

# Hazardous Materials Technician



## *COMPETENCY ASSESSMENT CHECK-OFF*

Adopted from:

NFPA 472 Competence of Responders to Hazardous Materials/

Weapons of Mass Destruction Incidents, 2013 Edition

Student Task Book

2015 Edition



## NFPA 472 Competencies for Hazardous Materials Technicians (Chapter 7)

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## **About this Competency Assessment Check-Off (Task Book)**

This Competency Assessment Check-Off was developed directly from the NFPA 472, Competency of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents, 2013 Edition.

### **Introduction**

This task book was developed by the Florida State Emergency Response Commission (SERC). SERC is made up of representatives from the hazardous materials industry, emergency responders, and civilian experts.

The SERC has developed these Hazardous Material Technician competency standards for emergency personnel. Completion of these standards ensures that personnel responding to hazardous material incidents are prepared to protect life, property and themselves. In addition, they serve as an added proof of documented training for emergency response personnel, the authority having Jurisdiction (A.H.J) under Florida Law, and the organization they represent as accepted best practice. Personnel trained to these standards and competencies help make Florida a great place to live and do business while ensuring excellent response in the event of a Hazardous Material incident.

### **Completing the Task Book**

Successful completion of the task book indicates the student has completed all required training and demonstrated competency in each section. Completion of competency is confirmed by the instructor's signature by each applicable section within the document. It is understood that numerous instructors may be used to conduct the course and provide competency assessment. To accommodate record keeping, at the beginning of the task book, each instructor participating in the training and/or assessment of the student will record their name, Florida State Instructor Number (if applicable).

To complete the process of certification the Fire Chief, CEO, or designee will assess the completed document and make the determination that the student/responder meets the Technician requirements of the Agency Having Jurisdiction (AHJ).

***As the Fire Chief, CEO, or Designee, my signature is authorization that this Hazardous Materials Technician has met all of the requirements set by the AHJ and as identified by the NFPA 472 Consensus Standard.***

\_\_\_\_\_  
**Fire Chief / CEO / or their Designee**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**HazMat Responder/Student's Name**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**HazMat Responder/Student's Signature**

\_\_\_\_\_  
**Lead HazMat Instructor and Instructor Number**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**HazMat Instructor and Instructor Number**

\_\_\_\_\_  
**Date**

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**HazMat Instructor and Instructor Number**

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**Date**

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**HazMat Instructor and Instructor Number**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**HazMat Instructor and Instructor Number**

\_\_\_\_\_  
**Date**

## Documentation in the Task Book

**Instructor/Assessor** – For each type of competency you must mark one of the criteria listed. The criteria include “Passed”, “Remediation Required”, or “Not Applicable to the Organization”.

Any time an instructor/assessor selects “Remediation Required” or “Not Applicable to the Organization”, there must be a remark defining the reason that these were selected.

The grading criteria are defined as follows.

**Passed** – Marking this selection means that the student successfully met the competency with no remediation needed.

**Remediation Required** – Marking this selection means that the student was not successful in meeting the competency. This selection indicates that the student will receive additional training in this area to bring them up to the level of “passed”.

**Not Applicable to the Organization** – This selection is provided when the jurisdiction or agency does not recognize this competency in their policies or standard operating procedures, does not have the equipment for, or it is unnecessary based on jurisdictional need. No further action is required once this selection is marked.

**Many of the knowledge based competencies in this document may be displayed by a student during lectures, in class table-top exercises, discussions, and testing. The instructor may sign-off these competencies based on the overall knowledge of the student displayed during these classroom opportunities.**

### Definition of a Hazardous Materials Technician

*The hazardous materials technician shall be that person who responds to hazardous materials/WMD incidents using a risk-based response process by which he or she analyzes a problem involving hazardous materials/WMD, selects applicable decontamination procedures, and controls a release using specialized protective clothing and control equipment.*

To successfully be certified as a hazardous materials technician in the State of Florida, the responder must have completed the Operation Level of training and be competent in that level of response. In addition the responder must have received 160 hours of additional training on the Technician level from a recognized hazardous materials technician course, complete the applicable competencies, and receive certification from their department’s Fire Chief, CEO, or designee. Criteria for the Hazardous Materials Technician course can be found in Florida State Rule 69A-37.065 Programs of Study and Vocational Courses.

## Section 1 – Analyzing the Incident

**7.2.1 Surveying Hazardous Materials/WMD Incidents.** Given examples of hazardous materials/WMD incidents, the hazardous materials technician shall identify containers involved and, given the necessary equipment, identify or classify unknown materials involved, verify the identity of the hazardous materials/WMD involved, and determine the concentration of hazardous materials, by completing the requirement of 7.2.1.1 through 7.2.1.5.

7.2.1.1 Given examples of various containers for hazardous materials/WMD, the hazardous materials technician shall identify each container by name and specification and identify the typical contents by name and hazard class.

7.2.1.1.1 and 7.2.1.1.2 Given examples of the following **railroad cars and intermodal tanks**, identify the containers by name and specification and identify the typical contents by name and hazard class:

Type	Grading Criteria		
<b>Cryogenic Liquid tank Car</b>	Passed	Remediated Required	Not Applicable to the Organization
Specification, Contents, and Hazard Class			
<b>Non-Pressure Tank Car</b>			
Specification, Contents, and Hazard Class			
<b>Pneumatically Unloaded Hopper Cars</b>			
Specification, Contents, and Hazard Class			
<b>Pressure Tank Cars</b>			
Specification, Contents, and Hazard Class			
<b>Specialized Tube Module</b>			
Specification, Contents, and Hazard Class			
<b>IM - 101 portable tank</b>			
Specification, Contents, and Hazard Class			
<b>IM-102 portable tank</b>			
Specification, Contents, and Hazard Class			
<b>Pressure Intermodal Tank</b>			
Specification, Contents, and Hazard Class			
<b>Specialized Cryogenic Intermodal Tank</b>			
Specification, Contents, and Hazard Class			
<b>Specialized Tube Module</b>			
Specification, Contents, and Hazard Class			
<b>Low-Pressure Chemical Tanks</b>			
Specification, Contents, and Hazard Class			
<b>Non-pressure Liquid Tanks</b>			

**Instructor Remarks:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.1.3 Given examples of the following **Cargo Tanks**, identify the containers by name and specification and identify the typical contents by name and hazard class:

Type	Grading Criteria		
<b>Compressed Gas Tube Trailers</b>	Passed	Remediated Required	Not Applicable to the Organization
Specification, Contents, and Hazard Class			
<b>Corrosive Liquid Tanks</b>			
Specification, Contents, and Hazard Class			
<b>Cryogenic Liquid Tanks</b>			
Specification, Contents, and Hazard Class			
<b>Dry bulk Cargo Tanks</b>			
Specification, Contents, and Hazard Class			
<b>High Pressure Tanks</b>			
Specification, Contents, and Hazard Class			
<b>Low-Pressure Chemical Tanks</b>			
Specification, Contents, and Hazard Class			
<b>Non-pressure Liquid Tanks</b>			
Specification, Contents, and Hazard Class			

**Instructor Remarks:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.1.4 Given examples of the following **Facility Storage Tanks**, identify the containers by name and specification and identify the typical contents by name and hazard class:

Type	Grading Criteria		
<b>Cryogenic Liquid Tank</b>	Passed	Remediated Required	Not Applicable to the Organization
Contents			
Hazard Class			
<b>Non-pressure Tank</b>			
Contents			
Hazard Class			
<b>Pressure Tank</b>			
Contents			
Hazard Class			

**Instructor Remarks:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.1.5 Given examples of the following **Non-Bulk Packaging**, identify the containers by name and specification and identify the typical contents by name and hazard class:

Type	Grading Criteria		
<b>Bags</b>	Passed	Remediated Required	Not Applicable to the Organization
Contents			
Hazard Class			
<b>Carboys</b>			
Contents			
Hazard Class			
<b>Cylinders</b>			
Contents			
Hazard Class			
<b>Non-pressure Liquid Tanks</b>			
Contents			
Hazard Class			

Instructor Remarks: \_\_\_\_\_

7.2.1.1.6 Given examples of the following **Radioactive Materials Packages**, identify the containers by name and specification and identify the typical contents by name and hazard class:

Type	Grading Criteria		
<b>Cryogenic Liquid Tank</b>	Passed	Remediated Required	Not Applicable to the Organization
Contents and Hazard Class			
<b>Non-pressure Tank</b>			
Contents and Hazard Class			
<b>Pressure Tank</b>			

Instructor Remarks: \_\_\_\_\_

7.2.1.1.7

Type	Grading Criteria		
<b>Given examples of the following packaging, identify the packaging by name and identify the typical contents by name and hazard class.</b>	Passed	Remediated Required	Not Applicable to the Organization
<b>Intermediate Bulk Container (IBC)</b>			
<b>Ton Container</b>			

Instructor Remarks: \_\_\_\_\_



7.2.1.2 Given examples of **3 facility** and **3 transportation containers**, the hazardous materials technician shall identify the approximate capacity of each container.

Type	Grading Criteria		
Using the markings on the container, identify the capacity (by weight or volume) of the following examples of transportation vehicles:	Passed	Remediated Required	Not Applicable to the Organization
Cargo Tank			
Tank Cars			
Tank Containers			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.2.2

Type	Grading Criteria		
Using the markings on the container and other available resources, identify the capacity (by weight or volume) of the following examples of transportation vehicles:	Passed	Remediated Required	Not Applicable to the Organization
Cryogenic Liquid Tank			
Non-Pressure Tank (general service or low-pressure tank)			
Pressure Tank			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.3

Type	Grading Criteria		
Given at least <b>three unknown</b> hazardous materials/WMD, one of which is a solid, one a liquid, and one a gas, the hazardous materials technician shall identify or classify by hazard each unknown material.	Passed	Remediated Required	Not Applicable to the Organization
Unknown Solid			
Unknown Liquid			
Unknown Atmosphere			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.3.3

Type	Grading Criteria		
What type of monitoring technology is used to determine the following hazards?	Passed	Remediated Required	Not Applicable to the Organization
<b>Corrosivity</b>			
<b>Flammability</b>			
<b>Oxidation Potential</b>			
<b>Oxygen Deficiency</b>			
<b>Pathogenicity</b>			
<b>Radioactivity</b>			
<b>Toxicity</b>			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.1.3.4

Type	Grading Criteria		
The hazardous materials technician shall identify the capabilities and limiting factors associated with the selection and use of the following monitoring equipment, test strips, and reagents:	Passed	Remediated Required	Not Applicable to the Organization
<b>Biological immunoassay indicators</b>			
<b>Chemical Agent Monitors (CAM)</b>			
<b>Colorimetric indicators (detector tubes, pH paper and meters, reagent test strips)</b>			
<b>Combustible Gas Indicators</b>			
<b>DNA Fluoroscopy</b>			
<b>Electrochemical cells (CO and Oxygen Meter)</b>			
<b>Flame Ionization Detector</b>			
<b>Gas Chromatograph/mass Spectrometer (GC/MS)</b>			
<b>Infrared spectroscopy</b>			
<b>Ion mobility spectroscopy</b>			
<b>Gamma Spectrometer (RIID)</b>			
<b>Metal Oxide Sensor</b>			
<b>Photoionization Detector</b>			
<b>Polymerase Chain Reaction (PCR)</b>			
<b>Radiation Detection and Measurement Instruments</b>			
<b>Raman Spectroscopy</b>			
<b>Surface Acoustical Wave (SAW)</b>			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.1.3.5 Given 3 hazardous materials/WMD, one of which is a **solid**, one a **liquid**, and one a **gas**, and using equipment, test strips, and reagents, provided by the AHJ as applicable, the hazardous materials technician shall select from the following equipment and demonstrate the correct techniques to identify the hazards (corrosivity, flammability, oxidation potential, oxygen deficiency, radioactivity, toxicity, and pathogenicity).

Equipment Used	Corrosivity	Flammability	Oxidation Potential	Oxygen Deficiency	Toxicity	Pathogenicity
Carbon Monoxide Meter						
Colorimetric Tubes						
Combustible Gas Indicator						
Oxygen Meter						
Passive Dosimeter						
pH indicators and/or pH Meter						
Photoionization and Flame Ionization Detectors						
Radiation Detection Instruments						
Reagents including Test Strips and WMD Detectors (Chemical and Biological)						
Other AHJ equipment						
Instructor Rating	Passed	Remediated Required		Not Applicable to the Organization		

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.3.6

Criteria	Grading Criteria		
	Passed	Remediated Required	Not Applicable to the Organization
Given monitoring equipment, test strips, and reagents provided by AHJ, demonstrate field maintenance and testing procedures for each			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.1.4 Given a label for a radioactive material, the hazardous materials technician shall identify the type of category of label, contents, activity, transport index, and criticality safety index as applicable, then describe the radiation dose rates associated with each label.

Criteria	Grading Criteria		
<b>Given a label for a radioactive material, identify, as applicable:</b>	Passed	Remediated Required	Not Applicable to the Organization
Category of label			
Contents			
Activity			
Transport Index			
Criticality Safety Index			
Describe Radiation Dose Rate			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.1.5 The hazardous materials technician shall demonstrate methods for collecting samples of the following:

Criteria	Grading Criteria		
<b>Demonstrate methods for collecting samples of the following:</b>	Passed	Remediated Required	Not Applicable to the Organization
Gas			
Liquid			
Solid			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**7.2.2 Collecting and Interpreting Hazard and Response Information.** Given access to printed and technical resources, computer databases, and monitoring equipment, the hazardous materials technician shall collect and interpret hazard and response information not available from the current edition of the DOT *Emergency Response Guidebook* or an MSDS and shall meet the requirements of 7.2.2.1 through 7.2.2.6.

7.2.2.1

Criteria	Grading Criteria		
Identify and interpret the types of hazard and response information available from each of the following resources and explain the advantages and disadvantages of each resource	Passed	Remediated Required	Not Applicable to the Organization
Hazardous Materials Databases			
Monitoring Equipment			
Reference Manuals			
Technical Information Centers (i.e., CHEMTREC/CANUTEC/SETIQ and local, state, and federal authorities)			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.2.2

Criteria	Grading Criteria		
Describe the following terms and explain their significance in the analysis process:	Passed	Remediated Required	Not Applicable to the Organization
Corrosive (acids and bases/alkaline)			
Air Reactivity			
Auto-refrigeration			
Biological agent and biological toxins			
Blood Agents			
Boiling Point			
Catalyst			
Chemical Change			
Chemical Interactions			
Compound, Mixture			
Concentration			
Critical Temperature and Pressure			
Dissociation (acid/base)			
Dose			
Dose Response			
Expansion Ratio			
Fire Point			
Flammable (explosive) range (LEL and UEL)			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.2.2 (continued)

Criteria	Grading Criteria		
	Passed	Remediated Required	Not Applicable to the Organization
<b>Describe the following terms and explain their significance in the analysis process:</b>			
Flashpoint			
Half-life			
Halogenated Hydrocarbon			
Ignition (autoignition) Temperature			
Inhibitor			
Instability			
Ionic and Covalent Compounds			
Irritants (riot control agents)			
Maximum Safe Storage Temperature (MSST)			
Melting Point and Freezing Point			
Miscibility			
Nerve Agent			
Organic and Inorganic			
Oxidation Potential			
Persistence			
pH			
Physical Change			
Physical State (solid, liquid, gas)			
Polymerization			
Radioactivity			
Reactivity			
Riot Control Agents			
Saturated, Unsaturated (straight and branched), and Aromatic Hydrocarbons			
Self-accelerating Decomposition Temperature (SADT)			
Solubility			
Solution and slurry			
Specific Gravity			
Strength			
Sublimation			
Temperature of Product			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.2.2 (continued)

Criteria	Grading Criteria		
<b>Describe the following terms and explain their significance in the analysis process:</b>	Passed	Remediated Required	Not Applicable to the Organization
Toxic Products of Combustion			
Vapor Density			
Vapor Pressure			
Vesicants (blister agents)			
Viscosity			
Volatility			

Instructor Remarks: \_\_\_\_\_

7.2.2.3

Criteria	Grading Criteria		
<b>Describe the heat transfer process that occur as a result of a cryogenic liquid spill</b>	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

7.2.2.4

Criteria	Grading Criteria		
<b>Given 5 hazardous materials/WMD scenarios and associated reference materials identify:</b>	Passed	Remediated Required	Not Applicable to the Organization
Signs and Symptoms of Exposure			
Target Organ Effects			

Instructor Remarks: \_\_\_\_\_

7.2.2.5

Criteria	Grading Criteria		
<b>Identify 2 methods for determining the pressure in bulk packaging or facility containers</b>	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

7.2.2.6

Criteria	Grading Criteria		
Identify 1 method for determining the pressure in bulk packaging or facility containers amount of lading remaining in damaged bulk packaging or facility containers	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

**7.2.3 Describe the Condition of the Container Involved in the Incident.** Given examples of container damage, the hazardous materials technician shall describe the damage by completing the related requirements of **7.2.3.1** through **7.2.3.5**.

7.2.3.1

Type	Grading Criteria		
Given examples of containers, including the DOT specification markings for non-bulk and bulk packaging, and associated reference guides, identify the basic design and construction features of each.	Passed	Remediation Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

7.2.3.1.1

Criteria	Grading Criteria		
Identify the basic design and construction features, including closures for the following Cargo Tanks:	Passed	Remediated Required	Not Applicable to the Organization
Compressed Gas Tube Trailers			
Corrosive Liquid Tanks			
Dry Bulk Cargo Tanks			
High-Pressure Tanks			
Low-Pressure Tanks			
Non-Pressure Tanks			

Instructor Remarks: \_\_\_\_\_



Criteria	Grading Criteria		
Identify the basic design and construction features, including closures for the following <u>Fixed Facility Tanks</u> :	Passed	Remediated Required	Not Applicable to the Organization
Cryogenic Liquid Tanks			
Non-pressure Tanks			
Pressure Tanks			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

Criteria	Grading Criteria		
Identify the basic design and construction features, including closures for the following:	Passed	Remediated Required	Not Applicable to the Organization
Intermediate Bulk Containers (also known as tote tanks)			
One-ton Containers (pressure drums)			
Pipelines			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

Criteria	Grading Criteria		
Identify the basic design and construction features, including closures for the following <u>Intermodal Tanks</u> :	Passed	Remediated Required	Not Applicable to the Organization
Non-pressure Intermodal Tanks including IM-101 and IM - 102			
Pressure Intermodal Tanks			
Specialized Intermodal Tanks including Cryogenic Intermodal and Tube Modules			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

Criteria	Grading Criteria		
Identify the basic design and construction features, including closures for <u>Railroad Cars</u> including:	Passed	Remediated Required	Not Applicable to the Organization
Cryogenic Liquid Tank Cars			
Non -pressure Tank Cars			
Pneumatically Unloaded Hopper Cars			
Pressure Tank Cars			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.3.1.2

Criteria	Grading Criteria		
Identify the basic design and construction features, including closures of the following non-bulk containers:	Passed	Remediated Required	Not Applicable to the Organization
Bags			
Carboys			
Drums			
Cylinders			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.3.1.3

Criteria	Grading Criteria		
Identify the basic design features and testing requirements on the following radioactive materials packages:	Passed	Remediated Required	Not Applicable to the Organization
Excepted			
Industrial			
Type A			
Type B			
Type C			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

2.3.2

Criteria	Grading Criteria		
Describe how a liquid petroleum product pipeline can carry different products	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.3.3

Criteria	Grading Criteria		
Given an example of a pipeline, identify the following:	Passed	Remediated Required	Not Applicable to the Organization
Ownership of the line			
Procedures for checking for gas migration			
Procedure for shutting down the line or controlling the leak			
Type of product in the line			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.3.3

Criteria	Grading Criteria		
Given a scenario involving radioactive materials, the hazardous materials technician, using available survey and monitoring equipment, shall determine if the integrity of any container has been breached.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

**7.2.4. Predicting Likely Behavior of Materials and Their Container Where Multiple Materials are Involved.** Given examples of hazardous materials/WMD incidents involving multiple hazardous materials or WMD, the hazardous materials technician shall predict the likely behavior of the material in each case and meet the requirement of 7.2.4.1 through 7.2.4.3.

7.2.4.1

Criteria	Grading Criteria		
Identify at least 3 resources available that indicate the effects of mixing various hazardous materials.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.2.4.2

Criteria	Grading Criteria		
Identify the impact of the following fire and safety features on the behavior of the products during an incident at a bulk liquid facility and explain their significance in the analysis process:	Passed	Remediated Required	Not Applicable to the Organization
Fire Protection Systems			
Monitoring and Detection Systems			
Pressure Relief and Vacuum Relief Protection			
Product Spillage and Control (impoundment and diking)			
Tank Spacing			
Transfer Operations			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.2.4.3

Criteria	Grading Criteria		
Identify the impact of the following fire and safety features on the behavior of the products during an incident at a bulk gas facility and explain their significance in the analysis process:	Passed	Remediated Required	Not Applicable to the Organization
Fire Protection Systems			
Monitoring and Detection Systems			
Pressure Relief Protection			
Transfer Operations			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**7.2.5 Estimating the Likely Size of an Endangered Area.** Given examples of hazardous materials/WMD incidents, the hazardous materials technician shall estimate the likely size, shape, and concentrations associated with the release of materials involved in an incident by using computer modeling, monitoring equipment, or specialists in this field by completing the requirements of 7.2.5.1 through 7.2.5.4.

7.2.5.1

Criteria	Grading Criteria		
Given the emergency response plan identify resources for dispersion pattern prediction and modeling, including computers, monitoring equipment, or specialists in the field.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.5.2

Criteria	Grading Criteria		
Given the quantity, concentration, and release rate of a material, identify the steps for determining the likely extent of the physical, safety, and health hazards within the endangered area of the hazardous materials/WMD incident.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.5.2.1

Criteria	Grading Criteria		
Describe the following terms and exposure values and explain their significance in the analysis process:	Passed	Remediated Required	Not Applicable to the Organization
Counts per Minute (cpm) and Kilocounts per Minute (kcpm)			
Immediately Dangerous to Life and Health (IDLH) value			
Incubation Period			
Infectious Dose			
Lethal Concentrations (LC <sub>50</sub> )			
Lethal Dose (LD <sub>50</sub> )			
Parts per Billion (ppb)			
Parts per Million (ppm)			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

7.2.5.2.1 (Continued)

Criteria	Grading Criteria		
<b>Describe the following terms and exposure values and explain their significance in the analysis process:</b>	Passed	Remediated Required	Not Applicable to the Organization
Permissible exposure limit (PEL)			
Radiation Absorbed Dose (rad)			
Roentgen Equivalent Man (rem), Millirem (mrem), Microrem (µrem)			
Threshold Limit Value Ceiling (TLV-C)			
Threshold Limit Value Short-Term Exposure Limit (TLV-STEL)			
Threshold Limit Value Time-Weighted Average (TLV-TWA)			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.5.2.2

Criteria	Grading Criteria		
<b>Identify 2 methods for predicting the areas of potential harm within the endangered area of a hazardous materials/WMD incidents.</b>	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.5.3

Criteria	Grading Criteria		
<b>Identify the steps for estimating the outcomes within an endangered area of a hazardous materials/WMD incidents</b>	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.2.5.4

Criteria	Grading Criteria		
Given three examples involving a hazardous materials/WMD release and the corresponding instrument monitoring readings, determine the applicable public protective response options and the areas to be protected.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Section 1 – Analyzing the Incident**

**Sign-Off**

\_\_\_\_\_

**Instructor’s Signature** **Date**

**Section 2 – Planning the Response**

**7.3.1 Identifying Response Objectives**

7.3.1.1

Criteria	Grading Criteria		
Given scenarios involving hazardous materials/WMD incidents, describe the response objectives for each problem.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.1.2

Criteria	Grading Criteria		
Given an analysis of a hazardous materials/WMD incident, describe the steps for determining response objectives (defensive, offensive, and nonintervention).	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

**7.3.2 Identifying the Potential Response Options.**

7.3.2.1

Criteria	Grading Criteria		
Identify the possible response options to accomplish a given response objective	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**7.3.3 Selecting Personal Protective Equipment.** Given scenarios of hazardous materials/WMD incidents with known and unknown hazardous materials/WMD, the hazardous materials technician shall determine the personal protective equipment for the response options specified in the incident action plan in each situation by completing the requirement of 7.3.3.1 through 7.3.3.4.8.

7.3.3.1

Criteria	Grading Criteria		
Describe types of personal protective equipment that are available for response based on NFPA standards and how these items relate to EPA levels of protection.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



7.3.3.2

Criteria	Grading Criteria		
Identify and describe personal protective equipment options available for the following hazards:	Passed	Remediated Required	Not Applicable to the Organization
Thermal			
Radiological			
Asphyxiating			
Chemical (liquids and vapors)			
Etiological (biological)			
Mechanical (explosive)			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.3

Criteria	Grading Criteria		
Identify the process to be considered in selecting respiratory protection for a specified action option.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4

Criteria	Grading Criteria		
Identify the factors to be considered in selecting chemical-protective clothing for a specified action option.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.1

Criteria	Grading Criteria		
Describe the following terms and explain their impact and significance on the selection of chemical-protective clothing:	Passed	Remediated Required	Not Applicable to the Organization
Degradation			
Penetration			
Permeation			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.2

Criteria	Grading Criteria		
Identify at least 3 indications of material degradation of chemical-protective clothing.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.3

Criteria	Grading Criteria		
Identify the different designs of vapor protective and splash protective clothing and describe the advantages and disadvantages of each type.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.4

Criteria	Grading Criteria		
Identify the relative advantages and disadvantages of the following heat exchange units used for the cooling of personnel in personal protective equipment:	Passed	Remediated Required	Not Applicable to the Organization
Air Cooled			
Ice Cooled			
Water Cooled			
Phase Change Cooling Technology			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.5

Criteria	Grading Criteria		
Identify the process for selecting protective clothing at hazardous materials/WMD incidents.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.3.3.4.6

Criteria	Grading Criteria		
<b>Given three examples of various hazardous materials, determine the protective clothing construction materials for a given action option using chemical compatibility charts.</b>	Passed	Remediated Required	Not Applicable to the Organization

**Instructor Remarks:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7.3.3.4.7

Criteria	Grading Criteria		
<b>Identify the physiological and psychological stresses that can affect users of personal protective equipment</b>	Passed	Remediated Required	Not Applicable to the Organization

**Instructor Remarks:** \_\_\_\_\_

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\_\_\_\_\_

7.3.3.4.8

Criteria	Grading Criteria		
<b>Given the Personal protective equipment provided by the AHJ, identify the process for inspecting, testing and maintenance of personal protective equipment</b>	Passed	Remediated Required	Not Applicable to the Organization

**Instructor Remarks:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**7.3.4 Selecting Decontamination Procedures.** Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall select a decontamination procedure that will minimize the hazard, shall determine the equipment required to implement that procedure, and shall complete the following tasks:

Criteria	Grading Criteria		
Describe the advantages and limitations of each of the following decontamination methods; Identify 3 sources for determining the applicable decontamination procedures.	Passed	Remediated Required	Not Applicable to the Organization
Absorption			
Adsorption			
Chemical Degradation			
Dilution			
Disinfecting			
Evaporation			
Isolation and Disposal			
Neutralization			
Solidification			
Sterilization			
Vacuuming			
Washing			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**7.3.5 Developing a Plan of Action.** Given scenarios involving hazardous materials/WMD incidents, the hazardous materials technician shall develop a plan of action, including site safety and control plan that is consistent with the emergency response plan and standard operating procedures and within the capability of available personnel, personal protective equipment, and control equipment for that incident by completing the requirements of 7.3.5.1 through 7.3.5.5.

7.3.5.1

Criteria	Grading Criteria		
<b>Describe the purpose of, procedure for, equipment required for, and safety precautions used with the following techniques for hazardous materials/WMD control:</b>	Passed	Remediated Required	Not Applicable to the Organization
Absorption			
Adsorption			
Blanketing			
Covering			
Damming			
Diking			
Dilution			
Dispersion			
Diversion			
Fire Suppression			
Neutralization			
Over-packing			
Patching			
Plugging			
Pressure Isolation and Reduction (Flaring: Venting: Vent and Burn; Isolation of Valves, pumps, or energy sources)			
Retention			
Solidification			
Transfer			
Vapor Control (Dispersion, Suppression)			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.3.5.2

Criteria	Grading Criteria		
<b>Given a scenario involving a hazardous materials/WMD incident</b>	Passed	Remediated Required	Not Applicable to the Organization
<b>Develop the site safety and control plan that must be included as part of the incident action plan.</b>			
<b>List and describe the safety considerations to be included.</b>			
<b>Identify the points that should be made in a safety briefing prior to working at the scene.</b>			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_

7.3.5.3, 7.3.5.4, 7.3.5.5

Criteria	Grading Criteria		
Identify the atmospheric and physical safety hazards associated with hazardous materials/WMD incidents involving confined spaces.	Passed	Remediated Required	Not Applicable to the Organization
Identify the pre-entry activities to be performed.			
Identify the procedures, equipment, and safety precautions for preserving and collecting legal evidence at hazardous materials/WMD incidents.			

Instructor Remarks: \_\_\_\_\_  
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 \_\_\_\_\_

## Section 2 – Planning the Response

### Sign-Off

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Instructor's Signature
Date

### Section 3 – Implementing the Planned Response

**7.4.1 Performing Incident Command Duties.** Give the emergency response plan or standard operating procedures and a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall demonstrate the duties of an assigned function in the hazardous materials branch or group within the incident command system and shall identify the role of the hazardous materials technician during hazardous materials/WMD incidents.

7.4.1.1

Criteria	Grading Criteria		
Describe the duties of an assigned function in the hazardous materials branch or group within the incident command system	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7.4.1.2

Criteria	Grading Criteria		
<b>Identify the role of the hazardous materials technician during hazardous materials/WMD incidents</b>	Passed	Remediated Required	Not Applicable to the Organization

**Instructor Remarks:** \_\_\_\_\_

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**7.4.2 Using Protective Clothing and Respiratory Protection.** The hazardous materials technician shall demonstrate the ability to don, work in, and doff liquid splash-protective, vapor-protective, and chemical-protective clothing and any other specialized personal protective equipment provided by the AHJ, including respiratory protection, and shall complete the following tasks:

Criteria	Grading Criteria		
<b>Describe the safety procedures for personnel working in chemical-protective clothing</b>	Passed	Remediated Required	Not Applicable to the Organization
<b>Describe three emergency procedures for personnel working in chemical-protective clothing</b>			
<b>Demonstrate the ability to don, work in, and doff liquid splash-protective, vapor-protective, and chemical-protective clothing in addition to any other specialized protective equipment provided by the AHJ</b>			

**Instructor Remarks:** \_\_\_\_\_

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**7.4.3 Performing Control Functions Identified in the Incident Action Plan.**

(1)

<b>Given a pressure vessel, select the material or equipment and demonstrate a method(s) to contain leaks from the following locations:</b>	Passed	Remediated Required	Not Applicable to the Organization
Fusible plug			
Fusible Plug Threads			
Side Wall of Cylinder			
Valve Blowout			
Valve Gland			
Valve Inlet Threads			
Valve Seat			
Valve Stem Assembly Blowout			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(2)

Criteria	Grading Criteria		
<b>Given the fittings on a pressure container, demonstrate the ability to perform the following:</b>	Passed	Remediated Required	Not Applicable to the Organization
Close Valves that are Open			
Replace Missing Plugs			
Tighten Loose Plugs			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(3)

Criteria	Grading Criteria		
<b>Given a 55 gallon (208L) drum and applicable tools and materials, demonstrate the ability to contain the following types of leaks:</b>	Passed	Remediated Required	Not Applicable to the Organization
Bung Leak			
Chime Leak			
Forklift Puncture			
Nail Puncture			

Instructor Remarks: \_\_\_\_\_  
 \_\_\_\_\_



(4)

Criteria	Grading Criteria		
Given a 55 gallon (208L) drum and an over-pack drum, demonstrate the ability to place the 55 gallon (208L) drum into the over-pack drum using the following methods:	Passed	Remediated Required	Not Applicable to the Organization
Rolling Slide-In			
Slide-In			

Instructor Remarks: \_\_\_\_\_  
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\_\_\_\_\_

(5)

Criteria	Grading Criteria		
Identify the maintenance and inspection procedures for the tools and equipment provided for the control of hazardous materials released according to the manufacturer's specifications and recommendations.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
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(6)

Criteria	Grading Criteria		
Identify 3 considerations for assessing a leak or spill inside a confined space without entering the area.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
\_\_\_\_\_  
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(7)

Criteria	Grading Criteria		
Identify 3 safety considerations for product transfer operations.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(8)

Criteria	Grading Criteria		
Given an MC-306/DOT-406 cargo tank and a dome cover clamp, demonstrate the ability to install the clamp on the dome.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

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(9)

Criteria	Grading Criteria		
Identify the methods and precautions used to control a fire involving an MC-306/DOT-406 aluminum shell cargo tank.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

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(10)

Criteria	Grading Criteria		
Describe at least one method for containing each of the following types of leaks in MC 306/DOT 406, MC 307/DOT 407, and MC 312/DOT 412 cargo tanks:	Passed	Remediated Required	Not Applicable to the Organization
Dome cover leak			
Irregular-shaped hole			
Puncture			
Split or tear			

Instructor Remarks: \_\_\_\_\_

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(11)

Criteria	Grading Criteria		
Describe three product removal and transfer considerations for overturned MC-306/DOT 406, MC-307/DOT 407, MC-312/DOT 412, MC-331, and MC-338 cargo tanks.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

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\_\_\_\_\_

**7.4.4 Cargo Tanks**

Criteria	Grading Criteria		
Given MC-306/DOT 406, MC-307/DOT 407, MC-312/DOT 412, MC-331, and MC-338 cargo tanks, the hazardous materials technician shall identify the common methods for product transfer from each type of cargo tank.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

**7.4.5 Performing Decontamination Operations Identified in the Incident Action Plan**

Criteria	Grading Criteria		
Demonstrate the ability to set up and implement the following types of decontamination operations:	Passed	Remediated Required	Not Applicable to the Organization
Technical decontamination operations in support of entry operations.			
Technical decontamination operations involving ambulatory and non-ambulatory victims.			
Mass decontamination operations involving ambulatory and non-ambulatory victims.			

Instructor Remarks: \_\_\_\_\_

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**Section 3 – Implementing the Response**

**Sign-Off**

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Instructor's Signature Date

**Section 4 – Evaluating Progress**

**7.5.1 Evaluating the Effectiveness of the Control Function**

Criteria	Grading Criteria		
Given scenarios involving hazardous materials/WMD incidents and the incident action plan, evaluate the effectiveness of any control functions identified in the incident action plan.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

**7.5.2 Evaluating the Effectiveness of the Decontamination Process**

Criteria	Grading Criteria		
Given scenarios involving hazardous materials/WMD incidents and the incident action plan, evaluate the effectiveness of any decontamination procedures identified in the incident action plan.	Passed	Remediated Required	Not Applicable to the Organization

Instructor Remarks: \_\_\_\_\_

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**Section 4 – Evaluating Progress**

**Sign-Off**

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**Instructor's Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Section 5 – Terminating the Incident**

**7.6.1 Assisting in the Debriefing**

Criteria	Grading Criteria		
Given a scenario involving a hazardous materials/WMD incident, participate in the debriefing of the incident by completing the following requirements:	Passed	Remediated Required	Not Applicable to the Organization
Describe 3 components of an effective debriefing			
Describe the key topics of an effective debriefing.			
Describe when a debriefing should take place.			
Describe who should be involved in a debriefing.			

Instructor Remarks: \_\_\_\_\_

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**7.6.2 Assisting in the Incident Critique**

Criteria	Grading Criteria		
Given a scenario involving a hazardous materials/WMD incident, provide operational observations of the activities that were performed in the hot and warm zones during the incident and shall complete the following tasks:	Passed	Remediated Required	Not Applicable to the Organization
Describe 3 components of an effective critique			
Describe who should be involved in the critique.			
Describe why an effective critique is necessary after a hazardous materials/WMD incident.			
Describe which written documents should be prepared as a result of the critique			

Instructor Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**7.6.3 Reporting and Documenting the Incident**

Criteria	Grading Criteria		
Given a scenario involving a hazardous materials/WMD incident, provide operational observations of the activities that were performed in the hot and warm zones during the incident and shall complete the following tasks:	Passed	Remediated Required	Not Applicable to the Organization
Describe 3 components of an effective critique			
Describe who should be involved in the critique.			
Describe why an effective critique is necessary after a hazardous materials/WMD incident.			
Describe which written documents should be prepared as a result of the critique			

Instructor Remarks: \_\_\_\_\_

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**Section 5 – Terminating the Incident**

**Sign-Off**

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**Instructor’s Signature**
**Date**