Purchase

5.1.1 Prior to starting the selection process of structural firefighting ensembles and ensemble elements and proximity firefighting ensembles and ensemble elements, the organization shall perform a risk assessment.

A.5.1.1 In general, some hazards that can be encountered include, but are not limited to, physical, environmental, thermal, chemical, biological, electrical, radiation, operational, and ergonomic hazards. The organization should also consider the frequency and severity of the identified hazards when conducting the risk assessment. The safety officer is the logical individual to perform this function since that is his or her role in the organization. The safety officer should consider national trends when performing this task. NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, substantiates OSHA's regulations as follows:

1. Section 4.3: Mandatory evaluation of safety and health programs
2. Subsection 4.4.2: Mandatory compliance with state and federal laws
3. Section 4.7: Safety officer's responsibilities also defined in NFPA 1521, *Standard for Fire Department Safety Officer*
4. Section 7.1: Requirements for ensembles and ensemble elements

In the identification of hazards, the organization should consider those hazards that fire fighters are likely to encounter. A list of hazards is provided in Table A.5.1.1. In determining risk, the organization should consider the frequency or likelihood of exposure to the hazard along with its potential severity (consequence) if exposure occurs.

Table A.5.1.1 List of Potential Fire Ground & Other Related Emergency Hazards

Physical Hazards
- Falling objects
- Flying debris
- Projectiles or ballistic objects
- Abrasive or rough surfaces
- Sharp edges
- Pointed objects
- Slippery surfaces
- Excessive vibration

Environmental Hazards
- High heat and humidity
- Ambient cold
- Wetness
- High wind
- Insufficient or bright light
- Excessive noise

Thermal Hazards
- High convective heat
- Low radiant heat
- High radiant heat
- Flame impingement
- Steam
- Hot liquids
- Molten metals
- Hot solids
- Hot surfaces

Biological Hazards
- Bloodborne pathogens
- Airborne pathogens
- Biological toxins
- Biological allergens

Chemical Hazards
- Inhalation
- Skin absorption or contact
- Chemical ingestion or injection
- Liquefied gas contact
- Chemical flashover
- Chemical explosions

Electrical Hazards
- High voltage
- Electrical arc flashover
- Static charge buildup

Radiation Hazards
- Ionizing radiation
- Non-ionizing radiation

Person-Position Hazards
- Daytime visibility
- Nighttime visibility
- Falling
- Drowning
- Person-Equipment Hazards
- Material biocompatibility
- Ease of contamination
- Thermal comfort
- Range of motion
- Hand function
- Ankle and back support
- Vision clarity
- Communications ease
- Fit (poor)
- Ease of donning and doffing

Commentary

Before beginning the selection process, the organization must conduct a risk assessment to determine appropriate firefighting ensembles. The risk assessment includes a review of the type of duties performed, frequency of use, past experience, incident operations, geographic location and climate, and the likelihood of responding to a CBRN terrorism incident.

Action Items

> Conduct a risk assessment to determine the appropriate firefighting ensembles before selecting or purchasing.

6.1 - 6.3 Inspection (General, Routine, Advanced)

6.1.2 Any ensemble elements that are found to be soiled or contaminated shall be cleaned or decontaminated before any additional inspection is initiated. Where ensemble elements are found to be contaminated by CBRN agents, the ensemble shall be retired.

Commentary

Any soiled or contaminated ensemble element must be cleaned or decontaminated before any further inspection is conducted. Any ensemble found to be contaminated by CBRN agents must be retired. The organization must determine what protocol members should follow in the event that an element is soiled to the point where cleaning, decontamination, or repair is necessary.

Action Items

> Properly clean or decontaminate any soiled ensembles.

> Inspect all ensembles after cleaning or decontamination.

> Retire any ensemble that is contaminated by CBRN agents.

6.2.1 Individual members shall conduct a routine inspection of their protective ensembles and ensemble elements after each use.

Commentary

Individual members of the organization must conduct routine inspections of their protective ensembles after each use. This inspection includes looking for signs of soiling, contamination, rips, tears, cuts, damaged or missing hardware and closure systems, charring, burn holes, melting, discoloration, damaged or missing reflective trim, loss of seam integrity, and broken or missing stitches.

Action Items

> Require all members to inspect their protective ensembles after each use, reporting any issues to determine if any additional action is necessary.

6.3.1 Advanced inspection and any necessary testing shall be performed by a verified independent service provider (ISP) or the organization's trained personnel.

Commentary

Any advanced inspection or testing must be performed by a verified independent service provider (ISP) or trained personnel within the department. Organization members who have been trained in advanced inspection techniques are responsible for performing this type of inspection. The manufacturer or the verified ISP determines the extent of training required, and must provide written documentation of the training. Advanced inspections must be conducted at least every 12 months or whenever a routine inspection indicates that a problem could exist. An advanced inspection includes the following:

- Soiling
- Contamination
- Physical damage
- Loss of moisture barrier integrity
- Evaluation of system fit and coat/trouser overlap
- Loss of physical integrity
- Loss of wristlet elasticity
- Reflective trim integrity
- Label integrity and legibility
- Hook and loop functionality
- Liner attachment systems
- Closure system functionality

Action Items

> Have a verified ISP or trained department personnel inspect or test protective ensembles every 12 months or whenever a routine inspection indicates that there may be a problem.

Resource Spotlight

Manufacturers provide cleaning and inspection guidelines for their products. Additionally, some offer training courses on meeting the requirements of NFPA 1851. Contact your manufacturer to discover what is available.

7.1 - 7.3 Cleaning and Decontamination (General, Routine, Advanced)

7.1.1 Organizations shall provide a means for having ensemble elements cleaned and decontaminated.

Commentary

Organizations must identify a process for cleaning and decontaminating ensemble elements. The end users are responsible for routine cleaning and must reference the manufacturer for cleaning and drying instructions. The routine cleaning process can begin at the emergency scene. If no contamination is discovered, dry debris can be brushed off. Other debris can be rinsed off with water, and a soft bristle scrub brush can be used to gently remove the material. If necessary, routine cleaning can be done in a utility sink designated for PPE cleaning and decontamination. Heavily soiled areas can be pre-treated. When cleaning, the water temperature must be below 105^0 F, mild detergents can be applied, and protective gloves and eye/face protection must be used. Elements can be gently scrubbed with a soft bristle brush and then thoroughly rinsed. Advanced cleaning must be done by a verified ISP or by trained department personnel.

Action Items

> Develop and implement a cleaning and decontamination policy and schedule for all ensembles.

7.2.1 The end users shall be responsible for the routine cleaning of their issued ensemble and ensemble elements.

A.7.2.1 Routine cleaning is a light cleaning of ensembles and ensemble elements performed by the end user without the elements being taken out of service. Routine cleaning can be accomplished by brushing off dry debris, rinsing off debris with a water hose, and spot cleaning.

7.2.2 Organizations shall examine the manufacturer's label and user information for instructions on cleaning and drying that the manufacturer provided with the ensemble or ensemble element. In the absence of manufacturer's instructions or manufacturer's approval of alternative procedures for the ensemble or ensemble element, the routine cleaning and drying procedures provided in this section shall be used.

7.3.1 Advanced cleaning shall be performed by a verified ISP or the organization's trained personnel.

7.3.1.1 The advanced cleaning shall be managed by a member of the organization or conducted by members of the organization who have received training in the advanced cleaning of protective ensembles and ensemble elements. The ensemble or ensemble element manufacturer and the organization shall determine the level of training required to perform advanced cleaning. The ensemble or ensemble element manufacturer shall provide written verification of training.

8.1 Requirements for All Ensembles and Ensemble Elements

8.1.1 All repairs shall be performed by the original manufacturer, an ISP, or a member of the organization who has received training by the manufacturer or by an ISP in the repair of ensembles or ensemble elements.

Commentary

All repairs must be performed by the original manufacturer, an ISP, or a member of the organization who has received training by the manufacturer or an ISP. Ensembles must be subject to advanced cleaning before any repair when applicable.

Action Items

> Have the manufacturer, an ISP, or trained department personnel perform any repairs to ensembles or ensemble elements.

9.1.1 Ensembles or ensemble elements shall not be stored in direct sunlight or exposed to direct sunlight while not being worn.

A.9.1.1 Ultraviolet (UV) light, especially from sunlight, is a known cause of protective ensemble degradation. Storage in direct sunlight causes degradation of fibers in protective garments, resulting in fabric strength loss, and can cause accelerated aging of other equipment. In addition, other UV light sources, such as fluorescent light, can cause similar degradation, although ongoing research suggests that the degradation from fluorescent light is far less severe than exposure to direct sunlight. Therefore, ensembles and ensemble elements should be stored to minimize exposure to all sources of UV light.

Commentary

Ensemble elements must not be stored in direct sunlight or be exposed to direct sunlight while not being worn. Ensemble elements must also be clean and dry before storage and must not be stored in air-tight containers unless they are new and unissued. Do not store ensembles or ensemble elements in temperatures below 25^0 F or above 180^0 F. Ensembles and ensemble elements must not be stored or transported in compartments or trunks with sharp objects, tools, or other equipment that could damage them. If the elements must be transported in such environments, they should be placed in a protective case or bag to prevent damage. Soiled ensemble elements must not be stored in living quarters or transported in the passenger compartment of personal vehicles. If ensembles must be transported or stored in this manner, they should be placed in a protective case or bag to prevent cross contamination. Do not store ensemble elements where they could come in contact with contaminants such as oils, solvents, acids, or alkalis. Proximity firefighting coats and trousers must be stored by hanging to limit the damage caused by creasing or folding. Store the ensembles in clean, dry, and well-ventilated areas.

Action Items

> Store ensembles in a clean, dry, and well-ventilated area. Do not expose them to sunlight.

> Transport soiled ensembles in a protective case or bag.

> Transport ensembles in a protective case or bag to prevent damage.

> Hang proximity firefighting coats and trousers.

10.1. The organization shall develop specific criteria for removal of structural firefighting ensembles and ensemble elements and proximity firefighting ensembles and ensemble elements from service, which includes, but is not limited to, issues that are specific to the ensembles or ensemble elements being used by the organization, the manufacturer's instructions, and the experience of the organization.

A.10.1.1 Retirement criteria should be based on a number of factors, including, but not limited to, the following:

1. Overall condition of the item
2. Specific deterioration of materials or components beyond their economic repair
3. Ability to adequately remove hazardous materials and other contaminants
4. Age of structural or proximity ensemble or ensemble elements

Commentary

Although there are other requirements referenced in Chapter 10 that may affect the retirement and disposal of structural and proximity firefighting ensembles/ensemble elements, the general rule is that they should be retired no more than 10 years from the date of manufacture. In all cases, the radiant outer shell of the proximity ensemble must be replaced at a maximum of 5 years. Structural and proximity firefighting ensembles/ensemble elements that are contaminated by CBRN terrorism agents must be retired immediately. Retired ensembles and ensemble elements must be destroyed or disposed and cannot be used for firefighting or emergency activities, including live fire training. However, retired ensembles and ensemble elements may be used for training that does not involve live fire, provided that the ensembles are appropriately marked for non-live fire training only.

Firefighter ensemble replacement programs may be difficult for some departments to implement. FEMA's Assistance to Firefighters Grants program can be used to address inadequate funding. Departments can also contact the manufacturer to identify other grants or programs to assist in the purchase of structural and proximity firefighting ensembles.

Action Items

> Retire structural and proximity firefighter ensembles and ensemble elements no more than 10 years after the date of manufacture.

> Replace the radiant outer shell of proximity ensembles no more than 5 years after the date of manufacture.

> Retire structural and proximity firefighter ensembles and ensemble elements immediately if contaminated with CBRN terrorism agents.

> Destroy or dispose of retired ensembles or ensemble elements.

> Do not use retired ensembles or ensemble elements for live fire training.

> Retired ensembles or ensemble elements can be used for training not involving live fire. Clearly mark them as for non-live fire training only.

Checklist: NFPA 1851*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Program				
4.1.1 Develop and implement a selection, care, and maintenance program for structural PPE ensemble.				
4.2.2 Develop a written SOP defining the following part and roles of the program to include:				
Records				
Protection of public and personnel from contamination				
Selection				
Inspection				
Cleaning and decontamination				
Repair				
Storage				
Retirement, disposition, and special incident procedures				
4.2.3 Limiting the adding of accessories				
Records				
4.3.3 Records kept for each ensemble or element on the following:				
Person to whom issued				
Date and condition when issued				
Manufacturer and model name or design				
Manufacturer's identification number, lot number, or serial number				
Month and year of manufacture				

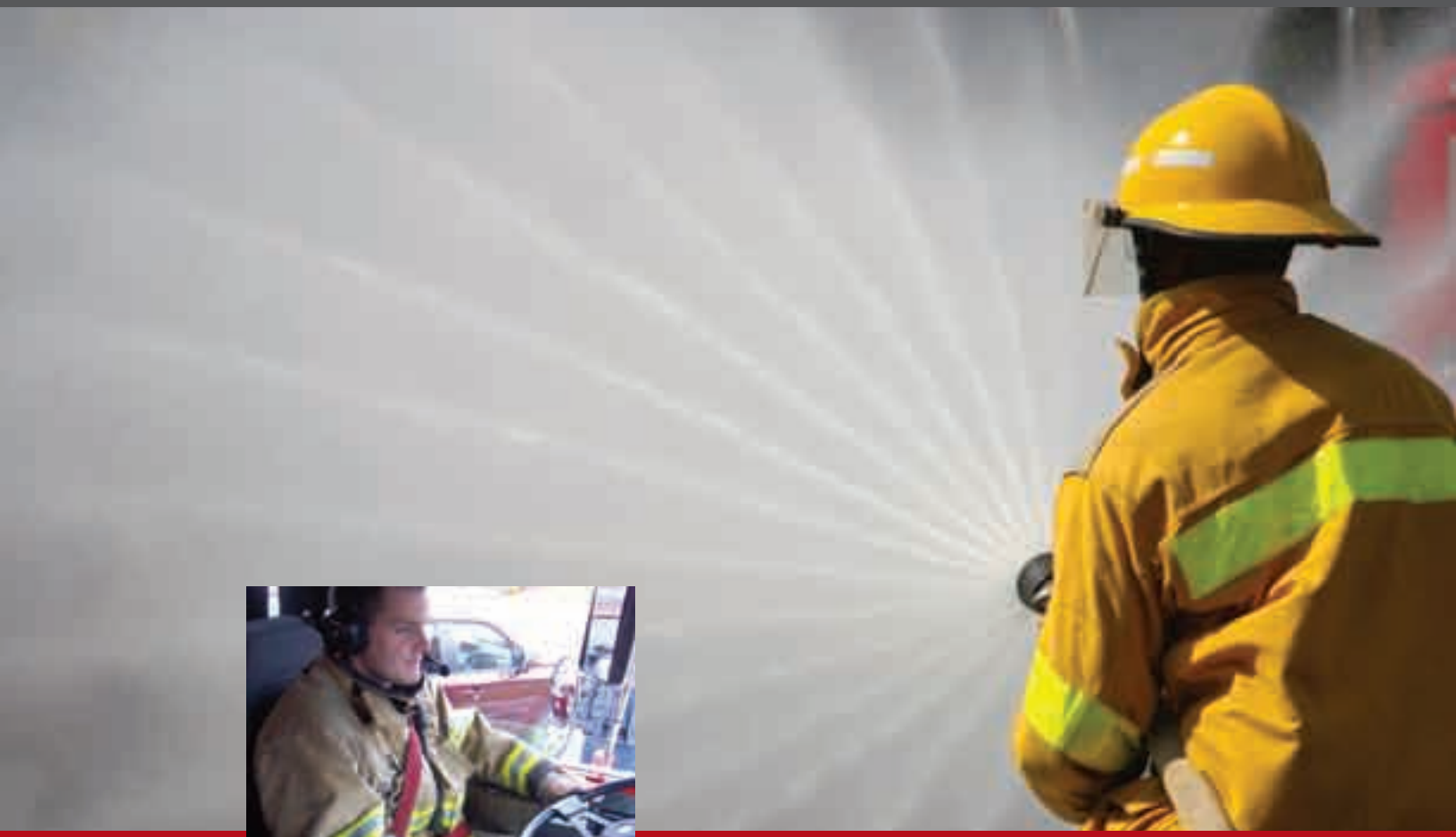
**This checklist coincides with the sections highlighted in this guide. Visit www.nfpa.org to view the standard in its entirety.*

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Date(s) and findings advanced inspection(s)				
Date(s) and findings of advanced cleaning or decontamination				
Reason for advanced cleaning or decontamination and who performed cleaning or decontamination				
Date(s) of repair(s), who performed repair(s), and brief description of repair(s)				
Date of retirement				
Date and method of disposal				
Selection				
5.1.2 A risk assessment was performed before selection based on the following:				
Type of duties performed				
Frequency of use of ensemble elements				
Organization's experiences				
Incident operations				
Geographic location and climate				
Likelihood of or response to CBRN terrorism incident				
Inspection				
6.1.3 Guideline established for members to determining if soiled and needs cleaning.				
6.2.1, 6.2.2 Members conduct routine inspections after use for the following:				
Soiling				
Contamination				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Rips, tears, cuts				
Damaged or missing hardware or closure systems				
Thermal damage (charring, burn holes, melting, discoloration of any layer)				
Damaged or missing reflective trim				
Loss of seam integrity and broken or missing stitches				
Correct assembly and size compatibility of shell, liner and drag rescue device				
6.3.3 Advanced Inspection performed every 12 months.				
6.3.4 Advanced inspection findings documented.				
Cleaning and Decontamination				
7.1.1 Organization has a means of having PPE cleaned and decontaminated.				
7.1.4 A means has been provided to isolate contaminated PPE for cleaning.				
7.1.7 Soiled or contaminated PPE are not brought home or public laundries for cleaning.				
7.3.1 Advanced cleaning performed by verified ISP or organization trained personnel.				
Repairs				
8.1.1 Repairs performed by original manufacturer, ISP, or member who has received training.				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Storage				
9.1.1 Ensembles not stored in direct sunlight or exposed to direct sunlight.				
9.1.2 Ensembles and ensemble elements are clean and dry before storage				
9.1.3 Ensembles and ensemble elements not stored in airtight containers unless new and unissued				
9.1.4 Ensemble and ensemble elements stored between -250 F and 1800 F.				
9.1.5 Ensembles or ensemble elements are not stored in compartment or trunks with sharp objects, tools or equipment. Protective bag or case used if ensemble or element must be transported this way.				
9.1.6 Ensemble and ensemble elements not stored in living quarters or with personal belongings or transported in the passenger compartment of a personal vehicle. If ensembles or elements must be transported in this manner, they are place in a protective bag or case.				
9.1.7 Ensemble and ensemble elements not stored in contact with oils, solvents, acids, alkalis, or other contaminants.				
9.1.9 Ensemble and ensemble elements stored in clean, dry, well-ventilated area				

Content	Compliance Y = Yes / N = No	Plan to Achieve Compliance Y = Yes / N = No	Expected Compliance Date	Notes, Modifications, Challenges
Retirement and Disposition				
10.1.2 Structural ensembles and ensemble elements and proximity ensemble and ensemble elements are retired no more than 10 years from the date of manufacture.				
10.2.1 Retired ensembles or elements are destroyed or disposed of so that they cannot be used in any firefighting or emergency activities, or for live fire training				
Special Incident				
10.3.1 Procedures for the handling and custody of structural fire fighting ensembles and ensemble elements that were worn by fire fighters who were victims at incidents where serious injuries or fatalities to the fire fighters occurred.				



Conclusion

Many departments face serious challenges when trying to implement standards. Though often daunting, it is important to remember that standards are an essential component contributing to firefighter safety. Departments should evaluate each section within a standard and determine what is feasible with current resources and develop plans to implement other components in the future. Standards can be overwhelming when examined in their entirety. Breaking them down into more manageable pieces allows a department to take small initial steps that can ultimately make a big impact over time. Focus on what is attainable and achievable and work to adopt those changes. While each department's timeline will vary based on available resources and capabilities, the overall goal remains the same. It is never too late to embrace and implement a culture of safety.

Additional Information

NFPA

For further information on the NFPA standards development process, please visit the NFPA homepage at **www.nfpa.org**.

To obtain general information regarding the standards development process, contact:

NFPA Codes & Standards Administration Department
One Batterymarch Park
Quincy, MA 02169-7471 USA

Phone: 617-770-3000 (until 5:00 PM EST)
Fax: 617-770-3500
Email: **stds_admin@nfpa.org**

NVFC

The NVFC is very active in the standards development process. As of 2012, the NVFC has representatives serving on the following NFPA committees:

> Ambulances
> Emergency Medical Services
> Fire and Emergency Service Organization and Deployment – Volunteer
> Fire Department Apparatus
> Fire Fighter Professional Qualifications
> Fire Officer Professional Qualifications
> Fire Prevention Organization and Deployment
> Fire Service Occupational Safety and Health
> Forest and Rural Fire Protection
> Hazardous Chemicals
> Hazardous Materials Response Personnel
> Incident Management Professional Qualifications
> Professional Qualifications Technical Correlating
> Structural and Proximity Fire Fighting Protective Clothing and Equipment
> Traffic Control Incident Management Professional Qualifications
> Wildland Fire Fighting Protective Clothing and Equipment

Supporting Those Who Serve

To learn more about the NVFC's involvement, contact:

National Volunteer Fire Council
7852 Walker Drive, Suite 450
Greenbelt, MD 20770

Phone: 1-888-ASK-NVFC
Fax: 202-887-5291
Email: **nvfcoffice@nvfc.org**

www.nvfc.org

Notes

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