PHRT
PLAN OF INSTRUCTION

Instructor Information

General information about the course is provided below.

- The course meets or exceeds the requirements of the National Fire Protection Association® (NFPA®) professional qualifications standard 472 for hazardous materials Operations-Level certification. By completing all of the lessons the student will be certified for the Hazardous Materials On-Scene Incident Command.

Scope Statement

This course addresses the requirements of the NFPA® 472, 2017 edition, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.*

The target audience includes, but is not limited to:
- Fire Service
- First Responders
- EMS Personnel

Course Description PHRT – Core Competencies

This is a 3-day, 24-hour course. The course is designed to provide certification for Hazardous Materials On-Scene Incident Commander.

Learning Objectives

This course is designed to meet the learning objectives/performance objectives specified by *NFPA® 472.*

Instructor-to-Participant Ratio
The instructor-to-participant ratio may vary based on the experience of the participants and the ability of the instructor. However, a ratio of **20:1** is recommended for classroom instruction

Practical Exercises and Skills
All practical exercises and skills are based on requirements listed in the PHRT student workbook.

Resources Required
The following resources are required to deliver this course.

- Computer
- Projector

- Projector screen
- PHRT HMIC Workbook
- White Board and marker
- 2016 ERG
- NIOSH Pocketguide

PHRT Student Workbook

It is required that each student have a copy of the PHRT student workbook for this course. The student workbook is designed to be a supplement to classroom instruction. The workbook consists of various types of questions, scenarios, and individual and small group learning activities. All of the items are based on the content in the respective manual and reinforce the content by the having the student complete the activities.

Course Schedule

Day 1 -	8AM-8:30AM	Introduction/Sign in	
	8:30AM-9:00AM	PPT 1	
	9:00AM-9:30AM	PPT 1	
	9:30AM-10:00AM	PPT 1	
	10:00AM-10:30AM	Discussion 1	
	10:30AM-11:00AM	PPT 2	
	11:00AM-11:30AM	PPT 2	
	11:30AM-Noon	Discussion 3	
	Noon-1:00PM	Lunch	
	1:00PM-1:30PM	Test A+B (Appendix K)	
	1:30PM-2:00PM	PPT 3	
	2:30PM-3:00PM	PPT 3	
	3:30PM-4:00PM	Discussion 2	Test J
	4:00PM-4:30PM	Day 1 Test	
	4:30PM-5:00PM	Scenario Day 1	
Day 2 -	8AM-8:30AM	Introduction/Sign in	
	8:30AM-9:00AM	PPT 4	
	9:00AM-9:30AM	PPT 4	Test C
	9:30AM-10:00AM	PPT 4	Test D
	10:00AM-10:30AM	PPT 4	Test E
	10:30AM-11:00AM	Discussion 4	
	11:00AM-11:30AM	PPT 5	
	11:30AM-Noon	Discussion 5	
	Noon-1:00PM	Lunch	
	1:00PM-1:30PM	PPT 5	
	1:30PM-2:00PM	PPT 6	
	2:30PM-3:00PM	PPT 6	
	3:30PM-4:00PM	Discussion 6	
	4:00PM-4:30PM	Day 2 Test	
	4:30PM-5:00PM	Scenario Day 2	
Day 3 -	8AM-8:30AM	Introduction/Sign in	
	8:30AM-9:00AM	PPT 7	
	9:00AM-9:30AM	PPT 7	
	9:30AM-10:00AM	Discussion 7	
	10:00AM-10:30AM	PPT 8	
	10:30AM-11:00AM	PPT 8	
	11:00AM-11:30AM	PPT 8	
	11:30AM-Noon	Discussion 8	
	Noon-1:00PM	Lunch	
	1:00PM-1:30PM	PPT 9	
	1:30PM-2:00PM	PPT 9	
	2:30PM-3:00PM	PPT 9	
	3:30PM-4:00PM	Day 3 Test	
	4:00PM-4:30PM	Final Test	
	4:30PM-5:00PM	Day 3 Scenario	

Color codes –

AAAA	=	Competency confirmed by annual training
AAAA	=	Day One
AAAA	=	Day Two
AAAA	=	Three

1910.120(e)(5)

Qualifications for trainers. Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.

WAC

(3) **Trainer qualifications:**

(a) Verify trainers have satisfactorily completed an instructors' training course for the subjects they teach. For example, courses offered by the United States National Academy, or equivalent courses are acceptable; or

(b) Have the educational and instructional experience necessary for training.

1910.120(q)(6)(v)

On scene incident commander. Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

1910.120(q)(6)(v)(A)

Know and be able to implement the employer's incident command system.

1910.120(q)(6)(v)(B)

Know how to implement the employer's emergency response plan.

1910.120(q)(6)(v)(C)

Know and understand the hazards and risks associated with employees working in chemical protective clothing.

1910.120(q)(6)(v)(D)

Know how to implement the local emergency response plan.

1910.120(q)(6)(v)(E)

Know of the state emergency response plan and of the Federal Regional Response Team.

1910.120(q)(6)(v)(F)

Know and understand the importance of decontamination procedures.

1910.120(q)(6)(i)

First responder awareness level. First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

1910.120(q)(6)(i)(A)

An understanding of what hazardous substances are, and the risks associated with them in an incident.

1910.120(q)(6)(i)(B)

An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.

1910.120(q)(6)(i)(C)

The ability to recognize the presence of hazardous substances in an emergency.

1910.120(q)(6)(i)(D)

The ability to identify the hazardous substances, if possible.

1910.120(q)(6)(i)(E)

An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.

1910.120(q)(6)(i)(F)

The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

1910.120(q)(6)(ii)

First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:

1910.120(q)(6)(ii)(A)

Knowledge of the basic hazard and risk assessment techniques.

1910.120(q)(6)(ii)(B)

Know how to select and use proper personal protective equipment provided to the first responder operational level.

1910.120(q)(6)(ii)(C)

An understanding of basic hazardous materials terms.

1910.120(q)(6)(ii)(D)

Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.

1910.120(q)(6)(ii)(E)

Know how to implement basic decontamination procedures.

1910.120(q)(6)(ii)(F)

An understanding of the relevant standard operating procedures and termination procedures.

WAC 296-824-30005

(2) **Retraining (refresher) training:**
(a) Provide retraining annually;
(b) Make sure retraining covers necessary content;
(c) Document training or demonstrated competency.

Note: Retraining is not required when employees demonstrate competencies annually and a record is kept of the demonstration methodology used.

Table 5 **Competencies for Incident Commanders**
Employees designated as Incident Commanders must be able to show they:
• Have competencies specified for the First Responder Operations Level. (See Table 3.)
• Know of the state emergency response plan and the Federal Regional Response Team.
• Can implement the local emergency response plan.
• Can implement the employer's emergency response plan.
• Have knowledge of the incident command system (ICS) and understand how they relate to it.
• Can implement the employer's ICS.
• Understand the hazards and risks associated with employees working in chemical protective clothing.
• Understand the importance of decontamination procedures.
Note: If the first employee arriving at the scene is not trained as an IC, they may take control of the incident within their designated role and training level.

Table 3 **Competencies for First Responders at the Awareness Level and Operations Level**		
Employees must be able to show they:	When they are designated as First Responders at the:	
	Awareness Level	Operations Level
Understand what hazardous substances are and their associated risks.	X	X
Recognize the presence of hazardous substances in an emergency.	X	X
Can identify the hazardous substances, when possible.	X	X
Understand the potential consequences of hazardous substances in an emergency.	X	X
Understand the role of a first responder at the awareness level as described in: • The employer's emergency response plan, including site	X	X

Table 3 Competencies for First Responders at the Awareness Level and Operations Level		
Employees must be able to show they:	When they are designated as First Responders at the:	
	Awareness Level	Operations Level
security and control. • The United States Department of Transportation's Emergency Response Guidebook. (*search at: http://www.dot.gov*).		
Can use The United States Department of Transportation's Emergency Response Guidebook.	X	X
Recognize the need for additional resources and the need to notify the incident's communication center accordingly.	X	X
Know basic hazard and risk assessment techniques.		X
Can select and use personal protective equipment (PPE) appropriate for first responder operations level.		X
Understand basic hazardous materials terms.		X
Can perform basic control, containment, and/or confinement operations within the capabilities of the resources and PPE available.		X
Can implement decontamination procedures to their level training.		X
Understand relevant standard operating and termination procedures.		X

NFPA 1072

Chapter 8 Incident Commander
8.1 General.
8.1.1 The incident commander (IC) is that person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources.
8.1.2 An IC shall meet the job performance requirements defined in Sections 4.2 through 4.4.
8.1.3 An IC shall meet the job performance requirements defined in Sections 5.2 through 5.6.
8.1.4 An IC shall meet the job performance requirements defined in Sections 8.2 through 8.6.
8.1.5 General Knowledge Requirements. Knowledge of incident management system/incident command system (IMS/ICS) and importance of command presence.
8.1.6 General Skills Requirements. (Reserved)
8.2 Analyze the Incident.
8.2.1 Analyze a hazardous materials/weapons of mass destruction (WMD) incident, given a hazardous material/WMD incident; incident information; policies and procedures; available resources; approved references; and access to a hazardous materials technician, an allied professional, an emergency plan, or standard operating procedures, so that the hazards are assessed and risks are evaluated.
(A) Requisite Knowledge. Advantages and limitations of hazardous materials databases, detection and monitoring equipment, reference manuals, technical information centers, and technical information specialists; methods available to obtain local weather conditions and predictions; resources to predict behavior and estimate outcomes.
(B) Requisite Skills. Assessing hazards and evaluating risks; written and verbal communication.
8.3 Plan the Response.
8.3.1 Plan the response to a hazardous materials/WMD incident, given an hazardous materials/WMD incident, the results of the incident analysis, and available resources, so that the response objectives are identified, potential response options are identified, level of personal protective equipment (PPE) is approved, decontamination process is approved, response options are selected based on available resources, and an IAP is developed.
(A)* Requisite Knowledge. Response objectives, purpose of hazardous materials control techniques, approving the level of PPE, steps for developing an IAP, factors to be evaluated in public protective actions, making tactical assignments, and safe operating practices and procedures.
(B) Requisite Skills. Approving the personal protective equipment for response options, developing a plan of action, and ability to use verbal and written communication.
8.4 Implement the Incident Action Plan (IAP).
8.4.1 Implement the planned response in a hazardous materials/WMD incident, given a hazardous materials/WMD incident and resources and equipment available, so that IMS/ICS is implemented, resources are directed, a focal point for information transfer is established, and actions are taken to meet the response objectives of the IAP.
(A)* Requisite Knowledge. Role of the command element, concept of unified command and its application and use, duties and responsibilities of hazardous materials branch/group functions, transfer of command, implementing IMS/ICS, directing resources, and establishing a focal point for information transfer.
(B) Requisite Skills. Implementing IMS/ICS including unified command as necessary, assigning and directing resources, and establishing information transfer focal point.
8.5* Evaluate Progress and Adjust IAP.
8.5.1 Evaluate the progress and adjust the IAP as needed at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, actions taken, and changing incident conditions, so that actual behavior of material and container is compared to that predicted, effectiveness of action options and actions is determined, and modifications to the IAP are made as needed until the scene is determined to be stabilized and hazards are controlled.
(A) Requisite Knowledge. Determination of safe versus unsafe, procedures for evaluating whether the action options are effective in accomplishing the objectives, steps for comparing actual behavior of the material and the container to that predicted, and procedures for making modifications to the IAP.
(B) Requisite Skills. Comparing predicted behavior of the material and its container to the actual behavior, determining effectiveness of action options and actions, and modifying the IAP when needed.
8.6* Termination.
8.6.1 Terminate response operations at a hazardous materials/WMD incident, given a hazardous materials/WMD incident that has been determined to be stabilized with hazards controlled, operational observations, and approved forms for documentation and reporting, so that command is transferred, debriefings are held, post-incident analysis is completed, a critique is conducted, and overall incident response operations are reported and documented.
(A)* Requisite Knowledge. Transition from safe and nonsafe; regulatory issues; elements and procedures for conducting a debriefing, a post-incident analysis, and a critique; and requirements for reporting and documenting overall incident response operations.
(B) Requisite Skills. Transferring command; participating in a debriefing, post-incident analysis, and critiques; and completing required reports and supporting documentation for overall incident response operations.

Chapter 4 Awareness

4.1 General.

4.1.1 Awareness personnel are those persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.

4.1.2* Awareness personnel shall meet the job performance requirements defined in Sections 4.2 through 4.4.

4.1.3 General Knowledge Requirements. Role of awareness personnel at a hazardous materials/WMD incident, location and contents of the AHJ emergency response plan, and standard operating procedures for awareness personnel.

4.1.4 General Skills Requirements. (Reserved)

4.2* Recognition and Identification.

4.2.1 Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.

(A)* Requisite Knowledge. What hazardous materials and WMD are; basic hazards associated with classes and divisions; indicators to the presence of hazardous materials including container shapes,NFPA 704 markings,globally harmonized system (GHS) markings, placards, labels, pipeline markings, other transportation markings, shipping papers with emergency response information, and other indicators; accessing information from the *Emergency Response Guidebook* (ERG) (current edition) using name of the material, UN/NA identification number, placard applied, or container identification charts; and types of hazard information available from the ERG, safety data sheets (SDS), shipping papers with emergency response information, and other approved reference sources.

(B)* Requisite Skills. Recognizing indicators to the presence of hazardous materials/WMD; identifying hazardous materials/WMD by name, UN/NA identification number, placard applied, or container identification charts; and using the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify hazardous materials/WMD and their potential fire, explosion, and health hazards.

4.3* Initiate Protective Actions.

4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.

(A)* Requisite Knowledge. Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.

(B)* Requisite Skills. Recognizing precautions for protecting responders and the public; identifyingisolation areas, denying entry, and avoiding minimizing hazards.

4.4 Notification.

4.4.1 Initiate required notifications at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved communications equipment, so that the notification process is initiated and the necessary information is communicated.

(A) Requisite Knowledge. Policies and procedures for notification, reporting, and communications; types of approved communications equipment; and the operation of that equipment.

(B) Requisite Skills. Operating approved communications equipment and communicating in accordance with policies and procedures.

Chapter 5 Operations

5.1 General.

5.1.1 Operations level responders are those persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release.

5.1.2 Operations level responders shall meet the job performance requirements defined in Sections 4.2 through 4.4.

5.1.3 Operations level responders shall meet the job performance requirements defined in Sections 5.2 through 5.6.

5.1.4 Operations level responders shall have additional competencies that are specific to the response mission and expected tasks as determined by the AHJ.

5.1.5 General Knowledge Requirements. Role of operations level responders at a hazardous materials/WMD incident; location and contents of AHJ emergency response plan and standard operating procedures for operations level responders, including those response operations for hazardous materials/WMD incidents.

5.1.6 General Skills Requirements. (Reserved)

5.2* Identify Potential Hazards.

5.2.1 Identify the scope of the problem at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, and approved reference sources, so that container types, materials, location of any release, and surrounding conditions are identified, hazard information is collected, the potential behavior of a material

and its container is identified, and the potential hazards, harm, and outcomes associated with that behavior are identified.
(A)* Requisite Knowledge. Definitions of hazard classes and divisions; types of containers; container identification markings, including piping and pipeline markings and contacting information; types of information to be collected during the hazardous materials/WMD incident survey; availability of shipping
papers in transportation and of safety data sheets (SDS) at facilities; types of hazard information available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, and manufacturers, shippers, and carriers; how to communicate with carrier representatives to reduce impact of a release; basic physical and chemical properties, including boiling
point, chemical reactivity, corrosivity (pH), flammable (explosive) range [LFL (LEL) and UFL (UEL)], flash point, ignition (autoignition) temperature, particle size, persistence, physical state (solid, liquid, gas), radiation (ionizing and nonionizing),
specific gravity, toxic products of combustion, vapor density, vapor pressure, and water solubility; how to identify the
behavior of a material and its container based on the material's physical and chemical properties and the hazards associated with the identified behavior; examples of potential criminal and terrorist targets; indicators of possible criminal or terrorist activity for each of the following: chemical agents, biological agents, radiological agents, illicit laboratories (i.e., clandestine laboratories, weapons labs, ricin labs), and explosives; additional
hazards associated with terrorist or criminal activities, such as secondary devices; and how to determine the likely harm and outcomes associated with the identified behavior and the surrounding conditions.
(B)* Requisite Skills. Identifying container types, materials, location of release, and surrounding conditions at a hazardous materials/WMD incident; collecting hazard information; communicating with pipeline operators or carrier representatives;
describing the likely behavior of the hazardous materials or WMD and its container; and describing the potential hazards, harm, and outcomes associated with that behavior and
the surrounding conditions.
5.3* Identify Action Options.
5.3.1 Identify the action options for a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, approved reference sources, and the scope of the problem, so thatresponse objectives, action options, safety precautions, suitability
of approved personal protective equipment (PPE) available, and emergency decontamination needs are identified.
(A)* Requisite Knowledge. Policies and procedures for hazardous materials/WMD incident operations; basic components
of an incident action plan (IAP); modes of operation (offensive, defensive, and nonintervention); types of response objectives; types of action options; types of response information
available from the *Emergency Response Guidebook* (ERG), safety data sheets (SDS), shipping papers with emergency response information, and other resources; types of information
available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, and manufacturers, shippers, and carriers (highway, rail, water, air, pipeline); safety procedures; risk analysis concepts; purpose, advantages, limitations, and uses of approved PPE to determine
if PPE is suitable for the incident conditions; difference between exposure and contamination; contamination types, including sources and hazards of carcinogens at incident scenes; routes of exposure; types of decontamination (emergency,
mass, and technical); purpose, advantages, and limitations of emergency decontamination; and procedures, tools, and equipment for performing emergency decontamination.
(B)* Requisite Skills. Identifying response objectives and action options based on the scope of the problem and available
resources; identifying whether approved PPE is suitable for the incident conditions; and identifying emergency decontamination
needs based on the scope of the problem.
5.4* Action Plan Implementation.
5.4.1 Perform assigned tasks at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; an assignment with limited potential of contact with hazardous materials/WMD, policies and procedures, the scope of the problem,approved tools, equipment, and PPE, so that protective
actions and scene control are established and maintained,on-scene incident command is described, evidence is preserved, approved PPE is selected and used in the proper manner; exposures and personnel are protected; safety procedures
are followed; hazards are avoided or minimized; assignments are completed; and gross decontamination of personnel, tools, equipment, and PPE is conducted in the field.
(A)* Requisite Knowledge. Scene control procedures; procedures
for protective actions, including evacuation and sheltering-in-place; procedures for ensuring coordinated communications between responders and to the public; evidence recognition and preservation procedures; incident command organization; purpose, importance, benefits, and organization of incident command at hazardous materials/WMD incidents; policies and procedures for implementing
incident command at hazardous materials/WMD incidents; capabilities, limitations, inspection, donning, working in, going through decontamination while wearing, doffing approved PPE; signs and symptoms of thermal stress; safety precautions when working at hazardous materials/WMD incidents;
purpose, advantages, and limitations of gross decontamination;
the need for gross decontamination in the field based on the task(s) performed and contamination received, including sources and hazards of carcinogens at incident scenes; gross decontamination procedures for personnel, tools, equipment,
and PPE; and cleaning, disinfecting, and inspecting tools, equipment, and PPE.

(B)* Requisite Skills. Establishing and maintaining scene control; recognizing and preserving evidence; inspecting, donning, working in, going through decontamination while wearing, and doffing approved PPE; isolating contaminated tools, equipment, and PPE; conducting gross decontamination of contaminated personnel, tools, equipment, and PPE in the field; and cleaning, disinfecting, and inspecting approved tools, equipment, and PPE.

5.5 Emergency Decontamination.

5.5.1 Perform emergency decontamination at a hazardous materials/WMD incident, given a hazardous materials/WMD incident that requires emergency decontamination; an assignment; scope of the problem; policies and procedures; and approved tools, equipment, and PPE for emergency decontamination, so that emergency decontamination needs are identified, approved PPE is selected and used, exposures and personnel are protected, safety procedures are followed, hazards are avoided or minimized, emergency decontamination is set up and implemented, and victims and responders are decontaminated.

(A) Requisite Knowledge. Contamination, cross contamination, and exposure; contamination types; routes of exposure; types of decontamination (emergency, mass, and technical); purpose, advantages, and limitations of emergency decontamination; policies and procedures for performing emergency decontamination; approved tools and equipment for emergency decontamination; and hazard avoidance for emergency decontamination.

(B) Requisite Skills. Selecting an emergency decontamination method; setting up emergency decontamination in a safe area; using PPE in the proper manner; implementing emergency decontamination; preventing spread of contamination; and avoiding hazards during emergency decontamination.

5.6* Progress Evaluation and Reporting.

5.6.1 Evaluate and report the progress of the assigned tasks for a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, status of assigned tasks, and approved communication tools and equipment, so that the effectiveness of the assigned tasks is evaluated and communicated to the supervisor, who can adjust the IAP as needed.

(A)* Requisite Knowledge. Components of progress reports; policies and procedures for evaluating and reporting progress; use of approved communication tools and equipment; signs indicating improving, static, or deteriorating conditions based on the objectives of the action plan; and circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident.

(B)* Requisite Skills. Determining incident status; determining whether the response objectives are being accomplished; using approved communications tools and equipment; and communicating the status of assigned tasks.

NFPA 472

Chapter 8 Competencies for Incident Commanders

8.1 General.

8.1.1 Introduction.

8.1.1.1 The incident commander (IC) at hazardous materials/WMD incidents shall be that person responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources as designated by the AHJ.

Δ 8.1.1.2 The incident commander shall be trained to meet all competencies at the awareness level *(see Chapter 4)*, all competencies at the operations level *(see Chapter 5)*, and all competencies in this chapter.

8.1.1.3 The incident commander shall receive any additional training necessary to meet applicable governmental response and occupational health and safety regulations.

8.1.1.4 The incident commander shall receive any additional training necessary to meet specific needs of the jurisdiction.

8.1.2 Goal.

8.1.2.1 The goal of the competencies in this chapter shall be to provide the incident commander with the knowledge and skills to perform the tasks in 8.1.2.2 in a safe manner.

Δ 8.1.2.2 In addition to being competent at the awareness and all competencies at the operations levels, the incident commander shall be able to perform the following tasks:

(1) Analyze a hazardous materials/WMD incident to determine the complexity of the problem and potential outcomes by completing the following tasks:

(a) Collect and interpret hazard and response information from printed and technical resources, databases, and monitoring equipment

(b) Estimate the potential outcomes within the endangered area at a hazardous materials/WMD incident

(2) Plan response operations within the capabilities and competencies of available personnel, PPE, and response equipment by completing the following tasks:

(a) Identify the response objectives for hazardous materials/WMD incidents

(b) Identify the potential response options (defensive, offensive, and nonintervention) available by response objective

(c) Approve the level of PPE required for a given action option

(d)* Develop an incident action plan (IAP), including a site safety and control plan, consistent with the emergency response plan or standard operating procedures and within the capability of available

personnel, PPE, and response equipment
(3) Implement a response to change the outcome favorably and to be consistent with the emergency response plan or standard operating procedures by completing the following tasks:
(a) Implement an incident command system, including the specified procedures for identification, notification, and utilization of nonlocal resources (e.g., governmental personnel)
(b) Direct resources (private, governmental, and others) with task assignments and on-scene activities and provide management overview, technical review, and logistical support to those resources
(c) Provide a focal point for information transfer to media and local elected officials through the incident command system structure
(4) Evaluate the progress of the planned response to ensure that the response objectives are met in a safe, effective, and efficient manner, and adjust the IAP as needed
(5) Terminate the emergency phase of the incident by completing the following tasks:
(a) Transfer command (control) when appropriate
(b) Conduct an incident debriefing
(c) Conduct a multiagency critique
(d) Report and document the hazardous materials/WMD incident and submit the report to the designated entity

8.2 Competencies — Analyzing the Incident.

8.2.1 Collecting and Interpreting Hazard and Response Information.

8.2.1.1 Given access to printed and technical resources, computer databases, and detection and monitoring equipment, the incident commander shall ensure the collection and interpretation of hazard and response information not available from the current edition of the ERG or an SDS.

8.2.1.2 Given access to printed and technical resources, computer databases, and monitoring equipment, the incident commander shall be able to 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:
(1) Hazardous materials databases
(2) Detection and monitoring equipment
(3) Reference manuals
(4) Technical information centers
(5) Technical information specialists

8.2.2 Estimating Potential Outcomes. Given scenarios involving hazardous materials/WMD incidents, the surrounding conditions, and the predicted behavior of the container and its contents, the incident commander shall estimate the potential outcomes within the endangered area and shall complete the following tasks:
(1) Identify the steps for estimating the outcomes within an endangered area of a hazardous materials/WMD incident (2) Describe the following toxicological terms and exposure values, and explain their significance in the analysis process:
(a) Counts per minute (cpm) and kilocounts per minute (kcpm)
(b) Immediately dangerous to life and health (IDLH) value
(c) Infectious dose
(d) Lethal concentrations (LC_{50})
(e) Lethal dose (LD_{50})
(f) Parts per billion (ppb)
(g) Parts per million (ppm)
(h) Permissible exposure limit (PEL)
(i) Radiation absorbed dose (rad)
(j) Roentgen equivalent man (rem), millirem (mrem), microrem (µrem)
(k) Threshold limit value ceiling (TLV-C)
(l) Threshold limit value short-term exposure limit (TLV-STEL)
(m) Threshold limit value time-weighted average (TLVTWA)
(n) Other toxicological terms or exposure values as determined by the AHJ
(3)* Identify two methods for predicting the areas of potential harm within the endangered area of a hazardous materials/WMD incident
(4) Identify the methods available to the organization for obtaining local weather conditions and predictions for short-term future weather changes
(5) Explain the basic toxicological principles relative to assessment and treatment of personnel exposed to hazardous materials, including the following:
(a) Acute and delayed toxicity (chronic)
(b) Dose response
(c) Local and systemic effects
(d) Routes of exposure
(e) Synergistic effects
(6)* Describe the health risks associated with the following:
(a) Biological agents and biological toxins
(b) Blood agents
(c) Choking agents
(d) Irritants (riot control agents)
(e) Nerve agents
(f) Radiological materials
(g) Vesicants (blister agents)

8.3 Competencies — Planning the Response.

8.3.1 Identifying Response Objectives. Given an analysis of a hazardous materials/WMD incident, the incident commander shall be able to describe the steps for determining response objectives (defensive, offensive, and nonintervention).

8.3.2 Identifying the Potential Response Options. Given scenarios involving hazardous materials/WMD, the incident commander shall identify the possible response options (defensive, offensive, and nonintervention) by response objective for each problem and shall complete the following tasks:
(1) Identify the possible response options to accomplish a given response objective.
(2) Identify the purpose of each of the following techniques for hazardous materials control:
(a) Absorption
(b) Adsorption
(c) Blanketing/covering
(d) Contamination isolation
(e) Damming
(f) Diking
(g) Dilution
(h) Dispersion
(i) Diversion
(j) Fire suppression

(k) Neutralization
(l) Overpacking
(m) Patching
(n) Plugging
(o) Pressure isolation and reduction (flaring; venting; vent and burn; isolation of valves, pumps, or energy sources)
(p) Retention
(q) Solidification
(r) Transfer
(s) Vapor control (dispersion, suppression)

8.3.3 Approving the Level of PPE. Given scenarios involving hazardous materials/WMD with known and unknown hazardous materials/WMD, the incident commander shall approve the PPE for the response options specified in the IAP in each situation and shall complete the following tasks:
(1) Identify the four levels of chemical protection (EPA/OSHA) and describe the equipment required for each level and the conditions under which each level is used
(2) Describe the following terms and explain their impact and significance on the selection of chemical-protective clothing:
(a) Degradation
(b) Penetration
(c) Permeation
(3) Describe three safety considerations for personnel working in vapor-protective, liquid splash–protective, and high temperature–protective clothing
(4) Identify the physiological and psychological stresses that can affect users of PPE

8.3.4 Developing an Incident Action Plan (IAP). Given scenarios involving hazardous materials/WMD incidents, the incident commander shall develop an IAP, including site safety and control plan, consistent with the emergency response plan or standard operating procedures and within the capability of the available personnel, PPE, and response equipment, and shall complete the tasks in 8.3.4.1 through 8.3.4.5.5.

8.3.4.1 The incident commander shall identify the steps for developing an IAP.

8.3.4.2 The incident commander shall identify the factors to be evaluated in selecting public protective actions, including evacuation and sheltering-in-place.

Δ 8.3.4.3 Given the emergency response plan or standard operating procedures, the incident commander shall identify the entity that will perform the following:
(1) Receive the initial notification
(2) Provide secondary notification and activation of response agencies
(3) Make ongoing assessments of the situation
(4) Command on-scene personnel (incident management system)
(5) Coordinate support and mutual aid (6) Provide law enforcement and on-scene security (crowd control)
(7) Provide traffic control and rerouting
(8) Provide resources for public protective action (evacuation or shelter in-place)
(9) Provide fire suppression services
(10) Provide on-scene medical triage, treatment, and transport
(11) Provide public notification (warning)
(12) Provide public information (news media statements)
(13) Provide on-scene communications support
(14) Provide emergency on-scene decontamination
(15) Provide operations-level hazard control services
(16) Provide technician-level hazard mitigation services
(17) Provide environmental remedial action (cleanup) services
(18) Provide environmental monitoring
(19) Implement on-site accountability
(20) Provide on-site responder identification
(21) Provide incident scene security
(22) Provide incident or crime scene investigation
(23) Provide evidence collection and sampling

8.3.4.4 The incident commander shall identify the process for determining the effectiveness of a response option based on the potential outcomes.

8.3.4.5 The incident commander shall identify the safe operating practices and procedures that are required to be followed at a hazardous materials/WMD incident.

8.3.4.5.1 The incident commander shall identify the importance of pre-incident planning relating to safety during responses to specific sites.

8.3.4.5.2 The incident commander shall identify the procedures for presenting a safety briefing prior to allowing personnel to work on a hazardous materials/WMD incident.

8.3.4.5.3* The incident commander shall identify at least three safety precautions associated with search and rescue missions at hazardous materials/WMD incidents.

8.3.4.5.4 The incident commander shall identify the advantages and limitations of the following and describe an example where each decontamination method would be used:
(1) Absorption
(2) Adsorption
(3) Chemical degradation
(4) Dilution
(5) Disinfection
(6) Evaporation
(7) Isolation and disposal
(8) Neutralization
(9) Solidification
(10) Sterilization
(11) Vacuuming
(12) Washing

8.3.4.5.5* The incident commander shall identify the atmospheric and physical safety hazards associated with hazardous materials/WMD incidents involving confined spaces.

8.4 Competencies — Implementing the Planned Response.

Δ 8.4.1 Implementing an Incident Command System. Given a copy of the emergency response plan and annexes related to hazardous materials/WMD, the incident commander shall identify the requirements of the plan, including the procedures for notification and utilization of nonlocal resources (governmental personnel), by completing the following requirements:
(1) Identify the role of the command element during a hazardous materials/WMD incident
(2) Describe the concept of unified command and its application and use at a hazardous materials/WMD incident
(3) Identify the duties and responsibilities of the following

hazardous materials branch/group functions within the incident command system:
(a) Decontamination
(b) Entry (backup)
(c) Hazardous materials branch director or group supervisor
(d) Hazardous materials safety
(e) Information and research
(4) Identify the steps for implementing the emergency response plans required under Title III Emergency Planning and Community Right-to-Know Act (EPCRA) of the Superfund Amendments and Reauthorization Act (SARA) Section 303, or other state and emergency response planning legislation
(5) Given the emergency response planning documents, identify the elements of each of the documents
(6) Identify the elements of the incident management system/incident command system (IMS/ICS) necessary to coordinate response activities at hazardous materials/WMD incidents
(7) Identify the primary government agencies and identify the scope of the regulatory authority (including the regulations) pertaining to the production, transportation, storage, and use of hazardous materials and the disposal of hazardous wastes
(8) Identify the governmental agencies and resources that can offer assistance during a hazardous materials/WMD incident and identify their role and the type of assistance or resources that might be available

8.4.2* Directing Resources (Private and Governmental). Given a scenario involving a hazardous materials/WMD incident and the necessary resources to implement the planned response, the incident commander shall demonstrate the ability to direct the resources in a safe and efficient manner consistent with the capabilities of those resources.

8.4.3 Providing a Focal Point for Information Transfer to the Media and Elected Officials. Given a scenario involving a hazardous materials/WMD incident, the incident commander shall identify information to be provided to the media and governmental officials and shall complete the following tasks:
(1) Identify the local policy for providing information to the media
(2) Identify the responsibilities of the public information officer and the liaison officer at a hazardous materials/WMD incident
(3) Describe the concept of a joint information center (JIC) and its application and use at a hazardous materials/WMD incident

8.5 Competencies — Evaluating Progress.

8.5.1 Evaluating Progress of the Incident Action Plan (IAP). Given scenarios involving hazardous materials/WMD incidents, the incident commander shall evaluate the progress of the IAP to determine whether the efforts are accomplishing the response objectives and shall complete the following tasks:
(1) Identify the procedures for evaluating whether the response options are effective in accomplishing the objectives
(2) Identify the steps for comparing actual behavior of the material and the container to that predicted in the analysis process
(3) Determine the effectiveness of the following:
(a) Control, containment, or confinement operations
(b) Decontamination process
(c) Established control zones
(d) Personnel being used
(e) PPE
(4) Make modifications to the IAP as necessary

8.5.2* Transferring Command and Control During the Response Phase and the Post-Response Phase. Given a scenario involving a hazardous materials/WMD incident, the emergency response plan, and standard operating procedures, the incident commander shall be able to identify the steps to take to transfer command and control of the incident.

8.6 Competencies — Terminating the Incident.

8.6.1 Terminating Response Operations. Given a scenario involving a hazardous materials/WMD incident in which the IAP objectives have been achieved, the hazardous materials incident commander shall describe the steps taken to terminate the incident consistent with the emergency response plan and/or standard operating procedures and shall complete the following tasks:
(1) Identify the steps required for terminating the hazardous materials/WMD incident
(2) Identify the procedures for transferring command to the AHJ having responsibility for post-emergency response operations (PERO)

8.6.2 Conducting a Debriefing. Given scenarios involving a hazardous materials/WMD incident, the incident commander shall conduct a debriefing of the incident and shall complete the following tasks:
(1) Describe three components of an effective debriefing
(2) Describe the key topics in an effective debriefing
(3) Describe when a debriefing should take place
(4) Describe who should be involved in a debriefing
(5) Identify the procedures for conducting incident debriefings at a hazardous materials/WMD incident

8.6.3 Conducting a Post-Incident Critique. Given details of a scenario involving a multiagency hazardous materials/WMD incident, the incident commander shall conduct a critique of the incident and shall complete the following tasks:
(1) Describe the components of an effective critique
(2) Describe who should be involved in a critique
(3) Describe why an effective critique is necessary after a hazardous materials/WMD incident
(4) Describe what written documents should be prepared as a result of the critique
(5) Implement the procedure for conducting a critique of the incident

8.6.4 Reporting and Documenting the Hazardous Materials/WMD Incident. Given a scenario involving a hazardous materials/WMD incident, the incident commander shall demonstrate the ability to report and document the incident consistent with governmental requirements and shall complete the following tasks:
(1) Identify the reporting requirements of the governmental agencies
(2) Identify the requirements for compiling incident reports, filing documents, and maintaining records as defined in the emergency response plan and/or standard operating procedures
(3) Identify the steps in keeping an activity log and exposure

records for hazardous materials/WMD incidents
(4) Identify the procedures required for legal documentation and chain of custody and continuity described in the standard operating procedures or the emergency response plan

4.2 Competencies — Analyzing the Incident.
Δ 4.2.1* Recognizing the Presence of Hazardous Materials/ WMD. Given a hazardous materials/WMD incident and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present by completing the following requirements:
(1)***** Define the terms *hazardous material* (or *dangerous goods*, in Canada) and *WMD*
(2) Identify the hazard classes and divisions of hazardous materials/WMD and identify common examples of materials in each hazard class or division
(3)***** Identify the primary hazards associated with each hazard class and division
(4) Identify the difference(s) between hazardous materials/WMD incidents and other emergencies
(5) Identify typical occupancies and locations in the community where hazardous materials/WMD are manufactured, transported, stored, used, or disposed of
(6) Identify typical container shapes that can indicate the presence of hazardous materials/WMD
(7) Identify facility and transportation markings and colors that indicate hazardous materials/WMD, including the following:
(a) Transportation markings, including UN/NA identification number marks, marine pollutant mark, elevated temperature (HOT) mark, commodity marking, and inhalation hazard mark
(b) NFPA 704 markings
(c)* Military hazardous materials/WMD markings
(d) Special hazard communication markings for each hazard class
(e) Pipeline markings
(f) Container markings
(8) Given an NFPA 704 marking, describe the significance of the colors, numbers, and special symbols
(9) Identify placards and labels that indicate hazardous materials/WMD
(10) Identify the following basic information on safety data sheets (SDS) and shipping papers for hazardous materials:
(a) Identify where to find SDS
(b) Identify major sections of SDS
(11) Identify the following basic information on shipping papers for hazardous materials:
(a) Identify the entries on shipping papers that indicate the presence of hazardous materials
(b) Match the name of the shipping papers found in transportation (air, highway, rail, and water) with the mode of transportation
(c) Identify the person responsible for having the shipping papers in each mode of transportation
(d) Identify where the shipping papers are found in each mode of transportation
(e) Identify where the papers can be found in an emergency in each mode of transportation
(12)***** Identify examples of other clues, including senses (sight, sound, and odor), that indicate the presence of hazardous materials/WMD
4.2.2 Identifying Hazardous Materials/WMD. Given examples of hazardous materials/WMD incident, awareness level personnel shall, from a safe location, identify the hazardous material(s)/WMD involved in each situation by name, UN/NA identification number, or type placard applied by completing the following requirements:
(1) Identify difficulties encountered in determining the specific names of hazardous materials/WMD at facilities and in transportation
(2) Identify sources for obtaining the names of, UN/NA identification numbers for, or types of placard associated with hazardous materials/WMD in transportation
(3) Identify sources for obtaining the names of hazardous materials/WMD at a facility**4.2.3* Collecting Hazard Information.** Given the identity of various hazardous materials/WMD (name, UN/NA identification number, or type placard), awareness level personnel shall identify the basic hazard information for each material by using the current edition of the ERG or equivalent document; safety data sheet (SDS); manufacturer, shipper, and carrier documents (including shipping papers); and contacts by completing the following requirements:
(1)* Identify the three methods for determining the guidebook page for a hazardous material/WMD
(2) Identify the two general types of hazards found on each guidebook page
4.3* Competencies — Planning the Response. (Reserved)
4.4 Competencies — Implementing the Planned Response.
Δ 4.4.1* Isolate the Hazard Area. Given examples of hazardous materials/WMD incidents, the emergency response plan, the standard operating procedures, and the current edition of the ERG, awareness level personnel shall isolate and deny entry to the hazard area by completing the following requirements:
(1) Identify the location of both the emergency response plan and/or standard operating procedures
(2) Identify the role of the awareness level personnel during hazardous materials/WMD incidents
(3) Identify the following basic precautions to be taken to protect themselves and others in hazardous materials/WMD incidents:
(a) Identify the precautions necessary when providing emergency medical care to victims of hazardous materials/WMD incidents
(b) Identify typical ignition sources found at the scene of hazardous materials/WMD incidents

(c)* Identify the ways hazardous materials/WMD are harmful to people, the environment, and property
(d)* Identify the general routes of entry for human exposure to hazardous materials/WMD
(4)***** Given examples of hazardous materials/WMD and the identity of each hazardous material/WMD (name, UN/NA identification number, or type placard), identify the following response information:
(a) Emergency action (fire, spill, or leak and first aid)
(b) Personal protective equipment (PPE) recommended:
(i) Street clothing and work uniforms
(ii) Structural fire-fighting protective clothing
(iii) Positive pressure self-contained breathing apparatus (SCBA)
(iv) Chemical-protective clothing and equipment
(5) Identify the definitions for each of the following protective actions:
(a) Isolation of the hazard area and denial of entry
(b) Evacuation
(c)* Shelter-in-place
(6) Identify the size and shape of recommended initial isolation and protective action zones
(7) Describe the difference(s) between small and large spills as found in the Table of Initial Isolation and Protective Action Distances in the ERG or equivalent document
(8) Identify the circumstances under which the following distances are used at a hazardous materials/WMD incidents:
(a) Table of Initial Isolation and Protective Action Distances
(b) Isolation distances in the numbered guides
(9) Describe the difference(s) between the isolation distances on the orange-bordered guidebook pages and the protective action distances on the green-bordered ERG pages
(10) Identify the techniques used to isolate the hazard area and deny entry to unauthorized persons at hazardous materials/WMD incidents

4.4.2 Initiating the Notification Process. Given a hazardous materials/WMD incident, policies and procedures, and approved communications equipment, awareness level personnel shall initiate notifications at a hazardous materials/WMD incident, completing the following requirements:
(1) Identify policies and procedures for notification, reporting, and communications
(2) Identify types of approved communications equipment
(3) Describe how to operate approved communications equipment

4.5* Competencies — Evaluating Progress. (Reserved)

4.6* Competencies — Terminating the Incident. (Reserved)

Chapter 5 Competencies for Operations Level Responders

5.1 General.

5.1.1 Introduction.

5.1.1.1* The operations level responder shall be that person who responds to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of protecting nearby persons, the environment, or property from the effects of the release.

5.1.1.2 The operations level responder shall be trained to meet all competencies at the awareness level *(see Chapter 4)* and the competencies defined in Sections 5.2 through 5.5 of this chapter.

5.1.1.3* The operations level responder shall receive additional training to meet applicable governmental occupational health and safety regulations.

5.1.2 Goal.

Δ 5.1.2.1 The goal of the competencies in this chapter shall be to provide operations level responders with the knowledge and skills to perform the competencies in 5.1.2.2 in a safe manner.

5.1.2.2 When responding to hazardous materials/WMD incidents, operations level responders shall be able to perform the following tasks:
(1) Identify the scope of the problem and potential hazards, harm, and outcomes by completing the following tasks:
(a) Survey a hazardous materials/WMD incident to identify the containers and materials involved and to identify the surrounding conditions(b) Collect hazard and response information from the ERG; SDS; CHEMTREC/CANUTEC/SETIQ; governmental authorities; and shipper/manufacturer/ carrier documents, including shipping papers with emergency response information and shipper/ manufacturer/carrier contacts
(c) Predict the likely behavior of a hazardous material/WMD and its container, including hazards associated with that behavior
(d) Estimate the potential outcomes harm at a 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 (PPE) 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 PPE provided is suitable for implementing each option
(d) Describe emergency decontamination procedures
(e) Develop a plan of action, including safety considerations
(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 a means of evidence preservation
(c) Initiate an incident command system (ICS) for hazardous materials/WMD incidents
(d) Perform tasks assigned as identified in the incident action plan
(e) Perform emergency decontamination
(4) Evaluate and report the progress of the assigned tasks taken at a hazardous materials/WMD incident to ensure that the response objectives are met in a safe, effective, and efficient manner 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 Competencies — Analyzing the Incident.

Δ 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, the materials involved, leaking containers, and the surrounding conditions released by completing the requirements of 5.2.1.1 through 5.2.1.6.

Δ 5.2.1.1* Given examples of the following pressure containers, the operations level responder shall identify each container by type, as follows:
(1) Bulk fixed facility pressure containers
(2) Pressure tank cars
(3) High-pressure cargo tanks
(4) Compressed gas tube trailers
(5) High-pressure intermodal tanks
(6) Ton containers
(7) Y-cylinders
(8) Compressed gas cylinders
(9) Portable and horizontal propane cylinders
(10) Vehicle-mounted pressure containers

5.2.1.1.1 Given examples of the following cryogenic containers, the operations level responder shall identify each container by type, as follows:
(1) Bulk fixed facility cryogenic containers
(2) Cryogenic liquid tank cars
(3) Cryogenic liquid cargo tanks
(4) Intermodal cryogenic containers
(5) Cryogenic cylinders
(6) Dewar flasks

5.2.1.1.2 Given examples of the following liquids-holding containers, the operations level responder shall identify each container by type, as follows:
(1) Bulk fixed facility tanks
(2) Low-pressure tank cars
(3) Nonpressure liquid cargo tanks
(4) Low-pressure chemical cargo tanks
(5) 101 and 102 intermodal tanks
(6) Flexible intermediate bulk containers/rigid intermediate bulk containers (FIBCs/RIBCs)
(7) Flexible bladders
(8) Drums
(9) Bottles, flasks, carboys

5.2.1.1.3 Given examples of the following solids-holding containers, the operations level responder shall identify each container by type, as follows:
(1) Bulk fixed facilities
(2) Railway gondolas, coal cars
(3) Dry bulk cargo trailers
(4) Intermodal tanks (reactive solids)
(5) FIBCs/RIBCs
(6) Drums
(7) Bags, bottles, boxes

5.2.1.1.4 Given examples of the following mixed-load containers, the operations level responder shall identify each container by type, as follows:
(1) Box cars
(2) Mixed cargo trailers
(3) Freight containers

Δ 5.2.1.1.5 Given examples of the following containers, the operations level responder shall identify the characteristics of each container by type as follows:
(1) Intermediate bulk container (IBC)
(2) Ton container

Δ 5.2.1.1.6* Given examples of the following radioactive material containers, the operations level responder shall identify the characteristics of each container by type, as follows:
(1) Excepted (package)
(2) Industrial (package)
(3) Type A (package)
(4) Type B (package)
(5) Type C (package) **5.2.1.2** Given examples of containers, the operations level responder shall identify the markings that differentiate one container from another.

5.2.1.2.1 Given examples of the following marked transport vehicles and their corresponding shipping papers, the operations level responder shall identify marking used for identifying the specific transport vehicle:
(1) Highway transport vehicles, including cargo tanks
(2) Intermodal equipment, including tank containers
(3) Rail transport vehicles, including tank cars

5.2.1.2.2 Given examples of facility storage tanks, the operations level responder shall identify the markings indicating container size, product contained, and/or site identification numbers.

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.

5.2.1.3.1 Given a pipeline marker, the operations level responder shall identify the emergency telephone number,

owner, and product as applicable.
5.2.1.3.2 Given a pesticide label, the operations level responder shall identify the active ingredient, hazard statement,
name of pesticide, and pest control product (CPC) number (in Canada).
5.2.1.3.3 Given a label for a radioactive material, the operations
level responder shall identify the type or category of label, contents, activity, transport index, and criticality safety index as applicable.
Δ 5.2.1.4* The operations level responder shall identify and list the surrounding conditions that should be noted when surveying
a hazardous materials/WMD incident.
5.2.1.5 The operations level responder shall describe ways to verify information obtained from the survey of a hazardous materials/WMD incident.
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* 5.2.1.6.1** Identify at least four types of locations that could be targets for criminal or terrorist activity using hazardous materials/
WMD.
***N* 5.2.1.6.2** Describe the difference between a chemical and a biological incident.
***N* 5.2.1.6.3** Identify at least four indicators of possible criminal or terrorist activity involving chemical agents.
***N* 5.2.1.6.4** Identify at least four indicators of possible criminal or terrorist activity involving biological agents.
***N* 5.2.1.6.5** Identify at least four indicators of possible criminal or terrorist activity involving radiological agents.
***N* 5.2.1.6.6** Identify at least four indicators of possible criminal or terrorist activity involving illicit laboratories (e.g., clandestine laboratories, weapons lab, explosive lab, or biological lab).
***N* 5.2.1.6.7** Identify at least four indicators of possible criminal or terrorist activity involving explosives.
***N* 5.2.1.6.8** Identify at least four indicators of secondary devices.
***N* 5.2.1.6.9** Identify at least four specific actions necessary when
an incident is suspected to involve criminal or terrorist activity.
***N* 5.2.1.7** The operations level responder shall describe ways in
which emergency responders are exposed to toxic products of combustion.
Δ 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 from SDS, CHEMTREC/CANUTEC/SETIQ, governmental authorities, and manufacturers, shippers, and carriers by completing the following requirements:
(1) Match the definitions associated with the hazard classes and divisions of hazardous materials/WMD with the designated class or division.
(2) Identify two ways to obtain an SDS in an emergency.
(3) Using an SDS for a specified material, identify the following hazard and response information:
(a) Identification, including supplier identifier and emergency telephone number
(b) Hazard identification
(c) Composition/information on ingredients
(d) First aid measures
(e) Fire-fighting measures
(f) Accident release measures
(g) Handling and storage
(h) Exposure controls/personal protection
(i) Physical and chemical properties
(j) Stability and reactivity
(k) Toxicological information
(l) Ecological information (nonmandatory)
(m) Disposal considerations (nonmandatory)
(n) Transport information (nonmandatory)
(o) Regulatory information (nonmandatory)
(p) Other information
(4) Identify the types of assistance provided by, procedure for contacting, and information to be provided to CHEMTREC/ CANUTEC/SETIQ and governmental authorities.
(5) Identify two methods of contacting manufacturers, shippers, and carriers (highway, rail, marine, air, and pipeline) 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 hazardous materials/WMD.
Δ 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) Use the hazard and response information obtained from the current edition of the ERG, SDS, CHEMTREC/ CANUTEC/SETIQ, governmental authorities, and manufacturer,
shipper, and carrier 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
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 nonionizing)
xi. Specific gravity
xii. Toxic products of combustion
xiii. Vapor density
xiv. Vapor pressure
xv. Water solubility
xvi. Polymerization
xvii. Expansion ratio
xviii
.
Biological agents and toxins
(b) Identify the differences between the following

terms:
i. *Contamination* and *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 types of stress that can cause a container system to release its contents (thermal, mechanical, and chemical).
(3)* Identify ways containers can breach (disintegration, runaway cracking, closures open up, punctures, and splits or tears).
(4)* Identify ways containers can release their contents (detonation,
violent rupture, rapid relief, spill, or leak).
(5)* Identify dispersion patterns that can be created upon release of a hazardous material (hemispherical, cloud, plume, cone, stream, pool, and irregular).
(6)* Identify the time frames for estimating the duration that hazardous materials/WMD will present an exposure risk (short-term, medium-term, and long-term).
(7)* Identify the health and physical hazards that could cause harm.

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, describe the number and type of exposures within that endangered area
(3) Identify resources available for determining the concentrations
of a released hazardous materials/WMD within
an endangered area
(4)* Given the concentrations of the released material, describe 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
(6) Describe the potential for secondary threats and devices at criminal or terrorist events

5.3 Competencies — Planning the Response.

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 by completing the following requirements:
(1) Given an analysis of a hazardous materials/WMD incident and the exposures, describe 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

5.3.2 Identifying Action Options. Given examples of hazardous
materials/WMD incidents (facility and transportation), the operations level responder shall identify the action options for each response objective and shall meet the following requirements:
(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

5.3.3 Determining Suitability of Personal Protective Equipment
(PPE). 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
PPE 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. Self-contained breathing apparatus (SCBA)
ii. Supplied air respirators
iii. Powered air-purifying respirators
iv. Air-purifying respirators
(b) Identify the required physical capabilities and limitations of personnel working in respiratory protection
(2) Identify the personal protective clothing, required for a given action 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, including liquid splash–protective ensembles and vaporprotective ensemblesii. High temperature–protective clothing, including proximity suits and entry suits
iii. Structural fire-fighting protective clothing

5.3.4* Identifying Emergency Decontamination Issues. Given
scenarios involving hazardous materials/WMD incidents, the operations level responder shall identify when emergency decontamination is needed by completing the following requirements:
(1) Identify ways that people, PPE, apparatus, tools, and equipment become contaminated.
(2) Describe how the potential for secondary contamination determines the need for emergency decontamination.
(3) Explain the importance, differences, and limitations of emergency/field expedient, gross, technical, and mass decontamination procedures at hazardous materials incidents.
(4) Identify the purpose of emergency decontamination procedures at hazardous materials incidents.

5.4 Competencies — Implementing the Planned Response.

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
(4)* Perform emergency decontamination while preventing spread of contamination and avoiding hazards while using PPE
(5)* Identify the items to be considered in a safety briefing prior to allowing personnel to work at the following:
(a) Hazardous material incidents
(b)* Hazardous materials/WMD incidents involving criminal activities
(6) Identify the procedures for ensuring coordinated communication between 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.

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 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 (PPE). Given the
PPE provided by the AHJ, the operations level responder shall describe considerations for the use of PPE provided by the AHJ
by completing the following requirements:
(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 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 PPE provided by the AHJ
(6) Identify the procedures for cleaning, disinfecting, and inspecting PPE provided by the AHJ
(7) Maintain and store PPE following the instructions provided by the manufacturer on the care, use, and maintenance of the protective ensemble elements

5.5 Competencies — Evaluating Progress.

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 factors to be evaluated to determine if 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

Δ 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 normal chain of command by completing the following requirements:
(1) Identify the procedures 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

5.6* Competencies — Terminating the Incident. (Reserved)