The 2005 Standardized Equipment List (SEL)

SEL Table of Contents

Foreword

The Standardized Equipment List (SEL) is provided to the responder community by the InterAgency Board for Equipment Standardization and Interoperability (IAB). The SEL contains a list of generic equipment recommended by the IAB to local, state, and federal government organizations in preparing for and responding to Weapons of Mass Destruction (WMD) events.

The SEL is a guideline, and its use is voluntary. The SEL promotes interoperability and standardization across the response community at the local, state, and federal levels by offering a standard reference and a common set of terminology. The IAB does not assume any liability for the performance of the equipment items mentioned in the SEL.

The SEL is now issued twice each year to keep pace with maturing and emerging technologies. The Spring edition is printed and distributed in conjunction with the IAB Annual Report, and is also loaded online for interactive use on the Responder Knowledge Base (RKB, at www.rkb.mipt.org). The Fall edition is online only. Government organizations may present suggested changes at any time for consideration.

The Spring 2005 SEL

The printed version of the SEL has traditionally been published as part of the IAB's Annual Report. Prior to 2004, the SEL's year corresponded with the year of the Annual Report. Since annual reports are published several months after the close of the calendar year, the year created some confusion. Last year, the IAB began assigning the "current" year to the SEL to alleviate this confusion. The Spring 2004 SEL was thus published with the 2003 Annual Report. That practice continues this year, with this Spring 2005 SEL being published within the 2004 IAB Annual Report.

Realignment with the DHS Authorized Equipment List

In the Fall 2004 (online) version of the SEL, the IAB accomplished a critical objective for the responder community - it realigned the SEL structure with the Authorized Equipment List (AEL) produced by the DHS Office of State and Local Government Coordination & Preparedness. Originally a subset of the SEL, the AEL is the equipment purchase grant guidance for a number of major grant programs such as the Urban Areas Security Initiative and Law Enforcement Terrorism Prevention Program. In recent years, the lists had been renumbered so that it was difficult for users to determine the whether SEL items were allowable under the grant programs. The Fall 2004 SEL and the FY2005 AEL were aligned so that the first 11 sections of the AEL correspond to the 11 sections of the SEL. The Spring 2005 SEL maintains those 11 major sections, as follows:

1. Personal Protective Equipment
2. Explosive Device Mitigation and Remediation Equipment
3. CBRNE Operational and Search & Rescue Equipment
4. Information Technology
5. CyberSecurity Enhancement Equipment
6. Interoperable Communications Equipment
7. Detection
8. Decontamination
9. Medical
10. Power
11. CBRNE Reference Materials

SEL Numbering Scheme

The Spring 2005 SEL continues the numbering scheme introduced in 2003. Some individual items will have different numbers this year, primarily due to improvements in category headings. For example, all equipment in Section 3 has now been classified as either operational or search and rescue equipment. This changes a portion of every SEL ID number in that section.

This scheme allows the IAB to group SEL items into related sets, and is also used in the on-line interactive version of the SEL (see below). The format for SEL number is 99xx-88-yyyy, where

99 is the section number, from 01 through 99 (currently 01 through 09 are used)

xx is the category. It is alphanumeric and unique within its section. For example, within Personal Protective Equipment, all items associated with the "NFPA 1994 Class 1 Ensemble" will have the category "C1".

88 is the numeric subcategory. For example, within the Personal Protective Equipment Section's NFPA 1994 Class 1 Ensemble, the "Required Items" will all have a subgroup code of "01". This code may be set to "00" when not required.

yyyy is the item identifier. It is alphanumeric and unique within its section, class, and group. Using an alphanumeric code at this level increases flexibility, and decreases the chance of human error. For example, the Hard Hat in the personal protective equipment section uses the item identifier "HHAT."

The On-Line, Interactive SEL

In addition to this printed version, the Spring 2005 SEL is accessible on-line as part of the Responder Knowledge Base (RKB) developed through the National Memorial Institute for the Prevention of Terrorism (MIPT). The web address is www.rkb.mipt.org. The on-line version includes all of the equipment information, and implements interactive selection factors to assist users in determining the IAB's recommendations. It also provides links to related standards, products, grants, and other equipment-related information. The Spring 2005 SEL is also available in hard copy or PDF format from the IAB web site at www.iab.gov.

Summary

The Spring 2005 SEL represents the collective efforts of the InterAgency Board members and several related support organizations. Like all previous versions, it is intended to provide the best possible information in support of all those who may be called in response to a WMD incident. Suggestions and comments are welcome.

Section 1 - Personal Protective Equipment

Overview

One of the most important aspects of the Fall 2004 SEL was that the Personal Protective Equipment Section was realigned with the DHS Authorized Equipment List. Part of this realignment was the adoption by DHS of performance standards in lieu of the traditional OSHA Level A, B, C, D designations when specifying PPE. To assist DHS with this transition, the PP&OE SubGroup authored a short white paper that was published with the FY2005 DHS grant guidance. The paper is included in the shaded sections below in its entirety.

Comments on Changes to FY2005 AEL Personal Protective Equipment Section

Proper selection of Personal Protective Equipment (PPE) for individual responders must be based upon a careful assessment of two factors: 1) the hazards anticipated to be present at the scene and, 2) the probable impact of those hazards, based upon the mission role of the individual. Currently, no single personal protective ensemble can protect the wearer from exposure to all hazards. The FY2004 Grant Guidance on purchase of Personal Protective Equipment (PPE) used OSHA/EPA Levels A, B, and C to describe recommended personal protective ensembles. These levels are defined in the Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), 29 CFR 1910.120, Appendix B, as follows:

Level A - To be selected when the greatest level of skin, respiratory and eye protection is required.

Level B - The highest level of respiratory protection is necessary but a lesser level of skin protection is needed.

Level C - The concentration(s) and type(s) of airborne substances is known and the criteria for using air-purifying respirators are met.

While these definitions provide guidelines and a framework for discussing PPE, the descriptive narrative in these levels does not set minimum performance criteria required for specific threats, such as chemical permeation resistance and physical property characteristics. Thus the use of these general "levels" of protection does not describe the protective capability of such ensembles, and does not assure that the wearer is adequately protected from any specific hazards. Relying solely on these nomenclatures could result in exposure above acceptable exposure limits, or an unnecessary reduction in operational effectiveness through lack of mobility, decreased dexterity, or reduced operational mission duration.

In preparing the FY2005 Grant Guidance, ODP has aligned the AEL with the Standardized Equipment List produced by the InterAgency Board for Equipment Standardization and Interoperability (IAB) to the maximum extent possible. The mission of the IAB includes support to the development of hazard-based protective clothing and equipment performance standards. This includes performance standards for respiratory protective equipment, protective ensembles, garments, boots, and gloves for protection against chemical, biological, radiological and nuclear (CBRN) threats. Section 1 of the IAB's 2004 Standard Equipment List (SEL) defines the hazard environments for chemical, biological, radiological, thermal, explosive and ballistic threats. The IAB has also defined emergency responder mission roles in categories of law enforcement, fire department, emergency medical services, follow-on responders and special operations. The SEL provides a table that indicates the federal, or consensus-based equipment performance standards with which personal protective equipment should be compliant to assure appropriate protection against CBRNE hazards.

Following the IAB's recommendations, and in accordance with Homeland Security Presidential Directive (HSPD) 8[1], the FY2005 Grant Guidance defines eligible personal protective equipment in terms of nationally-recognized or U.S. Government standards. These standards require third-party certification, listing, and labeling of products; products may not claim compliance with them unless fully certified by an independent third party in accordance with the standard. For the NFPA standards, several commercial entities are able to provide the appropriate testing and certification. For the NIOSH respiratory protection standards, all testing and approval is provided by the NIOSH National Personal Protective Technology Laboratory (NPPTL). Several of these standards have already been officially adopted by the Department of Homeland security, including:

1) National Fire Protection Association (NFPA) 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents (Class 1, Class 2, or Class 3) for chemical and biological terrorism incidents. Note that certifications under NFPA 1994 are issued only to complete ensembles. Individual elements such as garments or boots are not considered certified unless used as part of a certified ensemble. Thus purchasers of PPE certified under NFPA 1994 should plan to purchase complete ensembles (or certified replacement components for existing ensembles).

2) NFPA 1991, Standard on Vapor Protective Ensembles for Hazardous Materials Emergencies, including the now-mandatory requirements for CBRN protection for terrorism incident operations for all vapor-protective ensembles.[2]

3) NFPA 1951, Standard on Protective Ensemble for USAR Operations, for search and rescue or search and recovery operations where there is no exposure to chemical or biological warfare or terrorism agents, and where exposure to flame and heat is unlikely or nonexistent.

4) NFPA 1999, Standard on Protective Clothing for Emergency Medical Operations, for protection from blood and body fluid pathogens for persons providing treatment to victims after decontamination.

5) NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services.

6) NIOSH Chemical, Biological, Radiological and Nuclear (CBRN) Standard for Open-Circuit Self-Contained Breathing Apparatus.

7) NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Full Facepiece Air Purifying Respirator (APR).

8) NIOSH Standard for Chemical, Biological, Radiological, and Nuclear (CBRN) Air-Purifying Escape Respirator and CBRN Self-Contained Escape Respirator.

The following information is provided to assist emergency response organizations in transitioning from Levels A, B, and C to protection-based standards terminology. Because the OSHA/EPA Levels are expressed in more general terms than the standards and do not include testing to determine protection capability, it is not possible to "map" the Levels to specific standards. However, it is possible to look at specific configurations and infer their OSHA/EPA Level based on the definitions provided above. Some examples of ensembles and conservative interpretations of their corresponding levels are provided in the table below.

[1] Paragraph 15 of HSPD-8 states "To the extent permitted by law, equipment purchased through federal preparedness assistance for first responders shall conform to equipment standards in place at time of purchase. Other federal departments and agencies that support the purchase of first responder equipment will coordinate their programs with the Department of Homeland Security and conform to the same standards."

Ensemble Description Using Performance-Based Standard(s)

OSHA/EPA	Level
NFPA 1991 with C/B Option, worn with NIOSH CBRN SCBA	A[2]
NFPA 1994 Class 1 worn with NIOSH CBRN SCBA	A
NFPA 1994 Class 2 worn with NIOSH CBRN SCBA	B
NFPA 1994 Class 3 worn with NIOSH CBRN SCBA	B[2]
NFPA 1994 Class 2 worn with NIOSH CBRN APR	C
NFPA 1994 Class 3 worn with NIOSH CBRN APR	C

All purchasers of personal protective equipment are cautioned to examine their hazard and mission requirements closely, and select appropriate performance standards. All personal protective equipment must be employed in accordance with 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (or equivalent EPA/state regulations). 29 CFR 1910.134, "Respiratory Protection" (or an equivalent state regulation) is also applicable in states with OSHA-approved health and safety programs and for federal employers. Both include requirements for formal plans, medical evaluation, and training to assure the safety and health of emergency responders. The ODP Fiscal Year 2005 Homeland Security Grant Program Guidance, the list of allowable equipment, and information on related standards, certifications, and products are all available on the DHS-sponsored Responder Knowledge Base (http://www.rkb.mipt.org).

[2] In the original version of this document (dated 12/02/04), this ensemble was rated as Level C. However, this rating was reconsidered by the PP&OE Subgroup on 03/03/05, and changed to Level B in recognition of its higher respiratory protection. The SubGroup also removed the reference to the Chem/Bio option of NFPA 1991, which is now become part of the basic standard.

Currently, the federal government, including OSHA, the NIOSH National Personal Protection Technology Laboratory, EPA, and the NIST Office of Law Enforcement Standards are addressing the issue by redefining the protection levels to be consistent with the protection provided by such PPE. The IAB is supporting this effort, and is encouraging the participants to complete it during FY2005.

As stated in the document above, the ODP Fiscal Year 2005 Homeland Security Grant Program Guidance, the list of allowable equipment, and information on related standards, certifications, and products are all available on the DHS-sponsored Responder Knowledge Base (http://www.rkb.mipt.org).

Changes for 2005

This edition of the SEL continues the practice of providing features, operating considerations, and standards information for as many items as possible. Much of the section is unchanged from Fall, 2004. However, in addition to minor edits in this section, the following changes may be of interest:

- The category definitions for NFPA 1991 ensembles have been changed to reflect the issuance of the 2005 Edition of this standard, and the fact that Chemical/Biological Terrorism Protection is no longer optional (it has been incorporated into the basic standard). The Flash Fire Protection option still exists.
- Specialized clothing and protective padding have been added to the Tactical Law Enforcement Section.
- The PPE Accessories category has been restructured to incorporate multiple subcategories such as Gloves and Footwear, Eye Protection, Hearing Protection, etc. This should eliminate some redundancy and make these items easier to find.
- The Community Emergency Response Team (CERT) row has been removed from the Hazards/Mission Matrix. The SubGroup felt that upon arrival at an incident, the roles of CERT team members would be adequately described by some combination of the existing mission descriptions.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Personal Protective Equipment Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose to use Hazard Environment and Mission Role (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Hazard Environment and Mission Role, and the system will provide a list of all items tagged for that combination.

The best way to visualize the interaction of the two selection factors for PPE is to view them as a matrix, as described below. First, the hazard or threat, including the likely physical state in which it would present itself, forms the "Hazard Environment" axis of the matrix. Then, the hazard/risk assessment is completed by combining the weapon or "hazard" characteristics against the likelihood of exposure based upon generalized job functions. These job functions are represented by the "Mission Roles" axis of the matrix. Matching a mission role to one or more hazard environments gives a recommended set of equipment items. Where possible, each item identifies established performance standards for its manufacture, selection, and use.

Hazard Considerations (The Hazard Environment Axis)

This axis is based first on general weapon/hazard type, followed by an assessment of the physical state. For example, chemical weapons can exist as particulates, liquids or airborne vapors, gases or aerosols. Based upon credible intelligence and threat assessment information, a community might choose to select PPE designed to protect the responder from an event utilizing common toxic industrial materials in concentrations that are detrimental to the respiratory tract. In that case, the selection of "Chemical Weapon, Vapor/Gas/Aerosol in High Respiratory/Low Dermal concentrations" might be selected. In planning for potential RDD (radiological dispersion device) events, the selection of "Radiological with Penetrating Gamma/X-Ray" would be appropriate. Whatever selection is made will direct the user to the most up-to-date information concerning what, if any, protective ensembles are currently recommended, as well as usage limitations. The table below shows the hazard environment definitions adopted by the PPE Subgroup for use in the SEL:

Category	Environment	Definition
Chemical	Vapor/Gas/Aerosol (High Respiratory, High Dermal) [VH]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. *High Respiratory* refers to the airborne concentration present and suggests that the concentration is above respiratory IDLH levels. *High Dermal* indicates a significant dermal contact or absorption risk for acute/chronic skin toxicity or systemic health effects via skin contact (e.g. carcinogens).
	Vapor/Gas/Aerosol (High Respiratory, Low Dermal) [VR]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. *High Respiratory* refers to the airborne concentration present and suggests that the concentration is above respiratory IDLH levels. *Low Dermal* indicates that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or chronic health effects via skin contact (e.g. carcinogens).

HAZARD ENVIRONMENT DEFINITIONS - Continued

Category	Environment	Definition
Chemical *- Continued*	Vapor/Gas/Aerosol (Low Respiratory, Low Dermal [VL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a gas, a vapor that evaporates from a liquid, or a finely aerosolized low vapor pressure liquid. *Low Respiratory* refers to situations where the airborne concentration is anticipated to be below IDLH levels. *Low Dermal* indicates that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or chronic health effects via skin contact (e.g. carcinogens).
	Liquids (High) [LH]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a liquid where the potential exists for contact with that liquid. *High* indicates to conditions where extended contact in the form of splashes is expected.
	Liquids (Low) [LL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as a liquid where the potential exists for contact with that liquid. *Low* indicates to conditions where incidental contact could be expected from contaminated surfaces.
	Particulates (High) [PH]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as solid particles (particulate) or dust. *High* indicates that the concentration is above respiratory IDLH levels, or that the toxin is carcinogenic.
	Particulates (Low) [PL]	A chemical warfare agent or toxic industrial chemical found at the response scene that is present as solid particles (particulate) or dust. *Low* indicates that the concentration is below respiratory IDLH levels, and that the CBRNE agent is non-carcinogenic.
Biological	Airborne [BA]	Microorganisms that can be spread as aerosols or particulates, and are considered airborne threats for respiration and in some cases also through dermal contact.
	Liquid-borne [BL]	Microorganisms that can be spread by contact with blood, body fluids, and other contaminated liquids.
Radiological	Particulate/Liquid (Alpha and Beta) [AB]	Alpha or beta ionizing radiation that is spread by particles suspended in air or liquids. The primary hazard from these materials is through inhalation of particulates; skin contact should also be avoided.
	Penetrating Gamma/X-Ray [yX]	The threat from gamma/x-ray ionizing radiation consists of both exposure to and contamination by gamma and x-ray-emitting radioactive isotopes. Other than time, distance, and shielding, PPE is limited to minimizing direct contact with or inhalation of contaminated material.
Thermal	Flash Fire [FF]	A relatively short duration fire of 10 seconds or less that involves the ignition and combustion of a flammable atmosphere.

HAZARD ENVIRONMENT DEFINITIONS - Continued

Category	Environment	Definition
Thermal *- Continued*	Sustained Fire [SF]	A fire involving a structure or other source of materials that continues for a period of 1 minute or more until extinguished or through the consumption of the combustible materials present.
	Pre-Detonation [PR]	The potential for explosion still exists at the emergency scene.
Explosive	Post-Detonation [PO]	The device has already exploded and the response scene involves the physical hazards associated with structural collapse and debris.
Ballistic	Armed Assaults, Force Protection, Hostage Rescue [AS]	Handgun and rifle fire up to and including .30 Caliber armor piercing rounds.

Risk/Level of Exposure to the Hazard (The Mission Role Axis)

For a more detailed risk assessment of responders at CBRNE events, it is necessary to describe each responder's particular mission during the incident. By describing the mission, one can estimate numerous variables that place the individual at either an increased or decreased risk of actual exposure to the hazard. These variables include factors such as proximity to the potential release, potential exposure to IDLH environments, timing of arrival with regard to weapon dispersion, and probability of contact with potentially contaminated victims or surfaces. The mission roles listed in the matrix enable the community to consider a responder's job function during the CBRNE incident in comparison to the hazard. This results in a better matching of protective postures towards actual risk.

The fact that a mission role is listed in a particular duty area is not intended to imply that the role is not applicable to other duty areas. For example, rescue teams may be located in law enforcement, fire department, or emergency medical duty areas depending upon the performance expectations of the community and their Comprehensive Emergency Response Plan. In the interest of keeping the matrix to a manageable size, mission roles are not repeated in every possible duty area.

Additionally, the reader must bear in mind that the mission roles presented in the matrix are based upon their assigned mission after the event occurs. Therefore, those assigned to First Responder roles such as "Patrol Officer", "Firefighter" and "Medical First Receiver" will often be reclassified to another listed mission role once they become involved in the event (e.g. perimeter control, decontamination team, or contaminated patient care).

The table below shows the mission role definitions adopted by the PP&OE SubGroup for use in the SEL:

MISSION ROLE DEFINITIONS

Duty Areas	Mission Role	Definition
Law Enforcement	First Responder/ Patrol Officer	Initial response into possible CBRNE incident in law enforcement capacity. Responder would have risk of exposure during the first response and initial phase of the event. Any requirement to work within the hazardous environment beyond the initial recognition phase would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.
	Force Protection	Force protection at a CBRNE incident scene or at critical supporting infrastructure locations (e.g. medical, communications, logistical support, staging or command and control locations) and access control points for the purpose of ensuring the safety of operating personnel and assets.
	Perimeter Control and Field Force	Scene control, credentialing, perimeter security, and crowd control.
	Evidence Technician	Sample and evidence collection in cold, warm, and hot zones. These technicians may be involved in a variety of investigative processes including criminal investigation and environmental sampling.
	Tactical (SWAT)	Entry into any zone for immediate tactical action, hostage rescue, or assault.
Fire Department	Fire Responder/ Firefighter	Initial response in fire service capacity. Responders would have risk of exposure during the initial stages of the event. Any requirement to work within the hazardous environment beyond the first response and initial recognition phase would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.
	Rescue Team	Response to incident for purpose of rescuing live non-ambulatory casualties.
	Decontamination Team	Decontamination of response personnel or victims.
Emergency Medical Services	First Responder/ Medical First Receiver	Initial response in medical services capacity; responding to a report of an incident or being the first medical person to receive or recognize casualties from a CBRNE event. Responders would have risk of exposure during the initial phases of the event. Any requirement to function in another capacity beyond the first response and initial recognition phase of the event would generally result in the individual being reclassified into one of the other mission areas identified in this matrix.

MISSION ROLE DEFINITIONS - Continued

Duty Areas	Mission Role	Definition
Emergency Medical Services	Contaminated Patient Care	The medical care provider or allied medical professional (e.g. medical examiner) at any location or level of response who is likely to provide care or service to patients or victims who are likely to pose a significant risk of secondary contamination or exposure. These medical personnel may also be involved in the decontamination process.
	Non-Contaminated Patient Care	The medical care provider or allied medical professional (e.g. medical examiner) at any location or level of response who is likely to provide care or service to patients or victims who do not pose a significant risk of secondary contamination or exposure. The determination of lack of significant risk may be based upon a wide variety of factors including, but not limited to, the proximal location of the patient/victim at the time of CBRNE release, the physical/chemical properties of the CBRNE, the use of detection equipment or the extent of decontamination already taken.
Follow-On Responders	Administrative/ Logistical Support Personnel	Those individuals that would follow-on in the response to assist with the administration and logistical support of the event. These individuals would not normally be subjected to potential exposure provided appropriate force protection and perimeter security measures are in place.
	Technical and Skilled Specialty Personnel - Isolation Area	Those trade personnel called upon to provide a focused specialty function. These functions would likely be carried out in the isolation area of the event and therefore, potential exposures to materials are likely.
	Technical and Skilled Specialty Personnel - Non-Isolation Area	Those trade personnel called upon to provide a focused specialty function. These individuals would not normally be subjected to potential exposure provided appropriate force protection and perimeter security measures are in place.
Special	Hazardous Device Operations	Response to incidents involving a hazardous explosive and/or dispersal device within the isolation area, for the purpose of identification, rendering safe, or removal of such device(s). For operations outside the isolation area, PPE requirements are determined by specific mission role.
	HAZMAT Operations	Response to incidents involving CBRNE or hazardous materials within the isolation area for the purpose of detection, sampling, identification, control, and/or remediation. For operations outside the isolation area, PPE requirements are determined by specific mission role.
	Incident Command Team	Response to incidents for purposes of assuming incident command in the field, including establishment and operation of a field incident command center.
	Urban Search and Rescue (US&R)	Response to events in the isolation area involving collapsed structures for the purpose of locating and rescuing trapped victims, or structural stabilization.

MISSION ROLE DEFINITIONS - Continued

Duty Area	Mission Role	Definition
Special	Environmental/ Occupational Health Operations	Response to incidents involving CBRNE or hazardous materials in order to gather data/samples for the purpose of assessing human health risks to responders or the community. These activities generally occur at a secured scene after the completion of initial emergency response activities.
	Epidemiology	Conducting interviews and/or investigations for the purpose of gathering epidemiological information.
	Mortuary Operations	DMORT (Disaster Mortuary Operational Response Team) or coroner/medical examiner, law enforcement, morticians. PPE requirements are determined by specific mission role, e.g. sampling, preservation, etc.

The Hazard Environment Axis and Mission Role Axis form a large classification matrix for PPE equipment items. The figure on the following page is provided to assist readers in visualizing the complete selection matrix. Each item will be classified using this matrix, and thus be retrievable online when the appropriate selection factor values (corresponding to rows and columns) are entered.

The Planning Process

Threat assessment and prior planning are essential. A community must first complete a thorough threat assessment that at least identifies the most probable scenarios before the Hazard/Mission matrix can be used to maximum benefit. Although the tendency is to try to prepare for every eventuality, that approach is generally neither financially feasible nor appropriate. Thus the community should determine the most credible and likely threat "scenarios" as a basis for planning. This assessment can only occur through a coordinated communication and planning effort involving emergency response organizations, emergency planning officials, and the intelligence community. This coordinated effort should produce an "inventory" of the most likely hazards, scenarios and anticipated responder roles. The results can then be applied to the Hazard/Mission matrix. Completing this organized process of assessing the threat, planning the response, and identifying equipment gaps as a prerequisite to equipment selection is strongly encouraged.

PPE Hazard/Mission Selection Matrix Template

HAZARD		Chemical							Biological		Radiological		Thermal		Explosive		Ballistic
MISSION ROLE		VH	VR	VL	LH	LL	PH	PL	BA	BL	AB	yX	FF	SF	PR	PO	AS
Law Enforcement	First Responder/Patrol Officer																
	Force Protection																
	Perimeter Control and Field Force																
	Evidence Technician																
	Tactical (SWAT)																
Fire Department	Fire Responder/Firefighter																
	Rescue Team																
	Decontamination Team																
Emergency Medical Services	First Responder/Medical First Receiver																
	Contaminated Patient Care																
	Non-Contaminated Patient Care																
Follow-On Responders	Administrative/Logistical Support Personnel																
	Technical and Skilled Specialty Personnel - Isolation Area																
	Technical and Skilled Specialty Personnel - Non-Isolation Area																
Special	Hazardous Device Operations																
	HAZMAT Operations																
	Incident Command Team																
	Urban Search and Rescue																
	Environmental/Occupational Health Operations																
	Epidemiology																
	Mortuary Operations																

PPE Standards and Hazard Environments

In addition to the Hazard/Mission matrix, this edition of the SEL updates the table relating hazards to existing standards. The figure on the following page identifies recognized standards that apply to PPE used for protection from specific types of hazards encountered by responders during a CBRNE incident. Start with the left side of this chart to select the types of hazards that may be potentially encountered (the definitions are the same as those used in the Hazard axis of the Hazard/Mission matrix). Then look across the top of the chart to find the current nationally recognized standard(s) that address the selected hazards.

	Respiratory Protection			**Personal Protective Clothing**											
Exposure/Hazard	NIOSH CBRN-SCBA	NIOSH CBRN-APR[5]	NIOSH CBRN PAPR (Dec, 2005)[5]	NFPA 1991	NFPA 1991 w/ Flash Fire Options	NFPA 1994 Class 1	NFPA 1994 Class 2	NFPA 1994 Class 3	NFPA 1992	NFPA 1951	NFPA 1999	DoD-Advanced Bomb Suit Performance Specification	NFPA 1971	NFPA 1976	NIJ Standard 101 - Ballistic Protection
UNKNOWN ENVIRONMENT	X			X	X	X									
CHEMICAL															
Vapor/Gas/Aerosol (High Respiratory[1], High Dermal[4])	X			X	X	X									
Vapor/Gas/Aerosol (High Respiratory[1], Low Dermal[3])	X			X	X	X	X								
Vapor/Gas/Aerosol (Low Respiratory[2], Low Dermal[3])	X	X	✓	X	X	X	X								
Liquids (High)[6]	X			X	X	X	X								
Liquids (Low)[6]	X	X	✓	X	X	X	X	X	o						
Particulates (High)	X			X	X	X	X								
Particulates (Low)	X	X	✓	X	X	X	X	X	o	o	o		o	o	
BIOLOGICAL															
Airborne	X	X	X	X	X	X	X								
Liquid-borne	X	X	X	X	X	X	X	X		o	o		o	o	
RADIOLOGICAL															
Particulate/Liquid (Alpha and Beta)	X	X	X	X	X	X	X	X	o	o	o		o	o	
Penetrating Gamma/X-Ray															
THERMAL															
Flash Fire	X				X					o			o	o	
Sustained Fire															
EXPLOSIVE															
Pre-Detonation												o			
Post-Detonation										o			o	o	
BALLISTIC															
Armed Assaults, Force Protection, Hostage Rescue															X

Key to Matrix Values:

X Provides protection from the indicated CBRN exposure.
✓ NIOSH PAPR CBRN requirements are expected in December, 2005.
o Does not provide protection from CBRN exposures, but does provide protection from indicated exposures once the CBRN threat has been mitigated.

[1] "High Respiratory" indicates that airborne concentrations are anticipated to be at or above IDLH or respirator maximum use concentration levels.
[2] "Low Respiratory" indicates that airborne concentration is at or above published Short Term Exposure Limits (STEL) but less than IDLH or respirator maximum use concentration.
[3] "Low Dermal" suggests that vapors or gases are not in a high enough concentration to create a condition that is immediately dangerous to the wearer or conducive to systemic or chronic health effects via skin contact (e.g. carcinogens).
[4] "High Dermal" indicates a significant dermal contact or absorption risk for acute/chronic skin toxicity or systemic health effects via skin contact (e.g. carcinogens).
[5] Cartridges and canisters utilized for APRs and PAPRs may have significant life limitations in airborne particulate hazards of sufficient quantity to cause filter loading.
[6] With regards to liquid chemical hazards. Although expressed in this matrix in general terms, selection of respiratory levels of protection would be dependent volatility of the material and results of quantitative analysis of airborne concentrations.

Summary

Section 1 of the SEL is intended to provide the best possible guidance in selecting personal protective equipment based upon the anticipated hazard environment(s) and the mission role of the wearer. This edition incorporates several incremental changes that reflect evolving standards, increased emphasis on bomb squad equipment, and a better range of PPE accessories.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 01 - CBRN Self-Contained Breathing Apparatus (SCBA) and Supplied Air Repirators (SAR)			
01AR-01-SCBA SCBA, CBRN	CBRN SCBA - Self-Contained Breathing Apparatus certified as compliant with NFPA 1981 and certified by NIOSH as compliant with the CBRN approval criteria. Worn with multiple ensemble configurations.	SCBA consists of a harness, air cylinder, first stage regulator, low pressure hose, second stage regulator, end-of-service-time indicator (EOSTI) and facepiece. SCBA are typically rated for 30, 45, and 60 minutes of service life, but may be rated for other service lives in accordance with 42 CFR Part 84. Variations exist in harness design, types of cylinders, and facepieces. ---------- CBRN SCBA are intended for the worst case circumstances, where the substance involved creates an immediate threat, is unidentified, of unknown concentration, oxygen deficient, or determined to be immediately dangerous to life and health (IDLH). Such situations would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the CBRN SCBA. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. Direct contact with CBRN agents requires proper handling of the SCBA after each use and between multiple entries during the same use. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the SCBA after decontamination. SCBA should not be used beyond 6 hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. CBRN SCBA facepieces must be specifically fit tested for individual first responders in accordance with OSHA 29 CFR Part 1910.134. Other use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.134, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, care, and maintenance are covered in NFPA 1852, Standard on Selection, Care and Maintenance of Open-Circuit, Self-Contained Breathing Apparatus, 2002 Edition.	44, 46, 51, 54, 84, 87, 93
01AR-01-SCBC Cylinders and Valve Assemblies, Spare, and Service/Repair Kits, SCBA	Spare SCBA Cylinders and valve assemblies, and service/repair kits for item 01AR-01-SCBA.	Types of kits vary with specific SCBA. ---------- Cylinders and service/care kits must be specific to SCBA being used. Individuals using these items must be trained by manufacturer or manufacturer's representative.	51, 54, 59, 93

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR)			
01AR-02-APR Respirator, Air-Purifying, CBRN	CBRN Air-Purifying Respirator (APR) (certified by NIOSH as compliant with the CBRN approval criteria). Worn with multiple ensemble configurations.	NIOSH has established specific criteria for air-purifying respirators (APRs) with CBRN approval. These criteria include existing tests established in 42 CFR Part 84, supplemented by additional tests for specific performance against selected chemicals and agents and other areas of performance. The APR must be a full facepiece. Each manufacturer will offer facepieces in different materials and different designs. NIOSH standard requires interoperable 40mm thread for CBRN canister. --- NIOSH has listed the following limitations for CBRN APR: 1. Not for use in atmospheres containing less than 19.5 percent oxygen. 2. Not for use in atmospheres immediately dangerous to life and health or where hazards have not been fully characterized. 3. When used at defined occupational exposure limits, the rated service time cannot be exceeded. Follow established canister change schedules or observe End of Service Life Indicators to ensure that canisters are replaced before breakthrough occurs. 4. Failure to properly use and maintain this product could result in injury or death. 5. Follow the manufacturer's User Instructions for changing canisters. 6. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 7. Use replacement parts in the configuration as specified by the applicable regulations and guidance. 8. Refer to User Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 9. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 10. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. Procedures for monitoring radiation exposure and full radiation protection must be followed. 11. If during use an unexpected hazard is encountered such as a secondary CBRN device, pockets of entrapped hazard or any unforeseen hazard, immediately leave the area for clean air. 12. Use in conjunction with personal protective ensembles that provide appropriate levels of protection against dermal hazard. Failure to do so may result in personal injury even when the respirator is properly fitted, used, and maintained. 13. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 14. Direct contact with CBRN agents requires proper handling of the respirator after each use and between multiple entries during the same use. Decontamination and disposal →	46, 51, 53

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR) - *Continued*			
		procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the respirator after decontamination. 15. The respirator should not be used beyond eight (8) hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. If liquid exposure is encountered, the respirator should not be used for more than two (2) hours.	
01AR-02-APRC CBRN Canister or cartridges, APR	Canisters or Cartridges for Item 01AR-02-APR	The canister or cartridges for APR with CBRN are of a single type designed to meet NIOSH approval criteria against 10 different industrial chemicals and 2 chemical warfare agents. The canister or cartridge must incorporate a P100 filter capability and use a special mounting thread that permits interchangeability of the cartridge with other manufacturer respirators when no other cartridges are available. NOTE: The 40mm interchangeability connection is for emergency use only. --- NIOSH has listed the following limitations for CBRN APR: 1. Not for use in atmospheres containing less than 19.5 percent oxygen. 2. Not for use in atmospheres immediately dangerous to life and health or where hazards have not been fully characterized. 3. When used at defined occupational exposure limits, the rated service time cannot be exceeded. Follow established canister change schedules or observe End of Service Life Indicators to ensure that canisters are replaced before breakthrough occurs. 4. Failure to properly use and maintain this product could result in injury or death. 5. Follow the manufacturer's User Instructions for changing canisters. 6. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 7. Use replacement parts in the configuration as specified by the applicable regulations and guidance. 8. Refer to User Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 9. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 10. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. Procedures for monitoring radiation exposure and full radiation protection must be followed. 11. If during use an unexpected hazard is encountered such as a secondary CBRN device, pockets of entrapped hazard or any unforeseen hazard, immediately leave the area for clean air. 12. Use in conjunction with personal protective ensembles that provide appropriate levels of →	51, 53

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 02 - CBRN Air-Purifying Respirator (APR) - *Continued*			
		protection against dermal hazard. Failure to do so may result in personal injury even when the respirator is properly fitted, used, and maintained. 13. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 14. Direct contact with CBRN agents requires proper handling of the respirator after each use and between multiple entries during the same use. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the respirator after decontamination. 15. The respirator should not be used beyond eight (8) hours after initial exposure to chemical warfare agents to avoid possibility of agent permeation. If liquid exposure is encountered, the respirator should not be used for more than two (2) hours. NOTE: Only cartridges certified with a specific APR should be considered for purchase.	
AR - Respiratory Protection Equipment 03 - CBRN Powered Air-Purifying Respirator (PAPR)			
01AR-03-PAPA Respirator, Powered, Air-Purifying (PAPR)	Powered Air-Purifying Respirator (PAPR) (certified by NIOSH as compliant with 42 CFR Part 84 and outfitted with a canister or cartridge appropriate to the response). Worn with multiple ensemble configurations.	Powered air-purifying respirators (PAPRs) use a blower in combination with either a loose-fitting respirator inlet cover (such as a hood or helmet) or a tight-fitting facepiece. PAPRs may use different designs in hood, helmet, and facepiece designs. Generally, the blower is belt mounted, but other mounting options are available. The PAPR may use a single canister or multiple cartridges. --- Powered air-purifying respirators (PAPR) cannot be used in environments classified as immediately dangerous to life and health (IDLH) and further cannot be used when the oxygen concentration in the environment is less than 19.5%. PAPRs must be fitted with the appropriate canister or cartridges. The length of canister or cartridge use will depend on concentration of the chemical/agent present, the temperature, relative humidity, and breathing (flow) rate through the canister or cartridge. Air-purifying respirator use is predicated on monitoring of the environment or use of an end-of-service life indicator (EOSLI) in order to determine continued protection in accordance with OSHA 29 CFR Part 1910.134.	46, 51
01AR-03-PAPB Battery Pack, PAPR	Battery pack for item 01AR-03-PAPA.		46, 51

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 03 - CBRN Powered Air-Purifying Respirator (PAPR) - *Continued*			
01AR-03-PAPC Canister, PAPR	Canisters or Cartridges for Item 01AR-03-PAPR	Canisters are single filter/adsorbent elements used with a respirator; cartridges are dual filter/adsorbent elements. Canisters and cartridges are color-coded by the type of agents (chemicals) the canister or cartridge is rated against. Some canisters or cartridges may protect against multiple agents and chemicals. Some canisters and cartridges come with prefilters for particulates. --- Each canister or cartridge must have a NIOSH approval number. Canisters and cartridges are specific to the manufacturer's respirator and may not be interchanged with other respirators. Canisters and cartridges have a limited service life, which depends on the concentration of the chemical/agent present, the temperature, relative humidity, and breathing (flow) rate through the canister or cartridge. Air-purifying respirator use is predicated on monitoring of the environment or use of an end-of-service life indicator in order to determine continued protection in accordance with OSHA 29 CFR Part 1910.134.	46, 51
AR - Respiratory Protection Equipment 04 - CBRN Air-Purifying Escape Respirator			
01AR-04-ESCA Respirator, Escape	General purpose mask designed for short duration protection sufficient for evacuation.	Quick donning, short duration respiratory protection with limited protection against chemicals, biological agents, and radiological particles for escape purpose only. --- NIOSH has listed the following limitations: 1. Failure to properly use and maintain this product could result in injury or death. 2. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. 3. Refer to User's Instructions and/or maintenance manuals for information on use and maintenance of these respirators. 4. Consult manufacturer's User Instructions for information on the use, storage, and maintenance of these respirators at various temperatures. 5. This respirator provides respiratory protection against inhalation of radiological and nuclear dust particles. This respirator provides limited dermal protection to the head area and eyes. 6. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death. 7. Direct contact with CBRN agents requires proper handling of the respirator after use. Correct disposal procedures must be followed. These limitations are not all inclusive. The respirator manufacturer may also identify further →	52

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AR - Respiratory Protection Equipment 04 - CBRN Air-Purifying Escape Respirator- *Continued*			
		cautions and limitations for their respirators. In addition, regulatory agencies may also place a limit on the use of respirators in their standards.	
AR - Respiratory Protection Equipment 05 - Support Equipment			
01AR-05-FTST Tester, Mask Leak/Fit	A device used for performing fit testing of respirator facepieces to determine quality of face to mask seal.	Fit testing equipment for respirator masks may be either qualitative or quantitative. Qualitative equipment involves the use of a test agent (e.g., isoamyl acetate or irritant smoke) with the wearer determining whether the substance can be detected once the respirator is donned. Quantitative fit testing devices can use one of two methodologies: the negative pressure device measures the infiltration of air into a facepiece after a certain amount of air is withdrawn while the wearer holds their breath; particulate or ambient aerosol devices use the measurement of particulate or ambient aerosol leakage inside the wearer's breathing zone for determining the protection factor provided by the specific mask on the individual being tested. A protection factor is the ratio of contaminant concentration in the outside environment to contaminant concentration in the breathing zone. --- The selected mask leak/fit tester should accommodate the types of respirator facemasks used by the organization. The tester should be used by a trained individual. Fit testing should be in accordance with OSHA Title 29 Code of Federal Regulations Part 1910.134.	46
C1 - NFPA 1994 Class 1 Ensembles 01 - Ensemble			
01C1-01-ENSM Ensemble, Chemical/Biological Protective, NFPA 1994 Class 1	NFPA 1994 Class 1 Chemical/Biological Terrorism Protective Ensemble, including totally encapsulating suit with attached gloves and footwear or booties with outer boots (certified as compliant with NFPA 1994). Other separate items, such as CBRN SCBA, are required.	Ensemble consists of suit that encapsulates wearer and wearer's breathing apparatus, combined with attached gloves, and boots or booties with outer boots. Ensembles include transparent visors, pressure-sealing zippers, and exhaust valves for release of wearer's respirator exhalation air. Ensemble is designed to be worn with CBRN self-contained breathing apparatus (CBRN SCBA). The position of the closure system will vary with the manufacturer. The overall suit is evaluated for gas-tight integrity and inward leakage (0.02% is permitted). Materials are evaluated for permeation resistance against high levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. --- Class 1 ensembles are intended for the worst case circumstances, where the substance involved creates an immediate threat, is unidentified and of unknown concentration. Such situations →	44, 45, 84, 99

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C1 - NFPA 1994 Class 1 Ensembles 01 - Ensemble - *Continued*			
		would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the SCBA. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
C1 - NFPA 1994 Class 1 Ensembles 02 - Required Ensemble Elements			
01C1-02-FTWR Footwear, Chemical/Biological Protective, NFPA 1994 Class 1	NFPA 1994 Class 1 Chemical/Biological Terrorism Protective Footwear, (certified as compliant with NFPA 1994). Must be certified as part of a complete ensemble.	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must provide a gas-tight interface with the suit. Footwear is evaluated as part of the ensemble for gas-tight integrity and inward leakage (0.02% is permitted). Materials are evaluated for permeation resistance against high levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. Footwear is further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). --- Footwear as part of Class 1 ensembles is intended for the worst case circumstances, where the substance involved creates an immediate threat, is unidentified and of unknown concentration. Such situations would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the SCBA. Only footwear certified with a particular ensemble may be worn with that ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 99
01C1-02-GARM Garment, Chemical/Biological Protective, NFPA 1994 Class 1	NFPA 1994 Class 1 Chemical/Biological Terrorism Protective Garment, a totally encapsulating suit with attached gloves (certified as compliant with NFPA 1994).	Ensemble consists of suit that encapsulates wearer and wearer's breathing apparatus, combined with attached gloves, and boots or booties with outer boots. Ensembles include transparent visors, pressure-sealing zippers, and exhaust valves for release of wearer's respirator exhalation air. Ensemble is designed to be worn with CBRN self-contained breathing apparatus (CBRN SCBA). The position of the closure system will vary with the manufacturer. The overall suit is evaluated for gas-tight integrity and inward leakage (0.02% is permitted). Materials are evaluated for permeation resistance against high levels of chemical agents, liquid toxic industrial →	44, 45, 84, 99

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C1 - NFPA 1994 Class 1 Ensembles 02 - Required Ensemble Elements *- Continued*			
	Must be certified as part of a complete ensemble, including footwear.	chemicals, and gaseous toxic industrial chemicals. --- Class 1 ensembles are intended for the worst case circumstances, where the substance involved creates an immediate threat, is unidentified and of unknown concentration. Such situations would occur where there is still an on-going release with likely gas/vapor exposure, the responder is close to the point of release, and most victims in the area appear to be unconscious or dead from exposure. Stay times in the hazard zone are likely to be short and limited by the breathing air available from the SCBA. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
C1 - NFPA 1994 Class 1 Ensembles 03 - Suggested Support Items			
01C1-03-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01C1-01-ENSM	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. --- Inflation testing equipment should work with the selected NFPA 1994 Class 1 ensemble.	73
01C1-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01C1-01-ENSM.	Encapsulating suit that is constructed in similar manner as NFPA 1994, Class 1 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 1 ensemble. --- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
C2 - NFPA 1994 Class 2 Ensembles 01 - Ensemble			
01C2-01-ENSM Ensemble, Chemical/ Biological Protective, NFPA 1994 Class 2	NFPA 1994 Class 2 Chemical/Biological Terrorism Protective Ensemble, including suit with attached gloves and footwear or	Ensemble consists of an encapsulating suit, which may or may not be gas-tight, gloves, and footwear. The ensemble may be designed with the SCBA inside or outside of the ensemble. The ensemble is designed to minimize the inward leakage of gases or vapors as demonstrated by a specific test (leakage of no more than 2% is permitted). Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at low concentrations; →	44, 45, 84, 100

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C2 - NFPA 1994 Class 2 Ensembles 01 - Ensemble - *Continued*			
	booties with outer boots (certified as compliant with NFPA 1994).	materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to Class 1. Ensembles are tested for functionality. --- Class 2 ensembles are intended for circumstances where the agent or threat may be identified, when the actual release has subsided, or in an area where live victims may be rescued. Conditions of exposure include possible contact with residual vapor or gas and highly contaminated surfaces at the emergency scene. Most victims in the response area are alive and show signs of movement, but are non-ambulatory. For Class 2 ensembles, breathing air from the SCBA may still limit wearing time. However, Class 2 ensembles may also be configured with powered air-purifying respirators that provide longer duration response time. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
C2 - NFPA 1994 Class 2 Ensembles 02 - Required Ensemble Elements			
01C2-02-FTWR Footwear, Chemical/Biological Terrorism Protective, NFPA 1994 Class 2	Chemical/Biological Protective Footwear, NFPA 1994 Class 2 (certified as compliant with NFPA 1994). Must be certified as part of a complete ensemble.	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must resist inward leakage (2% is permitted) when tested as part of the overall ensemble. Materials are evaluated for permeation resistance against low levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. Footwear is further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). --- Footwear of Class 2 ensembles is intended for circumstances where the agent or threat may be identified, when the actual release has subsided, or in an area where live victims may be rescued. Conditions of exposure include possible contact with residual vapor or gas and highly contaminated surfaces at the emergency scene. Most victims in the response area are alive and show signs of movement, but are non-ambulatory. For Class 2 ensembles, breathing air from the SCBA may still limit wearing time. However, Class 2 ensembles may also be configured with powered air-purifying respirators that provide longer duration response time. Only footwear certified with a particular ensemble may be worn with that ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 100

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C2 - NFPA 1994 Class 2 Ensembles 02 - Required Ensemble Elements *- Continued*			
01C2-02-GARM Garment, Chemical/Biological Terrorism Protective, NFPA 1994 Class 2	Chemical/Biological Protective Garment, NFPA 1994 Class 2 (certified as compliant with NFPA 1994). Must be certified as part of a complete ensemble, including footwear and gloves.	Ensemble consists of an encapsulating suit, which may or may not be gas-tight, gloves, and footwear. The ensemble may be designed with the SCBA inside or outside of the ensemble. The ensemble is designed to minimize the inward leakage of gases or vapors as demonstrated by a specific test (leakage of no more than 2% is permitted). Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at low concentrations; materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to Class 1. Ensembles are tested for functionality. --- Class 2 ensembles are intended for circumstances where the agent or threat may be identified, when the actual release has subsided, or in an area where live victims may be rescued. Conditions of exposure include possible contact with residual vapor or gas and highly contaminated surfaces at the emergency scene. Most victims in the response area are alive and show signs of movement, but are non-ambulatory. For Class 2 ensembles, breathing air from the SCBA may still limit wearing time. However, Class 2 ensembles may also be configured with powered air-purifying respirators that provide longer duration response time. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 100
01C2-02-GLOV Gloves, Chemical/ Biological Terrorism Protective, NFPA 1994 Class 2	Chemical/Biological Protective Gloves, NFPA 1994 Class 2 (certified as compliant with NFPA 1994, and certified as a component of the 1994 Class 2 ensemble). Must be certified as part of a complete ensemble.	Gloves are attached to suits as part of an overall ensemble. The gloves may consist of one or more layers with a leak-free interface with the suit sleeve. Gloves are evaluated as part of the ensemble for inward leakage (2% is permitted). Materials are evaluated for permeation resistance against low levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and function (dexterity). --- Gloves of Class 2 ensembles are intended for circumstances where the agent or threat may be identified, when the actual release has subsided, or in an area where live victims may be rescued. Conditions of exposure include possible contact with residual vapor or gas and highly contaminated surfaces at the emergency scene. Most victims in the response area are alive and show signs of movement, but are non-ambulatory. For Class 2 ensembles, breathing air from the SCBA may still limit wearing time. However, Class 2 ensembles may also be configured with powered air-purifying respirators that provide longer duration response time. Only gloves certified with a particular ensemble may be worn with that ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 100

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C2 - NFPA 1994 Class 2 Ensembles 03 - Suggested Support Items			
01C2-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01C2-01-ENSM.	Encapsulating or non-encapsulating suit that is constructed in similar manner as NFPA 1994, Class 2 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 2 ensemble. --- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
C3 - NFPA 1994 Class 3 Ensembles 01 - Ensemble			
01C3-01-ENSM Ensemble, Chemical/ Biological Protective, NFPA 1994 Class 3	NFPA 1994 Class 3 Chemical/Biological Terrorism Protective Ensemble, including suit or garment with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1994)	Ensemble consists of full body one- or multi-piece suit, gloves, and footwear. The ensemble may be designed for use with SCBA or APR, though APR is consistent with the use of this ensemble. The ensemble is designed to minimize the inward leakage of liquids only by use of a liquid-tight integrity test. The suit and component parts do not offer protection from gases, vapors, or aerosols. Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at very low concentrations; materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to Class 2. Ensembles are tested for functionality. --- Class 3 ensembles are intended for use long after the release has occurred, at relatively large distances from the point of release, or in the peripheral zone of the release scene for such functions as decontamination, patient care, crowd control, perimeter control, traffic control, and clean-up. Class 3 ensembles should only be used when there is very little potential for vapor or gas exposure, when exposure to liquids is expected to be incidental through contact with contaminated surfaces, and when dealing with patients or self-evacuating victims. Class 3 ensembles must cover the individual and it is preferred that this clothing also cover the wearer's respirator to limit its potential for contamination. Because these ensembles are intended for longer wearing periods, the use of air-purifying respirators with these suits is likely. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 101
C3 - NFPA 1994 Class 3 Ensembles 02 - Required Ensemble Elements			
01C3-02-FTWR	NFPA 1994 Class 3 Chemical/Biological Terrorism	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. →	44, 45, 84, 101

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C3 - NFPA 1994 Class 3 Ensembles 02 - Required Ensemble Elements - *Continued*			
Footwear, Chemical/Biological Protective, NFPA 1994 Class 3	Protective Footwear (certified as compliant with NFPA 1994).	The footwear system must resist inward leakage of liquid when tested separately and as part of the overall ensemble. Materials are evaluated for permeation resistance against very low levels of chemical agents and liquid toxic industrial chemicals. Footwear is further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). --- Class 3 ensembles are intended for use long after the release has occurred, at relatively large distances from the point of release, or in the peripheral zone of the release scene for such functions as decontamination, patient care, crowd control, perimeter control, traffic control, and clean-up. Class 3 ensembles should only be used when there is very little potential for vapor or gas exposure, when exposure to liquids is expected to be incidental through contact with contaminated surfaces, and when dealing with patients or self-evacuating victims. Class 3 ensembles must cover the individual and it is preferred that this clothing also cover the wearer's respirator to limit its potential for contamination. Because these ensembles are intended for longer wearing periods, the use of air-purifying respirators with these suits is likely. Only footwear certified with a particular ensemble may be worn with that ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01C3-02-GARM Garment, Chemical/Biological Protective, NFPA 1994 Class 3	Chemical/Biological Protective Garment, NFPA 1994 Class 3 (certified as compliant with NFPA 1994). Must be certified as part of a complete ensemble, including footwear and gloves.	Ensemble consists of full body one- or multi-piece suit, gloves, and footwear. The ensemble may be designed for use with SCBA or APR, though APR is consistent with the use of this ensemble. The ensemble is designed to minimize the inward leakage of liquids only by use of a liquid-tight integrity test. The suit and component parts do not offer protection from gases, vapors, or aerosols. Materials are tested for permeation resistance to selected chemical agent and toxic industrial chemicals at very low concentrations; materials are also tested for viral penetration resistance, and various physical properties with criteria at lower levels as compared to Class 2. Ensembles are tested for functionality. --- Class 3 ensembles are intended for use long after the release has occurred, at relatively large distances from the point of release, or in the peripheral zone of the release scene for such functions as decontamination, patient care, crowd control, perimeter control, traffic control, and clean-up. Class 3 ensembles should only be used when there is very little potential for vapor or gas exposure, when exposure to liquids is expected to be incidental through contact with contaminated surfaces, and when dealing with patients or self-evacuating victims. Class 3 ensembles must cover the individual and it is preferred that this clothing also cover the wearer's respirator to limit its potential for contamination. Because these ensembles are intended for →	44, 45, 84, 101

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
C3 - NFPA 1994 Class 3 Ensembles 02 - Required Ensemble Elements - *Continued*			
		longer wearing periods, the use of air-purifying respirators with these suits is likely. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01C3-02-GLOV Gloves, Chemical/ Biological Protective, NFPA 1994 Class 3	NFPA 1994 Class 3 Chemical/Biological Terrorism Protective Gloves (certified as compliant with NFPA 1994).	Gloves may or may not be attached to the suit as part of an overall ensemble. The gloves may consist of one or more layers with a leak-free interface with the suit sleeve. Gloves are evaluated separately and as part of the ensemble for inward leakage of liquids. Materials are evaluated for permeation resistance against very low levels of chemical agents, liquid toxic industrial chemicals, and gaseous toxic industrial chemicals. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and function (dexterity). ---------- Class 3 ensembles are intended for use long after the release has occurred, at relatively large distances from the point of release, or in the peripheral zone of the release scene for such functions as decontamination, patient care, crowd control, perimeter control, traffic control, and clean-up. Class 3 ensembles should only be used when there is very little potential for vapor or gas exposure, when exposure to liquids is expected to be incidental through contact with contaminated surfaces, and when dealing with patients or self-evacuating victims. Class 3 ensembles must cover the individual and it is preferred that this clothing also cover the wearer's respirator to limit its potential for contamination. Because these ensembles are intended for longer wearing periods, the use of air-purifying respirators with these suits is likely. Only gloves certified with a particular ensemble may be worn with that ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 101
C3 - NFPA 1994 Class 3 Ensembles 03 - Suggested Support Items			
01C3-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01C3-01-ENSM.	Non-encapsulating suit that is constructed in a manner similar to a NFPA 1994, Class 3 suit. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1994, Class 3 ensemble. ---------- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items			
01EM-01-EYEP Eye/Face Protection Devices, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical eye and face protection devices (certified as compliant with NFPA 1999).	Eye and face protection devices can include splash-resistant eyewear such as faceshields or goggles, hooded visors, and masks. Only a few requirements exist for emergency medical face protection devices. These include permitting the wearer to pass a visual acuity test while wearing the device, passing a simulated spray test, and utilizing materials that do not allow viral penetration. --- The selected eye and face protection device should provide protection to the face from direct impingement of blood or body fluids, or subsequent runoff. A combination of eye and face protection devices may be used to meet this level of protection. Eye and face protection devices are not respirators and will not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102
01EM-01-FTWC Footwear Covers, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective footwear covers (certified as compliant with NFPA 1999).	Footwear covers are rubber, textile, or plastic-based materials that are shaped into a cover that can be worn over boots. Footwear covers are intended to provide additional protection from contamination and, consequently, are disposable after use. Footwear covers compliant with NFPA 1999 meet all barrier requirements of NFPA 1999-compliant footwear, but rely on physical protection from inner footwear (such as impact and puncture protection). --- Footwear covers should not interfere with ensemble wearing. The wear surface of the footwear cover should provide some level of traction to prevent slipping. The footwear cover design should not allow penetration of liquids in through the top of the cover. Consequently, the footwear cover should be worn on the ensemble in a fashion that will prevent any liquid entry at the top. NFPA 1999-compliant footwear covers may not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102
01EM-01-FTWR Footwear, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective footwear (certified as compliant with NFPA 1999).	NFPA 1999 footwear is likely to be leather footwear that incorporates a barrier as part of the lining system. The barrier layer must provide protection against bloodborne pathogens as demonstrated through a viral penetration resistance test. Footwear must be a minimum of 4 inches high (covering the ankle) and must have minimal toe impact protection and other physical protection features including cut and puncture resistance. --- NFPA 1999 footwear should be used whenever the potential for blood or body fluid contact →	43, 45, 84, 85, 102

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
		exists. The interface between the footwear and the bottom of the pants or coverall should provide resistance to inward leakage of liquids. NFPA 1999-compliant footwear may not protect against airborne pathogens. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	
01EM-01-GARM Garment, Emergency Medical, NFPA 1999	NFPA 1999 emergency medical protective garment (certified as compliant with NFPA 1999)	Under NFPA 1999, garments may be either full body outfits such as coveralls or jacket/pants combinations, or partial body clothing such as smocks, aprons, or sleeve protectors. In either case, the area of the body covered by the garment must afford complete barrier protection. For example, a garment with barrier panels built into the front of the garment, but with non-barrier materials in the back, would be considered unacceptable per NFPA 1999. The standard stipulates that the garments may be either single-use or reusable; however, single-use garments must be labeled "For Single Use Only." The barrier layer must provide protection against bloodborne pathogens as demonstrated through a viral penetration resistance test. The overall garment composite must also be breathable for improved wearer comfort. --- NFPA 1999 garments should be used whenever the potential for blood or body fluid contact exists. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102
01EM-01-GLCL Gloves, Emergency Medical, Cleaning, NFPA 1999	NFPA 1999 emergency medical cleaning gloves (certified as compliant with NFPA 1999).	Cleaning gloves are relatively thick rubber gloves intended to protect responders' hands from potentially contaminated blood and body fluids with a relatively higher level of physical protection compared to standard examination gloves used in most emergency medical operations. Cleaning gloves must also resist permeation from common disinfectants. Cleaning gloves are likely to be constructed of natural rubber, nitrile rubber, or Neoprene. Glove length, cuff design, and grip finishes will vary with different manufacturer products. --- Cleaning gloves should not be lined as the linings may absorb hazardous liquids. Cleaning gloves will not provide protection against all "sharps" or other physical hazards commonly encountered in cleaning following an emergency medical operation. Some wearers may be subject to natural rubber latex allergies and should use synthetic gloves instead. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EM - NFPA 1999 Protective Clothing (Emergency Medical Services) 01 - Items - *Continued*			
01EM-01-GLMP Gloves, Emergency Medical, Protective, NFPA 1999	NFPA 1999 emergency medical protective gloves (certified as compliant with NFPA 1999).	NFPA 1999-compliant gloves are standard medical examination gloves that have met specific design and performance criteria established in NFPA 1999. Many standard medical examination gloves fail to meet the more rigorous barrier and physical strength criteria established in NFPA 1999. Most gloves are constructed from natural rubber or nitrile rubber, although some additional polymers are available. These gloves are designed to provide intimate fit on the hand and allow fine dexterity and a high degree of tactility. --- NFPA 1999 gloves should be used in all emergency medical operations unless response conditions dictate the use of cleaning gloves, work gloves, or other gloves with additional protection. NFPA 1999 gloves should be selected that afford the highest degree of tactility while still affording adequate protection. Some wearers may be subject to natural rubber latex allergies and should use synthetic gloves instead. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102
01EM-01-GLMW Gloves, Emergency Medical, Work, NFPA 1999	NFPA 1999 emergency medical work gloves (certified as compliant with NFPA 1999).	NFPA 1999-compliant work gloves combine a rugged shell (leather or synthetic fabric) with a lining that includes a barrier layer. The shell fabric provides resistance to physical hazards such as cutting, punctures, and abrasion. The barrier layer provides resistance to penetration by bloodborne pathogens as demonstrated in a viral penetration resistance test. --- Work gloves trade off dexterity and tactility for ruggedness. NFPA 1999-compliant work gloves are intended for emergency medical operations involving significant physical hazards where a high level of dexterity and tactility are not needed. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030; NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition; and NFPA 1581, Standard on Fire Department Infection Control Program, 2000 Edition.	43, 45, 84, 85, 102
LE - Tactical Law Enforcement Protective Equipment 01 - Ballistic Protection			
01LE-01-ARMR Armor, Body	Personal body armor intended to protect the torso and extremities against small arms fire. This type of personal	Protection up to .30 caliber/7.62mm threat rounds, to include armor piercing. --- Refer to NIJ Guide 100-98, Selection and Application Guide to Personal Body Armor for appropriate selection and use of body armor. 100% protection from ballistic threats in all circumstances is impossible. Body armor selection is, to some extent, a tradeoff between ballistic protection →	107, 108

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
LE - Tactical Law Enforcement Protective Equipment 01 - Ballistic Protection - *Continued*			
	protective equipment is recommended for personnel entering into any zone for immediate tactical operations.	and wearability. The selection of appropriate threat levels is important to ensure that wearers have an adequate level of ballistic threat protection for the environment in which they operate. The NIJ standard identifies protection classifications as Type I, IIA, II, IIIA, III and IV. These protection classifications cover threats from hand guns to rifles, including armor piercing rounds. Manufacturer instructions related to the care of the outer shell vest (carrier) must be followed. Body armor that is not worn provides no protection.	
01LE-01-HLMT Helmet, Ballistic	Ballistic helmet intended to protect the wearer against small arms fire and fragmentation threats during tactical operations.	Ballistic helmets covered in this standard are classified into three levels of protective performance. --- Consider ability to attach visors, neck protection. Should accommodate full face respirator or SCBA facepieces, night vision devices, and communications equipment. Helmets should be inspected for dents, cracks, crazing, chipped or sharp corners, and other evidence of inferior workmanship. Requirements for face shields are not included in NIJ Standard 0106.01. Riot Helmets and Face Shield performance requirements are covered in NIJ Standard 0104.02.	109, 110
01LE-01-SHLD Shield, Ballistic	Ballistic shield intended to protect personnel against small arms fire and fragmentation threats while conducting tactical operations.	Ballistic performance to threat level III-A Ambidextrous handle	111
LE - Tactical Law Enforcement Protective Equipment 02 - Other Items			
01LE-02-BDUS Specialized Clothing, NFPA 1975 or NFPA 2112	Battle Dress Uniforms (BDUs), coveralls and jumpsuits that are worn during tactical operations and are constructed of fabrics that will not contribute to injuries in the event of exposure to heat, spark, or flash fire. Certified as compliant with	Constructed of flame-resistant, 100% cotton, or 100% wool fabric. --- Station/work uniforms are NOT protective garments or primary protective garments. Station/work garments serve as normal duty/task clothing for personnel that may, in the course of their duties, be exposed to heat, spark or fire and experience thermal injuries. Personal protective equipment (PPE) selected to protect users from the specific hazards associated with a given incident may be worn in conjunction with station/work uniforms. For example, structural firefighting gear and chemical protective clothing are often worn over station/work uniforms. →	91, 103, 104

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
LE - Tactical Law Enforcement Protective Equipment 02 - Other Items - *Continued*			
	NFPA 1975 or NFPA 2112.		
01LE-02-BOOT Boots, Protective, Tactical/Climbing	Boots for immediate tactical operations.	Boots should be selected to meet mission and special considerations such as weather, terrain, etc.	
01LE-02-PRPD Padding, Protective, Tactical	General protective pads to provide protection for elbows, knees, neck, and shins while conducting tactical law enforcement operations.		
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements			
01SF-01-FTWR Footwear, Structural Fire Fighting Protective, NFPA 1971	NFPA 1971 structural fire fighting protective footwear (certified as compliant with NFPA 1971).	Footwear may be either rubber or leather. Rubber boots use a step-in design, while leather boots can be either step-in or have a gusset with lace or zipper closure option. Other important footwear features include the lining package, type of outer sole, and pull-on loops or tabs. Footwear must include a protective toe cap and puncture resistant plate in the sole. Footwear comes in varying heights, but must be at least 8 inches high when measured from the inside. --- Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Footwear should be chosen to be compatible with selected garments such that a complete protective thermal and moisture envelope is provided for the firefighter. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	43, 45, 84, 86, 90

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
01SF-01-GARM Garment, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective garment (certified as compliant with NFPA 1971).	Garments are available in a number of different designs and materials. Garments are generally designed as a coat and pants. The coat may be of standard length with waist high pants, or short with longer bib-style pants. Pants often include suspenders. Different types of closures are used on the front of the coat and in the pants fly to provide overall liquid-tight integrity. Garments must include reflective trim for daytime and nighttime enhanced visibility. Garments are provided with a number of options in pocket placement, types of reinforcements, and other special features for improved wearing comfort and thermal insulation. The garment composite material consists of an outer shell, moisture barrier, and thermal barrier. The industry uses hundreds of combinations of these three layers to achieve different levels of thermal insulation as balanced against comfort and other performance properties. ---------- Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The garments should be fitted to the individual to provide complete protection in all wearer positions. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	43, 45, 84, 86, 90
01SF-01-GLOV Gloves, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective gloves (certified as compliant with NFPA 1971).	Gloves consist of a shell and lining. Most glove shells are heat and flame resistant leather, although some gloves use textile materials. The lining may be separate or an integrated moisture barrier and thermal barrier. Moisture barriers may be coated fabrics or laminates that offer some degree of breatheability. Different construction methods are used to make gloves, including the way that the liner is inserted to stay within the glove. Gloves may have a gauntlet or a knit wristlet. ---------- Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal →	43, 45, 84, 86, 90

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The type of glove cuff is affected by the wristlet construction used on the protective coat. Gloves should be selected to be compatible with the coat sleeve. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-HLMT Helmet, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective helmet (certified as compliant with NFPA 1971).	Helmets are required to include the minimum components of a shell; an energy absorption system; a retention system; reflective trim; ear covers; and a faceshield, goggles or both. The majority of performance requirements are applied to the complete helmet, including tests for impact/acceleration, physical penetration, heat resistance, flame resistance, electrical resistance, and retention/suspension system performance. Other requirements are applied to individual components, such as the textiles used in ear covers. Differences in helmets relate to the shell material, type of suspension (including the method of size adjustment) and use of an impact cap. Helmets are available in a range of weights and styling (including traditional and modern styles). --- Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. NFPA 1971 permits the use of goggles in place of or supplemental to the helmet faceshield. However, the type of goggles required by the standard must meet a number of requirements that go beyond the specific performance of primary eye protection in the ANSI Z87.1 standard. NFPA 1971 requires that in order for goggles to be part of the helmet, sample goggles must meet test requirements for oven heat resistance, impact resistance, flame resistance and scratch resistance. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance →	43, 45, 84, 86, 90

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SF - NFPA 1971 Ensembles (Structural Fire Fighting) 01 - Required Ensemble Elements - *Continued*			
		requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	
01SF-01-HOOD Hood, Protective, Structural Fire Fighting, NFPA 1971	NFPA 1971 structural fire fighting protective hood (certified as compliant with NFPA 1971).	The hood is a knit, pull-over clothing interface item intended to protect the wearer's head, face, and neck in areas not protected by the helmet, coat collar, and SCBA facepiece. The hood is designed with a face opening to accommodate the SCBA facepiece and a bib such that the hood stays tucked in under the coat collar when in use. Hoods may be made of different flame and heat resistant materials and may be in single or double layers. Some hoods include a ventilated layer at the top (underneath the helmet) which provides additional comfort for heat loss from the wearer. ---------- Structural fire fighting includes rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, marine vessels, or like properties that are involved in a fire or emergency situation. While the primary intent of structural fire fighting protective clothing is to protect against high heat and incidental flame contact while providing adequate thermal insulation in a range of fireground conditions, structural fire fighting protective clothing is also designed to protect against some hazardous liquids, including blood and body fluids, and physical hazards. Nevertheless, structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The hood should be selected to be compatible with the coat and other elements of the structural fire fighting protective ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.132 and 1910.1030, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, use, and maintenance requirements are provided in NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition.	43, 45, 84, 86, 90
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements			
01SH-01-FTWR Footwear, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective footwear (certified as compliant with NFPA 1976).	Proximity fire fighting protective footwear is similar to footwear used for structural fire fighting, except that the footwear materials are designed to offer higher levels of radiant heat protection. ---------- Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior opera→	45, 84, 92

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		tions, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Footwear should be chosen to be compatible with selected garments such that a complete protective thermal and moisture envelope is provided for the firefighter. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-GARM Garment, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective garment (certified as compliant with NFPA 1976).	Proximity fire fighting protective garments are similar to garments used for structural fire fighting, except that the garment materials are designed to offer higher levels of radiant heat protection. This is accomplished by the use of an aluminized fabric outer shell in place of the conventional textile-based outer shells used for structural fire fighting protective clothing. The aluminized outer shell is evaluated for a number of properties to demonstrate high heat resistance and durability of the reflective surface. Proximity fire fighting protective clothing also does not incorporate trim and other non-reflective materials on the shell outer surface. --- Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The garments should be fit to the individual to provide complete protection in all wearer positions. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	45, 84, 92
01SH-01-GLOV Gloves, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective gloves (certified as compliant with NFPA 1976).	Proximity fire fighting protective gloves are similar to gloves used for structural fire fighting, except that the materials are designed to offer higher levels of radiant heat protection. Gloves are required to have a highly reflective (aluminized) surface on the back of the hand. The palm is generally leather. Different glove designs are used to achieve this level of performance. Additional lining materials may be included for increased radiant heat insulation. --- Proximity fire fighting is a specialized fire fighting operation that can include the activities of →	45, 84, 92

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The type of glove cuff is affected by the wristlet construction used on the protective coat. Gloves should be selected to be compatible with the coat sleeve. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SH-01-HLMT Helmet, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective helmet (certified as compliant with NFPA 1976).	Proximity fire fighting protective helmets are generally structural fire fighting protective helmets that incorporate an aluminized outer shell cover. Proximity helmets may also use a gold Mylar face shield that also affords protection from radiant heat to the face area. --- Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	45, 84, 92
01SH-01-SHRD Shroud, Protective, Proximity Fire Fighting, NFPA 1976	Structural fire fighting protective shroud (certified as compliant with NFPA 1976).	A proximity protective fire fighting shroud is a protective interface component that extends from the helmet to provide protection to the face and neck area not protected by other items. The shroud is constructed of the same three-layer construction provided in the clothing to offer a similar level of radiant heat protection. --- Proximity fire fighting is a specialized fire fighting operation that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing high levels of radiant, conductive, and convective heat. Specialized thermal protection is necessary →	45, 84, 92

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 01 - Required Ensemble Elements - *Continued*			
		for persons involved in such operations due to the scope of these operations and the proximity to the fire (although direct entry into flame is NOT made). These operations usually are exterior operations, but may be combined with interior operations. Proximity fire fighting is not structural fire fighting but may be combined with structural fire-fighting operations. Proximity fire fighting also is not entry fire fighting. Structural fire fighting protective clothing does not protect against chemical agents or toxic industrial chemicals. The shroud should be selected to be compatible with the helmet, coat and other elements of the structural fire fighting protective ensemble. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
SH - NFPA 1976 Ensembles (Proximity Fire Fighting, High Radiant Heat) 02 - Optional Ensemble Elements			
01SH-02-SCBH Cover, SCBA, Protective Radiant Heat	Protective radiant heat cover for SCBA.	Some manufacturers of proximity protective clothing or SCBAs provide a protective cover to protect the SCBA from high levels of radiant heat. In general, aluminized fabrics are used as cover materials and configured for specific SCBAs. The aluminized fabric material should meet the same requirements as the garment outer shell as specified in NFPA 1976, Standard on Protective Ensemble for Proximity Fire Fighting. --- The cover should be specific for the type of SCBA being worn.	92
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble			
01SP-01-ENSE Ensemble, Liquid Splash-Protective, Encapsulating, NFPA 1992	Encapsulating liquid-splash protective ensemble (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	Liquid splash ensembles consist of a full-body garment, gloves, and footwear. The liquid splash-protective ensemble is either an encapsulating or non-encapsulating ensemble. Encapsulating ensembles enclose the wearer and his or her breathing apparatus; for non-encapsulating ensembles, the face area of the garment is open but the breathing apparatus covers the wearer's face. Both types of ensembles are evaluated with all components in place (garments, gloves, and footwear) for functionality and liquid-tight integrity. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials for garments, gloves, and footwear. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA →	44, 45, 84, 98

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble - *Continued*			
		1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SP-01-ENSN Ensemble, Liquid Splash-Protective, Non-Encapsulating, NFPA 1992	Non-encapsulating liquid-splash protective ensemble (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	Liquid splash ensembles consist of a full-body garment, gloves, and footwear. The liquid splash-protective ensemble is either an encapsulating or non-encapsulating ensemble. Encapsulating ensembles enclose the wearer and his or her breathing apparatus; for non-encapsulating ensembles, the face area of the garment is open but the breathing apparatus covers the wearer's face. Both types of ensembles are evaluated with all components in place (garments, gloves, and footwear) for functionality and liquid-tight integrity. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials for garments, gloves, and footwear. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcino- →	44, 45, 84, 98

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 01 - Liquid Splash-Protective Ensemble - *Continued*			
		genic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing			
01SP-02-FTWR Footwear, Liquid Splash-Protective, NFPA 1992	Liquid-splash protective footwear (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	Footwear is an item of clothing or an element of the protective ensemble designed to provide required protection to the foot, ankle, and lower leg. Footwear includes boots or outer boots in conjunction with booties. Boots may use different rubber materials and may or may not include a liner. Footwear must be liquid-tight and provide physical hazard resistance against toe impact, cut, puncture, and abrasion. Soles must provide adequate traction. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 98
01SP-02-GLOV Gloves, Liquid Splash-Protective, NFPA	Liquid splash-protective gloves (certified as compliant to NFPA 1992). [Note: 2005 Edition is	Gloves are an element of the liquid splash-protective ensemble or an item of protective clothing designed to provide protection to the hands and wrists. Gloves are generally either supported or unsupported styles with different cuff design and grip finishes. Glove materials must demonstrate resistance to liquid chemical penetration, physical hazard resistance, and adequate →	44, 45, 84, 98

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing - *Continued*			
1992	now current.]	hand function (dexterity). --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors that exist during a hazardous material response are no longer a hazard. The liquid splash-protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01SP-02-GRMT Garment, Liquid Splash-Protective, NFPA 1992	Liquid splash-protective garment (certified as compliant to NFPA 1992). [Note: 2005 Edition is now current.]	A garment is an element of the liquid splash-protective ensemble or an item of protective clothing designed to provide protection to the upper and lower torso, arms and legs (excluding the head, hands, and feet when garment hoods, gloves, and footwear are not provided). Garments include one or multi-piece splash suits, coveralls, and encapsulating suits. NFPA 1992 further permits both full body and partial body garments. Different design features include the types of interfaces between gloves and footwear, and the type of closure. Liquid splash ensembles incorporate different materials which may be coated or special laminates. Some garment materials may be breathable, but still resist penetration by liquids. --- NFPA 1992 does not address liquid splash protection against chemical warfare agents (CWA); it only addresses industrial chemicals. If CWA liquid splash protection is required, an NFPA 1994 Class 3 ensemble should be selected. An NFPA 1992 ensemble is appropriate for protecting decontamination personnel at an incident involving biological or radiological particulates as defined in the SEL Hazard-Role Matrix. NFPA 1992 addresses the second tier of hazardous materials response protection. This standard establishes the requirements for chemical liquid splash protection where the chemical vapors →	44, 45, 84, 98

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SP - NFPA 1992 Splash-Protective Ensembles and Items 02 - Liquid Splash-Protective Clothing - *Continued*			
		that exist during a hazardous material response are no longer a hazard. The liquid splash- protective ensembles are intended for situations where the primary form of chemical exposure is short-term intermittent contact with liquid chemicals that do not produce skin-toxic or carcinogenic vapors. NFPA 1992 further permits the individual certification of garments, gloves, and footwear, which may not be part of an overall ensemble. The primary purpose of NFPA 1992 is to establish requirements for clothing that keeps liquids from contacting the wearer's skin. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements			
01US-01-EYEP Eye/Face Protection, SAR Operations, NFPA 1951	NFPA 1951 USAR Operations eye/face protection (certified as compliant with NFPA 1951).	The intended eye and face protection devices in NFPA 1951 are goggles that meet the requirements in ANSI Z87.1, American National Standard for Occupational and Educational Eye Protection, as well as additional heat and flame resistance requirements provided in NFPA 1951. Goggles may be ventilated or not ventilated. Ventilated goggles may offer either direct or indirect ventilation. The ventilation feature is intended to prevent fogging, but may allow particulate and other substances to enter inside the goggles. Straps are generally adjustable to fit different head sizes. Other types of devices that protect the eye may also be used if all of the requirements of NFPA 1951 are met. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Goggles are principally used in environments where primary eye protection is needed, including but not limited to those where flying debris and particulate may exist. Goggles are not needed if primary eye protection is provided by the full facepiece of a respirator. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	45, 67, 84, 89
01US-01-FTWR Footwear, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective footwear (certified as compliant with NFPA 1951).	Footwear varies in the type of upper, lining, and sole materials. Footwear may be step in or use a combination of zippers, eyelets, and stud hooks with laces. Footwear complying with NFPA 1951 must incorporate a barrier material to prevent the inward leakage of liquids, such as emergency scene chemicals and blood or body fluids. Footwear materials must resist puncture, cut, and abrasion physical hazards. Overall footwear must provide toe impact protection, sole puncture →	45, 84, 89

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements - *Continued*			
		and abrasion protection, and overall traction. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Footwear must specifically be rugged and light weight for long-term wearing applications. Structural fire fighting footwear is typically too heavy for most operations covered by NFPA 1951. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01US-01-GARM Garment, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective garment (certified as compliant with NFPA 1951).	Garments must cover the entire body through the combination of a coat and pants, or coverall. Garment design features will vary with the manufacturer, including the type of closure, reinforcements and pockets. NFPA 1951 requires that garments use reflective trim for high visibility purposes. Garment materials may be one or two layers. Two-layer clothing consists of a shell fabric and lining. Shell fabrics must be flame and heat resistant in addition to being durable and resistant to physical hazards. The lining is a barrier material which is evaluated for liquid chemical and viral penetration resistance. The overall composite must afford a high level of breatheability for long-term wearing comfort. The overall garment must also provide integrity against liquid penetration. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	45, 84, 89
01US-01-GLOV Gloves, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective gloves (certified as compliant with NFPA 1951).	NFPA 1951-compliant gloves have a rugged exterior and a liner that includes a barrier layer. The gloves are designed to protect against physical hazards, penetration of liquids, and flame and heat contact; however, the gloves offer only limited insulation against high heat sources. Gloves may use a variety of different construction techniques and materials. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue →	45, 84, 89

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
US - NFPA 1951 Ensembles (Search and Rescue) 01 - Required Ensemble Elements - *Continued*			
		incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Gloves should be selected to provide a balance of physical, liquid, and heat protection versus hand function for dexterity, grip, and tactility. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01US-01-HLMT Helmet, Protective, USAR Operations, NFPA 1951	NFPA 1951 USAR Operations protective helmet (certified as compliant with NFPA 1951).	Helmets consist of a shell and a suspension system. Helmets may be either hat style with a full brim, or cap style with no brim. The suspension system uses both a chin strap and a nape device that fits to the back of the head. Helmets may use different shell materials and may or may not include padding. Helmets are evaluated for physical protection (impact and penetration), heat and flame protection, and electrical protection. --- NFPA 1951 covers protective clothing and equipment used in urban technical rescue incidents that include victim search, rescue, body recovery, and site stabilization during operations, such as building/structural collapse, vehicle/person extrication, confined space entry, trench/cave-in rescue, and rope rescue. NFPA 1951 does not address personal protective equipment for wilderness or other non-urban settings. Use considerations are provided in OSHA Title 29 CFR Section 1910.132 and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	45, 84, 89
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 01 - Ensemble			
01VF-01-ENSM Ensemble, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective ensemble with optional flash fire protection, including totally encapsulating suit with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1991 with flash fire protection option).	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. For flash fire protection, suit materials are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding →	44, 45, 84, 97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 01 - Ensemble - *Continued*			
	[Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	hazardous chemical environment. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 02 - Required Ensemble Elements			
01VF-02-FTWR Footwear, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective footwear with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must provide a gas-tight interface with the suit. Footwear are evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Footwear are further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). For flash fire protection, footwear is assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Selected footwear must be sized accordingly to fit both the individual and interface properly with the ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 97
01VF-02-GARM Garment, Vapor-Pro-	NFPA 1991 vapor-protective garment with optional flash fire protection (certi-	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the →	44, 45, 84, 97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 02 - Required Ensemble Elements - *Continued*			
tective, with Optional Flash Fire Protection, NFPA 1991	fied as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. For flash fire protection, suit materials are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
01VF-02-GLOV Gloves, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	NFPA 1991 vapor-protective gloves with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	Gloves are attached to suits as part of an overall ensemble. The gloves may be one or more layers (multiple gloves) with a gas-tight interface with the suit sleeve. Gloves are evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and function (dexterity). For flash fire protection, gloves are assessed for thermal insulation, static charge generation, and as part of the ensemble in a simulated flash fire. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for the severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. The flash fire option on certified NFPA 1991 ensembles is for escape only. Users should not knowingly enter a flammable or explosive atmosphere. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection 03 - Suggested Support Items - *Continued*			
01VF-03-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VF-01-ENSM.	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. --- Inflation testing equipment should work with the selected NFPA 1991 ensemble.	73
01VF-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01VF-01-ENSM.	Encapsulating suit that is constructed similarly to NFPA 1991 ensemble, but using different materials. Suits will not have same level of integrity or material performance as NFPA 1991 ensemble. --- Training suits must never be used in actual operations and must be clearly marked by the user organization to prevent their misuse.	
VT - NFPA 1991 Ensembles 01 - Ensembles			
01VT-01-ENSM Ensemble, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective ensemble, including totally encapsulating suit with attached or separate gloves and footwear or booties with outer boots (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. --- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
VT - NFPA 1991 Ensembles 02 - Required Ensemble Elements			
01VT-02-FTWR Footwear, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective footwear (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	Footwear may be attached to suits as part of an overall ensemble. Alternatively, the footwear system may consist of a bootie (sock-like extension of the suit) combined with an outer boot. The footwear system must provide a gas-tight interface with the suit. Footwear is evaluated as part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Footwear is further evaluated for physical properties (impact, abrasion, cut, puncture, cold temperature performance) and function (traction). ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Selected footwear must be sized accordingly to fit both the individual and interface properly with the ensemble. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 97
01VT-02-GARM Garment, Vapor-Protective, NFPA 1991	NFPA 1991 vapor-protective garment (certified as compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	NFPA 1991 defines an ensemble consisting of a suit with attached gloves that totally encapsulates the wearer and his or her breathing apparatus. Ensembles are frequently configured with an overcover, outer gloves, and outer boots in order to meet the requirements of the standard; however, some products can meet the requirements without these extra layers. Suit materials, including visors and seams, are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. NFPA 1991 also includes optional criteria for liquefied gas protection and flash fire escape protection. Additional criteria are provided for each of the certification options. Product labels must clearly indicate which options apply to the specific ensemble. The primary purpose of NFPA 1991 is to define requirements that isolate the wearer from a surrounding hazardous chemical environment. ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	44, 45, 84, 97
01VT-02-GLOV	NFPA 1991 vapor-protective gloves (certified as	Gloves are attached to suits as part of an overall ensemble. The gloves may be one or more layers (multiple gloves) with a gas-tight interface with the suit sleeve. Gloves are evaluated as →	44, 45, 84, 97

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
VT - NFPA 1991 Ensembles 02 - Required Ensemble Elements - *Continued*			
Gloves, Vapor-Protective, NFPA 1991	compliant with NFPA 1991). [Note: 2005 Edition is now current, and includes chemical-biological protection that was previously optional.]	part of the ensemble for gas-tight integrity. Materials are evaluated for permeation resistance against 21 different industrial chemicals and 5 chemical warfare agents. Gloves are further evaluated for physical properties (cut, puncture, cold temperature performance) and function (dexterity). ---------- NFPA 1991 defines the highest level of protection for hazardous material emergencies. NFPA 1991 ensembles are intended for the severe chemical exposure skin hazards. The suits are designed to provide protection from gases, vapors, liquids, and particulates. Level A ensembles should not be used without extensive training. Selected gloves must be attached to the ensemble to provide a gas-tight interface. Use considerations are provided in OSHA Title 29 CFR Sections 1910.120 and 1910.132, and NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
VT - NFPA 1991 Ensembles 03 - Suggested Support Items			
01VT-03-ITST Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VT-01-ENSM.	Inflation testing equipment includes a pump or air source, a pressure gauge, tubing, and fixtures for attachment of tubing to suit. The kit permits the blockage of exhaust valves and inflation of the suit to check gas-tight integrity according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles. ---------- Inflation testing equipment should work with the selected NFPA 1991 ensemble.	73
01VT-03-TRST Suit, Training	Training suit based on similar design, but different materials as Item 01VT-01-ENSM.	Encapsulating suit that is constructed in similar manner as NFPA 1991 ensemble. Suit uses different materials but similar design. Suits will not have same level of integrity or material performance as NFPA 1991 ensemble. ---------- Training suits must never be used in actual operations, and must be clearly marked by the user organization to prevent their misuse.	
XD - Explosive Ordnance Disposal 01 - Ensembles			
01XD-01-BSUT Suit, Improvised	Suit to provide protection from fragmentation, blast overpressure, heat and	This type of protective ensemble is a whole body protective outfit that can be rapidly donned and doffed. The protective ensemble must allow the wearer adequate situational awareness, mobility and comfort when conducting reconnaissance, render safe, or disruption procedures →	82

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 01 - Ensembles - *Continued*			
Explosive Device/ Explosive Ordnance Disposal (IED/EOD) Protective Ensemble	light flash, and flame generated by an Improvised Explosive Device (IED), explosives, or Unexploded Ordnance (UXO).	involving an explosive threat device. These types of protective ensembles can offer limited chemical and biological threat protection depending on specific manufacturer designs. --- This type of protective ensemble is not specifically designed to provide protection to the wearer from chemical, biological or radiological threats. However, this ensemble can be worn with protective ensembles designed for these type of threat hazards. Bomb disposal technicians wearing these types of protective ensembles can be subjected to the physiological effects of heat stress. Commercial personal cooling systems are sold as accessory components to these type of ensembles. Additional ensemble may be needed for chemical/biological protection (see NFPA 1994, Class 1, 2, or 3 ensembles) For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
01XD-01-RCON Ensemble, Reconnaissance, Improvised Explosive Device/Explosive Ordnance Disposal (IED/EOD)	IED/EOD protective ensemble intended to protect the head and torso from explosive fragmentation and flame. Include ballistic helmet, ballistic face shield, and ballistic vest.	Should be constructed with flame-resistant and fire-retardant materials. Protection up to .30 caliber / 7.62mm threat rounds to include armor-piercing. --- Refer to NIJ Guide 100-98, Selection and Application Guide to Personal Body Armor for appropriate selection and use of body armor. 100% protection from ballistic threats in all circumstances is impossible. Body armor selection is, to some extent, a tradeoff between ballistic protection and wearability. The selection of appropriate threat levels is important to ensure that wearers have an adequate level of ballistic threat protection for the environment in which they operate. The NIJ standard identifies protection classifications as Type I, IIA, II, IIIA, III and IV. These protection classifications cover threats from hand guns to rifles, including armor piercing rounds. Manufacturer instructions related to the care of the outer shell vest (carrier) must be followed.	107, 110
01XD-01-SRCH Suit, "Search", Improvised Explosive Device/Explosive Ordnance Disposal (IED/EOD) Protective Ensemble	Suit to provide protection from fragmentation blast overpressure, heat and light flash, and flame generated by an IED. Suit to be worn in an IED search and location function or with chemical/biological or respiratory protection equipment.	This type of protective ensemble is a whole body protective outfit that can be rapidly donned and doffed. The protective ensemble must allow the wearer adequate situational awareness, mobility and comfort when conducting reconnaissance, render safe, or disruption procedures involving an explosive threat device. --- This type of protective ensemble is not specifically designed to provide protection to the wearer from chemical, biological or radiological threats. However, this ensemble can be worn with protective ensembles designed for these type of threat hazards. Bomb disposal technicians wearing these types of protective ensembles can be subjected to the physiological effects of heat stress. Commercial personal cooling systems are sold as accessory components to these type of →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 01 - Ensembles - *Continued*			
		ensembles. Additional ensemble may be needed for chemical/biological protection (see NFPA 1994, Class 1, 2, or 3 ensembles) For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
XD - Explosive Ordnance Disposal 02 - Elements			
01XD-02-BOOT Boot, IED/EOD	Heavy-duty, non-static producing footwear for use with IED/EOD ensembles.	Leather preferred, with non-skid soles. Must be non-static producing. --- Compatibility with ensemble. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
01XD-02-CLTH Clothing, Operational, and Specialized/ Protective Gear IED/EOD	IED/EOD protective outer clothing used in conjunction with recon ensemble or in lieu of full protective ensemble for known minimum threat situation.	Clothing gear should be constructed with flame-resistant and fire-retardant materials. --- Use only with known minimum threat.	82
01XD-02-HAND Equipment, Hand Protection, IED/EOD	Hand protection component to IED/EOD protective ensemble system; protective gloves and ballistic hand covers.	Protective handwear should be constructed with flame-resistant and fire-retardant materials, but still allow adequate hand dexterity for the wearer to allow explosive device mitigation and disposal operations. --- Compatibility with ensemble. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
XD - Explosive Ordnance Disposal 02 - Elements - *Continued*			
01XD-02-HLMT Equipment, Head and Face Protection, IED/EOD	Helmet Protective System Component to IED/EOD Protective Ensemble System, forced air system. Includes ballistic helmet and face shield compatible with bomb suit or search suit above.	The protective helmet component provides an easily adjustable, comfortable helmet retention and suspension system that provides maximum stability and retention while facilitating removal during doffing. A washable, flame resistant head cover such a balaclava should be provided and used with this protective helmet component. The helmet must provide adequate protection against fragmentation and ballistic threats to the neck, head and face. The helmet must also provide appropriate protection against impact from the ground or other stationary objects. --- For operations in a chemical or biological contaminated environment, IED/EOD protective helmet systems can be procured with integrated inhalation protection. These types of helmets can also be used with NIOSH-CBRN certified respiratory protective equipment to provide inhalation protection in the event of a chemical, biological or radiological threat release. Integrated communications (radio) systems are available from manufacturers and vendors. Performance criteria and standards are currently being developed by NIJ and DHS under the management oversight of NIST- Office for Law Enforcement Standards (OLES) with technical support from Army Natick Soldier Center. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	82
ZA - PPE Accessories 01 - Personal Alert Safety Systems			
01ZA-01-OAPT System, Operations Area Personnel Tracking and Accountability	Operations area personnel tracking and accountability systems	Training may be required for operators.	
01ZA-01-PASS System, Personal Alert Safety (PASS)	PASS Device - Personal Alert Safety System (certified as compliant with NFPA 1982).	Personal Alert Safety Systems (PASS) provide an alarm whenever the wearer is motionless for 30 seconds or more. PASS provide audible alarms to aid in the location of a downed firefighter or first responder. These devices are built to be relatively small, rugged, and resistant to extreme physical or environmental conditions. PASS may be either separate or integrated into SCBA. All PASS are required to be automatically activated when used. --- PASS should be mounted such that the alarm signal will not be muffled if not part of the →	84, 94

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ZA - PPE Accessories 01 - Personal Alert Safety Systems - *Continued*			
		SCBA, and such that the device does not interfere with the wearing of other ensemble items. For use, see NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition.	
ZA - PPE Accessories 02 - Gloves and Footwear			
01ZA-02-FTWC Covers, Outer Footwear	Disposable outer footwear covers for contamination hazard protection (no standard currently applies for this item).	Footwear covers are rubber, textile, or plastic-based materials that are shaped into a cover that can be worn over boots. Footwear covers are intended to provide additional protection from contamination and, consequently, are disposable after use. --- Footwear covers should not interfere with ensemble wearing. The wear surface of the footwear cover should provide some level of traction to prevent slipping. The footwear cover design should not allow penetration of liquids in through the top of the cover. Consequently, the footwear cover should be worn on the ensemble in a fashion that will prevent any liquid entry at the top.	
01ZA-02-GLIC Gloves, Inner, Cotton	Inner cotton gloves (no standard currently applies for this item).	Knit cotton gloves worn under ensemble gloves for increased comfort. Gloves may be one-piece or formed from multiple pieces. --- Gloves should fit intimately onto wearer's hands. Gloves must be 100% cotton and be relatively lightweight to prevent loss of hand function when worn with other gloves.	
01ZA-02-GLOD Gloves, Outer, Disposable	Outer disposable gloves for contamination protection (marked in accordance with ANSI/ISEA 105).	Gloves may use a variety of different materials, are provided in different lengths and sizes, and include other features such as grip finishes and cuff end designs. Typical outer disposable gloves for NFPA 1994 Class 1 ensembles are heavy rubber gloves that offer some additional permeation and physical hazard resistance. --- Unsupported gloves should be used which provide a performance level of 2 for cut, puncture and abrasion resistance per ANSI/ISEA 105. Supported gloves should be avoided as fabric inserts will absorb chemicals. These gloves should also be free from holes as required in ANSI/ISEA 105. Gloves should be sized to fit over existing ensemble glove system with minimum of bulk to prevent loss of hand function. If rugged physical environment is involved, work gloves should be used in lieu of disposable outer gloves. Use gloves in accordance with OSHA 29 CFR 1910.138.	48, 70
01ZA-02-GLOW	Outer work gloves for physical hazard protection	Outer work gloves are made of materials that provide a relatively high degree of physical hazard resistance. Gloves are available in a variety of materials, construction styles, and cuff styles. →	48, 70

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ZA - PPE Accessories 02 - Gloves and Footwear - *Continued*			
Gloves, Outer, Work	(marked in accordance with ANSI/ISEA 105).	---------- Work gloves should provide a performance level of 3 for cut, puncture and abrasion resistance per ANSI/ISEA 105. Gloves should be sized to fit over existing ensemble glove system with minimum of bulk to prevent loss of hand function. Use gloves in accordance with OSHA 29 CFR 1910.138.	
01ZA-02-GLVA Gloves, Protective, Abrasion/Puncture-Resistant	Abrasion/puncture-resistant gloves provide protection to the fingers and hands from sharp implements, needle sticks, and abrasive surfaces while providing the wearer with the necessary dexterity to fulfill mission requirements.	Gloves should provide a performance level of 3 for cut, puncture and abrasion resistance per ANSI/ISEA 105.	48, 70
01ZA-02-GLVF Gloves, Protective, Fire-resistant	Fire-resistant gloves provide the wearer's fingers, hands, and wrists with protection from flash fires and short duration exposure to high heat, while still providing the wearer with sufficient dexterity to meet mission requirements.	Gloves should meet fire resistance requirements of ANSI/ISEA 105. ---------- Not for use in handling hazardous materials.	48, 70
ZA - PPE Accessories 03 - Eye Protection			
01ZA-03-EYEP Protection, Eye	Eye protection for field operations.	Personnel should have both shaded and clear lenses for day/night operations.	67

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ZA - PPE Accessories 04 - Hearing Protection			
01ZA-04-HEAR Protection, Hearing	Hearing protection for operations in potentially high noise environments.	Insert or muff style protection. --- Check Noise Reduction Rating (NRR) for the particular intended use. Generally, ear muffs provide a higher degree of protection than inserts. In high noise areas, both may be worn.	
ZA - PPE Accessories 05 - Undergarments			
01ZA-05-UNDR Undergarment, Non-Flame-Resistant	Non-flame-resistant undergarment for contamination control during doffing, and comfort (no standard currently applies for this item).	Undergarment(s) worn underneath garments will generally be constructed of a non-flame-resistant material with various options for sleeve ends (cut or elasticized), pant cuffs (cut, elasticized, or bootie feet), front closure (zipper or tape or combination), and hood design (open, drawstring, or elasticized). --- The selected undergarment(s) should be relatively lightweight and not restrict movement. They should be sized for a relatively close fit with the individual to prevent interference with wearing of the ensemble.	
01ZA-05-UNFR Undergarment, Flame-Resistant	Flame-resistant undergarment (certified as compliant with NFPA 2112 or the flame-resistant option of NFPA 1975).	Garments are constructed of intrinsically flame-resistant or flame-retardant treated materials of varying weights. Garment designs may include coveralls, or shirt and pant outfits with variations in specific styling features. --- The selected coverall or pants and shirt should be relatively lightweight and not restrict movement. They should be sized for a relatively close fit with the individual to prevent interference with wearing of the ensemble. Use undergarments as specified in NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition. Selection, care, use, and maintenance of garments per NFPA 2113, Standard for Selection, Care, Use, and Maintenance of Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2001 Edition.	84, 91, 103, 104
ZA - PPE Accessories 06 - Other Accessories			
01ZA-06-COOL Garment/Vest/ Device, Cooling	Cooling garment, vest, or device (no standard currently applies for this item).	Cooling garments may be active or passive, and involve a range of different technologies. Typical designs include vests and garments, though other types of devices such as vortex tubes and umbilical airlines can be used. Passive devices (such as "ice" vests) provide cooling without the ability for user adjustment. Active devices usually involve some form of circulating fluid or air, →	74

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ZA - PPE Accessories 06 - Other Accessories - *Continued*			
		which may require a power source and peripheral equipment for operation. Devices differ in their cooling capacity, weight, bulk, complexity, operating conditions, and effectiveness. --- The efficiency and effectiveness of personal cooling devices are greatly influenced by the type of protective clothing being worn by the user. The effectiveness of a cooling garment worn under a non-permeable, vapor-tight protective ensemble is greatly reduced. The work rate of the user can also reduce effectiveness. Testing has shown that the efficacy of cooling garments is dramatically reduced at high metabolic work rates. Tradeoffs exist between the additional weight and burden of cooling device versus its cooling performance. Some devices may add complexity to donning efficiency. The effectiveness of the device will vary with the type of technology used for cooling. There are advantages and disadvantages to each type of device. The selected device should work without interfering with the wearing of the selected ensemble, and without creating integrity or protection deficiencies.	
01ZA-06-HHAT Hardhat	Hardhat (certified as compliant to ANSI 89.1)	Hardhat consists of shell with suspension; the suspension generally consists of a chin strap or nape strap (worn behind the head) or both. Some hardhats may contain padding for additional impact protection. --- Minimum hardhat should be a Class G (general). Hardhat is worn inside encapsulating suit for head protection. Selected suit must accommodate hardhat; the hardhat should not interfere with head movement or wearing of SCBA. Use of head protection should be in accordance with OSHA 29 CFR 1910.135.	47, 68
01ZA-06-HYDR Hydration System, Personal	Personal hydration system	Some systems are not compatible with APRs. If these devices are going to be used as integrated item with respiratory protective equipment then the device must have been included in the NIOSH approval. Organizations should consult with the NIOSH Approved Equipment List for the CBRN SCBA or CBRN APR. Sanitizing and care of these items must be carried out in accordance with the manufacturer recommendations.	
01ZA-06-PRPD Padding, Protective	General protective pads to provide protection for elbows, knees, neck, and shins while conducting operations, including rescue operations.		

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ZA - PPE Accessories 06 - Other Accessories - *Continued*			
01ZA-06-TPBM Tape, Boundary Marking	Boundary marking tape: YELLOW Caution/ RED Danger/ Incident specific (i.e., radiological, biological, chemical).		
01ZA-06-VEST Vest or Outer Garment, High visibility	High visibility vest or outer garment, (certified as compliant with ANSI/ISEA 107)	ANSI/ISEA 107 specifies three different visibility classes of apparel based on the intended use and activity of the wearer. Class 1 is the lowest class, class 3 is the highest. Differences in the classes are based on the relative amount of background (fluorescent) and retroreflective materials. Fluorescent materials are intended for daytime visibility, while retroreflective materials provide enhancement of wearer visibility at nighttime. ANSI/ISEA 107 specifies design requirements for the placement of reflective materials on clothing items. Fluorescent materials may be lime-green, orange-red, or red. --- If worn, an outer high visibility garment or vest should be selected so as to not interfere with the wearing of the ensemble. The appropriate class of high visibility garment should be chosen based on the guidance provided in Appendix B of ANSI/ISEA 107.	71
ZP - Ancillary Equipment 00 - Miscellaneous			
01ZP-00-GBAG Bag/Box, Ensemble Gear Storage	Ensemble gear storage bag or box (no standard currently applies for this item).	Soft or hard container capable of holding ensemble and related equipment. --- Bag or box should be sufficiently large to prevent compression and overstuffing of equipment. Bag or box should also be free of sharp edges or rough surfaces that could damage ensemble materials.	
01ZP-00-STOL Stool/Table, Portable or Foldable	Backless stool or table, for use in donning protective equipment/garments.	Some stools or tables can be folded for portability. --- Should be very sturdy and set on flat, even surface.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 2 - Explosive Device Mitigation and Remediation Equipment

Overview

This section was created in the Fall 2004 (online) version of the SEL, and serves both to consolidate all bomb squad-specific equipment in one area, and to more closely align the SEL with the grant guidance promulgated by DHS. The use of a separate major section of the SEL (and the DHS Authorized Equipment List) for this equipment underscores the criticality of bomb squad operations and the seriousness of the threat from Improvised Explosive Devices (IEDs) as both primary and secondary devices.

The IAB continues to support much-needed expansion of the bomb squad equipment list and the role of bomb squads in emergency operations. The IAB now collaborates closely with the National Bomb Squad Commanders Advisory Board (NBSCAB) in identifying essential equipment and advising that the purchase of such equipment be limited to Accredited Bomb Squads. For many of the items in this section (and some of the corresponding EOD Personal Protective Equipment in Section 1) readers will find the notation "For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4" in the Operating Considerations. The inclusion of this notation was an important milestone in setting guidelines for the purchase of specific bomb squad equipment.

Expanded Content

The Spring 2005 SEL includes several new pieces of explosive device mitigation and remediation equipment, and expands some existing items through redefinition. Some new related personal protective equipment has also been included in Section 1. Some items of interest include:

- Post blast scene protection equipment, such as tents
- Equipment transportation trailers
- Vented IED transportation systems
- Blast suppression and deflection systems
- Vehicle-Borne (VBIED) and suicide bomber disabling tools
- Robot repeater devices for extended remote operations
- Reconnaissance ensemble (in Section 1)
- Search Suit (in Section 1)

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Explosive Device Mitigation and Remediation Equipment Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose to use Proficiency Level and Hazard Environment (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Proficiency Level and Hazard Environment, and the system will provide a list of all items tagged for that combination.

The first selection factor is Proficiency Level. In addition to any specific training required to operate an individual piece of equipment, the equipment operator must possess the skills necessary to meet the recommended proficiency level. The factors considered in determining this level include the anticipated location of operation of the equipment (i.e. hot zone, warm zone, or cold zone), the complexity of the equipment, and the necessity of chemical or biological training or expertise. The definitions used for

proficiency levels have been adapted using NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents, as a starting point. They are:

- **Awareness Level.** Responders at the awareness level are those persons who, in the course of their normal duties, can be the first on the scene of an incident. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel, and secure the area.
- **Operational Level.** Responders at the operational level are those persons who respond to WMD incidents as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property.
- **Technician Level.** Technicians are those persons possessing special training who respond to incidents for the purpose of control, active response, or remediation. Technicians are expected to use specialized equipment such as chemical protective clothing and control equipment.
- **Specialist Level.** Specialists are those persons possessing advanced special training who respond to incidents for the purpose of providing specialized assistance in control, active response, or remediation. Specialists are expected to use complex equipment to perform tasks restricted to those with specific advanced training.
- **Command Level.** Command level personnel include the incident commander and other staff members. The incident commander is that person who is responsible for all decisions relating to the management of the incident and site operations.

The second selection factor is the Hazard Environment(s) for which each item is suitable. The values for this factor address the commonly used CBRNE nomenclature. However, for our purposes it is useful to represent the Nuclear "N" as part Thermal, part Explosive, and part Radiological. Therefore, the values used are:

- Chemical
- Biological
- Radiological
- Thermal
- Explosive

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EX - Equipment 00 - General			
02EX-00-EXEN Equipment, Explosive Entry	Explosive entry equipment, related training, upgrades. Used for explosive tactical entries	For use by properly trained individuals only.	
02EX-00-EXMP Magazines, Portable or Transportable, Explosive	Portable or transportable magazines for storage/transport of explosive materials or possible IEDs to and from incident scene.	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
02EX-00-KTFO Kit, Fiber Optic	Fiber optic kit (inspection or viewing)	Potential application both in law enforcement surveillance mode and technical rescue search mode.	
02EX-00-MITA Mitigation Area, Explosive	Explosive/bomb mitigation areas, explosive training, upgrades.	Area in which the bomb technician can safely mitigate/train for Improvised Explosive Devices (IED). For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
02EX-00-MTDT Detector, Metal	Metal detection device		
02EX-00-PBIE Equipment, Post Blast Investigation	Equipment for post blast investigation, explosives/Improvised Explosive Device (IED) investigation, tools, evidence processing equipment, upgrades.	Includes equipment for marking, sampling, collecting, photographing, and processing.	
02EX-00-TCVV	Total containment vessel, vented, for containment,	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 2 | EXPLOSIVE DEVICE MITIGATION AND REMEDIATION EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EX - Equipment 00 - General *Continued*			
Total Containment Vessel (TCV), Transportation, Vented	transportation, or temporary storage of explosive materials or devices.	Bomb Data Center Special Technicians Bulletin 87-4.	
02EX-00-TCVW WMD Upgrades, TCV	WMD upgrades for TCV (Total Containment Vessel) transportation vessel.	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
EX - Equipment 01 - X-Ray Equipment			
02EX-01-XRAP X-Ray Unit, Portable or Transportable	Portable or Transportable X-Ray Unit, related attachments and equipment, film, image screens, computers for image storing/transmission, upgrades.	Ability to remotely x-ray a suspect package and save/transmit images. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
EX - Equipment 02 - Tools			
02EX-02-TLEX Tools, Explosive Mitigation, Suppression, Deflection	Explosive tools for Improvised Explosive Device (IED) remediation, such as boot bangers, shape charges, explosive related training, explosive/CBRN mitigation tents, bomb blankets, blast suppression and deflection equipment, upgrades.	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
02EX-02-TLPB Tools, IED/VBIED/	Disabling tools, disrupters, attachments, and related training and up-	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4. →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EX - Equipment 02 - Tools *Continued*			
Suicide Bomber Disabling	grades for disabling Improvised (and Vehicle-Borne Improvised) Explosive Devices and Suicide Bomber Devices.		
02EX-02-TLRO Tools, Remote Opening, Examination, Handling	Remote opening tools such as rigging kits, pulleys, clamps, probes, mirrors, hand, electric, pneumatic, remote opening, stethoscope, IED handling tools, other non-sparking tools, etc.	For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
EX - Equipment 03 - Canine Explosive Detection			
02EX-03-DOGS Canines, Explosive Detecting	Explosive detecting canines, related CBRNE training, protective equipment, handling accessories.	Departments should consider and plan for food, kenneling, and veterinary expenses associated with explosive detecting canines.	
EX - Equipment 04 - Robotic Explosive Detection			
02EX-04-RBTS Robot, Attachments, Tools	Robot, related attachments, tools, and training as defined by the National Bomb Squad Commander's Advisory Board 2009 Bomb Squad Accreditation Requirements.	For accreditation purposes, a robot is defined by the National Bomb Squad Commanders Advisory Board as including the following features: 1) A remote platform guided by remote control capabilities or a tethered line; 2) Ability to support a camera and project a working image back to the operator's location and allow the operator to manipulate the robot; 3) Ability to pick up and manipulate items using a claw-gripper; and 4) Ability to remotely fire a PAN disrupter. --- For use by accredited public safety bomb squads that meet the accreditation standards as →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 2 | EXPLOSIVE DEVICE MITIGATION AND REMEDIATION EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
EX - Equipment 04 - Robotic Explosive Detection *Continued*			
		defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	
02EX-04-RBTU Robot Upgrades	Robot upgrades; chemical, biological, nuclear, radiological detection devices, cameras, disruption ability, remote operation. Includes repeater devices for extended remote operations.	Includes hardware and software upgrades. ---------- Ability to upgrade existing robots to measure CBRN, add new cameras, disrupters, remote operations. For use by accredited public safety bomb squads that meet the accreditation standards as defined by the National Bomb Squad Commanders Advisory Board and outlined in the FBI Bomb Data Center Special Technicians Bulletin 87-4.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 3 - CBRNE Operational and Search & Rescue Equipment

Overview

This section contains equipment needed to sustain operations and provide general support during WMD response operations. In the Fall 2004 SEL, Explosive Device Mitigation and Remediation Equipment was placed in Section 2, and all other operational and search & rescue equipment moved to Section 3. In editions prior to 2004, this section also included references. All references are now in Section 11. The practice of including Features, Operating Considerations, and Standards references for each item is continued in this edition.

New Category and Subcategory Headings for 2005

For 2005, all items in this section have been reclassified as "Operational Equipment" or "Search & Rescue Equipment." Within these categories, the operational equipment retains familiar subcategories such as Optics, Scene Control, etc., while the search and rescue equipment has new categories that relate to the FEMA Cache categories, such as "Pneumatic Equipment, Tools, etc. The resulting structure should make it easier to locate desired items, and see the relationship to other lists of equipment.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the CBRNE Operational and Search & Rescue Equipment Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose to use Proficiency Level and Hazard Environment (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Proficiency Level and Hazard Environment, and the system will provide a list of all items tagged for that combination.

The first selection factor is Proficiency Level. In addition to any specific training required to operate an individual piece of equipment, the equipment operator must possess the skills necessary to meet the recommended proficiency level. The factors considered in determining this level include the anticipated location of operation of the equipment (i.e. hot zone, warm zone, or cold zone), the complexity of the equipment, and the necessity of chemical or biological training or expertise. The definitions used for proficiency levels have been adapted using NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents, as a starting point. They are:

- **Awareness Level.** Responders at the awareness level are those persons who, in the course of their normal duties, can be the first on the scene of an incident. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel, and secure the area.
- **Operational Level.** Responders at the operational level are those persons who respond to WMD incidents as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property.
- **Technician Level.** Technicians are those persons possessing special training who respond to incidents for the purpose of control, active response, or remediation. Technicians are expected to use specialized equipment such as chemical protective clothing and control equipment.
- **Specialist Level.** Specialists are those persons possessing advanced special training who respond to incidents for the purpose of providing specialized assistance in control, active response, or remediation. Specialists are expected to use complex equipment to perform tasks restricted to those with specific advanced training.

- **Command Level.** Command level personnel include the incident commander and other staff members. The incident commander is that person who is responsible for all decisions relating to the management of the incident and site operations.

The second selection factor is the Hazard Environment(s) for which each item is suitable. The values for this factor address the commonly used CBRNE nomenclature. However, for our purposes it is useful to represent the Nuclear "N" as part Thermal, part Explosive, and part Radiological. Therefore, the values used are:

- Chemical
- Biological
- Radiological
- Thermal
- Explosive

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 01 - Law Enforcement			
03OE-01-BGEV Bags and/or Canisters, Evidence	Evidence bags and/or canisters	Chemical compatibility	
03OE-01-GLVF Gloves, Protective, Fire-resistant	Fire-resistant gloves provide the wearer's fingers, hands, and wrists with protection from flash fires and short duration exposure to high heat, while still providing the wearer with sufficient dexterity to meet mission requirements.	Gloves should meet fire resistance requirements of ANSI/ISEA 105. --- Not for use in handling hazardous materials.	70
03OE-01-LLMN Munitions, Less Lethal	Less lethal munitions for use in tactical law enforcement operations conducted in critical locations.	Specialized needs require a variety of munitions for situations such as refinery, natural gas pipelines, aircraft entries, etc.	
03OE-01-VSTO Vests, Operational	Operational vests; duty gear and modular load bearing systems.	Capable of carrying multiple items such as radio, flashlight, camera, munitions, and antidote/decon kits. --- Depending upon mission, consideration should be given to high or low visibility vest.	
OE - Operational Equipment 02 - Optics			
03OE-02-BNOC Binoculars	Binoculars	Water-resistant.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 3 | CBRNE OPERATIONAL AND SEARCH & RESCUE EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 02 - Optics - *Continued*			
03OE-02-FIBR Systems, Fiber Optic	Fiber optic systems that permit remote observation during field operations.		
03OE-02-LASR Range Finder, Laser	A distance-measuring device capable of instantaneously measuring distance to target with accuracy of +/- one yard/meter.	Light weight, handheld, battery powered. --- Used for scene evaluation and structural monitoring.	
03OE-02-SCOP Spotting Scopes/ Surveillance Telescopes	Optics capable of use in long range, sometimes long term, observation of tactical, structural stability, or rescue operations.	Zoom capable; tripod mount compatible; drop resistant; water resistant; lightweight; portable. --- Normally used in tripod mount configuration.	
03OE-02-TILA Optics, Thermal Imaging and/or Light Amplification	Thermal imaging and/or light amplification optics for search operations involving trapped or lost victims or tactical operations.	Video transmission, recording, and overlay; image size. Waterproof; heat-resistant; durable case with interior construction designed to protect screen and other components. --- Intrinsically safe for use in flammable atmospheres. Battery life, availability, recharge time or time to replace. Usability by personnel wearing heavy gloves.	106
OE - Operational Equipment 03 - Scene Control			
03OE-03-ACCS System, Access Control	Access control system and badges, including digital camera, software, badge printer, laminator, and other accessories.	Portable; field deployable. --- Associated consumables requirements, such as badging materials, laminates, and clips/chains.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 03 - Scene Control - *Continued*			
03OE-03-CACS System, Capture and Containment	Capture and containment system		
03OE-03-GLRL System, Marking, Green Line/Red Line	Marking system, Green Line/Red Line, battery activated or appropriate substitute.	LEDs for use in low visibility areas	
03OE-03-KTFA Kit, First Aid, Trauma Type	Trauma type first aid kit, including bulk dressings and bandages, splints, occlusive dressings and associated supplies for treating trauma patients in a field environment.	Portable, back-pack construction; separate pouches/pockets for organization and rapid access to differing materials; water-resistant; decontaminable. --- Consider durability/resistance to normal decontamination procedures. Should be brightly colored for easy identification during rescue operations, but subdued (black, camouflage, etc.) for tactical operations.	
03OE-03-LOTO System, Lock Out/Tag Out	Lock Out/Tag Out system to secure, control, or block mechanical, electrical, hydraulic, or pneumatic systems or components to ensure protection of personnel.	Portable kit; reusable. --- Use is required for confined space entries when systems encroach on workspace and create a potential hazard to entrants.	49
03OE-03-LTPA Lighting, Portable Area Illumination	Portable area illumination for work areas, rescue sites, and staging areas during night operations or in areas with insufficient ambient light.	Lightweight; portable; 120 VAC; drop-resistant; tripod mounts. --- Tripod mounts are useful both for positioning and to extend height.	106
03OE-03-MEGA Public Address	Battery powered megaphone / public address system with corded micro-	Lightweight, portable, handheld; remote microphone feature, variable volume. --- Useful for crowd control or briefing incident personnel. →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 03 - Scene Control - *Continued*			
System	phone		
03OE-03-SIGN Signs	Restricted access and caution warning signs, preprinted or field printable, various colors, sizes, and shapes.	Wind/weather resistance Various materials, such as tag board or sheet plastic --- Night visibility Mountable on hard surfaces	
03OE-03-TIMR Timer	Timer or stopwatch, used for timing rescuer time on cylinder, entry time/duration, or any other operation requiring accurate time documentation.	Water resistant, drop resistant, digital or analog --- Day/night readability, large font/face.	
OE - Operational Equipment 04 - Safety Equipment			
03OE-04-BALA Balaclava, Fire Resistant	Fire resistant/retardant hood that affords head protection in the event of flash fire.	Nomex or similar fire-resistant material. --- Compatibility with respiratory protection; may increase rescuer fatigue due to heat retention. Recommend items that meet the protective hood requirements of NFPA 1971 or NFPA 2112.	90, 103
03OE-04-EXAC Extinguisher, Fire, Class ABC	Class ABC fire extinguisher, multi-purpose, hand-held, 20 lb capacity	Non-conductive hose assembly; rechargeable; portable. Mounting brackets for wall or vehicle. --- Not effective for Class D fires.	83
03OE-04-EXDD Extinguisher, Fire, Class D	Portable Class D Fire extinguisher	Pressure operated or manual. --- For use on small amounts of metals. Not effective on Class A or B fires.	83
03OE-04-GRCA Cables, Grounding	Grounding cables, point-type clamps on both ends; 1/8" stainless steel (unin-	Reducing risk of static electricity discharge in movement of flammable liquids, grounding and bonding operations. --- →	105, 106

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 04 - Safety Equipment - *Continued*			
	sulated) 50' minimum.	During transfer operations involving flammable/combustible liquids, containers should be bonded together and grounded.	
03OE-04-GRRD Rod, Copper Grounding	Copper grounding rod, 3/4" x 6' (minimum length) with slide hammer.	For use in reducing risk of static electricity discharge during movement of flammable liquids, grounding, and bonding operations. --- Used with bonding and grounding equipment.	105, 106
03OE-04-GRRT Tester, Ground Resistance	Ground resistance tester	Electrical resistance (OHM) measurement device to ensure proper grounding and bonding during movement of flammable liquids.	106
03OE-04-HSMN Monitor, Heat Stress	Heat stress monitor (ambient and personal)	Area monitoring of wet bulb temperatures (WBGT) or personal monitor.	
03OE-04-KTTL Kit, Tool, Miscellaneous, Non-sparking	Non-sparking tool kit, to include bung and spanner wrenches and tool box.	Tool for use with flammable liquids or in Lower Explosive Limit (LEL) environments. --- Use of non-sparking tools does not eliminate all sources of ignition.	
03OE-04-LTHE Lights, Personal, Inherently Safe	Hand-held lights or lights mounted on helmets or otherwise worn by the user for use in potentially flammable atmospheres.	Battery powered or rechargeable; waterproof; drop resistant. Handheld units need wrist strap or other means of securing unit. --- Various means exists to make electrical equipment inherently safe for flammable environments. The resulting products are labeled "explosion proof" or "intrinsically safe". Also consider: Power source Cords Plugs Compatibility with existing batteries or charging systems.	106
03OE-04-LTHH Light, Hand-Held or	Hand-held lights or lights mounted on helmets or otherwise worn by the	Waterproof; drop resistant. --- Not for use in explosive environments →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 3 | CBRNE OPERATIONAL AND SEARCH & RESCUE EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 04 - Safety Equipment - *Continued*			
Helmet-Mounted Illumination	user for use in non-flammable or non-explosive atmospheres.	Mounting system Battery life Type Availability	
03OE-04-MMTR Multi-Meter, Electrical	Intrinsically safe electrical multi-meter, or VOM (volt-ohm-millimeter).	Digital or analog. Should include cables, tips, and protective case. --- Can be utilized in PPE.	106
OE - Operational Equipment 05 - Vehicles			
03OE-05-VHCL Vehicle, Commercial	Commercial vehicles, vans, SUVs, flat bed and panel trucks for personnel transportation and equipment movement.	Run-flat tires; heavy duty configuration. --- Vehicle weight, transmission type, drive/braking systems, and size; Impact on licensing requirements.	
03OE-05-VHMP Packages, Maintenance	Vehicle and equipment maintenance packages.		
OE - Operational Equipment 06 - Rope Safety			
03OE-06-HARN Harnesses, Life Safety/Rappelling	Body harnesses used to support a person during rappelling or rope rescue operations.	--- Durability; number/type of hard attachment points; compatibility with PPE.	95

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 06 - Rope Safety - *Continued*			
03OE-06-ROHA Hardware, Rappelling or Rescue Operations	Rappelling/rescue hardware, including ascenders, friction devices, hand rope grabs, carabiners, plates, racks, etc.	Stainless steel hardware, though heavier, tends to be more durable. Not all hardware used in rescue operations is covered under NFPA 1983.	95
03OE-06-ROPE Rope, Life Safety	Rope of various diameters, lengths, and ratings.	Dynamic vs. static ropes; rescue vs. tactical operations; effects of chemical exposure.	95
03OE-06-ROSO Software, Rope	Includes items such as: Prusik cords, softrope grabs, bags, webbing, rope protection.	Compatibility with existing ropes and hardware. Not all rope used in rescue operations is considered "life safety" rope. Life Safety Rope should be certified as complaint with NFPA 1983.	95
OE - Operational Equipment 07 - Material Handling Equipment			
03OE-07-BULK Equipment, Bulk Material Handling	Equipment for movement of bulk material, including pallets, pallet lifting and movement devices, dollies, rigging, and cargo netting.	Suitability for intended use (i.e., pallets must fit into existing trucks, etc.). Compatibility of tiedown and material securing devices with platform(s).	
03OE-07-CART Cart, Field	Field cart for transporting tools, equipment, or personnel.	Flat bed; pneumatic tires. --- Suitability for use on rough ground, pavement or gravel; compatibility with equipment storage/transportation systems.	
03OE-07-CHMS Containers, Hazardous Material Shipping	Hazardous material shipping containers	Chemically compatible DOT compliant --- May be required for liquids, solids, aerosols, or cylinders.	56, 57

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 3 | CBRNE OPERATIONAL AND SEARCH & RESCUE EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 07 - Material Handling Equipment - *Continued*			
03OE-07-CONT Containers, Storage	Storage containers	Rigid; reusable; stackable, with lifting handles. Removable or hinged lids. --- At least one lifting handle for each 50 lbs of storage capacity.	
03OE-07-CPAC Carts, Portable Compressed Gas Cylinder	Portable carts for transporting gas cylinders to forward locations.	Pneumatic tires; chain or brackets for securing cylinders; retractable dolly wheels. --- Suitable for operation on rough or uneven ground; able to accommodate various diameters and lengths of cylinder.	
OE - Operational Equipment 08 - Logistics and Administration			
03OE-08-BAGS Bags and Bivys	Bags and bivys - individual sleeping systems, including "stuff sacks"	Water and mildew resistant; machine washable; zipper closure. --- Personal bags and bivys may be required to support personnel on extended operations.	
03OE-08-BGEQ Bags, Equipment	Equipment bags for storage and transportation of personal gear and equipment, personal protective equipment, and miscellaneous equipment.	Water and mildew resistant; machine washable; secure closure. --- Appropriate size for contents and intended use. Depending upon use, consider protection capability for items to be moved.	
03OE-08-BKPK Back Pack, Modular	Modular back pack for carrying personal items or equipment to forward locations.	Water and mildew resistant; decontaminable; secure closure. --- Modular construction and configurations to meet varying mission needs.	
03OE-08-COMP Compressors and Systems, Breathing Air	Air compressors or cascade filling systems suitable for refilling self-contained breathing apparatus (SCBA). Output compliant with NFPA 1989.		46, 96

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 08 - Logistics and Administration - *Continued*			
03OE-08-FANE Fan, Explosive-Proof, Exhaust	Explosive-proof exhaust fan for ventilation of confined spaces or enclosed areas with contaminated atmospheres.	Positive or negative pressure --- Concerns regarding discharge air. If exhausting gases and vapors from an enclosed area, consideration should be given to the target discharge area.	106
03OE-08-FRZR Freezer/Refrigerator	General purpose freezer/refrigerator	Frost-free desirable for transporting glass containers of water w/evidence or samples. --- Check capability to maintain control temperature is used for medications or temperature-sensitive reagents. Voltage requirement; 12v, 24v, 110v, 220v. May require generator for use in remote locations.	106
03OE-08-H2OP System, Water Purification	Portable system for producing potable water, with integrated pump; battery or AC powered.	Portable; integral pump. Auto-shutoff upon compromise of purification --- Minimum desirable output 30-60 GPH. Bladders or containers appropriate for potable water will be required for output.	
03OE-08-H2OT Water Trailers/Source	Water trailers (potable and non-potable) with distribution system and pump.	Pneumatic or electric brakes; filling and delivery mechanism; trailer hitch or other means of movement by vehicle. --- Consider operating terrain. Potable and non-potable units are not interchangeable. Consider associated sanitization and stabilization procedures. Potable water sources must meet water quality standards as regulated by EPA.	
03OE-08-HSSF Housing, Subsistence and Sanitation	Housing for response forces (e.g. tents, shelters, rehab trailers), subsistence and sanitation (field support).	Tents and sheltering equipment to allow for the development of a base of operations. This would include shelter, feeding and sanitation, portable HVAC.	
03OE-08-KTCL Kit, Chemical Leak Control	Chemical leak control kit	Plugging and patching kits of varying sizes and configurations.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 3 | CBRNE OPERATIONAL AND SEARCH & RESCUE EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
OE - Operational Equipment 08 - Logistics and Administration - *Continued*			
03OE-08-PCKO Overpack	Overpack container, used to consolidate a load or facilitate handling of packages or cargo.	May be plastic or metal with or without liners. ---------- Compatible with overpacked product. Not for use as a primary hazardous materials container, but may be used to protect and transport hazardous materials containers.	50, 58
03OE-08-SHEL Shelter Systems, Rapid Deployment	Rapidly deployable shelter systems, hardwall or softwall (command and control, triage, evidence protection, etc.).	May be designed in a wide variety of styles such as inflatable, framed, etc. ---------- Time and human resources need for deployment. Weight, storage requirements, shelf-life, and maintenance are all operational considerations.	
03OE-08-SHEN System, Environmental Control	Environmental control system for shelters.	High efficiency particulate and organic vapor filtration. ---------- Consider life expectancy of filter system, filtration capacity, maximum operating concentration, and CFM (cubic feet/minute) rating.	
03OE-08-SHEP System, Collective Protective	Collective protective system for shelters.		
SR - Search & Rescue 01 - Pheumatic Equipment			
03SR-01-ABAG Airbag, Lifting, Low or High Pressure	Low or high pressure airbag lifting systems, bags, regulators, hoses, controllers, accessories and attachments for lifting heavy objects for extrication of trapped victims.	Thin, ability to gain access in small areas. Large lifting capability, rapidly deployable in field. ---------- Must be used in conjunction with shoring or stabilizing systems to provide safety.	
03SR-01-COMP Compressor,	Working air compressor, storage systems, accessories and attachments	Gasoline or electric powered, portable or with wheel kit, integrated regulator. Electrical units should meet requirements of NFPA 70. ---------- →	106

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SR - Search & Rescue 01 - Pneumatic Equipment - *Continued*			
Industrial Air	for powering pneumatic tools, systems and equipment.	NOT to be utilized for compression of breathing air or supplying breathing air systems.	
03SR-01-SHOR Equipment/System, Shoring	Expandable shoring and raker systems, regulators, controllers, hoses, accessories and attachments for stabilization of unstable loads or structures.	Manual locking vs. auto-locking, high strength, rapidly deployable in the field, reusable. --- Pneumatics extend shore only, load supported by locking system. Must be utilized on static load or in conjunction with lifting system.	
03SR-01-TOOL Tools, Hand, Pneumatic	Pneumatic-powered hand tools, accessories and attachments for cutting, breaking, drilling or chiseling wood, steel, concrete and other materials. Includes tools for applying or removing fasteners.	Lightweight, ability to fit into small spaces. --- Reduces time to assemble and disassemble machinery. Requires eye, hand and hearing PPE.	
SR - Search & Rescue 02 - Tools			
03SR-02-HAND Tools, Hand	Manually operated hand tools, cutting torches, exothermic torches, accessories and attachments for cutting, prying, shoring, stabilizing, moving or applying or removing fasteners where powered tools are not appropriate or safe to use.	Manually operated, non-powered. --- Utilization of appropriate PPE for task.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SR - Search & Rescue 02 - Tools - *Continued*			
03SR-02-MARK Tools, Structural, Assessment, Marking and Monitoring	Tools, equipment, accessories and attachments for assessing, marking and monitoring damaged structures and their stability.	Provides a means to survey and monitor damaged structures and danger to rescue personnel. --- Requires additional training beyond rescuer level.	
03SR-02-SPRY Sprayers, Handheld and Backpack	Handheld and backpack spray tanks/bladders and attachments, air pressure or manual pump operated.	Limited volume, limited flow, portable, rapidly deployable in field. --- Not for application of toxic or combustible materials. Utilized for application of water for fire extinguishment, controlling dust or cooling of cutting/boring tools.	
03SR-02-TPEL Tools, Power, Electric	Electrically powered portable saws, cutters, breakers, drills, pumps, accessories and attachments.	Portable, lightweight, operable by a single operator. --- Utilization of applicable PPE for task. Not intrinsically safe.	88
03SR-02-TPGS Tools, Gasoline-Powered	Internal combustion engine, gasoline powered portable cutting saws, accessories and attachments for rescue operations.	Lightweight, portable, operable by single operator. --- Utilization of applicable PPE for task. Not intrinsically safe. Required ventilation or close monitoring of atmosphere in enclosed areas.	
03SR-02-TPHY Tools, Power, Hydraulic	Portable hydraulically-operated tools and power units, hoses, accessories and attachments for rescue operations. Internal combustion or electric power unit.	Portable, operable by a single operator. Generally safer to use in areas of limited ventilation. --- Portable; utilization of appropriate PPE for task; does not generate exhaust at the site where tool is used.	88

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SR - Search & Rescue 02 - Tools - *Continued*			
03SR-02-TRIG Tools, Heavy Rigging	Slings, shackles, wire ropes, chains, swivel plates, anchors, hoists and accessories for lifting and moving large objects with cranes or other heavy equipment.	Reusable, large capacity. --- Use requires training above rescuer level. Used in conjunction with heavy equipment and qualified operators.	
SR - Search & Rescue 03 - Search Equipment			
03SR-03-LSTN System, Listening	Seismic and acoustic listening devices and accessories for locating trapped and entombed victims not detectable by other means.	Portable, lightweight, rapidly deployed in the field. --- Requires prior training. Requires ability to cause cessation of all noise-generating operations during search operations.	
03SR-03-SCAM Camera, Search	Void area video search camera and accessories for inspecting voids and confined spaces with limited physical access.	Lightweight, portable, operable by a single operator, integrated illumination. Some units may have integrated listening devices. --- Tools are conductive, may present electrocution hazard, not intrinsically safe.	
SR - Search & Rescue 04 - Canines			
03SR-04-DOGS Canines, Search & Rescue	Search & rescue canines, related CBRNE training, protective equipment, and handling accessories.	Departments should consider and plan for food, kenneling, and veterinary expenses associated with search & rescue canines.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SR - Search & Rescue 05 - Robotic Equipment			
03SR-05-ROBT Robot, Search & Rescue	Robot, related attachments, tools, and training for search and rescue missions.		
03SR-05-ROBU Upgrades, Search & Rescue Robot	Robot upgrades; Attachments for search detection capability and mounting of cameras, listening devices, etc. Includes repeater devices for extended remote operations.		

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 4 - Information Technology

Overview

This section lists equipment, software, and systems that provide information (data) functionality and interoperability between local and other interagency organizations. The items mentioned serve to develop situational awareness and better coordinate response operations for CBRNE terrorism and homeland security operations.

The Spring 2005 SEL has divided information technology, cybersecurity and communications into three distinct sections. While there continues to be a close connection among the three (and even some merging of technologies such as voice communications over the Internet and encryption of data), the separation of sections should make it easier to locate desired items. In addition, a separate section (Section 10) has been established for common power storage and generation, rather than including items such as generators or common batteries in multiple sections of the list. This year's SEL also continues the practice of providing information on desirable features, operating limitations, and standards (where applicable). These fields are designed to enhance the reader's understanding of the defined items and their practical use.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Information Technology Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose User Level and Use Location (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of User Level and Use Location, and the system will provide a list of all items tagged for that combination.

The User Levels for information technology equipment are defined as follows:

End User	Users who possess no special training or other qualifications with respect to the equipment being utilized. Examples would be personal computer users who are familiar with basic applications but have not received any classroom or advanced training.
IT Technician	Users who possess some specialized training or other qualifications with respect to the equipment being utilized. Examples would be users who have attended classroom training for a Geographic Information System, or who have received training in hardware installation and setup.
IT Advanced Technician	Users who possess some extensive training or career-level qualifications with respect to the equipment being utilized. Examples would be trained professional network administrators who possess professional qualifications such as MCSE, or computer repair professionals.

The probable Use Location(s) are defined as follows:

Rear Information Zone - Strategic	Emergency Operations Center/ Joint Operations Center Intel Support
Rear Information Zone - Operational	Emergency Operations Center/ Departmental Operations Center Intel Support
Forward Information Zone - Support [Cold]	Incident Command Post Intel Support; near incident scene, but in cold zone
Forward Information Zone - Contamination Reduction [Warm]	Operations/Intel Support in warm zone
Forward Information Zone - Exclusion [Hot]	Operations/Intel Support in hot zone

The two factors provide a method for classifying equipment items. For example, a network router might be classified as requiring an IT Advanced Technician to install and configure, and might be used in the Rear Information Zone or the Forward Information Zone - Support [Cold], but would probably not be used in either the Warm or Hot zones. In the online SEL, if a user selected "IT Advanced Technician" and "Forward Information Zone - Support (Cold)" as the two desired selection factor values, the network router item would appear in the search results along with any other equipment recommended for that combination.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AP - Application Systems and Software 01 - Imaging and Visualization			
04AP-01-SVIS Software, Operational Space Visualization	Operational Space Visualization Tools	Mapping Graphical display of data Ability to draw from multiple data sources Data mining --- Emerging technology - standards and functionality are still being developed.	
AP - Application Systems and Software 02 - Alert/Notification Systems			
04AP-02-ALRT Systems, Alert/ Notification	Alert and notification equipment that allows for real-time dissemination of information and intelligence. Examples of this equipment include cellular phones, pagers, text messaging, etc.	'Closed' systems and public alerting systems are available. Consider phone line capacity: notification delivery speed is directly related to items such as # of phone lines, condition of central/other switch, etc.	
AP - Application Systems and Software 03 - Position Locating Systems			
04AP-03-AVLS Systems, Automatic Vehicle Locating (AVL)	Automatic Vehicle Locating (AVL) Systems	Both GPS (differential correction) and DR (ded reckoning) capability. Inclusion of DR preferred. --- Procure as package to ensure compatibility. There are several Coordinate Systems and Datum/Projections - it is critical that all involved systems (GIS, mapping, GPS receivers, etc.) are utilizing the same system AND projection. Coordinate Systems may include: Lat/Long, State Plane, UTM, etc. Datum/Projections may include: NAD 27, NAD 83, WGS 84, etc.	
04AP-03-DGPS Device, Global Positioning System (GPS)	Device, Global Positioning System (GPS)	Differential GPS (DGPS) compatible WAAS (Wide Area Augmentation System) compatible --- Required unobstructed line of sight to satellites (not used indoors or underground). There are several Coordinate Systems and Datum/Projections - it is critical that all involved systems (GIS, mapping, GPS receivers, etc.) are utilizing the same system AND projection. →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AP - Application Systems and Software 03 - Position Locating Systems- *Continued*			
		Coordinate Systems may include: Lat/Long, State Plane, UTM, etc. Datum/Projections may include: NAD 27, NAD 83, WGS 84, etc.	
04AP-03-PLTI Systems, Precision Locating Tracking (PLT)	Precision Locating Tracking Systems (PLT), indoor capable	2-D versus 3-D --- Emerging technology Range/penetration, ease of set-up	
AP - Application Systems and Software 04 - Geographical Information Systems (GIS)			
04AP-04-GISS Software, GIS	Geographical Information Systems (GIS) Software	Emerging technology - standards and functionality for GIS software are still being developed. Geospatial/Geographical Information Systems (GIS), including application software as well as integrated hardware for implementation. GIS systems support the acquisition, integration and dissemination of geospatial data and imagery. Geospatial software should support vector, raster, CAD, and/or spatial file formats. There are several Coordinate Systems and Datum/Projections - it is critical that all involved systems (GIS, mapping, GPS receivers, etc.) are utilizing the same system AND projection. Coordinate Systems may include: Lat/Long, State Plane, UTM, etc. Datum/Projections may include: NAD 27, NAD 83, WGS 84, etc.	
AP - Application Systems and Software 05 - Risk Management Software			
04AP-05-RISK Software, Risk Management	Software or systems that facilitate capture, quantification, and management of risk factors involved in specific tasks or programs.	Should incorporate some form of data visualization capability. Must provide parameters to allow adjustment of weighting factors for risk components. --- Look for maximum flexibility in defining risk components and weighting that reflect your own requirements in addition to the option of using predefined formulas.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AP - Application Systems and Software 06 - Data Fusion			
04AP-06-FUSN Software, Data Fusion	Software or system for accepting disparate inputs and producing organized information. May use multiple sensor inputs to develop a situational picture, and/or multiple inputs from different intelligence sources to create a correlated set of accessible data.	May incorporate some form of data visualization and/or pattern detection capability. Should have GIS integration in order to display mapped information. --- If purchased as software, carefully review platform requirements, including ability to handle varying inputs from sensors, outside systems, etc. Check compatibility with related "add-on" software such as pattern recognition, atypical signal analysis, and data mining. All three aspects of security (confidentiality, integrity, and availability) are extremely important for these systems. In addition to normal precautions such as strong authentication, firewalls, and fault-tolerant hardware, recurring professional third party vulnerability assessments are recommended for data fusion systems.	
AP - Application Systems and Software 07 - Incident Management			
04AP-07-CDSS Software, ICS	Incident Command System (ICS) software including command/plans & decision-support tools	Emerging technology - standards and functionality are still being developed.	
04AP-07-CRED Application Program, Credentialing	Software application and associated hardware for creating site/event credential badges.	Additional equipment needs may include: digital cameras, laminating equipment, facial recognition software, etc. Also consider mobile/portable, versus server based/attached systems	
AP - Application Systems and Software 08 - Analytical Tools			
04AP-08-FACR Software, Facial Recognition	Facial recognition software for access control, identification of criminal actors (IFF), etc.	Emerging technology - standards and functionality are still being developed.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AP - Application Systems and Software 08 - Analytical Tools - *Continued*			
04AP-08-PMOD Software, Plume Modeling	Plume Modeling Software (fate and transport)/databases capable of real time linkage to sensors and meteorological monitoring and detection.	Emerging technology - standards and functionality are still being developed. There are lot of vendors/researchers offering many differing models of varying quality, many of which are unproven!	
04AP-08-TRAF Traffic Modeling Software			
HW - Hardware 01 - Computers			
04HW-01-DTOP Computer, Desktop	Desktop computer, basic	">" indicates minimum requirement > Video Graphics Adapter (XVGA) > 16-bit audio > 128MB video memory > 2GHz processor DVD-R / CDRW > 56k modem Network Interface Card (NIC) 10/100 > 80GB hard drive > 2 USB 2.0 ports > 512MB of RAM	
04HW-01-HHCD Computing Device, Handheld	Handheld computing devices with connectivity. Includes a variety of platforms such as PDAs and Windows compatible devices.	Variety of Operating Systems available, including Windows CE, Windows PocketPC, Palm OS, Linux, etc. Wireless interface - 802.11x, Bluetooth, or other --- Match mission requirements to OS capabilities and compatibilities. Consider battery life and replacement battery availability. Ruggedization. Sleeves may offer this capability.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
HW - Hardware 01 - Computers - *Continued*			
04HW-01-LAPT Computer, Portable	Laptop, notebook or tablet computer, basic	">" indicates minimum requirement > Video Graphics Adapter (XVGA) > 16-bit audio > 32MB video memory > 1.5GHz processor DVD/CD RW > 56k modem Network Interface Connection (NIC) 10/100 > 15GB hard drive (removable) PC MCIA slot > 512MB RAM > USB ports 2.0 ---------- Comparable processor speeds may be lower if Pentium® M Chips are used in the machine. Ruggedization.	
04HW-01-SRVR Computer, Server	Computer used as central host to provide connectivity or data to other systems.	Server operating system, often a Unix variant (Solaris, HP-UX, AIX), Linux, OSX Server, Windows 2000 Server, or Windows Server 2003 ---------- Consider fault tolerance in design, such as dual power supplies, dual fans, disk arrays (such as RAID 5 arrays) in which "striping" can be used to create redundant storage, and multiple processor architecture in which processing continues in a degraded mode after failure of single processor. Servers with all of the above features can be extremely expensive. Alternatively, multiple identical servers can be procured and configured as a cluster to provide a desired combination of processing enhancement and redundancy.	
HW - Hardware 02 - Peripherals			
04HW-02-ALL1 All-in-One	Printer/Copier/Fax/ Scanner in single device with either inkjet or laser printing capability.	Minimum 600 DPI, high quality would be 1200 DPI USB connectivity desirable Network compatibility desirable ---------- Consumable supplies may be critical, particularly for ink-jet devices. Correct toner cartridges →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
HW - Hardware 02 - Peripherals - *Continued*			
		critical for laser devices. Consider types of fax traffic (e.g., images) before deciding on print quality requirement.	
04HW-02-BARC Equipment, Bar Code Reading and Printing	Bar code readers and printers, including devices that have wireless network capabilities.	Tag and readers --- Ensure compatibility of bar code types.	
04HW-02-PLOT Plotter	Output device for producing oversize hard copy output such as maps and visualization graphics.	Minimum 600 DPI, high quality would be 1200 DPI B/W or color Large format USB connectivity desirable Network compatibility desirable --- Consumables (ink supplies) can be critical, and quickly consumed when printing high resolution full-page color. Consider types of output (e.g., images) before deciding on print quality requirement.	
04HW-02-PRNT Printer	Printer using laser, ink-jet, or bubble-jet technology.	Minimum 600 DPI, high quality would be 1200 DPI B/W or color USB connectivity desirable Network compatibility desirable --- Consumables (toner and ink supplies) can be critical, and quickly consumed when printing high resolution full-page color. Consider types of output (e.g., images) before deciding on print quality requirement.	
04HW-02-RFID Devices, Radio Frequency Identification	RF Identification Devices (RFID) and associated readers.	Passive and/or active Tag and readers --- Distance sensitive	
04HW-02-SCAN Scanner	Scanner, flatbed or portable	USB connection capability desirable Network compatibility desirable --- May want RF capability in contaminated zones, perhaps via connection to handheld device.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
HW - Hardware 02 - Peripherals - *Continued*			
04HW-02-STOR Storage, Portable External	Devices that function as virtual drives for storage and transfer of files. Includes USB memory sticks, flash drives, smart chips, etc.	Minimum 128MB storage Drive emulation Compatibility with digital cameras --- Check driver requirements. Some devices may fit cameras but require a reader to interface with PC. Security (device access and content)	
HW - Hardware 03 - Networking Components			
04HW-03-ROUT Router	Network device that connects two or more networks, providing appropriate addressing and packet handling.	Wide variance in size, capacity, and price. May provide Dynamic Host Configuration Protocol (DHCP) service to provide IP addresses on demand to network hosts. May also function as a switch (see 04HW-03-SWCH), or as a Wireless Access Point (WAP - see 04-HW-03-WAP for special issues regarding wireless operation). May have built-in firewall capabilities (see 05NP-00-FWAL for details on firewalls). --- Since routers provide a path between networks, proper configuration and security implementation is essential. Low-end routers are often used as an access point for DSL or Cable-Modem connections to the Internet. Highly recommend that routers be able to support 10/100Mbps Ethernet operation. If very high bandwidth is required, routers with 10/100/1000 capability should be considered.	80, 81, 115
04HW-03-SSRV Server, Serial	Device that provides a network (TCP/IP) presence for serial devices. Example: printer network adapter.	Should offer Dynamic Host Configuration Protocol (DHCP) capability as well as the ability to operate at a static IP address.	
04HW-03-SWCH Switch, Network	Network switching device	Wide variance in size, capacity, and price. --- Smaller switches now used in place of hubs, providing better performance.	
04HW-03-WAP	Wireless Access Point (WAP) for local area net-	802.11b provided widest compatibility; 802.11g provides improved speed. May be combined with router/switch capability (see 04HW-03-ROUT for details on routers). →	80, 81, 115

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
HW - Hardware 03 - Networking Components - *Continued*			
Access Point, Wireless	working under 802.11x.	---------- Recommend the following minimum settings (in priority order): 1) Enable strongest available encryption. WPA and WPA2 are preferred, use WEP if they are not available. WEP is more vulnerable to attacks, but still far superior to no encryption at all. 2) Disable Service Set Identifier (SSID) broadcasting. It is not essential, and advertises the existence of the WAP to unauthorized users. 3) Restrict access to the wireless network to specific hosts by MAC address (a special identifier unique to each network access card). 4) Rotate (change) the network encryption key on a regular basis. Recommend monthly.	
HW - Hardware 04 - Miscellaneous Adapter Cables/Connections			
04HW-04-CABL Adapter Cables/ Connectors	Miscellaneous adapter cables/connectors		
MD - Media Devices 01 - Cameras and Surveillance Equipment			
04MD-01-CMRA Camera, Still	Still camera, digital or film	Decontaminable/Disposable Intrinsically safe housing ---------- Consider consumables (film cameras) and battery life and memory capacity/medium (digital cameras). Digital images may have legal implications - evidentiary standards for digital imagery are still emerging.	
04MD-01-IRED Camera, Infrared (IR)	Infrared (IR) a. Thermal b. Forward Looking Infrared Radiation (FLIR), and/or c. Infrared detection	Decontaminable/Disposable Intrinsically safe housing ---------- Note calibration requirements and potential cost.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
MD - Media Devices 01 - Cameras and Surveillance Equipment - *Continued*			
04MD-01-IRIL Equipment, Illumination, IR	Infrared Illumination Equipment	Decontaminable/Disposable Intrinsically safe housing --- Used as a supplement to IR camera and/or detection equipment.	
04MD-01-LAMP Light Amplification	Light Amplification (night vision enhancement) equipment	Decontaminable/Disposable Intrinsically safe housing --- Battery availability	
04MD-01-VCAM Camera, Video	Video camera	Intrinsically safe housing Remote operation, including pan, tilt, zoom --- Water-resistant housing accessory desirable for hot-zone operations. Decontamination/disposable potential.	
MD - Media Devices 02 - Projectors			
04MD-02-PROJ Projector, Video	Video projector	XVGA (1024x768) or greater projection capability highly desirable. Remote operation via USB connection desirable. Composite TV signal compatibility desirable. --- Check lumen and contrast ratings, particularly if operation will be in areas of high ambient lighting. Check bulb life rating and bulb replacement cost.	
MD - Media Devices 03 - Displays			
04MD-03-DISP Display, Video	Video display - assorted technologies including: Television, Plasma, LCD, etc.	Plasma screens are subject to image 'burn-in' and may not be advisable for some applications. Emerging technology - standards and functionality are still being developed.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SN - Sensor Devices 01 - Remote Sensors			
04SN-01-PTMS Station, Portable Meteorological	Portable meteorological station that monitors (at a minimum) temperature, wind speed, wind direction, precipitation, and barometric pressure.	Considerations: telemetry, greatly affected by placement (micro climates in downtown cores, in buildings, etc.)	
04SN-01-XMIT Transmission Device, Wireless, Remote Sensor	A device which, when attached to a remote sensor such as a video camera or chemical detector, allows wireless transmission of data to a distant base. May use radio frequency (RF), or infrared (IR) transmission.	Compatibility with multiple sensor devices desirable. ---------- Carefully check effective distance and sensitivity to obstacles and weather. May require line-of-sight. Check effective data rates in marginal conditions, especially if used for live video.	
SW - System and Networking Software 01 - Operating Systems			
04SW-01-OSSS System, Server Operating	Operating systems for servers. Examples include Windows, Apple OSX, Unix, Linux.	Minimum version should be: Windows: 2000 or 2003 Apple: OSX Linux: Varies by distribution - latest Kernel version is 2.6 Unix: Varies with brand - check with vendor for current release ---------- Check provided browser for 128-bit encryption and SSL capability.	
04SW-01-OSSW System, Workstation Operating	Operating systems for workstations. Examples include Windows, Apple OSX, Unix, Linux.	Minimum versions should be: Windows: 2000 or XP Apple: OSX Linux: Varies by distribution - latest Kernel version is 2.6 Unix: Varies with brand - check with vendor for current release ---------- Check provided browser for 128-bit encryption and SSL capability.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SW - System and Networking Software 02 - Application Programs			
04SW-02-EMLC Software, E-mail Client	E-mail client software	May be integrated into office suite. --- See NIST SP 800-45 for security guidance.	114
04SW-02-EMLS Software, E-Mail Server	E-Mail Server Software	Need to control relay of outbound mail to prevent server from being used as a spam platform.	114
04SW-02-IMSG Software, Instant Messaging	Instant Messaging (IM) software	Logging capability desirable Enterprise-level systems with encryption are recommended.	
04SW-02-VCSW Software, Video Teleconferencing	Video teleconferencing software	Up to 4 participants. --- Encryption desirable.	
SW - System and Networking Software 03 - Suites			
04SW-03-OFFC Software, Office Software Suite	Office software suite (spreadsheet, database, word processing and graphics presentation)	Document interoperability is critical when moving between suites.	
04SW-03-PTCH Patch management systems	System to manage the update and installation of patches, applications, and/or operating systems, utilized by an organization in order to maintain current 'version control'.	Record keeping of existing versions on different clients, date of last change, etc. System automatically gathers current versions from assorted vendors for pushing out to clients. --- Require regular vulnerability assessments.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 4 | INFORMATION TECHNOLOGY

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SW - System and Networking Software 04 - Reference Data Sources			
04SW-04-CBRN Software, CBRNE/Commercial Chemical/Hazard	CBRNE/commercial chemical/hazard software and response system	Emerging technology - standards and functionality are still being developed.	
SW - System and Networking Software 05 - Network Operating Systems			
04SW-05-NMGT Software, Network management	Network management software for monitoring network performance and/or maintaining configuration.	Trained personnel required for installation and operation.	
SW - System and Networking Software 06 - Monitoring Software			
04SW-06-NMGT Software, Network management	Network management software for monitoring network performance and/or maintaining configuration.	Trained personnel required for installation and operation.	
04SW-06-SCAD System, SCADA (Supervisory Control and Data Acquisition)	A software/hardware system designed primarily to monitor and control remote sensors and actuators. Uses vary from large-scale examples such as refinery or power grid control to building HVAC systems.	Remote monitoring and operation of large numbers of devices. Pre-set control functions such as duty cycling of equipment, or automatic device activation or alarms based upon sensor inputs exceeding set limits. --- Type(s) of communication between remote points and central controller(s), and susceptibility to interference. Architectural structure may involve only a single controller with direct access to all points, or a hierarchical structure with intermediate controllers able to perform some functions autonomously.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 5 - CyberSecurity Enhancement Equipment

Overview

This section lists equipment, software, and systems that contribute to improved information security. Three major functional categories are defined: encryption, network perimeter security, and host level security. The items recommended in this section are included in the SEL because of the criticality of responders' information infrastructure in areas ranging from hazard assessment to communications and incident command. The increasing vulnerability of networks impacts the reliability of this infrastructure, and thus cybersecurity must be considered in deployment and response operations.

CyberSecurity equipment and software should address validated system and network vulnerabilities, and should be acquired and deployed as part of a formal information security plan. Security plans should include management policies, recurring vulnerability assessments, and training (including awareness training), as well as the deployment of technology. Not all technologies are necessary or applicable in every installation.

Sources such as the Information Assurance Technical Framework Forum (http://www.iatf.net) provide important background information on information assurance planning and vulnerability assessment. In addition, the following NIST documents are available to assist in specific areas:

- NIST SP 800-41 Guidelines on Firewalls and Firewall Policy
- NIST SP 800-45 Guidelines on Electronic Mail
- NIST SP 800-36 Guide to Selecting Information Technology Security Products
- NIST SP 800-48 Wireless Network Security - 802.11, Bluetooth and Handheld Devices

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the CyberSecurity Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose User Level and Use Location (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of User Level and Use Location, and the system will provide a list of all items tagged for that combination.

The User Levels for CyberSecurity equipment are defined as follows:

End User	Users who possess no special training or other qualifications with respect to the equipment being utilized. Examples would be personal computer users who are familiar with basic applications but have not received any classroom or advanced training.
IT Technician	Users who possess some specialized training or other qualifications with respect to the equipment being utilized. Examples would be users who have attended classroom training for a Geographic Information System, or who have received training in hardware installation and setup.
IT Advanced Technician	Users who possess some extensive training or career-level qualifications with respect to the equipment being utilized. Examples would be trained professional network administrators who possess professional qualifications such as MCSE, or computer repair professionals.

The probable Use Location(s) are defined as follows:

Rear Information Zone - Strategic	Emergency Operations Center/ Joint Operations Center Intel Support
Rear Information Zone - Operational	Emergency Operations Center/ Departmental Operations Center Intel Support
Forward Information Zone - Support [Cold]	Incident Command Post Intel Support; near incident scene, but in cold zone
Forward Information Zone - Contamination Reduction [Warm]	Operations/Intel Support in warm zone
Forward Information Zone - Exclusion [Hot]	Operations/Intel Support in hot zone

The two factors provide a method for classifying equipment items. For example, a network firewall might be classified as requiring an IT Advanced Technician to install and configure, and might be used in the Rear Information Zone or even the Forward Information Zone - Support [Cold], but would not be used in either the Warm or Hot zones. In the online SEL, if a user selected "IT Advanced Technician" and "Rear Information Zone" as the two desired selection factor values, the network firewall would then appear in the search results along with any other equipment recommended for that combination.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
AU - Authentication Devices			
05AU-00-BIOM Device, Biometric User Authentication	Devices that utilize biometric characteristics (fingerprints, palm prints, retinal scanning, etc.) to authorize access to facilities and/or systems	May be implemented as a peripheral device or integrated into other hardware. --- Check both "false positive" and "false negative" error rates. False positives are more serious since they validate an unauthorized user.	
05AU-00-TOKN Device, Remote Authentication	A device, or token, used to remotely authenticate to a network.	May be connected via USB or PCMCIA to remote computer. Time sensitive key. Provides secure (encrypted) communication to network. --- Battery life. Compatibility with hardware to be used. Will require corresponding software in network to be accessed.	
EN - Encryption			
05EN-00-ECRP Software, Encryption	Encryption software for protecting stored data files or email messages.	See NIST Advanced Encryption Standard (AES) for applicable standards. Note that the Data Encryption Standard (which includes DES and 3-DES) is being replaced by AES. See NIST SP 800-36 for guidance. Third-party professional security audit of network recommended (using Certified Information System Security Professionals). Planning for key management is critical.	60, 112
05EN-00-ETRN Encryption, Data Transmission	A class of network access solutions, usually for remote access, that provide encrypted user access. This includes Virtual Private Networks, and encrypted transmission modes such as SSH and SSL.	Some solutions will utilize hardware "tokens" in addition to software clients (see 05AU-00-TOKN). --- See NIST SP 800-36 for guidance. Third-party professional security audit of network recommended (using Certified Information System Security Professionals). When utilized on handheld devices, the additional overhead may severely impact data transmission - consider platform(s). Planning for key management is critical.	60, 112

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 5 | CYBERSECURITY ENHANCEMENT EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
HS - Host Level Security			
05HS-00-AVIR Software, Virus Protection	Virus protection software	Must maintain current signature file to operate effectively - usually requires a subscription. Can also be deployed at the server or firewall level for entire network segments. Third-party professional security audit of network recommended (using Certified Information System Security Professionals). Maintenance of current versions, throughout the system, is critical (including devices that only access the system periodically).	112, 114
05HS-00-PFWL Software, Personal Firewall	Personal firewall software for operation on individual workstations. See also: 05NP-00-FWAL.	Some effective shareware available. --- Shareware or purchased. Third-party professional security audit of network recommended (using Certified Information System Security Professionals).	112, 113
NP - Network Perimeter Security			
05NP-00-FWAL Firewall, Network	Firewall (appliance or HW/SW standalone device) for use in protecting networks. See also 05HS-00-PFWL.	See NIST SP 800-36 and SP 800-41 for guidance. Third-party professional security audit of network recommended (using Certified Information System Security Professionals).	112, 113
05NP-00-IDS System, Intrusion Detection	Intrusion Detection System (IDS), deployed at either host or network level to detect unauthorized or aberrant behavior on the network. Software and hardware solutions exist	Requires trained network security personnel to configure system and interpret warning messages. Prone to false positives. See NIST SP 800-36 for guidance. Professional security audit recommended (Certified Information System Security Professional)	112

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 6 - Interoperable Communications Equipment

Overview

This section lists equipment and systems that provide communications functionality, connectivity, and interoperability between local and other interagency organizations. The items mentioned serve to develop situational awareness and better coordinate response operations for CBRNE terrorism and homeland security operations.

The 2005 SEL has divided information technology, cybersecurity, and communications into three distinct sections. While there continues to be a close connection among the three (and even some merging of technologies such as voice communications over the Internet), the separation of sections should make it easier to locate desired equipment items. In addition, a separate section (Section 10) was established in 2004 for common power storage and generation, rather than including items such as generators or common batteries in multiple sections of the list. This year's SEL also continues the practice of providing information on desirable features, operating limitations, and standards (where applicable). These fields are designed to enhance the reader's understanding of the defined items and their practical use.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Communications Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For this section, the SubGroup chose User Level and Use Location (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of User Level and Use Location, and the system will provide a list of all items tagged for that combination.

The User Levels for communications equipment are defined as follows:

End User	Users who possess no special training or other qualifications with respect to the equipment being utilized. Examples would be users of cellular telephones or 2-way transceivers.
Communications Technician	Users who possess some specialized training or other qualifications with respect to the equipment being utilized. Examples would be users who have attended classroom training for a telephone switch, or who have received training in hard ware installation and setup.
Communications Advanced Technician	Users who possess some extensive training or career-level qualifications with respect to the equipment being utilized. Examples would be trained satellite communications professionals capable of setting up and operating complex base stations.

The probable Use Location(s) are defined as follows:

Rear Information Zone - Strategic	Emergency Operations Center/ Joint Operations Center Intel Support
Rear Information Zone - Operational	Emergency Operations Center/ Departmental Operations Center Intel Support
Forward Information Zone - Support [Cold]	Incident Command Post Intel Support; near incident scene, but in cold zone
Forward Information Zone - Contamination Reduction [Warm]	Operations/Intel Support in warm zone
Forward Information Zone - Exclusion [Hot]	Operations/Intel Support in hot zone

The two factors provide a method for classifying equipment items. For example, satellite equipment is classified as requiring at least a Communications Technician to install and configure, and might be used in the Rear Information Zone or the Forward Information Zone - Support [Cold], but would probably not be used in either the Warm or Hot zones. In the online SEL, if a user selected "Communications Technician" and "Rear Information Zone" as the two desired selection factor values, satellite equipment would then appear in the search results along with any other equipment recommended for that combination.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CC - Commercial 01 - Cell - Digital			
06CC-01-CELL Phone, Cellular	Digital cellular phone	Locator / Phase II compliant. Wireless Priority Service (WPS) enabled. --- Check coverage area. WPS is only available w/GSM. Check availability of digital service in your area. Ongoing service costs. Cell phone cameras don't currently have high enough resolutions for legal purposes. Some brands of phones can be tracked via location software.	
CC - Commercial 02 - Data & Messaging			
06CC-02-2WAY Device, Messaging, 2-Way Text	Text messaging device with 2-way capability.	Some devices have Internet capability. Some devices also function as cell phones and/or wireless modems. --- Consider service area in vendor selection. Examine billing plan parameters.	
06CC-02-DSAD Device, Data Service Access	PCMCIA card, serial device, or USB device for access to on-line data services.	Multiple protocols available such as General Packet Radio Service (GPRS), CDMA, TDMA. --- Consider coverage area. Examine billing plan parameters.	
06CC-02-PAGE Paging	Paging services, 1-way text messaging.	Audible or silent alarm --- Consider coverage area. Examine billing plan. Consider capacity (# of characters).	
CC - Commercial 03 - Satellite Phone			
06CC-03-SATB Phone, Satellite Base	Satellite communication device, fixed location.	Operation similar to cell phone. Used in a fixed location. --- Consider cost(s) of service. →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CC - Commercial 03 - Satellite Phone - *Continued*			
		Line of sight to satellite (outside antenna) required.	
06CC-03-SATM Phone, Satellite Mobile	Satellite communication device, mobile.	Fixed or vehicle configuration. Cell-type service --- Line of sight to satellite (outside antenna) required Consider cost(s) of service.	
06CC-03-SATP Phone, Satellite Portable	Satellite service with handheld device.	Operation similar to cell phone. --- Line of sight to satellite (outside antenna) required. In-building/car kits are available for portable satellite phones. Service costs/fees.	
CC - Commercial 04 - Satellite Data Services			
06CC-04-EQSD Equipment, Satellite Data	Satellite earth station transmitter and receiver, usually Ku-Band.	Annual or multi-year leased capacity. 50KHz to 70MHz bandwidth. Single audio or low-speed data up to multiple T-1 capacity. --- 24x7x365 Availability. Fixed site (stationary and transportable). Two end points required. May require FCC license. Service costs questions should be directed to ODP.	
06CC-04-INST INMARSAT - B	INMARSAT - B Satellite communications equipment.	No license necessary. Similar to cell service. Monthly access charges with per minute charges. 64-Kbps channels. --- Line of sight to satellite (outside antenna) required. Supports video phone. Data links should be able to support VOIP.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CC - Commercial 04 - Satellite Data Services - *Continued*			
06CC-04-SADS Services, Satellite Data	Satellite Data Services (Internet access via satellite connection); Commercial providers of Internet connectivity via satellite.	Stationary operation, transportable. Includes Ku (most often) and L band. --- Fixed site (stationary and transportable). Line of sight to satellite (outside antenna) required. Ka satellite service not readily available yet.	
06CC-04-SSBR Services, Satellite, Brokered	Full service rental/lease of satellite transponder time, including truck and technicians.	Purchase as needed. 50KHz to 70MHz bandwidth. Single audio or low-speed data up to multiple T-1 capacity. --- Fixed site (stationary and transportable). Two end points required. Very high bandwidth available.	
06CC-04-SSFT Full Time Space Segment, Leased	Satellite transponder time purchased on long term contracts.	Annual or multi-year leased capacity. 50KHz to 70MHz bandwidth. Single audio or low-speed data up to multiple T-1 capacity. --- 24x7x365 Availability. Fixed site (stationary and transportable). Two end points required. May require FCC license. Service cost questions should be directed to ODP.	
06CC-04-SSHB Space Segment, Hourly Brokered	Satellite transponder time purchased by the hour.	Purchase as needed. 50KHz to 70MHz bandwidth. Single audio or low-speed data up to multiple T-1 capacity. --- Stationary site - Transportable Service. Two end points required. Service cost questions should be directed to ODP.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 6 | INTEROPERABLE COMMUNICATIONS EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CP - Private 01 - Land-Mobile Radios & Bases			
06CP-01-BASE Radio, Base	Base radio system	Digital and Analog capable. Supports 25Khz and 12.5Khz channels. Supports conventional and/or trunked systems. Project 25 compatible (if w/in 800 MHz). Project 25 required w/in 700MHz. --- Consider installation needs: grounding, location, lightning protection.	55
06CP-01-MOBL Radio, Mobile	Mobile radio equipment, deployed in vehicles or can also be deployed as 'temporary' base stations.	Digital and Analog capable. Supports 25Khz and 12.5Khz channels. Supports conventional and/or trunked systems. Project 25 compatible (if w/in 800 MHz). Project 25 required w/in 700MHz. --- See 47 CFR 90 FCC for applicable standard. When utilizing as a 'temporary' base station, consider programming needs and capabilities.	55
06CP-01-NRSC Cable, Non-radiation Shielded Transmission	Non-radiation shielded transmission cable between base/repeater and antenna.		
06CP-01-PORT Radio, Portable	Individual/portable radio transceivers	Digital and Analog capable. Supports 25Khz and 12.5Khz channels. Supports conventional systems. Project 25 compatible (if w/in 800 MHz). Project 25 required w/in 700MHz. --- See 47 CFR 90 FCC for applicable standard. Portable radios may not be advisable in EOD operations - consider hard-line, or other solutions. Can be intrinsically safe.	55

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CP - Private 01 - Land-Mobile Radios & Bases - *Continued*			
06CP-01-REPT Repeaters	Repeaters	Digital or Analog capable. Supports 25Khz and 12.5Khz channels. Supports conventional or trunked systems. Project 25 compatible (800 MHz). Project 25 required w/in 700MHz. Portable and/or Fixed. Able to pass encryption transparently. --- Could be configured for cross-band operations. Consider installation needs: grounding, location, lightning protection.	
CP - Private 02 - Interoperability Equipment			
06CP-02-BRDG Bridging/Patching	Bridging or patching equipment	Hard-wired or software-definable. Connects multiple radios together at voice level. Supports 12 or more transmit/receive devices (radio, telephone, VoIP). --- Careful consideration must be given to how channels are interconnected.	
06CP-02-INTE Interoperable Communications Hardware	The category of information includes a wide range of equipment utilized to connect disparate communications networks. Systems range in size from cords that can patch two radios to interface boxes that can link dozens of radios, phones, computers, etc.	Devices can be as small as a link between two specific devices or as large as infrastructure support systems. --- A significant knowledge of the systems to be linked is required. Mistakes in patching or bridging can bring down both systems. There are significant use policy implications with the operation of these systems. Consider licensing issues for individual system, as well as possible licensing implications from linking them.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

SECTION 6 | INTEROPERABLE COMMUNICATIONS EQUIPMENT

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CP - Private 03 - Other Land-Mobile Radio Equipment			
06CP-03-BAMP Amplifiers, Bi-directional	Bi-directional Amplifiers, application defined	May be passive or active. --- Used to extend cell phone or radio signals into/out of buildings, tunnels, underground.	
06CP-03-HFRQ Radio, High Frequency (HF) Single Sideband	High Frequency (HF) Single Sideband communications equipment.	Deployable Antenna Systems. Automatic Link Establishment (ALE). Automatic Email option available. --- Long range communication.	
6CP-03-MWAV Radio, Microwave Link	Microwave Link for remote control of radio base stations or for temporary links at event sites.	May require large antenna system (65 feet typical). Special knowledge area - beyond most common user level training May be either license-free or exclusive use license. --- Line of sight required. Available in licensed and un-licensed bands.	
06CP-03-PRAC Accessories, Portable Radio	Speaker/microphone extensions to portable radios. Sometimes used within encapsulated/partially encapsulated suits, where restricted access to radio equipment impedes normal portable radio operations.	May rely on Push-To-Talk(PTT) or Voice Activation (VOX) for keying microphone. May include bone microphones, throat microphones, etc. --- May include intrinsically safe equipment.	
CP - Private 04 - Wide Area Networks			
06CP-04-WADN Network, Wide Area Digital	Wide area digital network, voice/data capable.	>10MBPS data transmission speeds --- Network security.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CP - Private 05 - Wire-Line Communication			
06CP-05-BRAC Bridge, Audio Teleconferencing	Device to connect more than 2 parties (up to many dozens) into a single audio conference.	Encryption needs and impacts on overhead must be considered.	
06CP-05-LPBX Exchange, Private Branch	Portable Private Branch Exchange (PBX)	Many modern PBXs are VoIP platforms. ---------- Installation may be expedited by Telecommunications Service Prioritization (TSP) through state Emergency Management Office. Required to have pass-through/addressable phone locations for permanent installations.	
06CP-05-VCNB Bridge, Video Teleconferencing	Device to connect more than 4 parties (up to many dozens) into a single video conference.	May connect users via ISDN, Internet, dedicated broadband. May be encrypted. ---------- Extremely high price (>$100K). Encryption needs and impacts on overhead must be considered.	
06CP-05-VCON Teleconferencing, Video	Video teleconferencing over ISDN telephone lines or broadband facilities.	Minimum 256KB bi-directional bandwidth required. Encryption needs and impacts on overhead must be considered.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 7 - Detection

Overview

This section is structured to show detection equipment and recommended technologies based on both the type of expected hazard (Chemical, Biological, Radiological, Thermal, Explosive[1]) and the anticipated mode of use (Portable, Transportable Lab Equipment, Fixed Site, and Standoff). The equipment list continues to annotate the capabilities of each detection device using three codes: D for Detect, I for Identify, and Q for Quantify.

The maturity and types of detection technology vary greatly depending on the level and type of hazard the user is detecting, and therefore the number and sophistication of the detection devices also varies greatly. Radiological detection devices have been commercially available and widely used for decades. Though the military has been using them since World War I, chemical detection devices (especially for traditional chemical warfare agents) have only recently been available to the civilian community. There are numerous types of chemical detection technologies, each of which has different characteristics and operating parameters. Biological warfare agent detection devices have only recently become commercially available, and new technologies continue to emerge.

Sub-Section Headings for 2005

This section structure is organized around likely modes of use. The major groupings are Chemical Detection and Support, Biological Detection and Support, Explosive Detection, Radiological Detection and Support, and Support Equipment. Within these categories, the subcategories used are:

- *Portable*, defined as being human portable for mobile operations in the field. The instrument is light enough to be carried or worn by an emergency responder and operated by one individual.
- *Transportable Lab Equipment*, defined as being human portable for mobile operations in the field but generally requires a trained technical operator as well as extensive labor.
- *Fixed-Site Sampling or Detection Systems*, defined as stand-alone detection systems specifically designed to operate inside a building, fixed-mounted to a vehicle, or set up in a fixed location to monitor an incident perimeter.
- *Standoff Detector Systems*, defined as equipment specifically designed to monitor the presence of chemical agents that may be present in the atmosphere up to three miles away. These systems typically require one or two individuals for monitoring operations. Depending on the technique employed and the environmental conditions, these detectors can have high or low selectivity. Standoff detectors usually require vehicle transport and special setup.

This section of the SEL has a unique feature within the Operating Considerations field to assist users in determining anticipated costs and training time required for each type of equipment. Rating scales were adopted by the Detection and Decontamination SubGroup to quantify initial equipment costs, recurring operation and maintenance (O&M) costs, and amount of training required to become and remain proficient in the operation of the equipment. The initial cost was based on the estimated average cost of equipment that fit the category, including all necessary (but not extra) components. The O&M costs and training hours were based on estimated average annual requirements. The following scales were set:

[1] This scheme is a slight modification to the standard CBRNE, which treats the N (Nuclear) as part Radiological, part Thermal, and part Explosive.

Cost Scale (used for initial cost and yearly maintenance costs)

<$1K	$
$1-10K	$$
$10-50K	$$$
$50-100K	$$$$
>$100K	$$$$$

Training Scale (yearly requirement including initial training)

< 1 day	Minimal
1-2 days	Moderate
> 2 days (or requiring knowledge of chemistry, radiation, explosives or biology, or recurring training more than once a month)	Extensive

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Detection Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For the Detection Section, the SubGroup chose to use Proficiency Level and Hazard Environment (described below) as the two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Proficiency Level and Hazard Environment, and the system will provide a list of all items tagged for that combination.

Proficiency Level is the first factor. In addition to any specific training required to operate an individual piece of equipment, the equipment operator must possess the skills necessary to meet the recommended proficiency level. The considerations in determining this level include the anticipated location of operation (i.e. hot zone, warm zone, or cold zone), the complexity of the equipment, and the necessity for chemical or biological training or expertise. Proficiency Levels have been defined in accordance with NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents, as follows:

- **Awareness Level.** First responders at the awareness level are those persons who, in the course of their normal duties, can be the first on the scene of an emergency involving hazardous materials. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel, and secure the area.
- **Operational Level.** First responders at the operational level are those persons who respond to releases or potential releases of hazardous materials as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property from the effects of the release. They should be trained to respond in a defensive fashion to control the release from a safe distance and keep it from spreading.
- **Technician Level[2].** Hazardous materials technicians are those persons who respond to releases or potential releases of hazardous materials for the purpose of controlling the release. Hazardous materials technicians are expected to use specialized chemical protective clothing and specialized control equipment.
- **Command Level.** The incident commander is that person who is responsible for all decisions relating to the management of the incident. The incident commander is in charge of the incident site.

[2] This level was modified slightly by the SubGroup for this publication. The Technician Level was changed to Technician/Specialist (the term "specialist" as used here should not be confused with the Private Sector Specialist definition in NFPA 472). A Specialist, for purposes of our matrix, was defined as an equipment operator that possessed extensive technical expertise, but did not possess emergency response HAZMAT experience or knowledge. Generally, a Specialist would be required for a piece of equipment defined as Transportable Lab Equipment.

The second selection factor is Hazard Environment, which includes the particular CBRNE hazard environment(s) for which each item is suitable. As stated earlier, for our purposes it is useful to represent the Nuclear "N" as part Thermal, part Explosive, and part Radiological. Therefore, the Hazard Environment values used for online selection are:

- Chemical
- Biological
- Radiological
- Thermal
- Explosive

Finally, the Detection and Decontamination SubGroup strongly recommends that a minimum of two different but complimentary detection technologies be used to validate readings from any single instrument. This procedure will assist responders in interpreting data to better conduct their risk assessment and incident action plan.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
BD - Biological Detection 01 - Portable			
07BD-01-KFAS Kit, Field Assay	Field assay kit. [D,I]	Stand alone or with assay reader --- Test results are presumptive: confirmatory process required Limited shelf life Requires temp-controlled storage Strict operating procedures For use with bulk material (visible) point sampling - (Not for environmental surveys) Limited number of agents Time sensitive Initial cost: $ Maintenance: $ Training: minimal Frequent refresher training required	
07BD-01-PTST Kit, Protein Test	Protein test kit. [D]	Handheld --- Basic screen for biologicals based on protein detection Test results are presumptive: confirmatory process required Non-discriminatory between live or dead cells, harmless or harmful Reagents have limited shelf life For use with bulk material (visible) Initial cost: $ Maintenance: $ Training: minimal Operational competency maintenance required	
BD - Biological Detection 02 - Transportable Lab Equipment			
07BD-02-DNRN Analysis, DNA/RNA Detection	DNA/RNA detection analysis (example: PCR). [D,I,Q]	Test results are presumptive: confirmatory process required Reagent quality: continuous refrigeration required, highly perishable Proper sample preparation critical Does not discriminate between living and dead organisms Initial cost: $$$ Maintenance: $$ Training: extensive →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
BD - Biological Detection 02 - Transportable Lab Equipment - *Continued*			
		Skill competency maintenance required	
BS - Biological Support 01 - Portable			
07BS-01-KBBA Kit, Biological Sampling/evidence - Batch	Biological Sampling and Evidence Kit. Collects samples for later analysis.	Sample collector --- Initial cost: $ Maintenance cost: $ Training: minimal	
07BS-01-KBPA Sampler, Biological, Portable Air	Portable air sampler for biological sampling/ evidence.	Handheld Portable Air particulate/aerosol Collects sample for lab and/or assay analysis --- Variable air flow rate Shelf life consideration Filter: medium Initial cost: $$ Maintenance: $ Training: minimal	
BS - Biological Support 03 - Fixed-site Sampling and/or Detection Systems			
07BS-03-KBAP Kit, Biological Sampling/evidence - Automated Perimeter Sampling Systems	Biological sampling/ evidence kit - automated perimeter sampling systems.	Building system mounted Vehicle mounted/carried Collects/Concentrates air particulates/aerosols only Deposits sample on filters or collection medium --- Does not differentiate particle type Variable air flow rate Filter medium Initial cost: $$$	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
BS - Biological Support 03 - Fixed-site Sampling and/or Detection Systems - *Continued*			
		Maintenance: $ → Training: minimal Easy to use	
CD - Chemical Detection 01 - Portable			
07CD-01-CLAS Strips, Classifier (pH, Waste Water, Chemical)	Waste water classifier kit, pH and Chemical [D]	Paper indicator --- Initial cost: $ Maintenance: N/A Training: minimal	
07CD-01-DPFI Detector, Flame Ionization (FID), Point, Chemical Agent	Flame Ionization Detector (FID), for point chemical agent detection. [D]	Handheld --- Non-specific Presence/absence Combustible fuel source (transportation may be an issue) Cannot be used in explosive atmospheres Initial cost: $$ Maintenance: $ Training: minimal	
07CD-01-DPFP Detector, Flame Photometry, Point, Chemical Agent	Flame photometry detector for point chemical agent detection. [D,I,Q]	Detects nerve and blister --- Prone to false positives (anything containing sulphur and phosphorus) Requires hydrogen fuel (expensive to ship, buy in bulk to reduce cost) Initial cost: $$ Maintenance: $$ Training: minimal	
07CD-01-DPMG Detector, Multi-sensor Meter, Point, Chemical	Multi-sensor meter with minimum of O2 and LEL for point chemical detection. [D,I,Q]	4-5 gas meter Each sensor for different operation (O2, LEL/UEL, Cl2, CO, H2S, etc) Fan or pump operated Requires calibration prior to each use →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 01 - Portable - *Continued*			
		Calibration gases transportation issues Shelf life dependent on type of sensor Moderate sensitivity Initial cost: $$ Maintenance: $ Training: moderate	
07CD-01-DPPI Detector, Photo-Ionization Detector (PID)	Photo-Ionization Detector (PID) for point chemical agent detection. Volatile Organic Chemical (VOC) [D]	Handheld Fan or pump operated Variable pump speeds Intrinsically safe --- Non-selective Utilizes different lamps to detect the presence of different substances Requires calibration prior to each use Problems at high humidity and low temperatures Calibration gases require special transportation Service life dependent on type of lamp Ionization potential must be considered Initial cost: $$ Maintenance: $ Training: moderate	
07CD-01-DPSI Detector, Spectrometry, Ion Mobility, Point, Chemical Agent	Ion mobility spectrometry detector for point chemical agent detection. [D]	Handheld Battery operated Self-testing --- Optional wireless remote displays and data logging Readout indicates relative concentration, not actual measurement Non-selective Prone to false positives Internal radioactive source requires wipe test and NRC licensing Initial cost: $$ Maintenance: $$ Training: minimal	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 01 - Portable - *Continued*			
07CD-01-DPSW Detector, Surface Acoustic Wave (SAW), Point, Chemical Agent	Surface acoustic wave detector for point chemical agent detection. [D,I,Q]	Handheld Detects chemical warfare agents Battery operated --- Polymers and acoustic wave components subject to degradation over time Optional wireless remote displays and data logging Readout may indicate relative concentration or actual measurement Initial cost: $$ Maintenance: $ Training: minimal	
07CD-01-INPA Paper, Indicating, (M-8)	Indicating paper, Chemical Warfare Agent [D, I]	Handheld Will specify type/class of Chemical Warfare Agent (G, VX, H) Easy to use Response time: 30 seconds --- Liquid agent only Long shelf life Initial cost: $ Maintenance: N/A Training: minimal Prone to false positives	
07CD-01-INTI Tape, Indicating (M-9)	Indicating tape, Chemical Warfare Agent [D, I]	Will specify type/class of Chemical Warfare Agent (G, VX, H) Easy to use Response time: 30 seconds Attached to PPE or equipment --- Liquid agent only Long shelf life Initial cost: $ Maintenance: N/A Training: minimal Prone to false positives	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 01 - Portable - *Continued*			
07CD-01-KCTC Kit, Colorimetric Tape/Tube/Chip	Colorimetric tape/tube/chip kit specific for TICs and WMD applications. [D,I,Q]	Chemical specific User friendly --- Limited shelf life Wide variance in detection level Sensitive to humidity and temperature Initial cost: $$ Maintenance: $ Training: minimal	69, 72
07CD-01-KPCB Kit, PCB Test	PCB test kit. [D, I, Q]	Regulatory detection level --- Limited shelf life Initial cost: $ Maintenance: $ Training: minimal	
07CD-01-KTHG Kit, Mercury Test / Mercury Vapor Test	Mercury and mercury vapor test kit. [D]	Easy to use Moderate detection level --- Initial cost: $ Maintenance: $ Training: minimal	
07CD-01-KWTR Kit, Chemical Agent Water Test	Chemical agent water test kit. [D]	Detects chemical agents in water Unspecified detection level --- Initial cost: $ Maintenance: $ Training: minimal	
07CD-01-M256 Kit, M-256(A1)	M-256(A1) Detection Kit for chemical agent (military grade; blister: HD/L; blood: AC/CK; and nerve: GB/VX) detection. [D, I]	Detects nerve, blood and blister agents Self-contained colormetric kit Instructions in case Response time: 15 -25 minutes Training kit available →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 01 - Portable - *Continued*			
		---------- Detects presence/absence, not quantity Vapor only, except G agents Must be disposed of as hazardous waste after use Shelf life considerations Initial cost: $ Maintenance: $ Training: moderate	
07CD-01-MONO Detector, Single Chemical Sensors [D,I,Q]	Single gas meter with point chemical detection	One gas meter Different sensor for each operation Fan or pump operated, some passive ---------- Fresh air zeroing at start up Different sensors for different gases Shelf life dependent on sensor type Moderate sensitivity Initial cost: $ Maintenance:$ Training: minimal	
07CD-01-POLY Detector, Reactive Polymer	Reactive polymer point chemical agent detector. [D,I,Q]	Chemical specific polymers Discrete id and quantification ---------- Emerging technology Requires specific chip for chemical(s) being detected Some polymers degraded with acids Initial cost: $$ Maintenance: $$ Training: minimal	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 02 - Transportable Lab Equipment			
07CD-02-DPGC Detector, Gas Chromatograph/Mass Spectrometer, Point, Chemical Agent	Gas chromatograph/mass spectrometer detector for point chemical agent detection. (GC/MS). [D,I]	Identifies specific chemicals Portable Durable Response time: 5-15 minutes --- Climate sensitive High maintenance and recurring training Reagents and calibration requirements costly Initial cost: $$$ Maintenance: $$ Training: extensive	
07CD-02-DPIR Detector, Infrared, Point, Chemical Agent	Infrared (IR) detector for point chemical agent detection. [D,I,Q]	Detects liquid, vapor and solid samples --- Visible sample size needed for liquid/solid samples Additional expense in purchasing libraries Unstable at low temperatures Spectral interpretation necessary Initial cost: $$$$ Maintenance: $ Training: extensive	
07CD-02-KLSV Kit, Chemical Classifying	Chemical classifying kit for unknown liquids, solids and vapors. [D,I]	Identifies classes of chemicals --- Requires constant refresher training, dedicated technician Time consuming Subjective results Reagent shelf life and replacement costs Initial cost: $$ Maintenance: $ Training: extensive	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CD - Chemical Detection 04 - Standoff Detectors			
07CD-04-DCSO Detector, Stand-Off, Chemical	Stand-off chemical detector. [D, I] FTIR system	Cold zone operations Detects to 5 km --- Currently available to military only Sensitive to atmospheric conditions Gross level detector Requires line of sight Initial Cost: $$$$$ Maintenance: $$ Training: extensive	
CS - Chemical Support 01 - Portable			
07CS-01-KAVC Kit, Air/Vapor Chemical Sampling	Air/vapor chemical sampling/evidence kit.	Commercial sample collection kits --- Initial cost: $ Maintenance: $ Training: minimal	
07CS-01-KLCS Kit, Liquid Chemical Sampling	Liquid chemical sampling/evidence kit.	Commercial Sample Collection Kits --- Initial cost: $ Maintenance: $ Training: minimal	
07CS-01-KSCS Kit, Solid Chemical Sampling	Solid chemical sampling/evidence kit.	Commercial Sample Collection Kits --- Initial cost: $ Maintenance: $ Training: minimal	
07CS-01-KVES Kit, Chemical Sampling/Evidence,	Chemical sampling/ evidence kit, containment vessels.	Commercial Sample Collection Kits --- Initial cost: $ Maintenance: $ →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
CS - Chemical Support 01 - Portable - *Continued*			
Containment Vessels		Training: minimal	
07CS-01-LEAK Detectors, Leak	Leak detectors (e.g., soap solution, ammonium hydroxide, ultrasonic, etc.)	Initial cost: $ Maintenance: $ Training: minimal	
ED - Explosive Detection 01 - Portable			
07ED-01-SNIF Handheld Air-Sampler, Explosive Detecting	Handheld air-sampling explosive detectors	Detects particulates and vapors Some contain radioactive sources --- Wipe test required for equipment with radioactive source False Positives and Negatives Initial cost: $$ Maintenance: $$ Training: moderate	
ED - Explosive Detection 03 - Fixed-site Sampling and/or Detection Systems			
07ED-03-PORT Portal, Explosive Detecting	Ion Mobility Spectrometry (IMS) explosives screening Two types: Walk-through Drive through (Vehicle)	Walk-through / Vehicle Drive-through portal monitor --- Requires frequent calibration and confidence testing Subject needs to remain in monitor for several seconds False positives possible Initial Cost: $$$$ Maintenance: $$ Training: Extensive	
07ED-03-SWPE Swipe Test, Explosive Detecting	A cloth item used to wipe the surface and place in a machine that analyzes vapor for identifying the explosive.	Fixed facility screening device --- Requires presence of particulate matter Requires regular calibration by trained technician Swipes may be proprietary to machine →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
ED - Explosive Detection 03 - Fixed-site Sampling and/or Detection Systems - *Continued*			
		Initial Cost: $$$ Maintenance: $$$ Training: Moderate	
ED - Explosive Detection 04 - Standoff Detectors			
07ED-04-XRAY X-Ray, Explosive Detecting			
RD - Radiological Detection 01 - Portable			
07RD-01-DHPG Detector, High-Purity Germanium	High-purity germanium detector. [D,I,Q]	Portable handheld or laboratory fixed Gamma Isotope Characterization --- Considerable preparation time Liquid Nitrogen coolant required Limited battery life for portable units Calibration standards required Initial cost: $$$ Maintenance: $$ Training: extensive	62
07RD-01-DOSE Dosimeters, Electronic	Electronic dosimeters. (ED) [D,Q]	Auto range (mR to R)/hour (SI Units also available) Small, lightweight Beta/Gamma detection Audible alarm --- Limited battery life Vibralert option Limited sensitivity Initial cost: $ →	63

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RD - Radiological Detection 01 - Portable - *Continued*			
		Maintenance: $ Training: Minimal	
07RD-01-DOSP Dosimeters, Personal	Personal dosimeters, Thermoluminescence Dosimtry (TLD) [D,Q]	Film type detects Gamma, X-Ray, and Neutron TLD also detects Beta Records total dose to wearer --- Not self-reading Temperature sensitive Service costs Initial cost: $ Maintenance: $ Training: minimal	64, 116
07RD-01-DOSS Dosimeters, Self-Reading	Self-Reading Dosimeters (SRD) or Pocket Ionization Chambers (PIC). [D,Q]	Records total dose to wearer Detects Gamma only --- Shock sensitive Charging unit [battery operated & non-battery (piezoelectric)] Difficult to read Initial cost: $ Maintenance: $ Training: minimal	
07RD-01-HHCM Meters, Contamination, Handheld	Handheld contamination meters (alpha/beta, beta/gamma). [D,I,Q]	Multiple probes, mission dependent Various scales (CPM, mR, Sv) --- Limited battery life Calibration required Alpha mylar face prone to damage Initial cost: $ Maintenance: $ Training: moderate	64

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RD - Radiological Detection 01 - Portable - *Continued*			
07RD-01-PDGA "Detector", Personal Radiation (Gamma & Neutron)	Personal radiation "detector" (gamma & neutron). [D]	Portable High sensitivity Response time: quick Detects Gamma and/or Neutron --- Operator must set alarming levels. No self confidence test built in. Initial cost: $ to $$ Maintenance: $ Training: moderate	63
RD - Radiological Detection 02 - Transportable Lab Equipment			
07RD-02-HHSP Spectrometer, Handheld (NaI or CZT) with Nuclide Identification	Handheld spectrometer, (NaI or CZT) with nuclide identification. [I,Q]	Fixed or portable Spectral Analysis Neutron detection capable --- Calibration required Library of Isotopes or Reachback required to ID Limited battery life Temperature sensitive Initial cost: $$ Maintenance: $ Training: extensive	65
RD - Radiological Detection 03 - Fixed-site Sampling and/or Detection System			
07RD-03-PMVP Monitors, Portal	Portal monitors [vehicles, packages (large and small) and pedestrians]. [D]	Fixed or portable Beta, Gamma and Neutron detectors; varied configuration by manufacturer --- Require radiation source to verify operation Calibration requires service contract Sensitivity requirements Initial cost: $$$ Maintenance: $$ →	66

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RD - Radiological Detection 03 - Fixed-site Sampling and/or Detection System - *Continued*			
		Training: extensive	
RS - Radiological Support 01 - Portable			
07RS-01-AFCB Equipment, Air Sampling	Air flow calibrators for samplers. Personal air sampler. Area air sampler (high volume).	Particulate collector Fixed or portable --- Outside analysis of filter medium: costly Initial cost: $ to $$ Maintenance: $ Training: moderate	
SE - Support Equipment 01 - Portable			
07SE-01-IHTS Sensor, Heat, Infrared	Thermal Imaging Device	Handheld or hands free High temperature sensitivity High quality resolution --- Waterproof Durable Limited battery life Initial cost: $$ Maintenance: $ Training: minimal	
07SE-01-THMS Thermometer, Surface	Surface thermometer.	Handheld Accurate Precise Durable --- Initial cost: $ Maintenance: $ Training: minimal	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
SE - Support Equipment 02 - Plume Modeling			
07SE-02-PMOD Software, Plume Modeling	Plume modeling software program that predicts travel of hazardous materials. See also 04AP-08-PMOD	Web-based connectivity to reach back site On-site plume prediction --- Requires portable laptop Survey collection data Initial cost: $$ Maintenance: $ Training: extensive	
SE - Support Equipment 03 - Fixed-Site Sampling			
07SE-03-ENVS Equipment, Environmental (Weather) Surveillance	Environmental (weather) surveillance equipment to support CBRNE detectors.	Wind speed/direction Temperature Humidity Barometric pressure --- Fixed (vehicle mounted) or portable Information transfer Software interface Initial cost: $$ Maintenance: $ Training: minimal	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 8 - Decontamination

This section contains recommendations for decontamination equipment, and changes from the Fall 2004 version are minimal. It is organized into three main categories, as follows:

- **Pre-Decontamination,** defined as activities or equipment that may be used prior to active decontamination.
- **Active Decontamination,** defined as activities or equipment that may be used in removing contamination from individuals and equipment.
- **Post-Decontamination,** defined as activities or equipment that may be used after active decontamination.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Decontamination Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For the Decontamination Section, the SubGroup chose the same factors used in the Detection Section (Section 7) - Proficiency Level, and Hazard Environment. See the introduction to Section 7 for a detailed description of these two factors. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Proficiency Level and Hazard Environment, and the system will provide a list of all items tagged for that combination.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D1 - Pre-Decontamination 01 - Personal Decontamination Kits			
08D1-01-KITD Kits or Packets, Personal Decontamination	Kits or packets used for emergency personal decontamination.	Hand held Ability to self-decontaminate from chemical warfare agents. Ability to self-decontaminate from TIMs. Ability to self-decontaminate from biological agents. --- One time use Shelf life limitations Additional decontamination measures are required.	
D1 - Pre-Decontamination 02 - Personal Decontamination Solutions			
08D1-02-RSDL Lotion, Decontamination	Alternate solution to neutralize chemical warfare agents.	Easy to use --- For use on equipment FDA approved as a medical device only Good against chemical warfare agents and some TICs only	77
D1 - Pre-Decontamination 03 - Extraction Litters			
08D1-03-LITR Litters, Extraction	Extraction litters for non-ambulatory victims	Man-portable Decontaminable Reusable Wheeled --- Uneven terrain Labor intensive Patient maximum weight considerations Storage/transport considerations Minimal training	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D1 - Pre-Decontamination 04 - Technical Decontamination Corridor Support			
08D1-04-TDCS Support, Decontamination Corridor	Signs, signals, traffic cones, lights, hazmat tape, directional signage, strobes, glow sticks, loud-speakers, etc.	Multiple pictures and languages Industrial grade GFI equipment --- Size Weight Deployment time Collapsible Water resistant	106
D2 - Active Decontamination 01 - Emergency Decontamination Systems			
08D2-01-MCDS Systems, Mass Casualty Decontamination	Mobile or fixed systems capable of delivering water or solutions in varying temperatures and at sufficient flow rates for the purpose of washing numerous contaminated victims. Suitable systems may be tents, trailers, vehicle mounted, or integrated into building systems.	Lighting HEPA filters Roller systems for dealing with non-ambulatory victims Flash heater Pre-plumbed --- Set up time Water supply (requires source), temperature, pressure, volume Power supply Drainage or collection of runoff Modesty protection	
D2 - Active Decontamination 02 - Emergency Decontamination Applicator Equipment			
08D2-02-EDCS Equipment, Emergency Decontamination Applicator	Equipment or system with the capability to immediately reduce contamination of individuals with potentially life threatening exposure with or without the formal establishment of a decontamination	Man-portable Freedom to select desirable solutions Low pressure Rapidly deployable Durable --- All weather Hazards of material →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D2 - Active Decontamination 02 - Emergency Decontamination Applicator Equipment - *Continued*			
	corridor.	Low cost Minimal training	
D2 - Active Decontamination 03 - Waterproof Lighting			
08D2-03-LITE Lighting, Decontamination Area	Decontamination area lighting	Moisture resistance Brightness Decontaminable Portable Intrinsically safe --- Power supply Decontamination system compatible GFI Replacement bulbs Power cords	106, 118
D2 - Active Decontamination 04 - Personal Property Tracking			
08D2-04-PPTS System, Personal Property Tracking	Personal property tracking system to identify personal effects of decontaminated victims.	Waterproof Attachable Writable --- Size	
D2 - Active Decontamination 05 - Technical Decontamination Equipment - Dry			
08D2-05-TDED Equipment, Technical Decontamination - Dry	Equipment used to decontaminate or remove dry materials.	Portable --- Requires power supply Collected material must be disposed of properly.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D2 - Active Decontamination 06 - Technical Decontamination Equipment - Wet			
08D2-06-SOLN Decontamination, Solution, Site (Not Personnel)	Equipment and site decontamination solutions Not approved for humans	Premixed concentrate May be stored as a dry powder or liquid --- Some require dilution before application Some may require special applicators	
08D2-06-TDEW Equipment, Technical Decontamination - Wet	Equipment used in the physical or chemical process of deliberate decontamination for responders and their equipment using liquids/solutions.	Pressure control for people/equipment Water/solutions Portable --- Climate Material identification Runoff control/waste water management	
D2 - Active Decontamination 07 - Technical Decontamination Equipment - Shower Equipment			
08D2-07-SHWR Shower, Portable Decontamination	Framework designed to deliver water/decontamination solution at low pressure, low volume.	Stand alone Collapsible Rigged Quick setup --- Size Weight Runoff control / waste water management Water supply (source required) Deployment time	
D2 - Active Decontamination 08 - Technical Decontamination Equipment - Water Heater			
08D2-08-HTRW Heaters, Water, Transportable	Used to heat water for decontamination applications in the field.	Temperature regulation and gauge May have ability to induct and mix decontamination solutions with water --- Inlet water pressure requirements and limitations GPM output to meet application rate needed / fuel or power needed →	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D2 - Active Decontamination 08 - Technical Decontamination Equipment - Water Heater - *Continued*			
		Rapid heating of water	
D2 - Active Decontamination 09 - Technical Decontamination Equipment - Heater Equipment			
08D2-09-HTRB Heater, Portable Air Blower	Provides climate control for victims during necessary decontamination operations during inclement conditions.	Provides heating and/or drying --- Size Portability Power supply (electric or fuel) Temperature regulation Speed controls Collapsible ductwork	
D2 - Active Decontamination 10 - Decontamination Containment Devices			
08D2-10-LDCD Device, Liquid Decontamination Containment	Containment devices intended for use in the decontamination corridor for decontamination of equipment, people, and vehicles.	Portable Capture run off Non-porous May be disposable Low enough for personnel to step into and out of. --- Various sizes Decontamination system dependent Material compatibility Larger inflatable or collapsible devices for vehicles will require ability to get vehicle into and out of device. Size may limit patient numbers before requiring pump-off capability.	
D2 - Active Decontamination 11 - Waste Water Containment			
08D2-11-WWCD Drum, Waste Water	Drums or bladder, for waste water containment and decontamination	Various sizes Ability to hold large volumes of liquid hazardous waste product. Disposable or decontaminable →	58, 106

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D2 - Active Decontamination 11 - Waste Water Containment - *Continued*			
Containment	shower waste collection. To be used in conjunction with 08D2-10-LDCD.	---------- Size Weight Transportation Storage Empty or full may require vehicles. Pump capability	
D3 - Post-Decontamination 01 - Disposable Blankets			
08D3-01-BLKT Blankets, Disposable	Disposable blankets	Low cost Compact storage Durable ---------- One time use	
D3 - Post-Decontamination 02 - Disposable Modesty Clothing			
08D3-02-CLOM Clothing, Disposable Modesty	Disposable modesty clothing, with footwear; adult and child sizes.	Compact storage Durable Various sizes Instructions for use should be in multiple languages and/or pictures. ---------- Modesty shelter No shelf life limitations Low cost	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
D3 - Post-Decontamination 03 - Bags			
08D3-03-BCNT Bags, Cadaver, Non-transparent	Non-transparent cadaver bags See also 09MS-01-BAGB	Disposable Ability to be carried Virtually unlimited shelf-life --- Universal precautions may be required. Low cost	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 9 - Medical

Overview

The Medical SubGroup provides guidance regarding health and medical aspects of local, state, and federal standardization, interoperability, and responder safety to prepare for, respond to, mitigate, and recover from any incident by identifying requirements for CBRNE incident response equipment.

Items in this section are divided into 4 categories:

- Medical Equipment: durable medical equipment
- Medical Supplies: single use, disposable, and generally inexpensive (<$100 per item)
- Pharmaceuticals: medications and fluids
- Training Equipment and Supplies

Logistical equipment required to support medical operations (but not directly related to patient care or medical support of personnel) such as PPE, communications equipment, generators, etc., can be located in other appropriate SEL sections.

Edits and Additions

In this Spring 2005 SEL edition, the medical categories were further divided into subcategories to allow for easier use of both the published and online versions of the SEL (available through the Responder Knowledge Base). Additionally, the following items were added:

- End Tidal CO2 Monitor (Qualitative/Quantitative)
- IV Pumps
- Additional antibacterial and antiviral medications
- Several medications related to the management of radiological casualties
- Several new linkages among related products within the medical section of the SEL. We will continue to add additional linkages to items in other sections of the SEL as well as outside sources. This is a direct result of the flexibility that is inherent to the RKB format.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the Medical Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For the Medical Section, the SubGroup chose to use levels within the EMS/Clinical Care delivery system as the first factor, and Hazard Environment as the second. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of EMS/Clinical Care Level and Hazard Environment, and the system will provide a list of all items tagged for that combination.

The EMS/Clinical Care Level factor uses the following values:

Basic Life Support (BLS)	BLS as defined by the standard national BLS curricula and routinely carried on BLS EMS response resources.
Advanced Life Support (ALS)	ALS as defined by the standard national ALS curricula and routinely carried on ALS EMS response resources.
Pre-Hospital Mass Casualty	Items needed specifically to manage pre-hospital mass casualty events but that may not routinely be used by pre-hospital care organizations or carried on BLS/ALS response resources.

Hospital	Items routinely used in the hospital environment.
Disaster	Items that should be stockpiled for mass casualty/disaster response situations.

The second factor is the Hazard Environment, commonly represented with the CBRNE nomenclature. However, for our purposes it is useful to represent the Nuclear "N" as part Thermal, part Explosive, and part Radiological. Therefore, the values used for this factor are:

- Chemical
- Biological
- Radiological
- Thermal
- Explosive

The Medical SubGroup considers these selection factors to be particularly important in planning the acquisition and utilization of equipment. Therefore, in addition to the standard online facility, this printed version contains representative information on the selection factors (similar to that contained in the Spring 2004 printed version). Two additional columns, one for each factor, appear on the right side of each page. These columns, entitled "EMS/Clinical Care Level(s)" and "Hazard Environment(s)" will contain appropriate codes for each item.

Using the SEL Medical Section

The IAB Medical SubGroup would also like each organization to carefully consider the full range of issues inherent to the procurement of equipment, pharmaceuticals, and supplies. Though the SEL makes recommendations, each community must assess their individual needs and capabilities, and should modify the recommendations to suit their particular threats, weaknesses, and standards of care. This SEL section provides some initial guidance to assist local, state, and federal response organizations as they develop the health and medical aspects of their response plans. Local and/or state health and medical authorities must be involved in adapting this list for use in various jurisdictions, and for developing protocols governing use of the items on the list.

In addition to the considerations outlined previously, the Medical SubGroup also encourages each organization to evaluate the following factors as they develop response plans and purchase SEL items in support of those plans:

- Consider environmental factors during storage and response operations. Exposure to environmental extremes may impact potency, shelf-life, and performance.
- Consider and plan for the custom batteries/power systems that will be required for most medical diagnostic and monitoring equipment.
- Do comprehensive 'power planning' to look at the power needs of your total response capability. Pay particular attention to the combination of monitoring/diagnostic equipment and environmental factors such as climate control, lighting, refrigeration, and information equipment/computer support.
- Be aware that certain supplies are considered regulated for bulk transportation. If you are moving large amounts of material (especially applicable to the Disaster and Hospital sections of the matrix), consult with a transportation/hazmat professional.
- Don't forget to incorporate federal resources such as PEP Pods, SNS, and Chempack program into your local planning process.
- When selecting durable medical equipment as well as monitoring and diagnostic equipment, consider the needs of durability, appropriateness for field use, and whether the item is disposable or can be decontaminated.
- Remember to budget for the routine maintenance of monitoring and diagnostic equipment as specified by the manufacturers.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 01 - General					
09ME-01-ADMN Equipment, Administrative	All inclusive administrative and durable office support equipment to sustain medical branch operations.	Consider caching this type of equipment in portable vessels/containers to facilitate rapid mobilization and/or relocation. Consider wireless and satellite connectivity for computer-related products. See also 09MS-01-ADMN.		B,A,P,H,D	C,B,R,T,E
09ME-01-BAGM Bag/Kit/Pack, Medical	Portable vessel that contains various medical supplies and equipment.	Consider products impervious to infectious fluids; products equipped with reflective surfaces to enable rapid visualization; size versus storage limitations. Consider products that are lightweight and durable. See also 03OE-08-BGEQ, 03OE-08-BKPK.		B,A,P,H,D	C,B,R,T,E
09ME-01-COTS Cots	Portable, lightweight structures that are easily assembled to accommodate patients in supine position. Typically used in shelter operations.	All structures and related materials should be impervious to infectious fluids. Consider infection control and related maintenance issues; interoperability with other medical equipment (backboards, etc.); storage and transport requirements. Consider products that are lightweight and easy to assemble with minimal personnel. Consider all types of patient sizes/weights. See also 08D3-01-BLKT, 09ME-01-SHEL, 09MS-01-LNEN.		B,A,P,H,D	C,B,R,T,E
09ME-01-MCIK MCI Organizational Equipment/Kits	Fully equipped kits that contain all equipment and materials to coordinate multicasualty incidents, including (but not limited to) triage tags/supplies, clip boards and related forms, color coded marking tape and tarps for treatment areas, medical branch position vests; field operation guide (FOG) for medical branch/MCI operations and local protocols.	Consider containers/vessels impervious to infectious fluids; products with reflective surfaces for ease of visualization. See also 09MS-01-TTAG, 01ZA-06-VEST, 03OE-03-MEGA, 01ZA-01-OAPT, 03OE-07-CART, 03OE-03-KTFA.		B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 01 - General - *Continued*					
09ME-01-PEDT Pediatric Patient Assessment and Management Tool	These tools allow for the rapid assessment of pediatric patients using length based assessment to determine equipment size and medication dosages.			B,A,P,H,D	C,B,R,T,E
09ME-01-RFGR Refrigerator	Device for maintaining temperature control (cooling) for pharmaceutical and other medical equipment.	Battery and generator capabilities --- See also 03OE-08-FRZR, 10GE-00-GENR.		H,D	C,B,R,T,E
09ME-01-SHEL Shelter, Medical	Easy to assemble structure to provide temporary shelter for patients and medical practitioners. Constructed of lightweight frame and/or inflatable.	Structures should be lightweight and easy to assemble with minimal personnel; surfaces should be extremely durable and impervious to infectious fluids. Consider products with multiple access/egress points; products equipped with ventilation features; products that offer optional heating/cooling climate control features; products that offer optional decontamination features; logistical storage and transportation requirements. Consider appropriateness for operating environment. See also 01ZP-00-STOL, 03OE-04-KTTL, 03OE-04-LTHH, 03OE-08-SHEN, 03OE-03-LTPA, 03OE-03-SIGN, 09ME-01-COTS.		P,H,D	C,B,R,T,E
ME - Medical Equipment 02 - Airway Management					
09ME-02-AWMG Equipment, Airway Management	Durable airway management equipment, basic and advanced. Enables basic and advanced access to, and protection of, patient respiratory system.	Consider products impervious to infectious fluids; adult and pediatric applications. See also 09MS-02-AWMG and 09MS-02-0XYA.	1, 43, 46	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 02 - Airway Management - *Continued*					
09ME-02-ETCO End Tidal CO2 Monitor-Quantitative/ Qualitative	Monitor that allows for the quantitative and qualitative assessment of end tidal CO2 for patients that are breathing and/or being ventilated.	Equipment should provide both a numeric and waveform display to allow for accurate evaluation of respiratory and ventilatory status.		A,P,H,D	C,B,R,T,E
09ME-02-OXYE Equipment, Oxygen	Durable oxygen equipment (e.g., cylinders, regulators, manifolds, etc.) to facilitate the storage and delivery of medical oxygen.	All equipment should be lightweight and easily stored in the intended usage environment. All devices should be intrinsically safe relative to high pressures and flammability. Consider infectious control and related maintenance issues, and impact resistance features of gauges and other vulnerable impact points. See also 09MS-02-OXYA	75, 76, 78	B,A,P,H,D	C,B,R,T,E
09ME-02-SUCT Equipment, Suction Units	Negative pressure devices that enable suctioning of patient airway. Airway maintenance device. Various models, both powered and manually operated.	All devices, including carrying/storage cases, should be impervious to infectious fluids. Consider ease of use and disposability of collection vessels, tubing, and related supplies. Products should be easy to use; Consider products with adjustable pressure settings; adult and pediatric applications; storage and transport requirements; battery life and related replacement costs. For powered units 12 volt mobile, apparatus-based power and/or hand-operated power sources need to be considered. See also 09MS-02-SUCT.	21, 46	B,A,P,H,D	C,B,R,T,E
09ME-02-VENT Ventilators	Positive pressure ventilators that deliver regulated volumes of oxygen to patients requiring invasive respiratory support. Adult and pediatric applications.	Battery and gas powered devices are available. --- All devices and carrying cases should be impervious to infectious fluids and should offer adjustable rate and tidal volumes. Consider adult and pediatric applications; disposable adjuncts and related costs; storage and transport requirements. Devices should be easy to use, and offer both audible and visual over-pressure alarms . Device requires special batteries supplied by manufacturers; Note battery life and need for electrical recharging units during protracted incidents. See also 09MS-02-VENT.	5	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 03 - Diagnostic/Monitoring/Defibrillation					
09ME-03-BPSL Equipment, Blood Pressure	Manual and automated blood pressure equipment/products.	Consider products impervious to infectious fluids and/or disposable adjuncts; various size applications, including adult and pediatric applications; power needs and battery life on automated units.	8	B,A,P,H,D	C,B,R,T,E
09ME-03-DEAE Defibrillator, Automated External	Simple device that enables rapid application, automated assessment, and (when necessary) delivery of corrective electrical impulse for lethal cardiac dysrythmias. Use of device by practitioners with minimum or no training.	Consider ease of use for practitioners with minimal or no training. Consider products with clear, concise voice prompts; products with automated data storage and download features; products providing interoperability with advanced cardio/defibrillation devices. Consider adult/pediatric applications; weight and storage requirements; disposal cost of adjuncts/electrodes. These devices require special batteries supplied by manufacturers. Note battery life and need for electrical recharging units during protracted incidents. See also 09MS-06-PROB	7, 11	B,A,P,H,D	C,B,R,T,E
09ME-03-DEMP Defibrillator/Cardiac Monitors/Pacing	Advanced cardiac monitoring/defibrillation/pacing devices for use by practitioners with advanced medical training.	Consider interoperability with devices both less and more complex. Consider devices equipped with automated dysrythmia recognition and related alarm features; devices with clear & concise voice prompts; weight and storage requirements; cost of disposal of adjuncts/electrodes. Consider devices engineered to accommodate both basic and advanced trained practitioners. These devices require special batteries supplied by manufacturers. Note battery life and need for electrical recharging units during protracted incidents. See also 09MS-06-PROB	10, 11	A,P,H,D	C,B,R,T,E
09ME-03-GLUM Meters, Glucose	Simple device that rapidly analyzes blood glucose levels from capillary blood sample.	Devices should provide rapid analysis with minimal operator interface. Consider infection control and related maintenance; costs of strips and related supplies. Select products that self-calibrate or require minimal operator interface calibration, and utilize commercial over the counter batteries. Disposable items may require replacement during protracted incident.	2, 43	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 03 - Diagnostic/Monitoring/Defibrillation - *Continued*					
09ME-03-0TOP Otoscope/ Ophthalmoscope	Devices used during patient assessment to facilitate the examination of the eyes and ears.	Consider devices with commercial over the counter batteries. Disposable items may require replacement during protracted incident.	13, 41	H,D	C,B,R,T,E
09ME-03-P0XI Oximeter, Pulse	Non-invasive device that monitors oxygen saturation levels in blood.	Consider devices constructed as features built into other devices (EKG monitors, etc.). Consider durability of probes; disposable probe accessories and/or infection control and related maintenance issues. Device cases should be impervious to infectious fluids. Certain toxic exposures, as well as environmental conditions, can lead to inaccurate readings. Consider devices with commercial over the counter batteries; disposable items may require replacement during protracted incident.	9	B,A,P,H,D	C,B,R,T,E
09ME-03-STET Stethoscope	Durable stethoscope to assist in patient care through audible assessments (auscultation). Durable and disposal models available.	All products should be impervious to infectious fluids. Consider audible-assist features (Doppler) for high noise environments. Prices vary greatly - consider replacement costs. Consider acquisition of large quantity of disposable units for MCI/DMAT/USAR deployments.	3	B,A,P,H,D	C,B,R,T,E
09ME-03-THER Thermometer	Devices that enable assessment of patient temperature.	All devices and carrying cases should be impervious to infectious fluids. Consider disposable adjuncts that contact patient surfaces/fluids. Devices should be easy to use with minimal training, and offer large display features. Consider devices built-in as features to other medical devices (EKG monitors, etc.). Should use commercial over the counter batteries; disposable items may require replacement during protracted incident.	24, 25, 26	B,A,P,H,D	B,T
ME - Medical Equipment 04 - Immobilization					
09ME-04-SPIN Equipment, Spinal Immobilization	Adjuncts that enable spinal immobilization of patients encountered in a variety of positions and	All products should be impervious to infectious fluids. Consider all types of patient sizes and weights. Head immobilization features should enable easy access to patient airway. Products should be lightweight and easily transportable. Consider storage requirements; application →		B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 04 - Immobilization - *Continued*					
	situations.	in confined space/entrapment environments; horizontal and vertical rescue requirements including movement up and down stairwells and other minimal space environments. Consider products that enable interoperability with other rescue equipment (gurneys, litters, stokes, etc.). Also consider length and width limitations of transport vehicles (ambulances, helicopters, boats, carts, all-terrain vehicles, etc). See also 09MS-08-SPIN.			
09ME-04-SPLT Splints, Durable	Splints that enable all types of limb immobilization. All types and sizes.	Durable devices should be impervious to infectious fluids. Consider disposable products; all size requirements (including adult and pediatric); storage and transport requirements. Products should be easy to use with minimal training, and should be easy to apply in various rescue environments, including confined space and entrapment rescues. Products should offer interoperability with other medical equipment and rescue devices (backboards, litters, gurneys, etc). See also 09MS-08-SPLT.	17, 18	B,A,P,H,D	C,B,R,T,E
ME - Medical Equipment 05 - Patient Movement/Transfer					
09ME-05-GURN Gurneys	Portable patient movement devices. Adjustable positions both vertical and horizontal. Durable medical equipment.	All devices and related accessories should be impervious to infectious fluids. Consider products ease of use with minimal training; full range of vertical and horizontal position adjustments; operations in confined space environments including ascent and descent of stairwells, around corners and other confined spaces. Consider optional accessories to accommodate equipment storage including oxygen, EKG monitors, IV poles, and other surface areas and storage capabilities. Consider operational body mechanics required for all sizes of practitioners; maintenance requirements and related costs; interoperability with other medical equipment (backboards, splints, etc.) and interoperability with various transport vehicles (ambulances, helicopters, boats, carts, all-terrain vehicles, etc.). Consider weight rating requirements. Consider wheel locks and other desirable safety devices. See also 01EM-01-GLMW, 01ZA-02-GLOW, 09MS-07-REST.	40	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
ME - Medical Equipment 05 - Patient Movement/Transfer - *Continued*					
09ME-05-LITR Litters/Stretchers	Hand carried patient transport devices.	Stokes baskets considered in this category should be rugged and impact resistant; all surfaces and related accessories should be impervious to infectious fluids. Consider interoperability with other medical equipment (backboards, splints, etc); storage and transport requirements. See also 01EM-01-GLMW, 01ZA-02-GLOW, 09ME-05-GURN, 09MS-07-REST, 08D1-03-LITR.	39	B,A,P,H,D	C,B,R,T,E
ME - Medical Equipment 06 - Intravenous Equipment					
09ME-06-PUMP Intravenous Pump	A device to deliver accurate rates of IV fluids for both medication administration and volume infusion.	Should be battery operated and designed for operations in the field environment. Be aware of battery and power requirements for these items. Additionally, IV pump systems may require special administration tubing. Products that operate using standard IV tubing are preferred. See also 09MS-05-IVSA		A,P,H,D	C,B,R,T,E
MS - Medical Supplies 01 - General					
09MS-01-ADMN Supplies, Administrative	All inclusive administrative and non-durable office support supplies to sustain medical branch operations.	Various supplies including but not limited to paper, pens/pencils, markers, fastening supplies/devices, files, folders, etc. Consider caching this category of equipment in portable vessels/containers to facilitate rapid mobilization and/or relocation. See also 09ME-01-ADMN.		B,A,P,H,D	C,B,R,T,E
09MS-01-ALPP Pads, Alcohol Prep	Single-use alcohol prep pad to cleanse patient skin surface.	Disposable medical supply, single-use application. Consider skin sensitivity and use near open wounds.		B,A,P,H,D	C,B,R,T,E
09MS-01-BAGB Bag, Body, Heavy-Duty	Single-use body bag to contain deceased patients.	Single-use, rugged, non-transparent surface; should be impervious to fluids and should contain all bodily fluids within the assembly without leakage. Consider infectious control requirements. See also 08D3-03-BCNT.		B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 01 - General - *Continued*					
09MS-01-KDEB Kit, Debridement, and Supplies	Single-use, disposable kit to clean soft tissue injuries and surfaces.	Kits should be self-contained, single-use, disposable. See also: 01EM-01-EYEP, 01EM-01-GLMP, 09MS-01-SHEY, 09MS-03-GLVS.	43	H,D	C,B,R,T,E
09MS-01-LNEN Linens	Disposable and non-disposable linen products.	Consider disposable products to minimize storage and handling of materials soiled with infectious substances. Consider maintenance and storage requirements, and related costs for non-disposable products; product durability; product absorption characteristics. See also: 08D3-01-BLKT, 09ME-01-COTS.	43	A,P,H,D	C,B,R,T,E
09MS-01-MEDS Supplies, Medication Administration	Various disposable and non-disposable supplies to facilitate the administration of medications.	All supplies should be disposable or impervious to infectious substances. Consider all size requirements; interoperability requirements with needleless systems; necessary adapters to enable interoperability; storage and transport requirements.	22, 32, 43	B,A,P,H,D	C,B,R,T,E
09MS-01-NEAG Needles, Assorted	Various size/gauge needles to draw fluids and/or administer medications.	Consider all size/gauge requirements for intended uses; needles with safety mechanisms for use in direct patient administration; interoperability with needleless system and any required adapters; storage and transport requirements for various sizes and quantities. All products should be individually packaged.	22, 43	A,P,H,D	C,B,R,T,E
09MS-01-POAP Applicator, Povidine	Antiseptic brush saturated with Povodine to cleanse skin surface area.	Consider skin sensitivity; storage and transport requirements. Products should be individually packaged. Note shelf life. See also: 09MS-03-GLVS.		A,P,H,D	C,B,R,T,E
09MS-01-POVO Solutions and Applicators, Povidine Iodine	Various brushes and swabs saturated with Povodine to cleanse skin surface area.	Consider skin sensitivity; various size requirements; storage and transport requirements. Products should be individually packaged. Check shelf life.		H,D	C,B,R,T,E
09MS-01-SHER	Standard medical shears to enable cutting of vari-	Consider blunt tip requirements; size and strength requirements for various applications; storage and transport requirements. →	37	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 01 - General - *Continued*					
Shears/Scissors, Medical	ous materials.				
09MS-01-SHEY Shield, Eye Irrigation Lens	Single-use, disposable eye lens with catheter to facilitate irrigation.	Consider various size requirements; port connectivity requirements. Products should be individually packaged. See also: 01EM-01-EYEP, 01EM-01-GLMP, 01EM-01-GARM.		B,A,P,H,D	C,B,R,T,E
09MS-01-SUTR Suture, Various Sizes	Various size absorbable and non-absorbable suture.	Consider all injury size and types; all products should be single-use, disposable. See also 09MS-01-SUTS.	16, 43	H,D	C,B,R,T,E
09MS-01-SUTS Supplies and materials, Suture	Single-use, disposable supplies or kits to support suturing procedures.	See also 09MS-01-SUTR.	16, 43	H,D	C,B,R,T,E
09MS-01-TNDP Depressor, Tongue	Single-use, disposable device used for oral assessment.	Single-use, disposable; consider alternate uses.	33	B,A,P,H,D	C,B,R,T,E
09MS-01-TTAG Tags and supplies, Triage	Single-use, disposable patient marking device for use during multicasualty triage management.	Consider simple device compatible with standard triage protocol; packaged and stored in bulk. Tags should be impervious to moisture, able to be decontaminated, and consider inclusion of CBRNE criteria and features that allow rapid data capture. See also 09ME-01-MCIK, 08D2-04-PPTS.		B,A,P,H,D	C,B,R,T,E
MS - Medical Supplies 02 - Airway Management/Ventilation					
09MS-02-AWMG Supplies, Airway Management	Airway management supplies, basic & advanced. Enables basic and advanced access to, and protection of, patient	Consider all single-use, disposal products; adult and pediatric applications. See also 09ME-02-AWMG, 09MS-02-0XYA and 09MS-02-SUCT. →	1	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 02 - Airway Management/Ventilation - *Continued*					
	respiratory system. Non-durable supplies				
09MS-02-BITE Block, Bite	Disposable device designed for insertion between patient's teeth. Respiratory maintenance device.	Consider potential damage to patient's teeth and other potential airway complications caused from use of this product. Consider adult and pediatric applications; disposable, single-use assembly; individually packaged.	14	B,A,P,H,D	C,B,R,T,E
09MS-02-NATU Tubes, Nasogastric	Single-use, disposable gastric tube.	Consider all size/gauge requirements, including adult and pediatric applications; interoperability and any required adapters; storage and transport requirements. All products are single-use, disposable, and should be individually packaged.	15	A,P,H,D	C,B,R,T,E
09MS-02-NEBU Nebulizer	Nebulizer assembly to facilitate the administration of aerosolized medications and solutions.	All products should be single-use, disposable; individually packaged; easy to assemble with minimal training. Consider any required adapters to enable interoperability with other medication components. See also 09MS-02-AWMG.	4	B,A,P,H,D	C,B,R,T,E
09MS-02-OXYA Supplies, Oxygen Administration	Oxygen administration supplies, basic and advanced. Enables basic and advanced access to, and protection of, patient respiratory system.	Consider all single-use, disposal products; adult and pediatric applications. See also 09ME-02-AWMG, 09MS-02-AWMG, 09ME-02-OXYE.	1	B,A,P,H,D	C,B,R,T,E
09MS-02-SUCT Supplies and Adjuncts, Suction	Catheters, tubing, wands and miscellaneous connection devices for use with suction devices.	All products should be single-use, disposable; consider connectivity requirements with various ports and interoperability with other medical devices and airway equipment. See also 09ME-02-SUCT and 09MS-02-AWMG.	35, 43, 46	B,A,P,H,D	C,B,R,T,E
09MS-02-THOR Kit, Thoracostomy and Supplies	Self contained kit to perform and support chest decompression.	All products should be single-use, disposable; consider all needle size requirements; consider all necessary adapters and interoperability requirements. See also: 01EM-01-GLMP, 09MS-03-GLVS.	22, 43	H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 02 - Airway Management/Ventilation - *Continued*					
09MS-02-VENT Ventilator, Disposable	Positive pressure ventilators that deliver regulated volumes of oxygen to patients requiring invasive respiratory support. Adult and pediatric applications.	All devices and carrying cases should be impervious to infectious fluids. Consider pressure-controlled devices that enable adjustable rate and tidal volumes; consider adult and pediatric applications. Devices should be easy to use. Consider devices that offer both audible and visual overpressure alarms; consider storage and transport requirements. See also 09ME-02-VENT.	6	P,H,D	C,B,R,T,E
MS - Medical Supplies 03 - Infection Control					
09MS-03-BAGH Bag, Biohazard	Variable size, disposable bags to contain materials soiled with infectious fluids/products.	Consider various size requirements; bag thickness and durability; multilingual label requirements. Products should be conspicuously colored and labeled with biohazard insignias. Consider products with zip-closures and other ease-of-use features. See also 09MS-03-BIOD.	43	B,A,P,H,D	C,B,R,T,E
09MS-03-BIOD Supplies, Biohazard Disposal	Various non-durable vessels to contain and manage materials soiled with biohazards.	Consider various size requirements; product surface thickness and durability; multi-lingual label requirements; products with non-spill openings and other ease-of-use features. Products should be conspicuously colored and labeled with biohazard insignias. See also: 09MS-03-BAGH.	43	B,A,P,H,D	C,B,R,T,E
09MS-03-DSIN Supplies, Disinfectant	Commercial disinfectant products to clean skin and other surfaces.	Consider product decontamination features; packaging and application features; storage requirements. Consider various usage applications (human skin versus work surfaces).	43	B,A,P,H,D	C,B,R,T,E
09MS-03-GLVN Gloves, Biomedical, Non-Sterile	Variable size, single-use examination gloves. Disposable, non-latex. Non-sterile.	Consider all size requirements to accommodate practitioners; skin sensitivity; product thickness and durability; textured surfaces for ease of handling instruments. Products should be ambidextrous. See also 09MS-03-GLVS for sterile gloves, and 01EM-01-GLMP.	34, 43, 102	B,A,P,H,D	C,B,R,T,E
09MS-03-GLVS Gloves, Biomedical, Sterile	Variable size, sterile biomedical gloves.	See also 09MS-03-GLVN for non-sterile gloves, and 01EM-01-GLMP.	20, 43	H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 03 - Infection Control - *Continued*					
09MS-03-HYGP Supplies, Personal Hygiene	Various skin disinfectant and hygiene supplies.	Consider skin sensitivity when selecting products. Consider desired application versus product use features and limitations. All products should be single-use, disposable, and individually packaged.		B,A,P,H,D	C,B,R,T,E
09MS-03-ISOS Supplies, Body Substance Isolation	Body substance isolation supplies (masks, gowns, eye protection). Various isolation barriers to protect practitioners from exposure to infectious substances.	Consider all size requirements to accommodate practitioners, and skin sensitivity. All products should be impervious to infectious fluids/substances. Consider single-use, disposable products; any non-disposable equipment such as eye protection should be easy to clean/disinfect. Consider storage and transport requirements. See also 01EM-01-EYEP.	19, 43, 46	B,A,P,H,D	C,B,R,T,E
MS - Medical Supplies 04 - Bandages/Dressings/Tapes					
09MS-04-BAND Bandages and Dressings	Variable size, disposable bandages and dressing to treat all types of soft tissue wounds. Non-durable absorbent products.	Consider surface texture requirements for various applications; specialty dressings for burn care, all size requirements; adhesive and non-adhesive requirements. Sterile products should be individually packaged; other non-sterile products can be packaged in bulk. See also 09MS-04-HSBN.	23, 43	B,A,P,H,D	C,B,R,T,E
09MS-04-HSBN Hemostatic Bandaging and other products	Sterile bandages coated or impregnated with substances that enhance suppression of active bleeding as well as other materials that perform a similar function.	See also 09MS-04-BAND.		B,A,P,H,D	E
09MS-04-TAAS Tape, Adhesive	Various size adhesive medical tape.	Consider skin sensitivity; consider length and width requirements; consider absorption qualities for desired application; consider storage and transport requirements to support a selection of various size products.	29	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 05 - Intravenous Therapy					
09MS-05-IVBG Bag, Intravenous Pressure Infusion	Pressure infusion device for use with intravenous solution bags to expedite fluid delivery.	Consider size requirements for intended applications. All product surfaces should be impervious to infectious substances and puncture resistant. See also 09MS-05-IVSA.	30	A,P,H,D	C,B,R,T,E
09MS-05-IVSA Supplies, Intravenous Administration	Various intravenous solutions and needle/catheter assemblies.	Consider all size/gauge requirements for various applications; all required solution types based upon protocol standards; safety requirements including safety needles and needleless assemblies/systems and any required adapters and conversion accessories. Consider systems that offer ease of use with minimal training, and interoperability with other medical devices/applications. Consider storage and transport requirements. Products should be individually packaged; solutions are perishable. See also 09ME-06-PUMP.	27, 28, 31, 43	A,P,H,D	C,B,R,T,E
09MS-05-NEIO Needles, Intraosseous Infusion	Various size/gauges to facilitate fluid/medication administration.	Engineered with safety devices to minimize practitioner needle stick injuries. --- Consider all sizes/gauges required for the prescribed treatment interventions; interoperability with needleless systems and any required adapters; storage and transport required to accommodate various sizes and quantities. Products should be individually packaged.	43	A,P,H,D	C,B,R,T,E
09MS-05-SYRC Syringe, Cartridge Injector	Assembly that facilitates syringe use.	Consider all size requirements; products should be impervious to infectious substances and/or single-use disposable; consider ease of use. See also 09MS-05-SYRG.	12, 43	A,P,H,D	C,B,R,T,E
09MS-05-SYRG Syringe	Various size syringes, with and without built-in needles. For use in drawing and administering medications and solutions. Also used in injection and aspiration of air from some airway devices.	Consider various size/gauge requirements; consider needleless systems and interoperability requirements and any necessary adapters; consider products engineered with needle safety systems. See also 09MS-05-SYRC.	32, 43	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 06 - Monitoring/Defibrillationn					
09MS-06-PROB Electrodes Monitoring	Self-adhesive electrodes to facilitate electrical monitoring. Single-use, disposable.	Consider adult and pediatric applications; lead requirements for appropriate packaging quantities; diaphoretic tolerant products. Perishable product. See also 09ME-03-DEMP.	42	A,P,H,D	C,B,R,T,E
MS - Medical Supplies 07 - Patient Movement/Transfer					
09MS-07-REST Supplies/Systems, Patient Restraint	Multi-use patient restraints and systems; easy to apply with minimal training (including limb and torso restraints).	Products should be disposable or impervious to infectious substances and able to be decontaminated. Consider ease of use and ease of connectivity; interoperability with various medical devices including gurneys, litters, backboards, etc.; storage and transport requirements. See also: 08D1-03-LITR, 09ME-05-GURN, and 09ME-05-LITR.	36	B,A,P,H,D	C,B,R,T,E
MS - Medical Supplies 08 - Immobilization					
09MS-08-SPIN Supplies, Spinal Immobilization	Various devices (e.g., cervical collars, head immobilizers) to immobilize/stabilize the neck and spinal region.	Consider all types of patient sizes including adult and pediatric applications. Products should be single-use, disposable and/or impervious to infectious substances; consider ease of use; ease of application in confined spaces and other entrapment environments; storage and transport requirements. All carrying cases should be impervious to infectious substances. See also 09ME-04-SPIN.		B,A,P,H,D	C,B,R,T,E
09MS-08-SPLT Splints, Disposable	Splints that enable all types of limb immobilization. All types and sizes.	Products should be easy to apply in various rescue environments including confined space and entrapment rescues; should offer interoperability with other medical equipment and rescue devices (backboards, litters, gurneys, etc.). Consider storage and transport requirements. See also 09ME-04-SPLT.	17, 18,	B,A,P,H,D	C,B,R,T,E
MS - Medical Supplies 09 - Childbirth					
09MS-09-KTOB	Self-contained kit with supplies required to	Consider products that are single-use, disposable, self-contained; consider storage and transport requirements. See also 01EM-01-GLMP, →	43	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
MS - Medical Supplies 09 - Childbirth - *Continued*					
Kit, Obstetrical	support obstetrical procedures.	09MS-03-GLVS.			
PH - Pharmaceuticals 00 - General					
09PH-00-ADEN Adenosine	Anti-dysrhythmic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	43	A,P,H,D	C,B,R,T,E
09PH-00-ALBU Albuterol	Bronchodilator	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-AMIO Amiodarone	Anti-dysrhythmic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-ANTA Antacids	Antacid	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-00-ATVT Ipratropium	Bronchodilator	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-BCLM Beclomethasone	Steroid, oral inhalant or nasal spray for respiratory disorders.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-00-CACL Calcium Chloride	Electrolyte used in resuscitation settings.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09MS-05-IVSA.	77	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 00 - General - *Continued*					
09PH-00-DEXT Dextrose	Glucose compound for use in hypoglycemia.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	B,A,P,H,D	C,B,R,T,E
09PH-00-DIPH Diphenhydramine	Antihistamine	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-DOPA Dopamine	Used in emergency setting to treat acute hypotension.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-ELEC Electrolyte Replacement Fluid, Oral	Crystalloid solutions for oral rehydration therapy (ORT).	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 01ZA-06-HYDR.	77	P,H,D	C,B,R,T,E
09PH-00-EPIA Epinephrine, Auto-Injector	Epinephrine packaged in auto-injector	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Pediatric and adult versions available.	77	B,A,P	C,B,R,T,E
09PH-00-EPIP Epinephrine	Catecholamine, used in cardiac arrest, as a vasoconstrictor acute hypotension, as a bronchodilator and antispasmodic in bronchial asthma.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-FURO Furosemide	Diuretic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 00 - General - *Continued*					
09PH-00-GLUC Glucagon	Anti-hypoglycemia agent.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-LIDO Lidocaine, all concentrations	Anti-dysrhythmic as well as analgesic properties.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-MASU Magnesium Sulfate	Electrolyte replacement, anticonvulsant, bronchodilator, anti-dysrhythmic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-METP Methylprednisolone	Corticosteroid; bronchodilation and anti-inflammatory characteristics.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-NTRO Nitroglycerin	Nitrate; vasodilator and smooth muscle relaxant.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-OXYG Oxygen	Oxygen	Consider all dosage requirements; consider all contraindications and side effects; product stored under pressure; product supports combustion; consider storage and transport requirements, including safety considerations. See also 09ME-02-0XYE, 09MS-02-0XYA.	77	B,A,P,H,D	C,B,R,T,E
09PH-00-POLY Polysporin Ointment	Antibiotic ointment	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-RING Ringers Solution, Lactated	Crystalloid solution used for fluid replacement.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09MS-05-IVSA.	77	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 00 - General *- Continued*					
09PH-00-SALI Saline Solution	Crystalloid solution used for fluid replacement.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Product may also be used as topical irrigation solution. See also 09MS-05-IVSA.	77	B,A,P,H,D	C,B,R,T,E
09PH-00-SISU Silver Sulfadiazine Cream	Silver sulfadiazine, a sulfa drug, is used to prevent and treat infections of second- and third-degree burns.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,R,T,E
09PH-00-SOBI Sodium Bicarbonate	Electrolyte. Useful in the management of crush syndrome.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-TCOP Tetracaine Ophthalmic	Ophthalmic anesthetic for use in eye injuries.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-00-THEO Theophylline	Bronchodilator	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-00-THIA Thiamine	Vitamin	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-00-WATR Water, Sterile	Fluid solution; topical irrigation.	Consider usage requirements including any contraindications and side effects.	77	B,A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environ-ment[3]
PH - Pharmaceuticals 01 - Analgesics/Sedatives					
09PH-01-ACET Acetaminophen	Analgesic, anti-pyretic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-01-ASA Acetylsalicylic Acid	Anticoagulant; analgesic, anti-inflammatory; anti-pyretic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-01-BUTO Butorphanol Injection	Narcotic analgesic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-01-IBUP Ibuprofen	Nonsteroidal anti-inflammatory agent; analgesic, anti-pyretic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77, 117	H,D	C,B,R,T,E
09PH-01-KETO Ketorolac	Nonsteroidal anti-inflammatory agent; analgesic.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-01-MOSU Morphine Sulfate	Narcotic analgesic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-01-MZLM Midazolam	Sedative; anticonvulsant, benzodiazepine	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77, 117	A,P,H,D	C,B,R,T,E
PH - Pharmaceuticals 02 - Antibiotics/Antiviral					
09PH-02-ADAM Adamantines	Anti-viral	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Described in Federal Pandemic Influenza Preparedness and Response Plan: http://www.hhs.gov/nvpo/pandemicplan →	77, 117	H,D	B

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environ-ment[3]
PH - Pharmaceuticals 02 - Antibiotics/Antiviral - *Continued*					
		Sample fact sheets available at: http://www.niaid.nih.gov/factsheets/fludrugs.htm http://hopkins-heic.org/infectious_diseases/influenza/facts.htm			
09PH-02-AMOX Amoxicillin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	P,H,D	B
09PH-02-CEPH Cephalexin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Force Protection Item	77	H,D	B
09PH-02-CHLO Chloramphenicol	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
09PH-02-CPRO Ciprofloxacin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	P,H,D	B
09PH-02-DOXY Doxycycline	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	P,H,D	B
09PH-02-ERYT Erythromycin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	P,H,D	B
09PH-02-GENT Gentamicin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
09PH-02-MZOL Methronydazole	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Force Protection Item	77	H,D	B

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 02 - Antibiotics/Antiviral - *Continued*					
09PH-02-NEUR Neuraminidase inhibitors	Anti-viral	http://www.hhs.gov/nvpo/pandemicplan Sample fact sheets available at: http://www.niaid.nih.gov/factsheets/fludrugs.htm http://hopkins-heic.org/infectious_diseases/influenza/facts.htm --- Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
09PH-02-RIBA Ribavirin	Anti-viral.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
09PH-02-STMY Streptomycin	Antibiotic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
09PH-02-TRIM Trimethoprim/ Sulfamethoxazole	Antibacterial agent	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	B
PH - Pharmaceuticals 03 - Narcotics/Narcotic Antagonists					
09PH-03-NALX Naloxone	Narcotic antagonist	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
PH - Pharmaceuticals 04 - Antidote					
09PH-04-AMNI Amyl Nitrite	A component of the Cyanide Antidote Kit. Primary classification is vasodilator	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-CYKT, 09PH-04-SOTH.	77	A,P,H,D	C

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 04 - Antidote - *Continued*					
09PH-04-ATSF Atropine Sulfate	Antidote for organophosphate and nerve agent exposure. Primary classification anticholenergic.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-CANA, 09PH-04-NAAK, 09PH-04-PRAL, 09PH06-DIAZ.	77	A,P,H,D	C,B,R,T,E
09PH-04-CALG Calcium Gluconate	Electrolyte used in acute cases for hyperkalemia, hypocalcaemia, or calcium antagonist overdose. A topical preparation is available for use in the treatment of hydrofluoric acid burns.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E
09PH-04-CANA CANA Auto-Injector	Diazepam packaged in an auto-injector. For use in the management of nerve agent and organophosphate exposure.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-ATSF, 09PH-04-NAAK, 09PH-04-PRAL, 09PH-06-DIAZ, 09TR-01-CAIT.	77	B,A,P,H,D	C,B,R,T,E
09PH-04-CHAR Charcoal, Activated	Used in emergency setting to treat oral ingestion poisoning/overdoses.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77, 117	B,A,P,H,D	C,B,R,T,E
09PH-04-CYKT Cyanide Antidote Kit	Kit includes Sodium Nitrite, Sodium Thiosulfate and Amyl Nitrite inhalant.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Note shelf life of individual components. See also 09PH-04-AMNI, 09PH-04-SOTH.	77	A,P,H,D	C
09PH-04-DTPC Ca-DTPA, Pentetate Calcium Trisodium Injection	Radiation treatment drug for treating internal contamination with PLUTONIUM, AMERICIUM, and CURIUM.	http://www.fda.gov/cder/drug/infopage/DTPA/default.htm --- Consider all dosage requirements; consider all contraindications and side effects; perishable product. →	77	H,D	R

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 04 - Antidote - *Continued*					
		See also 09PH-04-DTPZ, 09PH-04-POTI, 09PH-04-PRUS, 09PH-05-GRAN.			
09PH-04-DTPZ Zn-DTPA, Pentetate Zinc Trisodium Injection	Radiation treatment drug for treating internal contamination; from PLUTONIUM, AMERICIUM and CURIUM.	http://www.fda.gov/cder/drug/infopage/DTPA/default.htm --- Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-DTPC, 09PH-04-POTI, 09PH-04-PRUS, 09PH-05-GRAN.	77	H,D	R
09PH-04-METB Methylene Blue	Used in emergency setting for hemoglobinopathies.	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C
09PH-04-NAAK Nerve Agent Antidote Kit (NAAK)	Commonly known as Mark 1 Kit (AutoInjector) Pralidoxime chloride autoinjector - 2-PAM; Atropine autoinjector.	For package inserts see: http://www.meridianmeds.com/images/AtroPen%20Pack%20Insert.pdf http://www.meridianmeds.com/images/2Pam%20Cl%20Pack%20Insert.pdf --- Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-ATSF, 09PH-04-PRAL, 09PH-04-CANA, 09PH-06-DIAZ, 09TR-01-NAIT.	77	B,A,P,H,D	C
09PH-04-POTI Potassium Iodide	Used in radiation emergency - protects the thyroid in a radiation emergency.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-DTPC, 09PH-04-DTPZ, 09PH-04-PRUS, 09PH-05-GRAN.	77	P,H,D	R
09PH-04-PRAL Pralidoxime Chloride	Used in nerve agent and organophosphate exposures.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. →	77	A,P,H,D	C

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 04 - Antidote - *Continued*					
		See also 09PH-04-ATSF, 09PH-04-NAAK, 09PH-04-CANA, 09PH-06-DIAZ.			
09PH-04-PRUS Prussian Blue	Used in emergency setting for radiation exposures, specifically to cesium.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-DTPC, 09PH-04-POTI, 09PH-04-DTPZ, 09PH-05-GRAN.	77	H,D	R
09PH-04-SOTH Sodium Thiosulfate	Used in the treatment of cyanide poisoning; a component of cyanide antidote kits.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-CYKT, 09PH-04-AMNI.	77	A,P,H,D	C
PH - Pharmaceuticals 05 - GastoIntestinal (GI)					
09PH-05-BISM Bismuth Products	Anti-emetic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-05-GRAN Gransetron	Antinauseant and antiemetic.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-DTPC, 09PH-04-POTI, 09PH-04-PRUS, 09PH-05-DTPZ.	77	H,D	R
09PH-05-LOPE Loperamide	Antidiarrheal agent	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	H,D	C,B,R,T,E
09PH-05-PHNG Phenergan	Antiemetic	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77	A,P,H,D	C,B,R,T,E

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]	EMS/ Clinical Care Level[2]	Hazard Environment[3]
PH - Pharmaceuticals 06 - Anticonvulsant					
09PH-06-DIAZ Diazepam	Anticonvulsant (May be used as part of the treatment for exposure to nerve agents.)	Consider all dosage requirements; consider all contraindications and side effects; perishable product. See also 09PH-04-ATSF, 09PH-04-NAAK, 09PH-04-PRAL, 09PH-04-CANA.	77	A,P,H,D	C,B,R,T,E
09PH-06-FOSP Fosphenytoin	Anticonvulsant	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77, 117	H,D	C,B,R,T,E
09PH-06-LORA Lorazepam	Sedative; antianxiety agent; benzodiapine.	Consider all dosage requirements; consider all contraindications and side effects; perishable product. Lorazepam injection requires refrigeration. See also 09ME-01-RFGR.	77	A,P,H,D	C,B,R,T,E
09PH-06-PHNT Phenytoin	Anti-convulsant	Consider all dosage requirements; consider all contraindications and side effects; perishable product.	77, 117	H,D	C,B,R,T,E
TR - Training 01 - Equipment					
09TR-01-CAIT CANA Auto Injector Training Simulator	A training simulator for CANA auto injector.	See also 09PH-04-CANA.	77	B,A,P,H,D	C,B,R,T,E
09TR-01-CSIM Equipment, Training/ Casualty Simulation	Life-like human body replicas that enable medical practitioners to train in various scenarios.	Consider adult and pediatric applications; ease of cleaning; ease of assembly and disassembly; storage requirements; battery life (as applicable). Consider disposal of accessories and adjuncts (and related costs).		B,A,P,H,D	C,B,R,T,E
09TR-01-NAIT NAAK Auto-Injector Training Simulator	To train personnel how to use the NAAK auto-injector kits.	See also 09PH-04-NAAK.		B,A,P,H,D	C

[1] *Use numbers given to refer to Standards List at the end of this document.*
[2] *Basic Life Support (B), Advanced Life Support (A), Pre-Hospital Mass Casualty (P), Hospital (H), Disaster (D)*
[3] *Chemical (C), Biological (B), Radiological (R), Thermal (T), Explosive (E)*

Section 10 - Power

Early editions of the SEL included multiple references to batteries and generators throughout the various sections. This section was created to eliminate that redundancy and remind readers that power is a significant consideration in planning across all areas. It includes only three sections: Batteries and Power Cells, Generators, and Other Power-Related Equipment. However, its inclusion as a separate section should increase awareness of power requirements as the number and type of electronic equipment items increase in virtually every section of the SEL. Readers are encouraged to look across the applicable items in other SEL sections, and consider the requirements for batteries (number, type, service life, shelf life, etc.), generators, power filtering equipment, and other power-related items without which critical equipment will cease to function. Where applicable, comments regarding the need for special power requirement such as custom batteries will be noted in the Operating Considerations field of equipment in other SEL sections.

No online selection factors have been provided for this section. The applicability of the power requirement will be determined by the type and location of the equipment items being powered.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
BC - Batteries and Power Cells			
10BC-00-BATT Batteries, All Types, Sizes	Batteries for all recommended equipment. Types including, but not limited to: Alkaline, Nickel-Cadmium (NICAD), Nickel Metal Hydride (NiMH), Lithium (Li-Ion). Form factors such as: AA, AAA, C and D cells, 9-Volt, Clamshell.	Disposable or rechargeable Intrinsically safe batteries required for explosive environments --- Shelf life Recharge time if applicable Disposal requirements Life (charge/discharge) cycles	
10BC-00-FCEL Cell, Fuel	Fuel Cells		
10BC-00-SOLR Charger	Including but not limited to: solar, natural gas, shore power, etc.		
GE - Generators			
10GE-00-GENR Generator	Generators, varying types and sizes, including gasoline, diesel, alternator and gas turbine powered devices.	Portable or fixed --- Examine load capacity Regular testing Automatic transfer switch	
PE - Other Power-Related Equipment			
10PE-00-BCON Conditioners, Battery	Battery Conditioners	Indicators showing current battery status --- Pulse chargers Number of charging ports Ability to keep track of individual batteries	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
PE - Other Power-Related Equipment - *Continued*			
10PE-00-PCDS System, Power Conditioning	Surge suppression		
10PE-00-PTSW Switch, Power Transfer	Switch for power output transfer to support generator maintenance and fueling.	Employable with generator autostart for continuous operation and uninterrupted power flow.	106
10PE-00-REEL Reel, Electric Cord	Electric cord reel	Twist-lock connectors --- Twist-lock connectors are advantageous during field operations to prevent accidental disconnection. Length and gauge are relative to expected current load	106
10PE-00-UPS Supply, Uninterruptible Power (UPS)	Uninterruptible Power Supply (UPS)	Consider load/time relation.	

[1] *Use numbers given to refer to Standards List at the end of this document.*

Section 11 - CBRNE Reference Materials

Overview

This section was created in the Spring 2004 edition to simplify access to reference documents that were previously included under Operational Equipment. All references are classified as either "Field Expedient References", “Reference Databases”, or "References", with the first category highlighting those items that would be useful to carry to the scene of an incident. Where possible, author, International Standard Book Number (ISBN), and edition information are provided. Comments on the applicability and utility of specific references are also provided.

Online Selection Factors

Like most sections in the 2005 SEL, the online version of the References Section (in the Responder Knowledge Base, www.rkb.mipt.org) uses a pair of selection factors to assist users in quickly identifying appropriate equipment items. For the References Section, the SubGroup chose to use the Mission Role definitions from Section 1 as the first factor, and the Hazard Environment definitions from Section 2 as the second. The intent is to allow selection of recommended references by detailed mission role (patrol officer, firefighter, hazmat technician, etc.) and general hazard environment (Chemical, Biological, etc.). See the introductions to Sections 1 and 2 for the specific definitions used. Every online item is "tagged" for each appropriate combination of factors. Thus users on the online version can choose any combination of Mission Role and Hazard Environment, and the system will provide a list of all items tagged for that combination.

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient			
11FR-00-CHRS CHRIS Manual	Author: USCG	Resource Scene Reference --- Quantity of chemicals discussed. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development. Particularly suited for toxic industrial chemicals. Does not address military agents.	
11FR-00-EAGR Emergency Action Guides	Author: Association of American Railroads	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-ECHE Emergency Care for Hazardous Materials Exposure	Author: Bronstein, Currance ISBN: 801678137 Edition: 2nd Pages: 635	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-EETG Effects of Exposure to Toxic Gases; First Aid and Medical Treatment	Author: Matheson ISBN: 9994698605	Limited descriptions of toxicological mechanisms --- Quantity of chemicals discussed. Reference resource during preplanning, training, and exercise development.	
11FR-00-EHMR Emergency Handling of Hazardous Materials in Surface Transportation	Author: Association of American Railroads ISBN: 9990687005	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-EPAP EPA Recognition and	Author: Morgan ISBN: 0912702818	Descriptions of toxicological mechanisms. --- Used for preplanning, training, and exercise development. →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient - *Continued*			
Management of Pesticide Poisoning			
11FR-00-FCHM Farm Chemicals Handbook	Author: Meister ISBN: 9990801061 Edition: 2002	Resource Scene Reference --- Quantity of chemicals discussed. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-GATX GATX Tank Car Manual	Author: GATX	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-GCST Gardner's Chemical Synonyms and Trade Names	Author: Milne ISBN: 566082195 Edition: 11th	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-GENI Genium's Handbook of Safety, Health, and Environmental Data	McGraw ISBN: 0071341439	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-GICN Pocket Guide for Industrial Chemicals	Author: National Institute for Occupational Safety and Health	Excellent quick reference for toxic industrial chemicals. Also available in electronic version.	
11FR-00-HAZD Hazardous Chemicals Desk Reference	Author: Lewis, Richard J. ISBN: 0471441651	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient - *Continued*			
11FR-00-HCCD Hawley's Condensed Chemical Dictionary	Author: Lewis, Hawley ISBN: 471387355 Edition: 14th Pages: 1,300	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-HMFG Hazardous Materials Field Guide	Delmar Publishing Author: Bevelacqua, Stilp ISBN: 766801551 Edition: 1st Pages: 96	Resource Scene Reference --- Quantity of chemicals discussed. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-HMMJ Hazardous Materials Managing the Incident - FOG	Author: Noll, Hildebrand, Yvorra Field operations guide	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-HTCC Handbook of Toxic and Hazardous Chemicals and Carcinogens	Author: Sittig, Pohanish ISBN: 081551459X Edition: 4th Pages: 2,300	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-HZMI Hazardous Material Injuries	Author: Stuz	Descriptions of toxicological mechanisms.	
11FR-00-JCBH Jane's Chemical/ Biological Handbook	Author: Sidell ISBN 710619235 Pages: 298	Overviews all of the primary military, chemical and biological materials. Includes differential diagnosis tools for agent identification.	
11FR-00-MCWC Management of	Author: Sidell, DOD	Descriptions of toxicological mechanisms. Field quick reference for treatment of patients. →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient - *Continued*			
Chemical Warfare Casualties			
11FR-00-MERK Merck Index	Author: Chapman, Hall ISBN: 412128217 Edition: 12th	Resource scene reference for chemical hazards of technical nature. ---------- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development. The web accessible version of The Merck Index, Thirteenth Edition (2003) is co-published by Merck & Co., Inc. and CambridgeSoft. This electronic version contains the text and structures of the monographs, the supplementary tables section and the Organic Name Reactions section. This product features powerful text and substructure searching tools for exploring the database. For subscription information contact: CambridgeSoft 100 Cambridge Park Drive Cambridge, MA 02140 USA ChemStore.Com (the online store) 800-315-7300 (US & Canada) 617-588-9300 (Local & International) info@cambridgesoft.com (sales department E-mail) The Merck Index OnlineSM is a text searchable database that contains the monograph section of The Merck Index, Thirteenth Edition. Contact the following licensed vendors for subscription access: DIALOG The Dialog Corporation 11000 Regency Parkway, Suite 10 Cary, North Carolina 27511 Tel: 1-800-3-DIALOG www.dialog.com E-mail: customer@dialog.com STN International Chemical Abstract Service →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient - *Continued*			
		2540 Olentangy River Road Columbus, OH 43202 Tel: 1-800-848-6533 www.cas.org E-mail: help@cas.org	
11FR-00-MGDB Matheson Gas Data Book	Author: Matheson	Detailed data on chemical gases. --- Detailed towards industrial gases. Suitable for reference at the scene of an incident and during preplanning, training, or exercise development.	
11FR-00-MMBC Medical Management of Biological Casualties Handbook	Author: DOD	Descriptions of toxicological mechanisms caused by biological hazard.	
11FR-00-MMCC Medical Management of Chemical Casualties Handbook	Author: DOD	Descriptions of toxicological mechanisms caused by chemical weapons.	
11FR-00-MMRC Medical Management of Radiological Casualties Handbook	Author: DOD ISBN: 1931828237 Edition: 1st Edition Pages: 133	Descriptions of toxicological mechanisms caused by radiological hazards.	
11FR-00-NA00 North American Emergency Response Guidebook	Author: U.S. Department of Transportation ISBN: 066017992X Edition: 2000	Resource Scene Reference --- Details of chemicals discussed. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
FR - Field Expedient - *Continued*			
11FR-00-QGPC Quick Selection Guide to Chemical Protective Clothing	Author: Forsberg, Mausdorf ISBN: 471287970 Edition: 3rd Pages: 124	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-SAXS Sax's Dangerous Properties of Industrial Materials	Author: Lewis, Richard J. ISBN: 0471354074	Resource Scene Reference for chemical hazards. --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-SYMS Symbol Seeker, Hazard Identification Manual, International Edition	Author: IFTSA Edition: International Edition	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11FR-00-TLVS TLVs and BEIs Guidebook	Author: ACGIH	Resource Scene Reference --- Quantity of chemicals discussed. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
RD - Reference Databases			
11RD-00-GPPS Gloves Plus	Author: Keith, Lawrence ISBN: 873717104 Pages: 26	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11RD-00-NGCH NIOSH Guide to	CDC/NIOSH - Electronic version of the pocket guide.	Free for download from http://www.cdc.gov/NIOSH. See publications and databases. Lists physical, chemical and toxicological properties of Toxic Industrial Chemicals (TICs). →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RD - Reference Databases - *Continued*			
Chemical Hazards (Electronic)			
11RD-00-TPLS Tomes Plus / Chemical Knowledge Database	Author: Micro Medix Pages: CD-ROM	Resource Scene Reference --- Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.	
11RD-00-TXFQ ToxFAQs(TM) Series, Agency for Toxic Substances and Disease Registry (ATSDR)	The ATSDR ToxFAQs(tm) is a series of summaries about hazardous substances developed by the ATSDR Division of Toxicology. Information for this series is excerpted from the ATSDR Toxicological Profiles and Public Health Statements.	Each fact sheet serves as a quick and easy to understand guide. Answers are provided to the most frequently asked questions (FAQs) about exposure to hazardous substances found around hazardous waste sites and the effects of exposure on human health. --- Information on the series can be obtained at www.atsdr.cdc.gov.	
RE - References			
11RE-00-AIRM Air Monitoring Instrumentation: A Manual for Emergency Investigatory and Remedial Responders	Author: Maslansky, Carol J. and Maslansky, Steven P. ISBN: 0471284602	Used for preplanning, training and exercise development.	
11RE-00-CCDM Control of Communicable Diseases Manual	American Public Health Association Dr. David Heymann, Editor ISBN: ISBN 0-87553-035-4	The Control of Communicable Diseases Manual is the most widely recognized sourcebook on infectious diseases. The new 18th edition addresses concerns about the impact of communicable diseases around the globe as communicable diseases, new and unknown, continue to thrive, kill, maim and surprise the masses. Among the diseases addressed in the new edition is Severe Acute Respiratory Syndrome (SARS). →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RE - References - *Continued*			
	Edition: 18th Edition Pages: 110		
11RE-00-COMM Common Sense Approach to Hazardous Materials	Author: Fire, Frank L.	Textbook dealing with the chemistry and effects of hazardous chemicals and radiation.	
11RE-00-CTCP Clinical Toxicology of Commercial Products	Author: Gosselin ISBN: 683036327 Edition: 5th Edition	Descriptions of toxicological mechanisms of Toxic Industrial Chemicals (TICs). ---------- Detail of mechanisms somewhat limited. Reference resource during preplanning. Used for training Hazardous Materials Technicians.	
11RE-00-ERHM Emergency Medical Response to Hazardous Materials	Delmar Publishing Author: Bevelacqua, Stilp ISBN: 827378297 Edition: 1st Pages: 522	Descriptions of toxicological mechanisms for the field medical technician ---------- Limitations due to the level of deployment, based upon protocol which the field medical technician can function. Reference resource during training. Used for training Hazardous Materials Technicians.	
11RE-00-FGAC First Responder's Guide to Agricultural Chemicals Accidents	Author: Foden-Weddell ISBN: 873717996 Pages: 540	Descriptions of toxicological mechanisms for the field medical technician ---------- Limitations due to the level of deployment agricultural chemicals, based upon protocol which the field medical technician can function. Reference resource during training. Used for training Hazardous Materials Technicians.	
11RE-00-HAMD HazMat Air Monitoring and Detection Devices	Hawley ISBN: 0766807274	Used for preplanning, training and exercise development.	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RE - References - *Continued*			
11RE-00-HBMT Handbook of Medical Toxicology	Viccellio ISBN: 0316902470	Descriptions of toxicological mechanisms. --- Used for preplanning, training, and exercise development.	
11RE-00-HCFA Household Chemicals and Emergency First Aid	Author: Foden, Weddell ISBN: 873719018 Pages: 448	Descriptions of toxicological episodes. --- Limited towards the level of description. Household chemicals only. Reference resource during training. Used for training Hazardous Materials Technicians.	
11RE-00-HMCD Hazardous Materials Chemistry	Delmar Publishing Author: Bevelacqua ISBN: 766814343 Edition: 1st Edition Pages: 192	Basic chemical nomenclature for the responder. Textbook. --- Detailed chemical mechanisms are not discussed. Reference resource during training. Used for training Hazardous Materials Technicians.	
11RE-00-HMMI Hazardous Materials: Managing the Incident	Author: Noll, Hildebrand, Yvorra ISBN: 0879391111	Overviews the management of hazardous materials incidents. Primarily a learning text. --- Suitable for preplanning, training, and exercise development.	
11RE-00-JFSH Jane's Facility Security Handbook	Author: Kozlow, Sullivan ISBN: 710622880 Pages: 320	Descriptions of primary planning issues. --- Direction with organizational structures. Reference resource during preplanning, training, and exercise development.	
11RE-00-JICM Joint Information Center (JIC) Manual		Descriptions of primary planning issues --- Used at strategic level operations. Reference resource during preplanning, training, and exercise development.	
11RE-00-MASS Mass Casualty and	Author: Christen, Henry T. and Maniscalco, Paul M. ISBN: 0-13-099222-4	Reference for planning and training. →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RE - References - *Continued*			
High Impact Incidents - An Operations Guide			
11RE-00-NIMS National Incident Management System; Principles and Practice	Authors: Walsh, Christen, Maniscalco, Callsen, Miller ISBN: 0-7637-3079-3	Provides information on NIMS impact, which may be critical in maintaining eligibility for some government grants.	
11RE-00-PODO Clinical Management of Poisoning and Drug Overdose	Author: Olson ISBN: 0838502601	Descriptions of toxicological mechanisms. ---------- Used for preplanning, training and exercise development.	
11RE-00-SPOP Special Operations of Terrorism and HazMat Crimes	Author: Hawley, Noll, Hildebrand	Used for preplanning, training and exercise development.	
11RE-00-STRT Street Smart HazMat Response	Author: Callan, Michael	Used for preplanning, training and exercise development.	
11RE-00-TCBF Tempest CB FRG (Chem Bio) First Responder Guidebook		Descriptions of military generated chemicals ---------- Quantity of chemicals discussed. Reference resource during preplanning and exercise development.	
11RE-00-TCBQ Tempest Chem Bio	Author: Graves ISBN: 966543718 Edition: 1st	Descriptions of military generated chemicals. Questions and answers. ---------- Quantity of chemicals discussed. →	

Item Number / Title	Description	Features / Operating Considerations	Standards[1]
RE - References - *Continued*			
Frequently Asked Questions (CB FAQ)	Pages: 175	Reference resource during preplanning and exercise development.	
11RE-00-TERF Terrorism Response: Field Guide for Fire and EMS Organizations	Author: Christen, Henry T. and Maniscalco, Paul M. ISBN: 0-13-110906-5	Reference for planning and training.	
11RE-00-TERL Terrorism Response: Field Guide for Law Enforcement	Author: Christen, Henry T. and Maniscalco, Paul M. ISBN: 0-13-110747-X	Reference for planning and training.	
11RE-00-THOR Terrorism Handbook for Operational Responders	Delmar Publishing Author: Bevelacqua, Stilp ISBN: 766804755 Edition: 1st Edition Pages: 110	Reference for planning, and training	
11RE-00-TRMQ Transport of Radiological Materials: Q&A About Incident Response	Author: Berga, Byrd, et al	General discussion on radiological chemicals. --- Level of information discussed. Reference resource during preplanning, training, and exercise development.	
11RE-00-UNDR Understanding Terrorism and Managing the Consequences	Author: Christen, Henry T. and Maniscalco, Paul M. ISBN: 0-13-021229-6	Used for preplanning, training and exercise development.	

Standards List

The list on the following pages is referenced by item number from multiple sections of the SEL. In addition to its number, each item on the list has two annotations:

- Type, which will be either ***Adopted*** or "R" for Reference Only. Adopted standards are those that have been formally adopted by the IAB (see discussion in the Standards Coordinating Committee section of the 2003 IAB Annual Report). All other standards are included for reference only.
- Use/Care, which distinguishes standards for the use and care of personal protective equipment, as opposed to product certification standards. Such standards will be identified by "y" in the Use/Care column,

Each standard in this list also has a corresponding record in the Responder Knowledge Base (www.rkb.mipt.org). The online records contain a summary description of the standard, the promulgating organization, and one or more links through which the standard may be viewed or purchased.

ID	Standard Name	Use/Care[1]	Type[2]
1	21 CFR (Several Standards apply) FDA. Local standards for EMS and facility patient management equipment should be used.		R
2	21 CFR 862.1345 (FDA), Glucose test system		R
3	21 CFR 868.1930 (FDA), Stethoscope head		R
4	21 CFR 868.5630 (FDA), Nebulizer		R
5	21 CFR 868.5895 (FDA), Continuous ventilator		R
6	21 CFR 868.5915 (FDA), Manual emergency ventilator		R
7	21 CFR 870.1025 (FDA), Arrhythmia detector and alarm		R
8	21 CFR 870.1120 (FDA), Blood pressure cuff		R
9	21 CFR 870.2700 (FDA), Oximeter		R
10	21 CFR 870.2800 (FDA), Medical magnetic tape recorder		R
11	21 CFR 870.5300 (FDA), DC-defibrillator (including paddles)		R
12	21 CFR 872.6770 (FDA), Cartridge syringe		R
13	21 CFR 874.4770 (FDA), Otoscope		R
14	21 CFR 876.1500 (FDA), Endoscope and accessories		R
15	21 CFR 876.5980 (FDA), Gastrointestinal tube and accessories		R
16	21 CFR 878 (FDA) (multiple sections apply)		R
17	21 CFR 878.3900 (FDA), Inflatable		R
18	21 CFR 878.3910 (FDA), Non-inflatable		R

[1] *"Y" indicates standard for the use or care of personal protective equipment - not a certification standard.*
[2] *IAB [A]dopted Standard, or [R]eference Only Standard*

Standards List - Continued

ID	Standard Name	Use/ Care[1]	Type[2]
19	21 CFR 878.4040 (FDA), Surgical apparel		R
20	21 CFR 878.4460 (FDA), Surgeon's glove		R
21	21 CFR 878.4780 (FDA), Powered suction pump		R
22	21 CFR 878.4800 (FDA), Manual surgical instrument for general use		R
23	21 CFR 880 (FDA) (multiple sections apply)		R
24	21 CFR 880.2900 (FDA), Colormetric		R
25	21 CFR 880.2910 (FDA), Electronic		R
26	21 CFR 880.2920 (FDA), Mercury		R
27	21 CFR 880.5025 (FDA), IV Bag Container		R
28	21 CFR 880.5200 (FDA), IV Catheter		R
29	21 CFR 880.5240 (FDA), Medical adhesive tape and adhesive bandage		R
30	21 CFR 880.5420 (FDA), Pressure infusor for an I.V. bag		R
31	21 CFR 880.5440 (FDA), Administration Set (All Components)		R
32	21 CFR 880.5860 (FDA), Piston syringe		R
33	21 CFR 880.6230 (FDA), Tongue depressor		R
34	21 CFR 880.6250 (FDA), Patient examination glove		R
35	21 CFR 880.6740 (FDA), Vacuum-powered body fluid suction apparatus		R
36	21 CFR 880.6760 (FDA), Protective restraint		R
37	21 CFR 880.6820 (FDA), Medical disposable scissors		R
38	21 CFR 880.6880 (FDA), Steam sterilizer		R
39	21 CFR 880.6900 (FDA), Hand-carried stretcher		R
40	21 CFR 880.6910 (FDA), Wheeled stretcher		R
41	21 CFR 886.1570 (FDA), Ophthalmoscope		R
42	21 CFR 898 (FDA), Performance Standard for Electrode Lead Wires and Patient Cables		R
43	29 CFR 1910.1030 (OSHA), Bloodborne Pathogens		R
44	29 CFR 1910.120 (OSHA), Hazardous waste operations and emergency response.	Y	R

[1] *"Y" indicates standard for the use or care of personal protective equipment - not a certification standard.*
[2] *IAB [A]dopted Standard, or [R]eference Only Standard*

Standards List - Continued

ID	Standard Name	Use/ Care[1]	Type[2]
45	29 CFR 1910.132 (OSHA), General requirements, PPE	Y	R
46	29 CFR 1910.134 (OSHA), Respiratory Protection	Y	R
47	29 CFR 1910.135 (OSHA), Head Protection	Y	R
48	29 CFR 1910.138 (OSHA), Hand Protection	Y	R
49	29 CFR 1910.147 (OSHA) The Control of Hazardous Energy (Lockout/Tagout)		R
50	40 CFR 264 (EPA), Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities		R
51	42 CFR 84 (NIOSH), Respiratory Protective Devices		R
52	42 CFR 84 (NIOSH), with Air-Purifying Escape Respirator/Self- Contained Escape Respirator CBRN Statement of Standard; NPPTL Letter dated October 8, 2003		A
53	42 CFR 84 (NIOSH), with APR CBRN Statement of Standard; NPPTL Letter dated April 4, 2003		A
54	42 CFR 84 (NIOSH), with SCBA CBRN Statement of Standard; NPPTL Letter dated December 28, 2001		A
55	47 CFR 90 (FCC), Private Land Mobile Radio Services		R
56	49 CFR 172.101 (DOT) Purpose and use of hazardous materials table.		R
57	49 CFR 173 (DOT), General Requirements for Shipments and Packages	Y	R
58	49 CFR 173.3 (DOT), Packaging and Exceptions	Y	R
59	49 CFR 178, Specifications for Packagings	Y	R
60	Advanced Encryption Standard (AES), Data Encryption Standard (DES), and Triple Data Encryption (3-DES) (NIST)		R
61	ANSI INCITS 385-2004, Face Recognition Format for Data Interchange		R
62	ANSI N42.14, Calibration and Use of Germanium Detectors for the Measurement of Gamma-Ray Emission Rates of Radionuclides.		R
63	ANSI N42.32, Performance Criteria for Alarming Personal Radiation Detectors for Homeland Security		A
64	ANSI N42.33, Portable Radiation Detection Instrumentation for Homeland Security		A
65	ANSI N42.34, Performance Criteria for Hand-held Instruments for the Detection and Identification of Radionuclides		A

[1] *"Y" indicates standard for the use or care of personal protective equipment - not a certification standard.*
[2] *IAB [A]dopted Standard, or [R]eference Only Standard*

Standards List - Continued

ID	Standard Name	Use/ Care[1]	Type[2]
66	ANSI N42.35, Evaluation and Performance of Radiation Detection Portal Monitors for Use in Homeland Security		A
67	ANSI Z87.1 Occupational and Educational Personal Eye and Face Protection Devices		R
68	ANSI Z89.1, Industrial Head Protection, 2003 Edition		A
69	ANSI/ISEA 102-1990, Gas Detector Tube Units - Short-Term Type for Toxic Gases and Vapors in Working Environments		R
70	ANSI/ISEA 105, Hand Protection Selection Criteria, 2000 Edition		A
71	ANSI/ISEA 107, High Visibility Safety Apparel, 2004 Edition		A
72	ASTM D4490, Measuring the Concentration of Toxic Gases or Vapors Using Detector Tubes		R
73	ASTM F1052-97, Standard Test Method for Pressure Testing Vapor Protective Ensembles	Y	R
74	ASTM F2300-05, Standard Test Method for Measuring the Performance of Personal Cooling Systems Using Physiological Testing		R
75	E-4 Edition: 4 Standard for Gas Pressure Regulators		R
76	E-7 Edition: 2 Standard for Medical Gas Regulators and Flowmeters		R
77	Federal Food, Drug and Cosmetic Act		R
78	G-4.1 Edition: 5 Cleaning Equipment for Oxygen Service		R
79	Global Justice XML Data Model (DOJ)		R
80	IEEE 802.11b-1999 (R2003) Supplement to 802.11-1999, Wireless LAN MAC and PHY specifications: Higher speed Physical Layer (PHY) extension in the 2.4 GHz band.		R
81	IEEE 802.11g-2003 Amendment to IEEE Std 802.11, 1999 Edition (Reaff 2003) IEEE Standard for Information technology.		R
82	National Institute for Justice (NIJ) and the Department for Homeland Security (DHS) are currently funding the development of an NIJ Standard for bomb suits. This standards development process is being managed by the NIST Office for Law Enforcement Standards (OLES). The requirement for a bomb suit standard was generated by the IAB PP&OE Subgroup. The U.S. military has developed the Operational Requirements Document (ORD) for Explosive Ordnance Disposal Advanced Bomb Suit (ABS). The U.S. military has also generated a draft Performance Specification, Bomb Suit, Advanced. The lead organization for this class of military protective equipment development is the Army Natick Soldier Center.		R
83	NFPA 10, Standard for Portable Fire Extinguishers, 2002 Edition		R

[1] *"Y" indicates standard for the use or care of personal protective equipment - not a certification standard.*
[2] *IAB [A]dopted Standard, or [R]eference Only Standard*

Standards List - Continued

ID	Standard Name	Use/ Care[1]	Type[2]
84	NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 edition	Y	R
85	NFPA 1581, Standard on Fire Department Infection Control Program, 2005 Edition	Y	R
86	NFPA 1851, Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles, 2001 Edition	Y	R
87	NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus, 2002 Edition	Y	R
88	NFPA 1936, Standard on Powered Rescue Tools, 2005 Edition		A
89	NFPA 1951, Standard on Protective Ensemble for USAR Operations, 2001 Edition		A
90	NFPA 1971, Standard on Protective Ensemble for Structural Fire Fighting, 2000 Edition		A
91	NFPA 1975, Standard on Station/Work Uniforms for Fire and Emergency Services, 2004 Edition		A
92	NFPA 1976, Standard on Protective Ensemble for Proximity Fire Fighting, 2000 Edition		R
93	NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus, 2002 Edition		A
94	NFPA 1982, Standard on Personal Alert Safety Systems, 1998 Edition		A
95	NFPA 1983, Standard on Fire Service Life Safety Rope and System Components, 2001 Edition		A
96	NFPA 1989, Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection, 2003 Edition		R
97	NFPA 1991, Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies, 2005 Edition		A
98	NFPA 1992, Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies, 2005Edition		A
99	NFPA 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents, 2001 Edition (Class 1 Requirements)		A
100	NFPA 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents, 2001 Edition (Class 2 Requirements)		A
101	NFPA 1994, Standard on Protective Ensembles for Chemical/Biological Terrorism Incidents, 2001 Edition (Class 3 Requirements)		A

[1] "Y" indicates standard for the use or care of personal protective equipment - not a certification standard.
[2] IAB [A]dopted Standard, or [R]eference Only Standard

Standards List - Continued

ID	Standard Name	Use/ Care[1]	Type[2]
102	NFPA 1999, Standard on Protective Clothing for Emergency Medical Operations, 2003 Edition		A
103	NFPA 2112, Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2001 Edition		A
104	NFPA 2113, Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2001 Edition	Y	R
105	NFPA 30, Flammable and Combustible Liquids Code, 2003 Edition		R
106	NFPA 70, National Electric Code, 2005 Edition		R
107	NIJ Guide 100-98, Selection and Application Guide to Police Body Armor, October 1998		R
108	NIJ Standard 0101.04, Ballistic Resistance of Personal Body Armor		A
109	NIJ Standard 0104.02, Riot Helmets and Face Shields		R
110	NIJ Standard 0106.01, Ballistic Helmets, December 1981		R
111	NIJ Standard 0108.01, Ballistic Resistance Protective Materials		R
112	NIST SP 800-36, Guide to Selecting Information Security Products		R
113	NIST SP 800-41, Guidelines on Firewalls and Firewall Policy		R
114	NIST SP 800-45, Guidelines on Electronic Mail Security		R
115	NIST SP 800-48, Wireless Network Security 802.11, Bluetooth and Hand-held Devices		R
116	NVLAP program (NIST) currently provides accreditation for several different types of whole body and extremity dosimeters		R
117	Title 21 USC, Controlled Substances Act, Section 812		R
118	UL 913, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations, 2003		A

[1] *"Y" indicates standard for the use or care of personal protective equipment - not a certification standard.*
[2] *IAB [A]dopted Standard, or [R]eference Only Standard*

The paper used in this publication is 100% recycled and its manufacturer contributes proceeds from its use to the Intrepid Fallen Heroes Fund. The Intrepid Fallen Heroes Fund provides unrestricted grants to the families of military personnel who have given their lives in the current operations in Afghanistan and Iraq. The gifts, $11,000 to each spouse and an additional $5,000 to each dependent child, are intended to help these families through any immediate or long-term financial difficulties they may face. They are also intended to tell these families that our nation will never forget them in their time of need.

The InterAgency Board

1550 Crystal Drive, Suite 601
Arlington, Virginia 22202
www.iab.gov