

2009 Standardized Equipment List (SEL)



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The Standardized Equipment List (SEL) is provided to the responder community by the InterAgency Board for Equipment Standardization and Interoperability (IAB). The SEL has traditionally contained a list of generic equipment recommended by the IAB to local, state, and federal government organizations in preparing for and responding to all Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) events. This edition continues the transition to a broader “all-hazards” SEL, *while maintaining an emphasis on CBRNE 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 equipment items mentioned in the SEL.

The most current SEL is printed and distributed each year in conjunction with the IAB Annual Report. This printed edition is always preceded by a complete review of the SEL by working groups within the IAB, and thus contains numerous changes and updates. However, the SEL master is maintained on line in order to keep pace with maturing and emerging technologies. It is available in interactive format on the IAB web site, www.iab.gov. The SEL is updated on line as required, and each online record includes the date and time of its most recent change. Local, Tribal, State, or Federal Government organizations may present suggested changes at any time for consideration.

Alignment with the DHS Authorized Equipment List

The numbering scheme and structure of the SEL are aligned with the Authorized Equipment List (AEL) produced by DHS. Originally a subset of the SEL, the AEL is the equipment purchase grant guidance for several major grant programs, including the entire DHS Homeland Security Grant Program (HSGP). It is currently maintained by the FEMA Grant Programs Directorate of DHS. The SEL/AEL alignment is the result of a 3-year effort undertaken so that the responder community could easily obtain grant allowability information from DHS alongside the features and operating consideration information contained in the SEL.

The SEL and AEL each contain 21 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
12. CBRNE Incident Response Vehicles
13. Terrorism Incident Prevention Equipment
14. Physical Security Enhancement Equipment

15. Inspection and Screening Systems
16. (Reserved, currently used by AEL only)
17. CBRNE Prevention and Response Watercraft
18. CBRNE Aviation Equipment
19. CBRNE Logistical Support Equipment
20. Intervention Equipment
21. Other Authorized Equipment

Section 16 of the AEL is entitled “Agricultural Terrorism Prevention, Response, and Mitigation Equipment.” It is currently “Reserved” in the SEL numbering scheme while items are being considered for incorporation into the SEL. The IAB continues to work closely with FEMA’s Grant Programs Directorate to ensure the closest possible correlation between the two lists.

SEL/AEL Numbering Scheme

The SEL and the DHS AEL both utilize the numbering scheme originally introduced in the 2003 SEL. The format for SEL/AEL numbers is 99xx-88-yyyy, where

- 99 is the section number, from 01 through 99 (currently 01 through 21 are used as shown above).
- 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 standard will have the category “CB”.
- 88 is the numeric subcategory. For example, within the Personal Protective Equipment Section, the NFPA 1994 Class 2 Ensemble has a subgroup code of “02”. 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.”

2009 Changes

The 2009 SEL includes 650 items, 136 of which have been changed or added in this edition. Changes include editorial changes (113), relocated items (5), and new items (18). There were no deletions in this edition.

Two new Categories have been created in the 2009 SEL. The first is Category 09MY, Mortuary Operations, which was created by the Medical SubGroup. This category recognizes the essential requirement for mass fatality capability in WMD or disaster incidents, and includes equipment kits addressing eight different aspects of mortuary operations. The second new category is 20CS, Crime Scene Processing, created by the Personal Protective and Operational Equipment SubGroup. This category supports the critical mission of law enforcement to investigate criminal aspects of major incidents as part of their response, and reflects the efforts of the IAB to broaden law enforcement content in the SEL.

Training Requirements

The inclusion of Training Requirements for each SEL item began in the 2008 Edition. These requirements were developed by the Training SubGroup in cooperation with each of the four SubGroups

responsible for SEL content, and have been updated in this edition. Each item contains training requirement information in three parts:

- Core Training requirements, which describe the fundamental baseline training (as opposed to product specific training) required for operation, usually by reference to one or more key documents (such as a standard containing minimum qualifications) or certifications (such as a diver's certificate).
- Initial Training requirements, which quantify the amount of training needed to utilize the specific piece of equipment, presented as Minimal (< 1 day), Moderate (1-2 days), or Extensive (>2 days).
- Sustainment Training requirements, which quantify the amount of annual recurrent training needed to maintain proficiency in using the specific piece of equipment. Again, the requirement is presented as Minimal (< 1 day), Moderate (1-2 days), or Extensive (>2 days).

In some cases, additional information is supplied. For example, some bomb squad items show Sustainment Training as "Extensive (>2 days) with 5-yr re-accreditation rqt" to remind users of the 5-year re-accreditation requirement for FBI-accredited bomb squads.

Selection Factors

Since 2004, some sections of the SEL have included selection factors to provide an alternate method of referencing SEL items. Currently, they exist only for Sections 1 through 9, and the definitions vary among those sections. These factors allow users on the Responder Knowledge Base (RKB) web site (www.rkb.us) to select factor values and obtain search results based, for example, on a particular mission role and hazard environment such as Firefighter, Flash Fire environment.

The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site. The only SubGroup to update their selection factors for the 2009 Edition is the Medical SubGroup, since their factors are the only ones actually published in the printed edition.

Selection factor definitions are presented as usual in this edition (in the introductions to Sections 1 through 9). However, readers should be aware that they are under review and that selection factors may be modified or eliminated during 2009.

Abbreviated Print Format and CD-ROM

Since adding features and operating considerations information in 2004, the printed version of the SEL has expanded steadily. With the introduction of the training requirements in 2008, the sheer volume of the SEL reached a point where continuing to print in the same format would possibly have required two volumes. As a result, the 2008 edition became the first to "streamline" the printed SEL to include only the SEL Number, Title, and Description of each item. This edition continues that format. A CD-ROM is enclosed inside the back cover of the printed edition that contains both PDF versions of the printed document and an interactive version of the SEL. The SEL on the CD-ROM is formatted like the on-line SEL, contains complete information on every item, and is viewable offline on any computer using a Web browser.

Online Versions of the SEL

In addition to this printed version and its accompanying CD-ROM, a searchable version of the 2009 SEL is accessible online at the IAB web site (www.iab.gov). As mentioned above, this version of the SEL is considered the master and will always contain the latest updates. The IAB site also allows users to download the printed version of the SEL and the IAB Annual Report in PDF format.

Another version of the SEL is available as part of the Responder Knowledge Base (RKB), at www.rkb.us. The RKB's SEL display 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, as well as an integrated display option that combines elements from the SEL and AEL.

Summary

The 2009 SEL represents the collective efforts of the InterAgency Board members and several related support organizations. This edition continues the migration toward an all-hazards approach, and incorporates two new operational areas. Like all previous versions, it is intended to provide the best possible information in support of all emergency responders. Suggestions and comments are welcome.

Overview

The capabilities of and requirements for personal protective equipment continue to evolve rapidly. The transition to a broader, “all-hazards” SEL (while maintaining an emphasis on CBRNE events) continues in this edition.

Last year’s SEL contained a special document authored by the Personal Protective & Operational Equipment (PP&OE) SubGroup to assist readers in understanding the relationship between the traditional “Level A, B, C” PPE terminology and the standards-based descriptions used in recent years for both the SEL and DHS’s AEL. In June 2008, the National Institute for Occupational Safety and Health (NIOSH), with the assistance of this SubGroup, released NIOSH Publication No. 2008-132, entitled: *Guidance on Emergency Responder Personal Protective Equipment (PPE) for Response to CBRN Terrorism Incidents* (<http://www.cdc.gov/niosh/docs/2008-132/>). The NIOSH document supersedes the document published in this introduction last year, and has been cross referenced to appropriate individual SEL items in this section.

Performance Standards

The importance of performance-based consensus standards in the certification, procurement, and use of personal protective equipment for emergency responders and first receivers cannot be overstated. The PP&OE SubGroup continues to devote significant effort to identifying useful standards, defining requirements for standards not yet available, and participating in the standards development process. The Standards List at the end of the SEL shows some 45 standards and special reference publications related to this section, 28 of which have been formally adopted by the IAB.

One of the most critical standards requirements cited by the IAB over the past five years has been the need for a performance-based personal protective equipment standard that specifically addresses the law enforcement mission. As of this writing, the National Institute for Justice (NIJ) under its Law Enforcement and Corrections Standards and Testing Program is completing the development of *NIJ Standard 0116.00, CBRN Protective Ensemble Standard for Law Enforcement*. Two companion documents are planned for this standard: *NIJ CBRN Protective Ensemble Certification Program Requirements*, and *NIJ Selection and Application Guide to CBRN Protective Ensembles*. The latter will provide procurement, selection, care, maintenance, training, and administrative guidance related to law enforcement CBRN protective ensembles. The IAB and the PP&OE SubGroup have been strong advocates for the development of this new CBRN ensemble standard, and several members of the IAB are participants on the NIJ Special Technical Committee (STC) that worked throughout 2008 in developing this product standard.

A second critical NIJ standard development effort also appears to be nearing completion. The National Institute for Justice (NIJ) and the Department of Homeland Security (DHS) are finalizing work on the development of an NIJ Standard for bomb suits. This standards development process is being managed by the NIST Office of Law Enforcement Standards (OLES). The requirement for a bomb suit standard was generated by the IAB PP&OE SubGroup, in close cooperation with the National Bomb Squad Commanders Advisory Board (NBSCAB). 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. It is currently anticipated that this long-awaited standard will be available in early 2009.

Section Changes for 2009

While routine edits and enhancements were made throughout the section, there were no major changes or item additions for 2009.

Item 01ZA-06-COOL, Garment/Vest/Device, Cooling, has been moved from Section 1 to Section 2, and is now item 02PE-02-COOL. The PP&OE SubGroup is carefully examining the efficacy of these devices, and they are not recommended for routine responder use. However, due to the weight and bulk of EOD ensembles, the item is being carried in Section 2 as a current recommended item.

The Ensemble Selection Process

In order to select the appropriate PPE ensemble, all sectors of the emergency response community must first complete a thorough threat assessment that at least identifies the most probable mission scenarios. Such scenarios should, at a minimum, address two major areas:

- What are the “hazards” likely to be encountered, e.g. chemical (vapors, liquids, particulates), biological, radiological, explosive, etc.?
- What is the likely “mission” (job function) of each responder during the event, and what are the type, level, and likelihood of exposure to potential hazards?

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 planning effort should produce an “inventory” of the most likely scenarios, as well as anticipated responder roles. The results can then be applied using the Hazard/Mission Matrix described below. Completing this organized process of assessing the threat, planning the response, and identifying equipment gaps as a prerequisite to equipment selection is strongly encouraged.

Selection Factors

Like many sections in the 2009 SEL, the Personal Protective Equipment Section 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 as the two factors. Users of the online version¹ 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 (Hazard and Mission Role) for PPE is to view them as a matrix, as shown on the following page. The hazard or threat, including the likely physical state in which it would manifest itself, forms the “Hazard Environment” (horizontal) axis of the matrix. The vertical axis represents the likelihood of exposure based upon generalized job functions - the “Mission Role” axis of the matrix. Matching a mission role to one or more hazard environments gives a recommended set of equipment items. The values used in each of these two axes are described in detail below. NOTE: Currently, this table only addresses CBRNE hazards. As the SEL continues its transition to an all-hazards scope, the table will be expanded to reflect both additional missions and hazards.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

PPE Hazard/Mission Selection Matrix Template		Hazard																	
		Chemical								Biological			Radiological			Thermal		Explosive	
<i>Mission Role</i>		VH	VR	VL	LH	LL	PH	PL	BA	BL	AB	yX	FF	SF	WF	PR	PO	AS	
Law Enforcement	First Responder/Patrol Officer																		
	Force Protection																		
	Perimeter Control and Field Force																		
	Evidence Technician																		
	Tactical (SWAT)																		
Fire Department	First Responder/Firefighter																		
	Rescue Team																		
	Decontamination Team																		
Emergency Medical Services	First Responder/Medical First Receiver																		
	Contaminated Patient Care																		
	Non-Contaminated Patient Care																		
	Administrative/Logistical Support Personnel																		
Follow-On Responders	Technical and Skilled Specialty Personnel - Isolation Area																		
	Technical and Skilled Specialty Personnel - Non-Isolation Area																		
	Hazardous Device Operations																		
	HAZMAT Operations																		
Special	Incident Command Team																		
	Technical Rescue																		
	Surface Water Operations																		
	Sub-Surface Water Operations																		
	Environmental/Occupational Health Operations																		
	Epidemiology																		
	Mortuary Operations																		

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 PP&OE 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).
	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 conditions where extended contact in the form of splashes is expected.

Category	Environment	Definition
Chemical - <i>Continued</i>	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 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 CBRNE agent 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 noncarcinogenic.
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.
	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.
	Wildland Fire [WF]	A fire in woodlands, forests, grasslands, brush, prairies, and other such vegetation, that is involved in a fire situation but is not within buildings or structures.
Explosive	Pre-Detonation [PR]	The potential for explosion still exists at the emergency scene.
	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.

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:

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.

Duty Areas	Mission Role	Definition
Fire Department	First 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.
	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.

Duty Areas	Mission Role	Definition
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.
	Technical Rescue	Operations involving specialized knowledge, skills and equipment to search for and rescue or recover victims of unique situations. This includes: high angle, confined space, structural collapse, trench, wilderness, vehicle and machinery.
	Surface Water Operations (Contaminated and uncontaminated)	Personnel deployed onto or in close proximity to surface waters. This includes watercraft, ice, surf, swift, and non-moving water missions, in both the contaminated and non-contaminated environment.
	Subsurface Water Operations (contaminated and uncontaminated)	Operations in or under the surface of the water/ice in which the use of supplemental air sources is required, in both the contaminated and non-contaminated environment.
	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.

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.

Exposure/Hazard High = IDLH Low = STEL/TLV	Respiratory Protection					Personal Protective Clothing																			
	NIOSH CBRN-SCBA	NIOSH CBRN-APR ⁵	NIOSH CBRN PAPER (TF/Hd) ¹⁰	NIOSH CBRN Escape (SC) ⁸	NIOSH CBRN Escape (AP) ⁸	NFPA 1991	NFPA 1991 with Flash Fire Option	NFPA 1994 Class 2	NFPA 1994 Class 3	NFPA 1994 Class 4	NFPA 1992 (Liquid Splash)	NFPA 1951 Utility	NFPA 1951 Rescue & Recovery	NFPA 1951 CBRN	NFPA 1999	NFPA 1999 CBRN	NIJ Bullet Resistant Body Armor	DOD-Advanced Bomb Suit Performance Specification	NFPA 1971 - Structural	NFPA 1971 - Proximity	NFPA 1971 - Structural CBRN	NFPA 1971 - Proximity CBRN	NFPA 1977 - Wildland		
Unknown Environment	A					A	A	A														A	A		
Chemical																									
Vapor/Gas/Aerosol (High Respiratory ¹ , High Dermal ³)	A					A	A	A														A	A		
Vapor/Gas/Aerosol (High Respiratory ¹ , Low Dermal ⁴)	A					A	A	A														A	A		
Vapor/Gas/Aerosol (Low Respiratory ² , Low Dermal)	O	A	A	E	E	O	O	O	A					A								O	A		
Liquids (High) ⁶	A					O	O	O		L												O	A		
Liquids (Low) ⁶	O	A	A	E	E	O	O	O	A	L				A								O	A		
Particulates (High)	A					O	O	O	O	A				O								O	O		
Particulates (Low)	O	A	A	E	E	O	O	O	O	A				O								O	O		
Biological																									
Airborne	O	A	A	E	E	O	O	O	O	A				O								O	O		
Liquid-borne	O	A	A	E	E	O	O	O	O	A	A		A	O	A					A	A	O	O		
Radiological/ Nuclear⁷																									
Particulate/Liquid (Alpha and Beta)	O	A	A	E	E	A	A	A	A	A	A			A								A	A		
Penetrating Gamma/X-Ray																									
Thermal																									
Flash Fire	A					A						A	A	A							A	A	A	A	
Sustained Fire	A																				A	A	A	A	
Wildland Fire																					O	O	O	O	A
Explosive																									
Pre-Detonation																					A				
Post-Detonation ⁹													A	A							A	A	A	A	
Ballistic																									
Armed Assaults, Force Protection, Hostage Rescue																								A	

Key to Matrix Values:

- A “Appropriate” - Provides appropriate protection from the indicated CBRN exposure.
- E “Escape” - Provides protection from the indicated CBRNE exposure for escape purposes only. Not intended for operations in the indicated hazard environment.
- L “Limited” - Does not provide specific protection from CBRNE exposure but may provide limited protection from collateral exposure such as TICs/TIMs once CBRN hazards have been mitigated.
- O “Overprotection” - Provides protection in excess of that required to address the indicated hazard. Overprotection may result in undesirable tradeoffs such as increased heat stress or loss of functionality.

- 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 “High Dermal” indicates a significant dermal contact or absorption risk for acute/chronic skin toxicity, sensitization, corrosiveness, or systemic health effects via skin contact (e.g. carcinogens).
- ⁴ “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 acute/chronic health effects via skin contact (e.g. carcinogens).
- ⁵ Canisters used for APRs and canisters/cartridges used for PAPRs may have significant life limitations in airborne particulate hazards of sufficient quantity to cause filter loading.
- ⁶ High/Low with regard to liquid chemical hazards. Although expressed in this matrix in general terms, selection of respiratory levels of protection would be dependent upon the volatility of the material and results of quantitative analysis of airborne concentrations.
- ⁷ The specific hazard/exposure indicated is radiological. Nuclear hazard environments will also include thermal and explosive components if detonation occurs.
- ⁸ CBRN Escape Respirators are grouped into two categories for this table: Air Purifying (AP), which includes respirators with and without the carbon monoxide (CO) option, and Self Contained (SC), which has its own air supply. Protections are limited to duration required for escape activity.
- ⁹ In the post-detonation setting, the primary hazard is assumed to be physical hazards. However, other chemical, biological or radiological hazards may be present and a hazard/risk assessment must be conducted in order to identify such hazards prior to final selection of a proper protective ensemble.
- ¹⁰ NIOSH CBRN PAPR includes units that are tight fitting (TF) and hooded (Hd).

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 user. This guidance is based principally on CBRNE hazards; other hazards must be considered in a thorough hazard and risk assessment, which is required by OSHA for the selection of PPE. However, no guidance can replace the fundamental requirement to examine a community’s most likely exposure to various hazards and mission roles for its personnel prior to PPE selection.

Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
AR - Respiratory Protection Equipment			
01 CBRN Self-Contained Breathing Apparatus (SCBA) and Supplied-Air Respirators (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.	47, 50, 58, 62, 125, 129, 130, 135, 141, 142
01AR-01-SCBC*	Cylinders and Valve Assemblies, Spare, and Service/Repair Kits, CBRN SCBA	Spare SCBA Cylinders and valve assemblies, and service/repair kits for item 01AR-01-SCBA. Cylinders and parts/assemblies must be purchased from the SCBA manufacturer or a source authorized by the manufacturer to ensure that the NIOSH CBRN approval of the SCBA remains valid.	47, 50, 62, 67, 125, 129, 130, 135, 141
01AR-01-SCBR	Kit, Retrofit, CBRN SCBA	Retrofit kit for existing Self-Contained Breathing Apparatus to bring the unit into CBRN compliance. Kit must be certified as compliant with NFPA 1981 and certified by NIOSH as compliant with the CBRN approval criteria.	47, 50, 58, 62, 125, 129, 130, 135, 141
AR - Respiratory Protection Equipment			
02 CBRN Air-Purifying Respirator (APR)			
01AR-02-APR	Respirator, Air-Purifying, Full-Face, Tight-Fitting, Negative Pressure, CBRN	CBRN Air-Purifying Respirator (APR) (certified by NIOSH as compliant with the CBRN approval criteria). Worn with multiple ensemble configurations.	47, 50, 58, 60, 125, 129, 130
01AR-02-APRC	Canister, CBRN, APR	CBRN canisters for Item 01AR-02-APR.	47, 50, 58, 60, 125, 129, 130
AR - Respiratory Protection Equipment			
03 CBRN Powered Air-Purifying Respirator (PAPR)			
01AR-03-PAPA	Respirator, Powered, Air-Purifying (PAPR), CBRN	CBRN Powered Air-Purifying Respirator (PAPR) (certified by NIOSH as compliant with CBRN approval criteria). Worn with multiple ensemble configurations.	47, 50, 58, 61, 125, 129, 130

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
AR - Respiratory Protection Equipment			
03 CBRN Powered Air-Purifying Respirator (PAPR) - Continued			
01AR-03-PAPB	Battery Pack, PAPR	Battery pack for item 01AR-03-PAPA.	47, 50, 58, 61, 125, 129
01AR-03-PAPC	Canister, CBRN, PAPR	CBRN Canisters for Item 01AR-03-PAPR	47, 50, 58, 61, 125, 129, 130
AR - Respiratory Protection Equipment			
04 CBRN Escape Respirator			
01AR-04-APEC*	Respirator, Escape, Air-Purifying, Single-Use, CBRN, with CO Option	CBRN Air-Purifying Escape Respirator (APER) designed for escape from hazardous environments, including carbon monoxide (certified by NIOSH as compliant with the CBRN approval criteria).	47, 50, 58, 59, 125, 129, 130
01AR-04-APER*	Respirator, Escape, Air-Purifying, Single-Use, CBRN	CBRN Air-Purifying Escape Respirator (APER) designed for escape from hazardous environments (certified by NIOSH as compliant with the CBRN approval criteria).	47, 50, 58, 59, 125, 129, 130
01AR-04-SCER	Respirator, Escape, Self-Contained, Single-Use, CBRN	CBRN Self-Contained Escape Respirator (SCER) designed for escape from hazardous and oxygen-deficient environments (certified by NIOSH as compliant with the CBRN approval criteria).	47, 50, 58, 59, 129

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
AR - Respiratory Protection Equipment			
05 Combination Respiratory Equipment			
01AR-05-COMB	Equipment, Respiratory Protection, Combination	Respiratory protection equipment that performs in multiple modes corresponding to various respirator types, such as a combination of Self Contained Breathing Apparatus (SCBA) and Powered Air Purifying Respirator (PAPR). Must be certified by NIOSH as a compliant combination respirator in accordance with 42 CFR 84. Each mode of operation must comply with the applicable NIOSH CBRN approval criteria. If no CBRN standard is established for a given mode of operation, the equipment must be certified in that mode under 42 CFR 84. Appropriate Cautions and Limitations of Use apply for each respirator type/mode of operation.	47, 50, 58, 60, 61, 62, 125, 129, 130, 135, 141, 142
AR - Respiratory Protection Equipment			
06 Disposable Respirator			
01AR-06-DISP	Respirator, Particulate, Disposable	Respirator certified by NIOSH under 42 CFR 84 and classified as one of nine types of filtering-facepiece disposable particulate respirators (N95, N99, N100; R95, R99, R100; P95, P99, P100).	47, 50, 58, 129
AR - Respiratory Protection Equipment			
07 Support Equipment			
01AR-07-FTST	Tester, Mask Leak/Fit	A device used for performing fit testing of respirator facepieces to determine quality of face to mask seal.	50, 129
01AR-07-QUAL	System, Compressed Breathing Air Quality Testing	A system for testing the quality of compressed breathing air used to fill cylinders for air-supplying respirators or self-contained underwater breathing apparatus (SCUBA).	50, 73, 129, 144

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
CB - NFPA 1994 CBRN Terrorism Protective Ensembles			
02 NFPA 1994 Class 2 Ensembles			
01CB-02-ENSM	Ensemble, Terrorism Incident Protective, NFPA 1994 Class 2	NFPA 1994 Class 2 CBRN Terrorism Incident Protective Ensemble, including garment, gloves, footwear, and CBRN SCBA (certified as compliant with NFPA 1994). NFPA 1994 Class 2 certifications specify these elements by make/model -- using any element other than those specified invalidates the certification. The elements of this Item should be purchased and used as a complete ensemble.	47, 48, 125, 130, 147, 156
01CB-02-TRST	Suit, Training	Training suit based on similar design, but different materials than Item 01CB-02-ENSM.	47, 48, 125
CB - NFPA 1994 CBRN Terrorism Protective Ensembles			
03 NFPA 1994 Class 3 Ensembles			
01CB-03-ENSM	Ensemble, Terrorism Incident Protective, NFPA 1994 Class 3	NFPA 1994 Class 3 CBRN Terrorism Incident Protective Ensemble, including garment, gloves, footwear, and CBRN APR or P APR (certified as compliant with NFPA 1994). NFPA 1994 Class 3 certifications specify these elements by make/model -- using any element other than those specified invalidates the certification. The elements of this Item should be purchased and used as a complete ensemble.	47, 48, 125, 130, 147, 156
01CB-03-TRST	Suit, Training	Training suit based on similar design, but different materials than Item 01CB-03-ENSM.	47, 48, 125
CB - NFPA 1994 CBRN Terrorism Protective Ensembles			
04 NFPA 1994 Class 4 Ensembles			
01CB-04-ENSM	Ensemble, Terrorism Incident Protective, NFPA 1994 Class 4	NFPA 1994 Class 4 CBRN Terrorism Incident Protective Ensemble, including garment, gloves, footwear, and CBRN APR or P APR (certified as compliant with NFPA 1994). NFPA 1994 Class 4 certifications specify these elements by make/model -- using any element other than those specified invalidates the certification. The elements of this Item should be purchased and used as a complete ensemble.	47, 48, 55, 125, 130, 147, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
EM - NFPA 1999 Protective Clothing (Emergency Medical Services)			
01 Eye/Face Protection			
01EM-01-EFPM	Device, Eye and Face Protection, Emergency Medical, Multiple-Use, NFPA 1999	Multiple-use emergency medical eye and face protection device (certified as compliant with NFPA 1999).	48, 55, 71, 130, 131, 148, 156
01EM-01-EFPS	Device, Eye and Face Protection, Emergency Medical, Single-Use, NFPA 1999	Single-use emergency medical eye and face protection device (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
01EM-01-MASK	Mask, Emergency Medical, Single-Use, NFPA 1999	Single-use emergency medical masks (certified as compliant with NFPA 1999).	48, 55, 91, 130, 131, 148, 156
EM - NFPA 1999 Protective Clothing (Emergency Medical Services)			
02 Garments			
01EM-02-GARM	Garment, Emergency Medical, Multiple-Use, NFPA 1999	Multiple-use emergency medical protective garment (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
01EM-02-GARS	Garment, Emergency Medical, Single-Use, NFPA 1999	Single-use emergency medical protective garment (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
EM - NFPA 1999 Protective Clothing (Emergency Medical Services)			
03 Gloves			
01EM-03-GLCL	Gloves, Emergency Medical, Cleaning, NFPA 1999	Emergency medical cleaning gloves (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
EM - NFPA 1999 Protective Clothing (Emergency Medical Services)			
<i>03 Gloves - Continued</i>			
01EM-03-GLME	Gloves, Emergency Medical, Examination, NFPA 1999	Emergency medical examination gloves (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
01EM-03-GLMW	Gloves, Emergency Medical, Work, NFPA 1999	Emergency medical work gloves (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
EM - NFPA 1999 Protective Clothing (Emergency Medical Services)			
<i>04 Footwear</i>			
01EM-04-FTWC	Covers, Footwear, Emergency Medical, NFPA 1999	Emergency medical protective footwear covers (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
01EM-04-FTWF*	Footwear, Medical Care Facility, NFPA 1999	Medical care facility protective footwear (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
01EM-04-FTWR	Footwear, Emergency Medical, NFPA 1999	Emergency medical protective footwear (certified as compliant with NFPA 1999).	48, 55, 130, 131, 148, 156
LE - Tactical Law Enforcement Protective Equipment			
<i>01 Ballistic Protection</i>			
01LE-01-ARMR	Armor, Body	Personal body armor intended to protect the torso and extremities against small arms fire. This type of personal protective equipment is recommended for personnel involved with tactical operations.	48, 151, 152
01LE-01-HLMT	Helmet, Ballistic	Ballistic helmet intended to protect the wearer against small arms fire and fragmentation threats.	48, 152, 153

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
LE - Tactical Law Enforcement Protective Equipment			
01 Ballistic Protection - Continued			
01LE-01-SHLD	Shield, Ballistic	Ballistic shield intended to protect personnel against small arms fire and fragmentation threats while conducting operations.	48, 154
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 NFPA 1975 or NFPA 2112.	48, 139, 149, 150
01LE-02-BOOT	Boots, Protective, Tactical/Climbing	Boots for tactical operations.	48
01LE-02-PRPD	Padding, Protective, Tactical	General protective pads to provide protection for elbows, knees, neck, and shins while conducting tactical law enforcement operations.	48
PC - NFPA 1971 Ensembles (Proximity Fire Fighting with Optional CBRN Protection)			
01 NFPA 1971 CBRN Ensemble			
01PC-01-ENSM*	Ensemble, Protective, Proximity Fire Fighting with Optional CBRN Protection, NFPA 1971	Proximity fire fighting protective ensemble with optional CBRN protection (certified as compliant with NFPA 1971).	47, 48, 50, 125, 130, 134, 138, 156
PF - NFPA 1971 Ensembles (Proximity Fire Fighting)			
01 Required Elements			
01PF-01-FTWR	Footwear, Protective, Proximity Fire Fighting, NFPA 1971	Proximity fire fighting protective footwear (certified as compliant with NFPA 1971).	48, 125, 130, 134, 138, 156
01PF-01-GARM	Garment, Protective, Proximity Fire Fighting, NFPA 1971	Proximity fire fighting protective garment (certified as compliant with NFPA 1971).	48, 125, 130, 134, 138, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
PF - NFPA 1971 Ensembles (Proximity Fire Fighting)			
01 Required Elements - <i>Continued</i>			
01PF-01-GLOV	Gloves, Protective, Proximity Fire Fighting, NFPA 1971	Proximity fire fighting protective gloves (certified as compliant with NFPA 1971).	48, 125, 130, 134, 138, 156
01PF-01-HLMT	Helmet, Protective, Proximity Fire Fighting, NFPA 1971	Proximity fire fighting protective helmet (certified as compliant with NFPA 1971).	48, 125, 130, 134, 138, 156
01PF-01-SHRD*	Shroud, Protective, Proximity Fire Fighting, NFPA 1971	Proximity fire fighting protective shroud (certified as compliant with NFPA 1971).	48, 125, 130, 134, 138, 156
SC - NFPA 1971 Ensembles (Structural Fire Fighting with Optional CBRN Protection)			
01 NFPA 1971 CBRN Ensemble			
01SC-01-ENSM*	Ensemble, Protective, Structural Fire Fighting with Optional CBRN Protection, NFPA 1971	Structural fire fighting protective ensemble with optional CBRN protection (certified as compliant with NFPA 1971).	47, 48, 50, 55, 125, 130, 134, 138, 156
SF - NFPA 1971 Ensembles (Structural Fire Fighting)			
01 Required Ensemble Elements			
01SF-01-FTWR*	Footwear, Structural Fire Fighting Protective, NFPA 1971	Structural fire fighting protective footwear (certified as compliant with NFPA 1971).	48, 55, 125, 130, 134, 138, 156
01SF-01-GARM*	Garment, Protective, Structural Fire Fighting, NFPA 1971	Structural fire fighting protective garment (certified as compliant with NFPA 1971).	48, 55, 125, 130, 134, 138, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
SF - NFPA 1971 Ensembles (Structural Fire Fighting)			
01 Required Ensemble Elements - Continued			
01SF-01-GLOV*	Gloves, Protective, Structural Fire Fighting, NFPA 1971	Structural fire fighting protective gloves (certified as compliant with NFPA 1971).	48, 55, 125, 130, 134, 138, 156
01SF-01-HLMT*	Helmet, Protective, Structural Fire Fighting, NFPA 1971	Structural fire fighting protective helmet (certified as compliant with NFPA 1971).	48, 55, 125, 130, 134, 138, 156
01SF-01-HOOD*	Hood, Protective, Structural Fire Fighting, NFPA 1971	Structural fire fighting protective hood (certified as compliant with NFPA 1971).	48, 55, 125, 130, 134, 138, 156
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).	47, 48, 125, 130, 146, 156
01SP-01-ENSN	Ensemble, Liquid Splash-Protective, Non-Encapsulating, NFPA 1992	Non-encapsulating liquid splash-protective ensemble (certified as compliant to NFPA 1992).	47, 48, 125, 130, 146, 156
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).	47, 48, 125, 130, 146, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
SP - NFPA 1992 Splash-Protective Ensembles and Items			
02 Liquid Splash-Protective Clothing - Continued			
01SP-02-GLOV	Gloves, Liquid Splash-Protective, NFPA 1992	Liquid splash-protective gloves (certified as compliant to NFPA 1992).	47, 48, 125, 130, 146, 156
01SP-02-GRMT	Garment, Liquid Splash-Protective, NFPA 1992	Liquid splash-protective garment (certified as compliant to NFPA 1992).	47, 48, 125, 130, 146, 156
UC - NFPA 1951 CBRN Technical Rescue Protective Ensemble			
01 Ensemble			
01UC-01-ENSM	Ensemble, CBRN Protective, Technical Rescue Incidents, NFPA 1951	CBRN technical rescue incident protective ensemble (certified as compliant with NFPA 1951).	47, 48, 50, 125, 130, 133, 137, 156
UR - NFPA 1951 Rescue and Recovery Technical Rescue Protective Ensemble			
01 Ensemble Elements			
01UR-01-EYEP*	Goggles, Rescue and Recovery, Technical Rescue Incidents, NFPA 1951	Rescue and recovery protective ensemble goggles (certified as compliant with NFPA 1951).	47, 48, 71, 125, 130, 133, 137, 156
01UR-01-FTWR*	Footwear, Rescue and Recovery, Protective, Technical Rescue Incidents, NFPA 1951	Rescue and recovery protective ensemble footwear (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
UR - NFPA 1951 Rescue and Recovery Technical Rescue Protective Ensemble			
01 Ensemble Elements - Continued			
01UR-01-GARM*	Garment, Rescue and Recovery, Protective, Technical Rescue Incidents, NFPA 1951	Rescue and recovery protective ensemble garment (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
01UR-01-GLOV*	Gloves, Rescue and Recovery, Protective, Technical Rescue Incidents, NFPA 1951	Rescue and recovery protective ensemble gloves (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
01UR-01-HLMT*	Helmet, Rescue and Recovery, Protective, Technical Rescue Incidents, NFPA 1951	Rescue and recovery protective ensemble helmet (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
UT - NFPA 1951 Utility Technical Rescue Protective Ensemble			
01 Ensemble Elements			
01UT-01-EYEP*	Goggles, Utility, Technical Rescue Incidents, NFPA 1951	Utility protective ensemble goggles (certified as compliant with NFPA 1951).	47, 48, 71, 125, 130, 133, 137, 156
01UT-01-FTWR*	Footwear, Utility, Protective, Technical Rescue Incidents, NFPA 1951	Utility protective ensemble footwear (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
01UT-01-GARM*	Garment, Utility, Protective, Technical Rescue Incidents, NFPA 1951	Utility protective ensemble garment (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
UT - NFPA 1951 Utility Technical Rescue Protective Ensemble			
01 Ensemble Elements - Continued			
01UT-01-GLOV*	Gloves, Utility, Protective, Technical Rescue Incidents, NFPA 1951	Utility protective ensemble gloves (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
01UT-01-HLMT*	Helmet, Utility, Protective, Technical Rescue Incidents, NFPA 1951	Utility protective ensemble helmet (certified as compliant with NFPA 1951).	47, 48, 125, 130, 133, 137, 156
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection			
01 Ensemble			
01VF-01-ENSM	Ensemble, Vapor-Protective, with Optional Flash Fire Protection, 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).	47, 48, 125, 130, 145, 156
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	Vapor-protective footwear with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option).	47, 48, 125, 130, 145, 156
01VF-02-GARM	Garment, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	Vapor-protective garment with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option).	47, 48, 125, 130, 145, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection			
02 Required Ensemble Elements - <i>Continued</i>			
01VF-02-GLOV	Gloves, Vapor-Protective, with Optional Flash Fire Protection, NFPA 1991	Vapor-protective gloves with optional flash fire protection (certified as compliant with NFPA 1991 with flash fire protection option).	47, 48, 125, 130, 145, 156
VF - NFPA 1991 Ensembles with Optional Flash Fire Protection			
03 Suggested Support Items			
01VF-03-ITST	Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VF-01-ENSM.	47, 48, 85, 125, 156
01VF-03-TRST	Suit, Training	Training suit based on similar design, but different materials than Item 01VF-01-ENSM.	47, 48, 125, 156
VT - NFPA 1991 Ensembles			
01 Ensemble			
01VT-01-ENSM	Ensemble, Vapor-Protective, 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).	47, 48, 125, 130, 145, 156
VT - NFPA 1991 Ensembles			
02 Required Ensemble Elements			
01VT-02-FTWR	Footwear, Vapor-Protective, NFPA 1991	Vapor-protective footwear (certified as compliant with NFPA 1991).	47, 48, 125, 130, 145, 156
01VT-02-GARM	Garment, Vapor-Protective, NFPA 1991	Vapor-protective garment (certified as compliant with NFPA 1991).	47, 48, 125, 130, 145, 156
01VT-02-GLOV	Gloves, Vapor-Protective, NFPA 1991	Vapor-protective gloves (certified as compliant with NFPA 1991).	47, 48, 125, 130, 145, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
VT - NFPA 1991 Ensembles			
03 Suggested Support Items			
01VT-03-ITST	Equipment, Inflation Testing	Inflation testing equipment specific to Item 01VT-01-ENSM.	47, 48, 85, 125, 156
01VT-03-TRST	Suit, Training	Training suit based on similar design, but different materials than Item 01VT-01-ENSM.	47, 48, 125, 156
WA - Water Operations PPE			
01 Equipment, Breathing - SCUBA			
01WA-01-BKUP	System, Water Operations, Emergency Backup Air Supply	Self-contained regulator and small cylinder to provide redundant emergency breathing air supply, containing 30-56 breaths for dive and swiftwater operations.	127
01WA-01-SCBA	Apparatus, Self-Contained Underwater Breathing (SCUBA)	SCUBA, including tanks and primary/secondary regulator.	127
01WA-01-SCBC	Apparatus, Self-Contained Underwater Breathing (SCUBA), Contaminated Water Diving	SCUBA for use in contaminated water diving, including tanks and integrated facepiece/regulator.	47, 55, 127
WA - Water Operations PPE			
02 Equipment, Breathing - Surface Supplied			
01WA-02-HLMT	Helmet, Surface Supplied Air, Diving	Diving helmet used with surface supplied air systems.	127
01WA-02-SAIR	System, Surface Supplied Air, Diving	Diving system which utilizes supplied air from the surface via an umbilical hose.	127

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
WA - Water Operations PPE			
03 Garments and Ensembles, Diving			
01WA-03-BOOT	Boots, Diving	Boots for use as part of diving ensemble, usually in surface supplied air operation.	127
01WA-03-GLOV	Gloves, Diving	Gloves for use in diving operations.	127
01WA-03-HOOD	Hood, Diving	Diving hood for wetsuit/dry suit operations.	127
01WA-03-NDAM	Dam, Neck, Diving	Neck dam for use with diving ensemble.	127
01WA-03-SUTD	Suit, Dry, Diving	Dry suit for diving operations.	127
01WA-03-SUTW	Suit, Wet, Diving	Wet suit for diving operations.	127
01WA-03-UNDR	Undergarment, Dry Suit, Diving	Undergarment for use with dry suit in diving operations, including contaminated water diving.	127
WA - Water Operations PPE			
04 Garments and Ensembles, Surface/Swift Water Operations			
01WA-04-BTES*	Booties, Protective, Swift Water Rescue	Protective booties worn with swift water rescue ensemble, designed to be worn under swim fins.	127, 133
01WA-04-FINR	Fins, Swift Water Rescue	Fins worn with swift water rescue ensemble.	127, 133
01WA-04-GARM*	Suit, Dry, Surface/Swift Water	Protective garment worn with surface/swift water rescue ensemble. Designed to limit contact of the user's skin with water/contaminants.	127, 133
01WA-04-GLOV*	Gloves, Protective, Swift Water Rescue	Protective gloves worn with swift water rescue ensemble.	127, 133
01WA-04-HLMT*	Helmet, Protective, Swift Water Rescue	Protective helmet worn with swift water rescue ensemble.	127, 133
01WA-04-SPFD*	Device, Personal Flotation, Swift Water Rescue	Personal flotation device (PFD) for swift water rescue operations. PFDs must be approved by the U.S. Coast Guard, Type III or Type V. Includes common accessories such as attached pealless whistle and signaling devices/lights.	48, 127, 133

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
WA - Water Operations PPE			
04 Garments and Ensembles, Surface/Swift Water Operations - <i>Continued</i>			
01WA-04-SUTI	Suit, Surface Ice Rescue	Completely waterproof ensemble with attached or attachable gloves, boots, and watertight hood.	127, 133
01WA-04-SUTW*	Suit, Wet, Surface/Swift Water	Protective garment worn with surface/swift water rescue ensemble. Designed to hold water against the skin.	127, 133
01WA-04-UNDR*	Undergarment, Surface/Swift Water	Insulation garment worn under dry suit portion of swift water rescue ensemble.	127, 133
WA - Water Operations PPE			
05 Garments and Ensembles, Contaminated Water Operations			
01WA-05-BTES	Boots or Booties, Diving, Contaminated Water	Protective boots or booties worn with ensemble for use in contaminated water diving operations. Designed to be worn with swim fins.	47, 55, 127
01WA-05-FINS	Fins, Diving, Contaminated Water	Diving fins worn with ensemble for use in contaminated water diving operations.	47, 55, 127
01WA-05-GLOV	Gloves or Mittens, Dry Suit, Diving, Contaminated Water	Gloves or mittens worn with ensemble for use in contaminated water diving operations.	47, 55, 127
01WA-05-SUTD	Suit, Diving, Dry, Protective, Contaminated Water	Protective dry suit for use in contaminated water diving operations.	47, 55, 127
01WA-05-TTHR	Tether, Diving, Contaminated Water Operations	Tether for use in contaminated water diving operations.	47, 55, 127

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
WA - Water Operations PPE			
06 Ancillary Equipment			
01WA-06-BAGG	Bag, Gear, Water Operations	Water operations gear bag constructed with mesh or solid materials to transport and store water operations equipment, both wet and dry.	
01WA-06-BCMP	Compensators, Buoyancy, Diving	Buoyancy compensators for diving operations.	127
01WA-06-CLIM	System, Diving, Climate Control	System for providing heat to divers in cold/deep water diving operations.	127
01WA-06-FINS	Fins, Swimming/Diving	Footwear that increases agility and speed during water operations by increasing mechanical advantages.	127
01WA-06-HRNS	Harness, Diving	Harness for diving operations.	
01WA-06-MAIN	Kits, Maintenance/Field Repair, Underwater Equipment	Kits for field maintenance of water operations equipment.	
01WA-06-MASK	Mask, Diving	Mask for use with diving ensemble.	
01WA-06-PFDS	Device, Personal Flotation	Wearable personal flotation device (PFD) to be utilized by shore or vessel-based operational personnel or personnel operating in non-moving water. PFDs must be approved by the U.S. Coast Guard. Includes common accessories such as attached peapless whistle and signaling devices/lights.	127
01WA-06-SNRK	Snorkel, Diving	A breathing device used by divers and swimmers consisting of a long tube held in the mouth through which the user breathes surface air.	
01WA-06-WGHT	Weights, Diving	Weights for creating negative to neutral buoyancy to allow for work in a water environment. Includes weight belts and ankle weights.	

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
WF - NFPA 1977 - Wildland Fire Fighting Clothing and Equipment			
01 Clothing Items			
01WF-01-BOOT*	Footwear, Wildland Fire Fighting Protective	Items of protective clothing that provide protection to the foot, ankle, and lower leg (certified as compliant with NFPA 1977).	48, 130, 140, 156
01WF-01-COLD*	Outerwear, Cold Weather, Wildland Fire Fighting Protective	Items of protective clothing that provides protection to the upper or lower torso, arms, and legs to provide insulation for warmth of the wearer during cold weather (certified as compliant with NFPA 1977).	48, 130, 140, 156
01WF-01-GARM*	Garment, Wildland Fire Fighting Protective	Items of protective clothing that provide protection to the wearer's upper or lower torso, excluding the hands, face, and feet. Includes one-piece and multi-piece garments, as well as shirts, trousers, and jackets as defined in NFPA 1977 (certified as compliant with NFPA 1977).	48, 130, 140, 156
01WF-01-GLOV*	Gloves, Wildland Fire Fighting Protective	Items of protective clothing that provide protection to the hands and wrists (certified as compliant with NFPA 1977).	48, 130, 140, 156
01WF-01-GOGL*	Goggles, Wildland Fire Fighting Protective	Items of protective equipment that provide protection to the eyes and a portion of the face (certified as compliant with NFPA 1977).	48, 71, 130, 140, 156
01WF-01-HLMT*	Helmet, Wildland Fire Fighting Protective	Items of protective equipment that provide protection to the head (certified as compliant with NFPA 1977).	48, 72, 130, 140, 156
01WF-01-SHRD*	Shroud, Face/Neck, Wildland Fire Fighting Protective	Items of protective clothing that provide protection to the face and neck area (certified as compliant with NFPA 1977).	48, 130, 140, 156
WF - NFPA 1977 - Wildland Fire Fighting Clothing and Equipment			
02 Other Items			
01WF-02-CSAW*	Protector, Chain Saw, Wildland Fire Fighting	Items of protective equipment worn while operating chain saws, that provide protection to the legs, or to the lower torso and legs, excluding the ankles and feet (certified as compliant with NFPA 1977).	48, 89, 140, 156

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
WF - NFPA 1977 - Wildland Fire Fighting Clothing and Equipment			
02 Other Items - Continued			
01WF-02-LOAD*	Equipment, Load Carrying, Wildland Fire Fighting	Items of protective equipment that are worn by the wildland fire fighter to facilitate the carrying of gear (certified as compliant with NFPA 1977).	48, 140, 156
ZA - PPE Accessories			
01 Personal Alert Safety Systems			
01ZA-01-PASS	System, Personal Alert Safety (PASS)	PASS Device - personal alert safety system (certified as compliant with NFPA 1982).	47, 50, 125, 130, 135, 142
ZA - PPE Accessories			
02 Gloves & Footwear			
01ZA-02-FTWC	Covers, Outer Footwear, Non-CBRNE	Disposable outer footwear covers for contamination hazard protection (no standard currently applies for this item - for certified medical footwear covers, see Item 01EM-04-FTWC).	48
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 (certified as compliant with ANSI/ISEA 105).	48, 52, 75
01ZA-02-GLVD	Gloves, Outer, Disposable	Outer disposable gloves for contamination protection (certified as compliant with ANSI/ISEA 105).	48, 52, 75
01ZA-02-GLVF	Gloves, Protective, Flame-resistant	Flame-resistant gloves that 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 (certified as compliant with ANSI/ISEA 105).	48, 52, 75
01ZA-02-GLVI	Gloves, Inner, Cotton	Inner cotton gloves (no standard currently applies for this item).	48, 52
01ZA-02-GLVW	Gloves, Outer, Work	Outer work gloves for physical hazard protection (certified as compliant with ANSI/ISEA 105).	48, 52, 75

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
ZA - PPE Accessories			
03 Eye Protection			
01ZA-03-EYEP	Protection, Eye	Eye protection for field operations, including polarized sun protection for water operations.	49, 71
ZA - PPE Accessories			
04 Hearing Protection			
01ZA-04-HEAR	Protection, Hearing	Hearing protection for operations in potentially high noise environments.	46
ZA - PPE Accessories			
05 Undergarments			
01ZA-05-UNDR	Undergarment, Non-Flame-Resistant	Non-flame-resistant undergarment for comfort and for contamination control during doffing (no standard currently applies for this item).	48
01ZA-05-UNFR	Undergarment, Flame-Resistant	Flame-resistant undergarment (certified as compliant with NFPA 2112 or the flame-resistant option of NFPA 1975).	48, 130, 139, 149
ZA - PPE Accessories			
06 Other Accessories			
01ZA-06-HHAT	Hardhat	Hardhat (certified as compliant to ANSI Z89.1).	48, 51, 72
01ZA-06-HYDR	Hydration System, Personal	Personal hydration system.	
01ZA-06-PRPD	Padding, Protective	General protective pads to provide protection for elbows, knees, neck, and shins while conducting operations, including rescue operations.	
01ZA-06-VEST	Vest or Outer Garment, High-visibility	High-visibility vest or outer garment (certified as compliant with either ANSI/ISEA 107 or ANSI/ISEA 207).	76, 77

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Section 1 | Personal Protective Equipment

Item Number	Title	Description	Standards ¹
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).	
01ZP-00-STOL	Stool/Table, Portable or Foldable	Backless stool or table for use in donning/doffing protective equipment/garments.	

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Section 2 – Explosive Device Mitigation and Remediation Equipment

Overview

This section was originally created in the Fall 2004 version of the SEL. 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 its close collaboration 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.

Section Changes for 2009

Many of the items in this section previously carried 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 National Guidelines for Bomb Technicians”* in the Operating Considerations. The original inclusion of this notation was an important milestone in setting guidelines for the purchase of specific bomb squad equipment.

This year, that notation has been replaced by the following: *“May only be purchased by an FBI-Accredited Bomb Squad. For information on establishing new bomb squad programs, agencies should contact the Special Agent Bomb Technician in the nearest FBI Office or call directly to the FBI Program Manager at the Hazardous Devices School, (256) 313-1910.”* This stronger restriction reflects the concern of both NBSCAB and the IAB that procurement and use of certain items should be restricted to accredited bomb squads.

Item 01ZA-06-COOL, Garment/Vest/Device, Cooling, has been moved from Section 1 to Section 2, and is now item 02PE-02-COOL. The PP&OE SubGroup is carefully examining the efficacy of these devices, and they are not recommended for routine responder use. However, due to the weight and bulk of EOD ensembles, the item is being carried in Section 2 as a current recommended item.

This section contains enhancements to features and operating considerations throughout.

Selection Factors

Like many sections in the 2009 SEL, the Explosive Device Mitigation and Remediation Equipment Section 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. Thus users of the online version¹ 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

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

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 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

Section 2 | Explosive Device Mitigation and Remediation Equipment

Item Number	Title	Description	Standards ¹
EX - Equipment			
00 General			
02EX-00-EXEN*	Equipment, Explosive Entry	Explosive entry equipment, upgrades. Used for explosive tactical entries (breaching).	
02EX-00-EXMP*	Magazines, Portable or Transportable, Explosive	Portable or transportable magazines for short- or long-term storage and transport of explosive materials, possible IEDs, or other suspected CBRNE devices to and from incident scene. Includes any movable magazines, including those requiring crane lift/placement.	
02EX-00-KTFO	Kit, Fiber Optic	Fiber optic kit (inspection or viewing).	133
02EX-00-MITA*	Mitigation Area, Explosive	Explosive/bomb mitigation areas, explosive training, upgrades, including portable explosive/burn containment vessels or shielding.	
02EX-00-PBIE*	Equipment, Post Blast Investigation	Equipment for post-blast investigation, explosives/Improvised Explosive Device (IED) investigation tools, portable and hand held metal detectors (HHMD), evidence processing equipment, upgrades.	
02EX-00-TCVV*	Vessel, Containment	Containment vessels (including vented, total containment (TCV), and transport), for containment, transportation, temporary storage, or destruction of any explosive material, ammunition, or CBRNE device. Also includes trailer for transporting vessel.	
02EX-00-TCVW*	Upgrades, Containment Vessel	Upgrades for containment vessels.	
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.	155
EX - Equipment			
02 Tools			
02EX-02-RBTL*	Attachments/Tools, Robot	Attachments and tools for use in the explosive mitigation and remediation mission.	

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Section 2 | Explosive Device Mitigation and Remediation Equipment

Item Number	Title	Description	Standards ¹
EX - Equipment			
<i>02 Tools - Continued</i>			
02EX-02-TLEX*	Tools, Explosive Mitigation, Suppression, Deflection	Tools for Improvised Explosive Device (IED) remediation, such as boot bangers, shape charges, mineral water bottles (MWBs), explosive/CBRN mitigation tents, bomb blankets, blast suppression shields. (Note that actual explosives such as shape charges and the explosives used to activate boot bangers/MWBs will not be allowable under DHS grant programs).	
02EX-02-TLPB*	Tools, Bomb Disabling	Disabling tools, disrupters, disrunder operational attachments, and upgrades for disabling Improvised Explosive Devices (IED), including Vehicle-Borne and Radio-Controlled Improvised Devices.	
02EX-02-TLRO*	Tools, Remote Opening, Examination, Handling	Remote opening tools such as rigging kits, pulleys, clamps, poles, probes, mirrors, hand, electric, pneumatic, remote opening, stethoscope, IED handling tools, non-sparking tools, etc.	
PE - Protective Ensembles			
<i>01 Ensembles</i>			
02PE-01-BSUT*	Suit, 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 Improvised Explosive Device (IED), explosives, or Unexploded Ordnance (UXO).	50, 171
02PE-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. Includes ballistic helmet, ballistic face shield, and ballistic vest.	151, 153, 154

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Section 2 | Explosive Device Mitigation and Remediation Equipment

Item Number	Title	Description	Standards ¹
PE - Protective Ensembles			
<i>01 Ensembles - Continued</i>			
02PE-01-SRCH*	Suit, "Search", Improved 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.	151, 153, 154
PE - Protective Ensembles			
<i>02 Elements</i>			
02PE-02-BOOT*	Boot, IED/EOD	Heavy-duty, non static-producing footwear for use with IED/EOD ensembles.	
02PE-02-CLTH*	Clothing, Operational, and Specialized/ Protective Gear IED/EOD	IED/EOD protective outer clothing used in conjunction with recon ensemble (02PE-01-RCON) or in lieu of full protective ensemble for known minimum threat situation.	171
02PE-02-COOL*	Garment/Vest/Device, Cooling	Cooling garment, vest, or device (no performance standard currently applies for this item).	48, 92
02PE-02-HAND*	Equipment, Hand Protection, IED/EOD	Hand protection component to IED/EOD protective ensemble system; protective gloves and ballistic hand covers.	
02PE-02-HEAR*	Protection, Ear, Blast and Overpressure Threat	Molded ear plugs or other device to be worn under the ballistic protective helmet.	
02PE-02-HLMT*	Equipment, Head and Face Protection, IED/EOD	Helmet Protective System Component of IED/EOD Protective Ensembles. Includes ballistic helmet and face shield compatible with bomb suit or search suit. Includes face shields with vision correction capability (using either a prescription shield or overlay).	171

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Section 3 - CBRNE Operational and Search and Rescue Equipment

Overview

This section contains equipment needed to initiate and sustain operations during operational and search and rescue response incidents.

Section Changes for 2009

This edition includes minor enhancements to 19 items, including some references to new standards. One new item was added: 03OE-01-CTAC includes tactical communications items such as throw phones and cameras. One item, 03OE-01-BGEV (Bags/Canisters, Evidence) was moved to a new category in Section 20 established for crime scene processing equipment and is now part of a new item 20CS-02-EVID.

Selection Factors

Many sections of the SEL include selection factors for use in the online, interactive version. For this section, the SubGroup chose to use Proficiency Level and Hazard Environment (described below) as the two factors. Thus users of the online version¹ 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.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

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

Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
OE - Operational Equipment			
01 Law Enforcement			
03OE-01-CTAC*	Device, Tactical Communications	Specialized communications devices for point to point communications in tactical situations where improvised individual communication is required. Includes audio and/or video devices such as wired, wireless, and sound-powered throw phones and throw cameras.	
03OE-01-LINE	Line, Linen, Fast Rope	Linen line used for vertical personnel insertion (fast rope) in tactical environments.	
03OE-01-LLMN	Equipment, Less Than Lethal Mitigation	Less than lethal mitigation equipment for use in tactical law enforcement operations conducted in critical locations.	
03OE-01-SPRS	Suppressors, Flash/Noise, Tactical	Suppression devices that, when attached to a delivery system, reduce or eliminate flash or noise during discharge.	
03OE-01-SSYS	System, Sighting Enhancement, CBRNE PPE Compatible	Includes systems such as laser "red dot" sights, infrared, holographic and flat screen displays, and other systems designed to allow sighting/aiming of weapons or less than lethal delivery systems in a CBRNE environment requiring PPE. Also includes mounting hardware and accessories such as rails, risers, etc.	
03OE-01-VSTO*	Vests, Operational	Operational vests; duty gear and modular load bearing systems.	
OE - Operational Equipment			
02 Optics			
03OE-02-BNOC	Binoculars/Scopes	Optical systems that permit remote observation during field operations.	
03OE-02-FIBR	Systems, Fiber Optic	Fiber optic systems that permit remote observation during field operations.	133
03OE-02-LASR	Range Finder, Laser	A distance-measuring device capable of instantaneously measuring distance to target with accuracy of +/- one yard/meter.	
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.	133
03OE-02-TILA	Optics, Thermal Imaging and/or Light Amplification	Thermal imaging and/or light amplification optics, including night vision equipment and Forward Looking Infrared (FLIR) for search operations involving trapped or lost victims or tactical operations.	123

Note: Features, Operating Considerations, and Training Considerations can be found on the enclosed CD-ROM, or online at www.iab.gov.

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

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
OE - Operational Equipment			
03 Scene Control			
03OE-03-CACS	System, Capture and Containment	Capture and containment system for hazardous material spills.	125
03OE-03-GLRL	System, Marking, Green Line/Red Line	Marking system, Green Line/Red Line, battery activated or appropriate substitute.	
03OE-03-KTCL	Kit, Chemical Leak Control	Chemical leak control kit.	125
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.	86
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.	54
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.	123
03OE-03-MEGA	System, Public Address, Handheld or Mobile	Systems for mass audio notification, including vehicle-mounted high powered speaker systems, or battery powered megaphone/public address systems with corded microphone.	
03OE-03-SIGN	Signs	Restricted access and caution warning signs, preprinted or field printable, various colors, sizes, and shapes. Includes traffic cones and other free-standing signage, as well as mountable items.	
03OE-03-TIMR	Timer	Timer or stopwatch used for monitoring rescuer time on cylinder, entry time/duration, or any other operation requiring accurate time documentation.	
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.	48, 138, 149

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
OE - Operational Equipment			
04 Safety Equipment - Continued			
03OE-04-CRNT	Detectors, Current	Equipment for detecting and/or measuring AC or DC current. Includes non-contact detectors for use in finding "live wiring" in walls or collapsed structures.	
03OE-04-EXAC	Extinguisher, Fire, Class ABC	Class ABC fire extinguisher, multi-purpose, handheld, 20 lb capacity.	121
03OE-04-EXDD	Extinguisher, Fire, Class D	Portable Class D Fire extinguisher.	121
03OE-04-GRCA	Cables, Grounding	Grounding cables, point-type clamps on both ends; 1/8" stainless steel (uninsulated) 50' minimum.	122, 123, 125
03OE-04-GRRD	Rod, Copper Grounding	Copper grounding rod, 3/4" x 6' (minimum length) with slide hammer or driver for demolition hammer.	122, 123, 125
03OE-04-GRRT	Tester, Ground Resistance	Ground resistance tester.	123, 125
03OE-04-HSMN	Monitor, Heat Stress	Heat stress monitor (ambient and personal).	130
03OE-04-KTTL	Kit, Tool, Miscellaneous, Non-sparking	Non-sparking tool kit, to include bung and spanner wrenches and tool box.	125
03OE-04-LTHE	Light, Personal, Intrinsically Safe	Compact, hand-held lights or lights mounted on helmets or equipment, or otherwise worn by the user for use in tactical operations and in potentially flammable atmospheres. Includes high-intensity lights as well as light sticks.	123
03OE-04-LTHH	Light, Hand-Held or Helmet-Mounted Illumination	Hand-held lights or lights mounted on helmets or otherwise worn by the user for use in non-flammable or non-explosive atmospheres.	
03OE-04-MMTR	Multi-Meter, Electrical	Intrinsically safe electrical multi-meter, or VOM (Volt Ohm Meter).	123

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
OE - Operational Equipment			
05 Rope Safety			
03OE-05-HARN	Harnesses, Life Safety/ Rappelling	Body harnesses used to support a person during rappelling or rope rescue operations (certified as compliant with NFPA 1983).	133, 143
03OE-05-ROPE	Rope, Life Safety	Rope of various diameters, lengths, and ratings used specifically for human rescue, egress, hoist, or transport (certified as compliant with NFPA 1983).	133, 143
03OE-05-ROPH	Hardware, Rappelling or Rescue Operations, Life Safety	Rappelling/rescue hardware, including ascenders, descenders, friction devices, hand rope grabs, carabiners, plates, racks, etc. (if covered, certified as compliant with NFPA 1983).	133, 143
03OE-05-ROPS	Software, Rope, Life Safety	Includes items such as: Prusik cords, softrope grabs, bags, webbing, rope protection (certified as compliant with NFPA 1983).	133, 143
OE - Operational Equipment			
07 Robots and Remotely Operated Vehicles			
03OE-07-ROBT*	Robots	Robotic platforms to support various mission areas such as explosive device remediation, hazardous materials operations, tactical law enforcement operations, search & rescue, and surveillance/detection.	82, 83
03OE-07-RPVS*	Vehicles, Remotely Piloted	Remotely piloted vehicles to support various mission areas such as explosive device remediation, hazardous materials operations, tactical law enforcement operations, search & rescue, and surveillance/detection. Examples include unmanned aerial vehicles (fixed or rotary-wing), submersible vehicles, and remotely-controlled ground vehicles.	
03OE-07-UPGD*	Upgrades, Robots or Remotely Piloted Vehicles	Upgrades or accessories to basic robot or RPV platforms, including software upgrades, battery/engine upgrades, arms, drive systems, range extenders, trailers, etc. Mission specific upgrades such as detectors and disrupters are detailed in other sections such as Explosive Tools, Search & Rescue, and Detection.	82, 83

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
SR - Search & Rescue Equipment			
01 Pneumatic 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 to extricate trapped victims.	125, 133
03SR-01-COMP	Compressor, Industrial Air	Working air compressor, storage systems, accessories and attachments for powering pneumatic tools, systems and equipment. NOT to be utilized for compression of breathing air or supplying breathing air systems.	123, 133
03SR-01-SHOR*	Equipment/System, Shoring	Expandable shoring and raker systems, regulators, controllers, hoses, accessories and attachments for stabilization of unstable loads or structures.	53, 56, 133
03SR-01-TLPN*	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.	53, 56, 133
SR - Search & Rescue Equipment			
02 Tools			
03SR-02-MARK*	Tools, Structural Assessment, Marking and Monitoring	Tools, equipment, accessories and attachments for assessing, marking and monitoring damaged structures and their stability.	53, 133
03SR-02-SPRY	Sprayers, Handheld and Backpack	Handheld and backpack spray tanks/bladders and attachments, air pressure or manual pump operated.	
03SR-02-TLHN*	Tools, Hand	Manually operated hand tools, cutting torches, exothermic torches, accessories and attachments for cutting, prying, breaking, shoring, stabilizing, moving, applying or removing fasteners where powered tools are not appropriate or safe to use.	133
03SR-02-TPEL*	Tools, Power, Electric	Electrically-powered portable saws, cutters, breakers, drills, pumps, accessories and attachments. (Certified as compliant with NFPA 1936).	133, 136
03SR-02-TPGS*	Tools, Gasoline-Powered	Internal combustion engine, gasoline-powered portable cutting saws, drills, breakers, coring tools, accessories and attachments for rescue operations. (Certified as compliant with NFPA 1936).	133, 136

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
SR - Search & Rescue Equipment			
02 Tools - Continued			
03SR-02-TPHY*	Tools, Power, Hydraulic	Portable hydraulically-operated tools and power units, hoses, accessories and attachments for rescue operations. Internal combustion, electric power unit, or manual power unit. (Certified as compliant with NFPA 1936).	133, 136
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.	133
SR - Search & Rescue Equipment			
03 Search Equipment			
03SR-03-KMON*	Kits, Confined Space Air Monitoring	Kits (including monitor, sampling hose, filters, pumps, and accessories) that monitor the atmosphere in confined spaces to detect hazardous environments.	53, 123, 125, 133, 174
03SR-03-LSTN*	System, Listening	Seismic and acoustic listening devices and accessories for locating trapped and entombed victims not detectable by other means.	53, 133
03SR-03-SCAM*	Camera, Search	Void area video search camera and accessories for inspecting voids and confined spaces with limited physical access.	53, 133
03SR-03-TPBM	Tape, Boundary Marking	Boundary marking tape: YELLOW Caution/RED Danger/Incident specific (i.e., radiological, biological, chemical).	
SR - Search & Rescue Equipment			
04 Canines			
03SR-04-DOGS*	Canines, Search & Rescue	Search & rescue canines, related CBRNE training, protective equipment/garments, and handling accessories.	133

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
SR - Search & Rescue Equipment			
05 Robotic Equipment			
03SR-05-RBTL*	Attachments/Tools, Search & Rescue Robot or Remotely Piloted Vehicle	Attachments/tools for specialized search & rescue capability such as mountable cameras (including infrared), remote manipulators, listening devices, etc. Includes repeater devices for extended remote operations.	133
WA - Water Operational & Search/Rescue Equipment			
01 Water Operational Equipment			
03WA-01-ALRT	Device, Alerting, Water Operations	Plastic, non-corrosive, pealless whistles.	
03WA-01-BAGB	Bag, Body, Underwater	Body bags for recovery operations of bodies and body parts underwater; these bags require holes for drainage as the bag is removed from the water/liquid.	133
03WA-01-BAGL	Bag, Lift	Bag capable of holding equipment/items for taking to the surface. Must be durable and capable of being hooked to a lifting device.	133
03WA-01-DCMP	Computer/Gauge, Dive	Dive computers should have at a minimum the following functions: air pressure, depth gauge, time remaining, ascent rate, decompression stops. The computer should be constructed to be durable and easy to read and understand.	133
03WA-01-DNIF*	Knives, Punches, and Cutting Shears, Diving	Knives and other cutting and punching tools for underwater use.	133
03WA-01-KFAD	Kit, Medical First Aid, Dive Specific	First aid kit for dive operations.	86, 133
03WA-01-LADD	Ladder, Diving	Method of ingress and egress from water onto vessel. Should be durable construction of non-corrosive materials.	133
03WA-01-LINE	Line, Work, Water Operations	Line for use in all water operations.	133
03WA-01-LOGD	Log, Dive	Book for logging dives, dive times and locations.	133

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
WA - Water Operational & Search/Rescue Equipment			
01 Water Operational Equipment - Continued			
03WA-01-MARK	Device, Marking, Marine	Location marking devices for marine use, including diver-down flags and Alpha flags. Includes anchoring mechanism such as magnetic attachment device or grappling hook.	133
03WA-01-PROP	System, Personal Propulsion	Device to assist diver mobility in the water and conserve diver energy.	133
03WA-01-UCUT	Cutting/Welding Equipment, Underwater	Torches and other equipment used for cutting or welding underwater. Includes both mechanical cutting tools and thermal cutting/welding tools.	133
03WA-01-ULHH	Lights, Underwater, Personal	Waterproof, handheld or attached lights designed for individual underwater use.	133
03WA-01-ULIT	Lights, Underwater, not Handheld	Waterproof lights designed for underwater use to provide fixed-site illumination.	133
03WA-01-UNAV	Equipment, Navigation, Underwater	Navigation board for use by divers.	133
03WA-01-USLD	Sled, Towing, Underwater	Sled or other device capable of carrying a body, equipment, or evidence underwater. Can be towed by a diver or moved via an attached underwater conveyance line.	133
03WA-01-UWMD	Detector, Metal, Underwater	Metal detector adapted for or designed for use underwater.	133
03WA-01-UWVRT	Slates/Writing Materials, Underwater	A plastic slate with an attached marker capable of being used while completely submerged.	133
03WA-01-WACC	Housings and Accessories, Underwater/Waterproof	Materials designed to protect equipment such as cameras, sensors, etc. from water penetration during water operations.	133

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Section 3 | CBRNE Operational and Search and Rescue Equipment

Item Number	Title	Description	Standards ¹
WA - Water Operational & Search/Rescue Equipment			
02 Water Search & Rescue Equipment			
03WA-02-BAGT	Bag, Throw	Rescue device consisting of line in a lightweight bag which can be deployed by securing one end of the line and throwing the entire bag at the target.	133
03WA-02-BORD	Boards/Sleds, Search and Rescue	Specialized, rapidly deployable craft for water/ice rescue operations, such as river rescue boards, ice rescue sleds, etc. Does not include boats, which are covered separately in Section 17.	133
03WA-02-SONR	Sonar, Imaging	Underwater imaging device utilizing sound waves to assist in search and rescue operations.	133

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Section 4 - Information Technology

Overview

This section lists equipment, software, and systems that provide information functionality and interoperability between local responders and other agencies working in cooperation to resolve or manage incidents. The items mentioned serve to develop situational awareness and better coordinate response operations for CBRNE terrorism and other 'all-hazard' homeland security operations.

Like previous editions, the 2009 SEL has divided information technology, cyber security and communications into three distinct sections (Sections 4, 5, and 6 respectively). 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. We have continued our efforts to provide information on desirable features, operating limitations, and standards (where applicable). The information provided is by no means exclusive. These fields are designed to enhance the reader's understanding of the defined items and their practical use.

Section Changes for 2009

There are no major changes in this edition. However, multiple changes have been made to descriptions, features, and operating considerations throughout the section to keep pace with technical advancements.

Selection Factors

Like many sections in the 2008 SEL, the Information Technology Section 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. Thus users of the online version¹ 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. Example: 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. Example: users who have attended classroom training for a Geographic Information System (GIS), or who have received training in hardware installation and setup.
IT Advanced Technician	Users who possess extensive training or career-level qualifications with respect to the equipment being utilized. Example: trained professional network administrators who possess professional qualifications such as MCSE, or computer repair professionals.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

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 factors described above 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 Zone. 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.

Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
AP - Application Systems and Software			
01 Computer Aided Dispatch			
04AP-01-CADS*	System, Dispatch, Computer Aided	Computer software system(s) used to track and manage public safety incidents and resources.	128
AP - Application Systems and Software			
02 Position Locating Systems			
04AP-02-AVLS	Systems, Automatic Vehicle Locating (AVL)	Automatic Vehicle Locating (AVL) Systems	
04AP-02-DGPS	Device, Global Positioning System (GPS)	Global Positioning System (GPS) receiving device, including self-contained handhelds, mobile mounted systems, and accessory devices to enable computers and communications devices.	
04AP-02-OAPT*	System, Operations Area Personnel Tracking and Accountability	Personnel tracking and accountability systems for use in an operations area, including both administrative tracking systems and precision locating and tracking systems.	
AP - Application Systems and Software			
03 Geographical Information Systems (GIS)			
04AP-03-GISD	Data, Geospatial	Data related to positions on the Earth's surface in the form of databases, maps, satellite and other remote-sensing imagery. For use with Geospatial Information Systems (Item 04AP-04-GISS).	
04AP-03-GISS*	System, Geospatial Information (GIS)	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. GIS systems provide or support multiple CBRNE terrorism prevention and response functions, including (but not limited to): - Geospatial Analysis - allows for association of intelligence and location-based information to perform complex analysis and visualization →	

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
AP - Application Systems and Software 03 Geographical Information Systems (GIS) - <i>Continued</i>			
		<ul style="list-style-type: none"> - Decision Support - provides a mechanism to deliver actionable intelligence, supporting strategic and tactical operations - Situational Awareness - supports a common operational picture with near real-time intelligence fused with geospatial information fully describing the area of operations in a spatial context - Navigation - Monitoring (tracking, weather, traffic, assets, environment, damage assessments, disease surveillance) - Modeling - combines complex spatial information and applies modeling tools to predict consequences of events in support of planning, mitigation, response and recovery - Mapping - presents fused information in a standard, distributable and easily recognizable format - Reporting (activity, after-action, alert-warning, location, situation, coverage portrayal) 	
AP - Application Systems and Software 04 Risk Management Software			
04AP-04-RISK	Software, Risk Management	Software or systems that facilitate capture, quantification, and management of risk factors involved in specific tasks, environments, or programs.	
AP - Application Systems and Software 05 Incident Management			
04AP-05-CDSS	Software, ICS	Incident Command System (ICS) software including command/plans and decision-support tools.	
04AP-05-CRED*	System, Credentialing	Software application and associated hardware and material for creating site/event credential badges and controlling scene access.	106, 166
04AP-05-SVIS	Software, Operational Space Visualization	Operational space visualization tools.	

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
AP - Application Systems and Software			
06 Analytical Tools			
04AP-06-CBRN	Software, CBRNE/Commercial Chemical/Hazard	CBRNE/commercial chemical/hazard software and response system that enables the tracking, identification, and/or querying of information relating to CBRNE sources.	
04AP-06-PMOD	Software, Plume Modeling	Plume modeling fate and transport software and/or databases capable of real-time linkage to sensors and meteorological monitoring and detection.	
04AP-06-TRAF	Software, Traffic Modeling	Software designed to depict traffic flow, identify congestion points, and predict impact of accidents or deliberate alterations of traffic patterns such as alterations of signal times, detours, closures, etc. Traffic flow may be for vehicular, maritime, aviation, pedestrian, or other flows.	
AP - Application Systems and Software			
07 Inventory			
04AP-07-INVN*	Software, Equipment Tracking and Inventory	Application software for tracking of tangible equipment, including location and person(s)/organization(s) responsible.	
AP - Application Systems and Software			
08 Simulation			
04AP-08-SIMS	Simulators	Systems that provide interactive audio-visual simulation of operational situations to support training, planning, or decision making.	
AP - Application Systems and Software			
09 Notification and Warning Systems			
04AP-09-ALRT*	Systems, Public Notification and Warning	Systems used to alert the public of protective actions or to provide warning to the public in the event of an incident, such as sirens, the Emergency Alert System (EAS), and the Integrated Public Alert and Warning System (IPAWS).	99

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
HW - Hardware			
01 Computers			
04HW-01-DTOP*	Computer, Desktop	Desktop computer, basic.	
04HW-01-HHCD*	Computing Device, Handheld	Handheld computing devices with connectivity. Includes a variety of platforms such as PDAs and Windows-compatible devices.	
04HW-01-MOBL	Computer, Mobile Data	Mobile computer devices, usually mounted permanently in vehicle, operating from DC power supply. Used for data upload and download, as well as local data entry.	
04HW-01-NTBK*	Computer, Portable	Basic notebook or tablet computer.	
04HW-01-SRVR	Computer, Server	Computer used as central host to provide connectivity or data to other systems/users.	
HW - Hardware			
02 Peripherals			
04HW-02-ALL1	All-in-One	Printer/Copier/Fax/Scanner in single device with either inkjet or laser printing capability.	
04HW-02-BARC	Equipment, Bar Code Reading and Printing	Bar code readers and printers, including devices that have wireless network capabilities.	
04HW-02-PLOT	Plotter	Output device for producing oversize hard-copy output such as maps and visualization graphics.	
04HW-02-PRNT	Printer	Printer using laser or ink-jet technology.	
04HW-02-RFID	Devices, Radio Frequency Identification	Radio Frequency Identification Devices (RFID) and associated readers.	
04HW-02-SCAN	Scanner, Imaging	Scanner, flatbed or portable, for converting documents, images, etc. to one or more computer-storable formats.	
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.	

Note: Features, Operating Considerations, and Training Considerations can be found on the enclosed CD-ROM, or online at www.iab.gov.

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

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
HW - Hardware			
03 Networking Components			
04HW-03-ROUT	Router	Network device that connects two or more networks or computers, providing appropriate addressing and packet handling.	110, 111, 165
04HW-03-SSRV	Server, Serial	Device that provides a network (TCP/IP) presence for serial devices. Example: printer network adapter.	
04HW-03-SWCH	Switch, Network	Network switching device.	
04HW-03-WAP	Access Point, Wireless	Wireless Access Point (WAP) for local area networking under 802.11x.	110, 111, 165
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.	
04MD-01-IRED	Camera, Infrared (IR)	Infrared (IR) a. Thermal b. Forward Looking Infrared Radiation (FLIR), and/or c. Infrared detection	
04MD-01-IRIL	Equipment, Illumination, IR	Infrared illumination equipment.	
04MD-01-LAMP	Equipment, Light Amplification	Light amplification (night vision enhancement) equipment, including hand-held, helmet mounted, or equipment-mounted tactical systems. Includes hardware/accessories necessary for helmet/equipment mounting.	

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
MD - Media Devices			
01 Cameras and Surveillance Equipment - Continued			
04MD-01-UCAM	Camera, Underwater (Still/Video)	Still or video camera adapted or designed for use underwater.	
04MD-01-VCAM	Camera, Video	Video camera.	
MD - Media Devices			
02 Projectors			
04MD-02-PROJ	Projector, Video	Video projector.	
MD - Media Devices			
03 Displays			
04MD-03-DISP	Display, Video	Video display - assorted technologies including CRT, Plasma, LCD, etc.	
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, relative humidity, and barometric pressure.	
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.	
SW - System and Networking Software			
01 Operating Systems			
04SW-01-OSSS	System, Server Operating	Operating systems for servers. Examples include Windows, Mac OS X Server, Unix, Linux.	
04SW-01-OSSW	System, Workstation Operating	Operating systems for workstations. Examples include Windows, Mac OS X, Unix, Linux.	

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Section 4 | Information Technology

Item Number	Title	Description	Standards ¹
SW - System and Networking Software			
02 Application Programs			
04SW-02-EMLC	Software, E-mail Client	E-mail client software.	162
04SW-02-EMLS	Software, E-mail Server	E-mail server software.	162
04SW-02-IMSG	Software, Instant Messaging	Instant messaging (IM) software.	
04SW-02-VCSW	Software, Video Teleconferencing	Video teleconferencing software.	
SW - System and Networking Software			
03 Suites			
04SW-03-OFFC	Software, Office Software Suite	Office software suite (spreadsheet, database, word processing and graphics presentation).	
SW - System and Networking Software			
04 Network Operating and Monitoring Systems			
04SW-04-NETW*	Software, Network	Software for networking, monitoring network performance and/or maintaining configuration.	
SW - System and Networking Software			
05 Monitoring Software			
04SW-05-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.	

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Section 5 - Cyber Security Enhancement Equipment

Overview

This section lists equipment, software, and systems that contribute to improved information security. Five major functional categories are defined: Authentication Devices, Encryption, Host Level Security, Network Level Security, and Patch/Configuration Management. 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 both the reliability of this infrastructure and user confidence in the information they receive. Thus, cyber security must be considered in deployment and response operations.

Section Changes for 2009

This section is essentially unchanged in 2009, with only minor enhancements to features and operating considerations.

Cyber Security Self-Assessment Questions and Resources

This set of suggestions and questions was originally introduced in 2006, and remains extremely relevant to all responder organizations. Agencies and jurisdictions at every level must have appropriate policies in place, understand their vulnerabilities, weigh the risks involved and make informed decisions on how to spend resources to secure systems and data. Thousands of new computer viruses are reported every year, and it now only takes a few minutes to compromise an unprotected computer that is connected to the Internet. A virus or other successful cyber attack can be devastating to networks, to the information contained within systems and, just as importantly, to the confidence of those who depend on these systems to accomplish their mission.

Information security is mission critical to every emergency responder. Every agency and jurisdiction should carefully consider the full scope of these three key components of information security:

- **Confidentiality**, the ability to ensure that only authorized personnel/systems have access to any given data;
- **Integrity**, the ability to ensure that data is not corrupted, and that only authorized personnel/systems can change any given data; and,
- **Availability**, the ability to ensure that authorized personnel have timely and complete access to data whenever and wherever it is required.

The relative importance of these three components will vary among organizations. For example, fire dispatch may place a premium on availability at the expense of confidentiality, while an intelligence sharing center might sacrifice availability to ensure confidentiality. Ultimately, all three must be achieved to at least a minimal degree in order to meet mission requirements.

Each state and local government entity should develop and execute a comprehensive cyber security plan that demonstrates due diligence in cyber security. The goal of a cyber security plan is to identify the cyber threat environment, and address these threats in order to maintain confidentiality, integrity and availability sufficient for mission performance. The plan must account for factors such as limited staff and resources (and staff turnover), varying size and complexity of the organization, varying cyber security and technology knowledge base within the organization, and a wide variance in technology being used. In addition to developing a comprehensive plan, organizations must periodically test and exercise their plan, using vulnerability assessments to identify gaps in policy and technology, as well as training needs.

This plan must address four main functional areas: Policy, Training, Technology Deployment, and Vulnerability Assessment. Each of these areas supports the others, and together they meet emerging standards of due diligence in information security. The questions below are designed to assist in “self assessment” and identify key issues within each major area. We have used the term “Organization” to represent a wide range of agencies, departments, and jurisdictions.

Policy:

- Does the Organization have a cyber security plan in place that sets the vision, goals, and objectives for Organization-wide cyber security?
- Has the Organization published a clear policy statement on cyber security to support the plan, including a “permitted use” policy for all Organization-owned cyber assets? Has this policy set been made available to subordinate organizations so that it can be adapted for their use?
- Does the Organization’s policy statement provide a clear mechanism for feedback and use of vulnerability assessment results to refine policies, training, and technology deployment?
- Has the Organization established a certification/accreditation program for information systems?
- Does the Organization have a designated cyber security office/officer whose primary focus is on protecting the Organization’s cyber infrastructure?
- Does the Organization have established cyber security metrics? Does the Organization have a mechanism for rating its cyber security alert level?
- Has the Organization established public, private, or academic partnerships for cyber security collaboration?
- Does the Organization have a capability for internal secure information sharing (Organization-wide secure portal)?
- Does the Organization have a formal connectivity policy covering network connections with external partners (including local government, state-wide intranet, etc.)? Does this policy address protection against intrusions via these connections?
- Does the Organization have a formal connectivity policy covering telecommuters or personnel who require access to internal systems from home or other off-site locations? If so, does this plan address vulnerabilities in off-site computers, such as home computers, that might be connected to the internal network?
- Does the Organization have a cyber operational center that functions 24/7? Does the Organization have an ad hoc 24/7 capability if an operational center does not exist?
- Does the Organization have an organization-wide Computer Security Incident Response Policy (IRP)? Is there a corresponding response plan, and are key personnel aware of their roles and all appropriate notification requirements?
- Does the Organization have a Continuity of Operations (COOP) plan that encompasses both communications and information technology capability?
- Does the Organization maintain a relationship with federal entities such as the United States Computer Emergency Readiness Team (US-CERT)?

Training:

- Does the Organization ensure that all employees have cyber security awareness training both at time of hire and on an annual recurring basis? Does this training include familiarization with permitted use policies? Do employees sign an acknowledgement of their familiarity with the Organization’s cyber security policies?
- Are training programs available at multiple levels commensurate with employees’ responsibility (e.g., general awareness, system administrator, network administrator, etc.)?

- Does the Organization have an outreach program to ensure the greatest penetration possible for cyber security awareness throughout state and local governments?
- Does the Organization have a web presence that provides cyber security guidance?
- Does the Organization have a program to establish and maintain a set of best practices for cyber security, both for its own use and to share with local jurisdictions?

Technology Deployment:

- Is the technology deployed by the Organization justified in terms of identified cyber security threats and a valid risk management strategy?
- Has the Organization deployed appropriate technology for basic cyber security requirements such as anti-virus protection and firewalls on Internet-facing assets?
- Has the Organization deployed specific technology (including modifications and patches to existing systems and software) to respond to vulnerabilities identified by internal or third-party vulnerability assessments?
- Does the Organization have an asset management system that tracks the number, type, and location of information technology assets? Does the Organization maintain a map of its network that depicts the position of these assets on its network? Does the system track personnel who are authorized access to cyber assets?
- Does the Organization have a system in place for tracking software versions in use, relevant known vulnerabilities and available patches to counter those vulnerabilities?
- Does the Organization have cyber forensics capabilities to serve both civilian and criminal matters for the Organization?
- Does the cyber security technology deployed by the Organization have sufficient capability and capacity to function in both routine and crisis management conditions?
- Has the Organization addressed the physical security requirements of its cyber assets (e.g., physically isolating servers and network equipment, access control for server area, etc.)?

Vulnerability Assessment:

- Does the Organization have a formal program for periodic internal vulnerability assessment and maintain a baseline of cyber threats and vulnerabilities?
- Does the Organization supplement its internal assessment program with third-party vulnerability assessments?
- Is there a formal risk management process by which assessment results are converted into prioritized remedial actions and tracked to completion?

While many of these questions are oriented to larger organizations, smaller entities such as local jurisdictions should review many of the same questions, scaled to their individual needs. *Every organization that owns and operates information technology equipment should have at least a rudimentary cyber security plan, and appoint an Information Security Officer (ISO) or single point of contact for cyber security, including up-to-date 24/7 contact information.* In some cases, smaller organizations may be able to obtain sample policy documents and plans from their parent organization and tailor them. Also, smaller jurisdictions should establish cooperative agreements to obtain access to specialized assistance, such as forensic analysis, when required.

Some of the software “products” useful in the cyber security area are “freeware,” i.e., they are available at no cost if certain restrictions are followed. Readers are also urged to review the information at the following sites, which provide valuable advice, best practices, and opportunities for support and information sharing:

CERT® Program Virtual Training Environment (VTE)

<http://vte.cert.org>

The Virtual Training Environment (VTE) is a web-based knowledge library for information assurance, computer forensics and incident response, and other IT-related topics. VTE is produced by the CERT® program of the Software Engineering Institute at Carnegie Mellon University. While VTE is used primarily to offer security training, DoD 8570.1 and FISMA training, and CERT® courses to partner organizations and students in an online format, CERT® makes as much of its library as possible available to the public in an effort to create a more knowledgeable information security community.

National Institute of Standards and Technology (NIST)

<http://csrc.nist.gov/>

Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Commerce Department's Technology Administration. NIST's mission is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. The NIST Information Technology Laboratory, Computer Security Division provides a variety of tips, newsletters, and publications to support cyber security efforts.

US Computer Emergency Readiness Team (US CERT)

<http://www.us-cert.gov/>

Established in 2003 to protect the nation's Internet infrastructure, US-CERT coordinates defense against and responses to cyber attacks across the nation.

Multi-State Information Sharing and Analysis Center (MS-ISAC)

<http://www.msisac.org/>

A public site identifying what the MS-ISAC is and what its mission, goals and objectives are in improving the nation's cyber security posture from a state and local perspective. The goal is to have this MS-ISAC include all fifty states, which would provide a valuable centrally-coordinated mechanism for sharing important security intelligence and information between the States. The MS-ISAC can serve as a critical point of contact between the States and the Federal government. A primary goal of the MSISAC is to eliminate duplicative efforts.

The SANS™ Institute

<http://www.sans.org/rrr> (reading room) and <http://isc.sans.org> (Internet Storm Center)

The SANS (SysAdmin, Audit, Network, Security) Institute SANS is an example of non-government cyber security resources and is one of the largest sources for information security training and certification in the world. It also develops, maintains, and makes available at no cost, the largest collection of research documents about various aspects of information security and operates the Internet's early warning system - the Internet Storm Center. SANS was established in 1989 as a cooperative research and education organization. Its programs now reach more than 165,000 security professionals, auditors, system administrators, network administrators, chief information security officers, and CIOs who share the lessons they are learning and jointly find solutions to the challenges they face.

National Security Agency Central Security Service

<http://www.nsa.gov/snac>

NSA initiatives in enhancing software security cover both proprietary and open source software, and they have successfully used both proprietary and open source models in their research activities. NSA's work to enhance the security of software is motivated by one simple consideration: use their resources as efficiently as possible to give NSA's customers the best possible security options in the most widely employed products. The objective of the NSA research program is to develop technologic advances that can be shared with the software development community through a variety of transfer mechanisms. NSA does not favor or promote any specific software product or business model; rather, NSA is promoting enhanced security.

Online Selection Factors

Like many sections in the 2008 SEL, Cyber Security section 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. Thus users of the online version¹ 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 Cyber security 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 Microsoft Certified Systems Engineer (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 Zone. 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.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

Section 5 | Cyber Security Enhancement Equipment

Item Number	Title	Description	Standards ¹
AU - Authentication			
00 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.	167
05AU-00-TOKN	System, Remote Authentication	System used to provide enhanced remote authentication, usually consisting of a server, some synchronization scheme, and a device or token.	
EN - Encryption			
05EN-00-ECRP	Software, Encryption	Encryption software for protecting stored data files or email messages.	68, 100, 105, 158
05EN-00-ETRN	Encryption, Data Transmission	A class of network access solutions, usually for remote access, that provide encrypted user access. May be used for remote access, point to point, or link encryption. Includes virtual private networks, and encrypted transmission modes such as SSH and SSL.	68, 100, 105, 158
HS - Host Level Security			
05HS-00-FRNS	Software, Forensic	Application suites that allow in-depth analysis of hosts based on operating system and file systems. Software of this type may be used by law enforcement officers, government/corporate investigators and consultants to investigate the aftermath of computer-related crimes. Forensics software generally includes disk analysis tools, tools for the recovery of deleted files, and integrated database support to mark files and data of interest to investigators.	158, 168
05HS-00-MALW	Software, Malware Protection	Software for protection against viruses, spyware, and malicious code. May be obtained for individual hosts or for entire network segments.	158, 162, 168
05HS-00-PFWL	System, Personal Firewall	Personal firewall for operation on individual workstations. Usually a software solution, but appliances are also available. See also: 05NP-00-FWAL.	158, 160, 168

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Section 5 | Cyber Security Enhancement Equipment

Item Number	Title	Description	Standards ¹
NP - Network Level Security			
05NPN-00-FWAL	Firewall, Network	Firewall (software or standalone appliance) for use in protecting networks. See also 05HS-00-PFWL.	158, 160, 164, 168
05NPN-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 (appliance) solutions exist.	157, 158, 161, 163, 168
05NPN-00-SCAN*	Tools, Network Vulnerability Scanning	Port scanners and other tools designed to identify security vulnerabilities on networks or individual hosts on target networks.	158, 168
05NPN-00-SEIM	System, Security Event/ Incident Management	Software or appliance that gathers data from multiple security sources such as firewalls, intrusion detection systems, malware protection systems, etc. to provide log file consolidation and event correlation capability in support of network security operations.	158, 168
PM - Patch and Configuration Management			
05PM-00-PTCH	System, Patch/ Configuration Management	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."	159

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Section 6 - Interoperable Communications Equipment

Overview

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

Like previous editions, the 2009 SEL has divided information technology, cyber security and communications into three distinct sections (Sections 4, 5, and 6 respectively). 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. This year’s SEL also continues the practice of providing information on desirable features, operating considerations, and standards (where applicable). These fields are designed to enhance the reader’s understanding of the defined items and their practical use.

Section Changes for 2009

There are no major changes in this edition. However, multiple changes have been made to descriptions, features, and operating considerations throughout the section to keep pace with technical advancements.

Selection Factors

Like many sections in the 2009 SEL, the Communications Section 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. Thus users of the online version¹ 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. Example: 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. Example: users who have attended classroom training for a telephone switch, or who have received training in hardware installation and setup.
Communications Advanced Technician	Users who possess some extensive training or career-level qualifications with respect to the equipment being utilized. Example: trained satellite communications professionals capable of setting up and operating complex base stations.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

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 factors described above 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 Zone. 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.

Section 6 | Interoperable Communications Equipment

Item Number	Title	Description	Standards ¹
CC - Commercial 01 Cell - Digital			
06CC-01-CELL	Phone, Cellular	Cellular phone	
CC - Commercial 02 Data & Messaging			
06CC-02-2WAY	Device, Messaging, 2-Way Text	Text messaging device with 2-way capability.	
06CC-02-DSAD	Device, Data Service Access	PCMCIA card, serial device, or USB device for access to on-line data services.	
06CC-02-PAGE	Services/Systems, Paging	Paging services/systems, 1-way text messaging.	
CC - Commercial 03 Satellite Phone			
06CC-03-SATB	Phone, Satellite Base	Satellite communication device, fixed location.	
06CC-03-SATM	Phone, Satellite Mobile	Satellite communication device, mobile.	
06CC-03-SATP	Phone, Satellite Portable	Satellite service with handheld device.	
CC - Commercial 04 Satellite Data Services			
06CC-04-EQSD	Equipment, Satellite Data	Satellite earth station transmitter and receiver, usually Ku-Band. Examples include, but are not limited to Iridium and INMARSAT A and B.	
06CC-04-SADS	Services, Satellite Data	Satellite data services (Internet access via satellite connection). Commercial providers of Internet connectivity via satellite.	
06CC-04-SSBR	Services, Satellite, Brokered	Full-service rental/lease of satellite transponder time, including truck and technicians.	
06CC-04-SSFT	Space Segment, Full-Time, Leased	Satellite transponder time purchased on long-term contracts.	

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Section 6 | Interoperable Communications Equipment

Item Number	Title	Description	Standards ¹
CC - Commercial			
04 Satellite Data Services - <i>Continued</i>			
06CC-04-SSHB	Space Segment, Hourly, Brokered	Satellite transponder time purchased by the hour.	
CC - Commercial			
05 Priority Services			
06CC-05-PRTY	Priority Services, Communications	Services to ensure priority communication over common carrier media, such as cellular phones or telephone land lines. Includes Government Emergency Telecommunications Service (GETS), NCS Telecommunications Service Priority (TSP) Program, and NCS Wireless Priority Services (WPS).	
CP - Private			
01 Land-Mobile Radios & Bases			
06CP-01-BASE	Radio, Base	Base radio system.	63
06CP-01-HFRQ	Radio, High Frequency (HF) Single Sideband	High frequency (HF) single sideband communications equipment.	
06CP-01-MOBL	Radio, Mobile	Mobile radio equipment, deployed in/on vehicles, or can also be deployed as temporary base stations.	63
06CP-01-PORT	Radio, Portable	Individual/portable radio transceivers.	63
06CP-01-REPT	Repeaters	An electronic device that receives a weak or low-level signal and retransmits that signal to extend usable range.	
06CP-01-VOTR	Receivers, Voter	A device that evaluates the comparative strength and signal/noise ratio from multiple receivers on the same frequency, selects the "best" signal and retransmits.	

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Section 6 | Interoperable Communications Equipment

Item Number	Title	Description	Standards ¹
CP - Private			
02 Bridging/Patching/Gateway Equipment			
06CP-02-BRDG	Equipment, Bridging/Patching/Gateway	Includes a wide range of equipment and software utilized to connect disparate communications networks. Systems range from cords that can patch two radios to interface boxes that can link dozens of radios, phones, computers, etc. in multiple sessions.	
CP - Private			
03 Other Land-Mobile Radio Equipment			
06CP-03-BAMP	Amplifiers, Bi-directional	Bi-directional amplifiers, application defined.	
06CP-03-ICOM	Intercom	System for hands-free (wired or wireless) communication for limited numbers of personnel in close proximity, such as vehicle crew members. Includes systems designed for underwater use.	
06CP-03-MWAV	Radio, Microwave Link	Microwave link for remote control of radio base stations or for links between infrastructure components and other communication assets.	
06CP-03-NRSC*	Cable, Non Radiation-Shielded Transmission	Non radiation-shielded transmission cable between base/repeater and antenna.	
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.	
06CP-03-TOWR	Systems, Antenna and Tower	Fixed and portable.	
CP - Private			
04 Wide Area Networks			
06CP-04-WADN	Network, Wide Area Digital	Wide area digital network, voice/data capable.	

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Section 6 | Interoperable Communications Equipment

Item Number	Title	Description	Standards ¹
CP - Private			
05 Wire-Line Communication			
06CP-05-BRAC*	Bridge, Audio Teleconferencing	Device to connect more than two parties (up to several dozen) into a single audio conference.	
06CP-05-LPBX	Exchange, Private Branch, Portable	Portable private branch exchange (PBX)	
06CP-05-VCNB	Bridge, Video Teleconferencing	Device to connect more than four parties (up to several dozen) into a single video conference.	
06CP-05-VCON	Teleconferencing, Video	Video teleconferencing over ISDN telephone lines or broadband facilities.	
CP - Private			
06 Communications Security (COMSEC) Support Equipment			
06CP-06-SAFE*	Safe, GSA-Rated	Safe for storing sensitive material and equipment such as encryption keys or encryption key loaders.	
06CP-06-SHRD	Shredder/Disintegrator	Shredding or disintegrating device for the destruction of sensitive materials such as reports or encryption key material.	

Note: Features, Operating Considerations, and Training Considerations can be found on the enclosed CD-ROM, or online at www.iab.gov.

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Section 7 - Detection Equipment

Overview

The section structure is organized around likely modes of use. The major categories are Chemical Detection and Sampling, Biological Detection and Sampling, Explosive Detection, Radiological Detection and Sampling, 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 transportable for mobile operations in the field but generally requiring 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/biological 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.

The Detection and Decontamination (D&D) SubGroup is working to incorporate applicable testing standards and certifications as they become available and approved for all types of detection devices.

The D&D SubGroup strongly recommends that a minimum of two different but complementary detection technologies (e.g., infrared, acoustic wave, etc.) be used to validate readings rather than relying upon any single instrument. This procedure will assist responders in interpreting data to better conduct their risk assessment and incident action plan.

Cost Rating Codes

The “\$” codes used in earlier editions of this section for purchase and operations and maintenance (O&M) costs are still provided within the Operating Considerations field. *Note: rating scales are used to give a general indication as to the time and costs associated with each type of equipment, and should not be used as the sole determinant in equipment selection.*

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 were based on estimated average annual requirements. The following scale is used:

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

Section Changes for 2009

The Category Titles for Biological Support, Chemical Support, and Radiological Support were renamed Biological Sampling, Chemical Sampling, and Radiological Sampling, respectively. This change was for clarity, recognizing that the items in these sections were all sampling equipment.

In addition to minor edits throughout the section, the following item changes were made:

- A new item, 07BD-01-OPDT was added to the Biological Detection category to cover Optical Detection Devices.
- Item 07CS-01-LEAK, Leak Detectors, was moved from Chemical Sampling to Support Equipment, and is now item 07SE-01-LEAK.
- Item 07ED-01-SNIF was renumbered as 07ED-01-HAND, Handheld Air-Sampling Explosive Detector for clarity.

Selection Factors

Like many sections in the 2009 SEL, the Detection Section 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. Thus users of the online version¹ 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.** Personnel at the awareness level are those persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/WMD. Personnel at the awareness level are expected to recognize the presence of hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.
- **Operations 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.
- **Operations Level, Mission Specific.** The knowledge, skills, and judgment needed by operations level responders who have completed the requisite core competencies and who are designated by the authority having jurisdiction to perform mission specific tasks such as decontamination, victim/hostage rescue and recovery, evidence preservation, and sampling.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

- **Technician Level².** Hazardous materials technicians are those persons who respond to releases or potential releases of hazardous materials/WMD 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 responsible for all decisions relating to the management of the incident. The incident commander is in charge of the incident site.

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

² This level was modified slightly by the SubGroup for this publication. The Technician Level was changed to Technician/Specialist in the online system (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.

Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
BD - Biological Detection			
01 Portable			
07BD-01-KFAS	Kit, Field Assay	Field assay kit. DIQCode: [D,I]	80, 125
07BD-01-OPDT*	Detector, Optical	Handheld detector utilizing optical technology to discriminate between bacterial spores and benign material. DIQCode: [D]	
07BD-01-PTST	Kit, Protein Test	Protein test kit. DIQCode: [D]	125
BD - Biological Detection			
02 Transportable Lab Equipment			
07BD-02-DNRN	Analysis, DNA/RNA Detection	DNA/RNA detection analysis (example: PCR, ECL). DIQCode: [D,I]	125
BS - Biological Sampling			
01 Portable			
07BS-01-KBBA	Kit, Biological Sampling/ evidence - Batch	Biological sampling and evidence kit. Collects samples for later analysis.	125
07BS-01-KBPA	Sampler, Biological, Portable Air	Portable air sampler for biological sampling/evidence.	125
BS - Biological Sampling			
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.	125

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
CD - Chemical Detection			
01 Portable			
07CD-01-CLAS	Strips, Classifier (pH, Waste Water, Chemical)	Waste water classifier strips, pH and chemical. DIQCode: [D]	125
07CD-01-DPFI	Detector, Flame Ionization (FID), Point, VOC	Flame ionization detector (FID) for point detection of volatile organic compounds (VOC). DIQCode: [D]	125
07CD-01-DPPF	Detector, Flame Photometry, Point, Chemical Agent	Flame photometry detector for point chemical agent detection. DIQCode: [D,I,Q]	125
07CD-01-DPIR	Detector, Infrared Spectroscopy, Point, Chemical Agent	Point chemical agent detector utilizing infrared spectroscopy. DIQCode: [D,I,Q]	125
07CD-01-DPMG	Detector, Multi-sensor Meter, Point, Chemical	Multi-sensor meter with minimum of O2 and LEL for point chemical detection. DIQCode: [D,I,Q]	125, 174
07CD-01-DPPI	Detector, Photo-Ionization (PID), Point, Volatile Organic Chemical (VOC)	Photo-ionization detector (PID) for point detection of volatile organic chemicals (VOC). DIQCode: [D]	125
07CD-01-DPRS	Detector, Raman Spectroscopy, Point, Chemical Agent	Point chemical agent detector utilizing Raman spectroscopy. DIQCode: [I] [Note: Replaces 07CD-01-DPFR.]	125
07CD-01-DPSI	Detector, Ion Mobility Spectrometry, Point, Chemical Agent	Ion mobility spectrometry (IMS) detector for point chemical agent detection. DIQCode: [D,I]	125
07CD-01-DPSW	Detector, Surface Acoustic Wave (SAW), Point, Chemical Agent	Surface acoustic wave detector for point chemical agent detection. DIQCode: [D,I]	125

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
CD - Chemical Detection			
<i>01 Portable - Continued</i>			
07CD-01-FTIR	Detector, Fourier Transform Infrared, Point, Chemical Agent	Point chemical agent detector utilizing infrared spectroscopy with Fourier Transform capability. DIQCode: [I] [Note: Replaces 07CD-01-DPFR.]	125
07CD-01-INPA	Paper, Indicating, (M-8)	Indicating paper, chemical warfare agent. DIQCode: [D,I]	125
07CD-01-INTP	Tape, Indicating (M-9)	Indicating tape, chemical warfare agent DIQCode: [D, I]	125
07CD-01-KCTC	Kit, Colorimetric Tape/Tube/Chip	Colorimetric tape/tube/chip kit specific for TICs and WMD applications. DIQCode: [D,I,Q]	74, 81, 125
07CD-01-KLSV	Kit, Chemical Classifying	Chemical classifying kit for unknown liquids, solids and vapors. DIQCode: [D,I]	125
07CD-01-KPCB	Kit, PCB Test	PCB test kit. DIQCode: [D, I, Q]	125
07CD-01-KTHG	Kit, Mercury Test/ Mercury Vapor Test	Mercury and mercury vapor test kit. DIQCode: [D, I]	125
07CD-01-KWTR	Kit, Chemical Agent Water Test	Chemical agent water test kit. DIQCode: [D]	125
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. DIQCode: [D, I]	125
07CD-01-MONO	Detector, Single Chemical Sensor	Single gas meter with point chemical detection. DIQCode: [D,I,Q]	125

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
CD - Chemical Detection			
01 Portable - <i>Continued</i>			
07CD-01-POLY	Detector, Reactive Polymer	Reactive polymer point chemical agent detector. DIQCode: [D,I,Q]	125
CD - Chemical Detection			
02 Lab Equipment			
07CD-02-DLSP	Detector, Spectroscopic, Laboratory, Chemical Agent	Laboratory-grade chemical detector using Raman spectroscopy, Fourier Transform Infrared (FTIR) spectroscopy, or a combination of both types in a single device chassis. DIQCode: [I,Q]	125
07CD-02-DPCC	Detector, Gas Chromatograph/Mass Spectrometer, Chemical Agent	Gas chromatograph and/or mass spectrometer detector for chemical agent detection (GC and/or MS). DIQCode: [D,I]	125
CD - Chemical Detection			
03 Fixed Site Sampling and/or Detection Systems			
07CD-03-IREDD	Detector, Fixed Site, Chemical	Chemical detection devices designed to be mounted in buildings or on fixed exterior mounts that utilize infrared detection technologies such as Fourier Transform Infrared (FT-IR), Raman, FT-IR/Raman, or photoacoustic infrared (PIR) for chemical detection. DIQCode: [D,I]	125
CD - Chemical Detection			
04 Standoff Detectors			
07CD-04-DCSO	Detector, Stand-Off, Chemical	Stand-off chemical detector. FTIR system. DIQCode: [D, I]	125
CS - Chemical Sampling			
01 Portable			
07CS-01-KAVC	Kit, Air/Vapor Chemical Sampling	Air/vapor chemical sampling/evidence kit.	125

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
CS - Chemical Sampling			
01 Portable - <i>Continued</i>			
07CS-01-KLCS	Kit, Liquid Chemical Sampling	Liquid chemical sampling/evidence kit.	125
07CS-01-KSCS	Kit, Solid Chemical Sampling	Solid chemical sampling/evidence kit.	125
ED - Explosive Detection			
01 Portable			
07ED-01-DOGS	Canines, Explosive Detecting	Explosive detecting canines, related CBRNE training, protective equipment/garments, handling and training accessories. DIQCode: [D]	
07ED-01-HAND*	Detector, Explosive, Air-Sampling, Handheld	Handheld air-sampling explosive detectors. DIQCode: [D,I]	125
ED - Explosive Detection			
03 Fixed-Site Sampling and/or detection systems			
07ED-03-PORT	Portal, Explosive Detecting	Ion mobility spectrometry (IMS) explosives screening equipment. Two types: walk-through and drive-through (vehicle). DIQCode: [D,I]	125
07ED-03-SWPE*	System, Swipe Test, Explosive Detection	An explosive detection system that utilizes cloths, papers, strips or other items to wipe a surface. The sampling medium is then placed in a machine that analyzes vapor to detect/identify the explosive. DIQCode: [D,I]	
RD - Radiological Detection			
01 Portable			
07RD-01-DOSP	Dosimeter, Personal	Personal dosimeter, including film, Thermoluminescence Dosimetry (TLD), and Optical Stimulated Luminescence (OSL). DIQCode: [D,Q]	125, 170

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
RD - Radiological Detection			
01 Portable - <i>Continued</i>			
07RD-01-DOSS	Dosimeter, Self-Reading	Self-reading dosimeter (SRD) or pocket ionization chambers (PIC). DIQCode: [D,Q]	113, 120, 125
07RD-01-EPD*	Dosimeter, Personal, Electronic	Electronic personal dosimeter (EPD). DIQCode: [D,Q] [Note: This item was previously numbered as 07RD-01-DOSE.]	120, 125
07RD-01-HHSM	Meter, Survey, Handheld	Handheld survey meter such as Geiger-Mueller (GM) meter or ionization chamber. Various probes allow detection of alpha/beta, beta/gamma, and neutron. DIQCode: [D,Q] [Note: This item was previously numbered as 07RD-01-HHCM.]	116, 125
07RD-01-PDGA	Detector, Radiation, Alarming, Personal (Gamma and Neutron)	Personal radiation (gamma and neutron) detection device which provides an alarm based on detection, but does not quantify dose-rate. DIQCode: [D]	115, 125
07RD-01-RIID	Identifier, Isotope, Radionuclide	Handheld spectrometer for nuclide identification using crystals such as NaI, CZT, LaBr, and Germanium. DIQCode: [D,I,Q] [Note: This item was previously numbered as 07RD-02-HHSP.]	117, 125
RD - Radiological Detection			
02 Transportable lab Equipment			
07RD-02-DRHS	Detector, Radionuclide, High-Sensitivity	Radionuclide detector utilizing high-purity crystal such as germanium. DIQCode: [D,I,Q] [Note: This item was previously numbered as 07RD-01-DHPG.]	114, 125

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Section 7 | Detection Equipment

Item Number	Title	Description	Standards ¹
RS - Radiological Sampling			
01 Portable			
07RS-01-AFCB	Equipment, Air Sampling	Air flow calibrators for samplers. Personal air sampler. Area air sampler (high volume).	125
SE - Support Equipment			
01 Portable			
07SE-01-IHTS	Sensor, Heat, Infrared	Heat sensing device.	125
07SE-01-LEAK*	Detectors, Leak	Leak detectors (e.g., soap solution, ammonium hydroxide, ultrasonic, etc.).	125
07SE-01-THMS	Thermometer, Surface	Surface thermometer.	125
SE - Support Equipment			
03 Fixed Site Sampling			
07SE-03-ENVS	Equipment, Environmental (Weather) Surveillance	Environmental (weather) surveillance equipment to support CBRNE detectors.	125

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Section 8 – Decontamination Equipment

Overview

This section contains recommendations for decontamination equipment. It is organized into three main categories, as follows:

- **Individual Decontamination**, which contains personal decontamination items.
- **Active Decontamination**, defined as equipment that may be used in removing contamination from individuals and equipment. Active decontamination includes Decontamination Corridor Support, Emergency Decontamination, Technical Decontamination, and Site/Equipment Decontamination.
- **Post-Decontamination**, defined as equipment that may be used after active decontamination.

Successful CBRNE HAZMAT response requires a sound decontamination plan that has been practiced with proper techniques and equipment. In addition to personnel, techniques, and equipment, the plan should address factors such as run-off and hazardous materials disposal, since some CBRNE agents may be neutralized while others may become hydrolyzed or diluted while being physically washed off patients and equipment. Plans should include as many specific procedures as possible - if a hazardous material has been identified through testing, then the decontamination plan should include proper PPE and decontamination equipment appropriate to the hazard. The plan should include multiple stages of decontamination (e.g., field expedient gross decon for personnel and equipment), with appropriate equipment and training required for each stage. The decontamination plan must also interface smoothly with other operating plans, such as medical response (e.g., policies for triage at decontamination stages, transportation of contaminated patients, etc.).

The Detection and Decontamination (D&D) SubGroup is continually working to identify standards and best practices for decontamination, including the establishment of standards for newly available decontamination equipment and technologies. All first responders should also seek advice from their state and local experts on the applicability and practicality of their plans in the context of local laws and practices.

Section Changes for 2009

This section is essentially unchanged in 2009, with only minor enhancements to features and operating considerations.

Selection Factors and Efficacy Matrix

Like many sections in the 2009 SEL, the Decontamination section 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. Thus, users of the online version¹ 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 Responder Knowledge Base also contains an additional feature (available only to registered emergency responders) that should prove helpful in decontamination planning. It is called the

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

Decontamination Efficacy Matrix, and provides information about various decontamination methods and their effectiveness against specific threats. The information in this matrix was provided to the RKB by the U.S. Army Edgewood Chemical and Biological Center (ECBC) in Aberdeen, Maryland, and is linked online to applicable items in this section of the SEL.

Section 8 | Decontamination Equipment

Item Number	Title	Description	Standards ¹
D1 - Individual Decontamination			
01 Personal Decontamination Items			
08D1-01-KITD	Kits or Packets, Personal Decontamination	Kits or packets used for emergency personal decontamination.	125
08D1-01-LOTN	Lotion, Decontamination	Alternate solution to neutralize chemical warfare agents.	104, 125
D2 - Active Decontamination			
01 Decontamination Corridor Support			
08D2-01-HTRB	Heater, Portable Air Blower	Provides climate control for victims during necessary decontamination operations during inclement conditions.	
08D2-01-HTRW	Heaters, Water, Transportable	Used to heat water for decontamination applications in the field.	169
08D2-01-LDCD	Device, Liquid Decontamination Containment	Containment devices intended for use in the decontamination corridor for decontamination of equipment, people, and vehicles.	125
08D2-01-LITE	Lighting, Decontamination Area	Portable area lighting system suitable for use in active decontamination area.	123, 173
08D2-01-LITR	Device, Victim Extrication	Devices such as litters, stretchers, stokes baskets, etc. for moving non-ambulatory victims.	125, 126
08D2-01-PPTS	System, Personal Property Tracking	Personal property tracking system to identify personal effects of decontaminated victims.	125
08D2-01-TDCS	Items, Support, Decontamination Corridor	Signs, signals, traffic cones, lights, hazmat tape, directional signage, strobes, glow sticks, loudspeakers, etc.	123, 125
08D2-01-WWCD	Drum, Waste Water Containment	Drums or bladders for waste water containment and decontamination shower waste collection. To be used in conjunction with Item 08D2-01-LDCD.	66, 125

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Section 8 | Decontamination Equipment

Item Number	Title	Description	Standards ¹
D2 - Active Decontamination			
02 Emergency Decontamination			
08D2-02-EDCS	Equipment, Gross Decontamination Application	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 corridor.	125
08D2-02-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.	125
D2 - Active Decontamination			
03 Technical Decontamination			
08D2-03-SHWR	Shower, Portable Decontamination	Framework designed to deliver water/decontamination solution at low pressure, low volume.	125
08D2-03-TDED	Equipment, Technical Decontamination - Dry	Equipment used to decontaminate or remove dry materials.	125
08D2-03-TDEW	Equipment, Technical Decontamination - Wet	Equipment used in the physical or chemical process of deliberate decontamination for responders and their equipment using liquids/solutions.	125
D2 - Active Decontamination			
04 Site/Equipment Decontamination			
08D2-04-SOLN	Solution, Decontamination, Site (Not For Personnel)	Equipment and site decontamination solutions (not approved for humans).	125
D3 - Post-Decontamination			
01 Blankets and Clothing			
08D3-01-BLKT	Blankets, Disposable	Disposable blankets.	125

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Section 8 | Decontamination Equipment

Item Number	Title	Description	Standards ¹
D3 - Post-Decontamination			
01 Blankets and Clothing - <i>Continued</i>			
08D3-01-CLOM	Clothing, Disposable Modesty	Disposable modesty clothing, with footwear; adult and child sizes.	125
D3 - Post-Decontamination			
02 Bags			
08D3-02-BCNT	Bags, Cadaver, Non-transparent	Non-transparent cadaver bags. See also 09MS-01-BAGB	55, 125

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Overview

The Medical SubGroup provides guidance regarding health and medical aspects of local, state, and federal standardization, interoperability, and first responder/receiver safety to prepare for, respond to, mitigate, and recover from any incident by identifying requirements for an all-hazards incident response with a special emphasis on CBRNE incident response equipment, supplies and pharmaceuticals.

Items in this section are divided into 5 categories (note the inclusion of Mortuary Operations, which is new in this edition):

- Medical Equipment: durable medical equipment
- Medical Supplies: single use, disposable, and generally inexpensive (<\$100 per item)
- Mortuary Operations: equipment and supplies needed for mass fatality management
- Pharmaceuticals: medications and fluids
- Training Equipment and Supplies

Logistical equipment required to support medical or mortuary operations, but not directly related to patient care or medical support of personnel, such as PPE, communications equipment, generators, etc., is listed in other appropriate SEL sections. The Medical SubGroup has ensured that notes and linkages to non-medical logistical items are included with the SEL items of the Medical Section.

Point of Dispensing (POD) List

In 2008, the Medical Subgroup introduced a new cross-reference feature within the SEL by designating key items across all sections that would be useful in establishing a medical Point of Dispensing (POD). These items are indicated by the tag “* POD-List *” at the end of the Operating Considerations for each item chosen. This identifier is designed so that when using the on-line version of the SEL (at www.iab.gov, select “Interactive SEL” option under the “SEL” tab), users can immediately obtain a list of the more than 140 SEL items recommended by the IAB Medical SubGroup for use in a POD. See the paragraph and link at the bottom of the on-line page.

During 2009, the Medical SubGroup will explore the feasibility of introducing a similar list to describe items throughout the SEL that are useful for mobile morgue operations.

Section Changes for 2009

In addition to routine minor edits, 13 new items were added to Section 9 in this edition. Eleven of these items were part of a new Mortuary Operations category, with code 09MY. The new category includes a subcategory for Kits (09MY-01) such as pathology, anthropology, and dental, and one for Storage and Transport (09MY-02).

Finally, the following two items were added to Pharmaceuticals, Antibiotics/Antiviral (09PH-03):

Item #	Title	Description
09PH-03-OPHG	Ophthalmic Gentamicin	Ophthalmic antibiotic
09PH-03-OPHE	Ophthalmic Erythromycin	Ophthalmic antibiotic

Selection Factors

Like many sections in the 2009 SEL, the Medical Section uses a set of selection factors to assist users in quickly identifying appropriate equipment items. For the Medical Section, the SubGroup uses levels within the EMS/Clinical Care delivery system as the first factor, and Hazard Environment as the second. Every item is “tagged” for each appropriate combination of factors.

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

- [B]asic Life Support (BLS): BLS as defined by the United States Department of Transportation National Standard Curriculum and routinely carried on BLS EMS response resources.
- [A]dvanced Life Support (ALS): ALS, or “paramedic”, as defined by the United States Department of Transportation National Standard Paramedic Curriculum and routinely carried on ALS EMS response resources.
- [P]re-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.
- [H]ospital: Items routinely used in the hospital environment.
- P[U]blic Health: Items used by public health authorities to prevent, detect, protect and respond to potential or actual public health threats or emergencies.
- [D]isaster: 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:

- [C]hemical
- [B]iological
- [R]adiological
- [T]hermal
- [E]xplosive

The Medical SubGroup considers these selection factors to be particularly important in planning the acquisition and utilization of equipment. This printed version contains representative information on the selection factors¹. Two additional columns, one for each factor, appear on the right side of each page. These columns, entitled “EMS/CC Level(s)” and “Threat/Incident Type(s)” will contain appropriate codes for each item.

Using the SEL Medical Section

The Medical SubGroup has attempted to provide useful information in this section (to include linkages to other SEL sections) to assist local, state, and federal organizations improve the safety aspects of their public health and medical response plans and procedures. Local and state public health and medical authorities should collaborate with other response partners in the review and modification of these recommendations for use in their organizations and jurisdictions. This collaboration should include protocols, operational procedures, standards of care, and other written documentation governing use of SEL items.

¹ The IAB is currently considering whether to continue to update and utilize these selection factors in their present form. For that reason, the factors have not been implemented for the online SEL on the new IAB web site (www.iab.gov). The 2008 factor values are still operational on the RKB web site (www.rkb.us).

Community hazard and vulnerability analysis is an integral aspect of planning and procuring equipment, supplies, and pharmaceuticals. Consideration should be given to the full range of issues inherent to the procurement of equipment, pharmaceuticals, and supplies (i.e., interoperability, compatibility, funding limitations, maintenance, training, re-supply, storage, safety, etc). Additional recommendations follow:

- Consider environmental factors during storage and response operations. Exposure to environmental extremes may impact potency, shelf life, and performance.
- Do comprehensive “power planning” to look at the power needs of your total response capability. Consider and plan for the custom batteries/power systems that will be required for most medical diagnostic and monitoring equipment. Pay particular attention to the combination of monitoring/diagnostic equipment and environmental factors such as climate control, lighting, refrigeration, altitude, humidity, airborne dust/particulate matter, and information equipment/computer support. Include storage in facilities that have backup generator power sources, and other requirements to ensure 24x7 readiness of the equipment/batteries, etc.
- Be aware that certain supplies are 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 Pre-positioned Equipment Program (PEP) Pods, the Strategic National Stockpile (SNS), and the CHEMPACK program into your local planning process. Also coordinate with local resources that receive support from federal funding.
- When selecting durable medical equipment as well as monitoring and diagnostic equipment, consider 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.
- Include contingencies for individuals with special needs (i.e., mobility impaired, hearing impaired, visually impaired, cognitively impaired, non-English speaking, pediatrics, elderly, medication dependent, aided by special escorts or animals, etc.), and others with pre-existing medical conditions.
- Consider Memoranda of Understanding (MOU)/Agreement (MOA) with hospitals and pharmacies for appropriate storage and management/regulation of medications and perishable items that must be kept in climate-controlled conditions. Consider MOUs with hospitals/biomedical engineering departments for preventive maintenance on biomedical equipment.
- Collaborate with community response partners. Share information and ask questions. Allow time to collect feedback and experiences from other users before purchasing equipment. The Responder Knowledge Base can also be used as a source of user opinion information.
- Consider requirements of regulatory agencies that monitor point-of-care or wave-form testing equipment (e.g., i-STATs (CLIA regulations), some urine tests (wave-form), and a few other point-of-care tests that would be appropriate for extended and protracted disaster care and surge capacity).
- Consider signage (bilingual) and other documentation forms/admission forms/etc, and health and medical screening tools (bilingual).
- Consider supplies and equipment necessary for mass fatality management.
- Consider veterinary and agricultural (food supply) requirements.

The Medical SubGroup is very interested in user feedback to improve the quality and usability of the Medical Section of the SEL. Please send comments to IAB@battelle.org, “Attention: IAB Medical SubGroup”.

Section 9 | Medical

Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
ME - Medical Equipment						
01 General						
09ME-01-ADMIN	Equipment, Administrative		All-inclusive administrative and durable office support equipment to sustain medical branch operations.		A, P, H, U, D	C, B, R, T, E
09ME-01-BAGM	Bag/Kit/Pack, Medical		Portable vessel that contains various medical supplies and equipment.	84, 124, 126	B, A, P, H, U, 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.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09ME-01-MCIK	Equipment/Kits, Multi-Casualty Incident (MCI)		Fully equipped kits that contain all equipment and materials to coordinate multi-casualty 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.	84, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-01-PEDT	Tool, Pediatric Patient Assessment and Management		These tools allow for the rapid assessment of pediatric patients using length based assessment to determine equipment size and medication dosages.	88, 124, 126	A, P, H, U, 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.	125	P, H, U, D	C, B, R, T, E

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Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
ME - Medical Equipment						
02 Airway Management						
09ME-02-AWMG	Equipment, Airway Management	Equipment, Airway Management	Basic and advanced durable airway management equipment. Enables basic and advanced access to, and protection of, patient respiratory system.	1, 50, 55, 84, 88, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-02-ETCO	Monitor, End Tidal CO ₂ , Quantitative/Qualitative	Monitor, End Tidal CO ₂ , Quantitative/Qualitative	Monitor that allows for the quantitative and qualitative assessment of end tidal CO ₂ for patients that are breathing and/or being ventilated.	3, 88, 124, 126	A, P, H, D	C, B, R, T, E
09ME-02-OXYE	Equipment, Oxygen	Equipment, Oxygen	Durable oxygen equipment (e.g., cylinders, regulators, manifolds, etc.) to facilitate the storage and delivery of medical oxygen.	84, 96, 97, 98, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-02-SUCT	Equipment, Suction Units	Equipment, Suction Units	Negative pressure devices that enable suctioning of patient airway. Airway maintenance device. Various models, both powered and manually operated.	23, 50, 84, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-02-VENT*	Ventilators	Ventilators	Positive pressure ventilators that deliver regulated volumes of oxygen to patients requiring invasive respiratory support. Adult and pediatric applications.	6, 88, 124, 126	A, P, H, D	C, B, R, T, E
ME - Medical Equipment						
03 Diagnostic/Monitoring/Defibrillation						
09ME-03-BCNI	Monitor, Blood Chemistry, Non-Invasive	Monitor, Blood Chemistry, Non-Invasive	Non-invasive medical device used to monitor blood levels of substances such as methemoglobin and carboxyhemoglobin.	88, 124, 126	A, P, H	C, B, R, T, E
09ME-03-BPSL	Equipment, Blood Pressure	Equipment, Blood Pressure	Manual and automated blood pressure equipment/products.	9, 84, 124, 126	B, A, P, H, D	C, B, R, T, E

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Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
ME - Medical Equipment					
03 Diagnostic/Monitoring/Defibrillation - Continued					
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 dysrhythmias. Use of AED by practitioners with minimum or no training.	8, 12, 84, 124, 126	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.	8, 11, 12, 88, 124, 126	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.	2, 55, 88, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-03-OTOP	Otoscope/Ophthalmoscope	Devices used during patient assessment to facilitate the examination of the eyes and ears.	14, 43, 88, 124, 126	H, D	C, B, R, T, E
09ME-03-POXI	Oximeter, Pulse	Non-invasive device that monitors oxygen saturation levels in blood.	10, 84, 124, 126	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.	4, 84, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-03-THER	Thermometer	Devices that enable assessment of patient temperature (all routes, including oral, axillary, tympanic, and rectal).	26, 27, 28, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E

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Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
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 situations.	84, 87, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-04-SPLT	Splints, Durable	Splints that enable all types of limb immobilization. All types and sizes.	18, 19, 84, 124, 126	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.	42, 84, 124, 126	B, A, P, H, D	C, B, R, T, E
09ME-05-LITR	Litters/Stretchers	Hand-carried patient transport devices.	41, 84, 124, 126	B, A, P, H, D	C, B, R, T, E
ME - Medical Equipment					
06 Intravenous Equipment					
09ME-06-PUMP	Pump, Intravenous	A device to deliver accurate rates of IV fluids for both medication administration and volume infusion.	34, 88, 124, 126	A, P, H, D	C, B, R, T, E
ME - Medical Equipment					
07 Public Health					
09ME-07-ISOL	Equipment, Patient Isolation	Equipment designed to maintain a continuous negative or positive pressure environment to isolate potentially contaminated or contagious patients requiring airborne precautions.	50, 108, 109, 124, 126	H, U, D	B

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Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
ME - Medical Equipment						
07 Public Health - Continued						
09ME-07-PCNT	Equipment, Pharmaceutical Counting	Equipment used to count and separate capsule or tablet forms of pharmaceuticals.			H, U, D	B, R
09ME-07-PLBL	Equipment, Pharmaceutical Labeling	Equipment used to prepare and print labels for pharmaceuticals dispensed during emergency situations.			H, U, D	B, R
09ME-07-TRAN	Equipment, Translation/Accessibility	Equipment used to communicate emergency medical information between non-English speaking, hearing-impaired, or visually-impaired patients (or patient representatives) and emergency medical, hospital or public health providers.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E	
MS - Medical Supplies						
01 General						
09MS-01-ADMIN	Supplies, Administrative	All-inclusive administrative and non-durable office support supplies to sustain medical branch operations.			B, A, P, H, U, D	C, B, R, T, E
09MS-01-ALPP	Pads, Alcohol Prep	Single-use alcohol prep pad to cleanse patient skin surface.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E	
09MS-01-BAGB*	Bag, Body, Heavy-Duty	Single-use body bag to contain deceased patients.	55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E	
09MS-01-KDEB	Kit, Debridement, and Supplies	Single-use, disposable kit to clean soft tissue injuries and surfaces.	55, 88, 124, 126	H, D	C, B, R, T, E	
09MS-01-LNEN	Linens	Disposable and non-disposable linen products.	55, 84, 124, 126	A, P, H, D	C, B, R, T, E	

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Section 9 | Medical

Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
MS - Medical Supplies						
<i>01 General - Continued</i>						
09MS-01-MEDS	Supplies, Medication Administration	Various disposable and non-disposable supplies to facilitate the administration of medications.	24, 35, 55, 88, 124, 126	B, A, P, H, U, D	C, B, R, T, E	
09MS-01-NEAG	Needles, Assorted	Various size/gauge needles to draw fluids and/or administer medications.	24, 55, 88, 124, 126	A, P, H, U, D	C, B, R, T, E	
09MS-01-POVO	Solutions and Applicators, Povidine Iodine	Various brushes and swabs saturated with Povidine to cleanse skin surface area.	55, 88, 124, 126	H, U, D	C, B, R, T, E	
09MS-01-SCRN	Screen, Privacy	Portable screen to provide privacy and visual screening during patient examination, triage, treatment, or stabilization.	125	H, U, D	C, B, R, T, E	
09MS-01-SHER	Shears/Scissors, Medical	Standard medical shears to enable cutting of various materials.	40, 84, 124, 126	B, A, P, H, D	C, B, R, T, E	
09MS-01-SHEY	Shield, Eye Irrigation Lens	Single-use, disposable eye lens with catheter to facilitate irrigation.	44, 84, 124, 126	B, A, P, H, D	C, B, R, T, E	
09MS-01-SUTR	Suture, Various Sizes	Various size absorbable and non-absorbable sutures.	17, 55, 88, 124, 126	H, D	C, B, R, T, E	
09MS-01-SUTS	Supplies and Materials, Suture	Single-use, disposable supplies or kits to support suturing procedures.	17, 55, 88, 124, 126	H, D	C, B, R, T, E	
09MS-01-TNDP	Depressor, Tongue	Single-use, disposable device used for oral assessment.	36, 84, 124, 126	B, A, P, H, D	C, B, R, T, E	

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
MS - Medical Supplies					
01 General - <i>Continued</i>					
09MS-01-TTAG	Tags and Supplies, Triage	Single-use, disposable patient marking devices for use during multi-casualty triage management.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
MS - Medical Supplies					
02 Airway Management/Ventilation					
09MS-02-AWVG	Supplies, Airway Management	Airway management supplies, basic and advanced. Enables basic and advanced access to, and protection of, patient respiratory system. Non-durable supplies.	1, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09MS-02-BITE	Block, Bite	Disposable device designed for insertion between patient's teeth. Respiratory maintenance device.	15, 84, 124, 126	B, A, P, H, D	C, B, R, T, E
09MS-02-NATU	Tubes, Nasogastric	Single-use, disposable nasogastric tube.	16, 88, 124, 126	A, P, H, D	C, B, R, T, E
09MS-02-NEBU	Nebulizer	Nebulizer assembly to facilitate the administration of aerosolized medications and solutions.	5, 88, 124, 126	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.	1, 84, 124, 126	B, A, P, H, U, 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.	38, 50, 55, 84, 124, 126	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.	24, 55, 88, 124, 126	A, P, H, D	C, B, R, T, E

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Section 9 | Medical

Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment 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.	7, 50, 88, 124, 126	A, 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.	55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09MS-03-BIOD	Supplies, Biohazard Disposal		Various non-durable vessels to contain and manage materials soiled with biohazards.	55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09MS-03-DSIN	Supplies, Disinfectant and Antiseptic		Commercial disinfectant and antiseptic products to clean skin and other surfaces.	55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09MS-03-GLVN	Gloves, Biomedical, Non-Sterile		Variable size, single-use examination gloves. Disposable, non-latex. Non-sterile.	37, 55, 84, 124, 126, 148	B, A, P, H, U, D	C, B, R, T, E
09MS-03-GLVS	Gloves, Biomedical, Sterile		Various sizes, sterile biomedical gloves.	21, 55, 88, 124, 126	H, U, D	C, B, R, T, E
09MS-03-HYGP	Supplies, Personal Hygiene		Various skin disinfectant and hygiene supplies.	84, 124, 126	B, A, P, H, U, 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.	20, 50, 55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
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.	25, 55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09MS-04-HSBN	Bandages and Products, Hemostatic	Sterile bandages coated or impregnated with substances that enhance suppression of active bleeding, as well as other materials that perform a similar function.	22, 55, 84, 124, 126	B, A, P, H, D	E
09MS-04-TAPE	Tape, Adhesive	Various size adhesive medical tape.	31, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
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.	32, 55, 88, 124, 126	A, P, H, D	C, B, R, T, E
09MS-05-IVSA	Supplies, Intravenous Administration	Various intravenous solutions and needle/catheter assemblies.	29, 30, 33, 55, 88, 124, 126	A, P, H, D	C, B, R, T, E
09MS-05-NEIO	Needles, Intraosseous Infusion	Various size/gauges to facilitate fluid/medication administration.	55, 88, 124, 126	A, P, H, D	C, B, R, T, E
09MS-05-SYRC	Cartridge Injector, Syringe	Assembly that facilitates syringe use.	13, 55, 88, 124, 126	A, P, H, U, D	C, B, R, T, E

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Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
MS - Medical Supplies					
05 Intravenous Therapy - Continued					
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.	35, 55, 88, 124, 126	A, P, H, U, D	C, B, R, T, E
MS - Medical Supplies					
06 Monitoring/Defibrillation					
09MS-06-PROB	Electrodes/Probes, Monitoring	Self-adhesive electrodes to facilitate electrical monitoring. Single-use, disposable.	45, 88, 124, 126	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).	39, 84, 124, 126	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.	84, 87, 124, 126	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.	18, 19, 84, 124, 126	B, A, P, H, D	C, B, R, T, E

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
MS - Medical Supplies					
09 Obstetrics					
09MS-09-KTOB	Kit, Obstretical	Self-contained kit with supplies required to support obstretical procedures.	55, 84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
MY - Mortuary Operations					
01 Kits					
09MY-01-ANTH*	Kit, Anthropology Section Tools	Measurement and comparison models for age and sex determination.		P, D	C, B, R, T, E
09MY-01-DENT*	Kit, Odontology Section Tools	Equipment used by forensic odontologists to conduct post mortem examination.		P, D	C, B, R, T, E
09MY-01-DNAK*	Kit, DNA Section Tools	Equipment used to collect DNA samples from the deceased.		P, D	C, B, R, T, E
09MY-01-EMBL*	Kit, Embalming Section Tools	Tools used to embalm and prepare human remains for transport.		P, D	C, B, R, T, E
09MY-01-FPRN*	Kit, Fingerprint Section Tools	Tools used to collect fingerprints from the deceased.		P, D	C, B, R, T, E
09MY-01-PATH*	Kit, Pathology Section Tools	Equipment used by forensic pathologists to conduct autopsy or examination by manipulating or removing bone or tissue as required.		P, D	C, B, R, T, E
09MY-01-PHOT*	Kit, Photography Section Tools	Tools used to create photographic documentation of remains.		P, D	C, B, R, T, E
09MY-01-XRAY*	Kit, Radiography Section Tools	Equipment used for obtaining full body radiographic images of the deceased.		P, D	C, B, R, T, E

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Section 9 | Medical

Item Number		Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
MY - Mortuary Operations						
02 Storage and Transport						
09MY-02-BHST*	Hoist, Body	Cadaver lift designed for one or two persons to move a decedent in a confined area.	P, D	C, B, R, T, E		
09MY-02-RACK*	Racking, Lightweight, Portable	Portable lightweight racks for decedents to be used in temporary refrigerated areas such as tents or trailers.	H, D	C, B, R, T, E		
09MY-02-REFR*	Refrigerators, Body (2, 3, or 4 body)	Stand alone refrigerator units for 2, 3, or 4 bodies to increase storage space in trailers or temporary morgues.	P, D	C, B, R, T, E		
PH - Pharmaceuticals						
01 General						
09PH-01-ADEN	Adenosine	Anti-dysrhythmic.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E	
09PH-01-ALBU	Albuterol	Bronchodilator.	88, 104, 124, 126	A, P, H, D	C, B, R, T, E	
09PH-01-AMIO	Amiodarone	Anti-dysrhythmic.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E	
09PH-01-ANTA	Antacids	Antacid.	88, 104, 124, 126	A, P, H, U, D	C, B, R, T, E	
09PH-01-ATVT	Ipratropium	Bronchodilator.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E	

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
01 General - Continued					
09PH-01-BCLM	Beclomethasone	Steroid, oral inhalant or nasal spray for respiratory disorders.	88, 104, 124, 126	H, D	C, B, R, T, E
09PH-01-CACL	Calcium Chloride	Electrolyte used in resuscitation settings.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-DEXT	Dextrose	Glucose compound for use in hypoglycemia.	88, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-01-DIPH	Diphenhydramine	Antihistamine.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-DOPA	Dopamine	Used in emergency setting to treat acute hypotension.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-ELEC	Fluid, Electrolyte Replacement, Oral	Crystalloid solutions for Oral Rehydration Therapy (ORT).	88, 104, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09PH-01-EPIA	Epinephrine, Auto-Injector	Epinephrine packaged in auto-injector.	55, 84, 104, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09PH-01-EPIP	Epinephrine	Catecholamine, used in cardiac arrest, as a vasoconstrictor acute hypotension, as a bronchodilator and antispasmodic in bronchial asthma.	55, 84, 104, 124, 126	A, P, H, D	C, B, R, T, E

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09PH-01-FURO	Furosemide	Diuretic.	55, 84, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-GLUC	Glucagon	Anti-hypoglycemia agent.	55, 84, 104, 124, 126	B, A, P, H, D	C, B, R, T, E
09PH-01-LIDO	Lidocaine, all concentrations	Anti-dysrhythmic as well as analgesic properties.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-MASU	Magnesium Sulfate	Electrolyte replacement, anticonvulsant, bronchodilator, anti-dysrhythmic.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-METP	Methylprednisolone	Corticosteroid; bronchodilation and anti-inflammatory characteristics.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-NTRO	Nitroglycerin	Nitrate; vasodilator and smooth muscle relaxant.	84, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-OXYG	Oxygen	Oxygen.	84, 104, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09PH-01-POLY	Polysporin Ointment	Antibiotic ointment.	88, 104, 124, 126	A, P, H, D	C, B, R, T, E

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
01 General - Continued					
09PH-01-RING	Ringers Solution, Lactated	Crystalloid solution used for fluid replacement.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-SALI	Saline Solution	Crystalloid solution used for fluid replacement.	84, 104, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09PH-01-SISU	Silver Sulfadiazine Cream	Silver sulfadiazine, a sulfa drug, is used to prevent and treat infections of second- and third-degree burns.	88, 104, 124, 126	A, P, H, D	C, R, T, E
09PH-01-SOBI	Sodium Bicarbonate	Electrolyte. Useful in the management of crush syndrome.	55, 84, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-TCOP	Tetracaine Ophthalmic	Ophthalmic anesthetic for use in eye injuries.	88, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-01-THEO	Theophylline	Bronchodilator.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-01-THIA	Thiamine	Vitamin.	55, 88, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-01-WATR	Water, Sterile	Fluid solution; topical irrigation.	84, 104, 124, 126	B, A, P, H, U, D	C, B, R, T, E

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
02 Analgesics/Sedatives					
09PH-02-ACET	Acetaminophen	Analgesic, anti-pyretic.	84, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-02-ASA	Acetylsalicylic Acid	Anticoagulant; analgesic, anti-inflammatory; anti-pyretic.	84, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-02-IBUP	Ibuprofen	Nonsteroidal anti-inflammatory agent; analgesic, anti-pyretic.	84, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
09PH-02-KETO	Ketorolac	Nonsteroidal anti-inflammatory agent; analgesic.	55, 88, 104, 124, 126	H, D	C, B, R, T, E
09PH-02-MZLM	Midazolam	Sedative, anticonvulsant; benzodiazepine.	55, 88, 104, 124, 126, 172	A, P, H, D	C, B, R, T, E
PH - Pharmaceuticals					
03 Antibiotics/Antiviral					
09PH-03-ADAM*	Adamantines	Anti-viral.	88, 104, 124, 126	H, D	B
09PH-03-AMOX	Amoxicillin	Antibiotic.	88, 104, 124, 126	P, H, U, D	B
09PH-03-CEPH	Cephalexin	Antibiotic.	88, 104, 124, 126	H, D	B

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Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
03 Antibiotics/Antiviral - Continued					
09PH-03-CHLO	Chloramphenicol	Antibiotic.	88, 104, 124, 126	H, D	B
09PH-03-CPRO	Ciprofloxacin	Antibiotic.	88, 104, 124, 126	P, H, U, D	B
09PH-03-DOXY	Doxycycline	Antibiotic.	88, 104, 124, 126	P, H, U, D	B
09PH-03-ERYT	Erythromycin	Antibiotic.	88, 104, 124, 126	P, H, D	B
09PH-03-GENT	Gentamicin	Antibiotic.	88, 104, 124, 126	H, D	B
09PH-03-MZOL*	Metronidazole	Antibiotic.	88, 104, 124, 126	H, D	B
09PH-03-NEUR*	Neuraminidase Inhibitors	Anti-viral.	88, 104, 124, 126	H, U, D	B
09PH-03-OPHE*	Ophthalmic Erythromycin	Ophthalmic antibiotic.	88, 104, 124, 126	P, H, D	B
09PH-03-OPHG*	Ophthalmic Gentamicin	Ophthalmic antibiotic.	88, 104, 124, 126	H, D	B
09PH-03-RIBA	Ribavirin	Anti-viral.	88, 104, 124, 126	H, U, D	B

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
03 Antibiotics/Antiviral - Continued					
09PH-03-STMY	Streptomycin	Antibiotic.	88, 104, 124, 126	H, D	B
09PH-03-TRIM	Trimethoprim/ Sulfamethoxazole	Antibacterial agent.	88, 104, 124, 126	H, D	B
PH - Pharmaceuticals					
04 Narcotics/Narcotic Antagonists					
09PH-04-BUTO	Butorphanol Injection	Narcotic analgesic.	55, 88, 104, 124, 126, 172	H, D	C, B, R, T, E
09PH-04-MOSU	Morphine Sulfate	Narcotic analgesic.	55, 88, 104, 124, 126, 172	A, P, H, D	C, B, R, T, E
09PH-04-NALX	Naloxone	Narcotic antagonist.	55, 88, 104, 124, 126	A, P, H, U, D	C, B, R, T, E
PH - Pharmaceuticals					
05 Antidote					
09PH-05-AMNI	Amyl Nitrite	Vasodilator. A component of the Cyanide Antidote Kit.	88, 104, 124, 126	A, P, H, U, D	C
09PH-05-ATSF	Atropine Sulfate	Anticholinergic. Antidote for organophosphate and nerve agent exposure.	55, 88, 104, 124, 126	B, A, P, H, U, D	C

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Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
05 Antidote - Continued					
09PH-05-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.	55, 88, 104, 124, 126	A, P, H, D	C, B, R, T, E
09PH-05-CANA	CANA Auto-Injector	Diazepam packaged in an auto-injector. For use in the management of nerve agent and organophosphate exposure.	55, 84, 104, 124, 126, 172	B, A, P, H, U, D	C
09PH-05-CHAR	Charcoal, Activated	Used in emergency setting to treat oral ingestion poisoning/overdoses.	84, 104, 124, 126	B, A, P, H, D	C, B, R, T, E
09PH-05-COBL	Hydroxocobalamin	Vitamin analog. Cyanide antidote.	55, 88, 104, 124, 126	A, P, H, U, D	C
09PH-05-CYKT	Kit, Cyanide Antidote	Kit includes Sodium Nitrite, Sodium Thiosulfate and Amyl Nitrite inhalant or other FDA-approved products for cyanide poisoning.	55, 88, 104, 124, 126	A, P, H, U, D	C
09PH-05-DTPC	Ca-DTPA, Pentetate Calcium Trisodium Injection	Radiation treatment drug for treating internal contamination from Plutonium, Americium, and Curium.	55, 88, 104, 124, 126	H, D	R
09PH-05-DTPZ	Zn-DTPA, Pentetate Zinc Trisodium Injection	Radiation treatment drug for treating internal contamination from Plutonium, Americium, and Curium.	55, 88, 104, 124, 126	H, D	R

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
05 Antidote - Continued					
09PH-05-METB	Methylene Blue	Used in emergency setting for hemoglobinopathies.	55, 88, 104, 124, 126	A, P, H, D	C
09PH-05-NAAK	Nerve Agent Antidote Kit (NAAK)	Pralidoxime chloride autoinjector - 2-PAM; Atropine autoinjector, or a combination autoinjector.	55, 88, 104, 124, 126	B, A, P, H, U, D	C
09PH-05-POTI	Potassium Iodide	Used in radiation emergency - protects the thyroid in a radiation emergency.	88, 104, 124, 126	P, H, U, D	R
09PH-05-PRAL	Pralidoxime Chloride	Used in nerve agent and organophosphate exposures. Component of Nerve Agent Antidote Kit (NAAK).	55, 88, 104, 124, 126	A, P, H, U, D	C
09PH-05-PRUS	Prussian Blue	Used in emergency setting for radiation exposures, specifically cesium.	88, 104, 124, 126	H, D	R
09PH-05-SOTH	Sodium Thiosulfate	Used in the treatment of cyanide poisoning; a component of cyanide antidote kits.	55, 88, 104, 124, 126	A, P, H, D	C
PH - Pharmaceuticals					
06 Gastrointestinal (GI)					
09PH-06-BISM*	Bismuth Products	Antiemetic.	88, 104, 124, 126	H, D	C, B, R, T, E
09PH-06-GRAN	Gransetron	Antinauseant and antiemetic.	88, 104, 124, 126	H, D	R

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
PH - Pharmaceuticals					
06 Gastrointestinal (GI) - Continued					
09PH-06-LOPE	Loperamide	Antidiarrheal agent.	88, 104, 124, 126	H, D	C, B, R, T, E
09PH-06-PHNG	Phenergan	Antiemetic.	88, 104, 124, 126	A, P, H, D	C, B, R, T, E
PH - Pharmaceuticals					
07 Anticonvulsant					
09PH-07-DIAZ	Diazepam	Anticonvulsant (may be used as part of the treatment for exposure to nerve agents.)	55, 88, 104, 124, 126, 172	A, P, H, D	C, B, R, T, E
09PH-07-FOSP	Fosphenytoin	Anticonvulsant.	55, 88, 104, 124, 126	H, D	C, B, R, T, E
09PH-07-LORA	Lorazepam	Sedative; antianxiety agent; benzodiazepine.	55, 88, 104, 124, 126, 172	A, P, H, D	C, B, R, T, E
09PH-07-PHNT	Phenytoin	Anti-convulsant.	55, 88, 104, 124, 126	H, D	C, B, R, T, E
TR - Training					
01 Equipment					
09TR-01-CSIM	Equipment, Training/ Casualty Simulation	Life-like human body replicas that enable medical practitioners to train in various scenarios.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E

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Section 9 | Medical

Item Number	Title	Description	Standards ¹	EMS/ Clinical Care Level ²	Hazard Environ- ment ³
TR - Training					
01 Equipment - <i>Continued</i>					
09TR-01-MKIT	Supplies, Moulage	Moulage supplies include prosthetics, makeup, and other materials used to simulate wounds/injuries for training/exercise purposes.	84, 124, 126	B, A, P, H, U, D	C, B, R, T, E
09TR-01-SAIT	Simulator, Auto Injector, Training	Training simulator for auto injectors such as CANA and NAAK.	84, 124, 126	B, A, P, H, U, D	C

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Overview

Early editions of the SEL included multiple references to power-related items such as batteries and generators throughout the various sections. This section was created to consolidate those references and eliminate redundancy. By maintaining a unique section for power, the IAB hopes to remind readers that the availability of power is a significant consideration in planning across all areas.

The Power section includes only three sub-sections: Batteries and Power Cells, Generators, and Other Power-Related Equipment. Its inclusion as a separate section should increase awareness of power requirements as the number and type of electronic equipment items continues to 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.

In the aftermath of disasters such as Hurricane Katrina and the January 2007 Midwest (Saint Louis) ice/wind storms, one of the salient lessons learned was the difficulty of recharging batteries in an environment characterized by widespread power outages. As a result, many response organizations are mandating that some critical equipment be capable of using commercially available disposable batteries either as a primary or alternate power source (e.g., an alkaline battery pack that can be used in place of a rechargeable NiCad battery). Where applicable, comments regarding the need for special power requirements such as custom batteries will be noted in the Operating Considerations field of equipment in other SEL sections.

One particularly noteworthy issue has been mentioned here in past versions of the SEL, and unfortunately still requires reinforcement. Readers are encouraged to emphasize generator safety and recognize the dangers of carbon monoxide poisoning and electrocution to the general public during disasters that cause power outages. Every year, and despite multiple warnings, many lives are lost due to individuals running generators in or near their homes. Carbon monoxide is an odorless and colorless gas that kills! Also, by inappropriately wiring generators directly into a building or residence (instead of plugging appliances into the generator), severe injuries/fires/damage can occur when power is restored.

Section Changes for 2009

Only minor edits to features and operation considerations were made in this edition.

Selection Factors

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.

Section 10 | Power

Item Number	Title	Description	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 (Ni-CAD), Nickel Metal Hydride (NiMH), Lithium (Li-Ion). Form factors such as AA, AAA, C and D cells, 9-Volt, Clamshell.	
10BC-00-FCEL	Cells, Fuel	Fuel Cells.	
10BC-00-SOLR*	Chargers	Including but not limited to solar, natural gas, shore power, etc.	
GE - Generators			
10GE-00-GENR	Generators	Generators, varying types and sizes, including gasoline, diesel, propane, natural gas, alternator, gas turbine powered devices, etc.	123
PE - Other Power-Related Equipment			
10PE-00-BCON	Conditioners, Battery	Battery conditioners.	
10PE-00-GFCI	Equipment, Ground Fault Circuit Interruption	Portable, high-reliability, all electronic device used to protect responders from electrocution by interrupting any unintentional electrical path between a source of current and a grounded surface when using electrical equipment at an incident scene.	123
10PE-00-INVT	Inverters	Equipment for DC to AC conversion.	123
10PE-00-PCDS*	System, Power Conditioning	Systems that provide protection against power spikes, surges, and momentary drops so that serviced equipment receives "clean" power.	123
10PE-00-PTSW	Switch, Power Transfer	Switch for power output transfer to support generator maintenance and fueling.	123
10PE-00-RECT	Rectifiers	Equipment for AC to DC conversion.	123
10PE-00-REEL	Reels, Electric Cord	Electric cord reels.	123
10PE-00-UPS	Supply, Uninterruptible Power (UPS)	Systems that compensate for loss of power to serviced equipment for some period of time. May include short-duration battery devices, or standby generator devices for longer duration.	

Note: Features, Operating Considerations, and Training Considerations can be found on the enclosed CD-ROM, or online at www.iab.gov.

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

* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 11 - CBRNE Reference Materials

Overview

This section was originally created in the Spring 2004 edition to highlight reference documents previously included under Operational Equipment. However, as the section evolved, it conflicted somewhat with the IAB's philosophy of making generic recommendations rather than listing specific product/brand names. Using product names, particularly in the reference database section, was unfair to vendors with comparable products even if they could be listed the following year.

In 2008, this section was replaced with three generic items:

- CBRNE References
- Field Expedient References
- Reference Databases

These three items convey the overall intent of the IAB in recommending that references of these types be obtained as part of the recommended list of items need for all-hazards response. Examples of published references (books, pocket guides, etc.) are now listed in bibliographical format in a separate List of References, which appears at the end of this book.

Section Changes for 2009

No changes to items. The List of References has been reviewed and updated.

Section 11 | CBRNE Reference Materials

Item Number	Title	Description	Standards ¹
11RE-00-RFCB	References, CBRNE	Publications and other materials that provide educational or operational information useful in the planning and execution of response to CBRNE incidents.	
11RE-00-RFDB	Databases, Reference	Databases containing chemical information (properties, physical characteristics, decontamination information), modeling tools, medical and first aid information, blast radii, transport labeling, or other information useful in all-hazards incident response, and designed for access through a handheld, notebook, or desktop computer. Includes centralized databases designed for remote access as well as databases incorporated into mobile systems.	
11RE-00-RFEX	References, Field Expedient	Publications or other reference material suitable for use at the scene of an incident or during preplanning, training, and exercise development.	

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

Section 12 – CBRNE Incident Response Vehicles

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). It contains multiple vehicle types, including trailers for water and equipment. The Personal Protective and Operational Equipment (PP&OE) SubGroup established this section, and is responsible for maintaining its content.

Section Changes for 2009

Minor edits only.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 12 | CBRNE Incident Response Vehicles

Item Number	Title	Description	Standards ¹
TR - Trailers			
12TR-00-H2OT	Trailer, Water/Source	Water trailers (potable and non-potable) with distribution system and pump.	
12TR-00-MOVR	Mover, Prime, for Equipment/Water Trailers	A vehicle used to tow equipment trailers, such as a semi-trailer tractor. It would be used with items such as the trailers in 12TR-00-TEQP and 12TR-00-H2OT.	
12TR-00-TEQP	Trailer, Equipment	Trailers for transport of equipment to an incident or training site.	
VE - Vehicles			
12VE-00-ABUS	Vehicle, Mass Casualty Transport	Specialized vehicles such as "Ambulance Buses" to transport stretcher-borne patients during a mass-casualty event. Includes retrofit kits to convert existing vehicles into mass casualty transports.	90, 112
12VE-00-CMDV	Vehicle, Command, Mobile	Mobile command vehicles for use at incident scene.	
12VE-00-MISS	Vehicle, Specialized Mission, CBRNE	Specialized vehicles designed to support specific CBRNE mission area requirements. Examples include deployment vehicles, tactical intervention vehicles, hazmat units, communications units, bomb response units, mobile morgue units, and special transport units such as all-terrain vehicles (ATVs), 2-wheeled personal transports for fully suited bomb technicians, and robot trailers designed to accommodate special mission equipment and accessories.	
12VE-00-SPEC	Vehicle, Specialized Emergency Management	Specialized vehicles for emergency management operations. This category includes special-purpose vehicles for the transport of response equipment and personnel to incident sites which may have limited or restricted access as a result of an emergency or disaster.	
12VE-00-VHCL	Vehicle, Commercial	Commercial vehicles, vans, SUVs, flat bed and panel trucks for personnel transportation and equipment movement.	

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* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 13 – Terrorism Incident Prevention Equipment

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). It also recognizes that although the SEL is response-oriented, several items from the Information Technology section of the previous edition had substantial utility in the “prevent” mission as well. The Interoperable Communication and Information System (ICIS) SubGroup established this section, and is responsible for maintaining its content.

Section Changes for 2009

This edition adds features information to items 13IT-00-SGNT and 13LE-00-SURV, as well as several references to new data interchange standards across the section. No additions or deletions were made in this edition.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 13 | Terrorism Incident Prevention Equipment

Item Number	Title	Description	Standards ¹
IT - Information Technology			
13IT-00-ALRT	System, Alert/Notification	Alert and notification equipment that allows for real-time dissemination of information and intelligence among responders via equipment such as cellular phones, pagers, text messaging, etc.	99
13IT-00-DACQ	Data Acquisition	Software for data collection and information/intelligence gathering, including data mining and search tools that support inferential analysis, including trend analysis.	
13IT-00-DEXC	Data Exchange and Interoperability	System or software designed to facilitate the exchange and interoperability of data on extramural or legacy systems such as databases, dispatch systems, records management systems, and other systems containing data useful in terrorism incident prevention.	78, 79, 101, 102, 103
13IT-00-DFSN	Data Fusion/Synthesis	Software, system or suite 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.	
13IT-00-FACE	Software, Facial Recognition	Facial recognition software for access control, identification of criminal actors (IFF), etc.	70, 78, 79
13IT-00-SGNT*	Software, Investigative, Signals Intelligence	Investigative software for collating and analyzing data from signals intelligence such as Pen Registers and wiretap management tools.	
LE - Law Enforcement Equipment			
13LE-00-SURV*	Equipment, Law Enforcement Surveillance	Surveillance equipment and related accessories, including by not limited to: audio, data, and visual equipment. Includes electronic equipment such as Pen registers (equipment capable of capturing incoming and outgoing phone numbers, along with the duration of calls, without listening to the actual conversations). Also includes equipment designed to extract information from personal digital assistants (PDAs) and cellular devices such as cellular phones and messaging devices.	

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* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 14 – Physical Security Enhancement Equipment

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). It contains items used to enhance the physical security of buildings and other infrastructure assets. These equipment items, when deployed, mitigate either the threat of an incident or its effects, and responders utilize or interact with many of these items in the course of response.

The Interoperable Communication and Information Systems (ICIS) SubGroup and the Personal Protective and Operational Equipment (PP&OE) SubGroup have collaborated in providing support for this section.

Section Changes for 2009

Item 14SW-01-ASTN, Network, Acoustic Sensor Triangulation was added online in 2008, and appears in the printed edition for the first time in 2009. Otherwise, this section contains only minor edits to two existing items.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 14 | Physical Security Enhancement Equipment

Item Number	Title	Description	Standards ¹
EX - Explosion Protection			
14EX-00-BCAN*	Receptacles, Trash, Blast-Resistant	Blast-resistant trash receptacles.	95
14EX-00-BSIR	Systems, Building, Blast/ Shock/Impact Resistant	Systems to mitigate damage from blasts, shocks, or impacts, such as column and surface wraps, breakage/shatter resistant glass, window wraps, and deflection shields.	
SW - Surveillance, Warning, Access/Intrusion Control			
01 General			
14SW-01-ALRM	Systems/Sensors, Alarm	Systems and standalone sensors designed to detect access violations or intrusions using sensors such as door/window switches, motion sensors, acoustic sensors, seismic, and thermal sensors. May also include temperature sensors for critical areas.	
14SW-01-ASTN*	Network, Acoustic Sensor Triangulation	A network consisting of some number of deployed acoustic sensors and one or more processing nodes for data integration and analysis. Such networks can be "tuned" to one or more ranges of frequencies to detect sounds such as gunshots, heavy weapons discharge, explosions, MANPAD launches, vehicle noises, etc., and utilize acoustic triangulation to provide accurate location data. Such networks can be wired, wireless, or hybrid, and are capable of operation near critical infrastructure assets or in wide areas.	
14SW-01-DOOR	Doors and Gates, Impact Resistant	Reinforced doors and gates with increased resistance to external impact for increased physical security.	
14SW-01-EXTM*	System, Fire Extinguisher Monitoring	System for monitoring the presence and inflation pressure of fixed-location fire extinguishers to ensure that they are usable and are not stolen for possible misuse.	
14SW-01-LITE	Lighting, Area, Fixed	Fixed high-intensity lighting systems for improved visibility in areas such as building perimeters and surveillance zones.	
14SW-01-PACS	System, Physical Access Control	Locking devices and entry systems for control of physical access to facilities.	
14SW-01-SIDP	Systems, Personnel Identification	Systems for positive identification of personnel as a prerequisite for entering restricted areas or accessing information systems.	106, 166

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

* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 14 | Physical Security Enhancement Equipment

Item Number	Title	Description	Standards ¹
SW - Surveillance, Warning, Access/Intrusion Control			
01 General - <i>Continued</i>			
14SW-01-SIDV	Systems, Vehicle Identification	Systems for identification of vehicles, ranging from decals to radio frequency identification (RFID) or other transponder devices.	
14SW-01-SNSR	Sensors/Alarms, System and Infrastructure Monitoring, Standalone	Standalone sensors/alerts for use on critical systems or infrastructure items (security systems, power supplies, etc.) to provide warning when these systems fail or are near failure.	
14SW-01-VIDA	Systems, Video Assessment, Security	Camera-based security systems utilizing standard, low light, or infrared technology.	
14SW-01-WALL	Barriers: Fences; Jersey Walls	Obstacles designed to channel or halt pedestrian or vehicle-borne traffic in order to protect a physical asset or facility.	
SW - Surveillance, Warning, Access/Intrusion Control			
02 Waterfront			
14SW-02-HSCN	Equipment, Hull Scanning	Devices or systems used to scan ship hulls for attached devices.	
14SW-02-RADR	Systems, Radar	Scanning systems for detection of objects such as vessels, personnel, and other objects.	
14SW-02-SONR*	Systems, Sonar	Includes several different types of underwater sound wave imaging: Imaging Sonar: A high-frequency sonar that produces video-like imagery using a narrow field of view. The sonar system can be pole-mounted over the side of a craft or hand-carried by a diver. Scanning Sonar: Consists of smaller sonar systems that can be mounted on tripods and lowered to the bottom of the waterway. Scanning sonar produces a panoramic view of the surrounding area and can cover up to 360 degrees. →	

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

* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 14 | Physical Security Enhancement Equipment

Item Number	Title	Description	Standards ¹
SW - Surveillance, Warning, Access/Intrusion Control 02 Waterfront - <i>Continued</i>		Side Scan Sonar: Placed inside of a shell and towed behind a vessel. Side scan sonar produces strip-like images from both sides of the device. 3-Dimensional Sonar: Produces 3-dimensional imagery of objects using an array receiver.	
14SW-02-VBAR	Barriers, Vessel	Deployable, modular systems for restricting the movement of vessels.	

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

^{*} *Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.*

Section 15 – Inspection and Screening Systems

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). It contains detection items used primarily for inspection and screening purposes. While primarily preventive, in some cases these items may be deployed in the course of response (for example, in an attempt to locate and disarm secondary devices).

Section Changes for 2009

None.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 15 | Inspection and Screening Systems

Item Number	Title	Description	Standards ¹
IN - Inspection Systems			
15IN-00-RADR	Radar, Ground/Wall Penetrating	Radar systems designed to penetrate walls or ground to allow detection of hidden objects.	
SC - Screening Systems			
15SC-00-PMON	Monitors, Portal	Systems to scan vehicles/cargo for radioactive content. Various sizes for vehicles, packages (large and small) and pedestrians. Does not identify radionuclide. DIQCode: [D, Q]	118
15SC-00-PPSS	Systems, Personnel/Package Screening	Fixed systems such as walk-through magnetometers and conveyor-belt x-ray systems used to screen personnel and packages for hazardous materials/devices.	

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* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 16 – Reserved

[This section corresponds to the AEL's *Agricultural Terrorism Prevention, Response, and Mitigation Equipment* Section. The Medical SubGroup and Personal Protective and Operational Equipment SubGroup are working to evaluate items for inclusion in this section. The section number is reserved to maintain the section number correspondence of the remaining sections.]

Section 17 – CBRNE Prevention and Response Watercraft

Overview

This section was created in 2007 as part of the Personal Protective and Operational Equipment (PP&OE) SubGroup's water operations initiative. In addition to new items in Sections 1 and 3, watercraft were added to the SEL for the first time. Because the AEL had an existing section for watercraft, the SubGroup placed their new watercraft items in a corresponding Section 17.

Section Changes for 2009

Minor edits only.

Online Selection Factor

No selection matrix has been formulated for this section.

Section 17 | CBRNE Prevention and Response Watercraft

Item Number	Title	Description	Standards ¹
WC - Watercraft			
17WC-00-BOAT	Watercraft, CBRNE Prevention and Response	Surface boats or vessels with appropriate specialized equipment, designed to perform prevention and response missions within port areas, waterways, dams, reservoirs, rivers, lakes, etc.	
17WC-00-DBOT	Boat, Dive	Specialized boat to serve as base for dive operations.	
17WC-00-WCMA	Modifications/ Accessories, Watercraft	Watercraft modifications such as propeller guards.	
17WC-00-WCPS	Watercraft, Patrol/ Surveillance	Patrol watercraft with surveillance and light interdiction capability.	
17WC-00-WCSR*	Watercraft, Search and Rescue	Watercraft designed for use in search and rescue operations, including both inflatable and rigid designs.	

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

* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Overview

This section was created in 2007 as part of the Personal Protective and Operational Equipment (PP&OE) SubGroup's expansion of operational equipment. Because the AEL had an existing section for aviation equipment, the SubGroup placed their new Aircraft CBRNE Equipment and Upgrades item in a corresponding Section 18.

Section Changes for 2009

For clarification, air safety containers were moved from item 18AC-00-ACFT, to item 18AC-00-ACUP. The former now refers solely to fixed and rotary-wing aircraft, while the latter includes a wide range of upgrades and added features such as avionics, containers, fast-rope gantries, etc.

Selection Factors

No selection matrix has been formulated for this section.

Section 18 | CBRNE Aviation Equipment

Item Number	Title	Description	Standards ¹
AC - Aircraft			
18AC-00-ACFT*	Aircraft, CBRNE	Special-purpose fixed-wing aircraft and helicopters for CBRNE terrorism prevention, response, mitigation and/or remediation.	47, 48, 50, 125
18AC-00-ACMC	Equipment/Kits, Aircraft Mass Casualty Conversion	Equipment used to convert and use non-medical aircraft (fixed or rotary-wing) for patient transport.	93, 94
18AC-00-ACUP*	Equipment and Upgrades, Aircraft, CBRNE	Specialized navigational, communications, safety, and operational equipment necessary for CBRNE prevention, response and/or recovery, such as aviation GPS system, air-ground communications system, night vision kit, observation platform, fast-rope gantry, air-safety containers, etc.	125

Note: Features, Operating Considerations, and Training Considerations can be found on the enclosed CD-ROM, or online at www.iab.gov.

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

* Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.

Section 19 – CBRNE Logistical Support Equipment

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). Because the AEL had an existing section for logistical support equipment, the Personal Protective and Operational Equipment (PP&OE) SubGroup approved separating this equipment from the operational and search and rescue equipment in Section 3.

Section Changes for 2009

Minor edits were made to item 19SS-00-SHEN to distinguish it from item 19SS-00-SHEP. The former is intended to cover simple environmental controls for shelters (heating, air conditioning, humidity control) while the latter refers to more sophisticated CBRN protective systems with positive pressure.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 19 | CBRNE Logistical Support Equipment

Item Number	Title	Description	Standards ¹
GN - General			
19GN-00-BGPK	Bags/Packs	Carry bags or wearable packs for storage and transportation of personal gear and equipment, personal protective equipment, and miscellaneous equipment.	
19GN-00-BIVY	Bags, Bivy/Sleeping	Bags and bivys - individual sleeping systems, including storage bag or "stuff sacks".	
19GN-00-COMP	Compressors and Systems, Breathing Air	Air compressor or cascade system suitable for refilling self-contained breathing apparatus (SCBA) or self-contained underwater breathing apparatus (SCUBA) cylinders. Output must be compliant with NFPA 1989, Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.	50, 73, 144
19GN-00-FANE	Fan, Intrinsicly Safe, Exhaust	Intrinsicly safe exhaust fan for ventilation of confined spaces or enclosed areas with contaminated atmospheres.	53, 123, 125, 133
19GN-00-FANV	Fan, Cooling/Heating/Ventilation	For personnel and decontamination tent use. Not for use in explosive environments.	47, 125
19GN-00-FUEL	Container, Fuel Storage	Portable and transportable containers for various fuels, including gasoline, diesel, etc.	65, 69
19GN-00-H2OD	System, Water Distribution	Mobile systems and equipment for the transport and distribution of potable or non-potable water. Includes pumping systems, piping, and storage containers with spigots or other facilities for filling personal containers.	
19GN-00-H2OP	System, Water Purification	Portable system for producing potable water, with integrated pump; battery or AC powered.	
19GN-00-HSSF	Housing, Subsistence and Sanitation	Housing for response forces (e.g. tents, shelters, rehab trailers), subsistence and sanitation (field support).	
19GN-00-OPCK	Overpack	Overpack container, used to consolidate a load or facilitate handling of packages or cargo.	57, 64, 66, 125
19GN-00-RFGR*	Refrigerator/Freezer	Refrigerator/freezer for maintaining temperature control (cooling) for pharmaceuticals, vaccines, reagents, samples, or evidence.	123

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Section 19 | CBRNE Logistical Support Equipment

Item Number	Title	Description	Standards ¹
GN - General - Continued			
19GN-00-RFMN	Monitors/Recorders, Temperature and Humidity	Devices used to continuously monitor the temperature and/or humidity of a storage area or refrigeration device to ensure that contents do not exceed storage limits.	
MH - Material Handling Equipment			
19MH-00-BULK	Equipment, Bulk Material Handling	Equipment for movement of bulk material, including pallets, pallet lifting and movement devices such as portable forklifts, dollies, rigging, cargo netting, and loading ramps.	
19MH-00-CART	Cart, Field	Field cart for transporting tools, equipment, or personnel.	
19MH-00-CHMS	Containers, Hazardous Material Shipping	Hazardous material shipping containers.	64, 65
19MH-00-CONT*	Containers, Storage	Storage containers.	
19MH-00-CPAC	Carts, Portable Air Cylinder	Portable air cylinder carts for carrying spare breathing air cylinders to forward locations.	
19MH-00-CPGC	Carts, Portable Compressed Gas Cylinder	Portable carts for transporting gas cylinders (not breathing air) to forward locations.	
SS - Shelter Systems			
19SS-00-SHEL	Systems, Shelter, Rapid Deployment	Rapidly deployable shelter systems, hardwall or softwall (command and control, triage, evidence protection, etc.).	
19SS-00-SHEN*	System, Environmental Control	Environmental control system for shelters (heating, air conditioning, humidity control).	
19SS-00-SHEP	System, Collective Protective	An integrated system for providing collective protection against radiological, chemical, and biological threats.	

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Section 20 – Intervention Equipment

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). The Personal Protective and Operational Equipment (PP&OE) SubGroup and Interoperable Communications and Information Systems (ICIS) SubGroup each moved an item into this section.

Section Changes for 2009

This section was restructured to include a new category for Crime Scene Processing Equipment (20CS). The previous fingerprint processing item (20FP-00-AFIS) was moved into this category as 20CS-01-AFIS. Evidence Bags (formerly 03OE-01-BGEV) were moved into this category and incorporated into a new item 20CS-02-EVID entitled Systems and Equipment, Evidence Collection. Two new items were added for Equipment and Supplies, Crime Scene Processing, and Equipment, Ultraviolet Light Detection. The result is a greatly enhanced set of law enforcement equipment in recognition of the evidence collection mission associated with any WMD or CBRN incident.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 20 | Intervention Equipment

Item Number	Title	Description	Standards ¹
CS - Crime Scene Processing Equipment			
01 Fingerprint Processing Equipment			
20CS-01-AFIS*	Equipment, Fingerprint Processing and Identification	Equipment for fingerprint processing, including Automated Fingerprint Identification System (AFIS) interface equipment.	78, 79
CS - Crime Scene Processing Equipment			
02 Other Crime Scene Processing Equipment			
20CS-02-EVID*	Systems and Equipment, Evidence Collection	Mobile evidence collection and storage systems, including bags, canisters, or other containers for evidence storage and preservation.	125
20CS-02-SUPP*	Equipment and Supplies, Crime Scene Processing	Equipment and consumable supplies for crime scene processing activities including latent fingerprint collection, evidence collection, and documentation.	125
20CS-02-UVLT*	Equipment, Ultraviolet Light Detection	Crime scene processing equipment utilizing various frequencies of UV light to identify fingerprints, gunshot residue, blood spatter, and other trace evidence.	125
TE - Tactical Entry Equipment			
20TE-00-NTRY	Equipment, Tactical Entry	Tactical entry equipment. Does not include explosive material or weapons.	

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Section 21 – Other Authorized Equipment

Overview

This section was created in 2007 to improve the alignment of the SEL with the DHS Authorized Equipment List (AEL). Even though it is entitled “Other Authorized Equipment”, this section is in fact used by the AEL for items such as consulting services, shipping charges, and sales tax that do not fit in any of the normal equipment categories. Since maintenance packages/contracts are also not “equipment” per se, the Personal Protective and Operational Equipment (PP&OE) SubGroup chose to move the maintenance item from the Operational Equipment section into Section 21 for the 2007 edition. That is currently the only SEL item in this section.

Section Changes for 2009

None.

Online Selection Factors

No selection matrix has been formulated for this section.

Section 21 | Other Authorized Equipment

Item Number	Title	Description	Standards ¹
GN - General			
21GN-00-MAIN	Maintenance	Vehicle and equipment maintenance packages.	

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

^{*} *Item has been moved or changed in this edition. Note that changes may be in fields that are only viewable on CD-ROM or online.*

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 “A” for 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 2007 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.us). 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	Type*
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 868.1400 (FDA), Carbon Dioxide Gas Analyzer		R
4	21 CFR 868.1930 (FDA), Stethoscope head		R
5	21 CFR 868.5630 (FDA), Nebulizer		R
6	21 CFR 868.5895 (FDA), Performance Standard for Continuous Ventilator (Respirator)		R
7	21 CFR 868.5915 (FDA), Manual emergency ventilator		R
8	21 CFR 870.1025 (FDA), Arrhythmia detector and alarm		R
9	21 CFR 870.1120 (FDA), Blood pressure cuff		R
10	21 CFR 870.2700 (FDA), Oximeter		R
11	21 CFR 870.2800 (FDA), Medical magnetic tape recorder		R
12	21 CFR 870.5300 (FDA), DC-defibrillator (including paddles)		R
13	21 CFR 872.6770 (FDA), Cartridge syringe		R
14	21 CFR 874.4770 (FDA), Otoscope		R
15	21 CFR 876.1500 (FDA), Endoscope and accessories		R
16	21 CFR 876.5980 (FDA), Gastrointestinal tube and accessories		R
17	21 CFR 878 (FDA) (multiple sections apply)		R
18	21 CFR 878.3900 (FDA), Inflatable extremity splint		R
19	21 CFR 878.3910 (FDA), Non-inflatable extremity splint		R
20	21 CFR 878.4040 (FDA), Surgical apparel		R
21	21 CFR 878.4460 (FDA), Surgeon's glove		R
22	21 CFR 878.4490 (FDA), Absorbable hemostatic agent and dressing		R
23	21 CFR 878.4780 (FDA), Powered suction pump		R
24	21 CFR 878.4800 (FDA), Manual surgical instrument for general use		R
25	21 CFR 880 (FDA) (multiple sections apply)		R
26	21 CFR 880.2900 (FDA), Colormetric Thermometer		R

* “R” indicates a reference standard; “A” indicates a standard that has been formally adopted by the IAB.

ID#	Standard Name	Use/Care	Type*
27	21 CFR 880.2910 (FDA), Electronic Thermometer		R
28	21 CFR 880.2920 (FDA), Mercury Thermometer		R
29	21 CFR 880.5025 (FDA), IV Bag Container		R
30	21 CFR 880.5200 (FDA), IV Catheter		R
31	21 CFR 880.5240 (FDA), Medical adhesive tape and adhesive bandage		R
32	21 CFR 880.5420 (FDA), Pressure infusor for an I.V. bag		R
33	21 CFR 880.5440 (FDA), IV Administration Set (All Components)		R
34	21 CFR 880.5725 (FDA), Infusion pump		R
35	21 CFR 880.5860 (FDA), Piston syringe		R
36	21 CFR 880.6230 (FDA), Tongue depressor		R
37	21 CFR 880.6250 (FDA), Patient examination glove		R
38	21 CFR 880.6740 (FDA), Vacuum-powered body fluid suction apparatus		R
39	21 CFR 880.6760 (FDA), Protective restraint		R
40	21 CFR 880.6820 (FDA), Medical disposable scissors		R
41	21 CFR 880.6900 (FDA), Hand-carried stretcher		R
42	21 CFR 880.6910 (FDA), Wheeled stretcher		R
43	21 CFR 886.1570 (FDA), Ophthalmoscope		R
44	21 CFR 886.4360 (FDA), Ocular surgery irrigation device		R
45	21 CFR 898 (FDA), Performance Standard for Electrode Lead Wires and Patient Cables		R
46	29 CFR 1910. 95 (OSHA), Occupational Noise Exposure		R
47	29 CFR 1910. 120 (OSHA), Hazardous Waste Operations and Emergency Response	Y	R
48	29 CFR 1910. 132 (OSHA), General Requirements, PPE	Y	R
49	29 CFR 1910. 133 (OSHA), Eye and face protection	Y	R
50	29 CFR 1910. 134 (OSHA), Respiratory Protection	Y	R
51	29 CFR 1910. 135 (OSHA), Head Protection	Y	R
52	29 CFR 1910. 138 (OSHA), Hand Protection	Y	R
53	29 CFR 1910. 146 (OSHA), Permit-Required Confined Spaces		
54	29 CFR 1910. 147 (OSHA), The Control of Hazardous Energy (Lockout/Tagout)		R
55	29 CFR 1910.1030 (OSHA), Bloodborne Pathogens		R
56	29 CFR 1926, (OSHA), Safety and Health Regulations for Construction		R
57	40 CFR 264 (EPA), Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities		R
58	42 CFR 84 (NIOSH), Respiratory Protective Devices		R
59	42 CFR 84 (NIOSH), with Air-Purifying Escape Respirator (APER) CBRN Statement of Standard and Self-Contained Escape Respirator (SCER) CBRN Statement of Standard; NPPTL Letter dated October 8, 2003		A
60	42 CFR 84 (NIOSH), with APR CBRN Statement of Standard; NPPTL Letter dated April 4, 2003		A

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Standards List - Continued

ID#	Standard Name	Use/Care	Type*
61	42 CFR 84 (NIOSH), with Powered Air-Purifying Respirator (PAPR) CBRN Statement of Standard dated October 6, 2006		A
62	42 CFR 84 (NIOSH), with Self-Contained Breathing Apparatus (SCBA) CBRN Statement of Standard (Requires NFPA 1981-2007 Certification)		A
63	47 CFR 90 (FCC), Private Land Mobile Radio Services		R
64	49 CFR 172.101 (DOT) Purpose and use of hazardous materials table		R
65	49 CFR 173 (DOT), Hazardous Materials Transportation Guide - Requirements for HAZMAT Shipments and Packages	Y	R
66	49 CFR 173.3 (DOT), Hazardous Materials Transportation Guide - Packaging and Exceptions	Y	R
67	49 CFR 178, Specifications for Packaging	Y	R
68	Advanced Encryption Standard (AES)		R
69	ANSI F852-99e1, Standard Specification for Portable Gasoline Containers for Consumer Use		R
70	ANSI INCITS 385-2004, Face Recognition Format for Data Interchange		R
71	ANSI Z87.1 Occupational and Educational Personal Eye and Face Protection Devices, 2003 Edition		A
72	ANSI Z89.1, Industrial Head Protection, 2003 Edition		A
73	ANSI/Compressed Gases Association Specification G-7.1, Commodity Specification for Air, Edition 5, 2004		R
74	ANSI/ISEA 102-1990, Gas Detector Tube Units - Short-Term Type for Toxic Gases and Vapors in Working Environments		R
75	ANSI/ISEA 105, Hand Protection Selection Criteria, 2005 Edition		A
76	ANSI/ISEA 107, High Visibility Safety Apparel, 2004 Edition		A
77	ANSI/ISEA 207, High Visibility Public Safety Vests, 2006 Edition		R
78	ANSI/NIST-ITL 1-2007, Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information - Part 1 (also available as NIST Special Publication 500-271)		R
79	ANSI/NIST-ITL 2-2008, Data Format for the Interchange of Fingerprint, Facial, & Other Biometric Information - Part 2: XML Version (also available as NIST Special Publication 500-275)		R
80	AOAC Test Methods for Handheld Bio Detectors		A
81	ASTM D4490-96 (2006)e1, Measuring the Concentration of Toxic Gases or Vapors Using Detector Tubes		R
82	ASTM E2566-08 Standard Test Method for Determining Visual Acuity and Field of View of On-Board Video Systems for Teleoperation of Robots for Urban Search and Rescue Applications		R
83	ASTM E2592-07, Standard Practice for Evaluating Cache Packaged Weight and Volume for Robots for Urban Search and Rescue		R
84	ASTM F1031-00 (2006), Standard Practice for Training the Emergency Medical Technician (Basic)		R
85	ASTM F1052-97 (2002), Standard Test Method for Pressure Testing Vapor Protective Ensembles	Y	R
86	ASTM F1453-92 (2003), Standard Guide for Training and Evaluation of First Responders Who Provide Emergency Medical Care		R

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ID#	Standard Name	Use/Care	Type*
87	ASTM F1556-94 (2007), Standard Guide for Spinal Immobilization and Extrication (Spine) Device Characteristics		R
88	ASTM F1651-95 (2002), Standard Guide for Training the Emergency Medical Technician (Paramedic)		R
89	ASTM F1897-04, Standard Specification for Leg Protection for Chain Saw Users		R
90	ASTM F2020-02a, Standard Practice for Design, Construction, and Procurement of Emergency Medical Services Systems (EMSS) Ambulances		R
91	ASTM F2100-07, Standard Specification for Performance of Materials Used in Medical Face Masks		R
92	ASTM F2300-05, Standard Test Method for Measuring the Performance of Personal Cooling Systems Using Physiological Testing		R
93	ASTM F2318-04, Standard Specification for Rotary Wing Basic Life Support		R
94	ASTM F2319-04, Standard Specification for Fixed Wing Basic Life Support		R
95	ASTM WK11343 (Work Item) - New Test Method for Blast Resistance of Trash Receptacles		R
96	CGA E-4, 4th Edition, Standard for Gas Pressure Regulators, Compressed Gas Association, 2002		R
97	CGA E-7, 2nd Edition, Standard for Medical Gas Regulators and Flowmeters, Compressed Gas Association, 1998		R
98	CGA G-4.1, 5th Edition, Cleaning Equipment for Oxygen Service, Compressed Gas Association, 2004		R
99	Common Alerting Protocol (CAP) 1.1, OASIS, October 2005		A
100	Data Encryption Standard (DES), and Triple-DES (3-DES)		R
101	Emergency Data Exchange Language (EDXL) Distribution Element, OASIS, May 2006		A
102	Emergency Data Exchange Language (EDXL) Hospital Availability Exchange (HAVE) 1.0, OASIS, November 2008		A
103	Emergency Data Exchange Language Resource Messaging (EDXL-RM) 1.0, OASIS, November 2008		A
104	Federal Food, Drug and Cosmetic Act		R
105	Federal Information Processing Standard (FIPS) 140-2, Security Requirements for Cryptographic Modules, 2001		R
106	Federal Information Processing Standard (FIPS) 201-1, Personal Identity Verification (PIV) of Federal Employees and Contractors, 2006		R
107	Global Justice XML Data Model (DOJ)		A
108	Guidelines for Design and Construction of Hospital and Health Care Facilities, 2001 (American Institute of Architects and the Facilities Guidelines Institute)		R
109	Guidelines for Environmental Infection Control in Health-Care Facilities, 2003 (CDC and the Healthcare Infection Control Practices Advisory Committee)		R
110	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
111	IEEE 802.11g-2003 Amendment to IEEE Std 802.11, 1999 Edition (Reaff 2003) IEEE Standard for Information technology		R

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ID#	Standard Name	Use/Care	Type*
112	KKK-A-1822E, Federal Specification for the Star-of-Life Ambulance		R
113	N42.13-1986, American National Standard Calibration and Usage of "Dose Calibrator" Ionization Chambers for the Assay of Radionuclides		R
114	N42.14-1999, Calibration and Use of Germanium Spectrometers for the Measurement of Gamma-Ray Emission Rates of Radionuclides		R
115	N42.32-2006, American National Standard Performance Criteria for Alarming Personal Radiation Detectors for Homeland Security		A
116	N42.33-2006, American National Standard for Portable Radiation Detection Instrumentation for Homeland Security		A
117	N42.34-2006, American National Standard Performance Criteria for Hand-held Instruments for the Detection and Identification of Radionuclides		A
118	N42.35-2006, American National Standard for Evaluation and Performance of Radiation Detection Portal Monitors		A
119	N42.38-2006, American National Standard Performance Criteria for Spectroscopy-Based Portal Monitors Used for Homeland Security		R
120	N42.49, American National Standard for Performance Criteria for Personal Emergency Radiation Detectors (PERD) for Exposure Control (DRAFT STANDARD)		R
121	NFPA 10: Standard for Portable Fire Extinguishers, 2007 Edition		R
122	NFPA 30: Flammable and Combustible Liquids Code, 2008 Edition		R
123	NFPA 70: National Electric Code, 2005 Edition		R
124	NFPA 450: Guide for Emergency Medical Services and Systems, 2004 Edition		R
125	NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials Incidents, 2008 Edition		A
126	NFPA 473: Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents, 2008 Edition		A
127	NFPA 1006: Standard for Rescue Technician Professional Qualifications, 2003 Edition		R
128	NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services, 2007 Edition		R
129	NFPA 1404: Standard for Fire Service Respiratory Protection Training, 2006 Edition		A
130	NFPA 1500: Standard on Fire Department Occupational Safety and Health Program, 2007 Edition	Y	R
131	NFPA 1581: Standard on Fire Department Infection Control Program, 2005 Edition	Y	R
132	NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs, 2007 Edition		A
133	NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents, 2004 Edition		A
134	NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2008 Edition	Y	A
135	NFPA 1852: Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus, 2008 Edition	Y	A
136	NFPA 1936: Standard on Powered Rescue Tools, 2005 Edition		A

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ID#	Standard Name	Use/Care	Type*
137	NFPA 1951: Standard on Protective Ensembles for Technical Rescue Operations, 2007 Edition		A
138	NFPA 1971: Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2007 Edition		A
139	NFPA 1975: Standard on Station/Work Uniforms for Fire and Emergency Services, 2009 Edition		A
140	NFPA 1977: Standard on Protective Clothing and Equipment for Wildland Fire Fighting, 2005 Edition		A
141	NFPA 1981: Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2007 Edition		A
142	NFPA 1982: Standard on Personal Alert Safety Systems (PASS), 2007 Edition		A
143	NFPA 1983: Standard on Life Safety Rope and Equipment for Emergency Services, 2006 Edition		A
144	NFPA 1989: Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection, 2008 Edition		A
145	NFPA 1991: Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies, 2005 Edition		A
146	NFPA 1992: Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies, 2005 Edition		A
147	NFPA 1994: Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents, 2007 Edition		A
148	NFPA 1999: Standard on Protective Clothing for Emergency Medical Operations, 2008 Edition		A
149	NFPA 2112: Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2007 Edition		A
150	NFPA 2113: Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire, 2007 Edition	Y	A
151	NIJ Guide 100-01, Selection and Application Guide to Personal Body Armor, 2001	Y	A
152	NIJ Standard 0101.06, Ballistic Resistance of Body Armor, July 2008		A
153	NIJ Standard 0106.01, Ballistic Helmets, December 1981		R
154	NIJ Standard 0108.01, Ballistic Resistance Protective Materials, September 1985		R
155	NIJ Standard 0603.01, Portable X-Ray Systems for Use in Bomb Identification, December 2007		R
156	NIOSH Publication No. 2008-132, Guidance on Emergency Responder Personal Protective Equipment (PPE) for Response to CBRN Terrorism Incidents, June 2008		R
157	NIST SP 800-31, Intrusion Detection Systems (IDSs)		R
158	NIST SP 800-36, Guide to Selecting Information Security Products		R
159	NIST SP 800-40, Version 2.0, Creating a Patch and Vulnerability Management Program (November, 2005)		R
160	NIST SP 800-41, Guidelines on Firewalls and Firewall Policy		R
161	NIST SP 800-44, Guidelines on Securing Public Web Servers		R
162	NIST SP 800-45, Guidelines on Electronic Mail Security		R

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ID#	Standard Name	Use/Care	Type*
163	NIST SP 800-46, Security for Telecommuting and Broadband Communications		R
164	NIST SP 800-47, Security Guide for Interconnecting Information Technology Systems		R
165	NIST SP 800-48, Wireless Network Security 802.11, Bluetooth and Handheld Devices		R
166	NIST SP 800-73-1, Interfaces for Personal Identity Verification, October 2007		R
167	NIST SP 800-76-1, Biometric Data Specification for Personal Identity Verification, January 2007		R
168	NIST SP 800-83, Guide to Malware Incident Prevention and Handling (November, 2005)		R
169	NSF/ANSI 5-2000, Water Heater, Hot Water Support Boiler, 2000		A
170	NVLAP program (NIST) currently provides accreditation for several different types of whole body and extremity dosimeters		R
171	The 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 in cooperation with the National Bomb Squad Commanders Advisory Board (NBSCAB). 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
172	Title 21 USC, Controlled Substances Act, Section 812		R
173	UL 913, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations, 2002		A
174	UL 2075, UL Standard for Safety Gas and Vapor Detectors and Sensors, 2004		A

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References	Comments
American Conference of Governmental Industrial Hygienists (ACGIH). <u>2008 TLVs® and BEIs®</u> . ISBN: 978-1-882417-79-7.	Features a resource for scene reference. Operating considerations include: Quantity of chemicals discussed, and it is suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Association of American Railroads, Bureau of Explosives, ATF, U.S. Treasury Department. <u>Emergency Action Guides</u> . Association of American Railroads, 2006. ISBN: 6-00-017107-2.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development. Available in hard copy or on CD-ROM from Bureau of Explosives, 412-741-1096.
Association of American Railroads, Bureau of Explosives. <u>Emergency Handling of Hazardous Materials in Surface Transportation</u> . Association of American Railroads, 2009. ISBN: TBD.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development. The 2005 Edition of this document has been discontinued. A new edition is planned for release in 2009. Contact the Bureau of Explosives, 412-741-1096 for details.
Bevelacqua, Armando S. <u>Hazardous Materials Chemistry</u> . Delmar Thomson Learning, 2005. ISBN-13: 9781401880903.	Features basic chemical nomenclature for the responder, and it is a textbook. Operating considerations include: Detailed chemical mechanisms are not discussed, reference resource during training, used for training Hazardous Materials Technicians.
Bevelacqua, Armando S., and Richard H. Stilp. <u>Hazardous Materials Field Guide</u> , 2 nd Ed. Thomson Delmar Learning, 2007. ISBN-13: 9781418038281	Features a resource for scene reference. Operating considerations include: quantity of chemicals discussed, and it is suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Bevelacqua, Armando S., and Richard H. Stilp. <u>Terrorism Handbook for Operational Responders</u> , 3 rd ed. Delmar Pub, 2009. ISBN-13: 9781428311459	Features a reference for planning, and training.
Bevelacqua, Toby. <u>Hazardous Materials: Managing the Incident Field Operations Guide</u> . Red Hat Publishing, 2005. ISBN: 1-932235-05-1.	Features a resource for scene reference. The FOG includes detailed tactical checklists that follow the Eight Step Process©, a section on identification and recognition of containers, data cards on the top 50 hazardous materials and CBRNE, as well as a matrix of WMD and drug lab precursor chemicals. The FOG is also designed for use in the classroom to support Hazardous Materials Technician and Incident Commander training. The Field Operations Guide (FOG) is designed to be used at the incident scene as a reference guide to strategic and tactical decision-making.

List of References - *Continued*

References	Comments
Burns, Paul. <u>Symbol Seeker, Hazard Identification Manual</u> . International Edition. Symbol Seeker, 1996. ISBN: 095088362x.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Callan, Michael. <u>Street Smart HazMat Response: A Common-Sense Approach to Handling Hazardous Materials Emergencies</u> . Red Hat Publishing, 2001. ISBN: 096565656x.	Operating considerations include: used for preplanning, training and exercise development.
Centers for Disease Control. <u>Public Health Emergency Response Guide for State, Local, and Tribal Public Health Directors</u> . Edition 1.0. Center for Disease Control. Available at: http://www.bt.cdc.gov/planning/responseguide.asp	Features an all-hazards reference tool. Pocket-sized. Durable. Contains checklists, templates, and guidance. Designed for public health professionals responsible for initiating response activities during the first 24 hours of an emergency or disaster. Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Christen, Henry T., and Paul M. Maniscalco. <u>Mass Casualty and High-Impact Incidents: An Operations Guide</u> . 2 nd revised ed. Prentice Hall, 2002. ISBN-13: 978-0130992222.	Features a reference for planning and training.
Christen, Henry T., and Paul M. Maniscalco. <u>Terrorism Response: Field Guide for Fire and EMS Organizations</u> . Prentice Hall, 2002. ISBN-13: 978-0131109063.	Features a reference for planning and training.
Christen, Henry T., and Paul M. Maniscalco. <u>Terrorism Response: Field Guide for Law Enforcement</u> . 3 rd ed. Prentice Hall, 2005. ISBN-13: 978-0131107472.	Features a reference for planning and training.
Currence, Phillip L. <u>Medical Response to Weapons of Mass Destruction</u> . Mosby/JEMS, 2005. ISBN-13: 978-0323023313.	Useful for education of first response medical personnel.
Currence, Phillip L., Bruce Clements, and Alvin C. Bronstein. <u>Emergency Care for Hazardous Materials Exposure</u> . 3 rd ed. Mosby/JEMS, 2006. ISBN-13: 978-0323048773.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Department of Defense. <u>21st Century Bioterrorism and Other Threats: U.S. Army Handbook on Medical Management of Radiological Casualties – Practical Emergency Information about Nuclear Weapons, “Dirty” Radioactive Bombs, Accidental Release, and other Radiation Contamination Threats</u> . 1 st ed. Progressive Management, 2002. ISBN-13: 978-1931828239.	Features descriptions of toxicological mechanisms caused by radiological hazards.
Farm Chemicals Handbook 2002. Meister Publishing Company, 2002. ISBN-13: 978-9990801064.	Features a resource for scene reference. Operating considerations include: quantity of chemicals discussed, and it is suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.

References	Comments
<u>Federal Explosives Law and Regulations, ATF Publication 5400.7</u> , Bureau of Alcohol, Tobacco, and Firearms, 2007.	Available online at http://www.atf.gov/explaron/fedexplolaw/2007edition/index.htm Provides legal framework, questions and answers, and example rulings. Also provides guidance on explosive handling and storage.
Fire, Frank L. <u>Common Sense Approach to Hazardous Materials</u> . 2 nd ed. Pennwell Books, 1996. ISBN-13: 978-0912212111.	Textbook dealing with the chemistry and effects of hazardous chemicals and radiation.
Foden, Charles R., and Jack L. Weddell. <u>First Responder's Guide to Agricultural Chemical Accidents</u> . Boca Raton: CRC Press LLC., 1992. ISBN-13: 978-0873717991.	Features descriptions of toxicological mechanisms for the field medical technician. Operating considerations include: limitations due to the level of deployment agricultural chemicals, to be based upon protocol which the field medical technician can function, reference resource during training, and used for training Hazardous Materials Technicians.
Forsberg, Krister, and S.Z. Mansdore. <u>Quick Selection Guide to Chemical Protective Clothing</u> , 5 th Ed. John Wiley & Sons, Inc., 2007. ISBN: 978-0-470-14681-1.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Genium's <u>Handbook of Safety, Health, and Environmental Data for Common Hazardous Materials, CD-ROM</u> . 1 st ed. McGraw-Hill Professional, 1998. ISBN-13: 978-0071341431.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Gosselin, Robert E., Roger P. Smith, Harold C. Hodge, and Jeanner Braddock. <u>Clinical Toxicology of Commercial Products</u> . 5 th ed. Williams & Wilkins, 1984. ISBN-13: 978-0683036329.	Features descriptions of toxicological mechanisms of Toxic Industrial Chemicals (TICs). Operating considerations include: Detail of mechanisms somewhat limited, reference resource during pre-planning, and used for training Hazardous Materials Technicians.
Graves, Barbara, ed. <u>Chem-Bio: Frequently Asked Questions</u> . Tempest Publishing, 1998. ISBN-13: 978-0966543711.	Features descriptions of military generated chemicals, as well as questions and answers. Operating considerations include: quantity of chemicals discussed, and it is a reference resource during preplanning and exercise development.
Hawley, Christopher David. <u>Hazardous Materials Air Monitoring and Detection Devices</u> . 2 nd ed. CENGAGE Delmar Learning, 2006. ISBN-13: 978-1418038311.	Operating considerations include: Used for preplanning, training and exercise development.
Hawley, Chris, Gregory G. Noll, and Michael S. Hildebrand. <u>Special Operations for Terrorism and HazMat Crimes</u> . Red Hat Publishing, 2001. ISBN-13: 978-0965656573.	Operating considerations include: Used for preplanning, training and exercise development.

List of References - *Continued*

References	Comments
Heymann, David L., ed. <u>Control of Communicable Diseases Manual</u> , 19 th ed. American Public Health Association, 2008. ISBN-13: 9780875531892.	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 they, 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).
Keith, Lawrence. <u>The National Toxicology Program's Gloves+ Version 3.12</u> . Lewis Publishers, 1992. ISBN: 0873717104.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Kozlow, Christopher, and John Sullivan. <u>Jane's Facility Security Handbook</u> . Jane's Information Group, 2001. ISBN-13: 978-0710622884.	Features descriptions of primary planning issues. Operating considerations include: Direction with organizational structures, and to be used as a reference resource during preplanning, training, and exercise development.
Trebisacci, David. <u>NFPA Hazardous Materials Response Handbook, 2008 Edition</u> . National Fire Protection Association, 2008. ISBN: 472HB08.	The Hazardous Materials Response Handbook includes: Includes the full texts of the 2008 NFPA 472: Competence of Responders to Hazardous Materials/ Weapons of Mass Destruction Incidents and the 2008 NFPA 473: Competencies for EMS Personnel Responding to Hazardous Materials/Weapons of Mass Destruction Incidents; relevant commentary that provides background information plus hands-on advice based on years of experience in the field; more than 200 illustrations, photos, and worksheets that support key facts so you can understand them more fully and apply requirements correctly; explanations of how to respond to haz-mat incidents resulting from general criminal/terrorist activities, as well as those involving weapons of mass destruction and radioactive materials; and practical guidance on emergency medical service response to incidents involving weapons of mass destruction and radioactive materials. Operating considerations include: reference resource during preplanning, training, and exercise development, and it includes relevant NFPA standards.
Lewis, Sr. Richard J. <u>Hawley's Condensed Chemical Dictionary</u> , 15th ed. Wiley-Interscience, 2007. ISBN-13: 978-0471768654.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Lewis, Sr. Richard J. <u>Hazardous Chemicals Desk Reference</u> , 5th ed. Wiley-Interscience, 2002. ISBN-13: 978-0471441656.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Lewis, Sr. Richard J. <u>Sax's Dangerous Properties of Industrial Materials, Three Volume Print</u> , 11 th ed. Wiley-Interscience, 2005. ISBN-13: 978-0471701330.	Features a resource scene reference for chemical hazards. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.

References	Comments
Maniscalco, Paul M., and Hank T. Christen. <u>Understanding Terrorism and Managing the Consequences</u> . Prentice Hall, 2001. ISBN-13: 978-0130212290.	Operating considerations include: Used for preplanning, training and exercise development.
Maslanskey, Carol J. <u>Air Monitoring Instrumentation: A Manual for Emergency, Investigatory, and Remedial Responders</u> . John Wiley & Sons, 1993. ISBN-13: 978-0471284604.	Operating considerations include: Used for preplanning, training and exercise development.
Matheson. <u>Effects of Exposure to Toxic Gases: First Aid and Medical Treatment</u> . Matheson, 1988. ISBN-13: 978-9994698608.	Features limited descriptions of toxicological mechanisms. Operating considerations include: quantity of chemicals discussed and reference resource during preplanning, training, and exercise development.
Milne, G.W.A. <u>Gardner's Chemical Synonyms and Trade Names</u> . 11 th ed. Wiley Publishing, 1999. ISBN-13: 978-0-566-08190-3.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
National Guidelines for Bomb Technicians. National Bomb Squad Commanders Advisory Board, April 2006. www.nbscab.org .	Operating considerations include: Used for preplanning, training, technical selection, certification/accreditation, and equipment requirements.
National Institute for Occupational Safety and Health. <u>NIOSH Pocket Guide to Chemical Hazards</u> . NIOSH Publication Number 2005-149. September 2005 Edition. ASIN: B000E8OY8C. CD-ROM and Online Versions Available: http://www.cdc.gov/NIOSH/npq .	Features an excellent quick reference for toxic industrial chemicals. Also available in CD-ROM and online version. It can be obtained by calling 1-800-35-NIOSH.
National Strategic Plan for U.S. Bomb Squads. National Bomb Squad Commanders Advisory Board, December 2006. www.nbscab.org .	Provides "Master Plan" for accredited bomb squads, shapes bomb squad policy development, and distribution restricted to accredited bomb squads. Further information, as well as an Executive Summary for Industry, is available at www.nbscab.org . Operating considerations include: Addresses alignment and coordination of Federal resources, and builds tactics, techniques, and procedures.
Noll, Gregory G., Michael S. Hildebrand, and James G. Yvorra. <u>Hazardous Materials: Managing the Incident</u> . 3 rd ed. Red Hat Publishing, 2005. ISBN: 1-932235-04-3.	Overviews the management of hazardous materials incidents. Primarily a learning text. The textbook consists of 12 chapters with chapters 1-3 addressing preparing for the incident and chapters 4-12 addressing how to respond safely to a hazardous materials incident. Chapter 4 is written as a "bridge chapter" and provides an overview of the Eight Step Process, which is a systematic way of approaching a hazmat incident. Chapters 5-12 expand on Chapter 4 by dedicating one chapter to each of the Eight Steps. Operating considerations includes: Suitable for preplanning, training, and exercise development.

List of References - *Continued*

References	Comments
<p>NRT Response Subcommittee Workgroup. <u>Joint Information Center Model: Collaborative Communications During Emergency Response</u>. The National Response Team, 2000. http://www.nrt.org.</p>	<p>A plan for conducting crisis communications during emergency responses that necessitate collaboration of multiple organizations to provide timely, useful and accurate information to the public and other stakeholders. The JIC Model works within the structure of ICS/UC while seeking to accommodate responses conducted under the FRP, FRERP, NCP or WMD/terrorist incidents.</p> <p>Document available at: http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/A-55JIC/\$File/JIC.pdf?OpenElement</p> <p>Operating considerations include: Used at strategic level operations, and it is a reference resource during preplanning, training, and exercise development.</p>
<p>O'Neil, Maryadele J., ed. <u>The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals</u>, 14th ed. Merck Publishing, 2006. ISBN-13: 978-0911910001.</p>	<p>Features a resource scene reference for chemical hazards of technical nature.</p> <p>Operating considerations include: suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.</p> <p>The web accessible version of The Merck Index, Fourteenth Edition 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:</p> <p>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)</p> <p>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:</p> <p>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</p> <p>STN International Chemical Abstract Service 2540 Olentangy River Road Columbus, OH 43202 Tel: 1-800-848-6533 www.cas.org E-mail: help@cas.org</p>

References	Comments
Olson, Kent R. <u>Poisoning and Drug Overdose</u> . 5 th ed. McGraw-Hill Medical, 2006. ISBN-13: 978-0071443333.	Features descriptions of toxicological mechanisms. Operating considerations include: Used for preplanning, training, and exercise development.
Pohanish, Richard P. <u>Sittig's Handbook of Toxic and Hazardous Chemicals and Carcinogens</u> . 4 th ed. New York: Noyes Publications/William Andrew Publishing, 2002. ISBN-13: 978-0815514596.	Features a resource for scene reference. Operating considerations include: Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.
Reigart, J. Routt, and James R. Roberts. <u>Recognition and Management of Pesticide Poisoning</u> . 5 th ed. Environmental Protection Agency, 1999.	Features descriptions of toxicological mechanisms. Downloadable from www.epa.gov/pesticides/safety/healthcare/handbook/handbook.htm Used for preplanning, training, and exercise development.
Sidell, Frederick R. <u>Jane's Chemical-Biological Handbook</u> . 3 rd ed. Jane's Information Group, 2005. ISBN-13: 978-0710627735.	Features overviews all of the primary military, chemical and biological materials. Includes differential diagnosis tools for agent identification.
Stilp, Richard H., and Armando S. Bevelacqua. <u>Emergency Medical Response to Hazardous Materials</u> . 1 st ed. Delmar Thomson Learning, 1997. ISBN-13: 9780827378292.	Features descriptions of toxicological mechanisms for the field medical technician. Operating considerations include: limitations due to the level of deployment, based upon protocol which the field medical technician can function, reference resource during training, and used for training Hazardous Materials Technicians.
Ulin, Scott, and Scott Stuz. <u>Hazardous Material Injuries</u> . 4 th ed. Bradcomm, Inc., 1997. ISBN: 0-913019-05-4.	Features descriptions of toxicological mechanisms.
United States Army Medical Research Institute of Chemical Defense. <u>Medical Management of Chemical Casualties Handbook</u> . 3 rd ed. Aberdeen Proving Ground: International Medical Publishing, Inc., 2002. ISBN-13: 978-1588081681.	Features descriptions of toxicological mechanisms caused by chemical weapons.
United States Army Medical Research Institute of Infectious Diseases. <u>USAMRIID's Medical Management of Biological Casualties Handbook</u> . 4 th ed. Fort Detrick, Frederick, Maryland: International Medical Publishing, Inc., 2001. ISBN-13: 978-1588081629.	Features descriptions of toxicological mechanisms caused by biological hazard.
United States Coast Guard. <u>Chemical Hazards Response Information System: Hazardous Chemical Data Manual (CHRIS Manual)</u> . U.S. Department of Transportation, 1999. ISBN: 0-16-049953-4.	Features a resource for scene reference. Operating considerations include: 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, and does not address military agents.

List of References - *Continued*

References	Comments
<p>United States Department of Energy. <u>Emergency Responder Radioactive Material Quick Reference Sheet</u>. U.S. Department of Energy Transportation Emergency Preparedness Program (TEPP), 2006.</p>	<p>This job aid is a quick reference to assist emergency responders in identifying preliminary safety precautions that should be taken during the initial response phase after arrival at the scene of an incident involving radiological material.</p> <p>In addition to this quick reference sheet, free training with valuable course material is available through the TEPP Modular Emergency Response Radiological Transportation Training (MERRTT) Program. For more information, go to http://www.em.doe.gov/TEPPPages/TEPPTraining.aspx</p>
<p>United States Department of Transportation, Transport Canada, and Secretariat of Communications and Transportation of Mexico. <u>Emergency Response Guidebook 2008</u>. Labelmaster, 2008.</p>	<p>Features a resource for scene reference.</p> <p>The Emergency Response Guidebook (ERG2008) was developed jointly by the US Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation of Mexico (SCT) for use by firefighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving a hazardous material. It is primarily a guide to aid first responders in (1) quickly identifying the specific or generic classification of the material(s) involved in the incident, and (2) protecting themselves and the general public during this initial response phase of the incident. The ERG is updated every three to four years to accommodate new products and technology.</p> <p>Can be obtained via web at http://phmsa.dot.gov/static/files/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf</p> <p>Details of chemicals discussed.</p> <p>Suitable for reference at the scene of an incident and as a reference resource during preplanning, training, and exercise development.</p>
<p>Venzke, Ben N. <u>First Responder Chem-Bio Handbook</u>. Tempest Publishing, 1998. ISBN-13: 978-0966543704.</p>	<p>Features descriptions of military generated chemicals.</p> <p>Operating considerations include: quantity of chemicals discussed, and it is a reference resource during preplanning and exercise development.</p>
<p>Viccellio, Peter, ed. <u>Handbook of Medical Toxicology</u>. 1st ed. Little Brown & Co., 1993. ISBN-13: 978-0316902472.</p>	<p>Features descriptions of toxicological mechanisms.</p> <p>Operating considerations include: Used for preplanning, training, and exercise development.</p>
<p>Walsh, Donald W. ed., Hank T. Christen, Geoffrey T. Miller, Christian E. Callsen Jr., Frank J. Ciffuffo, and Paul M. Maniscalco. <u>National Incident Management System: Principles and Practice</u>. 1st ed. Jones & Bartlett Publishers, 2005. ISBN-13: 978-0763730796.</p>	<p>Features reference for planning and training.</p> <p>Operating considerations include: Used for preplanning, training, and exercise development.</p>
<p>Yaws, Carl. <u>Matheson Gas Data Book</u>. 7th ed. McGraw-Hill Professional, 2001. ISBN: 0071358544.</p>	<p>Features limited descriptions of toxicological mechanisms.</p> <p>Operating considerations include: Quantity of chemicals discussed, and it is a reference resource during preplanning, training, and exercise development.</p>