

NFPA 1500

Standard on Fire Department Occupational Safety and Health Program

2002 Edition



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An International Codes and Standards Organization

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NFPA 1500

Standard on

Fire Department Occupational Safety and Health Program

2002 Edition

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 NFPA at its November Association Technical Meeting held November 10–14, 2001, in Dallas, TX. It was issued by the Standards Council on January 11, 2002, with an effective date of January 31, 2002, and supersedes all previous editions.

This edition of NFPA 1500 was approved as an American National Standard on January 31, 2002.

Origin and Development of NFPA 1500

This is the fourth edition of this standard. Previous editions were published in 1987, 1992, and 1997. The technical committee, working from data provided from NFPA's Data Analysis and Research Division, NFPA Fire Investigation reports, and NIOSH Fire Fighter Investigation reports, has updated requirements and explanatory text.

The number of fire fighter fatalities and injuries in the United States continues to make this occupation one of the most dangerous. Emphasis on medical and physical fitness capabilities, the use of incident management, and communication issues continue to dominate the statistics. This standard continues to emphasize these areas, as well as provides updates to the requirements and references to other standards. These include other referenced NFPA standards in the areas of personal protective clothing and equipment, fire apparatus, training, medical requirements, and other areas.

One of the most important areas of fire fighter safety, addressed in this revision, is respiratory protection. There are numerous NFPA standards, NIOSH regulations, CGA standards, and other publications that address this area. The technical committee, working in conjunction with other committees, has developed a complete section that sets the requirements for a fire department complete respiratory protection program. It provides the user, as well as the enforcer, of the standard one source in which to find and implement their respiratory protection program.

The technical committee can continue to develop and revise standards, but there must be a fundamental behavioral change in how fire fighters and fire departments address fire service occupational safety. In turn, they must continue to educate their members and, most importantly, the administration and citizens to what the hazards are of the fire fighting profession. The utilization and implementation of this standard can go a long way in reducing the staggering statistics involving fire fighter fatalities and injuries, but only if given the training and resources to do so.

In Memoriam, September 11, 2001

We pay tribute to the 343 members of FDNY who gave their lives to save civilian victims on September 11, 2001, at the World Trade Center. They are true American heroes in death, but they were also American heroes in life. We will keep them in our memory and in our hearts. They are the embodiment of courage, bravery, and dedication. May they rest in peace.

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

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

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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 Annex A.

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

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

Chapter 1 Administration

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

1.2 Purpose.

1.2.1 The purpose of this standard shall be to specify the minimum requirements for an occupational safety and health program for a fire department.

1.2.2 This standard shall specify safety requirements for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities.

1.2.3* The authority having jurisdiction shall identify which performance objectives of this standard existing programs or policies meet.

1.2.4 Nothing herein shall be intended to restrict any jurisdiction from exceeding these minimum requirements.

1.3 Application.

1.3.1* The requirements of this standard shall be 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.

1.3.2 This standard shall not apply to industrial fire brigades or industrial fire departments meeting the requirements of NFPA 600, *Standard on Industrial Fire Brigades*.

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 Chapter 5 of this standard.

1.4.2 The fire department shall provide technical documentation to demonstrate equivalency as allowed in 5.2.11.

1.5 Adoption Requirements.

1.5.1* 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.

1.5.2 The authority having jurisdiction shall be permitted to establish a phase-in schedule for compliance with specific requirements of this standard.

1.5.3 The fire department shall adopt a risk management plan as specified in Section 4.2 of this standard.

1.5.3.1 This risk management plan shall include a written plan for compliance with this standard.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

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

NFPA 10, *Standard for Portable Fire Extinguishers*, 1998 edition.

NFPA 101®, *Life Safety Code*®, 2000 edition.

NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*, 2002 edition.

NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents*, 2002 edition.

NFPA 600, *Standard on Industrial Fire Brigades*, 2000 edition.

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

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 1998 edition.

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, 2000 edition.

NFPA 1006, *Standard for Rescue Technician Professional Qualifications*, 2000 edition.

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

NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications*, 2002 edition.

NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*, 2000 edition.

NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, 1999 edition.

NFPA 1403, *Standard on Live Fire Training Evolutions*, 2002 edition.

NFPA 1404, *Standard for Fire Service Respiratory Protection Training*, 2002 edition.

NFPA 1561, *Standard on Emergency Services Incident Management System*, 2002 edition.

NFPA 1581, *Standard on Fire Department Infection Control Program*, 2000 edition.

NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*, 2000 edition.

NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters*, 2000 edition.

NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, 1999 edition.

NFPA 1851, *Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles*, 2001 edition.

NFPA 1901, *Standard for Automotive Fire Apparatus*, 1999 edition.

NFPA 1906, *Standard for Wildland Fire Apparatus*, 2001 edition.

NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus*, 1997 edition.

NFPA 1912, *Standard for Fire Apparatus Refurbishing*, 2001 edition.

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

NFPA 1915, *Standard for Fire Apparatus Preventive Maintenance Program*, 2000 edition.

NFPA 1925, *Standard on Marine Fire-Fighting Vessels*, 1998 edition.

NFPA 1931, *Standard on Design of and Design Verification Tests for Fire Department Ground Ladders*, 1999 edition.

NFPA 1932, *Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders*, 1999 edition.

NFPA 1936, *Standard on Powered Rescue Tool Systems*, 1999 edition.

NFPA 1961, *Standard on Fire Hose*, 2002 edition.

NFPA 1962, *Standard for the Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles*, 1998 edition.

NFPA 1964, *Standard for Spray Nozzles (Shutoff and Tip)*, 1998 edition.

NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, 2000 edition.

NFPA 1975, *Standard on Station/Work Uniforms for Fire and Emergency Services*, 1999 edition.

NFPA 1976, *Standard on Protective Ensemble for Proximity Fire Fighting*, 2000 edition.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting*, 1998 edition.

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

NFPA 1982, *Standard on Personal Alert Safety Systems (PASS)*, 1998 edition.

NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components*, 2001 edition.

NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*, 2000 edition.

NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*, 2000 edition.

NFPA 1994, *Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents*, 2001 edition.

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

2.3 Other Publications.

2.3.1 ACGIH Publication. American Conference of Governmental Industrial Hygienists, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.

Threshold Limit Values and Biological Exposure Indices for 1996–1997, 1996.

2.3.2 ANSI Publications. American National Standards Institute, Inc., 11 West 42nd Street, 13th floor, 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.

2.3.3 U.S. Coast Guard Publication. U.S. Coast Guard Commandant Instruction M 16465, Department of Transportation, Washington, DC 20241.

U.S. Coast Guard *Chemical Hazard Response Information System (CHRIS)*, Volumes 1–3, “Hazardous Chemical Data,” October 1978.

2.3.4 U.S. Government Publications. U.S. Government Printing Office, 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 29, *Code of Federal Regulations*, Part 1910.1030, “Occupational Exposure to Bloodborne Pathogens.”

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

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

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not included, common usage of the terms shall apply.

3.2 Official NFPA Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

3.2.3 Shall. Indicates a mandatory requirement.

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

3.3 General Definitions.

3.3.1 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. [1901:1.7]

3.3.2* 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.

3.3.3* Air Transfer. The process of transferring air from one SCBA cylinder to another SCBA cylinder of the same rated pressure capacity by connecting them together with properly designed fittings and a high-pressure transfer line.

3.3.4 Atmosphere.

3.3.4.1* Hazardous Atmosphere. Any atmosphere that is oxygen deficient or that contains a toxic or disease-producing contaminant.

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

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

3.3.6* Clear Text. The use of plain language in radio communications transmissions.

3.3.7* Company. A group of members: (1) Under the direct supervision of an officer; (2) Trained and equipped to per-

form assigned tasks; (3) Usually organized and identified as engine companies, ladder companies, rescue companies, squad companies, or multi-functional companies; (4) Operating with one piece of fire apparatus (engine, ladder truck, elevating platform, quint, rescue, squad, ambulance) except where multiple apparatus are assigned that are dispatched and arrive together, continuously operate together, and are managed by a single company officer; (5) Arriving at the incident scene on fire apparatus.

3.3.8* Confined Space. An area large enough and so configured that a member can bodily enter and perform assigned work but which has limited or restricted means for entry and exit and is not designed for continuous human occupancy.

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

3.3.10 Crew. A two-person team of fire fighters.

3.3.11 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.

3.3.12 Disease.

3.3.12.1* Communicable Disease. A disease that can be transmitted from one person to another.

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

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

3.3.14 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.

3.3.15 Facility. See Fire Department Facility.

3.3.16 Fire Apparatus. A vehicle of 10,000 lb (4540 kg) or greater gross vehicle weight rating (GVWR) used for fire suppression or support by a fire department, fire brigade, or other agency responsible for fire protection. [1901:1.7]

3.3.17 Fire Chief. The highest ranking officer in charge of a fire department. [1201:1.1.4]

3.3.18* Fire Department. An organization providing rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities.

3.3.18.1* Industrial Fire Department. An organization providing rescue, fire suppression, and related activities as well as emergency medical services, hazardous material operations, or other activities that occur at a single facility or facilities under the same management.

3.3.19* Fire Department Facility. Any building or area owned, operated, occupied, or used by a fire department on a routine basis.

3.3.20 Fire Department Member. See Member.

3.3.21 Fire Fighting.

3.3.21.1* 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. (See also *Entry Fire Fighting*, and *Proximity Fire Fighting*.) [1977:1.3]

3.3.21.2* 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. [1976:1.3.35, A.1.3.35]

3.3.21.3* 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. [1977:1.3]

3.3.22 Fire Shelter. An item of protective equipment configured as an aluminized tent utilized for protection, by means of reflecting radiant heat, in a fire entrapment situation. [1977:1.3]

3.3.23* Fire Suppression. The activities involved in controlling and extinguishing fires.

3.3.24* Flame Resistance. The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or nonflaming source of ignition, with or without subsequent removal of the ignition source; flame resistance can be an inherent property of a material, or it can be imparted by specific treatment. [1977:1.3]

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

3.3.26* Hazard. Any arrangement of materials and heat sources that presents the potential for harm, such as personal injury or ignition of combustibles. [921:1.3]

3.3.27 Hazardous Area. Those areas of structures or buildings posing a degree of hazard greater than that normal to the general occupancy of a building or structure, such as those areas used for the storage or use of combustibles or flammables; toxic, noxious, or corrosive materials; or heat-producing appliances. [101:3.3]

3.3.28 Hazardous Material. A substance (solid, liquid, or gas) that when released is capable of creating harm to people, the environment, and property. [472:3.3]

3.3.29 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.

3.3.30* 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.

3.3.31 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.

3.3.32* Hot Zone. The area immediately surrounding the physical location of a fire having a boundary that extends far enough from the fire to protect industrial fire brigade members positioned outside the hot zone from being directly ex-

posed to flames, dense smoke, or extreme temperatures. [600:1.5]

3.3.33 Immediately Dangerous to Life or Health (IDLH). Any condition that would do one of the following: (a) Pose an immediate or delayed threat to life; (b) Cause irreversible adverse health effects; (c) Interfere with an individual's ability to escape unaided from a hazardous environment. [1670:1.3]

3.3.34 Incident.

3.3.34.1 Emergency Incident. A specific emergency operation.

3.3.34.2 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.

3.3.35 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.

3.3.36 Incident Commander (IC). The fire department member in overall command of an emergency incident. [1:2-1.85]

3.3.37* Incident Management System (IMS). A system that defines the roles and responsibilities to be assumed by personnel and the operating procedures to be used in the management and direction of emergency operations; the system is also referred to as an incident command system (ICS). [1021:1.4]

3.3.38 Incident Safety Officer. An individual appointed to respond or assigned at an incident scene by the incident commander to perform the duties and responsibilities of that position as part of the command staff.

3.3.39 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. [1581:1.3.33, A.1.3.33]

3.3.40 Life Safety 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. [1983:1.3]

3.3.41 Life Support.

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

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

3.3.42* Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization.

3.3.43 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.

3.3.44 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.

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

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

3.3.47 Operations.

3.3.47.1* 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.

3.3.47.2 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.

3.3.47.3 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.

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

3.3.47.5* Special Operations. Those emergency incidents to which the fire department responds that require specific and advanced training and specialized tools and equipment.

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

3.3.49* Primarily Assigned. The principal fire-fighting responsibility in a given jurisdiction, district, or area.

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

3.3.51* Protective 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. [1971:1.3.85]

3.3.52 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.

3.3.53* Rapid Intervention Crew/Company (RIC). A minimum of two fully equipped personnel on-site, in a ready state, for immediate rescue of injured or trapped fire fighters.

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

3.3.55 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.

3.3.56* Respiratory Protection Equipment (RPE). Devices that are designed to protect the respiratory system against exposure to gases, vapors, or particulates. [1404:3.3]

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

3.3.58 Risk Management. The process of planning, organizing, directing, and controlling the resources and activities of an organization in order to minimize detrimental effects on that organization. [1250:1.6]

3.3.59 SCBA. Acronym for Self-Contained Breathing Apparatus. [1982:1.3]

3.3.60 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.*)

3.3.61 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. [1981:1.4]

3.3.61.1 Closed-Circuit Self-Contained Breathing Apparatus (SCBA). A recirculation-type SCBA in which the exhaled gas is re-breathed 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.

3.3.62 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.

3.3.63 Tactical Level Management Component (TLMC). A management unit identified in the incident management system commonly known as "division," "group," or "sector."

3.3.64 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.*)

3.3.65 Wildland Fire Fighting. The activities of fire suppression and property conservation in woodlands, forests, grasslands, brush, prairies, and other such vegetation, or any combination of vegetation, that is involved in a fire situation but is not within buildings or structures. [1977:1.3]

Chapter 4 Fire Department Administration

4.1 Fire Department Organizational Statement.

4.1.1* 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.

4.1.2* 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:

- (1) 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
- (2) 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
- (3) The number and types of apparatus and the number of personnel that will be dispatched to different types of incidents
- (4) The procedures that will be employed to initiate and manage operations at the scene of an emergency incident

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

4.2 Risk Management Plan.

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

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

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

4.2.3 The risk management plan shall include at least the following components (*see Annex D*):

- (1) Risk Identification. Actual and potential hazards
- (2) Risk Evaluation. Likelihood of occurrence of a given hazard and severity of its consequences
- (3) Risk Control Techniques. Solutions for elimination or mitigation of potential hazards; implementation of best solution
- (4) Risk Management Monitoring. Evaluation of effectiveness of risk control techniques

4.3 Safety and Health Policy.

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

4.3.2 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.

4.3.3* The fire department shall evaluate the effectiveness of the occupational safety and health program at least once every 3 years.

4.3.3.1 An audit report of the findings shall be submitted to the fire chief and to the members of the occupational safety and health committee.

4.4 Roles and Responsibilities.

4.4.1 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.

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

4.4.3* The fire department shall establish and enforce rules, regulations, and standard operating procedures to meet the objectives of this standard.

4.4.4 The fire department shall be responsible for developing and implementing an accident investigation procedure.

4.4.5* All accidents, injuries, fatalities, illnesses, and exposures involving members shall be investigated.

4.4.6 All accidents involving fire department vehicles, equipment, or fire department facilities shall be investigated.

4.4.7 The fire department shall take whatever appropriate corrective action necessary to avoid repetitive occurrences of accidents and exposure to communicable diseases.

4.4.8 Records of such investigations shall be kept in accordance with the applicable provisions of 4.6.1 of this chapter.

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

4.4.10 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.

4.4.11 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.

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

4.5 Occupational Safety and Health Committee.

4.5.1* An occupational safety and health committee shall be established and shall serve in an advisory capacity to the fire chief.

4.5.1.1 The committee shall include the following members:

- (1) The designated fire department health and safety officer
- (2) Representatives of fire department management
- (3) Individual members or representatives of member organizations

4.5.1.2 The committee shall also be permitted to include other persons.

4.5.1.3 Representatives of member organizations shall be selected by their respective organizations, but other committee members shall be appointed to the committee by the fire chief.

4.5.2 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.

4.5.3* The committee shall hold regularly scheduled meetings and shall be permitted to hold special meetings whenever necessary.

4.5.3.1 Regular meetings shall be held at least once every 6 months.

4.5.3.2 Written minutes of each meeting shall be retained and shall be made available to all members.

4.6 Records.

4.6.1* 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 job related.

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

4.6.3 The fire department shall assure that a confidential health record for each member and a health data base are maintained.

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

4.6.5 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.

4.7 Functions of the Health and Safety Officer.

4.7.1 The fire chief shall appoint a designated fire department health and safety officer.

4.7.1.1 This position shall comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

4.7.2* The health and safety officer shall be involved in the development, implementation, and management of the written risk management plan.

4.7.3 The health and safety officer shall communicate the health and safety aspects of the risk management plan to all members through training and education.

4.7.4 The health and safety officer shall make available the written risk management plan to all fire department members.

4.7.5 The health and safety officer shall monitor the effectiveness of the risk management plan and shall ensure the risk management plan is revised annually as it relates to fire fighter health and safety.

4.7.6 The health and safety officer shall develop an incident risk management plan that is implemented into the fire department's incident management system for incident scene operations as required in Section 8.2 of this standard.

4.8 Laws, Codes, and Standards.

4.8.1 The health and safety officer shall develop, review, and revise rules, regulations, and standard operating procedures pertaining to the fire department occupational safety and health program.

4.8.1.1 Based upon the directives and requirements of applicable laws, codes, and standards, the health and safety officer shall develop procedures that ensure compliance with these laws, codes, and standards.

4.8.1.2 These recommended or revised rules, regulations, or standard operating procedures shall be submitted to the fire chief or the fire chief's designated representative by the health and safety officer.

4.8.2 The health and safety officer shall periodically report to the fire chief or the fire chief's designated representative on the adequacy of, effectiveness of, and compliance with the rules, regulations, and standard operating procedures specified in 4.8.1 and 4.8.1.1.

4.8.3 The fire chief shall define the role of the health and safety officer in the enforcement of the rules, regulations, and standard operating procedures.

4.9 Training and Education.

4.9.1* The health and safety officer shall ensure that training in safety procedures relating to all fire department operations and functions is provided to fire department members.

4.9.2 Training shall address recommendations arising from the investigation of accidents, injuries, occupational deaths, illnesses, and exposures and the observation of incident scene activities.

4.9.3 The health and safety officer shall cause safety supervision to be provided for training activities, including all live burn exercises.

4.9.4 All structural live burn exercises shall be conducted in accordance with NFPA 1403, *Standard on Live Fire Training Evolutions*.

4.9.5 The health and safety officer or qualified designee shall be personally involved in pre-burn inspections of any acquired structures to be utilized for live fire training.

4.9.6 The health and safety officer shall develop and distribute safety and health information for the education of fire department members.

4.10 Accident Prevention.

4.10.1 The health and safety officer shall manage an accident prevention program that addresses the items specified in Section 4.10.

4.10.2 The health and safety officer shall be permitted to delegate the development, direct participation, review, or supervision of this program.

4.10.3 The accident prevention program shall provide instruction for all fire department members in safe work practices for emergency and non-emergency operations.

4.10.4 The accident prevention program shall address the training and testing of all fire department drivers, including all fire apparatus driver/operators.

4.10.5 The health and safety officer shall periodically survey operations, procedures, equipment, and fire department facilities with regard to maintaining safe working practices and procedures.

4.10.6 The health and safety officer shall report any recommendations to the fire chief or the fire chief's designated representative.

4.11 Accident Investigation, Procedures, and Review.

4.11.1 The health and safety officer shall develop and implement procedures to ensure that a member(s) suffering a life-threatening occupational injury or illness is provided immedi-

ate emergency medical care and transportation to medical facilities.

4.11.1.1 These procedures shall also ensure that all occupational injuries and illnesses are treated at the most appropriate health care facilities.

4.11.2 The health and safety officer shall investigate, or cause to be investigated, all occupational injuries, illnesses, exposures, and fatalities, or other potentially hazardous conditions involving fire department members and all accidents involving fire department vehicles, fire apparatus, equipment, or fire department facilities.

4.11.3 The health and safety officer shall develop corrective recommendations that result from accident investigations.

4.11.4 The health and safety officer shall submit such corrective recommendations to the fire chief or the fire chief's designated representative.

4.11.5 The health and safety officer shall develop accident and injury reporting and investigation procedures and shall periodically review these procedures for revision.

4.11.5.1 These accident and injury reporting procedures shall comply with all local, state, and federal requirements.

4.11.6 The health and safety officer shall review the procedures employed during any unusually hazardous operation. Wherever it is determined that incorrect or questionable procedures were employed, the health and safety officer shall submit corrective recommendations to the fire chief or the fire chief's designated representative.

4.12 Records Management and Data Analysis.

4.12.1* The fire department shall maintain records of all accidents, occupational deaths, injuries, illnesses, and exposures.

4.12.2 The health and safety officer shall manage the collection and analysis of this information.

4.12.3 The health and safety officer shall identify and analyze safety and health hazards and shall develop corrective actions to deal with these hazards.

4.12.4 The health and safety officer shall ensure that records on the following are maintained as specified in Section 4.6:

- (1) Fire department safety and health standard operating procedures
- (2) Periodic inspection and service testing of apparatus and equipment
- (3) Periodic inspection and service testing of personal safety equipment
- (4) Periodic inspection of fire department facilities

4.12.5 The health and safety officer shall maintain records of all recommendations made and actions taken to implement or correct safety and health hazards or unsafe practices.

4.12.6 The health and safety officer shall maintain records of all measures taken to implement safety and health procedures and accident prevention methods.

4.12.7 The health and safety officer shall issue a report to the fire chief, at least annually, on fire department accidents, occupational injuries, illnesses, deaths, and exposures.

4.13 Apparatus and Equipment.

4.13.1 The health and safety officer shall review specifications for new apparatus, equipment, protective clothing, and pro-

protective equipment for compliance with the applicable safety standards, including the provisions of Chapters 6 and 7.

4.13.2 The health and safety officer shall assist and make recommendations regarding the evaluation of new equipment and its acceptance or approval by the fire department in accordance with the applicable provisions of Chapter 6.

4.13.3 The health and safety officer shall assist and make recommendations regarding the service testing of apparatus and equipment to determine its suitability for continued service and in accordance with Chapter 6.

4.13.4 The health and safety officer shall develop, implement, and maintain a protective clothing and protective equipment program that will meet the requirements of Chapter 7, and provide for the periodic inspection and evaluation of all protective clothing and equipment to determine its suitability for continued service.

4.14 Facility Inspection.

4.14.1 The health and safety officer shall ensure all fire department facilities are inspected in accordance with Chapter 9.

4.14.2 The health and safety officer shall ensure that any safety or health hazards or code violations are corrected.

4.15 Health Maintenance.

4.15.1 The health and safety officer shall ensure that the fire department complies with the requirements of Chapter 10.

4.15.2 The health and safety officer shall incorporate medical surveillance, wellness programs, physical fitness, nutrition, and injury and illness rehabilitation into the health maintenance program.

4.16 Liaison.

4.16.1 The health and safety officer shall be a member of the fire department occupational safety and health committee.

4.16.2 The health and safety officer shall report the recommendations of the fire department occupational safety and health committee to the fire chief or the fire chief's designated representative.

4.16.3 The health and safety officer shall submit recommendations on occupational safety and health to the fire chief or the fire chief's designated representative.

4.16.4 The health and safety officer shall provide information and assistance to officers and fire fighters for surveying their districts, so they will be able to identify and report safety and health hazards that could have adverse effects on fire department operations.

4.16.5 The health and safety officer shall maintain a liaison with staff officers regarding recommended changes in equipment, procedures, and recommended methods to eliminate unsafe practices and reduce existing hazardous conditions.

4.16.6 The health and safety officer shall maintain a liaison with equipment manufacturers, standards-making organizations, regulatory agencies, and safety specialists outside the fire department regarding changes to equipment and procedures and methods to eliminate unsafe practices and reduce existing hazardous conditions.

4.16.7 The health and safety officer shall maintain a liaison with the fire department physician to ensure that needed

medical advice and treatment are available to the members of the fire department.

4.17 Occupational Safety and Health Committee. The health and safety officer shall ensure that an occupational safety and health committee is established, in conjunction with the fire chief, for the fire department.

4.18 Infection Control.

4.18.1 The health and safety officer shall ensure that the fire department's infection control program meets the requirements of 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens," and NFPA 1581, *Standard on Fire Department Infection Control Program*.

4.18.2 The health and safety officer shall maintain a liaison with the person or persons designated as infection control officer to assist in achieving the objectives of the infection control program as specified in NFPA 1581, *Standard on Fire Department Infection Control Program*.

4.18.3 The health and safety officer shall function as the fire department infection control officer if an infection control officer position does not exist in the fire department.

4.19 Critical Incident Stress Management.

4.19.1 The health and safety officer shall ensure that the fire department establishes a critical incident stress management (CISM) program.

4.19.2 The health and safety officer shall ensure that the critical incident stress management program is incorporated into the fire department's member assistance program.

4.20 Post-Incident Analysis.

4.20.1 The health and safety officer shall develop procedures to ensure that safety and health issues are addressed during post-incident analysis.

4.20.2 The health and safety officer shall provide a written report that includes pertinent information about the incident relating to safety and health issues.

4.20.3 The health and safety officer shall include information based upon input from the incident safety officer.

4.20.3.1 This information shall include the incident action plan and the incident safety officer's incident safety plan.

4.20.4 The health and safety officer shall include information about issues relating to the use of protective clothing and equipment, personnel accountability system, rehabilitation operations, and other issues affecting the safety and welfare of personnel at the incident scene.

4.20.5 The fire chief shall assign or make available, in accordance with NFPA 1561, *Standard on Emergency Services Incident Management System*, such additional assistant safety officers and resources as required to fulfill the requirements of the occupational safety and health program.

Chapter 5 Training and Education

5.1 General Requirements.

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

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

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

5.1.4* The fire department shall restrict the use of new members during emergency operations until the member has demonstrated the skills and abilities to complete the tasks expected.

5.1.5 The fire department shall provide all members with training and education on the department's risk management plan.

5.1.6 The fire department shall provide all members with training and education on the department's written procedures and guidelines.

5.1.7 The fire department shall provide all members with a training and education program commensurate with the emergency medical services that are provided by the department.

5.1.8 The fire department shall provide all members with a training and education program that covers the operation, limitation, maintenance, and retirement criteria for all assigned personal protective equipment expected to be utilized by members.

5.1.9 As a duty function, members shall be responsible to maintain proficiency in skills and knowledge provided to the member through department training and education programs.

5.1.10 Training programs for all members engaged in emergency operations shall include procedures for the safe exit and accountability of members during rapid evacuation, equipment failure, or other dangerous situations and events.

5.1.11 All members who are likely to be involved in emergency operations shall be trained in the incident management and accountability system used by the fire department.

5.2 Training Curriculums and Requirements.

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

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

5.2.3 All aircraft rescue fire fighters (ARFF) shall meet the requirements of NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*.

5.2.4 All members who are required to perform technical rescue tasks shall meet the requirements of NFPA 1006, *Standard for Rescue Technician Professional Qualifications*.

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

5.2.6 All members operating as wildland fire fighters shall meet the requirements of NFPA 1051, *Standard for Wildland Fire Fighter Professional Qualifications*. (See Annex E.)

5.2.7* All members responding to hazardous materials incidents shall meet the operations level as required in NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*.

5.2.8 All members shall meet training requirements as outlined in NFPA 1581, *Standard on Fire Department Infection Control Program*.

5.2.9* The fire department shall adopt or develop training and education curriculums that meet the minimum requirements outlined in professional qualification standards covering a member's assigned function.

5.2.10* All live fire training and exercises shall be conducted in accordance with NFPA 1403, *Standard on Live Fire Training Evolutions*.

5.2.11* All training and exercises shall be conducted under the direct supervision of a qualified instructor who meets the equivalency requirements of 1.4.1.

5.2.12* All members who are likely to be involved in emergency medical services shall meet the training requirements of the authority having jurisdiction.

5.2.13* 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.

5.3 Training Frequency and Proficiency.

5.3.1 Training shall be provided for all members as often as necessary to meet applicable requirements of this chapter.

5.3.2 The fire department shall develop a reoccurring proficiency cycle with the goal of preventing skill degradation and potential for injury and death of members.

5.3.3 The fire department shall develop and maintain a system to monitor and measure training progress and activities of its members.

5.3.4* The fire department shall provide an annual skills check to verify minimum professional qualifications of its members.

5.3.5 The fire department shall provide training and education events as required to support minimum qualifications and certifications expected of its members.

5.3.6 Members shall practice assigned skill sets on a regular basis but not less than annually.

5.3.7 The fire department shall provide specific training to members when written policies, practices, procedures, or guidelines are changed and/or updated.

5.3.8* The respiratory protection training program shall meet the requirements of NFPA 1404, *Standard for Fire Service Respiratory Protection Training*.

5.3.9 Members who perform wildland fire fighting shall be trained at least annually in the proper deployment of an approved fire shelter.

5.4 Special Operations Training.

5.4.1 The fire department shall provide specific and advanced training to members who engage in special operations as a technician.

5.4.2 The fire department shall provide specific training to members who are likely to respond to special operations incidents in a support role to special operations technicians.

5.4.3 Members expected to perform hazardous materials mitigation activities shall meet the training requirements of a technician as outlined in NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*.

5.4.4 Members expected to perform technical operations as defined in NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, shall meet the training requirements specified in NFPA 1006, *Standard for Rescue Technician Professional Qualifications*.

Chapter 6 Fire Apparatus, Equipment, and Drivers/Operators

6.1 Fire Department Apparatus.

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

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

6.1.2 All new fire apparatus shall be specified and ordered to meet the applicable requirements of NFPA 1901, *Standard for Automotive Fire Apparatus*.

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

6.1.4 All fire marine fire-fighting vessels shall be specified and ordered to meet the requirements of NFPA 1925, *Standard on Marine Fire-Fighting Vessels*.

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

6.1.6 When fire apparatus is refurbished, it shall be specified and ordered to meet the applicable requirements of NFPA 1912, *Standard for Fire Apparatus Refurbishing*.

6.1.7 Fire departments that operate their own fixed wing or rotary aircraft for fire department operations shall provide four-point restraints for all pilots and passengers, not including any EMS patients.

6.1.8 Members performing hoist rescue in the passenger area of the aircraft shall be secured by a safety harness or seat belt system.

6.2 Drivers/Operators of Fire Department Apparatus.

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

6.2.2* Drivers of fire apparatus shall have valid driver's licenses.

6.2.2.1 Vehicles shall be operated in compliance with all traffic laws, including sections pertaining to emergency vehicles, and any requirements of the authority having jurisdiction.

6.2.3 The fire department shall enact specific rules and regulations pertaining to the use of private vehicles for emergency response.

6.2.3.1 These rules and regulations shall be at least equal to the provisions regulating the operation of fire department vehicles.

6.2.4* Drivers of fire apparatus shall be directly responsible for the safe and prudent operation of the vehicles under all conditions.

6.2.4.1 When the driver is under the direct supervision of an officer, that officer shall also assume responsibility for the driver's actions.

6.2.5 Drivers shall not move fire apparatus until all persons on the vehicle are seated and secured with seat belts in approved riding positions, other than as specifically allowed in this chapter.

6.2.6 Drivers of fire apparatus 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.

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

6.2.7.1 Procedures for emergency response shall emphasize that the safe arrival of fire apparatus at the emergency scene is the first priority.

6.2.8* During emergency response, drivers of fire apparatus shall bring the vehicle to a complete stop under any of the following circumstances:

- (1) When directed by a law enforcement officer
- (2) Red traffic lights
- (3) Stop signs
- (4) Negative right-of-way intersections
- (5) Blind intersections
- (6) When the driver cannot account for all lanes of traffic in an intersection
- (7) When other intersection hazards are present
- (8) When encountering a stopped school bus with flashing warning lights

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

6.2.10* During emergency response or non-emergency travel, drivers of fire apparatus shall come to a complete stop at all unguarded railroad grade crossings. Drivers shall ensure that it is safe to proceed before crossing the railroad track(s).

6.2.11 Drivers shall use caution when approaching and crossing any guarded railroad grade crossing.

6.2.12 The fire department shall include information on the potential hazards of retarders, such as engine, transmission,

and driveline retarders, in the driver training program and shall develop written procedures pertaining to the use of such retarders.

6.2.13 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.

6.3 Riding in Fire Apparatus.

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

6.3.2 Seat belts 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.

6.3.3* 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.

6.3.3.1 All other persons in the vehicle shall be seated and belted in approved riding positions while the vehicle is in motion.

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

6.3.5* 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.

6.3.6* Helmets shall be provided for and used by persons riding in open cab apparatus or open tiller seats.

6.3.7* Eye protection shall be provided for members riding in open cab apparatus or open tiller seats.

6.3.8* 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 seated and belted positions shall be used.

6.4 Inspection, Maintenance, and Repair of Fire Apparatus.

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

6.4.2 A preventive maintenance program shall be established, and records shall be maintained as specified in Chapter 4 of this standard.

6.4.3 Inspection, maintenance, and repair of fire apparatus shall be conducted in accordance with NFPA 1915, *Standard for Fire Apparatus Preventive Maintenance Program*.

6.4.4* The fire department shall establish a list of major defects to be utilized to evaluate when a vehicle shall be declared unsafe.

6.4.4.1 Any fire department vehicle found to be unsafe shall be placed out of service until repaired.

6.4.5 All repairs to fire department apparatus shall be performed by personnel meeting the requirements of NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*, or personnel trained to meet the requirements identified by the manufacturers in their specifications and procedures for fire department vehicles and protective equipment.

6.4.6 Fire pumps on apparatus shall be service tested in accordance with the applicable requirements of NFPA 1911, *Standard for Service Tests of Fire Pump Systems on Fire Apparatus*.

6.4.7 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*.

6.4.8 All fire apparatus shall be cleaned and disinfected in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program*.

6.5 Tools and Equipment.

6.5.1 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.

6.5.2 The hearing conservation objectives of this standard shall be taken into account in the acquisition of new power tools and power equipment.

6.5.3 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*.

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

6.5.5 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)*.

6.5.6* All equipment carried on fire apparatus or designated for training shall be inspected at least weekly and within 24 hours after any use.

6.5.7 Inventory records shall be maintained for the equipment carried on each vehicle and for equipment designated for training.

6.5.8 All equipment carried on fire apparatus or designated for training shall be tested at least annually in accordance with manufacturers' instructions and applicable standards.

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

6.5.10 All fire department equipment and tools shall be cleaned and disinfected in accordance with NFPA 1581, *Standard on Fire Department Infection Control Program*.

6.5.11 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*.

6.5.12 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.

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

6.5.14 All fire department hydraulic rescue tools shall meet the requirements of NFPA 1936, *Standard on Powered Rescue Tool Systems*.

Chapter 7 Protective Clothing and Protective Equipment

7.1 General.

7.1.1* 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.

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

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

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

7.1.5* 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 and Emergency Services*.

7.1.6 While on duty, members shall not wear any clothing that is unsafe due to poor thermal stability.

7.1.7* The fire department shall provide for the cleaning of protective clothing and station/work uniforms.

7.1.7.1 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.

7.1.7.2 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*.

7.2 Protective Clothing for Structural Fire Fighting.

7.2.1* 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*.

7.2.2* The protective coat and the protective trousers shall have at least a 5.08-cm (2-in.) overlap of all layers so there is no gaping of the total thermal protection when the protective garments are worn.

7.2.2.1 The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, in both of the following positions:

- (1) Position A. Standing, hands together reaching overhead as high as possible
- (2) Position B. Standing, hands together reaching overhead, with body bent forward at a 90 degree angle, to the side (either left or right), and to the back

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

7.2.4 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.

7.2.5 Protective clothing and protective equipment shall be used and maintained in accordance with manufacturers' instructions.

7.2.5.1 The fire department shall establish a maintenance and inspection program for protective clothing and protective equipment.

7.2.5.2 Specific responsibilities shall be assigned for inspection and maintenance.

7.2.6 The fire department shall require all members to wear all the protective ensemble specific to the operation as required in Chapter 8.

7.3 Protective Clothing for Proximity Fire-Fighting Operations.

7.3.1* Members whose primary responsibility is proximity fire fighting and members who participate in proximity fire-fighting training shall be provided with and shall use both proximity protective coats and proximity protective trousers, or a proximity protective coverall, for limb/torso protection.

7.3.1.1 The proximity protective coat and proximity protective trousers, or the proximity protective coverall, shall meet the applicable requirements of NFPA 1976, *Standard on Protective Ensemble for Proximity Fire Fighting*.

7.3.2 The proximity protective coat and proximity protective trousers shall have at least a 5.08-cm (2-in.) overlap of all layers so there is no gaping of the total thermal and radiant heat protection when the protective garments are worn.

7.3.2.1 The minimum overlap shall be determined by measuring the garments on the wearer, without SCBA, in both of the following positions:

- (1) Position A. Standing, hands together reaching overhead as high as possible
- (2) Position B. Standing, hands together reaching overhead, with body bent forward at a 90 degree angle, to the side (either left or right), and to the back.

7.3.3 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.

7.3.4 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.

7.3.4.1 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.

7.4* Protective Clothing for Emergency Medical Operations.

7.4.1 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*.

7.4.2* Members shall wear emergency medical gloves when providing emergency medical care.

7.4.2.1 Patient care shall not be initiated before the gloves are in place.

7.4.3* 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.

7.4.4 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.

7.4.5 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*.

7.5 Chemical-Protective Clothing for Hazardous Materials Emergency Operations. (See Annex F.)

7.5.1* Vapor-Protective Garments.

7.5.1.1 Members who engage in operations during hazardous materials 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.

7.5.1.2 Vapor-protective suits shall meet the applicable requirements of NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*.

7.5.1.3 Prior to use, the incident commander shall consult the technical data package, manufacturers' instructions, and manufacturers' recommendations as provided and required by Chapters 2 and 3 of NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*, to assure that the garment is appropriate for the specific hazardous materials emergency.

7.5.1.4 All members who engage in operations during hazardous materials 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 7.10.

7.5.1.4.1 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.

7.5.1.5* 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.

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

7.5.2* Liquid Splash-Protective Garments.

7.5.2.1 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.

7.5.2.2 Liquid splash-protective suits shall meet the applicable requirements of NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*.

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

7.5.2.4 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 7.10.1 or respiratory protective devices that are certified by NIOSH under 42 CFR 84 as suitable for the specific chemical environment.

7.5.2.4.1 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.

7.5.2.5 Liquid splash-protective suits shall not be used for protection from chemicals in vapor form, or from unknown liquid chemicals or chemical mixtures.

7.5.2.5.1 Only vapor-protective suits specified in 7.5.1 and SCBA specified in 7.10.1 shall be considered for use.

7.5.2.6 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:

- (1) N. Irving Sax, *Dangerous Properties of Industrial Chemicals*
- (2) NIOSH *Pocket Guide to Chemical Hazards*
- (3) U.S. Coast Guard *Chemical Hazard Response Information System (CHRIS)*, Volumes 1-3, "Hazardous Chemical Data"

7.5.2.7 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*.

7.5.2.8* 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 ex-

plosive atmospheres; or from hazardous chemical vapor atmospheres.

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

7.6 Inspection, Maintenance, and Disposal of Chemical-Protective Clothing.

7.6.1 All chemical-protective clothing shall be inspected and maintained as required by the technical data package, manufacturers' instructions, and manufacturers' recommendations.

7.6.2 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.

7.6.2.1 Disposal shall be in accordance with applicable state or federal regulations.

7.7 Protective Clothing and Equipment for Wildland Fire Fighting.

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

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

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

7.7.4 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall use protective gloves that meet the requirements of NFPA 1977.

7.7.5 Members who engage in or are exposed to the hazards of wildland fire-fighting operations shall use protective footwear that meets the requirements of NFPA 1977.

7.7.6 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 for rapid deployment.

7.8 Respiratory Protection Program.

7.8.1 The fire department shall adopt and maintain a respiratory protection program that addresses the selection, care, maintenance, and safe use of respiratory protection equipment, training in its use, and the assurance of air quality.

7.8.2* The fire department shall develop and maintain standard operating procedures that are compliant with this standard and that address the safe use of respiratory protection.

7.8.3 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.

7.8.4* Reserve SCBA shall be provided to maintain the required number in service when maintenance or repairs are being conducted.

7.8.5 An adequate reserve air supply shall be provided by use of reserve cylinders or by an on-scene refill capability, or both.

7.8.6 Respiratory protection equipment shall be stored in a ready-for-use condition and shall be protected from damage or exposure to rough handling, excessive heat or cold, moisture, or other elements.

7.8.7* When engaged in any operation where they could encounter atmospheres that are immediately dangerous to life or health (IDLH) or potentially IDLH or where the atmosphere is unknown, the fire department shall provide and require all members to use SCBA that has been certified as being compliant with NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service*.

7.8.8* Members using SCBA shall not compromise the protective integrity of the SCBA for any reason when operating in IDLH, potentially IDLH, or unknown atmospheres by removing the facepiece or disconnecting any portion of the SCBA that would allow the ambient atmosphere to be breathed.

7.9 Breathing Air.

7.9.1 Breathing air used to fill SCBA cylinders shall comply with the requirements of ANSI/CGA G7.1, *Commodity Specification for Air*, with a minimum air quality of Grade D, a moisture content of no more than 24 parts per million, and a maximum particulate level of 5 mg/m³ air.

7.9.2 When a 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 the air is compliant with the requirements of 7.9.1.

7.9.3 When a fire department compresses 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 cylinder has been tested at least quarterly and that it is compliant with the requirements of 7.9.1.

7.9.4 When a 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 is compliant with the requirements of 7.9.1.

7.9.5 The fire department shall obtain documentation that a sample of the breathing air obtained directly from the point of transfer from the storage cylinders, cascade system cylinders, storage receivers, and other such storage equipment to the SCBA cylinder has been tested at least quarterly and that it is compliant with the requirements of 7.9.1.

7.10 Respiratory Protection Equipment.

7.10.1 SCBA.

7.10.1.1* Fire service SCBA shall meet the 1987 edition or later of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service*.

7.10.1.2* Closed-circuit SCBA shall be permitted when long-duration SCBA is required.

7.10.1.3 Closed-circuit SCBA shall be NIOSH certified with a minimum rated service life of at least 2 hours and shall operate in the positive-pressure mode only.

7.10.2 Supplied-Air Respirators.

7.10.2.1 Supplied-air respirator units used shall be of the type and manufacture employed by the authority having jurisdiction.

7.10.2.2 Supplied-air respirators shall not be used in IDLH atmospheres unless equipped with a NIOSH-certified emergency escape air cylinder and a pressure-demand facepiece.

7.10.2.3 Supplied-air respirators, Type C Pressure-Demand Class, shall not be used in IDLH atmospheres unless they meet manufacturers' specifications for that purpose.

7.10.3 Full Facepiece Air-Purifying Respirators.

7.10.3.1 Full facepiece air-purifying respirators shall be used only in non-IDLH atmospheres for those contaminants that NIOSH certifies them against.

7.10.3.2 The authority having jurisdiction shall provide NIOSH-certified respirators that protect the user and ensure compliance with all other OSHA requirements.

7.10.3.3* The authority having jurisdiction shall establish a policy to ensure canisters and cartridges are changed before the end of their service life.

7.11 Fit Testing.

7.11.1* The facepiece seal capability of each member qualified to use respiratory protection equipment shall be verified by qualitative or quantitative fit testing on an annual basis and whenever new types of respiratory protection equipment or facepieces are issued.

7.11.2 The fit of the respiratory protection equipment of each new member shall be tested before the members are permitted to use respiratory protection equipment 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 respiratory protection equipment.

7.11.3 Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

7.11.4* Qualitative or quantitative test protocols shall be conducted as required by the authority having jurisdiction.

7.11.5 Records of facepiece fitting tests shall include at least the following information:

- (1) Name of the member tested
- (2) Type of fitting test performed
- (3) Specific make and model of facepieces tested
- (4) Pass/fail results of the tests

7.11.6* For departments that perform quantitative fitting tests, the protection factor produced shall be at least 500 for negative-pressure facepieces for the person to pass the fitting test with that make of full facepiece.

7.11.7 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 fitting test measurement that can be obtained.

7.11.8* Members who have a beard or facial hair at any point where the facepiece is designed to seal with the face or whose hair 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.

7.11.8.1 These restrictions shall apply regardless of the specific fitting test measurement that can be obtained under test conditions.

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

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

7.11.11* 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.

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

7.11.13 The respiratory protection facepiece and head harness with straps shall be worn under the protective hoods.

7.11.14 The respiratory protection facepiece and head harness with straps shall be worn under the head protection of any hazardous chemical-protective clothing.

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

7.12 SCBA Cylinders.

7.12.1* SCBA cylinders made of aluminum alloy 6351-T6 shall be inspected annually, both externally and internally, by a qualified person.

7.12.2 SCBA cylinders shall be hydrostatically tested as required by the manufacturers and applicable governmental agencies.

7.12.3 In-service SCBA cylinders shall be stored fully charged.

7.12.4 In-service SCBA cylinders shall be inspected weekly, monthly, and prior to filling according to NIOSH requirements, CGA standards, and manufacturers' recommendations.

7.12.5* During filling of SCBA cylinders, all personnel and operators shall be protected from catastrophic failure of the cylinder.

7.12.6* Fire departments utilizing rapid filling of SCBA cylinders shall identify those unique emergency situations where rapid filling shall be permitted to occur.

7.12.7 The fire department risk assessment process shall incorporate standard operating procedures to identify those situations in 7.12.6.

7.12.8 Rapid refilling of SCBA while being worn by the user shall only be used under the following conditions:

- (1) NIOSH approved fill options are used.
- (2) The risk assessment process has identified procedures for limiting personnel exposure during the refill process, and provides for adequate equipment inspection, and member safety.
- (3) An imminent life-threatening situation requiring immediate action to prevent the loss of life or serious injury.

7.12.9 In an emergency situation where an individual becomes disoriented, running low on air, is trapped or injured and cannot be moved to a safe atmosphere, and danger of serious injury or death is likely, rapid fill (in accordance with 7.12.6), air transfer, or a supplied-air source shall be an approved method to provide a source of breathing air and shall be used in accordance with the manufacturers' instructions.

7.12.10 If a supplied source is not immediately available, transfilling of cylinders shall be done in accordance with the manufacturers' instructions.

7.13 Personal Alert Safety System (PASS).

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

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

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

7.14 Life Safety Rope and System Components.

7.14.1 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*.

7.14.2 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*.

7.14.2.1 Life safety rope used for any other purpose shall be removed from service and destroyed.

7.14.3* 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 manufacturers' instructions and provided that the following criteria are met:

- (1) The rope has not been visually damaged by exposure to heat, direct flame impingement, chemical exposure, or abrasion.
- (2) The rope has not been subjected to any impact load.
- (3) The rope has not been exposed to chemical liquids, solids, gases, mists, or vapors of any material known to deteriorate rope.

7.14.3.1 If the rope used for rescue at fires or other emergency incidents or for training does not meet the criteria set forth in 7.14.3(1), 7.14.3(2), or 7.14.3(3) or fails the visual inspection, it shall be destroyed after such use.

7.14.3.2 If there is any question regarding the serviceability of the rope after consideration of the list in 7.14.3, the safe course of action shall be taken and the rope shall be placed out of service.

7.14.4 Life safety rope used for any other purpose shall be removed from service and destroyed.

7.14.5 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.

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

7.15 Face and Eye Protection.

7.15.1 Primary face and eye protection appropriate for a given specific hazard shall be provided for and used by members exposed to that specific hazard.

7.15.1.1 Such primary face and eye protection shall meet the requirements of ANSI Z87.1, *Practice for Occupational and Educational Eye and Face Protection*.

7.15.2 The full facepiece of SCBA shall constitute face and eye protection when worn.

7.15.2.1 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 face and eye protection.

7.15.3 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.

7.16 Hearing Protection.

7.16.1* 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.

7.16.2* 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.

7.16.3* 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.

7.17 New and Existing Protective Clothing and Protective Equipment.

7.17.1 All new protective clothing and protective equipment shall meet the requirements of the current edition, as specified in Chapter 7.

7.17.2 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.

7.17.3 Members' personal protective ensembles manufactured prior to the 1986 edition of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, shall be removed from service, regardless of testing or inspection procedures.

Chapter 8 Emergency Operations

8.1 Incident Management.

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

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

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

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

8.1.5* 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.

8.1.6 As incidents escalate in size and complexity, the incident commander shall divide the incident into tactical-level management components and assign an incident safety officer to assess the incident scene for hazards or potential hazards.

8.1.7 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.

8.1.8* At an emergency incident, the incident commander shall have the responsibility for the following:

- (1) Arrive on-scene before assuming command.
- (2) Assume and confirm command of an incident and take an effective command position.
- (3) Perform situation evaluation that includes risk assessment.
- (4) Initiate, maintain, and control incident communications.
- (5) Develop an overall strategy and an incident action plan and assign companies and members consistent with the standard operating procedures.
- (6) Initiate an accountability and inventory worksheet.
- (7) 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.
- (8) Review, evaluate, and revise the incident action plan as required.
- (9) Continue, transfer, and terminate command.
- (10) On incidents under the command authority of the fire department, provide for liaison and coordination with all other cooperating agencies.
- (11) On incidents where other agencies have jurisdiction, implement a plan that designates one incident commander or that provides for unified command.
- (12) Interagency coordination shall meet the requirements of NFPA 1561, *Standard on Emergency Services Incident Management System*.

8.1.9 The fire department shall establish and ensure the maintenance of a fire dispatch and incident communications system that meets the requirements of NFPA 1561, *Standard on Emergency Services Incident Management System*, and NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*.

8.1.10* The fire department standard operating procedures shall provide direction in the use of clear text radio messages for emergency incidents.

8.1.10.1 The standard operating procedures shall use “emergency traffic” as designator to clear the radio traffic.

8.1.10.2 This “emergency traffic” shall be permitted to be declared by the incident commander, tactical level management component supervisor, or member in trouble or subjected to emergency conditions.

8.1.11* When a member has declared “emergency traffic,” that person shall use clear text to identify the type of emergency, change in conditions, or tactical operations.

8.1.11.1 The member who has declared the “emergency traffic” shall conclude the “emergency traffic” message by transmitting “all clear, resume radio traffic” to end the emergency situation or to re-open the radio channels to communication after announcing the emergency message.

8.1.12* The fire department communications center shall start an incident clock when the first arriving unit is on-scene of a working structure fire, hazardous materials incident, or when other conditions appear to be time sensitive or dangerous.

8.1.12.1 The dispatch center shall notify the incident commander at every 10-minute increment with the time that resources have been on the incident (e.g., incident clock is 10, 20, or 30 minutes), until the fire is knocked down or the incident becomes static.

8.1.12.2 The incident commander shall be permitted to cancel the incident clock notification through the fire department communications center based on the incident conditions.

8.2 Risk Management During Emergency Operations.

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

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

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

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

8.2.3.1 In situations where the risk to fire department members is excessive, as defined by 8.2.2, activities shall be limited to defensive operations.

8.2.4 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.

8.2.5* 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.

8.2.6 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.

8.2.7 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.

8.2.8* Because of the possibility of members being exposed to nerve agents during terrorist activities, fire departments shall consider providing atropine auto-injectors for members.

8.3 Personnel Accountability During Emergency Operations.

8.3.1* The fire department shall establish written standard operating procedures for a personnel accountability system that is in accordance with NFPA 1561, *Standard on Emergency Services Incident Management System*.

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

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

8.3.4 The incident commander shall maintain an awareness of the location and function of all companies or crews at the scene of the incident.

8.3.5 Officers assigned the responsibility for a specific tactical level management component at an incident shall directly supervise and account for the companies and/or crews operating in their specific area of responsibility.

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

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

8.3.8 Members shall be responsible for following personnel accountability system procedures.

8.3.9 The personnel accountability system shall be used at all incidents.

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

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

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

8.4 Members Operating at Emergency Incidents.

8.4.1 The fire department shall provide an adequate number of personnel to safely conduct emergency scene operations.

8.4.1.1* Operations shall be limited to those that can be safely performed by the personnel available at the scene.

8.4.2 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 4.1.1.

8.4.3 When inexperienced members are working at an incident, direct supervision shall be provided by more experienced officers or members.

8.4.3.1 The requirement of 8.4.3 shall not reduce the training requirements contained in 5.1.3 and 5.1.4.

8.4.4* Members operating in hazardous areas at emergency incidents shall operate in crews of two or more.

8.4.5 Crew 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.

8.4.6 Crew members shall be in proximity to each other to provide assistance in case of emergency.

8.4.7* In the initial stages of an incident where only one crew is operating in the hazardous area at a working structural fire, a minimum of four individuals shall be required, consisting of two individuals working as a crew in the hazard area and two individuals present outside this hazard area available for assistance or rescue at emergency operations where entry into the danger area is required.

8.4.8 The standby members shall be responsible for maintaining a constant awareness of the number and identity of members operating in the hazard area, their location and function, and time of entry.

8.4.9 The standby members shall remain in radio, visual, voice, or signal line communication with the crew.

8.4.10 The “initial stages” of an incident shall encompass the tasks undertaken by the first arriving company with only one crew assigned or operating in the hazard area.

8.4.11* One standby member shall be permitted to perform other duties outside of the hazard 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 crew.

8.4.12 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.

8.4.12.1 No one shall be permitted to serve as a standby member of the fire-fighting crew when the other activities in which

the fire fighter is engaged inhibit the fire fighter's 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.

8.4.13 The standby member shall be provided with at least the appropriate full protective clothing, protective equipment, and SCBA.

8.4.13.1 The full protective clothing, protective equipment, and SCBA shall be immediately accessible for use by the outside crew if the need for rescue activities inside the hazard area occurs.

8.4.14 The standby members shall don full protective clothing, protective equipment, and SCBA prior to entering the hazard area.

8.4.15 When only a single crew is operating in the hazard area in the initial stages of the incident, this standby member shall be permitted to assist with, or if necessary perform, rescue for members of his/her crew, provided that abandoning his/her task does not jeopardize the safety or health of the crew.

8.4.16 Once a second crew is assigned or operating in the hazard area, the incident shall no longer be considered in the "initial stage," and at least one rapid intervention crew shall comply with the requirements of 8.5.4.

8.4.17 Initial attack operations shall be organized to ensure that, if on 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 8.5.5.

8.4.17.1 No exception to 8.4.17 shall be permitted when there is no possibility to save lives.

8.4.17.2 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.

8.4.18* At aircraft rescue fire-fighting incidents, the initial IDLH shall be identified as the area within 23 m (75 ft) of the skin of the aircraft.

8.4.19 After size-up, the incident commander shall adjust the IDLH designation as the situation dictates to meet operational needs.

8.4.20 Aircraft rescue fire-fighting operations inside the area identified as the IDLH shall be in accordance with 8.4.4.

8.4.21* 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.

8.4.22 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*.

8.4.23 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.

8.4.24 When members are operating from aerial devices, they shall be secured to the aerial device with a system in compliance with NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components*.

8.4.25 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 and retro-reflective material.

8.4.26 Apparatus shall be utilized as a shield from oncoming traffic wherever possible.

8.4.27* When acting as a shield, apparatus warning lights shall remain on, if appropriate. Fluorescent and retro-reflective warning devices such as traffic cones (with DOT-approved retro-reflective collars) and DOT-approved retro-reflective signs stating "Emergency Scene" (with adjustable directional arrows) and illuminated warning devices such as highway flares and/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.

8.4.28 The incident commander shall ensure arson investigators or other members that enter an IDLH atmosphere or hazardous area use the appropriate personal protective equipment and/or SCBA.

8.4.29* Members involved in water rescue shall be issued and wear personal flotation devices that meet U.S. Coast Guard requirements.

8.5 Rapid Intervention for Rescue of Members.

8.5.1 The fire department shall provide personnel for the rescue of members operating at emergency incidents.

8.5.2 A rapid intervention crew/company shall consist of at least two members and shall be available for rescue of a member or a crew.

8.5.2.1 A rapid intervention crew/company shall be fully equipped with the appropriate protective clothing, protective equipment, SCBA, and any specialized rescue equipment that could be needed given the specifics of the operation under way.

8.5.3 The composition and structure of a rapid intervention crew/company shall be permitted to be flexible based on the type of incident and the size and complexity of operations.

8.5.4 The incident commander shall evaluate the situation and the risks to operating crews and shall provide one or more rapid intervention crew/company commensurate with the needs of the situation.

8.5.5 In the early stages of an incident, which includes the deployment of a fire department's initial attack assignment, the rapid intervention crew/company shall be in compliance with 8.4.11 and 8.4.12 and be either one of the following:

- (1) On-scene members designated and dedicated as rapid intervention crew/company
- (2) On-scene members performing other functions but ready to re-deploy to perform rapid intervention crew/company functions

8.5.5.1 The assignment of any personnel shall not be permitted as members of the rapid intervention crew/company if abandoning their critical task(s) to perform rescue clearly jeopardizes the safety and health of any member operating at the incident.

8.5.6 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 dedicated rapid intervention crew/company shall on arrival of these additional resources be either one of the following:

- (1) On-scene members designated and dedicated as rapid intervention crew/company
- (2) On-scene crew/company or crews/companies located for rapid deployment and dedicated as rapid intervention crews

8.5.6.1 During fire fighter rescue operations each crew/company shall remain intact.

8.5.7 At least one dedicated rapid intervention crew/company 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.

8.6 Rehabilitation During Emergency Operations.

8.6.1* The fire department shall develop standard operating procedures that outline a systematic approach for the rehabilitation of members operating at incidents.

8.6.2* 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 Emergency Services Incident Management System*.

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

8.6.4 Each member operating at an incident shall be responsible to communicate rehabilitation and rest needs to their supervisor.

8.6.5* Each member who engages in wildland fire-fighting operations shall be provided with 2 L (2 qt) of water.

8.6.5.1 A process shall be established for the rapid replenishment of water supplies.

8.7 Civil Unrest/Terrorism.

8.7.1 Fire department members shall not become involved in crowd control or crowd dispersal activities that would include the use of fire department appliances against the public.

8.7.2 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.

8.7.2.1 Such situations shall include but not be limited to civil disturbances, fights, violent crimes, drug-related situations, family disturbances, deranged individuals, and people interfering with fire department operations.

8.7.3 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.

8.7.4* 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.

8.7.5 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.

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

8.7.7 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.

8.7.8 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.

8.7.9 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.

8.7.10 Fire department companies or crews that provide support to law enforcement agency special weapons and tactics (SWAT) operations shall receive special training.

8.7.11 Special standard operating procedures shall be developed that describe the training and safety of these fire department crews for such operations.

8.7.11.1 These activities shall be considered as special operations for the purpose of this standard.

8.8 Post-Incident Analysis.

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

8.8.2 The fire department incident safety officer shall be involved in the post-incident analysis as defined in NFPA 1561, *Standard on Emergency Services Incident Management System*.

8.8.3 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.

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

8.8.5 The analysis process shall include a standardized action plan for such necessary changes.

8.8.5.1 The action plan shall include the change needed and the responsibilities, dates, and details of such actions.

Chapter 9 Facility Safety

9.1 Safety Standards.

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

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

9.1.3 All existing and new fire stations shall be provided with smoke detectors in work, sleeping, and general storage areas.

9.1.3.1 When activated, these detectors shall sound an alarm throughout the fire station.

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

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

9.1.6* The fire department shall prevent exposure to fire fighters and contamination of living and sleeping areas to exhaust emissions.

9.1.7 All fire department facilities shall be designated smoke-free.

9.2 Inspections.

9.2.1 All fire department facilities shall be inspected at least annually to provide for compliance with Section 9.1. (See Annex G.)

9.2.2 Inspections shall be documented and recorded.

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

9.3* Maintenance and Repairs. 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 10 Medical and Physical Requirements

10.1 Medical Requirements.

10.1.1 Candidates shall be medically evaluated and certified by the fire department physician.

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

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

10.1.4 Fire departments that operate their own fixed wing or rotary aircraft shall require fire department pilots who perform fire-fighting operations from the air to maintain a commercial Class 1 medical examination in conformance with Federal Aviation Agency (FAA) regulations for commercial pilots.

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

10.2 Physical Performance Requirements.

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

10.2.2 Medical certification for the use of respiratory protection shall be conducted annually.

10.2.3 Candidates shall be certified by the fire department as meeting the physical performance requirements specified in NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters*, prior to entering into a training program to become a fire fighter.

10.2.4 Members who engage in emergency operations shall be annually evaluated and certified by the fire department as meeting the physical performance requirements specified in NFPA 1583.

10.2.5 Members who do not meet the required level of physical performance shall not be permitted to engage in emergency operations.

10.2.6 Members who are unable to meet the physical performance requirements specified in NFPA 1583 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.

10.3 Health and Fitness.

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

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

10.3.3 The fire department health and fitness coordinator shall administer all aspects of the physical fitness and health enhancement program.

10.3.4 The health and fitness coordinator shall act as a direct liaison between the fire department physician and the fire department in accordance NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*.

10.4 Confidential Health Data Base.

10.4.1* The fire department shall ensure that a confidential, permanent health file is established and maintained on each individual member.

10.4.2 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.

10.4.3* 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.

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

10.5 Infection Control.

10.5.1* 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.

10.5.2 The fire department shall operate an infection control program that meets the requirements of NFPA 1581, *Standard on Fire Department Infection Control Program*.

10.6 Fire Department Physician.

10.6.1 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.

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

10.6.3* 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.

10.6.4* The fire department physician shall be readily available for consultation and to provide professional services on an urgent basis.

10.6.4.1 Availability shall be permitted to be accomplished by providing access to a number of qualified physicians.

10.6.5 The fire department shall require that the health and safety officer and the health fitness coordinator maintain a liaison with the fire department physician to ensure that the health maintenance process for the fire department is maintained.

Chapter 11 Member Assistance and Wellness Programs

11.1 Member Assistance Program.

11.1.1* 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.

11.1.2 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.

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

11.1.4* 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.

11.1.4.1 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.

11.1.5 Member records maintained by a member assistance program shall not become part of a member's personnel file.

11.2 Wellness Program.

11.2.1* 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.

11.2.2* The fire department shall provide a program on the health effects associated with the use of tobacco products.

11.2.2.1 The fire department shall provide a smoking/tobacco use cessation program.

Chapter 12 Critical Incident Stress Program

12.1 General.

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

12.1.2* 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.

12.1.3 The policy shall establish criteria for implementation of the program.

12.1.4 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.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.2.3 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. 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.

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 en-

forced 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.1.4.1 In no case should 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 meeting the requirements of Chapter 5.

A.1.5.1 For a fire department to evaluate its compliance with this standard, it must develop some type of logical process. The worksheet in Annex B 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 is being addressed until full compliance is reached 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.3.2.1 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.3.2.2 Authority Having Jurisdiction (AHJ). The phrase "authority having jurisdiction," or its acronym AHJ, 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.3.3.2 Aircraft Rescue and Fire Fighting. Such rescue and fire-fighting actions are performed both inside and outside of the aircraft.

A.3.3.3 Air Transfer. Air is allowed to flow from the cylinder with a higher pressure to the cylinder with a lower pressure until the pressure equalizes, at which time the transfer line is disconnected between the two cylinders.

A.3.3.4.1 Hazardous Atmosphere. A hazardous atmosphere can be immediately dangerous to life and health.

A.3.3.5 Candidate. In an employment context, the Americans with Disabilities Act (discussed in further detail in Annex D of NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*) 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.3.3.6 Clear Text. Ten codes or agency-specific codes should not be used when using clear text.

A.3.3.7 Company. For fire suppression, jurisdictions exist where the response capability of the initial arriving company is configured with the response of two apparatus. In some jurisdictions, apparatus is not configured with seated and belted positions for four personnel and therefore would respond with an additional vehicle in consort with the initial arriving engine to carry additional personnel. This response would be to ensure that a minimum of four personnel are assigned to and deployed as a company. The intent of this definition and the requirements in the standard are to ensure that these two (or more) pieces of apparatus would always be dispatched and respond together as a single company. Some examples of this include the following:

- (1) Engine and tanker/tender that would be responding outside a municipal water district
- (2) Multiple-piece company assignment, specified in a fire department's response SOPs, such as an engine company response with a pumper and a hose wagon
- (3) Engine with a vehicle personnel carrier
- (4) Engine with an ambulance or rescue unit

"Company," as used in this standard, is synonymous with company unit, response team, crew, and response group, rather than a synonym for a fire department.

A.3.3.8 Confined Space. Additionally, a confined space is further defined as having one or more of the following characteristics:

- (1) The area contains or has a potential to contain a hazardous atmosphere, including an oxygen-deficient atmosphere.
- (2) The area contains a material with a potential to engulf a member.
- (3) 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.
- (4) The area contains any other recognized serious hazard.

A.3.3.12.1 Communicable Disease. Also known as contagious disease.

A.3.3.18 Fire Department. The term *fire department* should include any public, governmental, private, industrial, or military organization engaging in this type of activity.

A.3.3.18.1 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.3.3.19 Fire Department Facility. 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.

A.3.3.21.1 Approach Fire Fighting. 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.

A.3.3.21.2 Entry Fire Fighting. 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.

A.3.3.21.3 Proximity Fire Fighting. 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 could be combined with interior operations. Proximity fire fighting is not structural fire fighting but could be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting.

A.3.3.23 Fire Suppression. Fire suppression includes 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.

A.3.3.24 Flame Resistance. Flame resistance can be an inherent property of the material or it can be imparted by specific treatment.

A.3.3.26 Hazard. Hazards include the characteristics of facilities, equipment systems, property, hardware, or other objects and the actions and inactions of people that create such hazards.

A.3.3.30 Health and Safety Officer. This individual can be the incident safety officer or that can also be a separate function.

A.3.3.32 Hot Zone. This zone is also referred to as the “exclusion zone” or “restricted zone” in other documents.

A.3.3.37 Incident Management System (IMS). The system is also referred to as an incident command system (ICS).

A.3.3.42 Member. 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.

A.3.3.47.1 Defensive Operations. 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.

A.3.3.47.5 Special Operations. 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.

A.3.3.49 Primarily Assigned. Fire-fighting situations that are most likely to occur within the response area.

A.3.3.51 Protective Ensemble. The elements of the protective ensemble are coats, trousers, coveralls, helmets, gloves, footwear, and interface components.

A.3.3.53 Rapid Intervention Crew/Company (RIC). Emergency services personnel respond to many incidents that present a high risk to personnel safety. Departments in compliance with OSHA 29 CFR 1910.134, “Respiratory Protection Regulations,” must have a minimum of two persons on-scene fully equipped when members are operating in an IDLH or potentially IDLH atmosphere. The primary purpose is the rescue of injured, lost, or trapped fire fighters. Departments utilizing an incident management system in accordance with NFPA 1561, *Standard on Emergency Services Incident Management System*, or 29 CFR 1910.120, along with a personnel accountability system have incorporated the RIC into their management system. Many departments have redefined their response plans to include the dispatch of an additional company (engine, rescue, or truck) to respond to incidents and stand-by as the RIC. Incident commanders can assign additional RICs based on the size and complexity of the incident scene. In some departments they can also be known as a rapid intervention team. At wildland incidents this would be addressed through the planning process and contingency planning.

A.3.3.56 Respiratory Protection Equipment (RPE). Examples are filter respirators, chemical cartridge or canister respirators, air-line respirators, powered air-purifying respirators, and self-contained breathing apparatus.

A.4.1.1 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 could include structural fire fighting, wild-land 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, 4.1.1 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.4.1.2 Additional information on fire department organization and operations can be found in Section 10 of the NFPA *Fire Protection Handbook*, and Chapter 5 of *Managing Fire Services*, published by the International City Management Association.

A.4.2.1 The risk management plan should consider all fire department policies and procedures, and it should include goals and objectives to ensure that the risks associated with the operations of the fire department are identified and effectively managed. Table A.4.2.1 provides an example for fire departments to use when developing a risk management plan that meets the requirements of this standard. (*See NFPA 1250, Recommended Practice in Emergency Service Organization Risk Management.*)

A.4.3.1 The following is an example of a safety policy statement:

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

A.4.3.3 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, because 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.4.4.3 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.4.4.5 See A.4.4.3.

A.4.5.1 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 could 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.

Table A.4.2.1 Anytown Fire Department Control Measures

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

O = Ongoing

A = Action required

A.4.5.3 The requirement for one regularly scheduled meeting every 6 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.4.6.1 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.4.6.4 See NFPA 1401, *Recommended Practice for Fire Service Training Reports and Records*, for further information and guidance.

A.4.7.2 Risk management is a vital component to any organization's operation, especially a fire department. The health and safety program is one of many elements that comprise the risk management process. The risk management process enables an organization to control the risks associated with fire department operations. Due to the inherent risks faced by members during emergency and non-emergency operations, a risk management plan will reduce the frequency and severity of risks.

A.4.9.1 The health and safety officer is not the only safety trainer. To fulfill this function properly, even in a small fire department, the health and safety officer should act as a clearinghouse for information and training programs related to occupational safety and health.

A.4.12.1 Data management refers to the collection and assimilation of information related to fire department safety and health and the use of this data to enhance the efforts of the occupational safety and health program. The data management process serves the following important functions:

- (1) It provides a summary of fire department experience in different categories (e.g., fire fighter injuries, vehicular accidents, work-related illnesses).
- (2) It provides a measure of how the experience of a particular fire department compares with other fire departments, with national trends, and with other occupations or industries.
- (3) It provides a systematic method to record information for future reference and use.

Data management provides a means of determining trends and program effectiveness, such as whether problems are becoming worse, whether accidents and injuries are being reduced, and whether the costs associated with accidents and injuries are increasing or decreasing.

Occupational safety and health laws require employers to maintain records of job-related injuries and illnesses.

A.5.1.4 The use of a structured on-the-job training (OJT) program with close supervision can assist fire departments to utilize new members in non-IDLH environments during emergency operations.

A.5.2.7 In the United States, federal regulations require a minimum amount of training for fire service personnel who respond to hazardous materials incidents. These require-

ments 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:

- (1) Knowledge of the basic hazard and risk assessment techniques;
- (2) Know how to properly select and use proper personal protective equipment provided to the First Responder Operations Level;
- (3) An understanding of basic hazardous materials terms;
- (4) 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;
- (5) Know how to implement basic decontamination procedures;
- (6) 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.5.2.9 In order to ensure compliance with the minimum requirements of NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, fire department training programs should be certified through a recognized accreditation system. In addition, NFPA 1405, *Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires*, provides recommended guidelines for those members who respond to marine vessel fires.

A.5.2.10 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.5.2.11 Fire departments can utilize instructors who are not necessarily trained and/or certified to the requirements of NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*. However, in using these instructors they should ensure that they are familiar with the fire department, its organization, and operations and, in addition, are qualified in that particular area of expertise.

A.5.2.12 Members can be trained and/or certified at the local, state, or national level in different levels of emergency medical care. This can include First Responder, Basic Life Support (BLS), or Advanced Life Support (ALS). Jurisdictions can require specialty skills within certain levels.

A.5.2.13 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. This would include clothing worn under their structural fire-fighting protective ensemble.

A.5.3.4 An annual skills check should address the professional qualification specific to a member's assignment and duty expectation. As an example, a fire fighter is checked for skills required by NFPA 1001, *Standard for Fire Fighter Professional Qualifications*. A driver/operator would be checked for skills required by NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*.

A.5.3.8 The essence of any successful respiratory protection training program is the establishment of written operational policies and the re-enforcement of those policies through comprehensive training.

The authority having jurisdiction should ensure that each member demonstrates knowledge of at least the following:

- (1) Why respiratory protection equipment is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- (2) What the limitations and capabilities of the respiratory protection equipment are
- (3) How to use the respiratory protection equipment effectively in emergency situations, including situations in which the respiratory protection equipment malfunctions
- (4) How to inspect, put on and remove, use, and check the seals of the facepiece
- (5) What the procedures are for maintenance and storage of the respiratory protection equipment
- (6) How to recognize medical signs and symptoms that can limit or prevent the effective use of respiratory protection equipment
- (7) The requirements of Section 7.8

A.6.1.1.1 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.6.1.5 The means of holding the item in place or the compartment should be designed to minimize injury to persons in the enclosed area of the fire apparatus or patient compartment of an ambulance. Loose equipment during the event of a crash, a rapid deceleration, or a rapid acceleration can be the cause of serious injury or the crash of the apparatus.

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

A.6.2.2 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 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.6.2.4 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.6.2.7 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.6.2.8 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.6.2.10 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.6.3.1 It is intended for the requirements of Section 6.3 to apply to all situations when persons or members are riding on fire apparatus other than for the specific variances in 6.3.4 and 6.3.5. Included in the "seated and belted" requirement 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.6.3.3 There are instances in which members need to 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, could include performing chest compressions during cardiopulmonary resuscitation (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.6.3.4 The following recommendations will assist the user in using this section of the standard:

- (1) Hose loading procedures should be specified in a written standard operating procedure that includes at least the safety conditions listed in (2) through (7). All members involved in the hose loading should have been trained in these procedures.
- (2) 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.

- (3) Non-fire department vehicular traffic should be excluded from the area or should be under the control of authorized traffic control persons.
- (4) The fire apparatus can be driven only in a forward direction at a speed of 8 kph (5 mph) or less.
- (5) No members should be allowed to stand on the tailstep, sidesteps, running boards, or any other location on the apparatus while the apparatus is in motion.
- (6) Members should be permitted to be in the hose bed, but should not stand while the apparatus is in motion.
- (7) 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.6.3.5 The following recommendations will assist the user in meeting the requirements of the standard:

- (1) Tiller training procedures should be specified in a written standard operating procedure that includes at least the safety conditions listed in (2) through (6). All members involved in tiller training should have been trained in these procedures.
- (2) 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.
- (3) 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.
- (4) Both the tiller instructor and the tiller trainee should be seated and belted.
- (5) The instructor and trainee should wear and use both helmet and eye protection if not seated in an enclosed area.
- (6) 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 a qualified driver/operator.

A.6.3.6 Helmets should be worn by all members in riding positions in an open cab that does 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 of the seats.

A.6.3.7 Eye protection (goggles, safety glasses, or face shields) should be issued to members who might ride in either exposed positions in open cab apparatus, or open tiller seats. Department SOPs should outline the safety issues associated with wearing eye protection while driving.

A.6.3.8 Such alternate means of transportation could include, but not be limited to, other fire apparatus, automobiles, and/or other personnel carriers.

A.6.4.1 The purpose of this paragraph is to ensure that all vehicles are inspected on a regular basis and checked for the proper operation of all safety features. This inspection should include tires, brakes, warning lights and devices, headlights and clearance lights, windshield wipers, and mirrors. The apparatus should be started and the operation of pumps and other equipment should be verified. Fluid levels should also be checked regularly.

Where apparatus is in regular daily use, these checks should be performed on a daily basis. Apparatus stored in unattended stations that might not be used for extended periods should be checked weekly. Any time such a vehicle is used, it should be checked before being placed back in service. The 24-hour reference provides for situations in which a vehicle can be used within the period preceding a scheduled inspection, although any deficiencies noted in use should be corrected without delay.

The safety equipment carried on fire department vehicles should be inspected in conjunction with the inspection of the vehicle.

A.6.4.4 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.6.5.6 See A.6.4.1.

A.7.1.1 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 non-emergency activities. The applicable regulations pertaining to industrial worker safety should be consulted to determine the need for protective equipment in non-emergency activities.

A.7.1.2 The fire department should provide body armor for all members who operate in areas where a potential for violence or civil unrest exists.

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

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

A.7.1.4 Protective clothing ensembles can be contaminated by bodily fluids or other contaminants encountered while pro-

viding medical care, or by smoke, soot, hydrocarbons, asbestos, chemicals, or other substances encountered during fire fighting and other operations.

A.7.1.5 Station/work uniforms are required to meet the requirements of NFPA 1975, *Standard on Station/Work Uniforms for Fire and Emergency Services*. 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.

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.7.1.7 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.

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 non-contaminated 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 greater than 54°C (130°F), 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 do commercial washers that the public has access to, such as those found 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 manufacturers' instructions, NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and NFPA 1581, *Standard on Fire Department Infection Control Program*.

A.7.2.1 The fire department should consider providing each member with two complete sets of structural fire-fighting protective clothing that meet the requirements of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, whenever possible. It is not reasonable to expect that a fire department would have enough stock protective clothing available to all members in the event that the protective clothing became soiled, wet, or contaminated during daily activities. Fire fighters provided with two complete sets of structural fire-fighting

protective clothing can change easily into proper fitting garments and will not be unnecessarily exposed or expose the public to contaminants. Structural protective clothing that is cleaned and properly and completely dried before the next use will last longer and provide greater protection than soiled or damp garments.

A.7.2.2 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.7.3.1 The technical committee's intent is that members utilize the appropriate protective clothing designed specifically for the type of fire-fighting activities for which the member is engaged. The type of fire-fighting activity is based upon the particular fire-fighting techniques used, such as using limited agents or chemicals, rather than the types of fuels involved.

A.7.4 Fire department personnel involved in emergency medical operations should 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 to 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. NFPA 1999 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 "liquidtight" integrity, and have limited physical durability and hazard resistance. Gloves must allow no penetration of virus, offer "liquidtight" 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 "liquidtight" integrity, and provide adequate visibility for those portions of the device covering the wearer's eyes.

A.7.4.2 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 could come in contact with the patient should use gloves.

A.7.4.3 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."

A.7.5.1 NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*, covers vapor-protective suits that are designed to provide "gastight" 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 should 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 1 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 should 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 by NFPA 1991:

- (1) A suit pressurization test to check the airtight integrity of each protective suit
- (2) An overall suit water penetration test designed to ensure the suit provides full body protection against liquid splashes
- (3) Penetration resistance testing of closures
- (4) 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.7.5.1.5 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 Ensembles for Hazardous Materials 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.7.5.2 NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials 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 gastight 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, a garment compliant with NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*, 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 should 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 Ensembles for Hazardous Materials 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.7.5.2.8 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 Ensembles and Clothing for Hazardous Materials 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.7.7.1 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.7.7.3 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.7.8.2 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, hazardous materials, and other operations can require different cylinders, umbilical connections, and features that are easier to ascertain and coordinate with a selection stage.

A.7.8.4 At least one additional reserve SCBA should be available at the incident scene for each ten SCBA in use to provide for replacement if a failure occurs.

A.7.8.7 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.7.8.8 The required use of SCBA means that the user should 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.7.10.1.1 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 the Fire Service*, 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 should 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 should stress that fire fighters should 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 the 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 a 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:

- (1) A strong, well-administered respiratory protection SCBA program
- (2) Emphasis on user testing and inspection of respiratory protection SCBA
- (3) Required before-use and after-use testing and maintenance
- (4) Functional preventive maintenance program
- (5) Fireground management based upon safe operations with knowledge of fire development, building construction, and coordinated fire-fighting operations
- (6) Quality breathing air

- (7) Personal alert safety system (PASS) devices and portable radios for interior fire-fighting teams
- (8) Thorough training in survival techniques, controlled breathing, and stress management
- (9) Accountability for interior fire-fighting crews
- (10) Physical fitness of fire fighters
- (11) 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 the Fire Service*

NFPA, ANSI, IAFF, and most SCBA manufacturers do not recommend buddy breathing because 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 5-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.7.10.1.2 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.7.10.3.3 Because of the cumulative hazards associated with the repeated use of filter canisters and cartridges under emergency response conditions, canisters and cartridges that have been placed in service should be removed, replaced, and discarded after training, regardless of exposure time.

A.7.11.1 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 should 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. In those instances where members cannot meet the facepiece seal requirement with equipment currently used by the authority having jurisdiction, individually fitted facepieces should be provided.

A.7.11.4 Although qualitative fit testing is an approved method for fit testing, it does have some drawbacks. It includes the use of chemicals [e.g., smoke (stannic chloride) and saccharin] that have been declared cancer-causing agents. Also, banana oil (isoamyl acetate) requires an exact solution, which must be used only on the day it is mixed, and the facepiece must be connected to an organic vapor filter unit that will filter out the scent used in the fit test procedure. If the test subject does smell the banana oil, then the person must leave

the test chamber quickly and go back into the selection room or area. Then the process must begin again with a new facepiece that provides a proper fit. Typically the use of banana oil has a lingering odor that will require a good ventilation system to remove the scent before the next person comes in for the test. All qualitative test methods rest on the ability of the person undergoing the test to say whether they can taste or smell the agent. The fit test operator has to make a judgment as to whether the test person is showing signs of perceiving the agent and what the person says he or she is tasting or smelling. A large degree of human sensory perception and operator judgment is being relied on to make the decision as to whether the respirator provides a good fit or not. The records that are to be kept for each person that is fit tested would indicate that the subject did not smell or taste the challenge atmosphere. There is no numerical value given when qualitative fit testing is done, it is “go” or “no go” for that facepiece. These records are retained until the next annual fit test is performed for each person being tested.

Quantitative fit testing has a number of advantages over qualitative fit testing. The machine provides a numerical value of each test exercise and then a computed fit factor that can be used as a benchmark for future fit testing the following year. The test subject must obtain at least a fit factor of 500 for the person to pass the fit test with the full facepiece. The processing of test subjects can be done much more expeditiously, eliminating down time between re-tests with another facepiece or testing of the next person, as is experienced with the qualitative test method. The strip chart that the test machine provides becomes the written record and a computer-generated record can be done at the same time. There is little judgment required by the operator of the fit test other than to make sure the test subject and the procedures are followed to the letter.

A.7.11.6 A protection factor of at least 10,000 in the positive pressure mode is recommended for positive-pressure SCBA. The quantitative test can be used to determine which facepieces fit an individual well and thus aids in selecting the facepiece that best conserves the amount of air in the cylinder.

If a satisfactory fit cannot be achieved for an individual with one make of facepiece, another make of the device should be bought for that member.

WARNING: If a facepiece from one manufacturer is used on a unit from another manufacturer, the NIOSH approval will be voided.

A.7.11.8 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.7.11.11 The user should be able to demonstrate the successful use of an SCBA with 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 6 months without any problems.

A.7.12.1 Given the considerable amount of stored energy inside an SCBA cylinder, cylinders should always be filled using manufacturers’ recommendations and following any existing NIOSH, CGA, or other regulatory agency guidelines.

Because of the failure during refilling of 11 cylinders using aluminum alloy 6351-T6, SCBA cylinders made of this alloy should be diligently inspected, both externally and internally, by properly trained inspectors at least annually.

Most of these failed cylinders had not been maintained properly. Some were being used beyond their DOT-defined hydrostatic test period. Some had not been retrofitted with a special neck-ring that the manufacturer had recommended to reduce the possibility of failure.

For additional information, refer to the NIOSH Research and Special Programs Administration (RSPA) advisory of 1994 (Federal Register Vol. 59, 38028, July 26, 1994), DOT advisory of 1999 (Federal Register Vol. 64, 56243, October 18, 1999), and the NIOSH Respirator User Notice of December 7, 1999.

Several of the ruptured cylinders were made using aluminum alloy 6351-T6. This alloy has been identified as being susceptible to sustained load cracking (SLC) in the neck and shoulder area of the cylinder. The NIOSH Respirator User Notice of December 7, 1999, states: “It is important to note that only a small percentage of cylinders made from aluminum alloy 6351-T6 have actually been found to exhibit sustained load cracking. Moreover, out of several million cylinders manufactured from this alloy by several companies, NIOSH and the U.S. Department of Transportation (DOT) are aware of only 12 ruptures within the United States. Eleven of the 12 ruptures occurred during refilling.... Six of these 12 ruptures involved SCBA cylinders. Forensic analysis has determined that most of these cylinders failed due to SLC failure. However, in some cases, evidence of other factors such as external mechanical damage was also present.”

Changes have now been made in materials specification and design of cylinders. Since 1988, manufacturers have been using aluminum alloy 6061-T6 in the manufacture of all of their cylinders and cylinder liners. Alloy 6061-T6 has become the “standard of the industry” because it is not susceptible to sustained load cracking.

The failed cylinders belong to a relatively small population of a particular type of cylinder, and there has been no occurrence of cylinder failure during filling of any other type of SCBA cylinders. Full-wrapped composite cylinders, which are predominantly being purchased by the fire service at this time, have been used since 1988 without failure during refilling. There is, therefore, reason to believe that these other types of SCBA cylinders can continue to be used in the fire service without risk of failure during filling.

A.7.12.5 To provide maximum protection to all fire fighters and support personnel, this standard also recommends that all personnel and operators be protected from catastrophic failure of the cylinder during routine filling.

To facilitate this, it is recommended that industry develop an inexpensive, lightweight chamber, or other means, to provide protection at the fire scene during routine cylinder filling. There is no current commonly accepted standard or specifications for protective enclosures in which to fill SCBA cylinders. Until such a standard is defined, such equipment should comply with the standards defined for fragmentation tanks in NFPA 1901, *Standard for Automotive Fire Apparatus*.

A number of SCBA manufacturers have developed systems to quickly fill cylinders. They enable cylinders to be filled while the user is wearing the SCBA. Even though some of these systems have been in use without incident for many years, it is felt that fire fighter and support personnel safety are paramount. This standard therefore recommends that personnel be protected when routinely refilling SCBA cylinders.

Until a commonly accepted standard for providing protection during routine refilling of cylinders is defined, the authority having jurisdiction should determine how best to provide protection for its personnel during routine cylinder filling.

Without a commonly accepted standard defining a concise method of protecting personnel during cylinder refilling, the authority having jurisdiction can choose which method best applies to its personnel. Such protection can consist of refilling cylinders in an enclosure considered acceptable to the authority having jurisdiction. It can consist of using a refill system with a safe record of operation, with no experience of failures or damage to cylinders, supported by sufficient data. Or it can consist of an alternate practice considered as safe by the authority having jurisdiction.

A.7.12.6 The possibility exists for catastrophic failure of SCBA cylinders during refilling.

A.7.13.1 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 fighters 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 should be coupled with a solid incident management system, a personnel accountability system, and adequate communications to properly ensure the safety of fire fighters.

A.7.14.3 Life safety rope can be significantly weakened by abrasion, misuse, contamination, wear, and stresses approaching its breaking strength, particularly impact loading. Because 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 could have occurred, it should 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 manufacturers' recommendations or impact loaded, it should be destroyed.

The destruction of the rope means that it should 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.7.16.1 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 could 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.7.16.2 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 non-emergency 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.7.16.3 An effective hearing conservation program should address the regular audiometric testing of members to iden-

tify 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 long-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.8.1.5 The incident commander should 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.8.1.8 The following explains the responsibilities of the incident commander:

- (1) The incident commander should 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.
- (2) 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 should be incorporated into this evaluation and forecasting.
- (3) 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.
- (4) 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 should be incorporated into each stage of the command process.

- (5) Tactical-level management component 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 off-site (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 components 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.
- (6) The incident commander should 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.
- (7) Effective command and control should 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.8.1.10 The intent of the use of "clear text" for radio communications is to reduce confusion at incidents, particularly where multiple agencies are operating at the same incident.

A.8.1.11 Examples of emergency conditions could be: "Fire Fighter Down," "Fire Fighter Missing," "Fire Fighter Trapped," "Officer Needs Assistance," "Evacuate the Building/Area," "Wind Shift from the North to South," "Change from Offensive to Defensive Operations," "Fire Fighter Trapped on the 1st Floor."

The term *mayday* should not be used for fireground communications in that it could cause confusion with the term used for aeronautical and nautical emergencies.

In addition to the "Emergency Traffic," the fire department can use additional signals such as an air horn signal for members to evacuate as part of their standard operating procedures. Some fire departments have developed an evacuation signal that consists of repeated short blasts of apparatus air horns. The sequence of air horn blasts should not exceed 10 seconds in length, followed by a 10-second period of silence, and it is done three times (total air horn evacuation signal including periods of silence lasts 50 seconds). When this evacuation signal is used, the incident commander should designate specific apparatus to sound the evacuation signal using air horns. The apparatus used should not be in close proximity to the command post, if possible, thus reducing the chance of missing any radio messages.

During fire fighter rescue operations, the incident commander should consider implementing the following:

- (1) Requesting additional resources
- (2) Including a medical component
- (3) Utilizing staging for resources
- (4) Committing the RIC team from standby mode to deployment
- (5) Changing from Strategic Plan to a High Priority Rescue Operation
- (6) Initiating a PAR (personnel accountability report)
- (7) Withdrawing companies from affected area
- (8) Assigning a rescue officer
- (9) Assigning a safety officer
- (10) Assigning a backup Rapid Intervention Crew/Company
- (11) Assigning an Advanced Life Support (ALS) or Basic Life Support (BLS) Company
- (12) Requesting additional command level officers
- (13) Requesting specialized equipment
- (14) Ensuring that dispatch is monitoring all radio channels
- (15) Opening appropriate doors to facilitate egress and access
- (16) Requesting additional vertical/horizontal ventilation
- (17) Providing lighting at doorways, especially at points of entry

A.8.1.12 Some fire departments can also wish to be provided with reports of elapsed time-from-dispatch. This method can be more appropriate for fire departments with long travel times where significant incident progress may have occurred prior to the first unit arrival.

A.8.2.1 The incident commander has the ultimate responsibility for the safety of all fire department members operating at an incident and for any and all other persons whose safety is affected by fire department operations. Risk management provides a basis for the following:

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

A.8.2.2 The risk to fire department members is the most important factor considered by the incident commander in determining the strategy that will be employed in each situation. The management of risk levels involves all of the following factors:

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

When considering risk management, fire departments should consider the following Rules of Engagement:

- (1) What is the survival profile of any victims in the involved compartment?
- (2) We WILL NOT risk our lives at all for a building or lives that are already lost.

- (3) We may only risk our lives a LITTLE, in a calculated manner, to save SAVABLE property.
- (4) We may risk our lives a lot, in a calculated manner, to save SAVABLE LIVES.

A.8.2.3 The acceptable level of risk is directly related to the potential to save lives or property. Where there is no potential to save lives, the risk to fire department members should be evaluated in proportion to the ability to save property of value. When there is no ability to save lives or property, there is no justification to expose fire department members to any avoidable risk, and defensive fire suppression operations are the appropriate strategy.

A.8.2.5 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.8.2.8 Atropine auto-injectors are used in the military and have been purchased by many fire departments. Fire departments that have auto-injectors available for their members need to provide training on the use of the auto-injector.

A.8.3.1 A standard system to account for the identity and assignment of each member could 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.8.3.10 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.8.3.11 These accountability supervisors should work with the incident commander and tactical-level management component supervisor to assist in the ongoing tracking and accountability of members.

A.8.4.1.1 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.8.4.4 For additional information, see 29 CFR 1910.134.

A.8.4.7 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 who 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 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 action. 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.8.4.11 The following examples show how a department could deploy a team of four members initially at the scene of a structure fire, regardless of how the team members are assembled:

- (1) 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 standby members.
- (2) 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.
- (3) Two fire fighters could advance the hoseline in the IDLH atmosphere, and the team leader and pump operator remain outside as standby members.

A.8.4.18 Studies have shown that the severity of incidents involving ARFF can rapidly escalate to catastrophic propor-

tions. If fire fighting and rescue operations are to be effective, fully assembled ARFF companies should be on-scene within the time requirements as specified in NFPA 403, *Standard for Aircraft Rescue and Fire-Fighting Services at Airports*. Experience has shown that it is extremely difficult to assemble personnel who are responding from separate locations for individual ARFF companies within these time constraints. It is strongly recommended that the minimum ARFF company staffing level be three on-duty members responding on or with each ARFF vehicle.

It is also recommended that structural fire apparatus responding in support of ARFF operations should be staffed in accordance with A.8.4.1.1. (See also NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*.)

A.8.4.21 If advanced life support personnel are available, this level of service would be preferred. Basic life support is the minimum acceptable level.

A.8.4.27 Some studies have shown that headlights or warning lights of parked vehicles at emergency incidents have caused accidents instead of preventing them. The fire department should develop guidelines in conjunction with their local law enforcement agency to determine what is appropriate for local conditions.

A.8.4.29 Consideration for rescue of members working over, in, and around water should be addressed by the incident commander and incident safety officer within the incident action plan.

A.8.6.1 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. Provisions addressed in these procedures could include medical evaluation and treatment, food and fluid replenishment, crew rotation, and relief from extreme climatic conditions. 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.8.6.2 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 as follows:

- (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

- (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 as follows:

- (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
- (4) Providing medical evaluation for personnel showing signs or symptoms of frostbite, hypothermia, or other cold-related injury

A.8.6.3 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.8.6.5 The importance of hydration during wildland fire-fighting operations cannot be overemphasized. This concept should 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 L (8 to 12 qt) of water per day, per member.

A.8.7.4 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 communications personnel and other responders, can warn others to the dangers of the situation without triggering violence or hostilities.

A.9.1.1 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. Applicable requirements of the Americans with Disabilities Act, 1992 should be met.

A.9.1.5 As new stations are constructed or existing stations are renovated, a separation between the apparatus floor and living quarters should be provided.

A.9.1.6 The operation of a fire department requires the storage and indoor operation of fire apparatus that are generally housed in an enclosed building. The need to keep the apparatus and other vehicles ready for immediate service and in good operating condition, which requires the indoor running of vehicles for response and routine service/pump checks, makes storage in an enclosed area, such as an apparatus bay, necessary. The exhaust from all internal combustion engines, including diesel and gasoline-powered engines, contains over 100 individual hazardous chemical components that, when combined, can result in as many as 10,000 chemical compounds. A large majority of these compounds are today listed by state and federal regulatory agencies as being cancer causing or suspected carcinogens. The target components listed by NIOSH/OSHA consist of both hydrocarbon carbon components and compounds, which are produced as both gas-phase and particulate-phase compounds. The gases and particulates, which are viewed by NIOSH and OSHA as life threatening, consist of a cancer-causing substance known as polynuclear aromatic hydrocarbons (PAHs). Gases in diesel exhaust, such as nitrous oxide, nitrogen dioxide, formaldehyde, benzene,

sulfur dioxide, hydrogen sulfide, carbon dioxide, and carbon monoxide, can also create health problems. According to NIOSH, human and animal studies show that diesel exhaust should be treated as a human carcinogen (cancer-causing substance). In accordance with the NIOSH *Pocket Guide to Chemical Hazards*, as it pertains to diesel exhaust, NIOSH recommends that occupational exposure to carcinogens be limited to the lowest feasible concentration. NIOSH uses OSHA's classification, outlined in 29 CFR 1990.103, which states in part "Potential occupational carcinogen means any substance, or combination or mixture of substances, which causes an increased incidence of benign and/or malignant neoplasm, or a substantial decrease in the latency period between exposure and onset of neoplasm in humans or in one or more experimental mammalian species as the result of any oral, respiratory or dermal exposure, or any other exposure which results in the induction of tumors at a site other than the site of administration." This definition also includes any substance that is metabolized into one or more potential occupational carcinogen by mammals.

Over the past decade, it has been documented that fire department personnel exposed to vehicle exhaust emissions have had adverse health effects, including death, even in areas where only short-term exposure had taken place. Secondary effects of vehicle exhaust have been sighted in the storage of sterilized medical equipment. The equipment is contaminated by exhaust emissions, handled by emergency services personnel while treating the public, thus creating a path for cross-contamination to the general public. In addition, there has been an effect on contamination to computers and emergency service electronics due to carbon deposits that lead to malfunction.

For the previously stated reasons and numerous support documentation, this technical committee recognizes and advocates the need for the elimination and the containment of all vehicle exhaust emissions to a level of no less than 100 percent effective capture. This complies with NIOSH's requirement to reduce the emissions to the lowest feasible level in an effort to reduce the health impact on human life. This, in turn, reduces the department's liability and risk.

The containment of the vehicle exhaust emissions should be achieved with a goal of eliminating all exhaust emissions from the breathing zone of the human inhabitants present in the station. Any system installed to suit this purpose should be made using "best available control technology."

A.9.3 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.10.1.5 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.10.2.1 Fire departments should consider use of the recruiting, mentoring, and training process found in the physical performance requirements referenced in the IAFF/IAFC Candidate Physical Ability Test (CPAT).

A.10.4.1 The health data base for a fire department should include the reports of regular physical evaluations, injury and illness reports, health exposures, and any supporting information that could be useful in tracking, analyzing, or predicting the health effects of various events on individuals or the group. This process should comply with the requirements of 29 CFR 1910.120, “Medical Record-Keeping.”

A.10.4.3 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.10.4.4 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.10.5.1 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.10.6.3 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.10.6.4 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.11.1.1 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 a 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 qual-

ity programs. The following program standards set forth by the Association of Labor-Management Administrators and Consultants on Alcoholism (ALMACA) address these program 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 the following two primary qualifications:

- (1) Appropriate managerial and administrative experience
- (2) 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.11.1.3 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.11.1.4 Adherence to federal regulations on confidentiality of alcohol and other drug abuse records is required of programs receiving federal funds, directly or indirectly.

A.11.2.1 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.11.2.2 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.12.1.2 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 could 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 meetings are recommended for active departments, while quarterly meetings could 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 1 to 3 hours after the incident. Debriefings should encourage brief discussions of the event, which in themselves 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. Member assistance programs 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.

Annex B Fire Service Occupational Safety and Health Program Worksheet

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

B.1 The worksheet (see Figure B.1) in this annex 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.

B.2 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 affected 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.

B.3 The following paragraphs are extracted from the standard to reiterate the fact that an implementation plan should be implemented and annually evaluated.

B.3.1 Purpose.

B.3.1.1 The purpose of this standard shall be to specify the minimum requirements for an occupational safety and health program for a fire department. [1500:1.2.1]

B.3.1.2 Nothing herein shall be intended to restrict any jurisdiction from exceeding these minimum requirements. [1500:1.2.4]

B.3.2 Implementation.

B.3.2.1 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. [1500:1.5.1]

B.3.2.2 The fire department shall adopt a risk management plan as specified in Section 4.2 of this standard. [1500:1.5.3]

B.3.2.3 This risk management plan shall include a written plan for compliance with this standard. [1500:1.5.3.1]

NFPA 1500 FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET									
Fire Department: _____					Date: _____				
Person(s) Completing Worksheet									
Name: _____					Title: _____				
Name: _____					Title: _____				
Name: _____					Title: _____				
Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
Chapter 1 Administration									
1.4 Equivalency									
1.4.1 Equivalency levels of qualifications									
1.4.2 Training, education, competency, safety									
Chapter 4 Organization									
4.1 Fire Dept. Organizational Statement									
4.1.1 Written statement or policy									
4.1.2 Operational response criteria									
4.1.3 Statement available for inspection									
4.2 Risk Management Plan									
4.2.1 Written risk management plan									
4.2.2 Risk management plan coverage									
4.2.3 Risk management plan components									
4.3 Safety and Health Policy									
4.3.1 Written fire dept. occupational safety and health policy									
4.3.2 Program complies with NFPA 1500									
4.3.3 Evaluate effectiveness of plan									
4.3.3.1 Occupational safety and health program audit									
4.4 Roles and Responsibilities									
4.4.1 Fire dept. responsibility									
4.4.2 Comply with laws									
4.4.3 Fire dept. rules, regulations, and SOPs									

(NFPA 1500, 1 of 25)

FIGURE B.1 Fire Service Occupational Safety and Health Program Worksheet.

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
4.4.4 Accident investigation procedure									
4.4.5 Members									
4.4.6 Fire dept. vehicles, equipment, facilities									
4.4.7 Corrective action to avoid repetitive occurrences									
4.4.8 Accident investigation records									
4.4.9 Individuals shall cooperate, participate, and comply									
4.4.10 Right to be protected and participate									
4.4.11 Member organization shall cooperate									
4.4.12 Collective rights									
4.5 Occupational Safety and Health Committee									
4.5.1 Establish committee									
4.5.1.1 Committee make-up									
4.5.1.2 Permit to include other persons									
4.5.2 Committee study and review									
4.5.3 Regular meetings									
4.5.3.1 Meetings at least every 6 months									
4.5.3.2 Minutes retained and available to members									
4.6 Records									
4.6.1 Accidents, injury, illness, exposures, death									
4.6.2 Occupational exposures									
4.6.3 Health (confidential)									
4.6.4 Training									
4.6.5 Vehicles and equipment									
4.7 Functions of the Health and Safety Officer									
4.7.1 NFPA 1521, fire dept. health and safety officer	✓								
4.7.1.1 Complies with NFPA 1021	✓								

(NFPA 1500, 2 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
4.7.2 Fire dept. health and safety officer manage program									
4.7.3 Communicate plan to members									
4.7.4 Written risk plan available to members									
4.7.5 Monitor effectiveness of plan, revise annually	✓								
4.7.6 Develop plan into the incident management system	✓								
4.8 Laws, Codes, and Standards									
4.8.1 Develop, review, revise SOPs	✓								
4.8.1.1 Ensure compliance	✓								
4.8.1.2 Submit recommendations	✓								
4.8.2 Report adequacy	✓								
4.8.3 Define role of health and safety officer	✓								
4.9 Training and Education									
4.9.1 Provide safety and health training	✓								
4.9.2 Training arising from investigations	✓								
4.9.3 Safety supervision at training	✓								
4.9.4 NFPA 1403, live fire training									
4.9.5 Pre-burn inspection									
4.9.6 Distribute health and safety information									
4.10 Accident Prevention									
4.10.1 Health and safety officer manage accident prevention program	✓								
4.10.2 Health and safety officer delegate the development, participate, review, or supervise the program	✓								
4.10.3 Instruction for safe work practices	✓								
4.10.4 Addresses training and testing of all fire dept. drivers	✓								
4.10.5 Survey operations, procedures, equipment, and fire dept. facilities	✓								
4.10.6 Report recommendations	✓								

(NFPA 1500, 3 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
4.11 Accident Investigation, Procedures, and Review									
4.11.1 Develop and implement procedures									
4.11.1.1 Occupational injuries and illnesses are treated									
4.11.2 Occupational injuries, illnesses, exposures, and fatalities, or other potentially hazardous conditions									
4.11.3 Develop corrective recommendations									
4.11.4 The health and safety officer submit such recommendations									
4.11.5 The health and safety officer develop and review procedures									
4.11.5.1 Comply with local, state, and federal requirements									
4.11.6 Review the procedures employed during any unusually hazardous operation									
4.12 Records Management and Data Analysis									
4.12.1 Maintain records of all accidents, occupational deaths, injuries, illnesses, and exposures									
4.12.2 The health and safety officer manage information									
4.12.3 The health and safety officer identify and analyze safety and health hazards and develop corrective actions	✓								
4.12.4 The health and safety officer ensure that records are maintained as specified	✓								
4.12.5 The health and safety officer maintain records of recommendations	✓								
4.12.6 Maintain records of all measures taken to implement safety and health procedures and accident prevention methods	✓								
4.12.7 Issue a report annually	✓								

(NFPA 1500, 4 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
4.13 Apparatus and Equipment									
4.13.1 Review specifications for new apparatus, equipment, protective clothing, and protective equipment	✓								
4.13.2 Assist and make recommendations regarding the evaluation of new equipment	✓								
4.13.3 Assist and make recommendations regarding the service testing	✓								
4.13.4 Develop, implement, and maintain a protective clothing and protective equipment program	✓								
4.14 Facility Inspection									
4.14.1 Inspect fire dept. facilities	✓								
4.14.2 Safety or health hazards or code violations are corrected	✓								
4.15 Health Maintenance									
4.15.1 Complies with Chapter 8	✓								
4.15.2 Health and wellness programs	✓								
4.16 Liaison									
4.16.1 The health and safety officer is member of the fire dept. occupational safety and health committee									
4.16.2 The health and safety officer reports the recommendations of the fire dept. occupational safety and health committee									
4.16.3 The health and safety officer submits recommendations on occupational safety and health	✓								
4.16.4 The health and safety officer provides information and assistance	✓								
4.16.5 The health and safety officer maintains a liaison with staff officers	✓								
4.16.6 The health and safety officer maintains a liaison with outside agencies	✓								
4.16.7 The health and safety officer maintains a liaison with the fire department physician	✓								

(NFPA 1500, 5 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
4.17 Occupational Safety and Health Committee. Safety and health committee is established									
4.18 Infection Control									
4.18.1 NFPA 1581, fire dept. infection control									
4.18.2 The health and safety officer maintains a liaison with the person or persons designated as infection control officer									
4.18.3 The health and safety officer functions as the fire dept. infection control officer if an infection control officer position does not exist in the fire dept.	✓								
4.19 Critical Incident Stress Management									
4.19.1 Establishment of a critical incident stress management (CISM) program									
4.19.2 CISM program is incorporated into the member assistance program	✓								
4.20 Post-Incident Analysis									
4.20.1 Develop procedures for post-incident analysis									
4.20.2 Written report									
4.20.3 Includes information from the incident safety officer	✓								
4.20.3.1 Includes the incident action plan and the incident safety officer's incident safety plan	✓								
4.20.4 Protective clothing and equipment, personnel accountability system, rehabilitation operations	✓								
4.20.5 NFPA 1561, emergency services incident management systems	✓								
Chapter 5 Training and Education									
5.1 General Requirements									
5.1.1 Safety and health training									
5.1.2 Training for duties and functions									
5.1.3 Training education programs for new members									

(NFPA 1500, 6 of 25)

FIGURE B.1 Continued

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
5.1.4 Restrict the use of new members									
5.1.5 Training on the risk management plan	✓								
5.1.6 Written procedures and guidelines									
5.1.7 Training for emergency medical services									
5.1.8 Operation, limitation, maintenance, and retirement criteria for personal protective equipment	✓								
5.1.9 Proficiency in skills and knowledge									
5.1.10 Training programs for all members engaged in emergency operations									
5.1.11 Incident management and accountability system used by the fire dept.	✓								
5.2 Training Curriculums and Requirements									
5.2.1 NFPA 1001, Fire Fighter I									
5.2.2 NFPA 1002, driver/operator									
5.2.3 NFPA 1003, airport fire fighter									
5.2.4 NFPA 1006, rescue technician									
5.2.5 NFPA 1021, fire officer									
5.2.6 NFPA 1051, wildland fire fighting									
5.2.7 NFPA 472, Hazardous materials responders, all members trained to at least first responder operations level									
5.2.8 NFPA 1581, fire dept. infectious disease control									
5.2.9 Adopt or develop training and education curriculums	✓								
5.2.10 NFPA 1403, live fire training									
5.2.11 Supervised training									
5.2.12 AHJ emergency medical services									
5.2.13 Care, use, inspection, maintenance, and limitations of the protective clothing and equipment	✓								

(NFPA 1500, 7 of 25)

FIGURE B.1 *Continued*

**NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET**

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
5.3 Training Frequency and Proficiency									
5.3.1 Training for all members as often as necessary									
5.3.2 Proficiency of members									
5.3.3 Monitor training progress									
5.3.4 Annual skills check									
5.3.5 Support minimum qualifications and certifications of members									
5.3.6 Members practice assigned skill sets on a regular basis but not less than annually	✓								
5.3.7 Training to members when written policies, practices, procedures, or guidelines are changed and/or updated	✓								
5.3.8 NFPA 1404, SCBA program	✓								
5.3.9 Wildland fire fighters trained at least annually in the proper deployment of fire shelter									
5.4 Special Operations Training									
5.4.1 Advanced training for special operations									
5.4.2 Train members for support to special operations									
5.4.3 NFPA 472, hazardous materials incidents									
5.4.4 NFPA 1670, operations and training for technical rescue incidents and NFPA 1006, rescue technician	✓								
Chapter 6 Fire Apparatus, Equipment, and Driver/Operators									
6.1 Fire Department Apparatus									
6.1.1 Safety and health concerns									
6.1.1.1 Restraint devices	✓								
6.1.2 NFPA 1901, automotive fire apparatus									
6.1.3 NFPA 1906, wildland fire apparatus									
6.1.4 NFPA 1925, marine fire-fighting vessels	✓								

(NFPA 1500, 8 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
6.1.5 Secure tools, equipment, and SCBA									
6.1.6 NFPA 1912, apparatus refurbishing	✓								
6.1.7 Aircraft provides 4-point restraints for pilots and passengers	✓								
6.1.8 Members performing hoist rescue in aircraft secured by a safety harness	✓								
6.2 Drivers/Operators of Fire Department Apparatus									
6.2.1 Successful completion of approved driver training									
6.2.2 Valid driver's licenses									
6.2.2.1 Traffic laws									
6.2.3 Rules and regulations for private vehicles for emergency response	✓								
6.2.3.1 Rules and regulations for fire department vehicles									
6.2.4 Drivers are responsible									
6.2.4.1 Officers also assume responsibility									
6.2.5 All persons secured									
6.2.6 Drivers obey all traffic laws									
6.2.7 SOPs for non-emergency and emergency response									
6.2.7.1 Safe arrival									
6.2.8 Emergency response, drivers bring vehicle to a complete stop									
6.2.9 Proceed only when safe									
6.2.10 Stop at unguarded railroad grade crossings									
6.2.11 Use caution at guarded railroad grade crossing									
6.2.12 SOPs – engine, transmission and driveline retarders									
6.2.13 SOPs – manual brake limiting valves									
6.3 Riding in Fire Apparatus									
6.3.1 Tail steps and standing prohibited									
6.3.2 Seat belts shall not be released while the vehicle is in motion									

(NFPA 1500, 9 of 25)

FIGURE B.1 Continued

**NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET**

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
6.3.3 Secured to vehicle while performing emergency medical care									
6.3.3.1 In approved riding positions while the vehicle is in motion	✓								
6.3.4 Hose loading operations									
6.3.5 Tiller training									
6.3.6 Helmets for nonenclosed areas									
6.3.7 Eye protection for nonenclosed areas									
6.3.8 Alternative transportation									
6.4 Inspection, Maintenance, and Repair of Fire Apparatus									
6.4.1 At least weekly or within 24 hours after any use									
6.4.2 Preventive maintenance program									
6.4.3 NFPA 1915, fire apparatus preventive maintenance	✓								
6.4.4 Establish list of defects to declare vehicle unsafe									
6.4.4.1 Remove from service									
6.4.5 NFPA 1071, emergency vehicle technician	✓								
6.4.6 NFPA 1911, pumper service tests									
6.4.7 NFPA 1914, aerial ladders and elevating platforms testing									
6.4.8 NFPA 1581, fire dept. infection control									
6.5 Tools and Equipment									
6.5.1 Safety and health are primary concerns									
6.5.2 Hearing conservation									
6.5.3 NFPA 1931, fire dept. ground ladders									
6.5.4 NFPA 1961, fire hose									
6.5.5 NFPA 1964, spray nozzle									
6.5.6 At least weekly and within 24 hours after any use									
6.5.7 Records maintained for the equipment									

(NFPA 1500, 10 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance	Compliance Date Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
6.5.8 Tested at least annually									
6.5.9 Remove from service									
6.5.10 NFPA 1581, fire dept. infection control									
6.5.11 NFPA 1932, fire dept. ground ladders									
6.5.12 NFPA 1962, fire hose									
6.5.13 NFPA 10, portable fire extinguishers									
6.5.14 NFPA 1936, powered rescue tools									
Chapter 7 Protective Clothing and Protective Equipment									
7.1 General									
7.1.1 Fire dept. provides PPE									
7.1.2 Use of PPE									
7.1.3 NFPA 1851, selection care and maintenance	✓								
7.1.4 Proper cleaning	✓								
7.1.5 NFPA 1975, work uniforms									
7.1.6 Avoid wearing any clothing that is considered unsafe									
7.1.7 Laundry service for contaminated clothing									
7.1.7.1 Proper cleaning procedures									
7.1.7.2 Washing machines for protective or work clothing									
7.2 Protective Clothing for Structural Fire Fighting									
7.2.1 NFPA 1971, protective clothing									
7.2.2 Minimum 5.08-cm (2-in.) overlap of all protective clothing layers	✓								
7.2.2.1 Garments measured without SCBA	✓								
7.2.3 Overlap not required on continuous composite protection coveralls	✓								
7.2.4 Protective resilient wristlets provided									

(NFPA 1500, 11 of 25)

FIGURE B.1 Continued

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.2.5 Maintenance of clothing and equipment									
7.2.5.1 Establish a maintenance and inspection program	✓								
7.2.5.2 Assign responsibilities for inspection and maintenance	✓								
7.2.6 Require all members to wear all the protective ensemble									
7.3 Protective Clothing for Proximity Fire-Fighting Operations									
7.3.1 Proximity fire fighting shall be provided with and shall use proximity protective equipment									
7.3.1.1 NFPA 1976, proximity protective clothing	✓								
7.3.2 Minimum 5.08-cm (2-in.) overlap of all proximity protective clothing layers									
7.3.2.1 Garments measured without SCBA	✓								
7.3.3 Overlap not required on continuous full thermal and radiant heat protective coveralls									
7.3.4 Failure of the SCBA									
7.3.4.1 Radiant reflective criteria over SCBA, worn over the outside of proximity protective clothing									
7.4 Protective Clothing for Emergency Medical Operations									
7.4.1 NFPA 1999, emergency medical protective clothing									
7.4.2 Members shall not initiate patient care before the emergency medical gloves are in place	✓								
7.4.3 Fire fighters likely to be exposed to airborne infectious disease provided with NIOSH-approved Type C respirators	✓								
7.4.4 Members shall use emergency medical body and face protection									
7.4.5 NFPA 1581, infection control program protective clothing cleaning									

(NFPA 1500, 12 of 25)

FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.5 Chemical-Protective Clothing for Hazardous Material Emergency Operations									
7.5.1 Vapor-Protective Garments									
7.5.1.1 Members provided with and shall use vapor-protective suits									
7.5.1.2 NFPA 1991, vapor-protective suits	✓								
7.5.1.3 Garment appropriate for the specific hazardous materials emergency									
7.5.1.4 SCBA during hazardous chemical emergency									
7.5.1.4.1 Additional outside NIOSH-approved air supplies permitted	✓								
7.5.1.5 Use only in vapor hazard atmospheres	✓								
7.5.1.6 Use for protection from liquid splash or solid chemicals and particulate protection permitted									
7.5.2 Liquid Splash-Protective Garments									
7.5.2.1 Members provided with and shall use liquid splash-protective suits									
7.5.2.2 NFPA 1992, liquid splash-protective suits	✓								
7.5.2.3 Garment is appropriate for the specific hazardous chemical emergency									
7.5.2.4 Respiratory protection	✓								
7.5.2.4.1 Additional outside NIOSH-approved air supplies permitted	✓								
7.5.2.5 Use for protection from chemicals in vapor form or from unknown liquid chemicals or chemical mixtures prohibited									
7.5.2.5.1 Only vapor-protective suits specified shall be considered for use	✓								
7.5.2.6 Not for carcinogen									
7.5.2.7 Not for toxins									

(NFPA 1500, 13 of 25)

FIGURE B.1 Continued

NFPA 1500 FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.5.2.8 Use only for liquid splash protection									
7.5.2.9 Use for protection from solid chemicals and particulate permitted									
7.6 Inspection, Maintenance, and Disposal of Chemical-Protective Clothing									
7.6.1 Manufacturer's recommendations									
7.6.2 Dispose of contaminated garments									
7.6.2.1 State or federal regulations									
7.7 Protective Clothing and Equipment for Wildland Fire Fighting									
7.7.1 Operating guidelines									
7.7.2 NFPA 1977, protective clothing									
7.7.3 NFPA 1977, protective helmet									
7.7.4 NFPA 1977, protective gloves									
7.7.5 NFPA 1977, protective footwear									
7.7.6 Members provided with an approved fire shelter									
7.8 Respiratory Protection Program									
7.8.1 Respiratory protection program that addresses the selection, care, maintenance, and use	✓								
7.8.2 SOPs that are compliant with this standard	✓								
7.8.3 Members certified for equipment use at least annually	✓								
7.8.4 Reserve SCBA	✓								
7.8.5 Adequate reserve air supply	✓								
7.8.6 Ready-for-use	✓								
7.8.7 Provide and use NFPA 1981, open-circuit self-contained breathing apparatus	✓								
(1) Hazardous atmospheres	✓								
(2) Suspected hazardous	✓								
(3) Can become hazardous	✓								
7.8.8 Keep facepiece in place	✓								

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FIGURE B.1 *Continued*

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FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content		New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance	Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.9	Breathing Air										
7.9.1	Grade D air: ANSI/CGA G7.1	✓									
7.9.2	Certification and documentation for vendor-provided air	✓									
7.9.3	Fire dept. manufactures own—tested every 3 months	✓									
7.9.4	Fire dept. obtains own—tested every 3 months	✓									
7.9.5	Fire dept. at point of transfer from the storage cylinders—tested every 3 months	✓									
7.10	Respiratory Protection Equipment										
7.10.1	SCBA	✓									
7.10.1.1	NFPA 1981, open-circuit self-contained breathing apparatus, 1987 edition or later	✓									
7.10.1.2	Closed-circuit SCBA permitted	✓									
7.10.1.3	Closed-circuit SCBA NIOSH-certified rated service life of at least 2 hours and positive-pressure only	✓									
7.10.2	Supplied-Air Respirators	✓									
7.10.2.1	AHJ air respirator	✓									
7.10.2.2	Not used in IDLH atmospheres unless equipped with a NIOSH-certified escape air cylinder and a pressure-demand facepiece	✓									
7.10.2.3	Type C Pressure-Demand Class not used in IDLH atmospheres unless they meet manufacturer's specifications	✓									
7.10.3	Full Facepiece Air-Purifying Respirators	✓									
7.10.3.1	Only used in non-IDLH atmospheres for contaminants NIOSH certifies	✓									
7.10.3.2	AHJ provide NIOSH-certified respirators	✓									
7.10.3.3	AHJ establish a policy for service life	✓									

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.11 Fit Testing									
7.11.1 Facepiece seal qualitative or quantitative fit test annually	✓								
7.11.2 Only members with a properly fitting facepiece permitted function in a hazardous atmosphere	✓								
7.11.3 Respirators quantitative or qualitative fit testing	✓								
7.11.4 AHJ-required test protocols	✓								
7.11.5 Records of facepiece fitting tests	✓								
7.11.6 Protection factor at least 500 for negative-pressure facepieces	✓								
7.11.7 Facepiece face seal	✓								
7.11.8 Beard and facial hair	✓								
7.11.8.1 Restrictions apply regardless of test	✓								
7.11.9 Spectacles	✓								
7.11.10 Spectacle strap or temple bars prohibited									
7.11.11 Contact lens permitted									
7.11.12 Head covering breaking seal prohibited									
7.11.13 SCBA facepiece/head harness worn under protective hood	✓								
7.11.14 SCBA facepiece/head harness worn under hazardous chemical protective clothing helmet	✓								
7.11.15 Helmets shall not interfere with the respiratory protection facepiece-to-face seal									
7.12 SCBA Cylinders									
7.12.2 Hydrostatic test cylinders	✓								
7.12.3 In-service SCBA cylinders	✓								
7.12.4 In-service SCBA cylinders inspected weekly, monthly, and prior to filling	✓								
7.12.5 Filling SCBA cylinders personnel shall be protected	✓								
7.12.6 Rapid filling	✓								
7.12.7 Risk assessment	✓								

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance	Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.12.8 Rapid refilling SCBA	✓									
7.12.9 Emergency situation air transfer permitted	✓									
7.12.10 Transferring manufacturer's instructions	✓									
7.13 Personal Alert Safety System (PASS)										
7.13.1 NFPA 1982, personal alert safety systems (PASS)										
7.13.2 Members provided with and use PASS device	✓									
7.13.3 Tested at least weekly and prior to use										
7.14 Life Safety Rope and System Components										
7.14.1 NFPA 1983, life safety rope and system components										
7.14.2 Life safety rope										
7.14.2.1 Remove from service										
7.14.3 Life safety rope inspection before reuse:										
(1) No damage from fires, chemicals, or abrasives										
(2) No impact load										
(3) No materials known to deteriorate ropes										
7.14.3.1 Destroyed after emergency use if failed 7.14.3										
7.14.3.2 Removed from service										
7.14.4 Other use removed from service and destroyed										
7.14.5 Inspection by qualified inspector										
7.14.6 Records for each life safety rope used at incident/training										
7.15 Face and Eye Protection										
7.15.1 Eye protection appropriate for hazard										
7.15.1.1 ANSI Z87.1, practice for occupational and educational eye and face protection										

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
7.15.2 SCBA facepieces—primary face and eye protection									
7.15.2.1 Facepiece-mounted regulator	✓								
7.15.3 Helmet face shield partial face protection	✓								
7.16 Hearing Protection									
7.16.1 Use in excess of 90 dBA apparatus									
7.16.2 Use in excess of 90 dBA tools and equipment									
7.16.3 Hearing conservation program									
7.17 New and Existing Protective Clothing and Protective Equipment									
7.17.1 New PPE meets current standards									
7.17.2 Existing PPE shall have met standards when manufactured									
7.17.3 PPE manufactured prior to the 1986 edition of NFPA 1971 shall be removed from service	✓								
Chapter 8 Emergency Operations									
8.1 Incident Management									
8.1.1 Prevent accidents and injuries									
8.1.2 NFPA 1561, incident management system in writing	✓								
8.1.3 Used at all emergency incidents									
8.1.4 IMS applied to drills, exercises for training									
8.1.5 IC incident responsible for safety									
8.1.6 Incident safety officer									
8.1.7 Span of control									
8.1.8 IC incident responsibility									
8.1.9 NFPA 1561, fire dispatch and fireground communication and NFPA 1221, emergency communication systems	✓								
8.1.10 SOPs use of clear text radio messages	✓								
8.1.10.1 SOPs use “emergency traffic” to clear radio traffic	✓								
8.1.10.2 “Emergency traffic” permitted	✓								

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
8.1.11 Identify emergency	✓								
8.1.11.1 All clear	✓								
8.1.12 Incident clock	✓								
8.1.12.1 Dispatch notify IC	✓								
8.1.12.2 IC cancel the incident clock	✓								
8.2 Risk Management During Emergency Operations									
8.2.1 Risk management in incident command									
8.2.2 Risk management principles									
8.2.3 Elevating members' risks									
8.2.3.1 Limit to defensive operations	✓								
8.2.4 Risk management principles define limits of acceptable/unacceptable position/functions									
8.2.5 Qualified personnel—safety of operations									
8.2.6 IC to ensure body armor available for civil disturbances	✓								
8.2.7 Incidents involving risk of physical violence	✓								
8.2.8 Nerve agents	✓								
8.3 Personnel Accountability During Emergency Operations									
8.3.1 Written SOP—NFPA 1561, incident management system									
8.3.2 Local conditions and characteristics									
8.3.3 Members actively participate									
8.3.4 IC maintain awareness									
8.3.5 Sector officers responsible	✓								
8.3.6 Company officers responsible	✓								
8.3.7 Fire fighters remain with company	✓								
8.3.8 Fire fighters responsible	✓								
8.3.9 Used all incidents	✓								
8.3.10 Accountability system effective	✓								
8.3.11 Additional accountability officers	✓								
8.3.12 Tracking and accountability of assigned companies	✓								

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
8.4 Members Operating at Emergency Incidents									
8.4.1 The fire department shall provide an adequate number of personnel to safely conduct emergency scene operations									
8.4.1.1 Safe operations									
8.4.2 Established safety criteria									
8.4.3 Direct supervision									
8.4.3.1 The requirement shall not reduce the training requirements	✓								
8.4.4 Teams of two or more									
8.4.5 Crew members operating shall be in communication									
8.4.6 Crew members shall be in proximity to each other									
8.4.7 Initial state—one team assigned-standby person									
8.4.8 Standby members responsible									
8.4.9 Standby members remain in communication									
8.4.10 Initial stage									
8.4.11 Standby member permitted to perform other duties outside of the hazard area									
8.4.12 Standby member permitted activities									
8.4.12.1 Standby member not permitted									
8.4.13 Full protective clothing, protective equipment, and SCBA									
8.4.13.1 Full protective clothing, protective equipment accessible									
8.4.14 Standby members shall don full protective clothing, protective equipment, and SCBA									
8.4.15 Single team assignment, one rapid intervention crew									
8.4.16 Second team assignment, one rapid intervention crew									

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
8.4.17 In imminent life-threatening situation, action to prevent loss of life permitted with less than four personnel									
8.4.17.1 No exception shall be permitted when there is no possibility to save lives									
8.4.17.2 Actions taken investigated									
8.4.18 Aircraft rescue fire fighting, IDLH area within 23 m (75 ft) of aircraft	✓								
8.4.19 IDLH adjusts to meet operational needs	✓								
8.4.20 Inside IDLH area	✓								
8.4.21 Highest available level of emergency medical care for special operations—basic life support minimum									
8.4.22 NFPA 473, EMS for hazardous materials operations									
8.4.23 Basic life support for other emergency operations									
8.4.24 Secured to aerial device									
8.4.25 Fluorescent retroreflective material—MV traffic									
8.4.26 Apparatus utilized as a shield									
8.4.27 Warning device for oncoming traffic	✓								
8.4.28 SCBA for arson investigators in IDLH atmosphere	✓								
8.4.29 Water rescue members wear flotation devices	✓								
8.5 Rapid Intervention for Rescue of Members									
8.5.1 Rescue of members									
8.5.2 Rapid intervention crew									
8.5.2.1 Fully equipped—PPE, SCBA, rescue equipment									
8.5.3 Composure and structure									
8.5.4 IC evaluate risks to crews									
8.5.5 Crew(s) status—early stages	✓								
8.5.6 Crew(s) status—expanded incident	✓								
8.5.7 Special operations rapid intervention crew(s)									

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FIGURE B.1 Continued

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
8.6 Rehabilitation During Emergency Operations									
8.6.1 SOP for rehabilitation of members									
8.6.2 IC provide rest and rehab									
8.6.3 On-scene rehabilitation to include basic life support									
8.6.4 Each member responsible to communicate rest and rehab needs	✓								
8.6.5 Each wildland fire fighter provided with 2 L (2 qt) of water									
8.6.5.1 Replenishment of water supplies									
8.7 Civil Unrest/Terrorism									
8.7.1 Fire dept. not involved in crowd control	✓								
8.7.2 SOPs—civil disturbance	✓								
8.7.2.1 Situations of disturbances	✓								
8.7.3 Interagency agreement	✓								
8.7.4 Indication of life and death situation requiring law enforcement intervention	✓								
8.7.5 Coordinate with law enforcement IC	✓								
8.7.6 Fire dept. IC identify and react to violent situations	✓								
8.7.7 Fire dept. IC communicate with law enforcement IC	✓								
8.7.8 Stage resources in a safe area	✓								
8.7.9 Secure law enforcement when violence occurs	✓								
8.7.10 Fire dept. support to SWAT	✓								
8.7.11 Special SOPs for members	✓								
8.7.11.1 Special operations									
8.8 Post-Incident Analysis									
8.8.1 SOPs—post-incident critique									
8.8.2 Critique involves incident safety officer	✓								
8.8.3 Basic review on the safety and health of members									
8.8.4 Identify needed action	✓								
8.8.5 Standard action plan	✓								
8.8.5.1 Includes change needed and the responsibilities	✓								

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FIGURE B.1 *Continued*

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FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
Chapter 9 Facility Safety									
9.1 Safety Standards									
9.1.1 Comply with codes									
9.1.2 NFPA 1581, infection control									
9.1.3 All facilities—smoke detectors									
9.1.3.1 Interconnected detectors									
9.1.4 All facilities—carbon monoxide detectors									
9.1.5 New/existing facilities comply with <i>Life Safety Code</i>									
9.1.6 Prevent exhaust exposure	✓								
9.1.7 Smokefree facilities									
9.2 Inspections									
9.2.1 Annual code inspection									
9.2.2 Inspections documented and recorded									
9.2.3 Monthly safety inspection									
9.3 Maintenance and Repairs. Established system									
Chapter 10 Medical and Physical Requirements									
10.1 Medical Requirements									
10.1.1 Medical evaluation and certification before becoming a member									
10.1.2 Risks and functions associated duties	✓								
10.1.3 NFPA 1582, medical requirements	✓								
10.1.4 Aircraft pilots comply with FAA regulations	✓								
10.1.5 Under the influence of alcohol or drugs	✓								
10.2 Physical Performance Requirements									
10.2.1 Fire dept. develop requirements									
10.2.2 Certification for use of respiratory protection conducted annually									
10.2.3 Candidated certified by fire dept.									
10.2.4 Current fire fighters annually certified by fire dept.									

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FIGURE B.1 *Continued*

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
10.2.5 Members not be permitted in emergency operations									
10.2.6 Physical performance rehabilitation	✓								
10.3 Health and Fitness									
10.3.1 NFPA 1583, fitness programs	✓								
10.3.2 Fitness levels determined individual's assigned functions									
10.3.3 Health and fitness coordinator administer the program									
10.3.4 Health and fitness coordinator act as liaison									
10.4 Confidential Health Data Base									
10.4.1 Confidential permanent health file									
10.4.2 File records the results evaluations									
10.4.3 Individual/group records									
10.4.4 Record autopsy results	✓								
10.5 Infection Control									
10.5.1 Fire dept. limit or prevent member's exposure									
10.5.2 NFPA 1581, infection control									
10.6 Fire Department Physician									
10.6.1 Fire dept. physician									
10.6.2 Provide medical guidance									
10.6.3 Licensed doctor									
10.6.4 Availability									
10.6.4.1 Availability permitted access to a number physicians	✓								
10.6.5 Health and safety officer and health fitness coordinator liaison with physician	✓								
Chapter 11 Member Assistance and Wellness Programs									
11.1 Member assistance program									
11.1.1 Provide member assistance program									
11.1.2 Member and family assistance program									

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FIGURE B.1 *Continued*

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FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM WORKSHEET

Standard Content	New in 2002 Ed.	Compliance	Partial Compliance	Compliance with Admin. Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated \$\$	Targeted Compliance Date	Remarks or Modifications
11.1.3 Written policy									
11.1.4 Written rules for records									
11.1.4.1 Rules for conditions of records released	✓								
11.1.5 Records maintained not part of member's personnel file	✓								
11.2 Wellness Program									
11.2.1 Wellness program									
11.2.2 Health promotion activities									
11.2.2.1 Provide a smoking/tobacco use cessation program	✓								
Chapter 12 Critical Incident Stress Program									
12.1 General									
12.1.1 Physician to provide guidance									
12.1.2 Written policy—program to relieve stress									
12.1.3 Criteria for implementation									
12.1.4 Program available to members for situations involving psychological and physical	✓								

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FIGURE B.1 *Continued*