



Pennsylvania State Fire Academy

1150 Riverside Drive

Lewistown, PA 17044-1979

(717) 248 1115

In PA: 1 800 459 4096

FAX (717) 248 3580

Minimum Standard for Accreditation (MSA)

Date: July 1, 2010

Last Revision: July 1, 2010

Course Title: Delmar Hazardous Materials Operations (DHMO)

SFA Course Code: (DHMO)

Course Length: 24 hours

Lecture/Lab Breakdown: 12/12

Prerequisites: DHMA or equivalent

Referenced Text(s): Hazardous Materials Handbook: Awareness & Operations Levels, Pennsylvania Custom Edition. Delmar Instructor Resources CD; OSHA 29 CFR 1910.120; DOT 49 CFR 171-173; NFPA 471; NFPA 472; DOT Emergency Response Guidebook, latest edition; *NIOSH Pocket Guide to Chemical Hazards*, latest edition, DHHS (NIOSH) Publication No. 97-140, U.S. Department Health and Human Services, Public Health Service, Centers for Disease Control & Prevention; *Fundamentals of Industrial Hygiene*, latest edition, National Safety Council; *Hazardous Materials, Managing the Incident*, latest edition, Noll, Hildebrand & Yvorra, Fire Protection Publications, Oklahoma State University.

Course Goal: Students completing this course will be able to safely and effectively control, manage, and mitigate a hazardous materials release using first due resources until the arrival of additional specialized units. The goal is to prepare the student to respond and operate at the Hazardous Materials Operation level.

Course Description: The primary target audiences for this course are the First Responders charged with response actions associated with hazardous materials releases. Student will learn and adapt the knowledge and skill requirements for effective scene and response management. This program is designed to train and educate the student in hazardous materials response at the Hazardous Materials Operations level and in accordance with NFPA 472 of 2008 and 29 CFR 1910.120. This program is designed to give the first responder the necessary skills to handle hazardous materials emergencies.

Description of Methodology: Lecture, discussion, demonstration, and supervised practice.

Student Equipment & Supplies: Pen/pencil, textbook & notebook, PPE, and SCBA, spare cylinder (optional).

Minimum Standard For Accreditation

Hazardous Materials Training: First Responder Operations

July 1, 2010

Page 2 of 5

Equipment/Audiovisual/Facility/Supply Requirements:

1. Classroom with usual amenities; computer and computer projection equipment with screen; AV CD for the course; below-listed equipment list:
2. One copy of Instructor Guide and PowerPoint Presentation CD
3. One copy of Student Manual for each student (manual will remain in student's possession at course conclusion)
4. Course Resource/Equipment Needs:
 - a. One ERG (latest edition) for each student
 - b. Example of DOT, NFPA, and Military Marking System placards and labels
 - c. Worksheets for students for practical skills
 - d. Several large booms, socks, pads
 - e. Training foam, at least 4 pails per class
 - f. 1 Foam eductor
 - g. 1 Foam expansion adapter
 - h. Water source, pump and hose
 - i. Several tarps
 - j. Shovels, flat head and spade
 - k. Street brooms
 - l. 1 extension ladder
 - m. Sand/soil pile (road silt may be used) (6 tons)
 - n. An area for practical skills to perform vapor suppression with foam, damming, diking & diverting, and vapor dispersion, the area should include (if possible) a waterway, roadway with storm rains, and impervious and non-impervious surface.
 - o. Decon equipment, (it would be best to use local hazmat teams if possible)
 - p. Multi-station: Showers, tarps or plastic, pools, garden hose, brushes, 5 gallon pails, fold-up chairs
 - q. Emergency decon: tarps, 25' pony line 3" to 5" or 2 roof ladders and pike poles
 - r. An area large enough to set up for at the very least emergency decon and normal team decon
 - s. Gas detectors single or multi-gas (should be fire company or hazmat team owned)
 - t. Command worksheets
 - u. Portable radios
 - v. If possible information on the location where class is held, this should include fixed facilities, area waterways and maps of local roads
 - w. Written examination and answer sheets, No 2. pencils
5. Optional Materials:
 - a. If local hazmat team truck is available, the following is recommended (optional):
 - i. APRs (samples)
 - ii. Tyvek or saranex suits (12 suit various sizes)
 - iii. CPC boots and gloves (12 sets)
 - iv. Medical gloves
 - v. Level "A" training suit (for teaching dress out assistance only)
 - vi. Area for dressing out students in different types of CPC
 - b. Props (if available) Empty cylinders, drums, and other containers
 - c. Thermal imaging camera (if available)

(continued)

Minimum Standard For Accreditation

Hazardous Materials Training: First Responder Operations

July 1, 2010

Page 3 of 5

- i. Not needed but should be reviewed if available
 - 1. Photo Ionization Detectors
 - 2. pH paper
 - 3. Radiation Monitors
 - 4. Colorimetric Tubes
 - 5. If possible, samples of products to be detected

Special Notes & Conditions: Maximum enrollment is 30 students. A second instructor will be required for the lab sections of the course (12hrs.). All written course material is the property of the Pennsylvania State Fire Academy and Cengage Delmar Learning; substantial portions of course materials may not be duplicated. Minimum student age is 16.

Course Outline

<u>Elapsed Time</u>	<u>Topic</u>
0.25	..... Introduction
0.75	..... Review of Lesson 1 – Laws, Regulations and Standards
1.0	..... Lesson 2 – Review Recognition and Identification Systems (Review of Slides 2.1 to 2.48)
1.0	..... Lesson 2 – Properties of Hazardous Materials (Slides 2.49 to 2.67)
2	..... Lesson 4 – Personal Protective Equipment
2.5	..... Lesson 5 – Protective Actions (classroom)
4.0	..... Decon Exercises Emergency Decon (Demonstrate) Emergency Decon (Practice) Team Decon Line (Demonstrate) Team Decon Line (Practice)
2.5	..... Lesson 6 – Product Control and Air Monitoring
4.0	..... Product Control Exercises Diking, Diverting, Retention (Demonstrate) Diking, Diverting, Retention (Practice)
4.0	..... Product Control Exercises Overflow Dam (Demonstrate) Overflow Dam (Practice)
0.75	..... Review of Lesson 7 -- Terrorism

(continued)

Minimum Standard For Accreditation

Hazardous Materials Training: First Responder Operations

July 1, 2010

Page 4 of 5

1.00	.....	Written Examination
0.25	.....	Summary and Course Evaluation
24 Hours	Total	

Competency Evaluation Mechanism: Student performance on practical skills evolutions and written examination grade (minimum passing grade of 70% required for successful completion of the course).

Learning Outcomes (Behavioral Objectives): Upon completion of this course, the student shall:

1. The student will identify hazardous materials by occupancy and location, placards and labels
2. The student will utilize the 2004 ERG in researching hazardous materials
3. The student will utilize facility documents in researching hazardous materials
4. The student will identify common facility markings and the NFPA 704 diamond
5. The student will identify the common health hazards and their effects associated with hazardous materials
6. The student will identify the routes of entry of hazardous materials in the human body and their health effects
7. The student will describe the differences between exposure and contamination
8. The student will identify expose terms and their meaning
9. The student will recognize the terms that are applied to the properties of hazardous materials
10. The student will describe the four levels of protection
11. The student will identify various PPE and how they protect the wearer
12. The student will identify various respiratory protection devices and how they protect the wearer
13. The student will identify the various sizes and types of pressurized vessels
14. The student will identify the various sizes and types of non-pressurized vessels
15. The student will describe the effects of stress on containers and their potential outcomes
16. The student will recognize the four common dispersion patterns from container failure
17. The student will describe the dispersion pattern of spilled hazardous material
18. The student will describe methods of mitigation for spill of a liquid hazardous material
19. The student will apply class B foam on a spill of a simulated liquid hazardous material
20. The student will apply a water vapor spray in a simulated hazardous material gas leak to disperse the vapors
21. The student will describe situations when no action would be taken at a hazardous materials incident
22. The student will identify common targets of terrorists
23. The student will describe the effects of a terrorist event
24. The student will describe the effects of various agents used in terrorist events

(continued)

Minimum Standard For Accreditation

Hazardous Materials Training: First Responder Operations

July 1, 2010

Page 5 of 5

25. The student will recognize the differences between a criminal and terrorist event
26. The student will identify three different types of decontamination and the appropriate situation for each type
27. The student will build an emergency decontamination system
28. The student will identify methods of decontamination
29. The student will identify devices used for detecting hazardous materials
30. The student will operate detecting devices in a simulated hazardous materials incident
31. The student will identify the five components of an incident command system
32. The student will describe the levels of response for hazardous materials incidents
33. The student will demonstrate their ability to properly don, wear, and doff personal protective ensembles
34. The student will demonstrate the ability to absorb a released product when given all necessary absorbants
35. Given the appropriate equipment and supplies, the student will be able to demonstrate their ability to divert the flow of released product
36. Given the appropriate equipment and supplies, the student will be able to demonstrate their ability to build a retention system
37. Given the appropriate equipment and supplies, the student will be able to demonstrate their ability to build an overflow and an underflow dam
38. The student will demonstrate their ability to make use of an Incident Action Plan
39. The student will demonstrate skill sets during integrated exercises

Questions/Comments: Curriculum Specialist at 717-248-1115