NFPA 1500
Standard on Fire Department Occupational Safety and Health Program

1997 Edition

National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

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Fire Department Occupational Safety and Health Program

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This edition of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* was prepared by the Technical Committee on Fire Service Occupational Safety and acted on by the National Fire Protection Association, Inc., at its Annual Meeting held May 19-22, 1997, in Los Angeles, CA. It was issued by the Standards Council on July 24, 1997, with an effective date of August 15, 1997, and supersedes all previous editions.

This edition of NFPA 1500 was approved as an American National Standard on August 15, 1997.

Origin and Development of NFPA 1500

The number of fire fighter fatalities has continued to decline since the development of the first edition of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, in 1987, with the exception of 1994 when there were 37 wildland fire fighter fatalities. This is due in part to the safety-conscious personnel who provide an array of services to the public. NFPA 1500 in its two previous editions raised the awareness level of the fire service on how to work safely in a dangerous occupation. However, there is still much work to be done to fully address the safety and health concerns of this profession. Several recent tragedies have occurred where an incident management system was not used, an accountability system was not in place, or protective equipment was either not worn or not activated. Safety cannot be dictated by regulations or standards alone. As the first chairman of the Technical Committee on Fire Service Occupational Safety and Health once said, "Safety begins with you."

The third edition of this standard has included significant work by committee members in the following areas: additional text on risk management, training requirements for personnel who could be required to do wildland fire fighting, and increased training and awareness of cleaning and disinfection of protective clothing and equipment. The committee spent considerable time and effort working on Chapter 6, including incorporating the 1993 Tentative Interim Amendment, which expanded the text on accountability and incident management, rehabilitation, and fire department operations that involve civil disturbances and/or terrorism. The committee has also included text on facility safety, with inspection sheets in the appendix, as well as medical requirements that were also updated in NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, and has divided the subject matters of employee assistance programs and critical incident stress into two chapters. Appendix material was expanded to provide additional information or guidance on the committee's intent.

Work on the third edition began in 1994 and was completed in January 1997. It was presented on May 22, 1997 at the Los Angeles, California Annual Meeting.

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

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

Committee Scope: This Committee shall have primary responsibility for documents on the occupational safety in the working environment of the fire service; and safety in the proper use of apparatus, tools, equipment, protective clothing, and protective breathing apparatus.

Contents

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

Information on referenced publications can be found in Chapter 11 and Appendix C.

Chapter 1 Administration

1-1 Scope.

1-1.1 This standard contains minimum requirements for a fire-service-related occupational safety and health program.

1-1.2 These requirements are applicable to public, governmental, military, private, and industrial fire department organizations providing rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services.

1-1.3 This standard does not apply to industrial fire brigades or industrial fire departments meeting the requirements of NFPA 600, *Standard on Industrial Fire Brigades*. Industrial fire brigades or fire departments shall also be permitted to be known as emergency brigades, emergency response teams, fire teams, plant emergency organizations, or mine emergency response teams.

1-2 Purpose.

1-2.1 The purpose of this standard is to specify the minimum requirements for an occupational safety and health program for a fire department and to specify safety guidelines for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities.

1-2.2* Many of the performance objectives of this standard shall be permitted to be achieved in a variety of ways. The achievement of these objectives is intended to help prevent accidents, injuries, and exposures and to reduce the severity of those accidents, injuries, and exposures that do occur. They will also help to prevent exposure to hazardous materials and contagious diseases and to reduce the probability of occupational fatalities, illnesses, and disabilities affecting fire service personnel.

1-2.3 Nothing herein shall be intended to restrict any jurisdiction from exceeding these minimum requirements.

1-3 Implementation.

1-3.1* When this standard is adopted by a jurisdiction, the authority having jurisdiction shall set a date or dates for achieving compliance with the requirements of this standard and shall be permitted to establish a phase-in schedule for compliance with specific requirements of this standard.

1-3.2* The fire department shall adopt a risk management plan as specified in Section 2-2 of this standard. This risk management plan shall include a written plan for compliance with this standard.

1-4 Equivalency.

1-4.1 The authority having jurisdiction shall be permitted to approve an equivalent level of qualifications for the requirements specified in 3-1.6, 3-3.2, 3-3.3, 3-3.4, and 3-3.5 of this standard, provided that the fire department has technical documentation to demonstrate equivalency.

1-4.2 The approved equivalent levels shall provide as nearly equivalent training, education, competency, and safety as possible and shall require that training, education, and competency be commensurate with those functions that the members are expected to perform as specified in the organizational statement in accordance with 2-1.1 and also in accordance with 3-1.3 and 3-1.4 of this standard. In no case shall the equivalency afford less competency of members or safety to members than that which, in the judgment of the authority having jurisdiction, would be provided by compliance with the provisions of the specified paragraphs.

1-5 Definitions.

Advanced Life Support (ALS). Emergency medical treatment beyond basic life support level as defined by the medical authority having jurisdiction.

Aerial Device. An aerial ladder, elevating platform, aerial ladder platform, or water tower that is designed to position personnel, handle materials, provide egress, and discharge water.

Aircraft Rescue and Fire Fighting. The fire-fighting actions taken to rescue persons and to control or extinguish fire involving or adjacent to aircraft on the ground. Such rescue and fire-fighting actions are performed both inside and outside of the aircraft.

Approach Fire Fighting. Limited, specialized exterior fire-fighting operations at incidents involving fires producing very high levels of conductive, convective, and radiant heat, such as bulk flammable gas and bulk flammable liquid fires. Specialized thermal protection from exposure to high levels of radiant heat is necessary for the persons involved in such operations due to the limited scope of these operations and the greater distance from the fire at which these operations are conducted. Approach fire fighting is not entry, proximity, or structural fire fighting. See also Entry Fire Fighting, Proximity Fire Fighting, and Structural Fire Fighting.

Approved.* Acceptable to the authority having jurisdiction.

Authority Having Jurisdiction.* The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

Basic Life Support (BLS). Emergency medical treatment at a level as defined by the medical authority having jurisdiction.

Belt. A system component; material configured as a device that fastens around the waist only and is designated as a ladder belt, an escape belt, or a ladder/escape belt.

Escape Belt. A belt that is certified as compliant with the applicable requirements of this standard and is intended for use only by the wearer as an emergency self-rescue device.

Ladder Belt. A belt that is certified as compliant with the applicable requirements of this standard and is intended for use as a positioning device for a person on a ladder.

Ladder/Escape Belt. A belt that is certified as compliant with the applicable requirements of this standard for both a ladder belt and an escape belt and that is intended for use as a positioning device for a person on a ladder as well as for use only by the wearer as an emergency self-rescue device.

Candidate.* A person who has submitted an application to become a member of the fire department.

Closed-Circuit Self-Contained Breathing Apparatus (SCBA). A recirculation-type SCBA in which the exhaled gas is rebreathed by the wearer after the carbon dioxide has been removed from the exhalation gas and the oxygen content within the system has been restored from sources such as compressed breathing air, chemical oxygen, and liquid oxygen, or compressed gaseous oxygen.

Communicable Disease. A disease that can be transmitted from one person to another. Also known as contagious disease.

Company. A group of members having the following characteristics:

(a) Under the direct supervision of an officer or leader

(b) Trained and equipped to perform assigned tasks

(c) Usually organized and identified as engine companies, ladder companies, rescue companies, or squad companies

(d) Usually operating with one piece of fire apparatus (e.g., quint, pumper, ladder truck, elevating platform, rescue, squad, or ambulance)

(e) Arriving at the incident scene on fire apparatus or assembling at the scene prior to assignment

Confined Space. An area large enough and so configured that a member can bodily enter and perform assigned work. An area with limited or restricted means for entry and exit. An area that is not designed for continuous human occupancy. Additionally, a confined space is further defined as having one or more of the following characteristics:

(a) The area contains or has a potential to contain a hazardous atmosphere, including an oxygen-deficient atmosphere.

(b) The area contains a material with a potential to engulf a member.

(c) The area has an internal configuration such that a member could be trapped by inwardly converging walls or a floor that slopes downward and tapers to a small cross section.

(d) The area contains any other recognized serious hazard.

Contaminant. A harmful, irritating, or nuisance material foreign to the normal atmosphere.

Debilitating Illness or Injury. A condition that temporarily or permanently prevents a member of the fire department from engaging in normal duties and activities as a result of illness or injury.

Defensive Operations. Actions that are intended to control a fire by limiting its spread to a defined area, avoiding the commitment of personnel and equipment to dangerous areas. Defensive operations are generally performed from the exterior of structures and are based on a determination that the risk to personnel exceeds the potential benefits of offensive actions.

Drug. Any substance, chemical, over-the-counter medication, or prescribed medication that can affect the performance of the fire fighter.

Emergency Incident. A specific emergency operation.

Emergency Medical Services. The provision of treatment—such as first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other pre-hospital procedures including ambulance transportation—to patients.

Emergency Operations. Activities of the fire department relating to rescue, fire suppression, emergency medical care, and special operations, including response to the scene of the incident and all functions performed at the scene.

Entry Fire Fighting. Extraordinarily specialized fire-fighting operations that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of conductive, convective, and radiant heat, such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Highly specialized thermal protection from exposure to extreme levels of conductive, convective, and radiant heat is necessary for persons involved in such extraordinarily specialized operations due to the scope of these operations and because direct entry into flames is made. Usually these operations are exterior operations. Entry fire fighting is not structural fire fighting. See also Approach Fire Fighting, Proximity Fire Fighting, and Structural Fire Fighting.

Facility. See Fire Department Facility.

Fire Apparatus. Any vehicle—including those used for rescue, fire suppression, emergency medical services, hazardous materials operations, wildland, or other functions—operated by a fire department member.

Fire Chief. The highest ranking officer in charge of a fire department.

Fire Department. An organization providing rescue, fire suppression, and related activities. It can also provide emergency medical services, hazardous materials operations, and special operations. The term "fire department" shall include any public, governmental, private, industrial, or military organization engaging in this type of activity.

Fire Department Facility. Any building or area owned, operated, occupied, or used by a fire department on a routine basis. This does not include locations where a fire department can be summoned to perform emergency operations or other duties, unless such premises are normally under the control of the fire department.

Fire Department Member. See Member.

Fire Shelter. A personal protection item carried by fire fighters that, when deployed, unfolds to form a shelter of heat-reflective materials.

Fire Suppression. The activities involved in controlling and extinguishing fires. Fire suppression shall include all activities performed at the scene of a fire incident or training exercise that expose fire department members to the dangers of heat, flame, smoke, and other products of combustion, explosion, or structural collapse.

Flame Resistance. The property of a material whereby the application of a flaming or nonflaming source of ignition and the subsequent removal of the ignition source results in the termination of combustion. Flame resistance can be an inherent property of the material, or it can be imparted by specific treatment.

Fully Enclosed Area. A cab or passenger compartment of fire apparatus providing total enclosure equipped with positive latching doors for entry and exit.

Gloves. An element of the protective ensemble designed to provide minimum protection to the fingers, thumb, hand, and wrist.

Guideline. A written indication or outline of department policy that allows flexibility in application.

Hazard. The potential for harm or damage to people, property, or the environment. Hazards include the characteristics of facilities, equipment systems, property, hardware, or other objects and the actions and inactions of people that create such hazards.

Hazardous Area. The area where members might be exposed to a hazardous atmosphere. A particular substance, device, event, circumstance, or condition that presents a danger to members of the fire department.

Hazardous Atmosphere. Any atmosphere that is oxygen deficient or that contains a toxic or disease-producing contaminant. A hazardous atmosphere can be immediately dangerous to life and health.

Hazardous Material. A substance that presents an unusual danger to persons due to properties of toxicity, chemical reactivity or decomposition, corrosivity, explosion or detonation, etiological hazards, or similar properties.

Hazardous Materials Operations. All activities performed at the scene of a hazardous materials incident that expose fire department members to the dangers of hazardous materials.

Health and Fitness Coordinator. The person who, under the supervision of the fire department physician, has been designated by the department to coordinate and be responsible for the health and fitness programs of the department.

Health and Safety Officer. The member of the fire department assigned and authorized by the fire chief as the manager of the safety and health program and who performs the duties and responsibilities specified in this standard. This individual can be the incident safety officer or that can also be a separate function.

Health Data Base. A compilation of records and data that relates to the health experience of a group of individuals and is maintained in a manner such that it is retrievable for study and analysis over a period of time.

Health Promotion. Preventive health activities that identify real and potential health risks in the work environment and that inform, motivate, and otherwise help people to adopt and maintain healthy practices and lifestyles.

Hot Zone. The area immediately surrounding a hazardous material incident that extends far enough to prevent adverse effects from the release of hazardous materials to personnel outside the zone. This zone is also referred to as the "exclusion zone" or "restricted zone" in other documents.

Immediately Dangerous to Life or Health (IDLH). Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.

Incident Action Plan. The objectives reflecting the overall incident strategy, tactics, risk management, and member safety that are developed by the incident commander. Incident action plans are updated throughout the incident.

Incident Commander. The fire department member in overall command of an emergency incident.

Incident Management System (IMS). An organized system of roles, responsibilities, and standard operating procedures used to manage emergency operations. Such systems are often referred to as incident command systems (ICS).

Incident Safety Officer. An individual appointed to respond or assigned at an incident scene by the incident commander to perform the duties and responsibilities specified in this standard. This individual can be the incident safety officer or can be a separate individual, appointed by the incident commander, or a predesignated individual.

Industrial Fire Department.* An organization providing rescue, fire suppression, and related activities. It can also provide emergency medical services, hazardous material operations, or other activities. These activities can occur at a single facility or facilities under the same management, whether for profit, not for profit, or government owned or operated, including occupancies such as industrial, commercial, mercantile, warehouse, and institutional. The industrial fire department is generally trained and equipped for specialized operation based on site-specific hazards present at the facilities.

Groups or teams that are organized to perform specialized rescue services but that do not perform fire suppression activities are not considered as industrial fire departments.

Infection Control Program. The fire department's formal policy and implementation of procedures relating to the control of infectious and communicable disease hazards where employees, patients, or the general public could be exposed to blood, body fluids, or other potentially infectious materials in the fire department work environment.

Infectious Disease. An illness or disease resulting from invasion of a host by disease-producing organisms such as bacteria, viruses, fungi, or parasites.

Interface Area. An area of the body where the protective garments, helmet, gloves, footwear, or SCBA facepiece meet (i.e., the protective coat/helmet/SCBA facepiece area, the protective coat/protective trouser area, the protective coat/glove area, and the protective trouser/footwear area).

Interface Components. Elements of the protective ensemble that are designed to provide limited protection to interface areas.

Life Safety Harness System Components. The following are utilized for fall arrest and rappelling operations:

Class I Life Safety Harness. Harness that fastens around waist and around thighs or under buttocks and designed to be used for emergency escape with one-person loads (300 pounds).

Class II Life Safety Harness. Harness that fastens around waist and around thighs or under buttocks and designed for rescue where two-person loads can be encountered (600 pounds).

Class III Life Safety Harness. Harness that fastens around waist, around thighs or under buttocks, and over shoulders and designed for rescue where two-person loads can be encountered (600 pounds) and where inverting might occur. Class III life safety harnesses shall be permitted to consist of one or more parts.

Medical Evaluation. The analysis of information for the purpose of making a determination of medical certification. Medical evaluation can include a medical examination.

Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. A fire department member can be a full-time or part-time employee or a paid or unpaid volunteer, can occupy any position or rank within the fire department, and can engage in emergency operations.

Member Assistance Program (MAP). A generic term used to describe the various methods used in the fire department for the control of alcohol and other substance abuse, stress, and personal problems that adversely affect member performance.

Member Organization. An organization formed to represent the collective and individual rights and interests of the members of the fire department, such as a labor union or fire fighters' association. This definition includes any organization

authorized to represent the interests of its members in dealing with the fire department management.

Occasionally Assigned. The infrequent fire-fighting responsibility in a given jurisdiction, district, or area. Fire-fighting situations that are less likely to occur or that occur on an infrequent basis within the response area.

Occupational Illness. An illness or disease contracted through or aggravated by the performance of the duties, responsibilities, and functions of a fire department member.

Occupational Injury. An injury sustained during the performance of the duties, responsibilities, and functions of a fire department member.

Offensive Operations. Actions that involve a direct attack on a fire to directly control and extinguish the fire, generally performed in the interior of involved structures.

Open-Circuit SCBA. An SCBA in which exhalation is vented to the atmosphere and not rebreathed. There are two types of open-circuit SCBA: negative-pressure or demand type and positive-pressure or pressure-demand type.

Oxygen-Deficient Atmosphere. Air atmospheres containing less than 19.5 percent oxygen by volume at one standard atmosphere pressure.

Personnel Accountability System. A system that readily identifies both the location and function of all members operating at an incident scene.

Positive-Pressure SCBA. An SCBA in which the pressure inside the facepiece, in relation to the pressure surrounding the outside of the facepiece, is positive during both inhalation and exhalation when tested by NIOSH in accordance with 42 CFR 84, Subpart H.

Pressure-Demand SCBA. See Positive-Pressure SCBA.

Primarily Assigned. The principal fire-fighting responsibility in a given jurisdiction, district, or area. Fire-fighting situations that are most likely to occur within the response area.

Procedure. An organizational directive issued by the authority having jurisdiction or by the department that establishes a specific policy that must be followed.

Property Conservation. Those activities directed at stopping or minimizing the dollar loss to buildings and property from the effects of fire and fire suppression activities or other emergency situations and the mitigation of those emergencies.

Protective Clothing Ensemble. Multiple elements of clothing and equipment designed to provide a degree of protection for fire fighters from adverse exposures to the inherent risks of structural fire-fighting operations and certain other emergency operations. The elements of the protective ensemble are coats, trousers, coveralls, helmets, gloves, footwear, and interface components.

Protective Uniform. A unit of textile apparel configured as a shirt, pant, or coverall and designed to be both the thermal barrier or a portion of the thermal barrier of a garment element of the protective ensemble and an apparel unit(s) of a station/work uniform.

Proximity Fire Fighting. Specialized fire-fighting operations that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of conductive, convective, and radiant heat such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Specialized thermal protection from exposure to high levels of radiant heat, as well as thermal protection from conductive and convective heat, is necessary for persons involved in such operations due to the scope of these operations and the close distance to the fire at which these operations are conducted, although direct entry into flame is *not* made. These operations usually are exterior operations but might be combined with interior operations. Proximity fire fighting is not structural fire fighting but might be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. See also Approach Fire Fighting, Entry Fire Fighting, and Structural Fire Fighting.

Qualified Person. A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with problems related to the subject matter, the work, or the project.

Related Activities. Any and all functions that fire department members can be called upon to perform in the execution of their duties.

Rescue. Those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and providing for transport to an appropriate health care facility.

Rescue Incident. An emergency incident that primarily involves the rescue of persons subject to physical danger and that can include the provision of emergency medical services.

Risk. A measure of the probability and severity of adverse effects. These adverse effects result from an exposure to a hazard.

Risk Management. Identification and analysis of exposure to hazards, selection of appropriate risk management techniques to handle exposures, implementation of chosen techniques, and monitoring of results, with respect to the health and safety of members.

Rope. A compact but flexible, torsionally balanced, continuous structure of fibers produced from strands that are twisted, plaited, or braided together and that serve primarily to support a load or transmit a force from the point of origin to the point of application.

Life Safety Rope. Rope dedicated solely for the purpose of supporting people during rescue, fire fighting, other emergency operations, or during training evaluations. See also Personal Escape Rope.

One-Person Rope. Life safety rope designed to support a one-person load when in use; also can be used to support a two-person load when used in systems where two ropes are used as separate and equal members.

Two-Person Rope. Life safety rope designed to support a two-person load when in use.

Personal Escape Rope. A system component; a single-purpose, one-person, one-time use, emergency self-escape (self-rescue) rope; not classified as a life safety rope. See also Life Safety Rope.

SCBA. See Self-Contained Breathing Apparatus.

Seat Belt. A two-point lap belt, a three-point lap/shoulder belt, or a four-point lap/shoulder harness for vehicle occupants designed to limit their movement in the event of an accident, rapid acceleration, or rapid deceleration by securing individuals safely to a vehicle in a seated position. See also Vehicle Safety Harness.

Self-Contained Breathing Apparatus (SCBA). A respirator worn by the user that supplies a respirable atmosphere that is either carried in or generated by the apparatus and is independent of the ambient environment.

Service Testing. The regular, periodic inspection and testing of apparatus and equipment, according to an established schedule and guideline, to ensure that they are in safe and functional operating condition.

Shall. Indicates a mandatory requirement.

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

Special Operations. Those emergency incidents to which the fire department responds that require specific and advanced training and specialized tools and equipment. Special operations include water rescue, extrication, hazardous materials, confined space entry, high-angle rescue, aircraft rescue and fire fighting, and other operations requiring specialized training.

Standard Operating Guideline.* An organizational directive that establishes a course of action.

Structural Fire Fighting. The activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, or like properties that are involved in a fire or emergency situation.

Tactical Level Management Unit. A management unit identified in the incident management system commonly known as "division," "group," or "sector."

Vehicle Safety Harness. A restraint device for vehicle occupants designed to limit their movement in the event of an accident, rapid acceleration, or rapid deceleration by securing individuals safely to a vehicle either in a seated position or tethered to the vehicle. See also Seat Belt.

Wildland Fire Fighting. The activities of fire suppression and property conservation in vegetation that is not within structures but is involved in a fire situation.

Working Structural Fire. Any fire that requires the use of a $1^1/_2$-in. (3.8-cm) or larger fire attack hose line and that also requires the use of self-contained breathing apparatus for members entering the hazardous area.

Chapter 2 Organization

2-1 Fire Department Organizational Statement.

2-1.1* The fire department shall prepare and maintain a written statement or policy that establishes the existence of the fire department, the services the fire department is authorized and expected to perform, and the basic organizational structure.

2-1.2* The fire department shall prepare and maintain written policies and standard operating procedures that document the organization structure, membership, roles and responsibilities, expected functions, and training requirements, including the following:

(a) The types of standard evolutions that are expected to be performed and the evolutions that must be performed simultaneously or in sequence for different types of situations

(b) The minimum number of members who are required to perform each function or evolution and the manner in which the function is to be performed

(c) The number and types of apparatus and the number of personnel that will be dispatched to different types of incidents

(d) The procedures that will be employed to initiate and manage operations at the scene of an emergency incident

2-1.3 The organizational statement and procedures shall be available for inspection by members or their designated representative.

2-2 Risk Management Plan.

2-2.1* The fire department shall develop and adopt a comprehensive written risk management plan. The risk management plan shall consider all fire department policies and procedures, and it shall include goals and objectives to ensure that the risks associated with the operations of the fire department are identified and effectively managed.

2-2.2 The risk management plan shall at least cover the risks associated with the following:

(a) Administration

(b) Facilities

(c) Training

(d) Vehicle operations, both emergency and nonemergency

(e) Protective clothing and equipment

(f) Operations at emergency incidents

(g) Operations at nonemergency incidents

(h) Other related activities

2-2.3* The risk management plan shall include at least the following components:

(a) *Risk Identification.* Actual and potential hazards

(b) *Risk Evaluation.* Likelihood of occurrence of a given hazard and severity of its consequences

(c) *Risk Control Techniques.* Solutions for elimination or mitigation of potential hazards; implementation of best solution

(d) *Risk Management Monitoring.* Evaluation of effectiveness of risk control techniques

2-3 Policy.

2-3.1* 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. It shall be the policy of the fire department to seek and to provide an occupational safety and health program that complies with this standard for its members.

2-3.2* The fire department shall evaluate the effectiveness of the occupational safety and health program at least once every three years. An audit report of the findings shall be submitted to the fire chief and to the members of the occupational safety and health committee.

2-4 Roles and Responsibilities.

2-4.1 It shall be the responsibility of the fire department to research, develop, implement, and enforce an occupational safety and health program that recognizes and reduces the inherent risks involved in the operations of a fire department.

2-4.1.1 The fire department shall be responsible for compliance with all applicable laws and legal requirements with respect to member safety and health.

2-4.1.2* The fire department shall establish and enforce rules, regulations, and standard operating procedures to reach the objectives of this standard.

2-4.2 The fire department shall be responsible for developing and implementing an accident investigation procedure.

2-4.2.1* All accidents, injuries, fatalities, illnesses, and exposures involving members shall be investigated.

2-4.2.2 All accidents involving fire department vehicles, equipment, or fire department facilities shall be investigated.

2-4.2.3 The fire department shall take whatever appropriate corrective action that is necessary to avoid repetitive occurrences of accidents and exposure to communicable diseases.

2-4.2.4 Records of such investigations shall be kept in accordance with the applicable provisions of Section 2-7 of this chapter.

2-4.3 Each individual member of the fire department shall cooperate, participate, and comply with the provisions of the occupational safety and health program.

2-4.3.1 It shall be the right of each member to be protected by an effective occupational safety and health program and to participate or be represented in the research, development, implementation, evaluation, and enforcement of the program.

2-4.4 The member organization, where such an organization exists, shall cooperate with the fire department by representing the interests and the welfare of the members in the research, development, implementation, and evaluation of the occupational safety and health program.

2-4.4.1 The member organization shall have the right to represent the individual and collective rights of its members in the occupational safety and health program.

2-5 Health and Safety Officer.

2-5.1 The fire chief shall appoint a designated fire department health and safety officer. This position shall comply with the requirements of NFPA 1521, *Standard for Fire Department Safety Officer*.

2-5.2 The fire department health and safety officer shall be responsible for the management of the occupational safety and health program.

2-5.3 The fire chief shall assign or make available in accordance with Chapter 2 of NFPA 1521, *Standard for Fire Department Safety Officer*, such additional assistant safety officers and resources as required to fulfill the requirements of the occupational safety and health program.

2-6 Occupational Safety and Health Committee.

2-6.1* An occupational safety and health committee shall be established and shall serve in an advisory capacity to the fire chief. The committee shall include the designated fire department health and safety officer, representatives of fire department management, and individual members or representatives of member organizations. The committee shall also be permitted to include other persons. Representatives of member organizations shall be selected by their respective organizations, but other committee members shall be appointed to the safety committee by the fire chief.

2-6.2 The purpose of this committee shall be to conduct research, develop recommendations, and study and review matters pertaining to occupational safety and health within the fire department.

2-6.3* The committee shall hold regularly scheduled meetings and shall be permitted to hold special meetings whenever necessary. Regular meetings shall be held at least once every six months. Written minutes of each meeting shall be retained and shall be made available to all members.

2-7 Records.

2-7.1* The fire department shall establish a data collection system and maintain permanent records of all accidents, injuries, illnesses, exposures to infectious agents and communicable diseases, or deaths that are or might be job related.

2-7.2 The data collection system shall also maintain individual records of any occupational exposure to known or suspected toxic products or infectious or communicable diseases.

2-7.3 The fire department shall assure that a confidential health record for each member and a health data base is maintained as specified in Chapter 8 of this standard.

2-7.4* The fire department shall maintain training records for each member indicating dates, subjects covered, satisfactory completion, and, if any, certifications achieved.

2-7.5 The fire department shall assure that inspection, maintenance, repair, and service records are maintained for all vehicles and equipment used for emergency operations and training.

Chapter 3 Training and Education

3-1 General Requirements.

3-1.1 The fire department shall establish and maintain a training and education program with a goal of preventing occupational accidents, deaths, injuries, and illnesses.

3-1.2 The training and education provided to members shall address all of the applicable provisions of this standard.

3-1.2.1 Equivalent levels of training shall be permitted as specified in Section 1-4 of this document.

3-1.3* The fire department shall provide training and education for all fire department members commensurate with the duties and functions that they are expected to perform. Members shall be provided with training and education appropriate for their duties and responsibilities before being permitted to engage in emergency operations.

3-1.4 The fire department shall provide training and education for all members to assure that they are able to perform their assigned duties in a safe manner that does not pose a hazard to themselves or to other members.

3-1.5* All training and education shall be provided by qualified persons.

3-1.6 Fire department training officers shall at least meet the qualifications for Instructor I as specified in NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications.*

3-1.7 The training program for all members engaged in emergency operations shall include procedures for the safe exit of members from the dangerous area in the event of equipment failure or sudden changes in conditions.

3-1.8 Training in emergency operations shall be based on standard operating procedures. These procedures shall be maintained in written form (in conjunction with the fire department risk management plan) and shall address anticipated emergency scene operations.

3-1.9 Training exercises shall be conducted in accordance with the established standard operating procedures and shall be supervised by qualified instructors.

3-1.10 All members who are likely to be involved in emergency operations shall be trained in the incident management system used by the fire department as specified in 6-1.2 of this standard.

3-2 Training Requirements.

3-2.1* All members who engage in structural fire fighting shall at least meet the requirements of Fire Fighter I as specified in NFPA 1001, *Standard on Fire Fighter Professional Qualifications.*

3-2.2 Any training involving live fire-fighting exercises shall be conducted in compliance with NFPA 1403, *Standard on Live Fire Training Evolutions.*

3-2.3 All fire apparatus drivers/operators shall meet the applicable requirements specified in NFPA 1002, *Standard for Fire Department Vehicle Driver/Operator Professional Qualifications.*

3-2.4 All members who are primarily assigned to aircraft rescue and fire fighting shall meet the requirements specified in NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications.*

3-2.5 All fire officers shall at least meet the requirements for Fire Officer I as specified in NFPA 1021, *Standard for Fire Officer Professional Qualifications.*

3-2.6 All members who engage in wildland fire fighting shall meet the requirements for wildland fire fighters as specified in NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications.*

3-2.7 All members who engage in emergency medical services shall meet the requirements of the authority having jurisdiction.

3-2.8 All members shall meet the training requirements for infectious disease control as specified in NFPA 1581, *Standard on Fire Department Infection Control Program.*

3-2.9* All members who respond to incidents involving the release or potential release of hazardous substances shall meet at least the requirements for First Responder Operations Level as specified in NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents.*

3-2.10 All members who respond to marine vessel fires from land-based companies shall be trained to meet the requirements of NFPA 1405, *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires.*

3-2.11 All members who engage in emergency operations shall be trained commensurate with their duties and responsibilities. Training shall be as frequent as necessary to ensure that members can perform their assigned duties in a safe and competent manner but shall not be less frequent than specified in this section.

3-2.11.1* The fire department shall assure that all members who engage in fire-fighting operations are aware of the flammability and thermal stability characteristics of various types of fabrics used in clothing.

3-2.12 Members who use respiratory protection equipment at emergency incidents or in hazardous or potentially hazardous atmospheres shall be qualified to use respiratory protection. Members shall be trained for each type and model of respiratory protection they are required to use.

3-2.13 The officers in charge of fire prevention, maintenance, communications, and other specialized bureaus shall be responsible for special training needed by the personnel assigned to their particular staff function. They shall coordinate this special training with other programs of the department and with the training officer.

3-2.14 Where the fire department is responsible for nonstructural fire-fighting operations, including but not limited to wildland or other exterior fires, the fire department shall provide training in such fire-fighting operations in compliance with NFPA 1403, *Standard on Live Fire Training Evolutions.*

3-2.15 These training sessions shall be in addition to the training required in 3-3.3 of this chapter for members who are also assigned to structural fire-fighting duties.

3-2.16* Smoke-generating devices that produce a hazardous atmosphere shall not be used in training exercises.

3-3 Frequency.

3-3.1 Training shall be provided for all members as often as necessary to meet the applicable requirements of this chapter, but not less than twice each year.

3-3.2 Whenever changes in standard operating procedures or technology are introduced, or new hazards are identified in the work environment, appropriate training and education shall be provided for all affected members.

3-3.3 Where the fire department is responsible for structural fire-fighting operations, the fire department shall provide structural fire-fighting training at least monthly.

3-3.4 Members who engage in structural fire fighting shall attend a minimum of 10 monthly structural fire-fighting training sessions. Members shall participate in at least 24 hours of structural fire-fighting training annually.

3-3.5 Members who are primarily assigned to nonstructural fire-fighting operations shall attend nonstructural fire-fighting training sessions consisting of at least 24 hours of training annually.

3-3.6 Members who occasionally are assigned to nonstructural fire-fighting operations shall attend nonstructural fire-fighting training sessions consisting of at least nine hours annually.

3-4 Special Operations.

3-4.1 Specific and advanced training and education shall be provided to members who engage in special operations.

3-4.2 The fire department shall develop written standard operating procedures that describe the actions to be taken in situations involving special operations and shall include these standard operating procedures in the advanced training and education program.

3-4.3 All members who are likely to be involved in hazardous materials mitigation shall be trained to the appropriate level above First Responder Operations in accordance with NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents.*

Chapter 4 Vehicles, Equipment, and Drivers

4-1 Fire Department Vehicles.

4-1.1* 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 vehicles.

4-1.2 All new fire apparatus, including but not limited to pumpers, initial fire attack, mobile water supply, ladder and elevating platforms, and special service apparatus, shall be specified and ordered to meet the applicable requirements of NFPA 1901, *Standard for Automotive Fire Apparatus.*

4-1.3 All new wildland fire apparatus shall be specified and ordered to meet the requirements of NFPA 1906, *Standard for Wildland Fire Apparatus.*

4-1.4 Where tools, equipment, or respiratory protection are carried within enclosed seating areas of fire department vehicles, such items shall be secured by either a positive mechanical means of holding the item in its stowed position or in a compartment with a positive latching door. The means of holding the item in place or the compartment shall be designed to minimize injury to persons in the enclosed area of the vehicle caused by loose equipment during travel and in the event of an accident, a rapid deceleration, or a rapid acceleration.

4-2 Drivers/Operators of Fire Department Apparatus.

4-2.1* Fire department vehicles shall be operated only by members who have successfully completed an approved driver training program or by student drivers who are under the supervision of a qualified driver. Driver/operators of fire apparatus shall meet the requirements specified in Chapter 3 of this standard.

4-2.2* Drivers of fire department vehicles shall have valid driver's licenses. Vehicles shall be operated in compliance with all traffic laws, including sections pertaining to emergency vehicles, and any requirements of the authority having jurisdiction.

4-2.3* Drivers of fire department vehicles shall be directly responsible for the safe and prudent operation of the vehicles under all conditions. When the driver is under the direct supervision of an officer, that officer shall also assume responsibility for the actions of the driver.

4-2.4 Drivers shall not move fire department vehicles until all persons on the vehicle are seated and secured with seat belts in approved riding positions, other than as specifically allowed in 4-3.1.1 of this chapter.

4-2.5 During nonemergency travel, drivers of fire department vehicles shall obey all traffic control signals and signs and all laws and rules of the road of the jurisdiction for the operation of motor vehicles.

4-2.6* The fire department shall develop standard operating procedures for safely driving fire department vehicles during nonemergency travel and emergency response and shall include specific criteria for vehicle speed, crossing intersections, traversing railroad grade crossings, and the use of emergency warning devices. Such procedures for emergency response shall emphasize that the safe arrival of fire department vehicles at the emergency scene is the first priority.

4-2.7* During emergency response, drivers of fire department vehicles shall bring the vehicle to a complete stop under any of the following circumstances:

(a) When directed by a law enforcement officer
(b) Red traffic lights
(c) Stop signs
(d) Negative right-of-way intersections
(e) Blind intersections
(f) When the driver cannot account for all lanes of traffic in an intersection
(g) When other intersection hazards are present
(h) When encountering a stopped school bus with flashing warning lights

4-2.7.1 Drivers shall proceed through intersections only when the driver can account for all lanes of traffic in the intersection.

4-2.8* During emergency response or nonemergency travel, drivers of fire department vehicles shall come to a complete stop at all unguarded railroad grade crossings. Drivers shall assure that it is safe to proceed before crossing the railroad track(s). Drivers shall also use caution when approaching and crossing any guarded grade railroad crossing.

4-2.9 The fire department shall include in the driver training program information on the potential hazards of retarders, such as engine, transmission, and driveline retarders, and shall develop written procedures pertaining to the use of such retarders.

4-2.10 The fire department shall develop written procedures requiring drivers to discontinue the use of manual brake limiting valves, frequently labeled as a "wet road/dry road" switch, and requiring that the valve/switch remains in the "dry road" position.

4-3 Persons Riding in Fire Apparatus.

4-3.1* All persons riding in fire apparatus shall be seated and belted securely by seat belts in approved riding positions and at any time the vehicle is in motion other than as allowed in 4-3.1.1, 4-3.1.2, and 4-3.1.3 of this section. Standing or riding on tail steps, sidesteps, running boards, or in any other exposed position shall be specifically prohibited. Seatbelts shall not be released or loosened for any purpose while the vehicle is in

motion, including the donning of respiratory protection equipment or protective clothing.

4-3.1.1* Members actively performing necessary emergency medical care while the vehicle is in motion shall be secured to the vehicle by a seat belt, or by a safety harness designed for occupant restraint, to the extent consistent with the effective provision of such emergency medical care. All other persons in the vehicle shall be seated and belted in approved riding positions while the vehicle is in motion.

4-3.1.2* Fire departments permitting hose loading operations while the vehicle is in motion shall develop written standard operating procedures addressing all safety aspects.

4-3.1.3* Fire departments permitting tiller training, where both the instructor and the trainee are at the tiller position, shall develop written standard operating procedures addressing all safety aspects.

4-3.2* Helmets and eye protection shall be provided for and used by persons riding in cabs or tiller seats that are not enclosed on at least three sides and the top.

4-3.3 On existing fire apparatus where there is an insufficient number of seats available for the number of members assigned to or expected to ride on that piece of apparatus, alternate means of transportation that provide seating positions shall be used. Such alternate means of transportation shall include, but not be limited to, other fire apparatus, automobiles, or vans.

4-3.4* All new fire apparatus shall be specified and ordered in accordance with the appropriate fire apparatus standard specified in Section 4-1 of this chapter with a sufficient number of seats in a fully enclosed personnel area for the maximum number of persons expected to ride on the vehicle at any time. The fully enclosed personnel area shall consist of a roof, a floor, and four sides, with positive latching doors that provide total enclosure.

4-4 Inspection, Maintenance, and Repair of Fire Apparatus.

4-4.1* All fire department vehicles 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 to identify and correct unsafe conditions.

4-4.2 A preventive maintenance program shall be established, and records shall be maintained as specified in 2-7.5 of this standard. Maintenance, inspections, and repairs shall be performed by qualified persons in accordance with manufacturer's instructions. Manufacturer's instructions shall be considered as minimum criteria for the maintenance, inspection, and repair of equipment.

4-4.3* The fire department shall establish a list of major defects to be utilized to evaluate when a vehicle shall be declared unsafe. Any fire department vehicle found to be unsafe shall be placed out of service until repaired.

4-4.4 All repairs to fire department apparatus shall be made by qualified persons experienced with the type of vehicle or the type of work to be performed in accordance with the vehicle manufacturer's instructions.

4-4.5 Fire pumps on apparatus shall be service tested in accordance with the applicable requirements of NFPA 1911, *Standard for Service Tests of Pumps on Fire Department Apparatus.*

4-4.6 All aerial devices shall be inspected and service tested in accordance with the applicable requirements of NFPA 1914, *Standard for Testing Fire Department Aerial Devices.*

4-4.7 All fire department apparatus shall be cleaned and disinfected after responding to an emergency medical services incident where the potential for contamination from exposure to communicable diseases could have occurred. Cleaning and disinfecting shall be in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program.*

4-5 Tools and Equipment.

4-5.1 The fire department shall consider safety and health as primary concerns in the specification, design, construction, acquisition, operation, maintenance, inspection, and repair of all tools and equipment.

4-5.1.1 The hearing conservation objectives of Section 5-11 of this standard shall be taken into account in the acquisition of new power tools and power equipment.

4-5.2 All new fire department ground ladders shall be specified and ordered to meet the applicable requirements of NFPA 1931, *Standard on Design of and Design Verification Tests for Fire Department Ground Ladders.*

4-5.3 All new fire hose shall be specified and ordered to meet the applicable requirements of NFPA 1961, *Standard on Fire Hose.*

4-5.4 All new fire department spray nozzles shall be specified and ordered to meet the applicable requirements of NFPA 1964, *Standard for Spray Nozzles (Shutoff and Tip).*

4-5.5* All equipment carried on fire apparatus or designated for training shall be inspected at least weekly and within 24 hours after any use. Inventory records shall be maintained for the equipment carried on each vehicle. Records shall also be maintained for equipment designated for training.

4-5.6 All equipment carried on fire apparatus or designated for training shall be tested at least annually in accordance with manufacturer's instructions and applicable standards.

4-5.7 Fire-fighting equipment found to be defective or in unserviceable condition shall be removed from service and repaired or replaced.

4-5.8 All fire department equipment and tools shall be cleaned and disinfected after responding to an emergency medical services incident where the potential for contamination from exposure to communicable diseases might have occurred. Cleaning and disinfecting shall be in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program.*

4-5.9 All ground ladders shall be inspected and service tested in accordance with the applicable requirements of NFPA 1932, *Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders.*

4-5.10 All fire hose shall be inspected and service tested in accordance with the applicable requirements of NFPA 1962, *Standard for the Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles.*

4-5.11 All fire extinguishers shall be inspected and tested in accordance with the applicable requirements of NFPA 10, *Standard for Portable Fire Extinguishers.*

Chapter 5 Protective Clothing and Protective Equipment

5-1 General.

5-1.1* The fire department shall provide each member with the appropriate protective clothing and protective equipment to provide protection from the hazards to which the member is or is likely to be exposed. Such protective clothing and protective equipment shall be suitable for the tasks that the member is expected to perform.

5-1.2* Protective clothing and protective equipment shall be used whenever the member is exposed or potentially exposed to the hazards for which it is provided.

5-1.3 Members shall be fully trained in the care, use, inspection, maintenance, and limitations of the protective clothing and protective equipment assigned to them or available for their use.

5-1.4* Structural fire-fighting protective clothing shall be periodically cleaned at least every 6 months as specified in NFPA 1581, *Standard on Fire Department Infection Control Program.*

5-1.5* Cleaning processes for protective clothing ensembles shall be appropriate for the types of contaminants and for the materials that are to be cleaned**.**

5-1.6* Where station/work uniforms are worn by members, such station/work uniforms shall meet the requirements of NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters.*

5-1.7 While on duty, members shall not wear any clothing that is unsafe due to poor thermal stability or poor flame-resistant characteristics of the fabric(s).

5-1.8* The fire department shall provide for the cleaning of protective clothing and station/work uniforms. Such cleaning shall be performed either by a cleaning service that is familiar with the proper procedures and equipped to handle contaminated clothing or by a fire department facility that is equipped to handle contaminated clothing.

5-1.8.1 Where such cleaning is conducted in fire stations, the fire department shall provide at least one washing machine for this purpose in the designated cleaning area specified in NFPA 1581, *Standard on Fire Department Infection Control Program.*

5-2 Protective Clothing for Structural Fire Fighting.

5-2.1 Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and shall use a protective ensemble that shall meet the applicable requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting.*

5-2.1.1 There shall be at least a 2-in. (5.08-cm) overlap of all layers of the protective coat and the protective trousers so there is no gaping of the total thermal protection when the protective garments are worn. The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, in both of the following positions:

Position A. Standing, hands together reaching overhead as high as possible

Position B. Standing, hands together reaching overhead, with body bent forward, to the side, and to the back as much as possible

5-2.1.2 Single piece protective coveralls shall not be required to have an overlap of all layers provided there is continuous composite protection.

5-2.1.3 Fire departments that provide protective coats with protective resilient wristlets secured through a thumb opening shall be permitted to provide gloves of the gauntlet type for use with these protective coats. Fire departments that do not provide such wristlets attached to all protective coats shall provide gloves of the wristlet type for use with these protective coats.

5-2.1.4* Protective clothing and protective equipment shall be used and maintained in accordance with manufacturer's instructions. The fire department shall establish a maintenance and inspection program for protective clothing and protective equipment. Specific responsibilities shall be assigned for inspection and maintenance.

5-2.1.5 The fire department shall require all members to wear all the protective ensemble as specified in 5-2.1, 5-2.1.3, and 5-2.1.4.

5-3 Respiratory Protection.

5-3.1* The fire department shall adopt and maintain a respiratory protection program that addresses the selection, inspection, safe use, and maintenance of respiratory protection equipment, training in its use, and the assurance of air quality testing. Members shall be tested and certified at least annually in the safe and proper use of respiratory protection equipment that they are authorized to use.

5-3.1.1 The respiratory protection program shall meet the requirements of NFPA 1404, *Standard for a Fire Department Self-Contained Breathing Apparatus Program.*

5-3.2* The fire department shall have written standard operating procedures to address the safe use of respiratory protection in hazardous atmospheres that can be encountered in normal operations and in emergencies.

5-3.3* The fire department shall provide to all members and require all members to use SCBA that meets NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*, when engaged in any operations where they might encounter atmospheres that are immediately dangerous to life or health (IDLH) or potentially IDLH or where the atmosphere is unknown.

5-3.4* Closed-circuit SCBA shall be permitted when SCBA is required. Closed-circuit SCBA shall be NIOSH certified with a minimum service duration of at least 30 minutes and shall operate in the positive-pressure mode only.

5-3.5* Members using SCBA shall not compromise the protective integrity of the SCBA for any reason when operating in a hazardous atmosphere, or in an atmosphere where the quality of air is unknown, by removing the facepiece or disconnecting any portion of the SCBA that would allow the ambient atmosphere to be breathed.

5-3.6 Compressed gaseous breathing air for SCBA cylinders shall meet the requirements of ANSI/CGA G7.1, *Commodity Specification for Air*, with a minimum air quality of Grade D, and shall have a dew point level of –65°F (–54°C) or dryer (24 ppm v/v or less) and a maximum particulate level of 5 mg/m^3 air.

5-3.7 When the fire department purchases compressed breathing air in a vendor-supplied SCBA cylinder, the fire

department shall require the vendor to provide documentation that a sample of the breathing air obtained directly at the point of transfer from the vendor's filling system to the SCBA cylinder has been tested at least quarterly and that it meets the requirements of 5-3.6 of this section.

5-3.7.1 When a fire department manufacturers its own breathing air, the fire department shall be required to provide documentation that a sample of the breathing air obtained directly from the point of transfer from the filling system to the SCBA cylinders has been tested at least quarterly and that it meets the requirements of 5-3.6 of this section.

5-3.7.2 When the fire department obtains compressed breathing air from a supplier and transfers it to other storage cylinders, cascade system cylinders, storage receivers, and other such storage equipment used for filling SCBA, the supplier shall be required to provide documentation that a sample of the breathing air obtained directly at the point of transfer from the filling system to the storage cylinders, cascade system cylinders, storage receivers, and other such storage equipment has been tested at least quarterly and that it meets the requirements of 5-3.6 of this section. In addition, the fire department itself shall obtain documentation that a sample of the breathing air obtained directly at the point of transfer to the SCBA cylinders from the storage cylinders, cascade system cylinders, storage receivers, and other such storage equipment used for filling SCBA has been tested at least quarterly and that it meets the requirements of 5-3.6 of this section.

5-3.8 SCBA cylinders shall be hydrostatically tested within the periods specified by the manufacturers and the applicable governmental agencies.

5-3.9* The facepiece seal capability of each member qualified to use SCBA shall be verified by qualitative fit testing on an annual basis and whenever new types of SCBA or facepieces are issued. Each new member shall be tested before being permitted to use SCBA in a hazardous atmosphere. Only members with a properly fitting facepiece shall be permitted by the fire department to function in a hazardous atmosphere with SCBA.

5-3.10* Members who have a beard or facial hair at any point where the SCBA facepiece is designed to seal with the face, or hair that could interfere with the operation of the unit, shall not be permitted to use respiratory protection at emergency incidents or in hazardous or potentially hazardous atmospheres. These restrictions shall apply regardless of the specific fit test measurement that can be obtained under test conditions.

5-3.11 When a member must wear spectacles while using a full facepiece respiratory protection, the respiratory protection full facepiece shall be fitted with spectacles in such a manner that it shall not interfere with the facepiece-to-face seal.

5-3.11.1 Spectacles with any strap or temple bars that pass through the facepiece-to-face seal area shall be prohibited.

5-3.11.2* Use of contact lenses shall be permitted during full facepiece respiratory protection use, provided that the member has previously demonstrated successful long-term contact lens use.

5-3.12 Nothing shall be allowed to enter or pass through the area where the respiratory protection facepiece is designed to seal with the face, regardless of the specific fit test measurement that can be obtained.

5-3.12.1 Any head covering that passes between the sealing surface of the respiratory protection facepiece and the member's face shall be prohibited.

5-3.12.2 The respiratory protection facepiece and head harness with straps shall be worn under the protective hoods specified in 5-2.1.5 and 5-4.5 of this chapter.

5-3.12.3 The respiratory protection facepiece and head harness with straps shall be worn under the head protection of any hazardous chemical protective clothing specified in Section 5-6 of this standard.

5-3.12.4 Helmets shall not interfere with the respiratory protection facepiece-to-face seal.

5-4 Protective Clothing for Proximity Fire-Fighting Operations.

5-4.1 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use both proximity protective coats and proximity protective trousers, or a proximity protective coverall, for limb/torso protection. The proximity protective coat and proximity protective trousers, or the proximity protective coverall, shall meet the applicable requirements of NFPA 1976, *Standard on Protective Clothing for Proximity Fire Fighting*.

5-4.1.1 There shall be at least a 2-in. (5.08-cm) overlap of all layers of the proximity protective coat and proximity protective trousers so there is no gaping of the total thermal and radiant heat protection when the protective garments are worn. The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, in both of the following positions:

Position A. Standing, hands together reaching overhead as high as possible

Position B. Standing, hands together reaching overhead, with body bent forward, to the side, and to the back as much as possible

5-4.1.2 Single piece proximity protective coveralls shall not be required to have an overlap of all layers, provided there is continuous full thermal and radiant heat protection.

5-4.2 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use helmets that meet the applicable requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire-fighting exposures where the helmet will be used.

5-4.3 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use gloves that meet the applicable requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire-fighting exposures where the gloves will be used.

5-4.4 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use footwear that meets the applicable requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire-fighting exposures where the footwear will be used.

5-4.5 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use protective hoods that meet the applicable requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire-fighting exposures where the hood will be used.

5-4.6 Where SCBA is worn over or outside the proximity protective garment, the fire department shall inform the member of the potential high levels of radiant heat that can result in the failure of the SCBA. The fire department shall require additional approved radiant reflective criteria, including but not limited to a protective cover, for the expected proximity fire-fighting exposures when the SCBA is worn over or outside the proximity protective garment.

5-5* Protective Clothing for Emergency Medical Operations.

5-5.1 Members who perform emergency medical care or are otherwise likely to be exposed to blood or other body fluids shall be provided with emergency medical garments, emergency medical face protection devices, and emergency medical gloves that meet the applicable requirements of NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*.

5-5.2* Members shall wear emergency medical gloves when providing emergency medical care. Patient care shall not be initiated before the gloves are in place.

5-5.2.1* The fire department shall provide all fire fighters who perform emergency medical care or are likely to be exposed to airborne infectious disease with NIOSH-approved Type C respirators certified to meet 42 CFR 84.

5-5.3 Each member shall use emergency medical garments and emergency medical face protection devices prior to any patient care during which large splashes of body fluids can occur, such as situations involving spurting blood or childbirth.

5-5.4 Contaminated emergency medical garments, emergency medical face protection devices, and emergency medical gloves shall be cleaned and disinfected or disposed of in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program*.

5-5.5 The fire department shall provide gloves that meet the requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting,* during operations where sharp or rough edges are likely to be encountered during emergency medical care operations.

5-6* Chemical-Protective Clothing for Hazardous Chemical Emergency Operations.

5-6.1* Vapor-Protective Garments.

5-6.1.1 Members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in vapor form or to unknown chemicals shall be provided with and shall use vapor-protective suits. Vapor-protective suits shall meet the applicable requirements of NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*.

5-6.1.2 Prior to use, the incident commander shall consult the technical data package, manufacturer's instructions, and manufacturer's recommendations as provided and required by Chapters 2 and 3 of NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, to assure that the garment is appropriate for the specific hazardous chemical emergency.

5-6.1.3 All members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in vapor form or to unknown chemicals shall be provided with and shall use SCBA that meet the applicable requirements of Section 5-3 of this chapter. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH under 42 CFR 84.

5-6.1.4* Vapor-protective suits shall not be used alone for any fire-fighting applications or for protection from radiological, biological, or cryogenic agents, or in flammable or explosive atmospheres.

5-6.1.5 Vapor-protective suits shall be permitted to be used for protection from liquid splashes or solid chemicals and particulates.

5-6.2* Liquid Splash-Protective Garments.

5-6.2.1 Members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in liquid-splash form shall be provided with and shall use liquid splash-protective suits. Liquid splash-protective suits shall meet the applicable requirements of NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*.

5-6.2.2 Prior to use of the garment, the incident commander shall consult the technical data package, manufacturer's instructions, and manufacturer's recommendations as provided and required by Chapters 2 and 3 of NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, to assure that the garment is appropriate for the specific hazardous chemical emergency.

5-6.2.3 All members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in liquid-splash form shall be provided with and shall use either SCBA that meet the applicable requirements of Section 5-3 of this chapter or respiratory protective devices that are NIOSH certified under 42 CFR 84 as suitable for the specific chemical environment. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH under 42 CFR 84.

5-6.2.4 Liquid splash-protective suits shall not be used for protection from chemicals in vapor form, or from unknown liquid chemicals or chemical mixtures. Only vapor-protective suits specified in 5-6.1 of this chapter and SCBA specified in Section 5-3 of this chapter shall be considered for use.

5-6.2.5 Liquid splash-protective suits shall not be used for protection from chemicals or specific chemical mixtures with known or suspected carcinogenicity as indicated by any one of the following documents:

(a) N. Irving Sax, *Dangerous Properties of Industrial Chemicals*

(b) NIOSH *Pocket Guide to Chemical Hazards*

(c) U.S. Coast Guard *Chemical Hazard Response Information System (CHRIS)*, Volumes 1-3, "Hazardous Chemical Data"

5-6.2.6 Liquid splash-protective suits shall not be used for protection from chemicals or specific chemical mixtures with skin toxicity notations as indicated by the American Conference of Governmental Industrial Hygienists, *Threshold Limit Values and Biological Exposure Indices for 1996-1997.*

5-6.2.7* Liquid splash-protective suits shall not be used alone for any fire-fighting applications or for protection from radiological, biological, or cryogenic agents; from flammable or explosive atmospheres; or from hazardous chemical vapor atmospheres.

5-6.2.8 Liquid splash-protective suits shall be permitted to be used for protection from solid chemicals and particulates.

5-6.3* Support Function Protective Garments.

5-6.3.1 Members who provide functional support outside the hot zone during hazardous chemical emergencies shall be provided with and shall use support function protective garments. Support function protective garments shall meet the applicable requirements of NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations.*

5-6.3.2 Prior to use, the incident commander shall consult the technical data package, manufacturer's instructions, and manufacturer's recommendations as provided and required by Chapters 2 and 3 of NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations*, to assure that the garment is appropriate for the intended environment.

5-6.3.3 Members who engage in or are exposed to chemicals in support function environments during hazardous chemical emergencies shall be provided with and shall use either SCBA that meet the applicable requirements of Section 5-3 of this chapter or respiratory protective devices that are NIOSH certified under 42 CFR 84 as suitable for the specific environment. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH under 42 CFR 84.

5-6.3.4 Support function protective garments shall not be used in any hot zone of any hazardous chemical operation.

5-6.3.5 Support function protective garments shall not be used for protection from chemicals or specific chemical mixtures with known or suspected carcinogenicity as indicated by any one of the following documents:

(a) N. Irving Sax, *Dangerous Properties of Industrial Chemicals*

(b) NIOSH *Pocket Guide to Chemical Hazards*

(c) U.S. Coast Guard *Chemical Hazard Response Information System (CHRIS)*, Volumes 1-3, "Hazardous Chemical Data"

5-6.3.6 Support function protective garments shall not be used for protection from chemicals or specific chemical mixtures with skin toxicity notations as indicated by the American Conference of Governmental Industrial Hygienists, *Threshold Limit Values and Biological Exposure Indices for 1996-1997.*

5-6.3.7* Support function protective garments shall not be used for any fire-fighting applications or for protection from radiological, biological, or cryogenic agents; from flammable or explosive atmospheres; or from hazardous chemical vapor atmospheres.

5-6.3.8 Support function protective garments shall be permitted to be used for protection against solid chemical and particulates outside of the hot zone.

5-6.4 Inspection, Maintenance, and Disposal of Chemical-Protective Clothing.

5-6.4.1 All chemical-protective clothing shall be inspected and maintained as required by the technical data package, manufacturer's instructions, and manufacturer's recommendations.

5-6.4.2 All chemical-protective clothing that receives a significant exposure to a chemical or chemical mixture shall be disposed of if decontamination will not stop the chemical assault on the garment and the protective qualities will be diminished or nullified. Disposal shall be in accordance with applicable state or federal regulations.

5-7 Protective Clothing and Equipment for Wildland Fire Fighting.

5-7.1* The fire department shall establish standard operating procedures for the use of wildland protective clothing and equipment.

5-7.2 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with and use a protective ensemble that meets the requirements of NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

5-7.3 Protective clothing for wildland fire-fighting operations shall be fitted so that an overlap of clothing is provided at the waist, ankles, and wrists.

5-7.4* Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with and use a protective helmet that meets the requirements of NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

5-7.5 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with and use protective gloves that meet the requirements of NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

5-7.6 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with and use protective footwear that meets the requirements of NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting.*

5-7.7 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with an approved fire shelter, in a crush-resistive case, and wear it in such a way as to allow immediate deployment.

5-7.7.1 Members shall be trained in the proper deployment of an approved fire shelter, at least annually.

5-7.8* Each member who engages in or is exposed to the hazards of wildland fire-fighting operations shall be provided with 2 quarts of water. A process shall be established for the rapid replenishment of water supplies.

5-7.9* Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall be provided with and use a laminated pocket card stating the 10 standard fire-fighting orders, the 18 "watch-out" situations, and the "LCES" (Lookouts, Communications, Escape routes, and Safety zones) safety orders.

5-8 Personal Alert Safety System (PASS).

5-8.1* Each member shall be provided with and shall use a PASS device in the hazardous area. PASS devices shall meet the requirements of NFPA 1982, *Standard on Personal Alert Safety Systems (PASS) for Fire Fighters.*

5-8.2 Each PASS device shall be tested at least weekly and prior to each use, and shall be maintained in accordance with the manufacturer's instructions.

5-9 Life Safety Rope and System Components.

5-9.1 All life safety ropes, harnesses, and hardware used by fire departments shall meet the applicable requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components.*

5-9.2 Rope used to support the weight of members or other persons during rescue, fire fighting, other emergency operations, or during training evolutions shall be life safety rope and shall meet the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components.* Life safety rope used for any other purpose shall be removed from service and destroyed.

5-9.3* Life safety rope used for rescue at fires or other emergency incidents or for training shall be permitted to be reused if inspected before and after each such use in accordance with the manufacturer's instructions and provided that the following criteria are met:

(a) The rope has not been visually damaged by exposure to heat, direct flame impingement, chemical exposure, or abrasion.

(b) The rope has not been subjected to any impact load.

(c) The rope has not been exposed to chemical liquids, solids, gases, mists, or vapors of any material known to deteriorate rope.

If the rope used for rescue at fires or other emergency incidents or for training has been subjected to (a), (b), or (c) or fails the visual inspection, it shall be destroyed after such use. If there is any question regarding the serviceability of the rope after consideration of the above, the safe course of action shall be taken and the rope shall be placed out of service. Life safety rope used for any other purpose shall be removed from service and destroyed.

5-9.4 Rope inspection shall be conducted by qualified inspectors in accordance with rope inspection procedures established and recommended as adequate by the rope manufacturer to assure rope is suitable for reuse.

5-9.5 Records shall be maintained to document the use of each life safety rope used at fires and other emergency incidents or for training.

5-10 Eye and Face Protection.

5-10.1 Primary face and eye protection appropriate for a given specific hazard shall be provided for and used by members exposed to that specific hazard. Such primary face and eye protection shall meet the requirements of ANSI Z87.1, *Practice for Occupational and Educational Eye and Face Protection.*

5-10.2 The full facepiece of SCBA shall constitute face and eye protection when worn. SCBA that has a facepiece-mounted regulator that, when disconnected, provides a direct path for flying objects to strike the face or eyes, shall have the regulator attached in order to be considered eye and face protection.

5-10.3 When operating in the hazardous area at an emergency scene without the full facepiece of respiratory protection being worn, members shall deploy the helmet goggles for eye protection.

5-11 Hearing Protection.

5-11.1* Hearing protection shall be provided for and used by all members operating or riding on fire apparatus when subject to noise in excess of 90 dBA.

5-11.2* Hearing protection shall be provided for and used by all members when exposed to noise in excess of 90 dBA caused by power tools or equipment, other than in situations where the use of such protective equipment would create an additional hazard to the user.

5-11.3* The fire department shall engage in a hearing conservation program to identify and reduce or eliminate potentially harmful sources of noise in the work environment. Where audiometric testing indicates a significant hearing loss for a member, the fire department shall address these conditions on an individual basis, as well as take steps to control potentially harmful noise exposure to any or all other members.

5-12 New and Existing Protective Clothing and Protective Equipment.

5-12.1 All new protective clothing and protective equipment shall meet the requirements of the current edition, as specified in Chapter 11 of this standard, of the respective standards specified in 5-1.6, 5-2.1, 5-4.1, 5-5.1, 5-6.1.1, 5-6.2.1, 5-6.3.1, and 5-8.1 of this chapter.

5-12.2 Existing protective clothing and protective equipment shall have been in compliance with the edition of the respective NFPA standard that was current when the protective clothing or protective equipment was manufactured.

Chapter 6 Emergency Operations

6-1 Incident Management.

6-1.1 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.

6-1.2 An incident management system that meets the requirements of NFPA 1561, *Standard on Fire Department Incident Management System,* shall be established with written standard operating procedures applying to all members involved in emergency operations. All members involved in emergency operations shall be trained in the system. The incident management system shall be utilized at all emergency incidents. The incident management system shall also 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.

6-1.3* At an emergency incident, the incident commander shall be responsible for the overall management of the incident and the safety of all members involved at the scene. As incidents escalate in size and complexity, the incident commander shall divide the incident into tactical-level manage-

ment units and assign an incident safety officer to assess the incident scene for hazards or potential hazards.

6-1.4 At an emergency incident, the incident commander shall establish an organization with sufficient supervisory personnel to control the position and function of all members operating at the scene and to ensure that safety requirements are satisfied.

6-1.5* At an emergency incident, the incident commander shall have the responsibility for the following:

(a) Arrive on-scene before assuming command.

(b) Assume and confirm command of an incident and take an effective command position.

(c) Perform situation evaluation that includes risk assessment.

(d) Initiate, maintain, and control incident communications.

(e) Develop an overall strategy and an incident action plan, and assign companies and members consistent with the standard operating procedures required by 6-1.2.

(f) Develop an effective incident organization by managing resources, maintaining an effective span of control, and maintaining direct supervision over the entire incident, and designate supervisors in charge of specific areas or functions.

(g) Review, evaluate, and revise the incident action plan as required.

(h) Continue, transfer, and terminate command.

(i) On incidents under the command authority of the fire department, provide for liaison and coordination with all other cooperating agencies.

(j) On incidents where other agencies have jurisdiction, implement a plan that designates one incident commander or that provides for unified command. Interagency coordination shall meet the requirements of Section 2-3 of NFPA 1561, *Standard on Fire Department Incident Management System.*

6-1.6 The fire department shall establish and ensure the maintenance of a fire dispatch and incident communication system that meets the requirements of Section 2-2 of NFPA 1561, *Standard on Fire Department Incident Management System.*

6-2 Risk Management During Emergency Operations.

6-2.1* The incident commander shall integrate risk management into the regular functions of incident command.

6-2.1.1* The concept of risk management shall be utilized on the basis of the following principles:

(a) 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.

(b) 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.

(c) No risk to the safety of members shall be acceptable when there is no possibility to save lives or property.

6-2.1.2* The incident commander shall evaluate the risk to members with respect to the purpose and potential results of their actions in each situation. In situations where the risk to fire department members is excessive, as defined by 6-2.1.1 of this section, activities shall be limited to defensive operations.

6-2.2 Risk management principles shall be routinely employed by supervisory personnel at all levels of the incident management system to define the limits of acceptable and unacceptable positions and functions for all members at the incident scene.

6-2.3* At significant incidents and special operations incidents, the incident commander shall assign an incident safety officer that has the expertise to evaluate hazards and provide direction with respect to the overall safety of personnel.

6-2.4 At civil disturbances or incidents involving the risk for physical violence, the incident commander shall ensure that appropriate protective equipment (e.g., body armor) is available and used before members are allowed to enter the hazard area.

6-2.5 At terrorist incidents or other incidents involving potential nuclear, biological, and chemical exposure, the incident commander shall exercise risk management practice and ensure that appropriate protective equipment is available for and used by members at risk.

6-3 Accountability.

6-3.1* The fire department shall establish written standard operating procedures for a personnel accountability system that is in accordance with Section 2-6 of NFPA 1561, *Standard on Fire Department Incident Management System*, and that provides for the tracking and inventory of all members operating at an emergency incident. The system shall provide a rapid accounting of all personnel at the incident scene**.**

6-3.1.1 The fire department shall consider local conditions and characteristics in establishing the requirements of the personnel accountability system.

6-3.2 It shall be the responsibility of all members operating at an emergency incident to actively participate in the personnel accountability system.

6-3.3 The incident commander shall be responsible for overall personnel accountability for the incident. The incident commander shall initiate an accountability and inventory worksheet at the very beginning of operations and shall maintain that system throughout operations.

6-3.3.1 The incident commander shall maintain an awareness of the location and function of all companies or units at the scene of the incident.

6-3.3.2 Officers assigned the responsibility for a specific tactical level management unit at an incident shall directly supervise and account for the companies operating in their specific area of responsibility.

6-3.3.3 Company officers shall maintain an ongoing awareness of the location and condition of all company members.

6-3.3.4 Where assigned as a company, members shall be responsible to remain under the supervision of their assigned company officer.

6-3.3.5 Members shall be responsible for following personnel accountability system procedures.

6-3.4 The personnel accountability system shall be used at all incidents.

6-3.5* The fire department shall develop the system components required to make the personnel accountability system effective.

6-3.6* The standard operating procedures shall provide the use of additional accountability officers based on the size, complexity, or needs of the incident.

6-3.7 The incident commander and members who are assigned a supervisory responsibility for a tactical level management unit that involves multiple companies or crews under their command shall have assigned a member(s) to facilitate the ongoing tracking and accountability of all assigned companies.

6-4 Members Operating at Emergency Incidents.

6-4.1* The fire department shall provide an adequate number of personnel to safely conduct emergency scene operations. Operations shall be limited to those that can be safely performed by the personnel available at the scene. No member or members shall commence or perform any fire-fighting function or evolution that is not within the established safety criteria of the organizational statement as specified in 2-1.2 of this standard.

6-4.2 When inexperienced members are working at an incident, direct supervision shall be provided by more experienced officers or members. This requirement shall not reduce the training requirements contained in Chapter 3 of this standard.

6-4.3* Members operating in hazardous areas at emergency incidents shall operate in teams of two or more. Team members operating in hazardous areas shall be in communication with each other through visual, audible, or physical means or safety guide rope, in order to coordinate their activities. Team members shall be in close proximity to each other to provide assistance in case of emergency.

6-4.4* In the initial stages of an incident where only one team is operating in the hazardous area at a working structural fire, a minimum of four individuals is required, consisting of two individuals working as a team in the hazard area and two individuals present outside this hazard area for assistance or rescue at emergency operations where entry into the danger area is required. The standby members shall be responsible for maintaining a constant awareness of the number and identity of members operating in the hazardous area, their location and function, and time of entry. The standby members shall remain in radio, visual, voice, or signal line communications with the team.

6-4.4.1 The "initial stages" of an incident shall encompass the tasks undertaken by the first arriving company with only one team assigned or operating in the hazardous area.

6-4.4.2* One standby member shall be permitted to perform other duties outside of the hazardous area, such as apparatus operator, incident commander, or technician or aide, provided constant communication is maintained between the standby member and the members of the team. The assignment of any personnel, including the incident commander, the safety officer, or operators of fire apparatus, shall not be permitted as standby personnel if by abandoning their critical task(s) to assist or, if necessary, perform rescue, they clearly jeopardize the safety and health of any fire fighter working at the incident. No one shall be permitted to serve as a standby member of the fire-fighting team when the other activities in which he/she is engaged inhibit his/her ability to assist in or perform rescue, if necessary, or are of such importance that they cannot be abandoned without placing other fire fighters in danger.

6-4.4.3 The standby member shall be provided with at least the appropriate full protective clothing, protective equipment, and SCBA as required in Chapter 5 of this standard. The full protective clothing, protective equipment, and SCBA shall be immediately accessible for use by the outside team if the need for rescue activities inside the hazard area is necessary. The standby members shall don full protective clothing, protective equipment, and SCBA prior to entering the hazard area.

6-4.4.4 When only a single team is operating in the hazardous area in the initial stages of the incident, this standby member shall be permitted to assist, or if necessary perform, rescue for members of his/her team, providing abandoning his/her task does not jeopardize the safety or health of the team. Once a second team is assigned or operating in the hazardous area, the incident shall no longer be considered in the "initial stage," and at least one rapid intervention crew shall be required.

6-4.4.5 Initial attack operations shall be organized to ensure that, if upon arrival at the emergency scene, initial attack personnel find an imminent life-threatening situation where immediate action could prevent the loss of life or serious injury, such action shall be permitted with less than four personnel when conducted in accordance with Section 6-2 of this standard. No exception shall be permitted when there is no possibility to save lives. Any such actions taken in accordance with this section shall be thoroughly investigated by the fire department with a written report submitted to the fire chief.

6-4.5* When members are performing special operations, the highest available level of emergency medical care shall be standing by at the scene with medical equipment and transportation capabilities. Basic life support shall be the minimum level of emergency medical care.

6-4.5.1 Emergency medical care and medical monitoring at hazardous materials incidents shall be provided by or supervised by personnel who meet the minimum requirements of NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents.*

6-4.5.2 At all other emergency operations, the incident commander shall evaluate the risk to the members operating at the scene and, if necessary, request that at least basic life-support personnel and patient transportation be available.

6-4.6 When members are operating from aerial devices, they shall be secured to the aerial device by an approved ladder belt that complies with the requirements of Section 5-9 of this standard.

6-4.7 When members are operating at an emergency incident and their assignment places them in potential conflict with motor vehicle traffic, they shall wear a garment with fluorescent retroreflective material.

6-4.7.1 Apparatus shall be utilized as a shield from oncoming traffic wherever possible.

6-4.7.2* When acting as a shield, apparatus warning lights shall remain on, if appropriate, and fluorescent and retroreflective warning devices such as traffic cones, illuminated warning devices such as highway flares, or other appropriate warning devices shall be used to warn oncoming traffic of the

emergency operations and the hazards to members operating at the incident.

6-5 Rapid Intervention for Rescue of Members.

6-5.1 The fire department shall provide personnel for the rescue of members operating at emergency incidents if the need arises.

6-5.2 A rapid intervention crew shall consist of at least two members and shall be available for rescue of a member or a team if the need arises. Rapid intervention crews shall be fully equipped with the appropriate protective clothing, protective equipment, SCBA, and any specialized rescue equipment that might be needed given the specifics of the operation under way.

6-5.3 The composition and structure of rapid intervention crews shall be permitted to be flexible based on the type of incident and the size and complexity of operations. The incident commander shall evaluate the situation and the risks to operating teams and shall provide one or more rapid intervention crews commensurate with the needs of the situation.

6-5.4 In the early stages of an incident, which includes the deployment of a fire department's initial attack assignment, the rapid intervention crew(s) shall be in compliance with 6-4.4 and 6-4.4.2 and be either one of the following:

(a) On-scene members designated and dedicated as rapid intervention crew(s)

(b) On-scene members performing other functions but ready to redeploy to perform rapid intervention crew functions. The assignment of any personnel shall not be permitted as members of the rapid intervention crew if abandoning their critical task(s) to perform rescue clearly jeopardizes the safety and health of any member operating at the incident.

6-5.5 As the incident expands in size or complexity, which includes an incident commander's requests for additional resources beyond a fire department's initial attack assignment, the rapid intervention crews shall upon arrival of these additional resources be either one of the following:

(a) On-scene members designated and dedicated as rapid intervention crews

(b) On-scene company or companies located for rapid deployment and dedicated as rapid intervention crews

6-5.6 At least one rapid intervention crew shall be standing by with equipment to provide for the rescue of members that are performing special operations or for members that are in positions that present an immediate danger of injury in the event of equipment failure or collapse.

6-6 Rehabilitation During Emergency Operations.

6-6.1* The fire department shall develop standard operating procedures that outline a systematic approach for the rehabilitation of members operating at incidents. Provisions addressed in these procedures shall include medical evaluation and treatment, food and fluid replenishment, crew rotation, and relief from extreme climatic conditions.

6-6.2* The incident commander shall consider the circumstances of each incident and initiate rest and rehabilitation in accordance with the standard operating procedures and with NFPA 1561, *Standard on Fire Department Incident Management System.*

6-6.3* Such on-scene rehabilitation shall include at least basic life-support care.

6-6.4 Each member operating at an incident shall be responsible to communicate rehabilitation and rest needs to his/her supervisor.

6-7 Civil Unrest/Terrorism.

6-7.1 The fire department shall develop and maintain written standard operating procedures that establish a standardized approach to the safety of members at incidents that involve violence, unrest, or civil disturbance. Such situations shall include but not be limited to riots, fights, violent crimes, drug-related situations, family disturbances, deranged individuals, and people interfering with fire department operations.

6-7.2 The fire department shall be responsible for developing an interagency agreement with its law enforcement agency counterpart to provide protection for fire department members at situations that involve violence.

6-7.2.1* The fire department shall develop a standard communication method that indicates that an incident crew is faced with a life and death situation requiring immediate law enforcement intervention.

6-7.3 Such violent situations shall be considered essentially a law enforcement event, and the fire department shall coordinate with the law enforcement incident commander throughout the incident.

6-7.4 The fire department incident commander shall identify and react to situations that do involve or are likely to involve violence.

6-7.5 In such violent situations, the fire department incident commander shall communicate directly with the law enforcement incident commander to ensure the safety of fire department members.

6-7.6 In such violent situations, the fire department incident commander shall stage all fire department resources in a safe area until the law enforcement agency has secured the scene.

6-7.7 When violence occurs after emergency operations have been initiated, the fire department incident commander shall either secure immediate law enforcement agency protection or shall withdraw all fire department members to a safe staging area.

6-7.8 Fire department companies or teams that provide support to law enforcement agency special weapons and tactics (SWAT) operations shall receive special training. Special standard operating procedures shall be developed that describe the training and safety of these fire department teams for such operations. These activities shall be considered as special operations for the purpose of this standard.

6-8 Post-Incident Analysis.

6-8.1 The fire department shall establish requirements and standard operating procedures for a standardized post-incident analysis of significant incidents or those that involved serious injury or death to a fire fighter.

6-8.2 The fire department incident safety officer shall be involved in the post-incident analysis as defined in NFPA 1521, *Standard for Fire Department Safety Officer.*

6-8.3 The analysis shall conduct a basic review of the conditions present, the actions taken, and the effect of the conditions and actions on the safety and health of members.

6-8.4 The analysis shall identify any action necessary to change or update any safety and health program elements to improve the welfare of members.

6-8.5 The analysis process shall include a standardized action plan for such necessary changes. The action plan shall include the change needed and the responsibilities, dates, and details of such actions.

Chapter 7 Facility Safety

7-1 Safety Standards.

7-1.1* All fire department facilities shall comply with all legally applicable health, safety, building, and fire code requirements.

7-1.2 Fire departments shall provide facilities for disinfecting, cleaning, and storage in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program.*

7-1.3 All existing and new fire stations shall be provided with smoke detectors in work, sleeping, and general storage areas. When activated, these detectors shall sound an alarm throughout the fire station.

7-1.4 All existing and new fire department facilities shall have carbon monoxide detectors installed in sleeping and living areas.

7-1.5* All fire stations and fire department facilities shall comply with NFPA *101®, Life Safety Code®*.

7-1.6 The fire department shall prevent exposure to fire fighters and contamination of living and sleeping areas to exhaust emissions.

7-1.7 All fire department facilities shall have designated smoke-free areas that include work, sleeping, kitchen, and eating areas.

7-2 Inspections.

7-2.1* All fire department facilities shall be inspected at least annually to provide for compliance with Section 7-1 of this chapter. Inspections shall be documented and recorded.

7-2.2 All fire department facilities shall be inspected at least monthly to identify and provide correction of any safety or health hazards.

7-3 Maintenance and Repairs.

7-3.1* The fire department shall have an established system to maintain all facilities and to provide prompt correction of any safety or health hazard or code violation.

Chapter 8 Medical and Physical

8-1 Medical Requirements.

8-1.1 Candidates shall be medically evaluated and certified by the fire department physician. Medical evaluations shall take into account the risks and the functions associated with the individual's duties and responsibilities.

8-1.2 Candidates and members who will engage in fire suppression shall meet the medical requirements specified in NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, prior to being medically certified for duty by the fire department physician.

8-1.3 All members who engage in fire suppression shall be medically evaluated periodically as specified by NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, on at least an annual basis, and before being reassigned to emergency duties after debilitating illnesses or injuries. Members who have not met the medical evaluation requirements shall not be permitted to engage in fire suppression. Where medical evaluations are conducted by a physician other than the fire department physician, the evaluation shall be subject to review and shall be approved by the fire department physician.

8-1.4 The medical evaluation shall be at no cost to the candidate, current fire fighter, or other member.

8-1.5* Members who are under the influence of alcohol or drugs shall not participate in any fire department operations or other duties.

8-2 Physical Performance Requirements.

8-2.1 The fire department shall develop physical performance requirements for candidates and members who engage in emergency operations.

8-2.2 Medical certification for the use of respiratory protection shall be conducted annually.

8-2.3 Candidates shall be certified by the fire department as meeting the physical performance requirements specified in 8-2.1 of this section prior to entering into a training program to become a fire fighter.

8-2.4 Members who engage in emergency operations shall be annually evaluated and certified by the fire department as meeting the physical performance requirements specified in 8-2.1 of this section. Members who do not meet the required level of physical performance shall not be permitted to engage in emergency operations.

8-2.5 Members who are unable to meet the physical performance requirements specified in 8-2.1 of this section shall enter a physical performance rehabilitation program to facilitate progress in attaining a level of performance commensurate with the individual's assigned duties and responsibilities.

8-3 Physical Fitness.

8-3.1 The fire department shall establish and provide a physical fitness program to enable members to develop and maintain an appropriate level of fitness to safely perform their assigned functions. 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.

8-3.2 The fire department shall require the structured participation of all members in the physical fitness program.

8-3.3 The fire department health and fitness coordinator shall administer all aspects of the physical fitness and health enhancement program. The health and fitness coordinator shall act as a direct liaison between the fire department physi-

cian and the fire department in accordance NFPA 1582, *Standard on Medical Requirements for Fire Fighters.*

8-4 Confidential Health Data Base.

8-4.1* The fire department shall ensure that a confidential, permanent health file is established and maintained on each individual member. The individual health file shall record the results of regular medical evaluations and physical performance tests, any occupational illnesses or injuries, and any events that expose the individual to known or suspected hazardous materials, toxic products, or contagious diseases.

8-4.2* Health information shall be maintained as a confidential record for each individual member as well as a composite data base for the analysis of factors pertaining to the overall health and fitness of the member group.

8-4.3* If a member dies as a result of occupational injury or illness, autopsy results, if available, shall be recorded in the health data base.

8-5 Infection Control.

8-5.1* The fire department shall actively attempt to identify and limit or prevent the exposure of members to infectious and contagious diseases in the performance of their assigned duties.

8-5.2 The fire department shall operate an infection control program that meets the requirements of NFPA 1581, *Standard on Fire Department Infection Control Program.* When appropriate, inoculations, vaccinations, and other treatment shall be made available.

8-6 Fire Department Physician.

8-6.1 The fire department shall have an officially designated physician who shall be responsible for guiding, directing, and advising the members with regard to their health, fitness, and suitability for various duties.

8-6.2 The fire department physician shall provide medical guidance in the management of the occupational safety and health program.

8-6.3* The fire department physician shall be a licensed medical doctor or osteopathic physician qualified to provide professional expertise in the areas of occupational safety and health as they relate to emergency services.

8-6.4* The fire department physician shall be readily available for consultation and to provide professional services on an urgent basis. Availability shall be permitted to be accomplished by providing access to a number of qualified physicians.

8-7 Post-Injury/Illness Rehabilitation.

8-7.1* It shall be an ongoing objective of the fire department to assist members affected by occupational injuries or illnesses in their rehabilitation and to facilitate their return to full active duty or limited duty where possible.

8-7.2* Prior to a member returning to full duty from a debilitating injury, illness, or any other extended leave, a member shall have a physical performance assessment performed by the health and fitness coordinator under supervision by the fire department physician based on the individual's duties and responsibilities.

Chapter 9 Member Assistance and Wellness Program

9-1 Member Assistance Program.

9-1.1* The fire department shall provide a member assistance program that identifies and assists members and their immediate families with substance abuse, stress, and personal problems that adversely affect fire department work performance. The assistance program shall refer members and their immediate families, as appropriate, to the proper health care services for the purpose of restoring job performance to expected levels, as well as for the restoration of better health.

9-1.2* The fire department shall adopt a written policy statement on alcoholism, substance abuse, and other problems covered by the member assistance program.

9-1.3* Written rules shall be established specifying how records are to be maintained, the policies governing retention and access to records, and the procedure for release of information. These rules shall identify to whom and under what conditions information can be released and what use, if any, can be made of records for purposes of research, program evaluation, and reports. Member records maintained by a member assistance program shall not become part of a member's personnel file.

9-2 Wellness Program.

9-2.1* The wellness program shall provide health promotion activities that identify physical and mental health risk factors and shall provide education and counseling for the purpose of preventing health problems and enhancing overall well-being.

9-2.2* The fire department shall provide a program on the health effects associated with the use of tobacco products. The fire department shall provide a smoking/tobacco use cessation program.

Chapter 10 Critical Incident Stress Program

10-1 General.

10-1.1 The fire department physician shall provide medical guidance in the management of the critical incident stress program.

10-1.2* The fire department shall adopt a written policy that establishes a program designed to relieve the stress generated by an incident that could adversely affect the psychological and physical well-being of fire department members. The policy shall establish criteria for implementation of the program.

10-1.3 The program shall be made available to members for incidents including but not limited to mass casualties, large life loss incidents, fatalities involving children, fatalities or injuries involving fire department members, and any other situations that affect the psychological and physical well-being of fire department members.

Chapter 11 Referenced Publications

11-1 The following documents or portions thereof are referenced within this standard as mandatory requirements and shall be considered part of the requirements of this standard. The edition indicated for each referenced mandatory document is the current edition as of the date of the NFPA issuance

of this standard. Some of these mandatory documents might also be referenced in this standard for specific informational purposes and, therefore, are also listed in Appendix C.

11-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 10, *Standard for Portable Fire Extinguishers*, 1994 edition.

NFPA *101®*, *Life Safety Code®*, 1997 edition.

NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*, 1997 edition.

NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents*, 1997 edition.

NFPA 600, *Standard on Industrial Fire Brigades*, 1996 edition.

NFPA 1001, *Standard on Fire Fighter Professional Qualifications*, 1997 edition.

NFPA 1002, *Standard for Fire Department Vehicle Driver/Operator Professional Qualifications*, 1993 edition.

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, 1994 edition.

NFPA 1021, *Standard for Fire Officer Professional Qualifications*, 1997 edition.

NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*, 1996 edition.

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications*, 1995 edition.

NFPA 1403, *Standard on Live Fire Training Evolutions* , 1997 edition.

NFPA 1404, *Standard for a Fire Department Self-Contained Breathing Apparatus Program*, 1996 edition.

NFPA 1405, *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires*, 1996 edition.

NFPA 1521, *Standard for Fire Department Safety Officer*, 1997 edition.

NFPA 1561, *Standard on Fire Department Incident Management System*, 1995 edition.

NFPA 1581, *Standard on Fire Department Infection Control Program*, 1995 edition.

NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, 1997 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 1996 edition.

NFPA 1906, *Standard for Wildland Fire Apparatus*, 1995 edition.

NFPA 1911, *Standard for Service Tests of Pumps on Fire Department Apparatus*, 1997 edition.

NFPA 1914, *Standard for Testing Fire Department Aerial Devices*, 1997 edition.

NFPA 1931, *Standard on Design of and Design Verification Tests for Fire Department Ground Ladders*, 1994 edition.

NFPA 1932, *Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders*, 1994 edition.

NFPA 1961, *Standard on Fire Hose*, 1997 edition.

NFPA 1962, *Standard for the Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles*, 1993 edition.

NFPA 1964, *Standard for Spray Nozzles (Shutoff and Tip)*, 1993 edition.

NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, 1997 edition.

NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*, 1994 edition.

NFPA 1976, *Standard on Protective Clothing for Proximity Fire Fighting*, 1992 edition.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*, 1993 edition.

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*, 1997 edition.

NFPA 1982, *Standard on Personal Alert Safety Systems (PASS) for Fire Fighters*, 1993 edition.

NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components*, 1995 edition.

NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, 1994 edition.

NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, 1994 edition.

NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations*, 1994 edition.

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, 1997 edition.

11-1.2 American Conference of Governmental Industrial Hygienists Publication. 6500 Glenway Avenue, Bldg. D7, Cincinnati, OH 45211.

Threshold Limit Valves and Biological Exposure Indices for 1996-1977, 1996.

11-1.3 ANSI Publications. American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

ANSI/CGA G7.1, *Commodity Specification for Air*, 1989.

ANSI Z87.1, *Practice for Occupational and Educational Eye and Face Protection*, 1989.

11-1.4 U.S. Coast Guard Publication. U.S. Coast Guard Commandant Instruction M 16465, Department of Transportation, Washington, DC.

U.S. Coast Guard *Chemical Response Information System (CHRIS)*, Volumes 1-3, "Hazardous Chemical Data," October 1978.

11-1.5 U.S. Government Publications. U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402.

NIOSH *Pocket Guide to Chemical Hazards*, U.S. Department of Health and Human Services, Public Health Services, Publication DHHS No. 85-114, September 1985.

Title 42, *Code of Federal Regulations*, Part 84 (42 CFR 84), July 1995.

11-1.6 Other Publication.

Sax, N. Irving, *Dangerous Properties of Industrial Chemicals*, 6th ed., Van Nostrand Reinhold, NY, 1988.

Appendix A Explanatory Material

This appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

A-1-2.2 It is possible that an existing program or policy can satisfy the requirements of this standard; if so, it can be adopted in whole or in part in order to comply with this standard. Examples of such existing programs and policies can be a mandatory SCBA rule, seat belt rule, corporate safety program, or municipal employee assistance program.

A-1-3.1 The specific determination of the authority having jurisdiction depends on the mechanism under which this standard is adopted and enforced. Where the standard is adopted

voluntarily by a particular fire department for its own use, the authority having jurisdiction should be the fire chief or the political entity that is responsible for the operation of the fire department. Where the standard is legally adopted and enforced by a body having regulatory authority over a fire department, such as federal, state, or local government or political subdivision, this body is responsible for making those determinations as the authority having jurisdiction. The plan should take into account the services the fire department is required to provide, the financial resources available to the fire department, the availability of personnel, the availability of trainers, and such other factors as will affect the fire department's ability to achieve compliance.

A-1-3.2 For a fire department to evaluate its compliance with the standard, it must develop some type of logical process. The worksheet in Appendix B of this document illustrates one way that an action plan can be developed to determine code compliance.

This standard is intended to be implemented in a logical sequence, based upon a balanced evaluation of economic as well as public safety and personnel safety factors. The compliance schedule request assures that risk is objectively assessed and reasonable priorities set toward reaching compliance. Interim compensatory measures are intended to assure that safety action that can be taken until full compliance is reached is comprehensively examined and formally adopted into the fire department organization's policies and procedures. This can include, but is not limited to, increased inspections, testing, temporary suspension or restriction of use of specific equipment, specialized training, and administrative controls.

A-1-5 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A-1-5 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A-1-5 Candidate. In an employment context, the Americans With Disabilities Act (discussed in further detail in Appendix D of NFPA 1582, *Standard on Medical Requirements for Fire Fighters*) requires that any medical examination to be conducted take place after an offer of employment is made and prior to the commencement of duties. Therefore, in the employment context, the definition of "candidate" should be applied so as to be consistent with that requirement. Volunteer fire fighters have been deemed to be "employees" in some states or jurisdictions. Volunteer fire departments should seek legal counsel as to their legal responsibilities in these matters.

A-1-5 Industrial Fire Department. The vast majority of industrial fire brigades are not industrial fire departments. Industrial fire departments are those few brigades that resemble and function as municipal fire departments. These are generally found only at large industrial facilities and at industrial facilities that also perform municipal fire fighting, usually where the plant is located far from municipalities with organized fire departments. Industrial fire departments are organized and equipped for interior structural fire fighting similar to municipal fire departments. Their apparatus is similar to that used by municipal fire departments.

Industrial fire brigades that provide rescue services are industrial fire departments. Industrial facilities can have separate organizations, covered by separate organizational statements, operating as industrial fire brigades and operating as rescue teams providing rescue not related to fire incidents. Membership in these two organizations can overlap.

A-1-5 Standard Operating Guideline. An organizational directive sometimes referred to as a standard operating guideline (SOG) that outlines a course of action that allows flexibility in application.

A-2-1.1 The organizational statement is a very important basis for many of the provisions of this standard. The statement sets forth the legal basis for operating a fire department, the organizational structure of the fire department, number of members, training requirements, expected functions, and authorities and responsibilities of various members or defined positions.

A key point is to clearly set out the specific services the fire department is authorized and expected to perform. Most fire departments are responsible to a governing body. The governing body has the right and should assert its authority to set the specific services and the limits of the services the fire department will provide and has the responsibility to furnish the necessary resources for delivery of the designated services. The fire department should provide its governing body with a specific description of each service with options or alternatives and with an accurate analysis of the costs and resources needed for each service.

Such services might include structural fire fighting, wildland fire fighting, airport/aircraft fire fighting, emergency medical services, hazardous materials response, high-angle rescue, heavy rescue, and others.

Spelling out the specific parameters of services to be provided allows the fire department to plan, staff, equip, train, and deploy members to perform these duties. It also gives the governing body an accounting of the costs of services and allows it to select those services they can afford to provide. Likewise, the governing body should identify services it cannot afford to provide and cannot authorize the fire department to deliver, or it should assign those services to another agency.

The fire department should be no different from any other government agency that has the parameters of its authority and services clearly defined by the governing body.

Legal counsel should be used to assure that any statutory services and responsibilities are being met.

The majority of public fire departments are established under the charter provisions of their governing body or through the adoption of statutes. These acts define the legal basis for operating a fire department, the mission of the organization, the duties that are authorized and expected to be performed, and the authority and responsibilities that are assigned to certain individuals to direct the operations of the fire department.

The documents that officially establish the fire department as an identifiable organization are necessary to determine specific responsibilities and to determine the parties responsible for compliance with the provisions of this standard.

In many cases, these documents could be a part of state laws, a municipal charter, or an annual budget. In such cases, it would be appropriate to make these existing documents part of the organizational statement, if applicable.

In cases other than governmentally operated public fire departments, there is a need to formally establish the existence of the organization through the adoption of a charter, the approval of a constitution or articles of incorporation, or through some equivalent official action of an authorized body. A fire department that operates entirely within the private sector, such as an industrial fire department, could legally establish and operate a fire protection organization by the adoption of a corporate policy as described in the organizational statement.

In addition to specifically defining the organization that is expected to comply with this standard, 2-1.1 requires that the organizational structure, membership, expected functions, and training requirements be contained in documents that are accessible for examination. These requirements are intended to reinforce the fact that the fire department is an identifiable organization that operates with known and specific expectations.

Where a fire department functions as a unit of a larger entity, such as one of several municipal departments or a particular unit of a private corporation, the larger organization is often able to provide some of the same elements that are required to be provided by the fire department. This would satisfy the requirements for the fire department to provide those elements.

A-2-1.2 Additional information on fire department organization and operations can be found in Section 10 of the NFPA *Fire Protection Handbook*, 18th edition; and Chapter 5 of *Managing Fire Services*, 2nd edition, published by the International City Management Association.

A-2-2.1 Sample Risk Management Plan.

ANYTOWN FIRE DEPARTMENT

RISK MANAGEMENT PLAN

PURPOSE:

The Anytown Fire Department has developed and implemented a risk management plan. The goals and objectives of the plan are the following:

(a) To limit the exposure of the fire department to situations and occurrences that could have harmful or undesirable consequences on the department or its members

(b) To provide the safest possible work environment for the members of the fire department, while recognizing the risks inherent to the fire department's mission

SCOPE:

The risk management plan is intended to comply with the requirements of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* specifically Section 2-2.

METHODOLOGY:

The risk management plan uses a variety of strategies and approaches to address different objectives. The specific objectives are identified from the following sources of information:

(a) Records and reports on the frequency and severity of accidents and injuries in the Anytown Fire Department

(b) Reports received from the Anytown's insurance carriers

(c) Specific occurrences that identify the need for risk management

(d) National trends and reports that are applicable to Anytown

(e) Knowledge of the inherent risks that are encountered by fire departments and specific situations that are identified in Anytown

(f) Any additional areas identified by fire department staff and personnel

RESPONSIBILITIES:

The fire chief has responsibility for the implementation and operation of the department's risk management plan. The department's health and safety officer has the responsibility to develop, manage, and annually revise the risk management plan. The health and safety officer also has the responsibility to modify the risk management plan when it is warranted by changing exposures, occurrences, and activities.

All members of the Anytown Fire Department have responsibility for ensuring their own health and safety based upon the requirements of the risk management plan and the department's safety and health program.

PLAN ORGANIZATION:

The risk management plan includes the following:

(a) Identification of the risks that members of the fire department could actually or potentially encounter, both emergency and nonemergency

1. Emergency risks include those presented at emergency incidents, both fire and nonfire (e.g., hazardous materials), Emergency Medical Services incidents, and emergency response.

2. Nonemergency risks include those encountered while performing the following functions: training, physical fitness, nonemergency vehicle operation, and station activities (e.g., vehicle maintenance, station maintenance, daily office functions).

(b) Evaluation of the identified risks based upon the frequency and severity factors

(c) Development and implementation of an action plan for controlling each of the risks, in order of priority

(d) Provisions for monitoring the effectiveness of the controls implemented

(e) A periodic review of the plan with modifications made as needed

RISK MANAGEMENT PLAN MONITORING:

(a) The Anytown Fire Department's risk management program will be monitored annually, in January, by the health and safety officer.

(b) Recommendations and revisions will be made based on the following criteria:

1. Annual accident and injury data for the preceding year
2. Significant incidents that have occurred during the past year
3. Information and suggestions from department staff and personnel

(c) Every 3 years, the risk management program will be evaluated by an independent source. Recommendations will be sent to the fire chief, the health and safety officer, and the occupational safety and health committee.

(See Table A-2-2.1.)

A-2-2.3 Essentially, a risk management plan serves as documentation that risks have been identified and evaluated and that a reasonable control plan has been implemented and followed.

The following are some factors to consider for each step of the process:

(a) *Risk Identification.* For every aspect of the operation of the fire department, list potential problems. The following are examples of sources of information that might be useful in the process:

1. A list of the risks to which members are or can be exposed
2. Records of previous accidents, illnesses, and injuries, both locally and nationally
3. Facility and apparatus surveys, inspections, and so forth

(b) *Risk Evaluation.* Evaluate each item listed in the risk identification process using the following two questions:

1. What is the potential frequency of occurrence?
2. What is the potential severity and expense of its occurrence?

This will help to set priorities in the control plan.

Some sources of information that could be useful are the following:

1. Safety audits and inspection reports
4. Prior accident, illness, and injury statistics
5. Application of national data to the local circumstances
6. Professional judgment in evaluating risks unique to the jurisdiction

Table A-2-2.1 Anytown Fire Department Control Measures

Identification	Frequency/ Severity	Priority			Summary of Control Measures
Strains and sprains	High/medium	High	1.	O	Periodic awareness training for all members
			2.	O	Evaluate function areas to determine location and frequency of occurrence
			3.	O	Based upon outcome of evaluation, conduct a task analysis of identified problems
Stress	Low/high	High	1.	O	Continue health maintenance program
			2.	O	Member participation in physical fitness program
Exposure to fire products	Low/high	Medium	1.	A	Re-evaluate department's philosophy on mandatory SCBA usage
			2.	O	Revise department policy and procedures on mandatory usage
			3.	A	Retraining and education of personnel on chronic effects of inhalation of by-products of combustion
			4.	A	Provide monitoring process of carbon monoxide (CO) levels at fire scenes, especially during overhaul
Vehicle-related incidents	Medium/high	High	1.	O	Compliance of department with state motor vehicle laws relating to emergency response
			2.	O	Mandatory department-wide EVOC
			3.	O	Monitor individual member's driving record
Terrorism and the workplace	Low/high	Low	1.	O	Provide awareness training for all personnel
			2.	O	Develop policy and procedures as indicated by need
Incident scene safety	Medium/high	High	1.	O	Revise and implement department incident-management system
			2.	O	Revise current policy on mandatory use of full personal protective equipment including SCBA
			3.	O	Evaluate effectiveness of the department's personal accountability system and make needed adjustments
			4.	A	Train all officers in NFA Incident Safety Officer course
Equipment loss	Low/medium	Medium	1.	O	Review annual accident/loss statistics and implement loss-reduction procedures
			2.	A	Develop procedures for review and recommendation for loss prevention based upon significant loss ($1000+)
			3.	O	Maintain department equipment inventory
Facilities and property	Low/high	Medium	1.	A	Review insurance coverage of contents and facilities for adequate coverage due to catastrophe
			2.	O	All new and renovated facilities incorporate life safety and health designs.
			3.	O	Conduct routine safety and health inspections of facilities

NOTE: O = Ongoing
A = Action required

(c) *Risk Control.* Once risks are identified and evaluated, a control for each should be implemented and documented. The two primary methods of controlling risk, in order of preference, are as follows:

1. Wherever possible, totally eliminate/avoid the risk or the activity that presents the risk. For example, if the risk is falling on the ice, then do not allow members to go outside when icy conditions are present.

2. Where it is not possible or practical to avoid or eliminate the risk, steps should be taken to control it. In the example above, some methods of control would be sand/salt procedures, the wearing of proper footwear, and so forth.

(d) Other methods of control to consider are the following:

1. Safety program development, adoption, and enforcement

2. Standard operating procedures development, dissemination, and enforcement

3. Training

4. Inspections

(e) *Risk Management Monitoring and Follow-Up.* As with any program, it is important to evaluate whether the plan is working. Periodic evaluations should be made, and, if the program elements are not working satisfactorily, then modifications should be made.

A-2-3.1 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 might be involved in fire department activities.

A-2-3.2 Experience has shown that there is often a significant difference between a written occupational safety and health program and the actual program that has been implemented. Periodic evaluations are one method the fire chief can use to measure how the program is being conducted. This evaluation should be conducted by a qualified individual from outside of the fire department, as outside evaluators provide a different perspective, which can be constructive. Outside evaluators could include municipal risk managers, safety directors, consultants, insurance carrier representatives, fire chiefs, safety officers, or others having knowledge of fire department operations and occupational safety and health program implementation.

A-2-4.1.2 The responsibility for establishing and enforcing safety rules and regulations rests with the management of the fire department. Enforcement implies that appropriate action, including disciplinary measures if necessary, will be taken to ensure compliance. A standard approach to enforcement should address both sanctions and rewards. All fire department members should recognize and support the need for a standard regulatory approach to safety and health. In addition to the management responsibilities, an effective safety program requires commitment and support from all members and member organizations.

A-2-4.2.1 See A-2-4.1.2.

A-2-6.1 One of the most important provisions for improving the safety and health of the fire service is through an official organizational structure that has the support of the members and the fire department management. Without official recognition and support, safety and health committees might be ineffective showpieces, lack authority, or be dominated by particular interests. To avoid such situations, it is recommended that a safety and health committee be composed of equal numbers of fire department management representatives and member representatives. Specific areas of responsibility of the joint safety and health committee should be outlined in detail through written procedures or contractual negotiation.

A-2-6.3 The requirement for one regularly scheduled meeting every six months is intended as a minimum. Committee meetings should be held as often as necessary to deal with the issues confronting the group. The written minutes of each meeting should be distributed and posted in a conspicuous place in each fire station so that all members can be aware of issues under discussion and actions that have been taken.

A-2-7.1 The data collection system for accidents, injuries, illnesses, exposures, and deaths should provide both incident-specific information for future reference and information that can be processed in studies of morbidity, mortality, and causation. The use of standard coding as provided by NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*, will allow compatibility with national and regional reporting systems.

A-2-7.4 See NFPA 1401, *Recommended Practice for Fire Service Training Reports and Records*, for further information and guidance.

A-3-1.3 Members who have not met the specific qualifications listed in 3-3.2 through 3-3.6 should not perform the listed duties in actual emergency incidents. These members might, however, be utilized under structured supervision to perform functions for which they have been trained.

A-3-1.5 A particular training class or session might be conducted by an individual who has special expertise or abilities in the subject area, whether or not the instructor is a member of the fire department or a qualified fire service instructor.

A-3-2.1 In order to ensure compliance with the minimum requirements of NFPA 1001, *Standard on Fire Fighter Professional Qualifications,* fire department training programs should be certified through a recognized accreditation system. Members who have not completed the training requirements for Fire Fighter I should not participate in interior structural fire fighting but might perform other support functions at emergency incidents.

A-3-2.9 In the United States, federal regulations require a minimum amount of training for fire service personnel who respond to hazardous materials incidents. These requirements can be found in 29 CFR 1910.120 (OSHA) and in 40 CFR 311 (EPA). These regulations affect all fire departments in the United States whether full-time career, part-time, combination career and volunteer, or fully volunteer. These regulations apply in all states, and not just in those states with federally approved state OSHA programs.

In the U.S. federal regulations, First Responder Operations Level is defined as follows:

> "First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for

the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposure. First responders at the operational level shall have received at least 8 hr of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed in the awareness level and the employer shall so certify:

(a) Knowledge of the basic hazard and risk assessment techniques;

(b) Know how to properly select and use proper personal protective equipment provided to the First Responder Operations Level;

(c) An understanding of basic hazardous materials terms;

(d) Know how to perform basic control, confinement, and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit;

(e) Know how to implement basic decontamination procedures;

(f) An understanding of the relevant standard operating procedures and termination procedures."

The First Responder Operations Level in both the U.S. federal regulations and NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*, is similar. Whereas the U.S. federal regulations (29 CFR 1910.120 or 40 CFR 311) govern the fire service in every state in the United States, the minimum level of training for all fire fighters must be the First Responder Operations Level.

A-3-2.11.1 Clothing that is made from 100 percent natural fibers or blends that are principally natural fibers should be selected over other fabrics that have poor thermal stability or ignite easily.

The very fact that persons are fire fighters indicates that all clothing that they wear should be flame resistant (as children's sleepwear is required to be) to give a degree of safety if unanticipated happenings occur that expose the clothing to flame, flash, sparks, or hot substances. *(See also 5-1.7.)*

A-3-2.16 Several accidents have occurred where smoke bombs or other smoke-generating devices that produce a toxic atmosphere have been used for training exercises. Where training exercises are intended to simulate emergency conditions, smoke-generating devices that do not create a hazard are required.

A-4-1.1 Information regarding ambulance specifications can be found in the current U.S. Federal Government General Services Administration's Federal Specification KKK-A-1822D for Ambulances.

A-4-2.1 NFPA 1451, *Standard for a Fire Service Vehicle Operations Training Program*, can be used to meet the requirements of an "approved driver training program."

A-4-2.2 When members respond to incidents or to the fire station in their own vehicles, the operation of these vehicles is governed by all applicable traffic laws and codes as enacted by the authority having jurisdiction. The fire department should enact specific rules and regulations pertaining to the use of private vehicles for emergency response. These rules and regulations should be at least equal to the provisions regulating the operation of fire department vehicles.

The determination of driver's license requirements is a function of a particular authority in each location. This agency can be a state or provincial Department of Transportation or an equivalent agency. Other authorities, such as military branches, have the authority to issue permits to operate their vehicles. It is a responsibility of the fire department to determine the requirements that apply in each situation and for each class of vehicle.

A-4-2.3 The driver of any vehicle has legal responsibility for its safe and prudent operation at all times. While the driver is responsible for the operation of the vehicle, the officer is responsible for the actions of the driver.

A-4-2.6 The development, implementation, and periodic review of standard operating procedures for driving any fire department vehicle is an important element in clearly identifying the fire department's policy on what is expected of drivers. Safe arrival is of prime importance. Standard operating procedures should include a "challenge and response" dialogue between the vehicle driver on an emergency response and the officer or other member in the driver compartment. The "challenge and response" dialogue should be instituted to determine the driver's intentions when approaching any perceived or identified hazard on the response route to remind the driver of the presence of the hazard and the planned procedures for managing the hazard, and to ensure that the driver is coping with stressors encountered during the response and not focusing only on arriving at the site of the emergency.

The specific inclusion of railroad grade crossing is based upon recommendations made by the National Transportation Safety Board (NTSB) to NFPA following the 1989 investigation of a collision between a fire department pumper and a passenger train. The NTSB report states that "planning how to safely traverse grade crossing encountered en route is a necessary part of any fire company's response plan."

NTSB recommends that the following be considered when developing the plans:

"If it is not practical to plan an emergency response route that avoids grade crossings, selection of crossings that are equipped with automatic warning devices is preferable to selection of those that are not. All planning should include identification of the location at the crossing from which a driver or other observer assigned to the apparatus can see the maximum available distance down the track(s) on both sides.

"At crossings over a single straight track with no nearby obstructions, briefly stopping or slowing the apparatus to allow a proper scan both left and right may be sufficient. If the tracks are curved, vision is obstructed, or the crossing has more than one set of tracks where the presence of one train may hide the approach of another, sight distance may be optimized by having one or more members cross the tracks on foot and look for approaching trains."

A-4-2.7 Accidents at intersections contribute to both civilian and fire fighter deaths and injuries while fire department vehicles are responding to or returning from an emergency incident. Coming to a complete stop when there are any intersection hazards and proceeding only when the driver can do so safely will reduce accidents and the risk of injury or death. It is recommended that intersection control devices be

installed that allow emergency vehicles to control traffic lights at intersections.

A-4-2.8 Vehicle accidents at railroad crossings have resulted in a number of deaths and injuries to fire department members. A National Transportation Safety Board (NTSB) study concluded that a train's warning horn becomes an ineffective device for warning large vehicles or trucks unless the vehicle driver stops; idles the engine; turns off all radios, fans, wipers, and other noise-producing equipment in the cab; lowers the window; and listens for a train's horn before entering a grade crossing.

A-4-3.1 It is intended for the requirements of 4-3.1 to apply to all situations when persons or members are riding on fire apparatus other than for the specific variances in 4-3.1.1, 4-3.1.2, and 4-3.1.3. Included in the "seated and belted" requirement are any times 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 the 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.

A-4-3.1.1 There are instances in which members must provide emergency medical care while the vehicle is in motion. In some situations, the provision of such medical care would not allow the members to remain seated and secured to the vehicle. Such situations, while they occur infrequently, might include performing chest compressions during CPR. If a vehicle accident were to occur while an unsecured member was performing necessary emergency medical care, there would be substantial risk of injury to the member.

A-4-3.1.2

(a) Hose loading procedures should be specified in a written standard operating procedure that includes at least these safety conditions. All members involved in the hose loading should have been trained in these procedures.

(b) There should be a member, other than those members loading hose, assigned as a safety observer. The safety observer should have an unobstructed view of the hose loading operation and be in visual and voice contact with the apparatus operator.

(c) Non-fire department vehicular traffic should be excluded from the area or should be under the control of authorized traffic control persons.

(d) The fire apparatus can be driven only in a forward direction at a speed of 5 mph (8 kph) or less.

(e) No members can be allowed to stand on the tailstep, sidesteps, running boards, or any other location on the apparatus while the apparatus is in motion.

(f) Members can be permitted to be in the hose bed, but should not stand while the apparatus is in motion.

(g) Prior to the beginning of each hose loading operation, the situation should be evaluated to ensure compliance with all the provisions of the written procedures. If the written procedures cannot be complied with, or if there is any question as to the safety of the operation for the specific situation, then the hose should not be loaded on moving fire apparatus.

A-4-3.1.3

(a) Tiller training procedures should be specified in a written standard operating procedures that includes at least these safety conditions. All members involved in tiller training should have been trained in these procedures.

(b) The aerial apparatus should be equipped with seating positions for both the tiller instructor and the tiller trainee. Both seating positions should be equipped with seat belts for each individual. The tiller instructor should be permitted to take a position alongside the tiller trainee.

(c) The tiller instructor's seat should be permitted to be detachable. Where the instructor's seat is detachable, the detachable seat assembly should be structurally sufficient to support and secure the instructor. The detachable seat assembly should be attached and positioned in a safe manner immediately adjacent to the regular tiller seat. The detachable seat assembly should be equipped with a seat belt or vehicle safety harness. The detachable seat assembly should be attached and used only for training purposes.

(d) Both the tiller instructor and the tiller trainee should be seated and belted.

(e) The instructor and trainee should wear and use both helmet and eye protection if not seated in an enclosed area.

(f) In the event the aerial apparatus is needed for an emergency response during a tiller training session, the training session should be terminated, and all members should be seated and belted in the approved riding positions. There should be only one person at the tiller position. During the emergency response, the apparatus should be operated by qualified driver/operators.

A-4-3.2 Helmets and eye protection (goggles, safety glasses, or faceshield) should be worn by all members riding in positions that do not provide the protection of an enclosed cab. Helmets are also recommended for members riding in enclosed areas where seats are not designed to provide head and neck protection in a collision. Properly designed seats, with head and neck protection, alleviate the need for helmets, and, in some cases, helmets would compromise the safety provided by the seats.

A-4-3.4 The minimum requirement for new fire apparatus provides seats in fully enclosed areas for all members who ride on fire apparatus at any time. It is generally agreed that fully enclosed driver compartments and passenger compartments

provide a higher level of safety in collisions and rollovers, protection from flying objects, noise reduction, and protection from inclement weather; therefore, fully enclosed cabs are required for new apparatus purchases and strongly recommended for renovation of existing apparatus where possible. It is extremely important that all members remain seated and secured by seat belts, in the seats provided, at all times when the vehicle is in motion.

A-4-4.1 and A-4-5.5 The purpose of these paragraphs is to assure 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.

A-4-4.3 Applicable federal and state regulations, standards, or guidelines should be used as a basis for creating the list to evaluate whether or not a vehicle is safe.

A-4-5.5 See A-4-4.1.

A-5-1.1 The provision and use of protective clothing and 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 nonemergency activities. The applicable regulations pertaining to industrial worker safety should be consulted to determine the need for protective equipment in nonemergency activities.

A-5-1.2 The fire department should provide body armor for all members who operate in areas where a potential for violence or civil unrest exists.

A-5-1.4 Inspection of protective coats and protective trousers should be conducted on a frequent basis by members to assure the protective clothing's continued suitability for use. The fire department should inspect all protective clothing at least annually. The inspection should include the following:

(a) All materials should be free from tears, embrittlement, and fraying.

(b) Seams should be intact and show no signs of excessive wear.

(c) Reflective trim should show no signs of abrasion or loss of reflectivity due to heat exposure.

(d) All pockets, knee pads, and other accessory items should be firmly attached to the garment and show no signs of excessive wear.

(e) Sleeve and pant cuffs should show no signs of fraying.

(f) The entire garment should be free from excessive dirt and stains.

(g) 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.

A-5-1.5 Protective clothing ensembles can be contaminated by bodily fluids or other contaminants encountered while providing medical care, or by smoke, soot, hydrocarbons, asbestos, chemicals, or other substances encountered during fire fighting and other operations.

A-5-1.6 Station/work uniforms are required to meet NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters.* Because it is impossible to ensure that every member—whether a volunteer, call, or off-duty career member—will respond to an incident in a station/work uniform or will change into station/work uniform clothing before donning protective garments, it is very important that members understand the hazards of some fabrics that more easily melt, drip, burn, shrink, or transmit heat rapidly and cause burns to the wearer. Station/work uniforms are required to meet the requirements of NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters. (See 5-1.6.)*

Because it is impossible to ensure that every member—whether a volunteer, call, or off-duty career member—will respond to an incident in a station/work uniform or will change into station/work uniform clothing before donning protective garments, it is very important that members understand the hazards of some fabrics that more easily melt, drip, burn, shrink, or transmit heat rapidly and cause burns to the wearer.

Clothing that is made from 100 percent natural fibers or blends that are principally natural fibers should be selected over other fabrics that have poor thermal stability or ignite easily.

The very fact that persons are fire fighters indicates that all clothing that they wear should be flame resistant (as children's sleepwear is required to be) to give a degree of safety if unanticipated happenings occur that expose the clothing to flame, flash, sparks, or hot substances.

A-5-1.8 The fire department should establish procedures for cleaning contaminated protective clothing (i.e., turnout gear) and station work uniforms. This decontamination and cleaning can be done if the proper washers are available.

Commercial washers are available for the fire service that allow the cleaning of fire department contaminated protective clothing and station work uniforms and noncontaminated items such as bed linens, dish towels, and truck towels.

The proper components of this process include a commercial washer that is front loading, has a stainless steel tub, has a water temperature is greater than 130°F (54°C), and has a programmed cycle to decontaminate the tub after the cleaning of contaminated protective clothing and station work uniforms.

Top-loading residential washers with enamel tubs do not meet the requirements nor due commercial washers that the public has access to such as in laundromats. If residential washers are going to be utilized for cleaning of station work uniforms that are contaminated or potentially contaminated, separate washers must be utilized. Residential washers cannot be utilized for cleaning turnout gear. For proper procedures for cleaning protective clothing and station work uniforms, refer to the manufacturer's instructions and NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting,* and NFPA 1581, *Standard on Fire Department Infection Control Program.*

A-5-2.1.4 Properly fitting protective clothing is important for the safety of the fire fighter. It is important to understand that all protective clothing should be correctly sized to allow for freedom of movement. Protective garments that are too small or too large and protective trouser legs that are too long or too short are safety hazards and should be avoided. Protective coat sleeves should be of sufficient length and design to protect the coat/glove interface area when reaching overhead or to the side. For proper fitting of a fire fighter, the protective clothing manufacturer should be contacted to provide sizing instructions.

A-5-3.1 Selection of SCBA is an important function, particularly when resources are limited and SCBA have to be used for different applications and with different equipment. Confined space, haz-mat, and other operations can require different cylinders, umbilical connections, and features that are easier to ascertain and coordinate with a selection stage.

A-5-3.2 The required use of SCBA means that the user must have the facepiece in place, breathing air from the SCBA only. Wearing SCBA without the facepiece in place does not satisfy this requirement and should be permitted only under conditions in which the immediate safety of the atmosphere is assured. All members working in proximity to areas where SCBA use is required should have SCBA on their backs or immediately available for donning.

Areas where the atmosphere can rapidly become hazardous could include rooftop areas during ventilation operations and areas where an explosion or container rupture could be anticipated.

A hazardous atmosphere would be suspected in overhaul areas and above the fire floor in a building. Members working in these areas are required to use their SCBA unless the safety of the atmosphere is established by testing and maintained by effective ventilation. With effective ventilation in operation, facepieces could be removed, under direct supervision, but SCBA should continue to be worn or immediately available.

A-5-3.3 Hazardous atmospheres requiring SCBA can be found in (but are not limited to) the following operations: structural fire fighting, aircraft fire fighting, shipboard fire fighting, confined space rescue, and any incident involving hazardous materials.

A-5-3.4 The use of long-duration SCBA should be restricted to operations in tunnels and underground structures, on board ships, and in other situations where the need for this capability is demonstrated.

Weight and stress reduction should be an objective in the acquisition of new SCBA and when upgrading currently used SCBA. Weight and other stress factors are major contributions to fire fighter fatigue and injury, and SCBA should be chosen accordingly.

A-5-3.5 Manufacturers of fire service SCBA that are NIOSH certified and that also meet requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*, provide SCBA with a reasonable level of dependability, if correctly used and maintained.

In those cases where there is a reported failure of SCBA, a before-use check, a more thorough user inspection program, or a preventive maintenance program most likely would have eliminated the failure.

Fire fighters should be thoroughly trained in emergency procedures that can reverse problems encountered with their SCBA. Use of the regulator bypass valve, corrective action for facepiece and breathing tube damage, and breathing directly from the regulator (where applicable) are basic emergency procedures that should be taught to, and practiced by, the individual user. Fundamental to all emergency procedure training is the principle of not compromising the integrity of the user's SCBA, with particular emphasis on not removing the facepiece for any reason. The danger of compromising the integrity of the SCBA by removing the facepiece in atmospheres where the quality of air is unknown must be reinforced throughout the SCBA training program.

It is natural that this same philosophy be adopted when dealing with the subject of "buddy breathing." The "buddy breathing" addressed herein is a procedure that requires compromising the rescuer's SCBA by either removal of the facepiece or disconnection of the breathing tube, as these actions place the rescuer in grave danger.

The subject of "buddy breathing" is always a highly emotional one. Training must stress that fire fighters must not remove the facepiece of the SCBA in a hazardous atmosphere to assist a civilian fire victim, thereby exposing themselves to the toxic atmosphere, but instead rely on a rapid removal of the victim to a safe atmosphere or to a place of refuge where the rescuer can obtain further assistance in removing the victim to fresh air and treatment. However, when a fire fighter becomes the victim due to exhaustion of the breathing air supply or other impairment, some fire departments or fire service personnel insist upon engaging in procedures that are extremely difficult at best, even with consistent training in relatively ideal conditions. Virtually all "buddy breathing" procedures require compromising the rescuer's SCBA and, for this reason, cannot be condoned. Positive-pressure SCBA has made certain methods of "buddy breathing" more complicated, if not impossible.

A key disadvantage in "buddy breathing" is that it is extremely difficult for two people to leave the hazardous atmosphere quickly while engaged in "buddy breathing," simultaneously consuming air at a faster rate. The risk that both individuals will inhale sufficient products of combustion to cause impairment or death is a very distinct possibility.

It is difficult to understand why "buddy breathing" advocates believe that an atmosphere that is deadly for one fire fighter, and causes that fire fighter to become a victim, can safely be breathed by another fire fighter (the would-be rescuer) while using a "buddy breathing" procedure.

A scenario involving two fire fighters working at a warehouse fire provides a graphic example of how "buddy breathing" can be more hazardous than beneficial to both the rescuer and the victim. While working in an interior operation at a warehouse fire, one fire fighter suffered depletion of his breathing air supply. The other fire fighter commenced "buddy breathing" while both attempted to move out of the building. Unable to make sufficient progress as the first fire fighter was being overcome, the rescuer left the victim and attempted to leave the area for help. But because the rescuer had inhaled sufficient products of combustion during the attempted "buddy breathing" operation, he collapsed before he could exit the building. He was rescued by other fire fighters and removed to a hospital before he could relate the circumstances regarding the first fire fighter. The first fire fighter was found dead some time later.

If the fire fighter had been trained to remove the victim completely from the building or from immediate physical danger if possible, a number of things would have been accomplished without endangering the rescuer's life and with less

risk to the victim fire fighter. If the rescuer had not compromised his SCBA, he would not have been affected by the products of combustion, he would have retained a greater air supply, and he would have either removed the victim fire fighter by himself or exited the area for additional assistance and alerted medical help.

The risk of both victim and rescuer exhausting their air supplies is another scenario associated with "buddy breathing." In this case, what starts out as rescuer-victim relationship ends up a victim-victim relationship, as the shared air supply is exhausted before exiting is possible.

The one scenario that does not allow exiting is that in which two or more persons are trapped and share air supplies by "buddy breathing." In this case, survival is based upon the time it takes those outside to realize that persons are trapped, initiate rescue operations, and accomplish rescue. Unfortunately "buddy breathing" might only provide a simultaneous ending of multiple lives.

SCBA emergency procedures should be an integral part of any respiratory protection SCBA program, with written policies for the removal of victims, both civilian and fire service, from hazardous atmospheres without compromising the rescuer's respiratory protection SCBA for any reason.

Factors that can limit the need for "buddy breathing" include the following:

(a) A strong, well-administered respiratory protection SCBA program

(b) Emphasis on user testing and inspection of respiratory protection SCBA

(c) Required before-use and after-use testing and maintenance

(d) Functional preventive maintenance program

(e) Fire ground management based upon safe operations with knowledge of fire development, building construction, and coordinated fire-fighting operations

(f) Quality breathing air

(g) Personal alert safety system (PASS devices) and portable radios for interior fire-fighting teams

(h) Thorough training in survival techniques, controlled breathing, and stress management

(i) Accountability for interior fire-fighting crews

(j) Physical fitness of fire fighters

(k) Use of positive-pressure SCBA that are NIOSH approved and that meet the requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*

NFPA, ANSI, IAFF, and most SCBA manufacturers do not recommend "buddy breathing" since it compromises one or more SCBA and can result in the needless impairment or death of either the rescuer or the victim, or both. The use of at least one five-minute emergency escape self-contained breathing apparatus (ESCBA), carried by a member of a fire-fighting team, is recommended for victim rescue (both civilian and fire fighter).

A-5-3.9 The procedures for qualitative fit testing are included in ANSI Z88.5, *Practices for Respiratory Protection for the Fire Service*. Quantitative fit testing is considered to be more precise than qualitative fit testing, but is not considered to be necessary where positive-pressure SCBA are used. If qualitative fit testing does not provide satisfactory results, the fire department should refer to ANSI Z88.5 for further information on quantitative fit testing. If necessary, the fire department should provide a facepiece of larger or smaller size to provide an adequate seal for an individual, and such individuals shall use only the facepiece provided. An effective face-to-facepiece seal is extremely important when using respiratory protection SCBA. Even a minor leakage can allow contaminants to enter the facepiece, even with positive-pressure respiratory protection SCBA. Any outward leakage will increase the rate of air consumption, reducing the time available for use and safe exit. The facepiece should seal tightly against the skin, without penetration or interference by any protective clothing or other equipment.

A-5-3.10 The following ruling regarding facial hair and SCBA or respirator use was issued in February 1990 by the Directorate of Compliance Programs, Occupational Safety and Health Administration, U.S. Department of Labor:

> "With respect to regulating the use of respiratory protection self-contained breathing apparatus (SCBA) for protecting employees with beards, 29 CFR 1910.134(e)(5)(i) contains the statement, 'Respirators shall not be worn when conditions prevent a good face seal.' This prohibition applies to any negative or positive-pressure personal respiratory protection device of a design relying on the principle of forming a face seal to perform at maximum effectiveness."
>
> "A beard growing on the face at points where the seal with the respirator is to occur is a condition that has been shown to prevent a good face seal. Thus an employer using SCBA to protect an employee with a growth of beard at points where the SCBA facepiece is designed to seal with the face, is violating 29 CFR 1910.134(e)(5)(i). This is so regardless of what fit test measurement can be obtained. If the beard is styled so no hair underlies the points where the SCBA facepiece is designed to seal with the face, then the employer may use the SCBA to protect the employee, however."

A-5-3.11.2 The user should be able to demonstrate the successful use of an SCBA with the contact lenses in a nonhazardous training environment before being allowed to use them in an incident. Successful long-term soft contact lens use should be measured by the ability to wear soft contact lenses for at least six months without any problems.

A-5-5 Fire department personnel involved in emergency medical operations must be protected against potential medical hazards. These hazards include exposure to blood or other body fluids contaminated with infectious agents such as hepatitis and human immunodeficiency viruses. The purpose of emergency medical protective clothing is to shield individuals from these medical hazards and conversely protect patients from potential hazards from the emergency responder. Emergency medical gloves are to be used for all patient care. Emergency medical garments and face protection devices are to be used for any situation where the potential for contact with blood or other body fluids is high.

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, covers garments, gloves, and face protection devices that are designed to prevent exposure to blood or other body fluids for those individuals engaged in emergency medical patient care and similar operations. The standard specifies a series of requirements for each type of protective clothing. Garments can be full body clothing or clothing items such as coveralls, aprons, or sleeve protectors. For the intended areas of body protection, the garment must allow no penetration of virus, offer "liquid-tight" integrity, and have

limited physical durability and hazard resistance. Gloves must allow no penetration of virus, offer "liquid-tight" integrity, and meet other requirements for tear resistance, puncture resistance, heat aging, alcohol resistance, sizing, and dexterity. Face protection devices can be masks, hoods, visors, safety glasses, or goggles. Any combination of items can be used to provide protection to the wearer's face, principally the eyes, nose, and mouth. For the intended areas of face protection, these devices must allow no penetration of virus, offer "liquid-tight" integrity, and provide adequate visibility for those portions of the device covering the wearer's eyes.

A-5-5.2 In order to avoid all potential exposure to infectious diseases, it is important that all members use gloves when providing patient care. All members who might come in contact with the patient should use gloves.

A-5-5.2.1 For additional information refer to Federal Register, Vol. 60, No. 110; 29 CFR 1910.134, Respiratory Protection; OSHA Enforcement Policy and Procedures for Occupational Exposure to Tuberculosis; Center for Disease Control and Prevention, "Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities," 1994.

A-5-6 Fire department personnel involved in a hazardous materials incident must be protected against potential chemical hazards. The purpose of chemical-protective clothing and equipment is to shield or isolate individuals from the chemical hazards that can be encountered during hazardous materials responses. Adequate chemical-protective clothing must be carefully selected and used to protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing.

Structural fire-fighting protective clothing and equipment should not be used for hazardous materials incidents. Even where certified to the appropriate NFPA standards for structural fire fighting, these clothing and equipment items provide little or no protection against hazardous chemicals. Use of this clothing for hazardous materials emergency response can result in serious injury or death for the following reasons:

(a) Structural fire-fighting protective clothing materials are easily permeated or penetrated by most hazardous chemicals. Some parts of structural fire-fighting clothing can actually absorb chemical liquids or vapors, increasing the likelihood of serious exposure.

(b) Many hardware items will fail or lose function when contacted by chemicals (e.g., etching of visors, deterioration of straps, corrosion of hooks or other metal items).

(c) Contamination of structural fire-fighting protective clothing might not be effectively removed by laundering. Reuse of contaminated clothing can cause chronic exposure and accelerate physiological effects produced by contact with the chemical.

Fire fighters must realize that no single combination of protective equipment and clothing is capable of protecting them against all hazards. Therefore, chemical-protective clothing should be used in conjunction with other protective methods. The use of such clothing can itself create significant wearer hazards, such as heat stress, and physical and psychological stress, as well as impaired vision, mobility, and communication. In general, the greater the level of chemical clothing protection, the greater are the associated risks. For any given situation, equipment and clothing should be selected that provide an adequate level of protection. Overprotection as well as underprotection can be hazardous and should be avoided.

The approach to selecting personal protective clothing and equipment must encompass an "ensemble" of clothing and equipment items that are easily integrated to provide both an appropriate level of protection and the ability to carry out emergency response activities. The following is a checklist of components that can form the chemical-protective ensemble:

(a) Protective clothing (i.e., suit, coveralls, hoods, gloves, boots)

(b) Respiratory equipment (i.e., SCBA, combination SCBA/SAR)

(c) Cooling system (i.e., ice vest, air circulation, water circulation)

(d) Communications device

(e) Head protection

(f) Ear protection

(g) Inner garments

(h) Outer protection (i.e., overgloves, overboots, flashcovers)

The United States Environmental Protection Agency (EPA) has outlined four levels of protection: A, B, C, and D. The EPA defined these levels of protection primarily for workers at hazardous waste sites, where emergency conditions do not usually exist. These levels of protection are commonly and often inappropriately utilized by the fire service. They are inadequate and do not correctly define the chemical-protective clothing with respect to the intended use based on the hazard and the required performance the selected clothing or equipment must offer.

EPA levels of protection should be used only as the starting point for ensemble creation; however, each ensemble must be tailored to the specific situation in order to provide the most appropriate level of protection. For example, if the emergency response activity involves a highly contaminated area or the potential of contamination is high, it might be advisable to wear a disposable covering such as coveralls or splash suits over the protective ensemble.

It is important to realize that selecting items by their design or configuration alone is not sufficient to ensure adequate protection. In other words, just having the right components to form an ensemble is not enough. Again, the EPA levels of protection do not define what performance the selected clothing or equipment must offer.

For emergency response, the only acceptable types of protective clothing include fully or totally encapsulating suits and nonencapsulating or "splash" suits combined with accessory clothing items such as chemical-resistant gloves and boots. These descriptions apply to how the clothing is designed, not to its performance. The NFPA has classified chemical-protective suits by their performance in the following three standards:

(a) Vapor-protective suits (NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*)

(b) Liquid splash-protective suits (NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*)

(c) Support function protective suits (NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations*)

Protective clothing should completely cover both the wearer and the wearer's breathing apparatus. Wearing SCBA or other respiratory equipment outside the suit subjects this equipment to the chemically contaminated environment. The SCBA used for hazardous materials emergency response are generally the same as those used in structural fire fighting.

Respiratory protective equipment is not designed to resist chemical contamination and should be protected from these environments. NFPA 1991 vapor-protective suits require that respiratory protection SCBA be worn on the inside. NFPA 1992 liquid splash-protective suits can be configured with the SCBA on either the inside or the outside. However, it is strongly recommended that respiratory equipment be worn inside the ensemble to prevent its failure and to reduce decontamination problems.

There are a variety of accessories available for chemical-protective ensembles. As with protective clothing and respirators, it is important that these components integrate easily into an ensemble without a decrease in the protective integrity offered by any one component. For the most part, the protective suit is the main integrating ensemble component, since it must accommodate all other equipment while completely covering the wearer. Nevertheless, selection of an ensemble configuration must consider all items simultaneously.

Fire departments are faced with selecting a number of available chemical-protective garments and sorting through the variety of information provided by the manufacturer. What follows are some guidelines that can be used in selecting chemical-protective suits.

(a) It must be determined if the clothing item is intended to provide vapor or liquid splash protection. Vapor-protective suits also provide liquid splash protection. Both vapor- and liquid splash-protective suits also provide protection against solid chemicals and particles. Many garments can be labeled as totally encapsulating but do not provide gas-tight integrity due to inadequate seams or closures. Splash suits must still cover the entire body when combined with the respirator, gloves, and boots. Applying duct tape to a splash suit does not enable it to protect against vapors. Gas-tight integrity can only be determined by performing a pressure or inflation test of the respective protective suit. ASTM F 1052, *Standard Practice for Pressure Testing of Gas-Tight Totally Encapsulating Chemical Protective Suits*, offers a procedure for conducting this test. This test involves the following:

1. Closing off suit exhalation valves
2. Inflating the suit to a prespecified pressure
3. Observing whether the suit holds the above pressure for a designated period of time

Liquid splash-protective suits must provide "liquid-tight" integrity. Liquid-tight integrity is best evaluated by determining how the chemical-protective suit and other clothing prevent sprayed liquid from contacting the wearer. ASTM F 1359, *Practice for Evaluating the Liquid-Tight Integrity of Chemical Protective Suits and Ensembles Under Static Conditions*, offers procedures for conducting this test involving the placement of the suit and other clothing over a mannequin that is dressed in a water-absorptive garment. Surfactant-treated water is sprayed at the suited mannequin from several different directions. Observations of water penetration on the water-absorptive garment indicate a lack of liquid-tight integrity. In particular, seam, closure, and clothing item interface areas should be examined closely for water-tight integrity.

(b) It must be determined if the clothing item provides full-body protection. A vapor-protective or totally encapsulating suit will meet this requirement by passing gas-tight integrity tests. Liquid splash-protective suits can have separate parts. Missing clothing items must be obtained separately and match or exceed the performance of the garment. Buying a polyvinyl chloride (PVC) glove for a PVC splash suit does not mean that the same level of protection is obtained. This determination must be made by comparing chemical resistance data.

Component parts of the liquid splash-protective suit must also integrate and provide liquid-tight integrity as described previously.

(c) The manufacturer's chemical resistance data provided with the garment must be evaluated. Technical data packages are required to be supplied by the manufacturers of protective suits that are certified to NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, or NFPA 1992, *Standard on Liquid Splash-Protect Suits for Hazardous Chemical Emergencies*. Manufacturers of vapor-protective suits must provide permeation resistance data for their products, while penetration resistance data must accompany liquid splash-protective garments. Data must be provided for every primary material in the suit, including the garment, visor, gloves, and boots.

Permeation data should include a citation that testing was conducted in accordance with ASTM F 739, *Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases*, and the following:

1. Chemical name
2. Breakthrough time (indicates how soon the chemical permeates)
3. Permeation rate (indicates the rate at which the chemical permeates)
4. System sensitivity (allows comparison of test results from different laboratories)

If no data is provided or if the data lacks any of the information above, the manufacturer should be asked to supply the missing data, or the product will not be considered. Manufacturers that provide only numerical or qualitative ratings must support their recommendations with complete test data.

Penetration data should include a pass or fail determination for each chemical listed and a citation that testing was conducted in accordance with ASTM F 903, *Standard Test Method for Resistance of Protective Clothing Materials to Penetration by Liquids*. Protective suits that are certified to NFPA 1991 or NFPA 1992 should meet all of the above requirements.

Suit materials that show no breakthrough or no penetration in response to a large number of chemicals are likely to have a broad range of chemical resistance. (Breakthrough times greater than one hour are usually considered to be an indication of acceptable performance.) If there are specific chemicals within a response area that have not been tested, the manufacturer should be consulted for test data on these chemicals.

(d) The manufacturer's instruction manual should be obtained and examined.

This manual should document all the features of the suit and describe those materials that are used in its construction. It should cite specific limitations for the suit and the restrictions that apply to its use. Procedures and recommendations should be supplied for at least the following:

1. Donning and doffing
2. Inspection, maintenance, and storage
3. Decontamination
4. Use

The manufacturer's instructions should be thorough enough to allow trained fire department members to wear and use the suit without a large number of questions.

(e) Sample garments should be obtained and inspected.

An examination of the quality of suit construction and other features that will impact its wearing should be made. If possible, representative garments should be obtained in advance, inspected prior to purchase, and reviewed with an individual who has experience in their use. It is also helpful to "try out" representative garments prior to purchase by having personnel run through exercises to simulate response activities while wearing the garments.

Despite the fact that a fire department has gone through a very careful selection process, a number of situations will arise where no information is available to judge whether the protective clothing chosen will provide adequate protection. These situations include the following:

1. Chemicals that have not been tested with the garment materials
2. Mixtures of two or more different chemicals
3. Chemicals that cannot be readily identified
4. Extreme environmental conditions (hot temperatures)
5. Lack of data in all suit components (e.g., gloves, visors)

Testing material specimens using newly developed field test kits can offer one means for making on-site clothing selection. A portable test kit has been developed by the EPA using a simple weight loss method that allows field qualification of protective clothing materials within one hour. Use of this kit can compensate for the absence of data and provide additional criteria for clothing selection.

Selection of chemical-protective clothing is a complex task and should be performed by personnel with both extensive training and experience. Under all conditions, clothing should be selected by evaluating its performance characteristics against the requirements and limitations imposed by the response activity.

A-5-6.1 NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies,* covers vapor-protective suits that are designed to provide "gas-tight" integrity and are intended for response situations where no chemical contact is permissible. This type of suit is equivalent to the clothing required in EPA's Level A. The standard specifies a battery of 17 chemicals, which were selected because they are representative of the classes of chemicals that are encountered during hazardous materials emergencies. Vapor-protective suits must resist permeation by the chemicals present during a response. Permeation occurs when chemical molecules "diffuse" through the material, often without any evidence of chemical attack. Permeation resistance is measured in terms of breakthrough time. An acceptable material is one where the breakthrough time exceeds the expected period of garment use. Chemical permeation resistance for one hour or more against each chemical in the NFPA battery is required for primary suit materials (garment, visor, gloves, and boots). To be certified for any additional chemicals or specific chemical mixtures, a suit must meet the same permeation performance requirements.

Other performance requirements are included in NFPA 1991 in order to reflect simulated emergency hazardous materials response use conditions. To determine adequate suit component performance in hazardous chemical environments, the following tests are required:

(a) A suit pressurization test to check the air-tight integrity of each protective suit

(b) An overall suit water penetration test designed to ensure the suit provides full body protection against liquid splashes

(c) Penetration resistance testing of closures

(d) Leak and creaking pressure tests for exhaust valves

To ensure that the materials used for vapor-protective suits will afford adequate protection in the environment where they will be used, material testing for burst strength, tear resistance, abrasion resistance, flammability resistance, cold temperature performance, and flexural fatigue are also required.

A-5-6.1.4 Materials used in vapor-protective suits are tested for limited thermal resistance; however, this testing only prevents the use of inherently flammable materials. There are no performance criteria provided in NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, to demonstrate protection of NFPA 1991-compliant vapor-protective suits during fire-fighting operations. There are no test requirements or performance criteria in NFPA 1991 addressing protection from radiological, biological, or cryogenic hazards.

A-5-6.2 NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, covers liquid splash-protective suits, which are designed to protect emergency responders against liquid chemicals in the form of splashes, but not against continuous liquid contact or chemical vapors and gases. Liquid splash-protective suits can be acceptable for some chemicals that do not present vapor hazards. Essentially, this type of clothing meets EPA Level B needs. It is important to note, however, that wearing liquid splash-protective clothing does not protect the wearer from exposure to chemical vapors and gases, since this clothing does not offer gas-tight performance, even if duct tape is used to seal clothing interfaces. Therefore, where the environment is unknown or not quantified through monitoring, where exposures include carcinogens, where the chemicals have a high vapor pressure, or where the splash-protective suit has not been certified for the chemical exposure, an NFPA 1991-compliant garment should be utilized.

NFPA 1992 specifies a battery of nine chemicals, including liquid chemicals with low vapor pressures with no known skin absorption toxicity, that are representative of the classes of chemicals likely to be encountered during hazardous materials emergencies. Chemical penetration resistance against the NFPA battery of test chemicals is required. Any additional chemicals or specific chemical mixtures for which the manufacturer is certifying the suit must meet the same penetration performance requirements.

Other NFPA 1992 performance requirements include an overall suit water penetration test to ensure the suit provides full body splash protection. As in NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies,* this standard contains performance criteria to ensure that the materials used for liquid-splash suits afford adequate protection in the environment where they will be used. These test requirements include material testing for burst strength, tear resistance, flammability resistance, abrasion resistance, cold temperature performance, and flexural fatigue testing.

A-5-6.2.7 Materials used in liquid splash-protective suits are tested for limited thermal resistance; however, this testing only prevents the use of inherently flammable materials. There are no performance criteria provided in NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, to demonstrate protection of NFPA 1992-compliant liquid splash-protective suits during fire-fighting operations. There

are no test requirements or performance criteria in NFPA 1992 addressing protection from radiological, biological, or cryogenic hazards.

A-5-6.3 NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations*, covers support function suits that provide liquid splash protection as required in NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, but offer limited physical protection. These garments can be made without the construction requirements for reuse of the garments. They can be designed by the manufacturer for a single use or a limited use expectancy. These garments can comprise several separate protective clothing components (i.e., coveralls, hoods, gloves, and boots). They are intended for use in nonemergency, nonflammable situations where the chemical hazards have been completely characterized. Examples of support functions include decontamination, hazardous waste cleanup, and training. Support function protective garments should not be used during emergency response outside of support functions and should never be utilized for protection in a hot zone.

A-5-6.3.7 Materials used in support function protective garments are tested for limited thermal resistance; however, this testing only prevents the use of inherently flammable materials. There are no performance criteria provided in NFPA 1993, *Standard on Support Function Protective Clothing for Hazardous Chemical Operations*, to demonstrate protection of NFPA 1993-compliant support function protective garments during fire-fighting operations. There are no test requirements or performance criteria in NFPA 1993 addressing protection from radiological, biological, or cryogenic hazards.

A-5-7.1 Fire departments that provide wildland and structural fire-fighting services should establish guidelines for members on which ensemble to wear for a given incident.

A-5-7.4 Structural fire-fighting helmets can be used for this purpose although these are overly heavy and can cause additional stress and fatigue for the member.

A-5-7.8 The importance of hydration during wildland fire-fighting operations cannot be over emphasized. This concept must be clearly understood and utilized by all members. A method of replenishment of this water supply should be in place to provide 8 to 12 quarts of water per day, per member.

A-5-7.9 Some wildland fire fighter fatalities have been attributed to the failure to follow the 10 standard orders, or a failure to recognize one or more of the 18 "watch-out" situations. The "LCES" model provides a quick reference for establishing a safe approach to wildland fire fighting. These 18 "watch-out" situations are listed below.

(a) *Fire Orders*

1. **F**ight fire aggressively but provide for safety first.
2. **I**nit iate all action based on current and expected fire behavior.
3. **R**ecognize current weather conditions and obtain forecasts.
4. **E**nsure instructions are given and understood.
5. **O**btain current information on fire status.
6. **R**emain in communication with crew members, your supervisor, and adjoining forces.
7. **D**etermine safety zones and escape routes.
8. **E**stablish lookouts in potentially hazardous situations.
9. **R**etain control at all times.
10. **S**tay alert, keep calm, think clearly, act decisively.

(b) *Common Denominators of Fire Behavior on Tragedy Fires*

1. Most incidents happen on the smaller fires or on isolated portions of larger fires.
2. Most fires are innocent in appearance before the "flare-ups" or "blow-ups." In some cases, tragedies occur in the mop-up stage.
3. Flare-ups generally occur in deceptively light fuels.
4. Fires run uphill surprisingly fast in chimneys, gullies, and on steep slopes.
5. Some suppression tools, such as helicopters or air tankers, can adversely affect fire behavior. The blasts of air from low-flying helicopters and air tankers have been known to cause flare-ups.

(c) *Watch-Out Situations*

1. Fire not scouted and sized up
2. In country not seen in daylight
3. Safety zones and escape routes not identified
4. Unfamiliar with weather and local factors influencing fire behavior
5. Uninformed on strategy, tactics, and hazards
6. Instructions and assignments not clear
7. No communication link with crew members or supervisor
8. Constructing line without safe anchor point
9. Building fireline downhill with fire below
10. Attempting frontal assault on fire
11. Unburned fuel between you and fire
12. Cannot see main fire, not in contact with someone who can
13. On a hillside where rolling material can ignite fuel below
14. Weather becoming hotter and drier
15. Wind increases and/or changes direction
16. Getting frequent spot fires across line
17. Terrain and fuels make escape to safety zone difficult
18. Taking nap near fireline

(d) *The four major common denominators of fire behavior on tragedy fires are as follows:*

1. Most incidents happen on smaller fires or on isolated sections of larger fires.
2. Flare-ups generally occur in deceptively light fuels, such as grass, herbs, and light brush.
3. Most fires are innocent in appearance before unexpected shifts in wind direction and/or speed result in flare-ups. In some cases, tragedies occur in the mop-up stage.
4. Fires respond to large and small scale topographic conditions, running uphill surprisingly fast in chimneys, gullies, and on steep slopes.

A-5-8.1 The mandatory use and operation of a PASS by fire fighters 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 fire fighter becomes incapacitated or needs assistance.

Past fire fighter fatality investigation reports document the critical need to wear and operate PASS devices when fire fight-

ers operate in hazardous areas. Investigation results show that fire fighters most often failed to activate the PASS unit prior to entering a hazardous area.

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 must be coupled with a solid incident management system, a personnel accountability system, and adequate communications to properly ensure for the safety of fire fighters.

A-5-9.3 Life safety rope can be significantly weakened by abrasion, misuse, contamination, wear, and stresses approaching its breaking strength, particularly impact loading. Since there is no approved method to service test a rope without compromising its strength, rope rescue and training operations should be carefully observed and monitored for conditions that could cause immediate failure or result in undetectable damage to the rope. If a rope has been used in a situation that could not be supervised or where potential damage might have occurred, it must be removed from service and destroyed.

It is important that ropes be inspected for signs of wear by qualified individuals after each use. If indications of wear or damage are noted, or if the rope has been stressed in excess of the manufacturer's recommendations or impact loaded, it must be destroyed.

The destruction of the rope means that it must be removed from service and altered in such a manner that it could not be mistakenly used as a life safety rope. This alteration could include disposal or removal of identifying labels and attachments and cutting the rope into short lengths that could be used for utility purposes.

The assignment of "disposable" life safety ropes to members or to vehicles has proven to be an effective system to manage ropes that are provided for emergency use and are used infrequently. Special rescue teams, which train frequently and use large quantities of rope, should include members who are qualified to manage and evaluate the condition of their ropes and determine the limitations upon their reuse.

A-5-11.1 The use of personal protective equipment to limit noise exposure should be considered as an interim approach until the noise levels produced by vehicles, warning devices, and radios can be reduced. Protective ear muffs are recommended for fire fighters, due to the difficulties of proper fit and insertion of ear plugs.

Studies in some jurisdictions have indicated that the most harmful noise exposure can come from radios that are turned up loud enough to be heard over the noise of engines and warning devices. Ear muffs are available that provide effective sound attenuation and rapid donning. They should also be provided with built-in speakers and volume controls for radio and intercom communications. Ear muffs should be worn by operators of noisy equipment (in excess of 90 dBA) at the scene of incidents as well as during response. In some jurisdictions, traffic regulations might limit the use of hearing protection by drivers.

The fire apparatus standards require the noise level at any seated position to be a maximum of 90 dBA when measured as specified in the standard, without any warning devices in operation, as the vehicle proceeds at a speed of 45 mph on a level, hard, smooth surface road. However, it is recommended that the specification for new fire apparatus provide maximum sound requirements that would allow members to ride in those vehicles without using hearing-protective devices. A maximum limit of 85 dBA without audible warning devices and 90 dBA with warning devices in operation is recommended. Interior noise levels should be measured with the vehicle in motion at the speed that produces the highest noise level, up to 55 mph. All windows should be closed, and the noise level should be measured in each passenger area.

A-5-11.2 When operating in situations where other protective clothing and equipment is necessary, such as in structural fire fighting, the interface between hearing protection and other necessary protection might not be adequately addressed by currently used devices. For example, ear muffs might not interface with helmets, and foam plastic ear plugs could be dangerous in a fire environment due to the potential for melting. In addition, a reduction in hearing capability in an emergency operations setting could create additional hazards. Effective hearing protection should also be used during nonemergency activities such as equipment checks and engine warm-ups. Attention should be given to correcting the deficiencies through the advent of improved protective devices and through the use of alternate or improved procedures that create less noise.

A-5-11.3 An effective hearing conservation program should address the regular audiometric testing of members to identify hearing loss, the development and implementation of steps to prevent further hearing loss by members exhibiting such loss, and the ongoing identification and reduction or elimination of potentially harmful noise sources in the work environment. The standards for hearing conservation included in 29 CFR 1910.95 should be used as a basic minimum approach to this problem.

Any approach to hearing conservation should address personal protective devices, audiometric testing, and the reduction of noise exposure that can be achieved by modifying existing equipment or changing procedures. Examples of modifications would include moving siren speakers and air horns down onto front bumpers, responding with windows closed, and installing sound-attenuating insulation in cabs of fire apparatus. The noise produced by audible warning devices should also be evaluated to determine the most effective balance between warning value and harmful characteristics. Some studies indicate that high-low alternating tone sirens and lower pitch air horns could be more effective warning devices and less damaging to hearing.

A longer-term approach to hearing conservation should deal with the purchase of apparatus and equipment that is less noisy by design, with noise standards included in the specifications. Improved radio equipment that produces higher clarity of sound with less output volume should also be considered.

For more information on fire department hearing conservation programs, consult the U.S. Fire Administration Publication, *Fire Department Hearing Conservation Program Manual.*

A-6-1.3 The incident commander must automatically integrate fire fighter safety and survival into the regular command functions. When this integration occurs, the incident commander promotes fire fighter welfare by performing the standard job of command. Under fire conditions, the incident commander is at an extreme disadvantage to perform any additional tasks. The safety plan for the incident commander has to be the regular command plan.

A-6-1.5

(a) The incident commander must always integrate fire fighter health and safety considerations into the command process. This integration ensures that safety will always be considered and will not be reserved for unusual or high-risk situations when the incident commander is under a high degree of stress. An incident action plan that addresses fire fighter safety should be a routine function of command.

(b) Early evaluation enables the incident commander to consider current conditions in a standard manner and then predict the sequence of events that will follow. The consideration of fire fighter safety must be incorporated in this evaluation and forecasting.

(c) Effective communications are essential to ensure that the incident commander is able to receive and transmit information, obtain reports to maintain an awareness of the situation, and communicate with all component parts of the incident organization to provide effective supervision and controls.

(d) Strategic decisions establish the basic positioning of resources and the types of functions they will be assigned to perform at the scene of a fire or emergency incident. The level of risk to which members are exposed is driven by the strategy; offensive strategy places members in interior positions where they are likely to have direct contact with the fire, while defensive strategy removes members from interior positions and high-risk activities. The attack plan is based on the overall strategy and drives the tactical assignments that are given to individual or groups of companies/crews and the specific functions they are expected to perform. Risk identification, evaluation, and management concepts must be incorporated in each stage of the command process.

(e) Tactical-level management unit people are command agents and are able to both monitor companies/crews at the actual location where the work is being done (geographic) and to provide the necessary support (functional). The incident commander uses a tactical-level management unit as offsite (from the command post) operational/communications/safety managers-supervisors. The incident commander uses the incident organization along with communications to stay connected. Some incident management systems identify tactical-level management units such as a "division" or a "group" for a functional position within the system, whereas other systems use the term "sectors" for either geographical or functional areas. As incidents escalate, the incident management system should be utilized to maintain an effective span of control ratio of 3-to-7. Good sector control = good safety control.

(f) The incident commander must routinely evaluate and re-evaluate conditions and reports of progress or lack of progress in reaching objectives. This process will allow the incident commander to determine if the strategy and attack plans should be continued or revised. The failure to revise an inappropriate or outdated attack plan is likely to result in an elevated risk of death or injury to fire fighters.

(g) Effective command and control must be maintained from the beginning to the end of operations, particularly if command is transferred. Any lapse in the continuity of command and the transfer of information increases the risk to fire fighters.

A-6-2.1 The incident commander has an 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:

(a) Standard evaluation of the situation
(b) Strategic decision-making
(c) Tactical planning
(d) Plan evaluation and revision
(e) Operational command and control

A-6-2.1.1 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:

(a) Routine evaluation of risk in all situations
(b) Well-defined strategic options
(c) Standard operating procedures
(d) Effective training
(e) Full protective clothing ensemble and equipment
(f) Effective incident management and communications
(g) Safety procedures and safety officers
(h) Back-up crews for rapid intervention
(i) Adequate resources
(j) Rest and rehabilitation
(k) Regular evaluation of changing conditions
(l) Experience based on previous incidents and critiques

A-6-2.1.2 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 must 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.

A-6-2.3 An incident safety officer should be established at all major incidents and at any high-risk incidents. The incident safety officer should be assigned to operate under the incident commander. Depending on the specific situation, this assignment could require one or more members. If the fire department's safety officer is not available or doesn't have the expertise necessary for the incident, the incident commander should assign one or more members that have the expertise to assume this responsibility. All members should be familiar with the basic duties and responsibilities of an incident safety officer.

A-6-3.1 A standard system to account for the identity and assignment of each member might be relatively simple when all members arrive as assigned crews on fire apparatus. The identity of each crew member should at least be recorded in a standard manner on the vehicle, and each company officer is responsible for those members. In fire departments where members arrive in their own vehicles or assemble at the scene, a system is required to record the identity of each member arriving and to organize them into companies or groups with appropriate supervision. This requires a standard system of "reporting in" at the incident and becoming part of the organized system of operations.

A-6-3.5 There are many means of meeting these requirements. Some components can include tactical worksheets, command boards, apparatus riding lists, company personnel boards, electronic bar-coding systems, and so forth. These

components can be used in conjunction with one another to facilitate the tracking of personnel by both location and function. The components of the personnel accountability system should be modular and expand with the size and complexity of the incident.

A-6-3.6 These accountability officers should work with the incident commander and tactical-level management unit officers to assist in the ongoing tracking and accountability of members.

A-6-4.1 The limitation of emergency scene operations to those that can be safely conducted by the number of personnel on the scene is intended to reduce the risk of fire fighter death or injury due to understaffing. While members can be assigned and arrive at the scene of an incident in many different ways, it is strongly recommended that interior fire-fighting operations not be conducted without an adequate number of qualified fire fighters operating in companies under the supervision of company officers.

It is recommended that a minimum acceptable fire company staffing level should be four members responding on or arriving with each engine and each ladder company responding to any type of fire. The minimum acceptable staffing level for companies responding in high-risk areas should be five members responding or arriving with each engine company and six members responding or arriving with each ladder company. These recommendations are based on experience derived from actual fires and in-depth fire simulations and are the result of critical and objective evaluation of fire company effectiveness. These studies indicate significant reductions in performance and safety where crews have fewer members than the above recommendations. Overall, five member crews were found to provide a more coordinated approach for search and rescue and fire suppression tasks.

During actual emergencies, the effectiveness of companies can become critical to the safety and health of fire fighters. Potentially fatal work environments can be created very rapidly in many fire situations. The training and skills of companies can make a difference in the need for additional personnel and in reducing the exposure to safety and health risks to fire fighters where a situation exceeds their capabilities.

A-6-4.3 For additional information see 29 CFR 1910.134 and U.S. Department of Labor, Occupational Safety and Health Administration, Memorandum for Regional Administration and State Designees, "Response to IDLH or Potential IDLH Atmospheres."

A-6-4.4 The assembling of four members for the initial fire attack can be accomplished in many ways. The fire department should determine the manner in which they plan to assemble members in their response plan. The four members assembled for initial fire-fighting operations can include an officer, chief officer, or any combination of members arriving separately at the incident.

Members that arrive on the scene of a working structural fire prior to the assembling of four persons can initiate exterior actions in preparation for an interior attack. These can include, but are not limited to, actions such as the establishment of a water supply, the shutting off of utilities, the placement of ladders, the laying of the attack line to the entrance of the structure, or exposure protection.

If members are going to initiate actions that would involve entering of a structure because of an imminent life-threatening situation where immediate action can prevent the loss of life or serious injury, and four members are not yet on the scene, the members should carefully evaluate the level of risk that they would be exposed to by taking such actions. If it is determined that the situation warrants such action, incoming companies should be notified so that they will be prepared to provide necessary support and backup upon arrival.

A-6-4.4.2 The following examples show how a department might deploy a team of four members initially at the scene of a structure fire, regardless of how the team members are assembled:

(a) The team leader and one fire fighter could advance a fire-fighting hoseline into the IDLH atmosphere, and one fire fighter and the pump operator become the stand-by members.

(b) The team leader could designate the pump operator to be the incident commander. The team leader and one fire fighter enter the IDLH atmosphere, and one fire fighter and pump operator remain outside as the standby members.

(c) Two fire fighters could advance the hoseline in the IDLH atmosphere, and the team leader and pump operator remain outside as stand-by members.

A-6-4.5 If advanced life-support personnel are available, this level of service would be preferred. Basic life support is the minimum acceptable level.

A-6-4.7.2 Some studies have shown that headlights or warning lights of parked vehicles at emergency incidents have caused accidents instead of prevented accidents. The fire department should develop guidelines in conjunction with their local law enforcement agency to determine what is appropriate for local conditions.

A-6-6.1 Having a pre-planned rehabilitation program that is applicable to most incident types is essential for the health and safety of members. The rehabilitation plan should outline an ongoing rehabilitation for simple or short-duration incidents as well as a process to transition into the rehabilitation needs of a large or long-duration incident. Medical evaluation and treatment in the on-scene rehabilitation area should be conducted according to EMS protocols developed by the fire department in consultation with the fire department physician and the EMS medical director. If ALS personnel are available, this level of EMS care is preferred.

A-6-6.2 Weather factors during emergency incidents can impact severely on the safety and health of members, particularly during extremes of heat or cold. Where these factors combine with long-duration incidents or situations that require heavy exertion, the risks to members increase rapidly. The fire department should develop procedures, in consultation with the fire department physician, to provide relief from adverse climatic conditions.

Typical rehabilitation considerations for operations during hot weather extremes are (1) moving fatigued or unassigned personnel away from the hazardous area of the incident; (2) removal of personal protective equipment; (3) ensuring that personnel are out of direct sunlight; (4) ensuring that there is adequate air movement over personnel, either naturally or mechanically; (5) providing personnel with fluid replenishment, especially water; and (6) providing medical evaluation for personnel showing signs or symptoms of heat exhaustion or heat stroke.

Typical rehabilitation considerations for operations during cold weather extremes are (1) moving fatigued or unassigned

personnel away from the hazardous area of the incident; (2) providing shelter from wind and temperature extremes; (3) providing personnel with fluid replenishment, especially water; and (4) providing medical evaluation for personnel showing signs or symptoms of frostbite, hypothermia, or other cold-related injury.

A-6-6.3 The assignment of an ambulance or other support crew to the rehabilitation function is essential during long-duration or heavy-exertion incident operations. This crew can assist with rehabilitation functions as well as be available to provide immediate life support needs for members.

A-6-7.2.1 Incidents that appear routine in nature, can, after the arrival of responding crews, turn into a violent or hostile environment. A standard communication phrase, known only by communication personnel and other responders, can warn others to the dangers of the situation without triggering violence or hostilities.

A-7-1.1 Where health, safety, building, and fire codes are not legally applicable to fire department facilities, steps should be taken to ensure that equivalent standards are applied and enforced. In the absence of local requirements, the provisions of NFPA 1, *Fire Prevention Code;* NFPA *101®*, *Life Safety Code;* NFPA 70, *National Electrical Code®;* and a model plumbing, mechanical, and building code should be applied. In addition, the workplace safety standards specified in 29 CFR 1910 or an equivalent standard should be applied (*Code of Federal Regulations*, Workplace Safety Standards). Applicable requirements of the American with Disabilities Act, 1992 should be met.

A-7-1.5 As new stations are constructed or existing stations are renovated, a separation between the apparatus floor and living quarters should be provided. The apparatus bay should be equipped with a designed exhaust ventilation system that meets local codes and applicable regulations. Exposure to diesel particulates can cause cancer, and elevated carbon monoxide levels are known to be toxic.

A-7-2.1 The following is a sample inspection form that can be used to document and record annual fire department facility inspections. Fire departments are encouraged to develop an inspection form that works for their jurisdiction.

VIRGINIA BEACH FIRE DEPARTMENT
FACILITIES SAFETY CHECKLIST

This checklist will provide direction for company officers to conduct inspections of their particular facilities on a monthly basis. The information referenced here comes from various resource materials.

I. GENERAL:

____ The required Virginia Occupational Safety and Health workplace poster shall be displayed in the station, as required, where all employees are likely to see it.

____ Emergency instructions and telephone numbers shall be available for the general public in the event of an emergency and fire personnel are out of quarters.

II. HOUSEKEEPING:

____ All rooms, offices, hallways, storage rooms, and the apparatus floor shall be kept clean and orderly and in a sanitary condition.

____ All hallways and/or passageways shall be free from any type of protruding objects such as nails, splinters, and holes.

____ All waste containers shall be emptied regularly.

____ Waste containers shall be provided in the kitchen and/or eating areas. These containers shall have tight lids.

____ All areas of the station shall be adequately illuminated.

____ Stairways shall be in good condition with standard railings provided for every flight having four or more risers.

____ Portable ladders shall be adequate for their purpose, in good condition, and have secure footing.

____ Fixed ladders shall be equipped with side rails, cages, or special climbing devices.

____ Smoking shall not be permitted in designated no-smoking areas.

____ Containers of all cleaning agents shall be carefully labeled per the 1910.1200 standard of VOSH standards.

____ First-aid supplies shall be available and clearly identified as to location.

____ Shower curtains should provide adequate protection to prevent floors from becoming excessively wet and slippery.

____ Cooking appliances and eating utensils should be kept clean and in good working order.

III. EXITS:

____ All exits shall be visible and unobstructed.

____ All exits shall be marked with a readily visible sign that is illuminated.

____ Doors that might be mistaken for exits shall be marked "Not an Exit."

____ Exits and exit signs shall be free of decorations, draperies, and/or furnishings.

____ Primary exit routes shall be obvious, marked, and free of obstructions.

____ Exits should be wide enough for easy access.

IV. WALKING AND WORKING SURFACES:

____ Floors shall be kept as clean and dry as possible.

____ Adequate lighting shall be provided in all working areas.

____ Fire fighters' routes to slide poles or to apparatus shall be completely free of projections, tripping hazards, loose objects, or other impediments.

____ Beds shall be located as to result in minimum interference during turnout of fire fighters.

____ Handrails shall be of sufficient strength and proper design for all stairways and floor openings.

____ All slide pole floor openings shall be provided with safety enclosures.

____ A safety mat shall be positioned at the bottom of the slide pole.

____ The slide pole shall be regularly inspected and maintained.

V. APPARATUS FLOOR AND MAINTENANCE AREAS:

____ Ladders, pike poles, and other items projecting from the apparatus shall be clearly marked with bright colored flags, stripes, or other identification to warn against "headbump" accidents.

____ Apparatus overhead doors shall be maintained in a safe, operating condition.

____ Apparatus doors shall have adequate space for proper clearance for vehicles.

____ Maintenance pits shall be adequately covered, sufficiently lighted, and ventilated.

____ Pit boundaries shall be clearly marked.

____ The pit floor shall be kept clean and as dry as possible.

____ Fire fighters shall use adequate eye protection when working with grinders, drills, saws, welding equipment, and other tools likely to present an eye hazard.

____ Eye protection shall be worn by personnel when working under vehicles.

____ In relation to the previous question, is eye protection provided, is it in good condition, and is it used?

____ Work rests on grinders shall be adjusted to within $^1/_8$ in. (.32 cm) to the grinding wheel.

____ Grinders and grinding wheels shall be adequately guarded. The safety guard shall cover the spindle end, nut, and the flange projections.
____ All power tools shall be provided with proper guarding for electrical, cutting, and moving parts.
____ Maintenance hand tools shall be safely stored when not being used. They shall be inspected periodically and maintained to assure their safe condition.

Unsafe conditions to check are as follows:

____ The tools shall be clean.
____ The handles/grips shall not be broken.
____ There shall be no worn, defective points/parts on the tool.
____ There shall be no parts missing.
____ Pulleys and belts shall be properly guarded.
____ Chain drives and sprockets shall be guarded.
____ Air cleaning nozzles shall not emit more than 30 psi deadened pressure. This information will be stamped on the nozzle.
____ A spotter shall be used when vehicles are backed up, especially as a vehicle is driven over a pit.

VI. FIRE PREVENTION AND PROTECTION:

____ Portable fire extinguishers shall be maintained in a fully operable condition and kept in designated places when not in use. They shall be inspected on a monthly basis.
____ Fire extinguishers shall be of the proper type for the expected hazards.
____ The fire extinguisher shall have a durable tag securely attached to show the maintenance or recharge date. Also, the initials or signature of the person who performed the inspection shall be on the tag.
____ The fire alarm system shall be tested on a quarterly basis, if the station is so equipped.
____ If the station is so equipped, the sprinkler system shall be serviced by a qualified person.
____ The minimum amount of clearance, 18 in. (45.7 cm), shallbe maintained below the sprinkler heads.
____ Smoke detectors, which are in stations not equipped with a fire alarm system, shall be tested the first Tuesday of each month.

VII. HAZARDOUS MATERIALS:

____ Cylinders of compressed gases shall be stored in an upright position away from combustible materials.
____ Flammable and combustible materials shall be stored in tanks or closed containers per NFPA 30, Flammable and Combustible Liquids Code.
____ Safety containers with self-closing lids shall be used for the storage of flammable liquids and soiled, oily rags.
____ Gasoline and diesel pumps shall be checked on a weekly basis for proper working order and the condition of the nozzles and hoses.

VIII. ELECTRICAL WIRING, FIXTURES, AND CONTROLS:

____ Electrical cords shall be strung so that they do not hang on pipes, nail hooks, and so forth
____ Conduit shall be attached to all supports and tightly connected to junction and outlet boxes.
____ All electrical cords shall be checked for fraying.
____ All equipment shall be securely mounted to the surface on which it sits.
____ Flexible cords and cables shall not be used as a substitute for fixed wiring.
____ All extension cords shall be properly grounded and approved.
____ All electrical tools, whether department owned or personnel property, shall be properly protected for damaged power cords, plugs, worn switches, defective ground circuits, or other faults that could render them unsafe for use.
____ Electrical switches and circuit breakers shall be marked to show their purpose.

IX. OTHER:

____ Portable heaters used in stations shall be placed out of travel routes and away from combustibles, and if turned over, they shall turn themselves off.
____ Any situations that warrant a concern shall be brought to the attention of the health and safety officer.

X. COMMENTS/EXPLANATIONS:

SAMPLE INSPECTION FORM

Truckee Meadows Fire Protection District

Station Inspection Form

Station_____

Date_____

Shift_____

Inspected By:_____

Officer responsible for corrections_____

Answer all questions with yes or no. Explain any no answers. Comment on the bottom of the page.

General Work Environment

____ Are all work sites clean and orderly?
____ Are all work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?
____ Are all combustibles stored properly?
____ Are all bathroom facilities clean and sanitary?
____ Is the kitchen clean and sanitary?
____ Is the day room clean?
____ Are the sleeping quarters clean?
____ Are there proper labels on all containers?
____ Are the apparatus room and shop area clean?
____ Is the outside of the station clean and cared for?
____ Are station log and all computer reports (INFERS, Training) up to date and correct?

Comments: _____-
_____
_____
_____
_____
_____
_____
_____
_____
_____

Environmental Controls

____ Are all electrical fixtures working?
____ Is the furnace working properly?
____ Are the furnace filters clean?
____ Are there any combustibles around the furnace or hot water heater?
____ Is the hood over the range clean?
____ Is the apparatus room exhaust system in use and working properly?
____ Is the air-conditioning or evaporative cooler clean and working properly?
____ Are all station exhaust fans working?
____ Are floor drains clean and draining properly?
____ Are all fire extinguishers up to date?
____ Are smoke detectors working?
____ Are material safety data sheets up to date?
____ Are extension cords used as permanent wiring?

____ Does all personnel have uniforms that meet NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*?

____ Are station CO detectors in place and working properly?

Coments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Apparatus

Apparatus Number_____

____ Are all apparatus tires safe?

____ Is there any broken or defective glass in any apparatus window?

____ Are all lights on apparatus working (i.e., red lights, working lights, headlights, taillights, marker lights, and so forth)?

____ Is apparatus clean?

____ Is all equipment on apparatus and working properly?

____ Are all apparatus checks and paperwork up to date and filled out properly? (SCBA check-off sheets)

____ Is apparatus ready to respond? (ask captain)

____ Is medical equipment clean and inspected?

____ Are all seat belts in place and working?

____ Are all safety gates in place and working?

____ Are all intercom headsets in place and working?

____ Are hand-held radios in place and working?

____ Is mobile radio working?

____ Are map books on apparatus and up to date?

____ Are building surveys on apparatus and up to date?

Comments:_____

_____

_____

A-7-3.1 In some jurisdictions fire department facilities are maintained by other agencies. In these situations fire departments should develop a process to expedite requests for repairs or modifications to the facility to address safety or health concerns.

A-8-1.5 If any member, either career or volunteer, reports for duty under the influence of alcohol or drugs, or any other substance that impairs the member's mental or physical capacity, this situation cannot be tolerated.

Evidence of substance abuse could include a combination of various factors such as slurred speech, red eyes, dilated pupils, incoherence, unsteadiness on feet, smell of alcohol or marijuana emanating from the member's body, inability to carry on a rational conversation, increased carelessness, erratic behavior, inability to perform a job, or other unexplained behavioral changes.

The possibility of liability exists if a member who is under the influence of alcohol or drugs is allowed to remain on duty, to operate or drive vehicles or equipment on duty, or to drive a private vehicle from the duty site. A member who is believed to be under the influence of alcohol or drugs cannot be allowed to operate equipment or drive a vehicle, including a private vehicle, until the condition of the member has been determined and verified.

A-8-4.1 The health data base for a fire department should include the reports of regular physical evaluations, injury and illness reports, and any supporting information that could be useful in tracking, analyzing, or predicting the health effects of various events on individuals or the group.

A-8-4.2 This information should be managed in a manner that respects the confidentiality of doctor-patient relationships. Electronic data processing is often employed to facilitate management of such a data base.

A-8-4.3 The fire department should try to obtain autopsy or other medical information for all deceased employees or former employees. This information could be useful in establishing relationships between occupational factors and resulting fatalities at some time in the future. Autopsies for fire fatalities should be conducted and recorded according to a standard protocol.

A-8-5.1 Where fire department members routinely respond to emergency medical incidents, the fire department should consult with medical professionals and agencies on measures to limit the exposure of members to infectious and contagious diseases. This should include the provision and maintenance of equipment to avoid or limit direct physical contact with patients, when feasible.

A-8-6.3 A fire department physician should have specific expertise and experience relating to the needs of fire department members and a thorough knowledge of the physical demands involved in emergency operations. If possible, the fire department physician should be a specialist in the field of occupational medicine.

A-8-6.4 Depending on the size and the needs of a fire department, the fire department physician might or might not be required on a full-time basis. A fire department should have a primary relationship with at least one officially designated physician. This physician can serve as the primary medical contact and, in turn, deal with a number of other physicians and specialists. A large fire department can designate more than one fire department physician or might determine that a relationship with a group practice or multiple provider system is more appropriate to its needs. In any case, the option to consult with a physician who is particularly aware of the medical needs of fire department members and who is available on an immediate basis should exist.

A-8-7.1 The fire department should be concerned with the members' ability to regain and maintain a comfortable, healthy, and productive life during and after their service with the fire department.

A-8-7.2 The minimum qualifications for the health and fitness coordinator should include emergency medical technician (EMT) state certification; health and fitness coordinator certification, which includes topics such as physical fitness training, exercise physiology, kinesiology, nutrition, weight control counseling, critical incident stress management, and substance abuse training and education; and NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications,* Instructor II.

Certification in areas of physical fitness, training, exercise physiology, kinesiology, nutrition, and weight control can be acquired through agencies such as the American College of Sports Medicine (health and fitness instructor), Oklahoma State University Fire Service Division (fitness coordinator), and Cooper Institute (fitness coordinator).

A-9-1.1 The fire department member assistance program does not have to be financed by the fire department. Many community/county/state mental health agencies provide such services free of charge or at a nominal fee. The fire department need have only the ability to identify when such problems exist and be able to offer confidential referrals to the professional who will provide the counseling. Although member assistance programs differ from one another in various ways according to the particular needs and resources of individual fire departments, member organizations, and members, there are certain components that are found in all quality programs. The following program standards set forth by the Association of Labor-Management Administrators and Consultants on Alcoholism (ALMACA) address these components and are strongly recommended:

The physical location of the member assistance program should facilitate easy access while ensuring confidentiality. There should be a review of medical and disability benefits to ensure that plans adequately cover appropriate diagnosis and treatment for alcohol, drug, and mental health problems. Where feasible, coverage should include outpatient and day treatment care. The member assistance program staff should be familiar with the provisions of the medical and disability benefit plans so they can advise clients clearly as to the extent, nature, and cost of the recommended treatment and the reimbursement available.

The member assistance program staff should combine two primary qualifications:

(a) Appropriate managerial and administrative experience

(b) Skills in identifying problems, interviewing, motivating, referring clients, and, where appropriate, in counseling or related fields; experience and expertise in dealing with alcohol-related problems is strongly recommended

It is important that members and their families are informed about the member assistance program and the services it offers and are continually updated on its existence, availability, and confidentiality. Information about the member assistance program should be made available to all new members and their families.

The member assistance program should maintain current information about alcoholism treatment services and other resources. These include Alcoholics Anonymous, Al-Anon, Alateen, and other self-help groups; appropriate health care; community services; and other professionals. Information about referral procedures, costs, and other relevant factors should be available. Professionally trained individuals should be immediately available to assist members involved in traumatic incidents to reduce or deal with the effects of psychological stress.

There should be a periodic review of the member assistance program to provide an objective evaluation of operation and performance. There should be an annual review of member assistance program staff performance.

A-9-1.2 The policy statement should acknowledge that alcoholism is a disease responsive to treatment and rehabilitation, and it should specify the responsibilities of management, member organizations, and members as they relate to the program. The member assistance program should not in any way alter management authority or responsibilities or the prerogatives of a member organization. Participation in the member assistance program should not affect future service or career advancement, nor should participation protect the member from disciplinary action for continued substandard job performance or rule infractions. Sponsorship of the program by management and the member organization is highly desirable.

A-9-1.3 Adherence to federal regulations on confidentiality of alcohol and other drug abuse records is required of programs receiving federal funds, directly or indirectly.

A-9-2.1 Health promotion should include, but not be limited to, the following activities: career guidance, family orientation, and educational programs on topics such as weight control, healthy heart, hypertension, stress management, nutrition, preventive medicine, substance abuse, smoking cessation, and retirement planning.

For additional guidance in the implementation and management of the stress management component of a member assistance program, consult the U.S. Fire Administration publication, *Stress Management Model Program for Maintaining Firefighter Well-Being*.

A-9-2.2 The fire department should develop a policy on the use of tobacco products for all members. The fire department should also develop a policy on the acceptance of new members into the fire department with regard to the use of tobacco products.

A-10-1.2 Fire fighters frequently experience trauma, death, and sorrow. Critical incident stress is a normal reaction experienced by normal people following an event that is abnormal. The emotional trauma can be serious. It can break through a person's defenses suddenly, or slowly and collectively, so that the person can no longer function effectively. Critical incident stress is the inevitable result of trauma experienced by fire service personnel. It cannot be prevented, but it can be relieved. Experiencing emotional aftershocks following a traumatic event is a very normal reaction and should not be perceived as evidence of weakness, mental instability, or other abnormality.

Symptoms can appear immediately after the incident, hours later, or sometimes even days or weeks later. The symptoms can last for a few days, weeks, or months. Occasionally a professional counselor might be needed. Knowing the signs and symptoms and how to respond to them after the occurrence of a critical incident can greatly reduce the chance of more severe and long-term stress.

Rapid intervention, talking about the situation, and reassuring that these are normal reactions and feelings can help prevent more serious problems later on, such as family and marital problems.

To provide this intervention, the fire department should have access to a critical incident debriefing (CID) team. The main objective of the CID team is to lessen the impact of the critical incident, put it into the proper perspective, and help maintain a healthy outlook.

The CID team should consist of other fire fighters, support personnel, and mental health professionals specifically trained in stress-related counseling. The team should be well represented by all types of members whether volunteer, call, or career, and by all ranks. All members should have a minimum of a two-day training seminar with continuing education in stress-related training as an ongoing part of the team's regular meetings (monthly is recommended for active departments, while quarterly might be sufficient for less active departments).

Any individual should be able to initiate the debriefing procedure simply by contacting his/her supervisor or officer, or

the dispatch center. A contact list of the debriefing team members should be available in the dispatch center.

Debriefings should be held for incidents that have the potential for having a stressful impact on members. It is important to remember that an event is traumatic when experienced as such.

Generally, debriefings should be held at a station within one to three hours after the incident. Debriefings should encourage brief discussions of the event, which in itself help to alleviate a good deal of the stress. Debriefings are strictly confidential and are not a critique of the incident. Information should be given on stress reactions and steps that members can take to relieve the symptoms so that they can continue their normal activities as soon as the debriefing is over. Some common signs and symptoms of critical incident stress are fatigue, headaches, inability to concentrate, anxiety, depression, inappropriate emotional behavior, intense anger, irritability, withdrawal from the crew and/or family, change in appetite, increased alcohol consumption, and a change in sleeping patterns.

To help alleviate some of the emotional pain, members can rest more; contact friends; maintain as normal a schedule as possible; eat well-balanced, scheduled meals; keep a reasonable level of activity to fight boredom; express feelings; and talk to loved ones. Recent studies and research also indicate that exercise, especially soon after an event, can greatly reduce mental pain. MAP should always be available to members. The CID team is often the first step in providing the help that is needed and should be ready to serve to help minimize stress-related injury.

Appendix B Fire Service Occupational Safety and Health Program Worksheet

This appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

The worksheet in this appendix was developed by technical committee members to provide a template for fire departments that are beginning an occupational safety and health program or that are evaluating the current status of their programs. This worksheet provides a tool for assessing the yearly progress of the program and for developing a fiscal policy plan to achieve compliance with the applicable requirements of the standard. In the second, third, or fourth column, the user can record whether his or her department has achieved total compliance, partial compliance, or compliance that was effected by either administrative order or legislative action. If the department has not achieved compliance, the date(s) that compliance is expected to be completed can be recorded in the fifth column. There are some compliance issues that require budgetary action and would be included in either an operating budget or a capital planning budget. When compliance is achieved, this can be recorded in the sixth column. For budget items that are planned for two or three years in the future, those costs and anticipated compliance dates can be included in the seventh and eighth columns. Any remarks or changes should be included in the last column for explanatory purposes. This is not a "one size fits all" worksheet and can be modified to meet the user's needs.

The following paragraphs are extracted from the standard to reiterate the fact that an implementation plan should be implemented and annually evaluated.

1-2 Purpose.

1-2.1 The purpose of this standard is to specify the minimum requirements for an occupational safety and health program for a fire department and to specify safety guidelines for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities.

1-2.2 Many of the performance objectives of this standard can be achieved in a variety of ways. The achievement of these objectives is intended to help prevent accidents, injuries, and exposures and to reduce the severity of those accidents, injuries, and exposures that do occur. They will also help to prevent exposure to hazardous materials and contagious diseases and to reduce the probability of occupational fatalities, illnesses, and disabilities affecting fire service personnel.

1-2.3 Nothing herein shall be intended to restrict any jurisdiction from exceeding these minimum requirements.

1-3 Implementation.

1-3.1 When this standard is adopted by a jurisdiction, the authority having jurisdiction shall set a date or dates for achieving compliance with the requirements of this standard and shall be permitted to establish a phase-in schedule for compliance with specific requirements of this standard.

1-3.2 The fire department shall adopt a risk management plan as specified in Section 2-2 of this standard. This risk management plan shall include a written plan for compliance with this standard

NFPA 1500 FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Fire Department: _____ Date: _____

Person(s) Completing Worksheet

Name: _____ Title: _____ Name: Title: _____

Name: _____ Title: _____ Name: Title: _____

Standard Content	New in 1997 Ed.	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
Chapter 1 Administration									
1-4 Equivalency									
1-4.1—Equivalent levels of qualifications									
1-4.2—Training, education, competency, safety									
Chapter 2 Organization									
2-1 Fire Dept. Organizational Statement									
2-1.1—Written statement or policy									
2-1.2—Operational response criteria									
2-1.3—Statement available for inspection									
2-2 Risk Management Plan									
2-2.1—Written risk management plan									
2-2.2—Risk management plan coverage									
2-2.3—Risk management plan components									
2-3 Policy									
2-3.1—Written fire department occupational safety and health policy									
2-3.2—Occupational safety and health program audit									
2-4 Roles and Responsibilities									
2-4.1—Fire department responsibility									
2-4.1.1—Comply with laws									
2-4.1.2—Fire department rules, regulations, and SOPs									
2-4.2—Accident investigation procedure									
2-4.2.1—Members									
2-4.2.2—Fire dept. vehicles, equipment, facilities									
2-4.2.3—Corrective action to avoid repetitive occurrences									
2-4.2.4—Accident investigation records									
2-4.3—Individuals shall cooperate, participate, and comply									

Standard Content	New in 1997 Ed.	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
2-4.3.1—Right to be protected and to participate									
2-4.4—Member organization shall cooperate									
2-4.4.1—Collective rights									
2-5 Health and Safety Officer									
2-5.1—NFPA 1521 Fire department health and safety officer									
2-5.2—Fire department health and safety officer manage program									
2-5.3—Fire chief assign resources									
2-6 Occupational Safety and Health Committee									
2-6.1—Establish committee									
2-6.2—Committee study and review									
2-6.3—Regular meetings and minutes									
2-7 Records									
2-7.1—Accidents, injury, illness, exposures, death									
2-7.2—Occupational exposures									
2-7.3—Health (confidential)									
2-7.4—Training									
2-7.5—Vehicles and equipment									
Chapter 3 Training and Education									
3-1 General Requirements									
3-1.1—Safety and health training									
3-1.2—Training on NFPA 1500									
3-1.2.1—Equivalent levels of training permitted	√								
3-1.3—Training for duties and functions									
3-1.4—Training for every member									
3-1.5—Qualified persons instruct									
3-1.6—NFPA 1041 Instructor I									
3-1.7—Safe exit from emergency operations									
3-1.8—SOPs—anticipated emergency scene operations									
3-1.9—Training exercises									
3-1.10—Incident management system									
3-2 Training Requirements									
3-2.1—NFPA 1001 Fire Fighter I									
3-2.2—NFPA 1403 Live fire training									
3-2.3—NFPA 1002 Driver/operator									
3-2.4—NFPA 1003 Airport fire fighter									
3-2.5—NFPA 1021 Fire officer									

Standard Content	New in 1997 Ed.	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
3-2.6—NFPA 1051 Wildland fire fighting									
3-2.7—AHJ emergency medical services	√								
3-2.8—NFPA 1581 Infectious disease control	√								
3-2.9—NFPA 472 Hazardous materials responders, all members trained to at least first responder operations level									
3-2.10—NFPA 1405 Responding to marine vessel fires from land-based companies	√								
3-2.11—Minimum training for emergency operations									
3-2.11.1—All members aware of flammability and thermal stability of clothing	√								
3-2.12—Members qualified and trained to use respiratory protection	√								
3-2.13—Officers responsible for special training	√								
3-2.14—NFPA 1406 Training for outside fires	√								
3-2.15—Structural fire-fighting duties additionally									
3-2.16—Hazardous smoke-generating devices prohibited									
3-3 Frequency									
3-3.1—Training not less than twice a year									
3-3.2—Procedure, technology, or new hazard training									
3-3.3—Monthly training									
3-3.4—Structural fire fighting 10 monthly sessions, 24 hr annually									
3-3.5—Primary assigned—24 hr annually									
3-3.6—Occasional assigned—9 hr annually									
3-4 Special Operations									
3-4.1—Specific and advanced training									
3-4.2—SOPs—special operations									
3-4.3—NFPA 472 Hazardous materials responders									
Chapter 4 Vehicles, Equipment, and Drivers									
4-1 Fire Department Vehicles									
4-1.1—Safety and health are primary concerns									
4-1.2—NFPA 1901 Automotive fire apparatus									
4-1.3—NFPA 1906 Wildland fire apparatus									
4-1.4—Secure tools, equipment, and SCBA									
4-2 Drivers/Operators of Fire Department Apparatus									

Standard Content	New in 1997 Ed.	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
4-2.1—Successful completion of approved driver training									
4-2.2—Valid driver's license									
4-2.3—Driver and officer are responsible									
4-2.4—All persons secured									
4-2.5—Nonemergency travel obey all laws									
4-2.6—SOPs nonemergency and emergency travel									
4-2.7—Emergency travel—bring fire department vehicles to a complete stop									
4-2.7.1—Proceed only when safe									
4-2.8—Unguarded and guarded railroad track(s)									
4-2.9—SOPs—engine, transmission, and drive-line retarders									
4-2.10—SOPs—manual brake limiting valves									
4-3 Persons Riding in Fire Apparatus									
4-3.1—Tailboards and standing prohibited									
4-3.1.1—Secured to vehicle while performing emergency medical care									
4-3.1.2—Hose loading operations									
4-3.1.3—Tiller training									
4-3.2—Helmets and eye protection for nonenclosed areas									
4-3.3—Alternate transportation									
4-3.4—New fire apparatus meet appropriate fire apparatus standard									
4-4 Inspection, Maintenance, and Repair of Fire Apparatus									
4-4.1—At least inspected weekly or within 24 hr after use									
4-4.2—Preventative maintenance program									
4-4.3—Remove from service									
4-4.4—Repairs made by qualified person									
4-4.5—NFPA 1911 Pumpers service test									
4-4.6—NFPA 1914 Aerial ladders and elevating platforms testing									
4-5 Tools and Equipment									
4-5.1—Safety and health are primary concerns									
4-5.1.1—Low noise level									
4-5.2—NFPA 1931 Fire department ground ladders									
4-5.3—NFPA 1961 Fire hose									

Standard Content	New in 1997 Ed.	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
4-5.4—NFPA 1964 Spray nozzle									
4-5.5—At least inspected weekly or within 24 hr after use; inventory and record on equipment used for training									
4-5.6—Tested at least annually									
4-5.7—Remove from service									
4-5.8—NFPA 1581 Fire department infection control	√								
4-5.9—NFPA 1932 Fire department ground ladders									
4-5.10—NFPA 1962 Fire hose									
4-5.11—NFPA 10 Portable fire extinguishers									
Chapter 5 Protective Clothing and Protective Equipment									
5-1 General									
5-1.1—F.D. provide PPE									
5-1.2—Use of PPE									
5-1.3—PPE training									
5-1.4—NFPA 1581 Infection control program—protective clothing cleaning at least every 6 months									
5-1.5—PPE cleaning	√								
5-1.6—NFPA 1975 Work uniforms									
5-1.7—Avoid wearing any clothing that is considered unsafe									
5-1.8—Laundry service for contaminated clothing									
5-1.8.1—Washing machines for protective or work clothing									
5-2 Protective Clothing for Structural Fire Fighting									
5-2.1—NFPA 1971 Protective clothing									
5-2.1.1—Minimum 2-in. overlap of all protective clothing layers									
5-2.1.2—Overlap not required on continuous composite protection coveralls									
5-2.1.3—Protective resilient wristlets provided	√								
5-2.1.4—Maintenance and inspection of clothing and equipment	√								
5-2.1.5—All members to wear protective ensembles	√								
5-3 Respiratory Protection									