

FIRESCOPE HAZARDOUS MATERIALS MINIMUM EQUIPMENT LIST

EDITION 2022



TABLE OF CONTENTS

PART 1: INTRODUCTION 1

| | |
|--|-----------|
| FORWARD..... | 1 |
| AUTHORITY..... | 1 |
| OBJECTIVE and PURPOSE..... | 1 |
| MINIMUM STATE STANDARD..... | 2 |
| INDUSTRY STANDARDS..... | 2 |
| INSTRUCTIONS FOR USE..... | 3 |
| CATEGORIES:..... | 3 |
| INVENTORY NUMBERING:..... | 4 |
| ITEM NAME and DESCRIPTION:..... | 4 |
| COMMENTS:..... | 5 |
| REQUIRED and OPTIONAL ITEMS:..... | 6 |
| PERSONAL PROTECTIVE EQUIPMENT (PPE)..... | 6 |
| BREATHING APPARATUS PERFORMANCE CRITERIA..... | 8 |
| UNKNOWN ENVIRONMENT:..... | 8 |
| CHEMICAL VAPOR/GAS:..... | 8 |
| CHEMICAL AEROSOL:..... | 8 |
| CHEMICAL LIQUID:..... | 8 |
| CHEMICAL PARTICULATES:..... | 8 |
| BIOLOGICAL AIRBORNE:..... | 8 |
| BIOLOGICAL LIQUID-BORNE:..... | 8 |
| BIOLOGICAL PARTICULATE:..... | 8 |
| RADIOLOGICAL PARTICULATE:..... | 9 |
| RADIOLOGICAL PENETRATING:..... | 9 |
| THERMAL or FLASH FIRE:..... | 9 |
| BREATHING APPARATUS TYPES..... | 9 |
| SELF-CONTAINED BREATHING APPARATUS:..... | 9 |
| AIR-PURIFYING RESPIRATOR:..... | 9 |
| POWERED AIR-PURIFYING RESPIRATOR:..... | 10 |
| CHEMICAL PROTECTIVE CLOTHING..... | 10 |
| PROTECTIVE CLOTHING STANDARDS:..... | 10 |
| THREAT BASED PERFORMANCE:..... | 11 |
| PROTECTIVE CLOTHING TERMS:..... | 12 |
| SELF-EVALUATION FORMS..... | 12 |
| APPENDIX A – EQUIPMENT SELF-EVALUATION..... | 12 |
| APPENDIX B – TRAINING RECORDS SELF-EVALUATION..... | 12 |

PART 2: LIST OF EQUIPMENT 14

| | |
|--|-----------|
| 1. FIELD TESTING and DETECTION..... | 14 |
| 1.1 Color Change Analysis..... | 14 |
| 1.2 Qualitative Analysis Kits..... | 15 |
| 1.3 Electronic Qualitative Analysis..... | 16 |
| 1.4 Colorimetric Analysis..... | 16 |

| | | |
|------------|--|-----------|
| 1.5 | WMD Biological Detection..... | 17 |
| 2. | AIR MONITORING..... | 17 |
| 2.1 | Confined Space Monitoring..... | 17 |
| 2.2 | Multiple Gas Monitoring, Toxic..... | 18 |
| 2.3 | Specialty Gas Capability..... | 18 |
| 2.4 | WMD Chemical Dedicated Equipment..... | 19 |
| 3. | SAMPLING..... | 20 |
| 3.1 | Substance Capture..... | 20 |
| 3.2 | Bulk Liquid Transfer – Mechanical..... | 22 |
| 3.3 | Containerization, Labeling, Documentation..... | 23 |
| 3.4 | Transportation..... | 24 |
| 4. | RADIATION MONITORING/DETECTION..... | 24 |
| 4.1 | Gamma, Beta, and Alpha Detection and Survey..... | 25 |
| 4.2 | Radionuclide Detection..... | 26 |
| 4.3 | Dosimeters..... | 26 |
| 5. | CHEMICAL PROTECTIVE CLOTHING..... | 26 |
| 5.1 | Vapor Protective..... | 27 |
| 5.2 | Liquid Splash Protective..... | 27 |
| 5.3 | Limited Use Protective..... | 27 |
| 6. | ANCILLARY PROTECTIVE EQUIPMENT..... | 28 |
| 6.1 | Hand Protection..... | 28 |
| 6.2 | Foot Protection..... | 29 |
| 6.3 | Head and Eye Protection..... | 29 |
| 6.4 | Support Systems..... | 30 |
| 7. | TECHNICAL REFERENCE..... | 30 |
| 7.1 | Printed References, Industrial and WMD Chemicals..... | 31 |
| 7.2 | Electronic References, Industrial and WMD Chemicals..... | 31 |
| 7.3 | Plume Air Modeling, Program Support..... | 32 |
| 7.4 | Computer, Support Hardware, Software..... | 32 |
| 8. | SPECIAL CAPABILITIES..... | 33 |
| 8.1 | Advanced Technologies; Vision, Heat, Sound..... | 33 |
| 8.2 | Weather Monitoring..... | 35 |
| 9. | INTERVENTION..... | 35 |
| 9.1 | Chemical Intervention..... | 35 |
| 9.2 | Environmental Intervention..... | 36 |
| 9.3 | Mechanical Intervention..... | 37 |
| 10. | DECONTAMINATION..... | 41 |
| 10.1 | Ground Protection..... | 41 |
| 10.2 | Support Tools for Decontamination..... | 42 |
| 10.3 | Water Supply, Distribution Tools..... | 43 |
| 10.4 | Collection..... | 44 |

| | | |
|------------|--|-----------|
| 11. | COMMUNICATIONS..... | 44 |
| 11.1 | Radio..... | 44 |
| 11.2 | Voice and Data Communication..... | 45 |
| 12. | RESPIRATORY PROTECTION..... | 46 |
| 12.1 | Self-Contained Breathing Apparatus (SCBA)..... | 46 |
| 12.2 | Air Purifying Respirator..... | 47 |
| 13. | TOOLS / OTHER..... | 48 |
| 13.1 | General Purpose, Hand Tools, Large..... | 48 |
| 13.2 | General Purpose, Hand Tools, Small..... | 48 |
| 13.3 | Special Purpose Hand Tools – Non-Sparking..... | 50 |
| 13.4 | Miscellaneous Equipment..... | 52 |

PART 3: APPENDIX SECTION 54

| | |
|--|-----------|
| APPENDIX A..... | 55 |
| Self-Evaluation Form – Equipment, Tools, Kits..... | 55 |
| APPENDIX B..... | 75 |
| Self-Evaluation Form – Training Records..... | 75 |
| APPENDIX C..... | 78 |
| Listing of Standards Agencies..... | 78 |
| APPENDIX D..... | 80 |
| Hazardous Materials Company Types and Minimum Standards..... | 80 |
| APPENDIX E..... | 82 |
| Hazardous Materials Company Types Explanation of Components..... | 82 |

TABLES AND CHARTS

| | |
|--|----|
| Table 1: Categories and sub-Categories of the MEL | 3 |
| Table 2: Inventory Number Explanation | 4 |
| Table 3: Example of Inventory Name and Description | 4 |
| Table 4: Examples of Company Type and Items Required, and Explanation | 5 |
| Table 5: Display of Standard or Certification Requirement for Selected Items | 6 |
| Table 6: Breathing Apparatus Standards Associated with Performance Criteria | 7 |
| Table 7: Example of NIOSH CBRN label that must be affixed to the SCBA frame. | 9 |
| Table 8: Example of NIOSH CBRN label that must be affixed to the APR canister. | 9 |
| Table 9: Chemical Protective Clothing Standards Associated with Example Performance Criteria | 11 |

FIRESCOPE HAZARDOUS MATERIALS **MINIMUM EQUIPMENT LIST**

PART 1: INTRODUCTION

FORWARD

This California FIRESCOPE Minimum Equipment List (MEL) is provided for the purpose of being used as a tool by the emergency response community in California. First responders should review this MEL 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 Minimum Equipment List do not assume liability for the performance of any equipment item mentioned in the MEL. Inclusion in the MEL does not imply 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. This MEL 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 MEL is a reference document only, and should be used as a guide in an attempt to meet the minimum level of standardization.

AUTHORITY

This MEL is a publication of California FIRESCOPE. This edition of the MEL 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 MEL is 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 MEL by emergency response agencies is intended to increase efficiency, safety and incident stabilization in the course of hazardous materials response company mutual aid.

The purpose of this MEL 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 MEL is predicated upon the evolution of hazardous materials response intervention, the history of popularity and utility, and need as demonstrated by the maintenance of local agency inventories. This master list serves as the basis for a sourcing document.

- Required items are identified to accomplish minimum functions of a mutual aid HazMat team.
- Suggested items are additional strongly recommended items that have been identified to enhance the capabilities to match common HazMat operations.
- Optional items are additional items that have been found to be useful to broaden the scope of response capability.

- 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 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 will also identify optional hazardous materials equipment items that could 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, the employer or the employee) must comply. The MEL will also identify those standards that provide a minimum level of performance of the item, tool, or piece of equipment (i.e., the manufacturer).

- f. 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, the employer or the employee) must comply. The MEL will also identify 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 MEL represents the establishment of a recognized state standard. It shall further serve as a minimum recommended inventory for each of the three **Types** of hazardous materials companies (**HazMat Type 1**, **HazMat Type 2**, **HazMat Type 3**) as described in **Appendix D**, “*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 represent a minimum equipment standard. Local jurisdictions may elect to exceed this minimum equipment standard. To further ensure and encourage attempts at uniformity and standardization, additional equipment items are listed in this MEL and are noted as being suggested or optional. See **REQUIRED, SUGGESTED, and OPTIONAL ITEMS** section of this MEL for further explanation. Note that the type columns will be color coordinated.

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

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.

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

| Cat . # | Main Category | Includes Sub-Categories |
|---------|---|--|
| 1 | Field Testing and Detection | <input type="checkbox"/> Color Change Analysis - Non-Electronic <input type="checkbox"/> Qualitative Analysis, Kits - Non-Electronic <input type="checkbox"/> Qualitative Analysis, Kits – Electronic <input type="checkbox"/> Colorimetric Analysis - Non-Electronic <input type="checkbox"/> WMD Biological Detection - Electronic |
| 2 | Air Monitoring / Survey | <input type="checkbox"/> Confined Space Monitoring <input type="checkbox"/> Multiple Gas Monitoring, Toxic <input type="checkbox"/> Specialty Gas Capability <input type="checkbox"/> WMD Chemical Detection Capability |
| 3 | Sampling | <input type="checkbox"/> Substance Capture <input type="checkbox"/> Bulk Liquid Transfer - Mechanical <input type="checkbox"/> Containerization, Labeling, Documentation <input type="checkbox"/> Transportation |
| 4 | Radiation Monitoring and Detection | <input type="checkbox"/> Gamma, Beta, Alpha Detection and Survey <input type="checkbox"/> Radionuclide Detection <input type="checkbox"/> Dosimeters |
| 5 | Chemical Protective Clothing | <input type="checkbox"/> Vapor Protective <input type="checkbox"/> Liquid Splash Protective <input type="checkbox"/> Limited Use Protective |
| 6 | Ancillary Protective Equipment | <input type="checkbox"/> Hand Protection <input type="checkbox"/> Foot Protection <input type="checkbox"/> Head and Eye Protection <input type="checkbox"/> Support Systems |

- ☐ 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 MEL where appropriate. Adherence to regulations, standards, certification requirements, testing, and product listings provide 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 MEL as a minimum.

INSTRUCTIONS FOR USE

CATEGORIES:

| | | |
|----|--------------------------------|---|
| 7 | Technical References | <input type="checkbox"/> Printed References, Industrial & WMD Chemicals <input type="checkbox"/> Electronic References, Industrial & WMD Chemicals <input type="checkbox"/> Plume Air Monitoring, Program Support <input type="checkbox"/> Computer, Support Hardware and Software |
| 8 | Special Capabilities | <input type="checkbox"/> Advanced Technologies; Vision, Heat, Sound <input type="checkbox"/> Advanced Technologies; Weather, GPS |
| 9 | Intervention | <input type="checkbox"/> Chemical Intervention <input type="checkbox"/> Environmental Intervention <input type="checkbox"/> Mechanical Intervention |
| 10 | Decontamination | <input type="checkbox"/> Ground Protection <input type="checkbox"/> Support Tools for Decontamination <input type="checkbox"/> Water Supply, Distribution Tools <input type="checkbox"/> Collection |
| 11 | Communications | <input type="checkbox"/> Radio <input type="checkbox"/> Cellular Phone |
| 12 | Respiratory Protections | <input type="checkbox"/> Self-Contained <input type="checkbox"/> Air Purifying |
| 13 | Tools / Other | <input type="checkbox"/> General Purpose, Hand Tools - Large <input type="checkbox"/> General Purpose, Hand Tools - Small <input type="checkbox"/> Special Purpose, Hand Tools, Non-Sparking <input type="checkbox"/> Miscellaneous Equipment |

Table 1: Categories and sub-Categories of the MEL

This Minimum 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 D**.

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.

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 MEL. 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 MEL inventory number, it will be easy to determine what category and what sub-category that tool or item falls under.

PART TWO of this MEL 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 2**.

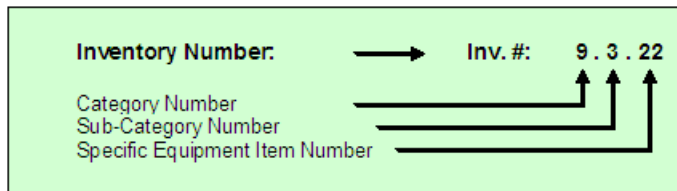


Table 2: Inventory Number Explanation

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 MEL 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 MEL 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 3** 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.

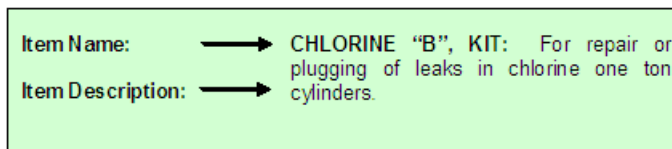


Table 3: Example of Inventory Name and Description

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

MINIMUM REQUIREMENT:

In the MEL, there is a column marked "**Required Minimum**". This column is used to indicate the specific requirements that must be met for a particular item or tool (i.e., "One Kit, complete or One system"). 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, or a specific amount for a team). If the item is indicated as being **Required** for a specific company type, it must be included in the inventory in an amount not less than that shown in this column unless explained otherwise. Items that are required are also highlighted on a pink color background. If an item is indicated as **Suggested** it is strongly recommended that the item or quantity be obtained and will be highlighted in orange color background. Note that "suggested" items are not required. However, items of this

nature are considered industry best practice, and plan to be moved into the required column in future revisions. If the item is indicated as being **Optional** 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. Examples are illustrated in **Table 4**.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|---|--------|--------|--------|
| 1.3.1 | GAS CHROMATOGRAPHY-MASS SPECTROMETRY: GC/MS. Capable of separating mixtures and trace detection. | One system | Either 1.3.1 or 1.3.2 satisfy requirement | 0 | 0 | |
| 1.3.2 | HIGH PRESSURE MASS SPECTROMETRY: HP/MS | One system | | 0 | 0 | |
| 1.3.3 | SPECTROSCOPY, INFRARED: | One system | | 1 | 0 | |
| 1.3.4 | SPECTROSCOPY, RAMAN: | One system | | 1 | 0 | |

COMMENTS:

The column marked “**Comments**” 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 MEL, 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 5** 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 | Comments |
|--|--|---------------------------|
| 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 5: Display of Standard or Certification Requirement for Selected Items | | |

REQUIRED and OPTIONAL ITEMS:

On the far right-hand side of the MEL 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, radiological and biological substances.

The user of this MEL 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** in order to meet this qualification. Scanning down the column will also indicate what equipment items or tools which are considered **Suggested** and **Optional**. 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:

| | | |
|----------|-----------------|--|
| 1 | = Required: | Item is required to achieve proper company typing, quantity is included and matches the quantity in the required minimum column. |
| 0 | = Suggested: | Item is strongly recommended, may become required next revision. The suggested quantity is described in the required minimum column. |
| 0 | = 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 |

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Users of this MEL 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 firefighting 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, 2019 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 terrorist attack.

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.

| 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 SCBA | OSHA – 42 CFR 84 APR | OSHA – 42 CFR 84 PAPR | NFPA 1981 Open Circuit |
|--|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Unknown Environment | <input type="checkbox"/> | | | <input type="checkbox"/> | | | <input type="checkbox"/> |
| CBRN Chemical Vapor/Gas (High: $\geq 1,000$ ppm) | <input type="checkbox"/> | | | | | | |
| CBRN Chemical Vapor/Gas (Low: $< 1,000$ ppm) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Chemical Aerosol (High) | <input type="checkbox"/> | | | | | | |
| CBRN Chemical Aerosol (Low) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Chemical Liquid (High) | <input type="checkbox"/> | | | | | | |
| CBRN Chemical Liquid (Low) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Particulate (High: ≥ 10 mg/m ³) | <input type="checkbox"/> | | | | | | |
| CBRN Particulate (Low: < 10 mg/m ³) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Biological Airborne (i.e. – Smallpox) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Biological Liquid Borne (i.e. – Bubonic Plague) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Biological Particulate (i.e. – Anthrax) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Radiological Particulate (i.e. – Suspended Alpha Particulate) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| CBRN Radiological Penetrating (i.e., Gamma) | | | | | | | |
| OVERALL PERFORMANCE, Live Agent (GB, HD) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| OVERALL PERFORMANCE, Mechanical Function | | | | | | | <input type="checkbox"/> |
| Sustained Air Delivery | | | | | | | <input type="checkbox"/> |
| Inward Leakage – Exhalation Valve | | | | | | | <input type="checkbox"/> |
| Excess Air Flow | | | | | | | <input type="checkbox"/> |
| Thermal Or Flash Fire | <input type="checkbox"/> | | | | | | <input type="checkbox"/> |
| Mandatory Fit Test Program | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Mandatory Maintenance Program | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Mandatory Service Testing | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Hydrostatic Testing | | | | <input type="checkbox"/> | | | |
| Training Program and Documentation | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

Table 6: Breathing Apparatus Standards Associated with Performance Criteria

Table 6 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.



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.

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.

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.

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 HazMat 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). 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 Optimum | NFPA 1991 - Flash Fire Optimum | NFPA 1991 - Liquid Gas Fire Optimum | NFPA 1991 - Alkaline Optimum; Edictive | NFPA 1992 Basic Industrial Chemicals | NFPA 1994 - Class 1 Ensemble, WMD | NFPA 1994 - Class 2 Ensemble, WMD | NFPA 1994 - Class 3 Ensemble, WMD | NFPA 1971 - Structural Fire Fighting |
|---|---|--|----------------------------------|--------------------------------|-------------------------------------|--|--------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------------------|
| Industrial Chemical Substance: | Known | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| Industrial Chemical Substance: | Unknown | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| WMD Chem-Bio Substance: | Known | | <input type="checkbox"/> | | <input type="checkbox"/> | | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| WMD Chem-Bio Substance: | Unknown | | <input type="checkbox"/> | | <input type="checkbox"/> | | | | | | |
| Toxicity May Not Be Verified | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Toxicity May Be In Excess of IDLH | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Toxicity May Be Below IDLH but Above STEL | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Toxicity May Be At or Below STEL but Above TLV | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Immediate Threat Is In Form Of: | Gas, Vapor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Immediate Threat Is In Form Of: | Liquid, Droplets, Aerosol | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Immediate Threat Is In Form Of: | Particulates, Powders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Immediate Threat Is In Form Of: | Liquid Borne Biological | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Immediate Threat Is In Form Of: | Radio-Nuclide Particles, Dust | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Immediate Threat Is In Form Of: | Alpha Emitting Contamination | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Repeated Entry Work Tasks Anticipated in: | High Hazard Area (Exclusion Zone) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Single Entry Work Tasks Anticipated in: | High Hazard Area (Exclusion Zone) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Repeated Entry Work Tasks Anticipated in: | Medium Hazard Area (Contamination Reduction Zone) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Repeated Entry Work Tasks Anticipated in: | No or Low Hazard Area (Support Zone) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | <input type="checkbox"/> | | |
| Highest Chemical Permeation Resistance is Desired | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| Limited Chemical Permeation Resistance is Desired | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> | | | |
| Highest Chemical Penetration Resistance is Desired | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| 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 Protection | NFPA 1991 - Liquid Gas Fire Protection | NFPA 1991 - Alkaline Oxidation | NFPA 1992 - Basic Industrial Chemicals | NFPA 1994 - Class 1 Ensemble, WMD | NFPA 1994 - Class 2 Ensemble, WMD | NFPA 1994 - Class 3 Ensemble, WMD | NFPA 1971 - Structural Fire Fighting |
|---|--|---------------------------------|-----------------------------------|--|--------------------------------|--|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------------------|
| Limited Chemical Penetration Resistance is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Highest Physical Property Protection Resistance is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Limited Physical Property Protection Resistance is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Short Duration Flash Fire Protection for Escape is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Short Duration Liquefied Gas Fire Protection for Escape is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Long Duration Heat Resistance is Desired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Table 9: Chemical Protective Clothing Standards Associated with Example Performance Criteria | | | | | | | | | | |

Table 9 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 criterion. 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” items have been removed, showing only the “required” 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.

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.

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FIRESCOPE HAZARDOUS MATERIALS MINIMUM EQUIPMENT LIST

PART 2: LIST OF EQUIPMENT

1. FIELD TESTING and DETECTION

Field Testing and Detection 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 yield results with a high degree of credibility. The results focus on at least verifying the presence of a substance, categorizing a substance according to chemical and physical property hazards, and potentially 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

A single use testing process based upon a change in color. This type of analysis is used to verify the presence of suspect known substances, unknown chemicals, WMD chemicals, and biological substances.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 1.1.1 | TEST STRIPS, pH PAPER, PACKET: To test acidity or alkalinity of aqueous solutions, 0-14 range ¼" wide x 3" long approximate | One packet | | 1 | 1 | 1 |
| 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 | One packet | | 1 | 1 | 1 |
| 1.1.3 | TEST STRIPS, OXIDIZER, PACKET: Potassium iodide-starch paper activated by weak hydrochloric acid. | One packet | | 1 | 1 | 1 |
| 1.1.4 | TEST STRIPS, PEROXIDE, PACKET: | One packet | | 1 | 1 | 1 |
| 1.1.5 | TEST STRIPS, FLUORIDE, PACKET: | One packet | | 1 | 1 | 1 |
| 1.1.6 | TEST STRIPS, CHEMICAL SPECIFIC, PACKET: Sensitive for a specific chemical (i.e., formaldehyde; chlorinated hydrocarbons; organo-phosphate; halogen ion; heavy metals; nitrites; nitrates; cyanides, sulfites, sulfates, etc.) | | | 0 | 0 | 0 |
| 1.1.7 | TEST STRIPS, MULTI-ION CLASSIFICATION, KIT: Single large test strips detect for five 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. | | | 0 | 0 | 0 |

| | | | | | | |
|--------|--|------------|--|---|---|---|
| 1.1.8 | TEST STRIPS, WATER QUICK TEST, KIT: Test strip detects five or more common contaminants in water simultaneously (typically chlorine ion, pH, alkalinity, hardness, nitrates, nitrites). | | | 0 | 0 | 0 |
| 1.1.9 | TEST STRIPS, WATER QUALITY, KIT: More advanced test kit, in addition to kit above, also tests for bacteria, ammonia, sulfates, free iron, free copper | | | 0 | 0 | 0 |
| 1.1.10 | TEST STRIPS, WMD CHEMICAL, KIT: Military grade or equivalent detection papers for field testing of liquids only: (i.e., "M-8" paper booklet of twenty-five 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 twelve sheets for some nerve agents, blister agents). Strip turns to one of three colors | One packet | | 1 | | |
| 1.1.11 | 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. | One packet | | 1 | | |
| 1.1.12 | 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]) | One packet | | 1 | | |
| 1.1.13 | TEST TICKET, NERVE AGENT ONLY: Applicable only for some nerve agents, color change based upon detection of organo-phosphate radicals, in air or water. | | | 0 | | |
| 1.1.14 | TEST TICKET, MUSTARD AGENT ONLY: Applicable only for mustard agents, color change based upon detection of chloroethyl radical, in air or water. | | | 0 | | |

1.2 Qualitative Analysis Kits

These kits incorporate numerous step-by-step procedures in accordance with a protocol, often assembled and marketed as complete stand-alone kits to detect presence of specific chemicals or verify chemical classes based on hazards.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|--|--------|--------|--------|
| 1.2.1 | CHEMICALS, KNOWN, QUALITATIVE: Test Kit, for testing and detection of known chemicals | One kit | | | | 1 |
| 1.2.2 | CHEMICALS, UNKNOWN, QUALITATIVE: Test Kit, for testing, classifying and detecting unknown chemicals, not for biological substances. (Usually, the more advanced version of the kits listed in # 1.2.1). | One kit | Satisfies requirement for 1.2.1 | 1 | 1 | 0 |
| 1.2.3 | PCB CHEMICALS, TEST KIT: Consists of a multi-step screening procedure to test for presence of poly-chlorinated biphenyl contaminated solvents. Minimum detection of 50 ppm. | One kit | Item #1.2.2 can test for this capability | 1 | 1 | 1 |

| | | | | | | |
|-------|---|---------|--|---|---|---|
| 1.2.4 | CHLORINATED HYDROCARBON, TEST KIT: Consists of a 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. | | | 0 | 0 | 0 |
| 1.2.5 | ORGANOPHOSPHATE, TEST KIT: Consists of a multi-step screening procedure to test for presence of organophosphates; Includes special test strips | | | 0 | 0 | 0 |
| 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. | | | 0 | 0 | 0 |
| 1.2.7 | INDUSTRIAL CHEMICALS, WATER SAMPLE, 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 HazMat team. | | | 0 | 0 | 0 |
| 1.2.8 | WMD, WATER TEST, 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. | One kit | | 1 | 0 | |
| 1.2.9 | 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 (i.e., M18A2 or M18A3 or CAD C-2). Complements item # 1.2.2 type field test kit. | | | 0 | 0 | |

1.3 Electronic Qualitative Analysis

Portable devices that analyze substances at a molecular level and compares results to an onboard reference library.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|------------------|---|--------|--------|--------|
| 1.3.1 | GAS CHROMATOGRAPHY-MASS SPECTROMETRY: GC/MS. Capable of separating mixtures and trace detection. | One system | Either 1.3.1 or 1.3.2 satisfy requirement | 0 | 0 | |
| 1.3.2 | HIGH PRESSURE MASS SPECTROMETRY: HP/MS | One system | | 0 | 0 | |
| 1.3.3 | SPECTROSCOPY, INFRARED: | One system | | 1 | 0 | |
| 1.3.4 | SPECTROSCOPY, RAMAN: | One system | | 1 | 0 | |

1.4 Colorimetric Analysis

Sealed chemical specific detection tubes for spot detection of vapors or gases.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|---|----------|--------|--------|--------|
| 1.4.1 | COLORIMETRIC KIT, BASIC: | One Kit, Complete, of any of the three listed | | 1 | 1 | |
| 1.4.2 | COLORIMETRIC KIT, CHIP: Small colorimetric tubes in a glass or plastic chip. | | | | | |

| | | | | | |
|-------|---|-------------------|--|---|---|
| 1.4.3 | COLORIMETRIC KIT, MULTI-SENSING: Specifically designed to read up to five or more different tubes simultaneously during one reading survey. | | | | |
| 1.4.4 | COLORIMETRIC KIT, WMD: Consists of selected industrial chemical tubes assembled by the manufacturer. Requires more advanced interpolation of the data derived. | One Kit, Complete | | 1 | |
| 1.4.5 | COLORIMETRIC KIT, CLAN LAB: Consists of selected clandestine drug lab chemical tubes assembled by the manufacturer. | | | 0 | 0 |
| 1.4.6 | PUMP, BELLOWS, ELECTRIC: A battery powered bellows pump to augment or upgrade hand operated bellows pump; Programmable with LCD readout. | | | 0 | 0 |

1.5 WMD Biological Detection

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. 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).

| Inv. #: | Item Name and Description | Required Minimum | Comments | 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. | One Kit Complete, of those listed for #1.5.1 Or #1.5.2 | | 1 | 0 | |
| 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. | | | | 0 | |

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

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|------------------|----------------------|--------|--------|--------|
| 2.1.1 | CONFINED SPACE OSHA STANDARD FOUR GAS: Continuous monitoring, independent displays, built-in alarms, minimum of ten feet of tubing and sampling wand. (O ₂ concentration in Percent; Combustible Vapor in percent of LEL; CO concentration in ppm; H ₂ S concentration in ppm). Calibrated to manufacturers specifications. | One unit | Intrinsic to UL #913 | 1 | 1 | 1 |
| 2.1.2 | BUMP TEST KIT, FOR ITEM # 2.1.1: | One kit | | 1 | 1 | 1 |

2.2 Multiple Gas Monitoring, Toxic

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 | Required Minimum | Comments | 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. May be suitable for Benzene ring substances. | One unit | | 1 | 1 | |
| 2.2.2 | AROMATIC HYDROCARBON (BENZENE RING) MONITORING: Device designed to detect aromatic hydrocarbon (ring) substances. <i>If this utility is incorporated into the above device, this requirement is met.</i> | One unit | | 1 | 1 | |
| 2.2.3 | SIMULTANEOUS MULTI-VAPOR MONITORING: Can differentiate between several combustible vapors or toxic vapors. May be suitable for Benzene ring substances. | One unit | | 0 | 0 | |
| 2.2.4 | AREA MONITORING: A four (4) gas or greater system that is capable of communicating real time data remotely to a computer. A complete system would include a minimum of four units. Should be compatible with 7.3 & 7.4 | One complete system | | 1 | 0 | |
| 2.2.5 | BUMP TEST KITS: Bump test kit for each type of monitor with appropriate gasses. | One kit | | 1 | 1 | |

2.3 Specialty Gas Capability

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 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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|--------------------------------------|--|--------|--------|--------|
| 2.3.1 | AMMONIA: Detects Ammonia vapors to ppm, approximate range 0 to 100 ppm. | One capability | One device may have capability to detect two or more specialty gases | 1 | 1 | |
| 2.3.2 | FREONS, HALOGENATED HYDROCARBONS: Halogen derivative refrigerants. | One capability | | 1 | 1 | |
| 2.3.3 | HALOGEN GASES: Specifically, Chlorine; Other halogen gases optional depending upon local needs. | One capability | | 1 | 1 | |
| 2.3.4 | PHOSPHINE: Continuous monitoring. | One capability | | 1 | 1 | |
| 2.3.5 | ALDEHYDES: Specifically, Formaldehyde | One capability | | 0 | 0 | |
| 2.3.6 | ARSINE: Specifically Arsenic Trihydride | One capability | | 0 | 0 | |
| 2.3.7 | CARBON DIOXIDE: Measures to ppm, some also display ambient temperature. | One capability | | 0 | 0 | |
| 2.3.8 | CYANIDES: Specifically, Hydrogen Cyanide, Cyanogen Chloride. | One capability | | 0 | 0 | |
| 2.3.9 | ETHYLENE OXIDE: | One capability | | 0 | 0 | |
| 2.3.10 | HALOGEN ACID VAPORS: Specifically, Hydrogen Chloride | One capability | | 0 | 0 | |
| 2.3.11 | MERCURY: Ability to detect elemental Mercury vapor. | One capability | | 0 | 0 | |
| 2.3.12 | NITRIC OXIDE, NITROGEN DIOXIDE: Approximate range 0 to 100 ppm for Nitric Oxide, and approximate range 0 to 10 ppm for Nitrogen Dioxide. | One capability | | 0 | 0 | |
| 2.3.13 | SULFUR DIOXIDE: | One capability | | 0 | 0 | |
| 2.3.14 | BUMP TEST KIT: Bump test kit for each type of monitor with appropriate gasses. | One for each type of monitoring unit | | 1 | 1 | |

2.4 WMD Chemical Dedicated Equipment

WMD chemical detection instruments and equipment 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 HazMat 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.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---------------------------|------------------|----------|--------|--------|--------|
|---------|---------------------------|------------------|----------|--------|--------|--------|

| | | | | | | |
|--------|--|---|-------------------------------------|----|---|---|
| 2.4.1 | NERVE AGENT DETECTION: This includes 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 | | 1 | | |
| 2.4.2 | BLISTER AGENT – MUSTARDS DETECTION: This includes H, HD, HN. | | | 1 | | |
| 2.4.3 | BLISTER AGENT – LEWISITE DETECTION: This includes L HL. | | | 1 | | |
| 2.4.4 | BLOOD AGENT DETECTION: This includes AC, HCN, CK, SA. Some specialty industrial detection devices are available. | | | 1 | | |
| 2.4.5 | CHOKING / VOMITING AGENT DETECTION: This includes CG, DP, CL. Some specialty industrial detection devices are available for Chlorine and Hydrogen Chloride. | | | 1 | | |
| 2.4.6 | INCAPACITATING AGENT DETECTION: Specifically, pepper spray. | | | 1 | | |
| 2.4.7 | 4th GENERATION NERVE AGENT DETECTION: This includes Novichoks and A-Series agents. | | | 0 | | |
| 2.4.8 | TRACE DETECTION: This includes the detection of explosives and opiate mixtures | | May be met by 1.3.1, 1.3.2 or 1.3.4 | 0 | | |
| 2.4.9 | BUMP TEST KIT: Bump test kit for each type of monitor with appropriate gasses. | One for each type of monitoring unit | | 1 | | |
| 2.4.10 | ANTIDOTE KIT: Antidote for CWA and organophosphate poisoning, auto-injector that administers atropine and pralidoxime simultaneously. Consider NARCAN as well for opiate poisoning. Intended to self or peer care, not for treating the public. | Two per assigned member | CAL EMSA Policy #300 | 16 | 0 | 0 |

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

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 | Required Minimum | Comments | 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 twelve of either type, mix or match | EPA Protocol B | 12 | 12 | 12 |
| 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. | | EPA Protocol B | 0 | 0 | 0 |
| 3.1.4 | COLIWASA TUBES, DISPOSABLE, POLYPROPELENE: Approximately 40" length, with neoprene cone stopper; Most inexpensive of all COLIWASA tubes, suitable for sludge, most organic solvents. | | | 0 | 0 | 0 |
| 3.1.5 | PIPETTE, TRANSFER, PLASTIC, REGULAR, BULK: Disposable, plastic, approximately 5 to 8 mL capacity, 15 cm long, some available with "bellows" type squeeze end. | Pkg of 100 of either type; Or a mixture | | 100 | 100 | 100 |
| 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 Pipettor Safety Bulb or squeeze bulb. | | | 0 | 0 | 0 |
| 3.1.8 | PIPETTER SAFETY BULB: Rubber, with adjustable suction valve, re-useable, replacement | | | 0 | 0 | 0 |
| 3.1.9 | PIPETTE, TRANSFER, PLUNGER STYLE: Polypropylene, capable of transferring 1 to 12 mL via action of push-pull plunger with rubber gasket, graduated markings in 1.0 mL increments, disposable | | | 0 | 0 | 0 |
| 3.1.10 | TEST TUBES, DISPOSABLE: Borosilicate glass, heat resistant. | One hundred | | 100 | 100 | 100 |
| 3.1.11 | SWAB, STERILE: Sterile non-organic single use swab. | One Box (Minimum of six individual units) | | 1 | 1 | 1 |
| 3.1.12 | SPONGE, SEALED, STERILE: For surface swipe sample taking. | Two | | 1 | 1 | 1 |
| 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. | | | 0 | 0 | 0 |
| 3.1.14 | TANKER SAMPLER: Same as 3.1.13 but with extension or telescopic handle to approximately 8 feet. | | | 0 | 0 | 0 |
| 3.1.15 | ENVIRONMENT DIPPER, TELESCOPIC: For collecting 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. | One | | 1 | 1 | 1 |
| 3.1.16 | TONGS, BEAKER OR CRUCIBLE, METAL, PTFE COATED: Chemical resistant stainless steel with tips coated with PTFE, approximately 9 ½" long. | Two of either type, or one of each | | 2 | 2 | 2 |
| 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. | | | 0 | 0 | 0 |

| | | | | | | |
|--------|---|---|----------------------|----|----|----|
| 3.1.19 | FORCEPS: Steel, Teflon coated or uncoated, or Plastic polypropylene, approximate length 3 ¼" to 5 ½", with pointed or round tips. | At least two, of any kind | | 2 | 2 | 2 |
| 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. | Complement of three, with at least one of each size | | 3 | 3 | 3 |
| 3.1.21 | SPATULA, SAMPLING, LARGE, "V" SHAPE: Plastic or metal, approximately 6" to 11" long x ¾" wide, approximate capacity 15 cc to 36cc. | Total of five, in any combination | | 5 | 5 | 5 |
| 3.1.22 | 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. | One | Meets FDA compliance | 1 | 1 | 1 |
| 3.1.23 | SPOON, PLASTIC: Polypropylene, with long handle (approximately 7"), disposable, in ¼ teaspoon, ½ teaspoon, 1 teaspoon, and 3 teaspoon sizes. | Twelve in any combination of those listed | | 12 | 12 | 12 |
| 3.1.24 | SCOOP, SMALL, STERILE, 2 OZ: General purpose | One | | 1 | 1 | 1 |
| 3.1.25 | SCOOP, MEDIUM, STERILE, 4 OZ: General purpose | | | 0 | 0 | 0 |
| 3.1.26 | SCOOP, LARGE, STERILE, 8 OZ: General purpose | | | 0 | 0 | 0 |
| 3.1.27 | SCOOP, SMALL, STAINLESS STEEL: Approximate bowl size 5" x 2 ½". | | | 0 | 0 | 0 |

3.2 Bulk Liquid Transfer – Mechanical

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 | Required Minimum | Comments | 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. | One of any of these three pumps listed | FM or UL Listed Mechanical, or If electrical, MUST be Intrinsically Safe | 1 | 1 | 1 |
| 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 transfers from containers up to 55 gallons at a rate of at least 5 GPM. | | | | | |
| 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. | | | 0 | 0 | 0 |
| 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. | | | 0 | 0 | 0 |

| | | | | | | |
|---------|--|--|---|---|---|---|
| 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. | | | 0 | 0 | 0 |
| 3.2.7 | PUMP, MECHANICAL: Approximately 15 GPM. Often is included as part of a tool inventory in support of decontamination processes. | One | | 1 | 1 | 1 |
| 3.2.8 | STINGER KIT: Approximately 2"-4" diameter and approximately 12' long, to assist in transfer of flammable liquid product from an overturned tanker truck; Requires a pneumatic drill with metal cutting 4" diameter hole-saw type drill bit. | One complete kit | | 1 | 1 | 0 |
| 3.2.9 | SYSTEM, GROUNDING AND BONDING, CAPABILITY: Complete system to consist of grounding rods, cables and ground resistance tester. | One complete kit | Met with sections 3.2.9.1, 3.2.9.2 and 3.2.9.3 | 1 | 1 | 0 |
| 3.2.9.1 | 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. | Not Less than 75' | Compliant To: NEC Article 250 And NFPA 70 NFPA 77 | 1 | 1 | 0 |
| 3.2.9.2 | GROUNDING, RODS: Three rods of approximate length 4 feet to 6 feet minimum and approximate diameter 3/8" to ½" copper. | Not less than 4' | | 3 | 3 | 0 |
| 3.2.9.3 | GROUND RESISTANCE AND BONDING VERIFICATION DETECTION CAPABILITY: Analog or digital readout, Intrinsically Safe, range of at least 0 – 200 ohm, 3-wire resistance hookup minimum. | <u>One Capability:</u> Ground resistance and bonding detection may require two separate units | | 1 | 1 | 0 |

3.3 Containerization, Labeling, Documentation

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|----------------------|---|--------|--------|--------|
| 3.3.1 | SAMPLE JARS, STERILE, CLEAR GLASS, 16 OZ: Short, EPA, wide mouth with Teflon lined lids | | To meet EPA performance-based specifications for semi-volatile organics, pesticides, PCBs and metals analyses | 0 | 0 | 0 |
| 3.3.2 | SAMPLE JARS, STERILE, CLEAR GLASS, 4 & 8 OZ: Short, EPA, wide mouth with Teflon lined lids | Compliment of twelve | EPA Protocol B | 1 | 1 | 1 |
| 3.3.3 | SAMPLE JARS, STERILE, AMBER GLASS, 16 OZ: EPA, wide mouth with Teflon lined lids | | EPA Protocol B | 0 | 0 | 0 |
| 3.3.4 | SAMPLE JARS, STERILE, AMBER GLASS, 4 & 8 OZ: EPA, wide mouth with Teflon lined lids | Compliment of four | EPA Protocol B | 1 | 1 | 1 |
| 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. | | | 0 | 0 | 0 |

| | | | | | | |
|--------|---|--|----------------|----|----|----|
| 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. | | | 0 | 0 | 0 |
| 3.3.7 | SAMPLE VIALS, STERILE, CLEAR AND/OR AMBER GLASS: Assorted sizes, borosilicate glass vials, with closed Teflon lined cap | | EPA Protocol B | 0 | 0 | 0 |
| 3.3.8 | STOPPERS, CONICAL: Rubber, neoprene, or silicone; assortment, ranging between sizes #000 to #6 (nine sizes), (12 mm to 30 mm) | Kit of five different sizes | | 5 | 5 | 5 |
| 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 twenty-four, representing all three sizes | | 24 | 24 | 24 |
| 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. | Twelve | | 12 | 12 | 12 |
| 3.3.11 | LABELS, ORDINARY BLANK: Approximate size to fit on sides of evidence collection jars or evidence bags; Preferably self-adhesive. | Kit of fifty of various sizes | | 50 | 50 | 50 |
| 3.3.12 | LABELS, EVIDENCE SEALS: Tamper-proof evidence labels or tape, approximate size is 1 1/4" 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 roll, or minimum of twenty-five | | 1 | 1 | 1 |
| 3.3.13 | PENS, MARKING, PAINT: Permanent marking, broad tip of porous fiber, multiple colors usually of enamel paint; Usually requires shaking to stir up paint. For marking on metal or glass. | Four, preferably of different colors | | 4 | 4 | 4 |
| 3.3.14 | PENS, MARKING, INDELIBLE: Medium & Fine Point; Permanent marking, Variety of colors. | Kit of six | | 6 | 6 | 6 |
| 3.3.15 | CHAIN OF EVIDENCE FORMS: | Twenty | | 20 | 20 | 20 |
| 3.3.16 | PHOTO AND VIDEO, ASSESSMENT AND RECONNAISSANCE KIT, DIGITAL: Digital Camera (4 megapixel or better) 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. | One kit | | 1 | 1 | 1 |

3.4 Transportation

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 HazMat), 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 | Required Minimum | Comments | 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. | One complete kit | ICAO Packing #602 for Infectious Substances | 1 | 0 | |
| 3.4.2 | ICE CHEST, LOCKING LID: Sturdy plastic, insulated, approximate capacity 2-5 gallon, with lid that securely locks shut. | | | 0 | 0 | |
| 3.4.3 | CONTAINER, BIOLOGICAL, CASE: Sturdy impact resistant case, for added protection of item described above; Approved for air travel; Approximate total capacity 4 liters; Ideal for high threat infectious diseases, WMD biological, and WMD chemical. | | ICAO Packing #602 for Infectious Substances | 0 | 0 | |
| 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" diameter plastic containers in Item # 3.4.2 (above) fit into this super strong cask. | | DOT | 0 | 0 | |
| 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" diameter plastic containers in Item # 3.4.2 (above) fit into this super strong cask. | | DOT | 0 | 0 | |
| 3.4.6 | CONTAINER, D.O.T. CERTIFIED, RECOVERY VESSEL: Totally encapsulate 100 lb and 150 lb compressed gas cylinders, 250 psi rated. Weighs 350 pounds. Requires DOT exemption certificate. | | DOT 3A480 | 0 | 0 | |

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

These instruments can be designed and calibrated for specialized application of a single ionizing radiation (i.e., gamma, beta, or alpha detection only), or designed and calibrated for use against more than one type of radiation (i.e., beta-gamma, or alpha-beta-gamma). 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 | Required Minimum | Comments | 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) | One Unit: "Combination" survey meter will also satisfy requirement | | 1 | 1 | 1 |

| | | | | | | |
|-------|---|--|--|---|---|---|
| 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. | One Unit: "Combination" survey meter will also satisfy requirement | | 1 | 1 | 1 |
| 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. | One Unit: "Combination" survey meter will satisfy requirement | | 1 | | |
| 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 | One Unit will satisfy 4.1.1 & 4.1.2 requirement | | 0 | 0 | 0 |
| 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. | One Unit will satisfy 4.1.1, 4.1.2 & 4.1.3 requirement | | 0 | 0 | 0 |
| 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. | | | 0 | 0 | 0 |
| 4.1.7 | PROBE, GAMMA, EXTENSION: Telescoping wand with Gamma detection capability, for up to 15'. | | | 0 | 0 | 0 |
| 4.1.8 | CHECK SOURCE: Check source appropriate for each type of detector carried. | One for each type of detector unit | | 1 | 1 | 1 |

4.2 Radionuclide Detection

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 | Required Minimum | Comments | 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. Displays correct chemical name of identified radio-nuclide, classification, and nuclide size. | One | One unit may satisfy both 4.2.1 and 4.2.2 requirements | 1 | | |
| 4.2.2 | NEUTRON RADIATION 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 | One | | 1 | | |
| 4.2.3 | CHECK SOURCE: Check source appropriate for each type of detector carried. | One for each type of detector unit | | 1 | | |

4.3 Dosimeters

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 (Thermo-luminescent 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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|--------------------------------------|----------|--------|--------|--------|
| 4.3.1 | 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 assigned member of team | | 8 | 5 | 5 |
| 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. | One for each assigned member of team | | 0 | 0 | 0 |

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

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 ensure accurate performance protection, they shall be compliant with current NFPA Standard for individual vapor protective ensembles. For ensembles to be totally compliant with NFPA, detachable glove assemblies, and removable or permanently attached boot assemblies as supplied by the manufacturer, must also meet appropriate NFPA compliance at all times.

A Type 1 HazMat Team must have WMD Chemical / Biological Agent vapor protection capability for each member assigned to the team.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|---|----------------------------------|--------|--------|--------|
| 5.1.1 | VAPOR PROTECTIVE ENSEMBLE, INDUSTRIAL CHEMICALS: | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current associated NFPA standard | 6 | 4 | 0 |
| 5.1.2 | VAPOR PROTECTIVE, WITH FLASH FIRE ESCAPE: Includes additional Flash Fire Escape Protection Option. Can be same ensemble as 5.1.1 if so specified and certified. | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current associated NFPA standard | 0 | 0 | 0 |

| | | | | | | |
|-------|--|---|---|---|--|--|
| 5.1.3 | VAPOR PROTECTIVE, WITH WMD CHEMICAL / BIOLOGICAL PROTECTION: For high vapor threat protective ensemble. | Provides for WMD entry. Six (6) for Type 1 | Current associated NFPA standard. May also meet 5.1.1 | 6 | | |
|-------|--|---|---|---|--|--|

5.2 Liquid Splash Protective

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 ensure accurate performance protection, they shall be compliant with current related NFPA Standard. For the ensemble to be totally compliant with current NFPA related standard, 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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|---|-------------------------------|--------|--------|--------|
| 5.2.1 | LIQUID SPLASH PROTECTIVE: Industrial Chemicals for liquid contact and splash protection (no vapor protection). | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current related NFPA standard | 6 | 4 | 4 |
| 5.2.2 | LIQUID SPLASH PROTECTIVE, WMD CHEMICAL / BIOLOGICAL PROTECTION: A separate WMD Chemical / Biological protective tactical ensemble which provides for liquid splash protection. | | | 6 | 0 | |
| 5.2.3 | LIQUID SPLASH PROTECTIVE, WITH 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. | One per assigned member | Current related NFPA standard | 0 | 0 | 0 |
| 5.2.4 | LIQUID SPLASH PROTECTIVE, WITH LIQUIFIED GAS PROTECTION OPTION: Can be same ensemble as 5.2.1 if so specified and certified at time of purchase. | One per assigned member | Current related NFPA standard | 0 | 0 | 0 |

5.3 Limited Use Protective

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 is 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.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|----------------------------|----------|--------|--------|--------|
| 5.3.1 | LIMITED USE, SPLASH PROTECTION: Can be a coverall type splash protective garment. | 2 for each assigned member | | 16 | 10 | 10 |
| 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 | | 0 | | |

| | | | | | | |
|-------|---|----------------------------|--|---|--|--|
| 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 | | 0 | | |
|-------|---|----------------------------|--|---|--|--|

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

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). There are no national standards for these later items.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|--|--|--------|--------|--------|
| 6.1.1 | REPLACEMENT GLOVES, VAPOR PROTECTIVE: Replacement glove inventory shall be ordered from and include ample supply of the <i>manufacturer's</i> recommended "outer" glove. Readily available generic type replacement gloves not acceptable. The "inner" glove is listed in item # 6.1.3 below. | Replacement pair for each suit on hand | Current related NFPA standard | 6 | 4 | 0 |
| 6.1.2 | REPLACEMENT GLOVES, LIQUID SPLASH PROTECTIVE: Replacement glove inventory must include ample supply of the "outer" generic replacement gloves (Some suit ensembles are not supplied with gloves from the manufacturer). | 1 Replacement pair for each suit on hand; Gloves for 6.1.1 will satisfy. | Current related NFPA standard or manufacturer model # must be UL or SEI listed | 6 | 4 | 4 |
| 6.1.3 | UNDER-GLOVE: Light weight chemical resistant disposable type glove popularly used as an under-glove or "inner" glove for the ensembles. Also used separately for light duty work, handling, sampling. | Twenty-four pair | | 24 | 24 | 24 |
| 6.1.4 | HIGH TEMPERATURE PROTECTIVE GLOVE: Provides approximately one minute of contact protection for surface temperatures of 1,000 ° F to 1,300 ° F. | Six pair | | 6 | 6 | |
| 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. Configuration is often a mitten that fits over glove as described in 6.1.3. | Six pair | | 0 | 0 | |
| 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. | Six pair | | 6 | 6 | |

6.2 Foot Protection

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 | Required Minimum | Comments | 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current related NFPA standard | 6 | 4 | 4 |
| 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | | 6 | 4 | 4 |

6.3 Head and Eye Protection

Protection of the head, ears and 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 | Required Minimum | Comments | 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | ANSI Z-89.1 | 6 | 4 | 4 |
| 6.3.2 | GOGGLES: Wide angle wraparound to prevent frontal and side splash to eyes Some available to fit over prescription glasses. | Six (6) for Type 1 Four (4) for Type 2 and 3 | ANSI Z-87.1 | 6 | 4 | 4 |

6.4 Support Systems

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 | Required Minimum | Comments | 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” | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current NFPA Standard | 6 | 4 | 4 |

| | | | | | | |
|-------|--|-----------------------|---|---|---|---|
| 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. | Four complete systems | | 0 | 0 | |
| 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. | Four complete systems | | 0 | 0 | |
| 6.4.4 | 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. | One Kit | | 1 | 1 | 1 |
| 6.4.5 | FIRST AID, KIT: In compliance with local policies and procedures of the agency seeking typing | One | | 1 | 1 | 1 |
| 6.4.6 | COOLER, REHYDRATION: Industrial quality 5 -10-gallon capacity with spigot, carrying handle. | One | | 1 | 1 | 1 |
| 6.4.7 | HEAT STRESS METER: Instrument used for helping to manage heat stress work load. Uses a WetBulb Globe Temperature (WBGT) to help with determining work/rest cycles. | One | May satisfy section 8.2.1. See also TB Med 507. | 0 | 0 | 0 |

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 ensure that no reference is over 5 years old.

Electronic versions must be accessible without internet access.

7.1 Printed References, Industrial and WMD Chemicals

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.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|----------------------------|----------|--------|--------|--------|
| 7.1.1 | DATABASE TYPE, PRINTED: Technical data, physical, chemical and toxicological properties | Three different references | | 3 | 3 | 3 |
| 7.1.2 | GUIDEBOOK TYPE, PRINTED: Intervention, incident handling, hazard assessment. | Two different references | | 2 | 2 | 2 |
| 7.1.3 | SPECIALTY TYPE, PRINTED: Special topics (i.e., rail tank car cross sections, pesticides, etc.) or specific information (i.e., incompatibility) | Two different references | | 2 | 2 | 0 |

| | | | | | |
|-------|--|--|---|---|---|
| 7.1.4 | REGULATORY TYPE, RESPONSE GUIDELINES, PRINTED OR ELECTRONIC: Local, Municipal, and County Response Plans, Operational Area Response Plans, OES Hazardous Materials Incident Contingency Plan. | One copy – Local Response Plans One copy – Operational. Area Resp. Plan One copy – OES HMICP | 3 | 3 | 3 |
| 7.1.5 | WMD CHEMICAL / BIOLOGICAL SUBSTANCES; PRINTED OR ELECTRONIC: Technical data, some guidelines, some first aid information. | At least: One – Chemical Two - Biological | 3 | | |

7.2 Electronic References, Industrial and WMD Chemicals

Many printed references on industrial and WMD chemicals are also available in digital formats which utilize a computer based or mobile application.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|------------------|---|--------|--------|--------|
| 7.2.1 | DATABASE TYPE, ELECTRONIC: Technical Data, physical, chemical and toxicological properties | One resource | Some commercial electronic data platforms have two or more of these databases included as separate files. | 1 | 1 | 1 |
| 7.2.2 | GUIDEBOOK TYPE, ELECTRONIC: Intervention, incident handling, hazard assessment. | One resource | | 1 | 1 | 1 |
| 7.2.3 | SPECIALTY TYPE, ELECTRONIC: Special topics (i.e., rail tank car cross sections, pesticides, etc.) or specific information (i.e., incompatibility). | One resource | | 1 | 1 | 0 |
| 7.2.4 | WMD CHEMICAL / BIOLOGICAL SUBSTANCES; ELECTRONIC: Technical data, some guidelines, some first aid information. | One resource | | 1 | | |
| 7.2.5 | CERS ACCESS, ELECTRONIC: Access to the local and statewide CERS data for facilities data. | | | 0 | 0 | 0 |
| 7.2.6 | APPLICATIONS: Mobile applications, the intent is to meet one of the above disciplines. | One app | | 1 | | |

7.3 Plume Air Modeling, Program Support

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.

The Interagency Modeling and Atmospheric Assessment Center (IMAAC) can also be contacted and used for free support for significant hazardous atmospheric release modeling if needed.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 7.3.1 | AIR MODELING, DATABASE SOFTWARE, BASIC PLATFORM: | One program | | 1 | 1 | 0 |
| 7.3.2 | AIR MODELING, OVERLAY / PLUME DISPLAY SOFTWARE: Compatible with basic database program (#7.3.1 above) | One program | | 1 | 1 | 0 |

| | | | | | | |
|-------|--|----------------|--|---|---|---|
| 7.3.3 | AIR MODELING, OVERLAY / MAPPING SOFTWARE: Compatible with basic database program (#7.3.1 above) | One program | | 1 | 1 | 0 |
| 7.3.4 | AIR MODELING, STAND-ALONE: Not compatible with any mapping system. Generates quick plumes, and prints grid or chart formats. | One program | | 0 | 0 | 0 |
| 7.3.5 | REAL TIME DATA DOWNLOAD: Compatible with computer and air modeling software (download capability and supporting software usually comes with the particular type of weather station purchased. See Section 8.5 for weather station descriptions) | One capability | | 0 | 0 | |

7.4 Computer, Support Hardware, Software

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|--|----------|--------|--------|--------|
| 7.4.1 | COMPUTER: One (1) desktop, laptop, or tablet with the capability to support a USB drive, CD/DVD access, and internet access. | | | 1 | 1 | 1 |
| 7.4.2 | PRINT CAPABILITY, COLOR: Ability to print documents at a rate of at least 10 pages per minute. This function can be combined with scanner (item 7.4.3) and duplication (item 7.4.4). | All teams need ability to perform all three functions. PRINT SCAN DUPLICATE | | 1 | 1 | 1 |
| 7.4.3 | SCAN CAPABILITY: Ability to SCAN documents in color, and save to hard drive or peripheral. This function can be combined with Printer (item 7.4.2) and Duplication (item 7.4.4) requirements. | | | 1 | 1 | 1 |
| 7.4.4 | DUPLICATION CAPABILITY: Ability to reproduce 8 ½ x 11 documents. This function can be combined with Printer (item 7.4.2) and Scan (item 7.4.3) requirements. | | | 1 | 1 | 1 |
| 7.4.5 | COMBINATION UNIT: Inkjet or laser color printer / scanner / duplicator (known as "3-in-1 units" or "4-in-1" units). | Separate components or combination components acceptable | | 0 | 0 | 0 |
| 7.4.6 | ACCESS TO INTERNET, WIRELESS: Hardware, connections and ports to provide ability to utilize radio or telecommunications network for to access the Internet, is Broadband capable, has wireless internet card or device in order to enable any capable device to transmit and receive. | One Capability | | 1 | 1 | 0 |
| 7.4.7 | HARDWARE, COMPUTER, GRAPHICS: Ensure that a high-quality graphics chip enhancement, or graphics board is included | One Capability | | 1 | 1 | 1 |
| 7.4.8 | HARDWARE, CD-ROM OR DVD DRIVE: Numerous different formats available, unit should be multi-format capable | One Capability | | 1 | 1 | 1 |

| | | | | | | |
|--------|--|--|--|---|---|---|
| 7.4.9 | 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. 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). | <u>Must have these capabilities:</u> a) Word Processing b) Photo-graphics | | 1 | 1 | 1 |
| 7.4.10 | SOFTWARE, FORMAT CONVERSION: a) Ability to download, open, copy, and save files in various graphics formats. b) Ability to convert any document or graphics file. | <u>Must have ability to convert files i.e.:</u> a) .jpg b) .pdf | | 1 | 1 | 0 |

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) Infrared light detection and thermal imaging; 3) 4) Ultra-sonic (ultra-high or ultra-low frequency) detection; And 5) digital wireless transmission

8.1 Advanced Technologies; Vision, Heat, Sound

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 | Required Minimum | Comments | 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); | One unit | Generation III or better technology | 1 | 1 | 0 |
| 8.1.2 | LIGHT AMPLIFICATION, SCOPE, INTERCHANGEABLE, BODY ONLY: Hand-held, portable stand-alone device for diminished light environments (Night Vision); | One unit - meets requirement for 8.1.1 | Generation III or better technology | 0 | 0 | 0 |
| 8.1.3 | LIGHT AMPLIFICATION, LENSES, INTERCHANGEABLE LENSES, WIDE ANGLE: Interchangeable camera lens, usually in the range of 25 to 35 mm. | One lens | | 0 | 0 | 0 |
| 8.1.4 | LIGHT AMPLIFICATION, LENSES, INTERCHANGEABLE LENSES, STANDARD: Interchangeable camera lens, usually in the range of 45 to 65 mm. | One lens | | 0 | 0 | 0 |

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|--------|--|------------------------------|--|---|---|---|
| 8.1.5 | LIGHT AMPLIFICATION, INTERCHANGEABLE LENSES, TELEPHOTO: Interchangeable camera lens, usually in the range of 125 to 225 mm. | One lens | | 0 | 0 | 0 |
| 8.1.6 | LIGHT AMPLIFICATION, INTERCHANGEABLE LENSES, ZOOM: Interchangeable camera lens; Popular ranges are 35 to 100 mm, 75 to 150 mm, and 100 to 250 mm. | One lens | | 0 | 0 | 0 |
| 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. | One unit | | 0 | 0 | 0 |
| 8.1.8 | INFRARED, THERMOMETER, TEMPERATURE SENSING ONLY: Hand-held, portable scope; with L.E.D. direct temperature reading display, approximate range from -25° F to + 1000° F. | One device | | 1 | 1 | 0 |
| 8.1.9 | INFRARED, HAND-HELD, THERMAL IMAGING CAMERA: Hand-held camera-like device, provides image of viewing area in infra-red light only (not ambient visual light). | One device | | 1 | 1 | 0 |
| 8.1.10 | INFRARED, MOUNTABLE, THERMAL IMAGING CAMERA: Camera-like device which provides image of viewing area in infra-red light only (not ambient visual light); Mountable and can provide image to the wearer, and/or transmit image back to a receiving station. | One device | | 0 | 0 | 0 |
| 8.1.11 | INFRARED, PROBE, IMAGING: Hand-held device, with infra-red camera lens on end of probe; Probe may be extendable; Lens may be moveable or pivotal. | One probe | | 0 | 0 | 0 |
| 8.1.12 | INFRARED, 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. | One unit | | 0 | 0 | 0 |
| 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) | One for each assigned member | | 0 | 0 | 0 |
| 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. | One for each assigned member | | 0 | 0 | 0 |
| 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. | One unit | | 1 | 1 | 0 |
| 8.1.16 | CAMERA, VIDEO, DIGITAL: Portable hand-held color video camera, with microphone, recommend including a waterproof case. The smartphone (11.2.1) may satisfy this requirement. | One unit | | 1 | 1 | 0 |
| 8.1.17 | CAMERA, VIDEO, PROBE, WIRELESS: Portable hand-held color video camera, with telescoping probe; Wireless transmitter to receiver in CP. | One unit | | 0 | 0 | 0 |
| 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. | One unit | | 0 | 0 | 0 |

8.2 Weather Monitoring

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.

| Inv. #: | Item Name and Description | Required Minimum | Comments | 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. | One complete kit: Either one as described will suffice | | 1 | 1 | 0 |
| 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. | One support system | | 0 | 0 | 0 |

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

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

| Inv. #: | Item Name and Description | Required Minimum | Comments | 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 | 5-gallon spill of sulfuric, hydrochloric, or nitric acids or equivalent | 1 | 1 | 0 |
| 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 | 5-gallon spill of sodium hydroxide, ammonium hydroxide, or equivalent | 1 | 1 | 0 |

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|-------|--|---|--|---|---|---|
| 9.1.3 | ENCAPSULATING SPREADABLE POWDER – GENERAL PURPOSE (AND SUITABLE FOR PESTICIDES): Must be NON-CLAY BASED. Granular, spreadable, and pourable; Acceptable for POLAR and NON-POLAR based solvents including pesticides. | An amount sufficient to encapsulate a 5-gallon spill (Not “kitty litter” or diatomaceous earth) | 5-gallon spill of common hydrocarbon solvents, pesticides, or equivalent | 1 | 1 | 0 |
| 9.1.4 | ENCAPSULATING SPREADABLE POWDER - FORMALDEHYDE: Granular spreadable / pourable, popular for formaldehyde solvents encapsulation. | An amount sufficient to encapsulate a 5-gallon spill | 5-gallon spill of formaldehyde or equivalent | 1 | 1 | 0 |
| 9.1.5 | ENCAPSULATING SPREADABLE POWDER – NON-POLAR SOLVENTS: Granular spreadable / pourable, suitable for hydrocarbon-based solvents (not water-based solvents), fuels, oil-based poisons. Encapsulates and solidifies into a solid. | An amount sufficient to encapsulate 5 gallons | | 1 | 1 | 0 |
| 9.1.6 | FIRE EXTINGUISHER, CLASS “D”: Capacity 30 lbs.; suited for metal fires | 1 unit | FM Approval | 1 | 1 | 1 |

9.2 Environmental Intervention

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|-----------------------------|----------|--------|--------|--------|
| 9.2.1 | ABSORBENT NON-POLAR SOLVENT, - 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. | 150 square feet of coverage | | 1 | 1 | 1 |
| 9.2.2 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT, - 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. | 150 square feet of coverage | | 1 | 1 | 1 |
| 9.2.3 | ABSORBENT NON-POLAR SOLVENT BOOMS - PIGS, SOCKS: Repels polar solvents (water), absorbs non-polar solvents (straight chain hydrocarbons, oils, some freon liquids, carbon tetrachloride); Approximate diameter. 3" to 6"; Approximate Length 4' – 12' each. | 40 feet total length | | 1 | 1 | 1 |
| 9.2.4 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT 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 diameter. 3" to 6"; Approximate Length 4' – 12' each. | 40 feet total length | | 1 | 1 | 1 |
| 9.2.5 | ABSORBENT NON-POLAR SOLVENT - 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. | 10-gallon absorption | | 1 | 1 | 0 |

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|--------|--|-------------------------------------|--|---|---|---|
| 9.2.6 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT - 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 diameter. 3" to 6"; Approximate size – 2 to 3-gallon absorption capacity each pad. | 25-gallon absorption | | 1 | 1 | 0 |
| 9.2.8 | MERCURY KIT, CLEANUP, SMALL SPILLS: Consists of two basic parts; Mercury absorbing sponges, and approximately 500-gram container of Mercury absorbing powder. | One kit | | 1 | 1 | 0 |
| 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 | | 0 | 0 | 0 |
| 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 | | 0 | 0 | 0 |
| 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., 3" dia., or 2" dia. | One 8' length of at least 3 sizes | | 1 | 1 | 1 |

9.3 Mechanical Intervention

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|-------------------|----------|--------|--------|--------|
| 9.3.1 | "A", KIT: For repair or plugging leaks in 150 lb. gas cylinders. Kit must include gaskets for all appropriate gasses. | One kit, complete | | 1 | 1 | |
| 9.3.2 | "B", KIT: For repair or plugging of leaks in one-ton cylinders. Kit must include gaskets for all appropriate gasses. | One kit, complete | | 1 | 1 | |
| 9.3.3 | "C", KIT: For repair or plugging of leaks in pressurized rail tank cars and highway tank trucks. Kit must include gaskets for all appropriate gasses. | One kit, complete | | 0 | 0 | |
| 9.3.4 | UNIVERSAL RAIL CAR CAPPING KIT: Kit must include gaskets for all appropriate gasses. | One kit, complete | | 1 | 1 | |
| 9.3.5 | GAUGING KIT: Consisting of two dry pressure gauges: one of high range up to 600 PSI and one of low range up to 100 PSI. Kit must be compatible with all rail tank cars. | One kit, complete | | 1 | 1 | |
| 9.3.6 | ANHYDROUS AMMONIA "A", KIT: For repair or plugging leaks in anhydrous ammonia gas cylinders. | One kit, complete | | 0 | 0 | |
| 9.3.7 | PATCH AND REPAIR, PIPE, LIQUIDS, SMALL, KIT: Consists of externally applied single bolt or dual bolt pipe clamps, with rubber sheeting lining; ten or more different pipe sizes ranging from 1/2" diameter pipe to at least 4" diameter pipe; with extra 1/8" neoprene material. | One kit | | 1 | 1 | 1 |

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|--------|--|---|---|---|---|---|
| 9.3.8 | PATCH AND REPAIR, PIPE, LIQUIDS, MEDIUM, KIT: Consists of externally applied dual bolt pipe clamps, with rubber sheeting lining; three or more different pipe sizes ranging from 4 1/2" diameter pipe to at least 8" diameter pipe; with extra 1/8" neoprene material. | One kit | | 0 | 0 | 0 |
| 9.3.9 | PATCH AND REPAIR, PIPE, LIQUIDS, LARGE, KIT: Consists of externally applied dual bolt or quadruple bolt (preferable) pipe clamps, with rubber sheeting lining; Ten or more different sizes ranging from 1" diameter pipe to at least 5" diameter pipe; with extra 1/8" neoprene material. Pipe clamps of this design range up to 18" in diameter. | One kit | | 0 | 0 | 0 |
| 9.3.10 | PATCH AND REPAIR, PIPE, LIQUIDS AND GAS: An assortment of wraps that can patch curved sections of pipe joints or fittings that are difficult to patch using mechanical devices. Capable of patching pipes from 1/2", up to 12" diameter or greater. Suitable for use in industrial applications with various chemicals. | One kit | | 1 | 1 | 1 |
| 9.3.11 | CLAMP, PIPE, GAS LINE, MECHANICAL: Used for squeezing shut natural gas lines with diameters up to 2" and with pressures not exceeding 75 psi. | One kit | ASTM F-1563 | 1 | 1 | |
| 9.3.12 | CLAMP, PIPE, GAS LINE, HYDRAULIC: Heavy Duty squeeze tool for squeezing shut natural gas lines of 1" to approx. 3 1/2" in diameter, hydraulically operated. | One kit | ASTM F-1563 | 0 | 0 | |
| 9.3.13 | 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 diameter pipe flange, or pipe valve connection, then inflated. Requires air source, air hose, regulator. | One kit Either one will satisfy requirement | 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) | 1 | 1 | 1 |
| 9.3.14 | 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 diameter, then inflated. Requires air source, air hoses, regulator. | | | | | |
| 9.3.15 | PATCH, TANKER, LIQUID: Large foam and plastic patch 12" x 7" with six feet of ratchet strap for 55-gallon drums. Extendable to twenty-five feet with extra strapping for highway tanker patching capability. | One kit | | 1 | 1 | 1 |
| 9.3.16 | 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. | One kit: Either one will satisfy requirement | | 1 | 1 | 1 |
| 9.3.17 | 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. | | | | | |
| 9.3.18 | 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 upgrade of previous kit. | One kit | | 0 | 0 | 0 |

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|--------|--|--|---|---|---|---|
| 9.3.19 | 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. | One unit | | 0 | 0 | 0 |
| 9.3.20 | 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. | One unit | | 0 | 0 | 0 |
| 9.3.21 | 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. | One unit | | 0 | 0 | 0 |
| 9.3.22 | 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., 9.3.13 or 9.3.15 or 9.3.16). | One 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) | 1 | 1 | 1 |
| 9.3.23 | 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. | One Unit | | 0 | 0 | 0 |
| 9.3.24 | PATCH, DRUM, LIQUID, COMPRESSION, KIT: Consists of six different sizes of tapered plug; two different sizes ball plug; two different sizes "T" plug, all with butterfly nuts; eight 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 | | 1 | 1 | 1 |
| 9.3.25 | 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. | One system | | 0 | 0 | 0 |
| 9.3.26 | DRUM PLUGS (BUNG): Spare bung plugs, metal and plastic. ¾" and 2". | Four of each size and type | | 4 | 4 | 0 |
| 9.3.27 | DRUM "UP-ENDER": | One | | 1 | 1 | 1 |
| 9.3.28 | PLUGS, STOPPER, LIQUID, COMPRESSION, REPLACEMENT: Individual replacement 6-piece compression stopper plugs for holes from ½" up to 2" diameter, with butterfly nut, for Drum, Liquid, Compression kit. | One each of two different sizes | | 0 | 0 | 0 |
| 9.3.29 | PLUGS, TAPERED STOPPER, LIQUID, COMPRESSION, EXTRA LARGE: Individual compression stopper plugs for holes 3" to 4" diameter, with butterfly nut; Sizes as indicated. (Complements and enhances Kit Item # 9.3.24). | One of either size | Tapered Plug: One – 3" diameter OR One – 4" diameter | 1 | 1 | 1 |
| 9.3.30 | PLUGS, TAPERED STOPPER, LIQUID, COMPRESSION, REPLACEMENT: Individual tapered, ball or half-round stopper plugs for holes up to 2" diameter, with butterfly nut, for Drum, Liquid, Compression kit. | One each of two different sizes | | 0 | 0 | 0 |
| 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" diameter, with butterfly nut; Sizes as indicated. (Compliments and enhances Kit Item #9.3.24). | One of either size | Ball or Half-Round: One – 3" diameter OR One – 4" diameter | 1 | 1 | 1 |

| | | | | | | |
|--------|---|---|---|---|---|---|
| 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 # 9.3.24). | One Unit | "T" Bolt Plug: 3" or larger, square curved plate | 1 | 1 | 1 |
| 9.3.33 | PLUGS, CONICAL, LIQUID, DRAIN: Kit consisting of three tapered plugs with eye bolts, ranging from 2 1/2" to 8" diameter for holes, drains, gravity flow pipes. Plugs must be flexible and chemical resistant. | Set of at least three sizes | | 3 | 3 | 3 |
| 9.3.34 | PLUGS, TAPERED, LIQUID, PNEUMATIC: Kit often comes with at least three different types of rubber plugs; Round tapered to 4" diameter and 10" long; Narrow wedge tapered 2 1/2" wide, Wide wedge tapered 4 1/2" wide; Includes quick-connect/quick-disconnect application lance; Requires air source, air hoses, regulator. | Set of at least three 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) | 0 | 0 | 0 |
| 9.3.35 | PLUGS, EXPANSION, LIQUID, STANDARD, KIT: Kit consisting of plumber's style expansion plugs with wing nut; 1", 1 1/4", 1 1/2", 1 3/4", 2", 2 1/2", 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 seven different sizes, of either style | | 7 | 7 | 7 |
| 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 1/4", 1 1/2", 1 3/4", 2", 2 1/2", 3", 3 1/2", 4", all of which have 1/4" 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. | | | 0 | 0 | 0 |
| 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; 1/4", 3/8", 1/2", 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 four different sizes | | 0 | 0 | 0 |
| 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 | | 0 | 0 | 0 |
| 9.3.39 | PLUGS, INFLATABLE, LIQUID, SMALL PIPE, KIT: Kit consisting of smaller diameter pipe (1/2", 3/4", 1", 1 1/4", 1 1/2"), 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 | | 0 | 0 | 0 |
| 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 | | 0 | 0 | 0 |

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|--------|---|---|--|---|---|---|
| 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 | | 0 | 0 | 0 |
| 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 seven different sizes | | 7 | 7 | 7 |
| 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" diameter to 5" diameter, and 3" long to 10" long | Assortment to satisfy 1" to 5" full range | | 5 | 5 | 5 |
| 9.3.45 | PLUGS, DOWELS, LIQUID, Extra Large: Long tapered round wood, rubber, or plastic plugs ranging from 4" diameter to 8" diameter | Assortment to satisfy local needs | | 0 | 0 | 0 |
| 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 | | 0 | 0 | 0 |
| 9.3.47 | PLUGS, BOILER, THREADED: Round tapered steel plugs, threaded, 1/8" to ¾" approximate diameter, by about 2" long. | One | | 0 | 0 | 0 |
| 9.3.48 | DOMELID 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 | Newer tank trailers may require 9.3.48 | 4 | 4 | 4 |
| 9.3.49 | DOMELID 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. 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 decon shower station, and at least two additional rinse stations.

10.1 Ground Protection

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 home made to provide a way to capture the decontamination run-off as to protect the environment.

| Inv. #: | Item Name and Description | Required Minimum | Comments | 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. | Two | | 2 | 2 | 2 |
| 10.1.2 | TARPS, CARRY-ALL, SMALL: Approximately 6' by 6', a small tarp, or carry-all (has handles) for contaminated equipment drop at decon first station. | One | | 1 | 1 | 1 |
| 10.1.3 | SHEETING, PLASTIC, ROLL, HEAVY DUTY: Approximate size 5' wide x 100' length, unfolds to approximately 20' wide, water repellent polyethylene. | One roll | | 1 | 1 | 1 |
| 10.1.4 | CATCH BASIN/POOL: Approximately 60-120 gallon capacity. Sometimes is a separate item, or sometimes supplied with a gross decon shower system or kit. | Three | | 3 | 3 | 3 |
| 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. | One | | 0 | 0 | 0 |
| 10.1.6 | EYE WASH, STATION: Portable, approximately 7-gallon capacity with 0.4 GPM flow rate. | One | | 0 | 0 | 0 |

10.2 Support Tools for Decontamination

Use of stiff bristled brushes should be avoided as they can do damage to the outer film layer of CPC.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 10.2.1 | STOOLS, PORTABLE: Plastic, stackable or folding. | Four | | 4 | 4 | 4 |
| 10.2.2 | BRUSHES, LONG HANDLE, SOFT BRISTLE: Toilet type: approximately 16" long, with plastic bristles | Four | | 4 | 4 | 4 |
| 10.2.3 | BRUSHES, SHORT HANDLE, SOFT BRISTLE: Toilet type: Plastic bristles | Two | | 0 | 0 | 0 |
| 10.2.4 | BRUSHES, SHORT HANDLE, RAT TAIL: Carpenter type, synthetic bristles | Two | | 2 | 2 | 2 |
| 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. | Two | | 2 | 2 | 2 |
| 10.2.6 | SPONGE, SET: Approximate size 3 to 5 inches wide by 4 to 6 inches long x 4 inches deep, | Set of Four | | 4 | 4 | 4 |
| 10.2.7 | TOWELS, ABSORBENT, DRYING: Commercial laundry towels, cotton, approximately 20" x 40" | Eight | | 8 | 8 | 8 |
| 10.2.8 | TOWELS, ABSORBENT, DISPOSABLE: Paper towels, usually in rolls. | One Roll | | 1 | 1 | 1 |
| 10.2.9 | BLANKETS, DISPOSABLE: | Four | | 4 | 4 | 4 |
| 10.2.10 | CADAVER BAGS: Non-transparent | One | CDC | 0 | 0 | 0 |

| | | | | | | |
|---------|---|---|--|----|----|----|
| 10.2.11 | CLOTHING, MODESTY/MODESTY KIT: Usually light weight disposable Tyvek® or equal, an array in various sizes; Complete with booties or foot protection. Meant to be used post decontamination. May be used in conjunction with 10.2.19. | Minimum of twelve sets | | 12 | 12 | 12 |
| 10.2.12 | TRAFFIC CONES/DELINEATORS, ORDINARY: Minimum 18" tall, high visibility. | Minimum of six | | 6 | 6 | 6 |
| 10.2.13 | TRAFFIC CONES/DELINEATORS, ORDINARY, REFLECTIVE: Minimum 18" tall, high visibility, with reflective bands, or warning bands "DO NOT ENTER" or "KEEP OUT". | | | | | |
| 10.2.14 | TRAFFIC CONES, MINIATURE: Approximately 4" to 6" tall | Ten to twenty | | 0 | 0 | 0 |
| 10.2.15 | SOAP, HYPOALLERGENIC, LIQUID: In dispense containers. | One pint | | 1 | 1 | 1 |
| 10.2.16 | MULTI THREAT DECON KIT: Multiple threat decon system capable of use for decon from CWA, bio agents, and synthetic opiates. | Capable for one team | | 1 | 0 | 0 |
| 10.2.17 | STOP WATCH: | One | | 1 | 0 | 0 |
| 10.2.18 | CHEMICAL RESISTANT-TAPE: Approximately 2" wide in rolls of 50'. Similar to Duct Tape but has chemical resistant outer layer. | Two Rolls | | 2 | 2 | 2 |
| 10.2.19 | CLOTHING REMOVAL TOOLS: Such as scissors, shears, etc. | One | | 1 | 1 | 1 |
| 10.2.20 | 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 twelve individuals minimum | | 12 | 12 | 12 |

10.3 Water Supply, Distribution Tools

Decontamination may require 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 ensure that the fire hose is available through some source. Some HazMat and/or decontamination companies carry their own.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 10.3.1 | ADAPTORS, 2 ½ TO 1 ½ AND 1 ½" TO GARDEN HOSE REDUCER(S): | Two of each size | | 2 | 2 | 2 |
| 10.3.2 | MANIFOLD FIRE HOSE: All metal or plastic construction with one 1 ½" female fire hose inlet swivel coupling, and three to six ¾" garden hose discharge valves. | One of each | | 1 | 1 | 1 |
| 10.3.3 | MANIFOLD GARDEN HOSE: All metal or plastic construction with one ¾" garden hose inlet swivel coupling, and three to six ¾" garden hose discharge valves. | | | | | |
| 10.3.4 | HOSE, GARDEN: Minimum of 25' each, may be collapsible – flat type, ½" diameter | Three | | 3 | 3 | 3 |

| | | | | | | |
|--------|--|-------|---|---|---|---|
| 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). | Three | Might be attached to and included with Item # 10.2.5. | 3 | 3 | 3 |
| 10.3.6 | WRENCH, HYDRANT, UNIVERSAL: | One | | 1 | 1 | 1 |
| 10.3.7 | APPLICATOR, NOZZLE, GARDEN HOSE ADJUSTABLE: Wash / Spray Nozzles | Two | | 2 | 2 | 2 |
| 10.3.8 | APPLICATOR, PRESSURE, GARDEN SPRAYER: Hand Pressurized pump sprayer. | One | | 1 | 1 | 1 |

10.4 Collection

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|--|--|--------|--------|--------|
| 10.4.1 | BUCKETS: Ordinary plastic, 5-gallon capacity, with or without lids | Four | | 4 | 4 | 4 |
| 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 | | 10 | 10 | 10 |
| 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 | | 10 | 10 | 10 |
| 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 decon area, not recommended for transfer operations and other containment activities. | <u>Must have as minimum:</u> One – 10.4.4 AND <u>One of either:</u> 10.4.5 OR 10.4.6 <u>For a total of:</u> Two | | 1 | 1 | 1 |
| 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 decon area, containment for leaking 55-gallon drum and other secondary containment, or catch reservoir for transfer operations. Must have at least one. | | <u>Must meet:</u> 49 CFR 173.3(c) If used to meet requirement for #10.4.4, #10.4.5, and #10.4.6, must have a total of Two. | 1 | 1 | 1 |
| 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 decon area, 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 | Ten | | 10 | 10 | 10 |

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

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 | Required Minimum | Comments | 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. | One for each assigned member | Must Be: Intrinsic to Underwriter's Laboratory #913 | 8 | 5 | 5 |
| 11.1.2 | RADIO, PORTABLE, VOICE SCRAMBLER: Secure Voice hardware and interfacing | Each portable unit | | 0 | 0 | 0 |
| 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. | One for each assigned member | | 0 | 0 | 0 |
| 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | | 6 | 4 | 0 |
| 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. | One for each assigned member | | 0 | 0 | 0 |
| 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. | Two for each portable unit | Must Be: Intrinsic to UL # 913 | 16 | 10 | 10 |

11.2 Voice and Data Communication

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:

Cell Phone: *–With service plan that allows priority access during a crisis or a disaster to ensure critical emergency response services can be provided by the government.*

Satellite 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.*

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|------------|--------|--------|--------|
| 11.2.1 | PHONE, CELLULAR: Priority access service capable. service contract to provide data/voice and internet access via cellular network. | One | Smartphone | 1 | 1 | 1 |
| 11.2.2 | PHONE, SATELLITE: | One | | 1 | 0 | 0 |
| 11.2.3 | DATA, SATELLITE: Hardware and service contract to provide data/voice and internet access via satellite. | One recommended | | 0 | 0 | 0 |
| 11.2.4 | GPS PERSONAL RECEIVER/TRANSMITTER: A portable unit that marks location of user. If a cellular phone (11.2.1) is to be used for this capability a second unit is required. | One | | 1 | 1 | 0 |

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 Breathing Apparatus (SCBA)

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 or NFPA 1986 CBRN (chemical, biological, radiological and nuclear) criteria. Ideally teams would carry an SCBA for each assigned team member. However, space constraints and cost issues are limiting factors. The minimum quantities required position a team to have multiple entry teams. All members are required to have a properly fit tested mask.

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).

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|---------------------------|------------------|--------|--------|--------|
| 12.1.1 | SCBA, COMPLETE, STRUCTURAL, ONE HOUR RATING: With bottle; unit must be NFPA and NIOSH certified for routine fire fighter use. | Four (4) for Type 2 and 3 | NFPA; NIOSH | | 4 | 4 |
| 12.1.2 | SCBA, COMPLETE, WMD CBRN, ONE HOUR RATING: With bottle; unit must be NFPA structural firefighting compliant and NIOSH certified for WMD CBRN threat atmospheres | Six (6) for Type 1 | NFPA; NIOSH CBRN | 6 | | |

| | | | | | | |
|--------|---|---|------------------|---|---|---|
| 12.1.3 | MASK, FULL-FACE, STRUCTURAL: NFPA and NIOSH compliant for structural fire fighter use. | One for each assigned member | NFPA; NIOSH | | 5 | 5 |
| 12.1.4 | MASK, FULL-FACE, WMD CBRN: Facepiece must be NFPA structural firefighting compliant and NIOSH certified for WMD CBRN threat atmospheres. | One for each assigned member | NFPA; NIOSH CBRN | 8 | | |
| 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. | One for each assigned member | | 0 | 0 | 0 |
| 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. | One for each assigned member | | 0 | 0 | 0 |
| 12.1.7 | BOTTLE, SPARE: Extra replacement air bottle of same type, and size. | One spare bottle for each assigned SCBA | NFPA, NIOSH | 6 | 4 | 4 |
| 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 | 0 | 0 | |
| 12.1.9 | RIC/RIT PACK: Complete kit with SCBA bottle, high pressure regulator, low pressure regulator with mask to be used for RIC/RIT. Should also be equipped with a device to rapidly extricate a downed team member, ability to provide minimal decon, cut a suit to gain access and control bleeding. | One complete kit recommended | | 0 | 0 | |

12.2 Air Purifying Respirator

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 | Required Minimum | Comments | 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. | Six (6) for Type 1 | NIOSH | 6 | 0 | 0 |
| 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. | Six (6) for Type 1 | NIOSH - CBRN | 6 | | |
| 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 | One for each assigned member | NIOSH | 0 | 0 | 0 |

| | | | | | | |
|--------|--|------------------------------|--------------|---|---|---|
| 12.2.4 | MASK AND UNIT, PAPR, CBRN: Full facepiece, single or multi cartridge style, speaking diaphragm, pump, airline, certified for use in industrial chemical threat atmospheres AND CBRN atmospheres. Meets 12.2.2 requirement | One for each assigned member | NIOSH - CBRN | 0 | | |
| 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. | Six (6) for Type 1 | NIOSH | 6 | 0 | 0 |
| 12.2.6 | CARTRIDGES, APR OR PAPR, CBRN: Cartridges are certified for WMD CBRN threat atmospheres. | Six (6) for Type 1 | NIOSH - CBRN | 6 | | |

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

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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 13.1.1 | SHOVEL, ROUND POINT, STEEL: Long handle | One | | 1 | 1 | 1 |
| 13.1.2 | SHOVEL, ROUND POINT, POLYPROPELEN PLASTIC: Or equal, long handle | | | 0 | 0 | 0 |
| 13.1.3 | SHOVEL, SQUARE POINT, STEEL: Long handle | One | | 1 | 1 | 1 |
| 13.1.4 | SHOVEL, SQUARE POINT, POLYPROPELENE PLASTIC: Or equal, long handle | One | | 1 | 1 | 1 |
| 13.1.5 | SHOVEL, SCOOP, POLYPROPELENE PLASTIC: Or equal, | One | | 1 | 1 | 1 |
| 13.1.6 | BROOM, STREET, STIFF POLYPROPELENE BRISTLE: With handle | One | | 1 | 1 | 1 |
| 13.1.7 | HAMMER, SLEDGE: 7 – 10 Lbs. | One | | 1 | 1 | 1 |
| 13.1.8 | BAR, WRECKING: 36" or greater | One | | 1 | 1 | 1 |

13.2 General Purpose, Hand Tools, Small

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 there will be no need to duplicate.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|---|------------------|----------|--------|--------|--------|
| 13.2.1 | HAMMER, DEAD BLOW: 36 to 45 oz. | One | | 1 | 1 | 1 |
| 13.2.2 | HAMMER, CLAW: 16 to 24 oz.; Non-Sparking acceptable. | One | | 1 | 1 | 1 |

| | | | | | | |
|---------|--|---------|--|---|---|---|
| 13.2.3 | HAMMER, ENGINEER: 36 to 40 oz.; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.4 | HAMMER, BALL PEEN: 8 to 16 oz.; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.5 | SCREWDRIVER, FLAT HEAD, KIT: To consist of at least <u>any three</u> of the following, in either short or long handle: Standard flat head – Small, medium, large, extra-large; Non-Sparking acceptable. | One kit | | 1 | 1 | 1 |
| 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. | One kit | | 1 | 1 | 1 |
| 13.2.7 | PLIERS, ORDINARY, UTILITY: Available in various sizes, 6", 7", 8", with square blunt end; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.8 | PLIERS, WIRE, SIDE CUTTING: Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.9 | PLIERS, LONG-NOSE, NEEDLE: Between 7" to 10"; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 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 | One kit | | 1 | 1 | 1 |
| 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. | One kit | | 1 | 1 | 1 |
| 13.2.12 | WRENCH, ALLEN, COMPLETE SET, STANDARD: | One kit | | 1 | 1 | 1 |
| 13.2.13 | WRENCH, ALLEN, COMPLETE SET, METRIC: | One kit | | 1 | 1 | 1 |
| 13.2.14 | WRENCH, CRESCENT, ADJUSTABLE, KIT: Kit to include any two of the following: Adjustable 12", 15", 22" 24"; Non-Sparking acceptable. | One kit | | 1 | 1 | 1 |
| 13.2.15 | WRENCH, CRESCENT, ADJUSTABLE, HEAVY DUTY: 26" to 36", aluminum or steel; Non-Sparking acceptable. | One | | 0 | 0 | 0 |
| 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. | One kit | | 1 | 1 | 1 |
| 13.2.17 | WRENCH, PIPE, ADJUSTABLE, HEAVY DUTY: 36" to 46"; Non-Sparking acceptable | One | | 1 | 1 | 0 |
| 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. | One | | 1 | 1 | 1 |
| 13.2.19 | WRENCH, COMBINATION, ORDINARY, KIT: (Open end and Box end), Set, to include any 10 of the following: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8"; Non-Sparking acceptable. | One kit | | 1 | 1 | 1 |
| 13.2.20 | WRENCH, COMBINATION, INDUSTRIAL, KIT: (Open end and Box end), Set, to include any 5 of the following: 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2", 2 1/4", 2 1/2" | One kit | | 0 | 0 | 0 |
| 13.2.21 | WRENCH, SOCKET, KIT: Socket set to include any 10 of the following: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8"; Non-Sparking acceptable. | One kit | | 0 | 0 | 0 |

| | | | | | | |
|---------|--|---------|--|---|---|---|
| 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. | One kit | | 0 | 0 | 0 |
| 13.2.23 | CHISEL, COLD, STANDARD OR HEX: Sizes between ¾" to 1" width by 6" to 14" long | One | | 1 | 1 | 1 |
| 13.2.24 | PUNCH, PIN – 7" x 3/8": | One | | 0 | 0 | 0 |
| 13.2.25 | PUNCH, PIN – 12" x 5/8": | One | | 0 | 0 | 0 |
| 13.2.26 | PUNCH, PIN, SPRING LOADED: | One | | 1 | 1 | 1 |
| 13.2.27 | TAPE, MEASURING, RETRACTABLE, METAL: 24' or greater. | One | | 1 | 1 | 1 |
| 13.2.28 | TAPE, MEASURING, RE-WIND, NON-METALLIC: 50 feet minimum, must be non-conductive. | One | | 1 | 1 | 1 |
| 13.2.29 | KNIFE, PUTTY, SCRAPING: 2' wide; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.30 | KNIFE, GENERAL UTILITY, CUTTING: Any heavy-duty knife including carpet cutting type: | One | | 1 | 1 | 1 |
| 13.2.31 | SHEARS, CUTTING: Any heavy-duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting; Non-Sparking acceptable. | One | | 1 | 1 | 1 |
| 13.2.32 | STRAPS, RATCHET, TIE DOWN: Approximately 1" x 20', 1000 lbs. approximate minimum rating. | Two | | 1 | 1 | 1 |

13.3 Special Purpose Hand Tools – Non-Sparking

Special purpose non-sparking tools. 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 | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|----------|--------|--------|--------|
| 13.3.1 | NON-SPARKING, HAMMER, SLEDGE: 7 to 10 lbs. | One | | 1 | 1 | 1 |
| 13.3.2 | NON-SPARKING, HAMMER, CLAW: 16-24 oz.; Also meets # 13.2.2 | One | | 1 | 1 | 1 |
| 13.3.3 | NON-SPARKING, HAMMER, ENGINEER: 36-40 oz. | One | | 0 | 0 | 0 |
| 13.3.4 | NON-SPARKING, HAMMER, BALL PEEN: 8-16 oz. | One | | 0 | 0 | 0 |
| 13.3.5 | NON-SPARKING, SCREWDRIVER, FLAT HEAD, KIT: To consist of at least <u>any three</u> of the following, in either short or long handle: Standard flat head tip– Small, medium, large, extra-large. | One kit | | 1 | 1 | 1 |
| 13.3.6 | 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. | One kit | | 1 | 1 | 1 |
| 13.3.7 | NON-SPARKING, PLIERS, ORDINARY, UTILITY: Available in various sizes, 6", 7", 8", with square blunt end. | One | | 1 | 1 | 1 |
| 13.3.8 | NON-SPARKING, PLIERS, WIRE, SIDE CUTTING: | One | | 1 | 1 | 1 |
| 13.3.9 | NON-SPARKING, PLIERS, LONG-NOSE, NEEDLE: | One | | 1 | 1 | 1 |

| | | | | | | |
|---------|--|---------|--|---|---|---|
| 13.3.10 | 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. | One kit | | 0 | 0 | 0 |
| 13.3.11 | 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. | One kit | | 0 | 0 | 0 |
| 13.3.12 | NON-SPARKING, WRENCH, BUNG: Universal: Several styles available, but should be able to function on 5 or more different bung caps and plugs. | One | | 1 | 1 | 1 |
| 13.3.13 | NON-SPARKING, WRENCH, CRESCENT, ADJUSTABLE, KIT: Kit to include any two of the following: Adjustable 12", 15", 22" 24". | One kit | | 1 | 1 | 1 |
| 13.3.14 | NON-SPARKING, WRENCH, CRESCENT, ADJUSTABLE, HEAVY DUTY: 26" to 36", aluminum or steel. | One | | 0 | 0 | 0 |
| 13.3.15 | NON-SPARKING, WRENCH, PIPE, ADJUSTABLE: Kit to include any two of the following: House – 16", Standard - 18", Medium – 22", Large – 28". | One kit | | 1 | 1 | 1 |
| 13.3.16 | NON-SPARKING, WRENCH, PIPE, ADJUSTABLE, HEAVY DUTY: Available in sizes ranging from 36" to 46". | One | | 0 | 0 | 0 |
| 13.3.17 | NON-SPARKING, WRENCH, COMBINATION, ORDINARY, KIT: (Open end and Box end), Set, to include any 10 of the following: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8" | One kit | | 0 | 0 | 0 |
| 13.3.18 | NON-SPARKING, WRENCH, COMBINATION, INDUSTRIAL, KIT: (Open end and Box end), Set, to include any 5 of the following: 1 1/2", 1 5/8", 1 3/4", 1 7/8", 2", 2 1/4", 2 1/2" | One kit | | 0 | 0 | 0 |
| 13.3.19 | NON-SPARKING, WRENCH, SOCKET, KIT: Socket set to include any 10 of the following: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8" | One kit | | 0 | 0 | 0 |
| 13.3.20 | NON-SPARKING, WRENCH, SOCKET, INDUSTRIAL, KIT: Socket set to include any 5 of the following: 1 1/2", 1 5/8", 1 3/4", 2", 2 1/4", 2 1/2". | One kit | | 0 | 0 | 0 |
| 13.3.21 | NON-SPARKING, KNIFE, PUTTY, SCRAPING: – 2" wide | One | | 1 | 1 | 1 |
| 13.3.22 | NON-SPARKING, SHEARS, CUTTING: Any heavy-duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting. | One | | 1 | 1 | 1 |

13.4 Miscellaneous Equipment

Miscellaneous tools and items that are needed during HazMat incidents that do not fit well in other categories, but are still necessary for a hazardous materials incident.

| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
|---------|--|------------------|------------------------|--------|--------|--------|
| 13.4.1 | REFRIGERATOR, UTILITY, SMALL: Installed onboard response unit, of approximate size 18" wide by 18" tall by 12" deep | One | | 1 | 1 | 0 |
| 13.4.2 | MEGAPHONE: Battery operated, 16-watt with 800' range; Adjustable volume. | One | | 1 | 1 | 1 |
| 13.4.3 | 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. | One kit | | 1 | 1 | 1 |
| 13.4.4 | SCOPE, SPOTTING: Includes binoculars; Adjustable telephoto spotting scope or binoculars with adjustable focus. | One | | 1 | 1 | 0 |
| 13.4.5 | 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. | One caddy | | 0 | 0 | 0 |
| 13.4.6 | VESTS, I.C.S., HAZMAT GROUP: For all of the positions within the HM Group (HazMat Group Supervisor, Asst. Safety Officer, Entry Team Leader, De-Con Team Leader, Site Access Control Leader, Technical Specialist, Safe Refuge Area Manager) | One set | ANSI 107 and FIREScope | 1 | 1 | 1 |
| 13.4.7 | LIGHT PROBE, FLOURESCENT: Approximately 25 watts, 36" long wand handle, insertable through bung hole of 55-gallon drum, and other confined spaces. | One | Intrinsically Safe | 0 | 0 | 0 |
| 13.4.8 | AIR BAG, LIFTING, HIGH PRESSURE: Operated by SCBA air bottle, to consist of one or a variety of air inflatable bags, with manifold and hose hardware, capable of lifting approximately 30 tons to 12 inches | One kit | | 0 | 0 | 0 |

FIREScope HazMat Specialist Working Group and CALOES can consider alternative items or substitutions for unavailable items on the MEL.

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**FIRESCOPE MINIMUM
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) | <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> PASS FAIL </div> |

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 “Minimum 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: To test acidity or alkalinity of aqueous solutions, 0-14 range ¼" wide x 3" long approximate | One Packet | | | | |
| 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 | One Packet | | | | |
| 1.1.3 | TEST STRIPS, OXIDIZER, PACKET: Potassium iodide-starch paper activated by weak hydrochloric acid. | One Packet | | | | |
| 1.1.4 | TEST STRIPS, PEROXIDE: | One Packet | | | | |
| 1.1.5 | TEST STRIPS, FLUORIDE, PACKETS: | One Packet | | | | |
| 1.1.10 | TEST STRIPS, WMD CHEMICAL, KIT: Military grade or equivalent detection papers for field testing of liquids only: (i.e., "M-8" paper booklet of twenty-five 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 twelve sheets for some nerve agents, blister agents). Strip turns to one of three colors | One packet | | | | |

| 1.1.11 | 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. | One Packet | | | | |
|--|---|--|--|--------|--------|--------|
| 1.1.12 | 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]) | One Packet | | | | |
| 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 | CHEMICALS, KNOWN, QUALITATIVE: Test Kit, for testing and detection of known chemicals | One Kit | | | | |
| 1.2.2 | CHEMICALS, UNKNOWN, QUALITATIVE: Test Kit, for testing, classifying and detecting unknown chemicals, not for biological substances. (Usually, the more advanced version of the kits listed in # 1.2.1). | One Kit | Satisfies requirement for 1.2.1 | | | |
| 1.2.3 | PCB CHEMICALS, TEST KIT: Consists of a multi-step screening procedure to test for presence of poly-chlorinated biphenyl contaminated solvents. Minimum detection of 50 ppm. | One Kit | Item #1.2.2 can test for this capability | | | |
| 1.2.8 | WMD, WATER TEST, 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. | One Kit | | | | |
| 1.3 Qualitative Analysis, Kits – Electronic | | | | | | |
| Inv. #: | Item Name and Description | Requirement | Function, Certification Or Standard | Type 1 | Type 2 | Type 3 |
| 1.3.3 | SPECTROSCOPY, INFRA-RED: | One System | | | | |
| 1.3.4 | SPECTROSCOPY, RAMAN: | One System | | | | |
| 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: | One Kit, Complete, of any of the three listed | | | | |
| 1.4.2 | COLORIMETRIC Kit, CHIP: Small colorimetric tubes in a glass or plastic chip. | | | | | |
| 1.4.3 | COLORIMETRIC KIT, MULTI-SENSING: Specifically designed to read up to five or more different tubes simultaneously during one reading survey. | | | | | |
| 1.4.4 | COLORIMETRIC KIT, WMD: Consists of selected industrial chemical tubes assembled by the manufacturer. Requires more advanced interpolation of the data derived. | One kit, Complete | | | | |
| 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: 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. | One Kit Complete, of those listed for #1.5.1 Or #1.5.2 | | | | |

| 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: Continuous monitoring, independent displays, built-in alarms, minimum of ten feet of tubing and sampling wand. (O ₂ concentration in Percent; Combustible Vapor in percent of LEL; CO concentration in ppm; H ₂ S concentration in ppm). Calibrated to manufacturers specifications. | One Unit | Intrinsic to UL #913 | | | |
| 2.1.2 | BUMP TEST KIT, FOR ITEM # 2.1.1: | One 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: 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. May be suitable for Benzene ring substances. | One unit | Continuous monitoring; Downloadable to computer | | | |
| 2.2.2 | AROMATIC HYDROCARBON (BENZENE RING) MONITORING: Device designed to detect aromatic hydrocarbon (ring) substances. <i>If this utility is incorporated into the above device, this requirement is met.</i> | One unit | Continuous monitoring | | | |
| 2.2.4 | AREA MONITORING: A four (4) gas or greater system that is capable of communicating real time data remotely to a computer. A complete system would include a minimum of four units. Should be compatible with 7.3 & 7.4 | One Complete System | | | | |
| 2.2.5 | BUMP TEST KITS: Bump test kit for each type of monitor with appropriate gasses. | One 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: Detects Ammonia vapors to ppm, approximate range 0 to 100 ppm. | One capability | One device may have capability to detect two or more specialty gases | | | |
| 2.3.2 | FREONS, HALOGENATED HYDROCARBONS: Refrigerants | One capability | | | | |
| 2.3.3 | HALOGEN GASES: Specifically, Chlorine. Other halogen gases optional depending on local needs. | One capability | | | | |
| 2.3.4 | PHOSPHINE: | One capability | | | | |
| 2.3.14 | BUMP TEST KIT: Bump test kit for each type of monitor with appropriate gasses. | One for each type of monitoring 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: This includes GA, GB, GD, GF, VX. | Must have capability to monitor and detect for at least <u>one substance in each of these six categories.</u> This may require one to several instruments, depending upon versatility of each | | | | |
| 2.4.2 | BLISTER AGENT – MUSTARDS DETECTION: This includes H, HD, HN. | | | | | |
| 2.4.3 | BLISTER AGENT – LEWISITE DETECTION: This includes L, HL | | | | | |
| 2.4.4 | BLOOD AGENT DETECTION: This includes AC, HCN, CK, SA. | | | | | |
| 2.4.5 | CHOKING / VOMITING AGENT DETECTION: This includes CG, DP, CL. | | | | | |
| 2.4.6 | INCAPACITATING AGENT DETECTION: Specifically, pepper spray. | | | | | |
| 2.4.9 | BUMP TEST KITS: Bump test kit for each type of monitor with appropriate gasses. | One for each type of monitoring unit | | | | |
| 2.4.10 | ANTIDOTE KIT: Antidote for CWA and organophosphate poisoning, auto-injector that administers atropine and pralidoxime simultaneously. Consider NARCAN as well for opiate poisoning. Intended to self or peer care, not for treating the public. | Two per assigned member | CAL EMSA Policy #300 | | | |

| 3. SAMPLING | | | | | | |
|---|--|---|-------------------------------------|--------|--------|--------|
| 3.1 Substance Capture and Bulk Transfer | | | | | | |
| Inv. #: | Item Name and Description | Requirement | Function, 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. | Twelve of either type, mix or match | EPA Protocol B | | | |
| 3.1.2 | COLIWASA TUBES, RE-USABLE, GLASS: Approximately 43" length, with Teflon seal. | | EPA Protocol B | | | |
| 3.1.5 | PIPETTE, TRANSFER, PLASTIC, REGULAR, BULK: DISPOSABLE, PLASTIC: Disposable, plastic, approximately 5 to 8 mL capacity, 15 cm long, some available with "bellows" type squeeze end. | Pkg of one hundred of either type; | | | | |
| 3.1.6 | PIPETTE, TRANSFER, PLASTIC, LAREGE, BULK: 20ml capacity, approximately 30 cm length (12") | Or a mixture | | | | |
| 3.1.10 | TEST TUBES, DISPOSABLE: Borosilicate glass, heat resistant | One hundred | | | | |
| 3.1.11 | SWAB STERILE: Sterile non-organic single use swab. | One Box (Minimum of six individual units) | | | | |
| 3.1.12 | SPONGE, SEALED, STERILE: For surface swipe sample taking. | Two | | | | |
| 3.1.15 | ENVIRONMENT DIPPER, TELESCOPIC: For collecting 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. | One | | | | |
| 3.1.16 | TONGS, BEAKER OR CRUCIBLE, METAL, PTFE COATED: Chemical resistant stainless steel with tips coated with PTFE, approximately 9 ½" long. | Two of either type, or one of each | | | | |

| 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. | | | | | |
|--|---|---|---|--------|--------|--------|
| 3.1.19 | FORCEPS: Steel, Teflon coated or uncoated, or Plastic polypropylene, approximate length 3 3/4" to 5 1/2", with pointed or round tips. | At least two, of any kind | | | | |
| 3.1.20 | FUNNEL: Plastic, glass or metal (disposable or re-useable): Small - approximate opening measurement 1 1/2" to 2" diameter; Medium - approximate opening measurement 2 1/2" to 3 1/2"; Large - approximate opening measurement 4" to 6" diameter. | Complement of three, with at least one of each size | Three different sizes | | | |
| 3.1.21 | SPATULA, SAMPLING, LARGE, "V" SHAPE: Plastic or metal, approximately 6" to 11" long x 3/4" wide, approximate capacity 15 cc to 36cc. | Total of five, in any combination | | | | |
| 3.1.22 | 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 1/2" long. | One | Meets FDA compliance | | | |
| 3.1.23 | SPOON, PLASTIC: Polypropylene, with long handle (approximately 7"), disposable, in 1/4 teaspoon, 1/2 teaspoon, 1 teaspoon, and 3 teaspoon sizes. | Twelve in any combination of those listed | | | | |
| 3.1.24 | SCOOP, SMALL, STERILE, 2 OZ: General purpose | One | | | | |
| 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; All 316 stainless steel with Teflon® piston; Hose 35 to 55 feet length; Rate 16 oz. per stroke approximate. | One of any of these three pumps listed | FM or UL Listed Mechanical, or If electrical, MUST be Intrinsically | | | |
| 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 transfers from containers up to 55 gallons at a rate of at least 5 GPM. | | | | | |
| 3.2.7 | PUMP, MECHANICAL: Approximately 15 GPM. Often is included as part of a tool inventory in support of decontamination processes. | One | | | | |
| 3.2.8 | STINGER KIT: Approximately 2"-4" diameter and approximately 12' long, to assist in transfer of flammable liquid product from an overturned tanker truck; Requires a pneumatic drill with metal cutting 4" diameter hole-saw type drill bit. | One complete kit | | | | |
| 3.2.9 | SYSTEM, GROUNDING AND BONDING, CAPABILITY: Complete system to consist of grounding rods, cables and ground resistance tester. | One complete kit | Met with sections 3.2.9.1, 3.2.9.2 and 3.2.9.3 | | | |
| 3.2.9.1 | 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 3/4" pin point hand clamps on both ends of each length. | Not Less than 75' | Compliant To: | | | |
| 3.2.9.2 | GROUNDING, RODS: Three rods of approximate length 4 feet to 6 feet minimum and approximate diameter 3/8" to 1/2" copper. | Not less than 4' | | | | |

| 3.2.9.3 | GROUND RESISTANCE AND BONDING VERIFICATION DETECTION CAPABILITY: Analog or digital readout, Intrinsically Safe, range of at least 0 – 200 ohm, 3-wire resistance hookup minimum. | One Capability: Ground resistance and bonding detection may require two separate units | NEC Article 250 And NFPA 70 NFPA 77 | | | |
|--|--|--|--|--------|--------|--------|
| 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, 4 & 8 OZ: Short, EPA, wide mouth with Teflon lined lids | Compliment of twelve | EPA Protocol B | | | |
| 3.3.4 | SAMPLE JARS, STERILE, AMBER GLASS, 4 & 8 OZ: EPA, wide mouth with Teflon lined lids | Compliment of four | EPA Protocol B | | | |
| 3.3.8 | STOPPERS, CONICAL: Rubber, neoprene, or silicone; Assortment, ranging between sizes #000 to #6 (nine sizes), (12 mm to 30 mm) | Kit of five different sizes | | | | |
| 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 twenty-four, representing all three sizes | | | | |
| 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. | Twelve | | | | |
| 3.3.11 | LABELS, ORDINARY BLANK: Approximate size to fit on sides of evidence collection jars or evidence bags; Preferably self-adhesive. | Kit of fifty of various sizes | | | | |
| 3.3.12 | LABELS, EVIDENCE SEALS: Tamper-proof evidence labels or tape, approximate size is 1 1/4" 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 roll, or minimum of twenty-five | | | | |
| 3.3.13 | PENS, MARKING, PAINT: Permanent marking, broad tip of porous fiber, multiple colors usually of enamel paint; Usually requires shaking to stir up paint. For marking on metal or glass. | Four, preferably of different colors | | | | |
| 3.3.14 | PENS, MARKING, INDELIBLE: Medium & Fine Point; Permanent marking, Variety of colors. | Kit of six | | | | |
| 3.3.15 | CHAIN Of EVIDENCE FORMS: | Twenty | | | | |
| 3.3.16 | PHOTO AND VIDEO, ASSESSMENT AND RECONNAISSANCE KIT, DIGITAL: Digital Camera (4 megapixel or better) 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. | One kit | | | | |
| 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: 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. | One complete kit | ICAO Packing #602 for Infectious Substances | | | |

| 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: 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) | One Unit: "Combination" survey meter will also satisfy requirement | | | | |
| 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. | One Unit: "Combination" survey meter will also satisfy requirement | | | | |
| 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. | One Unit: "Combination" survey meter will satisfy requirement | | | | |
| 4.1.8 | CHECK SOURCE: Check source appropriate for each type of detector carried. | One for each type of detector unit | | | | |
| 4.2 Radionuclide Detection | | | | | | |
| 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. Displays correct chemical name of identified radio-nuclide, classification, and nuclide size. | One | One unit may satisfy both 4.2.1 and 4.2.2 requirements | | | |
| 4.2.2 | NEUTRON RADIATION 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 | One | | | | |
| 4.2.3 | CHECK SOURCE: Check source appropriate for each type of detector carried. | One for each type of detector unit | | | | |
| 4.3 Dosimeters | | | | | | |
| Inv. #: | Item Name and Description | Requirement | Function, Certification Or Standard | Type 1 | Type 2 | Type 3 |
| 4.3.1 | 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 | | | | |

| 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, INDUSTRIAL CHEMICALS: At least one for each assigned member. | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current associated NFPA standard | | | |
| 5.1.3 | VAPOR PROTECTIVE, WITH WMD CHEMICAL / BIOLOGICAL PROTECTION: For high vapor threat protective ensemble. | Provides for WMD entry. Six (6) for Type 1 | Current NFPA related standard. May also meet 5.1.1 | | | |
| 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current related NFPA standard | | | |
| 5.2.2 | LIQUID SPLASH PROTECTIVE, WMD CHEMICAL / BIOLOGICAL PROTECTION: A separate WMD Chemical / Biological protective tactical ensemble which provides for liquid splash protection. | | | | | |
| 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: Can be a coverall type splash protective garment. | Two for each assigned member | | | | |

| ANCILLARY PROTECTIVE EQUIPMENT | | | | | | |
|--|---|--|--|--------|--------|--------|
| 6. ANCILLARY PROTECTIVE EQUIPMENT | | | | | | |
| 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: Replacement glove inventory shall be ordered from and include ample supply of the <i>manufacturer's</i> recommended "outer" glove. Readily available generic type replacement gloves not acceptable. The "inner" glove is listed in item # 6.1.3 below. | One Replacement pair for each suit on hand | Current related NFPA standard | | | |
| 6.1.2 | REPLACEMENT GLOVES, LIQUID SPLASH PROTECTIVE: Replacement glove inventory must include ample supply of the "outer" generic replacement gloves (Some suit ensembles are not supplied with gloves from the <i>manufacturer</i>). | Replacement pair for each suit on hand; Gloves for 6.1.1 will satisfy | Current related NFPA standard or manufacturer model # must be UL or SEI listed | | | |

| 6.1.3 | UNDER-GLOVE: Light weight chemical resistant disposable type glove popularly used as an under-glove or “inner” glove for the ensembles. Also used separately for light duty work, handling, sampling. | Twenty-four pair | | | | |
|------------------------------------|--|---|-------------------------------|--------|--------|--------|
| 6.1.4 | HIGH TEMPERATURE PROTECTIVE GLOVE: Provides approximately one minute of contact protection for surface temperatures of 1,000 ° F to 1,300 ° F. | Six pair | | | | |
| 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. | Six pair | | | | |
| 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: For use with Vapor Protective or Liquid Protective garments, and originals may be supplied by garment manufacturers. | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current related NFPA standard | | | |
| 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. | Six (6) for Type 1 Four (4) for Type 2 and 3 | | | | |
| 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. Should include suspension system, and adjustable sizing. | Six (6) for Type 1 Four (4) for Type 2 and 3 | ANSI Z-89.1 | | | |
| 6.3.2 | GOGGLES: Wide angle wraparound to prevent frontal and side splash to eyes Some available to fit over prescription glasses. | Six (6) for Type 1 Four (4) for Type 2 and 3 | ANSI Z-89.1 | | | |
| 6.4 Support Systems | | | | | | |
| 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” | Six (6) for Type 1 Four (4) for Type 2 and 3 | Current NFPA Standard | | | |
| 6.4.4 | 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. | One Kit | | | | |
| 6.4.5 | FIRST AID, KIT: In compliance with local policies and procedures of the agency seeking typing | One | | | | |
| 6.4.6 | COOLER, REHYDRATION: Industrial quality 5 -10-gallon capacity with spigot, carrying handle. | One | | | | |

| 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 | Three different references | | | | |
| 7.1.2 | GUIDEBOOK TYPE, PRINTED: Intervention, incident handling, hazard assessment. | Two different references | | | | |
| 7.1.3 | SPECIALTY TYPE, PRINTED: Special topics (i.e., rail tank car cross sections, pesticides, etc.) or specific information (i.e., incompatibility) | Two different references | | | | |
| 7.1.4 | REGULATORY TYPE, RESPONSE GUIDELINES, PRINTED OR ELECTRONIC: Local, Municipal, and County Response Plans, Operational Area Response Plans, OES Hazardous Materials Incident Contingency Plan. | One copy – Local Response Plans One copy – Oper. Area Resp. Plan One copy – OES HMICP | | | | |
| 7.1.5 | WMD CHEMICAL / BIOLOGICAL SUBSTANCES; PRINTED OR ELECTRONIC: Technical data, some guidelines, some first aid information. | At least: One – Chemical Two – Biological | | | | |
| 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: Technical Data, physical, chemical and toxicological properties | One resource | Some commercial electronic data platforms have two or more of these databases included as separate files. | | | |
| 7.2.2 | GUIDEBOOK TYPE, ELECTRONIC: Intervention, incident handling, hazard assessment. | One resource | | | | |
| 7.2.3 | SPECIALTY TYPE, ELECTRONIC: Special topics (i.e., rail tank car cross sections, pesticides, etc.) or specific information (i.e., incompatibility). | One resource | | | | |
| 7.2.4 | WMD CHEMICAL / BIOLOGICAL SUBSTANCES; ELECTRONIC: Technical data, some guidelines, some first aid information. | One resource | | | | |
| 7.2.6 | APPLICATIONS: Mobile applications, the intent is to meet one of the above disciplines. | One App | | | | |
| 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: | One Program | | | | |
| 7.3.2 | AIR MODELING, OVERLAY / PLUME DISPLAY SOFTWARE: Compatible with basic database program (#7.3.1 above) | One Program | | | | |
| 7.3.3 | AIR MODELING, OVERLAY / MAPPING SOFTWARE: Compatible with basic database program (#7.3.1 above) | One Program | | | | |
| 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: One (1) desktop, laptop, or tablet with the capability to support a USB drive, CD/DVD access, and internet access. | | | | | |

| | | | | | | |
|--------|--|--|--|--|--|--|
| 7.4.2 | PRINT CAPABILITY, COLOR: Ability to print documents at a rate of at least 10 pages per minute. This function can be combined with scanner (item 7.4.3) and duplication (item 7.4.4). | All teams need ability to perform all three functions. | | | | |
| 7.4.3 | SCAN CAPABILITY: Ability to SCAN documents in color, and save to hard drive or peripheral. This function can be combined with Printer (item 7.4.2) and Duplication (item 7.4.4) requirements. | PRINT SCAN DUPLICATE | | | | |
| 7.4.4 | DUPLICATION CAPABILITY: Ability to reproduce 8 ½ x 11 documents. This function can be combined with Printer (item 7.4.2) and Scan (item 7.4.3) requirements. | Separate components or combination components acceptable | | | | |
| 7.4.6 | ACCESS TO INTERNET, WIRELESS: Hardware, connections and ports to provide ability to utilize radio or telecommunications network for to access the Internet, is Broadband capable, has wireless internet card or device in order to enable any capable device to transmit and receive. | One capability | | | | |
| 7.4.7 | HARDWARE, COMPUTER, GRAPHICS: Ensure that a high-quality graphics chip enhancement, or graphics board is included | One Capability | | | | |
| 7.4.8 | HARDWARE, CD-ROM OR DVD DRIVE: Numerous different formats available, unit should be multi-format capable | One capability | | | | |
| 7.4.9 | 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. 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). | <u>Must have these capabilities:</u> a) Word Processing b) Photo-graphics | | | | |
| 7.4.10 | SOFTWARE, FORMAT CONVERSION: a) Ability to download, open, copy, and save files in various graphics formats. b) Ability to convert any document or graphics file. | <u>Must have ability to convert files i.e.:</u> a) .jpg b) .pdf | | | | |

| 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; Hand-held, portable stand-alone device for diminished light environments (Night Vision) | One unit | Generation III or better technology | | | |
| 8.1.8 | INFRARED, THERMOMETER, TEMPERATURE SENSING ONLY: Hand-held, portable scope; with L.E.D. direct temperature reading display, approximate range from -25° F to + 1000° F. | One device | | | | |
| 8.1.9 | INFRARED, HAND-HELD, THERMAL IMAGING CAMERA: Hand-held camera-like device, provides image of viewing area in infra-red light only (not ambient visual light). | One device | | | | |
| 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. | One unit | | | | |

| 8.1.16 | CAMERA, VIDEO, DIGITAL: Portable hand-held color video camera, with microphone, recommend including a waterproof case. The smartphone (11.2.1) may satisfy this requirement. | One 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: 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. | One complete kit: Either one as described will suffice | | | | |
| 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. | | | | | |

| 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: 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 | 5-gallon spill of sulfuric, hydrochloric, or nitric acids or equivalent | | | |
| 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 | 5-gallon spill of sodium hydroxide, ammonium hydroxide, or equivalent | | | |
| 9.1.3 | ENCAPSULATING SPREADABLE POWDER – <u>GENERAL PURPOSE (AND SUITABLE FOR PESTICIDES)</u>: Must be NON-CLAY BASED. Granular, spreadable, and pourable; Acceptable for POLAR and NON-POLAR based solvents including pesticides. | An amount sufficient to encapsulate a 5-gallon spill (Not “kitty litter” or diatomaceous earth) | 5-gallon spill of common hydrocarbon solvents, pesticides, or equivalent | | | |
| 9.1.4 | ENCAPSULATING SPREADABLE POWDER - <u>FORMALDEHYDE</u>: Granular spreadable / pourable, popular for formaldehyde solvents encapsulation. | An amount sufficient to encapsulate a 5-gallon spill | 5-gallon spill of formaldehyde or equivalent | | | |
| 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. | An amount sufficient to encapsulate 5 gallons | | | | |
| 9.1.6 | FIRE EXTINGUISHER, CLASS “D”: Capacity 30 lbs.; suited for metal fires | One unit | FM Approval | | | |
| 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 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. | 150 square feet of coverage | | | | |

| 9.2.2 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT, - 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. | 150 square feet of coverage | | | | |
|------------------------------------|---|-----------------------------------|-------------------------------------|--------|--------|--------|
| 9.2.3 | ABSORBENT NON-POLAR SOLVENT BOOMS - PIGS, SOCKS: Repels polar solvents (water), absorbs non-polar solvents (straight chain hydrocarbons, oils, some freon liquids, carbon tetrachloride); Approximate diameter. 3" to 6"; Approximate Length 4' – 12' each. | 40 feet total length | | | | |
| 9.2.4 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT 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 diameter. 3" to 6"; Approximate Length 4' – 12' each. | 40 feet total length | | | | |
| 9.2.5 | ABSORBENT NON-POLAR SOLVENT, - 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. | 10 Gallon Absorption | | | | |
| 9.2.6 | ABSORBENT GENERAL PURPOSE OR POLAR SOLVENT, - 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 diameter. 3" to 6"; Approximate size – 2 to 3-gallon absorption capacity each pad. | 25 Gallon Absorption | | | | |
| 9.2.8 | MERCURY KIT, CLEANUP, SMALL SPILLS: Consists of two basic parts; Mercury absorbing sponges, and approximately 500-gram container of Mercury absorbing powder. | One Kit | | | | |
| 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., 3" dia., or 2" dia. | One 8' 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 | "A", KIT: For repair or plugging leaks in 150 lb. gas cylinders. Kit must include gaskets for all appropriate gasses. | One kit, complete | | | | |
| 9.3.2 | "B", KIT: For repair or plugging of leaks in one-ton cylinders. Kit must include gaskets for all appropriate gasses. | One kit, complete | | | | |
| 9.3.4 | UNIVERSAL RAIL CAR CAPPING KIT: Kit must include gaskets for all appropriate gasses. | One kit, complete | | | | |
| 9.3.5 | GAUGING KIT: Consisting of two dry pressure gauges: one of high range up to 600 PSI and one of low range up to 100 PSI. Kit must be compatible with all rail tank cars. | One kit, complete | | | | |
| 9.3.7 | PATCH AND REPAIR, PIPE, LIQUIDS, SMALL, KIT: Consists of externally applied single bolt or dual bolt pipe clamps, with rubber sheeting lining; ten or more different pipe sizes ranging from 1/2" diameter pipe to at least 4" diameter pipe; with extra 1/8" neoprene material. | One kit, complete | | | | |
| 9.3.10 | PATCH AND REPAIR, PIPE, LIQUIDS AND GAS: An assortment of wraps that can patch curved sections of pipe joints or fittings that are difficult to patch using mechanical devices. Capable of patching pipes from 1/2", up to 12" diameter or greater. Suitable for use in industrial applications with various chemicals. | One kit | | | | |
| 9.3.11 | CLAMP, PIPE, GAS LINE, MECHANICAL: Used for squeezing shut natural gas lines with diameters up to 2" and with pressures not exceeding 75 psi. | One kit | ASTM F-1563 | | | |

| | | | | | | |
|--------|--|--|---|--|--|--|
| 9.3.13 | 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 diameter pipe flange, or pipe valve connection, then inflated. Requires air source, air hose, regulator. | One 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) | | | |
| 9.3.14 | 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 diameter, then inflated. Requires air source, air hoses, regulator. | Either one will satisfy requirement | | | | |
| 9.3.15 | PATCH, TANKER, LIQUID: Large foam and plastic patch 12" x 7" with six feet of ratchet strap for 55-gallon drums. Extendable to twenty-five feet with extra strapping for highway tanker patching capability. | One kit | | | | |
| 9.3.16 | 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. | One kit: Either one will satisfy requirement | 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) | | | |
| 9.3.17 | 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... | | | | | |
| 9.3.22 | 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). | One 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) | | | |
| 9.3.24 | PATCH, DRUM, LIQUID, COMPRESSION, KIT: Consists of six different sizes of tapered plug; two different sizes ball plug; two different sizes "T" plug, all with butterfly nuts; eight 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 | | | | |
| 9.3.26 | DRUM PLUGS (BUNG): Spare bung plugs, metal, and plastic. ¾" and 2". | Four of each size and type | | | | |
| 9.3.27 | DRUM "UP-ENDER": | One | | | | |
| 9.3.29 | PLUGS, TAPERED STOPPER, LIQUID, COMPRESSION, EXTRA LARGE: Individual compression stopper plugs for holes 3" to 4" diameter, with butterfly nut; Sizes as indicated. (Complements and enhances Kit Item # 9.3.26). | One of either size | Tapered Plug: One – 3" diameter OR One – 4" diameter | | | |
| 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" diameter, with butterfly nut; Sizes as indicated. (Compliments and enhances Kit Item #9.3.26). | One of either size | Ball or Half-Round: One – 3" diameter OR One – 4" diameter | | | |
| 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). | One Unit | "T" Bolt Plug: 3" or larger, square curved plate | | | |
| 9.3.33 | PLUGS, CONICAL, LIQUID, DRAIN: Kit consisting of three tapered plugs with eye bolts, ranging from 2 ½" to 8" diameter for holes, drains, gravity flow pipes. Plugs must be flexible and chemical resistant. | Set of at least three sizes | | | | |

| | | | | | | |
|--------|---|--|--|--|--|--|
| 9.3.35 | PLUGS, EXPANSION, LIQUID, STANDARD, KIT: Kit consisting of plumber's style expansion plugs with wing nut; 1", 1 1/4", 1 1/2", 1 3/4", 2", 2 1/2", 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 seven different sizes of either style | | | | |
| 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 1/4", 1 1/2", 1 3/4", 2", 2 1/2", 3", 3 1/3", 4"; Kit often is "home derived", assembled from devices from local plumbing distributor. | Selection of at least seven different sizes | | | | |
| 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 1/4", 1 1/2", 1 3/4", 2", 2 1/2", 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" diameter to 5" diameter, and 3" long to 10" long | Assortment to satisfy 1" to 5" full range | | | | |
| 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 | Newer tank trailers may require 9.3.48 | | | |
| 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 | | | | | | |
|--|--|-------------|-------------------------------------|--------|--------|--------|
| 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, to protect ground and aids in identifying decontamination corridor; Also, can be used for tool lay-out, shade, and other utilities. | Two | | | | |
| 10.1.2 | TARPS, CARRY-ALL, SMALL: Approximately 6' by 6', a small tarp, or carry-all (has handles) for contaminated equipment drop at decon first station. | One | | | | |
| 10.1.3 | SHEETING, PLASTIC, ROLL, HEAVY DUTY: Approximate size 5' wide x 100' length, unfolds to approximately 20' wide, water repellent polyethylene. | One roll | | | | |
| 10.1.4 | CATCH BASIN/POOL: Approximately 60-120 gallon capacity. Sometimes is a separate item, or sometimes supplied with a gross decon shower system or kit. | Three | | | | |
| 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. | Four | | | | |
| 10.2.2 | BRUSHES, LONG HANDLE, SOFT BRISTLE: Toilet type: approximately 16" long, with plastic bristles | Four | | | | |
| 10.2.4 | BRUSHES, SHORT HANDLE, RAT TAIL: Carpenter type, synthetic bristles | Two | | | | |
| 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. | Two | | | | |
| 10.2.6 | SPONGE, SET: Approximate size 3 to 5 inches wide by 4 to 6 inches long x 4 inches deep, | Set of Four | | | | |

| 10.2.7 | TOWELS, ABSORBENT, DRYING: Commercial laundry towels, cotton, approximately 20" x 40" | 8 | | | | |
|--|---|---|---|--------|--------|--------|
| 10.2.8 | TOWELS, ABSORBANT, DISPOSABLE: Paper towels, usually in rolls. | One roll | | | | |
| 10.2.9 | BLANKETS, DISPOSABLE: | Four | | | | |
| 10.2.11 | CLOTHING, MODESTY/MODESTY KIT: Usually light weight disposable Tyvek® or equal, an array in various sizes; Complete with booties or foot protection. Meant to be used post decontamination. May be used in conjunction with 10.2.19. | Minimum of twelve sets | | | | |
| 10.2.12 | TRAFFIC CONES/DELINEATORS, ORDINARY: Minimum 18" tall, high visibility. | Minimum of six | | | | |
| 10.2.13 | TRAFFIC CONES/DELINEATORS, ORDINARY, REFLECTIVE: Minimum 18" tall, high visibility, with reflective bands, or warning bands "DO NOT ENTER" or "KEEP OUT". | | | | | |
| 10.2.15 | SOAP, HYPOALLERGENIC, LIQUID: In dispense containers. | One pint | | | | |
| 10.2.16 | MULTI THREAT DECON KIT: Multiple threat decon system capable of use for decon from CWA, bio agents, and synthetic opiates. | Capable for one team | | | | |
| 10.2.17 | STOPWATCH: | One | | | | |
| 10.2.18 | CHEMICAL RESISTANT-TAPE: Approximately 2" wide in rolls of 50'. Similar to Duct Tape but has chemical resistant outer layer. | Two Rolls | | | | |
| 10.2.19 | CLOTHING REMOVAL TOOLS: Such as scissors, shears, etc. | One | | | | |
| 10.2.20 | 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 twelve 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 | ADAPTORS, 2 ½ TO 1 ½ AND 1 ½" TO GARDEN HOSE REDUCER(S): | Two of each size | | | | |
| 10.3.2 | MANIFOLD FIRE HOSE: All metal or plastic construction with one 1 ½" female fire hose inlet swivel coupling, and three to six ¾" garden hose discharge valves. | One of each | | | | |
| 10.3.3 | MANIFOLD GARDEN HOSE: All metal or plastic construction with one ¾" garden hose inlet swivel coupling, and three to six ¾" garden hose discharge valves. | | | | | |
| 10.3.4 | HOSE, GARDEN: Minimum of 25' each, may be collapsible – flat type, ½" diameter | Three | | | | |
| 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). | Three | Might be attached to and included with Item # 10.2.5. | | | |
| 10.3.6 | WRENCH, HYDRANT, UNIVERSAL: | One | | | | |
| 10.3.7 | APPLICATOR, NOZZLE, GARDEN HOSE ADJUSTABLE: Wash / Spray Nozzles | Two | | | | |
| 10.3.8 | APPLICATOR, PRESSURE, Garden Sprayer: Hand pressurized pump sprayer for decon solutions. | One | | | | |
| 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 | Four | | | | |
| 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 | Might be in rolls | | | |

| | | | | | | |
|--------|--|--|--|--|--|--|
| 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 | Might be in rolls | | | |
| 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 decon area, not recommended for transfer operations and other containment activities. | Must have as minimum: One – 10.4.4 | | | | |
| 10.4.5 | DRUM, CONTAINMENT UNIT, 85 TO 95 GALLONS: Steel or polyethylene drum with removable lid, suitable for multiple uses such as debris collection in decon area, containment for leaking 55-gallon drum and other secondary containment or catch reservoir for transfer operations. Must have at least one. | AND One of either: 10.4.5 OR 10.4.6 For a total of: Two | Must meet: 49 CFR 173.3(c) If used to meet requirement for #10.4.4, #10.4.5, and #10.4.6, must have a total of Two. | | | |
| 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 decon area, 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 | Ten | | | | |

| 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 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. | One for each assigned member | Must Be: Intrinsic to Underwriter's Laboratory #913 | | | |
| 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 | | | | |
| 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. | Two for each portable unit | Must Be: Intrinsic to UL #913 | | | |
| 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. service contract to provide data/voice and internet access via cellular network. | One | Smartphone | | | |
| 11.2.2 | PHONE, SATELLITE: | One | | | | |
| 11.2.4 | GPS PERSONAL RECEIVER/TRANSMITTER: A portable unit that marks location of user. If a cellular phone (11.2.1) is to be used for this capability a second unit is required. | One | | | | |

| 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, STRUCTURAL, ONE HOUR RATING: With bottle; unit must be NFPA, and NIOSH certified for routine fire fighter use. | Four (4) for Type 2 and 3 | NFPA, NIOSH Label on frame | | | |
| 12.1.2 | SCBA, COMPLETE, WMD CBRN, ONE HOUR RATING: With bottle; unit must be NFPA structural firefighting compliant, and NIOSH certified for WMD CBRN threat atmospheres | Six (6) for Type 1 | NFPA, NIOSH, CBRN Label on frame OR regulator | | | |
| 12.1.3 | MASK, FULL-FACE, STRUCTURAL: NFPA and NIOSH compliant for structural fire fighter use. | One for each assigned member | NFPA, NIOSH | | | |
| 12.1.4 | MASK, FULL-FACE, WMD CBRN: Facepiece must be NFPA structural firefighting compliant, and NIOSH certified for WMD CBRN threat atmospheres. | One for each assigned member | NFPA, NIOSH, CBRN | | | |
| 12.1.7 | BOTTLE, SPARE: Extra replacement air bottle of same type, and size. | One spare bottle for each assigned SCBA | NFPA, NIOSH | | | |
| 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: Full facepiece, single or dual cartridge style, speaking diaphragm, certified for use in industrial chemical threat atmospheres only. | Six (6) for Type 1 | NIOSH | | | |
| 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. | Six (6) for Type 1 | NIOSH CBRN Label on Canister | | | |
| 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 | | | |
| 12.2.6 | CARTRIDGES, APR OR PAPR, CBRN: Cartridges are certified for WMD CBRN threat atmospheres. | CBRN cartridge set for each APR | NIOSH - CBRN | | | |

| 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 | One | | | | |
| 13.1.3 | SHOVEL, SQUARE POINT, STEEL: Long handle | One | | | | |
| 13.1.4 | SHOVEL, SQUARE POINT, POLYPROPELENE PLASTIC: Or equal, long handle | One | | | | |
| 13.1.5 | SHOVEL, SCOOP, POLYPROPELENE PLASTIC: Or equal. | One | | | | |
| 13.1.6 | BROOM, STREET, STIFF POLYPROPELENE BRISTLE: With handle. | One | | | | |
| 13.1.7 | HAMMER, SLEDGE: 7 – 10 Lbs. | One | | | | |
| 13.1.8 | BAR, WRECKING: 36" or greater | One | | | | |
| 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. | One | | | | |
| 13.2.2 | HAMMER, CLAW: 16 to 24 oz.; Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.7) | | | |
| 13.2.3 | HAMMER, ENGINEER: 36 to 40 oz.; Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.8) | | | |
| 13.2.4 | HAMMER, BALL PEEN: 8 to 16 oz.; Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.9) | | | |
| 13.2.5 | SCREWDRIVER, FLAT HEAD, KIT: To consist of at least <u>any three</u> of the following, in either short or long handle: Standard flat head – Small, medium, large, extra-large; Non-Sparking acceptable. | One kit | Non-Sparking Acceptable (# 13.3.10) | | | |
| 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. | One Kit | Non-Sparking Acceptable (# 13.3.11) | | | |
| 13.2.7 | PLIERS, ORDINARY, UTILITY: Available in various sizes, 6", 7", 8", with square blunt end; Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.12) | | | |
| 13.2.8 | PLIERS, WIRE, SIDE CUTTING: Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.13) | | | |
| 13.2.9 | PLIERS, LONG-NOSE, NEEDLE: Between 7" to 10"; Non-Sparking acceptable. | One | Non-Sparking Acceptable (# 13.3.14) | | | |
| 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 | One kit | Non-Sparking Acceptable (# 13.3.15) | | | |
| 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. | One kit | | | | |
| 13.2.12 | WRENCH, ALLEN, COMPLETE SET, STANDARD: | One kit | | | | |
| 13.2.13 | WRENCH, ALLEN, COMPLETE SET, METRIC: | One kit | | | | |
| 13.2.14 | WRENCH, CRESCENT, ADJUSTABLE, KIT: Kit to include any two of the following: Adjustable 12", 15", 22" 24"; Non-Sparking acceptable. | One kit | | | | |
| 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. | One Kit | | | | |
| 13.2.17 | WRENCH, PIPE, ADJUSTABLE, HEAVY DUTY: 36" to 46"; Non-Sparking acceptable | One kit | | | | |
| 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. | One | | | | |
| 13.2.19 | WRENCH, COMBINATION, ORDINARY, KIT: (Open end and Box end), Set, to include any 10 of the following: 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 7/8", 1", 1 1/8", 1 1/4", 1 3/8"; Non-Sparking acceptable. | One kit | | | | |
| 13.2.23 | CHISEL, COLD, STANDARD OR HEX: Sizes between 3/4" to 1" width by 6" to 14" long | One | | | | |
| 13.2.26 | PUNCH, PIN, SPRING LOADED: | One | | | | |
| 13.2.27 | TAPE, MEASURING, RETRACTABLE, METAL: 24' or greater | One | | | | |
| 13.2.28 | TAPE, MEASURING, RE-WIND, NON-METALLIC: 50 feet minimum, must be non-conductive. | One | | | | |

| 13.2.29 | KNIFE, PUTTY, SCRAPING: 2' wide; Non-Sparking acceptable. | One | | | | |
|-----------------------------|--|-------------|--|--------|--------|--------|
| 13.2.30 | KNIFE, GENERAL UTILITY, CUTTING: Any heavy-duty knife including carpet cutting type: | One | | | | |
| 13.2.31 | SHEARS, CUTTING: Any heavy-duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting; Non-Sparking acceptable. | One | | | | |
| 13.2.32 | STRAPS, RATCHET, TIE DOWN: Approximately 1" x 20', 1000 lbs. approximate minimum rating. | Two | NOTE: Strapping in item # 9.3.17 may suffice. | | | |
| 13.3 Special Purpose | | | | | | |
| Inv. #: | Item Name and Description | Requirement | Function, Certification Or Standard | Type 1 | Type 2 | Type 3 |
| 13.3.1 | NON-SPARKING, HAMMER, SLEDGE: 7 to 10 lbs. | One | | | | |
| 13.3.2 | NON-SPARKING, HAMMER, CLAW: 16-24 oz.; Also meets # 13.2.2 | One | | | | |
| 13.3.5 | NON-SPARKING, SCREWDRIVER, FLAT HEAD, KIT: To consist of at least <u>any three</u> of the following, in either short or long handle: Standard flat head tip– Small, medium, large, extra-large. | One kit | | | | |
| 13.3.6 | 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. | One kit | | | | |
| 13.3.7 | NON-SPARKING, PLIERS, ORDINARY, UTILITY: Available in various sizes, 6", 7", 8", with square blunt end. | One | | | | |
| 13.3.8 | NON-SPARKING, PLIERS, WIRE, SIDE CUTTING: | One | | | | |
| 13.3.9 | NON-SPARKING, PLIERS, LONG-NOSE, NEEDLE: | One | | | | |
| 13.3.12 | NON-SPARKING, WRENCH, BUNG: Universal: Several styles available, but should be able to function on 5 or more different bung caps and plugs. | One | | | | |
| 13.3.13 | NON-SPARKING, WRENCH, CRESCENT, ADJUSTABLE, KIT: Kit to include any two of the following: Adjustable 12", 15", 22" 24". | One | | | | |
| 13.3.15 | NON-SPARKING, WRENCH, PIPE, ADJUSTABLE: Kit to include any two of the following: House – 16", Standard – 18", Medium – 22", Large – 28". | One kit | | | | |
| 13.3.21 | NON-SPARKING, KNIFE, PUTTY, SCRAPING: – 2" wide | One | | | | |
| 13.3.22 | NON-SPARKING, SHEARS, CUTTING: Any heavy-duty shears suitable for cutting sheet metal, heavy carpet, plastic sheeting. | One | | | | |

| 13.4 Miscellaneous Tools and Items | | | | | | |
|---|---|------------------|----------|--------|--------|--------|
| Inv. #: | Item Name and Description | Required Minimum | Comments | Type 1 | Type 2 | Type 3 |
| 13.4.1 | REFRIGERATOR, UTILITY, SMALL: Installed onboard response unit, of approximate size 18" wide by 18" tall by 12" deep | One | | | | |
| 13.4.2 | MEGAPHONE: Battery operated, 16-watt with 800' range; Adjustable volume. | One | | | | |
| 13.4.3 | 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 – | One kit | | | | |

| | | | | | |
|--------|---|---------|---------------------------|--|--|
| | powdered yellow and red, in 12 to 16 oz dispenser; Carpenter's heavy-duty crayons, yellow and red. | | | | |
| 13.4.4 | SCOPE, SPOTTING: Includes binoculars; Adjustable telephoto spotting scope or binoculars with adjustable focus. | One | | | |
| 13.4.6 | 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) | One set | ANSI 107 and FIREScope | | |

APPENDIX B

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

Self-Evaluation Form – Training Records

| | | | | | |
|---|--|-----------------------------------|--|----------------------------|---|
| Operational Identifier (three letters): | <input style="width: 50px;" type="text"/> | Department Name: | <input style="width: 280px;" type="text"/> | Company Designation: | <input style="width: 80px;" type="text"/> |
| MACS Agency Identifier (three letters): | <input style="width: 50px;" type="text"/> | | | | |
| Evaluated By: | <input style="width: 240px;" type="text"/> | Date of Evaluation: | <input style="width: 80px;" type="text"/> | OES Region Number: | <input style="width: 100px;" type="text"/> |
| Location of Evaluation: | <input style="width: 240px;" type="text"/> | Resource TYPE: (Enter 1, 2, or 3) | <input style="width: 80px;" type="text"/> | Evaluation Result (Circle) | <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> PASS FAIL </div> |

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 “Minimum 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 HazMat 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 “HAZMAT SPECIALIST – Weapons of Mass Destruction (HMS-WMD)”

- To capture the training documentation for a Type 1 Team.

Section 14.1.2 “HAZMAT SPECIALIST (HMS)”

- To capture the training documentation for a Type 2 Team.

Section 14.1.3 “HAZMAT 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 | | Certification Or Standard | Type 1 | Type 2 | Type 3 |
| | | Hours | Staffing | | | | |
| 14.1.1 | HAZMAT SPECIALIST-WEAPONS of MASS DESTRUCTION: Terrorism (HMS-WMD) , 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 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 | 8 | CCR Title 19 2520(o) | | | |
| a. | TOTAL approximate number of personnel <u>HMS-WMD Certified</u> (Include ALL shifts) in your department / JPA Program: | | | | | | |
| b. | VERIFY Availability of SEVEN (7) HMS-WMD Training Records: [This is the number of HMS-WMD Certified employees that must be available for deployment of the Company] | | | | | | |

| | | | | | | |
|---|----------|---------|---------|---------|--|--|
| c. Certificates: Are verifying HMS Certificates to document training for <u>seven employees</u> available? | | | | | | |
| NOTES: List NAMES on the HMS and WMD Certificates | NAME | HMT (✓) | HMS (✓) | WMD (✓) | | |
| | 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 | HAZMAT 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 your Department / JPA Program: | | | | | | |
| b. | VERIFY Availability of FIVE (5) HMS Training Records: [This is the number of HMS Certified Employees that must be available for deployment of the Company] | | | | | | |
| c. | Certificates: Are verifying HMS Certificates to document training for <u>five employees</u> available? | | | | | | |

| | |
|---|--|
| NOTES: List NAMES on the HMS Certificates | <div style="display: flex; justify-content: space-between; align-items: center;"> NAME HMT (✓) HMS (✓) </div> <div style="margin-top: 10px;"> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ </div> |
|---|--|

| | |
|------------|-------------------------|
| 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 | HAZMAT TECHNICIAN (HMT), Baseline for Type 3 Team <i>[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]</i> | 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: <i>[This is the number of HMT Certified Employees that must be available for deployment of the Company]</i> | | | | | | |
| c. | Certificates: Are verifying HMT Certificates to document training for <u>five employees</u> available? | | | | | | |

| | |
|---|---|
| NOTES: List NAMES on the HMT Certificates | <div style="display: flex; justify-content: space-between; align-items: center;"> NAME HMT (✓) </div> <div style="margin-top: 10px;"> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ </div> |
|---|---|

| | |
|------------|-------------------------|
| 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 Materials, Baseline for All Teams: <i>[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].</i> | 16 To 24 | 1 | CSTI ASO CCR 2520r -- or -- FIREScope ICS HM-222-5 | | | |
| a. | TOTAL approximate number of personnel ASO Certified (Include ALL shifts) in your Department / JPA Program: | | | | | | |

| | | | | |
|---|--|--|--|--|
| b. | VERIFY Availability of ONE (1) HMS-ASO Training Record: <i>[This is the number of HMS-WMD Certified employees that must be available for deployment of the Company]. This person MUST BE one of those as indicated in section 14.1.1, or 14.1.2, or 14.2.3.</i> | | | |
| c. | Certificates: Are verifying ASO Certificates to document training for <u>one of the above noted employees</u> available? | | | |
| NOTES: List NAME on the ASO Certificate | NAME _____ A.S.O. (✓) _____ | | | |

APPENDIX C

Listing of Standards Agencies

| Agency | Standard | Focus |
|---|---------------------------|--|
| UL Underwriters Laboratories Customer Service 1655 Scott Blvd. Santa Clara, CA, 95050 ul.com | Standard #913: | <i>Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous Locations:</i> Class I, Div. I, Groups A, B, C, G Class II, Div. I, Groups E, F, G Class III, Div. I |
| | Standard #1604 | <i>Standard For Safety for Electrical Equipment For use In Class I and II, Division 2, and Class III Hazardous (CLASSIFIED) Locations</i> |
| NFPA National Fire Protection Association 1 Batterymarch Park Quincy, MA, 02169 nfpa.org | 70 | <i>National Electric Code (NEC)</i> |
| | 77 | <i>Recommended Practice on Static Electricity</i> |
| | 470 (Previously 472, 473) | <i>Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents</i> |
| | 475 | <i>Recommended Practice for Organizing, Managing, and Sustaining a Hazardous Materials / Weapons of Mass Destruction Response Program</i> |
| | 704 | <i>Standard System for the Identification of the Hazards of Materials for Emergency Response</i> |
| | 1852 | <i>Standard on Selection, Care, and Maintenance of Open Circuit SCBAs</i> |
| | 1971 | <i>Protective Ensemble for structural Fire Fighting</i> |
| | 1975 | <i>Station / Work Uniforms for Emergency Services</i> |
| | 2977 | <i>Protective Clothing and Equipment for Wildland Fire Fighting</i> |
| | 1981 | <i>Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services</i> |
| | 1986 | <i>Standard on Respiratory Protection Equipment for Tactical and Technical Operations</i> |
| | 1990 | <i>Vapor-Protective Ensembles for Hazardous Materials Emergencies</i> |
| | 1990 | <i>Liquid Splash-Protective Ensembles for Hazardous Materials Emergencies</i> |
| | 1990 | <i>Protective Ensembles for Chemical/Biological Terrorism Incidents</i> |
| | 2112 | <i>Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire</i> |

| | | |
|--|---------------------------|--|
| OSHA Occupational Safety and Health Administration 200 Constitution Avenue, NW Washington, DC, 20210 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 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 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 Absorbent systems) |
| FDA Food and Drug Administration 5600 Fishers Lane Rockville, MD, 20857 fda.gov | Food | (About cleanliness of packaged tool items) |
| OPA Oil Pollution Act (EPA) Uscg.mil | OPA-90 | (About Calm Water Booms, containment0 |
| DOT Department of Transportation 400 7 th Street, SW Washington, DC, 20590 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 Robert- Bourassa Blvd. Montreal, Quebec, H3C 5H7 www.icao.int | ICAO # 602 | <i>Packing Guidelines for Infectious Substances</i> |
| IEEE Institute of Electrical and Electronic Engineers 445 Hoes Lane Piscataway, New Jersey, 08854 ieee.org | IEEE 1512.3 | <i>Standard for Hazardous Material Incident Management Message Sets for Use by Emergency Management Centers,</i> |
| | IEEE 629 | <i>Methods for Measuring Transmission Performance of Analog and Digital Telephone Sets, Handsets, and Headsets</i> |
| ASTM American Society for the Testing of Materials 100 Barr Harbor Drive West Conshohocken, PA, 19428 astm.org | F-1052 | <i>Test Method for Pressure Testing Vapor Protective Ensembles</i> |
| | F-1052 | (About Pressure Test Kit Performance for Encapsulating Chemical Protective Clothing) |
| | F-1563 | <i>Standard Specification for Tools to Squeeze-off Polyethylene (PE) Gas Pipe or Tubing</i> |

| | | |
|--|--------------------------|--|
| ANSI American National Standards Institute 1899 L Street, NW Washington, DC, 20036 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) |
| CAL EMSA California Emergency Medical Services Authority 10901 Gold Center Drive, Suite 400 Rancho Cordova, CA 95670 www.emsa.ca.gov | EMSA # 300 | Scope of Practice Statements |

APPENDIX D

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 | | |

| Components | Type 1 | Type 2 | Type 3 |
|--|---|---|---------------------------------|
| 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 | |
| | | | |
| 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 |

| Components | Type 1 | Type 2 | Type 3 |
|--|---|--------------------------------|-----------------------------|
| | 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 ② WMD Chem / Bio ③ 8 ④ | Haz Mat Specialist ② 5 ④ | Haz Mat Technician ① 5 ④ |

- ① All company personnel must meet the hazardous materials training requirements for Technician in CCR Title 19, Section 2520
- ② All company personnel must meet the hazardous materials training requirements for Specialist in CCR Title 19, Section 2520
- ③ 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).
- ④ 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 E

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 | Criteria | MEL | Type | Required Performance |
|---|--|-------------|------|--|
| 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, ensure 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). | 6.1 | 3 | NFPA Compliant Glove and Boot Replacement inventory |
| | | 6.1 | 2 | High Temperature Protective Gloves Cryogenic Protective Gloves |

| | | | | |
|---|---|--------------|---|---|
| | | 6.1 | 1 | |
| 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) - 8 personnel |