

**NFPA®**

# 1891

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Standard on Selection, Care, and  
Maintenance of Hazardous Materials,  
CBRN, and Emergency Medical  
Operations Clothing and Equipment

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**2022**



# NFPA® 1891

## Standard on Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment

2022 Edition



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## NFPA® 1891

### Standard on

## Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment

### 2022 Edition

This edition of NFPA 1891, *Standard on Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment*, was prepared by the Technical Committee on Hazardous Materials Protective Clothing and Equipment and released by the Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment. It was issued by the Standards Council on July 4, 2021, with an effective date of July 24, 2021.

This edition of NFPA 1891 was approved as an American National Standard on July 24, 2021.

### Origin and Development of NFPA 1891

The concept for the NFPA 1891 standard has been under development for more than 30 years. It was first proposed by Jan Dunbar, a member of the Technical Committee on Hazardous Materials Protective Clothing and Equipment, during the initial development of the first series of chemical protective standards. The project has been reinvigorated many times by several NFPA staff liaisons including Bruce Teele, David Trebisacci, and Chris Farrell. The current technical committee would like to thank Jan Dunbar, Division Chief of Special Operations (retired) of the Sacramento Fire Department, for his vision, insights, and guidance over the 30-year life of this product.

NFPA 1990, *Standards for Protective Ensembles for Hazardous Materials and CBRN Operations*, sets the performance requirements for the types and levels of protective ensembles for Hazmat/CBRN. NFPA 1891, in turn, establishes procedures as part of a program to provide selection, care, and maintenance requirements to reduce the safety risks and potential health risks associated with poorly selected, poorly maintained, contaminated, and damaged Hazmat/CBRN protective equipment. In addition, NFPA 1891 incorporates ensembles but not individual clothing items, as does NFPA 1999, *Standard on Protective Clothing and Ensembles for Emergency Medical Operations*.

The selection of PPE for a particular response or operational mission should account for specific hazard levels and types of protective ensembles that ensure appropriate levels of protection. Selection of protective equipment that is appropriate for hazardous materials emergencies, CBRN incidents, or emergency medical operations (Hazmat/CBRN/EMO) depends on a thorough hazard and risk assessment that identifies exposure threats and conditions at the response or operations scene. NFPA 1891 provides a standardized approach to the selection process using a decision matrix that is documented in Annex B and is referenced for use in NFPA 470, *Hazardous Materials/Weapons of Mass Destruction (WMD) Standard for Responders*. In addition, NFPA 1891 sets forth the requirements for a Hazmat/CBRN/EMO protective equipment program that includes guidance on inspection and testing, cleaning and decontamination, service and repair, storage, retirement, documentation and records, and test methods.

NFPA 1891 further includes extensive information in Annex A to aid authorities having jurisdiction (AHJs) with recommended approaches for attaining compliance in the standard. Detailed guidance is provided that relates to ensemble inspections, cleaning, and decontamination.

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**Committee Scope:** This Committee shall have primary responsibility for documents on the design, performance, testing, and certification of protective clothing and protective equipment manufactured for fire and emergency services organizations and personnel, to protect against exposures encountered during emergency incident operations. This Committee shall also have the primary responsibility for documents on the selection, care, and maintenance of such protective clothing and protective equipment by fire and emergency services organizations and personnel.

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unusual danger to responders are present or could occur due to toxicity, chemical reactivity, decomposition, corrosiveness, or similar reactions. Additionally, this Committee shall have primary responsibility for documents on the selection, care, and maintenance of hazardous materials protective clothing and protective equipment by fire and emergency services organizations and personnel.

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## NFPA 1891

## Standard on

## Selection, Care, and Maintenance of Hazardous Materials, CBRN, and Emergency Medical Operations Clothing and Equipment

2022 Edition

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

### Chapter 1 Administration

#### 1.1 Scope.

**1.1.1** This standard shall specify the minimum requirements for the selection, care, and maintenance of hazardous materials, CBRN, and emergency medical operations (hazmat/CBRN/EMO) ensembles and ensemble elements, that are used for protection during hazardous materials emergencies, CBRN incidents, and emergency medical operations, and are certified against NFPA 1999 or NFPA 1990, which incorporates NFPA 1991, NFPA 1992, and NFPA 1994.

**1.1.1.1\*** Individual clothing items addressed within this standard are limited to items certified against the NFPA 1992 and NFPA 1994 Class 5 portions of NFPA 1990.

**1.1.1.2** Emergency medical operations (EMO) PPE addressed within this standard are limited to single-use and multiple-use ensembles certified against NFPA 1999.

**1.1.2** This standard shall also specify requirements for hazmat/CBRN/EMO PPE manufactured to previous editions of NFPA 1991, NFPA 1992, NFPA 1994, and NFPA 1999.

**1.1.3** This standard shall not be construed as addressing all of the safety concerns associated with the use of compliant hazmat/CBRN/EMO PPE. The persons and AHJs that use compliant hazmat/CBRN/EMO PPE shall be responsible for establishing safety and health practices and for determining the applicability of regulatory limitations before use.

**1.1.3.1** Compliance with this document is not intended to be a substitute for compliance with all applicable laws and regulations.

**1.1.4** This standard shall not apply to initial life-safety operations where personnel take immediate action using available PPE to perform a rescue or evacuate an area following a preliminary risk analysis.

**1.1.5** This standard shall not specify requirements, such as appropriate use of hazmat/CBRN/EMO PPE for training, operations, or infection control, for other AHJ programs because these programs are under the jurisdiction of other NFPA standards.

**1.1.6** This standard shall not apply to ensembles or ensemble elements that are compliant with NFPA 1951, NFPA 1971, NFPA 1977, and NFPA 2112.

**1.1.6.1** Products compliant with NFPA 1951, NFPA 1971, NFPA 1977, and NFPA 2112 shall be permitted for use in certain hazmat/CBRN/EMO due to their unique protection capabilities.

**1.1.7** This standard shall not apply to ensembles or ensemble elements for protection against ionizing radiation, cryogenic liquid hazards, or explosive atmospheres.

**1.1.8** Nothing herein shall restrict any jurisdiction from exceeding these minimum requirements.

#### 1.2 Purpose.

**1.2.1** The purpose of this standard shall be to establish procedures as part of a program to provide selection, care, and maintenance requirements for hazmat/CBRN/EMO PPE to reduce the safety risks and potential health risks associated with poorly selected, poorly maintained, contaminated, and/or damaged hazardous materials, CBRN, and emergency medical operations protective equipment.

**1.2.2** This standard shall establish a basic criteria for selecting, inspecting, cleaning, decontaminating, repairing, storing, and retiring hazmat/CBRN/EMO PPE compliant with the requirements of NFPA 1999 or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.

#### 1.3 Application.

**1.3.1** This standard shall apply to hazmat/CBRN/EMO PPE that is certified compliant in accordance with NFPA 1999 or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.

**1.3.2** This standard shall also apply to hazmat/CBRN/EMO PPE that is manufactured to previous editions of NFPA 1991, NFPA 1992, NFPA 1994, and NFPA 1999.

**1.3.3** This standard shall not apply to other organizational programs such as the appropriate use of training, operations,

or infection control because these programs are under the jurisdiction of other NFPA standards.

**1.3.4** This standard shall not apply to respiratory protective equipment other than where such equipment interfaces with hazmat/CBRN/EMO protective ensembles.

**1.3.5** Requirements of this standard shall not apply to accessories attached to any element of the hazmat/CBRN/EMO PPE unless specifically addressed herein.

#### 1.4 Responsibility.

**1.4.1** To ensure the greatest possible protection of the organization's employees at the scene of a hazardous materials, CBRN, or emergency medical incident, both employers and employees shall collaborate to establish and maintain a safe and healthy work environment.

**1.4.2** At a minimum, employers shall be responsible for the following:

- (1) Performing a hazard analysis at the scene of a hazardous materials, CBRN, or emergency medical incident to identify and control physical and health hazards
- (2) Identifying and providing appropriate PPE for employees
- (3) Advising employees of the hazards they face and the limitations of the selected PPE
- (4) Training employees in the use and care of PPE
- (5) Maintaining PPE, including replacing worn or damaged PPE
- (6) Periodically reviewing, updating, and evaluating the effectiveness of the PPE program

**1.4.3** At a minimum, employees shall be responsible for the following:

- (1) Wearing PPE properly
- (2) Attending training sessions on PPE
- (3) Ensuring proper care, cleaning, and maintenance of PPE
- (4) Informing a supervisor of the need to repair or replace PPE
- (5) Informing a supervisor when they have questions about their PPE

#### 1.5 Implementation.

**1.5.1** When the standard is adopted by an AHJ, the AHJ shall set a date or dates for achieving compliance with the requirements of this standard.

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

#### 1.6 Units.

**1.6.1** In this standard, values for measurements are followed by an equivalent in parentheses, but only the first stated value shall be regarded as the requirement.

**1.6.2** Equivalent values in parentheses shall not be considered as the requirement as these values are approximate.

## Chapter 2 Referenced Publications

**2.1 General.** The following documents or portions thereof are referenced in this standard as mandatory requirements and shall be considered part of the requirements of this standard. The edition indicated for each referenced mandatory document

is the current edition as of the date of the NFPA issuance of this standard. Some of these mandatory documents might also be referenced in this standard for specific informational purposes and, therefore, are listed in Annex B.

**2.2 NFPA Publications.** National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 470, *Hazardous Materials/Weapons of Mass Destruction (WMD) Standards for Responders*, 2022 edition.

NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2018 edition.

NFPA 473, *Standard for Competencies for EMS Personnel Responding to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2018 edition.

NFPA 475, *Recommended Practice for Organizing, Managing, and Sustaining a Hazardous Materials/Weapons of Mass Destruction Response Program*, 2022 edition.

NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

NFPA 1500™, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2018 edition.

NFPA 1581, *Standard on Fire Department Infection Control Program*, 2021 edition.

NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020 edition.

NFPA 1855, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents*, 2018 edition.

NFPA 1951, *Standard on Protective Ensembles for Technical Rescue Incidents*, 2020 edition.

NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2018 edition.

NFPA 1977, *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting*, 2022 edition.

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services*, 2019 edition.

NFPA 1986, *Standard on Respiratory Protection Equipment for Tactical and Technical Operations*, 2017 edition.

NFPA 1990, *Standard for Protective Ensembles and Ensemble Elements for Hazardous Materials, CBRN, and Emergency Medical Response*, 2022 edition.

NFPA 1991, *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies and CBRN Terrorism Incidents*, 2016 edition.

NFPA 1992, *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*, 2018 edition.

NFPA 1994, *Standard on Protective Ensembles for First Responders to Hazardous Materials Emergencies and CBRN Terrorism Incidents*, 2018 edition.

NFPA 1999, *Standard on Protective Clothing and Ensembles for Emergency Medical Operations*, 2018 edition.

NFPA 2112, *Standard on Flame-Resistant Clothing for Protection of Industrial Personnel Against Short-Duration Thermal Exposures from Fire*, 2018 edition.

#### 2.3 Other Publications.

**2.3.1 ANSI Publications.** American National Standards Institute, Inc., 25 West 43rd Street, 4th Floor, New York, NY 10036.

ANSI/ASQ Z1.4, *Sampling Procedures and Tables for Inspection by Attributes*, 2003 (R2018).

**2.3.2 ASTM Publications.** ASTM International, 100 Bar Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM F1052, *Test Method for Pressure Testing Vapor Protective Suits*, 2014.

**2.3.3 ISO Publications.** International Organization for Standardization, ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*, 1999.

**2.3.4 NIOSH Publications.** National Institute for Occupational Safety and Health, Patriots Plaza 1, 395 E Street, SW, Suite 9200, Washington, DC 20201.

*Statement of Standard for NIOSH CBRN APR Testing*, 2003.

*Statement of Standard for NIOSH CBRN PAPR Testing*, 2006.

*Statement of Standard for NIOSH CBRN SCBA Testing*, 2003.

**2.3.5 United Nations Publications.** United Nations, 1775 K Street, Suite 500, Washington, DC 20006.

*Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*, 2011.

**2.3.6 U.S. Government Publications.** U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

Title 29, Code of Federal Regulations, Part 1910.120, “Hazardous Waste Operations and Emergency Response.”

Title 29, Code of Federal Regulations, Part 1910.134, “Respiratory Protection.”

Title 29, Code of Federal Regulations, Part 1910.1030, “Bloodborne Pathogens.”

Title 42, Code of Federal Regulations, Part 84, “Respiratory Protective Devices.”

U.S. Department of Transportation “Nine Classes of Hazardous Materials,” 2014. <https://www.fmcsa.dot.gov/regulations/enforcement/nine-classes-hazardous-materials-yellow-visor-card>

<https://www.fmcsa.dot.gov/regulations/enforcement/nine-classes-hazardous-materials-yellow-visor-card>.

### 2.3.7 Other Publications.

*Merriam-Webster’s Collegiate Dictionary*, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003 Edition.

## 2.4 References for Extracts in Mandatory Sections. (Reserved)

## Chapter 3 Definitions

**3.1 General.** The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or in another chapter, they shall be defined using their ordinarily accepted meanings in the context in which they are used. *Merriam-Webster’s Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

## 3.2 NFPA Official Definitions.

**3.2.1\* Approved.** Acceptable to the authority having jurisdiction.

**3.2.2\* Authority Having Jurisdiction (AHJ).** An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

**3.2.3 Labeled.** Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

**3.2.4\* Listed.** Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

**3.2.5 Shall.** Indicates a mandatory requirement.

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

**3.2.7 Standard.** An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

## 3.3 General Definitions.

**3.3.1 Accessories.** Those items that are attached to hazardous materials protective clothing, hazardous materials protective ensembles, or individual elements but designed in such a manner to be removable from the hazardous materials protective clothing, hazardous materials protective ensembles, and individual elements and that are not necessary to be attached to meet the requirements of the standard. Such accessories include, but are not limited to, utility belts, harnesses, backpacks, tools, tool packs, radios, radio packs, suspenders, and lights.

### 3.3.2 Agents.

**3.3.2.1 Biological Agents.** Liquid or particulate agents such as bacteria, viruses, fungi, and other microorganisms and their associated toxins.

**3.3.2.2 CBRN Agents.** The term used to refer to chemical terrorism agents including both chemical warfare agents

and toxic industrial chemicals, biological terrorism agents, and radiological particulate terrorism agents.

**3.3.2.3 Chemical Terrorism Agents.** Liquid, solid, gaseous, and vapor chemical warfare agents and toxic industrial chemicals used to inflict lethal or incapacitating casualties, generally on a civilian population as a result of a terrorist attack.

**3.3.2.4 Chemical Warfare (CW) Agents.** Liquid, solid, gaseous, and vapor chemical agents (most are liquids) traditionally used during warfare or armed conflict to kill or incapacitate an enemy.

**3.3.2.5 Radiological Particulate Terrorism Agents.** Particles that emit ionizing radiation in excess of normal background levels used to inflict lethal or incapacitating casualties, generally on a civilian population, as the result of a terrorist attack.

**3.3.3 Body Fluids.** Fluids produced by the body including, but not limited to, blood, semen, mucus, feces, urine, vaginal secretions, breast milk, amniotic fluids, cerebrospinal fluid, synovia fluid, and pericardial fluid.

**3.3.4\* Carcinogen/Carcinogenic.** A cancer-causing substance which is identified in one of several published lists including, but not limited to, the NIOSH "Pocket Guide to Chemical Hazards," SAX's "Dangerous Properties of Industrial Materials," and the ACGIH "Threshold Limit Values and Biological Exposure Indices." *Carcinogenic* is the adjective form of the word.

**3.3.5 Care.** Procedures for cleaning, decontaminating, and storing hazardous materials protective clothing, hazardous materials protective ensembles and individual elements.

**3.3.6 CBRN.** The abbreviation used for "chemical, biological, radiological, and nuclear."

**3.3.7 CBRN Terrorism Incidents.** Situations involving the intentional or accidental release of CBRN agents in civilian areas.

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

**3.3.9 Cleaning.** The act of removing soil and contamination from protective clothing, protective ensembles, and ensemble elements by mechanical, chemical, thermal, or combined processes.

**3.3.9.1\* General Cleaning.** A specific process applied for removing soil from the wearing of hazmat/CBRN/EMO PPE that has not been exposed to hazardous substances requiring decontamination.

**3.3.10\* Compliant Product.** A product that is covered by NFPA 1891 and has been certified as meeting all applicable requirements of NFPA 1999 or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.

**3.3.11 Component.** Any material, part, or subassembly used in the construction of the compliant product.

**3.3.12 Contamination.** The process of transferring a hazardous material, or the hazardous component of a weapon of mass destruction (WMD), from its source to people, animals, the environment, or equipment, that can act as a carrier.

**3.3.12.1 Cross Contamination.** The process by which a contaminant is carried out of the hot zone and contaminates people, animals, the environment, or equipment.

**3.3.13 Craze.** The appearance of fine cracks or hairline fractures in the surface a transparent material such as a faceshield or visor.

**3.3.14\* Decontamination.** The physical and/or chemical process of reducing and preventing the spread and effects of contaminants to people, animals, the environment, or equipment involved at a hazmat/CBRN/EMO incident.

**3.3.15\* Disinfectant.** A type of antimicrobial agent that destroys or irreversibly inactivates fungi and bacteria, but not necessarily their spores, on inanimate surfaces and objects.

**3.3.16\* Emergency Medical Operations (EMO).** The provision of emergency patient care and transportation prior to arrival at a medical care facility by emergency medical responders, emergency patient care by medical first receivers at a medical care facility, and body recovery by emergency medical responders.

**3.3.17\* Emergency Responders.** Personnel assigned to organizations that have the responsibility for responding to hazardous materials emergencies and CBRN terrorism incidents.

**3.3.18 Encapsulating Ensemble.** A type of ensemble that completely covers the wearer and the wearer's respirator.

**3.3.19 Ensemble.** Multiple ensemble elements that when worn together are designed to provide minimum full-body protection from some, but not all, risks that occur during hazardous materials emergencies, CBRN terrorism incidents, and emergency medical operations. (See also 3.3.20, *Ensemble Elements*).

**3.3.19.1 NFPA 1991–Certified Ensembles (and Ensemble Elements).**

**3.3.19.1.1\* Vapor-Protective Ensemble.** Multiple elements of compliant protective clothing and equipment that when worn together provide protection from some, but not all, risks of vapor, liquid splash, and particulate environments during hazardous materials emergencies and CBRN terrorism incidents in vapor, gas, liquid, or particulate forms.

**3.3.19.1.2\* Vapor-Protective Ensemble with Optional Chemical Flash Fire Escape Protection.** A compliant vapor-protective ensemble that is also certified as compliant with the optional requirements for limited protection against chemical flash fire for escape only.

**3.3.19.1.3 Vapor-Protective Ensemble with Optional Chemical Flash Fire Escape and Liquefied Gas Protection.** A compliant vapor-protective ensemble that is also certified as compliant with the optional requirements for both limited protection against chemical flash fire for escape only and for protection against liquefied gases.

**3.3.19.1.4\* Vapor-Protective Ensemble with Optional Liquefied Gas Protection.** A compliant vapor-protective ensemble that is also certified as compliant with the optional requirements for protection against liquefied gases.

**3.3.19.1.5\* Vapor-Protective Footwear.** The ensemble element of the protective ensemble that provides chemical protection and physical protection to the feet, ankles, and lower legs.

**3.3.19.1.6 Vapor-Protective Gloves.** The ensemble element of the protective ensemble that provides chemical protection to the hands and wrists.

**3.3.19.2 NFPA 1992–Certified Ensembles (and Ensemble Elements).**

**3.3.19.2.1\* Liquid Splash–Protective Ensemble.** Multiple elements of compliant protective clothing and equipment products that when worn together provide protection from some, but not all, risks of hazardous materials emergencies involving liquids to the torso, legs, arms, head, hands, and feet.

**3.3.19.2.2\* Liquid Splash–Protective Footwear.** The element of the protective ensemble, or the item of protective clothing that provides liquid chemical protection and physical protection to the feet, ankles, and lower legs.

**3.3.19.2.3\* Liquid Splash–Protective Garment.** The element of the protective ensemble or the item of protective clothing that provides liquid chemical protection to the upper and lower torso, arms, and legs, excluding the head, hands, and feet.

**3.3.19.2.4 Liquid Splash–Protective Gloves.** The element of the protective ensemble, or the item of protective clothing that provides liquid chemical protection to the hands and wrists.

**3.3.19.2.5\* Liquid Splash–Protective Hood.** The element of the protective ensemble or an item of protective clothing that provides liquid chemical protection and physical protection to the head and neck.

**3.3.19.3 NFPA 1994–Certified Ensembles (and Ensemble Elements).**

**3.3.19.3.1 Class 1 Hazmat/CBRN Protective Ensemble.** An ensemble comprising ensemble elements that when worn together are designed to protect emergency responders at hazardous materials emergencies and CBRN terrorism incidents involving vapor or liquid chemical hazards where concentrations are at or above immediately dangerous to life and health (IDLH), requiring the use of self-contained breathing apparatus (SCBA).

**3.3.19.3.2 Class 2 Hazmat/CBRN Protective Ensemble.** An ensemble comprising ensemble elements that when worn together are designed to protect emergency responders at hazardous materials emergencies and CBRN terrorism incidents involving vapor or liquid chemical hazards where concentrations are at or above immediately dangerous to life and health (IDLH), requiring the use of self-contained breathing apparatus (SCBA).

**3.3.19.3.3 Class 3 Hazmat/CBRN Protective Ensemble.** An ensemble comprising ensemble elements that when worn together are designed to protect emergency responders at

hazardous materials emergencies and CBRN terrorism incidents involving low levels of vapor or liquid chemical hazards where concentrations are below immediately dangerous to life and health (IDLH), permitting the use of CBRN air-purifying respirators (APR) or CBRN-powered air-purifying respirators (PAPR).

**3.3.19.3.4 Class 4 Hazmat/CBRN Protective Ensemble.** An ensemble comprising ensemble elements that when worn together are designed to protect emergency responders at hazardous materials emergencies and CBRN terrorism incidents involving biological or radiological particulate hazards where concentrations are below immediately dangerous to life and health (IDLH), permitting the use of air-purifying respirators (APR) or powered air-purifying respirators (PAPR).

**3.3.19.3.5 Class 5 Hazmat/CBRN Protective Ensemble.** An ensemble comprising ensemble elements that when worn together are designed to protect emergency responders at hazardous materials emergencies and CBRN terrorism incidents involving non-skin toxic, flammable gases where the potential exists for chemical flash fires and further requiring the use of self-contained breathing apparatus (SCBA).

**3.3.19.4 NFPA 1999–Certified Protective Ensembles.**

**3.3.19.4.1\* Multiple-Use Emergency Medical Protective Ensemble.** Multiple elements of compliant protective clothing and equipment providing full body coverage intended for multiple use that when worn together provide protection from some, but not all, risks of emergency medical operations.

**3.3.19.4.2\* Single-Use Emergency Medical Protective Ensemble.** Multiple elements of compliant protective clothing and equipment providing full-body coverage intended for a single use that when worn together provide protection from some, but not all, risks of emergency medical operations.

**3.3.20 Ensemble Elements.** Garment(s), gloves, footwear, hood(s), and other clothing and equipment items used to assemble a complete protective ensemble.

**3.3.20.1 Faceshield.** A hazardous materials protective component intended to help protect a portion of the wearer's face, not intended as primary eye protection.

**3.3.20.2 Footwear.** The element of the protective ensemble that provides protection to the foot, ankle, and lower leg.

**3.3.20.3 Footwear Cover.** The item of the protective ensemble to be worn over standard footwear that provides a barrier and physical protection to the wearer's feet, and possibly ankles and lower legs.

**3.3.20.4 Garment(s).** The element or elements of the protective ensemble that provides protection to the upper and lower torso, arms, and legs and possibly the head, excluding the hands and feet.

**3.3.20.5 Gloves.** The element of the protective ensemble that provides protection to the wearer's hands and wrists.

**3.3.20.6 Hood.** The element of the protective ensemble that provides protection to the wearer's head and neck.

**3.3.20.7 Sock.** An extension of the garment or suit leg or a separate item that covers the entire foot and ankle and is intended to be worn inside a protective outer boot.

**3.3.21 Exhaust Valve.** A one-way vent that releases exhaust to the outside environment and prevents entry of the outside environment.

**3.3.22 Fit.** The quality, state or manner in which the width, length, and other dimensions of clothing, when worn, relates to the wearer's body.

**3.3.23\* Gross Decontamination.** A phase of the decontamination process where significant reduction of the amount of surface contamination takes place as soon as possible, most often accomplished by mechanical removal of the contaminant or initial rinsing from handheld hose lines, emergency showers, or other nearby sources of water.

**3.3.24 Hardware.** Nontextile components of the hazardous materials protective clothing, hazardous materials protective ensemble, or individual elements including, but not limited to, those made of metal or rigid plastic.

**3.3.25\* Hazardous Materials Emergencies.** Incidents involving the release or potential release of hazardous materials.

**3.3.26 Hazmat/CBRN/EMO PPE.** An abbreviation for personal protective equipment worn by emergency responders for hazardous materials emergencies, CBRN terrorism incidents, and emergency medical operations.

**3.3.27 Hazardous Materials.** Any solid, liquid, gas, or mixture thereof that can potentially cause harm to the human body through respiration, ingestion, skin absorption, injection, or contact.

**3.3.28 Hazmat.** Abbreviation for the compound term *hazardous materials*, as in hazmat team.

**3.3.29 Independent Service Provider (ISP).** An independent third party performing services for inspection, cleaning, disinfection, sanitization, decontamination for reuse, and repair of hazmat/CBRN/EMO PPE.

**3.3.30 Maintenance.** Procedures for inspection, repair, and removal from service of hazardous materials and CBRN protective ensembles, ensemble elements, and clothing.

**3.3.31 Manufacturer.** The entity that directs and controls compliant product design, compliant product manufacturing, or compliant product quality assurance; or the entity that assumes the liability for the compliant product or provides the warranty for the compliant product.

**3.3.32 Model.** The collective term used to identify a group of individual items of the same basic design and components from a single manufacturer, produced by the same manufacturing and quality assurance procedures, and that are covered by the same certification.

**3.3.33\* Multiple Use.** Items designed to be worn repeatedly and used for protection during emergency medical operations.

**3.3.34\* Nonencapsulating Ensemble.** A type of ensemble that does not fully cover the wearer's respirator and relies on the facepiece of the respirator to interface with the garment to complete the enclosure of the wearer.

**3.3.35 Organization.** The entity that provides the direct management and supervision for emergency incident response personnel. Examples of such entities include, but are not limited to, fire departments, police departments, rescue squads,

emergency medical service providers, and hazardous materials response teams.

**3.3.36\* Products of Combustion.** The end product when fuels, such as hydrocarbons and materials, remain after the process of combustion in a fire.

**3.3.37 Removal from Active Service.** The process of removing from inventory a hazardous materials ensemble so that it is no longer available to be used in an active application at an incident.

**3.3.38\* Respirator.** A certified device that provides respiratory protection for the wearer and is worn as part of an ensemble.

**3.3.39 Retirement.** The process of removing from inventory hazardous materials and CBRN protective ensembles, ensemble elements, and clothing so that they are no longer available for any purpose, including training.

**3.3.40\* Ruggedized.** A category of ensembles with increased physical durability.

**3.3.41\* Sanitizer.** A type of antimicrobial agent that is used to reduce, but not necessarily eliminate, microorganisms from the inanimate environment to levels considered safe as determined by public health codes or regulations.

**3.3.42 Seam.** A line along which two pieces of protective material are sewn together in a garment or other article. Excludes external fittings, gaskets, and garment closure assemblies.

**3.3.43 Selection.** The process of determining what hazmat/CBRN/EMO PPE is necessary for protection of responders from an anticipated, specific hazard or other activity; the procurement of the appropriate hazmat/CBRN/EMO PPE; and the choice of hazmat/CBRN/EMO PPE for a specific hazard or activity at an emergency incident.

**3.3.44 Service Life.** The period for which hazardous materials and CBRN protective ensembles, ensemble elements, and clothing are useful before retirement.

**3.3.45\* Single Use.** A designation applied to an ensemble or ensemble element indicating their one-time use followed by disposal.

**3.3.46\* Soiling.** The accumulation of sweat, dust, dirt, debris, and other nonhazardous materials on or in hazmat/CBRN/EMO PPE that could degrade its performance or cause hygiene issues.

**3.3.47 Standard Operating Procedure (SOP).** A written directive that establishes specific operational or administrative methods to be followed routinely for the performance of a task or for the use of equipment.

**3.3.48 Storage Life/Shelf Life.** The useful life expected of the hazardous materials and CBRN protective ensembles, ensemble elements, and clothing from the date of manufacture when it has been stored, inspected, and has undergone proper care and maintenance in accordance with manufacturer's instructions, but has not been used, donned, doffed, or repaired.

**3.3.49\* Universal Precautions.** An approach to infection control in which human blood and certain human body fluids

are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

**3.3.50 Utility Sink.** A separate sink used for cleaning ensembles and ensemble elements.

**3.3.51 Visor.** The portion of the hazardous materials protective ensemble or hazardous materials protective clothing that permits the wearer to see outside of the ensemble or clothing.

**3.3.52 Wear Test.** A controlled evaluation of one or more hazardous materials and CBRN protective ensembles, ensemble elements, and clothing involving selected AHJ members wearing hazardous materials and CBRN protective ensembles, ensemble elements, and clothing in actual or simulated activities with the objective of providing quantitative ratings and subjective comments from participating members.

## Chapter 4 Program

### 4.1 General.

**4.1.1** The AHJ shall develop and implement a program for the selection, care, and maintenance of hazmat/CBRN/EMO protective ensembles and ensemble elements used by the members of the organization in the performance of their assigned functions or as required by the AHJ.

**4.1.2** This program shall have the goal of providing hazmat/CBRN/EMO PPE that are suitable and appropriate for the intended use; maintaining such hazmat/CBRN/EMO PPE in a safe, usable condition to provide the intended protection to the user; removing from use such hazmat/CBRN/EMO PPE that could cause or contribute to user injury, illness, or death because of its condition; and reconditioning, repairing, or retiring such hazmat/CBRN/EMO PPE.

**4.1.3** Where this program for the selection, care, and maintenance of hazmat/CBRN/EMO PPE is part of an AHJ's program on protective clothing and protective equipment, the portion of the AHJ's program that affects hazmat/CBRN/EMO PPE shall be in accordance with this standard.

### 4.2 Program Parts.

**4.2.1** As part of the program, the AHJ shall develop written standard operating procedures (SOPs) that identify and define various roles and responsibilities of the organization and of its members.

**4.2.2** The program shall incorporate at least the requirements in the chapters listed in Table 4.2.2.

**4.2.3** The AHJ shall not add accessories that compromise the scope and purpose of the product certification and shall not permit accessories to be added to hazmat/CBRN/EMO PPE unless the following have taken place:

- (1) The accessory has been certified for use with the element in accordance with NFPA 1999, or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.
- (2) The AHJ has the equipment manufacturer's approval to use the accessory with their hazmat/CBRN/EMO PPE.

### 4.3 Records.

**4.3.1** The AHJ shall compile and maintain records on their hazmat/CBRN/EMO PPE.

**Table 4.2.2 Required Program Parts for Hazmat/CBRN/EMO PPE**

| Chapter Title                                     | Chapter |
|---------------------------------------------------|---------|
| Referenced Publications                           | 2       |
| Selection                                         | 5       |
| Inspection and Testing                            | 6       |
| Cleaning and Decontamination                      | 7       |
| Service and Repair                                | 8       |
| Storage                                           | 9       |
| Retirement                                        | 10      |
| Documentation and Records                         | 11      |
| Test Methods                                      | 12      |
| Explanatory Material                              | Annex A |
| Selection of Hazmat/CBRN/EMO Protective Ensembles | Annex B |

**4.3.2** At least the following records shall be kept for hazmat/CBRN/EMO PPE:

- (1) Date and condition when received
- (2) Manufacturer and model name or design
- (3) Manufacturer's identification number, lot number, or serial number
- (4) Month and year of manufacture
- (5) Date(s) and findings of advanced inspection(s) by AHJ
- (6) Date(s) of advanced cleaning or decontamination by AHJ
- (7) Reason for advanced cleaning or decontamination and individual(s) who performed cleaning or decontamination
- (8) Date(s) of maintenance(s), names of individual(s) who performed maintenance(s), and brief description of any maintenance(s)
- (9) Date of removal from active service inventory or retirement
- (10) Date and method of destruction and/or disposal

### 4.4 Manufacturer's Instructions.

**4.4.1** When issuing new hazmat/CBRN/EMO PPE, the AHJ shall provide users with the instructions provided by the manufacturer on the care, use, and maintenance of the hazmat/CBRN/EMO PPE, including any warnings provided by the manufacturer.

**4.4.2** Where the manufacturer's instructions regarding the care or maintenance of their hazmat/CBRN/EMO PPE differ from a specific requirement(s) in this standard, the manufacturer's instructions shall be followed for that requirement(s).

**4.4.3** The AHJ shall retain a copy of the manufacturer's instructions for the hazmat/CBRN/EMO PPE for reference purposes.

**4.5 Protecting the Public from Contamination.** The AHJ shall develop written SOPs as part of the program, which minimize the public's exposure to soiled or contaminated hazmat/CBRN/EMO PPE.

## Chapter 5 Selection

### 5.1 Selection for Procurement.

**5.1.1** The AHJ shall establish a process to conduct selection for procurement of hazmat/CBRN/EMO PPE.

**5.1.2** The following reference materials shall be considered:

- (1) Standards related to selection, use, care, and maintenance:
  - (a) NFPA 1891
  - (b) NFPA 1500
  - (c) NFPA 1581
- (2) Standards and regulations related to training and end-user qualification:
  - (a) NFPA 470, which consolidates NFPA 472, NFPA 473, and NFPA 1072
  - (b) 29 CFR 1910.120
- (3) Standards and regulations related to respiratory protective equipment:
  - (a) NFPA 1981
  - (b) NFPA 1986
  - (c) 42 CFR Part 84
  - (d) 29 CFR 1910.134
  - (e) NIOSH *Statement of Standard for CBRN Full Facepiece Air-Purifying Respirators (APR)*
  - (f) NIOSH *Statement of Standard for CBRN Powered Air-Purifying Respirators (PAPR)*
  - (g) NIOSH *Statement of Standard for CBRN Self-Contained Breathing Apparatus (SCBA)*
- (4) Standards related to applicable PPE:
  - (a) NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994
  - (b) NFPA 1999
  - (c) NFPA 1971
  - (d) NFPA 1951
- (5) All applicable federal, state, and local regulations

**5.1.3** Before starting the procurement process for hazmat/CBRN/EMO protective ensembles and ensemble elements (i.e., liquid splash-protective clothing or emergency medical protective clothing), a hazard assessment and risk analysis study shall be conducted following the procedures provided in NFPA 475, Chapter 5, Risk Assessment. The risk assessment shall include the following steps:

- (1) Hazard identification and vulnerability assessment
- (2) Consequence identification
- (3) Risk analysis

**5.1.3.1** The hazard identification and vulnerability assessment process shall include collecting information regarding the locations and types of hazardous materials present in the jurisdiction covered by the AHJ. The process shall include, but not be limited to, the following:

- (1) Identification of facilities that manufacture/produce, store, transport, use, treat, or dispose of hazardous materials, including transportation routes where hazardous materials throughout the AHJ's jurisdiction might be present
- (2) Identification of all materials capable of causing death, injury, property damage, and system disruptions following an accidental or intentional release at identified locations

- (3) Identification of materials, material properties, quantities, concentrations, containers, storage considerations, transportation routes, potential hazards associated with spills or releases, and surrounding conditions
- (4) The likelihood of members to be exposed to biological hazards that occur as the result of exposure to blood-borne pathogens or other infectious diseases that could occur as the result of emergency medical operations
- (5) The potential for acts of terrorism or other releases of CBRN agents

**5.1.3.1.1** Special consideration shall be given to hazards specifically related to the selection of PPE including, but not limited to, the following:

- (1) State of hazardous material (gas/vapor, liquid, or solid) and potential length of exposure
- (2) Potential for flash fire or detonation
- (3) Whether a continuous fire is possible
- (4) Risk of a structural collapse or other severe physical hazards
- (5) Ruggedness or physical hazards within the response environment
- (6) Operations on elevated platforms, near roadways, or around open water
- (7) Activities involving rescue of affected victims or other protection of affected civilian personnel
- (8) Compatibility of hazmat/CBRN/EMO PPE with operational equipment
- (9) General chemical permeation, liquid penetration, or viral penetration resistance data associated with hazmat/CBRN/EMO PPE under consideration
- (10) Other specific conditions that might include substances in a cryogenic state, radiation exposure hazards, and explosive atmospheres

**5.1.3.2** The consequences of a release of hazardous materials found at each location in the jurisdiction covered by the AHJ shall be analyzed by evaluating the likely behavior of a container and its contents to determine the hazards associated with the release and the likely outcomes (e.g., deaths and injuries, environmental and property damage, and system disruptions) associated with that release.

**5.1.3.2.1** Analyzing the consequences of exposure shall include identifying the potential risks to emergency responders of exposure to liquid-borne or airborne biological hazards that result in the infection or debilitation of affected responders or the local population.

**5.1.3.3** Risk analysis shall be a judgment of the likelihood or probability of a release occurring coupled with the severity of outcomes, based on hazardous materials in the jurisdiction covered by the AHJ and an estimate of the likely outcomes associated with their release in the jurisdiction.

**5.1.3.3.1** On conclusion of the risk analysis study, the AHJ shall determine the required levels of protection in vapor protection, liquid splash protection, particulate protection, flash fire protection, liquefied gas protection, CBRN protection, and biological protection.

**5.1.4\*** The AHJ shall ensure that hazmat/CBRN/EMO PPE under consideration is certified as compliant with NFPA 1999 or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.

**5.1.4.1** The AHJ shall also consider the role and protective capabilities of other certified PPE in use by the emergency responders.

**5.1.5** The AHJ shall conduct a review of commercially available NFPA-compliant hazmat/CBRN/EMO PPE and shall consider the following factors:

- (1) Hazmat/CBRN/EMO protection against specific hazards in the area of jurisdiction
- (2) Resistance to physical and other hazards in the area of jurisdiction
- (3) Hazmat/CBRN/EMO ensemble and ensemble element design features and options
- (4) Available sizes of hazmat/CBRN/EMO protective ensembles and ensemble elements provided by the manufacturer
- (5) Human factors assessments including ease of donning/doffing and wearer mobility, visibility, dexterity, tactility, and tactical considerations required for the area of jurisdiction
- (6) Compatibility with other protective equipment and accessories (e.g., respiratory equipment, head protection, undergarments, communication systems, and cooling devices)
- (7) Durability and suitability for single use or reuse
- (8) Ease of decontamination and availability of decontamination procedures for doffing and reuse, including the provision of gross decontamination and transfer of contaminants during doffing
- (9) Storage recommendations and considerations
- (10) Warranties and disclaimers
- (11) User information and technical data package
- (12) Cost
- (13) Return policy, ability to repair, and replacement of individual elements
- (14) Recommended periodic testing and testing procedures
- (15) Recommended inspection programs
- (16) Stated hazmat/CBRN/EMO PPE storage life and recommendations for removal from active service inventory
- (17) Recommendations for how decisions are made for retirement of hazmat/CBRN/EMO PPE
- (18) Recommendations for destruction methods and disposal

**5.1.6** The AHJ shall verify that hazmat/CBRN/EMO PPE under consideration interface properly and shall confirm compatibility of all operational equipment to be worn with the certified PPE.

**5.1.7\*** When a wear trial of hazmat/CBRN/EMO PPE is performed by the AHJ, the wear trial shall include the following:

- (1) Mimicking expected operational scenarios
- (2) Using the hazmat/CBRN/EMO PPE as it would be used in the field, including use of all operational equipment and simulating typical wear times and activities
- (3) Using an objective rating system based on the needs of the AHJ
- (4) Providing an equal comparison of any similarly evaluated PPE against the incumbent PPE or all PPE on the same basis

**5.1.8** Where the AHJ develops purchase specifications, those specifications shall indicate that the hazmat/CBRN/EMO PPE shall be certified as compliant with the most current editions of NFPA 1991, NFPA 1992, NFPA 1994, or NFPA 1999. The

purchase specifications shall also include any other performance features found to be critical to acceptability for use based on the AHJ hazard assessment, wear trial, and selection process.

## **5.2 Selection for Use.**

**5.2.1** The AHJ shall ensure that a selection process based on the decision logic provided in Figure B.1 for hazmat/CBRN/EMO PPE is in place and is conducted at the scene of all hazardous materials emergencies, CBRN incidents, and emergency medical operations.

**5.2.1.1** Before starting the selection process for hazmat/CBRN/EMO PPE, a hazard assessment and risk analysis study shall be conducted following the procedures provided in NFPA 475, Chapter 5, Risk Assessment; NFPA 1500, Chapter 8, Emergency Operations; and NFPA 1581, Chapter 7, Protection for Emergency Service Operations.

**5.2.2** The AHJ shall designate a position in the organization with the authority to select the appropriate hazmat/CBRN/EMO PPE at each hazardous materials incident response.

**5.2.2.1** The designated individual shall have all pertinent information about the hazmat/CBRN/EMO PPE available to them for selection consideration at each incident response.

**5.2.2.2** The designated individual shall be trained according to NFPA 470 and shall have a minimum level of training to operations level responder with the mission-specific knowledge and skills identified in Section 6.8, Mission-Specific Competencies: Personal Protective Equipment (PPE), of NFPA 470.

**5.2.3** Before starting the selection process for the use of hazmat/CBRN/EMO PPE, a hazard assessment and risk assessment shall be conducted by the designated individual.

**5.2.4** The hazard assessment shall include an examination of the expected hazards and threats involving hazardous materials that might be encountered by members of the organization at the scene of the hazardous materials incident to include, but not be limited to, the following:

- (1) Categorization of the substance(s) in relation to its hazard(s) by using a classification system, such as the U.S. Department of Transportation "Nine Classes of Hazardous Materials" or the *Globally Harmonized System of Classification and Labelling of Chemicals*, and including cryogenics and carcinogens as separate categories
- (2) Listing of the chemical, physical, reactive, and toxicological properties of the substance(s)
- (3) Documentation of the type of facility or property on which the incident is located including, but not limited to, manufacturing, storage, packaging, distribution, transportation system, and/or consumption
- (4) Documentation of any potential threat to adjacent sensitive occupancies including, but not limited to, public assembly, government facilities, schools, shopping complexes, churches, underground occupancies, and abovegrade occupancies
- (5) Documentation of the size, condition of, damage to, and estimated integral strength of containers and container types, plumbing, valving, tanks, distribution systems, channels, holding ponds, and racking systems

- (6) Documentation of potentially vulnerable infrastructures, types of terrain, existing weather conditions, and limitations of the AHJ

**5.2.5** The risk analysis study shall follow the hazards assessment study at the scene of a hazardous materials emergency, CBRN incident, or emergency medical operation.

**5.2.5.1** The risk analysis shall include documentation of the projected dangers and unsafe situations that might be encountered by members of the AHJ if the decision is made that intervention activities are necessary.

**5.2.6** On conclusion of the risk analysis, the designated individual shall determine the required level(s) of protection from gases/vapors, liquid splashes, particulates, biological agents, flash fire, other flame or thermal hazards, liquefied gases, and physical hazards.

**5.2.7** The designated individual shall ensure that the hazmat/CBRN/EMO PPE under consideration for use is certified as compliant with the appropriate PPE category or class of NFPA 1999 or NFPA 1990, which consolidates NFPA 1991, NFPA 1992, and NFPA 1994.

**5.2.7.1** The designated individual shall also consider the role and protective capabilities of other certified PPE in use by emergency responders such as PPE certified as compliant with NFPA 1971 for structural firefighting.

**5.2.8** The designated individual shall verify that hazmat/CBRN/EMO PPE under consideration for use shall interface properly and shall be compatible with all operational equipment and accessories to be worn.

**5.2.9\*** Where the response involves emergency medical operations exclusively, the EMO PPE shall be selected on the basis of the following factors:

- (1) Exposure type (airborne or liquid-borne)
- (2) Relative risk of contact with pathogen
- (3) Expected exposure time and concentration (for airborne pathogens)
- (4) Exposure volume (for liquid-borne pathogens)
- (5) Exposure pressure (for liquid-borne pathogens)
- (6) Physical environment and other hazards present

## Chapter 6 Inspection and Testing

### 6.1 General.

**6.1.1** Nothing in this standard shall restrict any AHJ from exceeding these minimum requirements for inspection and testing.

**6.1.2\*** Before any inspection or testing procedure is initiated, the AHJ shall ensure that all items to be inspected or tested are clean and free of any contamination in accordance with Chapter 7.

**6.1.3\*** The AHJ shall develop an inspection and testing program for hazmat/CBRN/EMO protective ensembles and ensemble elements.

**6.1.3.1** The inspection and testing program shall identify, at a minimum, the following parts:

- (1)\* Specific recommended inspection and testing procedures provided by the PPE manufacturer

- (2) The types and frequency of inspection and testing as applicable to each item of PPE
- (3) Specific procedures to be applied to each item of PPE
- (4) The individual within the AHJ responsible for conducting the inspections and testing.
- (5) The documentation or records that are kept when inspections and testing are performed.

### 6.1.3.2 Types of Inspections.

**6.1.3.2.1** Depending on the type of PPE and its intended use or reuse, the types of inspections specified in Table 6.1.3.2.1 shall be applied.

**6.1.3.2.2** Based on information provided by the manufacturer of the PPE, the AHJ shall determine if the PPE is intended for a single use, single exposure, or can be reused for determining which inspections to perform.

**6.1.3.2.3 Inspections on Receipt of PPE Items.** On receipt of PPE items, the AHJ shall perform the following:

- (1) Inspect purchased hazmat/CBRN/EMO PPE items to ensure that the correct items were ordered, they meet any specifications provided by the AHJ, and they were not damaged prior to or during shipment.
- (2) Verify quantity and sizes of all items in the shipment received.
- (3) Review the manufacturer's recommendations for placing the garment or suit in service.
- (4) Ensure that procedures are established for returning unsatisfactory products, items not meeting specifications, errors in lot or model numbers, items not ordered, and items arriving damaged.

**6.1.3.2.4\* Annual or Periodic Inspections.** The AHJ shall conduct annual or periodic inspections in accordance with the specific recommendations provided by the hazmat/CBRN/EMO manufacturer, the procedures specified in 6.1.3.3, and the following additional provisions:

- (1) The AHJ shall inspect all hazmat/CBRN/EMO PPE at least annually, except for single-use examination gloves, cleaning/utility gloves, or other PPE items that are packaged in a sealed container that remains sealed until use.
- (2) The AHJ shall be permitted to change the frequency of the inspection to once during a period longer than 1 year if some form of sampling is provided to address large inventories of PPE.
- (3)\* The AHJ shall be permitted to apply an acceptable sampling scheme for a larger volume of PPE in accordance with either ANSI/ASQ Z1.4, *Sampling Procedures and Tables for Inspection by Attributes*, or ISO 2859-1, *Sampling Plans for Inspection by Attributes*.
- (4) The AHJ shall test encapsulated vapor-protective ensembles for gas-tight integrity as specified in Section 12.1, conduct any other tests that are recommended by the manufacturer, and record the test results.

**6.1.3.2.5 Prior to Donning Inspections.** Individual members of the AHJ shall inspect their hazmat/CBRN/EMO PPE prior to donning the PPE and entering a specific hazardous materials emergency, CBRN incident, or emergency medical operation in accordance with the specific recommendations provided by the hazmat/CBRN/EMO PPE manufacturer and the procedures specified in 6.1.3.3.

**6.1.3.2.6 Inspections Following Use, Cleaning, and Decontamination.** The AHJ shall inspect any hazmat/CBRN/EMO PPE

following use and cleaning or decontamination if the PPE is to be reused, in accordance with the specific recommendations provided by the hazmat/CBRN/EMO PPE manufacturer, the procedures specified in 6.1.3.3, and the following provisions:

- (1) If the PPE is used but is not exposed to any hazardous substances, the AHJ shall inspect the PPE prior to placing it back in service regardless of whether it was contaminated.
- (2) If the PPE is used, exposed to hazardous substances, and decontaminated, the AHJ shall apply universal precautions in the inspection of the PPE.
- (3) The AHJ shall test encapsulating, vapor-protective ensembles for gas-tight integrity in accordance with Section 12.1.
- (4) The AHJ shall conduct any other tests, as applicable, that are specified in Chapter 12 or by the manufacturer, or deemed appropriate based on the type of PPE.

#### 6.1.3.2.7 Inspections Following Repairs.

**6.1.3.2.7.1** If hazmat/CBRN/EMO PPE is subject to repairs by the manufacturer, the AHJ shall include a report from the manufacturer that includes the following:

- (1) A description of the repairs made, including the type, location, and methods used in making the repairs
- (2) The specific results of any testing or other assessments that are made with respect to ascertaining the quality of the repair and the fitness of the product to be operationally used

**6.1.3.2.7.2** AHJs shall inspect hazmat/CBRN/EMO PPE that has been subject to any repairs prior to placing the repaired PPE back into service in accordance with the specific recommendations provided by the hazmat/CBRN/EMO PPE manufacturer, the procedures specified in 6.1.3.3, and the following provisions:

- (1) The AHJ shall focus their inspections on those parts of the PPE that were subject to repair.
- (2) The AHJ shall test encapsulating vapor-protective ensembles for gas-tight integrity in accordance with Section 12.1.

- (3) The AHJ shall conduct any other tests, as applicable, that are specified in Chapter 12, by the manufacturer, or deemed appropriate by the AHJ based on the type of PPE.

#### 6.1.3.3 Inspection Procedures.

**6.1.3.3.1** The AHJ shall inspect hazmat/CBRN/EMO PPE according to the specific attributes or characteristics as specified by the manufacturer in their user information and according to the specific attributes and types of inspections listed in Table 6.1.3.3.1.

**6.1.3.3.2** The AHJ shall undertake specific actions with respect to inspections as specified in 6.1.3.4.

**6.1.3.3.3** The AHJ shall classify the findings of inspections as specified in Section 6.3.

**6.1.3.3.4 Inspection Actions.** The AHJ shall include in the inspection program the actions to be taken if deficiencies are found with any hazmat/CBRN/EMO PPE that would lead to the recommendation of appropriate follow-up actions determined by the inspection program.

**6.1.3.4.1** Where the PPE is soiled or contaminated, the AHJ shall perform any necessary cleaning or decontamination in accordance with the requirements specified in Chapter 7 as appropriate for the type and level of contamination.

**6.1.3.4.2** Where the results of the inspection indicate the need for repair of the PPE, the AHJ shall perform any necessary repairs in accordance with the requirements specified in Chapter 8, as permitted or instructed by the manufacturer.

**6.1.3.4.3** Where the results of the inspection indicate the need for changes in the storage conditions applied to the PPE, the AHJ shall make any necessary modifications or recommendations to storage practices in accordance with the requirements specified in Chapter 9.

**6.1.3.4.4** Where the results of the inspection indicate the retirement of hazmat/CBRN/EMO PPE is necessary, the AHJ shall retire the PPE in accordance with the requirements specified in Chapter 10.

**Table 6.1.3.2.1 Applicability of Inspections to Different Types of PPE**

| Type of PPE                                       | Type of Inspection |                              |                  |                                              |                   |
|---------------------------------------------------|--------------------|------------------------------|------------------|----------------------------------------------|-------------------|
|                                                   | On Receipt of PPE  | Annual or Periodic Frequency | Prior to Donning | Following Use, Cleaning, and Decontamination | Following Repairs |
| Hazmat/CBRN/EMO PPE, intended for single use      | X                  | X                            | X                | NA                                           | NA                |
| Hazmat/CBRN/EMO PPE, intended for single exposure | X                  | X                            | X                | X                                            | X                 |
| Hazmat/CBRN/EMO PPE, intended for reuse           | X                  | X                            | X                | X                                            | X                 |
| Single-use EMO protective clothing or ensemble    | X                  | X                            | X                | NA                                           | NA                |
| Multiple-use EMO protective clothing or ensemble  | X                  | X                            | X                | X                                            | X                 |

X: Applicable. NA: Not applicable.