



Pennsylvania State Fire Academy

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Minimum Standard for Accreditation (MSA)

Date: September 2006

Last Revision:

Course Title: Hazardous Materials Operations Level Refresher 472

SFA Course Code: HMOR

Course Length: 6 hours

Lecture/Lab Breakdown: 2/4

Prerequisites: HMOR

Referenced Text(s): *Hazardous materials Training: First Responder Operations* Instructor Guide; OSHA 29 CFR 1910.120; DOT 49 CFR 171-173; NFPA 471; NFPA 472; DOT Emergency Response Guidebook 2004 Edition; *NIOSH Pocket Guide to Chemical Hazards*, Third Printing, January 2003, 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*, Third Edition, National Safety Council (Stock#151.33); *Hazardous Materials, Managing the Incident*, Second 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. This program was designed as annual refresher training for students who have taken the Hazardous Materials Operations Level 472 course and provide hands on opportunities to exhibit the practical skills learned as part of that program.

Course Description: The primary target audiences for this refresher course are the First Responders who have taken the Hazardous Materials Operations Level 472 course. The Student will use previous learned skills and information presented during the class room training to perform the skills associated with NFPA 472 Chapter 5 Competencies for the First Responder at the Operational Level, and 29 CFR 1910.120 OSHA's Hazardous Waste Operations and Emergency Response, (HAZWOPER), First Responder Operations Level.

Description of Methodology: Lecture, discussion, and scenario based practical evolutions.

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

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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 the Hazardous Materials Operations Level Scenarios
4. Course Resource/Equipment Needs:
 - a. Lessons 1 & 2
 - i. 2004 ERG books 24 for each kit
 - ii. Student Guides 1 per student
 - b. Lesson 3 Scenario Based Practical Evolutions
 - i. Refresher Scenarios
 - ii. Turnout gear for each student
 - iii. SCBA, with spare cylinders
 - iv. Several large booms, socks, pads
 - v. Training foam, at least 4 pails per class
 - vi. 1 Foam eductor
 - vii. 1 Foam expansion adapter
 - viii. Several tarps
 - ix. Shovels, flat head and spade
 - x. Street brooms
 - xi. Hay bales
 - xii. 1 extension ladder
 - xiii. Sand/soil pile (road silt may be used) (6 tons)
 - xiv. (optional) Props (if available) Empty cylinders, drums, and other containers
 - xv. 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.
 - xvi. Decon equipment, (it would be best to use local hazmat teams if possible)
 - xvii. Multi-station: Showers, tarps or plastic, pools, garden hose, brushes, 5 gallon pails, fold-up chairs
 - xviii. Emergency decon: tarps, 25' pony line 3" to 5" or 2 roof ladders and pike poles
 - xix. Mass Decon: water supply, 2 engines and ladder truck
 - xx. An area large enough to set up for at the very least emergency decon
 - xxi. Gas detectors single or multi-gas (should be fire company or hazmat team owned)
 - xxii. Thermal imaging camera (if available)
 1. Not needed but should be reviewed if available
 - a. Photo Ionization Detectors

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- b. pH paper
- c. Radiation Monitors
- d. Colorimetric Tubes
- 2. If possible, samples of products to be detected
- xxiii. Command worksheets
- xxiv. Resource information from lesson 1-3
- xxv. Portable radios
- xxvi. If possible information on the location where class is held, this should include fixed facilities, area waterways and maps of local roads
- xxvii. Written examination

Special Notes & Conditions: Maximum enrollment is 30 students. A second instructor may be required for the lab sections of the course (6 hrs.). All course material is the property of the Pennsylvania State Fire Academy; Course materials may be duplicated. Minimum age is 18 due to the Child Labor Law restrictions on minors working at hazmat incidents with a potential exposure to IDLH atmospheres and chemical releases.

Course Outline

<u>Elapsed Time</u>	<u>Topic</u>
1.00	Unit 1: Identification
1.00	Unit 2: Hazardous Material Containers
4.00	Practical Evolutions
<hr/> 6 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).

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

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 The student will recognize the differences between a criminal and terrorist event
25. The student will identify three different types of decontamination and the appropriate situation for each type
26. The student will build an emergency decontamination system
27. The student will identify methods of decontamination
28. The student will identify devices used for detecting hazardous materials
29. The student will operate detecting devices in a simulated hazardous materials incident
30. The student will identify the five components of an incident command system
31. The student will describe the levels of response for hazardous materials incidents
32. The student will demonstrate skill sets during integrated exercises

Questions/Comments: Curriculum Specialist: Extension 106