1500

Standard on Fire Department Occupational Safety and Health Program

National Fire Protection Association

1992 Edition

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Policy Adopted by NFPA Board of Directors on December 3, 1982

The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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Standard on

Fire Department Occupational Safety and Health Program

1992 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 Health and acted on by the National Fire Protection Association, Inc. at its Annual Meeting held May 18-21, 1992 in New Orleans, LA. It was issued by the Standards Council on July 17, 1992, with an effective date of August 14, 1992, and supersedes all previous editions.

The 1992 edition of this document has been approved by the American National Standards Institute.

Origin and Development of NFPA 1500

Fire fighting has been recognized as the most hazardous occupation in North America in terms of occupational death and injury statistics. Each year in recent history, over 100 line-of-duty deaths have been recorded among career and volunteer fire fighters in the United States alone. The statistics compiled annually by NFPA on fire service deaths and injuries are more than sufficient evidence to demonstrate the need for increased efforts to reduce this toll.

In addition to the direct line-of-duty deaths, there is growing concern with the number of fire fighters who suffer disabling injuries or develop occupational diseases and conditions that often have debilitating or fatal consequences and force them to discontinue their fire service activities. The link between respiratory and heart diseases and fire service careers has been well documented and established. There is growing evidence of a similar link to cancer and related diseases, derived from occupational exposure to carcinogens, toxic products of combustion, and hazardous materials.

The fire service not only is involved in fire suppression activities, but also has an increasing role in the delivery of emergency medical and rescue services and response to incidents involving hazardous materials. The fire fighter may be exposed to a wide range of dangers arising from these activities that present an even more complex set of occupational safety and health concerns. There is a growing concern, as well, with the aspects of fire department activities and functions that are directly related to stress and the emotional and psychological consequences of providing emergency services.

Prior to this document, there was no consensus standard for an occupational safety and health program for the fire service. Fire service organizations are increasingly subject to regulations that were developed for general industry and do not provide for many of the specific needs and concerns of an organization involved in the delivery of emergency services. Depending on governmental authority and legislative actions, a fire service organization may or may not be subject to mandatory occupational safety and health requirements.

The intent of this standard is to provide the framework for a safety and health program for a fire department or any type of organization providing similar services.

The use of the term "member" throughout to refer to an individual who engages in any of the activities subject to the standard, and the generic use of the term "fire department" to refer to any organization engaging in activities of a similar nature is intended to support the applicability of this standard to career, volunteer, mixed career and volunteer, part-time, private, governmental, military, and public sector organizations of any type that engage in the activities normally associated with a fire department. Certain provisions would apply only to those members who may be engaged in specified activities, but the overall applicability of the standard would encompass anyone who operates under the auspices of the organization.

This standard is meant to be appropriate for voluntary compliance, as a state-of-the-art document, whether or not it is adopted as a mandatory requirement by an authority having regulatory jurisdiction over a particular organization. It was the intent of the Technical Committee to produce a document that would meet or exceed any existing mandatory or voluntary compliance standards addressing any aspect of fire fighter safety and health.

The standard is intended to be an umbrella document, establishing the basic framework for a comprehensive safety and health program, and providing for its implementation and management. A series of companion documents, each providing more specific details on various aspects and components of fire service occupational safety and health, are planned to further support this umbrella document. Documents already available in this series are NFPA 1521, NFPA 1561, NFPA 1581, and NFPA 1582.

The Technical Committee on Fire Service Occupational Safety and Health began work on this document in November, 1983 and had several meetings in different parts of the country. The first edition was completed in April, 1986 for the 1987 Annual Meeting cycle, and was voted on by the Association on 20 May 1987 at the Cincinnati, Ohio Annual Meeting.

Work on the second edition began in 1990 and was completed in January, 1992. It was presented to the Association membership on 20 May 1992 at the New Orleans, Louisiana Annual Meeting.

Technical Committee on Fire Service Occupational Safety and Health

Alan V. Brunacini, *Chairman*
City of Phoenix Fire Dept., AZ

Don R. Forrest, *Vice Chairman*
United Firefighters of Los Angeles City, CA

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James M. Connolly, M&M Protection Consultants, IL
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Arthur C. Smith, New York Board of Fire Underwriters, NY
Rep. AISG
Philip C. Stittleburg, Jenkins & Stittleburg, WI
Rep. NVFC
Harry K. Tompkins, Pierce Mfg. Inc., WI
Robert D. Tutterow, Charlotte Fire Dept., NC
Michael V. Vance, MD, Southwest Toxicology Services, Inc., AZ

Alternates

Robert K. Andrews, M&M Protection Consultants, MI
(Alternate to J. M. Connolly)
Angelo M. Catalano, North Bellmore Fire District, NY
(Alternate to E. Carter)
Iby George, Virginia Beach Fire Dept., VA
(Alternate to M. E. Loflin)
Thomas Healy, City of Phoenix Fire Dept., AZ
(Alternate to A. V. Brunacini)
Timothy V. Manning, Los Angeles City Fire Dept., CA
(Alternate to R. D. Neamy)
Gordon M. Sachs, U.S. Fire Administration, MD
(Alternate to R. T. McCarthy)
Bradley J. Schmidt, Underwriters Laboratories Inc., IL
(Alternate to B. F. Cole)

Bruce W. Teele, NFPA Staff Liaison

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

Information on referenced publications can be found in Chapter 10 and Appendix B.

Chapter 1 Administration

1-1 Scope.

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

1-1.2 These requirements are applicable to organizations providing rescue, fire suppression, and other emergency services, including public, governmental, military, private, and industrial fire departments.

1-1.3 This standard does not apply to industrial fire brigades that also may be known as emergency brigades, emergency response teams, fire teams, plant emergency organizations, or mine emergency response teams.

1-2 Purpose.

1-2.1 The purpose of this standard is to specify the minimum requirements for an occupational safety and health program for a fire department, and safety procedures for those members involved in rescue, fire suppression, and related activities.

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

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

1-3 Implementation.

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

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

1-4 Equivalency.

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

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

1-5 Definitions.

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.

Approved.* Acceptable to the "authority having jurisdiction."

Authority Having Jurisdiction.* The "authority having jurisdiction" is the organization, office, or individual responsible for "approving" equipment, an installation, or a procedure.

Basic Life Support. Emergency medical treatment at a level authorized to be performed by emergency medical technicians as defined by the medical authority having jurisdiction.

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

Company. A group of members:

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

(b) Trained and equipped to perform assigned tasks,

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

(d) Usually operating with one piece of fire apparatus (pumper, ladder truck, elevating platform, rescue, squad, ambulance), and

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

Confined Space. An area large enough and so configured that a member can bodily enter and perform assigned work. An area with limited or restricted means for entry

and exit. An area that is not designed for continuous human occupancy. Additionally, a confined space is further defined as having one or more of the following characteristics:

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

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

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

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

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

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

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

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

Emergency Incident. A specific emergency operation.

Emergency Medical Care. The provision of treatment to patients, including first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other medical procedures that occur prior to arrival at a hospital or other health care facility.

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.

Facility. See "Fire Department Facility."

Fire Apparatus. A fire department emergency vehicle used for rescue, fire suppression, or other specialized functions.

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

Fire Department. An organization providing rescue, fire suppression, and related activities. The term "fire department" shall include any public, governmental, private, industrial, or military organization engaging in this type of activity.

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

Fire Department Member. See "Member."

Fire Department Vehicles. Any vehicle operated by a fire department, including fire apparatus.

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

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

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

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

Hazardous Atmosphere. Any atmosphere that is oxygen deficient or that contains a toxic or disease-producing contaminant. A hazardous atmosphere may or may not be immediately dangerous to life and health.

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

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

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

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

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

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

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

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

Medical Evaluation. The analysis of information for the purpose of making a determination of medical certification. Medical evaluation may or may not include a medical examination.

Member. A person involved in performing the duties and responsibilities of a fire department, under the auspices of the organization. A fire department member may be a full-time or part-time employee, a paid or unpaid volunteer, may occupy any position or rank within the fire department, and may or may not engage in emergency operations.

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

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

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

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

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

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

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

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

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

Proximity Fire Fighting. The activities of rescue, fire suppression, and property conservation at situations involving high levels of radiant heat including, but not limited to, aircraft fires, bulk flammable liquid fires, and bulk flammable gas fires.

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

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

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

Rescue Incident. An emergency incident that primarily involves the rescue of persons subject to physical danger and that may or may not include the provision of emergency medical care.

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

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."*)

Sectors. A management subunit of an incident management system. Sectors are also known as divisions or groups.

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

Shall. Indicates a mandatory requirement.

Should. This term, as used in the appendix, indicates a recommendation or that which is advised but not required.

Special Operations. Those emergency incidents to which the fire department responds that require specific and advanced training and specialized tools and equipment. Special operations include water rescue, hazardous

materials, confined space entry, high-angle rescue, and other operations requiring specialized training.

Standard Operating Procedure. An organizational directive that establishes a standard course of action.

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

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."*)

Chapter 2 Organization

2-1 Fire Department Organizational Statement.

2-1.1* The fire department shall prepare and maintain a written statement or policy that establishes the existence of the fire department; the services that the fire department is required to provide; the basic organizational structure; the expected number of fire department members; the type of functions that fire department members are expected to perform; and the type, amount, and frequency of training to be provided to fire department members.

2-1.2* The fire department organizational statement shall set forth the operational response criteria for the various types of emergency incidents to which the fire department is required to respond. This written criteria for each type of emergency incident shall contain and identify the following:

(a) The types of standard fire fighting functions or evolutions, such as incident management, providing a water supply, hose deployment, forcible entry, search and rescue, ladder placement, ventilation, salvage, and overhaul required to safely complete the operation, specifying a determination of functions or evolutions that need to be performed simultaneously;

(b) The minimum number of members required to safely perform each identified fire fighting function or evolution, based on written standard operating procedures;

(c) The number and types of apparatus and members required for the initial response to each type of emergency incident, as well as the total complement of apparatus and members to be dispatched for each type of incident that defines the total response for all incidents up to the level of a major incident for that jurisdiction;

(d) A description of a typical emergency operation, including alarm time, response time, arrival sequence, initiation of basic function and evolution assignments, and standard operating procedures, as these factors relate to fire fighter safety and health.

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

2-2 Risk Management Plan.

2-2.1 The fire department shall adopt an official written risk management plan that addresses all fire department policies and procedures.

2-2.2 The risk management plan shall cover administration, facilities, training, vehicle operations, protective clothing and equipment, operations at emergency incidents, operations at nonemergency incidents, and other related activities.

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

(a) Risk Identification: Potential problems;

(b) Risk Evaluation: Likelihood of occurrence of a given problem and severity of its consequences;

(c) Risk Control Techniques: Solutions for elimination or mitigation of potential problems; implementation of best solution;

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

2-3 Policy.

2-3.1* The fire department shall adopt an official written departmental occupational safety and health policy that identifies specific goals and objectives for the prevention and elimination of accidents and occupational injuries, illnesses, and fatalities. It shall be the policy of the fire department to seek and to provide an occupational safety and health program for its members that complies with this standard.

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

2-4 Roles and Responsibilities.

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

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

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

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

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

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

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

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

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

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

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

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

2-5 Fire Department Safety Officer.

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

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

2-5.3 The fire chief shall assign or make available in accordance with 2-1.2 of NFPA, 1521, *Standard for Fire Department Safety Officer*, such additional assistant safety officers and resources as may be required to fulfill the requirements of the occupational safety and health program.

2-6 Occupational Safety and Health Committee.

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

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

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

2-7 Records.

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

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

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

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

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

Chapter 3 Training and Education

3-1 General Requirements.

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

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

3-1.3 The fire department shall provide training and education for all fire department members commensurate with the duties and functions that they are expected to perform.

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

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

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

3-2 Training Frequency.

3-2.1 Training shall be provided for all members as often as necessary to meet the applicable requirements of this chapter, but not less than twice each year.

3-2.2 Whenever changes in procedures or technology are introduced, or new hazards are identified in the work environment, appropriate training and education shall be provided for all affected members.

3-3 Basic Training and Education Requirements.

3-3.1* Members shall be provided with training and education appropriate for their duties and responsibilities before being permitted to engage in emergency operations.

3-3.2* All members who engage in structural fire fighting shall at least meet the requirements of Fire Fighter I as specified in NFPA 1001, *Standard for Fire Fighter Professional Qualifications.*

3-3.3 All fire apparatus drivers/operators shall meet the applicable requirements specified in NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications.*

3-3.4 All members who are primarily assigned to aircraft rescue and fire fighting shall meet the requirements specified in NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications.*

3-3.5 All fire officers shall at least meet the requirements for Fire Officer I as specified in NFPA 1021, *Standard for Fire Officer Professional Qualifications.*

3-3.6 All members who are likely to be involved in emergency operations shall be trained in the incident management system used by the fire department as specified in 6-1.2 of this standard.

3-3.7 The training program for all members engaged in emergency operations shall include procedures for the safe exit of members from the dangerous area in the event of equipment failure or sudden changes in conditions.

3-4 Training for Fire Fighting.

3-4.1 All members who engage in emergency operations shall be trained commensurate with their duties and responsibilities. Training shall be as frequent as necessary to ensure that members can perform their assigned duties in a safe and competent manner but shall not be less frequent than specified in this section. Minimum training shall be as specified in Sections 3-1, 3-2, and 3-3 of this chapter, as applicable, and as specified in this section.

3-4.2 Where the fire department is responsible for structural fire fighting operations, the fire department shall provide structural fire fighting training at least monthly.

3-4.2.1 Members who engage in structural fire fighting shall attend a minimum of 10 monthly structural fire fighting training sessions. Members shall participate in at least 24 hours of structural fire fighting training annually.

3-4.2.2 Any training involving live fire fighting exercises shall be conducted in compliance with NFPA 1403, *Standard on Live Fire Training Evolutions in Structures.*

3-4.3 Where the fire department is responsible for nonstructural fire fighting operations, including but not limited to wildland or other exterior fires, the fire department shall provide training in such fire fighting operations.

3-4.3.1 Members who are primarily assigned to nonstructural fire fighting operations shall attend nonstructural fire fighting training sessions consisting of at least 24 hours of training annually.

3-4.3.2 Members who occasionally are assigned to nonstructural fire fighting operations shall attend nonstructural fire fighting training sessions consisting of at least 9 hours annually.

3-4.3.3 These training sessions shall be in addition to the training required in 3-4.2 of this section for members who are also assigned to structural fire fighting duties.

3-4.4 Training in emergency operations shall be based on standard operating procedures. These procedures shall be maintained in written form and shall address all anticipated emergency scene operations.

3-4.5 Training exercises shall be conducted in accordance with the established standard operating procedures and shall be supervised by qualified instructors.

3-4.6* Smoke generating devices that produce a hazardous atmosphere shall not be used in training exercises.

3-5 Special Operations.

3-5.1 Specific and advanced training and education shall be provided to members who engage in special operations.

3-5.2 The fire department shall develop written procedures that describe the actions to be taken in situations involving special operations and shall include these procedures in the advanced training and education program.

3-5.3 All members who are likely to be involved in hazardous materials response shall be trained to the appropriate level in accordance with NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents.*

3-5.4* All members who respond to incidents involving the release or potential release of hazardous substances shall meet at least the requirements for First Responder Operations Level as specified in NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents.*

Chapter 4 Vehicles and Equipment

4-1 Fire Department Vehicles.

4-1.1 The fire department shall consider safety and health as primary concerns in the specification, design, construction, acquisition, operation, maintenance, inspection, and repair of all fire department vehicles.

4-1.2 All new pumper fire apparatus shall be specified and ordered to meet the applicable requirements of NFPA 1901, *Standard for Pumper Fire Apparatus*.

4-1.3 All new initial attack fire apparatus shall be specified and ordered to meet the applicable requirements of NFPA 1902, *Standard for Initial Attack Fire Apparatus*.

4-1.4 All new mobile water supply fire apparatus shall be specified and ordered to meet the applicable requirements of NFPA 1903, *Standard for Mobile Water Supply Fire Apparatus*.

4-1.5 All new aerial fire apparatus shall be specified and ordered to meet the applicable requirements of NFPA 1904, *Standard for Aerial Ladder and Elevating Platform Fire Apparatus*.

4-1.6 Where tools, equipment, or SCBA are carried within enclosed seating areas of fire department vehicles, such items shall be secured by either a positive mechanical means of holding the item in its stowed position or in a compartment with a positive latching door. The means of holding the item in place or the compartment shall be designed to minimize injury to persons in the enclosed area of the vehicle caused by loose equipment during travel and in the event of an accident, a rapid deceleration, or a rapid acceleration.

4-2 Drivers/Operators of Fire Department Vehicles.

4-2.1 Fire department vehicles shall be operated only by members who have successfully completed an approved driver training program or by student drivers who are under the supervision of a qualified driver. Driver/operators of fire apparatus shall meet the requirements specified in 3-3.3 of this standard.

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

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

4-2.4 Drivers shall not move fire department vehicles until all persons on the vehicle are seated and secured with seat belts or in approved riding positions, other than as specifically allowed in 4-3.1 of this chapter.

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

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

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

(a) When directed by a law enforcement officer

(b) Red traffic lights

(c) Stop signs

(d) Negative right-of-way intersections

(e) Blind intersections

(f) When the driver cannot account for all lanes of traffic in an intersection

(g) When other intersection hazards are present

(h) When encountering a stopped school bus with flashing warning lights.

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

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

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

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

4-3 Persons Riding on Fire Apparatus.

4-3.1* All persons riding on fire apparatus shall be seated in approved riding positions and shall be secured to the vehicle by seat belts at any time the vehicle is in motion other than as allowed in 4-3.1.1, 4-3.1.2, and 4-3.1.3 of this section. Riding on tailsteps, sidesteps, running boards, or in any other exposed position shall be specifically prohibited. Standing while riding shall be specifically prohibited.

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

4-3.1.2 Hose loading operations shall be permitted to be performed on moving fire apparatus only when all of the following conditions are complied with:

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

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

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

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

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

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

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

4-3.1.3 Tiller training, where both the instructor and the trainee are at the tiller position, shall be permitted to be performed on tractor-drawn aerial apparatus only if all of the following conditions are complied with:

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

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

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

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

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

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

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

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

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

4-4 Inspection, Maintenance, and Repair of Vehicles.

4-4.1* All fire department vehicles shall be inspected at least weekly, within 24 hours after any use or repair, and prior to being placed in service or used for emergency purposes to identify and correct unsafe conditions.

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

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

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

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

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

4-5 Tools and Equipment.

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

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

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

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

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

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

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

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

4-5.8 All ground ladders shall be inspected and service tested in accordance with the applicable requirements of NFPA 1932, *Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders.*

4-5.9 All fire hose shall be inspected and service tested in accordance with the applicable requirements of NFPA 1962, *Standard for the Care, Use, and Maintenance of Fire Hose Including Couplings and Nozzles.*

4-5.10 All fire extinguishers shall be inspected and tested in accordance with the applicable requirements of NFPA 10, *Standard for Portable Fire Extinguishers.*

Chapter 5 Protective Clothing and Protective Equipment

5-1 General.

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

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

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

5-1.4* Protective clothing and protective equipment shall be used and maintained in accordance with manufacturer's instructions. A maintenance and inspection program shall be established for protective clothing and protective equipment. Specific responsibilities shall be assigned for inspection and maintenance.

5-1.5 Structural fire fighting protective clothing shall be periodically cleaned at least every 6 months as specified in Section 5-4 of NFPA 1581, *Standard on Fire Department Infection Control Program.*

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

5-1.7* While on duty, members shall avoid wearing any clothing that is considered unsafe due to poor thermal stability or poor flame resistant characteristics of the fabric(s).

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

5-1.8.1 Where such cleaning is conducted in fire stations, the fire department shall provide at least one washing machine for this purpose in the designated cleaning area specified in Section 3-2 of NFPA 1581, *Standard on Fire Department Infection Control Program.* These washing machines shall be marked or labeled "FOR WASHING PROTECTIVE OR WORK CLOTHING ONLY."

5-1.8.2 Bed linen, dish towels, and other station linens or machine washables shall not be washed in the machines designated for protective or work clothing due to the possibility of cross-contamination.

5-2 Protective Clothing for Structural Fire Fighting.

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

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

Position A: Standing, hands together reaching overhead as high as possible;

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

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

5-2.2 Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and shall use helmets that meet the requirements of NFPA 1972, *Standard on Helmets for Structural Fire Fighting.*

5-2.3 Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and shall use gloves that meet the requirements of NFPA 1973, *Standard on Gloves for Structural Fire Fighting.*

5-2.3.1 Fire departments that provide protective coats with protective resilient wristlets secured through a thumb opening shall be permitted to provide gloves of the gauntlet type for use with these protective coats. Fire departments that do not provide such wristlets attached to all protective coats shall provide gloves of the wristlet type for use with these protective coats.

5-2.4* Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and shall use footwear that meet the requirements of NFPA 1974, *Standard for Protective Footwear for Structural Fire Fighting.*

5-2.5 Members who engage in or are exposed to the hazards of structural fire fighting shall be provided with and shall use protective hoods that meet the applicable requirements of NFPA 1971, *Standard on Protective Clothing for Structural Fire Fighting.*

5-2.6 The fire department shall require all members to wear all the protective clothing specified in 5-2.1, 5-2.2, 5-2.3, 5-2.4, and 5-2.5 of this section at all times when involved in or exposed to the hazards of structural fire fighting in the hazardous area at an emergency scene.

5-2.7* The fire department shall assure that all members who engage in fire fighting operations are aware of the flammability and thermal stability characteristics of various types of fabrics used in clothing. Fire fighters shall avoid wearing clothing under protective garments that is considered unsafe due to poor thermal stability or poor flame resistant characteristics and that could itself cause injury to the fire fighter despite the appropriate protective garments worn over such clothing.

5-3 Self-Contained Breathing Apparatus (SCBA).

5-3.1* Open-circuit SCBA shall be positive pressure and shall meet the requirements of NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters.* Closed-circuit SCBA shall be NIOSH/MSHA certified with a minimum service duration of at least 30 minutes and shall operate in the positive pressure mode only.

5-3.2* SCBA shall be provided for and shall be used by all members working in areas where:

(a) The atmosphere is hazardous

(b) The atmosphere is suspected of being hazardous

(c) The atmosphere may rapidly become hazardous.

5-3.3 Members using SCBA shall operate in teams of two or more.

5-3.4 At any time any members are working inside any confined space, such members shall be provided with SCBA and shall use the SCBA unless the safety of the atmosphere can be established by testing and continuous monitoring.

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

5-3.6* The fire department shall adopt and maintain a respiratory protection program that addresses selection, inspection, use, maintenance, training, and air quality testing. Members shall be tested and certified in the safe and proper use of SCBA at least annually.

5-3.7 Compressed gaseous air in the SCBA cylinder shall meet the requirements of ANSI/CGA G7.1, *Commodity Specification for Air*, with a minimum air quality of Grade D, as well as meeting a dew point level of –65°F (–54°C) or dryer (24 ppm v/v or less), and a maximum particulate level of 5 mg/m^3 air.

5-3.7.1* When the fire department purchases compressed breathing air in a vendor supplied cylinder, the fire department shall require the vendor to provide certification and documentation that the breathing air has been tested and that it meets the requirements of 5-3.7 of this section. The vendor shall provide documentation to demonstrate that the laboratory is accredited by the American Industrial Hygiene Association, the American Association for Laboratory Accreditation, or the National Voluntary Laboratory Accreditation Program.

5-3.7.2 When the fire department makes its own breathing air or transfers purchased breathing air from vendor cylinders into other storage cylinders, the air quality from compressors, cascade system cylinders, storage receivers, and other such breathing air manufacturing or storage equipment used for filling SCBA cylinders shall be tested at least every three months by a laboratory accredited by the American Industrial Hygiene Association, the American Association for Laboratory Accreditation, or the National Voluntary Laboratory Accreditation Program to certify that the breathing air meets the requirements of 5-3.7 of this section. Laboratories shall be required to notify the fire department immediately of air not meeting the requirements of 5-3.7 of this section.

5-3.7.3 SCBA cylinders shall be hydrostatically tested within the periods specified by the manufacturers and the applicable governmental agencies.

5-3.8* The facepiece seal capability of each member qualified to use SCBA shall be verified by qualitative fit testing on an annual basis and whenever new types of SCBA or

facepieces are issued. Each new member shall be tested before being permitted to use SCBA in a hazardous atmosphere. Only members with a properly fitting facepiece shall be permitted by the fire department to function in a hazardous atmosphere with SCBA.

5-3.9* A growth of beard or facial hair at any point where the SCBA facepiece is designed to seal with the face, regardless of the specific fit test measurement that can be obtained, or hair that could interfere with the facepiece valve function shall be prohibited for members required to use SCBA.

5-3.10 When a member must wear corrective lenses while using SCBA, the SCBA facepiece shall be fitted with spectacles inside of the facepiece in such a manner that shall not interfere with the facepiece-to-face seal.

5-3.10.1 Spectacles with any strap or temple bars that pass through the facepiece-to-face seal area shall be prohibited.

5-3.10.2* Use of soft contact lenses shall be permitted during SCBA use, provided that the member has previously demonstrated successful long-term soft contact lens use.

5-3.10.3 Use of hard contact lenses during SCBA use shall be prohibited.

5-3.11 Nothing shall be allowed to enter or pass through the area where the SCBA facepiece is designed to seal with the face, regardless of the specific fit test measurement that can be obtained.

5-3.11.1 Any head covering that passes between the sealing surface of the SCBA facepiece and the member's face shall be prohibited.

5-3.11.2 The SCBA facepiece and head harness with straps shall not be worn over protective hoods specified in 5-2.5 and 5-4.5 of this chapter.

5-3.11.3 The SCBA facepiece and head harness with straps shall not be worn over the head protection of any hazardous chemical protective clothing specified in Section 5-6 of this standard.

5-3.11.4 The wearing of helmets specified in 5-2.2 and 5-4.2 of this chapter or any helmet worn in conjunction with the hazardous chemical protective clothing specified in Section 5-6 of this standard shall not interfere with the SCBA facepiece-to-face seal.

5-4 Protective Clothing for Proximity Fire Fighting Operations.

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

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

Position A: Standing, hands together reaching overhead as high as possible;

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

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

5-4.2 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use helmets that meet the applicable requirements of NFPA 1972, *Standard on Helmets for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire fighting exposures where the helmet will be used.

5-4.3 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use gloves that meet the applicable requirements of NFPA 1973, *Standard on Gloves for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire fighting exposures where the gloves will be used.

5-4.4 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use footwear that meet the applicable requirements of NFPA 1974, *Standard for Protective Footwear for Structural Fire Fighting*, and additional radiant reflective criteria that are approved for the expected proximity fire fighting exposures where the footwear will be used.

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

5-4.6 Members who engage in or are exposed to the hazards of proximity fire fighting shall be provided with and shall use SCBA that meet the applicable requirements of Section 5-3 of this chapter.

5-4.6.1 Where SCBA is worn over or outside the proximity protective garment, the fire department shall inform the member of the potential high levels of radiant heat that can result in the failure of the SCBA. The fire department shall require additional approved radiant reflective criteria, including but not limited to a protective cover, for the expected proximity fire fighting exposures when the SCBA is worn over or outside the proximity protective garment.

5-5* Protective Clothing for Emergency Medical Operations.

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

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

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

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

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

5-6.1* Vapor-Protective Garments.

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

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

5-6.1.3 Members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in vapor form or to unknown chemicals shall be provided with and shall use SCBA that meet the applicable requirements of Section 5-3 of this chapter. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH/MSHA under 30 CFR 11.

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

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

5-6.2* Liquid Splash-Protective Garments.

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

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

5-6.2.3 Members who engage in operations during hazardous chemical emergencies that will expose them to known chemicals in liquid-splash form shall be provided with and shall use either SCBA that meet the applicable requirements of Section 5-3 of this chapter or respiratory protective devices that are NIOSH/MSHA certified under 30 CFR 11 as suitable for the specific chemical environment. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH/MSHA under 30 CFR 11.

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

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

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

(b) NIOSH *Pocket Guide to Chemical Hazards*

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

5-6.2.6 Liquid splash-protective suits shall NOT be used for protection from chemicals or specific chemical mixtures with skin toxicity notations as indicated by the following reference:

American Conference of Governmental Industrial Hygienists, *Threshold Limit Values and Biological Exposure Indices for 1988-1989*.

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

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

5-6.3* Support Functions Protective Garments.

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

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

5-6.3.3 Members who engage in or are exposed to chemicals in support function environments during hazardous chemical emergencies shall be provided with and shall use either SCBA that meet the applicable requirements of Section 5-3 of this chapter or respiratory protective devices that are NIOSH/MSHA certified under 30 CFR 11 as suitable for the specific environment. Additional outside air supplies shall be permitted to be utilized in conjunction with SCBA, provided such systems are positive pressure and have been certified by NIOSH/MSHA under 30 CFR 11.

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

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

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

(b) NIOSH *Pocket Guide to Chemical Hazards*

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

5-6.3.6 Support function protective garments shall NOT be used for protection from chemicals or specific chemical mixtures with skin toxicity notations as indicated by the following reference.

American Conference of Governmental Industrial Hygienists, *Threshold Limit Values and Biological Exposure Indices for 1988-1989*.

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

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

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

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

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

5-7 Personal Alert Safety System (PASS).

5-7.1* Each member involved in rescue, fire suppression, or other hazardous duties shall be provided with and shall use a PASS device in the hazardous area. PASS devices shall meet the requirements of NFPA 1982, *Standard on Personal Alert Safety Systems (PASS) for Fire Fighters*.

5-7.2 Each PASS device shall be tested at least weekly and prior to each use, and shall be maintained in accordance with the manufacturer's instructions.

5-8 Life Safety Ropes, Harnesses, and Hardware.

5-8.1 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, Harnesses, and Hardware*.

5-8.1.1 Class I life safety harnesses shall only be used for fire fighter attachment to ladders and aerial devices.

5-8.1.2 Class II and Class III life safety harnesses shall be utilized for fall arrest and rappeling operations.

5-8.2 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. Life safety rope used for any other purpose shall be removed from service and destroyed.

5-8.3* Life safety rope used for rescue at fires or other emergency incidents or for training shall be permitted to be reused if inspected before and after each such use in accordance with the manufacturer's instructions and provided:

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

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

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

If the rope used for rescue at fires or other emergency incidents or for training has been subjected to (a), (b), or (c) or fails the visual inspection, it shall be destroyed after

such use. If there is any question regarding the serviceability of the rope after consideration of the above, the safe course of action shall be taken and the rope shall be placed out of service.

5-8.4 Rope inspection shall be conducted by qualified inspectors in accordance with rope inspection procedures established and recommended as adequate by the rope manufacturer to assure rope is suitable for reuse.

5-8.5 Records shall be maintained to document the use of each life safety rope used at fires and other emergency incidents or for training.

5-9 New and Existing Protective Clothing and Protective Equipment.

5-9.1 All new protective clothing and protective equipment shall meet the requirements of the current edition, as specified in Chapter 10 of this standard, of the respective standards specified in 5-1.6, 5-2.1, 5-2.2, 5-2.3, 5-2.4, 5-2.5, 5-3.1, 5-4.1, 5-5.1, 5-6.1.1, 5-6.2.1, 5-6.3.1, 5-7.1, and 5-8.1 of this chapter.

5-9.2 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.

5-10 Eye and Face Protection.

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

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

5-10.3 When operating in the hazardous area at an emergency scene without the full facepiece of SCBA being worn, members shall deploy the helmet faceshield for partial face protection.

5-11 Hearing Protection.

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

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

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

Chapter 6 Emergency Operations

6-1 Incident Management.

6-1.1 Emergency operations and other situations that pose similar hazards, including but not limited to training exercises, shall be conducted in a manner that recognizes hazards and prevents accidents and injuries.

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

6-1.3* At an emergency incident, the incident commander shall be responsible for the overall safety of all members and all activities occurring at the scene.

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

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

(a) Assume and confirm command and take an effective command position;

(b) Perform situation evaluation that includes risk assessment;

(c) Initiate, maintain, and control incident communications;

(d) Develop an overall strategy and attack plan and assign units to operations;

(e) Develop an effective incident organization by managing resources, maintaining an effective span of control, and maintaining direct supervision over the entire incident by creating geographic and functional sectors;

(f) Review, evaluate, and revise the attack plan as required;

(g) Continue, transfer, and terminate command.

6-1.6 The fire department shall establish and ensure the maintenance of a fire dispatch and incident communication system that meets the requirements of Section 3-6 of NFPA 1561, *Standard on Fire Department Incident Management System*.

6-2 Risk Management During Emergency Operations.

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

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

(a) Activities that present a significant risk to the safety of members shall be limited to situations where there is a potential to save endangered lives.

(b) Activities that are routinely employed to protect property shall be recognized as inherent risks to the safety of members, and actions shall be taken to reduce or avoid these risks.

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

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

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

6-2.3* At significant incidents and special operations incidents, the incident commander shall assign qualified personnel with the specific authority and responsibility to evaluate hazards and provide direction with respect to the safety of operations.

6-3 Accountability.

6-3.1* The fire department shall establish written standard operating procedures for a personnel accountability system in accordance with Section 4-3 of NFPA 1561, *Standard on Fire Department Incident Management System*, and that provides for the tracking and inventory of all members operating at an emergency incident.

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

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

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

6-3.3.1 The incident commander shall maintain an awareness of the location and function of all companies and sectors.

6-3.3.2 Sector officers shall directly supervise and account for the companies operating in that sector.

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

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

6-3.3.5 Members shall be responsible to follow personnel accountability system procedures.

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

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

6-3.6 The standard operating procedures shall provide the use of additional accountability officers based on the size, complexity, or needs of the incident. These accountability officers shall work with the incident commander and sector officers to assist in the ongoing tracking and accountability of members.

6-4 Members Operating at Emergency Incidents.

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

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

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

6-4.4 In the initial stages of an incident where only one team is operating in the hazardous area, at least one additional member shall be assigned to stand by outside of the hazardous area where the team is operating. This standby member shall be responsible for maintaining a constant awareness of the number and identity of members operating in the hazardous area, their location and function, and time of entry. The standby member shall remain in radio, visual, voice, or signal line communications with the team.

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

6-4.4.2 The standby member shall be permitted to perform other duties outside of the hazardous area, such as apparatus operator, incident commander, or technician or aide, provided constant communication is maintained between the standby member and the members of the team.

6-4.4.3 The standby member shall be provided with at least the appropriate full protective clothing, protective equipment, and SCBA as required in Chapter 5 of this standard. The standby member shall be permitted to rescue or provide for the rescue of the members of the one team that is operating if the need arises. If such a rescue need arises, the standby member shall communicate the situation to the communications center and additional response shall be dispatched if not already underway.

6-4.4.4 Once a second team is assigned or operating in the hazardous area, the incident shall no longer be considered in the "initial stage," and at least one rapid intervention crew shall be required.

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

6-4.5.1 All emergency medical personnel who provide emergency medical care and medical monitoring at hazardous material incidents shall meet the minimum requirements of NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents*.

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

6-4.6 When members are operating from aerial devices, they shall be secured to the aerial device by an approved safety harness that complies with the requirements of 5-8.1.1 of this standard.

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

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

6-4.7.2 When acting as a shield, apparatus warning lights shall remain on, and fluorescent and retroreflective warning devices such as traffic cones, illuminated warning devices such as highway flares, or other appropriate warning devices shall be used to warn oncoming traffic of the emergency operations and the hazards to members operating at the incident.

6-5 Rapid Intervention for Rescue of Members.

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

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

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

6-5.4 In the early stages of an incident, the rapid intervention crew(s) shall be either:

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

(b) On-scene members performing other functions but ready to redeploy to perform rapid intervention crew functions.

6-5.5 As the incident expands in size or complexity, the rapid intervention crews shall be either:

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

(b) On-scene company or companies either in a staging area, or designated and dedicated as rapid intervention crews.

6-5.6 Whenever members are operating in positions or performing functions that include special operations or would subject them to immediate danger of injury in the event of equipment failure or other sudden event, at least one rapid intervention crew shall be standing by with equipment to provide assistance or rescue.

6-6 Rehabilitation During Emergency Operations.

6-6.1 All supervisors shall maintain an awareness of the condition of members operating within their span of control and ensure that adequate steps are taken to provide for their safety and health. The command structure shall be utilized to request relief and reassignment of fatigued crews.

6-6.2* The incident commander shall consider the circumstances of each incident and make suitable provisions for rest and rehabilitation for members operating at the scene. These provisions shall be in accordance with Section 4-4 of NFPA 1561, *Standard on Fire Department Incident Management System*, and shall include medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions, according to the circumstances of the incident.

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

6-7 Civil Disturbance.

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

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

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

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

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

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

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

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

6-8 Incident Critique.

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

6-8.2 The fire department occupational safety and health committee shall be involved in critiques as defined by the standard operating procedures.

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

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

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

Chapter 7 Facility Safety

7-1 Safety Standards.

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

7-1.2 Fire departments shall provide facilities for disinfecting, cleaning, and storage in accordance with Chapter 3 of NFPA 1581, *Standard on Fire Department Infection Control Program.*

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

7-1.4 All new and existing fire stations and fire department facilities shall comply with NFPA *101®, Life Safety Code®.*

7-1.5 Fire stations shall be designed and provided with provisions to ventilate exhaust emissions from fire apparatus to prevent exposure to fire fighters and contamination of living and sleeping areas.

7-1.6 All fire department facilities shall have designated smoke-free areas that include work, sleeping, kitchen, and eating areas.

7-2 Inspections.

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

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

7-3 Maintenance and Repairs.

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

Chapter 8 Medical and Physical

8-1 Medical Requirements.

8-1.1 Prior to becoming members, candidates shall be medically evaluated and certified by the fire department physician. Medical evaluations for all candidates and members shall take into account the risks and the functions associated with the individual's duties and responsibilities.

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

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

physician other than the fire department physician, the evaluation shall be subject to review and shall be approved by the fire department physician.

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

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

8-2 Physical Performance Requirements.

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

8-2.2 Candidates shall be certified by the fire department as meeting the physical performance requirements specified in 8-2.1 of this section prior to entering into a training program to become a fire fighter.

8-2.3 Members who engage in emergency operations shall be annually evaluated and certified by the fire department as meeting the physical performance requirements specified in 8-2.1 of this section. Members who do not meet the required level of physical performance shall not be permitted to engage in emergency operations.

8-2.4 Members who are unable to meet the physical performance requirements specified in 8-2.1 of this section shall enter a physical performance rehabilitation program to facilitate progress in attaining a level of performance commensurate with the individual's assigned functions and activities.

8-3 Physical Fitness.

8-3.1 The fire department shall establish and provide a physical fitness program to enable members to develop and maintain an appropriate level of fitness to safely perform their assigned functions. The maintenance of fitness levels specified in the program shall be based on fitness standards determined by the fire department physician that reflect the individual's assigned functions and activities, and that are intended to reduce the probability and severity of occupational injuries and illnesses.

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

8-3.3 The physical fitness program shall be under the medical supervision of the fire department physician.

8-4 Confidential Health Data Base.

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

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

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

8-5 Infection Control.

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

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

8-6 Fire Department Physician.

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

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

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

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

8-7 Post-Injury/Illness Rehabilitation.

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

8-7.2 In all cases, the fire department shall have ultimate concern for the members' ability to regain and maintain a comfortable, healthy, and productive life during and after their service with the fire department.

Chapter 9 Member Assistance Program

9-1 General.

9-1.1* The fire department shall provide a Member Assistance Program that identifies and assists members and their immediate families with substance abuse, stress, and

personal problems that adversely affect fire department work performance. The assistance program shall refer members and their immediate families, as appropriate, to the proper health care services for the purpose of restoring job performance to expected levels, as well as for the restoration of better health.

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

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

9-1.4* The Member Assistance Program shall provide health promotion activities that identify physical and mental health risk factors and shall provide education and counseling for the purpose of preventing health problems and enhancing overall well-being.

9-1.5* The fire department shall adopt a written policy that establishes a program designed to relieve the stress generated by an incident that could adversely affect the psychological and physical well-being of fire department members. The policy shall establish criteria for implementation of the program.

9-1.5.1 The program shall be utilized 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.

9-1.6* The fire department shall provide a program on the health effects associated with the use of tobacco products. The fire department shall provide a smoking/tobacco use cessation program.

Chapter 10 Referenced Publications

10-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

10-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 1901, Quincy, MA 02269-1901.

NFPA 10, *Standard for Portable Fire Extinguishers*, 1990 edition

NFPA *101*, *Life Safety Code*, 1991 edition

NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*, 1992 edition

NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents*, 1992 edition

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 1992 edition

NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 1988 edition

NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, 1987 edition

NFPA 1021, *Standard for Fire Officer Professional Qualifications*, 1992 edition

NFPA 1041, *Standard for Fire Service Instructor Professional Qualifications*, 1992 edition

NFPA 1403, *Standard on Live Fire Training Evolutions in Structures*, 1992 edition

NFPA 1521, *Standard for Fire Department Safety Officer*, 1992 edition

NFPA 1561, *Standard on Fire Department Incident Management System*, 1990 edition

NFPA 1581, *Standard on Fire Department Infection Control Program*, 1991 edition

NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, 1992 edition

NFPA 1901, *Standard for Pumper Fire Apparatus*, 1991 edition

NFPA 1902, *Standard for Initial Attack Fire Apparatus*, 1991 edition

NFPA 1903, *Standard for Mobile Water Supply Fire Apparatus*, 1991 edition

NFPA 1904, *Standard for Aerial Ladder and Elevating Platform Fire Apparatus*, 1991 edition

NFPA 1911, *Standard for Service Tests of Pumps on Fire Department Apparatus*, 1991 edition

NFPA 1914, *Standard for Testing Fire Department Aerial Devices*, 1991 edition

NFPA 1931, *Standard on Design of and Design Verification Tests for Fire Department Ground Ladders*, 1989 edition

NFPA 1932, *Standard on Use, Maintenance, and Service Testing of Fire Department Ground Ladders*, 1989 edition

NFPA 1961, *Standard on Fire Hose*, 1992 edition

NFPA 1962, *Standard for the Care, Use, and Maintenance of Fire Hose Including Couplings and Nozzles*, 1988 edition

NFPA 1964, *Standard for Spray Nozzles (Shutoff and Tip)*, 1988 edition

NFPA 1971, *Standard on Protective Clothing for Structural Fire Fighting*, 1991 edition

NFPA 1972, *Standard on Helmets for Structural Fire Fighting*, 1992 edition

NFPA 1973, *Standard on Gloves for Structural Fire Fighting*, 1988 edition

NFPA 1974, *Standard for Protective Footwear for Structural Fire Fighting*, 1992 edition

NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*, 1990 edition

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

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*, 1992 edition

NFPA 1982, *Standard on Personal Alert Safety Systems (PASS) for Fire Fighters*, 1988 edition

NFPA 1983, *Standard on Fire Service Life Safety Rope, Harnesses, and Hardware*, 1990 edition

NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, 1990 edition

NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, 1990 edition

NFPA 1993, *Standard on Support Function Protective Garments for Hazardous Chemical Operations*, 1990 edition

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, 1992 edition.

10-1.2 ANSI Publications. American National Standards Institute, 1430 Broadway, New York, NY 10018.

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

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

10-1.3 Superintendent of Documents Publication. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Title 30, *Code of Federal Regulations*, Part 11 (30 CFR 11), "Respiratory Protective Devices, Tests for Permissibility," March 25, 1972.

10-1.4* Other Publications.

(a) *Dangerous Properties of Industrial Chemicals*, 6th ed., Sax, N. Irving, 1988

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

(c) *Threshold Limit Values and Biological Exposure Indices for 1988-1989*, American Conference of Governmental Industrial Hygienists, 1988

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

Appendix A

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

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

A-1-3.1 The specific determination of the authority having jurisdiction depends on the mechanism under which this standard is adopted and enforced. Where the standard is adopted voluntarily by a particular fire department for its own use, the authority having jurisdiction should be the fire chief or the political entity that is responsible for the operation of the fire department. Where the standard is legally adopted and enforced by a body having regulatory authority over a fire department, such as federal, state, or local government or political subdivision, this body is responsible for making those determinations as the authority having jurisdiction. The plan should take into account the services the fire department is required to provide, the financial resources available to the fire department, the availability of personnel, the availability of trainers, and such other factors as will affect the fire department's ability to achieve compliance.

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

A-1-5 Approved. The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or 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 concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

A-1-5 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is

primary, the "authority having jurisdiction" may be a federal, state, local or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, 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 designated agent assumes the role of the "authority having jurisdiction"; at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

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

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

Industrial fire brigades that provide rescue services are industrial fire departments. Industrial facilities may 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 may overlap.

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

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

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

Spelling out the specific parameters of services to be provided allows the fire department to plan, staff, equip, train, and deploy members to perform these duties. It also gives the governing body an accounting of the costs of services and allows it to select those services they can afford to provide. Likewise, the governing body should identify services it cannot afford to provide and cannot authorize the fire department to deliver, or 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 may be part of state laws, a municipal charter, or an annual budget. In such cases, it would be appropriate to make these existing documents part of the organizational statement, if applicable.

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

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

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

Refer to NFPA 1201, *Recommendations for Developing Fire Protection Services for the Public*, for additional information on the organization of a fire department.

A-2-1.2 Additional information on staffing and fire department operations can be found in Section 9 of the NFPA *Fire Protection Handbook*, 17th Edition; and Chapter 5 of *Managing Fire Services*, 2nd Edition, published by the International City Management Association.

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

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

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

1. A list of the risks to which members are or may be exposed

2. Records of previous accidents, illnesses, and injuries, both locally and nationally

3. Facility and apparatus surveys, inspections, etc.

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

1. What is the potential frequency of occurrence?

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

This will help to set priorities in the control plan.

Some sources of information that may be useful are:

1. Safety audits and inspection reports

2. Prior accident, illness, and injury statistics

3. Application of national data to the local circumstances

4. Professional judgment in evaluating risks unique to the jurisdiction.

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

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

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

(d) Other methods of control to consider are:

1. Safety program development, adoption, and enforcement

2. Standard Operating Procedures development, dissemination, and enforcement

3. Training

4. Inspections.

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

A-2-3.1 Example of a safety policy statement:

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

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

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

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

A-2-6.1 One of the most important provisions for improving the safety and health of the fire service is through an official organizational structure that has the support of the members and the fire department management. Without official recognition and support, safety and health committees might be ineffective showpieces, lack authority, or be

dominated by particular interests. To avoid such situations, it is recommended that a safety and health committee be composed of equal numbers of fire department management representatives and member representatives. Specific areas of responsibility of the joint safety and health committee should be outlined in detail through written procedures or contractual negotiation.

A-2-6.3 The requirement for one regularly scheduled meeting every 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 may be aware of issues under discussion and actions that have been taken.

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

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

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

A-3-3.1 Members who have not met the specific qualifications listed in 3-3.2 through 3-3.5 should not perform the listed duties in actual emergency incidents. These members might, however, be utilized under structured supervision to perform functions for which they have been trained.

A-3-3.2 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. Members who have not completed the training requirements for Fire Fighter I should not participate in interior structural fire fighting but might perform other support functions at emergency incidents.

A-3-4.6 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-3-5.4 In the United States, federal regulations require a minimum amount of training for fire service personnel who respond to hazardous materials incidents. These requirements can be found in 29 CFR 1910.120 (OSHA) and in 40 CFR 311 (EPA). These regulations affect all fire departments in the United States whether full-time career, part-time, combination career and volunteer, or fully volunteer. These regulations apply in all states, and not just in those states with federally approved state OSHA programs.

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

> "First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposure. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed in the awareness level and the employer shall so certify:
>
> (a) Knowledge of the basic hazard and risk assessment techniques.
>
> (b) Know how to properly select and use proper personal protective equipment provided to the first responder operations level.
>
> (c) An understanding of basic hazardous materials terms.
>
> (d) Know how to perform basic control, confinement, and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
>
> (e) Know how to implement basic decontamination procedures.
>
> (f) An understanding of the relevant standard operating procedures and termination procedures."

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

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

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

department to determine the requirements that apply in each situation and for each class of vehicle.

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

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

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

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

> "If it is not practical to plan an emergency response route that avoids grade crossings, selection of crossings that are equipped with automatic warning devices is preferable to selection of those that are not. All planning should include identification of the location at the crossing from which a driver or other observer assigned to the apparatus can see the maximum available distance down the track(s) on both sides.
>
> "At crossings over a single straight track with no nearby obstructions, briefly stopping or slowing the apparatus to allow a proper scan both left and right may be sufficient. If the tracks are curved, vision is obstructed, or the crossing has more than one set of tracks where the presence of one train may hide the approach of another, sight distance may be optimized by having one or more members cross the tracks on foot and look for approaching trains."

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

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

A-4-3.1 It is intended for the requirements of 4-3.1 to apply to all situations when persons or members are riding on fire apparatus other than for the specific variances in 4-3.1.1, 4-3.1.2, and 4-3.1.3. Included in the "seated and belted" requirement are any times the fire apparatus is travelling 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 of the National Wildfire Coordinating Group represents the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Fish and Wildlife Agency, National Park Service, and the National Association of State Foresters. Their position is that the practice of fire fighters riding on the outside of vehicles and fighting wildland fires from these positions is very dangerous, and they strongly recommend this not be allowed. One issue is the exposure to personnel in unprotected positions. Persons have been killed while performing this operation. Also, the vehicle driver's vision is impaired. The second issue is that this is not an effective way to extinguish the fire, as it can allow the vehicle to pass over or by areas not completely extinguished. Fire can then flare up underneath or behind the vehicle and could cut off escape routes. The FLSC and the NWCG strongly recommend that two fire fighters, each with a hose line, walk ahead and aside of the vehicle's path, both fire fighters on the same side of the vehicle (not one on each side), in clear view of the driver, with the vehicle being driven in uninvolved terrain. This allows the fire fighters to operate in an unhurried manner, with a clear view of fire conditions and the success of the extinguishment. Areas not extinguished should not be bypassed unless follow-up crews are operating behind the lead unit and there is no danger to escape routes or to personnel.

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

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

A-4-3.4 The minimum requirement for new fire apparatus provides seats in fully enclosed areas for all members who ride on fire apparatus at any time. It is generally agreed that fully enclosed driver compartments and passenger compartments provide a higher level of safety in collisions and rollovers, protection from flying objects, noise reduction, and protection from inclement weather, and, therefore, fully enclosed cabs are required for new apparatus purchases and strongly recommended for renovation of existing apparatus where possible. It is extremely important that all members remain seated and secured by seat belts, in the seats provided, at all times when the vehicle is in motion.

A-4-4.1 and A-4-5.5 The purpose of these paragraphs is to assure that all vehicles are inspected on a regular basis and checked for the proper operation of all safety features. This inspection should include tires, brakes, warning lights and devices, headlights and clearance lights, windshield wipers, and mirrors. The apparatus should be started and the operation of pumps and other equipment should be verified. Fluid levels should also be checked regularly.

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

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

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

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

A-5-1.1 The provision and use of protective clothing and equipment should include safety shoes, gloves, goggles, safety glasses, and any other items appropriate to the members' activities. This applies to all activities members are expected to perform, including nonemergency activities. The applicable regulations pertaining to industrial worker safety should be consulted to determine the need for protective equipment in nonemergency activities.

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

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

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

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

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

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

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

(g) Where a fabric color change is noted, a condition that could be caused by high heat exposure or ultraviolet exposure, the entire area should be checked for loss of tear strength.

A-5-1.6 Station/work uniforms are required to meet NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*. Because it is impossible to ensure that every member—whether a volunteer, call, or off-duty career member—will respond to an incident in a station/work uniform or will change into station/work uniform clothing before donning protective garments, it is very important that members understand the hazards of some fabrics that more easily melt, drip, burn, shrink, or transmit heat rapidly and cause burns to the wearer. (*See also* 5-2.7.)

A-5-1.7 Clothing that is made from 100 percent natural fibers or blends that are principally natural fibers should be selected over other fabrics that have poor thermal stability or ignite easily.

The very fact that persons are fire fighters indicates that all clothing that they wear should be flame resistant (as children's sleepwear is required to be) to give a degree of safety if unanticipated happenings occur that expose the clothing to flame, flash, sparks, or hot substances. (*See also* 5-2.7.)

A-5-2.1.1 Properly fitting protective clothing is important for the safety of the fire fighter. It is important to understand that all protective clothing should be correctly sized to allow for freedom of movement. Protective garments that are too small or too large and protective trouser legs that are too long or too short are safety hazards and should be avoided. Protective coat sleeves should be of sufficient length and design to protect the coat/glove interface area when reaching overhead or to the side. For proper fitting of a fire fighter, the protective clothing manufacturer should be contacted to provide sizing instructions.

A-5-2.4 To diminish hazards of falls and slips, protective footwear selection should entail design and product review to obtain sure footing. Sole grip, sole stability, and ankle support are essential factors to minimize risks of fall and slip effects due to environment, ground obstacles, and operations.

A-5-2.7 Station/work uniforms are required to meet the requirements of NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*. (*See 5-1.6.*)

Because it is impossible to ensure that every member—whether a volunteer, call, or off-duty career member—will respond to an incident in a station/work uniform or will change into station/work uniform clothing before donning protective garments, it is very important that members

understand the hazards of some fabrics that more easily melt, drip, burn, shrink, or transmit heat rapidly and cause burns to the wearer.

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

A-5-3.1 The use of long-duration SCBA should be restricted to operations in tunnels and underground structures, on board ships, and in other situations where the need for this capability is demonstrated.

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

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

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

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

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

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

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

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

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

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

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

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

building. He was rescued by other fire fighters and removed to a hospital before he could relate the circumstances regarding the first fire fighter. The first fire fighter was found dead some time later.

If the fire fighter had been trained to remove the victim completely from the building or from immediate physical danger if possible, a number of things would have been accomplished without endangering the rescuer's life and with less risk to the victim fire fighter. If the rescuer had not compromised his SCBA, he would not have been affected by the products of combustion, would have retained a greater air supply, and would have either removed the victim fire fighter by himself or exited the area for additional assistance and alerted medical help.

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

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

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

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

(a) A strong, well-administered SCBA program

(b) Emphasis on user testing and inspection of SCBA

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

(d) Functional preventive maintenance program

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

(f) Quality breathing air

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

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

(i) Accountability for interior fire fighting crews

(j) Physical fitness of fire fighters

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

NFPA, ANSI, IAFF, and most SCBA manufacturers do not recommend "buddy breathing" since it compromises one or more SCBA and may 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-5-3.6 Selection of SCBA is an important function, particularly when resources are limited and SCBA have to be used for different applications and with different equipment. Confined space, haz-mat, and other operations may require different cylinders, umbilical connections, and features that are easier to ascertain and coordinate with a selection stage.

A-5-3.7.1 Addresses and phone numbers for the specified accreditation organizations are listed below. They may be contacted for listings of laboratories that have been accredited by their organizations.

American Industrial Hygiene Association
345 White Pond Drive
P.O. Box 8390
Akron, OH 44320
(216) 873-2442

American Association for Laboratory Accreditation
656 Quince Orchard Road, #304
Gaithersburg, MD 20878
(301) 670-1377

National Voluntary Laboratory Accreditation Program
Building 4311, Room A124
Gaithersburg, MD 20899
(301) 975-4016

A-5-3.8 The procedures for qualitative fit testing are included in ANSI Z88.5, *Practices for Respiratory Protection for the Fire Service*. Quantitative fit testing is considered to be more precise than qualitative fit testing, but is not considered to be necessary where positive pressure SCBA are used. If qualitative fit testing does not provide satisfactory results, the fire department should refer to ANSI Z88.5 for further information on quantitative fit testing. If necessary, the fire department should provide a facepiece of larger or smaller size to provide an adequate seal for an individual, and such individuals shall use only the facepiece provided. An effective face-to-facepiece seal is extremely important when using SCBA. Even a minor leakage can allow contaminants to enter the facepiece, even with positive pressure SCBA. Any outward leakage will increase the rate of air consumption, reducing the time available for use and safe exit. The facepiece should seal tightly against the skin, without penetration or interference by any protective clothing or other equipment.

A-5-3.9 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 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 a SCBA to protect an employee with a growth of beard at points where the SCBA facepiece is designed to seal with the face, is violating 29 CFR 1910.134(e)(5)(i). This is so regardless of what fit test measurement can be obtained. If the beard is styled so no hair underlies the points where the SCBA facepiece is designed to seal with the face, then the employer may use the SCBA to protect the employee, however."

A-5-3.10.2 Successful long-term soft contact lens use should be the wearing of soft contact lenses for at least 6 months without any problems.

A-5-4.1.1 See A-5-2.1.1.

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

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, covers garments, gloves, and face protection devices that are designed to prevent exposure to blood or other body fluids for those individuals engaged in emergency medical patient care and similar operations. The standard specifies a series of requirements for each type of protective clothing. Garments may 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 may be masks, hoods, visors, safety glasses, or goggles. Any combination of items may 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-5-5.2 In order to avoid all potential exposure to infectious diseases, it is important that all members use gloves when providing patient care. All members who may come in contact with the patient should use gloves.

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

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

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

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

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

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

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

1. Protective clothing (suit, coveralls, hoods, gloves, boots)
2. Respiratory equipment (SCBA, combination SCBA/SAR)
3. Cooling system (ice vest, air circulation, water circulation)
4. Communications device
5. Head protection

6. Ear protection
7. Inner garments
8. Outer protection (overgloves, overboots, flashcovers).

The United States Environmental Protection Agency (EPA) has outlined 4 levels of protection: A, B, C, and D. The EPA defined these levels of protection primarily for workers at hazardous waste sites, where emergency conditions do not usually exist. These levels of protection are commonly and often inappropriately utilized by the fire service. They are inadequate and do not correctly define the chemical-protective clothing with respect to the intended use based on the hazard and the required performance the selected clothing or equipment must offer.

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

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

For emergency response, the only acceptable types of protective clothing include fully or totally encapsulating suits and nonencapsulating or "splash" suits combined with accessory clothing items such as chemical-resistant gloves and boots. These descriptions apply to how the clothing is designed, not to its performance. The NFPA has classified chemical-protective suits by their performance in 3 standards:

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

Liquid Splash-Protective Suits (NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*), and

Support Function Protective Suits (NFPA 1993, *Standard on Support Function Protective Garments for Hazardous Chemical Operations*).

Protective clothing should completely cover both the wearer and the wearer's breathing apparatus. Wearing SCBA or other respiratory equipment outside the suit subjects this equipment to the chemically contaminated environment. The SCBA used for hazardous materials emergency response are generally the same as those used in structural fire fighting. Respiratory protective equipment is not designed to resist chemical contamination and should be protected from these environments. NFPA 1991 vapor-protective suits require that SCBA be worn on the inside. NFPA 1992 liquid splash-protective suits may be configured with the SCBA on either the inside or the outside. However, it is strongly recommended that respiratory equipment be worn inside the ensemble to prevent its failure and to reduce decontamination problems.

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

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

(d) It must be determined if the clothing item is intended to provide vapor or liquid splash protection. Vapor-protective suits also provide liquid splash protection. Both vapor- and liquid splash-protective suits also provide protection against solid chemicals and particles. Many garments may be labeled as totally encapsulating but do not provide gastight integrity due to inadequate seams or closures. Splash suits must still cover the entire body when combined with the respirator, gloves, and boots. Applying duct tape to a splash suit does not enable it to protect against vapors. Gastight integrity can only be determined by performing a pressure or inflation test of the respective protective suit. ASTM F1052, *Standard Practice for Pressure Testing of Gas-Tight Totally Encapsulating Chemical Protective Suits*, offers a procedure for conducting this test. This test involves:

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

Liquid splash-protective suits must provide "liquidtight" integrity. Liquidtight integrity is best evaluated by determining how the chemical-protective suit and other clothing prevent sprayed liquid from contacting the wearer. ASTM F1359, *Practice for Evaluating the Liquid-Tight Integrity of Chemical Protective Suits and Ensembles Under Static Conditions*, offers procedures for conducting this test involving the placement of the suit and other clothing over a mannequin that is dressed in a water-absorptive garment. Surfactant-treated water is sprayed at the suited mannequin from several different directions. Observations of water penetration on the water-absorptive garment indicate a lack of liquidtight integrity. In particular, seam, closure, and clothing item interface areas should be examined closely for watertight integrity.

(e) It must be determined if the clothing item provides full body protection. A vapor-protective or totally encapsulating suit will meet this requirement by passing gastight integrity tests. Liquid splash-protective suits may have separate parts. Missing clothing items must be obtained separately and match or exceed the performance of the garment. Buying a PVC glove for a PVC splash suit does not

mean that the same level of protection is obtained. This determination must be made by comparing chemical resistance data.

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

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

Permeation data should include a citation that testing was conducted in accordance with ASTM F739, *Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases*, and the following:

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

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

Penetration data should include a pass or fail determination for each chemical listed and a citation that testing was conducted in accordance with ASTM F903, *Standard Test Method for Resistance of Protective Clothing Materials to Penetration by Liquids*. Protective suits that are certified to NFPA 1991 or NFPA 1992 should meet all of the above requirements.

Suit materials that show no breakthrough or no penetration in response to a large number of chemicals are likely to have a broad range of chemical resistance. (Breakthrough times greater than 1 hour are usually considered to be an indication of acceptable performance.) If there are specific chemicals within a response area that have not been tested, the manufacturer should be consulted for test data on these chemicals.

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

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

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

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

(h) Sample garments should be obtained and inspected.

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

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

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

Testing material specimens using newly developed field test kits may offer one means for making on-site clothing selection. A portable test kit has been developed by the EPA using a simple weight loss method that allows field qualification of protective clothing materials within 1 hour. Use of this kit may compensate for the absence of data and provide additional criteria for clothing selection.

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

A-5-6.1 NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, covers vapor-protective suits that are designed to provide "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 must resist permeation by the chemicals present during a response. Permeation occurs when chemical molecules "diffuse" through the material, often without any evidence of chemical attack. Permeation resistance is measured in terms of breakthrough time. An acceptable material is one where the breakthrough time

exceeds the expected period of garment use. Chemical permeation resistance for 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 must meet the same permeation performance requirements.

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

(a) A suit pressurization test to check the airtight integrity of each protective suit

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

(c) Penetration resistance testing of closures

(d) Leak and creaking pressure tests for exhaust valves.

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

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

A-5-6.2 NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, covers liquid splash-protective suits, which are designed to protect emergency responders against liquid chemicals in the form of splashes, but not against continuous liquid contact or chemical vapors and gases. Liquid splash-protective suits may 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 NFPA 1991-compliant garment should be utilized.

NFPA 1992 specifies a battery of 9 chemicals, including liquid chemicals with low vapor pressures with no known skin absorbtion toxicity, that are representative of the classes of chemicals likely to be encountered during hazardous materials emergencies. Chemical penetration resistance against the NFPA battery of test chemicals is required. Any additional chemicals or specific chemical mixtures for which the manufacturer is certifying the suit must meet the same penetration performance requirements.

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

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

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

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

A-5-7.1 It is recommended that PASS units be worn on protective clothing and used at any time the member is involved in fire suppression or similar activities, whether or not SCBA is worn.

A-5-8.3 Life safety rope may be significantly weakened by abrasion, misuse, contamination, wear, and stresses approaching its breaking strength, particularly impact loading. Since there is no approved method to service test a rope without compromising its strength, rope rescue and training operations should be carefully observed and monitored for conditions that could cause immediate failure or result in undetectable damage to the rope. If a rope has been used in a situation that could not be supervised or where potential damage may have occurred, it must be removed from service and destroyed.

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

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

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

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

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

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

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

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

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

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

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

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

A-6-1.5 (a) The first action that occurs at an incident is command action. This process ensures that operations start under control, remain under control, and that control is never lost from the very beginning of the event.

Early Command = early operational control
Early Operational Control = early concern for fire fighter welfare

(b) Early evaluation enables the incident commander to consider current conditions in a standard manner and then forecast the future of the event. An important and standard outcome of the entire evaluation process (beginning/middle/end) is the consideration of fire fighter safety.

(c) The incident commander must stay connected with the operating and support parts of the organization through effective communications. If the communications process is maintained throughout the event, the incident commander can transmit information, receive reports, evaluate the effectiveness and safety of operations, and manage and move the operating and support parts so they can be productive and survive.

(d) Strategy development basically positions fire fighters in standard locations based on conditions. (For structural fire fighting incidents, offensive strategy = inside / defensive strategy = outside.) This provides the starting point for a standard approach to operations and safety. The "strategic concept" is developed ahead of the incident (SOPs, training, etc.) and enables the entire team to understand, operate, and react in a standard, survivable manner. Attack planning emerges from strategy development, and the incident commander becomes the focal point by committing the troops to action through regular assignments (given as orders).

(e) Sector people are command agents and are able to both monitor the troops at the actual location where the work is being done (geographic), and to provide the necessary support (functional). The incident commander uses sectors 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. Good sector control = good safety control.

(f) The incident commander applies a regular review process (standard review questions) to the attack plan to keep the plan current. Outdated plans result in poor forecasting and inattentive incident commanders. The front end command functions place the incident commander in a position to match action to actual conditions. Outdated plans can cause fire fighters to find themselves under or on top of falling buildings, in the way of expanding fire conditions, and generally overexposed to flame, heat, and hot gas.

(g) The incident commander must be able to continue command operations for the duration of the event. If the command system disintegrates before the fire is under control, safety is severely compromised. The incident commander must use the regular command functions to maintain a command system structure that outlasts the fire problem(s). Premature abandonment of the system by the incident commander puts fire fighters at serious risk.

A-6-2.1 The incident commander has an ultimate responsibility for the safety of all fire department members operating at an incident and for any and all other persons whose safety is affected by fire department operations. Risk management provides a basis for:

(a) Standard evaluation of the situation

(b) Strategic decision-making

(c) Tactical planning

(d) Plan evaluation and revision

(e) Operational command and control.

A-6-2.1.1 The risk to fire department members is the most important factor considered by the incident commander in determining the strategy that will be employed in each situation. The management of risk levels involves all of the following factors:

(a) Routine evaluation of risk in all situations

(b) Well-defined strategic options

(c) Standard operating procedures

(d) Effective training

(e) Full protective clothing and equipment

(f) Effective incident management and communications

(g) Safety procedures and safety officers

(h) Back-up crews for rapid intervention

(i) Adequate resources

(j) Rest and rehabilitation

(k) Regular reevaluation of conditions

(l) Pessimistic evaluation of changing conditions

(m) Experience based on previous incidents and critiques.

A-6-2.1.2 The acceptable level of risk is directly related to the potential to save lives or property. Where there is no potential to save lives, the risk to fire department members must be evaluated in proportion to the ability to save property of value. When there is no ability to save lives or property, there is no justification to expose fire department members to any avoidable risk, and defensive fire suppression operations are the appropriate strategy.

A-6-2.3 A safety sector should be established at all major incidents and at any high-risk incidents. The safety sector would normally be assigned to operate under the fire department safety officer or an assigned officer with this responsibility. If the designated safety officer is not available and the need for a safety sector is evident, the incident commander should assign one or more members to assume this responsibility on a temporary basis. Depending on the specific situation, this assignment could require one or more members. All members should be familiar with the basic duties and responsibilities of a safety sector.

A-6-3.1 A standard system to account for the identity and assignment of each member might be relatively simple when all members arrive as assigned crews on fire apparatus. The identity of each crew member should at least be recorded in a standard manner on the vehicle, and each company officer is responsible for those members. In fire

departments where members arrive in their own vehicles or assemble at the scene, a system is required to record the identity of each member arriving and to organize them into companies or groups with appropriate supervision. This requires a standard system of "reporting in" at the incident and becoming part of the organized system of operations.

A-6-3.5 There are many means of meeting these requirements. Some components may include tactical worksheets, command boards, apparatus riding lists, company personnel boards, electronic bar-coding systems, etc. These components may be used in conjunction with one another to facilitate the tracking of personnel by both location and function. The components of the personnel accountability system should be modular and expand with the size and complexity of the incident.

A-6-4.1 The limitation of emergency scene operations to those that can be safely conducted by the number of personnel on the scene is intended to reduce the risk of fire fighter death or injury due to understaffing. While members can be assigned and arrive at the scene of an incident in many different ways, it is strongly recommended that interior fire fighting operations not be conducted without an adequate number of qualified fire fighters operating in companies under the supervision of company officers.

It is recommended that a minimum acceptable fire company staffing level should be 4 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 5 members responding or arriving with each engine company and 6 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, 5 member crews were found to provide a more coordinated approach for search and rescue and fire suppression tasks.

During actual emergencies, the effectiveness of companies can become critical to the safety and health of fire fighters. Potentially fatal work environments can be created very rapidly in many fire situations. The training and skills of companies can make a difference in the need for additional personnel and in reducing the exposure to safety and health risks to fire fighters where a situation exceeds their capabilities.

A-6-4.5 If advanced life-support personnel are available, this level of service would be preferred. Basic life support is the minimum acceptable level.

A-6-6.2 Weather factors during emergency incidents can impact severely on the safety and health of members, particularly during extremes of heat or cold. Where these factors combine with long duration incidents or situations that require heavy exertion, the risks to members increase rapidly. The fire department should develop procedures, in consultation with the fire department physician, to provide relief from adverse climatic conditions.

Typical rehabilitation considerations for operations during hot weather extremes are (1) moving fatigued or unassigned personnel away from the hazardous area of the incident; (2) removal of personal protective equipment; (3) ensuring that personnel are out of direct sunlight; (4) ensuring that there is adequate air movement over personnel, either naturally or mechanically; (5) providing personnel with fluid replenishment, especially water; and (6) providing medical evaluation for personnel showing signs or symptoms of heat exhaustion or heat stroke.

Typical rehabilitation considerations for operations during cold weather extremes are (1) moving fatigued or unassigned personnel away from the hazardous area of the incident; (2) providing shelter from wind and temperature extremes; (3) providing personnel with fluid replenishment, especially water; and (4) providing medical evaluation for personnel showing signs or symptoms of frostbite, hypothermia, or other cold-related injury.

A-7-1.1 Where health, safety, building, and fire codes are not legally applicable to fire department facilities, steps should be taken to ensure that equivalent standards are applied and enforced. In the absence of local requirements, the provisions of NFPA 1, *Fire Prevention Code;* NFPA *101, Life Safety Code*; NFPA 70, *National Electrical Code®*, and a model plumbing, mechanical, and building code should be applied. In addition, the workplace safety standards specified in 29 CFR 1910 or an equivalent standard should be applied (*Code of Federal Regulations*, Workplace Safety Standards).

A-8-1.5 Any member, either career or volunteer, who reports for duty under the influence of alcohol or drugs, or any other substance that impairs the member's mental or physical capacity, cannot be tolerated.

Evidence of substance abuse could include a combination of various factors such as slurred speech, red eyes, dilated pupils, incoherence, unsteadiness on feet, smell of alcohol or marijuana emanating from the member's body, inability to carry on a rational conversation, increased carelessness, erratic behavior, inability to perform a job, or other unexplained behavioral changes.

The possibility of liability exists if a member who is under the influence of alcohol or drugs is allowed to remain on duty, to operate or drive vehicles or equipment on duty, or to drive a private vehicle from the duty site. A member who is believed to be under the influence of alcohol or drugs cannot be allowed to operate equipment or drive a vehicle, including a private vehicle, until the condition of the member has been determined and verified.

A-8-2.1 Critical fire fighting tasks are physically demanding. These tasks require muscular strength, muscular endurance, aerobic capacity, flexibility, equilibrium, and anaerobic power. A study is presently being conducted to

identify a valid physical performance test battery for use by fire departments. Until this test battery is finalized and included in a future edition of this standard, fire departments should include the above noted physical abilities for the evaluation of candidates and incumbent fire fighters.

A-8-3.2 For guidance in implementation of a physical fitness program, the NFPA publication *Physical Fitness for Public Safety Personnel* should be consulted. Two U.S. Fire Administration publications, *Physical Fitness Coordinators Manual for Fire Departments* and *Fire Service Physical Fitness Programs*, can also be consulted.

A-8-4.1 The health data base for a fire department should include the reports of regular physical evaluations, injury and illness reports, and any supporting information that could be useful in tracking, analyzing, or predicting the health effects of various events on individuals or the group.

A-8-4.2 This information should be managed in a manner that respects the confidentiality of doctor-patient relationships. Electronic data processing is often employed to facilitate management of such a data base.

A-8-4.3 The fire department should try to obtain autopsy or other medical information for all deceased employees or former employees. This information could be useful in establishing relationships between occupational factors and resulting fatalities at some time in the future. Autopsies for fire fatalities should be conducted and recorded according to a standard protocol.

A-8-5.1 Where fire department members routinely respond to emergency medical incidents, the fire department should consult with medical professionals and agencies on measures to limit the exposure of members to infectious and contagious diseases. This should include the provision and maintenance of equipment to avoid or limit direct physical contact with patients, when feasible.

A-8-6.3 A fire department physician should have specific expertise and experience relating to the needs of fire department members and a thorough knowledge of the physical demands involved in emergency operations. If possible, the fire department physician should be a specialist in the field of occupational medicine.

A-8-6.4 Depending on the size and the needs of a fire department, the fire department physician might or might not be required on a full-time basis. A fire department should have a primary relationship with at least one officially designated physician. This physician can serve as the primary medical contact and, in turn, deal with a number of other physicians and specialists. A large fire department can designate more than one fire department physician or might determine that a relationship with a group practice or multiple provider system is more appropriate to its needs. In any case, the ability to consult with a physician who is particularly aware of the medical needs of fire department members and who is available on an immediate basis should exist.

A-8-7.1 The member health rehabilitation program should include a post-traumatic incident debriefing and follow-up program to assist members in dealing with the psychological impact of these situations. This function is part of the Member Assistance Program. (*See 9-1.5 and A-9-1.5.*)

A-9-1.1 The fire department Member Assistance Program does not have to be financed by the fire department. Many community/county/state mental health agencies provide such services free of charge or at a nominal fee. The fire department need have only the ability to identify when such problems exist and be able to offer confidential referrals to the professional who will provide the counseling. Although Member Assistance Programs differ from one another in various ways according to the particular needs and resources of individual fire departments, member organizations, and members, there are certain components that are found in all quality programs. The program standards set forth by the Association of Labor-Management Administrators and Consultants on Alcoholism (ALMACA) address these components and are strongly recommended:

The physical location of the Member Assistance Program should facilitate easy access while ensuring confidentiality. There should be a review of medical and disability benefits to ensure that plans adequately cover appropriate diagnosis and treatment for alcohol, drug, and mental health problems. Where feasible, coverage should include outpatient and day treatment care. The Member Assistance Program staff should be familiar with the provisions of the medical and disability benefit plans so they can advise clients clearly as to the extent, nature, and cost of the recommended treatment and the reimbursement available.

The Member Assistance Program staff should combine two primary qualifications:

(a) Appropriate managerial and administrative experience

(b) Skills in identifying problems, interviewing, motivating, referring clients, and, where appropriate, in counseling or related fields. Experience and expertise in dealing with alcohol-related problems are strongly recommended.

It is important that members and their families are informed about the Member Assistance Program and the services it offers and are continually updated on its existence, availability, and confidentiality. Information about the Member Assistance Program should be made available to all new members and their families.

The Member Assistance Program should maintain current information about alcoholism treatment services and other resources. These include Alcoholics Anonymous, Al-Anon, Alateen, and other self-help groups; appropriate health care; community services; and other professionals. Information about referral procedures, costs, and other relevant factors should be available. Professionally trained individuals should be immediately available to assist members involved in traumatic incidents to reduce or deal with the effects of psychological stress.

There should be a periodic review of the Member Assistance Program to provide an objective evaluation of operation and performance. There should be an annual review of Member Assistance Program staff performance.

A-9-1.2 The policy statement should acknowledge that alcoholism is a disease responsive to treatment and rehabilitation, and 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. Cosponsorship of the program by management and the member organization is highly desirable.

A-9-1.3 Adherence to federal regulations on confidentiality of alcohol and other drug abuse records is required of programs receiving federal funds, directly or indirectly.

A-9-1.4 Health promotion should include, but not be limited to, the following activities: career guidance, family orientation, and educational programs on topics such as weight control, healthy heart, hypertension, stress management, nutrition, preventive medicine, substance abuse, smoking cessation, and retirement planning.

For additional guidance in the implementation and management of the stress management component of a Member Assistance Program, consult the U.S. Fire Administration publication, *Stress Management Model Program for Maintaining Firefighter Well-Being.*

A-9-1.5 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 may appear immediately after the incident, hours later, or sometimes even days or weeks later. The symptoms may last for a few days, weeks, or months. Occasionally a professional counselor may 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 its own 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 2-day training seminar with continuing education in stress-related training as an ongoing part of the team's regular meetings (monthly is recommended for active departments, while quarterly might be sufficient for less active departments).

Any individual should be able to initiate the debriefing procedure simply by contacting his/her supervisor or officer, or the dispatch center. A contact list of the debriefing team members should be available in the dispatch center.

Debriefings should be held for incidents that have the potential for having 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 itself help to alleviate a good deal of the stress. Debriefings are strictly confidential and are not a critique of the incident. Information should be given on stress reactions and steps that members can take to relieve the symptoms so that they can continue their normal activities as soon as the debriefing is over. Some common signs and symptoms of critical incident stress are fatigue, headaches, inability to concentrate, anxiety, depression, inappropriate emotional behavior, intense anger, irritability, withdrawal from the crew and/or family, change in appetite, increased alcohol consumption, and a change in sleeping patterns.

To help alleviate some of the emotional pain, members can rest more, contact friends, maintain as normal a schedule as possible, eat well-balanced, scheduled meals, keep a reasonable level of activity to fight boredom, express feelings, and talk to loved ones. Recent studies and research also indicate that exercise, especially soon after an event, can greatly reduce mental pain. MAP should always be available to members. The CID team is often the first step in providing the help that is needed and should be ready to serve to help minimize stress-related injury.

A-9-1.6 The fire department should develop a policy on the use of tobacco products for all members. The fire department should also develop a policy on the acceptance of new members into the fire department with regard to the use of tobacco products.

A-10-1.4(a) *Dangerous Properties of Industrial Chemicals* is published by Van Nostrand Reinhold, NY.

A-10-1.4(b) NIOSH *Pocket Guide to Chemical Hazards*, U.S. Department of Health and Human Services, Public Health Services, Publication DHHS No. 85-114, can be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

A-10-1.4(c) *Threshold Limit Values and Biological Exposure Indices for 1988-1989* can be obtained from the American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Bldg. D7, Cincinnati, OH 45211.

A-10-1.4(d) U.S. Coast Guard *Chemical Response Information System* can be obtained from U.S. Coast Guard Commandant Instruction M 16465, Department of Transportation, Washington, DC.

Appendix B Referenced Publications

B-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of NFPA issuance of this document.

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

NFPA 1, *Fire Prevention Code*, 1992 edition

NFPA 70, *National Electrical Code*, 1993 edition

NFPA *101*, *Life Safety Code*, 1991 edition

NFPA 472, *Standard for Professional Competence of Responders to Hazardous Materials Incidents*, 1992 edition

NFPA 901, *Uniform Coding for Fire Protection*, 1990 edition

NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, 1992 edition

NFPA 1201, *Recommendations for Developing Fire Protection Services for the Public*, 1989 edition

NFPA 1401, *Recommended Practice for Fire Service Training Reports and Records*, 1989 edition

NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, 1992 edition

NFPA 1975, *Standard on Station/Work Uniforms for Fire Fighters*, 1990 edition

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*, 1992 edition

NFPA 1991, *Standard on Vapor-Protective Suits for Hazardous Chemical Emergencies*, 1990 edition

NFPA 1992, *Standard on Liquid Splash-Protective Suits for Hazardous Chemical Emergencies*, 1990 edition

NFPA 1993, *Standard on Support Function Protective Garments for Hazardous Chemical Operations*, 1990 edition

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, 1992 edition

NFPA FPH 1791, *Fire Protection Handbook*, 17th edition, 1991

NFPA No. HP-FITNESS, *Physical Fitness for Public Safety Personnel*, Jacobs, Don T., 1990.

B-1.2 ANSI Publication. American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI Z88.5, *Practices for Respiratory Protection for the Fire Service*, 1981.

B-1.3 ASTM Publications. American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103.

ASTM F739, *Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases*, 1986

ASTM F903, *Standard Test Method for Resistance of Protective Clothing Materials to Penetration by Liquids*, 1990

ASTM F1052, *Standard Practice for Pressure Testing of Gas-Tight Totally Encapsulating Chemical Protective Suits*, 1987

ASTM F1359, *Practice for Evaluating the Liquid-Tight Integrity of Chemical Protective Suits and Ensembles Under Static Conditions*, 1991.

B-1.4 International City Management Association. 777 N. Capitol Street NE, Washington, DC 20002.

Managing Fire Services, 2nd edition, 1988.

B-1.5 USFA Publications. U.S. Fire Administration, Emmitsburg, MD 21727.

Fire Department Hearing Conservation Program Manual, 1991

Fire Service Physical Fitness Programs, 1977

Physical Fitness Coordinators Manual for Fire Departments, 1990

Stress Management Model Program for Maintaining Firefighter Well-Being, 1990.

B-1.6 U.S. Government Publications. U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402.

Title 29, *Code of Federal Regulations*, Part 1910 [29 CFR 1910.95, 29 CFR 1910.120, 29 CFR 1910.133, and 29 CFR 1910.134] July 1, 1992

Title 40, *Code of Federal Regulations*, Part 311 [40 CFR 311] (EPA) March, 1991.

Index

NFPA 1500
FIRE DEPARTMENT OCCUPATIONAL SAFETY & HEALTH PROGRAM WORKSHEET

Fire Department: _____ **Date:** _____

Person(s) Completing Worksheet

Name: _____ **Title:** _____ **Name:** _____ **Title:** _____

Name: _____ **Title:** _____ **Name:** _____ **Title:** _____

1-2 Purpose.

1-2.1 The purpose of this standard is to specify the minimum requirements for an occupational safety and health program for a fire department and safety procedures for those members involved in fire suppression, rescue, and related activities.

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

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

1-3 Implementation.

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

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

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
Chapter 1 Administration									
1-4 Equivalency									
1-4.1 Equivalent Levels of Qualifications	✓								
1-4.2 Training, Education, Competency, Safety	✓								
Chapter 2 Organization									
2-1 Fire Dept. Organizational Statement									
2-1.1 - Written Statement or Policy									
2-1.2 - Operational Response Criteria	✓								
2-1.3 - Statement Available for Inspection									
2-2 Risk Management Plan									
2-2.1 - Written Risk Management Plan	✓								
2-2.2 - Risk Management Plan Coverage	✓								
2-2.3 - Risk Management Plan Components	✓								
2-3 Policy									
2-3.1 - Written Fire Department Occupational Safety & Health Policy	✓								
2-3.2 - Occupational Safety & Health Program Audit	✓								
2-4 Roles and Responsibilities									
2-4.1 - Fire Department Responsibility									
2-4.1.1 Comply with Laws									
2-4.1.2 Fire Department Rules, Regulations & SOP's									

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
2-4.2 - Accident Investigation Procedure	✓								
2-4.2.1 - Members	✓								
2-4.2.2 - Fire Dept. Vehicles, Apparatus, Equipment, Facilities	✓								
2-4.2.3 - Corrective Action to Avoid Repetitive Occurances	✓								
2-4.2.4 - Accident Investigation Records	✓								
2-4.3 - Individuals Shall Cooperate, Participate, & Comply									
2-4.3.1 - Right to be Protected and to Participate									
2-4.4 - Member Organization Shall Cooperate									
2-4.4.1 - Collective Rights									
2-5 Fire Department Safety Officer									
2-5.1 - Fire Department Safety Officer - NFPA 1521									
2-5.2 - Fire Department Safety Officer Manage Program									
2-5.3 - Fire Chief Assign Resources									
2-6 Occupational Safety & Health Committee									
2-6.1 - Establish Committee									
2-6.2 - Committee Study & Review									
2-6.3 - Regular Meetings & Minutes									
2-7 Records									
2-7.1 - Accidents, Injury, Illness, Death									
2-7.2 - Occupational Exposures									
2-7.3 - Health (Confidential)									
2-7.4 - Training									
2-7.5 - Vehicles and Equipment									
Chapter 3 Training & Education									
3-1 General Requirements									
3-1.1 - Safety and Health Training									
3-1.2 - Training on 1500									
3-1.3 - Training for Duties & Functions									
3-1.4 - Training for Every Member									
3-1.5 - Qualified Persons Instruct									
3-1.6 - Instructor I-NFPA 1041									

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
3-2 Training Frequency									
3-2.1 - Training not less than twice a year									
3-2.2 - Procedure, Technology, or New Hazard Training									
3-3 Basic Training & Education Requirements									
3-3.1 - Trained before operating									
3-3.2 - NFPA 1001 Fire Fighter I									
3-3.3 - NFPA 1002 Driver/Operator									
3-3.4 - NFPA 1003 Airport Fire Fighter									
3-3.5 - NFPA 1021 Fire Officer									
3-3.6 - Incident Management System									
3-3.7 - Safe Exit From Emergency Operations	✓								
3-4 Training for Fire Fighting									
3-4.1 - Minimum Training for Emergency Operations	✓								
3-4.2 - Monthly Training	✓								
3-4.2.1 - Structural Fire Fighting 10 monthly sessions, 24 hours annually	✓								
3-4.2.2 - NFPA-1403 Live Fire Training									
3-4.3 - Wildland or Other Exterior Fire Fighting	✓								
3-4.3.1 - Primary Assigned - 24 hours Annually	✓								
3-4.3.2 - Occasional Assigned - 9 hours Annually	✓								
3-4.3.3 - Structural Fire Fighting Duties Additionally	✓								
3-4.4 - SOP's - Anticipated Emergency Scene Operations									
3-4.5 - Training Exercises									
3-4.6 - Hazardous Smoke Generating Devices Prohibited									
3-5 Special Operations									
3-5.1 - Specific and Advanced Training									

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
3-5.2 - SOP's - Special Operations									
3-5.3 - NFPA 472-Hazardous Materials Responders, Members Trained to Appropriate Level	✓								
3-5.4 - NFPA 472 - Hazardous Materials Responders, All Members Trained to at least First Responder Operations Level	✓								
Chapter 4 Vehicles and Equipment									
4-1 Fire Department Vehicles									
4-1.1 - Safety and Health are Primary Concerns									
4-1.2 - NFPA 1901-Pumper Fire Apparatus	✓								
4-1.3 - NFPA 1902-Initial Attack Fire Apparatus	✓								
4-1.4 - NFPA 1903-Mobile Water Supply Fire Apparatus	✓								
4-1.5 - NFPA 1904 Aerial Ladder and Elevating Platform Fire Apparatus	✓								
4-1.6 - Secure Tools, Equipment, & SCBA	✓								
4-2 Drivers/Operators of Fire Department Vehicles									
4-2.1 - Successful Completion of Approved Driver Training									
4-2.2 - Valid Drivers License									
4-2.3 - Driver and Officer are Responsible									
4-2.4 - All Persons Secured									
4-2.5 - Non-Emergency Travel -Obey All Laws	✓								
4-2.6 - SOP's - Non-Emergency and Emergency Travel	✓								
4-2.7 - Emergency Travel - Bring Fire Department Vehicles to a Complete Stop	✓								
4-2.7.1 - Proceed Only when Safe									
4-2.8 - Unguarded and Guarded Railroad Track(s)	✓								
4-2.9 - SOP's - Engine, Transmission & Driveline Retarders	✓								

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
4-2.10-SOP's-Manual Brake Limiting Valves									
4-3 Persons Riding on Fire Apparatus									
4-3.1 - Tailboards and Standing Prohibited									
4-3.1.1 - Secured to Vehicle while Performing Emergency Medical Care	✓								
4-3.1.2 - Hose Loading Operations	✓								
4-3.1.3 - Tiller Training	✓								
4-3.2 - Helmets & Eye Protection for Non-enclosed areas									
4-3.3 - Alternate Transportation	✓								
4-3.4 - New Fire Apparatus Meet Appropriate Fire Apparatus Standard									
4-4 Inspection, Maintenance, & Repair of Vehicles									
4-4.1 - At least inspected weekly or within 24 hours after use.									
4-4.2 - Preventative Maintenance Program									
4-4.3 - Remove From Service									
4-4.4 - Repairs Made by Qualified Person	✓								
4-4.5 - NFPA 1911-Pumpers Service Test									
4-4.6 - NFPA 1914-Aerial Ladders and Elevating Platforms Testing									
4-5 Tools and Equipment									
4-5.1 - Safety and Health are Primary Concerns									
4-5.1.1 - Low Noise Level									
4-5.2 - NFPA 1931-Fire Department Ground Ladders	✓								
4-5.3 - NFPA 1961-Fire Hose	✓								
4-5.4 - NFPA 1964-Spray Nozzle	✓								
4-5.5 - At least inspected weekly or within 24 hours after use. Inventory & Record on Equipment used for Training									
4-5.6 - Tested at least Annually									
4-5.7 - Remove From Service									
4-5.8 - NFPA 1932-Fire Department Ground Ladders									

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
4-5.9 - NFPA 1962-Fire Hose									
4-5.10 - NFPA 10-Portable Fire Extinguishers									
Chapter 5 Protective Clothing & Protective Equipment									
5-1 General									
5-1.1 - F.D. Provide PPE									
5-1.2 - Use of PPE									
5-1.3 - PPE Training									
5-1.4 - PPE Maintenance Program									
5-1.5 - NFPA 1581-Infection Control Program-Protective Clothing Cleaning at least every 6 months	✓								
5-1.6 - NFPA 1975-Work Uniforms	✓								
5-1.7 - Avoid wearing any clothing that is considered unsafe.	✓								
5-1.8 - Laundry Service for Contaminated Clothing	✓								
5-1.8.1 - Washing Machines for Protective or Work Clothing	✓								
5-1.8.2 - Other Machine Washables	✓								
5-2 Protective Clothing for Structural Fire Fighting									
5-2.1 - NFPA 1971-Protective Clothing	✓								
5-2.1.1 - Minimum 2 inch Overlap of all Protective Clothing Layers	✓								
5-2.1.2 - Overlap Not Required on Continuous Composite Protection Coveralls	✓								
5-2.2 - NFPA 1972-Helmets									
5-2.3 - NFPA 1973-Gloves									
5-2.3.1 - Wristlets									
5-2.4 - NFPA 1974-Footwear									
5-2.5 - NFPA 1971-Protective Clothing - Hoods	✓								
5-2.6 - Use PPE for Structural Fire Fighting									
5-2.7 - Avoid Wearing Any Clothing That is Considered Unsafe	✓								
5-3 Self Contained Breathing Apparatus (SCBA)									
5-3.1 - NFPA 1981 Open-Circuit SCBA	✓								

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
5-3.2 - Provide and Use SCBA									
(a) hazardous atmosphere									
(b) suspected hazardous									
(c) may become hazardous									
5-3.3 - Operate in Teams of Two or More	✓								
5-3.4 - Confined Space Use									
5-3.5 - Keep Facepiece in Place	✓								
5-3.6 - SCBA Program									
5-3.7 - Grade D Air. ANSI/CGA G7.1									
5-3.7.1 - Certification and Documentation for Vendor Provided Air									
5-3.7.2 - Air Tested Every 3 Months									
5-3.7.3 - Hydrostatic Test Cylinders									
5-3.8 - Facepiece Qualitative Fit Test									
5-3.9 - Beards and Facial Hair									
5-3.10-Spectacles	✓								
5-3.10.1 - Spectacle Strap or Temple Bars Prohibited	✓								
5-3.10.2 - Soft Contact Lens Permitted	✓								
5-3.10.3 - Hard Contact Lens Prohibited	✓								
5-3.11-Facepiece/Face Seal	✓								
5-3.11.1 - Head Covering Breaking Seal Prohibited	✓								
5-3.11.2 - Protective Hood Under SCBA Facepiece/Head Harness Prohibited	✓								
5-3.11.3 - Hazardous Chemical Protective Clothing Helmet Under SCBA Facepiece/Head Harness Prohibited	✓								
5-4 Protective Clothing for Proximity Fire Fighting Operations									
5-4.1 - NFPA 1976-Proximity Protective Clothing	✓								

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
5-4.1.1 - Minimum 2 inch Overlap of all Proximity Protective Clothing Layers	✓								
5-4.1.2 - Overlap Not Required on Continuous Full Thermal & Radiant Heat Protective Coveralls	✓								
5-4.2 - NFPA 1972-Helmets & Radiant Reflective Criteria	✓								
5-4.3 - NFPA 1973-Gloves & Radiant Reflective Criteria	✓								
5-4.4 - NFPA 1974-Footwear & Radiant Reflective Criteria	✓								
5-4.5 - NFPA 1971-Protective Clothing - Hoods & Radiant Reflective Criteria	✓								
5-4.6 - NFPA 1981-Open-Circuit SCBA	✓								
5-4.6.1 Radiant Reflective Criteria over SCBA worn over the Outside of Proximity Protective Clothing	✓								
5-5 Protective Clothing for Emergency Medical Operations									
5-5.1 - NFPA 1999 - Emergency Medical Protective Clothing	✓								
5-5.2 - Members Shall Not Initiate Patient Care Before Emergency Medical Gloves are In Place	✓								
5-5.3 - Members shall use Emergency Medical Body and Face Protection	✓								
5-5.4 - NFPA 1581-Infection Control Program Protective Clothing Cleaning	✓								
5-6 Chemical Protective Clothing for Hazardous Chemical Emergency Operations									
5-6.1 - Vapor-Protective Garments	✓								
5-6.1.1 NFPA 1991-Vapor-Protective Suits	✓								

Content	1992 Ed. New	Compliance	Partial Compliance	Compliance with Administrative Action	Expected Compliance Date	Compliance with Fiscal Action	Estimated $$	Targeted Compliance Date	Remarks or Modification
5-6.1.2 - Garment Appropriate for Specific Hazardous Chemical Emergency	✓								
5-6.1.3 - NFPA 1981-Open-Circuit SCBA	✓								
5-6.1.4 - Use only in Vapor Hazard Atmospheres	✓								
5-6.1.5 - Use for Protection From Liquid Splash or Solid Chemicals & Particulates Protection Permitted.	✓								
5-6.2 - Liquid Splash-Protective Garments	✓								
5-6.2.1 - NFPA 1992-Liquid Splash-Protective Suits	✓								
5-6.2.2 - Garment Appropriate for Specific Hazardous Chemical Emergency	✓								
5-6.2.3 - Respiratory Protection	✓								
5-6.2.4 - Use for Protection From Chemicals in Vapor Form or From Unkown Liquid Chemicals or Chemical Mixture Prohibited	✓								
5-6.2.5 - Not for Carcinogens	✓								
5-6.2.6 - Not for Skin Toxins	✓								
5-6.2.7 - Use Only for Liquid Splash Protection	✓								
5-6.2.8 - Use for Protection from Solid Chemicals and Particulates Permitted	✓								
5-6.3 - Support Functions Protective Garments	✓								
5-6.3.1 - NFPA 1993 - Support Function Protective Suits	✓								
5-6.3.2 - Garment Appropriate for Intended Environment	✓								
5-6.3.3 - Respiratory Protection	✓								
5-6.3.4 - Not for Use in Hot Zone	✓								
5-6.3.5 - Not for Carcinogen	✓								