Standardized Curriculum Form
Ontario, Canada

Office of the Fire Marshal and Emergency Management
Curriculum based on
NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition

Hazardous Materials/WMD Operations (Core) and MSC: Personal Protective Equipment and Product Control

National Fire Protection Association Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents

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Enquiries regarding testing and certification should be directed to:

Manager
Academic Standards and Evaluation
Ministry of Community Safety and Correctional Services
Office of the Fire Marshal and Emergency Management
25 Morton Shulman Avenue, 5th Floor
Toronto, Ontario
M3M 0B1
OFMTestingandCertification@ontario.ca

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Components of the OFMEM Academic Standards and Evaluation Standardized Curriculum Form

The OFMEM Academic Standards and Evaluation Standardized Curriculum Forms in Ontario, Canada, are based on internationally-recognized, competency-based, Professional Qualification Standards through the National Fire Protection Association (NFPA). Columns within this form from pages 5 and onward are composed of:

NFPA Objective

National Fire Protection Association Objectives are major competencies and Job Performance Requirements (JPR) within a professional qualifications standard that learners must acquire before successful completion of testing and certification. To attain these competencies, the OFMEM is offering flexible training delivery models centered on being accessible, attainable, and affordable.

Requisite Knowledge

As defined in published NFPA Professional Qualifications Standards, Requisite Knowledge is “Fundamental knowledge one must have in order to perform a specific task”. This can be acquired by referring to the various suggested readings described below. Information used to construct multiple choice test questions in the Provincial Certification Exam for HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL are derived from these materials.

Requisite Skills

As defined in published NFPA Professional Qualifications Standards, Requisite Skills are “The essential skills one must have in order to perform a specific task”. This can be acquired by referring to the various suggested readings described below along with the latest version of OFMEM Academic Standards and Evaluation’s Skills Sheets Booklet for HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL. This booklet is used by Provincial Examiners to evaluate Requisite Skill requirements for those seeking certification to NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition.

Suggested Readings

Multiple choice test bank questions in the Provincial Certification Exam for HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL (NFPA 472-2013) are derived from the following suggested readings:

Publisher/Title/Edition	Keyword Reference
1. NFPA 472, *Standards for Professional Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2013 Edition • Refer to Chapters 5, 6.2 and 6.6 regarding Hazardous Material Operations (Core), PPE and Product Control (pages 15 - 19, 20 - 21, and 25 - 26)	NFPA 472, 2013 Ed.
2. DOT, *Emergency Response Guidebook*, 2016 Edition • Refer to current ERG Edition	ERG, 2016 Edition
AND	
3. IFSTA, *Essentials of Fire Fighting and Fire Department Operations*, 6th Edition • Refer to Chapters 23 and 24 (pages 1296 - 1513)	IFSTA EOFF, 6th Ed.
OR	
4. Jones and Bartlett, *Fundamentals of Fire Fighter Skills*, 3rd Edition • Refer to Chapters 28, 29, 30, 31, 32, 33 and 34 (pages 866 - 989)	J&B FFFS, 3rd Ed.
5. IFSTA, *Hazardous Materials for First Responders*, 4th Edition	IFSTA HMFR, 4th Ed.
6. Jones and Bartlett, *Hazardous Materials Awareness and Operations*, 2nd Edition	J&B HMAO, 2nd Ed.

Knowledge Test Weighting (Out of 100%)

This column references percentage of multiple choice questions that will appear on the Provincial Certification Exam for knowledge-based testing for HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL.

Questions are validated by a Provincial Advisory Committee (PAC), and used for knowledge-based testing for those seeking certification to NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition through OFMEM Academic Standards and Evaluation. A mark of 70% or better is required to receive a “Pass” on the knowledge test.

Skill Sheet #

This column references skill objectives that will be evaluated by OFMEM Academic Standards and Evaluation, to test Requisite Skill requirements of HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL for those seeking certification to NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition.

OFMEM Academic Standards and Evaluation
Provincial Advisory Committee for HAZARDOUS MATERIALS/WMD OPERATIONS (CORE) and MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT AND PRODUCT CONTROL

NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition

Jason VanSlack, H.B.E.S., B.Ed., M.Ed.
Educational Consultant
OFMEM, Academic Standards and Evaluation, ON (Canada)

Ken Benoit
OFC Instructor
Ontario Fire College,
ON (Canada)

Paul Cooke
Captain
Central York Fire Services,
ON (Canada)

Ron Grisdale
Firefighter *(retired)*
Kitchener Fire Department,
ON (Canada)

John Martin
Captain
Toronto Fire Services,
ON (Canada)

Marc Walsh
Provincial Constable
Ontario Provincial Police
ON (Canada)

This document has been reviewed and approved by the Manager of Academic Standards and Evaluation of the Office of the Fire Marshal and Emergency Management (OFMEM) in Ontario, Canada:

Name: *Kalpana Rajgopalan* **Date:** *September 27, 2017*

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Course: Hazardous Materials/WMD Operations (Core) and MSC: Personal Protective Equipment and Product Control

Standard: NFPA 472, Chapter 5, 6.2 and 6.6, 2013 Edition

CHAPTER 5 - HAZARDOUS MATERIALS/WMD OPERATIONS (CORE)

5.1 General

5.1.1.2 The operations level responder shall be trained to meet all competencies at the awareness level (Chapter 4) and the competencies of this chapter.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.1.2.2 When responding to hazardous materials/WMD incidents, operations level responders shall be able to perform the following tasks:	1. Analyze a hazardous materials/ WMD incident to determine the scope of the problem and potential outcomes by completing the following tasks: (a) Survey the hazardous materials/WMD incident to identify the containers and materials involved, determine whether hazardous materials/WMD have been released, and evaluate the surrounding conditions (b) Collect hazard and response information from MSDS; CHEMTREC/CANUTEC/SETIQ; local, state and federal authorities; and shipper/ manufacturer contacts	3. Implement the planned response for a hazardous materials/WMD incident to favorably change the outcomes consistent with the emergency response plan and/or standard operating procedures by completing the following tasks: (a) Establish and enforce scene control procedures including control zones, emergency decontamination, and communications (b) Where criminal or terrorist acts are suspected, establish means of evidence preservation (c) Initiate an incident command system (ICS) for hazardous materials/WMD incidents	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapters 30, 31** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**8% of questions**	**Skill Sheets #1, #2, #3, #4, #7**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	(c) Predict the likely behavior of a hazardous material/WMD and its container (d) Estimate the potential harm at the hazardous materials/WMD incident 2. Plan an initial response to a hazardous materials/WMD incident within the capabilities and competencies of available personnel and personal protective equipment by completing the following tasks: (a) Describe the response objectives for the hazardous materials/WMD incident (b) Describe the response options available for each objective (c) Determine whether the personal protective equipment provided is appropriate for implementing each option (d) Describe emergency decontamination procedures (e) Develop a plan of action, including safety considerations	(d) Perform tasks assigned as identified in the incident action plan (e) Demonstrate emergency decontamination 4. Evaluate the progress of the actions taken at a hazardous materials/WMD incident to ensure that the response objectives are being met safely, effectively, and efficiently by completing the following tasks: (a) Evaluate the status of the actions taken in accomplishing the response objectives (b) Communicate the status of the planned response			

5.2 Core Competencies - Analyzing the Incident

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.2.1 Surveying Hazardous Materials/WMD Incidents.	• Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall collect information about the incident to identify the containers and materials involved, the surrounding conditions, and whether hazardous materials/WMD have been released by completing the requirements of 5.2.1.1 through 5.2.1.6.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapters 2, 4** **J&B HMAO, 2nd Ed. Chapter 3**	**20% of questions for all of 5.2.1 (5.2.1.1 to 5.2.1.6)**	**N/A**
5.2.1.1	• Given three examples each of liquid, gas, and solid hazardous materials or WMD, including various hazard classes, operations level personnel shall identify the general shapes of containers in which the hazardous materials/WMD are typically found.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed.**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
			Chapter 3		
5.2.1.1.1 Given examples of the following tank cars, the operations level responder shall identify each tank car by type, as follows:	1. Cryogenic liquid tank cars 2. Nonpressure tank cars (general service or low pressure cars) 3. Pressure tank cars	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.1.2 Given examples of the following intermodal tanks, the operations level responder shall identify each intermodal tank by type as follows:	1. Nonpressure intermodal tanks 2. Pressure intermodal tanks 3. Specialized intermodal tanks, including the following: (a) Cryogenic intermodal tanks (b) Tube modules	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.2.1.1.3 Given examples of the following cargo tanks, the operations level responder at the operational level shall identify each cargo tank by type as follows:	1. Compressed gas tube trailers 2. Corrosive liquid tanks 3. Cryogenic liquid tanks 4. Dry bulk cargo tanks 5. High pressure tanks 6. Low pressure chemical tanks 7. Nonpressure liquid tanks	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.1.4 Given examples of the following storage tanks, the operations level responder shall identify each tank by type, as follows:	1. Cryogenic liquid tank 2. Nonpressure tank 3. Pressure tank	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.1.5	1. Bags	**N/A**	**ERG, 2016 Ed.**	**Please refer to**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
Given examples of the following nonbulk packaging, the operations level responder shall identify each package by type as follows:	2. Carboys 3. Cylinders 4. Drums 5. Dewar flask (cryogenic liquids)		**IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**5.2.1 above**	
5.2.1.1.6 Given examples of the following packaging, the operations level responder shall identify the characteristics of each container or package by type as follows:	1. Intermediate bulk container (IBC) 2. Ton container	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.1.7 Given examples of the following radioactive	1. Excepted 2. Industrial 3. Type A	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
material packages, the operations level responder shall identify the characteristics of each container or package by type, as follows:	4. Type B 5. Type C		**J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**		
5.2.1.2	• Given examples of containers, the operations level responder shall identify the markings that differentiate one container from another.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.2.1 Given examples of the following marked transport vehicles and their corresponding shipping papers, the operations level	1. Highway transport vehicles, including cargo tanks 2. Intermodal equipment including tank containers 3. Rail transport vehicles, including	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed.**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
responder shall identify the following vehicle or tank identification marking:	tank cars		**Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**		
5.2.1.2.2	• Given examples of facility containers, the operations level responder shall identify the markings indicating container size, product contained, and/or site identification numbers	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.3	• Given examples of hazardous materials incidents, the operations level responder shall identify the name(s) of the hazardous material(s) in 5.2.1.3.1 through 5.2.1.3.3.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
			IFSTA HMFR, 4th Ed. Chapter 2 **J&B HMAO, 2nd Ed. Chapter 3**		
5.2.1.3.1 The operations level responder shall identify the following information on a pipeline marker:	1. Emergency telephone number 2. Owner 3. Product	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.3.2 Given a pesticide label, the operations level responder shall identify each of the following pieces of information, then match the piece of information to its significance in surveying the hazardous materials	1. Active ingredient 2. Hazard statement 3. Name of pesticide 4. Pest control product (PCP) number (in Canada) 5. Precautionary statement 6. Signal word	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
incidents:			**J&B HMAO, 2nd Ed. Chapter 3**		
5.2.1.3.3	• Given a label for a radioactive material, the operations level responder shall identify the type of category of label, contents, activity, transport index, and criticality safety index as applicable.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.4	• The operations level responder shall identify and list the surrounding conditions that should be noted when a hazardous materials/WMD incident is surveyed.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 31** **IFSTA HMFR, 4th Ed. Chapters 4, 6** **J&B HMAO, 2nd Ed.**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
			Chapter 3		
5.2.1.5	• The operations level responder shall describe ways to verify information obtained from the survey of a hazardous materials/WMD incident.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapters 2, 3** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**
5.2.1.6	• The operations level responder shall identify at least three additional hazards that could be associated with an incident involving terrorist or criminal activities.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 23** **J&B FFFS, 3rd Ed. Chapter 30** **IFSTA HMFR, 4th Ed. Chapter 2** **J&B HMAO, 2nd Ed. Chapter 3**	**Please refer to 5.2.1 above**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.2.2 Collecting Hazard and Response Information Given scenarios involving known hazardous materials/WMD, the operations level responder shall collect hazard and response information using MSDS, CHEMTREC/ CANUTEC/SETIQ, governmental authorities, and shippers and manufacturers by completing the following requirements:	1. Match the definitions associated with the UN/DOT hazard classes and divisions of hazardous materials/WMD, including refrigerated liquefied gases and cryogenic liquids, with the class or division 2. Identify two ways to obtain an MSDS in an emergency 3. Using an MSDS for a specified material, identify the following hazard and response information: (a) Physical and chemical characteristics (b) Physical hazards of the material (c) Health hazards of the material (d) Signs and symptoms of exposure (e) Routes of entry (f) Permissible exposure limits (g) Responsible party contact (h) Precautions for safe handling (including hygiene practices, protective measures, and procedures for cleanup of	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapters 29, 30** **IFSTA HMFR, 4th Ed. Chapters 1, 2, 3, 5, 6, 7** **J&B HMAO, 2nd Ed. Chapters 2, 3**	**8% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	spills or leaks) (i) Applicable control measures including personal protective equipment (j) Emergency and first-aid procedures 4. Identify the following: (a) Type of assistance provided by CHEMTREC/CANUTEC/ SETIQ and governmental authorities (b) Procedure for contacting CHEMTREC/CANUTEC/SETI Q and governmental authorities (c) Information to be furnished to CHEMTREC/CANUTEC/SETI Q and governmental authorities 5. Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information 6. Identify the type of assistance provided by governmental authorities with respect to criminal or terrorist activities involving the release or potential release of				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	hazardous materials/WMD 7. Identify the procedure for contacting local, state, and federal authorities as specified in the emergency response plan and/or standard operating procedures 8. Describe the properties and characteristics of the following: (a) Alpha radiation (b) Beta radiation (c) Gamma radiation (d) Neutron radiation				
5.2.3 Predicting the Likely Behavior of a Material and its Container Given scenarios involving hazardous materials/WMD incidents, each with a single hazardous material/WMD, the operations level responder shall describe the likely behavior of the material or agent and its container by completing the following requirements:	1. Interpret the hazard and response information obtained from the current edition of the DOT Emergency Response Guidebook, MSDS, CHEMTREC/CANUTEC/ SETIQ, governmental authorities, and shipper and manufacturer contacts, as follows: (a) Match the following chemical and physical properties with their significance and impact on the behavior of the container and its contents: i. Boiling point	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapter 29** **IFSTA HMFR, 4th Ed. Chapters 1, 3, 4, 7** **J&B HMAO, 2nd Ed. Chapters 2, 3**	**20% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	ii. Chemical reactivity iii. Corrosivity (pH) iv. Flammable (explosive) range [lower explosive limit (LEL) and upper explosive limit (UEL)] v. Flash point vi. Ignition (autoignition) temperature vii. Particle size viii. Persistence ix. Physical state (solid, liquid, gas) x. Radiation (ionizing and non-ionizing xi. Specific gravity xii. Toxic products of combustion xiii. Vapor density xiv. Vapor pressure xv. Water solubility (b) Identify the differences between the following terms: i. Contamination and				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	secondary contamination ii. Exposure and contamination iii. Exposure and hazard iv. Infectious and contagious v. Acute effects and chronic effects vi. Acute exposures and chronic exposures 2. Identify three types of stress that can cause a container system to release its contents 3. Identify five ways in which containers can breach 4. Identify four ways in which containers can release their contents 5. Identify at least four dispersion patterns that can be created upon release of a hazardous material 6. Identify the time frames for estimating the duration that hazardous materials/WMD will present an exposure risk. 7. Identify the health and physical hazards that could cause harm.				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	8. Identify the health hazards associated with the following terms: (a) Alpha, beta, gamma and neutron radiation (b) Asphyxiant (c) Carcinogen (d) Convulsant (e) Corrosive (f) Highly toxic (g) Irritant (h) Sensitizer, allergen (i) Target organ effects (j) Toxic 9. Given the following, identify the corresponding UN/DOT hazard class and division: (a) Blood agents (b) Biological agents and biological toxins (c) Choking agents (d) Irritants (riot control agents) (e) Nerve agents (f) Radiological materials				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	(g) Vesicants (blister agents)				
5.2.4 Estimating Potential Harm Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the potential harm within the endangered area at each incident by completing the following requirements:	1. Identify a resource for determining the size of an endangered area of a hazardous materials/WMD incident 2. Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials/WMD incident, estimate the number and type of exposures within that endangered area. 3. Identify resources available for determining the concentrations of a released hazardous material/WMD within an endangered area. 4. Given the concentrations of the released material, identify the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials/WMD incident 5. Describe the impact that time, distance, and shielding have on exposure to radioactive materials specific to the expected dose rate.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapters 29, 31, 33** **IFSTA HMFR, 4th Ed. Chapters 2, 3, 4, 6, 7** **J&B HMAO, 2nd Ed. Chapter 4**	**2% of questions**	**N/A**

5.3 Core Competencies - Planning the Response

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.3.1 Describing Response Objectives Given at least two scenarios involving hazardous materials/WMD incidents the operations level responder shall describe the response objectives for each example and shall meet the following requirements:	1. Given an analysis of a hazardous materials/WMD incident and the exposures, determine the number of exposures that could be saved with the resources provided by the AHJ 2. Given an analysis of a hazardous materials/WMD incident, describe the steps for determining response objectives 3. Describe how to assess the risk to a responder for each hazard class in rescuing injured persons at a hazardous materials/WMD incident 4. Describe the potential for secondary attacks and devices at criminal or terrorist events	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapter 31** **IFSTA HMFR, 4th Ed. Chapters 2, 6** **J&B HMAO, 2nd Ed. Chapter 4**	**2% of questions**	**N/A**
5.3.2 Identifying Action Options. Given examples of hazardous materials/WMD incidents (facility and transportation), the operations level responder	1. Identify the options to accomplish a given response objective 2. Describe the prioritization of emergency medical care and removal of victims from the hazard area relative to exposure and contamination concerns	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 31**	**2% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
shall identify the options for each response objective and shall meet the following requirements:			**IFSTA HMFR, 4th Ed. Chapter 6** **J&B HMAO, 2nd Ed. Chapter 4**		
5.3.3 Determining Suitability of Personal Protective Equipment. Given examples of hazardous materials/WMD incidents, including the names of the hazardous materials/WMD involved and the anticipated type of exposure, the operations level responder shall determine whether available personal protective equipment is applicable to performing assigned tasks by completing the following requirements:	1. Identify the respiratory protection required for a given response option and the following: (a) Describe the advantages, limitations, uses, and operational components of the following types of respiratory protection at hazardous materials/WMD incidents: i. Positive pressure self-contained breathing apparatus (SCBA) ii. Positive pressure air-line respirator with required escape unit iii. Closed-circuit SCBA iv. Powered air-purifying respirator (PAPR) v. Air-purifying respirator (APR) vi. Particulate respirator	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 32** **IFSTA HMFR, 4th Ed. Chapter 8** **J&B HMAO, 2nd Ed. Chapter 4**	**2% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	(b) Identify the required physical capabilities and limitations of personnel working in respiratory protection 2. Identify the personal protective clothing required for a given option and the following: (a) Identify skin contact hazards encountered at hazardous materials/WMD incidents (b) Identify the purpose, advantages, and limitations, of the following types of protective clothing at hazardous materials/WMD incidents: i. Chemical protective clothing such as liquid splash-protective clothing and vapor-protective clothing ii. High temperature protective clothing such as proximity suit and entry suits iii. Structural fire-fighting protective clothing				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.3.4 Identifying Decontamination Issues. Given scenarios involving hazardous materials/WMD incidents, operations level responders shall identify when decontamination is needed and shall meet the following requirements:	1. Identify ways that people, personal protective equipment, apparatus, tools, and equipment become contaminated 2. Describe how the potential for secondary contamination determines the need for decontamination 3. Explain the importance and limitations of decontamination procedures at hazardous materials incidents 4. Identify the purpose for emergency decontamination procedures at hazardous material incidents 5. Identify the methods, advantages, and limitations of emergency decontamination procedures	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 34** **IFSTA HMFR, 4th Ed. Chapter 9** **J&B HMAO, 2nd Ed. Chapter 4**	**2% of questions**	**N/A**

5.4 Core Competencies - Implementing the Planned Response.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.4.1 Establishing Scene Control. Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall explain how to establish and maintain scene control, including control zones and emergency decontamination, and communications between responders and to the public by completing the following requirements.	1. Identify the procedures for establishing scene control through control zones 2. Identify the criteria for determining the locations of the control zones at hazardous materials/WMD incidents 3. Identify the basic techniques for the following protective actions at hazardous materials/WMD incidents: (a) Evacuation (b) Shelter-in-place 5. Identify the items to be considered in a safety briefing prior to allowing personnel to work at the following: (a) Hazardous materials incidents (b) Hazardous materials/WMD incidents involving criminal activities 6. Identify the procedures for ensuring coordinated communication between	4. Demonstrate the ability to perform emergency decontamination	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapters 32, 33, 34** **IFSTA HMFR, 4th Ed. Chapters 5, 6, 9** **J&B HMAO, 2nd Ed. Chapter 5**	**6% of questions**	**Skill Sheet #4**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	responders and to the public				
5.4.2 Preserving Evidence.	• Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the process to preserve evidence as listed in the emergency response plan and/or standard operating procedures.	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 33** **IFSTA HMFR, 4th Ed. Chapter 7** **J&B HMAO, 2nd Ed. Chapter 5**	**2% of questions**	**N/A**
5.4.3 Initiating the Incident Command System. Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall implement the incident command system as required by the AHJ by completing the following requirements:	1. Identify the role of the operations level responder during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures. 2. Identify the levels of hazardous materials/WMD incidents as defined in the emergency response plan 3. Identify the purpose, need, benefits and elements of the incident command system for hazardous materials/WMD	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapters 28, 31** **IFSTA HMFR, 4th Ed. Chapters 1, 5, 6** **J&B HMAO, 2nd Ed. Chapter 5**	**6% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	incidents 4. Identify the duties and responsibilities of the following functions within the incident management system: (a) Incident safety officer (b) Hazardous materials branch or group 5. Identify the considerations for determining the location of the incident command post for a hazardous materials/WMD incident 6. Identify the procedures for requesting additional resources at a hazardous materials/WMD incident 7. Describe the role and response objectives of other agencies that respond to hazardous materials/WMD incidents				
5.4.4 Using Personal Protective Equipment. The operations level responder shall describe considerations for the use of personal protective	1. Identify the importance of the buddy system 2. Identify the importance of the backup personnel 3. Identify the safety precautions to be observed when approaching	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed.**	**4% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
equipment provided by the AHJ, and shall meet the following related requirements:	and working at hazardous materials/WMD incidents 4. Identify the signs and symptoms of heat and cold stress and procedures for their control 5. Identify the capabilities and limitations of personnel working in the personal protective equipment provided by the AHJ 6. Identify the procedures for cleaning, disinfecting, and inspecting personal protective equipment provided by the AHJ 7. Describe the maintenance, testing, inspection, and storage procedures for personal protective equipment provided by the AHJ according to the manufacture's specifications and recommendations.		**Chapter 32** **IFSTA HMFR, 4th Ed. Chapters 6, 8** **J&B HMAO, 2nd Ed. Chapters 4, 5**		

5.5 Core Competencies - Evaluating Progress

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
5.5.1 Evaluating the Status of Planned Response. Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall determine the effectiveness of the actions taken in accomplishing the response objectives and shall meet the following requirements:	1. Identify the considerations for evaluating whether actions taken were effective in accomplishing the objectives 2. Describe the circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 33** **IFSTA HMFR, 4th Ed. Chapter 6** **J&B HMAO, 2nd Ed. Chapters 5**	**2% of questions**	**N/A**
5.5.2 Communicating the Status of Planned Response. Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall report the status of the planned response through the	1. Identify the methods for reporting the status of the planned response through the normal chain of command 2. Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident	• Report the status of the planned response through the normal chain of command	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 31** **IFSTA HMFR, 4th Ed. Chapters 5, 6**	**2% of questions**	**Skill Sheet #3**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
normal chain of command by completing the following requirements:			**J&B HMAO, 2nd Ed. Chapters 5**		

5.6 Competencies - Terminating the Incident. (Reserved)

CHAPTER 6.2 - HAZARDOUS MATERIALS/WMD MISSION SPECIFIC COMPETENCIES: PERSONAL PROTECTIVE EQUIPMENT

6.2.1 General.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.2.1.2 Goal. The goal of the competencies in this section shall be to provide the operations level responder assigned to use personal protective equipment with the knowledge and skills to perform the following tasks safely and effectively:	**N/A**	1. Plan a response within the capabilities of personal protective equipment provided by the AHJ in order to perform mission specific tasks assigned. 2. Implement the planned response consistent with the standard operating procedures and site safety and control plan by donning, working in, and doffing personal protective equipment provided by the AHJ. 3. Terminate the incident by completing the reports and documentation pertaining to personal protective equipment.	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 32** **IFSTA HMFR, 4th Ed. Chapter 8** **J&B HMAO, 2nd Ed. Chapter 8**	**N/A**	**Skill Sheet #7**

6.2.2 Competencies - Analyzing the Incident. (Reserved)

6.2.3 Competencies - Planning the Response.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.2.3.1 Selecting Personal Protective Equipment. Given scenarios involving hazardous materials/WMD incidents with known and unknown hazardous materials/WMD and the personal protective equipment provided by the AHJ, the operations level responder assigned to use personal protective equipment shall select the personal protective equipment required to support mission-specific tasks at hazardous materials/WMD incidents based on local procedures by completing the following requirements:	1.* Describe the types of protective clothing and equipment that are available for response based on NFPA standards and how these items relate to EPA levels of protection. 2. Describe personal protective equipment options for the following hazards: (a) Thermal (b) Radiological (c) Asphyxiating (d) Chemical (e) Etiological/biological (f) Mechanical 3. Select personal protective equipment for mission-specific tasks at hazardous materials/WMD incidents based on local procedures. (a) Describe the following terms	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 32** **IFSTA HMFR, 4th Ed. Chapter 8** **J&B HMAO, 2nd Ed. Chapter 8**	**2% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	and explain their impact and significance on the selection of chemical-protective clothing: i. Degradation ii. Penetration iii. Permeation (b) Identify at least three indications of material degradation of chemical-protective clothing. (c) Identify the different designs of vapor-protective and splash-protective clothing and describe the advantages and disadvantages of each type. (d)* Identify the relative advantages and disadvantages of the following heat exchange units used for the cooling of personnel operating in personal protective equipment: i. Air cooled ii. Ice cooled iii. Water cooled iv. Phase change cooling				

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	technology (e) Identify the physiological and psychological stresses that can affect users of personal protective equipment. (f) Describe local procedures for going through the technical decontamination process.				

6.2.4 Competencies - Implementing the Planned Response.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.2.4.1 Using Protective Clothing and Respiratory Protection. Given the personal protective equipment provided by the AHJ, the operations level responder assigned to use personal protective equipment shall demonstrate the ability to don, work in, and doff the equipment provided to support mission-specific tasks by completing the following requirements:	1. Describe at least three safety procedures for personnel wearing protective clothing. 2. Describe at least three emergency procedures for personnel wearing protective clothing. 5. Describe the maintenance, testing, inspection, storage, and documentation procedures for personal protective equipment provided by the AHJ according to the manufacturer's specifications and recommendations.	3. Demonstrate the ability to don, work in, and doff personal protective equipment provided by the AHJ. 4. Demonstrate local procedures for responders undergoing the technical decontamination process.	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 32** **IFSTA HMFR, 4th Ed. Chapter 8** **J&B HMAO, 2nd Ed. Chapter 8**	**2% of questions**	**Skill Sheets #5, #13**

6.2.5 Competencies - Terminating the Incident.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.2.5.1 Reporting and Documenting the Incident.	**N/A**	• Given a scenario involving a hazardous materials/WMD incident, the operations level responder assigned to use personal protective equipment shall document use of the personal protective equipment by completing the documentation requirements of the emergency response plan or standard operating procedures regarding personal protective equipment.	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 31** **IFSTA HMFR, 4th Ed. Chapter 8** **J&B HMAO, 2nd Ed. Chapter 8**	**N/A**	**Skill Sheet #5**

CHAPTER 6.6 - HAZARDOUS MATERIALS/WMD MISSION SPECIFIC COMPETENCIES: PRODUCT CONTROL

6.6.1 General.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.6.1.2.2 When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform product control shall be able to perform the following tasks:	**N/A**	1. Plan an initial response within the capabilities and competencies of available personnel, personal protective equipment, and control equipment and in accordance with the emergency response plan or standard operating procedures by completing the following tasks: (a) Describe the control options available to the operations level responder. (b) Describe the control options available for flammable liquid and flammable gas incidents. 2. Implement the planned response to a hazardous materials/WMD incident.	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapters 23, 24** **J&B FFFS, 3rd Ed. Chapter 33** **IFSTA HMFR, 4th Ed. Chapter 10** **J&B HMAO, 2nd Ed. Chapter 12**	**N/A**	**Skill Sheet #7**

6.6.2 Competencies - Analyzing the Incident. (Reserved)

6.6.3 Competencies - Planning the Response.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.6.3.1 Identifying Control Options. Given examples of hazardous materials/WMD incidents, the operations level responder assigned to perform product control shall identify the options for each response objective by completing the following requirements as prescribed by the AHJ:	1. Identify the options to accomplish a given response objective. 2. Identify the purpose for and the procedures, equipment, and safety precautions associated with each of the following control techniques: (a) Absorption (b) Adsorption (c) Damming (d) Diking (e) Dilution (f) Diversion (g) Remote valve shutoff (h) Retention (i) Vapor dispersion (j) Vapor suppression	**N/A**	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 33** **IFSTA HMFR, 4th Ed. Chapter 10** **J&B HMAO, 2nd Ed. Chapter 12**	**2% of questions**	**N/A**
6.6.3.2 Selecting	• Given the personal protective equipment provided by the AHJ,	**N/A**	**ERG, 2016 Ed.**	**2% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
Personal Protective Equipment.	the operations level responder assigned to perform product control shall select the personal protective equipment required to support product control at hazardous materials/WMD incidents based on local procedures (see Section 6.2).		**IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 32** **IFSTA HMFR, 4th Ed. Chapter 10** **J&B HMAO, 2nd Ed. Chapter 12**		

6.6.4 Competencies - Implementing the Planned Response.

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
6.6.4.1 Performing Control Options. Given an incident action plan for a hazardous materials/WMD incident, within the capabilities and equipment provided by the AHJ, the operations level responder assigned to perform product control shall demonstrate control functions set out in the plan by completing the following requirements as prescribed by the AHJ:	2. Identify the characteristics and applicability of the following Class B foams if supplied by the AHJ: (a) Aqueous film-forming foam (AFFF) (b) Alcohol-resistant concentrates (c) Fluoroprotein (d) High-expansion foam 4. Identify the location and describe the use of emergency remote shutoff devices on MC/DOT-306/406, MC/DOT-307/407, and MC-331 cargo tanks containing flammable liquids or gases. 5. Describe the use of emergency remote shutoff devices at fixed facilities.	1. Using the type of special purpose or hazard suppressing foams or agents and foam equipment furnished by the AHJ, demonstrate the application of the foam(s) or agent(s) on a spill or fire involving hazardous materials/WMD. 3. Given the required tools and equipment, demonstrate how to perform the following control activities: (a) Absorption (b) Adsorption (c) Damming (d) Diking (e) Dilution (f) Diversion (g) Retention (h) Remote valve shutoff (i) Vapor dispersion (j) Vapor suppression	**ERG, 2016 Ed.** **IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 33** **IFSTA HMFR, 4th Ed. Chapter 10** **J&B HMAO, 2nd Ed. Chapter 12**	**2% of questions**	**Skill Sheets #5, #6, #7, #8, #9, #10, #11, #12**
6.6.4.2	• The operations level responder assigned to perform product	**N/A**	**ERG, 2016 Ed.**	**2% of questions**	**N/A**

NFPA Objective	Requisite Knowledge	Requisite Skills	Suggested Readings	Knowledge Test Weightings	Skill Sheet
	control shall describe local procedures for going through the technical decontamination process.		**IFSTA EOFF, 6th Ed. Chapter 24** **J&B FFFS, 3rd Ed. Chapter 34** **IFSTA HMFR, 4th Ed. Chapter 10** **J&B HMAO, 2nd Ed. Chapter 12**		

6.6.5 Competencies - Evaluating Progress. (Reserved)

6.6.6 Competencies - Terminating the Incident. (Reserved)