



New Hampshire Department of Safety
Division of Fire Standards and Training and Emergency Medical Services
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FIRE STANDARDS AND TRAINING COMMISSION

CURRICULUM DEVELOPMENT AND APPROVAL GUIDE

**Hazardous Materials Operations
NFPA 470, 2022**

Approved by the New Hampshire Fire Standards and Training Commission

Commission Approval

Date:

11/7/2024

INTRODUCTION:

The New Hampshire Fire Standards and Training Commission is responsible for the approval of certification curricula for firefighters throughout the state. To accomplish this portion of their mission, the Commission establishes a Visiting Committee who is charged with recommending new curricula, or updating existing certification programs, to present to the Commission for approval and adoption.

SCOPE:

This procedure shall apply to all Visiting Committees appointed by the Fire Standards and Training Commission.

PROCEDURE:

- I. The establishment of the Visiting Committee shall follow the approved policy from the Commission.
- II. Once appointed, the Visiting Committee shall be charged with providing valuable input of the current needs facing the New Hampshire emergency services responders. They shall work closely with the Division to provide this input and feedback on the proposed curriculum.
- III. With input from the Visiting Committee, the Division shall be responsible for formulating module lesson plans, presentation outlines, and job performance requirements and be consistent with Fire Part 402.03. It is not the responsibility of the Visiting Committee to choose instructors or design quizzes and exams.
- IV. Once a curriculum package is selected and all necessary documentation is completed, the Committee shall present to the Curriculum Committee for approval. If the Curriculum Committee approved the proposal, it shall then be brought forward to the full Commission for a preliminary approval. Once a preliminary approval has been granted, two public hearings (one in the day and one in the evening) shall be held in conjunction with a 60 day written comment period. All pertinent documentation shall be posted on the Division's website and notification of the comment period shall be distributed. Additionally, if ProBoard approval is required, it shall be done simultaneously with the public comment period.
- V. Upon completion of the public comment period and approval from ProBoard, if applicable, the final curriculum and public comments shall be brought forward to the full Commission for final approval.
- VI. Upon completion of two deliveries of the curriculum or after a period of one year, which ever happens first, the Division shall provide the Commission an evaluation of the curriculum and any suggested curriculum modifications needed.

1.

MEETING GUIDELINES:

- I. All Visiting Committee meetings shall be posted in advance on the Division's website along with the other meetings of the Commission. Along with posting each meeting, notification shall be sent to any person that expressed interest in being a member of the committee who was not selected.
2. II. A quorum on each Visiting Committee shall be established as a simple majority of the seated members. It is the intent to have an in-person quorum at each meeting, however in coordination with the Commission's representative the use of conferencing calling and/or video conferencing may be utilized.
3. III. In the event a quorum is not possible, the Commission representative shall make the determination whether to hold the meeting or postpone it.
4. IV. Upon the conclusion of each meeting, minutes shall be posted to the Division's website.
- V. All final recommendations shall be voted on by a quorum of the Visiting Committee.
- 5.

Curriculum Information Sheet

Name of Certification: Hazardous Materials Operations
 (including NFPA Standard) **NFPA Standard:** 470 **Edition Date:** 2022 **Next Edition:** 2027

Type of Certification: NH Certification _____ Pro-Board Accredited X
 Certificate of Attendance _____

ProBoard/Certification requirements: Number of exam questions: 100
 Job Sheets updated and formatted: 2
 Assessment Methodology Matrix: Attached
 Method of Delivery: **In-Person** / Hybrid / Online

Reference Materials: Digital Emergency Response Guidebook (Current Edition)
 Pipeline and Hazardous Materials Safety Agency, Washington, DC
 NIOSH Pocket Guide to Chemical Hazards (Current Edition)
 National Institute for Occupational Safety and Health, Washington, DC
 Hazardous Materials Awareness and Operations, 4th Ed. (2023)
 Jones & Bartlett Learning, Burlington, MA

Class Size: Min: 4 Max: 24 **Total recommended curriculum hours:** 16

Module Breakdown:	Module 1: Recognizing the Hazard	Hours:	10 hours
	Lab Block 1		
	HMO L1-1: Chemical and Physical Properties	Hours:	4 hours
	Lab Block 2		
	HMO L1-2: Identification of Hazards	Hours:	2 hours
	HMO L1-3: Scene Assessment and Management	Hours:	2 hours
	HMO L1-4: Emergency Decontamination	Hours:	2 hours
	Module 2: Product Control	Hours:	6 hours
	Block 1		
	HMO-SE-1: Controlling Hazardous Liquids	Hours:	1 hour
	HMO-SE-2: Controlling Hazardous Vapors	Hours:	1 hour
	HMO-SE-3: Metering and Respiratory Protection	Hours:	1 hour
	Block 2		
	HMO-SE-4: Responding to Hazardous Liquids	Hours:	1 hour
	HMO-SE-5: Responding to Hazardous Vapors	Hours:	1 hour
	HMO-SE-6: Responding to Incidents Involving Poisons	Hours:	1 hour
		Total:	16 hours

Prerequisites for Enrollment: Hazardous Materials Awareness (NFPA 470)
Training on the use of structural firefighting personal protective equipment including structural firefighting ensemble and self-contained breathing apparatus (SCBA) in accordance with the Professional Qualification Standards for Firefighter I
Training on the operation of hose lines and nozzles, adjustment of nozzle patterns, and water flow rates in accordance with the Professional Qualification Standards for Firefighter I

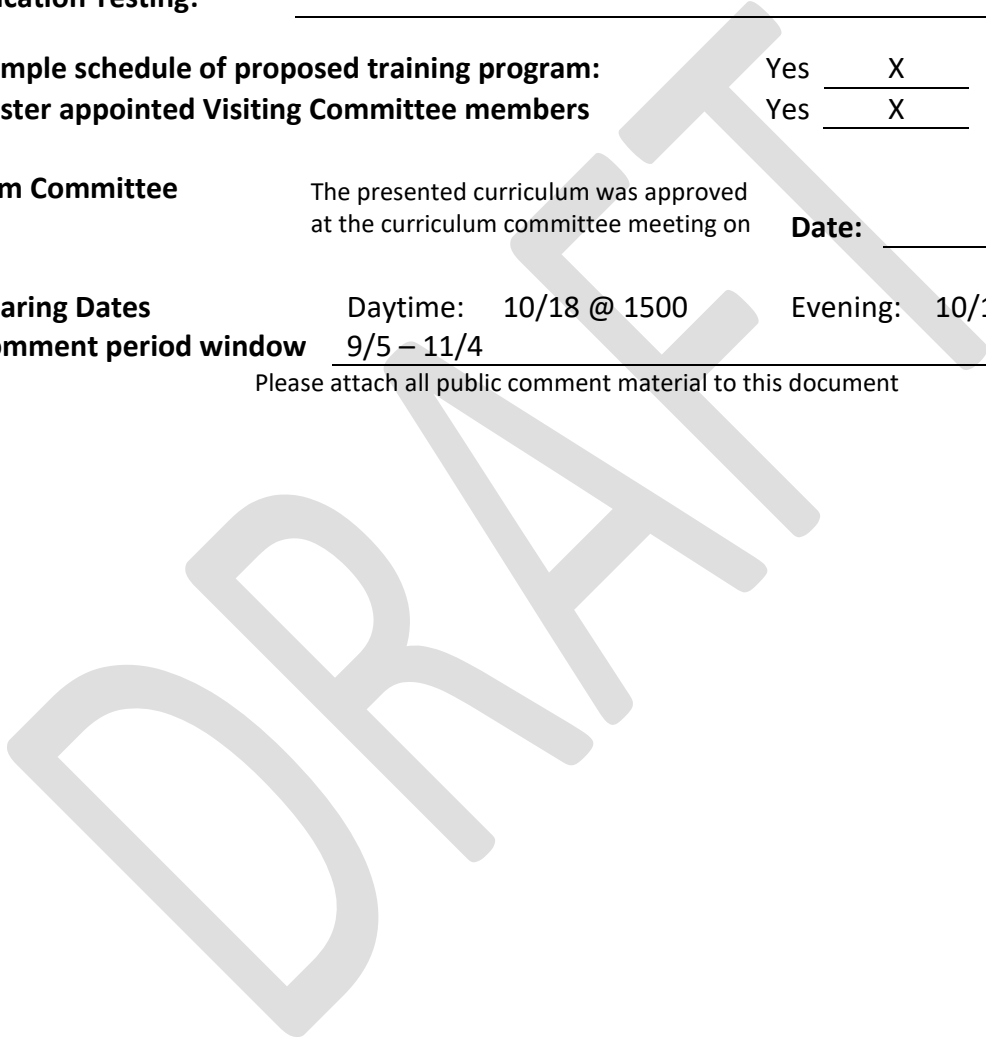
Requirements to be Eligible for Certification Testing: Completion of all modules

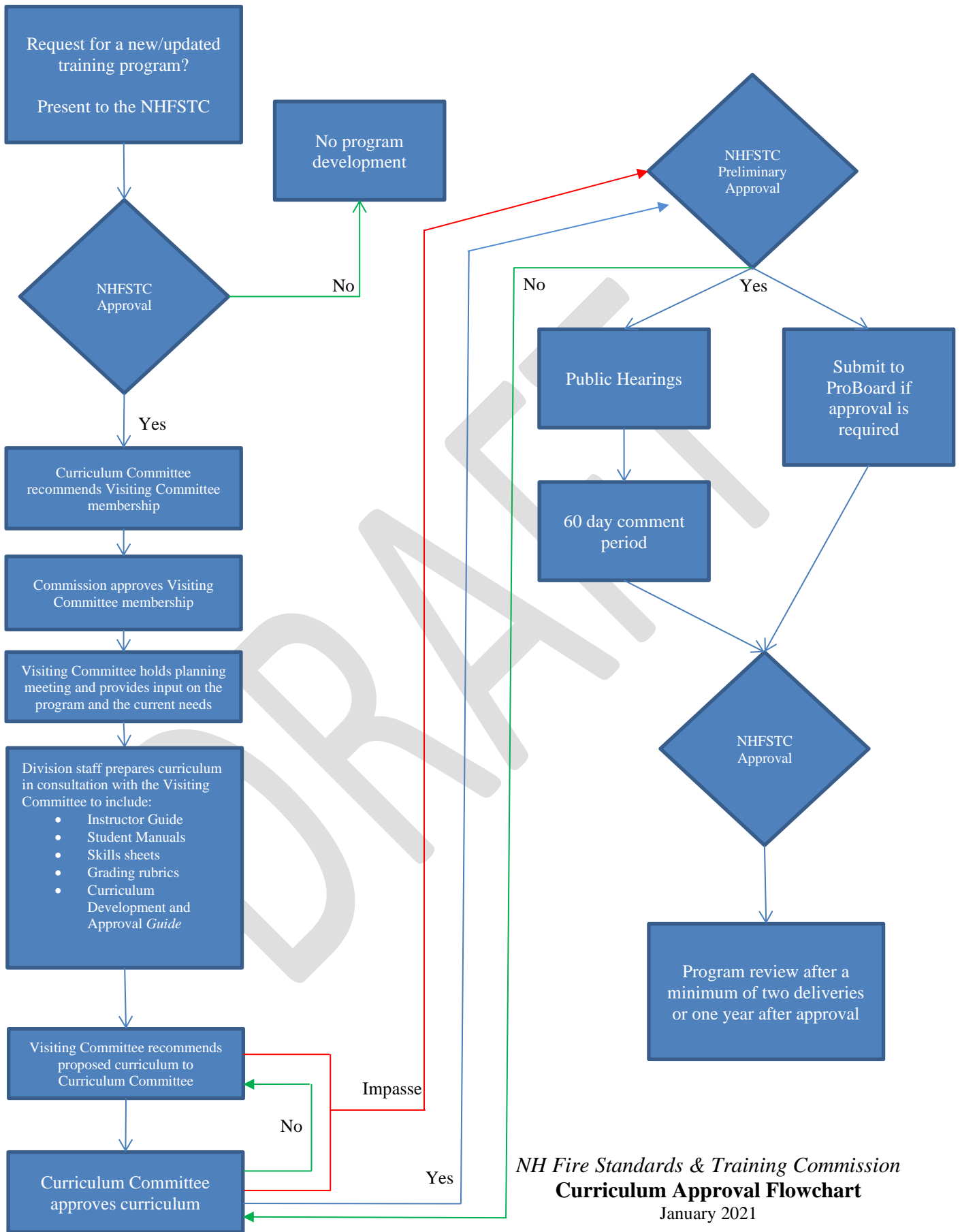
Attach sample schedule of proposed training program: Yes X No _____
Attach roster appointed Visiting Committee members Yes X No _____

Curriculum Committee Approval The presented curriculum was approved at the curriculum committee meeting on **Date:** _____

Public Hearing Dates Daytime: 10/18 @ 1500 Evening: 10/18 @ 1700
60 day comment period window 9/5 – 11/4

Please attach all public comment material to this document





NH Fire Standards & Training Commission
Curriculum Approval Flowchart
 January 2021

Visiting Committee Members

Name	Position	Organization
Guy Newbery	Call/Volunteer/Combination Fire Chief	
Brian Wade	Career Firefighter	City of Portsmouth Fire Department, START Seacoast Hazardous Materials Team
James Richardson	Coordinator, Twin State Fire Mutual Aid	Littleton Fire Department
Scott Hunter	Career Fire Chief	Bedford Fire Department
James Sylvain	Career Firefighter	Manchester Airport Fire Department
Stephen Solomon	Call/Volunteer/Combination Fire Chief	Conway Fire, Carroll County Haz Mat Team
Gary Courtney	Public member	
Robert Field	FSTC Representative	NH Fire Standards and Training Commission
Nicholas Bibeau	FSTEMS Representative	NH Division of Fire Standards and Training & EMS

Curriculum History

In 2022, the NFPA consolidated NFPA 472, NFPA 473, and NFPA 1072 into a single hazardous materials/WMD safety standard. This update initiated the curriculum development process in accordance with NH Fire Standards and Training Commission policy. A visiting committee was established with the goals of developing a course that meets the co-requisites for a Firefighter I certification, preparing operations level responders to apply their knowledge and skills effectively at the most common types of hazardous materials incidents, and to work effectively with technician level responders when required. The visiting committee considered both the knowledge competencies listed in Chapters 6 and 8, and the Job Performance Requirements (JPRs) listed in Chapter 7 and 9 of NFPA 470. This allowed for the comprehensive coverage of recommended knowledge and skill.

Summary of Changes

This version of the curriculum has extensive changes from previous editions, more closely aligning the content with NFPA standards. While the overall recommended length of the course remained the same, more attention was given to student-centered active learning strategies.

- Reduction of lecture methodology.
- Addition of hands on demonstration, case studies, table-top exercises, and scenario-based practical exercises in Module 1.
- Addition of progressive repetition of key skills in Module 2, Blocks 1 and 2.
- Addition of realistic context and decision making into practical exercises in Standard Evolutions 4, 5, and 6)
- Course length has been changed to a recommendation, acknowledging that class size and prior student knowledge and skill factors into the time needed for students to meet the competencies. The recommended course length is based on a maximum size cohort and may be adjusted in either direction to ensure student success. Course coordinators should consider the factor influencing course length when scheduling a course.
- Addition of hose and stream training to support vapor suppression standard evolutions. Course coordinators expecting students without prior training on the safe use of firefighting hose and nozzles should budget more time to accommodate remedial instruction on the topic.
- Clarification of Personal Protective Equipment & Self-Contained Breathing Apparatus (PPE & SCBA) as a prerequisite. Students must have completed a PPE & SCBA module taught at the Firefighter I level or higher. For example: the NH FSTC approved PPE & SCBA online and practical modules of Firefighter I.

Learning Outcome

At the conclusion of this course, firefighters who are expected to perform basic defensive measures at hazardous materials incidents will be able to identify the scope of the incident, plan initial strategies, perform assigned actions, and evaluate and report progress of assigned tasks as required by NFPA 470, Chapters 7, 9.2, and 9.6, given didactic and practical instruction and scenarios.

Learning Objectives

Learning objectives are clear goals that help instructors plan lessons and activities to focus on the most important parts of the lesson. By having these goals set in the curriculum, instructors can adapt their lessons to meet the needs of their students and the constraints of the learning environment. Learning objectives help instructors and program coordinators measure how well students understand the material through formative evaluations and activities, ensuring students and instructors stays on track.

ID	Objective	Alignment
HMO-LO1	Analyze the scope and potential hazards of a hazardous materials/WMD incident, given a simulated incident and approved references, such that container types, materials, states of release, surrounding conditions, and potential hazards and outcomes associated with the incident are accurately identified.	7.2.1 6.2.1, 6.2.2
HMO-LO2	Analyze the behavior of hazardous materials and their containers under emergency conditions, given a simulated incident and approved references, such that the potential health and physical hazards, and outcomes are accurately predicted.	7.2.1 6.2.3, 6.2.4
HMO-LO3	Evaluate the suitability of strategies and tactics for a hazardous materials/WMD incident, given a simulated incident, approved reference sources, and the scope of the problem, such that appropriate response actions are determined, safety precautions are identified, and an effective incident action plan is developed.	7.3.1 6.3.1, 6.3.2, 6.3.3
HMO-LO4	Evaluate the suitability of Personal Protective Equipment (PPE) for specific hazardous materials/WMD incidents, given a simulated incident, such that correct application and effective use of PPE in varying operational scenarios is demonstrated.	7.3.1 6.3.4, 6.3.5, 6.4.4 9.2.1 8.2.3.1, 8.2.4.1, 8.2.6.1
HMO-LO5	Employ effective scene control strategies, given a simulated incident, such that protective actions are established and maintained, the incident command system is initiated, evidence is recognized and preserved, and all assigned tasks are completed.	7.4.1 6.4.1, 6.4.2, 6.4.3
HMO-LO6	Employ product control techniques and safety procedures to manage hazardous materials/WMD incidents, given a simulated incident, an incident action plan, and appropriate equipment, such that risk of personal exposure is limited, guidance of higher trained personnel is followed, and established procedures are adhered to.	9.6.1 8.6.3.1, 8.6.4.1, 8.6.4.2, 8.6.6.1
HMO-LO7	Perform emergency decontamination at a hazardous materials/WMD incident, given a simulated incident, an incident action plan, and appropriate tools and equipment, such that hazards are identified, PPE is appropriately selected and used, safety procedures are implemented, and decontamination processes are employed to minimize risks and exposures.	7.5.1 10.3.5
HMO-LO8	Determine the need for adjustments in the Incident Action Plan (IAP), given a simulated incident, such that actual and predicted behavior of hazardous materials and their containers is compared, impact on safety, environment, and property is considered, and any changes to the IAP are communicated to the incident commander.	7.6.1 6.5.1, 6.5.2

Skill Competencies

Skill competencies are specific abilities that students will develop during the program. Competencies help instructors plan lessons and activities. By understanding these competencies, instructors can adapt their lessons to meet the needs of their students and the constraints of the learning environment, including the use of different equipment, tools, or techniques. Skill competencies also help instructors measure how well students are developing their abilities through formative evaluations and practical activities, ensuring

everyone stays on track. Students who can perform the skill competencies will demonstrate that they have achieved competence.

ID	Outcome	Alignment
HMO-SC01	Establish scene control, given a simulated hazardous materials incident, so that control zones are identified, protective actions are identified, incident command is initiated, and additional resources are requested if needed.	7.4.1
HMO-SC02	Preserve evidence, given a simulated hazardous materials incident with evidence, so that the incident is secured; fatalities, body parts, explosive components, or housings are left in place; source location is isolated; entry and exit locations are marked; and any food vending locations are secured.	7.4.1
HMO- SC03	Employ personal protective equipment (PPE), given a simulated hazardous materials incident and PPE, so that suitable equipment is selected and donned, worked in to avoid exposure, decontaminated and doffed to avoid contamination, and inspected and documented appropriately.	7.4.1; 9.2.1
HMO- SC04	Perform product control to confine or contain a release, given a simulated hazardous materials incident, tools and equipment, and an incident action plan, so that an effective product control technique is selected, and the product is controlled.	9.6.1
HMO- SC05	Perform product control to suppress or disperse a release, given a simulated hazardous materials incident, tools and equipment, and an incident action plan, so that an effective product control technique is selected, and the product is controlled.	9.6.1
HMO- SC06	Employ product control agents to adsorb or absorb a release, given a simulated hazardous materials incident, tools and equipment, and an incident action plan, so that an effective product control technique is selected, and the product is controlled.	9.6.1
HMO- SC07	Communicate incident status, given a simulated hazardous materials incident and communication equipment, so that the progress and effectiveness of assigned tasks is communicated in a clear and concise manner.	7.6.1
HMO- SC08	Perform emergency decontamination, given a simulated hazardous materials incident and tools and equipment, so that decontamination needs are identified, and victims and responders are decontaminated.	7.5.1, 9.2.1
HMO- SC09	Decontaminate tools and equipment, given a simulated hazardous materials incident with contaminated tools and equipment, so that contaminated items are isolated, safety procedures are followed, equipment decontamination is conducted in the field.	7.4.1

Note: The requisite skills for 7.2.1 and 7.3.1 are assessed through cognitive testing.

Content Outline

A content outline is a detailed plan that lists all the modules, blocks (if applicable), lessons and/or evolutions that will be covered in a course. It helps instructors by organizing the course material in a logical order, defining the overall range of topics (scope) and the order in which they will be taught (sequence). It helps ensure that each topic builds on the previous one. This helps instructors make sure that they cover all necessary material and teach it in a way that makes sense, allowing students to build their knowledge step by step.

Lesson	Learning Objectives	Std/LO	Resources
Module 1: Recognizing the Hazard			
Hazmat Operations Lab Block 1			
HMO L1-1	<p>Chemical and Physical Properties of Hazardous Materials</p> <ol style="list-style-type: none"> (1-1) Identify container types, materials involved, and their physical states in a hazardous materials/WMD incident. (7.2.1) (2-3) Identify physical and chemical properties of hazardous materials relevant to predicting behavior under stress. (6.2.3) (2-4) Determine the likely behavior of hazardous materials or WMDs and their containers based on their physical and chemical properties. (6.2.3) 	<p>LO1 7.2.1</p> <p>LO2 6.2.3</p>	<p>Student to Instructor Ratio: 12:1</p> <p>Materials:</p> <ul style="list-style-type: none"> Lab lesson plans Experiment reagents Experiment equipment 4-gas meter Litmus paper <p>Facilities:</p> <ul style="list-style-type: none"> Classroom area with adequate ventilation
Hazmat Operations Lab Block 2			
HMO L1-2	<p>Identification of Hazards</p> <ol style="list-style-type: none"> (1-2) Describe the location and physical state of any release, including surrounding conditions, to understand the immediate environment of the incident. (7.2.1) (1-3) Interpret container identification markings, including transportation vehicles and facility storage tanks. (6.2.1) (1-4) Classify different container types (e.g., rail tank cars, highway cargo tanks, storage tanks, pipelines) and their identification markings. (6.2.1) (1-5) Collect hazard and response information from safety data sheets (SDS), CHEMTREC/CANUTEC/SETIQ, governmental authorities, and manufacturers, shippers, and carriers. (6.2.2) (2-1) Describe the types of container stress (thermal, mechanical, chemical) and breaches (disintegration, runaway cracking, closures opening, punctures, splits/tears) in hazardous materials/WMD incidents. (7.2.1) (2-2) Explain the various release mechanisms (detonation, violent rupture, rapid relief, spill/leak) and their associated dispersion patterns (hemisphere, cloud, plume, cone, stream, pool, irregular). (6.2.3) (2-5) Apply knowledge of victim presentation and surrounding conditions to describe the likely outcomes at hazardous materials/WMD incidents. (6.2.4) 	<p>LO1 7.2.1 6.2.1 6.2.2</p> <p>LO2 7.2.1 6.2.3 6.2.4</p>	<p>Student to Instructor Ratio: 12:1</p> <p>Materials:</p> <ul style="list-style-type: none"> Lab lesson plans Case study instructor guide Case study handouts ERG NIOSH manual handouts <p>Facilities:</p> <ul style="list-style-type: none"> Classroom area

Lesson	Learning Objectives	Std/LO	Resources
Module 1: Recognizing the Hazard			
Hazmat Operations Lab Block 2			
HMO L1-3	<p>Scene Assessment and Management</p> <ol style="list-style-type: none"> 1. (2-6) Interpret information sources such as the ERG and plume dispersion modeling results to estimate the endangered area and the extent of hazards. (6.2.4) 2. (3-1) Analyze strategies and tactics for hazardous materials/WMD incidents to determine their applicability and effectiveness in different scenarios. (7.3.1) 3. (3-2) Analyze collected response information from multiple sources to formulate a strategic response plan. (6.3.1) 4. (3-3) Assess risks and potential outcomes using available resources to ensure an effective response. (6.3.2) 5. (3-4) Describe the components of an incident action plan (IAP) to understand roles and functions during hazardous materials/WMD incidents. (6.3.2) 6. (3-5) Identify tactics for each strategy to determine the most effective options for victim care and hazard mitigation. (6.3.3) 7. (5-1) Execute strategies and tactics within the incident command system during a hazardous materials/WMD incident to control the scene, preserve evidence. (7.4.1) 8. (5-2) Establish scene control zones during a hazardous materials/WMD incident to ensure effective coordination and safety. (6.4.1) 9. (5-3) Identify items to be included in a safety brief, including those related to hazardous materials and incidents involving criminal activities. (6.4.1) 10. (5-4) Recognize evidence during a hazardous materials/WMD incident to secure and isolate it for investigation. (6.4.2) 11. (5-5) Work within the incident command system involving multiple agencies to manage a hazardous materials/WMD incident. (6.4.3) 	<p>LO2 6.2.4</p> <p>LO3 7.3.1 6.3.1 6.3.2 6.3.3</p> <p>LO5 7.4.1 6.4.1 6.4.2 6.4.3</p>	<p>Student to Instructor Ratio: 12:1</p> <p>Materials:</p> <ul style="list-style-type: none"> • Lab lesson plans • ERG • NIOSH manual handouts <p>Facilities:</p> <ul style="list-style-type: none"> • Classroom area with tables suitable for group work and demonstration of techniques
HMO L1-4	<p>Emergency Decontamination</p> <ol style="list-style-type: none"> 1. (1-1) Identify container types, materials involved, and their physical states in a hazardous materials/WMD incident. (7.2.1) 2. (1-5) Collect hazard and response information from safety data sheets (SDS), CHEMTREC/CANUTEC/SETIQ, governmental authorities, and manufacturers, shippers, and carriers. (6.2.2) 3. (7-1) Describe the types of contamination, cross-contamination, and exposure risks associated with hazardous materials/WMD incidents. (7.5.1) 4. (7-2) Identify the need for emergency decontamination. (7.5.1) 5. (7-3) Identify the appropriate equipment and PPE for emergency decontamination and their advantages and limitations. (7.5.1) 6. (7-4) Demonstrate the selection and setup of an emergency decontamination method. (7.5.1) 7. (7-5) Employ emergency decontamination procedures for victims, personnel, and equipment. (10.3.5) 8. (7-6) Evaluate and triage victims at a hazardous materials/WMD incident. (10.3.5) 	<p>LO1 7.2.1 6.2.2</p> <p>LO7 7.5.1 10.3.5</p>	<p>Student to Instructor Ratio: 12:1</p> <p>Materials:</p> <ul style="list-style-type: none"> • Lab lesson plans <p>Facilities:</p> <ul style="list-style-type: none"> • Classroom area with tables suitable for group work and demonstration

Lesson	Learning Objectives	Std/LO	Resources
Module 2: Product Control			
Hazmat Operations Block 1			
HMO-SE-1	Controlling Hazardous Liquids <ol style="list-style-type: none"> (5-1) Execute strategies and tactics within the incident command system during a hazardous materials/WMD incident to control the scene, preserve evidence. (7.4.1) (6-1) Employ techniques to control the spread of hazardous material products. (9.6.1) (6-2) Differentiate between containment, confinement, diversion, detention, neutralization, and dispersion to select appropriate control techniques. (8.6.3.1) (6-3) Select techniques to confine or contain releases of hazardous materials. (8.6.3.1) (6-4) Implement product control techniques to control release while limiting risk of exposure. (8.6.4.1) (6-5) Use firefighting equipment to perform product control. (8.6.4.2) 	LO5 7.4.1 LO6 9.6.1 8.6.3.1 8.6.4.1 8.6.4.2	Student to Instructor Ratio: 12:1 Materials: <ul style="list-style-type: none"> Standard Evolution Job Sheet Container visual aids Sand Water Facilities: <ul style="list-style-type: none"> Shallow grade training area with adequate drainage.
HMO-SE-2	Controlling Hazardous Vapors <ol style="list-style-type: none"> (5-1) Execute strategies and tactics within the incident command system during a hazardous materials/WMD incident to control the scene, preserve evidence. (7.4.1) (6-1) Employ techniques to control the spread of hazardous material products. (9.6.1) (6-2) Differentiate between containment, confinement, diversion, detention, neutralization, and dispersion to select appropriate control techniques. (8.6.3.1) (6-3) Select techniques to confine or contain releases of hazardous materials. (8.6.3.1) (6-4) Implement product control techniques to control release while limiting risk of exposure. (8.6.4.1) (6-5) Use firefighting equipment to perform product control. (8.6.4.2) 	LO5 7.4.1 LO6 9.6.1 8.6.3.1 8.6.4.1 8.6.4.2	Student to Instructor Ratio: 12:1 Materials: <ul style="list-style-type: none"> Standard Evolution Job Sheet Container visual aids Smoke machine Water pump Handline Master stream Multi-gas meter Facilities: <ul style="list-style-type: none"> Training area with adequate drainage.
HMO-SE-3	Metering and Respiratory Protection <ol style="list-style-type: none"> (4-1) Describe the advantages, limitations, uses, and operational components of various types of respiratory protection in hazardous materials/WMD incidents. (6.3.4) (4-2) Identify the physical capabilities and limitations of personnel working in respiratory protection to ensure safety and effectiveness in operations. (6.3.4) (4-4) Use appropriate PPE based on incident hazards to protect personnel and accomplish IAP goals. (6.4.4, 9.2.1) (4-5) Describe the purpose, capabilities, and limitations of AHJ-provided PPE to support assigned tasks at a hazardous materials/WMD incident. (8.2.3.1) (4-6) Demonstrate the ability to use PPE to support assigned tasks at a hazardous materials/WMD incident, including safety precautions, inspection, donning, doffing, being decontaminated, and storage of PPE. (8.2.4.1) (4-7) Report the use of PPE and any exposure to hazardous materials. (8.2.6.1) 	LO4 6.3.4 6.4.4 9.2.1 8.2.3.1 8.2.4.1 8.2.6.1	Student to Instructor Ratio: 12:1 Materials: <ul style="list-style-type: none"> Standard Evolution Job Sheet PAPR/APR Multi-gas meter Facilities: <ul style="list-style-type: none"> Training area with adequate ventilation.

Lesson	Learning Objectives	Std/LO	Resources
Module 2: Product Control			
Hazmat Operations Block 2			
HMO-SE-4	<p>Responding to Hazardous Liquids</p> <ol style="list-style-type: none"> 1. (1-1) Identify container types, materials involved, and their physical states in a hazardous materials/WMD incident. (7.2.1) 2. (1-3) Interpret container identification markings, including transportation vehicles and facility storage tanks. (6.2.1) 3. (1-5) Collect hazard and response information from safety data sheets (SDS), CHEMTREC/CANUTECH/SETIQ, governmental authorities, and manufacturers, shippers, and carriers. (6.2.2) 4. (2-4) Determine the likely behavior of hazardous materials or WMDs and their containers based on their physical and chemical properties. (6.2.3) 5. (4-1) Describe the advantages, limitations, uses, and operational components of various types of PPE in hazardous materials/WMD incidents. (6.3.4) 6. (4-4) Determine the appropriate PPE to use based on incident hazards to protect personnel and accomplish IAP goals. (6.4.4, 9.2.1) 7. (5-1) Execute strategies and tactics within the incident command system during a hazardous materials/WMD incident to control the scene, preserve evidence. (7.4.1) 8. (5-2) Establish scene control zones during a hazardous materials/WMD incident to ensure effective coordination and safety. (6.4.1) 9. (5-5) Work within the incident command system involving multiple agencies to manage a hazardous materials/WMD incident. (6.4.3) 10. (6-1) Employ techniques to control the spread of hazardous material products. (9.6.1) 11. (6-2) Differentiate between containment, confinement, diversion, detention, neutralization, and dispersion to select appropriate control techniques. (8.6.3.1) 12. (6-3) Select techniques to confine or contain releases of hazardous materials. (8.6.3.1) 13. (6-4) Implement product control techniques to control release while limiting risk of exposure. (8.6.4.1) 14. (6-6) Communicate the status of product control operations to report and document incident progress. (8.6.6.1) 15. (7-1) Describe the types of contamination, cross-contamination, and exposure risks associated with hazardous materials/WMD incidents. (7.5.1) 16. (7-2) Identify the need for emergency decontamination. (7.5.1) 17. (7-3) Identify the appropriate equipment and PPE for emergency decontamination and their advantages and limitations. (7.5.1) 18. (7-5) Employ emergency decontamination procedures for victims, personnel, and equipment. (10.3.5) 19. (8-1) Communicate the status of assigned tasks to enable the Incident Commander to adjust the IAP as needed. (7.6.1) 20. (8-3) Assess the status of assigned tasks within the scope of the incident and the IAP. (6.5.1) 21. (8-6) Demonstrate methods for notifying the Incident Commander and other response personnel of emergency conditions. (6.5.2) 	LO1 7.2.1 6.2.1 6.2.2 LO2 6.2.3 6.2.4 LO4 6.3.4 6.4.4 LO5 7.4.1 6.4.1 6.4.2 6.4.3 LO6 9.6.1 8.6.3.1 8.6.4.1 8.6.4.2 8.6.6.1 LO7 7.5.1 LO8 7.6.1 6.5.1 6.5.2	Student to Instructor Ratio: 4:1 Materials: <ul style="list-style-type: none"> • Standard Evolution Job Sheet • Container visual aids • Sand • Water Facilities: <ul style="list-style-type: none"> • Shallow grade training area with adequate drainage.

Lesson	Learning Objectives	Std/LO	Resources
Module 2: Product Control			
HMO-SE-5	<p>Responding to Hazardous Vapors</p> <ol style="list-style-type: none"> 1. (1-3) Interpret container identification markings, including transportation vehicles and facility storage tanks. (6.2.1) 2. (2-4) Determine the likely behavior of hazardous materials or WMDs and their containers based on their physical and chemical properties. (6.2.3) 3. (4-4) Determine the appropriate PPE to use based on incident hazards to protect personnel and accomplish IAP goals. (6.4.4, 9.2.1) 4. (5-1) Execute strategies and tactics within the incident command system during a hazardous materials/WMD incident to control the scene, preserve evidence. (7.4.1) 5. (5-2) Establish scene control zones during a hazardous materials/WMD incident to ensure effective coordination and safety. (6.4.1) 6. (5-5) Work within the incident command system involving multiple agencies to manage a hazardous materials/WMD incident. (6.4.3) 7. (6-1) Employ techniques to control the spread of hazardous material products. (9.6.1) 8. (6-2) Differentiate between containment, confinement, diversion, detention, neutralization, and dispersion to select appropriate control techniques. (8.6.3.1) 9. (6-4) Implement product control techniques to control release while limiting risk of exposure. (8.6.4.1) 10. (6-5) Use firefighting equipment to perform product control. (8.6.4.2) 11. (6-6) Communicate the status of product control operations to report and document incident progress. (8.6.6.1) 12. (8-1) Communicate the status of assigned tasks to enable the Incident Commander to adjust the IAP as needed. (7.6.1) 13. (8-3) Assess the status of assigned tasks within the scope of the incident and the IAP. (6.5.1) 	LO1 7.2.1 6.2.1 LO2 6.2.3 LO4 6.4.4 9.2.1 LO5 7.4.1 6.4.1 6.4.3 LO6 9.6.1 8.6.3.1 8.6.4.1 8.6.4.2 8.6.6.1 LO8 7.6.1 6.5.1	Student to Instructor Ratio: 4:1 Materials: <ul style="list-style-type: none"> • Standard Evolution Job Sheet • Smoke machine • Water pump • Handline • Master stream • Multi-gas meter Facilities: <ul style="list-style-type: none"> • Training area with adequate drainage.

Lesson	Learning Objectives	Std/LO	Resources
Module 2: Product Control			
HMO-SE-6	<p>Responding to Incidents Involving Poisons</p> <ol style="list-style-type: none"> 1. (1-1) Identify container types, materials involved, and their physical states in a hazardous materials/WMD incident. (7.2.1) 2. (1-3) Interpret container identification markings, including transportation vehicles and facility storage tanks. (6.2.1) 3. (2-4) Determine the likely behavior of hazardous materials or WMDs and their containers based on their physical and chemical properties. (6.2.3) 4. (2-5) Apply knowledge of victim presentation and surrounding conditions to describe the likely outcomes at hazardous materials/WMD incidents. (6.2.4) 5. (4-1) Describe the advantages, limitations, uses, and operational components of various types of PPE in hazardous materials/WMD incidents. (6.3.4) 6. (4-4) Determine the appropriate PPE to use based on incident hazards to protect personnel and accomplish IAP goals. (6.4.4, 9.2.1) 7. (4-5) Describe the purpose, capabilities, and limitations of AHJ-provided PPE to support assigned tasks at a hazardous materials/WMD incident. (8.2.3.1) 8. (4-6) Demonstrate the ability to use PPE to support assigned tasks at a hazardous materials/WMD incident, including safety precautions, inspection, donning, doffing, being decontaminated, and storage of PPE. (8.2.4.1) 9. (7-1) Describe the types of contamination, cross-contamination, and exposure risks associated with hazardous materials/WMD incidents. (7.5.1) 10. (7-2) Identify the need for emergency decontamination. (7.5.1) 11. (7-3) Identify the appropriate equipment and PPE for emergency decontamination and their advantages and limitations. (7.5.1) 12. (7-4) Demonstrate the selection and setup of an emergency decontamination method. (7.5.1) 13. (7-5) Employ emergency decontamination procedures for victims, personnel, and equipment. (10.3.5) 14. (7-6) Evaluate and triage victims at a hazardous materials/WMD incident. (10.3.5) 15. (8-1) Communicate the status of assigned tasks to enable the Incident Commander to adjust the IAP as needed. (7.6.1) 16. (8-2) Identify the key information that would indicate improving, static, or deteriorating conditions. (6.5.1) 17. (8-6) Demonstrate methods for notifying the Incident Commander and other response personnel of emergency conditions. (6.5.2) 18. (8-7) Describe the specific conditions under which withdrawal from a hazardous materials/WMD incident is prudent. (6.5.1) 	LO1 7.2.1 6.2.1 LO2 6.2.3 6.2.4 LO4 6.3.4 6.4.4 9.2.1 8.2.3.1 8.2.4.1 LO7 7.5.1 10.3.5 LO8 7.6.1 6.5.1 6.5.2	Student to Instructor Ratio: 4:1 Materials: <ul style="list-style-type: none"> • Standard Evolution Job Sheet • Handline • Victim manikin Facilities: <ul style="list-style-type: none"> • Training area with adequate drainage.

Class Size Considerations

The recommended minimum student enrollment for this course should be no less than 4 students. This was determined by the minimum number of students needed to safely operate the handline and set up the master stream during the Responding to Hazardous Vapors standard evolution. The minimum enrollment recommendation should not preclude training agencies from using non-enrolled individuals as assistants, provided they meet or exceed the prerequisites for the course. The maximum number was set based on the enrollment limit for Firefighter I and II courses.

Hazardous Materials Operations Standards Map

	Lesson									
	L1-1	L1-2	L1-3	L1-4	SE-1	SE-2	SE-3	SE-4	SE-5	SE-6
7.2.1 Identify the scope of the problem at a hazardous materials/WMD incident	•	•	•	•				•	•	•
7.3.1 Identify the tactics for a hazardous materials/WMD incident			•				•			•
7.4.1 Perform assigned tasks at a hazardous materials/WMD incident			•		•	•		•	•	•
7.5.1 Perform emergency decontamination at a hazardous materials/WMD incident				•				•		•
7.6.1 Evaluate and report the progress of an assigned task for a hazardous materials/WMD incident								•	•	•
9.2.1 Select, don, work in, and doff approved PPE at a hazardous materials/WMD incident							•		•	•
9.6.1 Perform product control techniques with a limited risk of personal exposure at a hazardous materials/WMD incident					•	•		•	•	

Table of Test Specifications

A table of test specifications, also called a test blueprint, is a detailed chart that helps the accredited agency plan and organize a certification exam. It includes many key pieces of information to ensure the test is fair and comprehensive. The table lists the categories that will be tested, aligning each with the relevant standards to make sure the test matches what students have learned. It shows the total number of questions on the test and the percentage of questions for each category, helping to balance the focus on different topics. Based on these percentages, the table also indicates the exact number of questions in each category. Additionally, it breaks down the questions by knowledge level, showing the percentage and number of questions that test basic recall of facts and those that require students to apply their knowledge.

Hazardous Materials Operations Certification Exam Specifications

	Items	Recall	Apply
	100	80%	20%
Category / Topic	Wt%	Items	Items
7.2 Identify Potential Hazards	25%	20	5
7.3 Identify Tactics	20%	16	4
7.4 Action Plan Implementation	15%	10	5
7.5 Emergency Decontamination	5%	4	1
7.6 Progress Evaluation and Reporting	10%	8	2
9.2.1 Personal Protective Equipment	10%	8	2
9.6.1 Product Control	15%	10	5