FIRESCOPE STANDARDIZED HAZARDOUS MATERIALS EQUIPMENT LIST ICS-1120

EDITION 2016

TABLE OF CONTENTS

PART 3: APPENDIX SECTION 53

TABLES AND CHARTS

FIRESCOPE STANDARDIZED
HAZARDOUS MATERIALS EQUIPMENT LIST

PART 1: INTRODUCTION

FORWARD

This California FIRESCOPE Standardized Equipment List (SEL) is provided for the purpose of being used as a tool by the emergency response community in California. First responders should review this Standardized Equipment List (SEL) when preparing to develop equipment specifications, purchase orders, creating or updating local master hazardous materials equipment inventory lists, and for reviewing requirements for hazardous materials / WMD chemical-biological response equipment grants.

FIRESCOPE, the California Office of Emergency Services, the Fire & Rescue Branch of OES, and the authors of this SEL do not assume liability for the performance of any equipment item mentioned in the SEL. Nor is any approval or endorsement of a specific equipment item or tool to be assumed by mention of a model number, brand name, or manufacturer as provided in example notations. These example notations are included in the main body of the equipment list for clarification and comparison purposes only. However, this SEL will describe a minimum level of performance for each equipment item or tool category, in an attempt to establish a minimum level of standardization. The user of this document is solely responsible for the specific selection and purchase of items to be added to their agency's inventory. Therefore, this SEL is a reference document only, and should be used as a guide in an attempt to meet the minimum level of standardization.

AUTHORITY

This SEL is a publication of California FIRESCOPE. This edition of the SEL becomes effective upon the date of publication, and remains in effect until superseded by the publication of the next updated edition.

OBJECTIVE and PURPOSE

The overall objective of this SEL is intended to establish a California State standard reference document, and to promote better interoperability and standardization between all Hazardous Materials Companies in the State of California. Adoption and implementation of this SEL by emergency response agencies will insure increased efficiency and incident intervention in the course of hazardous materials response company mutual aid.

The purpose of this SEL is to:

a. Provide and establish a uniform hazardous materials equipment list:

   Establish an all-encompassing list of equipment that has been found to be consistent with and often utilized by hazardous materials response teams. The listing of equipment items included in this list is predicated upon the evolution of hazardous materials response intervention, and the history of popularity, utility, and need as demonstrated by the maintenance of local agency inventories. This master list would serve as the basis for a sourcing document.

b. Establish standardized equipment and tool response categories and criteria:

   Create a standardized set of "Categories" and "Sub-Categories". Equipment will be listed within these categories and sub-categories based upon their function. The function shall be described in a criteria paragraph that will accompany each category and sub-category.

c. Adopt standardized equipment and tool performance descriptions:

   Each individual equipment item shall be briefly described in terms of a short use or performance statement. In many cases the description will also include example sizes or approximate dimensions.

d. Support Hazardous Materials Company Typing equipment needs:

Consistent with the FIRESCOPE *Field Operations Guide (ICS 420-1), Hazardous Materials Company Types and Minimum Standards* chart, this list will identify and establish the minimum threshold equipment items needed to meet any one of the three types of hazardous materials companies. This list would also identify other hazardous materials equipment items that could be considered to be included in a local agency's inventory.

e. Promote use and adherence to industry accepted performance standards:

This list, where appropriate, shall identify various performance and regulatory standards to which the user (agency having jurisdiction, i.e. the employer and the employee) must comply, as well as those standards that provide a minimum level of performance of the item, tool, or piece of equipment (i.e. the manufacturer).

MINIMUM STATE STANDARD

The development and adoption of the SEL shall represent the establishment of a recognized state standard. It shall further represent a minimum recommended inventory for each of the three **Types** of hazardous materials companies **(Haz-Mat Type 1, Haz-Mat Type 2, Haz-Mat Type 3)** as described in **Appendix F**, *"Hazardous Materials Company Types and Minimum Standards,* and in the ***FIRESCOPE*** Field Operations Guide.

Items noted as being required for each of the three hazardous materials company types represents a minimum equipment standard. Local jurisdictions may in many instances elect to exceed this minimum equipment standard. To further insure and encourage attempts at uniformity and standardization, additional equipment items are listed in this SEL which are not required, and are noted as being optional***.*** See **REQUIRED and OPTIONAL ITEMS** section of this SEL for further explanation.

Local jurisdictions may also elect to include specialized equipment not listed in this SEL.

INDUSTRY STANDARDS

Where-ever possible, the selection, purchase and use of equipment items and tools in support of response to incidents involving toxic and hazardous materials, and weapons of mass destruction chemical and biological substances (WMD Chem-Bio) should be done so in compliance with nationally recognized and accepted standards and protocols.

Various agencies develop and publish performance standards, protocols, and approval listings in an attempt to establish a minimum acceptable performance threshold for a particular item, tool, garment, or instrument. **Table 1** illustrates a few examples of these agencies who publish standards, protocols and listings, and notes their types.

Agency	Influence	Type of Standard	Intent
Cal/OSHA, Fed/OSHA / NIOSH: Occupational Safety and Health	Safety procedures, working conditions	Regulatory	Mandatory
NFPA: National Fire Protection Association	Safety equipment, tools, protective clothing	Performance	Consensus
ASTM: American Society for the Testing of Materials	Materials testing, tool performance	Performance	Consensus
ANSI: American National Standards Institute	Testing procedures	Performance	Consensus
EPA Environmental Protection Agency	Cleanliness protocols, non-polluting protocols	Performance	Mandatory
IEEE: Institute of Electrical and Electronics Engineers	Electronic instruments; and Telecommunications	Performance	Consensus
UL: Underwriter's Laboratory	Tool, appliance, instrument design and function	Approval Listing	Consensus

Table 1: Example Types of Standards and Influence

Some standards and protocols are regulatory in nature, in that they become mandatory for implementation by the employer. These standards focus on working conditions, work process procedures, safety

procedures, training documentation, and provision of safety gear. Most federal agencies (i.e. OSHA, EPA, DOE, DOT, etc.) and many state agencies (i.e. Cal/EPA, Cal/OSHA, Dept of Health Services, etc.) issue **regulatory** standards. **Consensus** standards, such as performance standards, are developed to promote minimum threshold levels of performance of items or tools, and "consensus" means the adoption of the standard by a local entity is voluntary. However, once adopted, the standard becomes mandatory. Non-profit service organizations (i.e. NFPA, ASTM, ANSI, UL, FM) issue consensus standards and consensus listings. Some consensus standards (i.e. NFPA) also establish a set of minimum performance tests to which an item, tool, garment or instrument must be subjected to, and must pass, in order to be certified compliant to that standard. Items that have been submitted and pass this testing and certification regimen provide for the end user the following assurances:

- Highest and/or most broad spectrum of performance
- Highest level of safety
- Demonstrated durability
- Consistency of performance over time
- Consistency of manufacture
- Consistency of good quality

Governing regulations (mandatory), industry performance standards (consensus), and other influencing edicts such as applicable certification requirements, and testing listing shall be incorporated into this SEL where appropriate. Adherence to regulation, standards, certification requirements, testing, and product listing provides assurance of a minimum level of acceptable safety. In order to qualify as a ***FIRESCOPE Type 1, Type 2, or Type 3*** hazardous materials company, the equipment inventory of each type of company must meet this SEL as a minimum.

INSTRUCTIONS FOR USE

CATEGORIES:

This Standardized Equipment List is divided into thirteen (13) main equipment categories, as noted in **Table 2**. These main categories constitute the template for the Master Table of Contents. These categories also correlate with the Components column in the ***FIRESCOPE*** *"Hazardous Materials Company Types and Minimum Standards",* chart as found in **Appendix F**.

Each main category may be further divided into one or more sub-categories. Each category (i.e. Chemical Protective Clothing) and each individual sub-category (i.e. Vapor Protective) includes a descriptive paragraph that explains and defines in more detail the specific criteria that encompasses that category and sub-category.

Cat. #	Main Category	Includes Sub-Categories
1	**Field Testing and Detection**	➢ Color Change Analysis - Non-Electronic ➢ Qualitative Analysis, Kits - Non-Electronic ➢ Qualitative Analysis, Kits – Electronic ➢ Colorimetric Analysis - Non-Electronic ➢ WMD Biological Detection - Electronic
2	**Air Monitoring / Survey**	➢ Confined Space Monitoring ➢ Multiple Gas Monitoring, Toxic ➢ Specialty Gas Capability ➢ WMD Chemical Detection Capability
3	**Sampling**	➢ Substance Capture ➢ Bulk Liquid Transfer - Mechanical ➢ Containerization, Labeling, Documentation ➢ Transportation
4	**Radiation Monitoring and Detection**	➢ Gamma, Beta, Alpha Detection and Survey ➢ Radionuclide Detection ➢ Dosimeters
5	**Chemical Protective Clothing**	➢ Vapor Protective ➢ Liquid Splash Protective ➢ Limited Use Protective
6	**Ancillary Protective Equipment**	➢ Hand Protection ➢ Foot Protection ➢ Head and Eye Protection ➢ Support Systems
7	**Technical References**	➢ Printed References, Industrial & WMD Chemicals ➢ Electronic References, Industrial & WMD Chemicals ➢ Plume Air Monitoring, Program Support ➢ Computer, Support Hardware and Software
8	**Special Capabilities**	➢ Advanced Technologies; Vision, Heat, Sound ➢ Advanced Technologies; Weather, GPS
9	**Intervention**	➢ Chemical Intervention ➢ Environmental Intervention ➢ Mechanical Intervention
10	**Decontamination**	➢ Ground Protection ➢ Support Tools for Decontamination ➢ Water Supply, Distribution Tools ➢ Collection
11	**Communications**	➢ Radio ➢ Cellular Phone
12	**Respiratory Protections**	➢ Self-Contained ➢ Air Purifying
13	**Tools / Other**	➢ General Purpose, Hand Tools - Large ➢ General Purpose, Hand Tools - Small ➢ Special Purpose Tools

Table 2: Categories and sub-Categories of the SEL

The itemized listing of all equipment or tools are found immediately following a sub-category.

INVENTORY NUMBERING:

The listing of all appropriate individual items, tools, and equipment that follows a sub-category are given a specific and unique number. This is indicated in a column named **"Inv. #."** This number will become the unique assigned inventory number for that item within this SEL. It should be noticed that the number relates to its category and to its sub-category. Therefore, by referencing a specific tool or item's SEL inventory number, it will be easy to determine what category and what sub-category that tool or item falls under.

PART TWO of this SEL is an all-inclusive listing all equipment items, including "optional" items, where it will be noted that inventory numbers are consecutive with no intervening numbers skipped or left out. Appendix A in **PART 3**, *FIRESCOPE Type 1, Type 2, & Type 3 Hazardous Materials Resource Self-Evaluation Form – Equipment, Tools, Kits*, is provided so that an agency can conduct a self-evaluation in anticipation and preparation for a hazardous materials resource typing inspection. This one form can be used for any one of the three inspection types. It will be noted in this *Self-Evaluation Form* that some inventory numbers do skip. This is the result of removing all items that are optional (Opt) as noted in **PART 2** of the S.E.L.

The inventory number format is composed of numbers (digits), and is divided into three parts separated by decimal (.) points. The typical format is: " X . X . XX ". An example is illustrated in **Table 3**.

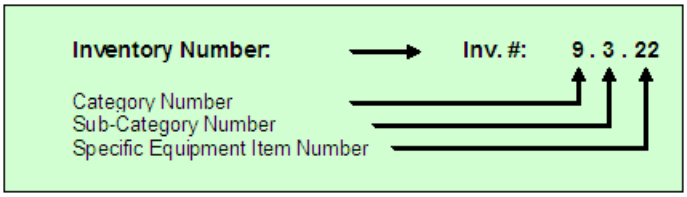

Table 3: Inventory Number Explanation

The first number (i.e. 9) is the category number, the second number (i.e. 3) is the sub-category number, and the third number (i.e. 22) is the individual item number. The entire number, **9.3.22**, is the complete inventory number for that specified item. This numbering system allows for the ability to group specific equipment items and tools into related sets (categories) and sub-sets (sub-categories). Future updated editions of this SEL may include revisions or additions to the number of categories, sub-categories, as well as adjustments to the titles and descriptions.

ITEM NAME and DESCRIPTION:

In the SEL list there is a column marked **"Item Name and Description"**. Each equipment item listed in a sub-category will be designated with a unique equipment item name. That name will be highlighted in bold print. That name will identify only that particular item, and no other. Brand names will not be used, only generic and commonly used terminology will be used to identify and establish a unique name for each item. Refer to **Table 4** for example. Following the designated name for each inventory item there will be a short description for that item. This description is also generic, but may contain information that should properly explain the function or proper intended use of the specific item.

Item Name:	CHLORINE "B", KIT:
Item Description:	For repair or plugging of leaks in chlorine one ton cylinders.

Table 4: Example of Inventory Name and Description

Information included within the description may include technical data that identifies a range of expected performance (i.e., temperature reading range, radiological detection, toxic gas sensitivities), or a level of performance within a range of a given performance standard (i.e., vapor protective, liquid splash protective), and so forth. The description for each equipment item will also be unique, with no two items having the same description.

This is because there may be very subtle differences between two or more listed items, but never-the-less the difference is unique enough to warrant separate entries based upon responder needs. For example, most toxic gas monitoring devices can monitor and detect in parts per million (PPM), which has by default become an industry standard and goal. However, upgraded, advanced, or an entirely new devices may detect certain like gases or vapors in parts per billion (PPB). Not all hazardous materials response teams may have the need to equip themselves with detection monitors that read in PPB, when PPM may be satisfactory. This itemization philosophy of equipment and tools is exercised in many of the sub-categories.

This SEL does not and will not endorse any equipment item or tool by brand name, vendor, or by manufacturer.

REQUIREMENT:

In the SEL, there is a column marked "**Requirement**". This column is used to indicate the specific requirements that must be met for a particular item or tool (i.e., "One Kit, complete"). It will also indicate the minimum quantity that must be included in a particular Type 1, 2, or 3 company inventory (i.e., One for each assigned member). If the item is indicated as being **Required (R)** for a specific company type, it must be included in the inventory in an amount not less than that shown in this column. Items that are required are also highlighted on a pink color background. If the item is indicated as being **Optional (Opt)** for a specific company type, it does not need to be included in an inventory, but if the agency desires to include that item voluntarily, the minimum quantity shown should be considered. Items that are optional are also highlighted on a light blue background. (Rev2012) Examples are illustrated in **Table 5**.

Inv #	Item Description	Requirement	Type 1	Type 2	Type 3
2.1.1	**CONFINED SPACE OSHA STANDARD, Four Gas:** Continuous monitoring, independent displays, built-in alarms, minimum of 10 feet of tubing and sampling wand. Referred to as "Four-In-One" Kits; (O_2 Presence in Percent; Combustible Vapor in LEL; CO presence; H_2S Gas presence)	1 Unit	**R**	**R**	**R**
3.2.6	**PUMP, ROTARY, Transfer, Plastic:** Suitable for solvents and corrosive liquids in 55 gallon drums; Polypropylene housing, uses Teflon "O" rings; Transfers approximately 8 – 10 gallons / minute.	1 Unit	**Opt**	**Opt**	**Opt**
12.1.1	**SCBA, COMPLETE, STRUCTURAL, 1 Hour Rating:** With bottle; unit must be NFPA and NIOSH certified for routine fire fighter use.	1 for each assigned member		**R**	**R**
12.1.2	**SCBA, COMPLETE, WMD CBRN, 1 Hour Rating:** With bottle; Unit must be NFPA structural fire fighting compliant and NIOSH certified for WMD CBRN threat atmospheres.	1 for each assigned member	**R**		

Inventory item # 2.1.1, a "CONFINED SPACE Four Gas" detector, is required for a Type 1, Type 2, and a Type 3 Company, because they are expected to have intervention capability in confined space emergencies, and thus must be equipped with appropriate OSHA confined space monitoring capability.

Inventory item # 3.2.6, "PUMP, ROTARY, Transfer, Plastic", is an optional item for all three company types.

Inventory item # 12.1.1, "SCBA, COMPLETE, STRUCTURAL", and item 12.1.2, "SCBA, COMPLETE, WMD CBRN" demonstrate that only a Type 1 Company is required to have the NIOSH "WMD CBRN" certification.

Table 5: Examples of Company Type and Items Required, and Explanation

CERTIFICATION or STANDARD:

The column marked **"Certification or Standard"** may include information regarding compliance to an appropriate performance standard (i.e. National Fire Protection Association – NFPA; American National Standards Institute - ANSI) or governmental regulatory standard (i.e. Occupational Safety and Health Agency – OSHA; National Institute for Occupational Safety and Health - NIOSH), or an item's certification (i.e. Underwriters Laboratory - UL or Institute of Electrical and Electronics Engineers - IEEE). Whether the equipment item or tool is indicated as being **Required** or only **Optional** within this SEL, if it is to be included into the agency's hazardous materials equipment list and inventory, that item or tool must meet the appropriate standard or certification when noted in this column. See **Table 6** for illustrated examples.

If there is no entry for an item or tool in this column (the box is blank), compliance of that equipment item or tool to a standard is not known, there is no standard, or a standard is not applicable, and therefore is not required.

Inv #	Item Description	Certification Or Standard
3.3.7	**SAMPLE VIALS, Sterile, Clear Glass, 1.3 oz:** Borosilicate glass vials, with closed Teflon lined cap	Class 2000 EPA Protocol B
5.1.1	**VAPOR PROTECTIVE ENSEMBLE, 1991 Industrial Chemicals:** At least one for each assigned member	NFPA 1991
6.3.1	**HELMET:** Light weight construction style helmet to provide head protection when wearing any CPC ensemble. Should include suspension system, and adjustable sizing.	ANSI Z-89.1
9.3.5	**SULFUR DIOXIDE UPGRADE, For Kit "A":** Allows for use of Chlorine Kit "A" for sulfur dioxide gas cylinders by providing special parts and gaskets.	Chlorine Institute

Inventory Item # 3.3.7: Sample jars and vials must meet EPA Protocol B for cleanliness and sterility, usually marked on the package.

Inventory Item # 5.1.1: Vapor Protective Ensemble (totally encapsulating) must meet NFPA Standard # 1991.

Inventory Item 6.3.1: Helmet must meet ANSI Standard # Z-89.1.

Inventory Item 9.3.5: Sulfur Dioxide kit, if upgraded from Chlorine Kit, must meet specifications of the Chlorine Institute.

Table 6: Display of Standard or Certification Requirement for Selected Items

REQUIRED and OPTIONAL ITEMS:

On the far right-hand side of the SEL are three columns marked **"Type 1", "Type 2",** and **"Type 3".** These refer to each of the three types of hazardous materials companies as described in the ***FIRESCOPE*** *"Hazardous Materials Company Types, Company Typing and Minimum Standards"* chart. In review, they are as follows:

- A **"Type 3"** company is one that: Is appropriately equipped and trained to handle, and can function in all categories, for all known industrial chemical hazards, in liquid, aerosol, powder and solid forms. They are not expected to be fully equipped to intervene and handle vapor / gas emergencies, nor incidents involving WMD chemical and biological substances.

- A **"Type 2"** company is one that: Meets all "Type 3" requirements, and is appropriately equipped and trained to handle, and can function in all categories, for all unknown industrial chemical hazards, in liquid, aerosol, powder, solids, and vapor and gas forms. They are not expected to be fully equipped to intervene and handle incidents involving WMD chemical and biological substances.

- A **"Type 1"** company is one that: Meets all "Type 3" and Type 2" requirements, and is appropriately equipped and trained to handle, and can function in all categories, for all known and unknown WMD chemical and biological substances.

The user of this SEL should select the column representing the appropriate type of hazardous materials company, then scan down this column to determine all of the equipment items and tools that are **Required (R)** in order to meet this qualification. Scanning down the column will also indicate what equipment items or tools which are considered **Optional (Opt)**. These items are not required to meet a hazardous materials company type qualification, but if added to an agency's inventory would broaden the scope of response capability. In some cases optional items may be substituted for a required item if it meets the performance criteria. The entry marks used in these three columns are: **(Rev2012)**

PERSONAL PROTECTIVE EQUIPMENT (PPE)

R	=	Required:	Item is required to achieve proper company typing
OPT	=	Optional:	Item is optional, and not required to achieve proper company typing
	=	Not Required:	Item is beyond the needs of that particular type of company **(Rev2012)**

Users of this SEL will note that the generally accepted grouping of all protective garments (i.e. chemical, structural fire) and all breathing apparatus (i.e. SCBA, APR, PAPR) into one large category commonly known as **Personal Protective Equipment** (PPE) has been avoided. There is an explanation. Performance standards for protective garments are different than those for breathing systems. However, the term PPE is still adequate and popular when discussing issues of a more general nature applicable to both garments and breathing systems.

Testing requirements, performance standards, and certification for all types of PPE can become very confusing. Furthermore, specific levels of performance may vary greatly within any one grouping (i.e. chemical protective clothing).

For years both OSHA and NFPA established regulatory and consensus standards for some PPE items such as SCBA and structural fire fighting gear. NFPA is the only organization to have established performance standards for chemical protective clothing (CPC), and recently has added WMD Chemical/Biological test criteria to those standards for CPC. NFPA 1981 *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services, 2007 Edition* now includes the mandatory requirement for all emergency services SCBA to be NIOSH certified as CBRN SCBA in accordance with the NIOSH Statement of Standard for NIOSH CBRN SCBA Testing. This requirement provides respiratory protection from CBRN terrorism agents (specified chemicals, biological agents, and radiological particulates) that could be released as a result of a terrorism attack. **(Rev2009)**

Breathing Apparatus Standards Associated with Example Performance Criteria, Testing, and User Requirements	NIOSH CBRN – SCBA Open Circuit	NIOSH CBRN - APR	NIOSH CBRN - PAPR	OSHA – 42 CFR 84	OSHA – 42 CFR 84	OSHA – 42 CFR 84	NFPA 1981 Open
Unknown Environment	+			+			+
CBRN Chemical Vapor/Gas (High: ≥ 1,000 ppm)	+						
CBRN Chemical Vapor/Gas (Low: < 1,000 ppm)	+	+	+				
CBRN Chemical Aerosol (High)	+						
CBRN Chemical Aerosol (Low)	+	+	+				
CBRN Chemical Liquid (High)	+						
CBRN Chemical Liquid (Low)	+	+	+				
CBRN Particulate (High: ≥ 10 mg/m^3)	+						
CBRN Particulate (Low: < 10 mg/m^3)	+	+	+				
CBRN Biological Airborne (i.e. – Smallpox)	+	+	+				
CBRN Biological Liquid Borne (i.e. – Bubonic Plague)	+	+	+				
CBRN Biological Particulate (i.e. – Anthrax)	+	+	+				
CBRN Radiological Particulate (i.e. – Suspended Alpha Particulate)	+	+	+				
CBRN Radiological Penetrating (i.e. Gamma)							
OVERALL PERFORMANCE, Live Agent (GB, HD)	+	+	+				
OVERALL PERFORMANCE, Mechanical Function							+
Sustained Air Delivery							+
Inward Leakage – Exhalation Valve							+
Excess Air Flow							+
Thermal Or Flash Fire	+						+
Mandatory Fit Test Program				+	+	+	
Mandatory Maintenance Program				+	+	+	
Mandatory Service Testing				+	+	+	
Hydrostatic Testing				+			
Training Program and Documentation				+	+	+	

Table 7: Breathing Apparatus Standards Associated with Performance Criteria

During the period of time this document was drafted (2003-04) the National Institute for Occupational Safety and Health (NIOSH), the governing organization of OSHA, has embarked upon a program to develop and establish testing criteria and certification standards for breathing systems specifically to WMD chemical, biological, radiological and nuclear (CBRN) substances. This testing and certification program will include the following groupings of breathing systems:

- Self-Contained Breathing Apparatus (SCBA), Open Circuit
- Air Purifying Respirators (APR)
- Powered Air Purifying Respirators (PAPR)
- Escape APR
- Escape SCBA
- Self-Contained Breathing Apparatus, Closed Circuit

This NIOSH testing criteria for all breathing apparatus will be specific only to selected WMD CBRN substances. All breathing apparatus will continue to be required to meet and comply with all other appropriate OSHA and NFPA standards.

Table 7 shows the appropriate breathing apparatus standards of OSHA, NFPA and NIOSH. A brief list of some performance criteria and user responsibilities are shown. A comparison will show that an association can be made between the performance criteria and the user responsibilities, and the applicable standard. This table can be used to quickly identify these nationally recognized standards that apply to breathing apparatus used for protection from specific types of hazards, particularly WMD chemical and biological substances.

BREATHING APPARATUS PERFORMANCE CRITERIA

Hazards identified during the hazard assessment and risk analysis phase of an incident, typical of those listed in Table 6, should be the basis for choosing the appropriate standard and its associated protective equipment. The following hazard categories have been listed to aid in this selection process:

UNKNOWN ENVIRONMENT:

An unknown environment represents a situation during the initial parts of a response with the identity of the agent or threat that has not yet been identified, and the atmosphere is suspect to be at or above the IDLH. An unknown environment can encompass any WMD chemical - biological agent, or toxic industrial chemical, but would not take into account the potential for high-energy penetrating radiological hazards, thermal hazards, or explosive hazards.

CHEMICAL VAPOR/GAS:

A WMD chemical agent or a toxic industrial chemical that is present as a gas or a vapor, or a vapor evaporating from a liquid. ***High*** refers to conditions in which the chemical is present at concentrations of 1,000 parts per million (ppm) or greater. ***Low*** refers to conditions in which the chemical is present at concentrations less than 1,000 ppm.

CHEMICAL AEROSOL:

An aerosol refers to the suspension of very fine liquid droplets suspended in air. ***High*** refers to a condition in which a relatively concentrated or dense aerosol exists, while ***Low*** refers to a dilute or rapidly dispersing aerosol. High concentrations would be most prevalent close to the time or point of release, while low concentrations would be prevalent further away or some time following the release.

CHEMICAL LIQUID:

A WMD chemical agent or a toxic industrial chemical present at the incident where there is a high likelihood of contact with the liquid. ***High*** refers to conditions where extended contact in the form of splashes is expected. ***Low*** refers to conditions where incidental contact could occur from contaminated surfaces.

CHEMICAL PARTICULATES:

A WMD chemical agent or toxic industrial chemical present at the incident might be in the form of solid particles (dust or particulates). ***High*** refers to conditions where there is a high concentration of particles in the air (10 milligrams per cubic meter or greater). ***Low*** refers to conditions where there is a lower concentration of particles in the air (less than 10 milligrams per cubic meter).

BIOLOGICAL AIRBORNE:

Microorganisms and other biological agents that can be spread in aerosol form by ambient air movement and are considered airborne threats through respiration and in some cases also through dermal contact. Examples would be aerosolized ricin or smallpox.

BIOLOGICAL LIQUID-BORNE:

Microorganisms that can be spread by contact with body fluids and other contaminated liquids or bodies of water. Examples would be bubonic plague and Ebola.

BIOLOGICAL PARTICULATE:

Microorganisms that can be spread as particles suspended in air. An example is anthrax spores.

RADIOLOGICAL PARTICULATE:

Alpha or beta ionizing radiation sources, in the form of solid particles (dust or particulates) that is spread by being suspended in air or by liquids. Examples include radioactive nuclides.

RADIOLOGICAL PENETRATING:

Gamma or X-ray ionizing radiation that has no mass associated with the exposure.

THERMAL or FLASH FIRE:

A relatively short duration exposure to fire of 10 seconds or less that involves the ignition and combustion of a flammable atmosphere.

BREATHING APPARATUS TYPES

SELF-CONTAINED BREATHING APPARATUS:

Self contained breathing apparatus (SCBA), both open circuit and closed circuit, are positive pressure respirators that provide the highest level of respiratory protection for unknown environments and for suspended contaminants which are at or above the Immediately Dangerous to Life and Health (IDLH) thresholds.

SCBA is tested for a number of performance criteria that apply to general industrial applications, and are evaluated to NFPA Standard # 1981 for sustained delivery of breathing air under a number of different environmental conditions including high heat and flame contact consistent with a flash fire. SCBA used in the fire service must meet the performance requirements of NFPA Standard # 1981, and the SCBA base frame must be affixed with NIOSH label. Further, certain manufacturer's SCBA models have been submitted to NIOSH for additional WMD (weapons of mass destruction) CBRN (chemical, biological, radiological and nuclear) testing and certification. SCBA in this category are evaluated for their performance against selected chemical warfare agents and toxic industrial chemicals. This testing includes a full apparatus performance test against live agents. SCBA models attaining a WMD-CBRN certification from NIOSH must be affixed with a NIOSH label confirming approval for use in a WMD-CBRN environment. These respirators are not tested for protection against penetrating radiological hazards. (Rev2009)

Table 8: Example of NIOSH CBRN label that must be affixed to the SCBA frame.

AIR-PURIFYING RESPIRATOR:

An air purifying respirator (APR) is a full facepiece, negative pressure respirator that are outfitted with the appropriate canister or cartridge, and that meets the certification requirements established for particulate and gas filtering air-purifying requirements in 42 CFR Part 84. They must also meet the additional approval criteria established by the National Institute for Occupational Safety and Health (NIOSH) for chemical, biological, radiological and nuclear (CBRN) protection.

Table 9: Example of NIOSH CBRN label that must be affixed to the APR canister.

These respirators provide a lower level of respiratory protection against multiple chemical, biological and particulate hazards when the concentrations of contaminants are at levels below IDLH levels. These respirators are tested for their performance under both industrial conditions and against selected WMD chemical agents and

toxic industrial chemicals at dilute concentrations. These respirators are not tested for protection against penetrating radiological hazards. (Rev2009)

POWERED AIR-PURIFYING RESPIRATOR:

A powered air-purifying respirator (PAPR) is a full facepiece, powered air respirator that meets the certification requirements established for particulate and gas filtering air-purifying requirements in 42 CFR Part 84. They are also outfitted with the appropriate canister or cartridge.

These respirators are tested for industrial protection for specific chemicals. These respirators provide a lower level of respiratory protection when the concentrations of contaminants are at levels below IDLH levels. NIOSH has developed additional approval criteria for chemical, biological, radiological and nuclear (CBRN) protection for PAPR respirators.

CHEMICAL PROTECTIVE CLOTHING

PROTECTIVE CLOTHING STANDARDS:

Only the National Fire Protection Association (NFPA) develops and provides performance standards for chemical protective clothing. NFPA Standards are reviewed in a five year cycle. This means that every five years a new updated edition of a standard should be expected. This entails that all agencies who adopt a policy to follow NFPA Standards insure they maintain the latest up-to-date editions at all times. In each revision cycle, many changes to a standard may occur. These changes become effective upon the Standard's publication date.

NFPA Standards # 1991 and 1992 focus on CPC ensemble and individual element performance levels which are very stringent, and provides for a superior protective garment of high quality and of an insured level of consistent safety. Garments developed in accordance with these standards are targeted toward special operations such as Hazardous Materials Response Teams. For example, NFPA Standard # 1991, *"Vapor Protective Ensembles for Hazardous Materials Emergencies",* establishes industrial chemical and physical property performance criteria for air tight, gas and vapor protective encapsulating ensembles for repeated and/or long term exposure to hazardous vapor environments of industrial chemicals. Additionally, effective with the year 2005 edition of the NFPA Standard # 1991, these ensembles are also tested in accordance with an additional battery of WMD chemicals that documents the performance of the ensemble to WMD threat atmospheres. Included in recent editions of 1991 are several "options", or upgrades of performance, which include: a) Flash Fire Option, and; b) Liquid Gas Fire Option. NFPA # 1992, *"Liquid Splash-Protective Ensembles for Hazardous Materials Emergencies",* establishes industrial chemical and physical property performance criteria that are slightly below those of 1991, and targeted toward liquid and aerosol threat environments. This document allows for multi-piece (including jumpsuit style) ensemble design. (Rev2009)

NFPA Standard # 1994, *Protective Ensembles for First Responders to CBRN Terrorism Incidents* is principally directed toward the First Responder audience, although a selection of these garments may be found very useful to Haz-Mat Companies as well. Standard 1994 establishes performance criteria for four different "levels" of threats: a) NFPA 1994 no longer specifies a Class 1 ensemble, but has left the designation "Class 1" vacant; b) Class 2 CBRN protective ensembles and ensemble elements shall apply to ensembles designed to provide limited protection to emergency first responder personnel at terrorism incidents involving vapor or liquid chemical hazards where the concentrations are at or above Immediately Dangerous to Life and Health (IDLH), requiring the use of self-contained breathing apparatus (SCBA); c) Class 3 CBRN protective ensembles and ensemble elements shall apply to ensembles designed to provide limited protection to emergency first responder personnel at terrorism incidents involving low levels of vapor or liquid chemical hazards where the concentrations are below Immediately Dangerous to Life and Health (IDLH), permitting the use of air-purifying respirators (APR), and; d) Class 4 CBRN protective ensembles and ensemble elements shall apply to ensembles designed to provide limited protection to emergency first responder personnel at terrorism incidents involving biological hazards or radiological particulate hazards where the concentrations are below Immediately Dangerous to Life and Health (IDLH), permitting the use of air-purifying respirators (APR), or powered air-purifying respirators (PAPR).(Rev2009) Except for Class One Garment, the rest of these classes of garments are designed to provide a limited exposure protection factor with respect to time, and thus should be considered short duration use ensembles.

Chemical Protective Clothing Standards Associated with Example Performance Criteria, Testing and User Requirements		NFPA 1991 - Basic Industrial Chemicals	NFPA 1991 - WMD Chem-Bio Option	NFPA 1991 - Flash Fire Option	NFPA 1991 - Liquid Gas Fire Option	NFPA 1991 - All Three Options; Edition	NFPA 1992 Basic Industrial Chemicals	NFPA 1994 - Class 1 Ensemble, WMD	NFPA 1994 - Class 2 Ensembles, WMD	NFPA 1994 - Class Three Ensembles, WMD	NFPA 1971 - Structural Fire Fighting
Industrial Chemical Substance:	Known	+	+	+	+	+	+				
Industrial Chemical Substance:	Unknown	+	+	+	+	+					
WMD Chem-Bio Substance:	Known		+			+			+	+	
WMD Chem-Bio Substance:	Unknown		+			+					
Toxicity May Not Be Verified		+	+	+	+	+					
Toxicity May Be In Excess of IDLH		+	+	+	+	+					
Toxicity May Be Below IDLH but Above STEL		+	+	+	+	+			+		
Toxicity May Be At or Below STEL but Above TLV		+	+	+	+	+			+	+	
Immediate Threat Is In Form Of:	Gas, Vapor	+	+	+	+	+					
Immediate Threat Is In Form Of:	Liquid, Droplets, Aerosol	+	+	+	+	+			+		
Immediate Threat Is In Form Of:	Particulates, Powders	+	+	+	+	+			+	+	
Immediate Threat Is In Form Of:	Liquid Borne Biological	+	+	+	+	+			+	+	+
Immediate Threat Is In Form Of:	Radio-Nuclide Particles, Dust	+	+	+	+	+			+		
Immediate Threat Is In Form Of:	Alpha Emitting Contamination	+	+	+	+	+			+		
Repeated Entry Work Tasks Anticipated in:	High Hazard Area (Exclusion Zone)	+	+	+	+	+					
Single Entry Work Tasks Anticipated in:	High Hazard Area (Exclusion Zone)	+	+	+	+	+					
Repeated Entry Work Tasks Anticipated in: Reduction Zone)	Medium Hazard Area (Contamination	+	+	+	+	+			+		
Repeated Entry Work Tasks Anticipated in: Zone)	No or Low Hazard Area (Support	+	+	+	+	+			+	+	
Highest Chemical Permeation Resistance is Desired		+	+	+	+	+					
Limited Chemical Permeation Resistance is Desired		+	+	+	+	+			+		
Highest Chemical Penetration Resistance is Desired		+	+	+	+	+	+		+	+	
Limited Chemical Penetration Resistance is Desired		+	+	+	+	+	+		+	+	+
Highest Physical Property Protection Resistance is Desired		+	+	+	+	+	+				+
Limited Physical Property Protection Resistance is Desired		+	+	+	+	+	+		+	+	
Short Duration Flash Fire Protection for Escape is Desired				+		+					+
Short Duration Liquefied Gas Fire Protection for Escape is Desired					+	+					
Long Duration Heat Resistance is Desired											+

Table 10: Chemical Protective Clothing Standards Associated with Example Performance Criteria

Table 10 shows these standards and other NFPA protective clothing standards, together with a comprehensive list of various performance criteria (which can also be considered specific levels of protection). This table should prove useful for the user to compare desired levels of protection and then survey the standards listed to determine the exact type of chemical protective clothing that would be most appropriate. Start with the left side of this table to select the type of hazards that may be potentially encountered. Then look across the top of the table to find the current nationally recognized standard that provides the protection against the hazards that were selected. The levels of protection listed is representative of the wide range of threats or hazards that might be encountered by a Hazardous Materials Response Team or a First Responder, at an industrial chemical incident or a suspect terrorist related WMD Chem-Bio incident.

THREAT BASED PERFORMANCE:

NFPA Chemical Protective Clothing standards are developed using performance criteria that is risk (i.e. time) and hazard (i.e. threat chemical) driven and is known as *Threat Based Performance*. The use of the term *Vapor Protective* as used and defined by NFPA, implies total encapsulation is necessary in order to provide a total body, gas-tight protection environment. However, the use of the Environmental Protection Agency (EPA) term *Level A* does not categorically imply total protection against all vapor threat environments, because the term is not defined

with regard to a level of performance protection. Similarly, the term *Liquid Splash Protective* as used and defined by NFPA, implies the highest level of total liquid protection to the body. The EPA terms *Level B and Level C* do not categorically imply a total protection against all liquid threat environments.

PROTECTIVE CLOTHING TERMS:

Traditional EPA terms often used to describe protective clothing *(Level A, B, C, and D)* are not used in this document. Acknowledging that they are very popularly used, they are often not used correctly in today's response world. They were developed over 30 years ago (by EPA / OSHA / NIOSH) before a performance criteria approach was used (by NFPA) to define actual performance of a class of garment. The terms *Level A, B, C and D* were derived based upon "design" of the garment or suit (i.e. encapsulating), and were not derived with regard to a level of protection (skin) and performance (suit material). There is no assurance that all totally encapsulating *Level A* suits are vapor protective, or even liquid splash-protective. These terms do not accurately describe the protective ability of an ensemble for toxic industrial chemicals or for weapons of mass destruction (WMD) warfare agents or biological substances. They should not be confused with NFPA terms, nor should they be used to imply an actual threat based performance criteria. Therefore, the common EPA terms *Level A, Level B, and Level C,* are not used in this document.

SELF-EVALUATION FORMS

APPENDIX A – EQUIPMENT SELF-EVALUATION

Appendix A, the "*Equipment Self-Evaluation Form – Equipment, Tools, Kits"* is provided to conduct a self-inspection. It includes all of the required hazardous materials equipment for each of the three hazardous materials resource types (Type 1, Type 2, Type 3). The equipment items are listed in the exact same way as they are in PART 2, - by Main Category and Sub-Category, - however, all "optional" (Opt) items have been removed, showing only the "required" (R) items necessary for each of the corresponding company types. Review and use of the *Self Evaluation Form* will show at a glance the tools and equipment necessary in order to qualify for a particular hazardous materials company type.

It should be noted that most of the detailed descriptions for each inventory item in the Appendix A for equipment and tools have been eliminated, reduced, or abridged. The user of this document should always refer back to PART 2 for a detailed explanation of the tool or equipment item. Only in PART 2 will explanations be given with regard to tool kit contents, kit compliment, recommended sizes or approximate dimensions, and material of manufacture. **(Rev2012)**

APPENDIX B – TRAINING RECORDS SELF-EVALUATION

Appendix B, the *"Self-Evaluation Form – Training Records"*, is provided to conduct a review of hazardous materials training records. Use of this inspection form will assist in assuring the proper number and types of training certificates are on hand and that they are also reflective of the correct level of training (HMT, HMS, HMS/WMD) for each of the three hazardous materials resource types (Type 1, Type 2, Type 3). These training records must be available at the time of a hazardous materials resource typing inspection.

Also eliminated from these lists are the detailed descriptions for each individual tool or piece of equipment. The user of this document should always refer back to PART TWO for a detailed explanation of the tool or equipment item. Only in PART TWO will explanations be given with regard to tool kit contents, kit compliment, recommended sizes or approximate dimensions, and material of manufacture. **(Rev2012)**

[THIS PAGE LEFT BLANK]

FIRESCOPE STANDARDIZED
HAZARDOUS MATERIALS EQUIPMENT LIST

PART 2: LIST OF EQUIPMENT

1. FIELD TESTING and DETECTION

Field Testing and Detection are procedures that can be employed in the field. They are utilized to support verification as to the possible presence of, or the specific identification of, industrial chemicals, WMD chemicals and/or biological substances. Field testing and detection incorporate a step-by-step process which utilize a variety of resources, including complete field testing chemical kits, specific chemical testing kits, individual testing paper strips, tickets, and packets, the use of colorimetric tube technology, and biological agent testing kits.

The objective of field testing is to employ an adequate and acceptable subjective testing procedure that will yield results with a high degree of credibility. The results should focus on at least verifying the presence of a substance, categorizing a substance according to chemical and physical property hazards, and occasionally identifying a substance by common or chemical name. Field testing category does not include instruments or devices for continuous survey. Continuous survey is included in the Air Monitoring category.

1.1 Color Change Analysis - Non-Electronic [Sub-Category]

Field testing employed to verify presence of suspect known substances. This type of analysis is also used to determine possible presence of unknown industrial chemicals, WMD chemicals and biological substances. This testing and detection process is largely predicated upon a "color change" technology. The results are often interpreted in a "yes – no" environment, such as employed by single use test paper, test strips, test cards, tickets, and coupons. This includes: pH paper, chemical specific test strips (i.e. formaldehyde, cyanides); chemical classification strips (i.e. nitrides, nitrates, heavy metals); or chemical and physical property determination (i.e. oxidizer, water reactivity).

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
1.1.1	**TEST STRIPS, pH PAPER, Packets:** To test acidity or alkalinity of aqueous solutions; ¼" wide x 3" long approximate; Presence is based upon a color change.	1 Pkt		**R**	**R**	**R**
1.1.2	**TEST TABS, pH PAPER, Kit:** Same as pH PAPER Test Strips, but extra-large, ½ to 1" wide by 6 to 9" long approximate; Presence is based upon a color change.	1 Pkt		**Opt**	**Opt**	**Opt**
1.1.3	**TEST STRIPS, OXIDIZER, Packets:** Physical or chemical property sensitive; Presence is based upon a color change.	1 Pkt		**R**	**R**	**R**
1.1.4	**TEST STRIPS, PEROXIDE, Packets:** Physical or chemical property sensitive; Presence is based upon a color change.	1 Pkt		**R**	**R**	**R**
1.1.5	**TEST STRIPS, CHEMICAL SPECIFIC, Packets:** Additional industrial chemicals test strips, usually sensitive for a specific chemical (i.e. formaldehyde; chlorinated hydrocarbons; organo-phosphate; halogen ion; heavy metals; nitrites; nitrates; cyanides, sulfites, sulfates, etc.) Presence is based upon a color change.	1 Pkt of each		**Opt**	**Opt**	**Opt**
1.1.6	**TEST STRIPS, MULTI-ION CLASSIFICATION, Kit:** Single large test strips detects for 5 or more ions or compounds simultaneously (typically is a combination of the following: corrosiveness, oxidizer, fluoride ion, halogen ions, organic solvents, sulfite, sulfide, nitrite, nitrate; potassium, lead, arsenic, organo-phosphates – depending on manufacturer); Combination can depend upon type of kit purchased. Based upon color change.	1 Kit		**Opt**	**Opt**	**Opt**

1.1.7	**TEST STRIPS, WATER QUICK TEST, Kit:** Test strip detects 5 or more common contaminants in water simultaneously (typically chlorine ion, pH, alkalinity, hardness, nitrates, nitrites). Based upon color change.	1 Kit		**Opt**	**Opt**	**Opt**
1.1.8	**TEST STRIPS, WATER QUAITY, Kit:** More advanced test kit, in addition to kit above, also tests for bacteria, ammonia, sulfates, free iron, free copper	1 Kit		**Opt**	**Opt**	**Opt**
1.1.9	**TEST STRIPS, WMD CHEMICAL, Kit:** Military grade detection papers for field testing of liquids only: (i.e. "M-8" paper booklet of 25 sheets, which are also part of the M256A1 Kit, for nerve agents GA, GB, GD, GF VX and blister agents L, H, HD). Strip turns to one of four colors. - Or - (i.e. "3-WAY" adhesive paper booklet of 12 sheets; for some nerve agents, blister agents). Strip turns to one of three colors	1 Pkt		**R**		
1.1.10	**TEST PAPER, WMD CHEMICAL, Roll:** Military grade (i.e. "M-9" paper rolls, for nerve or blister agents). Presence is based upon a single color change, and does not distinguish between nerve agents and blister agents.	1 Pkt		**R**		
1.1.11	**TEST PAPER, WMD CHEMICAL, Card:** Military M256A1 plastic card test kit (Twelve disposable plastic test cards are part of the M256A1 kit; for nerve [GA, GB, GD, VX], blister [H, HD, CX, L], blood [AC, CK] Presence is based upon color changes)	1 Kit		**R**		
1.1.12	**TEST CARD, TRAINING ONLY, WMD CHEMICAL**: Military M256A1 Training Kit.	1 Kit		**R**		
1.1.13	**TEST TICKET, NERVE AGENT ONLY, Sensor:** Applicable only for some nerve agents, color change based upon detection of organo-phosphate radicals, in air or water.	1 Package or Kit		**Opt**		
1.1.14	**TEST TICKET, MUSTARD AGENT ONLY, Sensor:** Applicable only for mustard agents, color change based upon detection of chlorethyl radical, in air or water.	1 Package or Kit		**Opt**		
1.1.15	**DETECTION, EXPLOSIVE SUBSTANCE, Kit:** Kit contains three aerosol cans, each to test for a specific group of explosives (A – TNT, TNB, DNT, picric acid; B – RDX, nitro, dynamite, PETN, SEMTEX; C – ANFO, black powder, nitrates, gun powder, potassium chlorate). Positive results are based upon color change.	1 Package or Kit		**Opt**	**Opt**	

1.2 Qualitative Analysis, Kits - Non-Electronic [Sub-Category]

A more advanced and disciplined qualitative analysis that incorporates numerous step-by-step procedures. Often assembled and marketed as complete stand-alone kits to detect presence of specific chemicals or verify chemical classes based on hazards, these kits are a compilation of numerous test procedures which are also based upon color change comparison, including color changes in a liquid medium. Their inventory may incorporate detection papers and test strips, sensor tickets, a wide range of reagent vials, some colorimetric tubes, and step-by-step instruction booklets. Testing a known or unknown in accordance to a protocol may incorporate numerous test procedures, and each test procedure may include numerous test steps.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
1.2.1	**INDUSTRIAL CHEMICALS, KNOWN, Qualitative:** Test Kit, Qualitative analysis, For testing and detection of known industrial chemicals	1 Kit				**R**
1.2.2	**INDUSTRIALCHEMICALS, UNKNOWN, Qualitative:** Test Kit, Qualitative analysis, For testing and detection of unknown industrial chemicals, not for biological substances. (Usually the more advanced version of the kits listed in # 1.2.1). ***If included in inventory, satisfies requirement for 1.2.1.***	1 Kit		**R**	**R**	**Opt**

1.2.3	**PCB CHEMICALS, Test Kit:** Consists of a simple multi-step screening procedure to test for presence of poly-chlorinated biphenyl contaminated solvents. Range of detection is approximately 20 ppm to 500 ppm, with different kit versions having different ppm ranges. Detection is dependent upon liquid color change.	1 kit	1 Kit or Item, or #1.2.2 can test for this capability **(Rev2012)**	**R**	**R**	**R**
1.2.4	**CHLORINATED HYDROCARBON, Test Kit:** Consists of a simple multi-step screening procedure to test for presence of free chlorine ions in solvents. Several different kits available representing different ppm ranges, but approximate range between 200 ppm to 4,000 ppm. Detection is dependent upon liquid color change.	1 kit	EPA 40 CFR 261	**Opt**	**Opt**	**Opt**
1.2.5	**ORGANO-PHOSPHATE, Test Kit:** Consists of a simple multi-step screening procedure to test for presence of organo-phosphate radical; Includes special test strips based on color change.	**1 Kit**		**Opt**	**Opt**	**Opt**
1.2.6	**INDUSTRIAL CHEMICALS, WATER CONTAMINATION, , Kit:** Qualitative analysis of domestic drinking water, and utility water supplies for contaminant industrial chemicals. Involves numerous different test procedures. Detection is dependent upon liquid color changes.	**1 Kit**		**Opt**	**Opt**	**Opt**
1.2.7	**INDUSTRIAL CHEMICALS, WATER SAMPLE TAKING, Kit,:** – A kit designed to support water utility company needs to gather large volume samples in preparation for analysis at their laboratories. Kits might be supplied by a local water utility company for use by the local haz-mat team.	1 Kit		**Opt**	**Opt**	**Opt**
1.2.8	**WMD, WATER TEST, MILITARY, Kit:** Qualitative analysis for WMD chemicals in water (i.e. M272 or M273 kit); Sensitive for GA, GB, GD, GF, VX HD, and L to ppb and ppt. Detection is dependent upon liquid color change. **(Rev2008)**	**1 Kit**		**R**	**Opt**	
1.2.9	**WMD CHEMICALS, MILITARY, Test Kit: -** Part of the M18A2 or M18A3 or CAD C-2 kit; For detecting nerve (GB, VX); blister (H, HD, HN, HT, L, CX, ED); blood (AC, CK); and choking/vomit (CG, MD). Comprises detection tickets, sampling tubes, reagent chemicals and some colorimetric tubes (i.e. M18A2, M18A3, CAD Kit C-2). **(Rev2008)**	**1 Kit**		**R**	**Opt**	
1.2.10	**WMD CHEMICALS, MICROSCOPY, Kit:** Field portable microscope, digital camera; Requires access to internet or by telephone to a prescribed registered laboratory for transmission, and analysis of data. Complements the item # 1.2.2type field test kit described in Sub-Category 1.2.	**1 Kit, Complete**		**Opt**	**Opt**	
1.2.11	**WMD CHEMICALS, Reagent Test Kit:** Includes kit containing reagent chemicals, and step-by-step procedures to test and screen suspect WMD chemicals by qualitative analysis. Complements the item # 1.2.2 type field test kit described in Sub-Category 1.2.	**1 Kit, Complete**		**Opt**	**Opt**	

1.3 Qualitative Analysis, Kits - Electronic [Sub-Category]

A more advanced qualitative analysis detection method. The results are based upon a sophisticated electronic testing process producing very reliable results. Analysis is based upon examining a substance at the molecular level. A sample of the unknown chemical must be collected and then properly prepared and containerized in accordance with the requirements of the specific device.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
1.3.1	**CHROMATOGRAPHY, GAS** – Portable chromatograph system complete within a briefcase or attaché case, self-contained computer, database, and display.	**1 Complete Kit of any one of the three technologies Described, or equal or better**		**R**	**Opt**	
1.3.2	**SPECTROMETRY, MASS** or equal – Portable general mass spectrometry system complete within a briefcase or attaché case, self-contained computer, database, and display.					

1.3.3	**SPECTROPSCOPY, INFRA-RED:** Portable identification system including computer, color display, software, 12 volt or 120 volt; Scans unknown with infra-red light and compares fingerprint with information in a database to identify unknown; **(Rev2012)**					

1.4 Colorimetric Analysis - Non-Electronic [Sub-Category]

Comprises the use of sealed detection tubes, each tube is chemical specific. Colorimetric tube technology detects the presence of a suspect industrial chemical, and some WMD chemical substances in air, by reacting to a pre-sensitized absorbent medium in the tube. Presence is verified by a color change of the absorbent material. Colorimetric tube technology is based upon chromatography principles, and therefore findings should be considered qualitative. Although each tube may be calibrated for a specific substance, tubes may be cross-sensitized to like materials or other interfering contaminants.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
1.4.1	**COLORIMETRIC Kit, BASIC –** For industrial chemicals spot analysis detection of vapors, gases.	**1 Kit, Complete, of any of the three listed**		**R**	**R**	
1.4.2	**COLORIMETRIC Kit, CHIP –** Industrial chemicals spot analysis detection of vapors, gases; Miniaturized colorimetric tubes in a glass or plastic chip, often several chips to a packet. May include or require special bellows pump, electronic reader depending upon sophistication and manufacturer.					
1.4.3	**COLORIMETRIC Kit, MULTI-SENSING –** Industrial chemicals spot analysis detection of vapors, gases; Specifically designed to read up to five (5) or more tubes simultaneously (each tube can be different), during one reading survey.					
1.4.4	**COLORIMETRIC Kit, WMD Special –** WMD chemicals spot analysis detection of vapors, gases; Consists of specially selected industrial chemical colorimetric tubes assembled by the manufacturer with special instruction on how to employ for some WMD chemicals detection. Requires more advanced interpolation of the data derived.	**1 Kit, Complete**		**R**		
1.4.5	**COLORIMETRIC Kit, CLAN LAB –** Special kit for spot analysis detection of vapors, gases associated with clandestine drug lab chemicals. Consists of specially selected industrial chemical colorimetric tubes assembled by the manufacturer with special instructions on how to employ.	**1 Kit**		**Opt**	**Opt**	
1.4.6	**PUMP, BELLOWS, Electric –** A battery powered bellows pump to augment or upgrade hand operated bellows pump; Programmable, with LCD readout.	1 Pump		**Opt**	**Opt**	

1.5 WMD Biological Detection - Electronic

Use of a field test system for unknown biological agents. This qualitative analysis process includes a testing ticket or strip based upon a color-change technology. It incorporates antibodies against an antigen (which may be an organism, part of an organism, a product of the organism, or a chemical). This antibody-antigen interaction triggers a chemical reaction on a test strip or ticket which may be visually interpreted with a detector. Detection for suspect biological substances, including toxins, can be grouped into two (2) assessment approaches: 1) Presumption of the presence of a biological substance (non-agent specific), and; 2) Verification of specific biological agents (agent specific). Testing and detection systems that support the first assessment approach (non-agent specific) are supported by an electronic reader, and give a simple “yes-no” response to possible presence of a biological agent, but does not specifically identify the agent. Those that support the second assessment approach (agent specific) are supported by a more sophisticated electronic reader, and utilize more complex analysis technologies, which are (in the order of increasing reliability) ion fluorescence, PCR (polymerases chain reaction) / DNA replication, chromatography, and infra-red spectrometry. Test duration time from start to finish of one test may be 15 minutes to 1 hour.

This WMD Biological Sub-Category DOES NOT include simple test strips which are based only on a color change (i.e. simple amino-assay, protein, and enzyme technologies), with no further analysis. They are inaccurate, often require

a very high background concentration of the target substance to initiate a “positive” reading, and are easily prone to false positives.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
1.5.1	**NON-AGENT SPECIFIC Biological Detection** – A sampling and detection system which will screen for presence of a biological substance based upon fluorescence technologies. Is not agent specific, only gives a “yes” or “no” that a suspect biological agent might be present with reliability of less than 50%. Confirmation and agent identification for more reliable hazard assessment requires further more advanced field testing, or samples sent in for laboratory analysis. Presence of proteins may give false positives.	**1 Kit** Complete, of those listed for #1.5.1 **Or** #1.5.2 (Rev2012)		**R**	**Opt**	
1.5.2	**AGENT SPECIFIC Biological Detection –** A sampling and detection system which will verify presence of a biological substance based upon protein fluorescence, or PCR / DNA replication technologies. This system is agent specific. Devices from different manufacturers should be reviewed as each manufacturer may provide a different array of agents that can be detected. Protein fluorescence technology – (Anthrax, SEB, Plague, Tularemia, Ricin, Botulinum, Brucella) - Or - Immuno-assay fluorescence technology, - (Ricin, Botulinum, Anthrax, Small Pox) - Or - DNA replication technology, - (Anthrax, Small Pox, Tularemia, Plague)				**OPT**	

2. AIR MONITORING

The use of electronic devices to monitor for and detect the presence of known or unknown gases or vapors or dangerous environments. Application is ideal for continuous air monitoring with continuous data readout. Platform monitoring begins with ability to provide standard OSHA confined space readings (oxygen presence in %; Flammable atmosphere in LEL; Carbon Monoxide presence, and Hydrogen Sulfide presence). Advanced detection and monitoring may incorporate more sophisticated instruments that differentiate between two or more flammable vapors, and which may directly identify by name a specific flammable or toxic vapor. More advanced air monitoring may also include ability to report parts-per-billion (ppb) readings for toxic substances, and continuous biological survey and monitoring.

2.1 Confined Space Monitoring [Sub-Category]

Combustible Gas Indicators (CGI) and Flame Ionization Detectors (FID) are the most popular technologies employed in detectors that provide a measurement of combustible vapors in air, as a percent (%) of Lower Explosive Limit (LEL). Additionally, some Photo Ionization Detectors (PID) can do the same (See also section 2.2). These instruments are best used to detect the presence of dangerous atmospheres in a confined space environment, namely oxygen deficiency, percent of the LEL of a hydrocarbon flammable gas, presence of Carbon Monoxide, and presence of Hydrogen Sulfide. These units generally do not identify the hydrocarbon by name and typically cannot identify aromatic hydrocarbons.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
2.1.1	**CONFINED SPACE OSHA STANDARD Four Gas:** Continuous monitoring, independent displays, built-in alarms, minimum of 10 feet of tubing and sampling wand. Referred to as “Four-in-One” Kits: (O_2 Presence in Percent; Combustible Vapor in LEL; CO presence; H_2S presence)	1 Unit	Intrinsic to UL #913	**R**	**R**	**R**
2.1.2	**CALIBRATION KIT, for Item # 2.1.1:** For each of the above that may be in inventory. (May be supplied by manufacturer as part of monitoring device kit).	1 Kit		**R**	**R**	**R**

2.2 Multiple Gas Monitoring, Toxic [Sub-Category]

These units are able to detect for two or more toxic gases as well as combustible vapors simultaneously and may be able to differentiate between at least two or more different vapors present (some up to 30). Most are PID technology but some may be FID technology. These units typically measure toxic vapors in parts per million (ppm) but some may read in parts per billion (ppb). Some are able to identify a specific combustible vapor by substance name, and include software to allow download of data for display on a computer. More advanced PID models may also be capable of additional monitoring functions, such as detection of specific or unique gases, identifying presence of aromatic compounds, have memories that store data for up to 8 hours or greater of continuous monitoring, and are not harmed by some corrosive atmospheres.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
2.2.1	**TOXIC VAPOR, in ppm:** Capable of detecting combustible atmospheres (VOC – Volatile Organic Compounds) and toxic vapors (TIC – Toxic Industrial Compounds); Resistant to damage from chlorinated hydrocarbons; Data downloadable to computer. Not usually suitable for Benzene ring substances.	**One Unit**		**R**	**R**	
2.2.2	**AROMATIC HYDROCARBON (Benzene Ring) Monitoring:** Device designed to detect aromatic hydrocarbon (ring) substances. ***If this utility is incorporated into the above device, this criteria is met.***	One Unit		**R**	**R**	
2.2.3	**SIMULTANEOUS MULTI-VAPOR Monitoring:** Can differentiate between several combustible vapors or toxic vapors. Not usually suitable for Benzene ring substances.	One Unit		**Opt**	**Opt**	
2.2.4	**CALIBRATION KITS:** For each of the above that may be in inventory.	1 Unit for each kit		**R**	**R**	
2.2.5	**AREA MONITORING:** A four (4) gas or greater system that is capable of communicating real time data remotely to a computer. **(Added 2012)**	1 Complete System		**Opt**	**Opt**	

2.3 Specialty Gas Capability [Sub-Category]

Continuous monitoring specialty gas detectors are instruments designed to measure a specific gas or vapor (i.e. chlorine), or a very specific category or family of materials. (i.e. halogen gases). Some basic units only warn of presence (i.e., freon and refrigerant detectors), while others can display a specific reading usually in ppm (i.e., cyanides). Units described in Sub-Category 2.2 as being able to also detect and monitor for specialty gases will meet this sub-category requirement. Determining the need to equip for particular specialty gases will be largely dependent upon local requirements and local pre-hazard assessment studies and potential threats.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
2.3.1	**AMMONIA:** Detects Ammonia vapors to ppm, approximate range 0 to 100 ppm.	**1 Capability**	One Device May Have Capability To Detect Two Or	**R**	**R**	
2.3.2	**FREONS, Halogenated Hydrocarbons:** Halogen derivative refrigerants.	**1 Capability**		**R**	**R**	
2.3.3	**HALOGEN GASES:** Specifically Chlorine; Other halogen gases optional depending upon local needs. **(Rev2008)**	**1 Capability**		**R**	**R**	
2.3.4	**PHOSPHINE:** Continuous Monitoring. **(Rev2008)**	**1 Capability**		**R**	**R**	
2.3.5	**ALDEHYDES:** Specifically Formaldehyde	**1 Capability**		**Opt**	**Opt**	
2.3.6	**ARSINE:** Specifically Arsenic Trihydride	**1 Capability**		**Opt**	**Opt**	
2.3.7	**CARBON DIOXIDE:** Measures to ppm, some also display ambient temperature. Requires calibration kit.	**1 Capability**		**Opt**	**Opt**	
2.3.8	**CARBON MONOXIDE:** Measures to ppm.	**1 Capability**		**Opt**	**Opt**	
2.3.9	**CYANIDES:** Specifically Hydrogen Cyanide, Cyanogen Chloride.	**1 Capability**		**Opt**	**Opt**	

2.3.10	**ETHYLENE OXIDE:**	**1 Capability**	More Specialty Gases (Rev2012)	**Opt**	**Opt**	
2.3.11	**HALOGEN ACID VAPORS:** Specifically Hydrogen Chloride	**1 Capability**		**Opt**	**Opt**	
2.3.12	**HYDROGEN SULFIDE:** Often is incorporated into a CGI/FID or PID instrument designed to meet OSHA Confined Space detection requirements.	**1 Capability**		**Opt**	**Opt**	
2.3.13	**NITRIC OXIDE, NITROGEN DIOXIDE:** Approximate range 0 to 100 ppm for Nitric Oxide, and approximate range 0 to 10 ppm for Nitrogen Dioxide. (Rev2012)	**1 Capability**		**Opt**	**Opt**	
2.3.14	**SULFUR DIOXIDE:**	**1 Capability**		**Opt**	**Opt**	
2.3.15	**VOLATILE ORGANIC COMPOUNDS (VOC's):**	**1 Capability**		**Opt**	**Opt**	
2.3.16	**CALIBRATION KITS:** Maintenance or Calibration Kit for each of the above devices that may be in inventory, as necessary.	**1 for each type of monitoring unit on hand**		**R**	**R**	

2.4 WMD Chemical Dedicated Instruments [Sub-Category]

WMD chemical detection instruments are highly specialized. They are specifically designed to detect presence of WMD chemical agents. The instruments may have narrow detection capability (i.e. nerve agents only), or they may have the ability to measure multiple chemical agents (i.e., nerve, blood, and blister agents). Most are based upon Ion Mobility Exchange technology or Surface Acoustic Wave technology.. A *Type 1 Haz-Mat Company* must have the ability to monitor for and detect presence of nerve agents, blister agents, blood agents, choking agents, and incapacitating agents. A variety of instruments are available, however, no one instrument can detect presence of all the mentioned WMD agent categories. Therefore, in order to assure a Company has this detection and monitoring capability, the Company's inventory may require inclusion of two or more instruments. See *Chart # 1* in Appendix D for reference and a cross-comparison as to what WMD agents can be detected and monitored by what WMD dedicated instruments

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
2.4.1	**NERVE AGENT Detection:** This includes GA, GB, GD, GF, VX; See Appendix D, Chart #1 for instruments.	Must have capability to monitor and detect for at least one substance in each of these six categories. This may require one to several instruments, depending upon versatility of each instrument		**R**		
2.4.2	**BLISTER AGENT – MUSTARDS Detection:** This includes H, HD, HN, See Appendix D, Chart #1 for instruments			**R**		
2.4.3	**BLISTER AGENT – LEWISITE Detection:** This includes L HL; See Appendix D, Chart #1 for instruments.			**R**		
2.4.4	**BLOOD AGENTS Detection:** This includes AC, HCN, CK, SA; See Appendix D, Chart #1 for instruments. Some specialty industrial detection devices are available.			**R**		
2.4.5	**CHOKING / VOMITING AGENTS Detection:** This includes CG, DP, CL; See Appendix D, Chart #1 for instruments. Some specialty industrial detection devices are available for Chlorine and Hydrogen Chloride.			**R**		
2.4.6	**INCAPACITATING AGENTS Detection:** Specifically Pepper Spray. See Appendix D, Chart #1 for instruments.			**R**		
2.4.7	**CALIBRATION KITS:** Maintenance or Calibration Kit for each of the above devices that may be in inventory, as necessary.	**1 for each type of monitoring unit**		**R**		

3. SAMPLING

Sampling is the process of instituting a standard substance collection protocol, and includes: Substance Capturing and collection; Containerizing and Labeling; and preparations for Transportation and Distribution. The latter may include evidence documentation and professional laboratory analysis. Sampling is particularly critical when collecting samples that require further on-scene testing, analysis, and categorization, as well as samples that may become evidence in court or other legal proceedings.

3.1 Substance Capture [Sub-Category]

Suitable sample taking activities require special tools to facilitate accurate capture of samples. This Sub-Category includes those tools necessary to capture, collect and then transfer samples of liquids, powders, solids, and surface contaminants to a collection vessel, container, or area. While there are specific tools designed for taking samples, other devices can be improvised into sample taking tools. Some of these items may be found as part of a Qualitative Field Testing Kit as described in Sub-Category 1.2, and if present there in the quantities listed below, would satisfy these requirements**.**

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
3.1.1	**COLIWASA TUBES, Disposable:** Glass or clear plastic, approximately 43" length, with ground glass seal, approx. 225 ml capacity	Must have minimum of 12 of either type, mix or match	EPA Protocol B	**R**	**R**	**R**
3.1.2	**COLIWASA TUBES, Re-usable, Glass:** Approximately 43" length, with Teflon seal		EPA Protocol B			
3.1.3	**COLIWASA TUBES, Re-usable, Teflon©:** Approximately 40" length, all parts are 100% Teflon®, with Teflon® seal. Only sampling tube suitable for HF.	12	EPA Protocol B	**Opt**	**Opt**	**Opt**
3.1.4	**COLIWASA TUBES, Disposable, Polypropylene:** Approximately 40" length, with neoprene cone stopper; Most inexpensive of all coliwasa tubes, suitable for sludge, most organic solvents.	12		**Opt**	**Opt**	**Opt**
3.1.5	**PIPETTE, TRANSFER, Plastic, Regular, Bulk:** Disposable, plastic, approximately 5 to 8 mil capacity, 15 cm long, some available with "billows" type squeeze end.	Pkg of 100 of either type; Or a mixture (Rev2009)		**R**	**R**	**R**
3.1.6	**PIPETTE, TRANSFER, Plastic, Large, Bulk:** Disposable, plastic approximately 20 ml capacity, 30 cm long.					
3.1.7	**PIPETTE, TRANSFER, Graduated:** Glass or plastic, graduated, approximately 28 cm long, disposable, for use with Pipetter Safety Bulb or squeeze bulb.	6		**Opt**	**Opt**	**Opt**
3.1.8	**PIPETTER SAFETY BULB:** Rubber, with adjustable suction valve, re-useable, replacement	1		**Opt**	**Opt**	**Opt**
3.1.9	**PIPETTE, TRANSFER, Plunger Style:** Polypropylene, capable of sucking or expelling 1 to 12 ml via action of push-pull plunger with rubber gasket, graduated markings in 1.0 ml increments, disposable	Pkg 10		**Opt**	**Opt**	**Opt**
3.1.10	**TEST TUBES, Disposable:** Borosilicate glass, heat resistant, approximately 12-14 ml capacity	100		**R**	**R**	**R**
3.1.11	**SWAB, STERILE:** Sterile non-organic single use swab. (Rev2012)	1 Box (Minimum of 6 Individual Units)		**R**	**R**	**R**
3.1.12	**SPONGE, Sealed, Sterile:** For surface swipe sample taking.	2		**R**	**R**	**R**
3.1.13	**DRUM SAMPLER:** Approximately 43" long plastic handle, with screw-on borosilicate glass bottle with an approximate capacity of 125 ml, to sample 55 gallon drums or small stationary tanks.	1		**Opt**	**Opt**	**Opt**
3.1.14	**TANKER SAMPLER:** Same as **previous item** but with extension or telescopic handle to approximately 8 feet.	1		**Opt**	**Opt**	**Opt**
3.1.15	**ENVIRONMENT DIPPER, Telescopic:** For grabbing samples in tankers, large tanks, creeks, canals; Usually polyethylene extendable or telescopic handle to approximately 8 – 24 feet, with slip-on 500 ml plastic cup, or 500 ml swivel ladle.	1		**R**	**R**	**R**
3.1.16	**TONGS, BEAKER or CRUCIBLE, Metal, PTFE Coated:** Chemical resistant stainless steel with tips coated with PTFE, approximately 9 ½" long.	2 - Two of either type, or one of each		**R**	**R**	**R**
3.1.17	**TONGS, BEAKER or CRUCIBLE, Metal, Plastic Coated:** Chemical resistant stainless steel with tips coated with plastic for handling jars, beakers; approximately 10" long.					

3.1.18	**TONGS, BEAKER or CRUCIBLE, Metal, Extra-Long:** Chemical resistant stainless steel or nickel plated, approximately 18" long.	1		**Opt**	**Opt**	**Opt**
3.1.19	**FORCEPS: Steel, Teflon coated or uncoated, or Plastic polypropylene,** approximate length 3 ¾" to 5 ½", with pointed or round tips.	At least two, of any kind		**R**	**R**	**R**
3.1.20	**FUNNEL: Plastic, Glass or Metal (disposable or re-useable)**: Small - approximate opening measurement 1 ½" to 2" diameter; Medium - approximate opening measurement 2 ½" to 3 ½"; Large - approximate opening measurement 4" to 6" diameter. **(Rev2009)**	Complement of 3, **with at least 1 of each size** **(Rev2009)**		**R**	**R**	**R**
3.1.24	**SPATULA, SAMPLING, LARGE, "V" Shape: Plastic or metal**, approximately 6" to 11" long x ¾" wide, approximate capacity 15 cc to 36cc.	Total of 5, in any combination		**R**	**R**	**R**
3.1.25	**SPATULA, SAMPLING, MICRO, Teflon Coated:** Nickel plated with long narrow flat ends, one end is oblong, the other end is blunt; Both ends coated with; Approximately 7 ½" long.	1	Meets FDA compliance	**R**	**R**	**R**
3.1.26	**SPOON, Plastic:** Polypropylene, with long handle (approximately 7"), disposable, in ¼ teaspoon, ½ teaspoon, 1 teaspoon, and 3 teaspoon sizes. **(Rev2012)**	12 in any combination of those listed		**R**	**R**	**R**
3.1.27	**SCOOP, SMALL, Sterile, 2 oz:** General purpose **(Rev2012)**	One		**R**	**R**	**R**
3.1.28	**SCOOP, MEDIUM, Sterile, 4 oz:** General purpose **(Rev2012)**	One		**Opt**	**Opt**	**Opt**
3.1.29	**SCOOP, LARGE, Sterile, 8 oz:** General purpose **(Rev2012)**	One		**Opt**	**Opt**	**Opt**
3.1.30	**SCOOP, SMALL, Stainless Steel:** Approximate bowl size 5" x 2 ½".	One		**Opt**	**Opt**	**Opt**

3.2 Bulk Liquid Transfer – Mechanical [Sub-Category]

Mechanical processes needed to support the moving of large quantities of substances which may proceed over a long period of time such as hand operated, electrical, or hydraulic devices. This process is most prevalently instituted to facilitate bulk liquid transfer and to hasten the return of a safe environment.

Inv.	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
3.2.1	**PUMP, SYPHON, DRUM, Heavy Duty, Stainless Steel:** For 55 gallon drums; All 316 stainless steel with Teflon® piston; Hose 35 to 55 feet length; Rate 16 oz. per stroke approximate.	**1 of any of these three pumps listed –**	**FM or UL Listed** Mechanical, or If electrical, MUST be Intrinsically Safe **(Rev2012)**	**R**	**R**	**R**
3.2.2	**PUMP, SYPHON, DRUM, Heavy Duty, High Quality:** For 55 gallon drums; PVC construction with Viton® gaskets and valves; Polyethylene hose 35 to 55 feet length; Rate 1.3 pints per stroke approximate.					
3.2.3	**PUMP, Transfer, Metal:** Suitable for flammable liquids in 55 gallon drums; Cast iron housing, rubber "O" rings (Viton® is recommended for solvents); Aluminum pick-up tube, flame arresting screen and baffle, vacuum breaker, and bung adaptor; Transfers approximately 8 – 10 gallons with 100 revolutions.					
3.2.4	**PUMP, SYPHON, DRUM, Plastic, Medium Duty:** For 55 gallon drums; Polyethylene or better, hose 36" minimum; For use with solvents and some inorganic acids; Fits 2" NPT bung hole of drums; Approximately 7 GPM.	**1**		**Opt**	**Opt**	**Opt**
3.2.5	**PUMP, SYPHON, DRUM, Plastic, Light Duty:** For 55 gallon drums; Polyethylene or better, hose 36" minimum; For use with solvents and some inorganic acids; Fits 2" NPT bung hole of drums; Approximately 5 GPM.	**1**		**Opt**	**Opt**	**Opt**
3.2.6	**PUMP, ROTARY, Transfer, Plastic:** Suitable for solvents and corrosive liquids in 55 gallon drums; Polypropylene housing, Uses Teflon "O" rings; Transfers approximately 8 – 10 gallons per minute.	**1**		**Opt**	**Opt**	**Opt**

3.2.7	**PUMP, MECHANICAL,** Approximately 15 GPM. Often is included as part of a tool inventory in support of decontamination processes.	**1**		**R**	**R**	**R**
3.2.8	**STINGER, SUCTION PROBE:** Usually an "in-house" fabricated aluminum pipe of approximately 4" dia. and 12' long, to assist in transfer of flammable liquid product from an overturned tanker truck; Requires drill, proper size metal cutting 4" dia. drill bit, suction or mechanical pump.	**1**		**Opt**	**Opt**	**Opt**

3.3 Containerization, Labeling, Documentation [Sub-Category]

Containers for samples and sample transport can be critical to the purity of the sample. Incompatible containers and Inappropriate container transportation may contaminate the sample and result in inaccurate analysis, thus emphasis for evidence collection and lab analysis samples should be sterile packaged, as sample contamination may jeopardize sample admissibility as evidence in legal matters.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
3.3.1	**SAMPLE JARS, Sterile, Clear Glass, 16 oz: S**hort, EPA Class 2000, wide mouth with Teflon lined lids	6	Class 2000 EPA Protocol B	**Opt**	**Opt**	**Opt**
3.3.2	**SAMPLE JARS, Sterile, Clear Glass, 8 & 4 oz:** Short, EPA Class 2000, wide mouth with Teflon lined lids	Compliment of 12 **(Rev2009)**	Class 2000 EPA Protocol B	**R**	**R**	**R**
3.3.3	**SAMPLE JARS, Sterile, Amber Glass, 16 oz**, EPA Class 2000, wide mouth with Teflon lined lids	2	Class 2000 EPA Protocol B	**Opt**	**Opt**	**Opt**
3.3.4	**SAMPLE JARS, Sterile, Amber Glass, 8 & 4 oz:** EPA Class 2000, wide mouth with Teflon lined lids	Compliment of 4	Class 2000 EPA Protocol B	**R**	**R**	**R**
3.3.5	**SAMPLE JARS, Non-Sterile, Plastic, 8 oz:** Ideal for solids or powder samples, polypropylene, with wide mouth screw lids; Not recommended for solvents; Not recommended for evidence or lab analysis collection.	12	None	**Opt**	**Opt**	**Opt**
3.3.6	**SAMPLE JARS, Non-Sterile, Glass, 8 oz:** Ideal for corrosive liquids and solvents, glass, with wide mouth screw lids. Not recommended for evidence or lab analysis collection.	12	None	**Opt**	**Opt**	**Opt**
3.3.7	**SAMPLE VIALS, Sterile, Clear and/or Amber Glass:** Assorted sizes**,** Borosilicate glass vials, with closed Teflon lined cap		Class 2000 EPA Protocol B	**Opt**		
3.3.8	**STOPPERS, Conical:** Rubber, neoprene, or silicone; Assortment, ranging between sizes #000 to #6 (9 sizes), (12 mm to 30 mm)	Kit of 5 different sizes		**R**	**R**	**R**
3.3.9	**BAGS, PLASTIC, Zipper Locking: Small** approximately 3" x 3"; Medium approximately 6" x 6"; Large approximately 9" x 9"; Thickness is 3 to 4 mil.	Kit of 24, representing all three sizes		**R**	**R**	**R**
3.3.10	**BAGS, EVIDENCE, Tamper-Proof:** Clear integrity evidence bags, approximate sizes are 7" x 4", 7" x 9", 12" x 9", with pre-printed label, tamper-proof, tear resistant, and self-sealing.	12		**R**	**R**	**R**
3.3.11	**LABELS, ORDINARY BLANK:** Approximate size to fit on sides of evidence collection jars or evidence bags; Preferably self-adhesive.	Kit of 50 of various sizes		**R**	**R**	**R**
3.3.12	**LABELS, NFPA DATA BLANK:** Approximate size is 1" x 2 ½" on vinyl, suitable for small and medium evidence bags, small vials and containers.	Kit of 12 blank	NFPA 704	**Opt**	**Opt**	**Opt**
3.3.13	**LABELS, NFPA DATA BLANK:** Approximate size is 4" x 6" on vinyl, suitable for medium and large evidence bags, large containers.	Kit of 12 blank	NFPA 704	**Opt**	**Opt**	**Opt**
3.3.14	**LABELS, NFPA LABEL ROLL:** Approximate size of each label is 1 1/8" x 3 1/8" on vinyl, available in rolls of 500 or more; Suitable for small evidence bags and all glass sample jars.	One role	NFPA 704	**Opt**	**Opt**	**Opt**

3.3.15	**LABELS, EVIDENCE SEALS:** Tamper-proof evidence labels or tape, approximate size is 1 ¼" x 3", may come by the roll of 250 or more; Dye protected, tampering or attempts to remove leave signs of tampering; Suitable for sealing sampling jars and evidence bags, door jams, electrical circuit switches, locks.	One role, or minimum of 25		**R**	**R**	**R**
3.3.16	**PENS, MARKING, PAINT:** Permanent marking, broad tip of porous fiber, multiple colors usually of enamel paint; Usually requires shaking to stir up paint.	4, preferably of different colors		**R**	**R**	**R**
3.3.17	**PENS, MARKING, INDELIBLE: Medium & Fine Point;** Permanent marking, Variety of colors.	Kit of 6		**R**	**R**	**R**
3.3.18	**CHAIN Of EVIDENCE FORMS:**	20		**R**	**R**	**R**
3.3.19	**PHOTO, ASSESSMENT and RECONNAISSANCE KIT:** Camera electronic technology: –Must provide "instant" printed images or printable from on-board computer for analysis by on-scene personnel / Incident Command conducting hazard assessment. **Rev 2015)**	1 kit Of either type as described **(R) Rev 2015**		**R**	**R**	**R**
3.3.20	**PHOTO, ASSESSMENT and RECONNAISSANCE KIT, Digital:** Camera (4 megapixel or better) digital which provides "instant" digital images for analysis by on-scene personnel / Incident Command conducting hazard assessment, and data can be transferred to computer and printed; Also to be water resistant or capable of undergoing decontamination. **(Rev2012)**			**Opt**	**Opt**	

3.4 Transportation [Sub-Category]

Occasionally samples captured at an incident need to be prepared for transportation. Responsibility for the transportation of samples is usually delegated to the investigating agency having jurisdiction, such as law enforcement, county health (environmental haz-mat), or state or federal EPA. On very rare occasions samples need special preparation and special handling. Low threat biological samples might need to be kept chilled in an ice bath. High threat biological samples may need packaging in a certified leak-proof metal container before FBI or CHP assumes chain of responsibility. Leaking compressed gas cylinders might necessitate the use of special DOT certified high pressure casks before they can be moved to a receiving facility for repair.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
3.4.1	**CONTAINER, BIOLOGICAL, Plastic:** A complete packaging system consisting of locking screw lid and jars of various capacities (6 ml to 500 ml), reinforcing receptacle, and cardboard box, with labels and instructions; Suitable for low threat infectious, blood, and biological.	1 complete kit	ICAO Packing #602 for Infectious Substances	**R**	**Opt**	
3.4.2	**ICE CHEST, Locking Lid:** Sturdy plastic, insulated, approximate capacity 2-5 gallon, with lid that securely locks shut.	Availability to 1		**Opt**	**Opt**	
3.4.3	**CONTAINER, BIOLOGICAL, Pelican Case:** Sturdy impact	1 Case	ICAO Packing #602 for Infectious Substances	**Opt**	**Opt**	
3.4.4	**CONTAINER, D.O.T. CERTIFIED, Small:** Stainless steel, with six-bolt lid, 6 ½" dia. By 10" tall, approved for air cargo, pressure tested. The 6" dia plastic containers in Item # 3.4.2 (above) fit into this supper strong cask.	1	DOT	**Opt**	**Opt**	
3.4.5	**CONTAINER, D.O.T. CERTIFIED, Large:** Stainless steel, with six-bolt lid, 6 ½" dia. By 22" tall, approved for air cargo, pressure tested. Three 6" dia plastic containers in Item # 3.4.2 (above) fit into this supper strong cask.	1	DOT	**Opt**	**Opt**	
3.4.6	**CONTAINER, D.O.T. CERTIFIED, Recovery Vessel:** Totally encapsulate 100 and 150# compressed gas cylinders, 250 psi. rated. Weighs 350 pounds. Requires DOT exemption certificate.	1	DOT 3A480	**Opt**	**Opt**	

4. RADIATION MONITORING/DETECTION

The process of instituting devices specifically for the detection of radiation sources. This process should be able to aid response personnel to differentiate between types of radiation; interpret accurately readings from the device; employ a field monitoring plan to conduct geographical survey for the search of suspect radiological sources or contamination spread. Basic criteria include detection and survey capabilities for gamma. Intermediate criteria include detection capabilities for beta. Advanced criteria include detection capabilities for alpha and radioactive nuclides. Radiation detection instruments incorporated into an inventory can be those that are specialized for each form of radiation, or a multi-purpose instrument to detect more than one form of radiation.

4.1 Gamma, Beta, and Alpha Detection and Survey [Sub-Category]

These instruments can be designed and calibrated for specialized application of a single ionizing radiation (i.e. gamma detection only, beta detection only, and alpha detection only), or designed and calibrated for use against more than one type of radiation (i.e. beta-gamma, or alpha-beta-gamma). Each type of radiation detection requires incorporation of separate electronic circuitry. Gamma instruments detect the "presence" of high energy gamma, and measure the dose rate of the exposure. It can be an "all-in-one" type unit including hand-held wand, or a meter that can accommodate different attachable probes or extendable telescope probes. Gamma detection technology includes gas G-M tubes, sodium iodide crystal, or cadmium zinc telluride. Beta and Alpha instruments detect the "presence" of particles, and measure the dose rate of the exposure. Beta and Alpha detection technology includes gas G-M tube, liquid crystal scintillation, and solid state detection circuitry. All can be referred to as "survey meters".

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
4.1.1	**SURVEY METER, GAMMA:** Capable of detecting gamma radiation (10 keV), with visual display meter 0.001 milli-Roentgen to 1 Roentgen per hour scale, and includes counts per minute/counts per second scale (0-60,000CPM). May include additional support utilities such as headphone set, interchangeable probes, computer hardware receptacle.	I Unit: "Combination" survey meter will also satisfy requirement (See Options)	European "CE" Certification is recommended	**R**	**R**	**R**
4.1.2	**SURVEY METER, BETA:** Capable of detecting beta particles (50 keV at 45% efficiency or 150 keV at 80% efficiency), with variable visual display readout in Roentgen and milli-Roentgen per hour, and includes counts per minute/counts per second scale. May include additional support utilities such as headphone set, interchangeable probes, and computer hardware receptacle.	I Unit: "Combination" survey meter will also satisfy requirement (See Options)		**R**	**R**	**R** (Rev2007)
4.1 3	**SURVEY METER, ALPHA:** Capable of detecting alpha particles (2.5 MeV with 70% efficiency), with variable visual display readout in Roentgen and milli-Roentgen per hour, and includes counts per minute/counts per second. Can contain a built-in detector or incorporate separate attachable detector probes.	I Unit: "Combination" survey meter will satisfy requirement (See Options)		**R**		
4.1.4	**SURVEY METER, COMBINATION, GAMMA-BETA: Will survey for both Gamma and Beta, and** Includes performance of items # 4.1.1 and 4.1.2 in one unit.. If selected, one unit will satisfy requirement for both 4.1.1 and 4.1.2	1 Unit will satisfy 4.1.1 & 4.1.2 requirement		**Opt**	**Opt**	**Opt**
4.1.5	**SURVEY METER, COMBINATION, GAMMA-BETA-ALPHA:** Will survey for Alpha, Beta, and Gamma, and Includes performance of items # 4.1.1, 4.1.2 and 4.1.3 in one unit. If selected, one unit will satisfy requirement for 4.1.1, 4.1.2 & 4.1.3.	1 Unit will satisfy 4.1.1, 4.1.2 & 4.1.3 requirement		**Opt**	**Opt**	**Opt**
4.1.6	**POCKET METER, COMBINATION,** With Alarm: Palm-held compact meter detects alpha, beta, gamma and x-ray; Operating range 0.05 to 50 mR/hr, and CPM 0-50,000; Built-in programmable alarm to function as dosimeter warning for accumulated dose.	2 Units		**Opt**	**Opt**	**Opt**
4.1.7	**PROBE, GAMMA, EXTENSION:** Telescoping wand with Gamma detection capability, for up to 15'.	1 Wand		**Opt**	**Opt**	**Opt**

4.2 Radionuclide Detection [Sub-Category]

Radio-nuclide detection instruments can identify by proper chemical name specific nuclide isotopes. The instrument comes equipped with a large library of nuclides in its memory database. These instruments typically use gamma-spectroscopy. Some units can identify multiple nuclides concurrently, and are adaptable to computer interface for display of graphs, time vs distance data, continuous time monitoring.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
4.2.1	**RADIO-NUCLIDE DETECTION:** Hand held instrument which includes either an internal or external detector, and also includes an internal memory of a radioactive nuclide library. Graphical display in counts per second, and energy corrected dose. Might be programmable for defined alarm levels. Might require docking station. May support download of stored data to computer display. Displays correct chemical name of identified radio-nuclide, classification, and nuclide size.	1 Unit		**R**		

4.3 Dosimeters [Sub-Category]

Dosimeters measure the amount (not the intensity) of high energy radiation (gamma and x-ray) an individual was exposed to during an operational period. The result is called “accumulated dose”. The display (the reading) is in milli-roentgens. Film badges and TLD (Thermoluminescent Dosimeters) must be sent to a licensed laboratory for processing. All others are instantaneously reading, and require re-charging or re-calibration for each use. Dosimeters are required to be worn by all personnel who are assigned or knowingly do work in a radiation threat environment.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
4.3.1	**DOSIMETER, DIRECT READING:** Direct reading of accumulated dose, or quantity of gamma and x-ray exposure. Requires hand-held re-charger, scale increments should be in milli-Roentgen. Good for quick, immediate, and initial emergency survey. Electronic dosimeter, with or without alarm in 4.3.3 will also satisfy this requirement.	1 for each assigned member; Electronic also satisfies, see 4.3.3	ANSI N-13.5	**R**	**R**	**R**
4.3.2	**DOSIMETER, TLD or Direct Ion Technology:** A thermo-luminescent dosimeter (TLD) utilizing crystals or film to measure dose, and must be sent to licensed lab for analysis; Direct Ion Technology uses a direct download to a computer. **(Rev2012)**	1 for each assigned member		**Opt**	**Opt**	**Opt**
4.3.3	**DOSIMETER, ELECTRONIC, Alarm:** Direct reading dosimeter with programmable limits and alarms; Functions like a pager and is worn in pocket or on belt; Battery operated, alarms when programmed accumulated dose has been recorded. Will satisfy requirement for 4.3.1.	One for each member of team		**Opt**	**Opt**	**Opt**

5. CHEMICAL PROTECTIVE CLOTHING

Chemical protective clothing (CPC) which includes complete ensembles (suit, boots, gloves), and may incorporate various configurations (encapsulating, non-encapsulating, jumpsuit, multi-piece) depending upon the level of protection needed. Levels of protection are; Vapor Protective, Liquid-Splash Protective, Chem-Bio Protective Option, and Flash Fire Protective Option. All levels of protection must be compliant with NFPA standards.

5.1 Vapor Protective [Sub-Category]

A vapor protective ensemble or garment, including boots and gloves, that is intended for use in an unknown threat atmosphere or for known high health risk threat atmospheres (at or above IDLH). The ensemble must be vapor tight (encapsulating). To insure accurate performance protection, they shall be compliant with NFPA Standard # 1991.

Individual vapor protective ensembles compliant with NFPA Standard # 1991 can also be certified for and provided with a variety of additional NFPA 1991 "options", which include certification for chemical flash fire escape protection, and liquid gas protection. The formerly optional requirement for protection from chemical and biological terrorism agents is no longer optional and is now incorporated into the base requirements for all NFPA 1991 vapor-protective ensembles(Rev2009). If it is desired that protection for WMD chemical and biological warfare agents be a separate ensemble, this separate ensemble may be compliant with NFPA Standard # 1994. For ensembles to be totally compliant with NFPA 1991 and 1994, detachable glove assemblies, and removable or permanently attached boot assemblies as supplied by the manufacturer, must also meet appropriate NFPA compliance at all times.

NFPA 1991 ensembles provide for the highest level of physical properties protection (rip, tear, puncture, abrasion), and are considered re-useable garments. NFPA 1994 ensembles provide for a reduced level of physical properties protection (rip, tear, puncture, abrasion), and are considered "Limited Use" garments. Ensembles compliant with NFPA 1991 are automatically certified for both WMD Chem-Bio vapor and liquid protection. A Type 1 Haz-Mat Company must have WMD Chemical / Biological Agent vapor protection capability for each member assigned to the company.

.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
5.1.1	**VAPOR PROTECTIVE ENSEMBLE, 1991 Industrial Chemicals**; At least one for each assigned member, not less than 6 for a Type 1 Company, and 4 for a Type 2 or 3 Company.	6 – Type 1 4 – Type 2 and 3	NFPA 1991	**R**	**R**	**Opt** (Rev2012)
5.1.2	**VAPOR PROTECTIVE, with 1991 Flash Fire Escape:** Includes additional NFPA 1991 Flash Fire Escape Protection Option; At least one for each assigned member (Can be same ensemble as 5.1.1 if so specified and certified)	6 – Type 1 4 – Type 2 and 3	NFPA 1991	**Opt** (Rev2007)	**Opt** (Rev2007)	**Opt** (Rev2012)
5.1.3	**VAPOR PROTECTIVE, with 1991 Liquid Gas Protection:** Includes additional NFPA 1991 Liquid Gas Protection Option; At least one for each assigned member (Can be same ensemble as 5.1.1 if so specified and certified)	6 – Type 1 4 – Type 2 and 3	NFPA 1991	**Opt**	**Opt**	**Opt** (Rev2012)
5.1.4	**VAPOR PROTECTIVE, with 1991 WMD Chemical / Biological Protection:** Includes additional NFPA 1991 WMD Chemical / Biological Protection Option; At least one for each assigned member (Can be same ensemble as 5.1.1 if WMD specified and certified. The 2005 edition of NFPA 1991 includes WMD chemicals tests. Certifying labels MUST be attached to inside of suit). (Rev2008)	Provides for WMD entry. Minimum 6 of either type of ensemble, must include gloves, boots to same certification	NFPA 1991	**R**		
5.1.5	**VAPOR PROTECTIVE, with 1994 WMD Chemical / Biological Protection:** A separate garment per NFPA 1994 **Class One** (pre-2005 *manufacturer's* date) or **Class Two** (post 2005 *manufacturer's* date) for high vapor threat protective ensemble. (This item DOES satisfy the WMD protection requirement of SEL item # 5.1.4, but DOES NOT satisfy Industrial Chemicals protection requirement of item # 5.1.1. Certifying labels MUST be attached to inside of suit). (Rev2008)					
5.1.6	**PRESSURE TEST KIT:** Usually supplied by garment manufacturer, includes Magnehelic gauge.	One		**R**	**R**	

5.2 Liquid Splash Protective [Sub-Category]

A liquid splash protective ensemble or garment, including boots and gloves, in a jumpsuit or multi-piece design that is intended for use in known threat atmospheres where vapor health risk threat is below IDLH but suspect to be above threshold limit value (TLV). The ensemble is intended to be used in an unknown vapor threat atmosphere only where the vapor threat is significantly low (below TLV) or non-existent, and where exposure to liquid splash threats and particulate contaminants may be probable. To insure accurate performance protection, they shall be compliant with NFPA Standard # 1992. For the ensemble to be totally compliant with NFPA 1992, detachable glove assemblies, and removable or permanently attached boot assemblies as supplied by the manufacturer, must also meet appropriate NFPA compliance at all times.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3

5.2.1	**LIQUID SPLASH PROTECTIVE, NFPA 1992**; Industrial Chemicals for liquid contact and splash protection (no vapor protection), can be jumpsuit style or multi-piece ensemble depending on manufacturer design.	6 – Type 1 Company 4 – Type 2 Company Of either type	NFPA 1992	**R**	**R**	**R**
5.2.2	**LIQUID SPLASH PROTECTIVE, with NFPA 1994 Class 3 WMD Chemical / Biological Protection:** A separate NFPA 1994 Class 3 WMD Chemical / Biological Protection Ensemble which provides for liquid splash protection, and provides a lesser level of physical property protection than NFPA 1992 garment. If selected to be in inventory, meets requirement for item 5.2.1.		NFPA 1994, Class 3 (Class 2 will Satisfy) (Rev2012)	**R**	**Opt**	
5.2.3	**LIQUID SPLASH PROTECTIVE**, **with NFPA 1992 Flash Fire Escape Protection Option;** Same garment as above, but with flash fire option added; (Can be same ensemble as 5.2.1 if so specified and certified at time of purchase).	6 – Type 1 4 – Type 2	NFPA 1992	**Opt**	**Opt**	**Opt**
5.2.4	**LIQUID SPLASH PROTECTIVE, with NFPA 1992 Liquefied Gas Protection Option;** (Can be same ensemble as 5.2.1 if so specified and certified at time of purchase).	6 – Type 1 4 – Type 2	NFPA 1992	**Opt**	**Opt**	**Opt**

5.3 Limited Use Protective [Sub-Category]

Limited Use protective ensembles or garments are intended for use in known threat atmospheres where health risk is below TLV. Further, these ensembles or garments are adequate for low risk known liquid splash environments. Use of these garments are for one time exposure or for limited short duration exposure to the threat. Work environments suitable for selection of these garments would be after elevated chemical and physical threats have been substantially reduced to the extent that vapor protective or liquid-splash protective ensembles are not necessary. The concentration of airborne substances are known and the criteria for using air purifying respirators (APR) are met. These garments are often referred to as “disposable” or “single use”, and incident support activities utilizing these garments include sample taking, sample testing, decontamination activities, incident documentation, scene investigation, etc. Currently there is no minimum NFPA Standard to which this level of protective clothing must meet. (NFPA Standard 1993 did describe this ensemble, however this standard was discontinued in year 2000.)

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
5.3.1	**LIMITED USE, Splash Protective**; Can be an apron, two piece garment, or coverall type splash protective garment. (Rev2012)	2 for each assigned member		**R**	**R**	**R**
5.3.2	**LIMITED USE, WMD SPLASH THREAT, NFPA 1994, Class Three:** Certified for low threat WMD liquid environments; Primarily attractive for first responder use and protection. This protection level can be combined with the particulate protection (i.e., Ensemble can be both Class Three and Four)	2 for each assigned member		**Opt**		
5.3.3	**LIMITED USE, WMD PARTICULATE THREAT, NFPA 1994, Class Four:** Certified for low threat WMD particulate environments. Primarily attractive for first responder use and protection. This protection level can be combined with the liquid protection (i.e., Ensemble can be both Class Three and Four)	2 for each assigned member		**Opt**		

6. ANCILLARY PROTECTIVE EQUIPMENT

Ancillary protective equipment are items that are available as separates, and even though some are supplied with chemical protective clothing to provide a complete ensemble (i.e. gloves, boots, booties), it is often necessary to maintain inventories of separates as replacement items. Whenever possible, replacement items should meet the same standards or certification criteria as that which was first supplied with the CPC from the manufacturer.

6.1 Hand Protection [Sub-Category]

In addition to chemical protective gloves that are supplied with the CPC ensemble, sufficient inventory of NFPA compliant gloves must be kept for CPC ensemble replacement purposes. Additionally, a variety of specialty gloves

should be considered (i.e. cryogenic, ultra-high temperatures, and radiological gloves). There are no national standards for these later items.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.1.1	**REPLACEMENT GLOVES, Vapor Protective:** Compliant to NFPA Standard 1991. Replacement glove inventory shall be ordered from and include ample supply of the *manufacturer's* recommended "outer" glove. Readily available generic type replacement gloves not acceptable. The "inner" glove is listed in item # 6.1.3 below. **(Rev2008)**	1 replacement set for each suit on hand	NFPA 1991	**R**	**R**	**Opt**
6.1.2	**REPLACEMENT GLOVES, Liquid Splash Protective:** Compliant to NFPA Standard 1992. Replacement glove inventory must include ample supply of the "outer" generic replacement gloves (Some 1992 suit ensembles are not supplied with gloves from the *manufacturer*). Where gloves are used as part of the protective ensemble, the manufacturer shall specify types of compliant outer gloves. When Liquid Splash-Protective ensembles are not provided with outer gloves by the manufacturer, replacement gloves must be compliant to NFPA Standard 1992 **(Rev2009)**. The "inner" glove is listed in item # 6.1.3 below. Doubling the number of 6.1.1 replacement gloves will satisfy this requirement, and reduce the number of different types of gloves. **(Rev2008)**	1 replacement set for each suit on hand; Gloves for 6.1.1 will satisfy.	NFPA 1992 Or Manufacturer Model # Must be UL or SEI Listed	**R**	**R**	**R**
6.1.3	**UNDER-GLOVE:** Light weight chemical resistant disposable type glove popularly used as an under-glove or "inner" glove for the 1991 and 1992 ensembles. Also is used separately for light duty work, handling, sampling.	24 Pair		**R**	**R**	**R**
6.1.4	**HIGH TEMPERATURE Protective Glove:** Provides approximately one minute of contact protection for surface temperatures of 800 ° F to 1,000 ° F, and 1,000 ° F to 1,300 ° F. Differing heat insulating ratings versus time is dependent upon manufacturer blend of Nomex© / Kevlar© / and PBI©.	2 Pair	None	**R**	**R**	
6.1.5	**ULTRA-HIGH TEMPERATURE Protective Glove:** Provides approximately one minute of contact protection for surface temperatures of 1000 ° F to 2,000 ° F. Differing heat insulating ratings versus time is dependent upon manufacturer blend of Nomex© / Kevlar© / and PBI©. Configuration is often a mitten that fits over glove as described in 6.1.3.	2 Pair	None	**Opt**	**Opt**	
6.1.6	**ULTRA-COLD Protective Glove:** Gauntlet length minimum elbow, not less than 16". Provides approximately one minute continuous contact protection for liquids (minus) – 260 ° F to (positive) + 300 ° F. Often not suitable for immersion in liquid nitrogen.	2 Pair	None	**R**	**R**	

6.2 Foot Protection [Sub-Category]

Some Chemical Protective Clothing ensembles are manufactured and supplied with attached boots. However, some are designed only with attached booties and require the donning of chemical resistant boots. Heavy duty chemical resistant outer boots must be provided by the employer, and a sufficient inventory of NFPA / ANSI compliant CPC boots must be kept for use or replacement purposes.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.2.1	**BOOTS, CHEMICAL RESISTANT:** For use with Vapor Protective or Liquid Protective garments, and originals may be supplied by garment manufacturers. Replacements for NFPA 1991 ensemble must meet NFPA Standard 1991; Replacements for NFPA 1992 ensemble must meet NFPA Standard 1992 or better; Replacements for use with NFPA 1994 ensemble must meet NFPA Standard 1994 or better. In order to reduce the number of boot sets on hand, one set of NFPA 1991 boots will satisfy requirements for both NFPA 1992 and 1994	Minimum 1 pair for each assigned member	NFPA 1991 or NFPA 1992 or NFPA 1994; and ANSI Z-41	**R**	**R**	**R**

6.2.2	**BOOTIE, OUTER PROTECTIVE:** Disposable chemical protective bootie slip-over that covers entirely a General Work Safety Boot for use in low threat level contamination environments. Not intended to take the place of nor provide protection equivalent to NFPA 1991, 1992 and 1994 CPC boots.	12 sets		**Opt** (	**Opt**	**Opt**

6.3 Head and Eye Protection [Sub-Category]

Protection of the head, ears, an eyes often require the employer to provide additional protective equipment or clothing not normally part of a CPC ensemble. Head protection should be considered whenever CPC is donned, including entry teams and decontamination teams. Adequate eye protection is afforded by the lens of Vapor Protective CPC, and also by the lens of breathing apparatus. In those environments (i.e. sample taking, sample testing, container labeling) where CPC must be worn, but breathing apparatus is not, eye protection should be provided by a supply of ancillary eye protective items.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.3.1	**HELMET:** Light weight construction style helmet to provide head protection when wearing any CPC ensemble. Should include suspension system, and adjustable sizing.	1 for each assigned member	ANSI Z-89.1	**R**	**R**	**R**
6.3.2	**GOGGLES:** For use during sample taking, material testing and qualitative analysis; Wide angle wraparound to prevent frontal and side splash to eyes; Polycarbonate or better lens for impact resistance. Some available to fit over prescription glasses.	1 for each assigned member.	ANSI Z-87.1	**R**	**R**	**R**

6.4 Support Systems [Sub-Category]

Support systems are devices, items of clothing, or equipment that when added or included as part of a complete CPC ensemble, provides additional safety and/or versatility. Any system or equipment item that requires the penetration of the CPC (i.e. umbilical air systems, hard wire communications systems), must be installed by the CPC manufacturer and not the employer, in order to attain and maintain industry and OSHA standards. Items that are ordinarily just an addition to the existing ensemble and do not interfere with the original performance function of the CPC should never-the-less meet appropriate industry standards.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.4.1	**UNDERGARMENT, FIRE RESISTANT:** Long sleeve jumpsuit style garment, one or two piece, with or without pockets, of fire resistant material; Compliant to one of the following NFPA Standards: 2112 – "Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire" - Or - 1975 – "Station / Work Uniforms for Emergency Services" - Or - 1977 – "Protective Clothing and Equipment for Wildland Fire Fighting" **(Rev2008) (Rev2012)**	1 for each assigned member	NFPA 2112 Or NPFA 1975 Or NFPA 1977 **(Rev2008)**	**R**	**R**	**R**
6.4.2	**COOLING SYSTEM, Vest:** Auxiliary vest worn to provide cooling to torso for short period of time; Different technologies available, such as dry ice, ice packs, cryogenic nitrogen.	4 complete systems		**Opt**	**Opt**	
6.4.3	**COOLING SYSTEM, Jumpsuit:** Jumpsuit style garment usually of fire resistant material, interwoven with tubes to provide a liquid circulating medium internal body cooling; Different technologies available, such as circulating cold water, cryogenic nitrogen; May require umbilical tube to supply cooling medium to wearer.	4 complete systems		**Opt**	**Opt**	

6.4.4	**COOLING SYSTEM, Umbilical Air:** Air from outside source (cascade system) supplied to wearer via umbilical hose system and manifold; Is also often used to augment or over-ride breathing air apparatus. All parts from cascade supply to wearer's face piece must be of same manufacturer. SEE also Section 12.1.	4 complete systems for suit cooling	NIOSH, OSHA	**Opt**	**Opt**	

7. TECHNICAL REFERENCE

Access to and use of various databases, chemical substance data depositories, and other guidelines and safety data sheets, either in print format, electronic format, stand-alone computer programs, or data available via telecommunications. The interpretation of data collected from electronic devices and chemical testing procedures. For those references and electronic databases that are updated with annual or periodic revisions or new editions, library should insure that no reference is over 5 years old.

7.1 Printed References, Industrial and WMD Chemicals [Sub-Category]

A variety of printed references provide different types of data: **Database** type (technical data) is the principal source for physical and chemical properties, toxicological data, and medical related properties of substances and illness symptoms; **Guidebook** type principally focuses on providing remedial intervention steps, precautionary warnings, "first responder" incident stabilization or handling suggestions, first aid treatment; **Specialty** type are unique references containing information not elsewhere found in any other source, such as focusing on one narrow subject field (pesticides), container construction, plumbing, and cargo transportation (rail tank car reference), or incompatible chemicals data; **Regulatory** type are references that contain information regarding regulation, placarding, shipping requirements, local response procedures, mutual aid agreements, etc. Several charts are included in Appendix E for reference to printed resources. Chart # 2 is for **Database** type; Chart # 3 is for **Guidebook** type; Chart # 4 is for **Specialty** type, and Chart # 5 is for **Regulatory** type.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
7.1.1	**DATABASE TYPE, Printed:** Technical data, physical, chemical and toxicological properties (See Appendix D, Chart # 2)	3 Different references		**R**	**R**	**R**
7.1.2	**GUIDEBOOK TYPE, Printed:** Intervention, incident handling, hazard assessment. (See Appendix D, Chart # 3)	2 Different references		**R**	**R**	**R**
7.1.3	**SPECIALTY TYPE, Printed:** Special topics (i.e., rail tank car cross sections, pesticides, etc.) or specific information (i.e. incompatibility) (See Appendix D, Chart # 4)	2 Different references		**R**	**R**	**Opt** (Rev2012)
7.1.4	**REGULATORY TYPE, Government Codes, Ordinances, Printed OR Electronic:** Includes Federal and State codes, adopted consensus standards such as NFPA 472, 2112, 1975, 1977, 1991, 1992, 1994, etc. (See Appendix D, Chart # 5). (Rev2008)	1 each of: 49 CFR; 29 CFR; Appropriate NFPA standards		**R**	**R**	**R**
7.1.5	**REGULATORY TYPE, Response Guidelines, Printed OR Electronic:** Local, Municipal, and County Response Plans, Operational Area Response Plans, OES Hazardous Materials Incident Contingency Plan.	1 copy – Local Response Plans 1 copy – Oper. Area Resp. Plan 1 copy – OES HMICP		**R**	**R**	**R**
7.1.6	**WMD Chemical / Biological Substances; Printed OR Electronic:** Technical data, some guidelines, some first aid information. (Rev2012) (See Appendix D, Chart #6)	At Least: 1 – Chemical 2 - Biological		**R**		

7.2 Electronic References, Industrial and WMD Chemicals [Sub-Category]

Many printed references on industrial and WMD chemicals are also available in electronic forms which utilize a computer based information system. Some proprietary chemical reference databases are available only in electronic (software) form. These electronic references are available through software distributors. Some might be available via internet access. Some electronic versions of these databases are now becoming available for Palm Pilots, thumb

drives, and miniature CD's, or can integrate to a Palm Pilot from the database which has been downloaded to a computer hard drive.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
7.2.1	**DATABASE TYPE, Electronic:** Technical Data, physical, chemical and toxicological properties (See Appendix E, Chart # 7)	I Program		R	R	R
7.2.2	**GUIDEBOOK TYPE, Electronic:** Intervention, incident handling, hazard assessment. (See Appendix E, Chart # 8)	1 Program		R	R	R
7.2.3	**SPECIALTY TYPE, Electronic**: Special topics (i.e. rail tank car cross sections, pesticides, etc.) or specific information (i.e. incompatibility). (See Appendix E, Chart # 9)	1 Program		R	R	Opt
7.2.4	**WMD Chemical / Biological Substances; Electronic:** Technical data, some guidelines, some first aid information. (See Appendix E, #10)	1 Program		R		

7.3 Plume Air Modeling, Program Support [Sub-category]

Plume air modeling provides the ability to simulate, predict, and/or monitor the movement of an airborne chemical release. This modeling provides the ability to determine populations at risk, and assists in determining protective action needs. Requires keyboard input into a computer program of typical on-scene weather conditions, container size, leak rate, and some other influencing factors. Some databases include physical and chemical property data (i.e. Cameo), although this too can in some cases be inputted. Some programs can display the calculated plume over a generic grid, or over compatible mapping programs (i.e. Cameo/Marplot). Some programs can only be displayed in a grid/plume fashion or in a chart display and are not compatible with any mapping program (i.e. EPI Code) and are considered "stand alone" plume display programs. Some complete programs allow for the input of "live" real time data from outside remote weather sensors.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
7.3.1	**AIR MODELING, Database Software, basic platform:**	1 Program		R	R	Opt
7.3.2	**AIR MODELING, Overlay / Plume Display Software:** Compatible with basic database program (#7.3.1 above)	1 Program		R	R	Opt
7.3.3	**AIR MODELING, Overlay / Mapping Software:** Compatible with basic database program (#7.3.1 above)	1 Program		R	R	Opt
7.3.4	**AIR MODELING, Stand-Alone:** Not compatible with any mapping system. Generates quick plumes, and prints grid or chart formats.	1 Program		Opt	Opt	Opt
7.3.5	**REAL TIME Data Downfeed:** Compatible with computer and air modeling software (This downfeed capability and supporting software usually comes with the particular type of weather station purchased. See Section 8.5 for weather station descriptions)	1 Capability		Opt	Opt	

7.4 Computer, Support Hardware, Software [Sub-Category]

Computers provide technical ability to access, analyze, document, print, download, and transmit detailed information critical to all phases on a hazardous materials emergency, particularly hazard assessment and logistics management. There is a wide range of special software programs and database support available for such use. The computer system can range from the very basic stand-alone laptop to a very sophisticated multi-tier system.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3

7.4.1	**COMPUTER:** One (1) desktop or laptop, mounted in vehicle with battery backup, and with flexibility to accommodate noted "Requirements" for a complete system. Basic "system" for all three team types must include all peripherals as noted under "Requirement" column. Additional peripherals and programs are required for Type 2 and Type 1 teams as noted below. **(Rev2008)**	**Basic "system" must include:** 7.4.2 – Printer capability 7.4.3 – Scan capability 7.4.4 – Duplication capability 7.4.8 – Graphics Hardware 7.4.11 – CD/DVD Drive 7.4.12 – USB Support 7.4.13 – Operating System Edition 7.4.14 – Document Processing **(Rev2008)**		**R**	**R**	**R**
7.4.2	**PRINTER, Color:** Inkjet or laser or equal color print at rate of at least 10 pages per minute (black and white). This function can be combined with Scanner (item #7.4.3) and Duplication (item 7.4.4) requirements. **(Rev2008)**	All teams need ability to perform all 3 functions. **(Rev2008)** PRINT SCAN DUPLICATE Separate components or combination components acceptable		**R**	**R**	**R**
7.4.3	**SCAN Capability:** Ability to SCAN documents in color, and save to hard drive or peripheral (in PDF or JPG format). This function can be combined with Printer (item 7.4.2) and Duplication (item # 7.4.4) requirements. **(Rev2008)**			**R**	**R**	**R**
7.4.4	**DUPLICATION Capability:** Ability to reproduce 8 ½ x 11 documents, black and white minimum. This function can be combined with Printer / Fax / Scanner. **(Rev2008)**			**R**	**R**	**R**
7.4.5	**COMBINATION UNIT:** Inkjet or laser color printer / scanner / duplicator (known as "3-in-1 units" or "4-in-1" units). **(Rev2008)**			**Opt**	**Opt**	**Opt**
7.4.6	**ACCESS To INTERNET, Wireless:** Hardware, connections and ports to provide ability to utilize radio or telecommunications network for computer to access the Internet, is Broadband capable, has wireless internet card or device in order to enable computer to transmit and receive e-mail. **(Rev2008)**	1 Capability		**R**	**R**	**Opt**
7.4.7	**ACCESS To INTERNET, Hard Wire:** Ability to tap into standard telephone hardwire access to the internet for computer; This may require maintaining extra modem/telephone cable suitable for and approved by telephone or cable company to be hooked up to their system(s) upon request.	1 Capability		**Opt**	**Opt**	**Opt**
7.4.8	**HARDWARE, COMPUTER, GRAPHICS:** Insure that a high quality graphics chip enhancement, or graphics board is included	1 Capability		**R**	**R**	**R**
7.4.11	**HARDWARE, CD-Rom or DVD drive**: Numerous different formats available, unit should be multi-format capable	1 Capability		**R**	**R**	**R**
7.4.12	**HARDWARE, COMPUTER, USB Port Compatible:** Insure that proper connection is included for attachment or download of external electronic devices (i.e. thumb drives, digital cameras, etc). **(Rev2008)**	1 Capability		**R**	**R**	**R**
7.4.13	**SOFTWARE, OPERATING SYSTEM:** IBM/Windows or Apple	1 Capability		**R**	**R**	**R**
7.4.14	**SOFTWARE, DOCUMENT PROCESSING:** a) Must have a word processing type software program that can create basic files or documents such as letters, notes, logs, tables, etc., and that can download and display other imported files such as incident command forms, Incident Action Plans, Site Safety Plans, etc. (i.e. .doc, .wpd, .rtf). **(Rev2008)** b) Must have a graphics processor type software program that can download and display graphics documents such as photos, maps, plume generation overlays in a variety of graphics file formats, (including .jpg). **(Rev2008)**	**Must have these capabilities:** a) Word Processing b) Photo-graphics **(Rev2008)**		**R**	**R**	**R**
7.4.15	**SOFTWARE, FORMAT CONVERSION:** a) Ability to download, open, copy, and save files in various graphics formats (i.e. .tiff, .bmp, .wmp, etc.) and convert them to a .jpg file. **(Rev2008)** b) Ability to convert any document and graphics file to a .pdf file. **(Rev2008)**	**Must have ability to convert files to:** a) .jpg b) .pdf **(Rev2008)**		**R**	**R**	**Opt**

7.4.16	**SOFTWARE, PROTECTION:** Installation of software and/or hardware to provide virus protection, Trojan horse protection, firewall, privacy protection, ad blocking, intrusion detection, upgrades, and removal of virus, Trojan horse, and spyware contamination.	1 Protective Setup		**R**	**R**	**Opt**

8. SPECIAL CAPABILITIES

Additional capabilities that would augment a particular level or Type of company, and would provide beneficial assets utilizing highly specialized equipment. These instruments utilize various advanced technologies such as; 1) Ambient light amplification; 2) Infra-red light detection and thermal imaging; 3) Ground positioning systems (GPS) or other locator systems; 4) Ultra-sonic (ultra-high or ultra-low frequency) detection; And 5) digital wireless transmission

8.1 Advanced Technologies; Vision, Heat, Sound [Sub-Category]

Light amplification (night vision) support instruments improve operations in dark environments by enhancing the ability to see. Night vision technology is based upon military development, and relies only on existing night ambient light (starlight, moonlight, or objects highlighted from a long distance by a flashlight). Electronic circuitry amplifies background light 5,000 to over 85,000 times, depending upon quality of device. Civilian level devices are usually referred to as "Generation I". Industrial, emergency services, and rescue needs are better suited to select at least "Generation II". Military needs are "Generation IV", and are the most expensive.

Infra-red technologies include two types of instruments: 1) Devices that detect excessive heat radiating from a point source night or day and usually displays temperature in degrees F or C; 2) Devices that are used as binoculars, probes, or spotting scopes to detect a narrower range of infra-red light (i.e. body heat) as in thermal imaging for search and rescue.

Ultra-sonic detection device. Leak detection from pipes focuses on ultra-high frequency generation or ultra-low frequency generation of sound, creating inaudible harmonics, that is produced by the escaping gas. Can be extremely sensitive, detecting very slow leaks or leaks that are very tiny.

Digital wireless data transmission includes the latest in video miniaturization technologies, remote wireless transmission of data, and includes electronic support equipment for portable electronic weather stations for stand-alone use, or in support of any of the above sub-categories. Digital wireless data transmission can be combined with any of these other systems. For digital still cameras, handheld, see Category # 3, ***PHOTO, ASSESSMENT and RECONNAISSANCE KIT, Digital.***

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
8.1.1	**LIGHT AMPLIFICATION, SCOPE, BASIC;** Hand-held, portable stand-alone device for diminished light environments (Night Vision); Some configurations available include: Monoculars and binoculars, usually with built-in zoom capability. Does not allow for interchangeable lenses. Item # 8.1.2 is acceptable to meet this requirement.	1 Unit	Generation II or Better Technology (Rev2012)	**R**	**R**	**Opt**
8.1.2	**LIGHT AMPLIFICATION, SCOPE, INTERCHANGEABLE, Body Only;** Hand-held, portable stand-alone device for diminished light environments (Night Vision); Usually single lens (monocular) only; Lenses are interchangeable, and usually incorporate the high quality of a variety of interchangeable 35mm cameral lenses, including standard view, wide angle, telephoto, and zoom-telephoto.	1 Unit - Meets requirement for 8.1.1	Generation II or Better Technology (Rev2012)	**Opt**	**Opt**	**Opt**
8.1.3	**LIGHT AMPLIFICATION, LENSES, INTERCHANGEABLE LENSES, Wide Angle:** Interchangeable cameral lens, usually in the range of 25 to 35 mm.	1 Lens		**Opt**	**Opt**	**Opt**
8.1.4	**LIGHT AMPLIFICATION, LENSES, INTERCHANGEABLE LENSES, Standard:** Interchangeable cameral lens, usually in the range of 45 to 65 mm.	1 Lens		**Opt**	**Opt**	**Opt**

8.1.5	**LIGHT AMPLIFICATION, INTERCHANGEABLE LENSES, Telephoto:** Interchangeable cameral lens, usually in the range of 125 to 225 mm.	1 Lens		**Opt**	**Opt**	**Opt**
8.1.6	**LIGHT AMPLIFICATION, INTERCHANGEABLE LENSES, Zoom:** Interchangeable cameral lens; Popular ranges are 35 to 100 mm, 75 to 150 mm, and 100 to 250 mm.	1 Lens		**Opt**	**Opt**	**Opt**
8.1.7	**LIGHT AMPLIFICATION, CAMERA, MINIATURIZED:** Very small night-vision technology camera (approximate size i.e. ball point pen); Attachable to helmet, goggles, glasses; Transmits image back to receiving station.	1 Unit		**Opt**	**Opt**	**Opt**
8.1.8	**INFRA-RED, SCOPE, Temperature Sensing Only:** Hand-held, portable scope; with L.E.D. direct temperature reading display, approximate range from -25° F to + 1000° F. **(Rev2012)**	1 Scope		**R**	**R**	**Opt**
8.1.9	**INFRA-RED, SCOPE, Hand-Held, Imaging:** Hand-held camera-like device, provides image of viewing area in infra-red light only (not ambient visual light).	1 Scope		**Opt**	**Opt**	**Opt**
8.1.10	**INFRA-RED, SCOPE, Mountable, Imaging:** Camera-like device which provides image of viewing area in infra-red light only (not ambient visual light); Mountable to helmet and can provide image to the wearer, and/or transmit image back to a receiving station.	1 Scope		**Opt**	**Opt**	**Opt**
8.1.11	**INFRA-RED, PROBE, Imaging:** Hand-held device, with infra-red cameral lens on end of probe; Probe may be extendable; Lens may be moveable or pivotal.	1 Probe		**Opt**	**Opt**	**Opt**
8.1.12	**INFRA-RED, CAMERA, MINITURIZED, Imaging:** Very small infra-red vision technology camera (approximate size i.e. ball point pen); Attachable to helmet, goggles, glasses; Transmits image back to receiving station; could be for further image manipulation and re-transmission.	1 Unit		**Opt**	**Opt**	**Opt**
8.1.13	**PERSONAL IDENTIFICATION BEACON, Infra-Red:** L.E.D. Personal Identification Beacon, for night or severely diminished light survey and monitoring of entry team personnel; Flashing light is in infra-red range, is invisible to naked eye; (Requires Night Vision Scope or an Infra-Red Imaging camera to detect)	1 for each assigned member		**Opt**	**Opt**	**Opt**
8.1.14	**PERSONAL TRACKER:** A transmitter is worn by the employee; sends an ultra-sonic signal. A hand held receiver receives signal; LED readout on receiver shows strength of signal and can track through smoke, flame and debris.	1 for each assigned member		**Opt**	**Opt**	**Opt**
8.1.15	**SOUND SENSING, Ultra-Sonic:** Leak detection device for escaping gas, detecting variations in inaudible harmonic sounds; Selectable dB range down to 30 dB and selectable frequency; Approximate frequency range 15 to 100 kHz..	1 Unit		**R**	**R**	**Opt**
8.1.16	**CAMERA, VIDEO, Digital:** Portable hand-held color video camera, with microphone, May have built-in compass, timer and mountable tripod.	1 Unit		**R**	**Opt**	**Opt**
8.1.17	**CAMERA, VIDEO, PROBE, Wireless:** Portable hand-held color video camera, with telescoping probe; Wireless transmitter to receiver in CP.	1 Unit		**Opt**	**Opt**	**Opt**
8.1.18	**CAMERA, MINIATURIZED, Video Imaging:** Very small video technology camera (approximate size i.e. ball point pen); Attachable to helmet, goggles, glasses; Transmits image back to receiving station; could be for further image manipulation and re-transmission.	1 Unit		**Opt**	**Opt**	**Opt**

8.2 Advanced Technologies; Weather, GPS [Sub-Category]

Portable weather stations can provide all pertinent atmospheric data that may influence conditions at an incident such as change in temperature, prediction of rain, wind velocities, etc. Some of these units can be set up and data transmitted via wire or wireless to computer, data is imported into plume modeling programs such as CAMEO, CHARM, and others. Portable or satellite supported GPS systems can be used to locate, monitor, and keep track of the movement of personnel engaged in assessment or intervention tasks where visual contact is seriously compromised by obstacles, solid objects, or vapor clouds. Positioning receiving devices can also send a wireless signal to a base monitor that displays location of (moving) transmitter over a grid system or over-lay plot plans, maps, blueprint images or floor plans.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
8.2.1	**WEATHER STATION, Basic Kit:** Tripod or mounting bracket, wind monitor (up to 100 mph), barometer (+ or – 3 mBars), air temperature sensor (-20 to +120 degrees F), internal compass, humidity sensor (0 to 100%); Hardwire connections allow use of vehicle or generator power, and sends data back to digital receiver and a host computer; All data upgraded approximately every second.	1 complete kit: Either one as describe will suffice		**R**	**R**	**Opt**
8.2.2	**WEATHER STATION, Wireless Digital Support:** Upgrades unit to include transmitter as part of unit, and transmits data up to 5 miles to digital receiver and host computer. Enables weather station to function either by hardwire or wireless.					
8.2.3	**WEATHER STATION, Software Support:** Sometimes included as part of basic kit, or may need to be purchased separately depending upon manufacturer; Allows for plume on-screen display, and/or allows for data to be compatible with other plume generation programs such as CAMEO, EIS, CHARM, SAFER.	1 support system		**Opt**	**Opt**	**Opt**
8.2.4	**GPS Personal Receiver/Transmitter:** A receiver-transmitter worn by the employee; sends signal to GPS receiver grid (i.e. satellites), which calculates location, and re-transmits position to a receiver station (Requires receiver station), and displayed on computer monitor.	1 for each assigned member		**Opt**	**Opt**	**Opt**

9. INTERVENTION

Includes the following: Employment of chemical means such as neutralization and encapsulation; Employment of environmental means such as absorption, dams, dikes, channeling, and placement of booms; and Employment of mechanical means of intervention to contain and control, including: plugging, patching, off-loading, tank stabilization

9.1 Chemical Intervention [Sub-Category]

Neutralization agents are used to create a neutral compound or non-polluting salt as an end product. Encapsulation is another option where a silicon based chemical agent traps the liquid within a granular substance, retains it, and prevents it from migrating out.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
9.1.1	**NEUTRALIZATION – Acids:** for **concentrated** Acid **spills of** up to **5** gallons: **Should be** neutral salt producing and non-polluting; Granular Sesquicarbonate **recommended**.	An amount sufficient to neutralize 5 gallon spill		**R**	**R**	**Opt**
9.1.2	**NEUTRALIZATION – Alkali (Bases):** for **concentrated** Alkali **spills**, up to **5** gallons; **Should be** neutral salt producing and non-polluting; Powdered Citric Acid **recommended.**	An amount sufficient to neutralize 5 gallon spill		**R**	**R**	**Opt**
9.1.3	**ENCAPSULATING SPREADABLE POWDER – <u>General Purpose</u> (and suitable for Pesticides):** Must be NON-CLAY BASED. Granular, spreadable, and pourable; Acceptable for POLAR and NON-POLAR based solvents including pesticides. Approximate size 5-10 lbs dispenser box or bag. **(Rev2008)**	1 Container (**Not** "kitty litter" or diatomaceous earth) **(Rev2008)**	OSHA 29CFR 1910.119, or EPA 40CFR170 **(Rev2008)**	**R**	**R**	**Opt**
9.1.4	**ENCAPSULATING SPREADABLE POWDER - <u>Formaldehyde</u>:** Granular spreadable / pourable, popular for formaldehyde solvents encapsulation; Approximate size – 5 gallon pail kit or 5 lbs of spreadable powder. **(Rev2008)**	An amount sufficient to encapsulate a 5 gallon spill **(Rev2008)**		**R**	**R**	**Opt**

9.1.5	**ENCAPSULATING SPREADABLE POWDER – <u>Non-Polar Solvents</u>:** Granular spreadable / pourable, suitable for hydrocarbon based solvents (not water based solvents), fuels, oil based poisons. Encapsulates and solidifies into a solid; Approximate size – 2 gallon pail. **(Rev2008)**	1 Container	EPA RCRA Burial Regulations	**R**	**R**	**Opt**
9.1.6	**FIRE EXTINGUISHER, CLASS "D", Sodium Chloride formulation:** Capacity 30 Lbs; suited for metal fires of magnesium, sodium, potassium, uranium, aluminum	Must have at least ONE. Any one from these two types will satisfy.	FM Approval	**R**	**R**	**R**
9.1.7	**FIRE EXTINGUISHER, CLASS "D", Copper compound formulation:** Capacity 30 Lbs minimum; suited for lithium, lithium alloys.		FM Approval			

9.2 Environmental Intervention [Sub-Category]

Environmental control methods involve the use of absorbent/adsorbent pads, rolls, pigs, socks, booms, sponges, sweeps, and pillows, as well as the application of flow control technology such as over-flow and under-flow dams, skimming and channeling, in order to control spill migration, and reduce or eliminate hazardous environments.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
9.2.1	**ABSORBENT <u>NON-POLAR SOLVENT</u>, - Pads or Roll:** Repels polar solvents (water), absorbs non-polar solvents (straight chain hydrocarbons, oils, some freon liquids, carbon tetrachloride); Approximate pad size 18" x 18"; or roll 12" to 15" wide x 150' long. **(Rev2008)**	150 square feet of coverage	40CFR 300.915(g)	**R**	**R**	**R**
9.2.2	**ABSORBENT <u>GENERAL PURPOSE or POLAR SOLVENT</u>, - Pads or Roll:** Absorbs polar solvents (water, acids, alkalis). If General Purpose type also will absorb non-polar solvents (straight chain hydrocarbons, oils, benzene ring compounds) Approximate pad size 18" x 18"; or roll 12" to 15" wide x 150' long. **(Rev2008)**	150 square feet of coverage	40CFR 300.915(g)	**R**	**R**	**R**
9.2.3	**ABSORBENT <u>NON-POLAR SOLVENT</u> MINI-BOOMS - Pigs, Socks:** Repels polar solvents (water), absorbs non-polar solvents (straight chain hydrocarbons, oils, some freon liquids, carbon tetrachloride); Approximate Dia. 3 to 6"; Approximate Length 4 – 12' each. **(Rev2008)**	40 feet total length	40CFR 300.915(g)	**R**	**R**	**R**
9.2.4	**ABSORBENT <u>GENERAL PURPOSE or POLAR SOLVENT</u> MINI-BOOMS - Pigs, Socks:** Absorbs polar solvents (water, acids, alkalis). If General Purpose type also will absorb non-polar solvents (straight chain hydrocarbons, oils, benzene ring compounds). Approximate Dia. 3 to 6"; Approximate Length 4 – 12' each. **(Rev2008)**	40 feet total length	40CFR 300.915(g)	**R**	**R**	**R**
9.2.5	**ABSORBENT <u>NON-POLAR SOLVENT</u>, - Pillows:** Repels polar solvents (water), absorbs non-polar solvents (straight chain hydrocarbons, oils, some freon liquids, carbon tetrachloride); Approximate size – 2 to 3 gallon absorption capacity each pad. **(Rev2008)**	10 Gallon Absorption	40CFR 300.915(g)	**R**	**R**	**Opt**
9.2.6	**ABSORBENT <u>GENERAL PURPOSE or POLAR SOLVENT</u>, - Pillows:** Absorbs polar solvents (water, acids, alkalis). If General Purpose type also will absorb non-polar solvents (straight chain hydrocarbons, oils, benzene ring compounds). Approximate Dia. 3 to 6"; Approximate size – 2 to 3 gallon absorption capacity each pad. **(Rev2008)**	25 Gallon Absorption	40CFR 300.915(g)	**R**	**R**	**Opt**
9.2.8	**MERCURY KIT, Cleanup, Small Spills:** Consists of two basic parts; Mercury absorbing sponges, and approx. 500 gram container of Mercury absorbing powder. **(Rev2008) (Rev2012)**	1 Kit		**R**	**R**	**Opt**
9.2.9	**BOOM, CONTAINMENT, Non-Absorbing:** For calm water corralling of a floating solvent/oil only, not for absorption; Buoyancy to weight ration 6:1; Grab tensile strength of 500 lbs and tongue tear strength of 150 lbs. Approximate size – 4" float x 6" skirt x 25' long.	100 feet	OPA-90 Calm Water	**Opt**	**Opt**	**Opt**

9.2.10	**BOOM, CONTAINMENT, Oil Absorbing:** Will not absorb water; For corralling and absorption of floating solvent/oil; No skirts; Will not sink; Linkable; Approximate size – 5" to 8" dia. X 10 to 25' long; Approximate absorption capacity 5 to 15 gallons per 10 foot section deployed, depending on diameter.	100 feet; and 50 gallons Absorption		**Opt**	**Opt**	**Opt**
9.2.11	**PIPE, PLASTIC:** Assortment of various sizes and lengths to aid in construction of over-flow and under-flow dams; Approximate sizes include 8' lengths of 12" dia.; 8" dia.; 6" dia.; 4" dia.	One 8' length of at least 3 sizes		**R**	**R**	**R**

9.3 Mechanical Intervention [Sub-Category]

Spill containment equipment and leak control devices are commercially available in pre-assembled kits or individual items. These include specially designed kits for controlling leaks in rail car dome assemblies and pressurized containers, to pneumatic and standard patching systems.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
9.3.1	**CHLORINE "A", Kit:** For repair or plugging leaks in chlorine gas cylinders.	1 Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.2	**CHLORINE "B", Kit:** For repair or plugging of leaks in chlorine one ton cylinders.	1 Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.3	**CHLORINE "C", Kit:** For repair or plugging of leaks in chlorine rail tank cars or highway tank trucks.	1 Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.4	**CHLORINE TRAINING PROP, One Ton:** Training facsimile of one ton cylinder to allow application of the "B" Kit.	1 Kit, Complete	Chlorine Institute	**Opt**	**Opt**	
9.3.5	**SULFUR DIOXIDE UPGRADE For Kit "A":** Allows for use of Chlorine Kit "A" for sulfur dioxide gas cylinders by providing special parts and gaskets.	1 Upgrade Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.6	**SULFUR DIOXIDE UPGRADE For Kit "B":** Allows for use of Chlorine Kit "B" for sulfur dioxide one ton cylinders by providing special parts and gaskets.	1 Upgrade Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.7	**SULFUR DIOXIDE UPGRADE For Kit "C":** Allows for use of Chlorine Kit "C" for sulfur dioxide rail tank cars by providing special parts and gaskets.	1 Upgrade Kit, Complete	Chlorine Institute	**R**	**R**	
9.3.8	**ANHYDROUS AMMONIA "A", Kit:** For repair or plugging leaks in anhydrous ammonia gas cylinders.	1 Kit, Complete		**Opt**	**Opt**	
9.3.9	**MIDLAND RAIL TANK CAR, Three Part Kit:** Advertised to be "universal", but does not fit all dome valve assemblies; Functional for repair or plugging leaks in predominantly LPG rail tank cars, but can fit some sulfur dioxide and hydrogen sulfide tank cars; Consists of three (3) separate large kit boxes.	1 Kit, Complete		**Opt**	**Opt**	
9.3.10	**PATCH AND REPAIR, PIPE, LIQUIDS, Standard, Kit:** Consists of (at a minimum) externally applied single bolt or dual bolt (preferable) steel pipe clamps, with rubber sheeting lining; Ten or more different pipe sizes ranging from 1/2" dia. pipe to at least 4" dia. pipe; with extra 1/8" neoprene material.	1 Kit		**R**	**R**	**R**
9.3.11	**PATCH AND REPAIR, PIPE, LIQUIDS, Extended, Kit:** Consists of (at a minimum) externally applied dual bolt steel pipe clamps, with rubber sheeting lining; Three or more different pipe sizes ranging from 4 1/2" dia. pipe to at least 8" dia. pipe; with extra 1/8" neoprene material.	1 Kit		**Opt**	**Opt**	**Opt**
9.3.12	**PATCH AND REPAIR, PIPE, LIQUIDS, Heavy Duty, Kit:** Consists of (at a minimum) high ferrous steel, nickel plate, or stainless steel externally applied dual bolt or quadruple bolt (preferable) pipe clamps, with rubber sheeting lining; Ten or more different sizes ranging from 1" dia. pipe to at least 5" dia. pipe; with extra 1/8" neoprene material. Pipe clamps of this design range up to 18" in diameter.	1 Kit		**Opt**	**Opt**	**Opt**
9.3.13	**CLAMP, PIPE, GAS, Line, Mechanical:** Used for squeezing shut natural gas lines with diameters up to 2" and with pressures not exceeding 75 psi. (Rev2012)	1 Kit	**ASTM F-1563** (Rev2012)	**R**	**R**	

9.3.14	**CLAMP, PIPE, GAS, Line, Hydraulic:** Heavy Duty squeeze tool for squeezing shut natural gas lines of 1" to approx. 3 ½" in diameter, hydraulically operated. **(Rev2012)**	1 Kit	**ASTM F-1563** **(Rev2012)**	**Opt**	**Opt**	
9.3.15	**PATCH, PIPE, LIQUID, Pneumatic, Flange:** Large heavy duty rubber bandage type device approximately 8" x 36" long, slips over leaking pipe from 2" to 8" in dia, pipe flange, or pipe valve connection, then inflated. Requires air source, air hose, regulator.	1 Kit Either One Will Satisfy Requirement **(Rev2012)**	Air source, hose, regulator, ratcheting straps from one kit can be used for another kit if of same manufacturer and compatible (Do not need to duplicate) **(Rev2008)**	**R**	**R**	**R**
9.3.16	**PATCH, PIPE, LIQUID, Pneumatic, Bandage:** Heavy duty rubber bandages of approximately 36" long x 8" wide, and 70" long x 8" wide; wrapped around leaking pipe from 2" to 19" in dia., then inflated. Requires air source, air hoses, regulator.					
9.3.17	**PATCH, TANKER, LIQUID:** Large foam and plastic patch 12" x 7 " with 6 feet of ratchet strap for 55 gallon drums. Extendable to 25 feet with extra strapping for highway tanker patching capability.	1 Kit		**R**	**R**	**R**
9.3.18	**PATCH, TANKER, LIQUID, Side:** Pneumatic operated leak sealing patch or bag, with straps and ratchets to hold in place. Compressed air expands patch (approximate size 24" x 12") to seal leak in side of large tanks, tank cars, or tankers. Requires air hoses, regulator, air source usually supplied as part of kit.	1 Kit: Either one will satisfy requirement		**R**	**R**	**R**
9.3.19	**PATCH, TANKER, LIQUID, Side, Drainage Control:** Identical to previous item, but rubber patch is heavy duty construction, with internal plumbing attached to allow for controlled drainage or bleed-off of liquid.					
9.3.20	**PATCH, TANKER, LIQUID, End:** Pneumatic operated leak sealing patch or bag, with straps and ratchets to hold in place. Compressed air expands special patch (approximate size 24" x 12") with four eye hooks at corners to seal leak on curved end of large tanks, tank cars, or tankers. Requires air source; air hoses, regulator usually supplied as part of kit, and is an up-grade of previous kit.	1 Kit		**Opt**	**Opt**	**Opt**
9.3.21	**PATCH, TANKER, LIQUID, Magnetic:** Approximately 15" x 32" stainless steel backing, with eight magnets, for ferrous metal highway tank trucks, and other low gravity ferrous metal tank leaks.	1 Unit		**Opt**	**Opt**	**Opt**
9.3.22	**PATCH, TANKER, LIQUID, Suction Cup:** Approximately 18" x 32" stainless steel backing, with eight EPDM suction assemblies, for use on non-ferrous tanks and tank trucks.	1 Unit		**Opt**	**Opt**	**Opt**
9.3.23	**PATCH, DRUM, LIQUID, Magnetic:** A 2" foam and plastic patch approximately 10" x 6" attached to a 32" x 10' pliable metal backing, equipped with two strong magnets on both ends. Magnets hold patch in place on ferrous metal drums and highway tank trucks.	1 Unit		**Opt**	**Opt**	**Opt**
9.3.24	**PATCH, DRUM, LIQUID, Pneumatic, Kit:** Small rubber patches of approximately 4" x 4", 4" x 9", and 7" x 7", held in place by a strapping system, patch inflated to stop leak. Requires air hose, air source, and regulator; Can be part of or additional accessories of previous kits if these inflatable patches are included in another kit (i.e. 9.3.15 or 9.3.17 or 9.3.18). **(Rev2008) (Rev2012)**	1 Kit	Air source, hose, regulator, ratcheting straps from one kit can be used for another kit if of same manufacturer and compatible (Do not need to duplicate) **(Rev2008)**	**R**	**R**	**R**
9.3.25	**PATCH, DRUM, LIQUID, Suction Cup:** Same as previous Item but has two adjustable suction cups on both ends for use on non-ferrous drums and tank trucks.	1 Unit		**Opt**	**Opt**	**Opt**
9.3.26	**PATCH, DRUM, LIQUID, Compression, Kit:** Consists of 6 different sizes of tapered plug; 2 different sizes ball plug; 2 different sizes "T" plug, all with butterfly nuts; 8 different sizes wood dowels, and other parts as described.	**1 Kit - Must Consist Of At Least** 6 – tapered plugs, diff. sizes 2 – ball plugs, diff. sizes 2 – "T" bolt patch, diff. sizes 8 – wood dowels, diff. sizes 1 – 8" x 12" rubber or foam sheet Assortment of sheet metal screws **(Rev2008)**		**R**	**R**	**R**
9.3.27	**PATCH, DRUM, LIQUID, Cribbing,:** Separate stainless steel plate and soft neoprene closed cell foam approximately 8" x 12"; With hardwood cribbing, secured with two 22' nylon straps and ratcheting buckles.	1 System		**Opt**	**Opt**	**Opt**

9.3.28	**PLUGS, STOPPER, LIQUID, Compression, Replacement:** Individual replacement 6 piece compression stopper plugs for holes from ½" up to 2" dia., with butterfly nut, for Drum, Liquid, Compression kit.	1 each of 2 sizes		**Opt**	**Opt**	**Opt**
9.3.29	**PLUGS, TAPERED STOPPER, LIQUID, Compression, Extra Large:** Individual compression stopper plugs for holes 3" to 4" dia., with butterfly nut; Sizes as indicated. (Complements and enhances Kit Item # 9.3.26). **(Rev2008)**	1 of either size **(Rev2012)**	**Tapered Plug:** One – 3" dia **OR** One – 4" dia. **(Rev2012)**	**R**	**R**	**R**
9.3.30	**PLUGS, TAPERED STOPPER, LIQUID, Compression, Replacement:** Individual tapered, ball or half-round stopper plugs for holes up to 2" dia., with butterfly nut, for Drum, Liquid, Compression kit..	1 each of 2 sizes		**Opt**	**Opt**	**Opt**
9.3.31	**PLUGS, BALL or HALF-ROUND, LIQUID, Compression, Extra Large:** Individual tapered, ball or half-round stopper plugs for holes 3 to 4 " dia., with butterfly nut; Sizes as indicated. (Compliments and enhances Kit Item #9.3.26). **(Rev2008)**	1 of either size **(Rev2012)**	**Ball or Half-Round:** One – 3" **OR** One – 4" **(Rev2012)**	**R**	**R**	**R**
9.3.32	**PLUGS, "T" BOLT, LIQUID, COMPRESSION, Extra Large:** Stainless steel curved plate and 3/4" soft neoprene closed cell foam for irregular slits up to 3" long; Sizes as indicated. (Compliments and enhances Kit item # 9.3.26). **(Rev2008)**	1 Unit **(Rev2012)**	**"T" Bolt Plug:** 3" or larger, square curved plate **(Rev2012)**	**R**	**R**	**R**
9.3.33	**PLUGS, CONICAL, LIQUID, Drain:** Kit consisting of three 10" to 13" long tapered plastic plugs with eye bolts, ranging in sizes from 2 ½ " to 8" dia. for holes, drains, gravity flow pipes. **(Rev2008)**	Set of at least 3 sizes		**R**	**R**	**R**
9.3.34	**PLUGS, TAPERED, LIQUID, Pneumatic:** Kit often comes with at least 3 different types of rubber plugs; Round tapered to 4" dia and 10" long; Narrow wedge tapered 2 ½" wide, Wide wedge tapered 4 ½" wide; Includes quick-connect/quick-disconnect application lance; Requires air source, air hoses, regulator.	Set of at least 3 sizes	Air source, hose, regulator, ratcheting straps from one kit can be used for another kit if of same manufacturer and compatible (Do not need to duplicate) **(Rev2008)**	**R**	**R**	**R**
9.3.35	**PLUGS, EXPANSION, LIQUID, Standard, Kit:** Kit consisting of plumber's style expansion plugs with wing nut; 1", 1 ¼", 1 ½", 1 ¾", 2", 2 ½", 3", 3 1/2", 4" for drains or open butt pipe. Kit commercially available but often is "home derived", assembling pipe plugs from local plumbing distributor.	Mix or match set of at least 7 different sizes, of either style		**R**	**R**	**R**
9.3.36	**PLUGS, EXPANSION, LIQUID, Vented, Kit:** Kit basically same as previous, but consisting of special plumber's style expansion plugs with wing nut; 1", 1 ¼", 1 ½", 1 ¾", 2", 2 ½", 3", 3 ½", 4", all of which have ¼" copper vent pipe incorporated through plug, with threaded end; For drains or open butt pipe. Kit commercially available but often is "home derived", assembling pipe plugs from local plumbing distributor.					
9.3.37	**PLUGS, EXPANSION, LIQUID, Specialized, Kit:** Kit consisting of plumber's style expansion plugs with turn nut and 4" long shaft handle but for extra small style plumbing typically found in laboratories; ¼", 3/8" ½", 5/8", 3/4" for drains or open butt pipe. Kit often is "home derived", assembling pipe plugs from specialty tubing and plumbing distributor.	One set of at least 4 different sizes		**Opt**	**Opt**	**Opt**
9.3.38	**PLUGS, EXPANSION, LIQUID, Heavy Duty, Kit:** Kit consisting of plumber's style extra-large commercial expansion plugs with wing nut or bolt; 5", 6", 7", 8", 10", 12", 14" for drains or open butt pipe. Some come with open pipe down center with valve, to control leak or flow once plug is in place. Kit often is "home derived", assembling pipe plugs from fire sprinkler or sewer plumbing distributor.	Selection of various sizes for local needs		**Opt**	**Opt**	**Opt**
9.3.39	**PLUGS, INFLATABLE, LIQUID, Small Pipe, Kit:** Kit consisting of smaller diameter pipe (½", ¾", 1", 1 ¼", 1 ½"), sometimes known as "Test Ball" or "Test Tube", inflatable rubber tubes inserted into open butt pipe or drain; One type uses domestic water to inflate, another type uses compressed air from bicycle pump to inflate; Have bleed valves, approximate lengths 4" to 12".	Selection of various sizes for local needs		**Opt**	**Opt**	**Opt**

9.3.40	**PLUGS, INFLATABLE, LIQUID, Large Pipe, Kit:** Kit consisting of very large heavy duty inflatable rubber tubes or balls, usually by air; Variety of sizes available (4", 5", 6", 8", 10", 12", 15", 18", 22"). Kit often is "home derived", assembling plugs from sewer or water main plumbing distributors or suppliers; Popular with Water Utility Departments.	Selection of various sizes for local needs		**Opt**	**Opt**	**Opt**
9.3.41	**PLUGS, INFLATABLE, LIQUID, Drain and Sewer:** Kit consists of 3 to 7 inflatable plug bags of heavy duty construction, capable of being inserted into storm drains, pipes ranging from 5" to 55" in dia. Inflation air supplied by SCBA tank; Kit should be complete with air hoses, manifold, and pressure regulator.	Selection of various sizes for local needs		**Opt**	**Opt**	**Opt**
9.3.42	**PLUGS, END CAP, LIQUID, Kit:** Also known as "Jim Caps", rubber cap fitting over open butt end of pipe, and has metal tightening band with screw (Similar to radiator clamp tightening band); Approximate sizes 1", 1 ¼", 1 ½", 1 ¾", 2", 2 ½", 3", 3 1/3", 4"; Kit often is "home derived", assembled from devices from local plumbing distributor.	Selection of at least 7 different sizes		**R**	**R**	**R**
9.3.43	**PLUGS, END CAP, LIQUID, Specialized, Kit:** Also known as "Jim Caps", same as previous item, but have center plumbing and valve to control flow; Approximate sizes 1", 1 ¼", 1 ½", 1 ¾", 2", 2 ½", 3", 3 1/3", 4"; Kit often is "home derived", assembled from devices from commercial plumbing distributor.					
9.3.44	**PLUGS, DOWELS, LIQUID, Assortment:** Long tapered round wood, rubber, or plastic plugs ranging from 1" dia to 5" dia, and 3" long to 10 " long	Assortment to satisfy 1" to 5" full range		**R**	**R**	**R**
9.3.45	**PLUGS, DOWELS, LIQUID, Extra Large:** Long tapered round wood, rubber, or plastic plugs ranging from 4" dia to 8"" dia.	Assortment to satisfy local needs		**Opt**	**Opt**	**Opt**
9.3.46	**PLUGS, WOOD WEDGES, LIQUID, Assortment:** Long tapered flat wood, rubber, or plastic wedges ranging from 1" w x 10" long to 3" w x 10 " long.	Assortment to satisfy local needs		**Opt**	**Opt**	**Opt**
9.3.47	**PLUGS, BOILER, THREADED:** Round tapered steel plugs, threaded, 1/8" to ¾" approximate diameter, by about 2" long.	1		**Opt**	**Opt**	**Opt**
9.3.48	**DOME LID LOCK, Screw Clamp:** Secures or tightens highway tanker "manway" lids; Adjustable for width with sliding clamp tongs, and large center screw bolt for tightening.	Set of 4, mix or match		**R**	**R**	**R**
9.3.49	**DOME LID LOCK, Spring Loaded:** Secures or tightens highway tanker "manway" lids; Spring loaded side tongs adjust to width of lid, and large center screw bolt for tightening.					

10. DECONTAMINATION

Each company type must be self-sufficient and maintain the ability to provide decontamination for members of their own entry team. Further, this the decontamination must be appropriate for the typing level of that company. A Type 3 company must be capable of providing decon for known chemical substances for not less than liquid splash and solid particulate contact. Type 2 and Type 1 companies must be capable of providing decon for unknown solid, liquid and vapor industrial chemical substances. A Type 1 Type company must be capable of providing decon for WMD Chemical/Biological solid, liquid and vapor threat contact. Sufficient sizes, types, and quantities of adapters, nozzles, hose, wands, manifolds and other tools must be on hand to support at least one gross de-con shower station, and at least two additional rinse stations.

10.1 Ground Protection [Sub-Category]

Ground protection provides a barrier between the decontamination area and the environment. This protection can capture and contain contaminants within a controlled area. Catch basins can be commercially purchased or grossly made to provide a way to capture the decontamination run-off as to protect the environment.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3

10.1.1	**TARPS, PLASTIC, Ground Cover:** At least 12' x 12" each, to protect ground and aids in identifying decontamination corridor; Also can be used for tool lay-out, shade, and other utilities .	2		**R**	**R**	**R**
10.1.2	**TARPS, CARRY-ALL, Small:** Approximately 6' by 6', a small tarp, or carry-all (has handles) for contaminated equipment drop at De-Con first station.	1		**R**	**R**	**R**
10.1.3	**SHEETING, PLASTIC, ROLL, Heavy Duty:** Approximate size 5' wide x 100' length, unfolds to approximately 20' wide, water repellent polyethylene.	1 Roll		**R**	**R**	**R**
10.1.4	**CATCH BASIN:** Approximately six feet square, 18" high, with rigid sides; Approximately 120 gallon capacity. Sometimes is a separate item, or sometimes supplied with a Gross De-Con Shower system or kit.	1	This item might be part of the de-con shower system item #10.1.5 and satisfies this requirement **(Rev2008)**	**R**	**R**	**R**
10.1.5	**SHOWER, GROSS DECONTAMINATION:** Usually utilized at first "station" in a decontamination corridor process; Can be homemade, many commercial styles available; Water supplied by garden hose or 1 ½" fire department connections; Fits into Catch Basin or comes with its own Catch Basin as a kit.	1		**R**	**R**	**R**
10.1.6	**EYE WASH, Station**: Portable, approximately 7 gallon capacity with 0.4 gpm flow rate. **(Rev2008)**	1	ANSI Z-358.1 (2004)	**R**	**R**	**R**
10.1.7	**POOL, PORTABLE, LARGE:** Approximately 60 to 80 gallon capacity, utilizing an expandable – collapsible spring hoop ring to support plastic sheeting for pool; Or, inflatable sidewalls; Approximate size 60" diameter. Liners are disposable and replaceable. **(Rev2012)**	3		**R**	**R**	**R**

10.2 Support Tools for Decontamination [Sub-Category]

Utilization of improvised equipment such as ladders and pike-poles for the purpose of supporting the decontamination process, as well as identifying other tools and equipment needed to assist the decontamination team. Use of stiff bristled brushes should be avoided as they can do damage to the outer film layer of a CPC.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
10.2.1	**STOOLS, Portable:** Plastic, stackable or folding.	4		**R**	**R**	**R**
10.2.2	**BRUSHES, LONG HANDLE, SOFT BRISTLE:** Toilet type: approximately 16" long, with plastic bristles	4		**R**	**R**	**R**
10.2.3	**BRUSHES, SHORT HANDLE, SOFT BRISTLE:** Toilet type: Plastic bristles	2		**Opt**	**Opt**	**Opt**
10.2.4	**BRUSHES, SHORT HANDLE, Rat Tail:** Carpenter type, synthetic bristles	2		**R**	**R**	**R**
10.2.5	**BRUSHES, CAR WASH TYPE, Long Handle:** Soft bristled wand type brush, with fixed or adjustable handle to 3 feet minimum. May come with garden hose connection to supply a flow of water at brush end. **(Rev2012)**	2		**R**	**R**	**R**
10.2.6	**SPONGE, SET:** Approximate size 3 to 5 inches wide by 4 to 6inches long x 4 inches deep, **(Rev2012)**	Set of 4		**R**	**R**	**R**
10.2.7	**TOWELS, ABSORBENT, DRYING:** Commercial laundry towels, cotton, approximately 20" x 40"	8		**R**	**R**	**R**
10.2.8	**TOWELS, ABSORBENT, DISPOSABLE:** Paper towels, usually in rolls.	1 Roll		**R**	**R**	**R**
10.2.9	**BLANKETS, DISPOSABLE**:	4		**R**	**R**	**R**
10.2.10	**CADAVER BAGS:** Non-transparent	1	CDC	**Opt**	**Opt**	**Opt**
10.2.11	**CLOTHING, MODESTY:** Usually light weight disposable Tyvek® or equal, an array in various sizes; Complete with booties or foot protection.	Minimum of 12 sets		**R**	**R**	**R**
10.2.12	**TRAFFIC CONES/DELINEATORS, Ordinary:** Minimum 18" high, fluorescent red. **(Rev2012)**	Minimum of 6		**R**	**R**	**R**

10.2.13	**TRAFFIC CONES/DELINEATORS, Ordinary, Reflective**: Minimum 18" high fluorescent red, with reflective bands, or warning bands "DO NOT ENTER" or "KEEP OUT". (Rev2012)					
10.2.14	**TRAFFIC CONES, Miniature**: Approximately 4" to 6" high	Ten to Twenty		**Opt**	**Opt**	**Opt**
10.2.15	**SOAP, SOFT, Hypoallergenic, Liquid:** In dispense containers. (Rev2012)	1 pint		**R**	**R**	**R**
10.2.16	**CHEMICAL RESISTANT-TAPE:** Approximately 2" wide in rolls of 50'. Similar to Duct Tape but has chemical resistant outer layer.	2 Rolls		**R**	**R**	**R**
10.2.17	**CLOTHING REMOVAL TOOLS**: Such as scissors, shears, etc.	1		**R**	**R**	**R**
10.2.18	**PERSONAL PROPERTY TRACKING**: Kit to consist of forms, tags, receipts, sealable baggies, labels, etc., to document personal property collected such as jewelry, wallets, pagers, cell phones, and documents personal information of owner.	Sufficient to manage 12 individuals minimum		**R**	**R**	**R**

10.3 Water Supply, Distribution Tools [Sub-Category]

Decontamination requires a supply and distribution of water. This can be accomplished by utilizing lengths of hose from a water source to the decontamination area (i.e. fire hose), using a manifold device with multiple discharges to smaller hoses with individual shut-offs, and wand or applicator capabilities to the individual decontamination stations. Fire hose in 2 ½" and 1 ½" sizes is often supplied by engine companies on the scene. Arrangements should always be made to insure that the fire hose is available through some source. Some haz-mat and/or decontamination companies carry their own.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
10.3.1	**ADAPTOR, 1 ½" to Garden Hose Reducer(s):**	2		**R**	**R**	**R**
10.3.2	**MANIFOLD, HEAVY DUTY:** All metal construction (steel / bronze) with 1 ½" female fire hose inlet swivel coupling, and four to six brass ¾" garden hose discharge ball gates; Tested to 250 psi; Mountable on a sturdy platform.	1 of either type listed (10.3.2 or 10.3.3)		**R**	**R**	**R**
10.3.3	**MANIFOLD, LIGHT DUTY:** Plastic PVC construction with 1 ½" female fire hose inlet swivel coupling, and three to six brass ¾" garden hose discharge gates; Mountable on a sturdy platform; Commercially available, or often home derived.					
10.3.4	**HOSE, GARDEN:** May be approximately 12' to 24' lengths, may be collapsible – flat type, ½" dia.	3		**R**	**R**	**R**
10.3.5	**HOSE, GARDEN, SHUT-OFF, In Line:** Separate detachable and replaceable ¼ - turn valve. Might be attached to and included with the car wash applicator (item #10.2.5). (Rev2008)	Total of 3 On hand	Might be attached to and included with Item # 10.2.5. (Rev2008)	**R**	**R**	**R**
10.3.6	**WRENCH, HYDRANT, UNIVERSAL:**	1		**R**	**R**	**R**
10.3.7	**APPLICATOR, NOZZLE, Garden Hose Adjustable:** Wash / Spray Nozzles	2		**R**	**R**	**R**
10.3.8	**APPLICATOR, PRESSURE, Garden Sprayer:** Hand Pressurized pump sprayer.	1		**R**	**R**	**R**

10.4 Collection [Sub-Category]

Equipment needed to aid the Decontamination team with the cleaning and/or collecting of contaminated equipment, clothing, tools and substance samples in containers removed from the exclusion zone.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
10.4.1	**BUCKETS:** Ordinary plastic, 5 gallon capacity, with or without lids	4		**R**	**R**	**R**

10.4.2	**BAGS, HEAVY DUTY YARD, Large:** Approximately 32" wide x 48" long, 3 mil thick, 42 gallon capacity, with tie straps or loc-ties.	Ten		**R**	**R**	**R**
10.4.3	**BAGS, HEAVY DUTY YARD, medium:** Approximately 28" wide x 36" long, 3 mil thick, 33 gallon capacity, with tie straps or loc-ties.	Ten		**R**	**R**	**R**
10.4.4	**DEBRIS COLLECTION UNIT:** 35 to 65 gallon capacity, light duty and light weight polyethylene drums, or collapsible mylar drum liners; Suitable for collection of debris and soiled clothing only, for De-Con zone, not recommended for transfer operations and other containment activities.	**Must Have As Minimum:** One – 10.4.4 **AND** **One of either:** 10.4.5 OR 10.4.6 **For Total Of:** Two (Rev2012)		**R**	**R**	**R**
10.4.5	**DRUM, CONTAINMENT UNIT, 85 to 95 Gallon:** Steel or polyethylene drum with removable lid, suitable for multiple uses such as debris collection in De-Con zone, containment for leaking 55 gallon drum and other secondary containment, or catch reservoir for transfer operations. Must have at least one. (Rev2009)		**Must Meet:** 49 CFR 173.3(c) (Rev2008) If used to meet requirement for #10.4.4, #10.4.5, and #10.4.6, must have a total of Two. (Rev2008)	**R**	**R**	**R**
10.4.6	**DRUM, OVER-PACK UNIT, 110 Gallon:** Heavy duty polyethylene drum with screw lid, suitable for multiple uses such as debris collection in De-Con zone, containment for leaking 55 gallon drum or other secondary containment, salvage operations, or catch reservoir for transfer operations. Must have at least one.					
10.4.7	**DRUM, LINER, 55 to 95 Gallon**: Heavy duty polyethylene	**10**		**R**	**R**	**R**

11. COMMUNICATIONS

Personnel utilizing chemical, vapor or liquid splash protective clothing, shall utilize and maintain communications of sufficient type and quality as to provide for safe communications between the entry team leader and members of the team, as well as between one another. Other communication devices include: Cellular phones and satellite phone capability for the purpose of verbal, data and imagery exchange.

11.1 Radio [Sub-Category]

One portable radio per assigned member of the company, and hands-free capability for entry, back-up and decontamination personnel. Components must maintain an intrinsically safe certification, and all be adaptable to accommodate attachable devices such as ear-muff style headphone sets with boom mic, and ancillary communication devices for use inside CPC ensembles. Recommended that these portable radios be equipped with separate tactical frequency channels not replicated elsewhere in the agency's communication plan to insure and encourage private, confidential, and uninterrupted communications between team members and their respective Team Leaders Team Leader communication capability should also include access to operational frequencies. Secure voice communications are preferred, but not required.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
11.1.1	**RADIO, PORTABLE, Intrinsically Safe (I.S.):** Walkie Talkie style, with carrying case, and appropriate support hardware to be worn on person; Those assigned for use in-suit to be equipped with separate private tactical channels. UL or FM "I.S." label must be on unit, and "I.S." battery must be of correct model compatible with unit, and neither can be interchanged with non-I.S. components. (Rev2008)	1 for each assigned member	**Must Be:** Intrinsic to Underwriter's Laboratory #913	**R**	**R**	**R**
11.1.2	**RADIO, PORTABLE, Voice Scrambler:** Secure Voice hardware and interfacing	Each Portable Unit		**Opt**	**Opt**	**Opt**

11.1.3	**RADIO, PORTABLE, Headphone Set (NOT for in-suit use):** Complete with boom mic, ear mic, bone mic, or throat mic, and necessary attachable hardware to walkie talkie. One for each member for field use. **(Rev2008)**	1 for each assigned member		**Opt**	**Opt**	**Opt**
11.1.4	**RADIO, PORTABLE, In-Suit Communications:** Complete with earphone system, microphone system (i.e. built into SCBA facepiece, or throat mic, or bone mic, or ear mic, etc), remote "Push-To-Talk" switch, and necessary attachable hardware and support connector system. Designs and configurations will vary and are influenced by support systems provided by portable radio manufacturer, and manufacturer of SCBA. See also 12.1.6.	6 – Type 1 4 – Type 2 4 – Type 3		**R**	**R**	**Opt**
11.1.5	**RADIO, PORTABLE, Hands-Free "Voice Actuated"**: Hardware and support connector system, switchable between "Push-To-Talk" mode and "Voice Activated" mode, for in-suit use.	1 for each assigned member		**Opt**	**Opt**	**Opt**
11.1.6	**RADIO, PORTABLE, Interchangeable battery, Intrinsically Safe (I.S.):** Two batteries assigned per unit, the second set for back-up; Certified intrinsically safe. **(Rev2008)**	2 for each portable unit	**Must Be:** Intrinsic to UL # 913	**R**	**R**	**R**

11.2 Cellular Phone [Sub-Category]

Voice and data communication in support of on-going hazard assessment and incident management needs can be vastly improved by the provision of cellular phone capability. New technologies allow for the following functions to be included into cell phone specifications and are highly recommended, or required as noted:

Standard Cell Phone: *CPAS (Cellular Priority Access Service) - Allows priority access during a crisis or a disaster to ensure critical emergency response services can be provided by the government; PCS (PERSONAL COMMUNICATION SYSTEM) – a digital, wireless, multiple band technology that can provide phone, fax, modem, and pager in one hand-set, and with one phone number. Digital, voice, and data transmissions can be encrypted and scrambled to allow information being transmitted securely without being intercepted by a third party; ROAMING – a feature that allows you to receive a call when you move into another cellular area. Incoming calls include long distance to the city you are roaming in unless callers use the local roaming access numbers. When using a cellular phone outside of the area which the phone is registered, the caller is considered to be "roaming".* **(Rev2012)**

Satellite Cell Phone: *MDPS (Mobile Packet Data Service) capability; INTELSAT: Is a satellite communications services provider. IRIDIUM / GLOBALSTAR / ORBCOMM: The three main satellite systems using specific frequencies in the L-Band through which the majority of satellite cell phone connectivity is made, and are the most reliable due to their abundance. ISDN (Integrated Services Digital Network) service should be specified which guarantees transmission speed of 64kbit/s without interruption and by using a dedicated channel; provides dial on demand.* **(Rev2012)**

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
11.2.1	**PHONE, CELLULAR:** Priority access service capable; Analog and digital function; CPAS, BROADBAND, PCS and ROAMNG enabled;	1 per Company	IEEE 1512.3 IEEE 269	**R**	**R**	**R**
11.2.2	**PHONE, Satellite:** ISDN preferable which increases high speed data flow to 64,000 bps; UHF. INTELSAT; and UDI support. Complete with portable high gain directional antenna, base transmit unit, interface frequencies. **(Rev2012)**	1 per Company		**Opt**	**Opt**	**Opt**

12. RESPIRATORY PROTECTION

Respiratory protection shall be of an approved type in compliance with Cal/OSHA regulations so as to provide personnel adequate respiratory protection when utilizing chemical protective clothing. Only SCBA can be used in environments involving unknown respiratory hazards, known respiratory hazards in excess of IDLH, and known or unknown respiratory hazards in excess of TLV-STEL where there is no on-going and continuous monitoring for the specific airborne threat. Only when continuous monitoring for the specific airborne threat is in place and functioning,

and the detected threat is declared to be below IDLH but above TLV-STEL, can respiratory protection be downgraded from SCBA to APR or PAPR.

12.1 Self-Contained [Sub-Category]

SCBA provide the highest level of respiratory protection for unknown environments where the atmosphere contains agents or contaminants at immediately dangerous to life and health (IDLH). SCBA are tested for a number of performance criteria that apply to general industrial applications. SCBA shall comply with 42 CFR part 82, NFPA 1981 and NIOSH CBRN (chemical, biological, radiological and nuclear) criteria.

Supporting umbilical air systems are OPTIONAL (not required). However, when incorporated into an agency's use inventory, Cal/OSHA requires the following: 1) The high pressure breathing air hose line from the breathing air cascade manifold to the "high pressure" side of the step-down pressure regulator cannot exceed 1,000 feet in length, and must comply with "high pressure" hose regulations; 2) The breathing air hose line (up to four) distributed from the "low pressure" side of the step-down pressure regulator cannot exceed a length of 300 feet, each, and must comply with "low pressure" hose regulations; 3). All devices and parts, from the cascade system to the user's face piece, must be of the same manufacturer (i.e., high pressure regulator on the cascade system, high pressure umbilical air hose, step-down regulator, low pressure umbilical air hose, pass-through in a chemical protective garment, breathing regulator, and the self-contained breathing apparatus). New NIOSH testing requirements for the face-piece of SCBA must comply with NIOSH CBRN chemicals testing, and must pass for NIOSH certification.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
12.1.1	**SCBA, COMPLETE, STRUCTURAL, 1 Hour Rating:** With bottle; unit must be NFPA and NIOSH certified for routine fire fighter use.	1 for each assigned member	NFPA; NIOSH		**R**	**R**
12.1.2	**SCBA, COMPLETE, WMD CBRN, 1 Hour Rating:** With bottle; unit must be NFPA structural fire fighting compliant and NIOSH certified for WMD CBRN threat atmospheres	1 for each assigned member	NFPA; NIOSH CBRN	**R**		
12.1.3	**MASK, FULL-FACE, STRUCTURAL**: NFPA and NIOSH compliant for structural fire fighter use.	1 for each assigned member	NFPA; NIOSH		**R**	**R**
12.1.4	**MASK, FULL-FACE, WMD CBRN:** Facepiece must be NFPA structural fire fighting compliant and NIOSH certified for WMD CBRN threat atmospheres.	1 for each assigned member	NFPA; NIOSH CBRN	**R**		
12.1.5	**MASK, HEADS-UP-DISPLAY:** Light emitting diode (LED) display within facepiece to monitor numerous ancillary inputs such as remaining air time, air pressure, ambient temperature, etc.; Usually available as add-on option from manufacturer.	1 for each assigned member	NIOSH	**Opt**	**Opt**	**Opt**
12.1.6	**MASK, BUILT-IN COMMUNICATIONS Interface;** Built-in microphone or bone mic, with earphone or built-in head phone set, complete with interface wire harness to portable radio, and push-to-talk (PTT) switch. Satisfies 11.1.4.	1 for each assigned member		**Opt**	**Opt**	**Opt**
12.1.7	**BOTTLE, Spare:** Extra replacement air bottle of same type, and size.	1 spare bottle for each assigned SCBA	DOT	**R**	**R**	**R**
12.1.8	**SUPPORT, UMBILICAL AIR:** Air from outside source (cascade system or portable air cart) supplied to wearer via umbilical hose system and manifold; Manifold to supply low pressure source to four users; Minimum of 600 feet of low pressure hose required; This system Is often used to provide interior suit cooling as an option. (SEE also Section 6.4.)	System to accommodate four users, 150' low pressure air hose each	NIOSH, OSHA	**Opt** (Rev2007)	**Opt** (Rev2007)	

12.2 Air Purifying Respirator [Sub-Category]

Operational limits not for use in the IDLH, unknowns, flammable, explosive environments or oxygen deficient. Gasses with poor warning properties and which generate heat in filter cartridges. Contaminants must be known, canisters

must be the approved type for known contaminants, and must not exceed the IDLH. The shelf life of the cartridges shall be recorded. Employers shall have a respiratory protection program in place including, fit testing and training.

Air Purifying Respirator (APR), and Powered Air Purifying Respirator (PAPR), can be used only in toxic environments or confined space environments where there is no oxygen deficiency, and where the threat vapor is below IDLH, per Cal/OSHA requirements. Further, all APR, and PAPR devices, and all filter canisters designed to be used with these devices, must meet NIOSH testing criteria. Cartridges must be of the same manufacturer as the mask and unit for which their use is intended (mixing and matching of different manufacturer's cartridges is not allowed).

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
12.2.1	**MASK and UNIT, APR, INDUSTRIAL:** Full facepiece, single or dual cartridge style, speaking diaphragm, certified for use in industrial chemical threat atmospheres only.	1 for each assigned member	NIOSH	**R**	**Opt**	**Opt**
12.2.2	**MASK and UNIT, APR, CBRN:** Full facepiece, single or dual cartridge style, speaking diaphragm, for use in industrial chemical threat atmospheres AND CBRN atmospheres.	1 for each assigned member	NIOSH - CBRN	**R**		
12.2.3	**MASK and UNIT, PAPR, INDUSTRIAL:** Full facepiece, single or multi cartridge style, speaking diaphragm, pump, air line, certified for use in industrial chemical threat atmospheres only. Meets 12.2.1 requirement	1 for each assigned member	NIOSH	**Opt**	**Opt**	**Opt**
12.2.4	**MASK and UNIT, PAPR, CBRN:** Full facepiece, single or multi cartridge style, speaking diaphragm, pump, air line, certified for use in industrial chemical threat atmospheres AND CBRN atmospheres. Meets 12.2.2 requirement	1 for each assigned member	NIOSH - CBRN	**Opt**		
12.2.5	**CARTRIDGES, APR or PAPR, INDUSTRIAL:** Cartridges certified only for industrial chemical threat atmospheres; Cartridges to be multi-gas and organic vapor protective, with solid particulate and liquid aerosol protection.	Multi-gas cartridge set for each APR	NIOSH	**R**	**Opt**	**Opt**
12.2.6	**CARTRIDGES, APR or PAPR, CBRN**: Cartridges are certified for WMD CBRN threat atmospheres.	CBRN cartridge set for each APR	NIOSH - CBRN	**R**		

13. TOOLS / OTHER

Hand tools may be used in all phases of hazardous materials mitigation. Hand tools may be used to collect samples, contain/control materials and runoff, move drums, boxes cylinders, recover victims, transport equipment.

13.1 General Purpose, Hand Tools, Large [Sub-Category]

Various hand tools necessary to complete jobs such as sample collection, containment and controlling of hazardous materials and run-off, transportation of equipment, movement of drums and victim recovery.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
13.1.1	**SHOVEL, Round Point, Steel;** long handle	1		**R**	**R**	**R**
13.1.2	**SHOVEL, Round Point, Polypropylene plastic:** Or equal: long handle	1		**Opt**	**Opt**	**Opt**
13.1.3	**SHOVEL, Square Point, Steel:** long handle	1		**R**	**R**	**R**
13.1.4	**SHOVEL, Square Point, Polypropylene plastic:** Or equal, long handle	1		**R**	**R**	**R**
13.1.5	**SHOVEL, Scoop, Polypropylene plastic:** Or equal,	1		**R**	**R**	**R**
13.1.6	**BROOM, Street, Stiff Polypropylene Bristle:** With handle	1		**R**	**R**	**R**
13.1.7	**DRUM "Up-Ender":**	1		**R**	**R**	**R**

13.1.8	**HAMMER, Sledge:** (7 – 10 Lbs)	1		**R**	**R**	**R**
13.1.9	**BAR, WRECKING:** – 36" or >	1		**R**	**R**	**R**
13.1.10	**COOLER, Rehydration:** Industrial quality five to 10 gallon capacity with spigot, carrying handle. Some come with a cup dispenser, 5 – 20 gallon	1		**R**	**R**	**R**
13.1.11	**MEGAPHONE:** Battery operated, 16 watt with 800' range; Adjustable volume.	1		**R**	**R**	**R**
13.1.12	**FIRST AID, Kit – Large:** Includes majority of gauze pads, wipes, tape, ointments, bandages, splints, tourniquets, and appropriate tools (i.e. scissors)	One of each or combination kit (Rev2008)	ANSI Z-308.1 (Rev2008)	**R**	**R**	**R**
13.1.13	**FIRST AID, TRAUMA, Kit:** Contains equipment to augment standard first aid kit; resuscitator, variety of airways, burn sheets, cervical collar, cold packs, eyewash solutions, etc.			**R**	**R**	**R**
13.1.14	**MEDICAL MONITORING, Kit:** For both Pre- and Post-entry to monitor baseline vitals; Includes stethoscope, aneroid gage sphygmomanometer, thermometer unit, and scale; Should include forms for documentation.	1 Kit		**R**	**R**	**R**
13.1.15	**FIRST AID, BLOOD PRESSURE MONITOR, Digital:** Battery operated, utilizing a finger cuff receptacle; Digital readout.	1 Unit		**Opt**	**Opt**	**Opt**
13.1.16	**ZONE MARKING, Kit:** Contains all tools necessary to help set up and identify various hazardous work zones; Barrier tape – 1000 feet rolls, yellow marked "CAUTION – DO NOT ENTER" or equal, and 1000 feet rolls, red marked; DANGER – HAZARDOUS CHEMICAL" or equal; Carpenter's chalk – powdered yellow and red, in 12 to 16 oz dispenser; Carpenter's heavy duty crayons, yellow and red.	1		**R**	**R**	**R**
13.1.17	**BARRICADE TAPE, CADDY:** A hand held carrier which may either dispense tape (3" wide x 1000 feet), assist in re-winding tape, or do both.	1 Caddy		**Opt**	**Opt**	**Opt**
13.1.18	**SCOPE, Spotting:** Includes binoculars; Adjustable telephoto spotting scope or binoculars with adjustable focus.	1 per company		**R**	**R**	**R**

13.2 General Purpose, Hand Tools, Small [Sub-Category]

Various hand tools necessary to complete routine jobs and small mechanical chores such as assembly, disassembly, tightening, loosening, bending, cutting, scraping, temperature observation. For hand tool items also listed in Section 13.3 that are "Non-Sparking" and required, they will be acceptable in lieu of the equivalent hand tool listed in Section 13.2 (as indicated), and thus there will be no need to duplicate.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
13.2.1	**HAMMER, Dead Blow:** 36 to 45 oz.	1		**R**	**R**	**R**
13.2.2	**HAMMER, Claw:** 16 to 24 oz.; Non-Sparking acceptable. ()Rev 2015	1	Item #13.3.7 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.3	**HAMMER, Engineer:** 36 to 40 oz.; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.8 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.4	**HAMMER, Ball Peen:** 8 to 16 oz.; Non-Sparking acceptable. (Rev 2015)	1	Item #13.3.9 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.5	**SCREWDRIVER, CHISEL, KIT:** To consist of at least <u>any three</u> of the following, in either short or long handle: Standard chisel tip– Small, medium, large, extra-large; Non-Sparking acceptable. (Rev2008)	1 Kit of 3 different	Item #13.3.10 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.6	**SCREWDRIVER, PHILLIPS, KIT:** To consist of at least any three of the following, in either short or long handle: Phillips No. 1, 2, 3, 4.; Non-Sparking acceptable. (Rev2008)	1 Kit of 3 different	Item #13.3.11 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.7	**PLIERS, ORDINARY, Utility:** Available in various sizes, 6", 7", 8", with square blunt end; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.12 Acceptable (Rev2008)	**R**	**R**	**R**

13.2.8	**PLIERS, WIRE, Side Cutting;** Non-Sparking acceptable. (Rev2008)	1	Item #13.3.13 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.9	**PLIERS, LONG-NOSE, Needle –** Between 7" to 10"; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.14 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.10	**PLIERS, COMBINATION, Kit: To consist of at least three different sizes of the following; slip, groove, channel, or self-adjusting pliers, ranging from 7" to 16" in length. Non-sparking acceptable** (Rev 2015)	1 Kit of 3 different	Item #13.3.15 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.11	**PLIERS, LOCKING, Kit:** To consist of any four of the following: Adjustable chain wrench, welding clamp, curved jaw locking, straight jaw locking, long nose locking, "C" clamp locking, sliding bar locking; Non-Sparking acceptable. (Rev2008)	1 Kit of 4 different sizes **OR** Types (Mix and Match) (Rev2012)	Item #13.3.16 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.12	**WRENCH, ALLEN, Complete Set, English (~9 piece)**	1 Kit		**R**	**R**	**R**
13.2.13	**WRENCH, ALLEN, Complete Set, Metric (~9piece)**	1 Kit		**R**	**R**	**R**
13.2.14	**WRENCH, CRESCENT, Adjustable, Kit:** Kit to include any two of the following: Adjustable 12", 15", 22" 24"; Non-Sparking acceptable. (Rev2008)	1 Kit of 2	Item #13.3.18 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.15	**WRENCH, CRESCENT, Adjustable, Heavy Duty:** 26" to 36", aluminum or steel; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.19 Acceptable (Rev2008)	**Opt**	**Opt**	**Opt**
13.2.16	**WRENCH, PIPE, Adjustable, Kit:** Kit to include any two of the following: House – 16", Standard - 18", Medium – 22", large – 28"; Non-Sparking acceptable. (Rev2008)	1 kit of 2	Item #13.3.20 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.17	**WRENCH, Pipe, Adjustable, Heavy Duty:** Available in sizes from 32" to 46"; Non-Sparking acceptable	1	Item #13.3.21 Acceptable (Rev2008)	**Opt**	**Opt**	**Opt**
13.2.18	**WRENCH, UNIVERSAL, Bung Cap:** Several styles available, but should be able to function on 5 or more different bung caps and plugs; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.17 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.19	**WRENCH, COMBINATION, Ordinary, Kit:** (Open end and Box end), Set, to include any 10 of the following: 3/8", 7/16", ½", 9/16", 5/8", 11/16", ¾", 7/8", 1", 1 1/8", 1 ¼", 1 3/8"; Non-Sparking acceptable. (Rev2008)	1 kit of 10	Item #13.3.22 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.20	**WRENCH, COMBINATION, Industrial, Kit:** (Open end and Box end), Set, to include any 5 of the following: 1 ½", 1 5/8", 1 ¾", 1 7/8", 2", 2 ¼", 2 ½" ; Non-Sparking acceptable. (Rev2008)	1 kit of 5	Item #13.3.23 Acceptable (Rev2008)	**Opt**	**Opt**	**Opt**
13.2.21	**WRENCH, SOCKET, Kit:** Socket set to include any 10 of the following: 3/8", 7/16", ½", 9/16", 5/8", 11/16", ¾", 7/8", 1", 1 1/8", 1 ¼", 1 3/8" ; Non-Sparking acceptable. (Rev2008)	1 kit of 10	Item #13.3.24 Acceptable (Rev2008)	**Opt**	**Opt**	**Opt**
13.2.22	**WRENCH, SOCKET, Industrial, Kit**: Socket set to include any 5 of the following: 1 ½", 1 5/8", 1 ¾", 2", 2 ¼", 2 ½"; Non-Sparking acceptable. (Rev2008)	1 kit of 5	Item #13.3.25 Acceptable (Rev2008)	**Opt**	**Opt**	**Opt**
13.2.23	**CHISEL, COLD, Standard or Hex –** Sizes between ¾" to 1" width by 6" to 14" long	1 Chisel		**R**	**R**	**R**
13.2.24	**PUNCH, PIN – 7" x 3/8"**	1		**Opt**	**Opt**	**Opt**
13.2.25	**PUNCH, PIN – 12" x 5/8"**	1		**Opt**	**Opt**	**Opt**
13.2.26	**PUNCH, PIN, Spring Loaded**	1		**R**	**R**	**R**
13.2.27	**TAPE, MEASURING, Retractable, Metal:** 24' or greater.	1		**R**	**R**	**R**
13.2.28	**TAPE, MEASURING, Re-Wind, Non-Metallic:** 50 feet minimum, must be non-conductive. (Rev2008)	1		**R**	**R**	**R**
13.2.29	**KNIFE, PUTTY, Scraping:** – 2' wide; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.26 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.30	**KNIFE, GENERAL UTILITY, Cutting:** Any heavy duty knife including carpet cutting type:	1		**R**	**R**	**R**
13.2.31	**SHEARS, Cutting:** Any heavy duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting; Non-Sparking acceptable. (Rev2008)	1	Item #13.3.27 Acceptable (Rev2008)	**R**	**R**	**R**
13.2.32	**STRAPS, RATCHET, Tie down:** Approximately 1" x 20', 1000 lbs. approximate minimum rating.	2		**R**	**R**	**R**

13.2.33	**STOP WATCH:**	1		**R**	**R**	**R**

13.3 Special Purpose Hand Tools [Sub-Category]

Special purpose tools, such as non-sparking implements, extra - heavy duty large socket sets for rail tank cars, grounding cables, and power and hydraulic tools, are a necessity to augment and broaden a response teams' intervention and control capabilities. Non-sparking small hand tools can be part of an inventory in lieu of regular ferrous iron small hand tools, as noted.

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
13.3.1	**SYSTEM, GROUNDING and BONDING, Capability:** Complete System To Consist Of:		Compliant To: NEC Article 250 And NFPA 70 NFPA 77 **(Added 2012)**			
13.3.1-A	**UNIT 1: GROUNDING, CABLE:** Insulated or non-insulated 3/16" or better carbon steel, shortest lengths not less than 10', equipped with either heavy duty "C" clamps, screw bolt clamps or ¾" pin point hand clamps on both ends of each length. **(Rev2012)**	Not Less than 75' **(Rev2012)**		**R**	**R**	**R**
13.3.1-B	**UNIT 2: GROUNDING, ROD:** One (1) of approximate length 4 feet to 6 feet minimum, and approximate dia. 3/8" to ½" copper. **(Rev2008) (Rev2012)**	Not less than 4'		**R**	**R**	**R**
13.3.1-C	**UNIT 3: GROUND RESISTANCE and BONDING VERIFICATION Detection Capability:** Analog or digital readout, Intrinsically Safe, range at least 0 – 200 ohm, 3-wire resistance hookup minimum. **(Added 2012)**	**1 Capability:** Ground resistance and bonding detection may require two separate units		**Opt**	**Opt**	**Opt**
13.3.3	**VESTS, I.C.S., Haz-Mat Group:** For all of the positions within the HM Group (Haz-Mat Group Supervisor, Asst. Safety Officer, Entry Team Leader, De-Con Team Leader, Site Access Control Leader, Technical Specialist, Safe Refuge Area Manager)	1 Set	ANSI 107 and FIRESCOPE	**R**	**R**	**R**
13.3.4	**LIGHT PROBE, Fluorescent:** Approximately 25 watt, 36" long wand handle, insertable through bung hole of 55 gallon drum, and other confined spaces.	1	Intrinsically Safe	**Opt**	**Opt**	**Opt**
13.3.5	**AIR BAG, LIFTING, High Pressure, Kit**: Kit, operated by SCBA air bottle, to consist of one or a variety of air inflatable bags, with manifold and hose hardware, capable of lifting a approximately 30 tons to 12 inches	1 Kit		**Opt**	**Opt**	**Opt**
13.3.6	**NON-SPARKING, Hammer, Sledge:** 7 to 10 pound.	1		**R**	**R**	**R**
13.3.7	**NON-SPARKING, HAMMER, Claw: 16 to 24 oz.;** Also meets # 13.2.2	1		**R**	**R**	**R**
13.3.8	**NON-SPARKING, HAMMER, Engineer: 36 to 40 oz.**	1		**Opt**	**Opt**	**Opt**
13.3.9	**NON-SPARKING, HAMMER, Ball Peen: 8 to 16 oz.**	1		**Opt**	**Opt**	**Opt**
13.3.10	**NON-SPARKING, SCREWDRIVER, CHISEL, Kit:** To consist of at least <u>any three</u> of the following, in either short or long handle: Standard chisel tip– Small, medium, large, extra-large.	1 Kit of 3 different		**R**	**R**	**R**
13.3.11	**NON-SPARKING, SCREWDRIVER, PHILLIPS, Kit:** To consist of at least any three of the following, in either short or long handle: Phillips No. 1, 2, 3, 4.	1 Kit of 3 different		**R**	**R**	**R**
13.3.12	**NON-SPARKING, PLIERS, ORDINARY, Utility:** Available in various sizes, 6", 7", 8", with square blunt end.	1		**R**	**R**	**R**
13.3.13	**NON-SPARKING, PLIERS, WIRE, Side Cutting:**	1		**R**	**R**	**R**
13.3.14	**NON-SPARKING, PLIERS, LONG-NOSE, Needle:**	1		**R**	**R**	**R**

13.3.15	**NON-SPARKING, PLIERS, COMBINATION, Kit: To consist of at least three different sizes of the following; slip, groove, channel, or self-adjusting pliers, ranging from 7" to 16" in length.** (Rev 2015)	1 Kit of 3 different		**Opt**	**Opt**	**Opt**
13.3.16	**NON-SPARKING PLIERS, LOCKING, Vice Grip® Type, Kit:** To consist of any four of the following: Adjustable chain wrench, welding clamp, curved jaw locking, straight jaw locking, long nose locking, "C" clamp locking, sliding bar locking.	1 Kit of 4 different sizes **OR** Types (Mix and Match) (Rev2012)		**Opt**	**Opt**	**Opt**
13.3.17	**NON-SPARKING, WRENCH, BUNG,** Universal: Several styles available, but should be able to function on 5 or more different bung caps and plugs.	1		**R**	**R**	**R**
13.3.18	**NON-SPARKING, WRENCH, CRESCENT, Adjustable, Kit:** Kit to include any two of the following: Adjustable 12", 15", 22" 24".	1 Kit of 2		**R**	**R**	**R**
13.3.19	**NON-SPARKING, WRENCH, CRESCENT, Adjustable, Heavy Duty:** 26" to 36", aluminum or steel.	1		**Opt**	**Opt**	**Opt**
13.3.20	**NON-SPARKING, WRENCH, PIPE, Adjustable, Kit:** Kit to include any two of the following: House – 16", Standard - 18", Medium – 22", Large – 28".	1 kit of 2		**R**	**R**	**R**
13.3.21	**NON-SPARKING, WRENCH, Pipe, Adjustable, Heavy Duty:** Available in sizes ranging from 32" to 46".	1		**Opt**	**Opt**	**Opt**
13.3.22	**NON-SPARKING, WRENCH, COMBINATION, Ordinary, Kit:** (Open end and Box end), Set, to include any 10 of the following: 3/8", 7/16", ½", 9/16", 5/8", 11/16", ¾", 7/8", 1", 1 1/8", 1 ¼", 1 3/8"	1 kit of 10		**Opt**	**Opt**	**Opt**
13.3.23	**NON-SPARKING, WRENCH, COMBINATION, Industrial, Kit:** (Open end and Box end), Set, to include any 5 of the following: 1 ½", 1 5/8", 1 ¾", 1 7/8", 2", 2 ¼", 2 ½"	1 kit of 5		**Opt**	**Opt**	**Opt**
13.3.24	**NON-SPARKING, WRENCH, SOCKET, Kit:** Socket set to include any 10 of the following: 3/8", 7/16", ½", 9/16", 5/8", 11/16", ¾", 7/8", 1", 1 1/8", 1 ¼", 1 3/8"	1 kit of 10		**Opt**	**Opt**	**Opt**
13.3.25	**NON-SPARKING, WRENCH, SOCKET, Industrial, Kit**: Socket set to include any 5 of the following: 1 ½", 1 5/8", 1 ¾", 2", 2 ¼", 2 ½".	1 kit of 5		**Opt**	**Opt**	**Opt**
13.3.26	**NON-SPARKING, KNIFE, PUTTY, Scraping:** – 2' wide	1		**R**	**R**	**R**
13.3.27	**NON-SPARKING, SHEARS, Cutting:** Any heavy duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting.	1		**R**	**R**	**R**
13.3.28	**RADIANT HEAT SURFACE Temperature Reading:** Direct contact (i.e. magnetic, spring clip, etc.), with approximate range +350° to +750° F. (spring operated thermometers)	One, or One complete set		**Opt**	**Opt**	**Opt**
13.3.29	**RADIANT HEAT SURFACE SENSING, Temperature:** Temperature sensitive crayon kit, 10 crayons, each sensitive to a different temperature range; Usually melt at specified temperature, and might change color; Approximate overall range from +150° F to + 800° F. (Rev2012)	1 Kit		**Opt**	**Opt**	**Opt**
13.3.30	**REFRIGERATOR, UTILITY, Small:** Installed onboard response unit, of approximate size18" wide by 18" tall by 12" deep	1		**R**	**R**	**Opt**

[THIS PAGE LEFT BLANK]

FIRESCOPE STANDARDIZED
HAZARDOUS MATERIALS EQUIPMENT LIST

PART 3: APPENDIX SECTION

APPENDIX A

FIRESCOPE Type 1, Type 2, & Type 3 Hazardous Materials Resource

Self-Evaluation Form – Equipment, Tools, Kits

Operational Identifier (three letters): MACS Agency Identifier (three letters):		Department Name:		Company Designation:	
Evaluated By:		Date of Evaluation:		Are Appropriate Training Records, Certificates, Complete?:	
Location of Evaluation:		Resource TYPE: **(Enter 1, 2, or 3)**		Evaluation Result: **(Circle)**	**PASS** **FAIL**

NOTE: ***This Self-Evaluation Form is provided as a tool for an agency to conduct an equipment assessment inspection in preparation of a Type 1, Type 2, or a Type 3 Fire & Rescue Hazardous Materials Resource inspection.***

NOTE: ***Please refer to the latest Edition of FIRESCOPE "Standardized Hazardous Materials Equipment List", PART TWO, "LIST OF EQUIPMENT", for a complete description of each tool or equipment item, required sizes, and listing of components for kits.***

NOTE: ***Select the appropriate column on the right-hand side that represents the haz-mat typing status to be achieved. A clear box indicates the item or requirement is required, and if present insert a check-mark. If the item or requirement is not met insert an X or large O mark. A shaded box indicates the item is not required.***

1. FIELD TESTING and DETECTION

1.1 Color Change Analysis – Non-Electronic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
1.1.1	**TEST STRIPS, pH PAPER:**	1 Pkt				
1.1.3	**TEST STRIPS, OXIDIZER:**	1 Pkt				
1.1.4	**TEST STRIPS, PEROXIDE:**	1 Pkt				
1.1.9	**TEST STRIPS, WMD CHEMICAL, Kit:** M-8 booklet of 25 sheets **- Or -** "3-WAY" booklet	1 Pkt of either one	Must detect nerve agents **and** blister agents			
1.1.10	**TEST PAPER, WMD CHEMICAL, Roll:** M-9 paper rolls or equal	1 Pkt	Single color change for nerve **or** blister			
1.1.11	**TEST PAPER, WMD CHEMICAL, Card:** Military M256A1 plastic card test kit	1 Kit	(Usually contains about 12)			
1.1.12	**TEST CARD, TRAINING ONLY, WMD CHEMICAL:** Same as M256A1 but for training only	1 Kit	Training Only			

1.2 Qualitative Analysis, Kits – Non-Electronic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
1.2.1	**INDUSTRIAL CHEMICALS, KNOWN, Qualitative:** Test Kit	1 Kit	Tests for at least KNOWNS			
1.2.2	**INDUSTRIAL CHEMICALS, UNKNOWN, Qualitative:** Test Kit	1 Kit	Tests for all UNKNOWNS			
1.2.3	**PCB CHEMICALS, Test Kit:** May be part of #1.2.1 or #1.2.2 Inventory	1 Kit Or capability	Detects PCB's in water or oil			

1.2.8	**WMD, WATER TEST, MILITARY, Kit:** M272 or M273	1 Kit	Nerve agents and Lewisite			
1.2.9	**WMD CHEMICALS, MILITARY, Test Kit:** M18A2 or M18A3 or CAD C-2	1 Kit	Nerve agents ☐ Blister agents ☐ Blood agents ☐ Choking agents ☐			

1.3 Qualitative Analysis, Kits – Electronic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
1.3.1	**CHROMATOGRAPHY, GAS:**	1 Kit, Complete, of any one of the three technologies Described				
1.3.2	**SPECTROMETRY, MASS:** or equal					
1.3.3	**SPECTROSCOPY, INFRA-RED:** or equal					

1.4 Colorimetric Analysis – Non-Electronic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
1.4.1	**COLORIMETRIC Kit, BASIC:**	1 Kit, Complete, of any one type listed	Spot analysis for Industrial Chemicals			
1.4.2	**COLORIMETRIC Kit, CHIP:** Miniaturized tubes in a plastic chip.					
1.4.3	**COLORIMETRIC Kit, MULTI-SENSING:** Reads 5 or more tubes simultaneously.					
1.4.4	**COLORIMETRIC Kit, WMD Special:** Special selection of industrial tubes for some WMD chemicals detection, MUST have flow chart or instruction book.	1 Kit, Complete	Spot analysis for WMD chemicals			

1.5 WMD Biological Detection – Electronic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
1.5.1	**NON-AGENT SPECIFIC Biological Detection:** Simple "yes" – "no" detection tabs or strips to detect presence of a protein, highly prone to false positives.	1 kit, Complete, of any one type listed	1 Kit, Complete, of either			
1.5.2	**AGENT SPECIFIC Biological Detection:** Listed in increasing order of reliability and accuracy: a. Protein fluorescence technologies **- Or -** b. Immuno-Chromatography (IC) or Immuno-assay fluorescence technology (IAF) **- Or -** c. DNA replication technology, or Polymerase Chain Reaction (PCR)		Protein Presence Only ☐ Protein Fluorescence ☐ I.C. or Immuno Assay ☐ DNA / PCR ☐			

2. AIR MONITORING

2.1 Confined Space Monitoring

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
2.1.1	**CONFINED SPACE OSHA STANDARD Four Gas:** with wand, 10' tubing; For O_2, LEL, CO, H_2S	1 Unit	Continuous monitoring; Intrinsic to UL #913			
2.1.2	**CALIBRATION KIT:** For Item # 2.1.1.	1 Kit				

2.2 Multiple Gas Monitoring, Toxic

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
2.2.1	**TOXIC VAPOR, in ppm: Volatile Organic Compound (VOC) and Toxic Industrial Compounds (TIC): Capable of identifying specific substances, sometimes Benzene**	1 Unit	Continuous monitoring; Downloadable to computer			
2.2.2	**AROMATIC HYDROCARBON (Benzene Ring) Monitoring:** If capability included in 2.2.1, satisfies this requirement.	1 Unit	Continuous monitoring			
2.2.4	**CALIBRATION KITS:** For each of the above that may be in inventory.	1 Kit for each Unit				
2.3	**Specialty Gas Capability**					
Inv. #:	**Item Name and Description**	**Requirement**	**Function, Certification Or Standard**	**Type 1**	**Type 2**	**Type 3**
2.3.1	**AMMONIA:** approximate range 0 to 100 ppm.	Detection	Continuous monitoring			
2.3.2	**FREONS, Halogenated Hydrocarbons:** Refrigerants	___	Refrigerants continuous monitoring			
2.3.3	**HALOGEN GASES:** Specifically Chlorine. Bromine and others are optional.		At least Chlorine			
2.3.4	**PHOSPHINE:**		Continuous monitoring			
2.3.16	**CALIBRATION KITS:** For each of the above, as necessary.	1 Kit for each unit				
2.4	**WMD Chemical Dedicated Instruments**					
Inv. #:	**Item Name and Description**	**Requirement**	**Function, Certification Or Standard**	**Type 1**	**Type 2**	**Type 3**
2.4.1	**NERVE AGENT Detection:** At least one of GA, GB, GD, GF, VX.	Must have capability to monitor and detect for at least **one substance in each of these six categories.** This may require one to several instruments, depending upon versatility of each instrument	Continuous Monitoring Nerve Agent			
2.4.2	**BLISTER AGENT – MUSTARDS Detection:** At least one of H, HD, HN, HS, HT.		Continuous Monitoring Blister Agent			
2.4.3	**BLISTER AGENT – LEWISITE Detection:** At least one of L, L-1, L-2, L-3.		Continuous Monitoring Lewisite Specific			
2.4.4	**BLOOD AGENTS Detection:** At least one of AC, HCN, CK, SA.		Continuous Monitoring Blood Agent			
2.4.5	**CHOKING / VOMITING AGENTS Detection:** At least one of CG, DP, Chlorine.		Continuous Monitoring Choking Agent			
2.4.6	**INCAPACITATING AGENTS Detection:** For Capsicum, also known as MACE, CN, CS-CN.		Continuous Monitoring Pepper Spray			
2.4.7	**CALIBRATION KITS:** Maintenance or Calibration Kit for each unit in inventory, as necessary.	1 for each type of monitoring unit				

3. SAMPLING

3.1 Substance Capture and Bulk Transfer

Inv.	Item Name and Description	Requirement	Function, Certification	Type	Type	Type
3.1.1	**COLIWASA TUBES, Disposable:** Glass or Clear Plastic, approximately 43" length, ground glass seal, approx 225 ml. capacity.	12 of either type, mix or match	EPA Protocol B			
3.1.2	**COLIWASA TUBES, Re-usable, Glass:** Same as above but with Teflon or Viton seal.		EPA Protocol B			
3.1.5	**PIPETTE, TRANSFER, Plastic, Regular, Bulk:** 5 to 8 ml capacity, approximately 15 cm length (6 ½")	Pkg. of 100 of either, or combination				
3.1.6	**PIPETTE, TRANSFER, Plastic, Large, Bulk:** 20ml capacity, approximately 30 cm length (12")					
3.1.10	**TEST TUBES, Disposable:** Borosilicate glass 12-14 ml.	100	Must be Borosilicate glass			

3.1.11	**SWAB STERILE:** Single use non-organic (no cotton) on stick	individual	Takes the place of the			
3.1.12	**SPONGES, Sealed, Sterile:** For surface swipe sample taking.	2				
3.1.15	**ENVIRONMENT DIPPER, Telescopic:** Approximately 8 - 24 feet; with slip-on 500 ml plastic cup or ladle.	1				
3.1.16	**TONGS, BEAKER or CRUCIBLE, Metal, PTFE Coated:** stainless steel, approximately 9 1/2" long.	-2- 2 of either type, or 1 of each				
3.1.17	**TONGS, BEAKER or CRUCIBLE, Metal, Plastic Coated**: stainless steel, approximately 10" long.					
3.1.19	**FORCEPS, Steel, Teflon coated or uncoated, or Plastic Polypropylene:** With pointed or round tips; Approximate length 3 ¾" to 5 ½".	2				
3.1.20	**FUNNEL, Plastic, Glass or Metal (disposable or re-useable):** Small 1 ½" to 2" diameter.; Medium 2 ½ to 3 1/2 " dia; Large 4 to 6" dia.	Complement of 3, with at least 1 of each size	3 different sizes			
3.1.24	**SPATULA, SAMPLING, LARGE, "V" Shape**: Plastic or metal, approximately 6 to 11" length.	5, in any combination				
3.1.25	**SPATULA, SAMPLING, MICRO, Teflon Coated:** Nickel plated – Teflon coated tips; One end oblong, other end blunt, approximately 7 ½" length.	1				
3.1.26	**SPOON, Plastic:** Polypropylene, disposable, long handle; ¼	Complement of 12, with at least 1 of each size	4 different sizes			
3.1.27	**SCOOP, SMALL, Sterile, 2 oz:** General purpose	1	(4 oz or 8 oz acceptable)			

3.2 Bulk Liquid Transfer – Mechanical

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
3.2.1	**PUMP, SYPHON, DRUM, Heavy Duty, Stainless Steel:** For 55 gallon drums; with Teflon piston and 35 feet hose.	1 of any of the three types listed	FM or UL Listed			
3.2.2	**PUMP, SYPHON, DRUM, Heavy Duty, High Quality:** For 55 gallon drums; with Viton or better gaskets and valves; 35 feet hose.					
3.2.3	**PUMP, Transfer, Metal:** Suitable for flammable liquids in 55 gallon drums; flame arresting screen, vacuum breaker.					
3.2.7	**PUMP, MECHANICAL:** Approximately 15 GPM to support decontamination process.	1				

3.3 Containerization, Labeling, Documentation

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
3.3.2	**SAMPLE JARS, Sterile, Clear Glass:** Short, wide-mouth 4 oz and 8 oz, with Teflon lined lids	Compliment of 24	**Class 2000 EPA Protocol B** (Printed on box or package)			
3.3.4	**SAMPLE JARS, Sterile, Amber Glass: Short** wide-mouth 4 and 8 oz, with Teflon lined lids	Compliment of 4	**Class 2000 EPA Protocol B** (Printed on box or package)			
3.3.8	**STOPPERS, Conical:** Rubber, neoprene or silicone; Nine sizes range between #000 to #6, and 12 mm to 30 mm.	Compliment of 5 different sizes				
3.3.9	**BAGS, PLASTIC, Zip Locking:** Three different sizes – Small 3" x 3"; Medium 6" x 6"; Large 9" x 9" or approximate.	Kit of 24 representing all three sizes				
3.3.10	**BAGS, EVIDENCE, Tamper-Proof:** Sizes range between 7" x 4" to 12" x 9", pre-printed label, self-sealing.	Compliment of 12				
3.3.11	**LABELS, ORDINARY BLANK:** Of approximate size to fit on sides of evidence jars, vials, bags; Preferably self-adhesive (Agency designed or commercial is acceptable)	Kit of 50 of various sizes				
3.3.15	**LABELS, EVIDENCE SEALS:** Tamper-proof, self-destructive if tampered, approximate size 1 ¼" x 3", rolls or pads.	1 Roll, or minimum of 25				
3.3.16	**PENS, MARKING, PAINT:** Permanent paint applying, various colors, about size of ball point pen, for marking abandoned drums, cans.	4, preferably of different colors				
3.3.17	**PENS, MARKING, INDELIBLE:** Medium & Fine Point.	Kit of 6				
3.3.18	**CHAIN OF EVIDENCE FORMS:** Usually available from local law enforcement or Arson Bureau.	20				

3.3.19	**PHOTO, ASSESSMENT and RECONISANCE KIT:** Camera, electronic technology: Must provide "instant" printed images or printable from on-board computer.	1 Kit of Either Type	Digital is acceptable if they can download and print from on-board computer High definition, 4 mega-pixels or better			
3.3.20	**PHOTO, ASSESSMENT and RECONISANCE KIT, Digital Type:** High quality, downloadable and printable from computer. Water resistant or capable of undergoing decontamination.					

3.4 Transportation

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
3.4.1	**CONTAINER, BIOLOGICAL, Plastic:** Complete packaging system with locking screw lid, jars of various sizes (6 ml to 500 ml), reinforcing receptacle with instructions; Suitable for infectious bodily fluids, biological threat substances.	1 Kit, Complete, any size	ICAO Packing #602 for Infectious Substances (Printed on box or container)			

4. RADIATION MONITORING / DETECTION

4.1 Gamma, Beta, and Alpha Detection and Survey

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
4.1.1	**SURVEY METER, GAMMA:** Gamma radiation (10keV) with visual display meter 0.001 milli-R per hour scale, and CPM scale (0-60,000 CPM)	Must have capability to survey for alpha, beta, and gamma. Separate units will meet this requirement, ***-- or- -*** 1 "combination" unit will suffice, see optional items	European "CE" Certification is recommended			
4.1.2	**SURVEY METER, BETA:** Beta detection (50 keV at 45% efficiency or 150 keV at 80% efficiency), with visual display read-out in R per minute /Counts Per Second (CPS)					
4.1 3	**SURVEY METER, ALPHA:** Alpha particle detection (2.5 MeV with 70% efficiency) with variable visual display in R and milli-R per hour, or CPM.					

4.2 Radionuclide Detection

4.2.1	**RADIONUCLIDE DETECTION:** Includes memory of radioactive nuclide library; Graphical display in CPS; Might be programmable	1 Unit	Can identify and display specific radionuclide			

4.3 Dosimeters

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
4.3.1	**DOSIMETER, DIRECT READING:** Accumulated dose, or quantity gamma and x-ray exposure; Requires re-charger; Scale increments should be in milli-R; - OR – Electronic version with alarm	1 for **each** assigned member	ANSI N-13.5, N-42.20, or Electronic versions will also satisfy			

5. CHEMICAL PROTECTIVE CLOTHING

5.1 Vapor Protective

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
5.1.1	**VAPOR PROTECTIVE ENSEMBLE, NFPA 1991 Industrial Chemicals:** Must display NFPA Certification label inside suit **NOTE: Item # 5.1.4 (below) will also satisfy this requirement.**	6-Type 1 4-Type 2	Provides for vapor industrial chemical entry NFPA 1991 Compliant			
5.1.4	**VAPOR PROTECTIVE, with NFPA 1991 WMD Chemical / Biological Protection: NOTE: This item DOES satisfy requirement in 5.1.1.** With year 2005 edition of 1991, WMD Chemical Testing is included and automatic. All 1991 compliant suits are WMD Certified. The label **does not say this**.	6 of either type of ensemble, must include gloves, boots to same certification	Provides for WMD entry. NFPA 1991 WMD ☐ - OR - NFPA 1994, Class Two or Class Three ☐			
5.1.5	**VAPOR PROTECTIVE, with NFPA 1994 WMD Chemical / Biological Protection.** **NOTE: This item DOES NOT satisfy Industrial requirement in 5.1.1**					
5.1.6	**PRESSURE TEST KIT:** Usually supplied by garment manufacturer, includes Magnehelic gauge.	1	NFPA 1991; ASTM F-1052			

5.2 Liquid Splash Protective

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
5.2.1	**LIQUID SPLASH PROTECTIVE, NFPA 1992:** For industrial chemical splash protection, jumpsuit or multi-piece ensemble.	Four (4) Or Six (6) of either type (1992) (1994)	NFPA 1992 ☐ Liquid Splash - OR - SEE BELOW ↓	**Must**	**Must**	**Must**
5.2.2	**LIQUID SPLASH PROTECTIVE, with NFPA 1994 Class 3 WMD Chemical / Biological Protection:** For WMD/Biological splash protection, jumpsuit or multi-piece ensemble; Provides a LESSER level of protection than NFPA 1992 garment. **NOTE:** This item meets requirement of 5.2.1.		NFPA 1994, Class 3 ☐ Liquid Splash (Class 2 also Acceptable, higher standard)			

5.3 Limited Use Protective

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
5.3.1	**LIMITED USE, Splash Protective:** Apron, two piece garment, or	2 for each assigned member	None			

6.1 Hand Protection

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
6.1.1	**REPLACEMENT GLOVES, Vapor Protective:** Ample supply of manufacturer's recommended or supplied "outer glove". The "inner glove" is listed in item # 6.1.3 below.	1 replacement set for each suit	NFPA 1991			
6.1.2	**REPLACEMENT GLOVES, Liquid Splash Protective:** Ample supply of manufacturer's "outer glove". The "inner glove" is listed in item # 6.1.3 below. Gloves for 6.1.1 will satisfy.	1 replacement set for each suit on hand;	Imprinted "NFPA 1992" **OR** certification message is on packaging **OR** certification is on GARMENT LABEL **OR** item Model Number matches UL or SEI certification			

6.1.3	**UNDER-GLOVE:** Chemical resistant disposable type used as an "inner glove"	24 Pair				
6.1.4	**HIGH TEMPERATURE Protective Glove:** One minute direct contact protection for 800 ^{0} F to 1,000 ^{0} F surface temperatures; Usually made of Nomex / Kevlar / PBI.	2 Pair				
6.1.6	**ULTRA-COLD Protective Glove:** Gauntlet length to elbow. Provides 1 minute continuous contact for liquids to (minus) - 260 ^{0} F.	2 Pair	Gauntlet to elbow (16" minimum)			

6.2 Foot Protection

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.2.1	**BOOTS, CHEMICAL RESISTANT:** Must meet appropriate NFPA Standard – 1991 for Vapor protective, 1992 for Liquid Splash protective. Must be "stamped", or certification marking on package.	1 pair for each assigned member	Imprinted "NFPA 1991 or NFPA 1992" **OR** certification message is on packaging **OR** certification is on GARMENT LABEL **OR** item Model Number matches UL or SEI certification			

6.3 Head and Eye Protection

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
6.3.1	**HELMET:** Light weight construction style helmet to provide head protection when wearing any CPC ensemble.	1 for each assigned member	ANSI Z-89.1			
6.3.2	**GOGGLES:** Used for sample taking, material testing, qualitative analysis; Wrap-around to protect side of eyes; Polycarbonate or better.	1 for each assigned member.	ANSI Z-87.1			

6.4 Support Systems

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
6.4.1	**UNDERGARMENT, FIRE RESISTANT:** Long sleeve jumpsuit	1 for each assigned member	Compliant to ONE of the following: NFPA 2112 ☐ **or** 1975 ☐ **or** 1977 ☐	Must	Must	Must

7. TECHNICAL REFERENCE

7.1 Printed References, Industrial and WMD Chemicals

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
7.1.1	**DATABASE TYPE, Printed:** Technical data, physical, chemical and toxicological properties. See Appendix D, Chart #2.	3 Different references				
7.1.2	**GUIDEBOOK TYPE, Printed:** Intervention Data, incident handling, hazard assessment. See Appendix D, Chart #3.	2 Different references				
7.1.3	**SPECIALTY TYPE, Printed:** Special topics; (i.e. Rail Tank Cars, Pesticides, Incompatible Chemicals, Compressed Gas Valve Threads, etc.) See Appendix D, Chart #4.	2 Different references				
7.1.4	**REGULATORY TYPE, Government Codes, Ordinances, Printed or Electronic:** See Appendix D, Chart #5		1 each of: 49 CFR (DOT) Sections 1 to 199 ☐ 29 CFR (OSHA) Section 1910.120 ☐ NFPA standard 472 ☐ NFPA Standard 1991 ☐ NFPA Standard 1992 ☐ NFPA Standard 1994 ☐			

7.1.5	**REGULATORY TYPE, Response Guidelines, Printed or Electronic:** Local, Regional, State.	1 copy – Local Response Plans ☐ 1 copy – Op. Area Resp. Plan ☐ 1 copy – OES HMICP ☐				
7.1.6	**WMD Chemical / <u>Biological Substances</u>: Printed OR**	<u>At Least:</u> 1 – Chemical WMD ☐ 2 – Biological WMD ☐				

7.2 Electronic Reference Sources, Industrial and WMD Chemicals

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
7.2.1	**DATABASE TYPE, Electronic:** Physical & chemical properties.	1 Program	Some commercial electronic data platforms have 2 or more of these databases included as separate files.			
7.2.2	**GUIDEBOOK TYPE, Electronic:** Intervention, control objectives, hazard assessment)	1 Program				
7.2.3	**SPECIALTY TYPE, Electronic:** Rail tank car, pesticides, incompatible chemicals.	1 Program				
7.2.4	**WMD Chemical / Biological Substances, Electronic:** MUST	1 Program				

7.3 Plume Air Modeling, Program Support

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
7.3.1	**AIR MODELING, Database Software, basic platform:**	1 Program				
7.3.2	**AIR MODELING, Overlay / Plume Display Software:**	1 Program	Compatible with 7.3.1			
7.3.3	**AIR MODELING, Overlay / Mapping Software:**	1 Program	Compatible with 7.3.1			

7.4 Computer, Support Hardware, Software

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
7.4.1	**COMPUTER:** Desktop or laptop;	1 Unit as described				
7.4.2	**PRINTER, Color:** Inkjet or laser or equal; Can be combined with 7.4.3 and 7.4.4	Ability to perform all 3 functions	Separate or all-in-one components acceptable			
7.4.3	**SCAN Capability:** Ability to SCAN document and save as a PDF or JPG file.					
7.4.4	**DUPLICATION Capability:** Can be combined with 7.4.2 and 7.4.3					
7.4.6	**ACCESS To INTERNET, Wireless:** Hardware, connections and ports, is Broadband capable, wireless card or internet device.	1 capability				
7.4.8	**HARDWARE, COMPUTER, GRAPHICS:** Computer includes a high quality graphics chip or board enhancement	1 capability				
7.4.11	**HARDWARE, CD-Rom or DVD drive:**	1 capability	Must have one or the other			
7.4.12	**HARDWARE, Computer, USB Port Compatible:** USB Flash Drive, Memory Stick, Digital Camera download, thumb drives, etc.	1 capability	At least one available USB port			
7.4.13	**SOFTWARE, OPERATING SYSTEM:** Microsoft Windows, Apple OS, Linux.	1 capabiity				
7.4.14	**SOFTWARE, DOCUMENT PROCESSING:** One for word processing and one for graphic images processing in at least .jpg format.	Word Processing (i.e. Word, WordPerfect) ☐ Graphics Processing (i.e. BMP, JPG, TIF) ☐				
7.4.15	**SOFTWARE, FORMAT CONVERSION:** Ability to save files to hard drive, especially graphics and photographs, in at least PDF format and JPG format.	1	Must have both capabilities Document to PDF, + ☐ Photos to JPG, + ☐			
7.4.16	**SOFTWARE, PROTECTION:** Protection for: 1) Viruses; 2) Trojan Horse, Parasites; 3) Spyware; 4) Intrusion Detection.	1 Protective setup	**<u>Need Protect For:</u>** 1. Viruses ☐ 2.Trojan Horse, Parasites ☐ 3. Spyware, Ad-ware ☐ 4. Intrusion Detection ☐			

8. SPECIAL CAPABILITIES

8.1 Advanced Technologies, Vision, Heat, Sound

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
8.1.1	**LIGHT AMPLIFICATION, SCOPE, BASIC:** Night Vision, monocular or binocular	1 Unit	Generation II or Better Technology			
8.1.8	**INFRA-RED, SCOPE, Temperature Sensing Only:** Hand-held with direct temperature reading display, approximately -25 ^{O} F to +1,000 ^{0} F.	1 scope				
8.1.15	**SOUND SENSING, Ultra-Sonic: Leak Detection,** detects harmonic sounds of escaping gas down to 30 dB, approximate frequency 15 to 100 kHz	1 Unit				
8.1.16	**CAMERA, VIDEO, Digital:** Hand-held color video	1 Unit				

8.2 Advanced Technologies, Weather, GPS

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
8.2.1	**WEATHER STATION, Basic Kit:** Wind to 100 mph; Barometer +/- 3 mBars, air temp -20 to 120 degrees F, internal compass, humidity to 100%.	1 Kit, Complete, of either type				
8.2.2	**WEATHER STATION, Wireless Digital Support:** Advanced version enhances above with digital transmitter to host computer 5 miles.					

9. INTERVENTION

9.1 Chemical Intervention

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
9.1.1	**NEUTRALIZATION – Acids:** Granular Sesquicarbonate is recommended, or biodegradable product that meets OSHA 1917.157(g) is acceptable.	An amount sufficient to neutralize 5 gallon spill	Should be neutral salt producing			
9.1.2	**NEUTRALIZATION – Alkali (Bases):** Powdered Citric Acid is recommended, or other biodegradable or encapsulating.	An amount sufficient to neutralize 5 gallon spill	Should be neutral salt producing			
9.1.3	**ENCAPSULATING SPREADABLE POWDER – General Purpose:** Absorbs polar and non-polar; Suitable for pesticides (Non-clay based).	An amount sufficient to absorb or encapsulate a 5 gallon spill	OSHA 29CFR 1910.119 **(Non-Clay Based absorbs pesticides – Clay-based types do not, i.e. Kitty Litter, diatomaceous earth, etc.)**			
9.1.4	**ENCAPSULATING SPREADABLE Powder – Formaldehyde:** Approximate size 2 to 5 gallon pail kit or 5 to 10 Lbs, granular, spreadable.	An amount sufficient to absorb or encapsulate a 5 gallon spill				
9.1.5	**ENCAPSULATING SPREADABLE POWDER – Non-Polar Solvents:** Granular, spreadable; For body fluids, organic or hydrocarbon non-polar solvents, oils, oil base poisons; Approximate size 2 gallon pail.	An amount sufficient to absorb or encapsulate a 5 gallon spill	EPA RCRA Burial Regulations (Solidifies into an acrylic polymer)			
9.1.6	**FIRE EXTINGUISHER, CLASS "D", Sodium Chloride formulation:**	1 Unit, of either type	FM or UL Approved Label			
9.1.7	**FIRE EXTINGUISHER, CLASS "D", Copper compound formulation:**					

9.2 Environmental Intervention

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
9.2.1	**ABSORBENT NON-POLAR SOLVENT, Pads or Roll:** Repels polar (water); absorbs non-polar solvents (hydrocarbons, some Freon liquids, carbon tet); Approximate size 15" x 18" pads or rolls	150 square feet of coverage	40CFR 300.915(g)			
9.2.2	**ABSORBENT GENERAL PURPOSE or POLAR SOLVENT, Pads or Roll:** Absorbs polar (water, acids, alkalis, benzene ring solvents); If General Purpose also will absorb contaminated water. Approximate size 12" x 18" pads or rolls.	150 square feet of coverage	40CFR 300.915(g)			
9.2.3	**ABSORBENT NON-POLAR SOLVENT, MINI-BOOMS - Pigs, Socks:** Repels polar (water), absorbs non-polar (hydrocarbons, oils, some Freon liquids, carbon tet); Approximate dia. 3" to 6", by 4 to 12 feet each.	40 feet total length	40CFR 300.915(g)			
9.2.4	**ABSORBENT GENERAL PURPOSE or POLAR SOLVENT, MINI-BOOMS - Pigs, Socks:** Absorbs polar (water, acids, alkalis, benzene ring solvents); Approximate dia. 3" to 6", by 4 to 12 feet each.	40 feet total length	40CFR 300.915(g)			
9.2.5	**ABSORBENT NON-POLAR SOLVENT, - Pillows:** Repels polar (water), absorbs non-polar solvents (hydrocarbons, oils, some Freon liquids, carbon tet); Approximate size 2 to 3 gallon absorption capacity each pillow.	10 Gallon Absorption	40CFR 300.915(g)			
9.2.6	**ABSORBENT GENERAL PURPOSE or POLAR SOLVENT, Pillows:** Absorbs polar (water, acids, alkalis, benzene ring); Approximate size 3" to 6" dia., 2 to 3 gallon absorption capacity each pillow.	25 Gallon Absorption	40CFR 300.915(g)			
9.2.8	**MERCURY KIT, Cleanup, Small Spills:** Mercury absorbing	1 Kit	**MUST INCLUDE** 500 gram			
9.2.11	**PIPE, PLASTIC:** Assortment of various sizes (4" to 12" dia.) cut to approximate 8' to 12' lengths.	One 8' to 12' length of at least 3 sizes				

9.3 Mechanical Intervention

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
9.3.1	**CHLORINE "A", Kit:**	1 Kit, Complete	Chlorine Institute			
9.3.2	**CHLORINE "B", Kit:**	1 Kit, Complete	Chlorine Institute			
9.3.3	**CHLORINE "C", Kit:**	1 Kit, Complete	Chlorine Institute			
9.3.5	**SULFUR DIOXIDE UPGRADE For Kit "A":**	1 Upgrade Kit, Complete	Chlorine Institute			
9.3.6	**SULFUR DIOXIDE UPGRADE For Kit "B":**	1 Upgrade Kit, Complete	Chlorine Institute			
9.3.7	**SULFUR DIOXIDE UPGRADE For Kit "C":**	1 Upgrade Kit, Complete	Chlorine Institute			
9.3.10	**PATCH AND REPAIR, PIPE, LIQUIDS, Standard Kit:** Single or dual bolt steel pipe clamps with rubber sheeting lining; Ten or more different pipe sizes exist ranging from ½" dia. to 4" dia.	1 Kit	Preferably			
9.3.13	**CLAMP, PIPE, GAS, Line, Mechanical:** Approximately 2" dia to squeeze shut domestic low pressure gas line.	1 Kit				
9.3.15	**PATCH, PIPE, LIQUID, Pneumatic, Flange:** Heavy duty rubber bandage device, approximately 8" x 36", slips over leaking pipe from 2" to 8" dia, then inflated. Requires air source, air hose, regulator.	1 Kit: Either one will satisfy requirement (9.3.16 is recommended)	Air source, hose, regulators, and ratcheting straps from one kit can be used for another kit (Do not need to duplicate)			
9.3.16	**PATCH, PIPE, LIQUID, Pneumatic, Bandage:** Heavy duty rubber bandage device, approximately 8" x 36", slips over leaking pipe from 2" to 8" dia, then inflated. Requires air source, air hose, regulator.					
9.3.17	**PATCH, TANKER, LIQUID:** Foam or plastic (non-inflatable) pad approximately 7" x 12", with 6 feet ratchet strapping for 55 gallon drum leaks, AND 25 feet strapping for highway tankers.	1 Kit				

9.3.18	**PATCH, TANKER, LIQUID, Side:** Pneumatic operated inflatable leak sealing patch or bag, with ratchet straps; Approximately size 24" x 12". Requires air source, air hose, regulator.	1 Kit of either type				
9.3.19	**PATCH, TANKER, LIQUID, Side, Drainage Control:** Identical to previous, but is heavy duty with internal plumbing for bleed-off control.					
9.3.24	**PATCH, DRUM, LIQUID, Pneumatic, Kit:** Small rubber inflatable pads of approximately 4" x 4"; 4" x 9"; and 7" x 7"; Requires ratcheting straps, air source, air hose, regulator to inflate and stop leak;	1 Kit	Acceptable if inflatable pads included in 9.3.17			
9.3.26	**PATCH, DRUM, LIQUID, Compression, Kit:** Compression type stopper plugs up to 2" dia, with butterfly nuts; Two ball plugs with butterfly nuts; 8 piece tapered wood dowels.	Kit Consists of: 6 – compression tapered rubber plugs 2 – ball rubber plugs 8 – tapered wood dowels 2 – "T" bolt patches 1 – 8"x12" rubber patch Assortment – sheet metal screws				
9.3.29	**PLUGS, TAPERED STOPPER, LIQUID, Compression, Extra Large:** Enhances item # 9.3.26 (above) with larger tapered compression plugs with butterfly nuts for holes up to 4" dia..	Consists of One of the Following: 3" dia. compression plug or 4" dia compression plug				
9.3.31	**PLUGS, BALL or HALF-ROUND, LIQUID, Compression, Extra Large:** Enhances item # 9.3.26 (above) with Individual tapered, ball, or half-round stopper plugs for holes up to 4" dia.	Consists of One of the Following: 3" dia. round or half-round or 4" dia round or half-round plug				
9.3.32	**PLUGS, "T" BOLT, LIQUID, COMPRESSION, Extra Large:** Enhances item # 9.3.26 (above) with stainless steel curved plate and ¾" neoprene closed cell foam for irregular slits 3" long.	1 - "T" bolt with foam pads, 3" or larger				
9.3.33	**PLUGS, CONICAL, LIQUID, Drain:** Three tapered plastic plugs (approximately 10" -13" long) with eye bolts, ranging in sizes from 2 ½" to 8" dia for holes, drains, gravity flow pipes; (i.e. Ultra Drain; Lab Safety)	Consists of: 3 extra-large conical plugs, each a different size				
9.3.34	**PLUGS, TAPERED, LIQUID, Pneumatic:** Enhances kit in item # 9.3.15. Inflatable round tapered rubber plugs 4" approximately dia; Narrow wedge tapered from 2 ½", wide wedge tapered to 4 ½" wide. Requires air source air hoses, regulator.	Set of at least 3 sizes	Air source, hose, regulators, and ratcheting straps from one kit can be used for another kit (Do not need to duplicate)			
9.3.35	**PLUGS, EXPANSION, LIQUID, Standard, Kit:** Plumber style expansion plug with wing nut. Sizes range from 1" to 4" for drains or open butt pipe.	Mix or match set of at least 7 different sizes, of either style				
9.3.36	**PLUGS, EXPANSION, LIQUID, Vented, Kit:** Same as # 9.3.35 but vented or has drain valve, some with threaded end.					
9.3.42	**PLUGS, END CAP, LIQUID, Kit:** Also known as "Jim Caps", rubber cap fitting for butt end of pipe with metal tightening band around circumference.	Selection of at least 7 different sizes, mix or match				
9.3.43	**PLUGS, END CAP, LIQUID, Specialized, Kit:** Same as # 9.3.42 but vented or has drain valve, some with threaded end.					
9.3.44	**PLUGS, DOWELS, LIQUID, Assortment:** Long tapered round wood, rubber or plastic plugs from 1" to 5" dia. and 3" to 10" long	Assortment to satisfy 1" to 5" full range				
9.3.48	**DOME LID LOCK, Screw Clamp:** Tightens tank truck "manway" lids with center screw clamp; Adjustable width.	Set of four, mix or match				
9.3.49	**DOME LID LOCK, Spring Loaded:** Same as # 9.3.48 but spring-loaded side tongs self-adjust to width of manway lid.					

10. DECONTAMINATION

10.1 Ground Protection

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
10.1.1	**TARPS, PLASTIC, Ground Cover:** At least 12' x 12' each.	2				
10.1.2	**TARPS, CARRY-ALL, Small:** Approximately 6' x 6' small tarp with rope type handles at corners for contaminated equipment.	1				
10.1.3	**SHEETING, PLASTIC, ROLL, Heavy Duty:** Approximately 5' wide x 100' length, unfolds to approximately 20', water repellent polyethylene.	1 Roll				
10.1.4	**CATCH BASIN:** Approximately six feet square, 18" high, with rigid sides.	1	Might be part of the de-con shower system			
10.1.5	**SHOWER, GROSS DECONTAMINATION:** Homemade or commercial; water supply by garden hose or FD 1 ½" hose connection, fits inside of the "Catch Basin".	1				
10.1.6	**EYE WASH, Station:** Portable, approximately 7 gallon, with 0.4 gpm flow rate.	1	ANSI Z-358.1 (2004)			
10.1.7	**POOL, PORTABLE, LARGE:** Approximately 60 – 80 gallon capacity, collapsing or inflatable style	3				

10.2 Support Tools for Decontamination

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
10.2.1	**STOOLS, Portable:** Plastic, stackable or folding.	4				
10.2.2	**BRUSHES, LONG HANDLE, SOFT BRISTLE:** Toilet type: approximately 16" long, with plastic bristles	4				
10.2.4	**BRUSHES, SHORT HANDLE, SOFT BRISTLE, Rat Tail:** Carpenter or wood-worker type, synthetic bristles are best	2				
10.2.5	**BRUSHES, CAR WASH TYPE, Long Handle:** Soft bristled wand type brush, approximate extendable length to 3 feet, may come with garden hose connection.	2				
10.2.6	**SPONGE, SET:** Approximately 3' x 5" to 4" x 6"	Set of Four				
10.2.7	**TOWELS, ABSORBANT, DRYING:** Commercial laundry towels, utility towels, cotton, approximately 20" x 40"	8	Cloth			
10.2.8	**TOWELS, ABSORBANT, DISPOSABLE:** Paper towels, usually in rolls.	1 Roll	Paper			
10.2.9	**BLANKETS, DISPOSABLE:**	4				
10.2.11	**CLOTHING, MODESTY:** Light weight disposable Tyvek style or equal, an array of different sizes, with booties	12 Sets				
10.2.12	**TRAFFIC CONES/DELINEATORS, Ordinary:** Minimum 18" high, fluorescent red.	Minimum of 6, mix or match				
10.2.13	**TRAFFIC CONES/DELINEATORS, Ordinary, Reflective:** Minimum 18" high, fluorescent red, with reflective bands					
10.2.15	**SOAP, SOFT, Hypoallergenic, Liquid:** Baby soap or camping	1 pint	Detergent Not Acceptable			
10.2.16	**CHEMICAL RESISTANT TAPE:** Approximately 2' wide in rolls of 50'; Similar to Duct Tape but has chemical resistant outer layer	2 Rolls				
10.2.17	**CLOTHING REMOVAL TOOLS:** Such as scissors, shears, etc.	1				
10.2.18	**PERSONAL PROPERTY TRACKING:** Kit To consist of property tracking forms, tags, receipts, sealable baggies, labels to document personal property collected (i.e. jewelry, wallets, pagers, cell phones, purses, documents, glasses)	Sufficient to manage 12 individuals minimum				

10.3 Water Supply, Distribution Tools

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
10.3.1	**ADAPTOR, 1 ½" to Garden Hose Reducer(s):**	2				
10.3.2	**MANIFOLD, HEAVY DUTY:** All metal construction with 1-1/2" female fire hose inlet coupling, and four to six ¾" garden hose discharge ball gates; Tested to 250 psi.	1 of either 10.3.2 Or				

10.3.3	**MANIFOLD, LIGHT DUTY:** Plastic PVC construction, and same as above.	10.3.3				
10.3.4	**HOSE, GARDEN:** 12' to 24' lengths	3 sections				
10.3.5	**HOSE GARDEN, SHUT-OFF, In Line:** Separate detachable ¼ turn valve.	3	Might be attached to Car Wash Brushes			
10.3.6	**WRENCH, HYDRANT, UNIVERSAL:**	1				
10.3.7	**APPLICATOR, NOZZLE, Garden type, Adjustable:**	2				
10.3.8	**APPLICATOR, PRESSURE, Garden Sprayer:** Hand pressurized pump sprayer for de-con solutions.	1				

10.4 Collection

Inv. #:	Item Name and Description	Requirement	Certification Or Standard	Type 1	Type 2	Type 3
10.4.1	**BUCKETS:** Ordinary plastic, 5 gallon capacity, with or without lids	4				
10.4.2	**BAGS, HEAVY DUTY YARD, Large:** 32" x 48" wide, 3 mil, 42 gallon capacity, with tie straps	10	Might be in rolls			
10.4.3	**BAGS, HEAVY DUTY YARD, Medium:** 28" x 36", 3 mil, 33 gallon capacity, with tie straps	10	Might be in rolls			
10.4.4	**DEBRIS COLLECTION UNIT:** Light weight polyethylene drum, 35 to 65 gallon capacity, or collapsible mylar drum liners.		49 CFR 173.3(c)			
10.4.5	**DRUM, CONTAINMENT UNIT, 85 to 95 Gallon:** Steel or polyethylene drum, removable bolt lid, for contaminated clothing collection		Minimum of TWO required, - - but - - Must have at least ONE of either 10.4.5 Or 10.4.6			
10.4.6	**DRUM, OVER-PACK UNIT, 110 Gallon:** Heavy duty polyethylene drum with screw lid.					
10.4.7	**DRUM, LINER, 85 to 95 Gallon:** Heavy duty polyethylene	10				

11. COMMUNICATIONS

11.1 Radio

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
11.1.1	**RADIO, PORTABLE, Intrinsically Safe (I.S.):** Walkie-Talkie hand-sets, NOT including battery (see #11.1.6 below for battery) UL or FM label must be attached to authenticate certification.	1 for each assigned member	Intrinsic to UL #913 Class I, II, III Division 1 Label must be on Walkie-Talkie	Must have	Must have	Must have
11.1.4	**RADIO, PORTABLE, In-Suit Communications:** Attachable hardware to item # 11.1.1, with boom mic (throat, bone, ear, or SCBA facepiece), earphone system, remote "Push-To-Talk" switch.	6 – Type I 4 – Type II		Must have	Must have	
11.1.6	**RADIO, PORTABLE, Interchangeable battery, Intrinsically Safe (I.S):**	2 for each portable unit	Must be compatible with I.S. Radio			

11.2 Cellular Phone

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
11.2.1	**PHONE, CELLULAR:** Priority access service capable; CPAS, BROADBAND, PCS and ROAMING enabled.	1 per Company	IEEE 1512.3 IEEE 269			

12. RESPIRATORY PROTECTION

12.1 Self-Contained

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
12.1.1	**SCBA, COMPLETE, 1 Hour Rating:** With bottle; NIOSH and NFPA certified for structural use.	1 for each assigned member	NFPA and NIOSH Label on frame		Must have	Must have
12.1.2	**SCBA, COMPLETE, WMD CBRN, 1 Hour Rating:** NFPA certified for structural use, and NIOSH certified for WMD CBRN use.	1 for each assigned member	NFPA and NIOSH CBRN Label on frame OR regulator	Must have		
12.1.3	**MASK, FULL-FACE, STRUCTURAL:** NFPA and NIOSH compliant for structural use.	1 for each assigned member	NFPA Structural NIOSH		Must have	Must have
12.1.4	**MASK, FULL-FACE, WMD CBRN:** NFPA certified for structural use, and NIOSH compliant for WMD CBRN use.	1 for each assigned member	NFPA Structural and NIOSH WMD CBRN	Must have		
12.1.7	**BOTTLE, Spare:** Replacement, same type and size	1 spare bottle for each assigned SCBA	DOT	Must have	Must have	Must have

12.2 Air Purifying Respirator

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
12.2.1	**MASK and UNIT, APR, INDUSTRIAL:** Single or dual cartridge style, certified for use in industrial chemical threats only.	1 for each assigned member	NIOSH	Must have		
12.2.2 **NOTE:**	**MASK and UNIT, APR, CBRN:** Single or dual cartridge style, certified for use in CBRN threats; Combination INDUSTRIAL and CBRN certified is acceptable for both # 12.2.1 and 12.2.2	1 for each assigned member	NIOSH CBRN Label on Canister	Must have		
12.2.5	**CARTRIDGES, APR or PAPR, INDUSTRIAL:** Cartridges certified ONLY for industrial chemical threats.	Multi-gas cartridge set for each APR	NIOSH	Must have		
12.2.6	**CARTRIDGES, APR or PAPR, CBRN:** Cartridges certified ONLY for WMD CBRN threats	CBRN cartridge set for each APR	NIOSH - CBRN	Must have		

13. TOOLS / OTHER

13.1 General Purpose, Hand Tools, Large

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
13.1.1	**SHOVEL, Round Point, Steel:** Long handle	1				
13.1.3	**SHOVEL, Square Point, Steel:** Long handle	1				
13.1.4	**SHOVEL, Square Point, Polypropylene plastic:** Or equal, long handle	1				
13.1.5	**SHOVEL, Scoop, Polypropylene plastic:** Or equal.	1				
13.1.6	**BROOM, Street, Stiff Polypropylene Bristle:** With handle.	1				
13.1.7	**DRUM "Up-Ender":**	1				
13.1.8	**HAMMER, Sledge:** 7 – 10 Lbs	1				
13.1.9	**BAR, WRECKING:** – 36" or >	1				
13.1.10	**COOLER, Rehydration:** 5 to 10 gallon, industrial quality	1				
13.1.11	**MEGAPHONE:** Battery operated, 16 watt, adjustable volume.	1				

13.1.12	**FIRST AID, Kit – Large:** Gauze pads, wipes, tape, ointments, bandages, splints, tourniquets, scissors, etc.	1 of each or combination kit	ANSI Z-308.1			
13.1.13	**FIRST AID, TRAUMA, Kit:** Resuscitator, airways, burn sheets, cervical collar, cold packs, eyewash, etc.					
13.1.14	**MEDICAL MONITORING, Kit:** Stethoscope, aneroid gage sphygmomanometer, thermometer unit, scale, individual documentation forms for Pre-entry baseline vitals.	1 Kit				
13.1.16	**ZONE MARKING, Kit:** Barrier tape in 1,000' rolls – yellow; red; Railroad Chalk Sticks red and yellow, powdered chalk yellow and red, 12 to 16 oz dispensers; Carpenter's crayons, yellow and red.	1 Kit – To Consist Of: Barrier Tape Yellow – 1000' ☐ Barrier Tape Red – 1000' ☐ Powder Chalk – Yellow ☐ Powder Chalk – Red ☐ Chalk Sticks – Yellow ☐ Chalk Sticks – Red ☐ Carpenter Crayons – Yellow ☐ Carpenter Crayons – Red ☐				
13.1.18	**SCOPE, Spotting:** Adjustable telephoto spotting scope or binoculars.	1				

13.2 General Purpose, Hand Tools, Small

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
13.2.1	**HAMMER, Dead Blow:** 36 to 45 oz.	1				
13.2.2	**HAMMER, Claw:** 16 to 24 oz.	1	Non-Sparking Acceptable (# 13.3.7)			
13.2.3	**HAMMER, Engineer:** 36 to 40 oz.	1	Non-Sparking Acceptable (# 13.3.8)			
13.2.4	**HAMMER, Ball Peen:** 8 to 16 oz.	1	Non-Sparking Acceptable (# 13.3.9)			
13.2.5	**SCREWDRIVER, CHISEL, KIT:** At least any 3 sizes of: Small, medium large, extra-large	1 Kit of 3 different	Non-Sparking Acceptable (# 13.3.10)			
13.2.6	**SCREWDRIVER, PHILLIPS, KIT:** At least any 3 of: # 1, #2, #3, #4.	1 Kit of 3 different	Non-Sparking Acceptable (# 13.3.11)			
13.2.7	**PLIERS, ORDINARY, Utility:** With square blunt end, any size	1	Non-Sparking Acceptable (# 13.3.12)			
13.2.8	**PLIERS, WIRE, Side Cutting:** May be incorporated with other pliers.	1	Non-Sparking Acceptable (# 13.3.13)			
13.2.9	**PLIERS, LONG-NOSE, Needle:** Between 7" to 10"	1	Non-Sparking Acceptable (# 13.3.14)			
13.2.10	**PLIERS, COMBINATION, Kit:**	1 Kit of 3 Different Types Or Sizes	Non-Sparking Acceptable (# 13.3.15)			
13.2.11	**PLIERS, LOCKING, Kit:** At least any 4 representing <u>four different types</u>: Adjustable chain, welding clamp, pipe clamp, curved jaw, straight jaw, long nosed, "C" clamp style, ultra-long "C" clamp style, or sliding bar.	1 Kit of 4	Non-Sparking Acceptable (# 13.3.16) Adjustable chain Welding clamp Pipe clamp Curved jaw Straight jaw Long nosed "C" clamp style Ultra-long "C" clamp style Sliding bar			
13.2.12	**WRENCH, ALLEN, Complete Set, English:** (Approx. 9 piece)	1 Kit				
13.2.13	**WRENCH, ALLEN, Complete Set, Metric:** (Approx. 9 piece)	1 Kit				
13.2.14	**WRENCH, CRESCENT, Adjustable, Kit:** At least any 2 of: 12" through 24"	1 Kit of 2	Non-Sparking Acceptable (# 13.3.18)			
13.2.16	**WRENCH, PIPE, Adjustable, Kit:** Any 2 of: House – 16"; Standard – 18"; Medium – 22"; Large – 28".	1 Kit of 2	Non-Sparking Acceptable (# 13.3.20)			
13.2.18	**WRENCH, UNIVERSAL, Bung Cap:** Should be able to function on 5 or more different bung cap designs.	1	Non-Sparking Acceptable (# 13.3.17)			
13.2.19	**WRENCH, COMBINATION, Ordinary, Kit:** (Open end-box end): Set of 10 minimum from 3/8" to 1 3/8".	1 Kit of 10	Non-Sparking Acceptable (# 13.3.22)			
13.2.23	**CHISEL, COLD, Standard or Hex:** ¾" to 1" x 12" long.	1 Chisel				

13.2.26	**PUNCH, PIN, Spring Loaded:**	1				
13.2.27	**TAPE, MEASURING, Retractable, Metal:** 24' min.	1				
13.2.28	**TAPE, MEASURING, Re-Wind, Non-Metallic:** Cloth, Tyvek, Plastic (non-conductive), 50 feet or longer.	1				
13.2.29	**KNIFE, PUTTY, Scraping:** Approx 2" wide	1	Non-Sparking Acceptable (# 13.3.26)			
13.2.30	**KNIFE, GENERAL UTILITY, Cutting:** Any type	1				
13.2.31	**SHEARS, Cutting:** Suitable to cut sheet metal, heavy carpet, thick plastic sheeting.	1	Non-Sparking Acceptable (# 13.3.27)			
13.2.32	**STRAPS, RATCHET, Tie down:** Approximately 1" x 20', 1000 lbs rating.	2	NOTE: Strapping in item # 9.3.17 may suffice.			
13.2.33	**STOP WATCH:**	1				

13.3 Special Purpose

Inv. #:	Item Name and Description	Requirement	Function, Certification Or Standard	Type 1	Type 2	Type 3
13.3.1-A	**GROUNDING, CABLE:** 3/16" carbon steel, 25' min., with either "C" clamp / screw bolt OR ¾" pin point type end clamps, at least 75' total.	75' minimum	Not less than 75' total. Separate lengths should not be less than 10'			
13.3.1-B	**GROUNDING, ROD:** Approximately 3/8" to ½" dia. x 4 to 6' length	1	Not less than 4'			
13.3.3	**VESTS, I.C.S., Haz-Mat Group:** For all HazMat Group positions.	1 Set	ANSI 107 and FIRESCOPE			
13.3.6	**NON-SPARKING, Hammer, Sledge:** 7 to 10 pound.	1				
13.3.7	**NON-SPARKING, HAMMER, Claw:** 16 to 24 oz.	1				
13.3.10	**NON-SPARKING, SCREWDRIVER, CHISEL, Kit:** Any 3 sizes of: Small, medium, large, extra-large.	1 Kit of 3 different				
13.3.11	**NON-SPARKING, SCREWDRIVER, PHILLIPS, Kit:** Any 3 sizes of: # 1, #2, #3, #4.	1 Kit of 3 different				
13.3.12	**NON-SPARKING, PLIERS, ORDINARY, Utility:** With square blunt end, any size.	1				
13.3.13	**NON-SPARKING, PLIERS, WIRE, Side Cutting:**	1				
13.3.14	**NON-SPARKING, PLIERS, LONG-NOSE, Needle:**	1				
13.3.17	**NON-SPARKING, WRENCH, BUNG, Universal:** Able to function on 5 or more different cap designs.	1				
13.3.18	**NON-SPARKING, WRENCH, CRESCENT, Adjustable, Kit:** Any 2 of the following: 12", 15", 22", 24".	1 Kit of 2				
13.3.20	**NON-SPARKING, WRENCH, PIPE, Adjustable, Kit:** Any 2 of: House – 16"; Standard – 18"; Medium – 22"; Large – 28".	1 Kit of 2				
13.3.26	**NON-SPARKING, KNIFE, PUTTY, Scraping:** 2" wide (Lexan plastic is acceptable)	1				
13.3.27	**NON-SPARKING, SHEARS, Cutting:** Suitable to cut sheet metal, heavy carpet, thick plastic sheeting.	1				
13.3.30	**REFRIGERATOR, UTILITY, Small:** Onboard response unit.	1				

APPENDIX B

FIRESCOPE Type 1, Type 2, & Type 3 Hazardous Materials Resource

Self-Evaluation Form – Training Records

Operational Identifier (three letters): MACS Agency Identifier (three letters):		Department Name:		Company Designation:	
Evaluated By::		Date of Evaluation:		OES Region Number:	
Location of Evaluation:		Resource TYPE: **(Enter 1, 2, or 3)**		Evaluation Result: **(Circle)**	**PASS** **FAIL**

NOTE: ***This Self-Evaluation Form is provided as a tool for an agency to conduct a training records assessment inspection in preparation of a Type 1, Type 2, or a Type 3 Fire & Rescue Hazardous Materials Resource inspection.***

NOTE: ***Please refer to the latest Edition of FIRESCOPE "Standardized Hazardous Materials Equipment List", APPENDIX G, "Hazardous Materials Company Types Explanation of Components", in particular Component "Personnel: Training & Staffing" for a complete description of the training requirements.***

NOTE: ***Select the appropriate column on the right-hand side that represents the haz-mat typing status to be achieved. Then follow that column down to the level of training that is required for the typing status:***

Section 14.1.1 "HAZ-MAT SPECIALIST – Weapons of Mass Destruction (HMS-WMD)"
- To capture the training documentation for a Type 1 Team.
Section 14.1.2 "HAZ-MAT SPECIALIST (HMS)"
- To capture the training documentation for a Type 2 Team.
Section 14.1.3 "HAZ-MAT TECHNICIAN (HMT)"
- To capture the training documentation for a Type 3 Team.

A clear box indicates the entry is required, and the minimum number of personnel is noted in the description to the left. Insert an integer indicating the number of personnel. A shaded box indicates the item is not required.

14. TRAINING RECORDS

14.1 Certified Training – Type 1

Inv. #	Item Name and Description	Requirement Hours	Requirement Staffing	Certification Or Standard	Type 1	Type 2	Type 3
14.1.1	**HAZ-MAT SPECIALIST-WEAPONS of MASS** **Baseline for Type 1 Team** *[In addition to the HMT and HMS training, each team member must be certified to this 24 hour WMD Hazardous Materials course as offered by California Specialized Training Institute or State Fire Marshal's Office, or equivalent. See OES Fire & Rescue Hazardous Materials Bulletin #2 for a list of acceptable equivalent WMD training courses. Certification for an acceptable WMD course can be verified by providing copies of certifying Letters of Qualifications, Course Final Exams, or copies of individual Certificates of Completion.]*	24 Hr	**7**	**CCR Title 19 2520(o)**			
a.	**TOTAL approximate number of personnel HMS-WMD Certified (Include ALL shifts) in**						
b.	**VERIFY Availability of SEVEN (7) HMS-WMD Training Records:** *[This is the number of HMS-*						
c.	**Certificates:** *Are verifying HMS Certificates to document training for seven employees*						

	NAME	HMT(✓)	HMS(✓)	WMD (✓)
NOTES: List NAMES on the HMS and WMD Certificates	1._____			
	2._____			
	3._____			
	4._____			
	5._____			
	6._____			
	7. _____			

14. TRAINING RECORDS

14.1 Certified Training – Type 2

Inv #	Item Name and Description	Requirement		Certification or Standard	Type 1	Type 2	Type 3
		Hours	Staffing				
14.1.2	**HAZ-MAT SPECIALIST (HMS),** **Baseline for Type 2 Team** *[In addition to the HMT training, each team member must be additionally certified to 80 hour Hazardous Materials Specialist course (240 hours total) as offered by California Specialized Training Institute or State Fire Marshal's Office]*	80 Hr	**5**	**CCR Title 19 2520(p-q)**			
a.	**TOTAL approximate number of personnel that are <u>HMS Certified</u> (Include ALL shifts) in**						
b.	**VERIFY Availability of FIVE (5) HMS Training Records:** *[This is the number of HMS*						
c.	**Certificates:** *Are verifying HMS Certificates to document training for <u>five employees</u>*						

	NAME	HMT(✓)	HMS(✓)
NOTES: List NAMES on the HMS Certificates	1 _____		
	2. _____		
	3 _____		
	4 _____		
	5. _____		

14. TRAINING RECORDS

14. TRAINING RECORDS

14.1 Certified Training – Type 3

Inv. #:	Item Name and Description	Requirement		Certification Or Standard	Type 1	Type 2	Type 3
		Hours	Staffing				
14.1.2	**HAZ-MAT TECHNICIAN (HMT),** **Baseline for Type 3 Team** *[Each team member must be certified to 160 hour Hazardous Materials Technician course as offered by California Specialized Training Institute or State Fire Marshal's Office]*	160 Hr	**5**	**CCR Title 19 2520(k-n)**			
a.	**TOTAL approximate number of personnel that are HMT Certified (Include ALL shifts) in your Department / JPA Program:**						
b.	**VERIFY Availability of FIVE (5) HMT Training Records:** *[This is the number of HMT Certified Employees that must be available for deployment of the Company]*						
c.	**Certificates:** *Are verifying HMT Certificates to document training for five employees available?*						

NOTES:
List NAMES on the HMT Certificates

NAME HMT(✓)

1._____

2._____

3._____

4._____

5._____

14. TRAINING RECORDS

14.2 Certified Training – Assistant Safety Officer

Inv. #	Item Name and Description	Requirement		Certification Or Standard	Type 1	Type 2	Type 3
		Hours	Staffing				
14.2.1	**ASSISTANT SAFETY OFFICER, Hazardous** **Baseline for All Teams:** *[Certify that at least ONE ASSIGNED MEMBER has been trained to CSTI A.S.O. or FIRESCOPE ICS-HM-222-5 (Assistant Safety Officer – Hazardous Materials), or equivalent].*	16	**1**	**CSTI ASO CCR 2520r - - or - - FIRESCOPE ICS HM-222-5**			
a.	**TOTAL approximate number of personnel ASO Certified (Include ALL shifts) in your**						
b.	**VERIFY Availability of ONE (1) HMS-ASO Training Record:** *[This is the number of HMS-*						
c.	**Certificates:** *Are verifying ASO Certificates to document training for one of the above noted* _____						

NOTES: List NAME on the ASO Certificate	NAME _____	A.S.O.(✓)

APPENDIX C

WMD Chemical Survey Instruments

CHART #1: WMD Chemical Survey / Monitoring Instruments and Agents Detected.

Data is derived from manufacturer's specifications, and from instrument testing results.

WMD Chemical Survey / Monitoring Instruments and Agents Detected			MODEL - INSTRUMENT	CAM	CAM FAM	RAID-1	E-CAM	I-CAM	Cam - 2	APD 2000	RAID-M	MiniCad II	ICAD	MiniRae 2000	ChemSentry 150C	AP2C	HazMatCad	HGVI	Sabre 4000	IMS 2000
Military Design.	Common Name	Chemical Name																		
NERVE AGENTS																				
GA	Tabun	Ethyl n,n-dimethylamidocyanophosphate		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GB	Sarin	Isopropylmethylphosphonofluoridate		+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
GD	Soman	Pinacolylmethylphosphonofluoridate		+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
GF	Cyclo-Sarin	O-Cyclohexylmethyl-fluorophosponate										+			+		+			
VX		S-(2-diisopropylaminoethyl)-ethylmethel phosphonothiolate		+		+		+	+	+	+				+	+	+	+	+	+
BLISTER AGENTS																				
H	Sulfur Mustard	Bis(2-Chloroethyl) Sulfide						+											+	
HD	Distilled Sulfur Mustard	Bis(2-Chloroethyl) Sulfide		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
HN	Nitrogen Mustard	Bis(2-Chloroethyl) ethylamine		+	+	+	+		+						+		+	+	+	
HT	Mustard	Bis-(2(2-chloroethylthio)ethyl)ether													+					
L	Lewisite	Chlorovinylarsine Dichoride				+			+		+		+							
HL		Mustard – Lewisite Mixture				+			+				+							
CX	Phosgene Oxime	Dichloroformoxime																		
PD	Sternite	Phenyldichloroarsine																		
ED	Dyke	Ethyldichloroarsine																		
MD	Methyl Dyke	Methyldichloroarsine																		
BLOOD AGENTS																				
AC / HCN	Hydrogen Cyanide	Hydrocyanic Acid			+	+	+		+		+		+		+		+	+	+	+
CK	Cyanogen Chloride	Chlorocyanogen											+						+	+
SA	Arsine	Arsenic Trihydride													+					
CHOKING / VOMITING AGENTS																				
CG	Phosgene	Carbonyl Chloride			+	+	+		+		+		+				+	+	+	+
DP	Diphosgene	Trichloromethyl Chloroformate																		
CL	Chlorine	Chlorine			+	+			+										+	+
DA	Clark I	Diphenylchloroarsine																		
DC	Clark II	Diphenylcyanoarsine																		
BZ	Oksilidin	3-Quinuclidinyl Benzilate																		
DM	Adamsite	Diphenylamineochloroarsine																		
INCAPACITATING AGENTS																				
OC	Pepper Spray	Capsaicin (Cyan)								+	+									
CS	Military Mace	O-chlorobenzylidene Malononitrile																		
CN	Mace	Chloroacetophenone																		
CS-CN																				

CNS		Chloroacetophenone (23%) and Chloropicrin (38%) in Chloroform (38%)																				
CNB		Chloroacetophenone (10%) in Benzene (45%) and Carbon Tetrachloride (45%)																				
CA	B B C	Bromobenzylcyanide																				

APPENDIX D

Printed and Electronic Reference Materials

CHART # 2: List of *Printed Database* Technical References

User Code	Reference Title – Printed DATABASE
PD-01	CHRIS Manual (3 volumes), U.S.C.G.
PD-02	Comprehensive Guide to Hazardous Properties of Chemical Substances (Patnaik)
PD-03	Condensed Chemical Dictionary (Hawleys)
PD-04	Condensed Chemical Dictionary (LEWIS)
PD-05	Dangerous Properties of Industrial Materials (SAX)
PD-06	Dictionary of Chemical Names & Synonyms (SYNAPSE)
PD-07	Crop Protection Handbook [previously called Farm Chemicals Handbook (MEISTER)] (also listed as a specialty reference)
PD-08	Fire Fighters' handbook of Hazardous Materials (Baker)
PD-09	Fire Hazard Properties of Flammable Liquids, Gases and Solids (NFPA 325)
PD-10	Handbook of Toxic and Hazardous Chemicals & Carcinogens (Sittig)
PD-11	Hazardous Chemicals Desk Reference (Lewis)
PD-12	Hazardous Materials Field Guide (Bevelacqua)
PD-13	Hazardous Materials Handbook (Pohanish)
PD-14	Merck Index (CHAPMAN – HALL)
PD-15	Pocket Guide to Chemical Hazards (NIOSH)
PD-16	Toxic and Hazardous Chemicals Safety Manual (ITI)
PD-17	Toxic Exposure Desk Reference (Cooper)
PD-18	ASTDR Toxicological Profiles (CRC Press – US Public Health Service)

CHART # 3: List of *Printed Guidebook Type* References

User Code	Reference Title – Printed GUIDEBOOK
PG-21	Emergency Action Guides (AAR)
PG-22	Emergency Care for Hazardous Materials Exposure
PG-23	Emergency Handling of Hazardous Materials (AAR)
PG-24	Emergency Response Guidebook (DOT, latest edition)
PG-25	Fire Protection Guide to Hazardous Materials (NFPA)
PG-26	First Responder's Pocket Guide to Hazardous Materials Emergency Response
PG-27	Hazardous Materials Data Section, Fire Protection Guide (NFPA 49)
PG-28	Hazardous Materials Injuries (Stutz)
PG-29	Haz-Mat Quick Guide (NFPA)
PG-30	Material Safety Data Sheets library (GENIUM)
PG-31	Material Safety Data Sheets library, other

CHART # 4: List of *Printed Specialty* References

User Code	Reference Title – Printed SPECIALTY
PS-41	Chemical Manufacturer's Directory of Trade Name Products (ASH)
PS-42	Clinical Handbook on Economic Poisons (USDHHS)
PS-43	Crop Protection Handbook [previously called Farm Chemicals Handbook (MEISTER)] (also listed as a technical reference)
PS-44	Fire Protection Guide to Hazardous Materials Reactions, Section 491M (NFPA)
PS-45	Gardner's Chemical Synonyms and Trade Names (ASH)
PS-46	Handbook of Reactive Chemical Hazards (BRETHERICK)
PS-47	Hazardous Chemical Spill Cleanup (Robinson)
PS-48	Medical Management of Biological Casualties (USAMRIID)
PS-49	Quick Selection Guide to Chemical Protective Clothing (Forsberg)
PS-50	Rapid Guide to Chemical Incompatibilities (Pohanish)
PS-51	Specialty Chemicals Source Book (SYNAPSE)
PS-52	Specialty Chemicals Source Book (SYNAPSE) (also listed as a specialty reference)
PS-53	Tank Car Manual (GATX)
PS-54	Guide to Occupational Exposure Values (ACGIH)
PS-55	Guide to Threshold Limit Values and Biological Indices (ACGIH)

CHART # 5: List of *Printed or Electronic Regulatory* References

User Code	Reference Title – Printed REGULATORY
PE -61	California Health and Safety Code
PE -62	Hazardous Materials Emergency Response Plan (Local Authority)
PE -63	Hazardous Materials Incident Contingency Plan (Cal-OES)
PE -65	NFPA Standard # 472, *Competence of Responders to Haz-Mat Incidents*
PE -66	NFPA Standard # 2112, *Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*
PE -67	NFPA Standard # 1975, *Station/Work Uniforms for Fire and Emergency Services*
PE -68	NFPA Standard # 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*
PE -69	NFPA Standard # 1991, *Vapor-Protective Ensembles for Hazardous Materials Emergencies*
PE -70	NFPA Standard # 1992, *Liquid Splash-Protective Clothing for Hazardous Materials Emergencies*
PE -71	NFPA Standard # 1994, *Protective Ensembles for First Responders to CBRN Terrorism Incidents*
PE -72	Title 19, CCR, California Code of Regulations, Hazardous Materials Training
PE -73	Title 8, CCR, California Code of Regulations, OSHA or Title 29, CFR (Code of Federal Regulations), - OSHA
PE -74	Title 49, CFR (Code of Federal Regulations), Transportation

CHART # 6: List of *Printed* WMD Chemical / Biological References

User Code	Reference Title – Printed WMD REFERENCES
PW-81	Bacteriological Warfare (Harris)
PW-82	Chem-Bio Handbook (JANE'S)
PW-83	Chemical and Biological Warfare Agents (Ellison)
PW-84	Chemical Warfare Agents: Toxicity at Low Levels (CRC)
PW-85	Emergency Action for Chemical and Biological Warfare Agents (Ellison)
PW-86	Guide to Germ Warfare
PW-87	Infectious Disease Handbook (West)
PW-88	Management of Chemical Warfare Agent Casualties (Sidell)
PW-89	Medical Management of Biological Casualties (USAMRIID)
PW-90	Medical Management of Chemical Casualties (Aberdeen Proving Ground)

CHART # 7: List of *Electronic Database* Software References

User Code	Reference Title – Electronic DATABASE Software
ED-101	CHRIS Volumes (U.S.C.G.)
ED-102	Condensed Chemical Dictionary (Hawleys)
ED-103	Cooper's Chemical Dictionary (COOPER)
ED-104	Dangerous Properties of Industrial Materials (SAX)
ED-105	Dictionary of Chemical Names & Synonyms (SYNAPSE)
ED-106	Crop Protection Handbook [previously called Farm Chemicals Handbook (MEISTER)] (also listed as a specialty reference)
ED-107	Hazardous Materials Handbook (Pohanish)
ED-108	Pocket Guide to Chemical Hazards (NIOSH)
ED-109	Merck Index (MERCK)
ED-110	ChemKnowledge (Micromedex) Formerly known as TOMES
ED-111	Integrated Risk Information System Database – IRIS (EPA)
ED-112	Pesticide Facts Database (EPA)
ED-113	Air Toxics Database (EPA)
ED-114	ASTDR Toxicological Profiles (CRC Press – US Public Health Service)
ED-115	Chemical Synonyms & Trade Names (Ash)
ED-116	HazMaster-G3; for computer, PalmOS, PocketPC, Linux (Pocket Mobility)
ED-117	HazGuide Chemical Explorer (Collection of ED-101, 108 and the ERG)

CHART # 8: List of *Electronic Guidebook* Software References

User Code	Reference Title – Electronic GUIDEBOOK Software
EG-121	Emergency Handling of Hazardous Materials (AAR)
EG-122	Emergency Response Guidebook (DOT)
EG-123	FastSearch (COLE PALMER)
EG-124	Fire Protection Guide to Hazardous Materials (NFPA)
EG-125	Handbook of Safety, Health, of Hazmat Substances (GENIUM)
EG-126	Haz-Mat Quick Guide (NFPA)
EG-127	Material Safety Data Sheets library (GENIUM)

CHART # 9: List of *Electronic Specialty* Software References

User Code	Reference Title – Electronic SPECIALTY Software
ES-131	Cooper's Toxic Exposure (LEWIS)
ES-132	Dictionary of Chemical Names and Synonyms (COLE PALMER)
ES-133	Dictionary of Environmental Health Safety (Wiley)
ES-134	Handbook of Industrial Chemical Additives (SYNAPSE)
ES-135	ChemKnowledge (Micromedex) – Formerly "TOMES"
ES-136	Handbook of Reactive Chemical Hazards (BRETHERICK)
ES-137	Crop Protection Handbook [previously called Farm Chemicals Handbook (MEISTER)] (also listed as a technical reference)

CHART # 10: List of *Electronic WMD* Software References

User Code	Reference Title – Electronic WMD Chemicals Software
EW-01	Cobra
EW-02	C-BAISS
EW-03	First Responder CHEM-BIO (Tempest Publishing)

APPENDIX E

Listing of Standards Agencies

CHART #11: Agencies, Standards, and Focus of Standards as cited or referenced within this SEL

Agency	Standard	Focus
UL Underwriters Laboratories Customer Service 1655 Scott Blvd. Santa Clara, CA, 95050 **Customerservice.sci@us.ul.com**	Standard #913:	***Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous Locations***: Class I, Div. I, Groups A,B,C,G Class II, Div. I, Groups E,F,G Class III, Div. I
	Standard #1604	***Standard For Safety For Electrical Equipment For use In Class I and II, Division 2, and Class III Hazardous (CLASSIFIED) Locations***
NFPA National Fire Protection Association 1 Batterymarch Park Quincy, MA, 02169 **.nfpa.org**	Standard 70 **(Added 2012)**	***National Electric Code (NEC)***
	Standard 77 **(Added 2012)**	***Recommended Practice on Static Electricity***
	Standard 472 **(Added 2012)**	***Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents***
	Standard 704	***Standard System for the Identification of the Hazards of Materials for Emergency Response***
	Standard 1971	***Protective Ensemble for structural Fire Fighting***
	Standard 1975 **(Added 2012)**	***Station / Work Uniforms for Emergency Services***
	Standard 2977 **(Added 2012)**	***Protective Clothing and Equipment for Wildland Fire Fighting***
	Standard 1981	***Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services***
	Standard 1991	***Vapor-Protective Ensembles for Hazardous Materials Emergencies***
	Standard 1992	***Liquid Splash-Protective Ensembles for Hazardous Materials Emergencies***
	Standard 1994	***Protective Ensembles for Chemical/Biological Terrorism Incidents***
	Standard 2112	***Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire***
OSHA Occupational Safety and Health Administration 200 Constitution Avenue, NW Washington, DC, 20210 **www.osha.gov**	29 CFR 1910.119	**(Encapsulating spreadable powders)**
	42 CFR 84 (PUBLIC HEALTH)	**(part about SCBA)**
	42 CFR 84 (PUBLIC HEALTH)	**(part about APR)**
	42 CFR 84 (PUBLIC HEALTH)	**(part about PAPR)**
NIOSH National Institute for Occupational Safety and Health 200 Independence Ave, SW Washington, DC, 20201 **www.cdc.gov/niosh/**	CBRN – SCBA	**Self-Contained Breathing Apparatus – Approved**
	CBRN – APR	**Air Purifying Respirators - Approved**
EPA Environmental Protection Agency 1200 Pennsylvania Avenue, NW Washington, DC, 20460 **www.epa.gov**	40 CFR 261	**(Chlorine free ion contamination threshold limit)**
	Class 2000 Protocol "B"	**(About sterility, cleanliness)**
	RCRA Burial Regulations	**(About Encapsulating substances approved for burial)**
	40 CFR 300.915(g)	**(About Absorbant systems)**

FDA Food and Drug Administration 5600 Fishers Lane Rockville, MD, 20857 **www.fda.gov**	Food	**(About cleanliness of packaged tool items)**
OPA Oil Pollution Act (EPA)	OPA-90	**(About Calm Water Booms, containment0**
DOT Department of Transportation 400 7th Street, SW Washington, DC, 20590 **www.dot.gov**	DOT 3A480	**(Certification of transportation containers for pressure vessels)**
	49 CFR 173.3©	**(Packaging and exemptions)**
	49 CFR 178	**(Specifications for cylinders)**
ICAO International Civil Aviation Organization 999 University Street Montreal, Quebec, H3C 5H7 **www.icao.int**	ICAO # 602	***Packing Guidelines for Infectious Substances***
IEEE Institute of Electrical and Electronic Engineers 445 Hoes Lane Piscataway, new Jersey, 08854 **www.ieee.org**	IEEE 1512.3	***Standard for Hazardous Material Incident Management Message Sets for Use by Emergency Management Centers***,
	IEEE 629	***Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets***
ASTM American Society for the Testing of Materials 100 Barr Harbor Drive West Conshohocken, PA, 19428 **www.astm.org**	F-1052	***Test Method for Pressure Testing Vapor Protective Ensembles***
	F-1052	**(About Pressure Test Kit Performance for Encapsulating Chemical Protective Clothing)**
	F-1563 **(Added 2012)**	***Standard Specification for Tools to Squeeze-off Polyethylene (PE) Gas Pipe or Tubing***
ANSI American National Standards Institute 1819 L Street, NW Suite 600 Washington, DC, 20036 **www.ansi.org**	107	**(About ICS Vests, reflectivity)**
	N-13.5; N-42.20; N-42.33	**(About Dosimeter Performance)**
	S-1.4	**(About sound sensing, ultra-sonic noise)**
	S-3.19	**(About Ear Muffs, dB ratings)**
	Z-41	**(About work boots, safety boots)**
	Z-87.1	**(About goggles, eye protection)**
	Z-89.1	**(About Helmets)**
	Z-308.1	**(About first aid kits)**
	Z-358.1	**(About Portable Emergency Eye Wash Stations)**

APPENDIX F

Hazardous Materials Company Types and Minimum Standards

This chart is also part of the Field Operations Guide (FOG)

Components	Type 1	Type 2	Type 3
Field Testing	Known Chemicals	Known Chemicals	Known Chemicals
	Unknown Chemicals	Unknown Chemicals	
	WMD Chem / Bio		
Air Monitoring	Combustible Gas Oxygen Carbon Monoxide Hydrogen Sulfide	Combustible Gas Oxygen Carbon Monoxide Hydrogen Sulfide	Combustible Gas Oxygen Carbon Monoxide Hydrogen Sulfide
	Specialty Gases Hydrocarbon Liquid Vapors	Specialty Gases Hydrocarbon Liquid Vapors	
	WMD Chem / Bio		
Sampling: Capturing Labeling Evidence Collection	Known Chemicals	Known Chemicals	Known Chemicals
	Unknown Chemicals	Unknown Chemicals	
	WMD Chem / Bio		
Radiation Monitoring and Detection	Gamma	Gamma	Gamma
	Beta	Beta	Beta
	Alpha; Radionuclide		
Chemical Protective Clothing: Ensembles	Liquid-Splash Protective	Liquid-Splash Protective	Liquid-Splash Protective
	Vapor Protective	Vapor Protective	
	Flash Fire Vapor Protective	Flash Fire Vapor Protective	
	WMD Chem / Bio Vapor Protective		
	WMD Chem / Bio Liquid Splash Protective		
Chemical Protective Clothing: Gloves - Boots	NFPA Compliant Replacement	NFPA Compliant Replacement	NFPA Compliant Replacement
	Hi-Temp. Protective Gloves Cryogenic Protective Gloves	Hi-Temp. Protective Gloves Cryogenic Protective Gloves	

Components	Type 1	Type 2	Type 3
Technical Reference	Printed and Electronic	Printed and Electronic	Printed and Electronic
	Plume Air Modeling, Map Overlays	Plume Air Modeling, Map Overlays	
	WMD Chem / Bio Sources		
Special Capabilities	Heat Sensing	Heat Sensing	
	Night Vision	Night Vision	
	Digital Photo	Digital Photo	
	Digital Video		
Intervention	Diking, Damming, Absorption	Diking, Damming, Absorption	Diking, Damming, Absorption
	Liquid, Solid Leak Intervention	Liquid, Solid Leak Intervention	Liquid, Solid Leak Intervention
	Vapor Leak Intervention	Vapor Leak Intervention	
	Neutralization, Plugging, Patching	Neutralization, Plugging, Patching	
	WMD Chem / Bio Spill Containment		
Decontamination	Known Chemicals	Known Chemicals	Known Chemicals
	Unknown Chemicals	Unknown Chemicals	
	WMD Chem / Bio		
Communications	In-Suit	In-Suit	In-Suit
	Cell Phone	Cell Phone	Cell Phone
	Wireless Fax, Copy, Web Access	Wireless Fax, Copy, Web Access	
Respiratory Protection	SCBA	SCBA	SCBA
	Umbilical Air Support (Changed to Optional 2006)		
	APR or PAPR, WMD Chem / Bio Compliant		
Personnel Training & Staffing	Haz Mat Specialist ❷ WMD Chem / Bio ❸ 7 ❹	Haz Mat Specialist ❷ 5 ❹	Haz Mat Technician ❶ 5 ❹

❶ All company personnel must meet the hazardous materials training requirements for Technician in CCR Title 19, Section 2520
❷ All company personnel must meet the hazardous materials training requirements for Specialist in CCR Title 19, Section 2520
❸ All company personnel must meet the training requirements for Hazardous Materials/Weapons of Mass Destruction: Terrorism for Technician/Specialist. Training shall be, at a minimum, meet or be equivalent to the requirements found in Title 19 CCR 2520(ff).
❹ One company member trained to minimum level of Assistant Safety Officer Hazmat (ICS-HM-222-5) and shall meet or be equivalent to the requirements found in Title 19 CCR 2520(r).

APPENDIX G

Hazardous Materials Company Types Explanation of Components

The Criteria column explains the overall objective or minimum requirements for each component. The Performance column explains the specific level of minimum performance to be demonstrated by that type of company. All performance levels for the Type 3 company are the minimum standard. A Type 2 company must, in addition to the Type 3 level of performance, meet all Type 2 performances. A Type 1 - company must, in addition to the Type 2 and Type 3 level of performance, meet all Type 1 performances.

Component				
Field-Testing	The identification of chemical substances using a variety of sources, which may include: Printed and electronic reference resources, material safety data sheets, field testing kits, specific chemical testing kits, chemical testing strips, and data equated from detection devices and air monitoring sources that should assist in identifying associated chemical and physical properties.	**1.2**	**3**	Known Chemicals
		1.2	**2**	Unknown Chemicals
		1.2 and 1.5	**1**	Known or Suspect WMD (Chem / Bio) Substances (powder, liquid, vapor)
Air Monitoring	The use of electronic devices to detect the presence of known or unknown gases or vapors. The basics begin with the ability to provide the standard confined space readings (oxygen (%); flammable atmosphere (LEL); carbon monoxide (ppm), and hydrogen sulfide (ppm). Advanced detection and monitoring may include instruments that differentiate between two or more flammable vapors, and may directly identify by name a specific flammable or toxic vapor. Identify toxic substances and aromatic hydrocarbons, in parts-per-million (ppm) readings. The employment of other instruments such as WMD (Chem / Bio) detection instruments.	**2.1**	**3**	Combustible Vapors; Oxygen Percent, Carbon Monoxide; Hydrogen Sulfide
		2.2 and 2.3	**2**	Specialty gas capability; Toxic vapor detection in ppm; Complex liquid hydrocarbon vapor
		2.4,	**1**	WMD (Chem / Bio) liquid, powder, vapor
Sampling	The three criteria tiers are known chemicals, unknown chemicals, and WMD (Chem / Bio) substances. Standard evidence collection protocols required for each include: Capturing and collection, containerizing and labeling, preparation for transportation, evidence collection and lab analysis.	**3.1 and 3.2**	**3**	Known Chemicals
			2	Unknown Chemicals
			1	WMD (Chem / Bio)
Radiation Monitoring / Detection	The application of devices specifically for the detection of radiation sources. This process includes: Being able to differentiate between types of radiation, interpret readings from the device, employ a field monitoring plan to conduct geographical survey search of suspect radiological source (s) or contamination spread, ability to conduct whole body hygiene survey, insure all members of survey teams are equipped with accumulative dose reading instruments (dosimeters).	**4.1**	**3**	Beta / Gamma Detection Geographical Survey Hygiene Survey Dosimetry
		4.1	**2**	Same as Type 3
		4.2	**1**	Alpha / Radionuclide Detection
Protective Clothing: Ensemble	Chemical protective clothing (CPC) includes complete ensembles (suit, boots, gloves), and may incorporate various configurations (encapsulating, non-encapsulating, jumpsuit, multi-piece) depending upon the level of protection needed. Levels of protection are: Vapor Protective, Flash Fire Vapor Protective, WMD (Chem / Bio) Vapor Protective, Liquid-Splash Protective, and (Chem / Bio) Liquid Splash Protective. All levels of protection must be compliant with NFPA standards # 1991 and # 1992. Flash fire protection and (Chem / Bio) protection are options within each NFPA standard that can be added to any basic 1991 or 1992 suit.	**5.2**	**3**	Liquid-Splash Protective
		5.1	**2**	Vapor Protective Flash Fire Vapor Protective
		5.1 and 5.2	**1**	WMD (Chem / Bio) Vapor Protective WMD (Chem / Bio) Liquid Splash Protective
Protective Clothing; Gloves and Boots	In addition to chemical protective gloves that are part of the CPC ensemble, sufficient inventory of NFPA compliant gloves and boots must be kept for CPC ensemble replacement purposes. Additionally, a variety of specialty gloves shall be considered (Cryogenic, Ultra-High temperatures). **(Rev2012)**	**6.1**	**3**	NFPA Compliant Glove an Boot Replacement inventory
		6.1	**2**	High Temperature Protective Gloves Cryogenic Protective Gloves
		6.1	**1**	**(Rev2012)**

Technical Reference	Access to and use of various databases, chemical substance data depositories, and other guidelines and material safety data sheets, either in print format, electronic format, stand-alone computer programs, or data available via telecommunications. This includes the interpretation of data collected from electronic devices and chemical testing procedures.	**7.1, 7.2**	**3**	Printed and Electronic
		7.3	**2**	Plume Air Modeling; Map Overlays
		7.1; 7.2	**1**	WMD (Chem / Bio)
Special Capabilities	Additional capabilities that would augment a particular level or type of company, and would provide beneficial assets utilizing specialty equipment. Significant categories that would augment functions are the inclusion of night vision capabilities, heat sensing or heat monitoring equipment, and digital photo and video		**3**	-0-
		8.1	**2**	Heat Sensing, Night Vision, Digital Photo
		8.1	**1**	Digital Video
Intervention	Employment of mechanical means of intervention and control such as plugging, patching, off-loading, and tank stabilization. Environmental means such as absorption, dams, dykes and booms. Chemical means such as neutralization and encapsulation. Intermediate capabilities should include large leak intervention. Advanced capabilities should include ability to intervene and control incidents involving WMD (Chem / Bio) substances.	**9.2**	**3**	Diking, Damming, Absorption
		9.1, 9.3	**2**	Neutralization, Plugging, Patching; Large Leak Intervention
			1	WMD (Chem / Bio) Spill Containment
Decontamination: Primary	Each company type must be capable of providing primary decontamination for members of an entry team. Primary decontamination must be appropriate for the typing level of that team. A Type 3 company must be capable of providing DECON for known chemical substances for not less than liquid splash contact. Type 2 company must be capable of providing DECON for unknown chemical substances for not less than vapor threat contact. Type 1 company must be capable of providing DECON for unknown chemicals as well as WMD (Chem / Bio) liquid and vapor threat contact.	**10.1 10.2**	**3**	Known Chemicals
		10.1 10.2	**2**	Unknown Chemicals
			1	WMD (Chem / Bio)
Communications	Personnel utilizing chemical, vapor or liquid splash protective clothing, shall utilize and maintain communications of sufficient type and quality as to provide for safe communications between the entry team leader, members of the team, and one another. Other communication devices include: Cellular phones. Intermediate and advanced capability should include wireless transmittal for the purpose of verbal, data transfer, and imagery exchange, and access to the Internet.	**11.1 11.2**	**3**	In-Suit Comm.; Cell Phone
		7.4 11.2	**2**	Wireless Fax, Copy, WEB Access
		7.4 11.2	**1**	Wireless Fax, Copy, WEB Access
Respiratory Protection	Self-contained breathing apparatus (SCBA) must be provided for each member of the team. To augment advanced, large scale, and/or long-term intervention activities, utilization of an umbilical air system should be considered. This also can be used to augment breathing air, suit cooling, and work in confined spaces. Air purifying respirators (APR) or powered air purifying respirators (PAPR) certified by NIOSH for (Chem / Bio) threat atmospheres should be considered for advanced capabilities.	**12.1**	**3**	SCBA
		12.1	**2**	SCBA
		12.1 12.2	**1**	SCBA and APR for (Chem / Bio)
Personnel: Training & Staffing	All personnel of a Type 3 company must meet the hazardous materials training requirements for Technician in CCR Title 19, Section 2520. All personnel of a Type 2 and Type 1 company must meet the training requirements for Specialist in CCR Title 19, Section 2520. All personnel of a Type 1 company must further be trained to WMD (Chem / Bio) equivalent to the 16-hour CSTI curricula "Technician Specialist Terrorism". CGC 8574.19-21		**3**	HMT (160 Hour) – 5 personnel
			2	HMS (240 Hour) – 5 personnel
			1	HMS + (Chem / Bio) (16 Hour) - 7 personnel