Hazardous Materials/WMD (2022)

Course Plan

Course Details

Certification: Fire Fighter 1

CTS Guide: Fire Fighter Certification Training Standards Guide (2019)

Description: This course provides the awareness skills and knowledge needed for the entry-level fire fighter to recognize and identify hazardous materials and weapons of mass destruction (WMD), isolate hazards and deny entry, and initiate required notification. At the operations level, this course provides the skills and knowledge needed to identify incident scope; select, use, and inspect PPE; perform emergency decontamination; perform assigned tasks at a hazardous materials/WMD incident including product control techniques; and evaluate and report incident progress.

Designed For: Entry level fire fighters

Prerequisites: None

Corequisites: None

Standard: Complete all activities, skills, and formative tests.

Complete all summative tests with a minimum score of 80%.

Hours (Total): 24.0 hours

(15.5 hours lecture / 8.5 hours application / AHJ determines practice and assessment times)

Maximum Class Size: 50

Instructor Level: Fire Fighter Instructor (See *SFT Procedures Manual* (January 2019) section 6.6 for requirements.)*

Instructor/Student Ratio: 1:50 (Lecture) / 1:50 (Application)

Restrictions: None

SFT Designation: CFSTES

* If any portion of this course curriculum is taught using another course plan, the instructor level and ratio of that course plan supersedes this requirement.

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Required Resources

Instructor Resources

To teach this course, instructors need:

- *Fundamentals of Fire Fighter Skills and Hazardous Materials Response* (Jones and Bartlett Learning, 5th edition, ISBN: 978-1-284-28305-1)
  or
  Essentials of Fire Fighting (IFSTA, 8th edition, ISBN: 978-087939831-6) & *Hazardous Materials for First Responders*, (IFSTA, 6th Edition, ISBN: 978-0-87939-757-9)
- *Emergency Response Guidebook* (U.S. Department of Transportation, current edition)
  - This is also available in App format (ERG 2016)
- Full PPE and SCBA that meets AHJ requirements

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/divisions/state-fire-training/cfstes-professional-certification/fire-fighter-1-2019/

- Hazardous Materials WMD Skill Sheets
  - 5-2a: Recognize, Identify, and Isolate Hazardous Materials WMD
  - 5-2b: Identify Markings
  - 5-4: Initiate Required Notifications
  - 6-2: Identify the Scope of a Hazardous Materials/WMD Incident
  - 6-3: Identify Tactics for a Hazardous Materials/WMD Incident
  - 6-4: Perform Assigned Tasks at a Hazardous Materials/WMD Incident
  - 6-5: Perform Emergency Decontamination
  - 6-6: Evaluate and Report Progress for a Hazardous Materials/WMD Incident
  - 7-1: Don, Work In, and Doff Chemical Protective Clothing
  - 7-2: Perform Product Control

Student Resources

To participate in this course, students need:

- *Fundamentals of Fire Fighter Skills and Hazardous Materials Response* (Jones and Bartlett Learning, 5th edition, ISBN: 978-1-284-28305-1)
  or
  Essentials of Fire Fighting (IFSTA, 8th edition, ISBN: 978-087939831-6) & *Hazardous Materials for First Responders*, (IFSTA, 6th Edition, ISBN: 978-0-87939-757-9)
- Full PPE and SCBA that meets AHJ requirements

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

- Emergency Response Guidebook

- Samples of: placard, UN number, shipping papers or Safety Data Sheet (SDS)
- Descriptions and pictures of a hazardous materials/WMD incident involving containers that have released a chemical
    - Safety Data Sheet of chemical
- PPE and SCBA
- Decontamination equipment

Time Table

Segment	Lecture	Application	Unit Total
Unit 1: Introduction			
Topic 1-1: Orientation and Administration	0.5	0.0	
Topic 1-2: Fire Fighter 1 Certification Process	0.5	0.0	
Unit 1 Totals	**1.0**	**0.0**	**1.0**
Unit 2: Hazardous Materials/WMD Awareness			
Topic 2-1: Description of Duties (Awareness)	1.0	0.0	
Topic 2-2: Recognizing and Identifying Hazardous Materials/WMD and Associated Hazards	2.0	1.0	
Topic 2-3: Isolating the Hazard Area and Denying Entry	0.5	1.0	
Topic 2-4: Initiating Required Notifications	0.5	1.0	
Unit 2 Totals	**4.0**	**3.0**	**7.0**
Unit 3: Hazardous Materials/WMD Operations			
Topic 3-1: Description of Duties (Operations)	1.5	0.5	
Topic 3-2: Identifying the Scope of a Hazardous Materials/WMD Incident	1.5	0.5	
Topic 3-3: Selecting, Donning, Working In, and Doffing Approved PPE at a Hazardous Materials/WMD Incident	1.0	0.5	
Topic 3-4: Performing Emergency Decontamination at a Hazardous Materials/WMD Incident	1.0	1.0	
Topic 3-5: Identifying Tactics for a Hazardous Materials/WMD Incident	3.0	0.0	
Topic 3-6: Performing Assigned Tasks at a Hazardous Materials/WMD Incident	0.5	1.0	
Topic 3-7: Performing Product Control Techniques at a Hazardous Materials/WMD Incident	1.0	1.5	
Topic 3-8: Evaluating and Reporting Progress for a Hazardous Materials/WMD Incident	1.0	0.5	
Unit 3 Totals	**10.5**	**5.5**	**16.0**
Summative Assessment			
Determined by AHJ or educational institution	**TBD**	**TBD**	**TBD**
Skills Practice (Lab / Sets and Reps)			
Determined by AHJ or educational institution	**TBD**	**TBD**	**TBD**
Course Totals	**15.5**	**8.5**	**24.0**

Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.

2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.

3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor's responsibility to add this time based on the course delivery schedule.

4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.

5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
    - Restroom locations
    - Food locations
    - Smoking locations
    - Emergency procedures
2. Identify classroom requirements
    - Start and end times
    - Breaks
    - Electronic device policies
    - Special needs and accommodations
    - Other requirements as applicable
3. Review course syllabus
    - Course objectives
    - Calendar of events
    - Course requirements
    - Student evaluation process
    - Assignments
    - Activities and skills exercises
    - Required student resources
    - Class participation requirements

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. When teaching Fire Fighter 1A, 1B, and 1C in a consecutive format, it is not necessary to repeat this topic for each course. At a minimum, cover it once on the first day of the first course.

Topic 1-2: Fire Fighter 1 and 2 Certification Process

Terminal Learning Objective

At the end of this topic a student will be able to identify the requirements for Fire Fighter 1 and 2 certification and be able to describe the certification task book and examination process.

Enabling Learning Objectives

1. Identify the different levels of certification in the Fire Fighter certification track
   - Fire Fighter 1
   - Fire Fighter 2
2. Identify the prerequisites for certification
   - Fire Fighter 1
   - Fire Fighter 2
3. Identify the course work required for certification
   - Fire Fighter 1
   - Fire Fighter 2
4. Identify the exams required for certification
   - Fire Fighter 1
   - Fire Fighter 2
5. Identify the task book requirements for certification
   - Fire Fighter 1
   - Fire Fighter 2
6. Identify the experience requirements for certification
   - Fire Fighter 1
   - Fire Fighter 2
7. Identify the position requirements for certification
   - Fire Fighter 1
   - Fire Fighter 2
8. Describe the certification task book process
9. Describe the certification examination process

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Instructor Notes

1. When teaching Fire Fighter 1A, 1B, and 1C in a consecutive format, it is not necessary to repeat this topic for each course. At a minimum, cover it once on the first day of the first course.
2. Use the *SFT Procedures Manual (2019)* 7.12.1 Fire Fighter 1 (2019) and 7.12.3 Fire Fighter 2 (2019) content for ELOs 2 through 7.
3. Use a copy of the Fire Fighter 2 Certification Task Book to walk students through the task book process and expectations for ELO 8.
4. Use the *SFT Procedures Manual (2019)* (Chapter 11: Fire Fighter Certification Exams) content for ELO 9.

Unit 2: Hazardous Materials/WMD Awareness

Topic 2-1: Description of Duties (Awareness)

Terminal Learning Objective

At the end of this topic a student will be able to identify the awareness roles and responsibilities of a Fire Fighter who encounters an emergency involving hazardous materials/weapons of mass destruction (WMD).

Enabling Learning Objectives

1. Identify the role of awareness level personnel at a hazardous materials/WMD incident per CCR Title 8, §5192(q)(6)(A), First Responder, Awareness Level (FRA):
    - 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:
        - An understanding of what hazardous substances are and the risks associated with them in an incident
        - An understanding of the potential outcomes associated with an emergency created when hazardous substances are present
        - The ability to recognize the presence of hazardous substances in an emergency
        - The ability to identify the hazardous substances, if possible
        - 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
        - The ability to realize the need for additional resources, and to make appropriate notifications to the communication center
2. Identify the location and contents of the AHJ emergency response plan
3. Describe standard operating procedures for awareness level personnel

Discussion Questions

1. How do you recognize a hazardous material?
2. Where would you locate information on the event?
3. What clues indicate the presence of hazardous materials?
4. What clues indicate the presence of weapons of mass destruction?
5. What actions should you take to protect yourself (awareness level)?
6. What primary notifications should you make?

Application

1. Determined by instructor

Instructor Notes

1. None

CTS Reference: 5-1
Skill Sheet: None

Topic 2-2: Recognizing and Identifying Hazardous Materials/WMD and Associated Hazards

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident and approved reference sources, will be able to recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident so that the presence of hazardous materials/WMD is recognized and the materials and their hazards and associated harm are identified.

Enabling Learning Objectives

1. Describe how to recognize hazardous materials (dangerous goods internationally) and WMD
2. Describe the differences between hazardous materials/WMD incidents and other emergencies
3. Define hazard classes and divisions of hazardous materials/WMD
4. Describe how hazard classes and divisions are harmful to
    - People
    - Environment
    - Animals
    - Property
5. Identify general routes of entry for human exposure to hazardous materials/WMD
6. Identify sights, sounds, and odors that might indicate the presence of hazardous materials
7. Identify the limitations of using senses to determine the presence of hazardous materials/WMD
8. Identify indicators to the presence of hazardous materials including:
    - Container shapes included in the ERG
    - NFPA 704 markings
    - Globally harmonized system (GHS) markings
    - Placards
    - Labels
    - Pipeline markings
    - Other transportation markings including
        - UN/NA identification number marks
        - Marine pollutant mark
        - Elevated temperature (HOT) mark
        - Commodity marking
        - Inhalation mark
    - Shipping papers and emergency response information
    - Person responsible for the shipping papers in each mode of transportation (air, highway, rail, and water), where shipping papers are found during emergencies and nonemergency situations in each mode of transportation
    - Other indicators

    - Military hazardous materials/WMD markings
    - Special hazard communication markings
    - Special container markings
9. Describe how to access response information from the *Emergency Response Guidebook* (ERG) (current edition) using the alphabetical index of chemical names, numerical index of identification numbers, table of markings, labels, and placards, or container identification charts
10. List types of hazard information available from:
    - The ERG
    - Safety data sheets (SDS)
    - Shipping papers and emergency response information
    - Sources for obtaining the names of hazardous materials/WMD at a facility
11. Recognize indicators to the presence of hazardous materials/WMD
12. Identify hazardous materials/WMD by name, UN/NA identification number, marking/label/placard applied, or container shapes identified in the ERG
    - Department of Transportation placarding and labeling system
13. Use the ERG, SDS, manufacturer/shipping/carrier documents (including shipping papers and emergency response information) and other approved reference sources to identify hazardous materials/WMD and their primary hazards

Discussion Questions

1. How does the GHS marking system assist responders with identifying hazards present?
2. What are the four types of hazard information found on a NFPA 704 marking system?
3. What is the difference between NFPA marking system and a UN/NA placard?

Application

1. Given a scenario and an ERG, have students work in small groups to identify potential hazards, fire and health considerations, public safety needs, protective clothing requirements, evacuation considerations, and emergency response options including fire, spill or leak, and first aid.
    - Use both daytime and nighttime scenarios.

Instructor Notes

1. Bring the ERG (and have students download the App version) and samples of safety data sheets (SDS), shipping papers with emergency response information, and other approved reference sources to show students including any additional AHJ-specific sources or references.

CTS Reference: 5-2

Skill Sheet:

- 5-2a: Recognize, Identify, and Isolate Hazardous Materials/WMD
- 5-2b: Identify Markings

Topic 2-3: Isolating the Hazard Area and Denying Entry

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, will be able to isolate the hazard area and deny entry at a hazardous materials/WMD incident so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided and/or minimized, and additional people are not exposed to further harm.

Enabling Learning Objectives

1. Describe how to use the ERG, SDS, shipping papers and emergency response information, or other approved reference sources to identify:
   - Initial isolation and protective action distances
   - Initial emergency actions (fire, spill, or leak and first aid)
   - PPE
   - Recommended protective actions
2. Describe the difference between the isolation distances on the orange-bordered guidebook pages and the protective action distances on the green-bordered ERG pages
3. 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 documents
4. Describe policies and procedures for isolating the hazard area and denying entry
5. Identify the purpose of and methods for isolating the hazard area and denying entry
   - Evacuation
   - In-place protection/sheltering in place
6. Recognize precautions for protecting responders and the public
7. Identify isolation areas
8. Deny entry
9. Avoid or minimize hazards

Discussion Questions

1. What is the difference between scene isolation and protective actions for threatened areas?
2. What are the limitations of the different references used by hazardous materials responders (ERG, SDS, shipping papers)?

Application

1. Given a simulated scenario and references have students establish isolation for protecting responders and the public and identify how they would deny entry.

Instructor Notes

1. ELO 1: Include any additional AHJ-specific sources or references.

CTS Reference: 5-3

Skill Sheet: 5-2a: Recognize, Identify, and Isolate Hazardous Materials/WMD

Topic 2-4: Initiating Required Notifications

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident, policies and procedures, and approved communications equipment, will be able to initiate required notifications at a hazardous materials/WMD incident so that the notification process is initiated and the necessary information is communicated.

Enabling Learning Objectives

1. Identify policies and procedures for notification, reporting, and communications
   - Local 911
   - Administrating agency (CUPA - local)
   - State Warning Center (state)
   - National Response Center (federal)
2. Identify six general information items needed for mandatory notifications
   - Name/agency of person reporting
   - Location of hazardous materials released
   - Hazardous materials involved
   - Nature of problem (e.g. fire, spill)
   - Quantity released
   - Potential hazards
3. Communicate in accordance with policies and procedures

Discussion Questions

1. What is CUPA?
2. What is the procedure to reporting and notifying other organizations?
3. Who is responsible for making the mandatory notifications?

Application

1. Given a scenario and communications equipment, have students identify which equipment to use and whom to call for technical or logistical assistance based on AHJ target hazards. Use both daytime and nighttime scenarios.

Instructor Notes

1. Utilize local agencies for equipment demonstrations.
2. Provide a sample checklist for notifications.
3. Consider visiting local hazardous materials response team.

CTS Reference: 5-4

Skill Sheet: 5-4: Initiate Required Notifications

Unit 3: Hazardous Materials/WMD Operations

Topic 3-1: Description of Duties (Operations)

Terminal Learning Objective

At the end of this topic a student will be able to identify the operations roles and responsibilities of a Fire Fighter who responds to an emergency involving hazardous materials/weapons of mass destruction (WMD).

Enabling Learning Objectives

1. Identify the role of operations level responders at a hazardous materials/WMD incident per CCR Title 8, §5192(q)(6)(B), First Responder, Operations Level (FRO):
    - 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:
        - Knowledge of the basic hazard and risk assessment techniques
        - Know how to select and use proper PPE provided to the first responder operational level
        - An understanding of basic hazardous materials terms
        - Know how to perform basic control, containment, and/or confinement operations and rescue injured or contaminated persons within the capabilities of the resources and PPE available with their unit
        - Know how to implement basic equipment, victim, and rescue personnel decontamination procedures
        - Understand the relevant standard operating procedures and termination procedures
2. Identify the 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

Discussion Questions

1. What are the responsibilities of a fire fighter responding to a hazardous materials incident?

Application

1. Determined by instructor

Instructor Notes

1. None

CTS Reference: 6-1
Skill Sheet: None

Topic 3-2: Identifying the Scope of a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident, an assignment, policies and procedures, and approved reference sources, will be able to identify the scope of the problem at a hazardous materials/WMD incident so that container types, materials, location and physical state (form) of release, and surrounding conditions are identified; hazard and response 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.

Enabling Learning Objectives

2. Identify types of information to be collected during the hazardous materials/WMD incident survey, including:
   - Types of containers and the physical state of their likely contents
   - Materials involved
   - General location and physical state (form) of release
   - Surrounding conditions in accordance with NFPA 470 paragraph 6.2.1.4
3. Identify container identification markings, including:
   - Transportation vehicles and facility storage tanks
   - Pesticide labels
   - Radioactive material labels
   - Piping and pipeline markings
   - Contacting information
4. Identify the availability and location of transportation shipping papers and safety data sheets (SDS) at facilities
5. Describe types of hazard and response information available from and how to contact:
   - CHEMTREC, CANUTEC, and SETIQ
   - Government authorities
   - Manufacturers
   - Shippers
   - Carriers (highway, rail, water, air, pipeline)
6. Describe how to communicate with subject matter experts including carrier and manufacturer representatives to reduce impact of a release
7. Identify 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
- Water solubility

8. Identify the behavior and hazards of a material and its container based on the material's physical and chemical properties and the surrounding conditions
    - BLEVE (boiling liquid expanding liquid explosion)
    - Leaks
    - Punctures
    - Container failure
9. List examples of potential criminal and terrorist targets
10. Identify indicators of possible criminal or terrorist activity for each of the following:
    - Chemical agents
    - Biological agents
    - Radiological agents
    - Illicit laboratories)
    - Explosives
11. Describe additional hazards associated with terrorist or criminal activities, such as secondary devices and threats
12. Determine the likely harm and outcomes associated with the identified behavior and the surrounding conditions
13. Collect hazard and response information
14. Communicate with pipeline operators or carrier representatives
15. Describe the likely behavior of the hazardous materials or WMD and its container
16. Describe the likely outcomes associated with the identified behavior and surrounding conditions

Discussion Questions

1. What types of containers are used to hold hazardous materials/WMD?
    - Typical characteristics?
    - Typical commodities within AHJ?
2. What information do you need to provide to operators or carrier representatives?
3. What differentiates a hazardous material incident from a WMD incident?
4. What target hazards within your jurisdiction might be potential points of interest for WMD?

Application

1. Given the description of a container and its contents, have students discuss the behavior of the material and its associated container, predict behavior based on the material's physical and chemical properties, and identify potential outcomes.
2. Given a local area target hazard, have students identify potential locations for a secondary device at a suspected WMD incident.

Instructor Notes

1. None

CTS Reference: 6-2

Skill Sheet: 6-2: Identify the Scope of a Hazardous Materials/WMD Incident

Topic 3-3: Selecting, Donning, Working In, and Doffing Approved PPE at a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident; a mission-specific assignment in an IAP that requires use of PPE; the scope of the problem; strategies and tactics for the incident; access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; approved PPE; and policies and procedures, will be able to select, don, work in, and doff approved PPE at a hazardous materials/WMD incident so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, approved PPE is selected, inspected, donned, worked in, decontaminated, and doffed; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; PPE is maintained and stored consistent with AHJ policies and procedures and NFPA 1891; and all reports and documentation pertaining to PPE use are completed.

Enabling Learning Objectives

1. Describe types of PPE and the hazards for which they are used
2. Describe policies and procedures for PPE selection and use
3. Describe the importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures when selecting and using PPE
4. Identify the purpose, capabilities, and limitations of and specialized donning, doffing, and usage procedures for approved PPE
5. Describe procedures for approved PPE
   - Decontamination
   - Inspection
   - Maintenance
   - Storage
6. Describe procedures for reporting and documenting the use of PPE
7. Describe how to clean, disinfect, and inspect tools, equipment, and PPE
8. Select PPE for the assignment
9. Inspect, maintain, store, don, work in, and doff PPE
10. Go through decontamination (emergency and technical) while wearing the PPE
11. Report and document the use of PPE

Discussion Questions

1. What are the limitations of structural PPE when working with:
   - A biological agent?
   - A chemical agent?
   - A WMD agent?
2. What is the difference between emergency decontamination and technical decontamination?

Application

1. Given a hazardous materials scenario, have students select the proper PPE for the incident, don PPE, go through technical decontamination, doff PPE, and then inspect and prepare PPE to return to service.

Instructor Notes

1. None

CTS Reference: 7-1

Skill Sheet: 7-1: Don, Work In, and Doff Chemical Protective Clothing

Topic 3-4: Performing Emergency Decontamination at a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident that requires emergency decontamination, an assignment, the scope of the problem, policies and procedures, and approved tools, equipment, and PPE for emergency decontamination, will be able to perform emergency decontamination at a hazardous materials/WMD incident 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.

Enabling Learning Objectives

1. Define contamination, cross contamination, and exposure
2. Explain the difference between exposure and contamination
3. Describe contamination types
   - Emergency
   - Mass
   - Technical
4. List routes of exposure
5. Identify types of decontamination
   - Emergency
   - Mass (including modesty concerns)
   - Technical
6. Describe the purpose, advantages, and limitations of emergency decontamination
7. Describe policies and procedures for performing emergency decontamination
   - Personnel
   - Tools
   - Equipment
   - PPE
8. Identify approved tools and equipment for emergency decontamination
9. Describe hazard avoidance for emergency decontamination
10. Select an emergency decontamination method
11. Set up emergency decontamination in a safe area
12. Use PPE in the proper manner
13. Implement emergency decontamination
14. Prevent spread of contamination
15. Avoid hazards during emergency decontamination

Discussion Questions

1. What is the difference between exposure and contamination for individuals involved in a hazardous material incident?
2. How can modesty concerns be addressed during a mass decontamination operation?
3. In which situations would a fire fighter perform emergency decontamination rather than technical decontamination?

4. How does skin protection and respiratory protection differ with each level of chemical protective clothing?

Application

1. Given a hazardous materials incident scenario that requires emergency decontamination, have students select an emergency decontamination method, set up a decontamination safe area, and go through the emergency decontamination process while wearing proper PPE.

Instructor Notes

1. None

CTS Reference: 6-5

Skill Sheet: 6-5: Perform Emergency Decontamination

Topic 3-5: Identifying Tactics for a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident, an assignment, policies and procedures, approved reference sources, and the scope of the problem, will be able to identify the tactics for a hazardous materials/WMD incident, so that response information is collected; strategies, tactics, safety precautions, suitability of approved personal protective equipment (PPE) available, and emergency decontamination needs are identified; and an action plan is developed.

Enabling Learning Objectives

1. Identify policies and procedures for hazardous materials/WMD incident operations
2. List the basic components of an incident action plan (IAP)
   - Response objectives
   - Action options
   - Safety precautions
   - Suitable personal protective equipment (PPE) based on advantages and limitations of each option
   - Emergency decontamination needs
3. Describe modes of operation
   - Offensive
   - Defensive
   - Nonintervention
4. Describe types of strategies
5. Describe types of tactics
6. Identify types of response information available from:
   - The *Emergency Response Guidebook* (ERG)
   - Safety data sheets (SDS)
   - Shipping papers and emergency response information
   - Other resources
7. Describe safety procedures
8. Describe actions necessary when incidents involve potential criminal or terrorist activities
9. Describe risk analysis concepts
10. Identify the purpose, advantages, limitations, and required physical capabilities of personnel working in PPE
11. Identify the uses of approved PPE to determine if PPE is suitable for the incident conditions
12. Explain the difference between exposure and contamination
13. Identify contamination types including sources and hazards of carcinogens at incident scenes
14. List routes of exposure
15. Identify strategies and tactics based on the scope of the problem and available resources
16. Identify emergency decontamination needs based on the scope of the problem

Discussion Questions

1. What information from the identification and hazard assessment process needs to be included into the incident action plan?
2. What is a nonintervention mode? Why would you consider this mode?
3. How does risk analysis influence response objectives and safety procedures?
4. What considerations determine structural PPE use at incidents involving hazardous materials?

Application

1. Given a hazardous materials or WMD scenario, have students work in groups to identify response objectives and action options based on the incident's scope and the available resources.

Instructor Notes

1. None

CTS Reference: 6-3

Skill Sheet: 6-3: Identify Tactics for a Hazardous Materials/WMD Incident

Topic 3-6: Performing Assigned Tasks at a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, 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, will be able to perform assigned tasks at a hazardous materials/WMD incident so that protective actions and scene control are established and maintained, on-scene incident command is initiated, 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 emergency decontamination is conducted in the field.

Enabling Learning Objectives

1. Describe scene control procedures, including control zones and the criteria for determining the location of the control zones
2. Explain the differences between these control zones:
   - Exclusion zone (hot zone)
   - Contamination reduction zone (warm zone)
   - Support zone (cold zone)
3. Describe protective actions, including evacuation and sheltering-in-place
4. Describe procedures for ensuring coordinated communications between responders and to the public
5. List evidence recognition and preservation procedures
6. Identify incident command system factors at hazardous materials/WMD incidents
   - Purpose
   - Importance
   - Benefits
   - Organization
   - Roles
   - Responsibilities
   - Policies and procedures for implementation
7. Describe duties and responsibilities of an Incident Safety Officer
8. Describe items to be considered in a safety briefing per NFPA 470 paragraph 6.4.1(5)
   - Hazardous material incidents
   - Hazardous materials/WMD incidents involving criminal activities
9. Describe duties and responsibilities of the hazardous materials branch or group
10. Describe how to recognize signs and symptoms of thermal stress
11. Identify safety precautions when working at hazardous materials/WMD incidents
12. Identify the need for emergency decontamination in the field based on the task(s) performed and contamination received, including sources and hazards of carcinogens at incident scenes
13. Establish and maintaining scene control
14. Recognize and preserve evidence

15. Inspect, don, work in, go through decontamination while wearing, and doff approved PPE
16. Isolate contaminated tools, equipment, and PPE
17. Conduct emergency decontamination of contaminated personnel, tools, equipment, and PPE in the field
18. Clean, disinfect, and inspect approved tools, equipment, and PPE

Discussion Questions

1. What activities take place with the following zones?
   - Exclusion zone (hot zone)
   - Contamination reduction zone (warm zone)
   - Support zone (cold zone)
2. What are some indicators that a WMD was involved at a hazardous materials incident?
3. What safety precautions should a fire fighter take when working at hazardous materials/WMD incidents?

Application

1. Given a hazardous materials/WMD scenario, have students work in groups to identify and set up control zones, determine protective actions, coordinate communications between responders and with outside entities, and recognize and preserve evidence (if applicable).

Instructor Notes

1. ELOs 12 through 15 are included here because they are assigned tasks at a hazardous materials/WMD incident, but the actual training and application for these ELOs should be completed in Topic 3-3 and Topic 3-4.

CTS Reference: 6-4

Skill Sheet: 6-4: Perform Assigned Tasks at a Hazardous Materials/WMD Incident

Topic 3-7: Performing Product Control Techniques at a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident with release of product; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, control agents, and PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, will be able to perform product control techniques with a limited risk of personal exposure at a hazardous materials/WMD incident so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; a product control technique is selected and implemented; the product is controlled; victims, personnel, tools, and equipment are decontaminated; and product control operations are reported and documented.

Enabling Learning Objectives

1. Describe the importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures
2. Define offensive control, confinement, containment, and extinguishment techniques
   - Plug and patch
   - Absorb/adsorb
   - Transfer
   - Containerize
   - Stop
3. Define defensive control, confinement, containment, and extinguishment techniques
   - Dike
   - Dam
   - Divert
   - Disperse
   - Dilute
   - Cover
   - Foam
4. Define nonintervention control, confinement, containment, and extinguishment techniques
   - Isolate and deny entry
   - Retention area
5. Describe policies and procedures for product control
6. Identify product control methods for controlling a release with limited risk of personal exposure
7. Describe safety precautions associated with each product control method

8. Identify the location of and describe how to operate remote/emergency shutoff devices in cargo tanks and intermodal tanks in transportation and containers at facilities that contain flammable liquids and flammable gases
9. List characteristics and applicability of approved product control agents
10. Describe how to use approved tools and equipment
11. Identify requirements for reporting and documenting product control operations
12. Select and use PPE
13. Select and perform product control techniques to confine/contain the release with limited risk of personal exposure
14. Use approved control agents and equipment on a release involving hazardous materials/WMD
15. Use remote control valves and emergency shutoff devices on cargo tanks and intermodal tanks in transportation and containers at fixed facilities
16. Perform product control techniques

Discussion Questions

1. What control techniques can a fire fighter use at a hazardous materials/WMD incident?
2. What is the difference between offensive actions and defensive actions?

Application

1. Given a hazardous materials/WMD scenario, have students select and perform offensive product control techniques to confine/contain the release with limited risk of personal exposure.
2. Given a hazardous materials/WMD scenario, have students select and perform defensive product control techniques to confine/contain the release with limited risk of personal exposure.

Instructor Notes

1. Design the application scenarios so that students are exposed to hazards that require offensive and defensive control techniques.

CTS Reference: 7-2
Skill Sheet: 7-2: Perform Product Control

Topic 3-8: Evaluating and Reporting Progress for a Hazardous Materials/WMD Incident

Terminal Learning Objective

At the end of this topic a student, given a hazardous materials/WMD incident, an assignment, policies and procedures, status of implemented strategies and tactics, and approved communication tools and equipment, will be able to evaluate and report the progress of assigned tasks for a hazardous materials/WMD incident so that the effectiveness of the assigned task is evaluated and communicated to the Incident Commander or designee so that the IAP can be adjusted as needed.

Enabling Learning Objectives

1. List components of progress reports
   - Conditions
   - Actions
   - Needs
2. Describe policies and procedures for evaluating and reporting progress
3. Describe methods to immediately notify Incident Commander and other response personnel regarding critical emergency conditions at an incident
4. Describe how to use approved communication tools and equipment
5. Identify facts and circumstances indicating improving, static, or deteriorating conditions based on the objectives of the assigned tasks intended to accomplish the incident objectives
6. Describe how to compare actual behavior of the material and the container to the predicted circumstances under which it would be prudent to withdraw from a hazardous materials/ WMD incident
7. Determine incident status
8. Determine whether the strategies are being accomplished
9. Use approved communications tools and equipment
10. Communicate the status of assigned tasks

Discussion Questions

1. When should a fire fighter send a progress report during a hazardous materials/WMD incident?
2. What information should a fire fighter include in a progress report?
3. What are the challenges of using communication equipment while wearing chemical protective clothing?

Application

1. Given a hazardous materials/WMD scenario and timeline, have students identify when they would send a progress update and what the information that communication would include.

Instructor Notes

1. None

CTS Reference: 6-6

Skill Sheet: 6-6: Evaluate and Report Progress for a Hazardous Materials/WMD Incident

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details
The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources
The Required Resources segment identifies the resources, equipment, facilities, and personnel required to delivery the course.

Unit
Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics
Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective
A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives
The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master in order to complete the TLO.

Discussion Questions
The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application
The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes
The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference
The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet
The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.